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**REGIONAL DEPARTMENT OF DEFENSE RESOURCES**  
**MANAGEMENT STUDIES**



**DEFENSE RESOURCES MANAGEMENT IN THE 21<sup>ST</sup>**  
**CENTURY**

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**AN EXPLORATION OF THE COMPLEX INTERACTION  
BETWEEN ECONOMIC DEVELOPMENT AND MILITARY  
CONFLICT**

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**Abstract:**

The history of mankind has taken a sinuous path along the ages, with ups and downs, shifts in direction and changes of paces, accomplishments and tragedies. All these irregularities were due to different factors, the most important of them being probably wars. Like it or not, violence is in our genes and has driven the path of the societies, states, empires or republics as they appeared, rose, flourished or disappeared. During all that time, people surprisingly managed to evolve, economically and technologically. But where these developments independent of the violent nature of humans, or were they influenced by it? Or maybe the other way around? Since the sought answers are not simple, the present paper will try to bring just a little bit of light into this shadowy domain.

*Without peace, there can be no development, but without sound socio-economic development, there can be no sustainable peace. [1]*

**Introduction**

For millennia, the humankind evolution was reflected in demographics, economics, technology and so on. For the same timeframe, its path was affected by conflicts, shaping the way it moved ahead (most of the times), changing direction and accelerating or slowing it down.

Most of the times, wars were directly influenced by unbalanced or unfair societies' development and vice-versa, fighting determined the direction of the evolution of human groups, in particular their wealth. As history taught us, there were and most likely there will always be multiple links between these two fundamental facets of the human civilization.

The complexity level of the relationship between the conflicts and the economical development of different actors into conflict is overwhelming and has fed the imagination of great thinkers throughout the ages. The present paper has the humble intent of revealing only some of the most significant correlations between these two aspects of humankind evolution (or sometimes involution).

**Insights on the interaction between economic development and the military conflict**

**Uneven economical development – triggering factor for a conflict**

It is quite naturally that different groups have different evolutions, even if neighboring and subject to similar conditions. This is due to each one's intrinsic abilities to transform resources in hand into wealth, and its native skills to preserve it. The result is that most likely there will be differences in the quality of life between bordering societies, inevitably leading to one group coveting the other's wealth and craving for it.

The uneven distribution of wealth is acceptable up to a certain breaking point, when the envy of one group overcome the fear of conflict, reaching the level of triggering a skirmish with the other in order



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to get so desired other's goods. This was the world's order since the first cave man cracked the neighbor's head over a chunk of brontosaurus meat, and unfortunately will forever cast its shadow over humanity. This is part of what we are and there's no point in denying it.

Sometimes parties tried to justify the conflict through different reasons in search of the image of the righteous in the eyes of history, as well as trying to secure the home public support for the war effort, but in fact the trigger was always the craving for other's wealth. As such, during the Middle Ages the crusades departed under the banner of the holy cross and resulted into pillaging cities in Asia Minor (very often including the Christian cities on the way!). Centuries later, US troops entered Iraq in order to bring democracy to a society with a traditional tribal mentality, in a region that happened to be very rich in oil – the result of the Gulf Wars was the vast control over a critical resource at the dawns of the twentieth Century. Sorry for having to say that, in the future, for sure we'll have the chance to witness again this kind of rationing – the word trying to justify the sword.

### **Competition for resources**

Other times, the economical development of some societies have put them into the situation of initiating a military conflict, in order to get an essential resource, more required by the economical activities. In fact, very often the growth of human activities is limited by the amount of natural resources available to those activities like land, water, oil etc., or other types of resources like access to strategic ways of communications, advanced technologies, sites of high spiritual value and so on. In such situations, initiating parties claimed the inevitability of the conflict due to the essential need of the resources the others had or controlled. This was best captured by Travis Sharp in 2007 in an article [2] published under the aegis of *The Center for Arms Control and Non-Proliferation*, in which he wrote: “From 1914-1982, twelve major international conflicts were fueled by access to resources, including World War I, World War II, the Six-Day War of 1967, and the Falkland/Malvinas Conflict of 1982. Since 1982, resources have exercised an even more dramatic influence on the initiation, duration, and intensity of both inter- and intra-state conflicts.”

On the other hand, in some cases the growth in number of population became unsustainable by the low level of resources at hand in conjunction with the poor development, leading to shortages in the very basic needs like food, fresh water, basic health care, security. For example, the year 2011 brought to the world the worst drought in Africa, leading to a food crisis especially in Somalia and Ethiopia. In this case, armed factions fought for essential goods required for the survival – water, grains and livestock.

As presented by the online edition of *The Economist* in an article [3] dated July 7th, 2011: “In areas lucky enough to have a little green, armed herders are violently competing for dwindling resources. In Kenya alone more than 100 herders have been killed so far this year.”

### **Economical development as enhancer for the military conflict**

Besides the loss of lives, any military conflict entails loss of goods and waste of resources, without which the fighting effort cannot be sustained. That's the reason why, before starting any kind of aggression, a group will normally assess very carefully its capabilities against the opposing force, in order to secure the victory of the campaign. Failure in doing so, either on short or long term, leads to defeat (as it was so bitterly seen by the Germans in WW II when they failed to foresee Russian's capability to sustain a long term war effort).

Military conflict requires a significant level of availability of resources from the involved parties, sustainable for extended periods of time. Since this is directly linked to the economical development, we can see it as a conflict enhancer, meaning that a war is likely to continue as long as the belligerents have the means to sustain it. When one party runs out of food, water, oil, manpower or



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whatever commodities essential to the war effort, most likely it will seek truce or surrender, effectively ending the conflict.

In reality, there isn't a linear relationship between the economical development and a state's willingness to engage in a conflict, as Boehmer and Sobek pointed out in the article [4] *Violent Adolescence: State development and the propensity for militarized interstate conflict*, published in January 2005 in *The Journal for peace research*, later quoted by Braddon and Hartley in the *Handbook of economics of conflict* [5]:

“A high level and a low level of development reduce the risk of militarized conflict, whereas an intermediate level of development gives rise to interstate conflict. [...] poor states lack the military capability to wage an extended war and thus the opportunity to escalate a conflict to the state of war. Highly developed countries, though having the military wherewithal, are less likely to risk their prosperities and economic relations. In between these two poles fall the ‘moderately’ developed economies. These economies may have the right mix of opportunities and willingness to engage in belligerent behavior.”

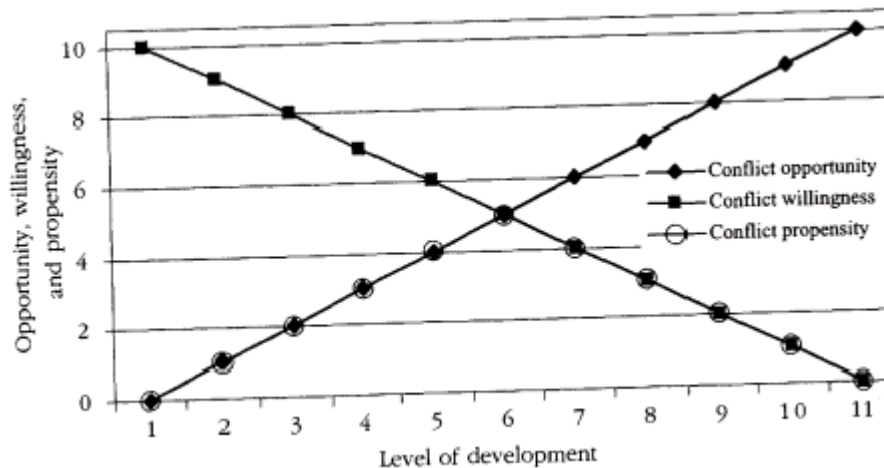


Fig. 1 – Graphical representation of conflict opportunity and willingness (thus resulting propensity), over economical development

### **Impact of military conflict on the economical development**

Generally, military conflicts have a negative impact on the economy not only of the belligerent parties, but also of those in relation with these. As Joshua Goldstein noted in his article [6] *War and Economic history*, published in 2003 in the *Oxford Encyclopedia of economic history*: “Wars are expensive (in money and other resources), destructive (of capital and human capital), and disruptive (of trade, resource availability, labor management). Large wars constitute severe shocks to the economies of participating countries. Notwithstanding some positive aspects of short-term stimulation and long-term destruction and rebuilding, war generally impedes economic development and undermines prosperity”. He goes then into more details on the economical effects of conflicts, consisting in:

- inflation, which is the general increase in prices due to the fact that in wartime even common goods and services are usually difficult (or even impossible) to be provided, because most of the economical activities concentrate into the war effort. This was obvious even from the early ages of civilization, as Sun Tzu stated: "Where the army is, prices are high; when prices raise the wealth of the people is exhausted". Maybe there was no better moments to see it then during the Middle Ages, when kingdoms relied heavily on mercenary armies, very expensive to maintain – the key to the success was to have more money than your opponent; some states succeeded in doing so by



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expanding the empires overseas, conquering rich new territories able to assure a steady flow of silver and gold.

Another ways to provide the necessary financing of the war effort was to print more currency and thus skyrocketing the inflation, or to go for external credits leading to debts hard to pay, sometimes putting the country into bankruptcy (as it happened to Spain in the second half of the sixteenth century). For example, Milton Friedman and Anna Jacobson Schwartz pointed out in Chapter 3 (*World War II Inflation, September 1939– August 1948*) of their work - *From New Deal Banking Reform to World War II Inflation*, published in 1980 under the aegis of Princeton University Press: “The outbreak of war in Europe in September 1939 ushered in a period of inflation comparable to the inflations which accompanied the Civil War and World War I, though more protracted than either. By the postwar price peak nine years later (August 1948), wholesale prices had more than doubled, the implicit price deflator had somewhat less than doubled, the stock of money had nearly tripled, and money income had multiplied more than two-and-a-half-fold.”

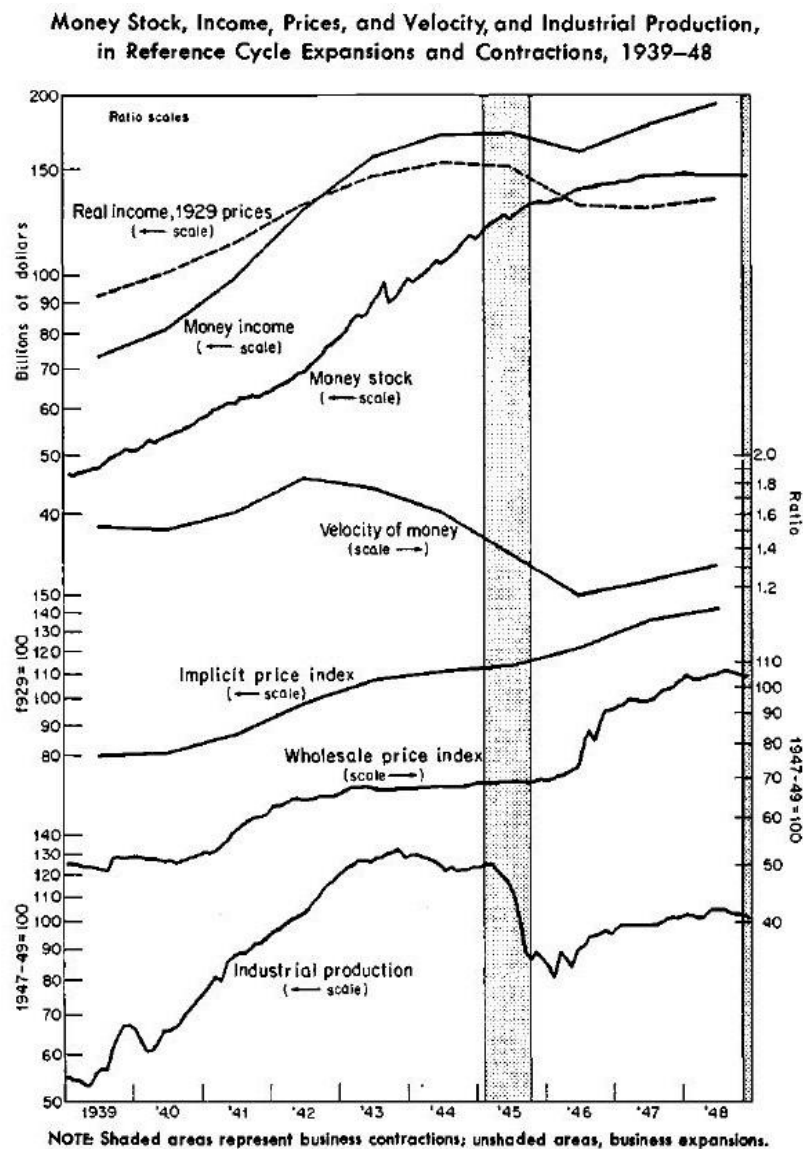


Chart 1 – Money Stock, Income, Prices, and Velocity, and Industrial Production, in Reference Cycle Expansions and Contractions, 1939—48





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- waste of capital (economical assets and manpower): in addition to diverting significant resources from economical development into the war effort, battles usually come with the price of destruction of infrastructure and loss of qualified labor. During World War II, the city of Stalingrad, one of the most industrialized region of Russia, turned into rubbles as a result of the heavy fights for controlling this important production center, thus becoming unusable for the Germans; in fact it became a turning point into the war, both parties wasting a lot of resources in the area.



Fig. 2 - Rubble of Stalingrad’s Red October Steel Factory [7]

On the other hand, if factories can be rebuilt within years or decades, waste in humans can have a more far reaching effect, since they ripple throughout the decades. Besides the obvious loss of lives wars come with (either casualties directly attributable to fighting or deaths caused by disease related to conflict), they induce other significant social changes like: the gender balance (through the death of mostly men on battlefield, leading to situations where women assumed leading role in home industry supporting the war effort); changes into mentality, setting up long-lasting animosities (maintaining the perception of one population towards former opponents as “enemies” long after the end of the conflict); post-conflict “baby-booms” had a decisive influence in the way the societies evolved decades after the First and the Second Wars. Although states carrying conflict outside of their territories (as US did during the twentieth century), they are not safe from all these influences and still can observe their effects;

- debts of the defeated as compensations owed to the winners: usually the post-conflict recovery is much harder when the state losing the battle has to pay compensations to the other parties – sometimes it is impossible to economically rebuild for decades. In this situation, it is of paramount importance that the winners acknowledge the need to assist the recovering country through different means: either to wipe out or restructure the debt (as it happened in 1953 with Germany's debt after the World War I and World War II, based on the *London Agreement on German External Debt* [8], which reduced the amount owed to international creditors and stretched the reimbursement over 30 years, and additionally stated that Germany was to pay the debts only when she would have a trade benefit and the reimbursement would not exceed 3% of the export earnings – thus encouraging foreign state to do business with the country trying to rebuild after the war), or the setup of reconstruction mechanisms based on international funding as part of peace building (as it happened in Iraq in 2003, when *Iraq Relief and Reconstruction Fund* (IRFF) [9] was established by the US Congress and allocated more than 20 Billion USD -initially 18 Billion USD, later supplemented - on an multi-year approach in order to support the reconstruction of the infrastructure ravaged by war);



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Sector	Allocation November 2003	Allocation September 2008	Difference
Electric	\$5,560	\$4,202	\$(1,358)
Water resources and sanitation	4,332	2,051	(2,281)
Security and law enforcement	3,243	4,962	1,719
Oil infrastructure	1,890	1,728	(162)
Justice, public safety infrastructure, and civil society	1,318	2,300	982
Health care facilities	793	812	19
Transportation and telecommunications	500	462	(38)
Roads, bridges, and construction	370	305	(65)
Education, refugees, human rights, and governance	280	539	259
Private sector development	153	868	715
Administrative expenses	0	220	220
<b>Total</b>	<b>\$18,439</b>	<b>\$18,449</b>	<b>\$10</b>

**Note:**

Numbers are affected by rounding.

Table 1 – IRFF Sector Allocation from November 2003 to September 2008 (Million USD), according to the report of the Special Inspector General for IRAQ Reconstruction, SIGIR 11-013 dated April 22, 2011 [10]

using large amounts of funding in order to develop and support military capabilities, thus diverting the capital from more useful civilian use (such as education, public health, infrastructure development), that could provide beneficial effect over long term and provide the foundation for further growth. As Joshua Goldstein noted in his article [6] *War and Economic history*, published in 2003 in the *Oxford Encyclopedia of economic history*: “During the Cold War, high military spending contributed (among other causes) to the economic stagnation of the Soviet Union and the collapse of North Korea, whereas low military spending relative to GDP contributed to Japan's growth and innovation. During the 1990s, as real military spending worldwide fell by about one-third, the United States and others reaped a "peace dividend" in sustained expansion. However, effects of military spending are long-term, and sharp reductions do not bring quick relief, as Russia's experience since 1991 demonstrates.”. All this rationale is valid, of course, when the threat is below the level where all these investments would be jeopardized by the perspective of being overtaken by the competitors.

In order to be historically fair, one must admit some other effect of the conflicts, consisting in the economical development due to:

- mobilization of forces and resources under the state's authority, in order to support the war effort. In the absence of this concentration of efforts, usually the outcome of the economical activities follow an uneven distribution, most of the income being allocated to a reduced number of the fortunate-ones and later on being unwisely spent. The military expenditure can sometimes serve as a mean to re-launch a receding economy, as it was the case during the great depression in the 30's, when the US preparations for war lead to reduced unemployment and a better use of industrial base; or, as Paul Baran and Paul Sweezy pointed out in the work [11] *Monopoly Capital - An Essay on the American-Economic and Social Order* (page 153), published in 1966, when talking about US economy in the 1920-1950 timeframe: “It is of course in the area of defense purchases that most of the expansion has taken place – from less than 1 percent of GNP to more than 10 percent, accounting for two thirds of the total expansion of government spending relative to the GNP since the 1920's. This massive absorption of surplus in military preparations has been the key fact of postwar American economic history. Some six to seven million workers, more than 9 percent of the labor force, are now



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dependent for jobs on the arms budget. If military spending were reduced once again to pre-Second World War proportions, the nation’s economy would return to a state of profound depression, characterized by unemployment rates of 15 percent and up, such as prevailed during the 1930’s“ (the period when US faced the Great Depression. They presented also a brief comparison of the figures reflecting US spending, versus GNP:

**Government Spending, 1929-1957**  
**(Percent of GNP)**

	1929	1957
Non-defense purchases	7.5	9.2
Transfer payments	1.6	5.9
Defense purchases	0.7	10.3
<b>Total</b>	<b>9.8</b>	<b>25.4</b>

Table 2. Comparison of US spending in the ‘20s vs. 50’s

- technological development, since a lot of new inventions were pushed forward by the pressure of military for better weapons. Most of these new technologies (such as radar, jets, GPS and so on) found civilian use later on, leading to economical improvement. However, it is arguable whether the money spend on the development of the military technologies later converted into civilian use, wouldn't have had a better effect if it had been invested directly into civilian research;
- infrastructure rebuilding: the war-induced destructions very often led to the situation where one country's whole setup was wiped-out and later rebuilt from scratches. In this case, the newly built roads and buildings were more appropriate to the use in modern times, comparing to the old ones (even today, some countries struggle with cities organized the way they were in the Middle Ages, tributary to their own inflexibility throughout history). Big working sites as part of post-conflict reconstruction boosted economies through high employment rate and new business opportunities (for example, after the destructions in the First and the Second World Wars, France knew an economical development in the 50's much higher than in pre-conflict at the beginning of the century);
- gain of the winner: it is obvious that any war has at least one party benefiting after the conflict, through the following:
  - **direct use of the conquered resources:** the whole history of conflicts shows the tendency of expanding empires to “consume” the gain of the occupied regions (usually in terms of: raw goods - grains, salt, lumber and later oil; fortune in any forms - silver, gold, jewels; and finally manpower – more commonly known in the dawns of history as “slaves”) in order to support increasingly larger armies necessary to sustain the expansion of the empire while maintaining the well-being of the citizens. Maybe the most obvious examples would be the Roman empire between first century BC and fifth century AD, which used the slaves from the conquered regions as cheap and affordable labor and the treasures of the occupied territories in order to provide *panem et circenses* (bread and circuses) to keep the Romans satisfied; or the Ottoman empire, (which raised in the thirteenth century, flourished after the fall of Constantinople in 1543 and lasted until the early twentieth century), that used to force the conquered nations to pay, on yearly basis, not only a quite consistent monetary tribute but also a contribution to the army in form of children and young people, to be drafted and forcibly enrolled into infantry units called *Janisseries*, further used to sustain the authority of the empire over the foreign lands. The policy of draining resources from the occupied territories left traces that can be seen even today (for example, in the South Africa the rail infrastructure reflects the initial purpose of assuring the transportation of raw materials from the mines and from the plantation towards the coastal ports, in order to be shipped to Netherlands and Britain);



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- **control over territories producing significant resources:** it is quite obvious even to the simplest mind that, if the use of the conquered fortunes can support the well-being for short periods, the best way to secure a long term prosperity is to own or control assets that repeatedly produce resources, such as mines, farms and plantations, fishing grounds, oil-producing regions and refineries, industrial base and so on. The bigger the benefits are from such assets, the more attractive they are to possible pretenders and the higher the risk of military conflict is. That was the case for example of the oil-rich territories in Kuwait, invaded in 2000 by the militarized neighboring Iraq (invasion took two days to unfold and lasted for seven months until the military intervention of a international coalition under the lead of USA, later known as the first Gulf War). Disputes over rich territories can be settled through arbitration and conflict can be avoided in some fortunate environments (usually when all parties would risk significant losses if going for conflict, comparing to the potential gain) – that was the case with the continental shelf area in the vicinity of the Serpent Island in the Black Sea, challenged by both Romania and Ukraine – ultimately settled by the International Court of Justice in 2009, the solution being somewhere between the claims of the two parties;

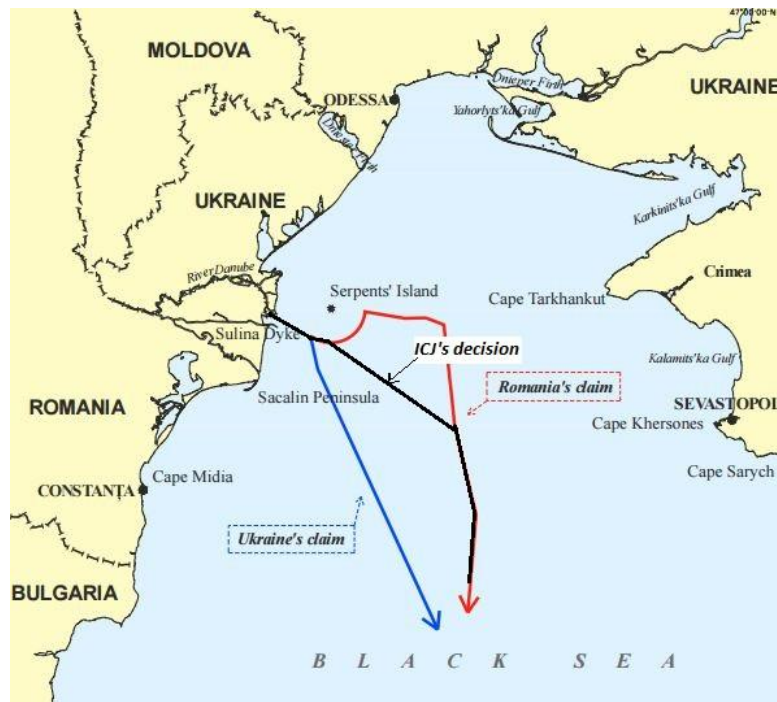


Fig. 3 – Serpent Island and the claims over sea continental shelf

- **control over strategic choke points** (such as straits, bridges, channels, passes): this allows the controlling state to impose tolls on the passing merchandise (hence gaining considerable revenue on long term) and even restrictions (thus having a tool to control the balance of power into the region). One of the most commonly-known cases is the regime of the Bosphorus strait, linking the Black Sea area to the Mediterranean through the Sea of Marmara: the strait represented an important strategic point throughout the ages, this being most visible during the sixteenth to nineteenth century, period in which the Ottoman Empire controlled the strait and ultimately imposed the rule of not allowing the Russian ships to cross it, thus transforming the Black Sea into a Ottoman lake; the situation led to the outbreak of several Russo-Turkish wars and later fights during the World War I; the status of the strait was eventually settled by the *Montreux Convention Regarding the Regime of the Turkish Straits* [12], signed in Switzerland in 1936.

- another one case was the 1989 US campaign into Panama, aimed at securing the control over the Panama Canal; the channel had been built by French (in late nineteenth century) and finished by



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the US (1914) in order to provide a much shorter route for maritime ships from Atlantic to Pacific (the traffic increased from 1.000 ships in 2014 to roughly 15.000 ships nowadays; more than 1 million ships already passed through the channel since its construction); the channel had been US-owned and administrated until 1977, when it was handed over the Panama administration under the provisions that a small US garrison would remain in place and that the US ships would freely transit the channel; that was to change in 1989 during the Manuel Noriega regime, triggering a military intervention from the US resulting in the disembarkation of Noriega (the intervention was called by the Americans “Operation Just Cause”, while the Panamanians called it “La Invasion” (The Invasion); in 1999 the channel was passed under full authority of Panama; the tolls charged by the Panama Canal administration are based on the tonnage of the ships passing through and went throughout the history of the channel up to 375.000 USD, averaging about 50.000 USD. For example, in the latest years (2011-2013), i.a.w. Panama Canal Authority [13], the total revenue was roughly about 2,4 Billion Balboas (1 Panamanian Balboa = 1 USD):

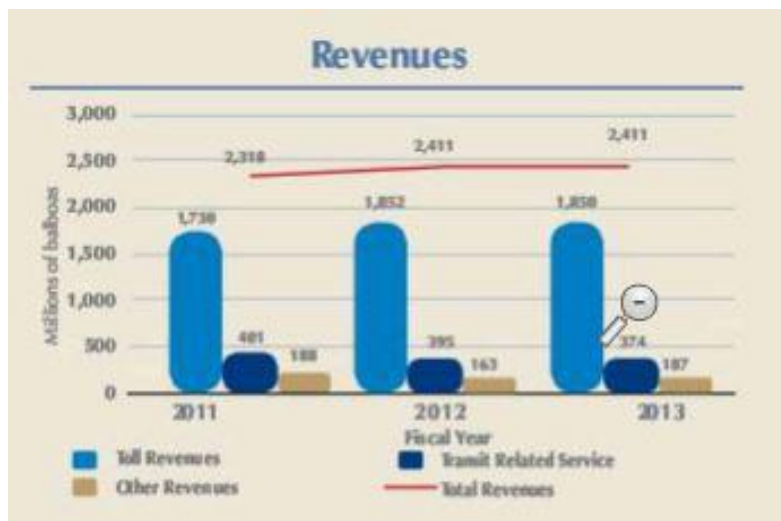


Fig. 4 – Panama Canal revenues in 2011-2013 timeframe

- Controlling choke-points such as straits allows one state to have a position of force into the region, as seen in the case of the Strait of Hormuz: it links the Persian Gulf with the open seas, hence being the transit point for as much as between 20% and 40% of the petroleum traded around the world; it lies between Iran at North-East and Oman at South-West, and has a width of roughly 50 nautical miles out of which the navigation width is 5 nautical miles, split between inbound and outbound traffic. Due to its narrowness, it represented the best way Iran tried to impose into the region, by blocking the merchant traffic (and most important – the crude oil outgoing from the Gulf). This led to skirmishes and even fights with US Navy, resulting into a continued tensioned situation into the area, from the operation Praying Mantis in 1988 (resulting in the sinking of one Iranian frigate and 7 other smaller boats) until nowadays.



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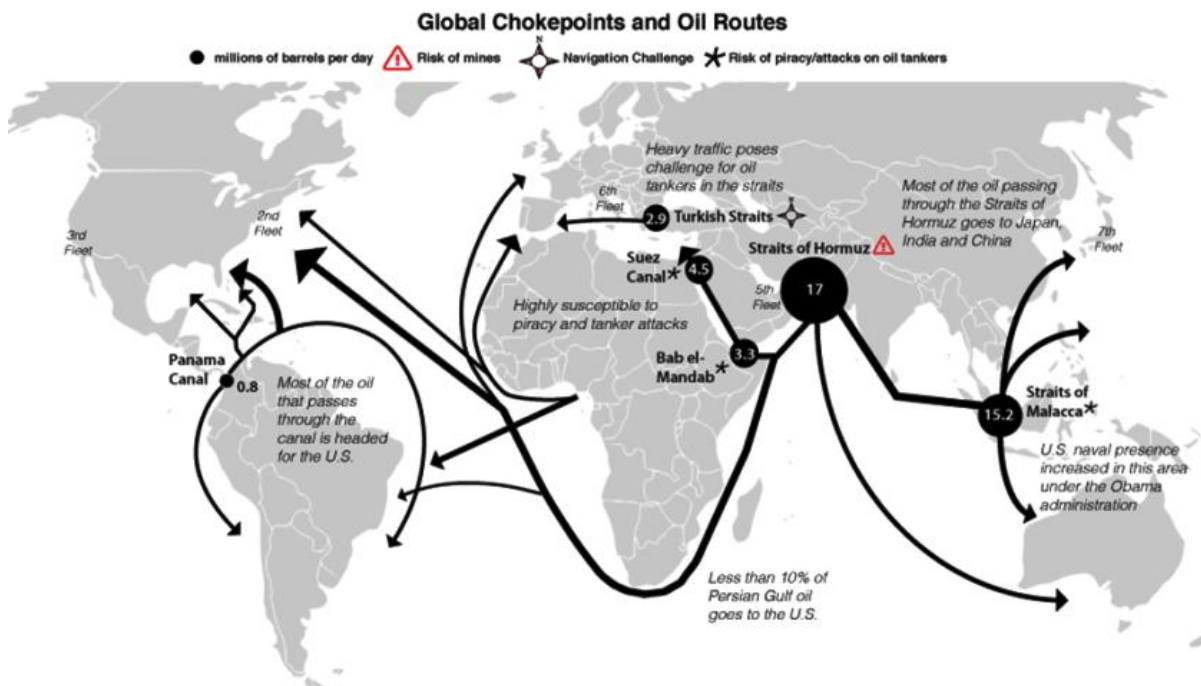


Fig. 5 – The importance of the Hormuz strait in the international flow of oil

- changes in the public mentality: while victory brings a sense of triumph and pride to one side in the aftermath of a conflict, across the lines the feelings are usually dispersed in a wide spectrum, ranging from desperation to a sense of “constructive fury”, as if to show the true meaning of Nietzsche’s words: “What doesn’t kill me, makes me stronger” [14]. When seeded over a specific mentality such as the Anglo-Saxone or Japanese one (rooted deep down into a culture of hard work spirit and sense of duty), this kind of feeling can have a mobilizing effect, motivating the population to endure and commit to superhuman efforts in order to make the best use of the scorched fields left in hand, so that they can prove themselves in the eyes of the history. This was in fact the case with Germany and Japan after the Second World War, who’s population’s resilience became an example for the whole world.

### **The vicious cycles**

All these cause-effect relationships, multiplied by the mutual influences presented above, lead in the end to some of the worst cycles for the humankind:

- poverty → military conflict → economical stagnation or even regression → poverty: this is the case with most of the conflicts occurring today in Africa and some poor Asian Countries. The constant struggle for survive in these areas impede the growth of their economies (mostly based on mining and agriculture), keeping the status at a barely survival stages or even below – in some cases the population rely on international support in order to cover the basic needs. In this environment, the violence flourish as the only rule is the survival of the fittest (the one fitted with the biggest gun). Armed groups and militias impose their own rules of seizing the momentary benefits, regardless of long-term result. Even worse, the fights between different factions result in further destruction of the already poor infrastructure (houses, roads, wells etc.) and loss of lives. In turn, the lack of personal security further encourages people to join these armed groups. Hence there is no possibility for these societies to economically recover, and the cycle is thus complete. This still applies even today, as



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Joshua Goldstein noted in his article [6] *War and Economic history*, published in 2003 in the *Oxford Encyclopedia of economic history*: “In some of the world's poorest countries, such as Sudan and Afghanistan, endemic warfare impedes economic development and produces grinding poverty, which in turn intensifies conflicts and fuels warfare”.

- economical development → higher stake → military expenditure → technological development: at the other edge of the civilization, there is the race for armaments. The countries with superpower claims invest a significant level of resources into the military development, in order to add credibility to their statements (forging swords to back up the words). In doing so, they put a lot of resources into military-oriented activities, such as research and development, allowing the technological evolution, further strengthening their sense of being among leaders. Some of the new technologies find their use in the civilian sectors, bolstering new areas and providing new opportunities. This was the case for example of the missile development in the twentieth century: during World War II the Germans developed V-1 and V-2 rockets as weapons of terror against the civilian population in United Kingdom; as the course of the war shifter and eventually resulted into the Germany's defeat, the team of German rocket scientists led by Werner von Braun surrendered to the US troops, while the whole research facility at Peenemünde (including hundreds of V-2 rockets under different stages of construction) was taken over by the Soviets. Further on, the American side used the von Braun-led team of German specialists to build up the American Short and Intermediate-Range Ballistic Missile program (the Redstone family of missiles [15]), and later on switched to civilian use under the aegis of NASA, peaking with the Apollo mission in 1969, leaving the footprint of humankind on the Moon. On the other hand, the Soviets used the technology captured at Peenemünde to further develop Surface-to-Air Missile Systems (SAM's), ubiquitous in nowadays' wars – that later on being the foundation for further Soviet missile development, with the moments of glory in 1957 when the first man-made object flew into space under the name of Sputnik-1, or in 1961 with the Vostok-1 mission when the first man left Earth for a sub-orbital flight (Yuri Gagarin). All these accomplishments led to a space race between the two super-powers, which eventually turned to have some beneficial effects into the civilian life – today we take for granted satellite communications, GPS, weather forecast based on space imagery, orbital-based deep space telescopes). There are still a lot of argues whether all these resources put into military research and development, eventually turned into civilian use, wouldn't have been better used in directly sustaining civilian economical development.

If for the armaments cycle race one can argue that it is limited only to the states affording this kind of race and that it might have some beneficial effects, the first cycle (poverty-violence-destruction) proved to be the most detrimental to the humankind evolution, even nowadays ravaging some of the realms on Earth.

**Peace building – role of economical development in conflict prevention**

Trying to impede the cycle most catastrophic to peace, one might find himself facing the conundrum such as the classical chicken and the egg: what part of the cycle is he to address: is it the poverty that is to be solved initially, or is it the cease-fire to be sought with higher priority, or maybe the reconstruction should come first? Well, I believe that the answer is disappointingly simple: all of them contribute to the overall effect of stabilization in conflict prevention, and all of them should be concertized.

One can argue that the cease-fire must obviously be realized as soon as possible, and it is true that economical reconstruction cannot start under the permanent threat of the attacks. However, it is imperiously necessary to go deep to the roots of the violence and identify the underlying conditions leading to permanents conflicts; otherwise, the risk of turning into an everlasting peacekeeping operation is at the highest degree. Only by addressing these basic factors like poverty, shortage of



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basic needs and lack of brighter perspective is possible to go to a path of a sustainable peace. The best way of doing that is to start a sustainable economical development, starting with the basic activities (like bolstering agriculture even in the most arid regions, dwelling wells, improving transportation infrastructure, implementing sound health care facilities, providing increasingly education and so on).

The role of the economical development in the conflict prevention has been acknowledged at the highest level, and specific bodies being created to this purpose, such as the UN Department of Economic and Social Affairs (UNDESA) [16], with a working group specialized in Conflict Prevention, Peacebuilding and Development. At its meeting held on 15 November 2004 at the UN headquarters in New York, Mrs. Susan Brown presented their findings, collected into the work named *The Road to Peacebuilding: You Can't Get There From Here* [17]. Among its key conclusions, the most relevant for the conflict-economy equation are presented below:

“- Without peace, there can be no development, but without sound socio-economic development, there can be no sustainable peace;

- Continuous economic decline contributes significantly to state collapse and conflict. Economic and social programs are crucial to the pursuit of sustainable peace;

- There is a clear relationship between poverty and poor governance. Conflicts flourish in weak or failed states. The fact that the incidence of civil war is significantly higher in the poorest countries should make engagement with fragile states a top priority;

- In order to increase the possibility of sustainable peace, development and foreign policy need to fill the persistent gap between emergency relief and sustainable development by developing more robust transition assistance programs to break the cycle of violence;

- It will not be possible to achieve the Millennium Development Goals for poverty reduction and socio-economic development without addressing the real issues which tear communities apart.”

## **Conclusion**

Undoubtedly the conflicts and economy are closely linked and influence each other, often in a very obvious manner but sometimes in quite subtle ways. The facts presented here are intended only to present maybe the most visible ones, and open the way for further readings.

The conflict drives the pace of economy, through destruction, waste of capital and manpower, or boost of technological development. On the other hand, resources play a major role in the triggering, the unfolding and the outcome of any armed conflict. The two-way influence between these factors has been a constant throughout the ages.

If we are to learn from history in order to avoid past mistakes, we need to look closely to the very deep causes of the violence and try to address them, the economical development being maybe the most important tool to do so.

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**NEW CHALLENGES TO NATO’s FUTURE AND THE EU’s  
COLLECTIVE SECURITY**

**Ciprian BALICA**

Land Forces/Romania

**Abstract:**

No matter how well prepared you are, you can never imagine what other person will think, for the imagination is the ultimate limit of a human being.

Therefore, by touching on the future of NATO and EU in terms of capability readiness to cope with collective security, I opened the Pandora box of predicting the future thus the unknown.

Facing a high speed changing global environment, with strong interdependencies and interplays at stake, demonstrating that these two very important international bodies will be able to meet the future challenges it will prove to be a treacherous endeavor.

*Keywords:* security, European Union, power, actors

**Introduction**

Our planet is reaching its limits in terms of sustainability of the fast growing population (more than 7 billion inhabitants). Hence the trend in future conflicts will most likely be vital resources access based rather than the old fashion *conquer the other’s country warfare*.

The unthinkable events of 9/11 terrorist attacks changed the world we knew once and for all. The two dimension classical warfare turned to a tridimensional asymmetric threat, irregular, unpredictable and with tremendous impact on public opinion, the major supporter of any military endeavor.

On the other hand, the ancient instinct of the human race to gather in tribes or groups for the sole purpose of surviving united has extrapolated for the past decades by creating alliances amongst states such as UN, NATO, former Warsaw Pact, EU or BRICS.

Despite the fact that most of them share and support different principles and values, the need for alliances and treaties remains valid in order to counter future threats and maintain the state of order and safety worldwide.

**Global environment trends**

The world has sky rocketed for the past decades at a pace no one could predict 30 years ago. The technical revolution has triggered the wheels of our surrounding environment in a phenomenal race against the ultimate rival – *time*.

You will never have enough time in spite of inventing state of the art machinery designed to save time. But with the ability to process many tasks simultaneously came multitasking therefore an increasing lack of time.

Hand in hand with the time factor came the need to access the increasingly scarce resources. Therefore, whoever managed to “*make it*” to the vital resources “*on time*” proved to be successful and reached a high level of prosperity.

On the other hand, the migration of the labor force from the underdeveloped countries to the promise land of well paying wealthy countries triggered significant demographic changes and distribution of different ethnic groups of people.



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Considering the military aspect of the future trend we are looking to a new threat and also a new dimension of modern warfare – cyber warfare. With most of the population being interconnected via internet it is almost impossible to be protected against cyber attacks.

These are the future challenges of the global collective security, regardless of nation, belief or level of development. Therefore the decision makers have to think outside the box in order to be one step ahead future risks and threats.

### **Current global poles of power**

The United States of America is facing a major challenge in maintaining its status quo of world leading nation in terms of economy and military power. Dried up by two major conflicts in Afghanistan and Iraq, over buried in debt to China (!) and fighting to recover from the economic crisis, „*The Goliath*” seems to be shaking on his feet not acting with that boldness that we were used to.

As an example of faith, China recently acquired an aircraft carrier, thus increasing its operational capabilities, using the interest money owed by The United States.

The BRICS countries (Brazil, Russia, India, China and South Africa), no longer emerging economies, pose a major concern regarding future shifting of political economical and military influence. Just a quick look at numbers gives the bird’s eye view on the seriousness of the matter. BRICS sum up approximately three billion citizens, almost half of world population. These countries also account for almost 40% of world GDP and for the past years they boosted the global economy by 25%. On the other hand if you consider the strategic location the aforementioned states, they actually corner both NATO and EU putting those organizations between the hammer and the anvil.

The mighty Russian bear has got out of its hibernation lair, determined to regain former dominance in the Eurasia region. Recent annexation of the Crimean peninsula served as a statement that Russia will spare no effort in order to accomplish its political and military goals. Considering the economical factor, due to the recent discovery of oil reserves in the Arctic Ocean, Russia clearly intends to seize that economic platform by standing up tall, bold and determined.

China besides the economical boost and domination worldwide has a large well equipped and trained military force.

India’s population growth has exceed 1 billion citizens and its military influence in the Indian Ocean area is well known.

Iran is continuing to follow its nuclear ambition creating a concern for the international peace and security of Israel and the neighboring countries.

The ”bully” of South East Asia, North Korea maintains its nuclear ambition destabilizing peace in the region. Due to its dictatorial leadership the future military actions may embrace the worst case scenario.

### **New actors emerged on the global stage**

As the world is being reshaped, new non state actors surfaced adding a great deal of uncertainty into the equation – terrorist organizations such as Al-Qaida and Isis.

These criminal factions pose an unconventional threat by conducting asymmetrical operations in order to disrupt the normal way of life and instill fear. Originally located in the Far East and not posing any imminent threat to the European countries, these criminal organizations managed to reach to Western Europe.

Through their persuasive propaganda they succeeded in establishing terrorist franchises, employing Muslim residents which are increasing in numbers especially in Germany, France, Austria



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and the Low Countries. By doing this, they set up a strong foot hold in the heart of a christen vulnerable continent.

### **NATO and EU role in current global/regional stability**

Europe is enjoying its longest period of peace time – over 70 years. This allowed nations to develop and grow up generations without the fear of an armed conflict. Since EU managed *to secure peace*, now the next challenge requires being able *to secure prosperity*.

Since the Amsterdam Treaty, which strengthened defense policy cooperation in Europe, the EU has been very active in the area of foreign policy. It is worth mentioning that the failure of the EU in the Yugoslav region posed serious questions to the role of EU and how it can prevent or resolve European wide conflicts. Europe failed to stop the disintegration of Yugoslavia and witnessed the worst bloodshed since World War II.

The EU's incapability to act decisively in the Balkans was repeated during the Kosovo war in 1998 to 1999 when the European Council stressed the EU's „*moral obligation*” to address the humanitarian disasters in the middle of Europe, while relying on the US-led NATO missions to halt the Serb offensive. Such was the inaction from the EU in the area of foreign policy until the Union showcased its most striking diplomatic performance in 2008, when the French European Presidency Council played a significant role in devising a peace plan in the war between Russia and Georgia in Abkhazia and South Ossetia.

### **NATO – still “The big brother?”**

The creation of NATO brought a sense of safety, stability and protection provided by „*The big brother*”. Until 1989, NATO's role was very well defined, a force on force major actor.

But as the global environment changed rapidly, NATO assumed missions and tasks no longer in accordance with its name (*North Atlantic Treaty Organization*), expanding its area of operations beyond the geographical area of its member countries.

It also took part to operations other than article 5 (any form of military aggression upon any member state) assuming the role of an international *police force* bringing about justice.

The involvement of NATO in two major operations concurrently took its toll in terms of human lives lost and resources spent. Apparently the alliance bit more than it could chew. With the emergence of new actors on the world scene came new risks and threats to regional and global security and freedom.

The United States is still playing the role of the big horse pulling the NATO chariot, but with large debts to China and facing real internal problems, lack of support of public opinion (lots of casualties during Iraq and Afghanistan campaigns).

As the lead nation within NATO with the largest military force and the most amounts of financial resources added to the table, The United States still has the capability of projecting and sustaining combat forces to conduct major operations anywhere in the world.

### **European Union – The newbie federal state?**

The European Union managed to bring together initially the wealthy western states and furthermore the political-economical alliance spread its umbrella towards Eastern Europe in an effort to create a credible, stable “*federal*” organization. The huge blow received during the economic crisis put the ability to cope with such situations to the test and questioned the durability of the international body itself.

EU started as an economical endeavor but later on established a level of ambition far too large to be accomplished. European integration was seen by many as an escape from the extreme forms of nationalism that had devastated the continent.



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The European Union received the 2012 Nobel Peace Prize for having "*contributed to the advancement of peace and reconciliation, democracy and human rights in Europe.*" The Nobel Committee stated that "*that dreadful suffering in World War II demonstrated the need for a new Europe [...] today war between Germany and France is unthinkable*". These shows how, through well-aimed efforts and by building up mutual confidence, historical enemies can become close partners.

Joining countries do not only have to accept the common rules and procedures, they also must satisfy certain economic, democratic and social conditions. Indeed, two countries are holding accession negotiations at present: Turkey and the Former Yugoslav Republic of Macedonia. Generally, it can be stated that a big percentage of Europeans fear that a further enlargement could threaten the Union's progress, intensified by uncertainty about cost of the procedure.

In the long term, other countries belonging geographically to Europe are likely to apply for membership, including the Balkan states as well as Moldova, Belarus and Ukraine, whose policies are already pro-European at this moment. Basically, as far as those countries match the criteria needed to join the Union and the current treaties are replaced by a new one (like the Treaty of Lisbon, see chapter 4.1) allowing the number of Member States to be more than the current maximal amount of 28, the European institutions have no reason for rejecting their membership.

However, with more and more countries joining, cultural, linguistic and economic differences within the Union increase, thus not only engraving problems of EU institutions, bureaucracy and fiscal policy, but also challenging the process of European integration and people's satisfaction.

At this point, it seems adequate to differentiate between Turkey on one side and the two Balkan states on the other hand. The main reason to do so is the countries' population. Since Turkey has about 70 Million inhabitants, an accession of this country would have heavier consequences for the Union than an accession of Macedonia or Croatia having a population of 2 Million and 4,5 Million respectively.

Proponents of Turkey's accession argue that the country has big regional power, a large economy and a large military force. Moreover, they await a significant economic growth of the country allowing EU states to benefit from. The country's big area and population would be a good delivery market for existing EU member states. Also, the facts that Turkey has improved in human rights issues and has been applying for membership for 40 years by now militate in favor of an accession.

However, there are severe arguments against a membership. Firstly, with the country neglecting key principles like "freedom of expression", with women frequently having a lower status than men and with military having a too heavy influence on government, key features of a liberal democracy are not matched. Secondly, after joining, the 70 Million Turks would represent the second populous country of the Union, thus becoming a grave counterbalance of Germany, France and the UK. This argument is enforced by expectations that Turkey's population will significantly grow in the next decades, whereas most European countries face a demographic decline, which will lead to Turkey surpassing Germany in number of seats in European institutions. Thirdly, an admission would involve costs up to 10 billion € a year for the EU.

At last, it is the country's location itself which creates questions: Does Turkey as a whole geographically belongs to Europe? If Turkey joins, what would happen to other possible applicants like Russia and Morocco, whose application has already been rejected on geographic basis?

Another problem always occurring when a state promulgates its candidacy is the reaction of European Union citizens. "Turkey's membership is supported by 28% of the public among EU member states" and one of the major reasons for Dutch and French people to reject the Constitutional Treaty in 2005 was reluctance concerning Eastern-European enlargement policy and the extension of membership to Turkey.



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All these facts join to the conclusion of the heterogenic nature of the European Union which acts like an obstacle in the path of globalization and unity of effort [1].

### **Future collective challenges**

Despite all the draw backs presented in the previous section, enlargement is one of the most powerful means of the European Union's policy. The enlargement policy serves the strategic interests of the EU in terms of stability and peace, security and conflict prevention, and as the basic postulate of creating the EU in general.

The aim of the EU is certainly a compact unit with stable, prosperous and democratic neighbors. This policy of enlargement contributed to more prosperity and growth opportunities, also to increasing connectivity of the transport and energy routes, as well as the reputation of the EU in the world.

The EU seeks two main types of policies towards the rest of the world: economic policies, through trade transactions and humanitarian aid; and foreign and security policy, through the Common Foreign and Security Policy. Foreign and security policy issues dominated the EU agendas at the beginning of the 1990s following the revolutions in Central and Eastern Europe, the fall of the Soviet empire and the end of the Cold War.

As the world's political center of gravity is constantly shifting, the EU is developing towards being a major, yet unevenly balanced, player in global politics. While the EU mainly uses its soft power instrument of economic trade and humanitarian aid, a more robust foreign policy performance and a stronger foreign policy identity must be enforced, especially when international issues arise. With China challenging the US's status quo hegemonic power, in my opinion, I will argue that the EU needs to speak with one voice and that can be achieved by adjusting of its foreign policy priorities in times of international conflicts. While it is not realistic to believe that the EU will be able to challenge the hegemony of the US as the only military superpower, recent developments suggest that the EU may be on its way to becoming a more credible partner for the US in world politics.

But as the economic crisis drawback becomes worse within a few member nations such as Greece, Spain, Portugal, Ireland, the future doesn't look bright. The European leaders will be forced to make a decision in order to keep the boat floating.

### **NATO's future**

NATO's strength relies in the unity of effort. Therefore, in the future it must plan and use defense resources in the most efficient way possible in order to achieve the best outcome.

What does really NATO stand for? No Action Talking Only? Because if we look back in time we will discover that all major conflicts started as a Coalition Force and afterwards NATO was involved. The fact that the organization is made of 28 countries led to the lack of full support when the situation occurred.

That makes one wonder: will this work in an article 5 scenario? God forbid! I do not even want to picture what will happen with 28 countries fighting alongside against a single major nation foe.

When US, UK and Canada, as a Coalition Force, attacked the Taliban regime in Afghanistan, and the invasion of Iraq, there were situations of *blue on blue (fratricide)*. What is scary about that fact is that there were only two or three nations conducting operations, ironically all three of them speaking the same language and sharing the same combat procedures. Therefore, I fear that NATO is far from being fully interoperable and credible as military force.

Considering the situation occurred in Ukraine, NATO's position was rather reactive than preemptive and not very convinced of its own power or show of force. This confirmed the lack of commitment, determination and resolve in solving this issue.



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Emplacing missile defense shields along the NATO's Eastern flank along with the deployment of US forces towards the remote countries confirms once again the role played by US as leading nation. The future will tell how other member nations will rally alongside in order to counter a possible threat from East.

With the economical crisis not being solved yet and a lot of member countries struggling to survive there is a big question mark regarding the credibility and sustainability of the military alliance. According to the latest strategy, the organization has to be able to meet the level of ambition of conducting two major joint operations and six small scale joint operations simultaneously. Given the current conditions and the trend of cutting down defense expenses this goal seems pretty unreachable.

On the other hand, NATO's intention to expand its membership towards Ukraine and Georgia, which will lead to a position of being neighbors to Russia, seems rather unrealistic considering Russia's recent evolution and expressed ambition.

### **NATO and EU collective effort – The way ahead!**

The majority of countries that are part of NATO are also member of the EU, hence it is easy to identify the interplays and interdependencies among the two bodies.

Since NATO is a military alliance relying on combat forces and the adequate material (financial) support, the economical stability and prosperity of the member nations will reflect on the readiness and the operational capability of generating, projecting and sustaining forces in a major military operation.

NATO's role as the guardian of freedom and security should provide the bedrock of stability needed for the EU to achieve a united, prosperous union. But, since the major players within NATO are the US and Turkey, nations that are not part of EU, it seems a little bit out of order to claim such requirement. It looks like we are in horns of a dilemma.

Are NATO and EU's objectives similar? Are they able to cooperate towards a common goal? So far these seem to be rhetorical questions due to the major discrepancies and differences of opinion regarding long term interests and levels of ambition.

With the high speed rate of information technology development, the risk of Cyber warfare poses a common battle space for both NATO and EU.

George Tenet, a former CIA Director perfectly outlined the importance of foreseeing the outcome of something new in our lives: *“We have built our future upon a technology we have not learned how to protect”*.

Therefore, in order to prevail both organizations should share the same goals and objectives and act interconnected towards the same end state.

### **Conclusion**

The European Union is neither a pure intergovernmental organization, nor a true federal state. As National interests matter, states are becoming more reluctant to delegate extra powers and sovereignty to the European Union. Identity politics play a fundamental role in the European Union's quest to transform its future shape. The goals of Europe 2020 strategy need to be achieved through commitment, cooperation and action both at national and EU levels. The European Union is unlikely to be able to meet the challenges in Europe without greater state capacity or more democratic legitimacy.

Regarding the current situation and relations within the European Union, it is more realistic to view EU as a means to overcome the period of crisis, i.e. to pass through a period of consolidation and reform of institutional arrangements. This period may be crucial for the future of the European Union in a way that improves the economic and political dimensions of integration. A lot of attention and



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energy is aimed at the institutionalization of the mechanism of crisis management in the Euro zone. This is a good and important goal.

However, a more important challenge - which is mostly covered by the accompanying debate - is the need to prevent crisis.

Such a decision, having in mind how fast it was taken, leaves an impression that the institutional frame for the Euro zone stays incomplete, until the clear rules on how to manage financial crisis are determined.

The tragic, unforeseen events on 9/11 triggered a massive alert signal for all leaders regarding the fact that you can never be prepared for everything, no matter how many contingency plans you develop.

As Albert Einstein stated: *“Imagination is more important than knowledge. For knowledge is limited to all we now know and understand, while imagination embraces the entire world, and all there ever will be to know and understand.”*, the future does not seem bright and comforting for NATO especially due to the unbalanced ratio between future threats and actual economical constraints of the contributing nations. No one can predict what future threats are to be faced.

As for our nation, being a member in both organizations should give us that sense of identity and security. But as history proved, most of the treaties and alliances were not designed for the weak and the fainted. Future events will tell how solid and committed that support will be. Even though the matter is of the utmost seriousness, I cannot help myself asking:

*If we are to face the mighty bear what will we do?....Play dead?*

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## **AN ANALYSIS ON SECURITY GOVERNANCE IN TURKEY**

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### **Abstract**

The shift in global power has led not only to a diffusion of power, but also to a diffusion of ideas, concepts, principles, value and preferences in the last decades. A comprehensive approach called “security governance” has been introduced in order to cope with the problems caused by this conceptual change. Security governance, which presents an understanding of the concept of security beyond the issue of defense and encompasses the ‘more diverse, less visible and less predictable’, has become one of the most controversial issues both for academicians and defense experts. In this study, we aim to discuss the present condition of security governance both in Turkey and in the world in a comparative manner.

*Keywords: Defense, Defense Institutions, Security, Security Governance, Turkey*

### **Introduction**

Since the end of Cold War period, fundamental changes have transformed the transatlantic security architecture, posed a great challenge to the existing perception of security organizations and led to the emergence of a large number of new bilateral and multilateral organizations involved in security. Within the context of coherent and comprehensive global security management, NATO and the European Union revised their objectives and functions in order to face security threats more efficiently and also adapted new instruments to respond appropriately. The new primacy of security, which includes international terrorism and issues related to transnational crime, has thereby revolutionized the concept of governance and economic dimensions of international politics.

It has become a challenging necessity to design an enforceable system of global governance that can both serve and constrain sub-state, trans-state and traditional state actors. This new governance approach is also different in terms of breadth and variety of current concept of security because it also covers not only the matters of conflict and armaments but also the need to defend against terrorism, crime, diseases, natural disasters, environmental issues, socio-economic problems such as poverty, exclusion and overpopulation. Most papers on security governance would include a useful definition of security culture, but only a limited number of them pay attention to define how to establish a proper security culture.

In the light of these developments, our study aim to discuss to current governance condition of Turkey, analyze the existing approach and address to the question of “how can we develop proper security governance for our defense institutions?”.

### **The Concept of Security and Security Governance**

Increasing visibility of emerging powers at the international arena is currently perceived as a challenge to more traditional powers [1], [2]. The reshuffling of economic and political strength between the great powers of the previous period and the challengers holds the potential to alter the global landscape.



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The basic functions and definitions of security and governance, both between states and societies, have been dramatically evolving. This evolution has provided a basis for better understanding of the ‘interconnectedness’, and sometimes interdependencies, between security and governance. The notions of security and governance are now an important part of both the academic and policy discourses. On the other hand, the notion of security governance still remains unclear and it is accepted as a concept at its formative stage [3]. In order to conceptualize security governance, it is necessary to specify the component terms of it: security and governance.

The term security, which is briefly defined as to be untroubled by danger or fear, is a core of human life [4]. As it has been already pointed out by Thomas Hobbes, without security “there is no place for industry...no arts, no letters, no society; and which is worst of all, continual fear, and danger of violent death; and the life of man, solitary, poor, nasty and short” [5].

Security of the state stands for a state’s ability to protect itself from external threats; such as intervention, invasion, occupation, or some other harmful interference by a hostile foreign power or terrorist group. And thus, the main aim of the state security is to deter, prevent or defeat possible attack against the state and its citizens [6].

During the Cold War period, the notion of security was considered in terms of national security, which was largely defined in militarized terms. On the one hand, it was also noted that security might be threatened by more than military threats alone and this understanding has led to the inclusion of political, economic, societal and environmental aspects [7].

The term of governance is a recent concept in literature which has been used within the context of globalization. As an evolving concept, it reflects the fragmentation of political authority among public and private actors on multiple levels of governance; namely national, sub-national and international. It refers to the structures and processes whereby a social organization manages itself, whether it applies centralized control or self-regulation [8]. In other words, we can describe governance simply as “the capacity to get things done” [9].

According to a more complicated definition, governance ‘denotes the structures and processes which enable a set of public and private actors to coordinate their independent needs and interests through the making and implementation of binding policy decisions in the absence of a central political authority’ [1]. This definition includes new notions such as the introduction of self-government at the local or state level, the outsourcing of governmental functions to the private sectors, privatizing security in newly established democracies, the term of failed states, cooperation between governments, international institutions and private actors as well as post-conflict reconstruction of states [10].

At the international level, if there is an absence of a world government, governance takes a different form which includes rule-based cooperation between multiple governments, international institutions as well as transnational actors such as corporate business and non-government organizations. Therefore, it also refers to the “security architectures” on the global and regional levels.

Thus, governance can be more demanding than government; it provides a solid foundation for governments to deal with the reality of the contemporary world in which governments are still the central actors in domestic and international affairs although they are increasingly obliged to share authority with non-state actors at all levels of interaction.

### **New Actors of Security Governance**

The shift from government to governance in security affairs, which has been applied to established democracies as well as to ‘failed states’, necessitates a broader consideration of security sector as it includes non-statutory security forces such as guerrilla armies and private security companies.



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The United Nations (UN) has also perceived that consideration requirement and a new definition was put forward by the Human Development Report 2002 [11] and published by the United Nations Development Programme (UNDP). Therefore, five categories of actors are defined within the security sector:

**1. “Organizations authorized to use force:** This subgroup includes armed forces, police, gendarmeries, intelligence services (military and civilian), coast guards, customs authorities, reserve and local security units (civil defense forces, national guards, presidential guards, militias);

**2. Civil management and oversight bodies:** This subgroup includes the president and prime minister, national security advisory bodies, legislature and legislative select committees, ministries of defense, internal affairs and foreign affairs, customary and traditional authorities, financial management bodies (finance ministries, budget offices, financial audit and planning units), civil society organizations (civilian review boards, public complaints commissions);

**3. Justice and law enforcement institutions:** This subgroup includes judiciary, justice ministries, prisons, criminal investigation and prosecution services, human rights commissions and ombudspersons, correctional services, customary and traditional justice systems;

**4. Non-statutory security forces:** This subgroup includes liberation armies, guerrilla armies, private bodyguard units, private security companies, political party militias; and,

**5. Non-statutory civil society groups:** This subgroup includes professional groups, the media, research organizations, advocacy organizations, religious organizations, non-governmental organizations, community groups” [11], [10].

The level of involvement by the actors given in these five categories varies from country to country because of their political systems.

### **The Current Situation in Turkey**

The Turkish security discourse has also affected by different regional security dynamics in the aftermath of the Cold War. As an enthusiastic partner in NATO for maintenance of collective peace and security, Turkey has redefined security risk and threats and tried hard to promote and protect universal values which were defended by this normative union.

The longitudinal political and social “weight” of the Turkish Armed Forces has been considered among the most significant and complex issues in Turkish history. Recently, the need for further alignment of the Turkish Civilian-Military Relations (CMR) with the democratic standards was emphasized at the European Commission’s (EC) successive Annual Progress Reports on Turkey. This issue, without no doubt, has become one of the most significant issues in Turkey’s accession to the European Commission.

In order to establish a more harmonized civilian-military relations with the democratic standards, the significance of healthy cooperation between the government, parliament and security sector institutions (the armed forces, the police department, the gendarmerie and other actors) was underlined at a conference titled as “Security Sector Governance: Turkey and Europe” [12], [13].

Apart from being an active member of alliances, Turkey has also started to conduct meetings and conferences; invited experts from different security sector institutions and provided a basis for these experts to exchange ideas to improve cooperation. The civil society has become an actor of this process and demands stemming from civil society are taken into consideration as well.

In addition to the issue of alignment of the Turkish CMR with the EU standards, implementation of “a substantive Security Sector and Bureaucracy Reform (SSBR)” has been emphasized at different academic events in Turkey. It is envisioned that SSBR would cover both CMR-related subjects and the establishment of democratic control and oversight mechanisms on all domestic security institutions by adopting a citizen-oriented approach. Therefore, it is considered that good governance among all actors of security sector would be achieved.



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### **Conclusion**

Over the past decade, Turkish politics have been dealt with two conflicting developments which also affected the security sector in Turkey. First of all, the Turkish military structure has placed a great emphasis on its self-appointed role as a guardian of the basic principles of the Turkish state. This emphasis has been supported by the Constitution of the Turkish Republic as the Constitution does not point out a difference between the concepts of both internal and external security. Moreover, the notion of subordination of all forces which contribute to internal security and the exact role definitions of civilian authorities is not asserted in current Constitution.

Secondly, the EU has stipulated a package of political preconditions that are supposed to be filled to gain successful entry into the European fold. While the military's overseer role remains as the pre-eminent source of authority in Turkey, the EU's entry criteria prescribes a model that places the military structure in a subordinate position to democratic control.

On the other hand, there are also substantial changes in Turkey within the last two decades. Its GDP almost reached 1.4 trillion \$ with a more steady and sustainable economic growth rate. In the recent years, Turkey follows a proactive foreign policy both globally and regionally, try to be an active member of international institutions such as the United Nations and G20 and it has been pointed out as an emerging power in many researches. Besides, Turkey's presence in NATO operations has increased their legitimacy and dissolved resistance in the Muslim world which also enables Turkey to be acknowledged to have a distinctive position in terms of the sensitivities of Islamic societies and Western military intervention [14].

Apart from these developments, International Conference on Security Sector Governance: Turkey and Europe, which was held in 2005, could be accepted as a turning point together with the EU's prescription. Now, different events are organized under the title of security governance and increasing number of academic researches has been conducted. Besides, Turkey's first private military firm, Sancak Akademi, was established in 2014. Consequently, it could be concluded that Turkey attaches greater importance to security governance and has made a certain progress in that process but there are still certain parts that require improvement.

In order to achieve good governance, first of all the notion of accountability of all administration and forces (including the internal security forces) to the citizens and their representatives should be added to the constitution. Also the definition of subordination to civilian authority for police, gendarme and coast guards should be clear. Last but not least, the strengthening of democratic control over security institutions by the state and civil society as well as the professionalization of the security forces would make a major contribution to this process

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## **ECONOMIC SECURITY AND REGIONAL INTEGRATION**

### **Bachelor's degree in Economics Ceachir Ştefan**

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#### **Abstract**

An important role in ensuring economic security in the capacity building of regional member states to implement and maintain the following measures: efficient management of public interests; ensuring efficient and responsible exercise of power; good governance or efficient governance; prevention and/or effective management of crisis situations.

*Keywords: Economic, security, integration, globalization.*

#### **Economic Security**

Within the context of regional integration, which involves the establishment and enforcement of common policies, each member state shall promote, protect and defend the value system underpinning the formal organization of regional integration and act immediately to accelerate economic, social and political development. The economic development of the organization is equivalent to the economic development of each member state and is based on the assurance that an economic security climate exists.

Economic security (an important component of national security) designates the status of the economy based on prosperity, legality, balance and stability, based on market economy principles, as expressed by the rule of law and secured by shares economic, political, social, legal or other nature, representing the ability to maintain the necessary conditions to foster sustained economic growth in the short medium and long term. [1]

It is a concept closely linked to the frameworks of personal achievement that ensure the values of financial security, that is linked to legislation that encourages initiative, stimulates creativity and involvement, but also to intervenes coercively to discourage events that undermined a healthy economic environment such as (monopolies, tax evasion, corruption, etc.) as well as protecting and stimulating the domestic economy relative to the external environment, to ensure a balance in the market between member economies of the regional structure, so there are no major gaps in order to establish and strengthen in the short and medium term a monetary union.

In a broad sense, the economic security of a country is determined by the stock of resources and level of development of that country. In the current geopolitical context, ensuring economic security situation involves the operation of the market economy, sustainable economic development, in order to maximize the profits of all factors of production and ensure social prosperity, in accordance with national policies regional development and regional integration objectives and highlights the fundamental values, interests, and needs of the national economy.[2]

An important role in ensuring economic security in the capacity building of regional member states to implement and maintain the following measures: efficient management of public interests; ensuring efficient and responsible exercise of power; good governance or efficient governance; prevention and/or effective management of crisis situations.

Economic security values represent the social and economic relations through whose existence and manifestation shall ensure the functioning of the national economy as a whole, as well as the interests and security needs economically, by guaranteeing the basic principles of Economics, property, fair competition, natural resources, ecological balance, economic freedom and development, financial system, banking, social welfare, scientific and technological research and copyright.[3]



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Characteristics of economic security in the context of globalization, from the practical point of view, are:

- The ability of states to maintain independent capabilities of military production on the world market;
- If economic dependence on the world market, will be used to achieve different policy objectives;
- The possibility that the global market to increase economic inequalities between states;
- The risk that economic globalization – this reduces the state’s economic functions – to generate unconventional effects, as the underground economy, illicit trade and trafficking in technology and environmental damage;
- The risk that the economy enters into crisis at the global level for political leadership in international institutions ineffective, some protectionist reactions and instability of the financial deep.

It should not be forgotten, however, in the context of the current economic provision of energy sources is a necessary condition for sustainable development of the state. Energy resources are of vital importance, both from the point of view of the citizens of any state has these resources constitute the basis of the system of life properly, but also from the standpoint of the economy as a whole, because energy is one of the key elements, ensuring the functioning of the industry.[4]

### **Regional Integration**

Because of it’s multidimensional, it is practically difficult to make a clear distinction between economic regionalization and the political, given that in any regional groupings there is an economic component, the rule of thumb, around which develops components of social, political or security.

Seen in the general sense, increasing regionalization describes societal integration within the framework of a regions and undirected process of economic and social interactions established between States or regions located in the same geographical area. With all that geographical proximity is less important, it is generally used for the purpose of demarcating regionalization of other forms of organization "at a different level than the global" (Andrew Wyatt Walter, counteracting force known as Regionalism, Globalization and the World Economic Order, 1995).

Determining component of the postwar economic order, regionalization "defined dynamically as a process of forming interstate groups agreements on a regional basis and static by the existence of a limited number of states grouped by geographical proximity criterion and of common interdependence" appeared once with institutionalized economic cooperation, political and military and the organization of their formal. It has developed in the co-ordinates political, economic, and security of their own bipolar world cold war period and has evolved after his term in the process of recalculation of global economy founded on multipolar bases.

Informal regional cooperation is performed mainly on the microeconomic level, by creating of general flow of factors and goods on the basis of decisions and of the policies adopted in joint by firms belonging to the same regions, depending on the requirements of the market, and also influencing the economic policies of their countries of origin. Developing of multinational firms on vertical and horizontal with regional implantations, that generates the growth of the trade volumes in the firm, along with the increasing number of mergers and acquisitions between firms and the creation of dense networks of strategic alliances between firms belonging to the same region contributes, ultimately, to the integration of economies within the region.

Currently, global security environment is characterized mainly by the following major trends: globalization and accelerating acceleration of regional integration procedures, along with continuing actions that aim to:

- State fragmentation;



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- the convergence reasonable efforts to structure a new security architecture, stable and predictable, accompanied by heightened anarchic tendencies in some regions;
- reinvigorates efforts of the state's to preserve their influence in the dynamics of international relations in parallel by multiple forms of intervention and the increase of non-state actors in the development of these relations.

Forms of regional economic integration varies depending on their purpose: economic- in the case of preferential awards the free trade areas, customs unions and of the common market; economic and political to economic and monetary of the Union or the political Union; depending on the intensity of the integrative process once the measure of harmonization of policies, depending on the degree of institutionalization – given the number and strength of the joint institutions – depending on the degree of centralization of authority – depending on the effects that propagate etc.[5]

In the literature, rich in demarcation of the concept of integration, are distinguished, according to a series of economic criteria, political, geographical, structural, etc. The following forms of the economic integration appropriate to a tendencies more intense or more restricted to equalisation of economic, social and political coordinates has:

a) preferential trade agreement formed from two or more countries which reduce import duties on each other all commodities, so basically, there is an exchange of tariff preferences between them. Member countries retain the same time, initial tariffs against non members (Commonwealth System of Preferences – United Kingdom and 48 associated countries).

b) free trade area represents that form of integration in which two or more countries agree to remove tariff and non of them on a preferential trade agreement, but each country maintains its own trade barriers in trade with countries. (NAFTA – Free Trade Agreement between the United States, Canada and Mexico Free Trade Agreement between the United States and Israel Free Trade Area of the Asia- Pacific).

c) customs union is a form of integration that countries remove all trade barriers in place between them and adopts a common external customs tariff to third parties.

d) common market (or internal) is a customs union version the liberalization movement flows among member countries in factors which UN space inside instead of relative economic trend are near the level of prices of goods and factors. (European Economic Community, the Common Market followed by formation of the single internal market).

### **Energy security in the context of regional integration**

An example of economic security component of interrelated regional integration is energy security if Russia relationship – the European Union. In the current economic context, providing energy sources and resources is a prerequisite for strengthening regional integration, starting with Member States.

Differential access to resources affect relations between states with many adverse consequences, sometimes even destructive. We are seeing an increase in natural disasters, depletion of energy resources, population growth correlated with decreased food and water resources, global warming, etc. phenomena that continue to influence global stability and security. „Collapse” of states due to poor governance poor economic and social unrest with the spread of conflict – type ethnic – religious inconsistency transatlantic relations remain a reality in the current security environment, which security environment, which requires the development of new partnerships, new regional and local forms of cooperation.[6]

Amplification interdependence of countries on the use of these resources lead to new and complex problems relating to the need for all states to access them. However, the great powers seeking to acquire control of major energy resources of the planet and default on their prices. Thus, in recent years, the energy landscape is remarkable in several directions:





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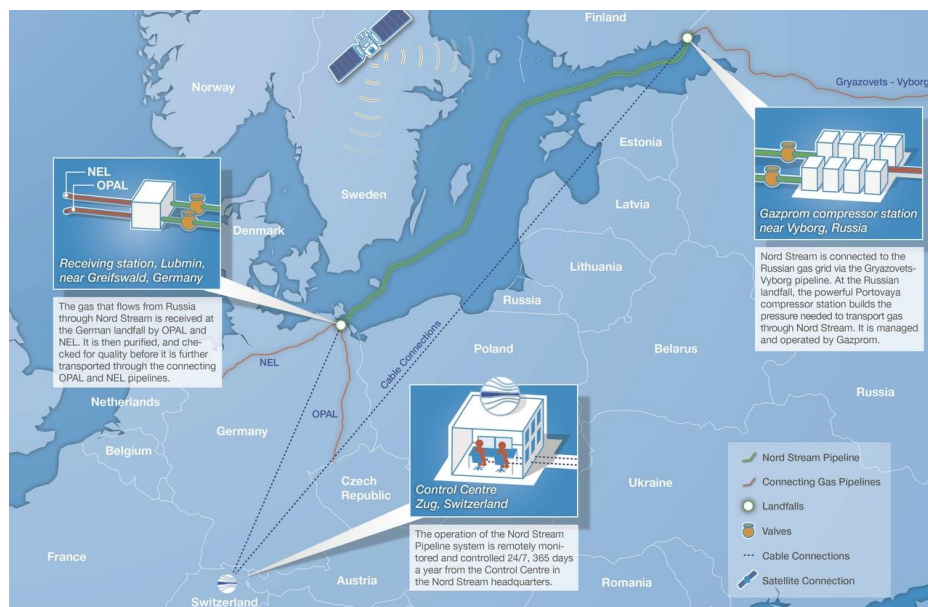


- Reorganization of the global market trend on economic blocs and alliances energetic experiencing the full liberalization of their;
- Trend change oil quota system and price fixing;
- The tendency of the Russian Federation to establish a new center of reference prices on the world market.

In this way energy issues become matters of security and security of energy supply has become a common concern of the great actors of this dynamic competition.

Russia currently controls of northern transportation route of natural gas and oil supply continuity known subject to political risk. Although the countries of the Caspian Sea have become new players in the market, reserves found in this case from the system increasing dependence of Russian energy transport so that they do not obtain market prices for energy exports made.

The EU energy security is affected by the disputes involved between Moscow and the former Soviet Union countries, but also Russia's interests in resolving certain issues concerning global security strategic areas of influence, economic and military interests, etc. On the other hand, Russia has increased its efforts to divide EU countries in order to prevent them from reaching a unitary energy strategy, which would discard the EU of Russian energy dependence.



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The main European project to generate an option on natural gas from Russia, namely the Nabucco project is locked. The number of similar cases occurred so due to disagreements between partner countries in the project as well as launched by Russia of the variance of SOUTH stream, which was intended to compete project Nabucco project. And how Turkey has approved pipe routing through its territorial waters in the Black Sea, Russia announced the beginning of the works to South stream, at the end of the year may 2012 quickly than prognosase. Operation due to Russian Federation in Crimea and the penalties imposed by the EU, the project has ceased.

Therefore, Russia has reached two strategic objectives in the short-term: strengthen control position energy market and prevent implementation of a uniform energy strategy of the European Union.



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## **THE COMMON SECURITY AND DEFENSE POLICY BETWEEN INTERNAL CONSTRAINTS AND EXTERNAL CHALLENGES**

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### **Abstract:**

The last years impose cutting the defense budgets from all the countries around the world, but much more for those who didn't succeed to have at least 1,5%/year of economic growth. These uncoordinated cuts in defense spending, for the European countries, have eroded the EU's role as a security actor in what is now a multipolar world. Therefore, it is very important to gather all the Heads of the member states and the EU institutions with responsibilities to strengthen defense cooperation in the EU, and put them at same table, show them which urgent measures have to be taken for increasing the EU's strategic security. It is very important to change the way of thinking if we want to have "A secure Europe in a better world".<sup>[i]</sup>

Member states could achieve much more value for money than the €190 billion that they spend to keep up 28 national armies, comprising roughly 1.5 million service personnel.<sup>[ii]</sup>

*Key words: EU Defense, Defense activities, European Security and Defense, European Defense Union*

### **Introduction**

The paper will be edited in English using Times New Roman 12, Justify, line spacing 1p. The paper shall be written using Page setup A4, orientation „Portrait”, „Mirror”. As you can see, for the title of the paper you must use 16pt, Centered, Bold, Times New Roman. Leave two blank lines and then type Author's Name and Academic Title (14pt Times New Roman, centered), Institution /Department/ University/ Town/ Country (in 12pt Times New Roman, centered).

The end of the twentieth century, more precisely in the early decades of the eighth century, marks a number of changes regarding the concept of European Security. In a Europe, divided into military blocs, where the arms race is constantly growing, the new concept of security is based on the consolidation of relations between states in Europe on new principles, and "...the policy of the blocks, will have to make room for a security organization, calling for a system of commitments and concrete measures to exclude the use of force and to ensure the peaceful development of European states in a climate of detente, understanding and cooperation".<sup>[iii]</sup>

Common European Security and Defense Policy represent a new challenge for the European Union, although the idea of a common defense policy is not a recently phenomena. Development of a business idea of European Security and Defense has its roots in the first three years of the post-world war II period.

### **What is Common European Security and Defense Policy (CSDP)?**

European Security and Defense Policy is one of the main priorities of the European countries, in the context of increasingly diverse threats to stability and security of the European Union. The idea of laying the foundations of a common policy on security and defense has not been regarded as a necessity, and subsequently has been treated with "low priority" by highly developed Western



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countries. However, the existence of a major threat to their safety, danger given by the presence of a major concentration of forces from the USSR, in central and Eastern Europe, Belgium, France, the Netherlands and the United Kingdom have decided to address again the idea of a common policy on security and defense.

Moreover, they put bases of the Brussels Treaty Organization by signing the Treaty of Cultural, Social, Economic Cooperation and Collective Defense.

Even if the United States had a lot of troops stationed in the Federal Germany territory, this was not a solution upon long term, and this new way of thinking gave another impulse and greater development of the new common security policy, by the four signatory states.

Common European Security and Defense Policy (CESDP or just CSDP) intend to allow development capabilities of its Union civil and military crisis management and conflict prevention at the international level. Thus, its contribution to maintaining peace and international security, under the UN Charter, would increase considerably, i.e. power its economic and demographic. It should be noted that ESDP does not involve creating a European armed, but it is evolving in a manner consistent and coordinated with the North Atlantic Treaty Organization (NATO).

European Union High Representative Javier Solana said, based on the size and economic power of the European Union that Europe has to take/to assume, as United States is doing, a global strategic responsibility.

Hence, in December 2003, Javier Solana was empowered by the member states to develop a security strategy for EU. Starting from the Petersberg declaration presented at the June 1992 Western European Union (WEU) Council of Ministers near Bonn, Germany, he succeed in December 2003 to finish so called document “A Secure Europe in a Better World” – [Security Strategy for Europe](#), which analyzed the EU’s security environment and identified key security challenges and subsequent political implications for the EU. The implementation of the document was revised in 2008.<sup>[iv]</sup>

### **Internal constraints versus external challenges**

CSDP was based on Petersberg tasks and according the article II.4 of “Petersberg Declaration”, from the Western European Council of Ministers, which took place in Bonn in 1992, there were three purposes for which military units might be deployed:

- humanitarian and rescue tasks;
- peacekeeping tasks;
- tasks of combat forces in crisis management, including peacemaking.

The term “peacemaking” was adopted as a consensual solution and as a synonym for “peace-enforcement”. The Petersberg tasks were subsequently incorporated into Article 17 of the Treaty of the European Union (TEU) through the Treaty of Amsterdam. The 2009 Treaty of Lisbon (TEU Art. 42) then further expanded these tasks to include:

- humanitarian and rescue tasks;
- conflict prevention and peace-keeping tasks;
- tasks of combat forces in crisis management, including peacemaking;
- joint disarmament operations;
- military advice and assistance tasks;
- post-conflict stabilization tasks.<sup>[v]</sup>

To enable them to assume their responsibilities concerning on the whole range of conflict prevention and crisis management, EU Member States are required to develop more effective military capabilities and establish new political and military structures, for the adoption of decisions and its management of the activities. However, Europe, as an organization, has certain difficulties as regards appropriate equipment to its troops. So, he does not hold the basic requirements for a war, that, for instance,



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transport of heavy armament, armament high-technology industries, etc., as well as troops sufficient to be carried out, even if it has more soldiers than the United States. But before to engage in a war, Europe must be, before all, responsible for its own security and cannot expect the United States to intervene whenever there is a crisis on the continent.

Listing a few of the risks end of the XX century, among which the temptation an American isolation and new tensions between Washington and Beijing, French president Jacques Chirac stressed the fact that *"a truly multipolar there may be only if the European Union becomes itself a real power"*. After creating the common currency EURO, the continent must tackle a second-largest challenge, the defense area: *"Kosovo confirmed fully the need and even affirmation emergency a Europe of defense, which act either in Atlantic Alliance breast, be self-contained manner, depending on the nature crisis"*, said Jacques Chirac.<sup>[vi]</sup>

Major crisis in Kosovo highlighted the need of a reestablishing the balance between the United States of America and Europe concerning the participation in the settlement crisis management and conflict in the European region, through an increase of the role of our continent endowed with a Common Foreign and Security Policy.

The objective of the European Union is to have autonomy to take decisions and, where NATO, is not engaged directly, to initiate and then to carry out military operations in response to crises in the area of interest. But it is a fact that a European Community promotes the increase extended stability by increasing confidence based on collective security, political unit and trading.

The idea of an autonomous European defense led by default and in the discussions controversial within the EU, relating, in particular, from the weakness of existing structures and complexity their roles, but also of American commitment on European soil. Consensus appeared around willpower to "Europeanization" defense of obscured in reality numerous contradictions and disagreements, with regard to the matters strategic, military and institutional capacities of such a jerk. Also, there is no harmonization of Member States on final designs and arrangements for European defense has been for a long time that the institutions created for this purpose prove to be less effective. Another controversy is related to the military statute of the European states. The four states are not neutral (traditionally or constitutional), while the other belong to NATO, and a large part of them prefer American protection expenses in place of the modernization of the military. What's more, many Member States have already concluded between them treated by bilateral and multilateral military cooperation.

On taking up his duties as secretary general of the Alliance, George Robertson said: *"transatlantic link remains an effectiveness path for NATO"*, *"it is not necessary to spend more money for defense and security, but to spend it better"*.<sup>[vii]</sup>

Safety depends on the stability, as stability cannot be achieved without a healthy economy and only a healthy economy is capable of sustaining efforts to safety. Unfortunately, the latest events in the economic area, both in Europe as well as global economy does not show a significant improvement and are not even encouraging in this respect, the crisis affecting countries budgets particularly in the military field.

The climate of stability in Europe can be improved through the development of a common European policy on Security and Defense consistent and constructive, which also have preventive effects in areas with high potential of insecurity on the continent.

For instability and insecurity - a variety and amplitude unprecedented - it is necessary to the precautionary approach in place of one reactive or curative, focused on policy objectives and not on threats.

In the first half of the 1990s Western European Union has experienced a process of consolidation, by accepting in the organization Spain, Portugal (in 1990) and Greece (in 1992), by means of the integration of the associate members in the Council WEU, Iceland or Norway, and Turkey (in 1991),



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through the establishment, under French impulse, of institutional structures permanent Military Committee, the Institute for Security Studies in Paris (1990), the Satellite Center from Torrejon (1991), the Planning Cell (1992), the Western European Armaments Group, (WEAG, 1992) and the Circumstantial Center (1995) -, as well as by the appearance of European Multinational Forces - EUROCORP (European body), EUROFOR (Force the European Dry), European Maritime Force (EUROMARFOR), Group European Air, Multinational Division Center, the force titles like British-Nederland, etc.

Attacks on the 11<sup>th</sup> of September 2001 in New York and Washington and followed by the "war on terror" brought the fight against terrorism and extremist movements in first place in the agenda of work on security issues of the leaders of countries Western Europe and not only.

The terrorist attacks in Istanbul in November 2003, in Madrid, in March 2004, the four suicides bombing in the heart of London, July 2005, and do not forget neither the terrorists attack from France last year, nor the killing of a soldier by two Muslim guys in the middle of the street in London (2013), showed that Europe is not only a target of terrorist attacks but also a basis for global terrorism.

Furthermore, in our days France is facing with the highest threat of a jihadist attack, which has reached a level "without precedent" and new attacks are inevitable. A high-level official in the defense ministry, said that this "threat is permanent".<sup>[viii]</sup>

Against this new scourge facing Europe, the Member States have agreed to act in common, in the spirit solidarity, in the event that one of them is target of a terrorist attack, and to mobilize all the tools at their disposal.

With considerably increased terrorist threats against some Member States, as well as confronting the migration at a large scale and ever-growing population of Eastern Europe to Western Europe, but also in order to increase confidence and safety European population, the European Union and its Member States were armed with new modern tools: the warrant for his arrest, the defining terrorism, Euro justice, which fully complies with civil liberties and European Constitution.

Cross-border traffic of drugs, women, illegal immigrants and weapons do no more than to undermine internal security of European states, and feeds also conflicts in other parts of the world. None of threats presented in European security strategy are not purely military in nature, and complexity and interdependence of threats requires an approach which combines a broad set of tools. European Union only recently started buying military instruments, but it also has some experience in applying a range of foreign policy issues international security policy: external trade, development cooperation, international environmental policy, international police, justice and intelligence, cooperation, immigration policy, and multilateral diplomacy.

Let us not forget a new type of threat which may produce more damages than a Sol-Air-Missile and which is highly unpredictable: cyber terrorism. In this modernized world where each network is interconnected with other two or three networks, cyber defense should be if not the first on the top of priorities at least on the second place.

As we have seen so far, CSDP faces too many challenges and until now EU was not able as a Union to take the best measures in order to encounter its. Nevertheless, in last three years a major problem coming from the Eastern borders of the EU (internal war in Ukraine) is putting under the question mark the ability to manage a new huge challenge: real war. As well as Crimean crisis (one year ago) started another type of "war": the economic one with Russia. Therefore, those have revived awareness in the EU about the possibility of military attack and occupation in Europe.<sup>[ix]</sup>

It is well known that the economical and financial crisis across the Globe (more or less), created a good opportunity for many countries to adapt and review their budgets. That led on massive allocation cuts for the defense, based on relative peace in the world (at that time) and starts to build new concepts for common defense: globalization and specialization.



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Even if the CSDP principles were not directed to an EU army, these new challenges made EU states take into consideration very seriously the concept of Globalization and armies' specialization, which, as always, have good parts and bad parts, depends which side “of the fence” you are.

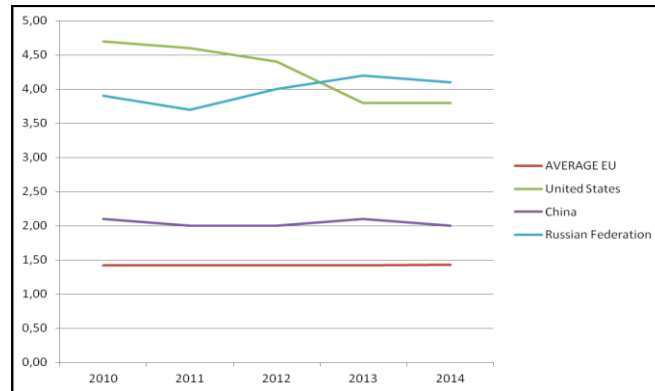


Fig. 1 – Defence budget (% GDP) <sup>[x]</sup>

All these budgeting cuts, made EU member states change their opinions and to start thinking seriously of Pooling & Sharing as a short/long term solution. For doing that first of all they have to convince themselves is a viable plan for their countries and secondly to convince peoples from their countries.

For CSDP low level of defense spending will be a major problem, in order to achieve the goal presented in the European Security – “A Secure Europe in a Better World”. To respond of these cuts, countries had to adapt their expenses. So that, many procurement programs were aborted or postponed (France give up to upgrade their Mirage Fighter planes, Italy canceled frigates acquisitions and cut down the Eurofighter command with 25, Germany abolished conscription and reduced the manpower from MoD with almost 15,000)<sup>[xi]</sup>, the years of use of the equipments and techniques had to be increased, which conduct inevitably to a lower level of readiness of troops, as well as the retirement age was increased (see what happen in Romania).

Considering those presented above, pooling & sharing has to go to the next level starting with reviewing policies and strategies. If you will analyze the infrastructure of the Europe Union you will be amazed how many opportunities there are.

With a lot of industry (cars, chemicals, biotechnology, food), very well developed transportation system, Research & Development, many military education institutions, and so on, European Union should head his eyes on that *globalization* and *specialization* of the nations armies in terms of sustainability and effectiveness.

According to Giovanni Faleg and Alessandro Giovannini in their 2012 report “*The EU between Pooling & Sharing and Smart Defense: Making a virtue of necessity?*” three important developments have reinvigorated the debate on EU military integration through pooling & sharing:

a) the provision by the Lisbon Treaty of Permanent Structured Cooperation (PESCO) as an instrument allowing groups of member states to cooperate more closely, thus attaining objectives that otherwise would be unattainable at 28;

b) the adoption of two Directives (43/EC in late 2008 and 81/EC in early 2009) aimed at simplifying procedures for moving military goods among member states and increasing the amount of defense procurement that is open to competition across the EU;

c) the adoption of the Ghent Framework in December 2010, under the Belgian Presidency, exploring the feasibility of intensified EU cooperation and P&S regarding military capabilities in areas such as training, logistics, medical, transport and communication.<sup>[xii]</sup>



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Still, these aren't enough. The reluctance of the states who are more developed in industry, for not sharing their knowledge, and being afraid not to lose the advantage of investments they did so far is a big wall in front of CSDP. On the other hand states don't want to involve in expensive cooperative programs with others, therefore giving each other greater visibility of what they plan to spend on defense and how they plan to spend it, although it could be cheaper for their own budgets.

For that the EU institutions as the European Commission and European Defense Agency (EDA), might play an important role in order to facilitate coordination, identify the areas of cooperation, and assists with the consolidation of defense industries. They should take a look of the US which changed military capabilities for doing more efficient and developing the concept of small teams with high trained personnel. Furthermore, military capabilities and interoperability improvements can be made through more effective spending by prioritizing expenditure on missions and capabilities – and by encouraging smaller and better trained forces rather than personnel-centered defense budgets.<sup>xiii</sup> Keep in mind that we need forces to deter and defend EU not to attack others, as well as those forces could be also those NATO forces, to not double the efforts of nations.

A major crisis, in the European Union was the war of Libya, which revealed again, if it was necessary, the lack of coherence in EU states approach regarding cohesion and effectiveness, as well as reducing military spending and starting a massive competition between them is not a sustainable solution for achieving CSDP goal. Nevertheless, US interests changed regarding Europe since the “fall” of the Cold War, and they are focused on what's happening to the South East of Asia, where China became more efficient and his growth in the last four years shows the world that they are “somebody”, and North Korea increases his threats for a war with South Korea and Japan. So, EU has to become more independent and EU head states have to stop thinking as they are only “one item”. CSDP need all not only ONE.

EU has to be careful about pooling & sharing capabilities to not overlap with the NATO “Smart Defense” initiative. Otherwise it will be a waste of efforts, energy and money. The future of CSDP depends for the political will to consult and cooperate on military capabilities for turning the EU into a global actor and a security provider, not only for his citizens, but also for his partners.

The lack of Intelligence, Surveillance and Reconnaissance, during the Libyan war, as well as refueling the aircraft in the air, highlighted the most needed capabilities. In the same time, EU states are part of NATO so they have multiple capabilities which have worked together using the same procedures, and maybe some of them they fought in Iraq or Afghanistan. Why EU does not use that in his advantage? Why they are waiting for US to take initiative and tell them what to do?

The Eastern borders of the EU are vulnerable since the civil war started in Ukraine and Russia annexed Crimea. Not to mention Transnistrian situation from Moldova Republic, where Russia continued to provide support to the separatist regime militarily, politically and economically, allowing him to survive and giving it a certain degree of autonomy vis-à-vis Moldova.<sup>xiv</sup> But, DO NOT FORGET Cyprus crisis which is far for being finished, and Kosovo Crisis also.

### **Conclusion**

CSDP is far away to be effectiveness for the EU citizens. Should we analyze these threats, the following questions become obvious:

- **terrorism:** can be fully eradicated??
- **proliferation of Weapons of Mass Destruction (WMD):** could be stopped in any way??
- **regional conflicts:** can be managed in order to be finished/eradicated??
- **State Failure:** there are any chances to avoid that??
- **organized crime:** it can be managed for getting read of this??

The answer of all these questions can't be found here, but what I have tried to make was to present some very important issues which EU institutions is facing. The “war on terror” has put the





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fight against terrorist and extremist on the top of the agenda regarding security policies, because of the fact that Europe is not only a target for terrorist, but also a base for it.

Regional conflicts and the proliferation of WMD are getting hand in hand. Regional conflicts can lead to terrorism, extremism as well as state failure, and can provide many opportunities of arms race and the possibility for terrorists buying WMD (Tokyo subway attack with the poisonous nerve gas Sarin).

Let us consider the Ukraine regional conflict, where according Kostiantyn Yelisieiev, Ukraine's Ambassador to the EU, the “first short-term goal of the Russian leadership is to disrupt the process of financial and economic stabilisation, and not permit Ukraine to proceed with the needed internal political, economic and financial reforms. Indeed, the economic situation is not an easy one, because my country is in a de facto state of war.”<sup>[xv]</sup>

So, state failure could increase the terrorist acts, extremism, and for sure, will provide opportunity for organized crime such as: cross-border trafficking, in drugs, women, illegal migrants, and weapons, which not only undermine the internal security of European states, but they also fuel conflicts in other parts of the world.<sup>[xvi]</sup>

The CSDP has to bear with countries budget constraints, and threats/challenges, which request doubling the effort.

For helping and improving CSDP we need a proactive approach. Asses the risks, develop a European Union defense army, increase spending for intelligence, developing a strategic culture that stimulates, when necessary, rapid intervention in hot areas, are the key point of the CSDP which have to be changed. The future of the CSDP cannot be predicted, but it is more likely this policy shall continue moving forward, depending on each step for political will and national budget allocations.

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**THE MILITARY AS A COSMOPOLITAN: A BLUEPRINT FOR  
BUILDING UPON INTERNATIONAL MISSIONS**

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**Abstract:**

The aim of this paperwork is to underline some aspects regarding military education in international missions from a cultural perspective.

*Keywords:* multicultural, cosmopolitan, military, environment

**Introduction**

One of the most known facts that appear in the last years is that things are dynamic. Speed is present everywhere and space became just an abstract word. Modern technology allows us to travel worldwide without any restrictions, from our rooms, without leaving our private space.

Information drives us anywhere. These are no more well defined boundaries. National border is now blurred when is about globalization.

Even in military society those facts are also applied.

Missions are more international involved, culture is more present in day by day operations. Therefore, traditional coordinates of military actions such as: attack, defence, enemy, immediate response are now new forms: security, protect and support, confidence, building stability, etc.

**TERMINOLOGICAL DEFINITIONS. COSMOPOLITAN,  
MULTICULTURAL AND INTERCULTURAL CONCEPTS IN THE  
MILITARY ENVIRONMENT.**

**Cosmopolitan concept in the military environment.**

The word ‘cosmopolitan’, which derives from the Greek word *kosmopolitês* (‘citizen of the world’), has been used to describe a wide variety of important views in moral and socio-political philosophy. The nebulous core shared by all cosmopolitan views is the idea that all human beings, regardless of their political affiliation, are (or can and should be) citizens in a single community. Different versions of cosmopolitanism envision this community in different ways, some focusing on political institutions, others on moral norms or relationships, and still others focusing on shared markets or forms of cultural expression. In most versions of cosmopolitanism, the universal community of world citizens functions as a positive ideal to be cultivated, but a few versions exist in which it serves primarily as a ground for denying the existence of special obligations to local forms of political organizations. Versions of cosmopolitanism also vary depending on the notion of citizenship they employ, including whether they use the notion of ‘world citizenship’ literally or metaphorically. The philosophical interest in cosmopolitanism lies in its challenge to commonly recognized attachments to fellow-citizens, the local state, parochially shared cultures, and the like.

Cosmopolitanism favours the international over the national; it suggests that militaries should be used to fight for principles of universal justice and human rights rather than for the interests of their own nation state.[1] This line of thinking was demonstrated in military interventions in Sierra Leone, Indonesia, the Balkans, Iraq and Afghanistan. Much was made that these campaigns were not about narrow self interest, but that they were about human rights. Upholding these cosmopolitan ideals was



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presented as being in the national interest. Prime Minister Blair made this clear in his well known Chicago speech in 1999 where he justified military intervention in Kosovo,

*“This is a just war, based not on any territorial ambitions but on values. We cannot let the evil of ethnic cleansing stand. ... We are all internationalists now, whether we like it or not. ... We cannot turn our backs on conflicts and the violation of human rights within other countries if we want still to be secure.... today more than ever before we are mutually dependent, ... national interest is to a significant extent governed by international collaboration ... partnership and cooperation are essential to advance self-interest...”*

In a number of ways these cosmopolitan ideals involve a diminution of the role and identity of the nation state, after all, that is their purpose. Support for human rights and global values weaken states' identities and sovereignty because their appeal is to the universal over the local and the national. Such global values lean towards individualism since they make the individual his own sovereign by emphasising the rights of the individual over those of his state community. They encourage the individual to defy the state of which he is a citizen if he believes that his state is acting improperly towards him by, for example, denying him his human rights. In the cosmopolitan world individuals have stronger obligations to cosmopolitan ideals than they do an obligation to their own state.

One of the main characteristics of cosmopolitanism in relation to humanitarian military intervention is equivocation in the face of competing pressures. First of all, cosmopolitan principles of human rights and global governance lend support to humanitarian military intervention if it is deemed necessary in order to protect the basic human rights of the most vulnerable. Humanitarian military intervention appears as an extension of the precedent set at Nuremberg: if evidence of crimes against humanity can serve as a basis for legal prosecution after the event, then it can also serve as a basis for military intervention to prevent or stop the crimes themselves. If ‘universal responsibility’ is to mean anything, it is the responsibility of those who have the power not to stand idly by when crimes against humanity are being committed and it is within their capacities to end them. On the other hand, cosmopolitanism is historically associated with the critique of militarism, the search for alternatives to war and the ideal of ‘perpetual peace’.

The ambivalence of cosmopolitanism manifests itself in the fact that individuals who share similar cosmopolitan principles can and do come to opposite conclusions with regard both to the principle of humanitarian military interventions and its application to particular situations. The question the new cosmopolitanism faces is how to deal with ambivalence without denying either side of it and without being paralysed by it.

The obstacles to reforming military forces and strategic cultures to suit the imperatives of cosmopolitan law enforcement are stark. National military forces are often unable and unwilling to conduct themselves in anything like a cosmopolitan fashion. They are trained and equipped for combat, not for rescue operations, and intervening powers are often unwilling to risk their own troops for the sake of saving strangers. Humanitarian missions may be carried out in circumstances where the distinction between combatants and non-combatants is blurred, so that military forces trained to fight clearly recognisable opponents struggle to adapt to demanding new conditions. Humanitarian missions require political skills such as winning the respect of the local populations in targeted regions and working with locally based civil society groups, and existing military forces are frequently unable or unwilling to carry out the basic functional requirements of this political purpose. In these circumstances it is possible reluctantly to endorse military intervention on the grounds that some kind of response is better than none in the face of humanitarian crimes; it is equally possible reluctantly to condemn military intervention because the proposed remedy does not live up to cosmopolitan criteria.



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In all cases we are confronted with reluctance against reluctance: a reluctance to endorse a humanitarian military intervention that does not live up to cosmopolitan criteria versus a reluctance to absolve powerful states of their responsibility in the face of humanitarian catastrophes. Once the ideal character of this cosmopolitan approach is brought down to earth, we discover that equivocation returns. This is not a reason to dismiss it. Cosmopolitan theories of military intervention perform important functions: they clarify and systematise our convictions, they provide a framework for making judgements in particular situations; they act as a stimulus for legal and institutional reforms. However, specification of criteria does not resolve ambivalence; it lifts it to another level. The downside of the specification of criteria is the radical indeterminacy present in their application to concrete situations.

**Multicultural concept in the military environment.**

The term multicultural describes the culturally diverse nature of human society. It not only refers to elements of ethnic or national culture, but also includes linguistic, religious and socio-economic diversity.

In order to respond better to actual international situation, military education and training system need to take into account the multicultural character of societies, and aim at actively contributing to peaceful coexistence and positive interaction between different cultural groups. Taking into account the fact that in actual international environment, borders are no longer well defined when it's about culture and education, there are traditionally two approaches: multicultural education and intercultural education. Multicultural education uses learning about other cultures in order to produce acceptance, or at least *tolerance*, of these cultures. Intercultural education aims to go beyond passive coexistence, to achieve a developing and sustainable way of living together in multicultural societies through the creation of *understanding* of, *respect* for and *dialogue* between the different cultural groups.



Fig.1

After the end of the Cold War armed forces across the world, especially those of NATO member and NATO partner countries, are busier than ever before. They have to cover the whole range of missions - from peacekeeping to combat. For this reason, armed forces are deployed in missions in an array of tasks to combat threats of a military and mostly a non-military transnational nature. These missions require more adaptive, flexible and mobile forces to deal with the broad range of tasks, and national armed forces have to cooperate intensively with the armed forces of other nations in the theatre.

In post-modern military organizations, the focus is on missions abroad, much more so than in the past. Nowadays and in the future we will be seeing multinational intervention forces (Kosovo, Afghanistan) or permanent multinational corps such as the EUROCORPS, the EUROFOR, or NATO, as a security organization. This has led to a necessary increase in cooperation between national armed forces, linked on the one hand with the “specialization” of the various national European militaries, and on the other with deeper political and military integration in alliances and security frameworks. It



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has also resulted in the emergence of cultural and political challenges, and these are influencing both the success and the effectiveness of military operations abroad. In the past, military operations have been analyzed mainly from historical, organizational, and institutional aspects. In recent years there has also been a growing interest in culture-related factors and issues in multinational operations.

Regarding the concept of multiculturalism and multinationality in the military, there are two different kinds of multinationality that can be observed, each with different preconditions for the working process in multinational units. Firstly, standing multinational corps in barracks in one of the participating countries: at most two to four countries are involved in these standing formations. Examples are EUROFOR, permanently headquartered in Florence, or the 1st German-Netherlands Corps, located in Munster. These units have encountered some of the sociological problems typical of multinational military formations, such as language, different ranking systems, payment and so on. But all in all smooth cooperation is possible in standing formations.

Secondly, nowadays the form of multinational cooperation more frequently observed is based on ad hoc cooperation in military missions abroad, for example in Kosovo, Afghanistan or Iraq. Here nations from more than 40 countries may be involved in one mission. This can cause misunderstandings and jeopardize the mission goals. In most cases multinational forces are needed to intervene quickly and on an ad hoc basis in crisis situations which are ambiguous, dangerous and complex. National militaries assigned to urgent missions often have no time for specific joint training with the other armed forces. Additionally, they are subjected to different Rules of Engagement (ROE) and different legal systems governing discipline and the use of violence.

Multinational armed forces normally consist of more than two nations. When cooperation is bi-national, many problems can arise. There is always a preponderance of one party in military missions, leading to tensions and animosity. As an example, at Camp Julien in Afghanistan, most of the friction that arose was between the large minority of Belgians and the dominating Canadians. In this case there was moderate heterogeneity: two sizeable participating armed forces that formed two “blocs” and were continuously frustrating each other.

But the multinational approach is common. It is an example of high heterogeneity involving several countries and national contingents of roughly equal size, a condition which helps to optimize processes and outputs. With many armed forces of different cultures in the same mission, personal conversations about one's own culture frequently take place and friendly comparisons are made. On the whole it seems that officers are very ready to engage in such multinational contacts. At the rank and file level this readiness is less marked. In multinational missions, national units have to surrender some control and have less autonomy. People in general, and military personnel in particular, do not like to be dependent on other nations in situations that can be life-threatening and dangerous.

As a conclusion, the most important aspect is language training for multinational forces. Usually, in contemporary military missions the lead language is English because the English speaking armed forces are those armies how bear the most burdens in missions.

**Intercultural concept in the military environment.**

*All human beings are born free and equal in rights.”<sup>1</sup>*

This concept is dynamic and refers to evolving relations between cultural groups. It has been defined as “the existence and equitable interaction of diverse cultures and the possibility of generating shared cultural expressions through dialogue and mutual respect.”<sup>2</sup>

It presupposes multiculturalism and results from ‘intercultural’ exchange and dialogue on the local, regional, national or international level.

<sup>1</sup> Universal Declaration of Human Rights – article 1

<sup>2</sup> UNESCO Convention on the Protection and Promotion of the Diversity of Cultural Expressions (2005), art. 8



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Forming the relational dimension of Romanian military personnel and not only of participants in international missions, represents a requirement for developing *l'esprit de corps* (fundamental characteristic of their professional profile), lay at the foundation of forming and strengthening convictions, contributes to shaping/reshaping military staff personality, its adaptation to various acting situations (including intercultural environments) and to the accomplishment of complex missions. Starting from these considerations, we found it useful to review the models of forming/ developing the intercultural communication competence, for a future formative design where the directions of developing the communication competence become evident. Byram's model inspired an adequate model of forming, the military system of education being easy to expand to the prefigured dimensions (knowledge, skills, attitude, education). This step must be continued with life-long training courses, respectively adequate selection and training of military personnel for international missions, together with position requirements and the development of cultural frame.

Regarding the Romanian military education, the reshaping of competences and spreading the relational construct prefigured at the intercultural dimension are brought into discussion. Normally, this reconfiguration does not aim at the relocation of funds or massive restructuring of a system already subjected to adaptations, rehabilitations and lining to standards (regarding not only its educational side, but also the military one), but at a reshaping of competences according to comprehension investment and to the reconfiguration of the requests, submitted to a present and/or future prefigured reality. But, as long as the entire Romanian higher education is configured according to Hainaut's matrix: to know for the sake of knowing, of doing and of being, it is obvious that the simplest way is that of following the step and of development in the same respect. Therefore, a valid way of forming the intercultural communication competence within the military higher education is the one proposed by Byram. Byram model, together with the other models of intercultural communication system starts from the idea of projecting this competence on three dimensions: cognitive, affective and psychomotor, alongside with the implementation of a new educational philosophy. Hence, the projecting frame remains unchanged whereas the approach changes. Therefore, Byram model is focused on knowledge, attitudes and skills – in d'Hainaut's perspective – but this perspective is modified, that is, skills aim at the interpretation and discovery/interaction, meaning that, in a cumulative manner, a fifth factor – the proper system of education – contributes to a configuration of the competition.

Based on this concept, the military higher education can be extended to prefigured dimensions:

- self knowledge and knowledge of the other, knowledge of the interaction, individual and social knowledge (savoirs), by sets of transmitted content within the educational act;
- skills of interpretation and establishing connections (savoir comprendre) by comparative analysis of transmitted knowledge;
- skills of discovering and/or interaction (savoir apprendre/faire), by applying the content correctly and by going beyond the classical interpretative frame;
- attitudes resulted from the relativisation of the self and the re - evaluation of the other (savoir etre), by effective performance within an intercultural environment and by evaluating the prefigured skills and knowledge; political education and cultural awareness (savoir s'engager), by effective engagement into relations with the other for self awareness, for cognitive, evaluative and act orientation, realized by mingling of cognitive, affective and psychomotor objectives, reached during the previous phases. Political education together with the critical cultural consciousness do not impose confining within the limits of an extreme patriotism, or its dilution, but the engagement into a relation with The Other, only in terms of respect for the national and the humanity values.

Within the military environment, the openness to alterity by projecting and forming the intercultural communication competence must not be seen as an alternative to patriotism and



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nationalism, or as an openness to poor cosmopolitanism or as a rejection of national culture in the detriment of civilization values that exclude the first ones. Patriotism and nationalism, if they imply love and the identification with a state/homeland, that is, a nation, that appeals to political consciousness, respectively to cultural consciousness of a nation-state existence, should not presuppose restrictive, exclusive or even aggressive forms. In its essence, patriotism offers the strong motivation for acting morally [2], which presupposes the transcendence of any barriers towards the other one, the promotion of human rights irrespective of ethnicity, religion, race or type and the tolerance manifestation as a fundamental value of intercultural relations. The openness to intercultural forming and development of intercultural communication competence answer very important and critical issues regarding present actionable steps of the Romanian military staff. Participation in peace keeping missions raises problems related to the Romanian military relations with the country, the accomplishment of the mission for the country and to the use of its action for the country they represent. Intercultural education represents a way of forming in the sense of providing answers, at the other perceptive level, regarding the way in which the Romanian soldiers can cope, constrained by the oath of faith to the country, by the globalist challenges they are subjected to. The intercultural education also provides answers to unhealthy and non-attractive forms of cosmopolitanism, such as the aggressive universe, a cosmopolite strategy of destroying local cultures and institutions. Furthermore it creates a global political and cultural system, such as the hegemonic globalization, or a version in which a single country creates a united world, by subordinating other countries to the proper jurisdiction.

In the military environment, the intercultural education and, implicitly, forming the intercultural communication competence (which has attitudes and intercultural components at its basis) is shaped in the spirit of moderate patriotism characterized by interdiction of harming any one, no matter the person, special duties to the own country (but positive one - assistance, support for everybody), increased interest towards the own country and authentic interest, but, most important for the other, moral constraints in accomplishing the national goals and obligations, not only towards the own country but also towards the other ones through their citizens [3]. Thus, exaggerations of the obligations only for the own country are abandoned, with no constraints in reaching the targets, specific to extreme patriotism, or those regarding interests with no constraints in reaching the cosmopolite targets specific to extreme cosmopolitanism.

## **TYPES OF COMPETENCIES ACQUIRED IN INTERNATIONAL MISSIONS**

For all participants in international military missions it is mandatory to meet some prerequisites prior to be a part in those missions. To achieve a common goal, some objectives must be defined and ways to accomplish these objectives must be developed and mastered. Most military operations are characterized by typically stages of duration, depending on their nature, intensity, and complexity. In broad terms these stages may be defined as planning, pre-deployment, deployment (execution and force rotation), redeployment, and post-deployment.





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Fig. 2

Multinational forces are often used during Operations Other Than War (OOTW), a class of mission that has grown since the post-Cold War era. OOTW include goals as varied as deterring hostile actions, combating terrorism, and providing relief from natural disasters. These missions are undertaken by coalition forces from divergent national cultures but also including non-governmental organizations (NGO) and private voluntary organizations (PVO). Each member of the coalition may have its own agenda and its own leadership expectations and style. Multinational missions vary in goals, while the participants vary in their agendas and command structure.

### **Pre-Deployment.**

Conflict size has changed radically in recent years by the nature of asymmetrical confrontations and the use of specific revolutionary technologies in military affairs. Challenges in local, regional and global security environment, produce a big impact in the character, nature and content of the Romanian Army missions.

In this context, national military forces must respond quickly and effectively to any disaster or conflict or natural disaster, both within Romania's borders and beyond, through a strategic, operational or tactical commitment. At the same time, there is a need for forces to be able to organize and reorganize themselves quickly and efficiently in order to carry out various missions, and dispersed over a wide area of operations. Thus, military forces must be very flexible and able to perform various types of specific operations, both for stability and support in peace or war time. Since the beginning of participation in such missions, army units involved have improved their operating procedures from one mission to another, today is widely recognized professional competence of the Romanian military, especially their ability to adapt to social environmental characteristics, specific in theaters.

Stability and support operations are conducted in many cases in a multinational framework, so it is absolutely necessary to harmonize the doctrines that govern these operations, basic concepts, finding a common language and, moreover, the development of joint working procedures the successful completion of these operations.

Stability operations are diverse typology. The armed forces can perform the following types of stability operations: arms control, counter-terrorism, anti-drug operations support the imposition of sanctions, the imposition of exclusion zones (air, sea or land), humanitarian assistance, assistance to other nations, non-combatants evacuation operations, military assistance to civil authorities, peace operations, recovery operations (search, rescue, evacuation), demonstrations of force, protection of navigation, strikes and raids limited. These operations should be viewed as a response actions being generated by the emergence of crisis / threat; they are typically nonlinear and isolated and conducted by specific principles, respecting, where appropriate, the principles characteristic of the armed struggle.

Nature is defined by diversity, so every person is different, unique – we might say. We, as individuals, have different faces, personalities, beliefs, skills, etc. This is a good thing because that is



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life but to achieve a common goal, especially for soldiers is very difficult without some additional steps. Training to achieve those skills is so important.

For a military, every mission is important no matter if is inside national territory or abroad, because it has many implications, both in the general and specialized military training. For our army, since Romania joined NATO, many military modern concepts have been introduced, because now international missions are derived from modern battlefield realities with new challenges into an extremely complex environment and cannot be countered only through military operations themselves.

It becomes quite obvious for military authorities to establish training and development programs for troops to close any critical gaps that have been identified in previous missions, and also to develop multilingual standard operating procedures, cultural awareness training, staff training at the headquarters level, and education in a basic code of ethics.

For our soldiers it is important to have proper training and skills before deployment. To achieve that goal, it is necessary to have some pre-deployment training courses.

According to a study from 2007 (“Conceptualizing Multicultural Perspective Taking Skills”), a possible training program for military theater of operations should aim at developing a wide area of competencies, such as:

- main competencies, focused on knowledge of own culture, strengths and weaknesses, self confidence and emotional intelligence
- communication competencies, such as teamwork, listening, interrelate
- personal competencies: creativity, learning, complexity, critical thinking.
- advanced competencies: understanding, integration, processing.

The purpose of pre-deployment training is to raise the level of preparedness in order to allow deployment on international military operations in the mission area. As an example, for the British Army, pre-deployment training is a critical part of successful operations abroad.

As part of its pre-deployment training, a battalion will spend a certain period of time in a special designated place and at the end it is mandatory for all soldiers to complete the training program and to have desired level of skills.

This is considered a MUST procedure for all of them.

The training process is divided into phases with different levels of intensity and responsibility.

- First stage is focused on the preparation of the individual and is the responsibility of the Parent Unit Commander focusing on administrative and logistical processing in preparation for phase 2 training. Topics covered include fitness tests, weapons training, personal admin and logistical admin.
- Next stage is focused on the preparation of the battalion deploying and is focused on Platoon/Troop and Company level skills. It is the responsibility of the lead brigade to oversee this phase of training coordinated by a Task Force chaired by the Executive Officer of the Brigade. Most likely several companies will be training concurrently to develop and fine tune skills that will be required for overseas deployment. Topics covered in this phase are wide and varied including but not limited to Helicopter drills, Communications, Intelligence, Medical and Map reading.
- Third stage for training is focused on the Overseas Battalion and is designed to build on the training in Phase 2 with a view to building a cohesive Unit capable of carrying out its tasks to the standard required for deployment to its operational environment. It involves modules on particular skills for the mission which are then evaluated by means of the Mission Readiness Exercise.
- Last stage is conducted whilst deployed in the operational environment and is focused on In-Theatre situational and environmental training to compliment prior training.



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Because of recent military missions history and worldwide implications in different types of tasks, it became as a necessity to have a common understanding of what is mandatory to be known before deployment. The Core Pre-deployment Training Materials (CPTMs) were designed by the UN Department of Peacekeeping Operations (DPKO) to provide the common and essential training required for all personnel – military, police, and civilian – who serve on UN peacekeeping missions. The CPTMs are circulated by DPKO and provide both a list of topics as well as actual training materials usable as lesson plans. National peacekeeping training centres worldwide incorporate the CPTMs into their classroom courses as an important part of their students’ training prior to their deployment on any UN peacekeeping mission<sup>3</sup>.

**Deployment.**

“Today’s operating environment demands a much greater degree of language and regional expertise requiring years, not weeks, of training and education, as well as a greater understanding of the factors that drive social change”.<sup>4</sup>



Fig.3

For military conflict stabilisation and peace building efforts to have a chance of success, there are a lot of gaps that need to be solved and / or closed.

A major aspect that was fully understood by military in Bosnia was language barrier. For future missions it has become necessary to develop language skills, particularly for military troops from Eastern Europe (Czech, Bulgarian and Romanian soldiers). Nevertheless, communication skills were pretty good, despite the initial lack of experience, because of language similarities and other common territorial expressions. The use of english language, as a standard, in military operations was seen as an advantage for all native speakers (UK, USA, Ireland or Canada). On the other hand, for french military troops, the use of english instad of their own language was a big disadvantage from the perception point of view. As an example, in Deliberate Force operation in Bosnia, the use of both english and french language for translation was received as an obstacle for troops and a big time consuming.

U.S. military allies view language barriers, rather than incompatible technology, as a primary obstacle to multinational operations.

Computer networks can be connected rather easily, especially modern systems that are built with commercial technology. But the inability of troops from different countries to communicate because they don’t speak the same language creates more fundamental problems, said officers attending a U.S. Marine Corps war game in Potomac, Md. Efforts by the United States and other NATO members to promote “interoperability” between military forces and to encourage countries to contribute troops to current operations fail to take into account the difficulties experienced by non-English speakers, said

<sup>3</sup> Peace Operations Training Institute - Core Pre-deployment Training Materials

<sup>4</sup> Quadrennial Defence Review - February 2010



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Lt. Col. Marc Humbert, a member of the French Joint Staff and a liaison officer at U.S. Joint Forces Command.

*“The biggest challenge is language,” he said. “It’s a significant factor for us and other countries, working in an English-speaking environment. Some of us master the language, but to what level does it go? At what level can we integrate units? This is a very big issue.”*

U.S. officials regard “information sharing” as the most significant hurdle in coalition operations, but often don’t take into account whether the information can be understood by those who don’t speak English. *“Everybody has networks, and you can plug into the network, but if the information is in a foreign language, can you translate it?”* Humbert asked.

No easy fix exists to this problem, Humbert noted. *“We have been trying to develop procedures. But I would submit that total integration is not possible with non-English speaking countries.”*

Among French troops, a small number (between 10 and 20 percent) speak Arabic. But even they couldn’t communicate with Arab-speaking Iraqis, for example, because French-Arabs, who usually hail from Northern Africa, speak a different from of Arabic.

Language is critical for communication. International aviation has acknowledged the importance of a common language by standardizing messages for use. The system is vulnerable when the complex, unexpected, and unprecedented occurrences need to be described. Common language remains a problem in all domains including multinational participants. Even English speakers report confusions when sharing complex information with those from different English speaking nations.

Other officers from English-speaking U.S. allied countries agreed that language differences can hinder interoperability. They also highlighted other reasons why multinational operations can be daunting. *“We have wrestled for years with interoperability,”* said Maj. Sean Wyatt, of the Canadian Army.

It is evident that cultural differences in language, nonverbal behavior, and body language (e.g., differences in voice inflections or facial expressions; norms regarding acceptable length of eye contact or personal distance; variations in handshakes) may all pose challenges to intercultural communication in multinational military contexts (Desimone, Werner, & Harris, 2002; Gillespie, 2002)[5]. This made things very difficult, as neither side really understood the other’s culture. For the involved actors, it became very important to have soldiers as translators. Some were just that; they translated from one language to another. But the issue was still there, because, more than that in translation there was no cultural consideration involved. Some times, translators were able to relate not just was said, but the meaning behind it. Interpreters were vital to the success of the mission, in training, and in the conduct of operation. Without them the gap that lay between „us” and „them” could not be bridged. Culturally diverse teams need the knowledge and the tools necessary to make differences explicit<sup>5</sup>.

Bowman and Pierce (2003) suggest that an understanding of how culture affects teamwork has provided critical information for the development of training tools to help leaders and teams overcome cultural barriers. Bowman and Pierce identify two training tools that have been developed. The first is a communication skills training tool that can help individuals to develop understanding and tolerance of culturally diverse cognitive styles. The second is a web-based decision game designed to provide information and situational awareness of cultural differences in cognition. Both tools will have application before, upon arrival, and throughout the period of deployment and will be available to US and other leaders and teams, thereby creating opportunities for national and multinational team building. With increasing emphasis being placed on interoperability of systems between coalition

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<sup>5</sup> Cultural Barriers to Multinational C2 Decision Making



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partners, Bowman and Pierce (2003) suggest that this project will provide a foundation for continued linkages between nations in technology and human systems.

Finally, some further recommendations regarding language training in the context of multinational military operations should be mentioned. In addition to language training, dictionaries of common terms must be developed and distributed, including logistical and tactical terms (Marshall et al., 1997). As mentioned earlier, acronyms and abbreviations should be avoided in order to ensure a clear understanding of terms within a coalition, and operational and logistic plans and orders should be written in greater detail and clarity to avoid misunderstandings (Bowman, 1997). Once again, it is recommended that native English speakers are able to speak other languages, in order to build mutual understanding and respect (Potts, 2004; Bowman, 1997; Stewart, et al., 2004), and that they speak slowly and avoid colloquialisms (Bowman & Pierce, 2003).

In summary, as the composition of multinational military operations becomes more diverse, the need for leaders to bring groups of different cultures together to function as a unit becomes more crucial (Graen & Hui, 1999). Thorough preparation and training is vital if commanders are to be culturally aware and sensitive, patient, adaptive, and tolerant (Soeters et al., 2004). In general, all personnel who are deployed in multinational military coalitions should have thorough training in the cultural aspects of their work. Attention must be paid to the cultural characteristics of both the coalition partners and the local population. Steps taken to develop common operating procedures, to train together, and to educate future leaders will help ensure that future coalitions successfully accomplish their assigned mission (Bowman, 1997).

#### **Post-Deployment.**

Several major lessons learned (or re-learned) have emerged from involvement in Iraq and Afghanistan after U.S. 2001 events. These include the need for advisors to forge strong relationships with their counterparts and linguists, the need to learn about and adapt to the unconventional military advising mission, and other key lessons that follow in this section.

- Building strong relationships with counterparts is the most important aspect of the advising mission. The most important method to develop a productive advisor-counterpart relationship is to create a strong personal connection. Such a relationship results from advisors' concerted efforts to learn about their counterparts' personal characteristics and idiosyncrasies. A productive relationship also comes from gaining greater knowledge of the overall context in which the counterparts function and then applying a variety of relevant techniques to leverage this understanding to create mutual trust and a solid bond.

Attain cross-cultural competence to help build combat advisor-counterpart relationships and enhance advisory team survivability.

Acquire culture- specific competence about a counterpart and the cultural context in which that person thinks and acts. To succeed, advisors must learn relevant and detailed knowledge about the counterpart, the counterpart's organization, and, the host nation and region.

Accept a counterpart' hospitality, an draw on the power of informal socializing to build relationships.

Use humor including comical self-deprecation, to build rapport with counterparts.

Wisely navigate delicate, sensitive issues when interacting with counterparts. Despite warnings from advisor training and doctrine about avoiding taboo topics (politics, religion, etc.), sometimes candid, but private, conversations about these topics build advisor- counterpart bonds. However, appropriate timing and settings for such conversations is essential.

Practice cultural stretching: advisors must often enter discomfort zones and tolerate or participate in some unusual or culturally challenging events to bond with counterparts (e.g., trying to



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eat distasteful foods, letting counterparts hold the advisor's hand, understanding that counterparts might apply harsh punishments to their own troops, and so on).

Carefully navigate cases when cultural stretching goes too far. At times advisors need to politely refrain from events (e.g., that cross moral boundaries) and also may need to try to influence counterparts to stop certain actions without disrespecting counterparts.

Remain firm while not being either commanding or too diplomatic; strong, respectful, and courteous military advisors gain their counterparts' respect.

Perform cost-benefit analyses about taking mission-related physical and cultural risks to help build rapport with counterparts and advance the mission. For example, sometimes advisors must work hard to acquire permission to reside on their counterparts' bases, travel in their counterparts' vehicles (or at least to frequently travel in convoys with their counterparts), soften their conventional military appearance standards (e.g., U.S. Special Forces advisors sometimes grow beards or wear military patches given to them by their counterparts), and so on.

- Linguists are vital intercultural intermediaries. A second major post-2001 advisory lesson learned is the need for advisors to work effectively with linguists (also known as translators or interpreters). During the Iraq and Afghan conflicts, only a very small handful of advisors spoke their counterpart's language at a working level, or worked with counterparts who spoke English at a high enough level of competence to preclude misunderstandings. Thus, the overwhelming majority of U.S. advisors had to use linguists, many of whom lacked the vocabulary and cultural understanding of both sides to provide translations beyond a basic level. This presented a special problem because without effective communications advisory missions are doomed to failure. Therefore, successful advisors developed special skills to effectively lead, build rapport with, and make full use of their linguists' talents.

- Conventional forces must adapt to the unconventional military advising mission.

### **Conclusion**

Some of these conclusions are based on a study made by an international team, regarding *Military Co-operation in Multinational Missions: The Case of EUFOR in Bosnia and Herzegovina*.

Working in international environment became a normal „way of living” for modern military society. A progressive increase of multinational forces employed in several missions under the aegis of UN, NATO and, recently, EU represents one of the significant changes within the armed forces of European countries in the last decade.[5]

In the last few years, in a trend towards a growing integration, soldiers of different nationalities have more and more interacted and co-operated under an integrated command structure. Particularly, this phenomenon was a matter for Western countries' soldiers, but not only for them: the “internationalization of military life” (Klein/Kümmel 2000) is a global phenomenon. For instance, one of the most multi-ethnic and multi-cultural armies ever assembled was the UN's peacekeeping force in ex-Yugoslavia, with troops from 44 nations representing almost all geo-political areas of the world. As far as this research is concerned, EUFOR, which replaced the NATO's Stabilisation Force (SFOR) on December 2, 2004, is strongly characterized by multi-nationality, being supported by 33 countries, 22 of which members of the EU.

In order to enhance multinational co-operation and to foster intercultural understanding it is important to establish and extend common practices and procedures, since common skills and standards as well as mutual trust and cohesion mainly develop by “doing” co-operation, through concerted action in practice. However, cultural differences and obstacles do not only influence co-operation between soldiers coming from different countries but also are an important factor determining the relations between the armed forces of an international mission (like EUFOR in Bosnia and Herzegovina) and the local population. Up to now we know very little about how soldiers



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see and behave with people they are supposed to protect and/or bring peace to, nor how those conversely perceive the role of the international military actors in their country. In low-intensity operations like *Althea* aiming at supporting the peace building and democratization process in a particular country or region the duties and responsibilities of the international armed forces consist to a great extent in keeping contact with the local authorities and other international actors. In this case an operation's success also largely depends on how interaction and communication between the parties involved works out. For this reason future cross-cultural research on low intensity military operations should not only focus on problems and challenges within the multinational military organisation alone, but also extent to analysing the relationship between multinational armed forces and their environment, i. e. other international institutions, the local authorities and the local population. For in the end this might turn out to be as important for achieving a mission's goal as a well-functioning co-operation of the various members of multinational armed forces.<sup>6</sup>

Multinational coalitions will become more prevalent in the future as nations seek alternate methods of resolving conflict. With the increasing complexity of such coalitions, and with new partners, future coalition commanders will face a myriad of challenges, including the integration of culturally diverse groups and the establishment of an effective command and control structure (Davis, 2000a). This environment will demand a greater range of leadership skills and competencies, the ability to overcome cultural barriers to effective teamwork (such as cultural differences in power distance and decision making), and an ability to lead within various command structures. Leaders must recognize that both national interests and cultural factors will influence the setting of coalition goals and objectives, place constraints on the coalition force, and determine a nation's contribution in terms of organization, capability, and command authority (Davis, 2000a). Through the development of intercultural leadership skills, innovative command structures, and thorough coordination, liaison, and cooperation, both political interests and cultural diversity in coalition operations can be addressed, and cultural diversity in multinational military operations can be used effectively as a positive resource.

The focus in multinational military operations must be toward achieving unity of purpose, as opposed to unity of doctrine or command. To achieve unity of purpose, operational level commanders must develop mutual confidence amongst the military leadership of the coalition partners to ensure that a balance is struck between competing political and military interests and to ensure that cultural issues are addressed (Davis, 2000a). Indeed, of the intangibles of coalitions' command and control matters, mutual confidence and trust between partners may be the most important consideration. Being able to trust is essential to unity of effort, much more so in the case of nonconventional operations in which the commander must blend the skills of culturally diverse national contingents so that the whole is greater than the sum of its parts (Barabé, 1999). More research is needed, however, to examine the issue of trust and reliability in a multicultural environment.

In the current operating environment, mission success relies on the ability to improve relationships with foreign individuals, organizations, or militaries. Service personnel tend to deploy to a variety of areas in the world throughout their careers and are only assigned to certain jobs and locations for relatively short periods. They need efficient, effective ways to acquire a culture and language capability. The notion of cross-cultural competence (3C) has been developed to reflect this requirement.[6] One definition of it is “the ability to quickly and accurately comprehend, then appropriately and effectively engage individuals from distinct cultural backgrounds to achieve the desired effect, despite not having an in-depth knowledge of the other culture.[7]”

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<sup>6</sup> Sozialwissenschaftliches Institut der Bundeswehr - Military Co-operation in Multinational Missions.



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Taking into consideration that actual missions are regional, there are many local issues that must be understood and solved. For a person to understand and win a battle it is necessary to become a diplomat. These are the most important habits of highly effective warrior-diplomats.

- Adopt a cross-culturalist stance;

**Adopting a Cross-Culturalist Stance**

1. Know yourself and how you're different
2. Know the value of (a little) cultural understanding
3. Frame intercultural experiences as opportunities to learn

**Seeking and Extending Cultural Understanding**

4. Pay attention to cultural surprises
5. Test your knowledge
6. Reflect on your experiences

**Using Cultural Understanding to Guide Action**

7. Adapt how and what you express

Fig. 5

- Seek and extend your cultural understanding;
- Apply cultural understanding to guide action.

In my opinion, these mental strategies have implications for effective mission performance and mission readiness: preparing for deployments overseas, gaining traction within a new culture or environment, and learning from experiences.

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**STUDY ON THE IMPACT OF SOVEREIGN DEBT ON THE  
DEGREE OF SELF-REGULATION OF ROMANIAN ECONOMY**

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**Abstract:**

The self-regulation degree of national economy system, represented through: monetary policy rate; the minimum wage; government spending was studied in relation to sovereign debt volume. Thus, based on the data set related parameters considered: monetary policy rate, minimum wage, government spending and debt in the medium and long term, contains monthly data, period of analysis being the 2003-2014, period was estimated to what extent is adjusted national economy in terms of increasing the system, with a given value of the country's debt volume. The obtained Error Correction Model reflects the degree of national economic self-tuning, concretized on the macroeconomic strategy function, based on the loan. According to the study presented, significant rate, adjusting the economic system by means of loans made by the government will induce, in Romania, a sovereign rate becoming more pronounced. In Romania, the strategies for maintaining national economy, at a minimum necessary condition of survival by making loans, are not sustainable in the long term, but short term.

*Key words: ECM, sovereign debt crisis, self-regulation degree of national economy system*

**Introduction**

The degree of self-regulation of the national economic system - emphasized through indicators like the monetary policy rate, the minimum wage and government spending - will be studied in relation to the volume of sovereign debt. Thus, based on the data set afferent to the considered parameters - monetary policy rate, minimum wage, government spending and medium and long term debt – which contains analysis of monthly data from the 2003-2014 period, we will estimate the extent to which the system of national economy adjusts when the volume of national debt increases with a given amount. The estimated Error Correction Model will reflect the degree of self-regulation of the national economy corresponding to the adopted macroeconomic strategy based on debt.

**The ECM model**

According to Systems' Theory, system self-regulation is a part of artificial intelligence and consists of maintaining the system inside certain targeted parameters obtained as a result of the permanent exchange between the system and its internal and external components.

Adjustment at the macroeconomic level is obtained by regulating the national economy system through the strategies adopted at this level. The mechanism of self-regulation is centered on the rapport between long-term balance and short-term balance.

Given that Romania, more and more indebted, tends to increase the degree of turbulence at the level of its national economic system, there is a need to estimate the degree of self-regulation of the considered parameters of the macroeconomic-financial system. Estimating the interdependency equation between short-term and long-term equilibrium involves also studying the correlation in order to detect the falsity of the estimated equation.

Cointegration is the best solution for "diagnosing the falsity of the researched relationship and for deducting the correct relationship between the two variables represented by data series" (Stancu, Constantin & Stancu, 2012). It should be noted that the data series, which present unit roots in their structure, are characterized by unsteadiness.



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**The data set used**

The data set afferent to the considered parameters - monetary policy rate, minimum wage, government spending and medium and long term debt - contains monthly data, analyzed in the 2003-2014 period.

Data sources are as follows:

- the statistical database on the official website of the European Commission, EUROSTAT: <http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home> used for extracting data for:
  - government spending (as a percentage of GDP);
  - medium and long-term debt (expressed in millions of euro).
- the statistical database on the official website of the National Bank of Romania, the section of monetary indicators: <http://www.bnr.ro/Indicatori-de-politica-monetara-1744.aspx>, used for extracting data for the monetary policy interest rate (expressed in percentages).
- the statistical database on the official website Google Public Data (offered by Eurostat): <https://www.google.ro/publicdata/directory>, used for extracting data for the minimum wage (expressed in Euros).

**The software used**

The software used in this study, EViews7, is a statistic software product developed by Quantitative Micro Software (QMS) that facilitates complex processing of data sets through an interface based on object oriented programming (Bhave, 2012). In this manner, time series, data series, systems of equations and more are designed as objects through the EViews7 programming.

On the other hand, we can mention another advantage of EViews, namely to provide a complete statistical package containing:

- Autocorrelation and partial autocorrelation functions, cross-correlation functions;
- Tests on the existence of the unit root<sup>7</sup>, cointegration tests, causality tests etc.

Remarks:

- 1) According to WolframMathWorld, the cross-correlation function of two functions,  $f(t)$  and  $g(t)$ , noted  $f \diamond g$ , is defined by:

$$f \diamond g \equiv \overline{f(-t)} * g(t) \tag{1}$$

where:

\* - designates convolution;

$\overline{f(-t)}$  - is the conjugate function of  $f(t)$ .

Convolution is defined as follows:

$$f * g = \int_{-\infty}^{\infty} f(\theta) f(t - \theta) d\theta \tag{2}$$

Or, more exactly:

$$(f * g)(t) = \int_{-\infty}^{\infty} \overline{f(-\theta)} f(t - \theta) d\theta. \tag{3}$$

In the condition when  $\theta' = -\theta$  and  $d\theta' = -d\theta$ , relationship (3) becomes:

---

<sup>7</sup> Among the tests implemented in EViews7 which verify the existence of unit root, we can mention: ADF, Phillips-Perron, KPSS, DFGLS, ERS or Ng-Perron, for time series, and Levin-Lin-Chu, Breitung, Im-Pesaran-Shin, Fisher or Hadri, for panel data series.



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$$f * g = \int_{-\infty}^{\infty} \bar{f}(\theta') f(t + \theta') (-d\theta') = \int_{-\infty}^{\infty} \bar{f}(\theta) f(t + \theta) d\theta. \quad (4)$$

2) The intercorrelation satisfies the following identity:

$$f \hat{\wedge} g = f * g \quad (5)$$

On the other hand, VAR<sup>8</sup> (Vector AutoRegression) and ECM<sup>9</sup> can be estimated by EViews7 by accounting for the corresponding criteria. Later, one can opt to examine the impulse-response functions and to decompose the momentum variance for VAR or ECM. VAR impulse-response functions are accompanied by standard errors, calculated by using analytical methods or the Monte Carlo method, and are outlined in a variety of formats.

### Empirical results

A first step in conducting the study based on representative data is to check the series' stationarity by using tests such as ADF (Augmented Dickey-Fuller)<sup>10</sup> and PP (Phillips-Perron). Since all the considered data series presented unsteadiness, they were stationised through order I differentiation.

By performing the co-integration study upon the considered time series the following was obtained:

➤ **The case of a single equation (Engle-Granger Cointegration Test):**

Series: DAT PROC\_CHELT\_IN\_PIB RATA\_DOB\_POL\_MON SAL\_MIN  
 Sample: 2003Q1 2014Q2  
 Included observations: 46  
 Null hypothesis: Series are not cointegrated  
 Cointegrating equation deterministic: C  
 Automatic lags specification based on Schwarz criterion (maxlag=9)

Dependent	tau-statistic	Prob.*	z-statistic	Prob.*
DAT	-2.144068	0.8267	-8.312685	0.8478
PROC_CHELT_IN_PIB	-4.262874	0.0599	-26.47833	0.0482
RATA_DOB_POL_MO				
N	-2.282041	0.7769	-10.14240	0.7463
SAL_MIN	-2.027664	0.8627	-8.032344	0.8612

\*MacKinnon (1996) p-values.

Intermediate Results:

	DAT	PROC_CHELT	RATA_DOB_	SAL_MIN
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<sup>8</sup> For more details regarding the VAR model and ECM model, consult: Stancu, S., **Constantin, A.M.**, Stancu(Popa) V.S. (2012) *Efectele crizei datoriilor suverane asupra echilibrului la nivel macroeconomic*, Revista Studii și Cercetări de Calcul Economic și Cibernetică Economică, ISBN:0585-7511, available at: <http://www.revcib.ase.ro/12-2012/Stelian%20Stancu.pdf>

<sup>9</sup> Error Corection Model

<sup>10</sup> For more details regarding the ADF and PP tests, consult: Stancu, S. (2011) *Econometrie. Teorie și aplicații utilizând EViews, Capitolul 10*, pp.421-423, ISBN:978-606-505-462-2, Editura ASE, București.



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		_IN_PIB	POL_MON	
Rho – 1	-0.184726	-0.588407	-0.140167	-0.178497
Rho S.E.	0.086157	0.138031	0.061422	0.088031
Residual variance	21213805	23.84493	1.021564	64.31053
Long-run residual variance	21213805	23.84493	2.762810	64.31053
Number of lags	0	0	1	0
Number of observations	45	45	44	45
Number of stochastic trends**	4	4	4	4

\*\*Number of stochastic trends in asymptotic distribution

**Table 1**

According to table 1, the probability associated to each variable exceeds the 0.05 threshold and we can therefore say that the four analyzed variables are cointegrated, each with I(1).

➤ **The matrix case (Johansen Cointegration Test):**

Sample (adjusted): 2003Q3 2014Q2

Included observations: 44 after adjustments

Trend assumption: Linear deterministic trend

Series: DAT PROC\_CHELT\_IN\_PIB RATA\_DOB\_POL\_MON SAL\_MIN

Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None	0.444207	42.49873	47.85613	0.1452
At most 1	0.240416	16.65489	29.79707	0.6654
At most 2	0.098161	4.555583	15.49471	0.8540
At most 3	0.000217	0.009531	3.841466	0.9219

Trace test indicates no cointegration at the 0.05 level

\* denotes rejection of the hypothesis at the 0.05 level

\*\*MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None	0.444207	25.84384	27.58434	0.0821
At most 1	0.240416	12.09931	21.13162	0.5379
At most 2	0.098161	4.546051	14.26460	0.7977
At most 3	0.000217	0.009531	3.841466	0.9219

Max-eigenvalue test indicates no cointegration at the 0.05 level

\* denotes rejection of the hypothesis at the 0.05 level

\*\*MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegrating Coefficients (normalized by b'\*S11\*b=I):

DAT	PROC_CHELT_I N_PIB	RATA_DOB_POL _MON	SAL_MIN
4.76E-05	0.187085	0.256682	0.005206
7.18E-05	0.130500	-0.330844	-0.068683
-7.98E-05	-0.010561	-0.030987	0.046390
7.04E-05	-0.044119	0.057142	0.003816



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Unrestricted Adjustment Coefficients (alpha):

D(DAT)	323.4094	20.20593	327.8894	-24.13259
D(PROC_CHELT _IN_PIB)	-2.977659	-1.242917	0.222969	-0.032420
D(RATA_DOB_P OL_MON)	-0.151973	0.049203	0.187074	0.005196
D(SAL_MIN)	-2.304684	2.000990	-0.660058	-0.035412

1 Cointegrating Equation(s):                      Log likelihood                      -710.7382

Normalized cointegrating coefficients (standard error in parentheses)

	PROC_CHELT_I	RATA_DOB_POL	
DAT	N_PIB	_MON	SAL_MIN
1.000000	3929.644	5391.517	109.3593
	(766.103)	(1608.97)	(222.093)

Adjustment coefficients (standard error in parentheses)

D(DAT)	0.015397
	(0.01528)
D(PROC_CHELT _IN_PIB)	-0.000142
	(3.7E-05)
D(RATA_DOB_P OL_MON)	-7.24E-06
	(5.6E-06)
D(SAL_MIN)	-0.000110
	(4.5E-05)

2 Cointegrating Equation(s):                      Log likelihood                      -704.6885

Normalized cointegrating coefficients (standard error in parentheses)

	PROC_CHELT_I	RATA_DOB_POL	
DAT	N_PIB	_MON	SAL_MIN
1.000000	0.000000	-13198.30	-1871.838
		(3429.34)	(469.877)
0.000000	1.000000	4.730660	0.504167
		(1.10198)	(0.15099)

Adjustment coefficients (standard error in parentheses)

D(DAT)	0.016849	63.14178
	(0.02767)	(73.2265)
D(PROC_CHELT _IN_PIB)	-0.000231	-0.719274
	(6.5E-05)	(0.17091)
D(RATA_DOB_P OL_MON)	-3.70E-06	-0.022011
	(1.0E-05)	(0.02663)
D(SAL_MIN)	3.40E-05	-0.170042
	(7.6E-05)	(0.20106)

3 Cointegrating Equation(s):                      Log likelihood                      -702.4155

Normalized cointegrating coefficients (standard error in parentheses)

	PROC_CHELT_I	RATA_DOB_POL	
DAT	N_PIB	_MON	SAL_MIN
1.000000	0.000000	0.000000	-625.8074



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			(182.470)
0.000000	1.000000	0.000000	0.057553
			(0.07165)
0.000000	0.000000	1.000000	0.094408
			(0.02233)
Adjustment coefficients (standard error in parentheses)			
D(DAT)	-0.009308	59.67896	66.16823
	(0.03718)	(72.2917)	(132.930)
D(PROC_CHELT_IN_PIB)	-0.000249	-0.721629	-0.360009
	(8.8E-05)	(0.17089)	(0.31424)
D(RATA_DOB_POL_MON)	-1.86E-05	-0.023987	-0.061084
	(1.3E-05)	(0.02574)	(0.04733)
D(SAL_MIN)	8.67E-05	-0.163071	-1.233134
	(0.00010)	(0.19979)	(0.36737)

**Table 2**

Based on the output shown in Table 2, the Trace statistic doesn't indicate any cointegrating relation, for a significance level of 5%, as all values of Trace statistics are lower than the critical values.

**Note:** According to Stancu, **Constantin** & Stancu (2012), the information generated from the application of the Johansen test refers to "the number of cointegration relationships in a model and not in relation to variables that are cointegrated."

Following the estimation through the Error Correction Model, EViews7 generated the following output:

Vector Error Correction Estimates  
Sample (adjusted): 2003Q4 2014Q2  
Included observations: 43 after adjustments  
Standard errors in ( ) & t-statistics in [ ]

Cointegrating Eq:	CointEq1		
PROC_CHELT_IN_PIB(-1)	1.000000		
RATA_DOB_POL_MON(-1)	6.639378		
	(1.34719)		
	[ 4.92830]		
SAL_MIN(-1)	0.793608		
	(0.22975)		
	[ 3.45428]		
C	-202.0655		
Error Correction:	D(PROC_CHELT_IN_PIB)	D(RATA_DOB_POL_MON)	D(SAL_MIN)
CointEq1	-0.082209	-0.004000	-0.286950
	(0.06824)	(0.00911)	(0.06223)
	[-1.20473]	[-0.43888]	[-4.61124]
D(PROC_CHELT_IN_PIB(-1))	-0.253940	-0.012670	0.016771
	(0.17669)	(0.02360)	(0.16113)



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	[-1.43723]	[-0.53691]	[ 0.10408]
D(PROC_CHELT_IN_PIB(-2))	-0.158918 (0.17260) [-0.92073]	-0.015446 (0.02305) [-0.67005]	0.009597 (0.15740) [ 0.06097]
D(RATA_DOB_POL_MON(-1))	0.940771 (1.27052) [ 0.74046]	0.678121 (0.16969) [ 3.99618]	0.674294 (1.15862) [ 0.58198]
D(RATA_DOB_POL_MON(-2))	0.211275 (1.50096) [ 0.14076]	-0.152583 (0.20047) [-0.76112]	3.553147 (1.36877) [ 2.59587]
D(SAL_MIN(-1))	-0.014484 (0.16062) [-0.09017]	-0.001715 (0.02145) [-0.07993]	-0.165040 (0.14648) [-1.12674]
D(SAL_MIN(-2))	0.005495 (0.15555) [ 0.03533]	0.018687 (0.02078) [ 0.89944]	-0.233250 (0.14185) [-1.64430]
C	0.957751 (1.85458) [ 0.51643]	-0.228614 (0.24770) [-0.92295]	3.651947 (1.69124) [ 2.15933]
DAT	-2.00E-05 (6.0E-05) [-0.33645]	9.74E-07 (8.0E-06) [ 0.12249]	6.69E-05 (5.4E-05) [ 1.23223]
R-squared	0.149289	0.362835	0.422571
Adj. R-squared	-0.050879	0.212914	0.286705
Sum sq. resids	1232.386	21.98404	1024.871
S.E. equation	6.020518	0.804108	5.490288
F-statistic	0.745819	2.420174	3.110209
Log likelihood	-133.1578	-46.59036	-129.1935
Akaike AIC	6.611989	2.585598	6.427603
Schwarz SC	6.980612	2.954221	6.796227
Mean dependent	0.050930	-0.343023	2.777209
S.D. dependent	5.872967	0.906365	6.500706
Determinant resid covariance (dof adj.)		616.1965	
Determinant resid covariance		304.6145	
Log likelihood		-306.0026	
Akaike information criterion		15.62803	
Schwarz criterion		16.85677	

**Table 3**

Based on the results generated by Eviews7 for ECM, we can say that the degree of self-regulation at the level of the macroeconomic system is of approximately 0.002%, based on the loans made by the government.





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### **Conclusions**

According to the study presented, the too low - and therefore insignificant - rate of economic system adjustment by means of governmental loans will induce an increasingly pronounced sovereign rate in Romania.

In the case of Romania, the strategies for maintaining the national economy at a minimum necessary survival condition by making loans are not sustainable in the long term, but only in the short term.

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**CONSIDERATIONS ON THE INFLUENCE OF THE  
OVERRELIANCE ON NATURAL RESOURCES EXPLOITATION ON  
ECONOMIC DEVELOPMENT**

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**Abstract:**

The reliance of a country's economic development on the exploitation and export of natural resources does not automatically generate problems, but a resource based development model does not promote sustainable development, as it generates a higher dependence of the economy on the exploitation of raw materials, with lower export values than manufactured and processed goods and higher price volatility. Although the exploitation of resources may support economic growth for a number of years, they may eventually be exhausted, or their exploitation may become financially unsustainable, with negative effects on a country's economic development.

*Key words: primary commodities, natural resources, economic growth*

## **Introduction**

Although apparently countries endowed with plentiful natural resources should have an advantage on the route towards economic development, the economic data from the last half a century proved that for many of them that is not the case, leading some authors to designate the situation under the name of “commodity trap”. The reliance of a country on its primary commodities for achieving economic development is not by itself a generator of problems, as some developed countries such as Australia, Canada, Denmark, Finland, South Africa and others, owe their development (at least partially) to the exploitation and export of natural resources.

Still, the causes that differentiate these countries from those caught in the “commodity trap” are varied. A primary cause would be the reliance on the export of a few primary commodities, without making the transition to more technological intensive, higher value products. Other factors leading to the “commodity trap” may be the volatility of the prices of the primary commodities, the decreased demand for some primary commodities due to technological advances and increased production efficiency, the strong and uneven competition from the advanced countries regarding the manufactured goods and the difficult access to more advanced technologies, a narrow specialization on just a few primary commodities, the negative externalities generated by the excessive exploitation of natural resources, problems related to the weak governance and rule of law, corruption, social issues etc.

## **Natural resources exploitation and economic growth**

One of the main challenges to sustainable economic development of many emerging countries has been their reliance on the export of a few or even on a single commodity, many times raw materials. In recent years, although the negative effects of the economic crisis that started in 2008 were felt both by developed and developing economies, some of the emerging economies have been harder hit, due to the crisis effect on the commodity prices. This meant a drop in the commodity



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prices, especially for raw materials, which for many developing countries were the basis of their exports, leading to a decline in exports, diminished trade and investments, increased unemployment and slower economic growth. If the initial impact of the economic crisis took some time to propagate with some emerging economies remaining largely unaffected - as the economic growth in some developing states remained relatively untouched, such as China and India, which still had growth rates of above 5 % [1], its effects were soon felt. These effects derived from diminished market confidence, which contributed to the propagation of the crisis through diminished trade and an increased risk aversion, leading to a fall in the net capital flows to developing countries, from \$1.2 trillion in 2007 to \$363 billion in 2009 [2] and diminished investments (with cancelled infrastructure projects having a significant impact) and remittances. According to the International Monetary Fund [3] many of the poorest countries experiences the growth of incomes per head fall almost to zero, with the average real GDP/ per capita in countries from sub-Saharan Africa contracting for the first time after a decade of growth.

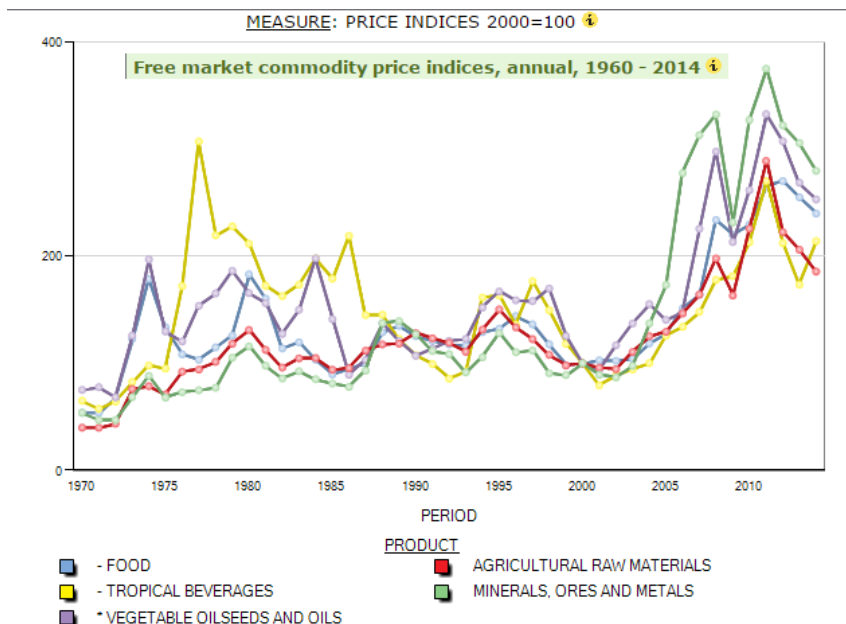


Figure 1 Free market commodity price indices

Source: <http://unctadstat.unctad.org/wds/TableViewer/chartView.aspx?ReportId=59954>

One of the results of the crisis and the subsequent economic problems was an increase in poverty, especially in countries already facing economic problems, social inequalities and a high poverty level, as many of the workers lost their jobs or have seen their working hours, wages and benefits reduced (in areas such as construction, trade, goods manufacturing). Among other effects was increased job insecurity, as a lot of people were forced to accept jobs in the underground economy, as the number of legal jobs available diminished and negative effects on small businesses and subsistence farmers. In this sense, a United Nations report of 2009 [4] the estimated that the effects of the global economic recession have increases the number of people living under the poverty line with more than 100 million people especially in poorer countries already negatively affected by the increase of the food prices in 2008.

Besides the overreliance of a country's GDP on the export of raw materials, the unsustainable exploitation of natural resources generates further social and economic problems, leading to negative long term effects on the economic development. This type of exploitation may be the result of internal factors (high poverty, lack of education, corruption and poor governance, weak rule of law) or



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external pressures. One such external pressure may come from the restrictive legislation imposed in the importing countries on the exploitation of their own resources, with timber and fishing as notable examples. In many situations, restrictions imposed on forest cutting for timber or trade restrictions on tropical timber, promoted for the positive purpose of conserving the forests, have not generated only positive results, as timber companies from many countries in which such laws have been enacted (such as India, Pakistan, Malaysia, China, and many other countries from EU, North and Latin America etc) have moved to countries with less restrictive legislations, weaker governments or higher corruption which still have exploitable forests, with negative effects on the economies, environment and security of those countries. For example, India's growing economy has been dependent, among other imported natural resources, on wood products, among which timber logs, especially from Myanmar and Malaysia, which constitute up to 88% of the country's wood imports [5]. Myanmar is one of the countries most affected by deforestation, with timber and plantation companies from China and Malaysia controlling most of the sector. At world level, illegal logging has been estimate to represent from 10% to 30% of the global timber trade, with a value of 30 to 100 billion USD per year [6].

The risks to the local and national security of a country related to the unsustainable exploitation of timber may come in various ways. They may range from the illegal cutting of natural forests, some of them of high value and targeting rare species, to illegal cutting for building materials, furniture saw wood, pulp for paper industry to the use of the wood as fuel or for charcoal, with severe economic, social, environmental and even military implications.

The economic implications may be localized (for example loss of jobs and bankruptcies of local businesses under the pressure of large foreign companies) or of national importance (through extensive tax evasion, fraud and diminished legal production and trade of timber and wood products generated by reduced forest surfaces).

In Romania, the foreign companies involved in timber exploitation have registered significant increases in profit (even in recession conditions), through the exploitation and export of timber, with negative effects on the environment and the local population and businesses. The three main foreign companies controlling the market reap the benefits from their higher productivity and lower local wages export timber or selling the wood to local furniture producers. In 2014, the price for timber has risen, as a result, with 30%, while the price of furniture has risen only with 2-3%, pushing many of the small and medium local producers out of business (both due to unsustainable raw material prices, but also due top shortages of raw materials, as most of the timber is exported directly). The situation affects more that just the local communities, as the exported timber brings a lower added value than manufactured products to a country's GDP.

In respect to the military and security implications, logging has often been the center of a vicious circle, in which the exploitation of forests funded terrorist groups and military campaigns, followed by military campaigns being fought in order to gain control over more forest areas to be exploited. In many African countries with civil wars and conflicts (Somalia, Mali, Sudan, Democratic Republic of Congo, Central African Republic, Liberia etc), rebel and militia groups may extract from illegal charcoal trade resulting from heavy logging between 111 million and 289 million USD each year [7].

The situation is by no means restricted to the African continent, as the case of Cambodia is a reference example of the vicious circle of illegal exploitation of resources and conflict. After the cut in the Khmer Rouge financing from the communist block after the end of the cold war, both the group and the government forces found sources of financing of their operations, but also for personal gains, by the exploitation of natural resources such as timber and precious gems. The natural resources fueled the continuation of the conflict, resulting in devastating implications on the environment, not to mention the economic and social impact. For instance, the forest covered surface of the country



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decreased dramatically, from 73% in 1969 to 30% in 1995 [8] as a result of logging and destructive agricultural practices used by the impoverished population. Thai companies, though the official Thailand policy was of non-cooperation with the Khmer government, contributed to the conflict through the very lucrative timber trade, which supplied US\$10 million - US\$20 million per month [9] to the Khmer forces. Far from generating just an environmental disaster, the situation has significant social and economic implications, as the local population could no longer use the forest and nearby agricultural land due to fighting, armed rebels or landmines. The government armed forces gained almost complete control over the country's forests, leading to extensive logging operations for personal profit which increased insecurity and weakened the state budget revenues.

Deforestation and war create a vicious circle in which conflict and negative social and economic influence can be exported beyond the borders of a specific country. In Cambodia's case, Vietnam and Thailand had an important influence in deforestation, as due to their high rates of deforestation, they focused their attention on their neighbor, in order to satisfy their internal timber demand. In Liberia, the dictator Charles Taylor first funded the invasion of the neighboring Sierra Leone by the rebel group Revolutionary United Front (at some point, the rebel group gaining 125 millions USD annually from the illicit diamond trade), in order to control the profitable diamond fields, and after this source of financing ran out, he turned to another source of revenue, Liberian timber, which fueled a bitter internal civil conflict for a few more years, with devastating effect on the country's economy. Although accurate reports are difficult to obtain, according to some sources, the revenues from the exploitation of the country's timber were in 2000 of at least 106 million USD, with only 7 million USD registered as revenue to the state budget (a staggering 94% of the revenues from timber being diverted from the state's GDP).

Another issue related to the overreliance on natural resources to generate economic growth derives from the unequal allocation of the wealth resulting from the exploitation of the raw materials among the members of the society. As natural resources tend not to be distributed evenly over a country's territory, this leads to differences in economic development between various regions of a country, but also to differences in wealth allocation may arise between various ethnic groups, between people living in cities and in the countryside, between those with higher incomes and those with lower incomes etc. Regardless of the specific type of differentiation, the crucial issue in a conflict free and sustainable exploitation of natural resources is a correct estimation of both the costs and benefits of a decision in this respect, both on short term and long term, and also on how these benefits and costs are going to be spread between the components of the society, as the higher the disparities and the inequality, the higher the resentments and the probability for tensions and conflict. Obviously, cutting down on the social, environmental and economic costs of a decision regarding natural resources exploitation is the correct way ahead, but many countries (even in the situation when various interest groups are not influencing the decision for personal gains) are faced with the difficult decision of choosing between short term benefits and long term (sometimes huge, but more difficult to quantify) costs.

## **Conclusion**

A resource based development model is not very beneficial for the long term economic development of a country, as it promotes a higher dependence of the economy on the exploitation of raw materials, with lower export values than manufactured and processed goods and higher price volatility. Also, although the exploitation of resources may support economic growth for a number of years, on the long run (or even medium run, for resources such as timber) they may eventually be exhausted, or their exploitation may become financially unsustainable.



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Even in cases when the resource based development model is beneficial for the country (the case of powerful emerging economies such as China, India, Brazil etc), it may generate additional costs at even global level (through pollution, destruction of the environment, use of agricultural land for other purposes etc).

Nations need to realize that, beyond the measures that can be taken internally to diminish the dependence on natural commodities, global sustainable development also depends on their willingness to engage in international cooperation, as often countries lack the ability to achieve these purposes solely with its own resources, they need to reduce the costs, ensure the legitimacy of policies and share the responsibility with other countries [10].

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## **NATO STRATEGIC AIRLIFT CAPABILITIES A COMPARATIVE ANALYSIS**

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Ministry of National Defense /Romania

### **Abstract**

The Strategic airlift has been a long-standing critical shortfall for the NATO Alliance. At the Riga summit, NATO Heads of State and Governments noted the need for “*forces that are fully deployable, sustainable and interoperable and the means to deploy them.*” They also endorsed several initiatives to increase strategic airlift, including the SAC, the Strategic Airlift Interim Solution (SALIS), and offers to coordinate support structures for A-400M strategic airlift, which seven allies are planning to acquire beginning in 2010. All these initiatives are now encompassed by a new concept developed at Chicago Summit in May 2012 – *Smart Defence*.

**Keywords:** NATO, strategic airlift, capabilities, project

### **Introduction**

The Strategic airlift has been a long-standing critical shortfall for the NATO Alliance. At the Riga summit, NATO Heads of State and Governments noted the need for “*forces that are fully deployable, sustainable and interoperable and the means to deploy them.*” They also endorsed several initiatives to increase strategic airlift, including the SAC, the Strategic Airlift Interim Solution (SALIS), and offers to coordinate support structures for A-400M strategic airlift, which seven allies are planning to acquire beginning in 2010. All these initiatives are now encompassed by a new concept developed at Chicago Summit in May 2012 – *Smart Defence*.

The term Smart Defence was coined by the current NATO Secretary General, and he has invested a lot of personnel and political capital to developing it. NATO Secretary General Anders Fogh Rasmussen publicly started to use the term “Smart Defence” at the beginning of 2011, giving several speeches in which he endorsed the development of multinational cooperation, economic planning and regional approaches to build improved Alliance capabilities. In an article in the July/August 2011 edition of *Foreign Affairs*, wrote:

*“Smart Defence is about building security for less money by working together and being more flexible. That requires identifying those areas in which NATO allies need to keep investing. (...) Smart Defence also means encouraging multinational cooperation. Nations should work in small clusters to combine their resources and build capabilities that can benefit the alliance as a whole. Here NATO can act as a matchmaker, bringing nations together to identify what they can do jointly at a lower cost, more efficiently and with less risk.”*

Multinational projects are a concrete illustration of the Smart Defence initiative, a new way of cooperation among NATO nations. As defence budgets are under pressure, Smart Defence represents a renewed emphasis on multinational cooperation in order to provide cost-effective security in a period of economic austerity.

*“The financial crisis is one more reason why we should strive for greater cooperation between the European Union and NATO. The benefit is clear. If we work together, then both our institutions can emerge stronger from these times of economic difficulty,”* explained NATO Secretary General Anders Fogh Rasmussen, addressing the chairmen of parliamentary committees on foreign affairs from across the EU in April 2012.



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This paper is an attempt to represent a successful examples of longstanding cooperation between nations in order to achieve a common goal: *strategic airlift capabilities*, and also a comparative analysis of the programmes initiated to support these capabilities.

## Strategic Airlift Capabilities

### Strategic Airlift Interim Solution (SALIS)

#### Programme background

During their annual spring meeting in Brussels in June 2003, NATO Ministers of Defence signed letter of intent on strategic air- and sealift, at that time eleven nations signed the letter of intent on airlift. One year later on 28 June 2004, during Istanbul Summit, Defence Ministers of 15 countries: Canada, the Czech Republic, Denmark, France, Germany, Hungary, Luxembourg, the Netherlands, Norway, Poland, Portugal, Slovak, Slovenia, Spain and Turkey, signed a memorandum of understanding to achieve an operational airlift capacity for outsize cargo by 2005, using up to six Antonov An-124-100 transport aircraft.

In January 2006, the 15 countries signed a contract with Ruslan SALIS GmbH, a subsidiary of the Russian company Volga Dnepr, based in Leipzig.

In March 2006, the 15 original signatories were joined by Sweden at a special ceremony in Leipzig to mark the entry into force of the multinational contract. The contract's initial duration was for three years but this has been extended until the end of 2014 with option to be extend until December 2017.

The SALIS contract provides two Antonov An-124-100 aircraft on part-time charter, two more on six days' notice and another two on nine days' notice. The countries have committed to using the aircraft for a minimum of 1859 flying hours per year and for 2000 flying hours per year for 2013 and for a minimum of 2450 flying hours for 2014. Additional aircraft types i.e. IL-76 and An-225 are included in contract but its use is subject to availability.

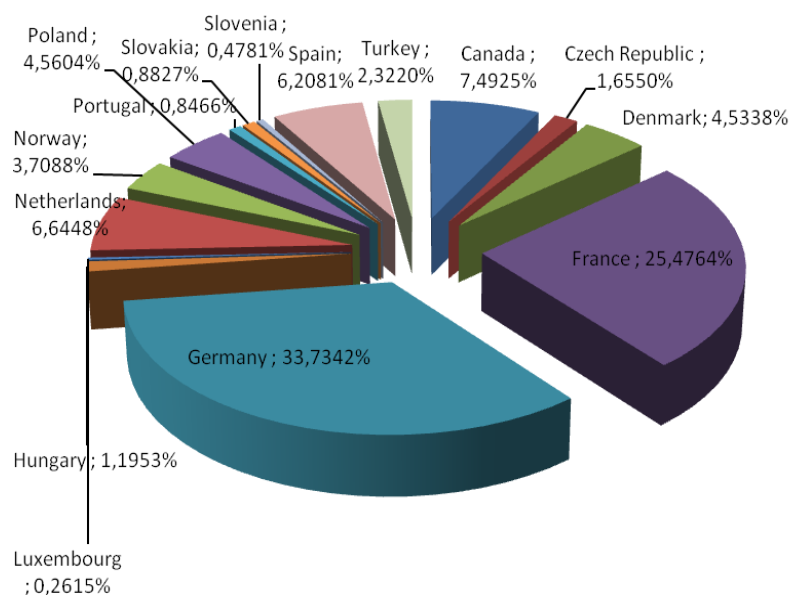


Fig.1 SALIS Programme participants (based on 2012 MoU)





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Volga-Dnepr and Ukraine's ADB provide the SALIS aircraft and also provide AN-24-100 aircraft to support Afghanistan mission, with weekly sorties from Europe to Afghanistan and back, under contractual arrangement with NATO Support Agency (NSPA).

The capabilities of SALIS will play a big role in on-going Afghanistan re-deployment.

Strategic airlift co-ordination is carried out by the SALIS Co-ordination Cell collocated with but not part of the Movement Coordination Centre Europe (MCCE) in Eindhoven, the Netherlands.

Following Russia's annexation of Crimea in March 2014, NATO foreign ministers announced on 1 April a decision “to suspend all practical civilian and military cooperation between NATO and Russia.” A North Atlantic Council meeting at the level of foreign ministers on 24-25 June 2014 decided to maintain the suspension, as did the NATO Summit meeting in Wales 4-5 September. One area thus far unaffected by this decision is cooperation with Russian commercial air services providing heavy airlift support for NATO- and EU-led military and humanitarian relief operations as well as for members' national military requirements.

The decision to rely on charters of Russian and Ukrainian transport aircraft to satisfy the heavy airlift requirements of NATO and EU military forces was determined primarily by the significant advantages offered by the An-124 in comparison with other large cargo aircraft. The An-124 has nearly twice the payload capacity and greater range than a Boeing C-17, and it is more cost effective to operate. It can load and unload cargo from both ends and its ability to “kneel” for front-end loading and its built-in cranes and winches make rapid turnarounds possible even at underdeveloped airfields.

The contract for lease of the An-124-100 Ruslan was recently extended until the end of 2016. Under the terms of the contract, two An-124-100 Ruslan aircraft are permanently based in Germany and four are provided to the customer on demand. The partners and the NATO Maintenance and Supply Agency (NAMSA) signed a three-year contract (with the option of extension) worth EUR 600 million for transportation of cargo on behalf of NATO and the European Union in late 2005. The contract was extended by two years in late 2008, in 2010, and in 2012.

#### **An-124-100 Technical specifications**

The AN-124-100 commercial aircraft has been developed on the basis of the AN-124 “Ruslan” heavy military transport aircraft. It is the biggest serial heavy lifter in the world. It is intended for the transportation of heavy and oversized cargo and various special-purpose vehicles. In 1992, ANTONOV obtained the Type Certificate for the AN-124-100. The aircraft meets the noise level requirements of Part III, Appendix 16, of the ICAO regulations, requirements relating to emissions of aviation engines, accuracy of piloting, flights under conditions of short vertical separation spacing, etc.

The AN-124-100 has a double-deck fuselage layout. On the upper deck, there is the cockpit and relief crew compartment and the cargo attendants' cabin. The lower deck is a pressurized cargo compartment. The construction and dimensions of the forward and rear cargo doors, closed with ramps, ensure quick and easy loading/unloading operations. The onboard ceiling mounted cranes allow loading/unloading without ground equipment. The multi-wheel landing gear with rough-field capability, two APUs and mechanized loading enable independent operation of the aircraft from poorly equipped airfields. Simplicity, reliability and safety of the aircraft operation are ensured by the redundancy and computerization of its systems.



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**Primary Function:** Transport aircraft  
**Prime Contractor:**  
**Power Plant:** Four Ivchenko Progress D-18T  
Turbofans  
**Thrust:** 229.5 kN (51600 lbf), each engine  
**Wingspan:** 240 feet (73.3 meters)  
**Length:** 226 feet (68.96 meters)  
**Height:** 68 feet 2 inch (20.78 meters)  
**Cargo Compartment:** length, 36,5 meters;  
width, 6,4 meters; height, 4,4 meters  
**Speed:** 865 km/h  
Service Ceiling: 35,000 feet at cruising speed  
(12,000 meters)  
**Range:** 4,500 km (with maximum payload)  
**Crew:** Six  
**Payload:** 150,000 Kg (330,695 lb.)  
**Maximum Takeoff Weight:** 405,000 Kg (892,875 lb.)  
**Unit Cost:** \$80 million  
Date Deployed: June 1986  
**Inventory:** 56

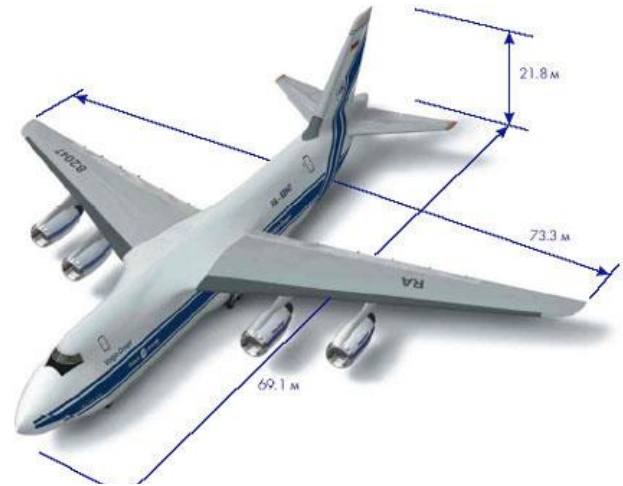


Fig.2 An-124-100 main dimensions

### **Strategic Airlift Capabilities (SAC)**

#### **Programme background**

The Strategic Airlift Capabilities (SAC) concept started at NATO HQ in mid-2006. NATO officials and national representatives envisaged a partnered solution that would satisfy a need for strategic airlift for members' states without the economic resources to field a permanent capability. Originally this idea was called the NATO Strategic Airlift Capabilities (NSAC). In October 2006 the first non-NATO nation joined the initiative and the concept changed its name to SAC and moved outside the Alliance.

On 23 September 2008 ten NATO members (Bulgaria, Estonia, Hungary, Lithuania, the Netherlands, Norway, Poland, Romania, Slovenia and the United States) and two NATO Partnership for Peace (PfP) nations (Finland and Sweden) have signed the Memorandum of Understanding and Strategic Airlift Capability programme was borne.

After its establishment, SAC proceeded quickly from an idea into an operational airlift initiative.

On 14 July 2009, Strategic Airlift Capability received its first C-17 aircraft, bearing the registration SAC 01. The remaining two aircraft, SAC 02 and 03, were delivered in the following months and operations with the Heavy Airlift Wing started immediately thereafter at Pápa Air Base.

In November 2012 the Heavy Airlift Wing achieved Full Operational Capability (FOC). The unit was then considered fully capable of missions containing air refueling, single ship airdrop, assault landings, all-weather operations day or night into low-to-medium-threat environments, limited aeromedical evacuation operations and utilizing C-17 air-land and air-drop mission capabilities.

Since 2009 the Strategic Airlift Capability has supported a variety of operations at its 12 member nations' requests including the International Security Assistance Force (ISAF, 2009 – 2014) and the Resolute Support Mission (RSM, 2015 –) in Afghanistan, NATO operations in Libya (2011), UN Multidimensional Integrated Stabilization Mission in Mali (MINUSMA, 2013–), the European Union military operation EUFOR RCA (2014 – 15) and the UN mission MINUSCA in the Republic of Central Africa (2015 –).



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Strategic Airlift Capability has also participated in the logistics support provided to the investigation of the 2014 Malaysia Airlines MH17 crash in Ukraine.

In addition to the above operations, significant humanitarian operations supported include earthquake relief in Haiti (2010) and flood relief in Pakistan (2010).

Although the Strategic Airlift Capability relies on certain NATO support structures, it transcends the military and political alliances like the NATO and the European Union. The governing bodies of the program are the Strategic Airlift Capability Steering Board and the NATO Airlift Management Programme Board that consists of representatives of the member nations.

The SAC Steering Board exercises overall responsibility for the guidance, execution and oversight of the Strategic Airlift Capability in accordance with the SAC Memorandum of Understanding. It formulates SAC requirements and communicates them to the NAM Programme Board for execution.

The Strategic Airlift Capability has a lifespan of a minimum of 30 years and its member nations have committed to constant development of the program and its capabilities.

According to the Strategic Airlift Capability Memorandum of Understanding, SAC nations have access to 3,165 annual C-17 flight hours produced by the Heavy Airlift Wing. The hours are divided among nations according to a pre-agreed share.

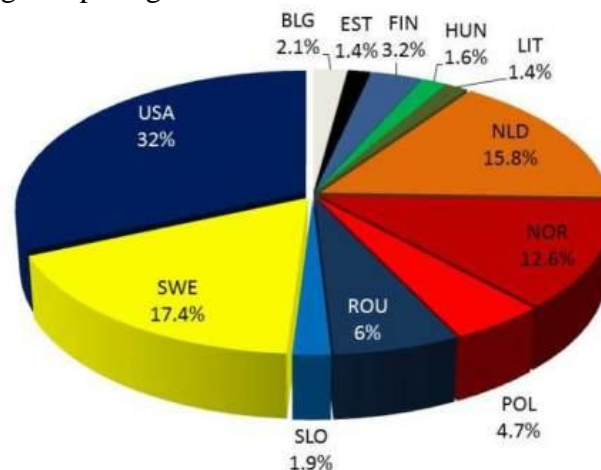


Fig.3 SAC participants based on 2008 MoU

The Strategic Airlift Capability is widely seen as a groundbreaking initiative in the field of smart defense and pooling and sharing of defense capabilities.

SAC C-17s are operated by the Heavy Airlift Wing (HAW), the operational arm of the program. The wing is manned with personnel sent by the 12 SAC member nations making it the first operational multinational military airlift unit in the world.

The aircraft and supporting equipment operated by the Heavy Airlift Wing are owned by the NATO Airlift Management Programme on behalf of the SAC Nations.

The NAM Programme is the legal entity of SAC and an integral part of the NATO Support and Procurement Organization, and consists of a Programme Board and a Programme Office. The NAM Programme Office is executing the ownership roles of the NAM Programme and related responsibilities for the assigned aircraft and other assets, and performs configuration / sustainment management of the C-17 weapon system. In addition, it contracts on a competitive basis logistics support identified by the Commander of the HAW, administers approved operations budgets for the HAW and provides legal, procurement and information technology services for the wing.

The symbiotic relationship between NAM and SAC can simply be described as one between a customer (SAC) and a provider (NAM Programme).



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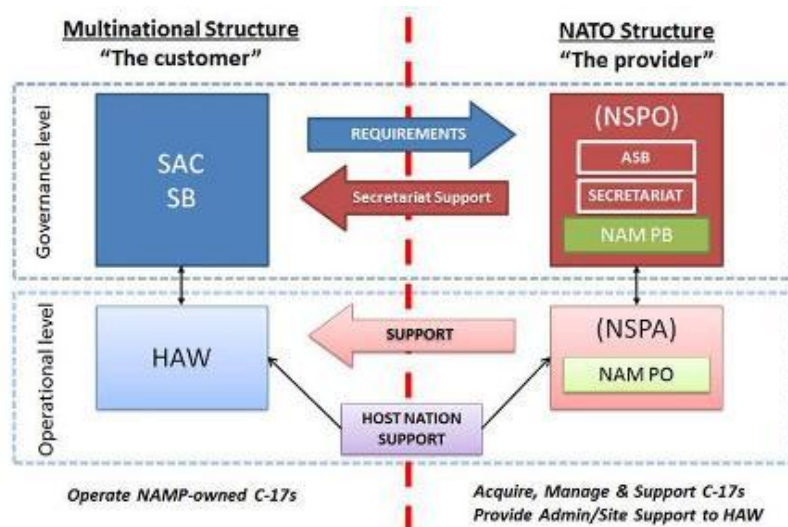


Fig.4 Relationship diagram between NAMP and SAC

Besides these two main product lines, support is provided in the field of Information Systems, Legal Affairs and Organizational Development.

Strategic Airlift Capability relies on a partnership also in the technical support of the C-17 aircraft. The manufacturer of the C-17, the Boeing Company, is contracted through the Foreign Military Sales (FMS) program of the United States Government by the NAM Programme Office. Boeing is responsible for the maintenance of SAC aircraft and support equipment, engineering and technical support and the management and supply of C-17 spare parts. For this purpose Boeing has based a Field Services Integrated Product Team at the Pápa Air Base.

As of March 2015, the Strategic Airlift Capability C-17 fleet has achieved over 15,000 flying hours, flown over 1,100 missions, delivered over 105 million pounds (over 47,000 tons) of cargo and carried over 60,000 passengers.

### **C-17 Globemaster III Technical specifications**

The C-17 Globemaster III is the newest, most flexible cargo aircraft to enter the airlift force. The C-17 is capable of rapid strategic delivery of troops and all types of cargo to main operating bases or directly to forward bases in the deployment area. The aircraft can perform tactical airlift and airdrop missions and can transport litters and ambulatory patients during aeromedical evacuations when required

The ultimate measure of airlift effectiveness is the ability to rapidly project and sustain an effective combat force close to a potential battle area. Threats to U.S. interests have changed in recent years, and the size and weight of U.S.-mechanized firepower and equipment have grown in response to improved capabilities of potential adversaries. This trend has significantly increased air mobility requirements, particularly in the area of large or heavy outsize cargo. As a result, newer and more flexible airlift aircraft are needed to meet potential armed contingencies, peacekeeping or humanitarian missions worldwide. The C-17 is capable of meeting today's demanding airlift missions.

The aircraft is powered by four, fully reversible, Federal Aviation Administration-certified F117-PW-100 engines (the military designation for the commercial Pratt & Whitney PW2040), currently used on the Boeing 757. Each engine is rated at 40,440 pounds of thrust. The thrust reversers direct the flow of air upward and forward to avoid ingestion of dust and debris. Maximum use has



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been made of commercial off-the-shelf equipment, including Air Force-standardized avionics.

The aircraft is operated by a crew of three (pilot, co-pilot and loadmaster), reducing manpower requirements, risk exposure and long-term operating costs. Cargo is loaded onto the C-17 through a large aft door that accommodates military vehicles and palletized cargo. The C-17 can carry virtually all of the Army's air-transportable equipment.

Maximum payload capacity of the C-17 is 170,900 pounds (77,519 kilograms), and its maximum gross takeoff weight is 585,000 pounds (265,352 kilograms). With a payload of 169,000 pounds (76,657 kilograms) and an initial cruise altitude of 28,000 feet (8,534 meters), the C-17 has an unrefueled range of approximately 2,400 nautical miles. Its cruise speed is approximately 450 knots (.74 Mach). The C-17 is designed to airdrop 102 paratroopers and equipment.

The design of the aircraft allows it to operate through small, austere airfields. The C-17 can take off and land on runways as short as 3,500 feet (1,064 meters) and only 90 feet wide (27.4 meters). Even on such narrow runways, the C-17 can turn around using a three-point star turn and its backing capability.

**Primary Function:** Cargo and troop transport

**Prime Contractor:** Boeing Company

**Power Plant:** Four Pratt & Whitney F117-PW-100 turbofan engines

**Thrust:** 40,440 pounds, each engine

**Wingspan:** 169 feet 10 inches (to winglet tips) (51.75 meters)

**Length:** 174 feet (53 meters)

**Height:** 55 feet 1 inch (16.79 meters)

**Cargo Compartment:** length, 88 feet (26.82 meters); width, 18 feet (5.48 meters); height, 12 feet 4 inches (3.76 meters)

**Speed:** 450 knots at 28,000 feet (8,534 meters) (Mach .74)

**Service Ceiling:** 45,000 feet at cruising speed (13,716 meters)

**Range:** Global with in-flight refueling

**Crew:** Three (two pilots and one loadmaster)

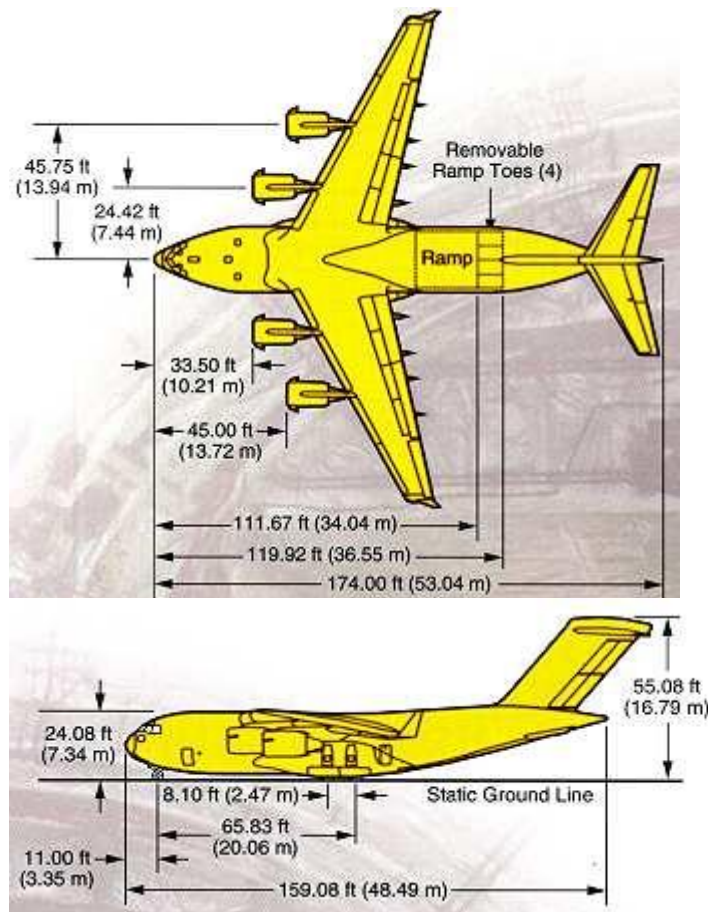


Fig.3 C-17 main dimensions

**Aeromedical Evacuation Crew:** A basic crew of five (two flight nurses and three medical technicians) is added for aeromedical evacuation missions.

Medical crew may be altered as required by the needs of patients

Maximum Peacetime Takeoff Weight: 585,000 pounds (265,352 kilograms)

**Load:** 102 troops/paratroops; 36 litter and 54 ambulatory patients and attendants; 170,900 pounds (77,519 kilograms) of cargo (18 pallet positions)

**Unit Cost:** \$202.3 million (fiscal 1998 constant dollars)

**Inventory:** Active duty, 187; Air National Guard, 12; Air Force Reserve, 14; SAC, 3; UK, 6;



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Canada, 4; Australia, 4; Qatar, 2; India, 6 (4 more on order)

**A-400M Programme**

**Programme background**

After years of waiting, on May 2003 eight European countries (France, Germany, Spain, Italy, the UK, Turkey, Belgium, and Luxembourg) have signed one of the most ambitious contracts to fulfil their need of tactical and strategic airlift and also to replace their aged fleet of C-130 and C-160 Transall. The contract was signed between Airbus and the newly created European procurement agency OCCAR for 212 aircraft. After Italy withdrew its order the number of aircraft ordered was reduced to 180 with deliveries to start in 2009 and continuing until 2020.

Airbus Military SL of Madrid, a subsidiary of Airbus Industry, is responsible for management of the A400M programme. Other companies with a share in the programme are: BAE Systems (UK), EADS (Germany, France and Spain), Flabel (Belgium) and TUSA Aerospace Industries (Turkey). Final assembly took place in Seville, Spain.

In January 2009, EADS postponed the first deliveries of the A400M until 2012 and proposed to develop a new approach for the A400M to discover new ways to advance the programme.

2009 continued to be a troubled year for the A400M as estimates on the cost overrun of the project were released with predictions of up to €11.2bn over budget.

In November 2010 Belgium, Britain, France, Germany, Luxembourg, Spain and Turkey agreed to lend Airbus €1.5bn and proceed with the programme, however Germany and the UK reduced the number of aircraft ordered to 53 and 22 respectively, taking the total down to 170. With the contract signed by Malaysia in 2005, for purchase of four A400M, the total firm orders for the A400M stand at 174 aircraft.

First deliveries will be to the French Air Force and will take place in the second quarter of 2013. Deliveries are expected to conclude in 2025.

Date	Country	Order	Entry into service date (first delivery)	Notes
27 May 2003	Germany	53	Dec.2014	Order reduced from 60 to 53, and will try to resell 13
	France	50	August 2013	
	Spain	27	Expected 2016	Requirement reduced to 14 aircraft and will try to resell 13
	United Kingdom	22	Nov. 2014	Order reduced from 25 to „at least 22”
	Turkey	10	April 2014	A400M deliveries to be completed by 2018.
	Belgium	7	Expected 2018-2020	
	Luxembourg	1	Expected 2019	
8 Dec 2005	Malaysia	4	March 2015	
<b>TOTAL</b>		<b>174</b>		

**Table 1 – A400M Programme participants**



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### A400M Technical specifications

The A400M is the most versatile airlifter currently available responding to the most varied needs of world Air Forces and other organizations in the 21st century.

It can perform three very different types of missions:

- [tactical missions](#) directly to the point of need
- long range [strategic/logistic](#) missions
- air to air refueling “tanker”

Powered by four unique counter-rotating Europrop International (EPI) TP400 turboprop powerplants, the A400M offers a wide flight envelope in terms of both speed and altitude. It is the ideal airlifter to fulfill the most varied requirements of any nation around the globe in terms of military, humanitarian and any other “civic” mission for the benefit of society.

The A400M has been rigorously designed to meet the equipment transport needs of modern armed forces. The A400M can perform missions which previously required two - or more - different types of aircraft, and which even then provided an imperfect solution. Its fuselage external width of 5.64 meters / 18 ft 6 in is equal to that of the A330/A340 wide-body. Its cargo hold has an inside usable width of four meters / 13ft, height of up to four meters / 13ft, and usable length of 17.71 meters / 58 ft.

With a maximum payload of up to 37 tones (81 600 lb) and a volume of 340 m<sup>3</sup> (12 000 ft<sup>3</sup>), the A400M can carry numerous pieces of [outsize cargo](#) including, vehicles and helicopters that are too large or too heavy for previous generation tactical airlifters, for example, an NH90 or a CH-47 Chinook helicopter, or two heavy armored vehicles for military purposes. It can also carry a heavy logistic truck, or a rescue boat, or large lifting devices, such as excavators or mobile cranes needed to assist in disaster relief.

The A400M has been specifically designed for low detectability, low vulnerability and high survivability. Its high maneuverability, its enhanced low level flight capability, its steep descent and climb performance, as well as its short landing and take-off performance, its damage tolerant flight controls, its armored cockpit and bullet-resistant windscreens, the use of inerting gas in the fuel tanks as well as the segregated routing of hydraulics and wiring give it excellent self-protection and survivability. With its minimal infra-red signature EPI TP 400 turboprops, highly responsive fly-by-wire flight controls, four independent control computers, comprehensive defensive aids, and damage tolerant controls, the A400M is hard to find, hard to hit and hard to kill.

**Primary Function:** Military transport aircraft

**Prime Contractor:** Airbus Company

**Power Plant:** Four Europrop TP400-D6 turboprop

**Thrust:** 8,250kW (11,060 hp) each engine

**Wingspan:** 42,4 meters

**Length:** 45,1 meters

**Height:** 14,7 meters

**Cargo Compartment:** length, 17,71 meters on flat floor, 5,40 meters on ramp; width, 4 meters; height, 3,85 meters)

**Load:** 116 troops/paratroops (with the addition of two fully removable rows of centerline seats; 66 stretchers medical evacuation; 81,571 pounds (37,000 kilograms) of cargo (9 pallet positions)

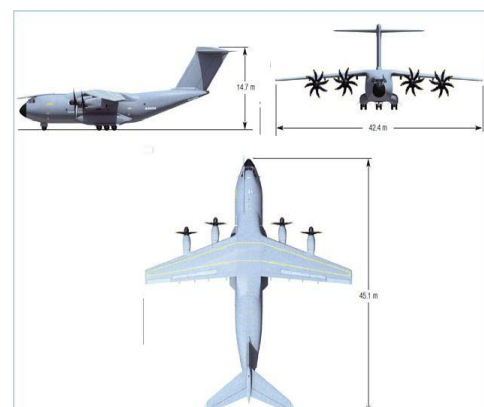


Fig.6 A400M main dimensions



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**Speed:** max. cruise speed 780 km/h

**Service Ceiling:** 11,278 meters max.

**Unit Cost:** about £140 million; or about \$192 million.

**Inventory:** Active duty, 11; France, 6; Germany, 1; United Kingdom, 1; Turkey, 2; Malaysia, 1;

### **Comparative Analysis**

#### **Economical Consideration**

Demand for military airlift capability has risen sharply over the past years, and European armed forces are resorting to a range of aircraft to fill the gap. This study presents three different solutions taken by EU nations in order to fulfil their need of strategic airlift. Each solution represents a different approach and the results are quantified differently.

The SALIS Programme is similar with a lease contract for which fifteen EU nations have contracted an airlift capabilities with intend to close the existing gap for strategic airlift for outsized cargo in the most cost efficient manner. Their purpose was mainly driven by rapid deployment of equipment in support of NATO and EU operations. Through the contract, the contractor will provide assured access for up to six An-124-100 aircraft no later than six days after notifications. In such case these six aircraft will be available for up to twenty consecutive days and able to fly a minimum of 800 flying hours.

Following Russia's annexation of Crimea in March 2014, NATO foreign ministers announced on 1 April a decision “to suspend all practical civilian and military cooperation between NATO and Russia.” A North Atlantic Council meeting at the level of foreign ministers on 24-25 June decided to maintain the suspension, as did the NATO Summit meeting in Wales 4-5 September. One area thus far unaffected by this decision is cooperation with Russian commercial air services providing heavy airlift support for NATO- and EU-led military and humanitarian relief operations as well as for members' national military requirements.

SALIS Programme proved the participants expectation and seems to be the most cost effective interim solution to satisfy the needs of strategic airlift, the only issue arise is that the contracted capabilities do not permit operational or tactical airlift to be contracted.

The national cost share for SALIS Programme covers both administration and operating costs. Participants of the SALIS agreement each have an annual allocation of hours and each nation prepays a portion of those total allocated hours. For FY 2005/06 – 2009/10, the cost of programme was \$3,835,184.

The Strategic Airlift Capability (SAC) was a new concept for NATO when initiated a few years ago. The successful establishment of SAC can be largely explained by its concept, consisting of pooling resources in order to acquire maximum airlift capability for many nations, in a restrictive budgetary environment. The sound concept on which programme has been founded matches perfectly the new NATO strategy, investing in more flexible and mobile armed forces, while capitalizing on collaborative defense projects and avoiding capabilities duplication.

Ten NATO member countries (Bulgaria, Estonia, Hungary, Lithuania, the Netherlands, Norway, Poland, Romania, Slovenia, and the United States) and two Partnership for Peace nations (Finland and Sweden) established SAC by signing the SAC Memorandum of Understanding (MoU).

By comparison, the countries that signed the SAC MoU have committed themselves to SAC for 30 years and purchased the aircraft together; they did not just contract flight hours from a commercial enterprise. Based on their initial contribution to the programme the SAC participants are entitled to a corresponding percentage of the available flight hours and therefore provides assured access to strategic airlift capability. Each participating nation owns a share of the available





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flight hours that can be used for missions without the prerequisite to consult with the other SAC Participants.

For SAC Programme participants agree that the total cost of the programme will be under the Cost Ceiling of \$5,944.1 million in the Base Year (BY) 2007, including acquisitions and operations costs. Each participant will have both an Acquisition Segment and an Operations Segment within SAC Program. Within operational Segment a distinction exists between the fixed and variable costs. Fixed costs are those directly related to the SAC Program, and are not influenced in the short term by actual versus planned Flight Hours. Variable costs are directly related to a mission performed and therefore will be paid by Participants using the actual Flight Hours. Important to be noted is the fact that within Acquisition Segment, the U.S. share will be one C-17 aircraft provided as a Non-financial contribution, the remaining two C-17 aircraft are supported by other participants based on their cost shares.

The A400M programme is a combination of political, industrial and economic reality. The A400M programme will support 10,000 European jobs, a large diverse and multinational supply chain, billions in tax revenues and re-establishes European skills in large military aircraft/turboprop design thus countering current US and Russian domination in the sector. Many people see industrial issues as either irrelevant to defence needs, but the others see the A400M as a Europe work programme and this make perfect sense from a geo-industrial perspective.

Airbus stated as of 2003 that the A400M unit cost was around \$80 million and the total cost of program was officially valued at \$17.5 billion, but the actual cost were more likely to exceed \$22 billion, and the cost per A400M aircraft was more likely to be \$120 - \$130 million. One of the bigger advantages of the A400M is that it was designed to meet the requirements of eight European Air Forces, maintenance operations in a joint industrial consortium which means an important step forward in standardization of Europe’s fleet of tactical transport. Moreover, this will provide for an improved interoperability level and the option of consolidating major

### **Tactical and Strategic Capabilities**

#### **Cargo**

Aircraft	Cargo compartment			MTO W [Kg]	Max. Payloa d [Kg]	Numbe r of pallets
	Len <sup>g</sup> t h	Width	Height			
	[m]	[m]	[m]			
C-17	26	5.48	3.76/4. 11	265.30 0	76.644	18
A400M	17.71	4	3.85/4	141.00 0	37.000	9
An-124- 100	36	6.4	4.4	405.00 0	150.00 0	

**Table 2 – Tactical capabilities**

With a maximum payload of up to 150 tones and a volume of 1050 m<sup>3</sup>, the An-124-100 has a transportation capability two times higher than C-17 Globemaster III and four times higher than A400M. Both C-17 Glomemaster III and A400M were designed for military purpose and are suitable with all of the Army’s air transportable equipment.



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**Personnel**

Aircraft	Number of pax Standard	Number of pax. Config.	Notes
C-17	102	188	
A400M	58	116	
An-124-100	24	-	No passenger on cargo area due to pressurization.

**Table 3 – Passengers capabilities**

C-17 Globemaster III is fitted with 27 seats along each side of the cargo bay, and 48 more seats can be installed in the centre of the cargo bay, providing seats for 102 fully-equipped troops. C-17 can also be configured for passenger transportation only and additional seats pallets can be loaded providing in total 188 seats available.

The A400M can also carry 116 personnel, or paratroops. Because of the width of the A400M’s fuselage, they can be seated in four rows, all along the two sides of the fuselage, and back to back along the centre-line, with enough space in between the facing rows.

Up to 24 passengers can seat in passenger compartment up-stair on An-124-100 aircraft. The cargo compartment is not pressurized therefore no troops or staff are transported there.

**Strategic Performance**

Aircraft	Maximum Range / payload	Maximum Cruise Altitude	Cruise Speed Normal	Cruise Speed	Take-off Field Length	Rate of Climb
	Km	[Ft] (m)	[Knots] (km/h)	[Knots] (km/h)	[Ft] (m)	[Ft/mi n]
C-17	5200	45000 (13716)	450 (833)	450 (833)	7600 (2300)	1500 (457)
A400M	4535	40000 (12192)	300 (555)	300 (555)		
An-124-100	4500	35000 (10668)	459 (850)	432 (800)	9186 (2799)	3300 (1000)

**Table 4 – Strategic performance**

The A400M provides a new standard of performance for tactical airlifters, and offers global reach at high speed, whilst still retaining the capability of landing at austere airfields. With a typical payload of 20 tones (44 000 lb) allowing to airlift a Cat II MRAP, 20 troops and two pallets over an operating range of 3450 nm (6400 km), the A400M provides a true strategic range capability.

With its maximum payload of 37 tones (81 600 lb) allowing to airlift a heavy mobile crane, four personnel and three military pallets, the A400M has an operating range of 1780 nm (3300 km).

Flying faster and higher, can respond more rapidly to crises, because greater distances can be flown in a one crew duty day. The A400M is hence much more efficient than its predecessors.

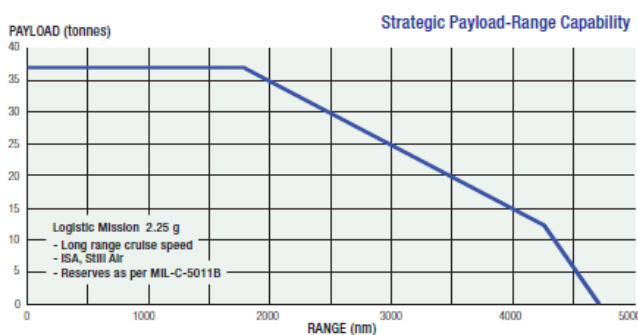


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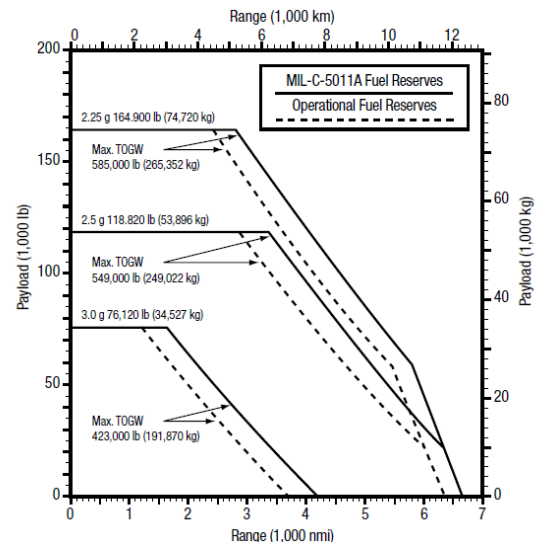


Also, as it can fly higher, it can cruise above poor weather and turbulence of found at medium altitudes, resulting in less fatigue for the crews, and passengers or troops alike.

Maximum payload capacity of the C-17 is 170,900 pounds, and its maximum gross takeoff weight is 585,000 pounds. With a payload of 130,000 pounds and an initial cruise altitude of 28,000 feet, the C-17 has an unrefueled range of approximately 5,200 nautical miles. Its cruise speed is approximately 450 knots (.77 Mach).



**Fig.7 A400M Maximum payload capacity**



**Fig.8 C-17 Maximum payload capacity**

## Tactical Performance

### Short Unpaved Airstrip Performance

Thanks to its unique short landing characteristics, the A400M is the only large airlifter that can fly equipment and personnel directly to the site of action, where these materials are urgently needed. In addition to its Europrop EPI TP400 Turboprops, which are less sensitive to ingestions than jet engines, the A400M is fitted with a twelve-wheel main landing gear and an efficient absorption of shock-loads into the airframe structure for operations from stone, gravel or sand strips, and is designed to minimize risk of foreign object damage.

The A400M is therefore able to land on, and take-off from, any short, soft and rough unprepared CBR 6 airstrip, no longer than 750 m / 2,500 ft, while delivering up to 25 tonnes / 55,000 lb of payload, and with enough fuel on board for a 930 km / 500 nm return trip. In addition to offering optimized support to deployed military operating bases, these characteristics also allow it to ensure that swift humanitarian aid can be deployed direct to a disaster region.

The C-17 can operate on small, austere airfields with runways as short as 3,000 feet (914m) and as narrow as 90 feet (27.4m) wide, and can complete a 180-degree three-point "star" turn within 80 feet (24.4m). Also, when fully loaded, the aircraft is capable of backing up a 2 percent gradient slope using the directed flow thrust reversers.

Short TakeOff and Landing (STOL) capability is achieved when the trailing-edge flaps are extended into the exhaust flow from the engines during takeoffs and landings. The engine exhaust is deflected downward by the slotted-flaps to augment the wing lift. This allows aircraft with "blown flaps" to operate at roughly twice the lift coefficient of that of conventional jet transport aircraft.



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An-124-100 is not able to use short airfields, but the multi-wheel landing gear with rough-field capability, two APUs and mechanized loading enable independent operation of the aircraft from poorly equipped airfields.

### **Autonomous Ground Operations**

Once on the ground, the A400M is designed for very rapid and autonomous cargo loading or unloading without any specialized ground support equipment. Fitted with on-board 32-tonne capable powered winch and an (optional) five tones / 11,000 lb capable crane to load directly from ground level, the cargo hold is optimized for single loadmaster operation from a computerized workstation, where the loadmaster can pre-plan loading from a loads data base. Furthermore, the A400M's landing gear can “kneel” down in order to reduce the angle of the ramp facilitate the off- and on-loading of material. This allows loading and unloading without ground assistance at the most remote and austere strips, minimizing vulnerable time on the ground. This reduces the aircraft's vulnerability to hostile action, hence increasing its survivability. The A400M can also conduct cross-loading with other strategic transports without the need to reconfigure loads in ‘hub and spoke’ operations.

The aircraft can operate into and out of problematic sites such as those surrounded by inhospitable terrain or made difficult by adverse weather conditions. The fully-integrated, electronic flight-deck and the advanced cargo-handling systems allow a basic crew of only two pilots and one air loadmaster to operate the aircraft. On the ground, the aircraft can be turned in a very small radius and its four Pratt & Whitney engines are fully reversible, giving it the ability to maneuver into and out of restricted parking or freight-offload areas at undeveloped strips. This enables the C-17 to deliver cargo to small airfields with limited parking space in a shorter time, so increasing throughput where time on the ground is kept to a minimum.

### **Air-to-air Refuelling**

#### **Air-to-air refueling systems**

Air-to-Air Refueling can be done either through two wing mounted hose and drogue under-wing refueling pods or through a centre-line fuselage refueling unit (FRU). Its built-in air-to-air refueling capability allows it to be rapidly re-configured to become a tanker. With hard points, fuel lines and electrical connections already built into the wings, it takes under two hours to convert the A400M from an airlifter into a two-point tanker aircraft.

The two hose and drogue under-wing refueling pods can provide a fuel flow of up to 400 US gal / 1,500 liters per minute to receiver aircraft. Refueling can also be done through a centre-line Hose and Drum Unit (HDU) which provides a higher fuel flow of some 600 US gal / 2,250 liters per minute. Three video cameras can also be installed, to monitor the refueling from the wing pods and the centre-line unit.

C-17 Globemaster is equipped with a boom designated for air to air refueling and doesn't have tanker capabilities.

#### **Refueling any type of aircraft and helicopter**

The A400M is the only Tanker which can refuel the entire range of probe-equipped military aircraft at their preferred speeds and altitudes. This is because it can fly both at the low speeds and low altitudes typically used to refuel helicopters (roughly 110 knots and 5000 feet), as well as at higher speeds and altitudes of about 290 knots kt and altitudes around 25,000 ft which are typically used for refuelling of fast jets, such as fighters or large aircraft (such as the C295, C-130 Hercules, Eurofighter, F/A-18 Hornet or Rafale,) or even another A400M for buddy refueling. To do so, the



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A400M receiver is equipped with a refueling probe mounted above the cockpit. This increases the range and endurance of the A400M. The probe can easily be removed when it is not needed.

### **Operational Flexibility**

#### **Air Drop**

The A400M excels in the airdrop role, being able to drop from both high and low altitudes, (as high as 40,000 ft for special forces' operations, and as low as 15ft for low level load deliveries). With the new A400M, which can carry more paratroopers than other Western-built military transport, Airbus Military is setting new standards in paradropping operations.

The A400M can accommodate up to 116 fully equipped paratroopers, carrying them to the drop zone at speeds up to 300kt, but dropping them at as little as 110kt to ensure minimum dispersion. Crucially, two streams of paratroopers can jump simultaneously from the ramp or the two side doors to further cut jumping time and scatter. Careful aerodynamic design reduces turbulence behind the aircraft and deployable baffles at the door exits protect jumpers from the airflow. The aircraft is also fitted with a winch, allowing any 'hung-up' static-line paratrooper to be safely retrieved. The type's low speed characteristics make the A400M ideal for dropping supplies from low altitude. The A400M can assure a very rapid and direct response to any occurrence, making it the ideal tactical airlifter. The A400M can airdrop up to 25 tones / 55 100 lb of containers or pallets through gravity and parachute extraction. The Computed Air Release Point (CARP) linked to the Automated Release System, automatically computes the release point for optimum delivery accuracy, including corrections for wind effects.

By 1999 the Air Force was upgrading the C-17s capability by developing a new air drop system that increased its cargo air drop capacity by 266% and reduced by 30% the total number of C-17 aircraft required for strategic brigade airdrop. The system called Dual Row Airdrop System (DRAS) delivers equipment more safely and efficiently than the older single row airdrop system. The new system allows two rows of equipment to be airdropped from the C-17s; this brings more than doubles the capacity of each C-17 and cuts in half the number of C-17s required to airdrop.

#### **Medical Evacuation**

The A400M is equipped with eight stretchers as standard which are permanently stored on board, but it can accommodate as many as 66 standard NATO stretchers and 25 medical personnel seated on troop seats. It has the range, speed, operating altitude and comfort to optimally serve the medevac role

The C-17 aircraft can transport litters and ambulatory patients during aeromedical evacuations when required. A basic crew of five (two flight nurses and three medical technicians) is added for aeromedical evacuation missions. Medical crew may be altered as required by the needs of patients. The aircraft can accommodate 36 litter and 54 ambulatory patients and attendants

### **Cost Effectiveness**

#### **Reliability**

The A400M has been designed to be the most reliable airlifter ever. By using proven Airbus commercial design concepts and tools, its availability benefits from high component reliability. Its new maintenance concept, which is largely inspired from commercial civil airliner experience, will translate into a very high dispatch reliability of 98.7 per cent at entry into service. This will dramatically reduce life cycle costs. Over twelve years of operation, the mandatory heavy



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maintenance “down-time” will only require the A400M to be on the ground for only 84 days in total.

Reliability and maintainability are two outstanding benefits of the C-17 system. Current operational requirements impose demanding reliability and maintainability. These requirements include an aircraft mission completion success probability rate of 92 percent, only 20 aircraft maintenance man-hours per flying hour, and full and partial mission availability rates of 74.7 and 82.5 percent, respectively. The Boeing warranty assures these figures will be met.

### **Life Cycle Cost and Productivity**

Thanks to its superior performance and capabilities, a fleet of eight A400Ms offers the same productivity (measured in tones per nm each year) as a fleet of eighteen previous generation tactical airlifters. The Life Cycle Cost of these eighteen previous generation tactical airlifters is 55% higher than the one of the eight A400M fleet and they are unable to transport outside loads such as helicopters or armored vehicles including Mine Resistant Ambush Protected (MRAP) vehicles, which can be transported by the A400M.

The original specification from McDonnell Douglas defined for C-17 Globemaster III a service life of 30,000 hours.

### **Conclusion**

All three programme presented in this paper are an example of multinational cooperation, where nations that are signatories to the MOUs contribute funding on a cost-share basis. The main difference between all three programmes consists on type of contract the participant nations have signed to fulfill their need of strategic airlift flying hours.

The SALIS Programme is similar with a lease contract for which participant nations have contracted up to six An-124-100 aircraft and their cost-share covers both administration and operating. The Programme proved the participants expectation and seems to be the most effective interim solution to satisfy the need of strategic airlift, but the programme is restricted in term of flexibility and control of the assets in crisis situations.

The SAC Programme is more appropriate by an off-the-shelf purchase contract for which the signatory nations have purchased their own assets and decided to share the acquisitions and operating cost in order to take advantage and to satisfy the national need of strategic airlift. The Programme is a successful example of pooling and share and matches perfectly the new NATO strategy even the programme is acting outside of NATO umbrella. By comparison with SALIS Programme for which the participants committed themselves for three years with possibility to extend the contract, the SAC MoU signatory nations have committed themselves for 30 years with the possibility of extension is the service life of C-17 Globemaster III aircraft will be extended.

The A400M Programme is a joint contract on which the participant nations have decided to invest in a new type of strategic airlift capability in order to fulfill their need of tactical and strategic airlift and also to replace their aged fleet of C-130 aircraft. The A400M Programme is also a combination of political, industrial and economic commitment through which more than 10000 European jobs will be supported and re-establishes European skills in large military aircraft industry. One of the bigger advantages of the A400M is that it was designed to meet the requirements of eight European Air Forces, which means an important step forward in standardization of Europe’s fleet of tactical transport. Moreover, this will provide for an improved interoperability level and the option of consolidating major maintenance operations in a joint industrial consortium.

Taken in consideration the capabilities used by all three programmes we conclude that, the C-17 appears to have several advantages over the Antonov in terms of performance. First, the C-17 can land on short, unpaved, austere runways, while the Antonov, mainly due to its size, is restricted to



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large airfields and long runways. Second, the Boeing aircraft has defensive aids and self-protection measures, which the An-124-100 does not, being a commercial variant of a military aircraft. Therefore, the Antonov is not suitable to operate in hostile environments. Third, the C-17 has an advantage in terms of operational and technical reliability, while the An-124 is not NATO-certified to carry passengers. On the other hand, the Antonov is twice as large as the C-17 and, therefore, can fit more loads.

The A400M's capacity puts it between the C-130 and the C-17 and way below the Antonov. The size of the A400M's cargo compartment and volumetric capacity is two thirds that of the C-17 and double that of the C-130J. But, when we talk about the performance, the A400M is the most advanced military airlifter, fully equipped and able to perform three different types of missions: tactical, strategic and air-to-air refueling. The A400M has been rigorously designed to meet the equipment transport needs of modern armed forces. The A400M can perform missions which previously required two - or more - different types of aircraft.

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**PROMOTING AND DEVELOPING INDIVIDUAL AND  
COMMUNITY EMERGENCY PREPAREDNESS AS RESOURCES  
OF INCREASING RESPONSE EFFECTIVENESS**

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**Abstract:**

It is a known fact that disasters create large humanitarian and development challenges this is why working to help individuals and communities prepare for natural disasters is a necessity to build safer and more resilient communities.

Preparing for emergency reduction should become a key part of public policy regarding disaster management by introducing programs that would ensure both individuals and communities can understand the possible causes and consequences of disasters and know the best way to act when disasters take place so that they become part of the solution rather than a part of the problem.

*Key words: emergency preparedness, disaster response, disaster relief, emergency management, individual preparedness*

**Introduction**

For most of known history the force of nature was the main cause of disasters from storms, to earthquakes, to floods, to wildfires, to volcanic eruptions the fury of nature spread and afflicted great suffering on human societies.

Later as human civilization evolved risks brought upon with the advent of technology brought new meanings to disasters from modern warfare, to nuclear fallout, nuclear accidents, industrial accidents, air crashes, naval accidents, to wars.

In our modern industrialized world artificial disasters are more common than in the centuries of the past and this while natural disasters have increased themselves as we are facing the effects of climatic changes.

We are also being faced today by a new form of disaster that threatens human civilization, disasters caused by terrorism that is real threat to the well-being of social and community development.

Disasters are one of the major challenges that society must learn to prepare for, to prevent and deal with swiftly and efficiently as disasters can affect each and every single one of us any time, anyhow and anywhere no matter how safe we think we are.

**The challenges we face**

The survival instinct is one of the most powerful that humans have and it made it possible for humanity to survive, reproduce and evolve. Each time disaster occur the people that are most affected are responding to the event before outside trained help from the government, NGO's or private companies arrive.

The way people in the affected community respond to crises and disasters can make a considerable difference in the relief efforts. They can either become part of the solution or part of the problem by acting the wrong way. Because good intentions without proper knowledge and skills are not enough.

There are also other people that want to get involved in the relief efforts but what most don't realize is that unprepared volunteers without proper training can end up by doing more harm to the relief effort than good.[1] During the 2012 massive snowfall Romanian authorities have found that aid





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was still coming, one month after the snowfall, to the affected communities while stockpiles of previously sent aid were still being held in improvised spaces [2]

This kind of logistical errors come to show that good intentions are not enough to really help those in need and that efficient relief measures can only be realized if there is a proper communication system that allows local communities to receive exactly the help and aid that is truly needed. Another problem that was observed by the Romanian media was that allegedly aid was given preferentially by the authorities to the victims of the disaster and if true this kind of actions can increase population frustration and distrust.[3]

This kind of problems can arise because the use of aid can be seen as an opportunity to increase the chances for reelection into public office or getting support for other political objectives by some of the people in the decision process. In their study about, *Flirting with Disaster the Inherent Problems with FEMA*, Russel S. Sobel and Peter T. Leeson claim that usually states represented on the congressional oversight committees for FEMA receive more money for disasters than the states not represented on those committees.[4]

As we can see there are challenges that have to be addressed in order to increase the effectiveness of disaster response. Encouraging the participation of communities by increasing the awareness and individual preparedness can become an important part of solving those challenges.

In past years we have seen a growing recognition of the need to involve the community more in the prevention efforts and even a growing number of situations in which volunteers were involved in the relief efforts. This involvement is possible because of reforms and the improvement of Romanian economy that allowed citizens and companies to donate more and thus we have seen a growing number of NGO's

some of which have as their main objective disaster prevention and relief. Having more funds allows NGO's to equip, organize courses, training's, promote themselves so that others might join or sponsor, organize simulations for their teams and become involved in some relief efforts.

Although we can see certain improvements because of the existence of organizations that put effort, time and resources into preparing their volunteer teams there are still a lot to do when it comes to public awareness and preparedness.

Romania needs to take urgent steps when it comes to prevention for disasters but also when it comes to health issues. This urgency comes in a large extent from the massive exodus of health care providers to countries where they are better paid and equipped.

According to statistics in the last eighteen years over seventeen thousand health care providers left the country, about nine thousand doctors and eight thousand nurses. What makes things worse is that according to statistics from 2012 that means one doctor for every five hundred patients.[5]

This means that in the case of a major disaster the authorities will have to be able to move qualified medical personnel quickly to the affected area. This is possible only if the population from the affected area don't block the roads and cause civil disturbance and the populations from the areas from which the medical personnel is being moved shows understanding and solidarity.

Another problem is that level of individual preparedness in Romania is not known so we can't be sure of how well individuals will be able to handle a major disaster. What we do know is that according to research made in the US people who believe themselves "prepared" for disasters often aren't as prepared as they think. [6]

Private companies can play a major role in helping communities to cope disasters by taking necessary precautions to protect their operations in order to get back to business as fast as possible after a disaster.



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Community engagement is extremely hard since there is a real need for active and efficiently organizing all the members be it professionals or volunteers. It is difficult to organize groups of people and make sure that those people can work together in a proper manner.

This is why companies can help in relief effort because they already have structure and it should be a lot easier for them to interact and work with other organizations both governmental and private then for normal individuals to start organizing themselves in the first phases of disasters.

Other major contributions that companies can have in the relief effort is bringing their unique expertise, logistics and creative way of approaching problems and thus increasing the adaptability of relief efforts.

Individual citizens could also help their community if there are mechanism that could facilitate their involvement and use them in the places where their abilities are most needed.

## **Conclusion**

Because the main objective of relief work is to help the greatest number of people in the most effective way as possible stakeholders should try to involve as many resources as possible into the process in an organized well prepared fashion.

This is why preparing for emergency reduction should become a key part of public policy regarding disaster management by introducing programs that would ensure both individuals and communities can understand the possible causes and consequences of disasters and know the best way to act when disasters take place so that they become part of the solution rather than a part of the problem.

Preparation of the public therefore has a vital role in preparing communities and ensuring safer lives and more resilient societies. Emergency management programs should have a pragmatic approach centered around community and shared responsibility in which the role of the public must be increased and they should have a seat at the decision table.

The state organizations that are in charge of emergency management and the general public must plan not for what they are capable of responding to, but rather for what can really happen.

People must be encouraged to be able to take care of themselves and their communities and thus to increase the number of lives that can be saved and the reduction of negative socioeconomic effects.

This is why the number of partnerships between state institutions and private actors should be increased as well the number of public campaigns for informing and preparing the public to deal with disasters.

Emergency management preparedness policies must change from a government-centric approach to a citizen-centric approach in which individuals, companies and communities are more involved and become part of the relief effort and overall solution.

This is why emergency management organizations must increase preparedness policies and direct them to a more inclusive approach in which both individuals and communities are more involved in the preparation and relief effort.

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**THE NATO HUMINT CENTRE OF EXCELLENCE AS  
DEPARTMENT HEAD FOR HUMAN INTELLIGENCE  
EDUCATION AND TRAINING IN NATO**

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**Abstract:**

NATO recognizes the NATO HUMINT Centre of Excellence (HCOE) as a mature organization, with a remarkable contribution to the overall development of the Human Intelligence capability within the Alliance. Another step toward improving the HCOE performance in this field has been recently accomplished; in the 2nd of September 2015, during a ceremony organized at the Headquarters Supreme Allied Command Transformation (HQ SACT), in Norfolk, Virginia, The United States of America, the HCOE officially became “Department Head for Human Intelligence Education and Training” in NATO. According to the Memorandum of Agreement signed during the event, the HCOE is responsible for matching the ACT requirements with E&T solutions, and liable for the coordination of those solutions. The importance of this status, subsequent challenges and ways to follow are further debated in this paper.<sup>11</sup>

*Key words: NATO, HCOE, Department Head, HUMINT, education, training*

**Introduction**

The NATO Secretary General document “Building Capability through Multinational and Innovative Approaches” [1] is the starting point behind a series of major changes in the way NATO addresses its capabilities` development.

Subsequent to this directive, a Multi-National Approach (MNA) Task Force (TF) led by the Allied Command Transformation (ACT) was established with the aim to identify the best options to improve the NATO capabilities at reduced costs through multinational approach and burden sharing. The whole process underwent three phases of work, focused on several areas of interest: Acquisition, Operation and Maintenance, Capability Initiatives and Organization of Forces, Innovative Solutions, and Preparation of Forces, each of them dedicated to a designed Working Group (WG):

Phase 1 - Information gathering, aiming to capture potential initiatives and liaison with other NATO TF and the EU to synchronize and de-conflict efforts;

Phase 2 - Assessment, involving interaction with nations to identify potential multinational projects;

Phase 3 - Reporting, focused on the production of this final report and associated socialization.

Within its initial workshop (WS), the Preparation of Forces Working Group (PFWG)<sup>12</sup> addressed eight proposals, one of it recommending NATO Centres of Excellence (COEs) as Hubs for Education and Individual Training (E&IT) in NATO, in their respective areas of expertise. Out of the eight proposals addressed, ACT is considered the lead for three of them – Individual Training and Education Program (ITEP), Distributed Training and Exercises (DTE), and Shared Scenarios; the Framework and Sponsoring nations are the lead for COEs as Hubs for E&IT; and four proposals required a nation volunteering to lead coordination efforts to validate the value of these projects and proposals to the Alliance and/or individual nations.

<sup>11</sup> DISCLAIMER: This paper expresses the views, interpretations, and independent position of the authors. It should not be regarded as an official document, nor expressing formal opinions or policies, of NATO or the HCOE.

<sup>12</sup> composed of military and civilian personnel from ACT, ACO, IMS, IS; PFWG presentations can be accessed on ACT portal at the following address: <https://transnet.act.nato.int/WISE/CollaboCat/Multinatio/Preparatio>



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Four COEs attended the WS and presented their initial feasibility study information: Civil-Military Cooperation (CIMIC), Cyber Defense (CCD), Defense against Terrorism (DAT) and Human Intelligence (HUMINT). Excepting CCD which did not have training capabilities, the other COEs expressed their intention to become a hub for E&IT in their field of expertise. Although MILMED did not attend the WS, it passed on their intention to also become a Hub.

It pertained to the WG to identify the requirements to become a hub for E&IT, privileges and obligations coming out of this status – a process that further involved a long process of reflection, debates, negotiation, analysis and modeling of different scenarios.

Within the final report of MNA TF released on 09 September, the project COEs as hub for Education and Individual Training has been included into the Tier 1.5 - Projects that could provide a significant benefit consistent with the intent of Smart Defence<sup>13</sup>.

This paper further examines the development of HCOE from the position of providing certified NATO HUMINT education and training to the status of Department Head for HUMINT education and training in NATO.

**The NATO HUMINT Centre of Excellence – common facts and figures**

The NATO HUMINT Centre of Excellence (HCOE) has been officially accredited in July 2010, having as mission to provide the highest quality NATO HUMINT-focused services and products in response to the requirements and needs of the NATO Command Structure (NCS), NATO Force Structure (NFS), NATO Nations, and, when feasible, Partner Nations.

The HCOE management team and subordinated sections (see fig. 1) strives to consolidate the institution position as central point of HUMINT expertise within NATO and to place it at the spearhead of all major HUMINT initiatives within the Alliance [3]. These efforts are reflected into an extensive program of work carried on in support of NATO, on four main directions: standardization, concept development and experimentation, education and training, lessons learned and analysis.

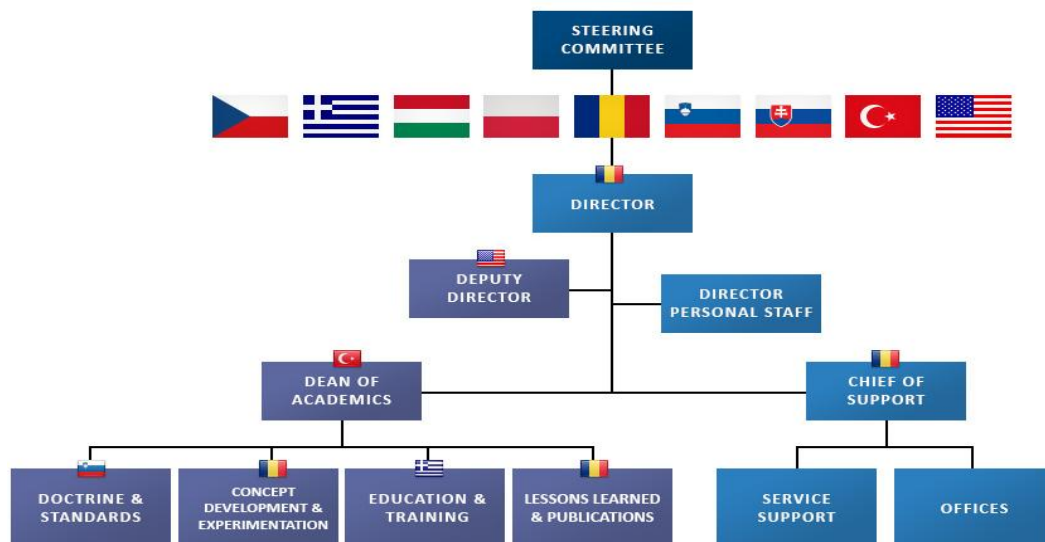


Fig.1 HCOE Organization chart [2]

<sup>13</sup> Meanwhile, ACT/JFT engaged itself to continue its work to widen this project to encompass all NATO Education and Training Facilities, Partner Training Centres and national institutions in a new Tier 1 project named 'Smart Training'. (Direct Support Team (DST) - Smart Defence, Status Report 4 on Smart Defence Multinational Projects, 20 March 2012 DI(STR)(2012)0008 REV3)



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To understand the fundamentals of HCOE candidation for HUMINT E&T Department Head capacity, it would be useful to briefly list a series of institutional achievements to date, as real enablers for a high-quality exhibition of HCOE at this level:

- the HCOE Director chairs the NATO HUMINT Working Group (NHWG) and NATO HUMINT Technology Working Group (NHTWG), which gives the HCOE a front seat to better capture operational issues and provide NATO solutions;
- HCOE is hosting and filling in key positions in the premier NATO HUMINT Exercise Steadfast Indicator, (SFIR);
- HCOE ensures custodianship for NATO HUMINT doctrine, AJP2.3, and NATO HUMINT Tactics, Techniques and Procedures, AIntP-5, and provided SME support to completion/ revision of NATO HUMINT Policy and SHAPE Directive for HUMINT, AD65-7;
- HCOE released specialty studies in support of doctrinal development and E&T process (NATO HUMINT Operator Handbook, HUMINT Support to Maritime and Air Operations) and conducts a broad range of research projects – as Human Aspects of the Operational Environment (HAOE) [4], NATO HUMINT Operator Toolset, HUMINT in Human Network Analysis & Targeting, HUMINT in the cyber environment, etc.;<sup>14</sup>
- HCOE provides HUMINT standardization, advanced and systems “train the trainer” courses;
- HCOE manages a solid HUMINT data collection – LL/BP capability.



Fig.2 The NATO HCOE – internal view

Nonetheless important, the HCOE established an impressive network serving its working relations. Beside the NATO strategic headquarters, HCOE has connections with and provide support to the Emerging Security Challenges Division – NATO HQ, the Joint Force Training Centre (JFTC), Joint Warfare Centre (JWC), Joint Analysis and Lessons Learned Centre (JALLC), NATO Special Operations HQ, NATO School Oberammergau, Joint Forces Command Naples, Joint Forces Command Brunssum, ACCI, NCIA, NATO operations HQs (KFOR, ISAF/Resolute Support) and maintains academic outreach with the US National Intelligence University, University of Oradea, Land Forces Academy, and others.

### **The NATO HUMINT Centre of Excellence – Hub for HUMINT Education and Individual Training in NATO**

The matter for the NATO HUMINT Centre of Excellence (HCOE) establishment as a Hub for HUMINT Education and Individual Training (E&IT) in NATO have started early in 2011, when the Deputy Chief of Staff Joint Force Trainer, NATO HQ SACT, advanced this proposal under the aegis

<sup>14</sup> Most of the HCOE products are classified, but there are notable research contributions available to the public, as well [5]



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of the NATO Secretary General document “Building Capability through Multinational and Innovative Approaches” [1].

The scope behind this endeavour was to increase the effectiveness and efficiency of NATO HUMINT education and training by maximizing the potential available in the HCOE, already recognized for its impetuous activity performed in multiple dimensions of the HUMINT capability. In this way, the HCOE synergy of like-minded professionals jointly tackling difficult issues creates better results in the HUMINT functional area while saving time, energy and resources.

In relation with ACT, the HCOE outlined from the incipient phase of this project that it has:

- the capability to provide basic<sup>15</sup> training to the interested Nations through a cooperative (burden sharing) multi-national venture, or complementary to their own internal training capabilities, and
- the capacity to assume the role of the NATO “central hub” for HUMINT education and training, to include Office of Primary Responsibility (OPR) and Curriculum Control Authority (CCA).

As the HCOE Steering Committee approved by decision no. 72/NOV 2011 the ACT request regarding HCOE to become Hub for HUMINT E&IT in NATO, our institution continued the work on adjusting its capabilities and procedures to the new requirements.

The initial direction and guidance (08MAR12) offered by the Deputy Chief of Staff Joint Force Trainer (JFT)/ Allied Command Transformation (ACT) regarding the E&IT programme framework was supposed to ensure the alignment of the NATO E&T development, facilitation and measurement at compatible levels of quality and accreditation with a diverse, global education and training system.

In this respect, a series of key elements of the E&T programme framework have been outlined as parameters from which roles and responsibilities derive:

- Requirement Authority (RA) – vested at ACOS/DCOS level and designated to define required capability/ required performance competency, aligned with SACEUR’s Annual Guidance on ETEE and synchronized with the evaluation process led by SHAPE; it also entailed the review of requirements, capabilities and competencies, and providing advice to the Department Head on the status of theoretical support (concepts, doctrine, policy, procedures);
- Department Head (DH) – responsible for translating operational requirements into education and training objectives within a programme, module and course, their standards and development;
- JFT – holding the final authority within the E&T business and leading the accreditation process.

The E&T system’s structure and functions have been further consolidated and optimised into the Bi-SC 75-2 Education and Training Directive (E&TD) (October 2013)<sup>16</sup> and the new NATO Education, Training, Exercises, and Evaluation (ETEE) Policy (MC 0458/3 from SEP14). Thus, the DH functions are detailed to the extent to:

- lead, conduct and approve the Training Needs Analysis (TNA), supported by JFT and the RA;

<sup>15</sup> This was a “game changer” since the HCOE did not have from inception the charter/authority to conduct basic training on behalf of interested nations; it was supposed to only supplement (not replace or develop) internal HUMINT education and training, which is considered a national responsibility.

<sup>16</sup> Within the hierarchy of NATO’s E&T directives, Bi-SC 75-2 subordinates: Bi-SC 75-7 Education and Individual Training Directive, Bi-SC 75-3 Collective Training and Exercise Directive, and Bi-SC 80-6 Lessons Learned Directive.



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- translate the operational requirements into education and training within a subject, programme, module and/or course, and apply the educational standards to which the programme, modules and courses will adhere;
- recommend changes to the RA (and if necessary to JFT);
- lead and conduct the Annual Discipline Conference on behalf of JFT, with participation from the community of interest (RA, Subject Matter Experts (SME), E&T institutions and affiliated organisations).

## **Steps toward the Department Head capacity**

### **HCOE and the Quality Assurance seal**

According to the NATO ETEE Policy, given the variety of institutions engaged in the delivery of NATO E&IT, the Quality Management principle requires quality assurance and quality control at various levels, to ensure that the planned and systemic approach to building, maintaining and improving the execution of education and training activities is aligned to the required standards.

The Quality Assurance (QA) Process ensures that NATO's standards, in line with international Educational Standards, expressed in Educational Goals and derived Educational Standards are met.

The QA objective is to implement quality improvements in the four identified areas of quality within E&T: [6]

- the whole structure involved (academic, admin, supporting functions);
- institutional (in-situ) QA policy, to provide appropriate guidance;
- quality systems, to enable the goals achievement; and
- the review and improvement process.

Until the new approach of the E&T process in NATO, HCOE courses have been designed, developed, delivered, evaluated and managed in accordance with the NATO Education and Individual Training Management System (NEITMS). The HCOE has followed the NATO accreditation criteria, and used to be periodically screened by SACT to ensure that its E&T activities satisfy all appropriate standards and regulations.

With the new regulations regarding the QA, after a self-evaluation report delivered by HCOE to ACT, in November 2012, a Quality Assurance JFT team performed an evaluation visit at HCOE in order to assess different aspects of interest regarding the standards applied, internal procedures, available resources and information management (NATO Policy and QA, Instructional Systems Design, curriculum development, analysis and evaluation, human resource development, instruction) necessary to validate the QA criteria.

As a result of the visit, HCOE was conferred by ACT, in 18JAN13, with **CONDITIONAL ACCREDITATION**, having several fields to improve in order to receive full QA accreditation recognition: educational theories and processes reflected in course documentation, theory objectives vs training control documents, curriculum design, assessment strategy, and the internal communication plan. However, the HCOE was commended for a series of best practices regarding the orientation training and development, instructor recruitment, continuous improvement process, E&T support elements, and quality research, reinforced by the lessons learned capacity.

In a short period of time, a committed effort of the HCOE management team and the experts involved in the E&T area determined the award of our institution by the Deputy Chief of Staff JFT, on behalf of the Supreme Allied Commander Transformation, with the QA **UNCONDITIONAL ACCREDITATION** at 15OCT2013. In this respect, the accreditation letter makes reference to: [7]





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- sound internal quality assurance systems and procedures for the assurance of quality standards;
- procedures effectively applied at each Depth of Knowledge level to ensure the quality of individual curriculum;
- effective and regular processes of reviewing the quality of programmes and the standards of curriculum, and implementing the required changes, developments and enhancements;
- accurate, complete and reliable information about the quality of the institutions programmes and the standards of its curriculum.

Since June 2013, a series of HCOE internal documents support the whole QA approach:

- the *HCOE Quality Assurance Review Directive*, establishing the Dean of Academics as Office of Primary Responsibility (OPR) for QA management in HCOE, and stating the processes, roles and responsibilities of the staffs involved in the self-assessment activity for the implementation and development of quality standards;
- the *HCOE Quality Assurance Policy*, which covers the basic and general principles to achieve, develop, and maintain quality standards and performance in HCOE; and
- the *HCOE Quality Assurance Strategy*, guiding the implementation of the Quality Assurance Policy.

#### **HCOE – DH for HUMINT E&T in NATO**

At 29 May 2015, the Military Committee has released his approval for HCOE to become DH for HUMINT education and training in NATO (the document IMSM-0264-2015). The formal approval has been followed in the 2<sup>nd</sup> of September 2015 by a ceremony organized at the Headquarters Supreme Allied Command Transformation, in Norfolk, Virginia (USA), when the NATO HUMINT Centre of Excellence (HCOE) officially became “Department Head for Human Intelligence Education and Training” in NATO.

During the event, Col. Eduard SIMION – the HCOE Director – and Vice Admiral (ESP N) Javier GONZALEZ-HUIX (the Joint Force Trainer head), on behalf of HQ SACT, signed the “Memorandum of Agreement between NATO HUMINT COE and Headquarters Supreme Allied Command Transformation (HQ SACT) concerning The Appointment of NATO Human Intelligence Centre of Excellence as the Department Head for Human Intelligence Education and Training” (fig. 3).





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Fig.3 Aspect from the signing ceremony of the Memorandum of Agreement (left - DCOS JFT Vice Admiral (ESP N) Javier GONZALEZ-HUIX, right - Col. Eduard SIMION – the HCOE Director) [8]

The document restates the hierarchy of the system and sets up the roles and responsibilities associated to the specific functions, complementary to MC 0458/3 (NATO Education, Training, Exercise and Evaluation (ETEE) Policy, 03SEP2014) and Bi-SC Directive 75-2 (ETE Directive, 02OCT2013).

According to the Memorandum, the HCOE as DH has to fulfill a series of responsibilities: [9]

- coordination and collaboration with DH Coordinator (DHC) for managing HUMINT E&T; this includes delivery of E&T solutions with designated facilities;
- lead of the TNAs required to fill HUMINT E&T gaps identified in the final TRA report;
- compiling a HUMINT E&T programme in accordance with the requirements; this will be nested within the broad NATO Intel Training Programme published by the DHC on an annual basis;
- provide assistance to HQ SACT DCOS JFT with the assessment of E&T solutions;
- recommend improvements to the DHC and RA;
- organize the Annual Discipline Conference (ADC) for HUMINT E&T;
- participate in other programming boards, conferences and WGs as appropriate, in order to execute DH functions;
- provide analysis of HUMINT related lessons identified;
- provide SME support to individual and collective NATO-led training events.

While some of the responsibilities would not raise difficulties in their practical application – based on previous experience and practice, a series of aspects still need internal assessments and actions to be fully achievable.

## **Considerations on the HCOE new roles and responsibilities as DH**

### **New status – new requirements**

The newly acquired capacity as DH requires structural and procedural adaptation of HCOE, in order to better meet the expectations.

First of all, there is a sustained process to reconfigure the HCOE organizational chart, in order to establish the supporting entities (a DH section) and to include in the job descriptions the correspondent functions within all sections. This process will include the preservation and enhancement of the internal Quality Assurance practice.

Second, the DH capacity itself needs adjustments. The curricular authority of the DH in relation with other E&T providers in support of NATO is somehow lost. Because HCOE is not directly subordinated to ACT, it requires direct liaison authority and/or administrative control to effectively engage/ coordinate E&IT activities with all NATO countries and institutions involved in the process. Even more, these relationships need to be established and vetted by those nations/ organizations with HUMINT equities.

A third challenge is to effectively act as DH and function as part of the Global Programming development methodology. Once the result of the TRA (where HCOE will provide specialized support, as required) and the Strategic Training Plan will be approved and provided to the DH, HCOE has to lead the TNA, making recommendations to ACT in order to improve the available solutions, purposed to meet E&T deficiencies identified through the TRA, and eliminate potential duplications. The solutions recommended by the DH will be then validated by ACT, or the MC if ACT's means and capabilities are surpassed.



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As evolution and developments occurs within a subject, the triad JFT-RA-DH ensures that all new aspects of DOTMLPFI<sup>17</sup> are injected appropriately into the subject's education and training architecture [10]. HCOE is excellently fit from this perspective, as long as it covers key aspects of doctrine management (regular revisions, supporting studies and research, terminology standardization, lessons learned process), education and training (throughout the available courses and on request SME support, NATO exercises support, etc.), materiel (technology-related research and development), facilities (the overall E&T and exercise infrastructure available to support NATO) etc. The value-added to all these efforts is the symbiotic relation of HCOE with the front-line fora of the HUMINT Community of Interest in NATO – NHWG and NHTWG.

Last but not the least, HCOE has to embrace academic best practice in order to boost its communication outreach (as described in the HCOE Quality Assurance Strategy [11]) and to enhance the quality of the academic products. The establishment of an Academic Board (permanent or ad-hoc entity) may be a solution for some of the incumbent challenges related to this topic.

To cover all these aspects, HCOE, as DH, has to use the resources of direct staff coordination and the framework of the Annual Discipline Conference.

### **The Annual Discipline Conference (ADC)**

Naturally, the E&IT programme framework has to include an appropriate forum for collaboration between the stakeholders involved in the process itself (and here is a large range to list, beside the NATO hierarchical structure, to include the Transformation Network), but also in relation with the customers.

Under the guidance of HQ SACT, the ADC reviews the adequacy of the programmes used to satisfy NATO's E&T requirements, and should be as inclusive as possible, involving the appropriate stakeholders. The intent is to ensure E&T remains aligned with evolving needs, available technology and resources (in this respect, DH issues a Discipline Alignment Plan).

The JFT guidance for the establishment of a Discipline Conference focused on a series of functions that such an event has to technically fulfill:

- to ensure updated information sharing (course design, E&IT products and services, development opportunities, etc.);
- to facilitate coordination between stakeholders (in order to ensure synergy of efforts, acquire national support, determine participation of Subject Matter Experts (SMEs), enhance the execution of the programme);
- to return operational feedback (based on the Lessons learned/ Best practice process);
- to outline recommendations and way ahead to follow in all critical aspects: programme development and execution, goals and standards, interoperability, support, etc.

These lines of development determine a technically focused event, with effects on the overall institutional approach to the E&IT cycle, from programme inception to E&IT delivery, feedback collection and programme adjustment and development.

A delicate challenge is to determine the most feasible environment to conduct the conference, in order to ensure the proper audience and contribution. The natural option would be the HCOE host and strictly following the described directions in order to reach the purpose.

But, what if the Discipline Conference would largely address the specialty development as a whole, and the E&T background will generously embrace an academic debate facet (additional to the technical-methodology one)? Gathering E&T specialists with a specific occasion may leave space to additional activities with profitable results...

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<sup>17</sup> Doctrine, Organization, Training, Materiel, Leadership and education, Personnel, Facilities, Interoperability



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Another point of reflection is the manifestation/ contribution in the ADC of the special relation between HCOE and the NATO HUMINT Community of Interest represented by the NATO HUMINT Working Group and NATO HUMINT Technology Working Group.

### **Conclusion**

Definitely, the honor for HCOE to be chosen as Department Head for HUMINT E&T in NATO is doubled by a great responsibility and hard work for the staff to accomplish the important tasks deriving from this new capacity.

We are confident that HCOE, by its means and capabilities, will bring a significant contribution both to the NATO HUMINT E&T process and the comprehensive development of the HUMINT capability in NATO, too.

The DH position also strengthens the academic flavor of the HCOE activity. It has to be associated with the development of an appropriate interface with the academic entities, a more consistent presence in the academic fora, the development of the practical activity in this domain, increasing the networking portfolio and consolidation of the own community of interest.

More details about the HCOE activity are available online at [www.natohcoe.org](http://www.natohcoe.org), where will be also reflected the further developments of his performance as DH.

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## **ASSESSMENT OF DEFENSE INDUSTRY CLUSTERS IN TURKEY**

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### **Abstract:**

According to Stockholm International Peace Research Institute (SIPRI), the global military expenditure exceeded \$1.7 trillion in 2014. Defense spendings are on the rise all over the world. The cost of developing defense systems is increasing. Therefore, the defense industry attracts many big and small to medium-sized enterprises (SMEs). While big companies have the necessary resources to take on big defense contracts, SMEs are in a disadvantage due to lack of resources. To overcome this handicap and be a part of the business, defense industry clusters are being established mostly consisting of SMEs. Since 2010, Turkey shows signs of improvement in defense industry clustering. In this study, we present an assessment of current defense clusters and point out some of the current challenges.

*Key words: Clusters, Business Cluster, Defense Cluster, Defense and Aviation Cluster, Turkey.*

### **Introduction**

Achieving the goal of having a capable and independent defense industry is important for any country. Clustering of defense firms and supporting industries is an important tool in terms of increasing the capability of national defense industries. These clusters are also supported with related government agencies, public institutions and universities. Today, the significance of defense clusters to achieve a strong independent defense industry is strongly emphasized by both the practitioners and academicians. While developed countries have already established many clusters, the developing countries are in the process of establishing these clusters. In Turkey, the importance of defense clustering is also acknowledged and recently, there have been many initiatives both on the government and private sector side. In the last 5 years, clusters related to defense, security, aviation, and space have been established.

Currently, Turkey has achieved a certain level of national defense industrial capability. The development of MILGEM corvette, ATAK helicopter, ALTAY tank are among the main achievements of the defense investments over the years. While the Turkish defense industry has some notable success in recent years, the defense industry clustering is still under development. Therefore, in this study, we aim to present the current status and a brief assessment on the defense industry clustering in Turkey.

### **Literature Review**

#### **Clustering**



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Today, even acquiring cheap labor is becoming ineffective in a competitive global economy. Therefore, more innovation, successful research and development (R&D), and high intellectual capital is needed to stay competitive. The small and medium-sized enterprises (SMEs) have limited resources to invest in innovation, R&D, and intellectual capital. Clustering is seen as a solution for SMEs to stay competitive against large companies with more resources. Thus, clustering in various industries has gained an increasing attention.

The notion of clustering is introduced by Tyron in 1939 [10] and Porter introduced the term of business clustering with his famous work titled *Competitive Advantage of Nations* in 1990 [22]. According to Porter, business clustering is the geographic concentration of firms from a particular industry with the firms from supporting industries and related public and private institutions [9]. Porter states that “A cluster allows each member to benefit as if it had greater scale or as if it had joined with others without sacrificing its flexibility.” [9]. The Porter’s diamond model is used by many researchers to analyze the competitiveness of nations and clustering in various industries [11]. Clusters may be developed based on industrial similarity or interdependency [23]. According to Jacobs and De Man [13] three notions of clusters can be identified: Regionally concentrated industry, sectors or groups of sectors, and production chains.

The mature clusters, which are based on a good strategic plan, share certain common characteristics [12]:

- Common customers
- Common suppliers
- Shared infrastructure
- Shared pool of human resources
- Shared opportunities for educating and training of employees in the defense companies
- Shared access to research and development institutions, universities, and non-profit organizations playing a role in the defense industry
- Common risk, capital, and market structure.

### **The Phases of Cluster Development**

Similar to biological systems, clusters go through various phases in their life cycle. According to Porter, these are (i) birth, (ii) evolution, and (iii) decline [9]. According to Rosenberg [18], the clusters have four phases in a life cycle. These are embryonic stage, growth stage, maturity, and decay. These two life cycle approaches are in fact similar.

Sometimes, the birth of a cluster occurs naturally based on market needs created by demanding consumers. The textile clustering in Denizli region of Turkey could be given as a prominent example to that kind of clusters [3]. Sometimes, the clusters in a region cause the birth of another cluster. The environmental cluster in Finland is developed due to the pollution created by other industries such as energy, forestry, metals, and chemicals [9]. During the second stage, the cluster starts to evolve. The cluster gains a momentum in creating and maintaining a competitive advantage. More firms are attracted to the clusters. The support to the cluster increases as the government, the institutions, and supporting industries show an increasing interest. In this stage, the competition within the cluster also increases. In the last stage, the cluster starts to lose its competitiveness due to both internal and external factors.

According to Rosenfeld [18], the embryonic stage of a cluster may be the result of innovations, inventions, or inward investment. The growth stage follows the embryonic stage. The growth stage occurs with the development and restructuring of the related market attracting more entrepreneurs for new spin offs and startups. In the maturity phase, the processes and services become routine and costs become a key competitive advantage. At the last stage, the cluster is being challenged by alternative



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clusters and industries. In this decay stage, the cluster starts to lose its competitiveness and slowly decay in time.

### **Objectives of Clustering**

Kuah states that starting a business in a cluster has many benefits for the startup [5]. According to Porter [9], being in a cluster has many benefits for companies such as:

- Better access to employees and suppliers
- Access to specialized information
- Complementaries
- Access to institutions and public goods
- Better motivation and measurement

Ariç [7] states that there are four main reasons why a group of firms start or join a cluster:

- Networking
- Political and social benefits
- Commercial and strategic alliances
- Innovation

Clusters are also effective environments for information gathering and sharing [14]. Conferences, seminars, invited talks, expositions are good opportunities for networking and information/expertise/lessons learned sharing. Therefore, effective clusters place a special emphasis on such events. Effective clusters are also the sources of innovation. Today, clusters and innovation have become the terms which are commonly used together. The Silicon Valley located in San Jose, USA, is a good example of a cluster as a source of innovation.

### **Defense Industry Clusters in Turkey**

The firms serving the defense industry have certain roles depending on their size, products, and services. There are three main roles: Main contractor, subcontractor, and suppliers of various devices and components. There are also some firms that conduct analysis, design, testing specialized in certain areas. Figure 1 shows the hierarchical structure of the defense industry firms and institutions depending on their roles [1].

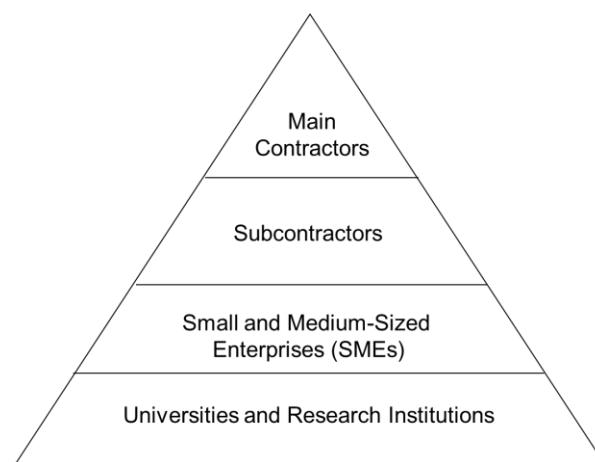


Fig.1 Hierarchy of Dependence in Defense Industry

Due to security and confidentiality of the defense technology in defense systems, the need to develop these systems, at least the critical portions of them within the country is obvious. Many



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countries place limitations on the use of exported defense systems. For example, in the USA, the export of defense systems is subject to the approval of the congress. Furthermore, the maintenance costs of exported defense systems are considerably high. Therefore, independence in defense systems has many advantages for the countries.

Defense systems are generally complex, large-scale, and software-intensive systems [19]. Generally, the defense contract is won by a main contractor. This main contractor has many subcontractors to develop various parts of the system. The main contractor may also get services for design, testing, and certification of specialized components. In some cases experts from consultancy firms or scientists from universities may be hired for consultancy. As a result, defense system projects have many stakeholders [19]. Defense systems are generally developed for governments and stakeholder involvement is especially challenging in government-contract software projects [16]. Therefore, clustering has many benefits in developing defense systems by bringing these stakeholders together. In order to achieve competitiveness, the firms in the cluster are required to form effective collaboration circles both within the cluster and outside the cluster. The success of firms in the cluster is higher than the firms outside the cluster due to fact that no firm can overcome the challenges related to development of defense systems. Since defense systems are large-scale and complex, it is quite unlikely that the expertise and resources needed to successfully develop a defense system will be possessed by only one firm. Thus, clustering is one of the best solutions for this problem. Porter emphasizes that clusters are formed by industrial firms that share common benefits and firms from different industries supporting the industrial focus of the cluster. The common benefits are shared pool of resources, institutions, a shared culture, common opportunities, and similar threats [6]. The strategic alliances between defense industry firms are affected by the conditions due to political, social, economic, and security climate in the country.

The defense firms are not the only players in creating a competitive defense industry. Therefore, there are other actors playing significant roles in achieving a strong defense industry. Ministry of Defenses, government acquisition agencies, public and private research and development institutions, universities, non-profit organizations are among these other actors. According to Ziylan, a large defense project cannot be achieved by a single main contractor without having government support [2]. Having adequate qualified human resources in the Turkish defense industry is also important [4]. Therefore, universities and research institutions should be in close contact with the defense industry and be able to offer programs and courses needed by the defense industry. Creating a synergy between all these actors will help to achieve a strong defense industry. Consequently, the defense clusters would create communication channels between all these actors.

The fast growing defense industry started to realize the importance of clusters in terms of achieving a competitive industry. The national policies and reports (for instance [17]) also state that creating effective defense clusters is a necessity. Furthermore, having a strong technological base and a sustainable growth in variety and depth of defense industry is crucial for competitiveness.

Murad Bayar, the Head of Turkish Undersecretariat of Defense Industries (SSM) between 2004 and 2014, drew attention to the importance of defense industry clustering during his appointment. According to Bayar, currently, the defense industry in Turkey has yet to reach the capability to create innovative and critical defense technologies. He states that the development of capable main and subcontractors and the creation of necessary culture in defense industry would take time. Therefore, SSM is trying to lead the SMEs and other firms in defense industry to establish defense project management practices and increasing the technology development capability. He also highlights that clustering is an important tool in guiding these firms and achieving these goals. Bayar, signifies the example of OSSA as a successful implementation of defense clustering [8].

The first defense industry cluster in Turkey is OSTIM Defense and Aviation Cluster (OSSA) established in 2008 [20]. Two more clusters followed OSSA. Teknokent (Technology Park) Defence





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Industry Cluster (TSSK) [21] located in Middle East Technical University in Ankara is established at the end of 2010. Aerospace Clustering Association (ACA) [24] located in Izmir started in 2010 as the first cluster specializing in Aviation and Space technologies. Eskişehir Aviation Cluster (ESAC) [25] followed ACA in aviation and established in 2011 in Eskişehir, one of the cities hosting a large Air Force base in Turkey. Another cluster focusing on Space, Aviation, and Defense is established in 2014 in Bursa. Currently, this cluster is in early stages. 55 firms applied for memberships. Table 1 shows an overview of the defense clusters in Turkey.

**Table 1** Industry Clusters related to Defense in Turkey

<b>Cluster Name</b>	<b>OSTIM Defense and Aviation</b>	<b>Teknokent Defence Industry Cluster</b>	<b>Aerospace Clustering Association</b>	<b>Defence, Aviation, Space Clustering Association</b>	<b>Eskişehir Aviation Cluster</b>
<b>Cluster Abbreviation</b>	OSSA	TSSK	ACA	SAHA Istanbul	ESAC
<b>Cluster Focus</b>	Defense and Aviation	Defense and Security	Aviation and Space	Defence, Aviation and Space	Aviation
<b>Location</b>	Ankara	Ankara	Izmir	Istanbul	Eskişehir
<b>Year Established</b>	2008	2010	2010	2015	2011
<b>Number of Companies and Corporates</b>	160 (7500 personnel)	70	37 Corporate 14 Academic 31 Companies (Over 60 members)	30+	32

### Conclusion

The clusters consisting of defense firms have similar characteristics. We believe this is due to the inherent characteristics of defense industry. The main characteristic of the first three defense industry clusters in Turkey is that they mostly consist of SMEs and they are located in the same geographic area. However, Aviation and Space Valley of France, consists of not just SMEs but also main defense contractors. The Teknokent Defense Industry cluster located in Middle East Technical University in Ankara and Aviation and Space cluster located in İzmir, have strategic alliances with the universities located nearby. The universities offer related graduate programs and courses to educate the practitioners of the firms in the clusters. The OSTIM Defense and Aviation Industry cluster is different in the sense that the main focus is on manufacturing rather than research and development. Therefore, the cluster consists of SME manufacturing firms and the cluster facilitates the coordination.

The lack of guidance and determination of roles in defense clustering presents a challenge in Turkey. Without an in-depth analysis and planning, there are various attempts from different government agencies for clustering initiatives. As a result, the optimal use of resources may not be



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achieved. One of the first steps in finding a solution to the current set of problems is to fill the gaps in the industry regulations related to clustering and cluster development.

The defense industry clusters in Turkey are in their early phases and they are not developed to the point of fully functioning clusters. The slow pace in the development may be attributed to the deficiencies in the cluster formation during early phases. Currently, the defense clusters in Turkey are only able to bring the SMEs together to increase coordination and the governing body of these clusters solely function as an association providing a list of subcontractors to the main contractors. The main reason is the limited perspective of the SMEs forming the clusters. Rather than cooperation and forming strategic alliances with other SMEs to increase their capabilities, they only try get a piece from business and benefit from government subsidiaries such as tax relieves. One of solution to this problem may be establishing processes to benefit from experts and academicians as consultants along the way. However, these strategies and solutions should not be perceived as items in some strategy papers but they should be considered as actually functioning and effective processes.

The defense industry clusters in Turkey have not specialized in a particular defense area or a technology. Specialization in certain defense areas may produce better results. For example, the French aviation and space industry clustering established in Midi-Pyrenees and Aquitaine region of south-eastern France is specialized in structural aviation engineering. The French aviation and space industry clustering established in Ile De France region of northern France is specialized in aviation electronics and aircraft engines. Another cluster located in Cote D’azue region of south-eastern France develops projects related to helicopters.

While the firms in the defense clusters has achieved a certain level of synergy, information sharing, and collective R&D, the outside links of clusters is currently weak. Especially the links between the defense firms in clusters and the universities need to be improved. The universities should be more engaged to defense industry clusters and they should actively participate in defense project development.

Even though, there are still many problems, the defense industry clustering in Turkey has been successful in achieving the intended goals in the last 5 years. The current trend shows signs of improvement and will likely to increase the national defense industry capability.

### **Acknowledgements and Disclaimers:**

The views and conclusions contained herein are those of the authors and should not be interpreted as necessarily representing the official policies or endorsements, either expressed or implied, of any affiliated organization or government.

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## **CURRENT PERSPECTIVES ON FACTORS THAT INFLUENCE ORGANIZATIONAL CULTURE**

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### **Abstract:**

Training cultural systems is conditioned by history and founders of the organization, the external environment and the size of the organization, but also the vision, goals and organizational goals.

Identifying the factors that influence organizational culture is a key issue for any manager, especially given that has not yet materialized in a comprehensive and rigorous. The internal factors are more numerous and more influence, but can not be neglected any external factors.

*Key words: organization, organizational culture, internal factors, external factors*

### **Introduction**

Organizational culture is a difficult concept to define; literature does not meet universally accepted definition. When defining organizational culture and have contributed various disciplines: anthropology, psychology, economics, sociology, general and comparative management. Therefore different approaches, including between those skilled in the art.

Organizational culture is similar to the national culture and rooted in history, myths, heroes and symbols. It evolves around the organization values inherited from previous generations, influencing the critical ability of the system to change.

### **Organizational culture basic feature in managing the organization**

The concept of culture has given managers a way to discuss important organizational elements that are not easily measured or integrated into traditional categories such as leadership skills and interpersonal relationships.

Although it is an important concept, organizational culture is not defined in the same way by two researchers or scientists. Although in recent years the concept of culture has been much debated and publicized for organizational culture there is still no universally accepted definition. Whitey W. and G. W. England reviewed 164 definitions of culture, reaching its synthetic definition that sums up a culture knowledge, belief, art, law, moral norms or customs that serve to differentiate groups from each other.

A. Strati highlights the points of connection between human resource management objectives as elements of the organization: “organizational culture is a set of symbols, beliefs and behavior patterns learned, product and recreated by people who devote their energy and life's work of an organization. It is expressed in the design and organization of work, built manifestations of culture and services that the organization produces.”

Other definitions are formulated representative of W. Ouchi, G. Hofstede, R. Pascale, R. Griffin, S. Davis, G. Johns: “... a set of symbols, ceremonies and beliefs and myths that communicates the organization's core values its members”(W. Ouchi); “... collective mental programming that distinguishes members of an organization to another organization” (G. Hofstede); “... relates to the implementation of an internal model that determines the behavior, values and schemes of thought,



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speech and action in an organization” (R. Pascale); “... the constellation of values of an organization, it is elucidating support organization and purpose establish modalities and priorities” (R. Griffin); “... a set of values and beliefs shared by the staff of an organization with specific meanings and it provides rules for acceptable behavior” (S. Davis); “... formal, organizational culture consists of beliefs, values and assumptions shared within an organization” (G. Johns).

Of Romanian authors, E. Burduş and I. Popa, O. Nicolescu and I. Verboncu defined organizational culture as: “... a complex model of faith and hope, which include philosophies, values, postulates, attitudes and common rules of that organization members” (E. Burduş and I. Popa); “... lies across organizational culture values, beliefs, aspirations, expectations and behaviors shaped over time in each organization, prevailing therein and conditions its direct and indirect functionality and performance” (O. Nicolescu and I. Verboncu).

In all the above definitions of organizational culture meet common elements:

- envisage a set of meanings and values that belong to individuals in the organization;
- organizational culture elements require a relatively long period of time to form;
- meanings and values that form the basis of organizational culture is a synthesis of individual and national;
- values and beliefs are reflected in symbols, attitudes, behaviors;
- organizational culture is a reference framework for the organization's members;
- manifestations of organizational culture significantly influence the evolution and performance of the organization.

Organizational culture, which is a different concept of the social culture, shows a growing interest increased for managers. All the processes taking place in an organization are covered culture. This in turn is influenced by internal factors (endogenous) and external factors (exogenous) to the organization.

### **Factors influencing organizational culture**

Identifying the factors that influence organizational culture is one of the problems with a high degree of importance for any organization manager. Although it is a particularly important issue, so far there has outlined a comprehensive and rigorous approach on the factors that influence organizational culture. Below we present internal and external factors that we believe that significantly influence the organizational culture.

a) **The internal factors** exerting an influence permanent and visible especially on “personality” of an organization. These factors are:

a<sub>1</sub>) *The founders of the organization*, through original ideas they had when he founded the organization influences how those ideas are supported and implemented. A strong culture is the founder and circumstances associated with the establishment of the organization. Some of the founders and their personalities have made their mark on the organization and led initially created them, and their success rules were imposed, influencing mission, objectives and strategies applied survivors.

Fundamental concepts of founders and employees are adopted, they acting according to values and beliefs founders. If employees have successfully repeatedly when beliefs, values and assumptions are validated founders and experiences are shared in common by all employees. If employees fail at what they do, the organization is dissolved and no longer appears no culture.

If the step of forming and strengthening the organization's founders and leaders have a key role in building the organizational culture as the organization gets older and experienced members themselves begin to find solutions to some issues. Such employees strongly influences cultural systems, the bearers of their contents.



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a<sub>2</sub>) *History of the organization* envisages the set up and development of the organization. The way in which the organization was established as a private company or public institution forward as a series of values, perspectives and concepts. The organization's history is longer and more complex, the influence on organizational culture is stronger. Thus, the scope of coverage, robustness and impact symbols, rituals and myths are wider organization so the organization has a longer history. At the same time, it presents as history gives continuity stability, prestige and power to influence organizational culture elements. In small organizations, inherited, there is still strong opposition in recruiting and promoting managers from outside the family. In this case the values are centered on loyalty and discipline, and employees are aware of the organization's past, which ultimately results strengthen organizational culture.

a<sub>3</sub>) *Size of the organization* expressed usually by turnover, capital value and / or number of employees, all of which are in direct correlation with the size of the organizational culture. Because the more the organization, the greater and diversified organizational culture, becoming increasingly difficult to perceive and model, we rely on experts in organizational culture.

Organisations small organizational culture is characteristic stable, homogeneous. The growing size of the organization, especially when multiple branches, spread over a large geographical area, there are subcultures. These in turn can be dominated by one or organizational culture may conflict with it.

a<sub>4</sub>) *The purpose and objectives of the organization* are included in coherent and realistic policies and strategies. Establishing precise goals and objectives of the organization, their knowledge by employees of the organization and ensuring interpenetration goals and objectives of the organization with the employee remodeling are key elements of organizational culture, affecting the fulfillment of the objectives for the organization. If the organization's goals and objectives are not clearly defined and are known by employees, organizational culture effects will be predominantly negative.

a<sub>5</sub>) *Owners organizations* may be represented by a person or group, more or less, persons and / or organizations. If the owner is represented by one person or a few people, influence on organizational culture is great. When the property is dispersed among a large number of shareholders, influence on organizational culture is low, leading to increased influence by taking effective managers of power from owners.

a<sub>6</sub>) *Organization's managers* is a variable that has a high significance in culture. Manager's personality, level of managerial and specialized training, leadership that characterizes may vary within wide limits from one manager to another, with direct implications on the way and extent real influence on the pattern of organizational culture. Among managers, the organizational culture, the increased sway a higher level of managers, followed by mid-level managers.

a<sub>7</sub>) *The organization's management system*, by nature methodological and managerial decision-making, informational and organizational structure, has a strong influence on the culture. A management system with high functionality and based on a powerful motivating employees in the organization causes a strong company culture. Professionalism is reflected in the ability of managers to design and implement performance management systems that lead to strong and competitive corporate culture.

a<sub>8</sub>) *The employees of the organization*, along with managers, is one of the factors that influence organizational culture. Number of employees, training, sex, age, temperament them are parameters that mark in various ways value system.

a<sub>9</sub>) *The economic situation* organizational culture influences the size of the organization and the availability of resources for employees, by facilities or economic restrictions practiced by economic stress intensity on the evolution of the organization and its employees.

a<sub>10</sub>) *Phase of the life cycle of the organization*, although it represents an important internal



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factor on the organizational culture is not always taken into account. The life cycle of the organization are: creation (birth), rapid (youth), taking advantage of previous investments (maturity) and economic decline (old age). At each stage, the organizational culture has different characteristics to be identified and considered. A performance management system take appropriate managerial, technical and economic stages of maturity of the organization, so as to continue developing and to delay the phase of economic decline.

a<sub>11</sub>) *Values and visions stability* is the most powerful internal factor involved in maintaining and strengthening organizational culture. The extent to which members of the organization believe and adhere to the values of the organization for a long time organizational culture will influence on the ability to have a positive impact on organizational performance.

b) **External factors** that exert the most visible influence on organizational culture are:

b<sub>1</sub>) *National culture* in which the organization functions include the reasoning, religion, education, training processes elites and constitutes a common fund which determines beliefs, values, norms, symbolism, individual perspectives and conceptions of organization. National cultural factor was identified and taken into account in recent decades amid increasing globalization and internationalization of economic activities.

b<sub>2</sub>) *Economic environment of the organization* is closely related to legal and institutional environment and reflects the functionality and performance of the national economy. When the national economy recorded rapid economic growth, development activities are conducted in a manner organization tax, banking, higher trade. When the national economy is in crisis, the economic environment exert economic stress on the organization. Direct and indirect effects of the economic environment on the organizational culture organizational visible in aspirations, expectations, beliefs, norms of behavior etc.

b<sub>3</sub>) *Legal and institutional environment* influencing organizational culture through interpretation and observance of laws degree by the organization. Through laws, ordinances, methodologies and institutions of each state shall establish basic rules for the establishment, operation, development and liquidation of organizations. If legal and institutional environment favoring performance is consistent and organizations, all processes within organizations, including those relating to organizational culture, are positive developments. If the legal and institutional environment is incomplete, insufficiently harmonized and does not seek to obtain economic performance, the organization will be adversely affected. In this case, the protective function of organizational culture go first.

b<sub>4</sub>) *Competitors and customers*, as actors markets directly affects organizational culture by market segment addressed the scale, level requirements, different development potential and prospects.

b<sub>5</sub>) Causes huge *technical and technological factors* differences between organizational cultures of different organizations. Technique and technology used by organizations with a dynamic technological environment causes important influences on the culture, being found in one form or another, the components of organizational culture.

## **Conclusion**

□ Although in recent years the concept of culture has been much debated and publicized for organizational culture there is still no universally accepted definition. Currently there are over 164 definitions.

□ All the processes taking place in an organization are covered organizational culture which in turn is influenced by internal factors (endogenous) and external factors (exogenous) to the organization.



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□ Identify factors that influence organizational culture is one of the problems facing any manager. Although it is a particularly important issue, so far there has outlined a comprehensive and rigorous approach on the factors that influence organizational culture.

□ The internal factors exerting an influence permanent and visible especially on “personality” of an organization, but no external factors can not be neglected.

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**ECONOMIC INTELLIGENCE FOR AUGMENTING THE  
NATIONAL ECONOMIC COMPETITIVENESS**

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**Abstract:**

The global markets evolution of the last decades have emphasized the significant growth of the ongoing international competition between the economic actors, but mostly between the states. In order to face the challenges of informational asymmetry, each of the players involved resort more and more to the specific instruments of the intelligence activity. The big companies, the multinational firms, have been the first to understand the potential of the information to increase the value of the production factors, and to allow the capitalization of the available resources, in optimal economic circumstances. Afterwards, by taking over their mechanisms and turning them into public policies, the states with advanced economies succeed to obtain and maintain competitive advantages.

In the present global context, it has become necessary that the public authorities should design and implement a national economic intelligence system. If developed as a private-public partnership, that embodies and harmonizes both the interests of the private economic actors, and those of the state, to capitalize resources in an optimal manner, the economic intelligence system has the unique goal of increasing the national economic competitiveness through intelligence.

The economic intelligence implies a three-way approach: to constantly monitor the areas of interest, in order to obtain relevant data about them; to promote its own vision, by launching adequate ideas/behaviours, and interpret them to the benefit of its strategy; to protect the available information/intelligence, in order to counter-attack any attempts to reach it, by the opposite side.

*Keywords: Economic intelligence. Economic competitiveness. Economic information. National interest.*

**Introduction**

The world's configuration at the end of the Cold War brought up new major challenges, generated by the globalization, as powerful interaction, at global scale, between people, societies and social mechanisms (political, economical, intellectual, social, and so on) or as a way to develop general/generalized interdependent systems.

In this new era, marked by the digital revolution, the global power centers diversified and multiplied, as the actors were extremely different: international institutions which acted in order to impose their supremacy (NATO, EU, etc.), emergent states (Brazil, China, India etc.) that induced confusing evolutions on the world stage, as well as new actors coming from within the civil society (associations, think tanks, NGO's, cyber activists etc.), which, for over 20 years have been acting as participants of the national and/or international stage. The multi-polarity factor is more and more present, even if the USA continue to express their global super-power claims on all levels: military, political, economic, social, cultural etc. or that of important global actor, involved in solving various global issues (beginning with the judicial ones, up to those of environmental protection).

In this complex and extremely uncertain global context, the relations between the public and private actors coagulate around a more and more obvious reality: the furious competition on all levels (industrial, commercial, technological etc.). The globalization didn't bring with itself the end of the confrontations between the world's great actors, but, on the contrary, it conferred another scale for



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expressing political and economic ambitions, a growing amplitude of geo-economic and geo-strategic disputes.

On the new international background, the need to identify and use those instruments of preserving national interests has increased significantly, as the highly developed states (Japan, USA, France, Germany, Great Britain etc.) tend to create and strengthen mechanisms of economic intelligence or competitive intelligence at state level. Such systems, created as public-private partnerships, act in order to harmonize the private interests of the economic agents with the national interests of optimal use of resources, everything with a unique goal: increasing economic competitiveness through information.

From this perspective, the economic intelligence proves to be an efficient tool of accomplishing national security, on the economic level, as it allows the management of certain risks aimed at economic security and/or promoting national interests as well (such as ensuring an adequate competitive environment, growing competitiveness of certain economic fields/products, providing access to consumers and its own economic operators to natural resources, in equitable price conditions etc.).

### **Informational needs - tools of the economic intelligence system**

The informational society - born together with the developing of new informational and communication technologies - has determined significant changes in the way that economic actors and markets act, inducing numerous challenges which economic actors have to face.

- On the first hand, the **informational overflow** of the last decades, when a simple Internet access ensures a fast and cost free huge volume of information about any desired subject, has generated major concerns within companies (either small or big), in order to identify the mechanisms to ensure their search and selection of the information they need from the immense amount available. The stake here is getting the necessary information to evaluate the context in which they act, from the perspective of digging up opportunities or, on the contrary, problematic elements that turn or risk to turn them less competitive against their competitors. Basically, the implementation of their own development strategies will or will not be successful based on the result of this process of choosing only the opportune data from the informational abyss available at some point, which is often an extremely difficult and time consuming activity.

According to Éric Delbecque and Jean-Renaud Fayol<sup>18</sup>, the informational flow has two major characteristics:

- on one hand, the information dissemination speed through networks has increased in a spectacular manner, together with the new technologies (as the development of the optic fiber), which determined important changes at the level of the search and selection tool (methods and techniques) of the necessary data;

- on the other hand, the growth of information vectors makes identifying viable sources very difficult, so that we no longer look at the traditional media, but also at the interactive web systems, with the social networks upfront.

Consequently, in order to be competitive, the economic actors have to permanently monitor informational flows in order to obtain the relevant data which can ensure to maintain/to strengthen their position on various markets. In this process, they constantly face an informational overflow, a fact which makes them pay great attention to the numerous challenges of the environment within they act. In order to face these challenges, the actors must know their informational needs or **cognitive needs** very well, as Éric Delbecque and Jean-Renaud Fayol<sup>19</sup> name them.

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<sup>18</sup> Delbecque, Éric; Fayol, Jean-Renaud, *Intelligence économique*, Magnard-Vuibert, Paris, 2012, p.7.

<sup>19</sup> Op. cit., pp.8-10.



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They define them as needs to obtain valid and pertinent information, in order to give meaning to the events and strategies of various actors. The cognitive needs of an agent are *permanent* (as far as monitoring the environment is concerned) or *punctual* (when solving actual problems) and they need to be placed in a hierarchy, in order to establish the priorities of searching and using information. The quality of this simple act confers advantages to achieving performance by the economic agents, which are preoccupied with innovation and positioning on favorable levels on the market. Basically, once the cognitive needs have been established, the economic operators try to identify the necessary information and, by consuming an increasingly consistent volume of information/knowledge, they are able to apply their development strategies, with real chances of being competitive.

- At the opposite side lies **the informational asymmetry**, where the central element is connected to the way the uncertainty caused by the various amount of information owned by economic entities is managed. The activities of any market unfold under the auspices of numerous specific factors, some of them with a pronounced random feature (beginning with social and political events and up to macroeconomic decision making), so that the economic operators often use knowledge with various degrees of completion, preciseness and relevance.

The patterns of informational asymmetry assume that at least a party of the transaction owns the relevant information, as there are parties that do not, at the same time. Some patterns of asymmetrical information can be used in circumstances when at least one party can impose or effectively exploit the certain terms of a deal, while the other party does not have this possibility.

Consequently, the uncertainty at the pragmatic level of the economic markets also has a cognitive origin. The cognitive uncertainty can be diminished by increasing the knowledge level about the market (its features and those of its specific operators) and about its related events, while maintaining the balance and the selective role of the market.

### **The main specific activities of the economic intelligence**

Within the economic intelligence process there are two essential stages/main activities: *monitoring the environment*, in order to identify the elements that are relevant to the economic operator, regarding both the development opportunities for its business, and the market on which its competitors also act, and, respectively, *protecting the information* owned by economic agents, against unwanted access by its potential competitors, to data which once revealed would steal its competitive advantage.

- In order to be competitive, any company must use a **global monitoring** system the foundation of any economic intelligence action which means a constant surveillance of the context in which it unfolds its activity, that of its main competitors, but also of all the elements that compile the market which it interferes with. This stage consists in a permanent search for the necessary information, gathering and processing that particular data (by analyzing and placing them in a certain perspective) and, in the end, the dissemination of the resulted products<sup>20</sup>. Basically, the monitoring has the following objectives<sup>21</sup>:

- on one hand, the detection of the low signals of future evolution trends (which guarantees a maximum profit out of the new opportunities offered by them, but also protection against any threat elements that develop out of those trends);

- on the other hand, the evaluation of the competitive environment, made out of suppliers, customers, potential new actors, but also substituent entities.

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<sup>20</sup> Op. cit., p.10.

<sup>21</sup> Op. cit., p.11.



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The monitoring process is preceded by the clear establishment of two essential coordinates of the intelligence process, according to the conclusions obtained by a research group led by Christian Coutenceau<sup>22</sup>:

- *the center of gravity*, defined as the focal point of strength of the agent/economic sector/economy of a state, which must be protected against any vulnerability or risk (it can be either an advanced logistics, a distribution network, a decision maker at an exceptional level or any public worker placed in a key position etc.). The correct and timely identification of the center of gravity ensures the knowledge of power elements, the definition of the main surveillance/monitoring directions and the essential landmarks that need protection;

In close connection with the establishment of the center of gravity there is the process of defining the critical vulnerability, which represents the problematic issue through which competitors can reach/attempt to threaten the center of gravity.

- *the final targeted stage*, which represents the strategic position (in noticeable and measurable terms) aimed to be reached by the agent/economic sector/economy of a state after the intelligence process has finished.

The monitoring act is conditioned by the existence of three major elements<sup>23</sup>:

- *the strategic plan of the economic agent/sector/state economy*: it is established in a certain area, it defines and prioritizes the goals of value creating actions on the long term, and it also specifies the resources allocated to this process (human, financial, technological etc.);

- *the monitoring plan*: it is elaborated according to the stakes of the economic agent/sector/state economy and it defines the domain (the activities, the technologies, the regulations etc.) which will be actively supervised in order to anticipate the evolutions. When drawing up such a plan, one has to take into consideration the strategic plan of the economic agent/sector/state economy, its center of gravity and the final targeted stage. The plan contains the objectives (both permanent and occasional) presumed to be reached, in order to obtain decisive information, with a superior timing;

- *the relevant/pertinent information*: it is that type of information which can have an impact upon the economic agent/sector/state economy and, implicitly, upon its development.

● **Protecting strategic information** represents a second essential activity of the economic intelligence process and, from the point of view of the research group led by Christian Coutenceau, it implies taking into account several factors: the center of gravity<sup>24</sup> (defined as the power element of the company); the intrusive action (accessing a network, including a data network, without invitation/permission); the destabilization process (inducing a state of vulnerability, by means of pressure blackmail, corruption, threat etc.). At this point, it is necessary to detect and manage the various types of threats, of both internal or external origin.

In the first category of threats there can be included:

- the active ones, which depend upon the will/intention to act against the company. There can be dissatisfied/disillusioned collaborators of the respective entity or some who have been bought by the competition, for various reasons (revenge, jealousy, other interests etc.). These people can undertake various less scrupulous actions against the company (embezzlement/affecting the patrimony, disclosure of information or contacts which are not meant to be made public etc.);

- the passive ones, which are not part of a voluntary behaviour, but which, once expressed, can bring prejudice to the patrimony/interests of the company. In this category there can be included the

<sup>22</sup> Coutenceau, Christian, coordonator, *Guide pratique d'intelligence économique*, Paris, EYROLLES, Éditions d'Organisation, 2010, p.9.

<sup>23</sup> Op. cit. p.17.

<sup>24</sup> Op. cit., p.38-41.



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imprudence acts (public indiscretions, revealing sensitive aspects on the social networks etc.), misunderstandings (due to a certain gap between the collaborator and the company) or the lack of rigor in applying procedures (breaking the security rules, passing out confidential documents etc.).

In the category of external threats there are those who origin from persons or organisations exterior to the company and which:

- undertake an offensive action either in order to achieve a strategic goal (obtaining a piece of information, technology, knowhow, a key collaborator etc.), or to affect the company or its image (by launching misinformation campaigns, based on rumours, unfounded accusations etc.);

- exploit the vulnerable elements of the security policy or the mistakes made by the various involved actors, in order to create a context that leads to the takeover of an amount of the company's confidential patrimony.

The category of external threats can be associated with the actions of direct competitors, but also with actions of the economic actors from other states, including those achieved by the specific means of economic intelligence and so on.

Once the threats detected, there can be established and implemented a strategy meant to protect crucial information, which emphasizes the risk evaluation process, according to the identified threats, but also the definition and determination of the permanent or occasional means to apply it, in order to preserve the company's interests.

At first, the area meant to be protected will be defined, ensuring the best compromise between the request to defend and the impact of the measures which are meant to be adopted to that purpose.

Afterwards, according to the defined perimeter, the adequate protection manner is chosen: *permanent devices* for installations, human resources, material and immaterial patrimony, computer systems and databases; *occasional devices* for communications, events, exhibits, negotiations, trips, incidents/attacks.

For each single category and device type there will be chosen the technical, human or informational solution meant to limit the risks and to prevent the threat from becoming a fact.

According to other approaches, the economic intelligence includes a third major activity/stage, that of **promoting the company**<sup>25</sup>, which is not limited to the simple lobby act, nor assimilated to manipulation. On the contrary, the promotion activity implies the existence of a communication and PR (public relation) strategy.

## **Conclusions**

The information is the means by which there can be reached the objectives set within international economic competitions. In order to survive, each actor must protect its own informational patrimony and, at the same time, make efforts to know more about that of the competition. At microeconomic and mezo-economic level, the information plays an important part in increasing a company's competitiveness, or that of the national economy, in an international context. The developed states have adopted national programs to support their own economies with relevant information from the potential or active markets, the example of France being the most relevant in this matter. The fact that important foreign companies come and invest in Romania, they have commercial success (sometimes unexpectedly) and they grow is, to a great extent, due to the analyses made by the dedicated intelligence departments and why not, to the almost complete lack of counterintelligence protection within the Romanian companies.

The offer to create a general framework in order to increase the intelligence activities in the economy starts from the premises of a good understanding of the context in which the relevant and

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<sup>25</sup> Delbecque, Éric; Fayol, JeanRenaud, *Intelligence économique*, Magnard Vuibert, Paris, 2012, p.17.



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timely information can contribute to increasing management performances and economic development, in the big picture. The main idea is that of using a specialized infrastructure in order to collect, process and analyze data and information in order to disseminate intelligence to the economic actors.

What does the intelligence process offer to the economy? On the first hand, relevant and timely information. For each important company or economic branch, it can identify the informational needs, the place or the environment where the best data can be collected from, the most adequate analysis techniques to reach the targeted goal, and the best way to present the produced intelligence, in order to reduce the uncertainty within which decisions are made by the top management. Briefly, added value for competitiveness. On the other hand, in this way there can be identified and revised informational vulnerabilities, actions or inactions of people who, due to the lack of intelligence culture, manage to turn important companies vulnerable.

Consequently, in the context of globalization and of the exacerbated global competition, the economic intelligence as a way to obtain strategic information, useful to the economic agents represents, more and more obviously, a stringent necessity. The economic operators, the regions or the states cannot ignore and, furthermore, must impose and use this essential function in order to consolidate markets, guarantee quality and, recently, to ensure durable development.

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- [4] Martre, Henri coordonator, Rapport du Commissariat au Plan consacré à «*l'intelligence économique et la compétitivité des entreprises*» (La documentation française), 1994.
- [5] “Intelligence économique” available at [https://fr.wikipedia.org/wiki/Intelligence\\_économique](https://fr.wikipedia.org/wiki/Intelligence_%C3%A9conomique) (checked on the 30<sup>st</sup> of July 2015).
- [6] Deschampes, Christophe; Moinet, Nicolas, *La boîte à outils de l'Intelligence économique*, Paris, Dunod, 2011, p.6.



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**ESTABLISHING A JOINT ARAB FORCE TO FIGHTING  
TERRORISM BETWEEN THE INTERNAL CONSTRAINTS AND  
EXTERNAL CHALLENGES**

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**Abstract:**

In this paper the author tries to discuss and propose solutions to the idea currently raised in the Middle East (the establishment of a joint Arab force in order to counter the rising threat of terrorism) by a simplified review to the historical background of joint Arab military cooperation, then display of the most serious threats on the regional scene and how serious are they, and that led to the emergence of the need to establish a joint Arab force, with the presentation of some other reasons that led to the emergence of the need to establish a joint Arab force, then clarify the possible scenarios for the formation of such a force be followed by the view of the author on the context of the composition of the force and method of work as a general idea without going into the details, then the author gives a summary of the biggest internal obstacles that hinder the establishment of the joint Arab force and the most important external challenges that face its foundation, with presenting some positive indications and proposals to overcome those obstacles and challenges in a bid to theoretically support the idea.

*Key words: Terrorist, Joint Arab military force, Arab league, Middle East, National security, Threats, establishment, Constraints, Challenges.*

**Introduction**

A research issued for the Regional Centre for Strategic Studies in Egypt prepared by researcher Ahmed Kamel Beheiri, explained that the security threats facing the Arab region in the post-revolutionary movement pushed to the search for a new formula for cooperation in order to counter the risk of the spread of terrorist organizations, as well as the possibility of turning some Arab countries to "failed states" because of the internal armed conflicts and the risks involved threaten Arab national security, came the call for the establishment of a joint Arab military force, in an attempt to create new tools Arab joint military action to overcome the challenges facing the security of the Arab countries. And from here stems the importance of this paper, where they dealt with proposals for the establishment of such a force and review the obstacles facing the establishment and external challenges facing them.

**The Situations Reality in the Arabic Region  
Historical Background**

After that the Arab countries gained independence in the last century, in the midst of risks and ambitions that were plaguing the region, signed a 7 countries in 1950, the joint Arab defense treaty and the most important clauses, set up military plans and confront any armed attack is located on one of the signatory states, and the formation of permanent or temporarily sub-committees from among its members to discuss any of the topics within the scope of its terms of reference.

However, since the signing of the Treaty till now it has not been formation of a joint operations room or a starting base and in spite of wars and crises that fought Arab armies, the Arab power remained a dead letter.

Pending the crystallization form of force and its mission, objectives and census soldiers, rising pace of the challenges facing the region dramatically, ranging from the Israeli-Palestinian conflict and



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the situation in Sudan divided, leading to expansion of the "Islamic state" in Iraq, Syria and Libya, as these countries live bloody wars threaten unity and predict the future of the Dark, and the same situation in Yemen, Saudi Arabia, which led the "Hazm storm" on Houthis militants.

It is worth mentioning that there is a joint defense agreements signed by Arab countries with non-Arab countries along the lines of those that signed the Gulf countries with the United States, France, Britain, or concluded by Syria with Iran in 2006, and still those agreements form the cornerstone of national security for these countries, but those agreements has been outside the framework of the Arab League, as it is the individual agreements do not include all Arab States.

And the recent Arab summit has coincided in of March 2015 with seventy years after the founding of the Arab League, and in this context provides foreign ministers' meeting at the request amendment of the Charter of the university to the summit in preparation for the adoption of the proposed amendments, especially those relating to the draft statute of the Council of the Arab Peace and Security, which It stresses that the establishment of Peace and Security Council of the Arab as one of the university devices comes to achieving the goals of strengthening peace, security and stability in the Member States as well as the fight against international terrorism in all its forms and aspects to coordinate the efforts, which would pave the legal, political and institutional environment for the establishment and activation of joint Arab force.

[1] Ahmed Aatef, How do the Arab states exceed the common force creation barriers? Regional Centre for Strategic Studies in Cairo, March 2015, article in Region Situation journal.

### **Current threats**

The Arab region has seen many dangers and threats that require the formation of this joint military force for the time being, to maintain the stability of Arab States and protection if it is exposed to external or internal threats. The most notable motives in this regard:

1. Lawlessness and chaos experienced by Yemen after the Houthis coup on the legitimate authority, and may be posed by this situation of risk to the security of the Arab Gulf states, and the prospect of the arrival of the threats to the Bab al-Mandab global maritime hub, not to mention the threat to shipping in the Suez Canal.
2. What is going on in Libya and control of armed militias, particularly the "ISIS" over large areas of them, and represented a threat to the countries of the regional neighbors, particularly Egypt, which may require intervention urgently to implement the quality of operations in Libya against the militants, "ISIS" and other criminal organizations there.
3. The spread of terrorism groups in many Arab areas under various names, which called for the formation of regional and international alliances to confront them, which could expose the region to more foreign intervention.
4. the threat posed by Iran to countries in the region, particularly the Gulf Cooperation Council (GCC), especially in light of the tools owned by the Iranians like their development of nuclear capabilities, and possession of an arsenal of ballistic missiles that could hit the energy infrastructure in the Gulf states, which, as well as the prospects for success of the negotiations ongoing between Washington and Tehran, and the possibility of a deal between the two sides on US allies in the Middle East account.





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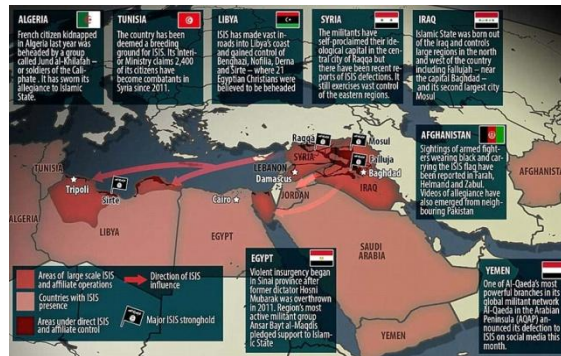


Fig.1 (The ISIS threats spots in Arab region)

[2] Ahmed Kamel Elbehairy, Security threats facing the Arab region after the revolutionary movement. , Regional Centre for Strategic Studies in Cairo, February 2015, article in Region Situation journal.

### The Necessary reasons

A range of changes in the Arab region that are imposed on its formation of an Arab force to protect its national security, notably:

1- Increasing national security and Arab threats: With the proliferation of expiatory groups such as ISIS and Alnasra and the others, the growing unity of internal conflicts after the fall of authoritarian regimes, and the growing Iranian and Turkish influence in the region, threatens the existence of the Arab countries more than ever before - revealed with the region for international intervention, and appeared to Arab League too weak to cope with these security threats.

2- Threats are greater than the capacity of the confrontation individual countries: are security threats in the region today being a cross-border, so that the associated network extended relationships, are difficult to be controlled Arab state alone, and then they need cooperation and solutions to regional, and that countries in the region States have the responsibility collectively to protect their national security.

3- The establishment of an Arab deterrent force: It is possible in the event of the establishment of joint Arab force, which represents a defensive deterrent against foreign interference in the region and frequent confrontations in the areas of aggression, if included the major military powers in the region such as Egypt, Saudi Arabia and Algeria.

4- The legitimacy of the unified Arab role in the intervention: where will ensure possession of the Arab states a legitimate cover to counter any threats to its security without reliance on the west role to control these threats, or individual by getting involved, though others argue that any military intervention of this force must receive the approval of the Council Security.

5- A solution to the disputes between the intra-Arab States: where the proposed Arab reduce the power of any military interventions to individual state against another in the region, and perhaps raised by the Egyptian air strike against Libya, which represents a legitimate defense of Egyptian self in the face of terrorist threats.

6- To provide expertise to the small Arab armies: There is interest lies of the joint Arab force on the Arab countries with smaller armies, or which have never armies fight fighting experiences before, and was dependent on foreign forces to protect them, and today faces exposure with draws the attention of the United States towards East Asian countries, so that these countries benefit from the experiences of big armies participation.



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7- The establishment of unconventional intervention forces: the region faces unconventional threats did not pass by, nor be able to fully encounter them because the weakness of their capabilities, and needs some unconventional intervention security types such as the fight against terrorism forces, and rapid intervention, peacekeeping, or provide aid to the affected States, etc.

It should not be limited to the role of the proposed force on military interventions, but also must be accompanied by supporting reconstruction efforts in post-conflict to promote peace and prevent the resurgence of conflict, next to coordinate efforts to combat international terrorism in all its forms and aspects, in addition to strengthening Arab capabilities in the field of preventive action through the development of an early warning system to monitor the factors leading to conflicts. Also, it highlights the importance of coordination with the United Nations and the Security Council in the formation of the joint Arab force in order to gain UN cover and according to the rules of international law and the charters of the United Nations, to avoid the objection of international and regional powers at its foundation.

[3] Haby Tarek, Proposed formation of a joint Arab force. Justifications and obstacles, Regional Centre for Strategic Studies in Cairo, March 2015, article in Region Situation journal.

### **The form of the proposed force and mechanisms of action**

#### **Raised scenarios**

There are a number of scenarios that are likely to be the director of understanding between the Arab countries, on the formation of the joint Arab force, which are as follows:

First scenario: the formation of the nucleus of Arab military forces jointly converged parties in the region's crises analysis, which focuses on three parties, "UAE, Egypt and Jordan", which are collected by a specific consensus on the face of the threat of terrorism, compared to the vision of Saudi Arabia, which focuses on the face of Iranian expansion, and does not want to face the Islamic movements, that are described by terrorist organizations may, because they establish ways of communications with each other, especially the Reform Party in Yemen.

The second scenario: the formation of multiple alliances, each alliance regards to a specific crisis ends with the goal achievement, as it happens in the Yemeni's the end of the formation of (alliance 9 +1), without the restriction of Arab parties, on the assumption of Pakistan's participation in it, and this is released by the part of Egypt to form a coalition, "Emirati Egyptian Italian French "(2 +2), particularly to confront the Libyan crisis. This scenario leads to the formation of an enormous iceberg of seasonal alliances during the next phase.

The third scenario: success in overcoming the disparities among Arab parties in political and military dimensions of the functions of the joint Arab military force so that is activated for the decision of the Arab summit in Sharm El-Sheikh, March 2015, and the coalition is roomy to include "Egypt, Saudi Arabia, UAE, Jordan," and may be include other Arab countries such as Morocco and Kuwait.

The fourth scenario: the failure to bridging the gap between country disparities of Arab countries with regard to determining the security challenges that the Arab countries are facing, especially in regard to Egyptian situation which stuck to (three noes) no for enter any regional forces in joint Arab military force to be formed, no for any intervention from the international military in the Syrian file and the rest of the zone files, no for dialogue with armed militias and terrorist groups in the region.

[4] Mustafa Basuiny, Joint Arab force is moving with rapid steps, <http://assafir.com/>, May 2015.

#### **The author's vision**

The author believes that although there are there are many scenarios looming on the horizon when it comes to joint Arab military force type targeted to be formed in the coming period, but it can



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clarify that the most likely of these force paths - both in terms of the legal framework to be established or forms of composition - and that as follows:

**1- The framework of the establishment of the joint military force:** There are two main frameworks governs the work of the joint Arab military force with respect to legal support for its formation, one at the regional level and the other is on the international level, which are:

(A) Framework of the League of Arab States: It means that the joint Arab defense agreement is the origin of the establishment of the joint Arab military force, which states that any aggression against any signatory to the Arab defense agreement is an act of aggression against other countries, and obligates to form a permanent military committee consists of representatives of the army staff of war of the contracting for the organization of joint defense plans.

(B) Framework of the Charter of the United Nations: As based on the joint Arab defense agreement to Article 51 in Chapter 51 of the Charter of the United Nations, it is possible to form a joint Arab force among several countries only away from any regional umbrella by using the same article and the same chapter as a reference, as referred to Article that nothing in the present Charter shall impair the inherent right of nations- individually or collectively - in self-defense if an armed attack occurs against a United Nations member, and to the fact that the Security Council has taken necessary measures to maintain international peace and security. Measures taken by Members in the exercise, which the right of self-defense shall be communicated to the Council immediately, and therefore these countries need to coordinate with the international community.

**2. The composition of the proposed force:** The draft resolution adopted by the Arab foreign ministers meeting in March 27, 2015 confirms that the joint Arab force would be permanent and will be agreement on all elements during the following three months of the Arab summit, and to join them will be a voluntarily decision by the States, and will have a headquarters for leadership and centers for the spread and a permanent mechanism of action and will assume the functions of the rapid intervention and other functions to meet the challenges that threaten the safety and security of Member States, national sovereignty, including terrorist organizations, threats. The most anticipated features of this force can be determined after its formation, as follows:

(A) The basic tasks: The proposed joint force aims to rapid intervention in the face of crises, without functions include sending a long-term military campaigns, and then will have formations rely primarily on special forces and rapid reaction forces, it is likely that the Egyptian rapid intervention forces be level "Airborne" one of the main pillars of the joint forces of Arab, because of the readiness and the strength of its formation, and the possibility of carrying flown to different places to help in securing Arab borders, and the same concept would be applied to similar formations in the Arab countries, especially the Gulf Cooperation Council (GCC).

(B) Forces command and training: It is expected to receive this Arab forces joint exercises every three months, where these exercises focus on the plans will be put in order to encounter the threats, and is likely to be the establishment of a joint command of the joint forces along the lines of the "Arab military junta", and will include military and intelligence men, and it will be assigned to develop a plan for training in the face of threats and tasks to be performed by those forces, to be ready to intervene in hot spots throughout the region.

(C) The basic structure and the distribution of roles: it is estimated that it will be the distribution of roles on the Arab countries to participate in those forces, so rely on the military post of countries with armies and equipment, while it will receive logistical support from other countries, and through the available information on the capabilities of the Arab armies , it is clear that the Egyptian army is the largest in number and hardware, as the UAE possesses advanced aircraft and modern arming system,



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and the same thing applies to Saudi Arabia, which possesses advanced and modern equipment due to the huge arms deals, which was keen to contract over the past years.

Thus, the stakes are the biggest to be the leadership of the joint Arab military force in Egypt because of its military expertise and then bear to provide the bulk of the troops, in addition to the military experts and field trainers, while both Saudi Arabia and the UAE, Kuwait, Bahrain, Jordan and Morocco participates in units of elite special quality to the level of air and naval forces and the Rapid Intervention In addition to logistical support.

When it comes to talk about the establishment costs, we can find easily that it will not be a simple budget to be afforded by a small number of countries, as it may exceed \$10 billion in some estimates; as a result it is better to make a budget proposal that is approved by the Participating Countries, Taking into account what each country offers as capabilities other than money, such as land, equipment and training experience.

### **The internal constraints and external challenges**

The joint Arab military force is facing a number of internal constraints and external challenges, that might hinder the implementation of the completion of the project in full, and this is the most important obstacles and challenges are as follows:

#### **The internal constraints**

1-Absence of Arab consensus on a specific definition of the concept of terrorism as one of the objectives of funding the joint force, There is a wide dispute among the Arab countries towards this concept, and with the exception of the "ISIS," If we take the example of the” Muslim Brotherhood Group”, is classified as a terrorist organization in Egypt, but not in other countries, and then how could to use a joint Arab military force to hunt down this group where they are? Specially if a number of Arab countries do not classify it.

2. Variation in the political and military situation of Arab countries about vital crises such as the Syrian and Libyan crises, how can that employs joint Arab force to intervene in this crisis, and how can define the concept of regional security in regard of the difference or variance of list of threats from one country to another? Issues may become increasingly complex in the case of sincerity of claims repeated by some media in recent times about the presence of variation in the perceptions of some files between the major Arab states, particularly with regard to relations with Turkey and to deal with some controversial groups about the possibility of considering them as terrorist groups.

3. The challenge of activating the joint Arab defense agreement, which means the need for consent of all the states of the Arab League, which is difficult in regard of the deep-rooted political differences between some Arab countries, which makes Arab reconciliation initial step for the implementation of the agreement if it will become a legal framework that will be the reference of the joint Arab force. Joint Arab force and can be beyond this problem by relying on a regulatory framework which is limited just to countries that wishing to participate in the joint force only with the possibility of expanding its scope in the future.

4- The collapse of some old regular armies in number of Arab countries or sliding into the midst of the civil war and the conflict for power like Syria, Iraq, Libya and Yemen. On the other hand we find the regular Arab armies which survived from collapse or civil war either they are modest in census and armament like some armies of the Gulf, and Lebanon, or countries are immersed in a fierce wars against terrorism like Egyptian army.

5- Wide and obvious variation between the possibilities of individual Arab countries, when we find that some of the Arab countries that do don't have any financial problems but they lack good armament or required experience, we find others that are well armed and have a deep experience, but they are suffering from a deteriorating economic indicators, which will necessarily be reflected in the



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form of the emergence of problems in operations budgeting, financial issues, training and equipment efficiently use.

[5] Adel Alkady, Differences hinder the formation of a "joint Arab force", <http://altagreer.com/>, May 2015.

### **The external challenges**

1-The fear of number of Non-Arab countries from the joint Arab military force, although terrorism has become a threat to everybody, but a number of Western forces that *selectively fight* terrorism may find in the joint Arab force a threat to their interests, and therefore, it is expected that Some countries oppose the draft standard Arab power, and resort to pressure on the potential participating countries in order to prevent them from participation, or to encourage other Arab countries to reject the idea of interference in their affairs through a joint Arab force under the pretext of preventing "sensitivities" or taking into account the considerations of "sovereignty". What strengthens this hypothesis is the recent refusal of the United States and some European countries for Egyptian efforts to pass a Security Council resolution authorizing international military action against "ISIS" and other armed militias in Libya, along the lines of the international coalition in Iraq and Syria.

2- There is a perception of some countries to expand the military alliance to include "Turkey" to create a military *Sunni* alliance instead of the Arab one, to be able to make a regional balance with "Iran", which is set for expansion in Lebanon, Iraq, Yemen, Syria, and try to influence the Shiites situation in Bahrain and eastern Saudi Arabia, as well as having the possibility of the imminent signing of the deal of understanding between Iran and Western countries on the nuclear issue. In other words, close ties with some of the international and regional powers impedes the establishment of this force, these other countries see in this force a direct threat to its interests and influence (such as Turkey, Iran), which may hinder the establishment of the force negotiations, since the initial approval for some Arab countries on the establishment of a joint force does not necessarily guarantee the completion of the task.

### **Overcoming obstacles and challenges**

Although there are a lot of problems facing the establishment of joint Arab force, but there are also many positive signs in this regard, and including:

**1-Hazm Storm:** despite the failures that occurred to Arabs military cooperation reinforcement attempts among them, history did not deprive them from some successful instantaneous experiments that can be guided by them in the future, whether through the wars that took place between them and Israel or during the process of liberation of Kuwait in 1991, and then enter the Island Shield forces in Bahrain in 2011, leading to the experience of the most prominent in the Saudi-led Arab forces directing painful blows against the strongholds of the Houthis in Yemen through the process of " Hazm Storm " in March 2015, when 185 fighter aircraft participated process, including one hundred of Saudi Arabia and thirty from the UAE and 15 from Kuwait and the same of Bahrain, while Qatar participated ten aircraft, and Jordan with six aircraft, as well as Morocco six aircraft, and Sudan in three planes, as Egypt, Jordan, Sudan, Tunisia, Djibouti indicated its willingness to participate in the land process If the circumstances lead to this option.

**2- Some indications of flexibility:** Egypt has been keen to facilitate the formation of the Arab military forces process across a variety of ways, most notably: confirmation that participation in the proposed force would be optional, and the contribution will be according to the capabilities of each country, it was announced that the roles distribution of the participating Arab countries in those forces



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is dependent on military participation from countries with armies and equipment, as they will receive logistical support from other countries.

It has also taken into account that if found it is difficult to work under the umbrella of the Arab countries, the participating countries will form the legitimacy, as happened in the international coalition to confront ISIS.

Some Egyptian officials had already announced that if the Egyptian proposal has not been approved by the Arab summit, the force will be formed by those attended and agreed.

**3-Support the Arab summit:** the 26<sup>th</sup> Arab summit approval to the Egyptian draft resolution of the establishment of a joint Arab force -which was approved by the Arab foreign ministers during their preparatory meetings - gave impetus to efforts to form a joint Arab force, the summit authorized the presidency of the last session represented in Egypt to begin forming steps of the joint force and present the results of its work within three months on the special meeting of the Board of the Joint Arab Defense for approval.

The Secretary-General pointed out that the high-level team under the supervision of the Chiefs of Staff of the armed forces of the participation wishing countries will be invited to a meeting in a month to study all aspects of the subject and propose operational procedures and mechanisms of action, pointing out that the communication has already begun to call for the meeting.

**4-the world reassure:** Emphasis was placed across many media channels and political meetings for many of the Arab leaders that the joint Arab force proposed to be established is not directed against any party, and the aim of its creation is to contribute to the achievement of the desired stability and preserve the unity of the Arab nation and the preservation of its resources, as well as realize the hopes and aspirations of their people , especially that the region is going through severe turbulence and polarization phase.

**5- Amendment of the Charter of the Arab League:** The last Arab summit synchronized with seventy anniversary of the Arab League, and in this regard foreign ministers' meeting provides a request for amendment of the Charter of the Arab League to the summit in preparation for the adoption of the proposed amendments, especially those relating to the Council of the Arab Peace and Security system draft, which confirms that the establishment of the Council of the Arab Peace and Security as one of the league tools works to achieve the goals of peace reinforcement, security and stability in the member states as well as frightening against international terrorism in all its forms and aspects to coordinate the efforts, which would pave the legal, political and institutional environment for the establishment and activation of joint Arab force.

**6- USA support:** USA Secretary of Defense Ashton Carter has confirmed during the visit, "Fort Drum" military base in New York state to support his country's Arab plans to establish a joint military force to encounter the increasing security threats in the Middle East, and that the Pentagon would cooperate in areas where USA interests are compatible with Arab interests, in particular, that a number of Arab participants already have bilateral security partnerships with the United States.

Perhaps the USA welcoming of that shift in Arab strategy which is not directed against Israel is returning to Washington's desire to abandon the direct involvement policy in regional conflicts in order to support its allies and intend to rely on regional agents to act as a regional policeman on its behalf and under her leadership and directed within the leadership strategy from behind.

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### **Some recommendations**

From the foregoing, it became clear that the joint Arab force has become an urgent necessity in many Arab countries, to enable them to address the risks and threats to the whole region, though the formation of this force is facing challenges and obstacles threaten idea, which requires from some Arab countries the convergence of views among themselves on some of the points of contention about regional issues and topics, and overcoming them in order to support the Arab national security, and also pressure on international allies in order to support a proposed joint force, and there are other recommendations proposed in this regard, namely:

1. Exploit the support of some international parties to form a joint Arab force, such as Russia, which expressed support for the open through the envoy of President "Vladimir Putin" comments for the Middle East, "Mikhail Bjaddanov" who expressed his country's welcome and support for the idea, during a meeting with the Secretary of the Arab League. Thus, it is possible that the Arab countries, for example, are seeking to Moscow to get the necessary weapons to the force and military equipment.
2. It is very important to select elements for the joint force from elite units within the Arab armies, and the highest level of combat training and technical efficiency.
3. Launching a special fund so early- regardless the finishing of the agreement- to provide funding for the arming the joint Arab force, and keeping this fund permanent available, not just in case of operations nor even with the support of financially capable countries .
4. Action execution to unify as much as possible arms and training systems to the Arab armies, with the exchange of information on the various sources of military threats.

### **Conclusion**

Finally; the formation of a joint Arab force represents an urgent necessity in the light of the threats experienced by the Arab region, including imposes on the Arab countries need to work in order to make it successful, and to overcome the challenges facing its foundation by setting clear criteria for the use of joint Arab force, define their objectives clearly, and agree on fixed resources for funding even perform its functions effectively and not get stuck in the future, taking into account the principle of non-interference by one of the members of the internal affairs of another member states, and to strengthen the foundations of democracy, good governance and the rule of law and protection of human rights, and respect for international humanitarian law in the context of conflicts prevention efforts ,stop them, managing and resolution.

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**A PERSPECTIVE ON CO-OPERATION AND  
INTEROPERABILITY, MILESTONES FOR IMPROVING  
SECURITY IN THE BLACK SEA REGION**

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**Abstract:**

The Black Sea region has lately emerged as a region of main concern due to its increased geopolitical importance and the wide range of security issues it confronts with. As a result both regional and international actors have focused their attention in finding suitable solutions to secure the area. Finding solutions is not an easy issue as there is not regional identity and the regionalization process is nascent. Using information present in academic and government literature, this paper concludes that the process of NATO integration, regional cooperation and defense transformation has been the main drivers for Romania's contribution in improving the security environment in the region. The paper also identifies international cooperation and standardization as tools for increasing the confidence and security in the Black Sea region.

**Introduction**

The purpose of this research is to emphasize the importance of cooperation and interoperability, the tendencies in the cooperation domain, the need for an interoperable naval task group and to lay out some ground work that could perhaps, later on, be taken into account for the improvement of these tasks.

The upmost questions debated in this study are – *“Is the present level of the cooperation and interoperability satisfactory in order to fulfill partners missions? And, What are the ways and possibilities to amplifying cooperation in Black Sea region?”*

Our missions will have us, during future exercises, working together with NATO and PfP Black Sea littoral countries, friends, partners, and civilians (as search and rescue and/or environmental organizations). Thus, there is a need for a coherent cooperation and interoperability.

I consider that the most important aspect, having a good level of cooperation and interoperability, will allow us to perform smoothly our assigned mission with the application of standing operating procedures.

This research paper wants to surface some aspects regarding the necessity of cooperation and interoperability in the Black Sea area. To accomplish this task, the paper shows the geostrategic importance of the Black Sea Area, defines some terms used along this study, explains interoperability from a maritime perspective and shows ways to improve it until a required level is reached, Humanitarian Assistance and Disaster Response.

**The geostrategic importance of the Black Sea area**

From ancient times the Black Sea area was a transit region for economic, politic and strategic interests. To support this statement, there are the caravans and the antique sea lanes which created *“the silk road,”* as a linkage between eastern and western civilizations and the numerous movements of the greatest strategists of the time with their troops from south to north and vice versa.

The Black Sea basin is a strategic region bordering the Greater Middle East and a key transit route for Caspian oil. This region is a patchwork of overlapping civilizations and spheres of influence. The region is geopolitically significant precisely because it is a nexus of cultures, international trade, ideas, and influences. Oil and gas from Central Asia and the Middle East move along Black Sea





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shipping lanes and pipelines to Europe and other points west. The Black Sea region can be a launching platform for military, reconstruction, and stabilization operations in Afghanistan and Iraq as well as for the protection of energy shipping lanes between the Caspian region and Western markets. It is also Europe's new southeastern border. Thus, there are many countries with strong interests in safeguarding the movement of some goods, preventing the movement of others, and maintaining a presence in the Black Sea region.

Although it is strategically situated at the crossroads between Europe and Central Asia, and has been the site of many confrontations during history, the Black Sea was never recognized as a region. This was because *“since the Antiquity it had developed a tradition of being backyard of one state or the other; otherwise witnessed their competition to dominate it.”*[1] This was also the case during the Cold War when only Turkey, among the littoral states, was outside Soviet Union influence. Therefore it is understandable the deficiency of regional identity among the local states and of regional awareness within the international community. Moreover, the boundaries that define the Black Sea region are also ambiguous. [2] In order to eliminate confusions this research paper refers to the Black Sea Region as comprising the littoral states, South Caucasus and Moldova.

Geography, the interests of others and the region's relations with the rest of the world in large part explain its resurgence. Black Sea straddles Europe and Asia, linking north to south and east to west. Oil, gas, transport and trade routes are all crucial in explaining its increasing relevance.

In the last two decades, the Black Sea has changed beyond recognition. We have witnessed the transformation of the former communist societies and the impact of globalization.

Its strategic location, between the hydrocarbon reserves of the Caspian basin and energy hungry Europe, places the Black Sea in a unique position. Nevertheless, while the opportunity to transfer Caspian oil and gas to European markets raises hopes for regional economic development and prosperity, competition to control pipelines, shipping lanes and transport routes to secure increased political and economic influence, not only throughout the region, but also on a global scale, raises the risks of confrontation.

Romania's foreign policy has established among its priorities the ones concerning the Black Sea region, which are considered to be *“a very important issue, of national interest.”*[3]

In this geostrategic environment, the influence of historical evolution is a factor that should be taken into consideration as we strive to configure the relationships between this region and organizations like NATO and the EU and to prove its increased importance.

The former Chief of General Staff, General Constantin Degeratu, has made an assessment about the importance of the Black Sea, at the annual Black Sea Naval Commanders Committee Meeting, held in Mamaia on May 17th, 2005: *“in our opinion, Black Sea is recognized as an important geopolitical area, which also covers the countries placed around it and in its closeness. It claims a real Euro-Atlantic strategy in order to ensure the democratic stability, security and prosperity, on one hand and, to properly promote the dynamism of democratic changes process, on the other hand. In order to support such strategy, we have to start from the region's realities, as well as from the ways this area is integrated onto the global processes.”*

From this point of view, as well as from the latest statements of the Romanian president, there are at least three specific elements for the Black Sea area.

First of all, all states within the area are united by the same fundamental values and interests, which govern the current development of international relationships: democracy, human rights and free market economy.

Secondly, all countries are linked, one way or another, to the Euro-Atlantic security configuration. In relation with NATO, there are Alliance members, PfP members, and countries that share a special partnership with NATO.



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Thirdly, the Black Sea region develops as a major chain loop, which links the strategic Euro-Atlantic area and the Middle East, Caspian Sea and Central Asia.

The Black Sea area is placed at a central point between two major strategic axes, which have complementary components: the axis of the energy producer and the energy consumer, on one hand and, the axis of the security producer and the security consumer, on the other hand.

The increased importance of the Black Sea region in the present geopolitical context is given by the necessity to establish the strategic raw materials flow, by the economic and military co-operation and by the increased involvement of the great powers and of the international institutions' contribution to solve major issues of the region.

### **Naval interoperability-a maritime perspective**

In my opinion, the main pillars of Black Sea security are regional cooperation, interoperability and confidence building the most important attribute being flexibility as a tool for fulfill the mission' requirements.

At the outset, we should be clear what we mean by interoperability as it can be interpreted in different ways. For the purposes of this article, interoperability describes the ability of forces from Black Sea littoral countries to train, exercise and operate effectively together in the execution of assigned missions and tasks. Within NATO, standardization is the process of developing concepts, doctrines, procedures and designs to achieve and maintain the most effective level of standardization in the fields of operations, administration and materiel. The levels of standardization are in ascending order compatibility, interoperability, interchangeability and commonality [4].

Interoperability is a property referring to the ability of diverse systems and organizations to work together (inter-operate). The term is often used in a technical systems engineering sense, or alternatively in a broad sense, taking into account social, political, and organizational factors that impact system to system performance [5].

### **Improve Interoperability.**

In my opinion, the most important pillar of Black Sea security is interoperability. It was improved exercise by exercise but there are still some gaps. Ships' commanding officers have to gradually increase the interoperability level in accordance with the mission, aims and objectives stated in EXPLANs, ships characteristics and present level of crews training. This characteristic has to show, first of all, capability to adapt to any situations, fast, without hesitations and capable to face any situation.

Interoperability and rapid reaction is the key to success in missions such humanitarian assistance or search and rescue. Cooperation with naval forces of Black Sea nations requires more interoperability taking in consideration various levels of technology. We have to work as a mechanism for the interoperability level improvement as a main pillar of Black Sea security.

Once obtained the desired interoperability' level will demand a high degree of coordination among liaison officers, exercises' staff, ships with their departments in order to execute their responsibilities of providing, training, and sustaining naval forces. Each commanding officer at all levels has to act responsibly for determining how ships are organized, deployed, and employed. This role involves identification of requirements emphasized by mission stated in EXPLANs and articulation of how their ships or subordinates can be integrated in appropriate ways to meet aims and objectives. Close synchronization among these is more than necessary having a satisfactory level of efficiency. International staff must prove their ability to plan, asses and execute in accordance with NATO series documents.



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**The Level of Interoperability Required.**

To determine and extract from the mission what the required level of interoperability is, represents the most important objective. Interoperability is multifaceted and its requirements vary from sea phases exercises shore SIMEX, workshops, briefings and post exercise discussions. The Romanian Navy is engaged in interoperability since 1990 when it paved the way with Partnership for Peace and, continuing with BLACKSEAFOR and more pre-eminently after Romania's accession to NATO. I consider that, in order to fulfill our assumptions and missions an increased level of interoperability is required to maintain an effective Command and Control. Sometimes, interoperability covers a large spectrum including language, cultural and technical aspects. The basic level of interoperability represents communications, both in technical and operational point of view. During sea phases, communications have to be improved in order to avoid any misunderstanding. For ships, situation is complicated by limitation in number of radio equipment, language barriers, and being continuously shorthanded in communication personnel.

**Humanitarian assistance and training**

**Humanitarian Assistance and Disaster Response**

During NATO and PfP exercises, many interactions have been developed among ships, in order to reduce the harmful effects of natural disaster. Because of their operational readiness and capabilities, ships are able to support and assist people in distress and in suffering. I consider this Navy's mission one of the most important. There is a need to improve our trainings, both, at sea and in ports, in order to improve the standing operating procedures. People in distress do not have enough time and patience to wait. Thus, ships have to show capability to develop a sustained, precise and fast non-combatant evacuation.

In case of natural disasters or emergencies on humanitarian assistance situations, the Romanian navy ships should be able to provide timely civilians evacuation and non-combatant personnel support. In addition, it has to be able to provide emergency medical treatment and to fix or evacuate damaged infrastructure. Finally, for the humanitarian support, the exercises actions has to focus on measures for human life saving, such as medical support, water supplies, food, clothing, fuel and also the transportation on sea of the persons affected by the disaster.

**Training**

Given the mission, there is a mandatory necessity to train both, sailors and staff, in order to face challenges. For young officers, they have to work in a very sustained sea exercises, requiring from their commanders to be entrusted with responsibility to conduct different exercise and serials in order to execute and fulfill the mission.

Crews training must be polished in accordance with missions. Operations such humanitarian assistance require enhanced understanding of real life situation, achieved through intense training throughout workshops, sea serials, shore simulated exercises (SIMEX), staff assignments, nights and days on the bridge.

**The Romania Naval Forces contribution to the provision of cooperation and security in the Black Sea**

Cooperation [1] can mean two things. Firstly, it means being together. As social creatures, we need other human beings for companionship. We feel most secure in a group where we are accepted and find encouragement. Secondly, it means working together. Preservation of security in the Black Sea region through regional cooperation is a key to maintain the stability of this region. In this paper I analyze one of the Navy missions, developing cooperation among countries.



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The Black Sea region is increasingly becoming a priority on the international agenda. In fact, a regional approach is emerging as actors understand that common problems need to be addressed jointly. Nevertheless, cooperation efforts are hampered by a number of factors, such as uneven economic and political development within and among countries, nationalist forces, and longstanding animosities between regional players. In this context, it is imperative to foster sound policies aimed at strengthening dialogue and cooperation.

In my opinion, security of the Black Sea region and anchoring the region to the Euro-Atlantic cooperation using the existing regional initiatives including BLACKSEA HARMONY are priorities to Romanian Naval Forces Staff.

Romania is paying particular consideration to the Black Sea region and I believe that its geographical location at the southeastern boundaries of the EU and NATO requires a special approach from all countries. Romania will continue to play an important role in sharing trust and interoperability of the navy forces of the riparian countries.

I think that the geographical position of Romania in the vicinity of the Black Sea and its connection to the Planetary Ocean represents a strategic advantage that must be fully exploited.

In the context of Romania's external policy priorities, a special attention is given to the Black Sea issues. This concern is a very important matter, of national interest. Romania wants to promote its own maritime and river interests, which are sustained by its maritime power, by the access to the sea and by the length of the maritime and river borders.

From this perspective, our country has major interests to support the supply with raw materials through the maritime and river lines of communications, to exploit the sea bed, to develop the submarine exploration and exploitation, to support economic activities at sea and river – naval transportation, tourism, naval building – and to promote its image worldwide, by showing the flag at seas and oceans. Also, the Euro-Atlantic involvement on the extended region of the Black Sea is very important.

Participation at common naval exercises under the auspices of the regional initiatives, consolidates the trust, friendship and relations of good vicinity with Black Sea littoral states.

The main tendency for the Black Sea is that this area will become an area of co-operation, interoperability, development and regional mutual confidence. The regional co-operation is a reality with significant results, especially regarding to the level of trust between the littoral states. Black Sea has permanently been unstable and represented a border between various political, ideological and religious systems.

The co-operation relationships are focused on the economic development and the prevention and elimination of the risk factors that may generate crisis situations, with harmful effects over the regional stability and security. Thus, there are promoted political, ideological, economic, diplomatic and cultural relations in order to maintain and consolidate the stability and, also, the military co-operation relations in order to increase the trust and security through transparency.

By participating to the regional and PfP activities, the Romanian Naval Forces are mainly engaged in the fulfillment of humanitarian and Search and Rescue missions. The contribution of the Romanian Naval Forces to the regional stability can be evaluated also by the adoption of “The Document on Confidence and Security Building Measures in the naval field in the Black Sea”, which is the result of the negotiations between the six littoral states.

## **Conclusion**

The Black Sea Region has significantly grown in importance in the last decade, both for the regional and international actors. It has been due to the enlargement of both NATO and the EU, which has connected them geographically to the Black Sea, making the Black Sea an access point. Because of globalization, the main tool in dealing with security issues is to develop a regional security



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approach reinforced by region building and regional cooperation. Even though the Black Sea lacks a regional identity due to different political and economic development, military potential, history, religion, and culture, there has been evidence of regional cooperation since 1992. Moreover, the important differences in foreign policies and strategic orientations of the countries in the region have hampered the regionalization. However, the regional cooperation has diversified, having a big impact on regional security challenges. I am considering regional initiatives have the potential of enhancing stability and security in the Black Sea Region.

The Black Sea security environment is fairly complex. However, the foundation to cope with these complex challenges is strong. The Montreux Convention, existing bilateral and multilateral cooperation arrangements, organizations and structures are concrete instruments. What counts is the will and intention of all littoral states to maintain and foster peace and stability in the Black Sea region.

Beside cooperation, interoperability is extremely complex and becoming more important. Experimentation of different standing operating procedures innovation in finding new interoperable ways to fulfill our missions and building based on lessons identified from previous exercises to improve interoperability, will remain important aspects from my perspective. It is a long way to transform an identified lesson into a learned one, but as an officer, I am taking the responsibility to take this over the time.

Finally, this paper has outlined the potential contribution of Romania, as an EU and NATO member, in enhancing Black Sea regional security cooperation in the future. Before EU integration, Romania has envisaged playing an active role for the enhancement of security situation in the Black Sea region, by canalizing regional efforts in developing a coherent strategy towards this region and promoting it within EU. As EU member, Romania is enhancing its contribution for prioritization of common efforts, which will increase regional development and stability. As NATO member, Romania has the military capabilities and political maturity to develop NATO' assumed missions.

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## **SPECTRUM MANAGEMENT IN COGNITIVE RADIO NETWORKS**

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### **Abstract:**

Cognitive radio networks will provide high bandwidth to mobile users via heterogeneous wireless architectures and dynamic spectrum access techniques. However, CR networks impose challenges due to the fluctuating nature of the available spectrum, as well as the diverse Qom requirements of various applications. Spectrum management functions can address these challenges for the realization of this new network paradigm. To provide a better understanding of CR networks, this article presents recent developments and open research issues in spectrum management in CR networks. More specifically, the discussion is focused on the development of CR networks that require no modification of existing networks. First, a brief overview of cognitive radio and the CR network architecture is provided. Then four main challenges of spectrum management are discussed: spectrum sensing, spectrum decision, spectrum sharing, and spectrum mobility.

*Key words:* CR (Cognitive Radio), SDR (Soft Defined Radio), Qom (Quality of Service), spectrum management.

### **Introduction**

Current wireless networks are characterized by a static spectrum allocation policy, where governmental agencies assign wireless spectrum to license holders on a longterm basis for large geographical regions. Recently, because of the increase in spectrum demand, this policy faces spectrum scarcity in particular spectrum bands. In contrast, a large portion of the assigned spectrum is used sporadically, leading to underutilization of a significant amount of spectrum [1]. Hence, dynamic spectrum access techniques were recently proposed to solve these spectrum inefficiency problems. The key enabling technology of dynamic spectrum access techniques is cognitive radio (CR) technology, which provides the capability to share the wireless channel with licensed users in an opportunistic manner. CR networks are envisioned to provide high bandwidth to mobile users via heterogeneous wireless architectures and dynamic spectrum access techniques. This goal can be realized only through dynamic and efficient spectrum management techniques. CR networks, however, impose unique challenges due to the high fluctuation in the available spectrum, as well as the diverse quality of service (Qom) requirements of various applications.

In order to address these challenges, each CR user in the CR network must:

- Determine which portions of the spectrum are available;
- Select the best available channel ;
- Coordinate access to this channel with other users;
- Vacate the channel when a licensed user is detected [2].

These capabilities can be realized through spectrum management functions that address four main challenges: spectrum sensing, spectrum decision, spectrum sharing, and spectrum mobility.

This article presents a definition, the functions, and the current research challenges of spectrum management in CR networks. More specifically, we focus our discussion on the development of CR networks that require no modification in existing networks. An overview of CR technology is provided, and the CR network architecture is presented. We explain the concept of spectrum management and the required functionalities. Then we describe spectrum sensing, spectrum decision, spectrum sharing, and spectrum mobility concepts.



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### **Cognitive Radio Technology**

The key enabling technologies of CR networks are the cognitive radio techniques that provide the capability to share the spectrum in an opportunistic manner. Formally, a CR is defined as a radio that can change its transmitter parameters based on interaction with its environment [1].

From this definition, two main characteristics of cognitive radio can be defined [3]:

- *Cognitive capability*: Through real-time interaction with the radio environment, the portions of the spectrum that are unused at a specific time or location can be identified. CR enables the usage of temporally unused spectrum, referred to as spectrum hole or white space. Consequently, the best spectrum can be selected, shared with other users, and exploited without interference with the licensed user.

- *Reconfigurability*: A CR can be programmed to transmit and receive on a variety of frequencies, and use different access technologies supported by its hardware design [4]. Through this capability, the best spectrum band and the most appropriate operating parameters can be selected and reconfigured.

In order to provide these capabilities, CR requires a novel radio frequency (RF) transceiver architecture. The main components of a CR transceiver are the radio front-end and the baseband processing unit that were originally proposed for software-defined radio (SDR). In the RF front-end the received signal is amplified, mixed, and analog-to-digital (A/D) converted. In the baseband processing unit, the signal is modulated/ demodulated. Each component can be reconfigured via a control bus to adapt to the time-varying RF environment. The novel characteristic of the CR transceiver is the wide band RF front-end that is capable of simultaneous sensing over a wide frequency range. This functionality is related mainly to the RF hardware technologies, such as wide band antenna, power amplifier, and adaptive filter. RF hardware for the CR should be capable of being tuned to any part of a large range of spectrum. However, because the CR transceiver receives signals from various transmitters operating at different power levels, bandwidths, and locations; the RF front-end should have the capability to detect a weak signal in a large dynamic range, which is a major challenge in CR transceiver design [5].

### **Cognitive radio network architecture**

A comprehensive description of the CR network architecture is essential for the development of communication protocols that address the dynamic spectrum challenges. The CR network architecture is presented in this section.





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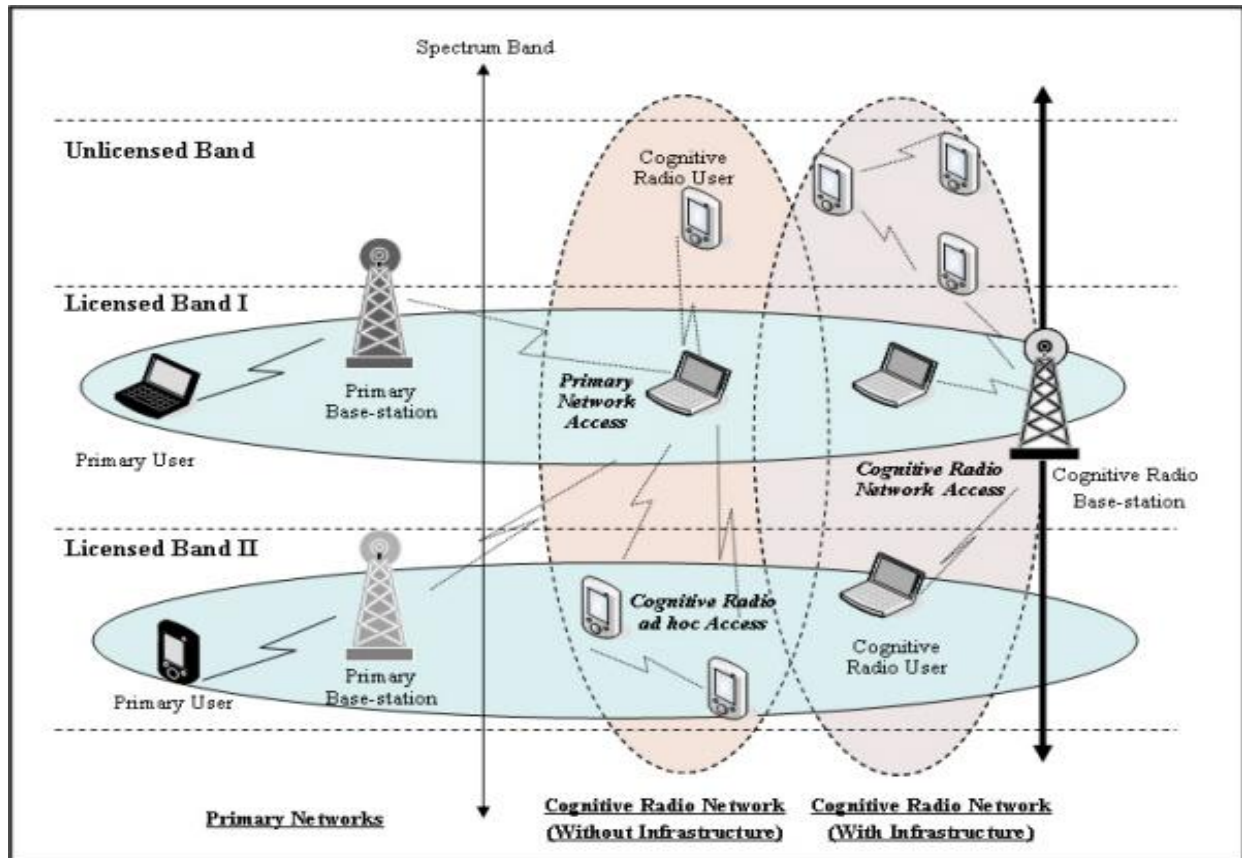


Fig.1 A CR network architecture [9]

### Network components

The components of the CR network architecture, as shown in Fig. 1, can be classified as two groups: the primary network and the CR network.

The primary network (or licensed network) is referred to as an existing network, where the primary users have a license to operate in a certain spectrum band. If primary networks have an infrastructure, primary user activities are controlled through primary base stations. Due to their priority in spectrum access, the operations of primary users should not be affected by unlicensed users.

The CR network (also called the dynamic spectrum access network, secondary network, or unlicensed network) does not have a license to operate in a desired band. Hence, additional functionality is required for CR users to share the licensed spectrum band. CR networks also can be equipped with CR base stations that provide single-hop connection to CR users. Finally, CR networks may include spectrum brokers that play a role in distributing the spectrum resources among different CR networks [6].

### Spectrum sensing in cognitive radio networks

With Cognitive Radio being used in a number of applications, the area of spectrum sensing has become increasingly important. As Cognitive Radio technology is being used to provide a method of using the spectrum more efficiently, spectrum sensing is key to this application.

The ability of Cognitive Radio systems to access spare sections of the radio spectrum, and to keep monitoring the spectrum to ensure that the Cognitive Radio system does not cause any undue interference relies totally on the spectrum sensing elements of the system.



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For the overall system to operate effectively and to provide the required improvement in spectrum efficiency, the Cognitive Radio spectrum sensing system must be able to effectively detect any other transmissions, identify what they are and inform the central processing unit within the Cognitive Radio so that the required action can be taken.

***Cognitive Radio Spectrum Sensing basics***

In many areas cognitive radio systems coexist with other radio systems, using the same spectrum but without causing undue interference. When sensing the spectrum occupancy, the cognitive radio system must accommodate a variety of considerations:

- *Continuous spectrum sensing:* It is necessary for the cognitive radio system to continuously sense the spectrum occupancy. Typically a cognitive radio system will utilize the spectrum on a non-interference basis to the primary user. Accordingly it is necessary for the Cognitive radio system to continuously sense the spectrum in case the primary user returns.
- *Monitor for alternative empty spectrum:* In case the primary user returns to the spectrum being used, the cognitive radio system must have alternative spectrum available to which it can switch should the need arise.
- *Monitor type of transmission:* It is necessary for the cognitive radio to sense the type of transmission being received. The cognitive radio system should be able to determine the type of transmission used by the primary user so that spurious transmissions and interference are ignored as well as transmissions made by the cognitive radio system itself.

***Types of cognitive radio spectrum sensing***

There are a number of ways in which cognitive radios are able to perform spectrum sensing. The ways in which cognitive radio spectrum sensing can be performed falls into one of two categories:

- *Non-cooperative spectrum sensing:* This form of spectrum sensing, occurs when a cognitive radio acts on its own. The cognitive radio will configure itself according to the signals it can detect and the information with which it is per-loaded.
- *Cooperative spectrum sensing :* Within a cooperative cognitive radio spectrum sensing system, sensing will be undertaken by a number of different radios within a cognitive radio network. Typically a central station will receive reports of signals from a variety of radios in the network and adjust the overall cognitive radio network to suit.

***Cognitive radio spectrum sensing methodologies***

There are a number of attributes that must be incorporated into any cognitive radio spectrum sensing scheme. These ensure that the spectrum sensing is undertaken to meet the requirements for the particular applications. The methodology and attributes assigned to the spectrum sensing ensure that the cognitive radio system is able to avoid interference to other users while maintaining its own performance.

- *Spectrum sensing bandwidth:* There are a number of issues associated with the spectrum sensing bandwidth. The first is effectively the number of channels on which the system will sense whether they are occupied. By sensing channels apart from the one currently in use, the system will be able to build up a picture of alternative channels that can be used should the current one become occupied. Secondly the actual reception bandwidth needs to be determined. A narrow bandwidth will reduce the system noise floor and thereby improve the sensitivity, but it must also have a sufficiently wide bandwidth to detect the likely transmissions on the channel.



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- *Transmission type sensing:* The system must be capable of identifying the transmission of the primary user for the channel. It must also identify transmissions of other units in the same system as itself. It should also be able to identify other types of transmission that may be spurious signals, etc.
- *Spectrum sensing accuracy:* The cognitive radio spectrum sensing mechanism must be able to detect any other signal levels accurately so that the number of false alarms is minimized.
- *Spectrum sensing timing windows:* It is necessary that the cognitive radio spectrum sensing methodology allows time slots when it does not transmit to enable the system to detect other signals. These must be accommodated within the frame format for the overall system.

### **Spectrum decision**

Based on information of spectrum sensing, a spectrum band is analyzed and best available spectrum is selected for transmission. This allocation is focused mainly on spectrum availability, cost of communication and quality of service requirements. CR networks require the capability to decide This notion is called spectrum decision and constitutes a rather important but as yet unexplored topic in CR networks. Spectrum decision is closely related to the channel characteristics and operations of primary users. Furthermore, spectrum decision is affected by the activities of other CR users in the network. Spectrum decision usually consists of two steps: first, each spectrum band is characterized, based on not only local observations of CR users but also statistical information of primary networks. Then, based on this characterization, the most appropriate spectrum band can be chosen.

### **Spectrum sharing**

Cognitive radio has to access and share the spectrum with multiple other secondary or cognitive users. Spectrum sharing is to distribute the spectrum among all cognitive and non-cognitive users such that there should be no collisions among them.

### **Spectrum mobility**

The fourth step in spectrum management and one of the most prominent features of cognitive radio networks will be the ability to switch to different portions of radio spectrum as soon as spectrum left over or spectrum holes are detected. Spectrum mobility is the technique that will enable cognitive radio networks to achieve this goal. As licensed users or primary users have the right to their spectrum slice thus cannot accept any interference thus in this direction the most important and challenging issue of spectrum mobility is to avoid interference to primary users and obtain a seamless communication.

### **Conclusion**

CR networks are being developed to solve current wireless network problems resulting from the limited available spectrum and the inefficiency in spectrum usage. CR networks, equipped with the intrinsic capabilities of cognitive radio, will provide an ultimate spectrum-aware communication paradigm in wireless communications. In this paper intrinsic properties and current research challenges of spectrum management in CR networks are presented. In particular, we investigate novel spectrum management functionalities such as spectrum sensing, spectrum decision, spectrum sharing, and spectrum mobility. However, to ensure efficient spectrum-aware communication, more research is required along the lines introduced in this paper.



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## **WAVEFORM USE IN TACTICAL RADIO NETWORKS**

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**Abstract:**

*A series of software-defined multiband programmable radios and waveforms designed to transfer voice, data and video with the goal of connecting small tactical units with larger battlefield networks is developing in this time. By drawing on available spectrum, waveforms provide secure wireless networking services for mobile and stationary forces to transmit and receive information, including voice, data, images and video. While there are many waveforms, three in particular—Soldier Radio Waveform (SRW), Wideband Networking Waveform (WNW) and Mobile User Objective System (MUOS)—are playing critical roles in tactical radio operation and performance.*

**Keywords:** *Soldier Radio Waveform (SRW), Wideband Networking Waveform (WNW) and Mobile User Objective System (MUOS), ANW2, SDR.*

### **Introduction**

Military forces' transition to wideband communications has led to an increased use of collaborative wireless applications such as video feeds, imagery, tactical chat, and file transfer. Wideband systems provide enhanced command and control and situational awareness through the utilization of ad-hoc networking technologies, which enable voice and data to travel around geographical obstructions via automatic relay. When operating over a wideband network, deployed forces are able to communicate in new and different ways to stay connected and retain the upper hand on the enemy. For military personnel looking to implement new wideband technologies, the benefits exceed the challenges. However, the latter do exist, including a lack of infrastructure, security, and channel conditions. That's why companies at the forefront of wideband development like Harris Corporation continue to dedicate resources to help meet the growing networking needs of soldiers.

For years, networking has been deployed on the battlefield at the division, brigade, and battalion levels. However, networking at the battalion level and below has proven more difficult due to the mobile nature of those forces and to the limited data capabilities of traditional narrowband tactical radios, such as the inability to support voice and data on a single channel.

Starting in the late 1990s, first-generation wideband networking solutions overcame some of these issues by integrating the data network inside the radio and providing increased channel bandwidth. These single-purpose data radios provided improved performance but were not yet a “perfect” solution, with shortcomings that included lack of integrated security and integrated voice, limited frequency support, and a pre-configured hierarchy[1].

### **Adaptive Networking Wideband Waveform (ANW2)**

The latest wideband waveforms, such as the Adaptive Networking Wideband Waveform (ANW2) from Harris Corporation, are providing effective and field-tested solutions to the challenges of wireless tactical networking. ANW2 is operating on the Harris Falcon III® AN/PRC-117G and is widely fielded by RO forces in Afghanistan, providing transformational communication capabilities.



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The waveform is also be operating on the Harris Falcon III AN/PRC-152(C) handheld radio, allowing deployed forces greater and more portable options for wireless tactical communications[1].

### **The role of ANW2**

Harris’ development of ANW2 was driven by the need to deliver many different types of information across an often asymmetric, non-linear battlespace in which enemy engagements take on varying forms. At the time, the military had not yet completed its planned standard waveforms for mobile, flexible, and secure networked voice and wideband data communications at the battalion level and below. ANW2 uses robust and adaptive modem technology to provide connectivity in challenging combat scenarios. Mobile ad-hoc networking seamlessly provides soldiers with a common operational picture of the battlespace. This includes voice and data connectivity around geographical obstructions such as buildings or mountains. This capability is enabled by automatic relay, which, in essence, means that all radios in an ANW2 network act as relay stations, delivering signals to all other members on a network.

Harris’ AN/PRC-117G (PRC-117G) provides legacy narrowband interoperability and mobile wideband networking in a radio platform that is significantly smaller and lighter than previous units. The radio provides up to 20 watts of output power as a dismount system and 50 watts when connected to a vehicular amplifier, which further extends its reach across the battlefield.

The radio covers an extended frequency range from 30 MHz to 2 GHz, with narrowband interoperability with manpack radios in the 30-512 MHz band and wideband waveform support from 225-2000 MHz[2].

The radio’s SCA V2.2 operating environment is certified SCA compliant by the Joint Tactical Radio System (JTRS) Joint Test and Evaluation Laboratories (JTEL). The radio includes the Sierra II™ programmable crypto system, which is a reprogrammable cryptographic device that protects information up to the TOP SECRET level, and supports cryptographic requirements of the JTRS and NSA’s Crypto Modernization program, including the requirement for programmability[3].

ANW2 provides transformational capabilities, optimizing network performance across several, often conflicting, parameters, including rate (capacity), robustness, range, and network reach (routing). Optimizing these parameters requires deliberate and flexible trade-offs that vary depending on how and where the network is deployed. Some of the key considerations include:

- **No Infrastructure.** Unlike broadband technologies in established strategic locations such as Wi-Fi, networked tactical radios are without the benefit of any existing network infrastructure—no cell towers, no fiber optics, no cable companies. ANW2 requires no pre-configured head or cluster nodes. This allows ANW2 to form multiple networks and adapt constantly to changing channel conditions.
- **High Security.** ANW2 data in the 117G is secured using the High Assurance Internet Protocol Encryption (HAIPE™) standard. Using this interoperable networking standard, the 117G is NSA certified to pass TOP SECRET data. Voice traffic is also Type-1 encrypted.
- **Varying Channel Conditions.** The channel conditions between any two stations in a network undergo constant change as nodes—individual warfighters—move on the battlefield. At times, nodes may not always have direct line-of-sight communication to all other notes. The nodes in an ANW2 network measure and communicate these changes and automatically adapt by selecting appropriate modulations. The modulation is chosen on a station-by-station basis so that the entire network is not penalized by the lowest performing connection.
- **Fast Forming and Healing Times.** Military environments where warfighters are on the move require networks that can form, break apart, and heal very quickly. ANW2 employs a time-division multiple-access (TDMA) data protocol, which provides predictable performance and fast forming and healing times—typically less than 10 seconds. The TDMA structure also



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allows all radios to transmit at maximum power. Other common mechanisms require adaptive power schemes.

- Voice Connectivity. Even in the networked environment, voice remains a key capability for critical and last-ditch communications. ANW2 includes a dedicated all-informed combat net radio (CNR) voice channel that operates simultaneously, yet independently, from the data operation. This dedicated voice channel improves voice reliability and performance in combat environments while at the same time leveraging the network capability of the waveform, providing a unique multi-hop voice capability. This voice-flooding technique allows stations without direct line-of-sight to communicate using voice.
- Scalability. ANW2 sub-networks support one to 30 full-member nodes and up to 250 guest-member nodes. Full-member nodes have access to transmit and receive voice and data, while guest-member nodes can transmit and receive voice as well as receive multicast data. This allows up to 280 nodes within a single sub-network or radio channel. ANW2 also uses standard network protocols and interfaces[2].

The main objective of wideband waveforms is to improve efficiency and aid force protection through increased information sharing. Using ANW2, the 117G provides increased data connectivity to the battalion and below levels, including secure reachback capability into secure networks. This capability is also being further extended through the use of high capacity line of sight (HCLOS) radios, satellite terminals, or direct connection to a secure network.

For example, a 117G combined with a Broadband Global Area Network (BGAN) satellite terminal enables mobile and dismounted command and control in rugged terrain. The 117G network stack determines the link to use based on the network connectivity. If an address cannot be reached using ANW2, it falls over to use the beyond line-of-sight (BLOS) BGAN links. Conversely, when line-of sight connectivity is re-established, the BGAN link is dropped.

Once in place, these networks enable the use of existing collaborative applications. For example, the Tactical Ground Reporting Network (TiGRNet) application allows posting of text and imagery to a map, while the Biometrics Automated Toolset (BAT) allows collection and querying of biometric. Since the PRC-117G follows network standards, little integration is required to support these applications[1].

Further applying its know-how in tactical networking, Harris continues to port waveforms from the JTRS Information Repository to provide warfighters with greater flexibility and capabilities. This includes the Soldier Radio Waveform (SRW), the Wideband Networking Waveform (WNW), and the Mobile User Objective System (MUOS). ANW2 is a complementary technology to these waveforms, providing a mobile on-the-move link between SRW at the soldier level and WNW at the battalion level and above.

The architecture of battlefield with all this waveform work together is shown in the next picture. In this picture is represented also the other networks that make part of JTRS. For us important is SRW, WNW, MUOS.



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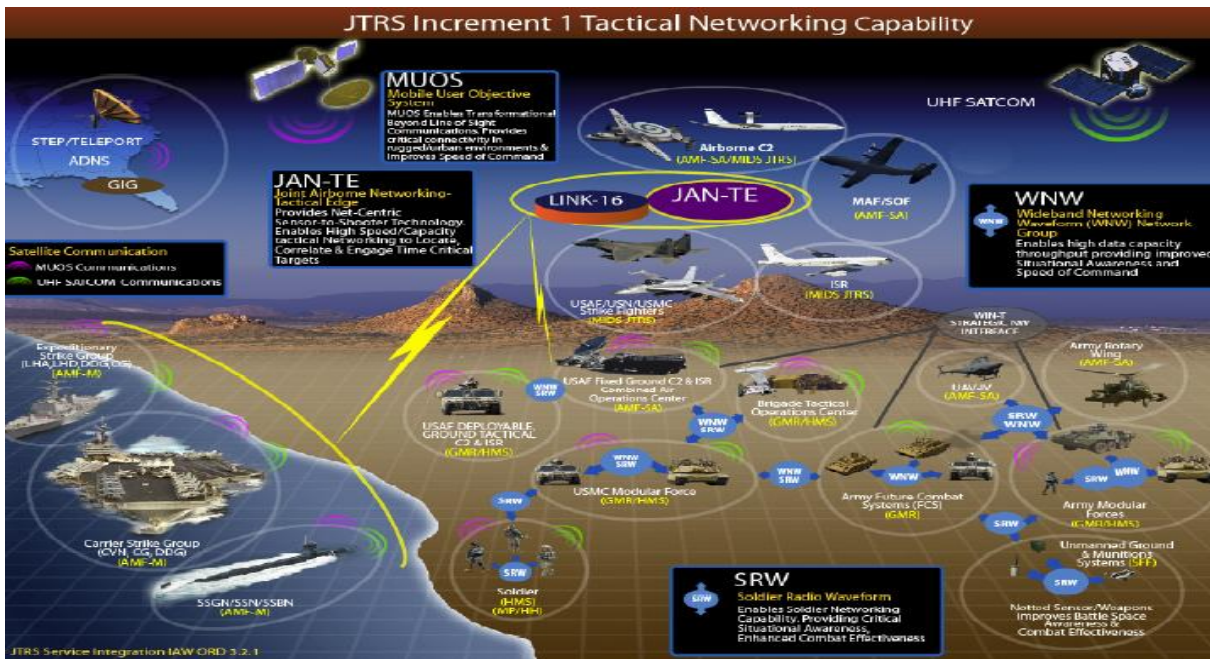


Fig.1. JTRS increment 1 tactical networking capability [4].

3

Soldier

### Radio Waveform (SRW)

SRW is an open-standard voice and data waveform that's used to extend wideband battlefield networks to the tactical edge. Designed as a mobile ad hoc waveform, SRW functions as a node or router within a wireless network to transmit vital information across long distances and over elevated terrain, including mountains and other natural or manmade obstructions.

SRW is used by individual soldiers, small units and very small sensors such as unattended ground or air vehicles. The waveform allow communication without a fixed infrastructure, such a cell tower or satellite network. SRW has been fielded as part of the Army's Capability Set (CS) 13 in the Rifleman and Manpack Radios. Both radios use SRW to transmit real-time information that was previously only available in vehicles or command posts down to the dismounted soldier[5].

### Wideband Networking Waveform (WNW)

WNW is designed to provide network connectivity between aircraft and ground vehicles. The waveform re-routes and re-transmits communications whenever terrain or structures challenge users attempting to communicate beyond line-of-sight. Moran noted that compared to SRW, WNW "is a little bit of a heftier waveform, a little bit more capable waveform." He added that the "waveform is used to provide connectivity to command posts at the platoon, company and battalion level." [5]

With its mobile ad-hoc networking capabilities, WNW is designed to work well in an urban landscape or a terrain-constrained environment, since it can locate specific network nodes and determine the best path for transmitting information.

As part of the Army's new Mid-tier Networking Vehicular Radios (MNVRs), WNW is on track for fielding with Capability Set 17. The waveform's most recent version increases the throughput and number of nodes supported simultaneously in a single network. Soldiers will also be able to send and receive Internet Protocol information from any source while on the move.

### Mobile User Objective System (MUOS)

Harris's Falcon III AN/PRC-117G multiband manpack radio, hosting the Mobile User Objective System (MUOS) waveform, has successfully completed initial interoperability testing, but





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now is not available for Ro Army. In this paper we discussed about MUOS because in a efficient waveform for tactical networks.

The test, conducted at the Joint Tactical Networking Center MUOS Reference Implementation Laboratory in San Diego, California, US, demonstrated interoperability with the addition of MUOS software to AN/PRC-117G radios, without modification from their standard hardware configurations. The US Navy's MUOS is a next-generation narrowband tactical satellite communications system capable of enhancing ground communications for US forces on the move. In addition to providing cellular-based service through tactical radios, the MUOS offers more communications capability for military users over existing systems, including simultaneous voice, video and data - similar to the capabilities experienced today with smart phones[6].

### **Conclusion**

The benefits of wideband tactical communications are vast, benefitting the warfighter with a more extensive information environment. In this paper we are discussed about the ultimate wideband waveforms that existing. These waveforms are the foundation for designing future tactical radio networks capable of fighting against both traditional threats and especially those hybrid.

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**CHALLENGES IN DEFENSE PLANNING DEVELOPMENT IN THE  
CURRENT ECONOMIC AND SECURITY ENVIRONMENT  
(TUNISIA CASE)**

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**Abstract:**

Four years after the revolution, Tunisia confronted new realities that stemmed from the post revolutionary process it was experiencing. The challenges may not have been as acute as in other countries, but they were still complex and problematic. The Tunisian economy remained sluggish and found it difficult to shake off the revolution's impact. Unemployment remained stubbornly high (officially more than 16 percent), foreign investments decreased, and the country's tourist industry—a pivotal component of the economy—did not bounce back to its prerevolutionary levels. Many Tunisians were concerned with the deteriorating internal security situation and the emergence of violent Islamist groups.

In this paper, we will limit ourselves to discussing certain economic and security aspects, first with a focus on the difficult economic situation of Tunisia. And second, a brief analyze of the security situation and relation between economy and security. We will try to identify, in the last part, the challenges that faces Tunisian defense planning in the current economic and security circumstances.

**Introduction**

Since January 14, 2011, Tunisia has initiated a new decisive phase in its modern history. Thanks to the valuable Tunisian Revolution assets, the country has tried -confidently and optimistically- to build a better future; satisfying the will of his wise youth, encouraging the aspiring freedom and enhancing both development and progress. Tunisia is determined to break up with the past and to establish a strong democratic system, to strengthen the rule of the law and institutions as well as to build a new society based on freedom, justice and citizenship. Indeed, the success of the democratic transition process and the adoption of a new development model are the best guarantors of a promising project company that is at the height of the people's aspirations and the best support for the consolidation of the national development process. On this basis, the new reform strategy was developed based on the consecration of political development, building democratic institutions based on pluralism, equality and freedom.

The first democratic elections on October 23, 2011, enabled the establishment of a National Constituent Assembly and temporary executive structures. Following the "National Dialogue" and the acceleration of the political process at the end of 2013, the Tunisian political transition has reached a major milestone with the adoption of a new Constitution dated January 26, 2014.

Tunisia evolves in a context of profound changes that affect the political, social, security and economic system. Also, there are some pressuring changes at the international level that amplify due to the globalization effects and the opening to external environment.

The democratization of the political landscape of Tunisia has opened a lively debate, marked by tensions on issues such as equality between men and women, the role of religion in the country, foreign policy orientations, territorial inequalities, etc. In fact, since the fall of 2013, Tunisia has witnessed repeated incidents and acts of terrorism between the different components of the society, including the involvement of the radical religious movements. These incidents have revealed the difficulties for certain institutional structures, including military forces, to meet these new challenges.



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**Review of the Economic Situation after Revolution and the Global Crisis**

***The painful awakening of the revolution***

On January 15, 2011, the Tunisian economy has awakened into a full economic and social turmoil that worsened by the day. The security skid, sporadic anti-revolutionary movements, the opportunism of social demands, the absence of democratic political dialogue traditions, the low representation of social and business organizations and the legacy of despotism inhibiting all forms of expression are all factors that promoted and maintained the emergence and establishment of a genuine economic and social crisis.

Other particular significant element of a certain economic stagnation, industrial productivity declined, particularly in the mining sector, the country's first industry. Tourism has also experienced an unprecedented crisis and will only slowly recovering from the shock of the revolution. Although the outlook is brighter, tourism revenues sustain more than one family out of eight and fell by more than a third in 2011.

Unemployment and poverty are common issues in the developing world and Tunisia is no different. However, the nature of unemployment within Tunisia grew into one of the acute factors that led to the start of the revolution. Hampered by the broader international financial crisis as well as structural issues, the Tunisian economy was hurting. In 2010 unemployment continued to climb and one of the hardest hit portions of the work force was the youth. As for unemployment, it increased by five points since the uprising. He is approaching 19 percent, the equivalent of 800,000 people against 500,000 on the eve of Ben Ali departure, on a labor force of 3.5 million. Furthermore, approximately 200,000 of these unemployed were youth holding university degrees.

Year	2006	2007	2008	2009	2010	2011	2012	2013	2014
<b>Unemployment rate (%)</b>	12.5	12.4	12.4	13.3	13	18.9	16.8	15.8	15.2
<b>Unemployment rate of higher education graduates by gender</b>	Male	11.3	12.9	13.9	14.6	15.8	22.6	21,7	21,2
	Female	26.0	27.4	30.0	34.9	32.9	44.2	41,9	40,8
	Total	<b>17.0</b>	<b>18.7</b>	<b>20.6</b>	<b>23.4</b>	<b>23.3</b>	<b>33.1</b>	<b>31,9</b>	<b>31,4</b>

**Table1 (Source; National Institute of Statistics – Tunisia)**

Poverty is widespread in the interior of Tunisia, hampered by lack of access to infrastructure and education and the geographic restrictions that often exist with the coastal region of nations built on trade and tourism. One of the main contributors to the revolution was the poverty and inequality experienced by many in the interior of Tunisia and the dignity lost as their way of life fell further and further away from being able to provide for self and family. In fact, nine out of every ten jobs created in Tunisia was created on the coast, representing an ever-widening gulf between interior and coast: the revolution began in the interior and spread to the coast.

***End of the transitional period***

The easing of the political and security situation at the beginning of 2014 has already had positive effects of renewed confidence in the economy. Preliminary growth projections for 2015, close to 3%, and expected external and fiscal imbalances still large, requiring substantial external financing, reflect the gradual nature of the recovery and economy sanitation. The economic and social programs prepared by the government aim primarily at limiting the social impact of economic shocks while laying the foundations for a revival of economic activity. Nevertheless, this strategy faces significant external financing needs in the short term and in the medium term, in terms of public



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investment, notably to contribute in a manner that the interior regions catch up the developmental delay.

Despite the positive rate increase in 2014 and 2015 (p), the economic activity remains insufficient to contribute significantly in the reduction of unemployed numbers, including foreign investment and tourism revenues, which remain below the one achieved in 2010. Indeed, it estimates damages to 4% of GDP. All these elements have negatively contributed to the economic activity of the country. An immediate and severe sanction has been imposed during 2011 and 2012 [Tunisian Observatory for Democratic Transition, 2012]:

- Decline in GDP growth.
- Decline in industrial production 6%.
- Reduced entrepreneurship of 8.42%.
- Reduced foreign direct investment of 26.3%.

Social tensions remain high. Unemployment, despite the slight improvement to 15.2% in the first quarter of 2014 (against 17% a year earlier), is still high especially taking into consideration the fact that about 40% of the unemployed are graduated.

***From one crisis to another: Tunisia’s new economic challenges***

Highly dependent on the economic strength of its European neighbors, Tunisia is an Afro-Arab country whose economy is closely linked to the old continent than others. It has particularly suffered from the drop in purchasing power in Europe. Its tourism revenue declined as well as its exports and foreign exchange.

Among other factors that did not help Tunisia overcome its critical economic situation is the stagnation of the world economy. In fact, the world economy has gone through a period of instability which put the promising perspectives in doubt. Indeed, the World Bank has revised downwards its GDP growth forecast for 2015 by reducing them from 3.4% to 3% as a global average, against 2.6% achieved in 2014. The reasons for such performance reduction are multiple however three main phenomena illustrate the destabilization of global economy.

The first phenomenon is related to the fact that the acceleration of global growth comes only from the US, and therefore remains dependent on the performance of the country. It is certainly expected that the US economy continues its momentum by achieving between 3% and 3.2% from the GDP growth in 2015, against 2.4% in 2014.

The second source of instability comes from the Euro zone related particularly to the situation of the German economy. All Eurozone countries are experiencing poor economic performance, which impacts the expectation of a continuous trend in 2015 by 1% of expected growth. It is not only the consequence of the Russian crisis, but also of the adopted economic policies. It is expected that the Eurozone achieves 1.1% of GDP growth in 2015 against 0.8% in 2014 and -0.4% in 2013.

Indeed, the economic crisis of our main partner EU has a direct impact on the growth of the Tunisian economy. Thus, it has resulted in a slowdown of economic activity which reduced the Tunisian fiscal and external leeway. The Tunisian economy, as previously announced, is highly dependent on the European Union. The latter absorbs 78% of exports, provides 65% of imports, generates 83% of revenues in the tourism sector, provides 73% of foreign direct investment and affords 90% of income transfers to Tunisia. Considering the sum, the equivalent of two-thirds of Tunisia's GDP is directly dependent on Europe.

The third source of instability in the global economy comes from the first emerging countries which are known by the “BRICS” appellation. The economic growth in these countries has witnessed a slow that will continue for various reasons:

- Russia live an economic crisis linked to the situation arising from Ukraine's conflict and the decline in energy prices which constitutes the main resource of the country.



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- China sees its growth stabilizing at 7% since it cannot continue to achieve growth rates in double figures.

The international economic and financial crisis was significant for its global, systemic dimension and in particular for its unprecedented form of propagation. In the absence of decoupling, this crisis, whose origins fall within the chain reaction of financial sector failures in developed countries, gradually reached Tunisia via a number of mechanisms and transmission channels. It is above all on the level of the real economy that this crisis has produced negative spillover effects due to close commercial ties with Europe.

The 2014 economic performances reported by the National Institute of Statistics – Tunisia (INS) were weak in several respects: GDP growth was only 2.3% over the first three quarters and is therefore low for the year 2014. This is the second consecutive year where Tunisia fails to achieve the 2.5% of its annual growth. It is mainly due to the decline in production of oil, phosphate and derivatives, and also tourism stagnation. In general, the industrial production has evolved very slowly, partly because of the recession in Europe, as indicated by the slowdown in the general index of industrial production in the first ten months of 2014 (+0, 3% against 2.1% during the same period of the previous year). The Board of Directors of the Central Bank of February the 2<sup>nd</sup> has also expressed its concern as regards the service sector’s situation which saw its key business indicators declining continuously in December, especially in the tourism and air transport sectors.

Foreign trade has evolved unfavorably, bringing the trade deficit to an alarming level since it amounts to over 15% of GDP. This is related to the decline in export volumes (-1.8% over 2013) resulting in a small increase at current prices (2.5%) despite the fall of the dinar. On the other hand, imports are continuing to grow at 6.4%. This deficit is partly due to the energy deficit (27% of the total deficit) and the Chinese phenomenon (22% of the total deficit). - Inflation fell to 5% in December 2014 against 6% in 2013. This decline in the rate -which gives an average inflation rate over 2014 of 5.5%- is related to the decline in food station with the improvement of agricultural production, but the level of inflation remains higher than the 4% limited historical average.

The deficit on current external payments reached 8.9% of GDP due to the trade deficit. Its funding was provided by external borrowing rising rapidly near IDE that are declining (5% compared to 2013). – This deficit has increased external indebtedness and has allowed consolidation of the level of net foreign exchange reserves, which reached 15,055 MTD or the equivalent of 129 days.

PRINCIPAL ECONOMIC INDICATORS	2012	2013	2014	2015(p)
Growth GDP (%)	3,7	2,3	2,5	3,0
Inflation (annual average )	5,6	6,1	5,6	5,0
Budgetary account / PIB (%)	-5,7	-6,2	-4,8	-6,2
Courant account / PIB (%)	-8,2	-8,3	-7,9	-6,4
Public debt / PIB (%)	44,5	44,8	49,4	55,2

**Table2 (Source; National Institute of Statistics – Tunisia (INS))**

This difficult economic situation is not the result of chance but rather a consequence of the former regime that was ruling Tunisia for nearly a quarter century, and which had tried to make up a socio-economic reality on a very worrying state aiming at plundering the country from the benefit of a quasi-mafia organization.

***The restricted institutional development of the Tunisian military***

Throughout its history as an independent nation, Tunisia has maintained a record of having probably the smallest defense budget among all countries in the Arab world. Investment in impressive weaponry for the sake of prestige has never been a policy of the governing regime. In the 1980s, however, efforts to improve the armed forces' capabilities had strained a national budget oriented



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primarily toward economic and social development. The defense budget was drawn up annually by the national planning authorities in the Ministry of Finance.

Although never lavished with resources under Bourguiba, the military was modernized in the 1980s, partly with U.S. military aid, in response to growing concern over Qaddafi’s Libya. After Zine El Abidine Ben Ali seized the Presidency in a bloodless coup in 1987, further steps were taken to weaken the military institutionally. He reduced the size of the army, cut the defense budget, forced certain officers into retirement, and may even have accused innocent officers of plotting a coup, imprisoning them to serve as a warning to others who might contemplate such actions. By the end of the Ben Ali regime, Tunisian military expenditures accounted for only 1.4% of GDP. Under Ben Ali, the military limited its activities to border protection, natural disaster response, and participation in UN Peacekeeping missions. It became resolutely apolitical, with recruitment and advancement based on performance and academic achievement. Tunisian officers have also been frequent participants in military exchange and training programs offered by the U.S. and France. In keeping the military out of politics, and preventing it from gaining other sources of economic or political power, Ben Ali helped to ensure that the army would remain relatively weak and professional.

A year after the revolution, this assessment remains unchanged. Ministry officials rank the priorities of the Tunisian government to be economic, with national security—particularly the control of borders—as being subordinate. When asked whether the Tunisian military has enough equipment to accomplish its expanded mission since the revolution, the response was a surprising affirmative. “We have the manpower we need. We managed to go through the revolution and do all that we do with what we have. . . . We do not need expensive weapons or aircraft.” [1]

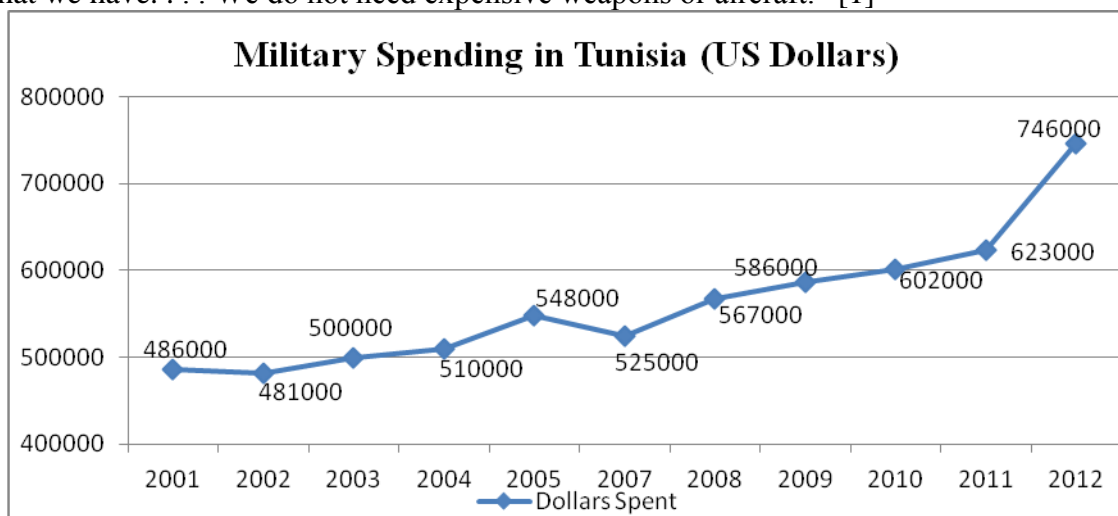


Fig.1 (Source: <http://militarybudget.org/tunisia/>)

Since the year 2012, and after the rising of new serious threats things changed. And despite the national and international economic difficulties the budget of the defense started to increase at a much important rate. The changes that started to occur in TDB size, the importance of the share allocated to equipments and infrastructure. This change in the budget structure traduces a prompt response to effective threats and risks. It is more likely the undergoing of the escalating security situation that obliged decision makers to switch to a need first approach.

New equipment start to be delivered, but the American Blackhawks, recently ordered, will take time to be delivered, in addition to the political wrangling of the two previous years, which have resulted in significant changes at the head of the army. The problem is mainly financial and strategic as well as organizational and human. We must change defense policy by adapting new internal and external constraints that can affect our regional and international environment. Actually, national defense is a collective responsibility and not just an army one. To remain credible, our defense



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system, to be based on national unity (the collective determination to defend), is a modern defensive armament core, and an effective chain of command.

It is imperative to adapt our army to the new war data against terrorism by developing a new operational strategy. In order to do this, a doctrine revision is needed to change its strategy and adjust their combat tactics. It is also related to encourage taking initiatives to unit field instead of curbing on certain decisions that require necessary autonomy

Formed for a conventional fighting, Tunisia was conducted the day after the revolution, to ensure missions for which the country was not prepared: maintaining public order in the city and fight against terrorist groups practicing guerrilla techniques and harassment. Drones and handling are inadequate, although national UAV projects (from commercial databases) exist; armored vehicles against explosive devices are very inadequate. The modernization of fighter bombers is struggling.

## **Tunisia facing security threats**

### ***Religious Violence in Tunisia: four years after the Revolution***

Since the Tunisian revolution in early 2011, religiously-motivated violence has steadily increased. Until late 2012, it was primarily characterized by small scale attacks and vandalism. In June 2012, for example, Tunisian Salafists angered at an arts exhibition where they considered blasphemous rioted in Tunis and other cities, throwing rocks and petrol bombs at police stations and other buildings. Yet the real threat of religious violence was first witnessed in September 2012, when protesters outside the U.S. Embassy in Tunis became violent and attacked the embassy, causing the death of three people.

The factors driving the increase in religious violence in Tunisia are complex and include socio-political, economic, and regional dynamics. Such important event has contributed to the rise of Salafist activity especially when many political prisoners -including jihadists- were released following a general amnesty shortly after the revolution. Ennahda's initial dialogue-seeking strategy, in which they turned a "blind eye" to many instances of small-scale religious violence, also likely, helped violent Salafists to evolve, both ideologically and organizationally. In fact, only after the assassination of Mohammed Brahma in July 2013 that Ennahda's leaders clearly take some distance from the Tunisia's Ansar al-Shari'a (AST), declaring that organization as a terrorist one.

Political exclusion is another key factor that has made some young Tunisians more prone to religious violence. Political parties struggle to integrate the youth, and young Tunisians often describe political party as "sclerotic" and the "same as before." Immediately after the revolution, many international donors gave money for civil society projects that absorbed some of the youth, but such funding has declined during the past year, leaving even more youth without prospects.

Another key cause of the rise in jihadist activity in Tunisia is the increasing number of Tunisians who have traveled to Syria to fight against Bashar al-Assad regime. Tunisian foreign fighters in Syria [*an estimated 1,500 to 3,000 of the fighters are from Tunisia, ICSR - The International Centre for the Study of Radicalisation and Political Violence*] have fought alongside the al-Qa`ida linked Jabhat al-Nusra, as well as the most radical fighters of the Islamic State of Iraq and the Sham (ISIS). Motives for fighting in Syria include ideological conviction and economic opportunities.



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Fig.2 (Number of foreign fighter in Syria and Iraq, Source: <http://icsr.info>)

There is a very strong recruitment network of Salafist organizations that send people from Tunisia to Syria or Iraq. In the long term, Tunisia is facing a big challenge of people coming from back from Syria and Iraq. Perhaps one of the reason's it's so peaceful there is that all of the troublemakers are in a different place. The return of combatants from conflicts in the Middle East has been identified as a contributing factor to radicalization and instability. The return of trained and potentially armed fighters may increase the likelihood for the medium and long term that Tunisia could become a staging ground for jihadist action.

***Smuggling: a porosity generating activity***

The jihadist breakthrough in Mont Chaambi, the Libyan chaos, and progress in the Middle East of radical Islam that attracts an unemployed youth present a worry. "Since 2013, the alliance between traffickers (arms and drugs) and jihadist cells is reinforced in the border areas," says a recent report from the International Crisis Group (ICG). The end of the Libyan revolution and the fall of Gaddafi had both facilitated in large proportions trafficking and arms exports. This hollow meantime, when Tunisia was very busy with her political process, gave discretion to the armed groups to be formed through official channels (political wing) which hardly concealed his commitment to the ideals of al Qaeda and above forming an armed wing spread the ideals supposed jihadists.

The Tunisian-Algerian Border Mountains extend over 220 km, and apart from the topography, this area (with southern Tunisia) was always a land of smuggling, even at the time of colonization where the seizure of weapons and various commodities constituted the daily of the time security forces. With the Libyan border, it is not easy to secure such a zone and to counter smuggling that feed directly parallel trade.

This organization has become so powerful that it controls and masters the border gates. The weapons are circulating, and the discovery of arms is evident as well as the numerous local accomplices.





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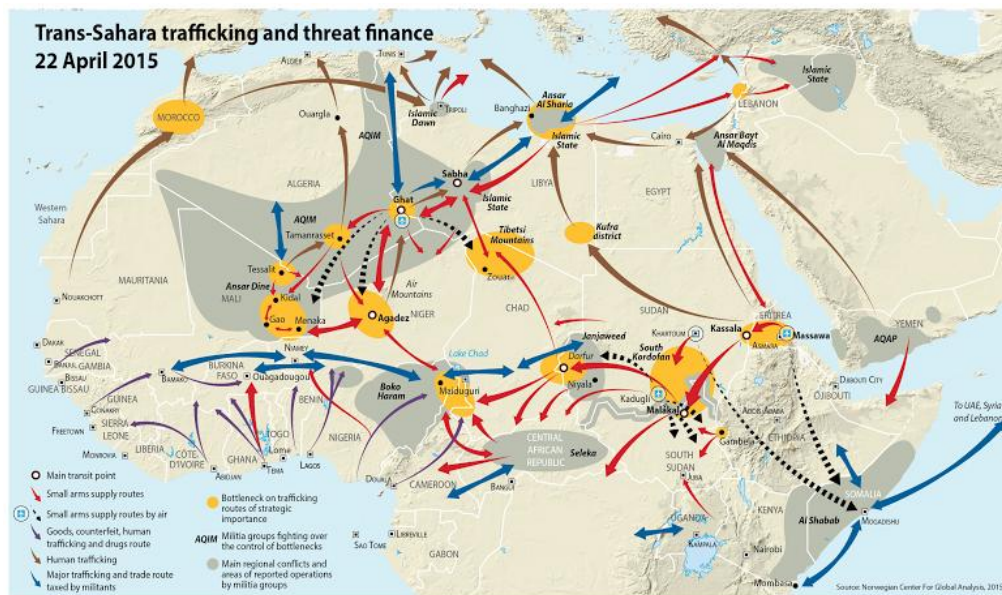


Fig.3 (Trafficking routes, International Business Times)

Terrorism resorts to contraband. The funding secret enjoyed by these groups facilitated their collaboration with smugglers who know the terrain (mountains) and provided them food and weapons. Not only national security is in danger, but also a large part of our today’s economy which is dying due to the uncontrollable invasion of all kinds of goods.

***The smuggling migrant***

Human smuggling networks are also active in Tunisia, though migrant smuggling which is less common now than in Morocco. Nonetheless, migrant smuggling networks exploited the collapse of border control during and immediately after the revolution to stage migrants in Tunisia for maritime transport to Europe. Tunisian officials note that Syrian refugees are also being smuggled through their territory as they attempt to reach Europe. The refugees reportedly fly into Algiers before traveling to the Tunisian-Algerian frontier. Many of them cross the border to Kasserine governorate. From Kasserine, they travel to the Libyan border, where they hire maritime smugglers to bring them to Europe.

Italy: Arrivals by sea, 2014

	<b>Men</b>	<b>Women</b>	<b>Minors</b>	<b>Total</b>
Syria	25,155	6,203	10,965	<b>42,323</b>
Eritrea	24,061	6,076	4,192	<b>34,329</b>
Mali	9,382	27	529	<b>9,938</b>
Nigeria	6,989	1,454	557	<b>9,000</b>
Gambia	7,409	28	1,270	<b>8,707</b>
Palestinian	3,413	1,035	1,634	<b>6,082</b>
Somalia	3,010	1,104	1,642	<b>5,756</b>

Table3 (Source; <http://www.bbc.com/news/world-europe-32387224>)

Migrants are not a major threat to the North African zone. The threat is rather the active networks along the border which are transporting those who can pay across regional borders regardless the reason why the individuals want to move. These networks can be leveraged by nefarious actors—such as terrorist organizations—to move their personnel throughout the region. Their existence carries a risk for the entire region



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***The close link between terrorism and smuggling:***

The 459 kilometers of the Tunisian-Libyan border are basically desert, sparsely populated and requiring a certain expertise (knowledge of relief) and technical equipment to be crossed. After a swampy area a few kilometers from the Mediterranean Sea and the border post of Ras Jdir begins a semi-desert area. The passage, however, is easier through the tracks.

This conventional boundary line is first checked by the border police, which has stations through which citizens wishing to travel legally in Libya and Algeria must pass. Apart from these legal points of entry and exit, many opportunities to cross land borders exist.

To prevent illegal crossings, National Guard, army and customs control the border areas between border crossings. The National Guard has about 105 of advanced and equipped stations, including old forts of the French army, from which it radiates and often reinforced by military units.

It should probably insist on today's importance of mobilization of our armed forces on the border line from Mount Chaambi till the maritime border in the northwest. These are long mountainous series of more than 240 km with average mountains whose heights range from 600 to 1500 meters, with course valleys, gorges and especially the concentration of a rural and mountain population very familiar with the terrain. Jebel Mghila where the terrorist operation took place extends to 1058 meters and is moderately wooded. It borders Jebel Smama which reaches 1314 meters. It is in this triangle of mountains (Smama, Mghila and Chaambi) and perhaps with connecting routes with neighboring villages that terrorists always act with impunity. Much more than a hostile topography with dense forests, the phenomenon of smuggling and complicity of part of the population living in these regions has much in the amplification of the terrorist phenomenon. In previous terrorist operations, detainees have confessed to their appeals even to children for tracking operations, which proves once again that we should exclude any track to know the procedure of these groups.

**The new challenges of the Tunisian defense.**

We must admit that the Tunisian armed forces are not adapted to the fight against terrorism, which explains their difficulty in overcoming the jihadist maquis whose epicenter is at Jebel Chambi, bordering west-central. Tunisian military are indeed able, and they have shown in recent years with four partially, to ensure or restore order and security at the national level, whether in the urban centers along the axes traffic or on the borders. This earned them respect and reaffirmed confidence from the majority of the population. The modest material resources at their disposal do not constitute a major handicap, given the small size of the country. Finally, we find at the command structures proved that professionalism is accompanied by partisan neutrality.

For now, the immediate priority for the military is to deploy its full active means, to better control the borders, especially in desert areas south of the country. The military has primary responsibility in the military zone—a border buffer zone—created in September 2013 in the southernmost third of the country. Movement in the border zone is monitored but not restricted. The fact that the military coordinate the activities of all security organs in these buffer zones and will direct the joint patrols, which confirms the leading role of the military in the fight against terrorism and activities revolving around.

The challenge remains considerable for state authorities because the powers that be can now use the methods in force at the time of Ben Ali, essentially based on the police surveillance and repression. The latter, for they have been effective in their time, are no longer compatible with the new regional environment but even more with the institutional functioning and the deontological principles carried by the Revolution in January 2011. adaptation and capacity operational and technical means involved in the fight against the armed extremist movements must now be superimposed an approach based both on a sanitized and stabilized political environment, but also a



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reconciliation to the most targeted populations, socially and geographically, for the radical movement. The key to the success of the Tunisian state and society in the fight against jihadism, a task which falls within the period, based on the complex assembly de- combining seemingly contradictory steps but that should not be separated the 'from each other

***Change the military belief.***

The Tunisian army has been formed in a spirit of military defense of the homeland against the foreign enemy. Therefore, everything has been directed to the defense of borders (land, sea and air). Now, the enemy is there, it is among us and is inside! It is a strategic shift in size than confront the enemies of the country from within. This requires mobilization of the army in a new defense concept.

The army is well aware, but should we speed things up by using another certainly much heavier design. And this is hardly minimize combative value of our soldiers or the insights of top executives that also say that this war against these groups, these nebulae and tapes must be prepared other than by a classical approach to war called "conventional ". We are now witnessing a "asymmetric" war bands that create each time the element of surprise, most often disguised as civilians, peasants or citizens. It is unlikely that with our current resources both human (training) materials that we can eradicate this scourge that continues to grow.

It is high time to review the whole struggle against these groups strategy, starting with the intelligence service, and especially not let fixed troops to the sentry. These groups employ almost all the time to surprise. It is also time to use the same strategy to overcome these groups to be surprised in their nests. Let us remember, the operation of the National Guard against the leaders of these terrorists is proof that intelligence, information and the surprise must be the most used weapons against the vandals of the XXI century.

For equipment also monitoring the mountains, villages and cities have to do with means, let us say, civilians. Pending the acquisition of adequate equipment, it takes on the human factor in delivering our day military maneuvers with cyclic especially our Algerian neighbors

***Strengthen the capacity of intelligence and the fight against jihadism***

To fight against this terrorism phenomenon, and among the undid of the defense, the need to stand against terrorism on the effective coordination, particularly in intelligence, between the various departments concerned, which had been lacking until now . In particular the creation of a National Security Agency, have ample means and expanded responsibilities, under the direct authority of the head of state. At the time of Ben Ali, such coordination did not exist, most of the repression against religious extremism was the sole responsibility of the powerful services of the Interior Ministry, while border surveillance, including in the northern part of the country, was the prerogative of the National Guard, aspect militarized body, but dependent on the police. The context created by the Revolution has not diminished, on the contrary, mistrust and lack of dialogue between the two departments.  
Strengthen

***Fight arms trafficking:***

A recent report by the International Crisis Group noted the links between the sale of arms and the trafficking of drugs, especially on the southern Tunisian border. The conflict in Libya and, above all, the disastrous handling of the fall of Gaddafi have fed a phenomenon that the Tunisian authorities seem unable to respond to. Perhaps they do not know how. At a time of faster and more individual radicalization processes, the ease with which arms can be acquired is doubly worrying. Preventing new weapons entering the market and removing those already acquired from circulation should form part of any prevention strategy.



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***International collaboration:***

Inasmuch as terrorism is a global threat and a transnational phenomenon, the sharing of information and the technical capacity to fight it has become an unavoidable necessity. In fact, cooperation on anti-terrorism between the European police and intelligence services and their Maghrebi counterparts has been in development for years. Tunisia has made notable progress in a particularly adverse setting. This should be translated to a maximum level of cooperation. Further, we should add a new dimension to the anti-terrorist fight in which cooperation between Europeans, Tunisians and the other Maghrebi states is of vital importance. All of them share the goal of slowing (and, ideally, preventing) radicalization processes and preparing a strategy to deal with the possible return of combatants who are at the moment in Syria and Iraq.

**Conclusion**

As Tunisia prepares to enter a new phase in its process of democratization, with the election of a new president and the formation of a new cabinet following the successful parliamentary elections held in October, two key challenges face the country's government: the economy and security.

The two challenges are interconnected. Economic underperformance has led to the high rates of unemployment and exacerbated the sense of hopelessness that led to the revolution and caused many young Tunisians to take up armed opposition. Stronger economic growth is therefore crucial to social and political stability, but it will not be easy to achieve.

Undoubtedly, Tunisia's security situation is fragile. The army has long faced low-intensity, but persistent, threats from jihadists along the border with Algeria. Growing lawlessness and continued conflict in Libya fuel fears that malevolent extremists, munitions and drugs will be smuggled across largely unmonitored borders.

In facing the new threat posed by the presence of jihadist combatants on the border with Algeria and Libya, the Tunisian security apparatus has a double challenge. The first is to identify who is behind the attacks; the second, at a more purely strategic level, is to put in place measures to face the threat.

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**"When people decide to live, destiny shall obey, and one day ... the slavery chains must be broken."**

So we have chanted since our adolescence, repeating this legendary verse by the Tunisian poet Abu al-Qasim al-Shabi. Perhaps, the mythical character of this verse does not stem only from it being old - al-Shabi wrote it in the 1940s against the colonialism of the past century - but also from our feeling of hope.

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**ETHICS AND DEONTOLOGY IN THE MILITARY  
ORGANIZATION**  
**(AN EDUCATIONAL OUTLOOK / A PRACTICAL OUTLOOK)**

**Wing Commander Syed Muhammad Mehdi**

Pakistan Air Force

**Abstract:**

This paper aims to provide an insight into different aspects of ethics in military organization. It will start by defining and differentiating theories used in the study of Ethics. This will be followed by a discussion on the need of Ethics in military and a description of different models used in selected military services of the world. Chapter 2 will deliberate on the practical problems faced by personnel in making ethical decisions, both in conventional as well as unconventional warfare. Chapter 3 suggests solutions to the problems discussed in Chapter 2.

*Keywords:* ethics, organization, military

**Introduction**

All animals fight when they see a reasonable chance of success of their aggressive behaviour. They would rather choose to withdraw if chances of success are minimal. Man has been fighting since almost his beginning; it started as a way of winning the desired mate and then led to securing the rights to a territory for grazing cattle and/ or for cultivation. As human civilization developed, war fighting abilities grew alongside. This was evident in the invention of more lethal weapons and tactics and division of society into classes. The warrior has always been seen as the protector of their people and therefore respected. In the past, the prevalent mindset was that of ‘winner takes all’. Large scale murder, looting, rape and enslavement were considered normal for the victorious army and were hardly questioned. Control of territory was more important than love of its inhabitants. Social development, especially in Western countries gave rise to calls for humane behaviour in battle by their militaries. These demands gained strength by the killing of non-combatants in Vietnam, Africa and Balkans. Study of ethics and its application in battlefield has been adopted in the military organizations of all countries. It is aimed at improving the conduct of their soldiers. They may differ in methodology but the objective remains the same. This paper aims to provide a comprehensive insight into ethics and deontology in the military organization. It will describe the theoretical background of ethics, its need in military organizations and ethics teaching methodology adopted by different countries. The paper shall dwell on the ethical problems faced by soldiers in regular as well as irregular warfare. This will be followed by suggested ways for the solution of the problems discussed earlier. It is hoped that this paper will help in clarifying the whole concept of application of ethics in military organization in a simplified form which is easier to grasp by the men and women in arms.

**Definition of Terms and Ethics in Military**

It is important to define the terms and theories which form the basis of subsequent discourse.

**Ethics**

Ethics is a branch of philosophy that, at its core, seeks to understand and to determine how human actions can be judged as right or wrong. We may make ethical judgments, for example, based



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upon our own experience or based upon the nature of or principles of reason. Those who study ethics believe that ethical decision making is based upon theory and that these theories can be classified <sup>[1]</sup>. Following is a very brief description of classes of ethical theories (See Garrett, Baillie, & Garrett, 2001):

### **Theories of Ethics**

**Natural Law:** This theoretical position suggests that one may, through rational reflection on nature (especially human nature), discover principles of good and bad that can guide our actions in such a way that we will move toward human fulfillment or flourishing. This position suggests that human beings have the capacity within themselves for actualizing their potential <sup>[2]</sup>.

**Virtue Ethics:** Virtue ethics consists of two differing approaches to ethics and can, therefore, be confusing to understand. Very briefly, the first approach to ethics in this theoretical orientation proposes that there are certain dispositional character traits (virtues) that are appropriate and praiseworthy in general and/ or in a particular role. More formally, virtue ethics represents a "systematic formulation of the traits of character that make human behaviour praiseworthy or blameworthy" (Shelp, 1985, p.330).

The second approach to virtue ethics not only identifies the virtues, but focuses on their integration into what can be described as "practical wisdom" or "right reason." Practical wisdom is the phrase used to describe one's ability to choose patterns of actions that are desirable. These patterns of actions are informed by reasoning that is, in part, influenced by habits of emotional experience or virtues (Baillie, 1988), but also by the depth and breath of experience available to the human being as he or she is placed in society <sup>[3]</sup>.

**Consequentialism:** Ethical theories that fall under the classification of consequentialism posit that the rightness or wrongness of any action must be viewed in terms of the consequences that the action produces. In other words, the consequences are generally viewed according to the extent that they serve some intrinsic good <sup>[4]</sup>.

**Utilitarianism:** The most common form of consequentialism is utilitarianism (social consequentialism) which proposes that one should act in such a way to produce the greatest good for the greatest number <sup>[5]</sup>.

**Deontology:** Deontologism is a position based, predominately, on the work of Immanuel Kant. Most simply, deontologism suggests that an act must be performed because the act in some way is characterized by universality (i.e. appropriate for everyone) or that it conforms with moral law (formal rules used for judging the rightness or wrongness of an act). According to this theoretical position, the rightness or wrongness of some acts are independent of the consequences that it produces and the act may be good or evil in and of itself <sup>[6]</sup>.

**Divine Command:** Divine Command Theory takes God's will to be the foundation of ethics. According to divine command theory, things are morally good or bad, or morally obligatory, permissible, or prohibited, solely because of God's will or commands <sup>[7]</sup>.

### **Need for Ethics in Military**

We are all familiar with the proverb, "everything is fair in love and war". It means that mankind had reasoned long ago that ethical behaviour had nothing to do with the conduct of war per



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se. Wars were fought in the name of tribe, king, country or God. Wars fought on religious ideology were particularly cruel as one side sought to impose its religion on its opponent which was also convinced of its own righteousness. Every general aimed to destroy his enemy and ensured that the enemy would never challenge the conquerer again. This resulted in mass murder, pillaging, enslavement and also rape being used as an instrument of war.

Social development in Europe from 17<sup>th</sup> century onwards led to calls for ethical behaviour by militaries in war and its aftermath. However, governments did not pay much heed to ethical theories of philosophers till the end of 20<sup>th</sup> century when governments were forced to enforce ethical behaviour in military due to public outrage created as a result of coverage of conflicts by electronic media. It started with the My Lai massacre (South Vietnam 1968)<sup>[8]</sup> and culminated after Rwandan (April to July 1994) and Srebrenica massacres (July 1995)<sup>[9]</sup>. As a result, the militaries adopted the principles of proportional response, avoidance of collateral damage and respect for the non-combatants. The concept of Just War was followed in order to retain moral superiority.

### **Existing Regulations / Modules for Ethics Implementation**

The Law of War provides the legal basis for ethical behaviour by combatants. It comprises international treaties, customs and general principles agreed to by all signatories. These regulations cover a wide range of topics ranging from declaration of war to acceptance of surrender, treatment of prisoners of war and wounded, distinction, proportionality and prohibition of certain types of weapons<sup>[10]</sup>. Geneva conventions of 1949<sup>[11]</sup> under United Nations Charter lay down the treatment of Prisoners of War, wounded and sick combatants and civilians in time of war. These laws are also applicable to non-signatories e.g rebel groups fighting within a state. Rome Statute of the International Criminal Court (1998) allows the trial of persons violating the laws of war.

All major religions have laid down the conduct of individuals, nations, and other agents in war in order to mitigate the worst effects of war. Mahabharata (Hindu mythology), Torah and Quran have given clear dos and don'ts of war. Conquest of Mecca by Prophet Muhammad (PBUH) in 630 AD can be cited as an example where he laid strict rules of engagement for the Muslim army. He restricted his followers not to fight non-combatants and those who took refuge in Kaaba (house of Allah) or their own homes. Mecca was conquered without a battle and its inhabitants were granted amnesty by the Prophet.

### **Examples of Ethics Education in Different Militaries**

Military forces of all countries teach ethics in some form to their personnel. More emphasis is laid on training of officer cadets while all personnel receive training in ethics prior to their deployment abroad. Among militaries, there are differences in orientation, emphasis, ownership and methodology of the study of ethics in their training institutions. Most follow virtue based ethics with overt religious foundation while some countries follow ethos based approach catering to a secular society. Examples of ethics education in selected militaries is given in subsequent paragraphs.

#### **United States of America<sup>[12]</sup>**

The United States military follows a system of virtue ethics based on the values enshrined in its Constitution. It is based on Christian values and chaplains are responsible for conducting religious services in the training institutions. Enlisted personnel are taught Army ethic at all schools but it is not comprehensive. Moreover, lawyers and chaplains teach Law of Land Warfare without any passion which does not generate much interest among the trainees.

West Point has incorporated a comprehensive ethics programme in its four year curriculum. It is aimed at character building and stresses leading through self example. The honour code of US Military Academy is, “*I shall not lie, steal, cheat nor tolerate anyone who does so*”. The course is





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taught by philosophers and starts with an introduction to philosophy, then moving on to Just War Tradition. Professional military ethic seminars are conducted throughout training which use case study method. This keeps the interest of cadets who are encouraged to find solutions to ethical dilemmas presented in the case studies. Character building is consolidated in Field Exercises through team building and role playing exercises based on actual events.

#### **Norway<sup>[13]</sup>**

Ethics in Norwegian academies is taught by chaplains as Norwegians believe that Ethics carries a religious dimension with it. Norwegian defence forces ground their ethos in Christian and humanistic basic values (The Basic Values Document, 2007). Modern soldier is aware and requires moral justification of war. The same is also demanded by media for the sake of legitimacy. Norwegian military believes that moral justification of war is also required by the population of a country where Norwegian forces are deployed.

Conscripts analyse military dilemmas faced by soldiers on the front lines, assisted by an instructor. It helps in building their data base of possible scenarios which will better prepare them for deployment. Officer training starts with introduction to military ethics and encompasses ethics theory, use of force, ethics of war and cultural challenges in international operations, and post war ethics. It is believed that an officer must be able to make critical decisions. This is achieved through practice and reflection.

#### **United Kingdom<sup>[14]</sup>**

Old British Army followed Christian practices and norms. The ideal was considered to be a Christian gentleman. There were no written moral guidelines as these values were ingrained in the public schools. From 1960s, secular ideals were embraced by majority of the people with stress on equality, independence and materialism. Therefore, British military adopted a new ethical model in the year 2000, based on ethos, which is the characteristic spirit of a community. UK chose to express its ethos along secular lines, though it is heavily based on Christian ethics. Its biggest drawback is that soldiers are required to follow the Army ethos and no justifications have been given for following these values.

Royal Military Academy Sandhurst has a one year training tenure and is not a degree awarding institution. Theoretical ethics are not taught to cadets. Civilian academic staff teach Law of Armed Conflict which is reinforced in field exercises that involve ethical problem solving through role playing which instils basic military values in cadets. The Army has a Service Test which states, “*Have the actions or behaviour of an individual adversely impacted or are they likely to impact on the efficiency or operational effectiveness of the Army?*”.

#### **Netherlands<sup>[15]</sup>**

Since the end of Cold War, the primary focus of Dutch armed forces has been on overseas operational deployments and peacekeeping operations. Dutch approach to such operations is to be non-threatening, culturally aware, transparent, making minimal use of force, mutually respectful, firm but friendly with the local population. Netherlands Defence Academy (NLDA) has a 4 year programme where Ethics is not a course as such, but part of different courses. It is a purely secular curriculum with emphasis on virtue ethics. The academics start with a course on ‘Philosophy and Ethics’ in the first year. In this foundational course, students study importance of ethics, courage and organizational ethics. Second year has a course in Military leadership and Ethics. It mainly comprises assigned readings where groups of students give presentations on assigned readings. This is followed by a discussion under the supervision of an instructor. Teachers at the academy include ethicists, philosophers and management experts. This education aims to enable the students to recognise and analyse moral problems. In the fourth year, each student submits a final paper on different aspects of



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Srebrenica, Iraq and Afghanistan operations. Students opting for management studies undergo a course on “Integrity and Organizational Ethics”. NLDA wants its cadets to conform to moral principles voluntarily and for their own sake and not for fear of punishment.

## **Problems Faced by Soldiers in Battlefield**

### **Ethical War**

The world today is more unstable than it was during the Cold War. The number of conflicts has risen sharply with great cost in terms of human lives lost and displaced. Many of these conflicts have suspect justification and their aftermath has created greater insecurity for the stake holders. The biggest question facing the political leadership of nation states is whether to intervene in a country where the dominant group is persecuting the people having a different ethnicity, religion or political orientation. According to United Nations Charter, no country can interfere in another country’s internal affairs. By this definition, outsiders must not intervene in a civil war as it is an internal affair of a country. The logical question which follows is that what is the threshold after which an intervention is necessary? Is such an intervention legitimate and who is responsible for those who died while rest of the world was weighing the legal aspects of such intervention.

The world hesitated in the case of Bosnian civil war and it was the Srebrenica massacre of non-combatants which forced the governments to act under public pressure. Second Gulf War (2003) was an example of unethical initiation of war. That war was initiated without UN sanction on the pretext of destroying Weapons of Mass Destruction. No WMD were found in Iraq subsequently and the resulting turmoil has destroyed the social fabric of Iraqi and Syrian societies. On the other end of the spectrum, the doctrine of using nuclear weapons in war poses ethical questions to the political leadership of such countries.

The biggest problem encountered by soldiers is whether the war is ethically justified in their view. In many militaries, refusal to fight in war carries a death penalty. It is debatable as to how many would be willing to refuse fighting under such conditions.

### **Regular Warfare**

Regular warfare is simpler to understand in terms of ethics. While the decision of going to war is taken by politicians, the generals and soldiers are supposed to achieve the political aims through application of force. In this case, soldiers are clear about the application of Law of Armed Conflict which they have studied in their training institutions.

The enemy is known and non-combatants are clearly identifiable. Still, questions on the use of anti-personnel land mines and cluster munitions, acceptable level of collateral damage, withholding / destroying water supply of the enemy can place soldiers in an ethical dilemma. Another question is about when to consider an opponent a prisoner of war. This question arises when the assaulting troops overrun enemy positions and are unable or unwilling to identify an opponent’s unwillingness to fight. During the Falklands War, there were allegations that British troops had killed Argentine soldiers during assaults while they had raised their arms in surrender<sup>[16]</sup>. Treatment of wounded and prisoners of war by a military shows its ethical maturity.

### **Irregular Warfare**

Most of the operations undertaken by militaries around the world since 1996 comprise irregular warfare. This includes counter insurgency and anti-terrorism operations, peace-keeping / peace enforcement missions and humanitarian assistance operations. There is greater expectation of ethical conduct from personnel of regular armed forces as compared to insurgents. In counter



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insurgency and anti-terrorism operations, the enemy is not clearly identifiable and is mostly merged within the non-combatant population.

Moreover, insurgent sympathisers are non-combatants who provide shelter and intelligence to the insurgents. Irregular warfare depends heavily on good intelligence and discrete but minimal use of force. The local population must feel that the regular troops are fighting for their sake. It is a battle to win the hearts and minds of the local population. Therefore, commanders must subordinate their military operations to the political aim<sup>[17]</sup>. This restriction may not be liked by the soldiers who may see it as restricting their freedom of action and thus cause frustration.

Lack of training in ethics, limited knowledge of local customs combined with the stress of fighting an invisible enemy can lead to unethical actions being committed by troops on ground. There have been cases of US troops attacking Afghan wedding parties as they did not know the Pashtun tradition of celebratory gunfire during weddings. Abuse of prisoners in Abu Gharib prison was attributed to lack of education on the part of prison guards while the killings in My Lai (Vietnam) and Haditha (Iraq) were a result of troops' frustration and sense of insecurity. Any communication gap in the military hierarchy and/ or an implied culture within the force can also result in unethical behaviour by the soldiers.

Commanders are responsible for the conduct of their subordinates. Instances of unethical conduct by soldiers indicates that the senior commanders had not put in efforts to educate their men and the field commanders did not have an open culture where their soldiers could express their concerns and fears. The level of stress in battlefield and afterwards is much higher in irregular warfare as compared to regular warfare<sup>[18]</sup>. Military units are cohesive where soldiers see themselves as part of a family. Their anger builds up when they see their comrades being killed by Improvised Explosive Devices (IED) or snipers whom they cannot see. Level of anguish becomes even higher when soldiers see videos of their comrades being slaughtered by terrorists or their disfigured bodies. This anger, if not handled properly by commanders, will be expressed through cruel and unethical behaviour by soldiers. The feeling of revenge will overcome the need for humane treatment to prisoners.

The biggest problem that is encountered by soldiers in field is ethical decision making. It must be borne in mind that officers may not always be part of a patrol and that most soldiers are not well educated and may rely heavily on their experiences and social norms. This lack of formal education combined with the stress of irregular warfare may cause them to make decisions which may prove counter productive to the aim of the operation. On the other hand, too much introspection by young officers trained in ethics at the academies may put their survival in jeopardy<sup>[19]</sup>.

### **Recommended Solutions**

Problems discussed in the previous chapter can have serious consequences for the State as well as the military. The solution lies in better understanding of the reason of war by the troops and education of ethics based on case studies prior to deployment in theatre. The prerequisite for these two is open communication, both vertical and lateral, in the military. It demands ethical behaviour both from political as well as military leadership at all levels. The soldier of today is aware of events occurring around him and expects his superiors to be honest with him/ her. Moreover, it is a fact that ethics draws heavily from religion, whether it is presented as such or not is another matter.

### **Religious Approach**

Religion plays an important part in the lives of humans. They believe in the Unseen and measure their actions against the standard given in their religious scriptures. People are motivated to do good in order to feel accomplished in the eyes of God and hence be eligible for a place in Heaven. The other argument can be that people do good in order to avoid the wrath of their deity or avoid going to Hell. Religious ethics is a set of edicts that gives clear dos and don'ts to its followers with



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hardly any room for arguments. This approach frees the soldiers from the responsibility of judging the validity of the doctrine; they are only to follow instructions to the best of their abilities. This approach is more rigid than secular one. Religious approach to ethics is applicable both in war and peace and is more suitable in cases where soldiers are semi-literate and incapable of critical thinking (Third World). Religion also provides some support to cater for post-traumatic stress disorder. In the author's opinion, religious approach to ethics is a better way of ensuring good conduct by soldiers provided it is based on balanced religious thought and strictly regulated by military leadership. However, this approach has a drawback. Its inherent rigidity can produce opposite results as religiously motivated troops may resort to religious cleansing (summary executions, forced conversions, harassment, special taxes or enforced social behaviour).

### **Secular Approach**

Secular approach to ethics emphasises the importance of universal values. It does not refer to religion as its source and gives great freedom to the individual to apply his/ her critical thinking in order to find a solution best suited to a situation. As a consequence, individuals operating under secular ethics bear total responsibility for their actions. This approach is primarily based on Virtue Ethics and the same is taught in military training institutions for character building of young trainees. The idea is that a person of good character is more likely to make ethical decisions. It may be highlighted that study of ethics based on virtues takes time and is therefore more suited to peacetime. It also requires well developed analytical skills which ordinary soldiers in complex tactical environments may not possess.

Wartime ethics therefore should be based on a combination of deontological and consequentialist bases, tempered by virtue ethics. This may sound complex but it must be viewed in the perspective of soldiers operating in battlefield. On battlefield, there is not much time for critical analysis and an opportunity lost might cost lives of own soldiers. Troops on ground need to quickly find solutions best suited to their situation. This may be achieved through study of ethics using case studies based on actual situations so that soldiers develop a data base of situations they are likely to experience. This approach simultaneously requires a strong sense of identity as members of a military force. This defines the duties soldiers are supposed to perform as members of their organization. The aim of such approach is to enable the soldiers to quickly decide ethically while being able to foresee the consequences of their actions.

### **Conclusion**

Conduct of war is a dirty business. Ethical behaviour is required of militaries in order to regulate the amount of force applied and to minimize loss of life and property. It must be understood that war is a means to an end and not an end in itself. Soldiers fighting on both sides are instruments of State. They neither know their opponents nor have any personal enmity with members of opposing forces. Study of ethics helps in moderating the thought process of its students. The subject must be owned by the individuals and organizations. Different militaries have adopted different methods of ethics education depending on their suitability to each country. Dreaming for a world without war and bloodshed may be utopian but the realistic aim of the study of ethics in military organizations is to bring some sanity to the insane event called war.

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## **A COMPARATIVE ANALYSIS OF THE NATO DEFENSE PLANNING PROCESS AND THE NATIONAL DEFENSE PLANNING PROCESS**

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### **Abstract:**

The present paper intend to address the *NATO Defence Planning Process (NDPP)* and the *National Defence Planning System (NDPS)<sup>26</sup>* in terms of legal framework, definitions, functioning, actors involved and official documents issued within the frame of defence planning. The academic approach of the paper is a *mixture between a description of a several theoretical notions used by NATO and Romania policies, strategies, processes, laws and regulations* within the area of defence planning and a number of *personal viewpoints concerning the adjustment of NDPS to NDPP provisions*. I have made this option due to the *timely and updated NDPP* that has begun this year its first complete cycle since its very beginnings in 2001<sup>27</sup>, considering also important to illustrate *how, where, when and who adapts the NDPS to NDPP provisions*. Therefore, *my initial supposition is saying that the causality condition between NDPP and NDPS enhance the national defence planning system, slightest to higher level decision and mostly to medium and low level decision along the defence planning area*. The chapter 1 of the paper refers to an overview of the national defence planning system giving more than a glance over the legal framework, actors involved, planning documents and definitions within NDPS area. The above idea is supported along the entire chapter 2 of the paper, that address the process of adaptation of national defence planning to NDPP along the five steps, particularly with reference to the Ministry of National Defence level. The conclusion of the paper comprises several *personal points of view concerning the synergy between NDPP and NDPS regarding the development and maintaining of credible capabilities by Romania throughout PPBES*.

*Keywords: NATO, defense planning, steps*

### **Introduction**

Why should address the issue of adapting Romanian defence planning system to NATO Defence Planning Process? Are these two military or political issues? These are some of the questions that I am going to find an answer or at least to provide a perspective over its.

NATO is a political and military alliance having the essential purpose to safeguard the freedom and security of its members through political and military means. But what does it mean through political and military means? Each NATO member states agree to embrace the values of the North Atlantic Treaty consisting, generally speaking, in promoting freedom, peace, and security and shared values. If to all or these we add the fact that becoming a NATO member the states do not lose their sovereignty, which is a genuine state attribute, it becomes clear that the decision along NATO stand in the politician hands. A NATO decision is the expression of the collective will of all 28 member countries since all decisions are taken by consensus within the North Atlantic Council which is the highest decision making authority where nations are represented by presidents or chief of governments. Alternatively, by military means NATO is committed to the peaceful resolution of disputes. But if the diplomacy fails, then the Alliance has to have the military capacity to fulfil, in

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<sup>26</sup> The notion and acronym are not supported by any official paper.

<sup>27</sup> The reference stands for the current NATO defence planning process philosophy - capability based planning



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accordance with international law, the two of three<sup>28</sup> core tasks namely collective defence<sup>28</sup> and crisis management<sup>29</sup>.

In order to reach or to maintain that credible military capacity Allies undertake to provide, individually or together, the forces and capabilities needed for NATO to fulfil its security and defence objectives. The NATO Defence Planning Process (NDPP) is the primary means to identify the required capabilities and promote their timely and coherent development and acquisition by Allies. By participating to NDPP and, as I mentioned above, without losing their sovereignty, Allies harmonize their national defence plans with those of NATO to identify, develop and deliver a fair share of the overall forces and capabilities needed for the Alliance to be able to undertake its full range of missions.

The NDPP is designed to influence national defence planning efforts and identifies and prioritises NATO's future capability requirements, apportions those requirements to each Ally as targets, facilitates their implementation and regularly assesses progress and take the necessary measures to improve or correct it, if necessary. It provides the framework for the harmonization of national and Alliance defence planning activities aimed at the timely development and delivery of all the capabilities, military and non-military, needed to meet the agreed security and defence objectives inherent to the Strategic Concept.

Therefore, Romania, as a NATO member state, takes part to NDPP and, based on political decisions, assumes commitments to NATO that are converted within the national defence planning system into several provisions captured by the laws, strategies, guidance, programs, plans which govern the area of national defence planning.

At the same time, according to the National Defence Strategy<sup>30</sup>, Romania is a national, sovereign and independent state that seeks to promote and protect its national interests in compliance with its NATO and European Union member status.

Defence planning is an essential part of the defence policy which together with military international cooperation and military diplomacy defines and accomplishes the defence policy objectives, Romanian Army missions and military objectives. In this respect, Ministry of National Defence (MoD), as the national designated authorities to conduct and implement the defence planning activities plays a key role in the defence planning area.

## **Overview of the National Defence Planning System**

### **Legal framework**

The legal framework that rules the National Defence Planning System comprises in a number of laws that regulates the defence planning, budget and finance activities or functioning and competency of the actors, administrative authorities with responsibilities within the national defence planning. Under the above mentioned legislative framework that set out the legal basis at the national level, at the MoD level and in full respect of the national legislation and NDPP provisions, defence planning is put in place, starting with 2001, within a tool called Planning, Programming, Budgeting and Evaluation System (PPBES).

The defence planning process is founded on the basis of the Law no. 473/2004 on defence planning, which provides the national legal framework for it. The law streamlines the national defence process and mechanisms by detailing the main national and departmental planning documents, as well as the responsibilities of national institutions and bodies acting in the areas of national security and

<sup>28</sup> This task is carried out under article 5 of the Washington Treaty - NATO's founding treaty

<sup>29</sup> This task is carried out under a UN mandate, alone or in cooperation with other countries and international organizations.

<sup>30</sup> National Defence Strategy adopted through Parliament Decision no 30/4.11.2008



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defence. Moreover, the law provides compliance of national defence planning with NATO's defence planning process.

Due to the fact that the political-military environment has changed since 2004 and the MoND command and force structures are planned to be revised, this law is being reviewed in order to take into account all these changes. Consequently, the new drafted law takes into consideration the NATO's new planning process and envisages a 10 years planning period instead of 6 years as it is for now. All the other changes that the new drafted law comprises will be address consequently at their relevant topics.

Apart of the Law no. 473/2004 on defence planning there are other several laws that have significant inputs into the area of national defence planning. Two of them are related to the financial and budgetary fields and the other two settles the organizing and functioning of two major actors within national defence planning system.

Then, the Law no. 500/2002 on Public Finance stipulates concerning our area of concern, among general procedures, two landmarks: the budget holders' responsibilities and the budget time frame and the budgetary programs. As a consequence of its provision, the Law on the budget, which is the other law that bring more accurate information regarding the budget within the national defence planning system, is annually. Therefore, the administrative authorities will have their budget spitted on budgetary chapters and respective budget holders within the law on the budget.

Shifting to the major actors primarily involved in the national defence planning system it is the proper time to clearly state that „*national defence planning is accomplished based on political decisions of the President of Romania and Romania's Government, both endorsed by the Supreme Council of National Defence, and sanctioned by the Parliament. It also includes those measures and actions taken by other public institutions, which have legal responsibilities in the field of national defence.*”<sup>31</sup>

The first part of this provision regarding the political decisions of the President, Parliament and Govern should be usually supported by The Supreme Council of National Defence (SCND), which is the highest decision making body in the field of security and national defence.

The second part of the provision is addressed mainly to Ministry of National Defence that is the foremost administrative authorities in defending the country and, therefore in national defence planning.

Both administrative authorities, SCND and MoND, have their own laws on the organizing and functioning<sup>32</sup> that depicts their responsibilities and roles.

Apart of the President, Parliament, Govern and MoND there are other several public authorities which have their own responsibilities and roles within the national defence planning. Thus, civil emergency planning, whatever is a defence planning domain, falls under a specific law provisions being a responsibility of Ministry of Interior which is supported by MoND under a Memorandum of Understanding provisions.

Similar to the above mentions, those commitments that Romania must to fulfil in NATO and EU and involved non-military capability and exceed MoND responsibility could be subjects of other ministries or governmental agencies under the coordination of SCND, with MoND in support regarding speciality expertise.

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<sup>31</sup> The draft of the new law on defence planning, art. 3, line 4

<sup>32</sup> Law no. 415/2002 – The Law on the organizing and functioning of the Supreme Council of National Defence and Law 346/2006 – The Law on the organizing and functioning of the Ministry of National Defence





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To sum up, as it results from what it was written above, the legal framework that regulates the national defence planning field comprises in one law specially designated to regulates the field and other several laws whose part of the provisions serve as inputs within the field. Moreover, based on the provisions of all of these laws there are other several planning documents that are issued at the ministries and agencies level and stand for internal regulations.

**Planning documents, actors and governance within NDPS**

As I have mention above, the national defence planning system is based on and consistent with political guidance provided by either the national authorities which have responsibilities in the field of national defence or by international political-military organisations in which Romania is member, namely the North Atlantic Treaty Organisation (NATO) and the European Union (EU).

The main strategic documents that substantiate the defence planning at national level are: the *National Defence Strategy* and the *Governance Programme*.

At the departmental level, at MoND level, the defence planning documents are: the *Defence White Paper*, the *Military Strategy*, the *Defence Planning Guidance*, the *Major Programmes* and the *Annual Plans*.

The defence planning documents at national and departmental level take into account the commitments and recommendations resulted from: NATO defence planning process, the **Alliance’s Strategic Concept**, the **NATO Political Guidance**, the **European Union Security Strategy**, **strategic scenarios and operational planning documents** and **any other relevant defence planning papers issued by NATO and EU**.

The *National Defence Strategy (NDS)* is the basic document that substantiates the defence planning at national level comprising:

- the national security values, interests and objectives;
- the assessment of the international security environment;
- the potential risks, identified threatens and vulnerabilities;
- the strategic objectives and the priorities in the defence field, as well as the main actions to be undertaken in order to assure the Romanian national security in the defence field.

The President of Romania drafts and presents the NDS in the Parliament plenary within 6 months<sup>33</sup> from sworn into office. The Parliament debates and approves the Strategy by joint Parliamentary Decision of the two Chambers.

If significant changes in the security environment occur while the Strategy is in force, the President of Romania may initiate the process of amending/adjusting the document accordingly, followed by Parliament’s approval in urgent procedure. NDS covers a period of 5 years<sup>34</sup> and comprises long term provisions.

The *Governance Programme* set the objectives, priorities and guidance within the defence field that the Government pledges to achieve along its mandate.

*The Defence White Paper (DWP)* is issued by the Ministry of National Defence in order to enforce the provisions of the National Security Strategy and the defence objectives lay down by Government Programme and in accordance with the NATO Strategic Concept.

The Defence White Paper sets out:

- defence policy objectives – area policy in the area of defence
- measures and actions to be taken in order to achieve them;
- Armed Forces’ specific missions and requirements;

<sup>33</sup> within 60 days from sworn into office according to the new draft law on defence planning

<sup>34</sup> a presidential mandate including, in addition, medium and long-term provisions.



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- policies in the field of human and material resources, infrastructure, procurement and in the area of managing the relationship with the defence industry;
- financial resources to be provided, under the form of a strategic expenditure plan;

The Defence White Paper is endorsed by Government and the Supreme Defence Council, and then approved by Parliament no later than 6 months after the vote of confidence is granted to the Government. It covers a period of 4 years and encompasses long term provisions and may be revised in case the National Defence Strategy is amended or a new Strategy is issued, or if circumstances require.

The Defence White Paper is the basis regarding policy, domains strategies and priorities established to be address by the MoND within the request on annually drafted budget.

*The Military Strategy (MS)* is issued by the MoND based on NDS, DWP and relevant NATO and EU documents.

The Military Strategy includes:

- the potential security risks and threats identified from a military viewpoint;
- the national military objectives;
- the defence capabilities<sup>35</sup> and priorities in their establishing;
- Romanian Army's force structure and guidelines regarding its configuration, sizing, training and endowment;
- the strategic and operational concepts established to fulfil these objectives and the Armed Forces' missions.

*The Defence Planning Guidance (DPG)* is developed by the Ministry of National Defence based on the National Defence Strategy, Defence White Paper and NATO and EU relevant documents.

The Defence Planning Guidance is a ten year planning document, updated annually that includes:

- the objectives and priorities of the Ministry of National Defence;
- the Major Programmes' titles and their programme managers;
- the specific objectives and their capabilities for each Major Programme;
- the budget line for each Major Programme.

The DPG is approved by the Minister of National Defence, after being endorsed by the Defence Planning Council, which is the deliberative body empowered to decide on the major objectives and actions to be undertaken for fulfilling the tasks of Ministry of National Defence, and on the quantity, structure and allocation of the necessary resources as well.

**Once the DPG is issued the strategic/national planning phase ends and MoND level planning phase starts under PPBES framework. The PPBES mechanism used by MoND offers the necessary tools for the democratic oversight over the formulation and implementation of defence policy.** It also allows a proper correlation between defence objectives/tasks that shall be achieved/executed and the allocated resources. In addition, it allows an audit of MPs implementation status and budget execution.

*The Major Programmes*<sup>36</sup> are developed at the level of Ministry of National Defence, based on the DPG, and include all specific measures and actions carried out for the establishment, modernization, procurement, training, maintenance of the armed forces at peace time, and for their preparation for missions abroad as well as for crisis and war contingencies, ensuring optimal condition for personnel, providing logistics support and rations for mobilization and war, development

<sup>35</sup> Capability is the ability to execute the required actions in order to achieve the desired objectives.

<sup>36</sup> As it defined in Article 2 paragraph 37 of Law 500/2002 on public finances, as amended and complemented, as well as the meaning of “budgetary program”.



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and maintenance of infrastructure for military operations under NATO collective defence, international cooperation, as well as the resources allocated annually for achieving the here above measures and actions. The establishment of a capability takes into account a complex of actions and measures in a broad perspective including doctrine, organization, training, materiel, leadership development, personnel, facilities, and interoperability elements.

The Major Programmes' development and implementation falls under the responsibility of the Programme Managers which is the head of a structure responsible for generating capabilities. In order to accomplish this task, he is given the necessary human, material and financial resources, and specific objectives are assigned. On the other side, the Major Programme's oversight and monitoring falls under the responsibility of the central defence planning structure from the Ministry of National Defence level.

The Major Programmes are generated annually, with a time horizon of 6<sup>37</sup> years.

**Basically, the major programmes are the instruments that translate the long term objectives stated in the NDS, DWP and DPG to medium term objective and relate them with allocated resources.**

*The Annual Plans* are developed by the major programme managers based on the Major Programmes, the funds from the State budget allocated for the current year, taking into account the previous year's budget execution, and also including the degree of accomplishment of the approved programme indicators.

**The Annual Plans represents the first year of a major programme, its proposed measures and actions being updated accordingly to budget adjustments. The Annual Plans execution status represents inputs for the next major programm cycle.**

Apart of the above defence planning documents that are related moreover to resource planning field, there are other several plans issued within MoND that put in place measures and actions related furthermore to capability planning within NDPP. The defence planning aim is also to support the national operational planning process in order to fulfil the missions and objectives in the defence field.

Consequently, the *Plans on Implementing Capability Targets* stands for the activities, measures and resources to implement the national and multinational capabilities targets committed to NATO based on NDPP provisions. Likewise, *The Strategic Scenarios, The Permanent Defence Plans and Contingency Plans* include the missions, the relevant scenarios, the forces to be employed, the financial, human and material resources to be allocated and the course of action for their implementation.

## THE NATIONAL DEFENCE PLANNING SYSTEM CHART

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<sup>37</sup> 10 years , according to the new draft law on defence planning



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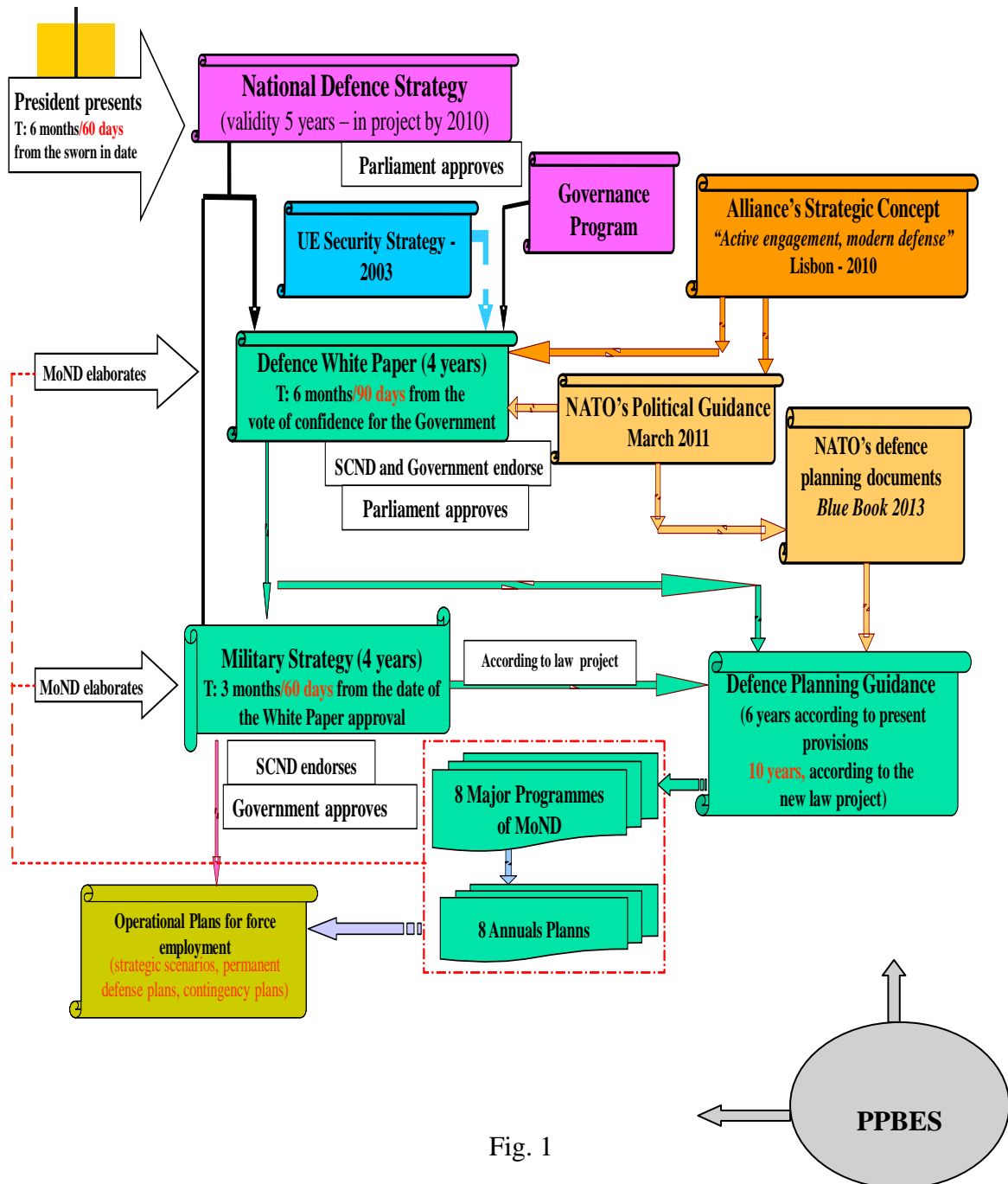


Fig. 1

Coming back to PPBES, some mentions must be made in order to stressed its main role as a tool in the hands of decision stakeholders but the multi-annual planning cycle, as its quintessence, which is the basic planning mechanism that ensures the MoND long-term sustainability and its 5 yearly phases (*planning, programming, budgeting, and execution/evaluation*) that ensures fulfilment of the medium and short term objectives based on the resource allocation and provide feed- back to the next cycles of planning.



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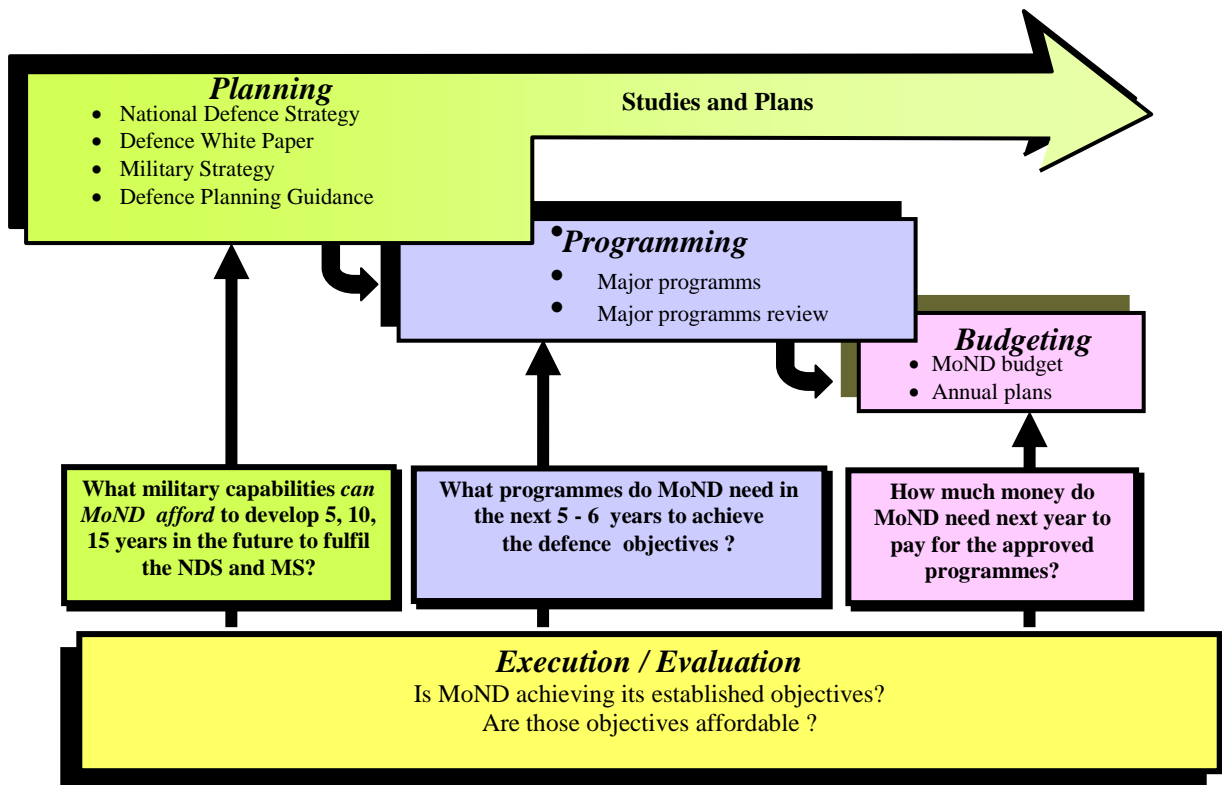


Fig. 2

In the *planning phase* the MoND priorities and objectives, based on the approved national and international politico-military policies and planning documents and the necessary financial resources to achieve these objectives are defined. It also includes the process of projection of combat forces, command and administrative structures. This phase has as the output the issuing of long-term strategies and plans.

In the *programming phase* the concrete actions and activities meant to be taken in order to ensure the implementation of the major programmes general and specific objectives described by DPG. The Programming phase is about how to convert from long term objectives to medium term objectives and with what resources.

Within the *budgeting phase*, all major programmes activities costs are evaluated (i.e. personnel, acquisition, maintenance and operation, infrastructure costs) and translated into a financial plan (Annual Plan), in both national and NATO categories of expenditures. During the budgeting phase, the first programmed year is translated into financial details and the programme costs into annual funding requirements. At this stage the defence budget is approved.

In the *execution phase* the *evaluation process* is also conducted. If during the evaluation process a need/requirement for improving the major programmes execution phase is identified, the appropriate measures shall be taken in order to make the necessary corrections. The evaluation process is conducted bi-directional: a regular evaluation during each phase and a final evaluation (annual review) at the end of the PPBES cycle, which is the end of fiscal year. During evaluation process, the specialized planning structures from major programmes directors, General Staff and Department for defence policy and planning analyse and assess the sustainability and affordability of the established objectives and the progress made in implementing them.

The results of regular analyses and the annual review conduct to adjustment of several plans (annual plans, Capability target plan) and later on taken into consideration at the new DPG



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preparation. Also, the evaluation phase of the first PPBES cycle have impact on programming and budgeting phases within the second cycle and on planning phase from the third cycle. As a result, the major programmes directors, their planning staff and MoND level experts are involved in more than one PPBES cycle at the same time which makes the activities within PPBES very complex and challenging.

### **Adapting NDPS to NDPP**

The issue of adapting National Defence Planning System to NATO Defence Planning Process could be at first sight a matter of misunderstandings in terms of systems theory approach, as long as, generally, a system consists, apart of principles, rules, elements etc of one or more processes that influence the system performance and not on the other way round.

To begin with a more clear understanding it will be helpful to take a look on what the NDPS and NDPP stands for as long as a wide range accepted definitions are not available.

NDPS it provides the frame for national defence planning to promote national interests and fulfil the national security objectives in the defence field, as well as to perform those actions needed to comply with NATO and EU requirements regarding the national defence actions.

NDPP is designed to influence national defence planning efforts and identifies and prioritises NATO's future capability requirements, apportions those requirements to each Ally as targets, facilitates their implementation and regularly assesses progress. It provides a framework for the harmonisation of national and Alliance defence planning activities aimed at the timely development and delivery of all the capabilities, military and non-military, needed to meet the agreed security and defence objectives inherent to the Strategic Concept.

Hence, NDPP is interested in influencing the NDPS, foremost in its part that address the national will in establishing, developing and sustaining the capabilities committed to the Alliance.

Within the next lines I would like to have a glance over the NDPP five steps and to come up with the each step implications over the national defence planning.

### **Within NDPP step1 - Establish political guidance**

Political guidance sets out the overall aims and objectives to be met by the Alliance. It translates guidance from higher strategic policy documents, such as the Strategic Concept, in sufficient detail to direct the defence planning efforts of the planning domains in order to determine the capabilities required.

Political guidance aims at defining the number, scale and nature of the operations the Alliance should be able to conduct in the future (commonly referred to as NATO's Level of Ambition). It also defines the qualitative capability requirements to support this ambition. By doing so, it steers capability development efforts within the Allies and NATO. It defines associated priorities and timelines for use by the planning domains.

Within this step, Romania (especially Ministry of Foreign Affairs and Ministry of National Defence representatives), along with the other Allies, support the effort of issuing of the Political Guidance throughout the national viewpoints expressed by national experts and decision makers within the various discussions that take place in order to reach the consensus among the Allies.

### **Within NDPP step 2 - Determine requirements**

The NDPP step 2 is, along with step 1 (establish political guidance) an internal bussiness of NATO, meaning that the nations are not playing a very important role in spite of being invited to participate to working sessions at NATO level.

NATO's capability requirements (current and future) are consolidated into a single list called the Minimum Capability Requirements. These requirements are identified by the planning domains



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and the two Strategic Commands (Allied Command Operations (ACO) and Allied Command Transformation (ACT)). ACT has the lead in determining the requirements. The process is structured, comprehensive, transparent and traceable and uses analytical tools coupled with relevant NATO expert analysis. This is done once every four years, although out-of-cycle activity for particular capabilities can be undertaken as circumstances dictate.

Like the step 1 case, Romania through MoND experts, can be involved to NATO's working group activities within the Alliance spirit of transparency regarding the process of determine requirements and shortfalls.

**Within NDPP step 3 - Apportion requirements and set targets**

Target setting apportions the Minimum Capability Requirements to the Allies (either individually or as part of an agreed multinational undertaking) and NATO entities in the form of target packages. The apportionment process aims to apply the principles of fair burden-sharing and reasonable challenge.

The Strategic Commands (with ACT in the lead) develop a target package for each Ally for existing and future capabilities, with associated priorities and timelines. Targets are expressed in capability terms and are flexible enough to allow innovative solutions to be developed rather than replacing 'like with like'.

Once each Ally has been consulted, the International Staff replaces the Strategic Commands in leading the process. Target packages are forwarded to Allies with a recommendation of which targets should be retained or removed. Allies review these packages during a series of Multilateral Examinations and agree a target package for each Ally on the basis of "consensus minus one", meaning that a single Ally cannot veto what otherwise would be a unanimous decision on its own target package.

Agreed target packages are subsequently forwarded to Allies for submission to defence ministers for adoption. A summary report is also prepared which includes an assessment of the potential risk and possible impact caused by the removal of targets from packages on the delivery of the Alliance's Level of Ambition.

Within the step 3, the drafted capability package addressed to Romania is analyzed within MoND in cooperation with other ministries or national agencies for those targets that exceeds the MoND responsibility. The analyze process outcome consist in Romania position regarding the acceptance level of each capability target and the proposed ways of implementing them.

This paper is submitted to NATO and represents the basis for next consultations within bilateral discussions NATO-Romania. Coming after the bilateral consultations, Romania take part to the multilateral consultations „28 minus 1” that establish the consolidated capability targets package for each Ally, and later on assumed the agreed commitments through minister of national defence approval.

**Within NDPP step 4 - Facilitate implementation**

This step assists national measures, facilitates multinational initiatives and directs NATO efforts to satisfy agreed targets and priorities in a coherent and timely manner. Unlike other steps in the process, this step – or function - is continuous in nature.

At the MoND level, the forth NDPP step consist of the process of issuing the Implementation Plans of Capabilities Targets that are implemented through the major programm within MoND.

**Within NDPP step 5 - Review results**

This step seeks to examine the degree to which NATO's political objectives, ambitions and associated targets have been met and to offer feedback and direction for the next cycle of the defence



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planning process. Step 5 provides an overall assessment of the degree to which the Alliance’s forces and capabilities are able to meet the political guidance, including the NATO Level of Ambition. It is carried out by a Defence Planning Capability Review (DPCS) which scrutinises and assesses Allies’ defence and financial plans.

Every two years, Allies complete a Defence Planning Capability Survey which seeks data on Allies’ national plans and policies, including efforts (national, multinational and collective) to address their capability targets. The survey also seeks information on the national inventory of military forces and associated capabilities, any relevant non-military capabilities potentially available for Alliance operations and national financial plans.

On the basis of this and the individual assessments, the DPPC prepares a NATO Capabilities Report, highlighting individual and collective progress on capability development as it relates to NATO’s Level of Ambition.

At MoND level the review results consist in filling and transmitting the information requested by NATO within DPCS and also in several internal evaluations aiming to evaluate the capabilities targets implementation status, the annual plans and major programmes execution. All these evaluations fall under the execution/evaluation phase within PPBES.

### THE NATO DEFENCE PLANNING PROCESS CHART

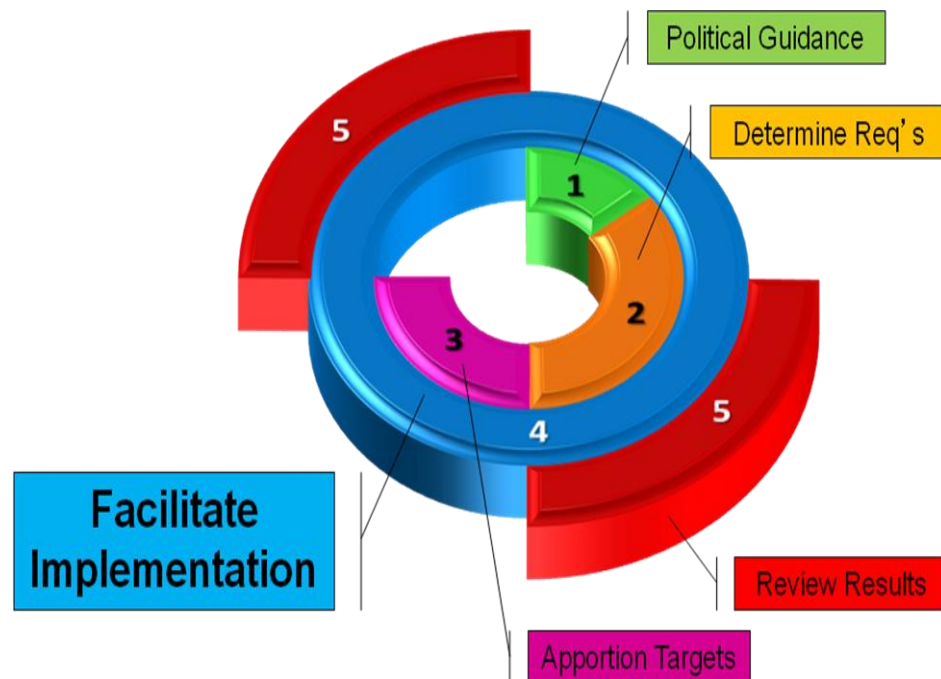


Fig. 3

### Conclusion

Adapting the National Planning Defence System to NATO Defence Planning Process represents one of the consequences of being a NATO member country. Although NATO does not request to the nations a specific national defence system, the Alliance request the alignment of national plans with NATO’s plans and encourage nations to invest mainly in those capabilities included in the Capability Package committed by nations to NATO. Therefore, the Alliance is





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particularly interested in the process of establishing, developing and sustaining of the committed capabilities within nations, throughout a capability based planning process, namely NDPP.

On the other hand, the Romanian defence planning system stands for wider purposes related to promoting national interests and fulfils the national security objectives in the defence field. Within NDPS are perform, as well, those actions needed to comply with NATO and EU requirements regarding the national defence actions. Therefore, some adjustments within NDPS have to be made to comply with the NDPP provisions particularly regarding the process of building up, developing and maintaining the national capabilities within NDPS.

At present, Romania is within the crucial phase of building up the critical and relevant capabilities. Thus, Romanian capability based planning system consists mainly in setting up the capabilities that Romania committed to NATO within NDPP.

In Romania, the national public authority responsible for the building up, developing and maintaining the military capabilities is The Ministry of National Defence (MoND). For the non-military capabilities committed by Romania to NATO, arrangements among the public authorities involved must be put in place.

The process of building up, developing and sustaining the military capabilities at the MoND level is implemented through a resource planning system that consists in integration in a timely manner of capabilities, priorities and financial resources, using as a implementing tool The Planning, Programming, Budgeting and Evaluation System (PPBES).

Generally speaking, PPBES it has to be seen, also, as a tool to implement the democratic control over the Romanian Army. Thus, Defence Planning Guidance is the paper that connects, for the first time along the process, the objectives, the missions, the capability development process with financial resources and their way of allocation among the major programmes holders and setting up a priority in allocation of financial resources.

In the light of the all considerations from above, I am going to address forward several take away key points:

1. Romania is a NATO and EU member country being beneficiary of collective defence and mutual defence clauses. Therefore all the activities in the national defence area, including defence planning have to start from this fact;

2. Romania, like all the other Allies keeps its sovereignty. Thus, its NDPS is established based on the national political, judicial, social, cultural etc frame. Still, NDPS is influenced by NDPP by:

- a) aligning the national plans for defence to NATO plans;
- b) investing in those capabilities committed to NATO;
- c) persuade countries to spend a minimum of 2% of their Gross Domestic Product (GDP) on defence and 20% of their defence budgets on major equipment, including related Research & Development<sup>38</sup>.

3. The new cycle of NDPP starts this year with a new Political Guidance and a long term approach of 10 years;

4. A new defence planning law has been issued by MoND to comply with the provisions of the new NDPP frame;

5. NDPS could be split in two parts:

- a) strategic/political level – slightly influenced by NDPP;
- b) departamental/MoND level – very influenced by NDPP;

6. NDPS is a top to down approach up to the programming phase of PPBES; this point forward the approach is down to top;

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<sup>38</sup> Wales Summit Declaration 2014, issued by the Heads of State and Government participating in the meeting of the North Atlantic Council in Wales



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7. being a top to down approach system at strategic level, if one of the document from the strategic level is not issued in due time is going to affect the process by affecting the scope, objectives, missions that are set up at this level within NDS, GP, WDP and MS;

8. The timeline of issuing the official papers at the national level (NDS, GP and WDP) is related to the presidential or/and government mandate length, being irrespective of NDPP provisions;

9. Also, different timeline between NDPP and PPBES as follows:

- a) NDPP consists of five steps conducted over a period of four years. It address also to medium (5 years) and long term capability planning (10 years) within the *step 3 - Apportion requirements and set targets*;
- b) PPBES consist, also, in four phases, but, over a period of 1 year. It address also to medium (5 years) and long term capability planning (10 years) regarding the process of capabilities generation;
- c) In terms of resources allocation, PPBES is influenced by the fiscal-budgetary strategy that estimates the resources for four years, the annually budgetary limits that set up the resources ceiling for the major programmes and by the annually budget which substantiate the budget for the Annual Plan (first year of a major programme).

10. Regarding the national capability based planning process it can be assumed that the gap between the needed capability and the existing ones it can not be identified as long as there is no ceiling set up regarding the needed capabilities. That ceiling should stand for the national LoA as a result of political decision holders. Consequently, the gap should be the primary area of national concern and the related risks to be assumed at the highest level of political decision in the national defence field, namely SCND;

11. The lack of a legal frame to facilitate the cooperation between MoND and the other public authorities responsible for carrying out the process of establishing, developing and sustaining of non-military capabilities;

12. The little efficiency of the evaluation process and insufficient implication of the political side in the defence planning, particularly SCND.

All in one, NDPP influences the NDPS along all its levels, by posing some issues to national level that were integrated into the documents issued at this level (NDS, WPD, MS), but mostly the departmental planning level and its tool, the PPBES.

Accordingly, the assumptions stated at the beginning of the paper which stands for the influence of the NDPP over NDPS in a slightest manner to higher level decision and mostly to medium and low level decision along the defence planning area, has been confirmed.

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**INTERNAL AND EXTERNAL FACTORS OF THE RECRUITMENT  
OF HUMAN RESOURCES IN THE ORGANISATION**

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**Abstract:**

The recruitment is a dynamic, laborious and an expensive process, which has a high impact on the organisation. For a successful recruitment, the organisation must have developed policies of staff issued from both prognostic and planning of the staff resources and also from the analysis of the posts that are going to be occupied.

The recruitment process is influenced by both internal factors and external factors.

*Key words: organisation, human resources, recruitment, internal factors, external factors*

**Introduction**

An organisation will accomplish its established objectives and it may be successful and/or it will resist if its human resources are qualitative from both points of view: intellectual and professional training as well as their psychological characteristics (attitude, behaviour, temper). In order to do that, the organisation must identify and attract the most competitive applicants through the recruitment process.

**The Recruitment of Human Resources in the Organisations**

The recruitment, also named pre-setting, represents the preliminary activity of the selection of the human resources for a particular structure of the organisation or for the whole organisation. The recruitment consists in both identification and attraction in the organisation of people who are appropriate intellectually, occupationally, motivationally and psychologically (attitude, behaviour and temper) for filling the vacancies or to be newly established.

Recruitment policies are determined by a number of factors, among which:

- the type, dimensions, image and reputation, the tradition of the organisation;
- economic and legal situation of the organisation;
- the ratio between demand and supply in the labour market;
- ensuring consistency between recruitment activities of the organisation and its values and strategies, without neglecting the existing competition in the labour market;
- legislative framework relating to employment;
- relationship organization – unions;
- relationship organisation – local, regional, central administration

Recruitment is a process whereby public offer of the organisation becomes better known to those interested in representing a two-way communication: organisation – candidate and candidate – organisation.

The recruitment process is also considering obtaining numerical requirements of employees, as well as ensuring high qualities of labor attracted, to meet the needs of the organisation while reducing costs.

The main objective of recruitment is the identification of a sufficient number of candidates eligible to be selected. Through recruitment, from among the selected candidates, they shall be taken



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effectively only those candidates whose professional knowledge, personality and skills best match the vacancies.

Recruitment is a process:

- which involves direct contact between the employer and the applicant;
- bidirectional, in which both the employer and the applicant shall evaluate the advantages and disadvantages;
- public, in order to attract candidates, use the media services of the National Agency for Employment of the Workforce and of scholarships and job fairs;
- of communication between your organisation and the applicant, each with its own signals;
- transparent when you can verify the truth regarding the information that circulate in conjunction with their staff in the organisation, as well as conditions of work, the rewards granted, relations within the organisation, the organisation's stability, etc.;

Recruitment is conducted continuously and systematically as it is necessary both to ensure the human resources posts newly established (in the case of the development of the organisation), as well as replacing employees who are geeks or leaving the organisation due to various reasons (continuing studies, military service, better salary offer, moving to another area, sickness, disability, death).

The recruitment needs of organisations can be:

- strategic, corresponding to strategic needs for a segment for which you can ensure more sustainable jobs, motivating and retributive
- temporary, when employees leave the organisation for various reasons (resignations, studies, pre-and postnatal leave, promotions, postings, transfers, etc.);
- Permanent (systemic)-in the case of large organisations where recruitment can be a complex and expensive task, requiring special attention in terms of internal and external organisational consequences.
- spontaneous-when needed (the case of small organisations).

The recruiting process is influenced by a number of internal and external factors.

### **Internal and external factors that influence the recruitment of human resources**

Recruitment factors depend on the type of management practiced by the organisation, the strategic objectives, as well as those of the organisation of the labour market situation at the time of recruitment, the condition of the national economy, national economic policy (with effects on the economic policy of the organisation).

Internal factors that may influence the recruitment activity are represented by factors related to organisation and factors related to work.

Factors related to the institution are:

- the peculiarity of the organisation;
- turnover and capital invested;
- the situation in terms of the effectiveness of the organisation's activities;
- the size of the organisation (SMEs, large multinational undertaking, etc.);
- property status (independent enterprise, subsidiary undertakings in other countries, part of a network, etc.);
- the objectives of the organisation reflected both in matters of human resources, as well as in the policies and decisions of the recruitment of human resources
- type of management practiced;
- the dominant organisational culture which, through promoted values, positively affects the willingness of potential candidates to be part of the organisation;



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- management policies and practices in the field of human resources in the organisation that represents the organisation's code of conduct in this field and which affects both potential candidates and recruitment process;
- economic and financial situation of the organisation, since recruitment activity involves spending (employment ads, the time used for recruitment, etc.);
- the Union, by the provisions of the collective labour contract, may cause some of the constraints or recruitment activity or it can influence this process;
- the Union's relationship with the leading factors;
- the location of the zone (access, transport, etc.)

There are organisations that employ staff on the basis of political criteria, ethnic or otherwise.

Factors related to work are:

- profession needed;
- the degree of skill required to fill the post;
- to draw up a detailed job description sheets, precise, clear, that does not lead to confusion or leave room for interpretation;
- the remuneration offered;
- the specificity of the vacancy;
- hierarchical relationships and other posts in the establishment plan;
- working conditions.

From the external environment of the organisation, the specific conditions of the labour market and national legislation concerning employment affect human resources recruitment and constrain the organisation to adopt certain strategies.

External factors that have influence on recruitment activity in an organization are:

- conditions and changes on the labour market, since both the manifestations and changes over time of it causes a high influence over recruitment of human resources. Thus, if the labour market offer of staff is relatively small, mainly qualitative, and unemployment is very low, the recruiting process will be difficult. At the same time, for certain categories of workers, the labour market can be reduced to the local market (locality/area in which is situated the organisation), while for other categories of workers, the labour market can include availability of personnel at County or national level;
- demographic trends in the area in which the organisation operates;
- labour market entry of female labour;
- increasing the age of retirement;
- the level of employment of the population of the area in which the organisation is located;
- the level of unemployment in the area;
- the capacity of training systems and development of human resources;
- the image and/or reputation of the organisation within the community may have a positive or negative influence on the process of recruitment and can attract or repel prospective candidates;
- socio-economic situation of the area in which the organisation is situated -educational services, health services, transport facilities, living conditions, the supply of housing, the existence or lack of utilities, shops, etc.;
- the main competitors that make direct employment on the similar posts;
- the existence nearby of some educational institutions on similar workstation profiles (high schools, vocational schools, universities);
- -educational methods used in the preparation of future candidates for vacancies in your organisation;



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- potential candidates preferences for a certain job or to certain advantages offered within the organisation. These preferences can be influenced by the skills and attitudes developed, professional experience, the influences coming from family, friends, teachers or those of someone's entourage;
- legislative or legal (laws, decrees, decisions of the Government Emergency Ordinance, standards and methodologies) specific for the human resources domain, covering various aspects of the process of with staff (including recruitment activity), in order to avoid unlawful decisions or hiring practices, and discrimination of any kind. The absence of appropriate rules lead to the failure of self defense of the discriminated or wronged persons.

There are situations where difficulties or delays in the recruitment of human resources may occur. This may be due to:

- the need to identify and attract potential candidates confidentially and without advertising;
- the existence of special posts or more complex for which the potential candidates are harder to come by or to be attracted. In general, for such positions, the average length of time required for their occupation is much higher;
- lower level at monetary rewards when compared to other organisations (for similar posts or qualifications).

### **Conclusion**

The recruitment process represents a key element of human resources management, the latter being the main method of ensuring the workforce of an organisation.

The basic aim of recruitment is the identification of a large number of candidates eligible to be selected.

The success of the recruitment activity is conditioned by the time and the financial effort supplied by the organisation. The process of identifying and attracting competitive candidates must begin as soon as the organisation itself prepares for the change, and the recruitment methods used have to be varied.

Recruitment policies are affected by a number of constraints, internal and external factors of the organization

Internal factors that may influence the recruitment activity are represented by factors related to organisation and factors related to work.

Among the external factors, both the labour market and the legislative or legal domain of the human resources (laws, decrees, decisions of the Government Emergency Ordinance, standards and methodologies), which covers various aspects of the staff recruitment process, represent a major influence.

To be successful and competitive, an organisation must carry out a comprehensive and complex analysis of all internal and external factors that will attract potential candidates.

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**THE STRATEGY OF PERSONNEL ORIENTED TOWARDS  
RESOURCES IN THE ORGANISATION**

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**Abstract:**

Within this strategy, the human resources or the possibilities of supplying personnel considerably influence the content of the organisation's strategy. Human resources issues are already included or taken into account in the formulation of the strategy of the organisation and do not occur only at the stage of its realization when the existing staff might be at an inappropriate level.

Managers across all hierarchical levels must be engaged in order to establish the functional strategy for human resources of the organisation. This is needed, because, regarding the importance of human resources in achieving the level of performance and competitiveness of the organisation, no other area neither of functional strategies nor of afferent politics won't be so vital.

*Key words: organization, human resources, strategy of personnel, performance, competitiveness*

**Introduction**

Philosophy of Management geared towards people means that “people represent the Organisation” and also that “respect for people” is to “compete through people”. Without the presence of the employees who know what, when and how the work must be done, the organisations cannot achieve their goals.

In the conditions of practicing a modern management, human resources are considered to be vital resources, they assuring the existence, development and success of the organisation.

**Strategic planning of human resources in the Organisation**

Man lives in a world of organisations because he is born in an organisation, he is instructed in an organisation, he earns his living in an organisation.

Modern society is a network of organisations that appear, or disappear, develops, the most difficult issue for their success being their own capacity to adapt to change. The organisations are social structures designed to achieve common goals through joint effort and they have as their main characteristic the humans existence. They exist because although people have physical and intellectual capabilities developed in certain limits, they have the ability to develop organisations. These organisations depend on the efforts of employees, and the employees ' behaviour influences the efficiency and effectiveness of the organisation.

Organisations are involved in the daily life of the people and represent a great part of their everyday existence.

In order to grow, the organisations are forced to create structures capable of anticipating, with a low margin of error, the trends of social development and of the structural and content changes of the market.

High-performing organisations allocate financial and material resources in the research and drafting of strategies of human resource policies.

Personal strategies take into account the following considerations:

- dynamics of social structure;





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- modification of the level of the general and specialty training of the working population as well as of the scholastic and academic population;
- development of the market trends, including those of the labour market;
- economic and cultural globalization
- development and diversification of means of communication;
- the increase of the share as well as of the importance of the communication throughout the company;
- the amplification of the share of the productive and commercial companies with both multinational and international character
- growth trends of the social level of organisations
- the promotion and application of the concept of total quality in the field of organisational management;
- increasing of the specialization level of the primary productive units which work within the integrator companies of products and services
- the amendment of the international standards, legislative and of quality, along with the accession of Romania to the European Union.

Related to the issues which the personnel strategies impose, the organisation is required to make assessments in:

- its own structure;
- the efficiency of the information and resource flows;
- the level of performance attained and the level of performance to be attained;
- the degree of adaptation of the Organisation to external changes
- the capacity of staff to use new technologies;
- the ability to fund its own restructuring;
- the ability to invest in advanced vocational training and/or retraining of personnel

The adoption of a single strategy regarding the development of the human resources cannot ensure the capacity of reaction of the organisation to all internal and external environmental factors to which the organisation is exposed. In order to assure the success even in case of some unforeseeable external transformations, large organizations adopt a main strategy as well as a complementary one.

Logical steps completed by the organisation in adopting strategies relating to the human resources consist of the evaluation of:

- the organisation as a whole (the organisational culture and the objectives);
- the existing human potential in the organisation (performances and non performances);
- capacity for self-development and of assisted human resources growth in your organisation;
- costs relating to the restructuring of existing human resources;
- costs and opportunities to recruit and select new categories of human resources;
- foreseeable effects that will result from the measures outlined above.

The combination of the above activities represents the strategic planning of human resources in the organisation.

Through the strategic planning of human resources the organisation defines its intentions both in terms of the directions of development of human resources, as well as the needs and/or requirements to be met in the area of human resources, so that the organisation can achieve its organisational objectives set. Therefore, strategies in the field of human resources should consider both the organisational objectives, as well as the content of human resources management.

Directions in which personnel strategies can be developed are:

- the supply and selection of personnel;
- the training and development of employees;



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- the evaluation of performances
- rewarding of the employees;
- the relationships with the employees.

The main features of the human resources strategies are presented in the table no. 1.

<i>Human resources strategy</i>	<i>Main features</i>
<i>Human resources-organisation</i>	<ul style="list-style-type: none"> <li>– human resources are considered to be the cause (variable), and the organisation's performance represents the effect (function);</li> <li>– construction of personnel structure determines the structure of the organisation;</li> <li>–both policy and managerial practice relating to human resources determine the organisation's culture;</li> <li>– investment in human resources are considered primary;</li> <li>– the inertia of human resources to external changes must be compensated by investing in superior qualification of the personnel at any given time.</li> </ul>
<i>Organisational socialization</i>	<ul style="list-style-type: none"> <li>– the organisation takes into account the needs and aspirations of employees satisfaction's medium and long term (training, integration, motivation and payroll after performance, fairness, non-discrimination, ensuring optimal conditions for employment, security of work);</li> <li>– the adoption of this strategy may be to capture the organisation when the outside environment evolves unpredictably.</li> </ul>
<i>Development through investment</i>	<ul style="list-style-type: none"> <li>–organisation opts for substantial investment in its own human resources development;</li> <li>–the stability for the employees is assured, technological innovations are easily retrieved, and the adaptability to market requirements is also ensured.</li> </ul>

**Table 1**

Personal strategies are diversified according to the organisations and to the specialists' concepts in the related field. Depending on the degree of dependence on personnel and business strategy, Rolf Bühner distinguishes three types of staffing strategies, as follows:

- personnel strategies oriented to investments;
- personnel strategies oriented to value
- personnel strategies oriented to resources

Next we will discuss the issue of the personnel strategy oriented to resources.

### **Personnel Strategy Oriented to Resources**

The promotion of this personnel strategy involves inverting the report goal – means, emphasizing the role of human resources as a competitive advantage. Thus, the existent human resources or the opportunities for human resource supply decisively influence the content of the strategy of the organisation, and the human resources function actively contributes to its development and its implementation. The human resources department within the organisation makes available for the managers data and information needed regarding the existing human resources and may suggest



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what kind of global strategies of the organisation can be achieved within the framework of the propounded aim with the existing human resources in the organisation.

The adaptation of such a strategy requires a change in the attitude of managers, they must understand that the strategy focused on the financial aspects of the organisation are not in contradiction with the strategy of resource-oriented staff. For example, reducing investment can determine a certain reduction in staff, but does not exclude a superior qualification of staff, necessary to ensure or improve quality. Therefore, the personnel strategy oriented to resources, for the maintenance and development of human resources is a prerequisite to making new business.

In this strategy the traditional question: *What kind of staff is necessary for carrying out organisational strategy?* is replaced with the question *What kind of markets can be penetrated with current human potential?*

The human resources development becomes the necessary premise for the organisation to quickly and flexibly react to possible changes in the external environment.

The correlation of the personnel strategy with the strategy of the organisation determines the necessity of an overall vision which leads to the increase of the competitive success of the organisation and creates the prerequisites for the development of new strategic approaches under the conditions of maintaining the human resources. At the same time, it is necessary to take into account the fact that human potential cannot always be adjusted in the short term to the strategic requirements of the organisation.

Depending on the size of the sums allocated by the organisation for the development of its own human resources, personnel strategies can be categorized as follows:

- the “reconciliation” strategy – targets the preventing or settlement of possible conflicts which have a social character and may occur as a result of the lack of concern on the part of managers of the organisation for the improvement of human resources.
- “survival” strategy – is based on the establishment of a special fund within the organisation, and the Fund, although insufficient, has as an aim to ensure coherence of actions related to the development of human resources;
- strategy “in leaps and bounds,” or “Hey-break” – the activities for the development of human resources in the organisation have an occasional character, although high amounts are allocated for the personnel activities;
- investment strategy – is based on the concept of the allocation of the amounts which are relevant for human resources development in the organisation. This strategy is similar to the personnel strategy oriented towards investment where human resources are becoming the object or element in the further development and future of the organisation.

Another approach to strategies in the field of human resources focuses solely on concerns for the improvement and development of human resources in the organisation. Starting from the preparing role in bridging the gap between the level of effective performance of the employee at his job and the level of the performance required by the needs of the organisation, the personnel strategies are:

- corrective strategy (reactive) – considering the gap between the employee's actual performance (at some point) and the performance which should be obtained from the respective post (at the same time). This is a characteristic of the organisations in which the development of human resources does not constitute a priority.
- proactive strategy – aims the elimination of the discrepancy between the required performance of the post in the near future. It is based on both forecasting of the future development of the organisation and identification of the future needs of training of the human resources in the organisation. It is a characteristic of organisations that have a



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well-defined global strategy and consider the human resources being especially important in an organisation.

- procedural strategy – aims at creating an organisational framework for stimulating learning at all levels and continually updating knowledge through lifelong learning. It aims the cover of the human resources performance gap between the current and desired performance in a more distant future. This strategy does not preclude the type of corrective or proactive interventions, but emphasis is placed on continuous learning and professional development. It is a characteristic of organisations geared towards long-term organisational performance.

Another criterion suggested for the classification of training and development strategies is considering steps that human resources traverse during their career within an organisation:

- social strategy – aims at integrating new employees into the organisational culture and consists in programming and developing certain activities that have the purpose of familiarizing new employees with the mission, strategy, objectives and history of the organisation. Upcoming performances of new employees depend to a great extent on the success of the integration into the organisational culture to new employees.
- specialisation strategy – aims to develop employees’ skills that are specific to the occupied post. There are organisations that adopt this type of strategy without being supported by complementary strategies: social, development or upgrading ones.
- development strategy – aims at developing of employees’ skills both horizontally through their rotation on posts as well as vertically, through their promotion. This strategy is applied, as a rule, to the employees who are expected to pursue a career upward in the organisation.
- valorisation strategy – aims to use skills and experience of other employees the organisation, used as mentors, for the development of other employees. The performance of human resources that reach this stage in their careers far outweigh the investments made by them or by the organisation over time. This is because performance is not confined only to professional performance, but also to the role of mentor to other employees the organisation.

It should be noted that between the different strategies developed in the field of human resources there are no formal barriers because they reflect different interrelated aspects of the human resources function. Therefore, the choice of the most appropriate strategy for human resources must be preceded by an analysis of the actual condition of these resources in the organisation at a time.

## **Conclusion**

□ The adaptation of personnel strategy oriented to resources requires a change in the attitude of managers, they must understand that the strategy focused on the financial aspects of the organisation are not in contradiction with the strategy of resource-oriented staff.

□ Personnel strategy oriented to resources is focused on the development of human resources so as to enhance their contribution to the success of the organisation's strategy.

□ In the context of the personnel strategy oriented to resources, issues related to human resources are already included or taken into account in the formulation of the strategy of the organisation and do not occur only in the phase of its implementation, focusing on human resources development in order to make them able to react quickly and adequately to changes in the strategy of the organisation.

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## **NEW CHALLENGES IN ANTI-TERRORISM STRATEGIES**

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### **Abstract:**

The need to adopt a new strategy to combat terrorism or counterinsurgency continues to lead to be the main issue of the discourse on contemporary security. The ideology of the jihadists within the Islamic State Group calls for a total war which has no limits and constraints. This requires the adoption of new anti-terrorism strategies, depending on the nature of the terrorist threat.

The Islamic State group currently controls an extensive region in Syria and Iraq. The battle against the Islamic State is inevitably a long-term project because it is much more than a terrorist group.

*Key words: terrorism, strategy, security, Islamic State*

### **Introduction**

The terrorist risks at international level have preserved their causality, being joined with prolonging instability in certain regions of the world and a rise in violence, especially in the region of Syria-Iraq. As expected, the fight against terrorism has changed in recent decades, this development is due to the changes produced in the nature of terrorism.

The escalation of terrorist actions in recent years has been fueled by the intensification of ethnic and religious tensions, as well as by the worsening of some political, economic or social problems. On the other hand, the proliferation of mass destruction weapons and the development of the Internet have resulted in the shaping of new forms of terrorism: chemical, biological, radiological, nuclear and computer ones. The acts of the terrorist groups have become bloodier and bloodier and indiscriminate, thus forcing Governments to adopt a new tactic in the struggle to combat the phenomenon. Along with the technological revolution, this fight has evolved into a form of irregular warfare.

While terrorism is a threat that cannot be completely eradicated, there are steps that can be taken to disrupt, dismantle and ultimately defeat terrorist organizations, through the systematic degradation of the capacities of action of the terrorist groups and the reduction of the territory they control. Whereas terrorist threats do not take into account the borders, they have to be addressed at both the national and international level. Existing strategies to combat terrorism are based on horizontal and vertical cooperation between the interested parties at the local level up to the international one. The effective prevention entails the involvement of non-governmental organizations, front-line workers, security services and experts in the field.

### **Challenges in anti-terrorism strategies**

Terrorism poses a threat to security, to the values of our democratic societies and towards the citizens' rights and freedoms. The anti-terrorism strategies are shifting depending on the nature of the terrorist threats. International terrorism, particularly Al-Qaeda-type terrorism, is and remains persistent and flexible to the changes of the contemporary world. That is precisely why anti-terrorism strategies involve comprehensive approaches to combat terrorism, based not only on the



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allocation of the necessary resources but also on setting out the responsibilities to provide a direct response proportional to the terrorist attacks because there is no simple solution to the issue of terrorism.

The strategic recipes applied to such groups as Hamas and Hezbollah will look totally different depending on the political context, the current environment of threat and, of course, according to the Government carrying out such operations to combat terrorism. These strategies require building confidence within communities and between them, promoting a better understanding of the sensibilities and other issues, involving different classes of society and many more. Achieving all these steps reduces the risk of radicalization and provides better opportunities for the termination of processes that lead to extremism and violence.

Organizing, preparing and implementing the terrorist actions have perfected continuously, the funding sources have not yet been stopped- the very actions of the Islamic State prove perfection in the use of modern techniques and weaponry, the high-level gathering of information-and the benefits, from a legal, financial, operative or security point of view, give the terrorist organizations outstanding possibilities to carry out actions.

Eliminating terrorism only by force is not possible, the vast territory that it manifests itself cannot be controlled. There are states possessing the nuclear weapon, the Muslim religion is in expansion as well as the Muslim population. One solution would be to establish realistic strategies in combating terrorism in the long run, although each conflict against terrorism has its own characteristics.

### **Initiatives of the European Union and the United States**

Europe is directly affected by the terrorist activity of the rest of the world. Europeans may be victims of the attacks, but they may also be perpetrators of such attacks. **EU strategy for combating terrorism** aims at countering global terrorism, with respect for human rights, and increasing safety in Europe, ensuring its citizens an area of freedom, security and justice. In this regard, the Council adopted in 2005 the EU strategy to combat terrorism. The strategy focuses on four main pillars: prevention, protection, pursuit and response. Through its four pillars, the strategy recognizes the importance of cooperation with third countries and with international institutions.

The recent terrorist attacks in the EU have highlighted the need for a common firm reply at EU level, in particular the phenomenon of foreign fighters who return to the country of origin. Although this issue is not new, the scale and the flow of fighters to and from ongoing conflicts from Syria, Iraq and Libya, as well as the interconnected nature of these conflicts are unprecedented.

In the light of recent developments as well as the phenomenon of individuals acting on their own and the foreign fighters or the growing potential of mobilization and communication means of social communication, the Council adopted a revised version of that strategy in June 2014. In December 2014, the Ministers of Justice and Home Affairs adopted a series of **guidelines** for the revised EU Strategy for combating radicalization and recruitment ("**exit strategies**") [1]. These guidelines will lay down a series of measures to be implemented by the EU and its Member States.

In the work of prevention I consider that an important role is the countering **the challenges of online** materials and extremist propaganda. The groups within communities, the citizens, the victims and the former extremists can convey powerful messages in this regard. To respond to such challenges the cooperation with civil society and the private sector is important in the development of measures to dismantle the extremist propaganda.

The second priority of the EU's strategy to combat terrorism is the protection of citizens and the infrastructure and reducing vulnerability to attacks. This includes the protection of external borders, improvement of the safety of transport, protection of strategic targets and reducing the vulnerability of critical infrastructures. In this area, the EU is currently working on the elaboration of



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legal acts regulating the use of **the data in the records with the name of passengers (PNR)** in order to ensure compliance with the law.

The EU turned its attention to several aspects: strengthening of national capacities, improving practical cooperation and exchange of information between the police and judicial authorities (in particular through Europol and Eurojust), addressing the question of financing of terrorism and thwarting the means of organizing attacks and communication of the terrorist organizations. In May 2015, the Council and the European Parliament adopted new rules to prevent **money laundering and the financing of terrorism**.

Another objective of the EU's strategy to combat terrorism is preparation, in the spirit of solidarity, to manage and to minimize the consequences of a terrorist attack. This is achieved by improving the capacity to manage the risks, the coordination of response and the needs of victims. Priorities in recent years have included: defining arrangements for implementing EU solidarity clause, by means of a Council decision, adopted in June 2014; the process of review of EU mechanisms for coordination in emergency situations and crises, replaced by the integrated EU mechanism for political response to crises (IPCR) in June 2013; review of EU legislation in the field of civil protection at the end of 2013.

In taking the strategic guidelines relating to justice and home affairs, adopted in June 2014, the European Council called for the establishment of an effective policy to combat terrorism, which should integrate the internal and external aspects. On 12 February 2015, the heads of State and Government of the EU have highlighted the importance for the EU to have increased cooperation with third countries in the field of security and combating terrorism. The EU will cooperate to combat terrorism with the Western Balkan countries, North Africa, the Sahel, the Middle East, the Horn of Africa and North America, and Asia. **Cooperation with the USA** represents a fundamental component of EU strategy.

The European Union cooperates with international organizations, including the United Nations and with the Global Forum on combating terrorism, and with regional organizations such as OSCE, the Council of Europe, the League of Arab States and the organization of Islamic Cooperation. Within the framework of its cooperation with the United Nations, and as a result of resolutions of the UN Security Council, the EU has adopted restrictive measures against certain persons or entities linked to the Al-Qaeda network. [2] Smuggling of migrants and trafficking in human beings constitute a serious cross-border crime, which is a priority on the political agenda of the EU. Since 2011, in the EU there is a directive on preventing and combating trafficking in human beings and protecting its victims. The legislative framework and the existing policy have contributed to enhancing and improving cooperation between the various agencies of the EU as well as at the various levels of Government.

The EU regulates the free movement of weapons used for legitimate purposes and has taken measures to prevent cross-border smuggling in firearms. The EU has imposed very strict standards on the import, export and transfer of firearms. Despite these efforts, the black market still exists in Europe. The European Commission hopes to introduce more stringent controls at the level of the EU and has called for a better exchange of information relating to the production of and trafficking in firearms. The incidents in Paris and subsequent actions on terrorism and the arrests in Europe show the need for a European concerted response against terrorism.

The terrorist phenomenon must be very well reviewed as it requires knowledge of the mechanisms, in order to combat the causes, to limit the effects, to deter them, if possible. September 11, 2001, the day that the terrorist attacks took place in the USA, has remained in collective memory not only as a major disaster, but also as the day when humanity understood that a long war against this scourge would start and that nothing would be as before. The policy without concessions introduced after the events of September 11, 2001 is no longer totally valid. The developments in counter-





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terrorist actions have been a slow process, influenced by the changing nature of the international terrorism, the new advances in military technology.

Some anti-terrorism strategies are defined in the field manual of USA as *operations, which include offensive measures taken to prevent, deter, predict and respond to terrorism*. [3] The anti-terrorism strategies change, however, depending on the nature of the threat. The fight against terrorism is a complex phenomenon that involves specialized forces, cutting-edge techniques, and immense financial and human resources, highly qualified workforce information.

The last form of a Strategy of National Security of the United States was presented by President Barack Obama earlier this year. The main threats remained terrorism, extreme climate changes and cyber ones. The fight against the Islamic State (ISIS) remains as a matter of priority, in the context of the terrorist threat in many countries of the world. *The National Security Strategy* describes US as an indispensable force in tackling global challenges such as terrorism, climate changes and cyber threats. [4] The strategy acknowledges that there are serious threats externally and reiterates that the aim is to defeat the Group ISIS, but keeps a catchy tune. [5] The National Security Strategy also specifies that the USA will continue to support the Iraqi Government in the fight against the ISIS group and that it will help in training and equipping the Syrian moderate opposition fighting against terrorists from Syria. [6] The document acknowledges that the terrorist threat persists and has spread to many countries and continents. [7] In the same time, the threat of catastrophic attacks of terrorists over the country decreased. [8]

The fight against international terrorism is at a crossroads, the political debates on the need to adopt a new strategy to combat terrorism or to counterinsurgency continue to lead the security discourse in the contemporary USA and NATO. As for the ways to combat the terrorist threat in Europe, where, similar as in the United States, the current counter-terrorist policy is marked by confusion, the Secretary General of the Atlantic Treaty Association (ATA/NATO), Jason Wiseman, stated that it was necessary to act both on the fight against terrorist groups and the motivations that caused an increasing number of Europeans to become sympathetic or combatants of these groups. [9]

### **Campaign against ISIS**

Triggered in March 2011 by a popular uprising, brutally repressed, the conflict in Syria has been transformed into a civil war with a multitude of actors, resulting in more than 240,000 dead, which prompted to the flee of millions of Syrians and provoked a serious crisis of migration. Now we find ourselves in an unprecedented situation in recent history.

The Middle East is under siege of the Jihadist Islamic State grouping (SI), an ultra radical group, which already controls territories in Syria and Iraq, and its campaign of recruiting ended up in India. SI made its presence felt in the last few years, but had a quick ascent into the summer of 2014. Jihadi group and expansion added a new dimension to terrorism, which is now no longer restricted to specific attacks against Western civilization, how the al-Qaida organization, but is aimed at the creation of territorial entities.

After Syria and Iraq, and is preparing to expand its influence up in Southeast Asia, where it already controls the impoverished territories through Southeast Asia, attracting the interest of young people in the area. [10] Today young people get radical to be sitting at home on the internet, in chat rooms and on Facebook.

The Islamic State is considered a threat to Europe because hundreds of Muslim Europeans joined the group, which means that we can reasonably expect from future terrorist attacks. NATO leaders were removed from the list of possible interventions: soldiers on the ground, negotiating with and for the release of the hostages from the Western countries and the formation of an alliance with the adversary group in Syria, President Bashar al Assad. The countries of the Arab League have also been suggested (in fewer words) that will fight against the group, which threaten Iraq, authority and



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even the existence of the State and other States, but not in the context of alliances with Western States. [11]

Military actions taking place in Syria, and that military campaign is being prepared, there is no precedent. Will not be restricted to air strikes with drones, such as anti-terrorism operations from Yemen and Pakistan, but will not include any military operations on the ground, as in Afghanistan, and unlike the Kosovo war of 1999, there will be an intensive military action, which will end in two months. The main goal is to help Iraqi and Kurdish troops to regain control in the territories taken over and, while this strategy is both military and economic policy. Perhaps that goal will be reached or not, has more shades of political and economic, rather than military, and it will be achieved will probably assume a long period in which terror and will continue, and which, inter alia, of the Orient decimates Christianity.

The Syrian regime's forces are supported by Russia, which argues that attacks mainly Islamic State grouping jihadist (SI), targeting in particular actually hostile rebel groups, including the al-Nusra Front, Syrian wing of al-Qaeda. While Westerners, hostile to President Bashar al-Assad, accusing Moscow wants to consolidate the Syrian ally, instead of combat, which occupied half of the territory of the vast regions of Syria and neighboring Iraq.

The terrorist organization Hamas, until recently considered a major threat for Israel, is now a "frenemy" of the Jews, because they declared war.

Organization, grouping Libya Fajr from Islamist embroiled in a brutal war against the Libyan Government, once destabilized, Libya is in confrontation with and.

Iran has shown its willingness to fight against the jihadists and, contrary to his "reputation" as a State that sponsors most terrorism.

## **Conclusion**

Terrorism is not just the evil that shall befall the planet, but, moreover, it is often the obsessive power of fanaticism, of vengeance, of killing, against any laws. Therefore, the phenomenon must be very well reviewed, required knowledge of mechanisms, in order to combat the causes, to limit the effects even to deter, if possible.

In the near future, terrorism will remain the main concern for security of the transatlantic community. A realistic strategy to deal with terrorist threats, to ensure the allocation of scarce resources and defining the spheres of action, is a topical theme. As Winston Churchill reminds us, "no matter how beautiful it is, one has to analyze the results from time to time". [12] Defining the strategy for combating terrorism will be the first step. Firm commitment on the part of all States in respect of its implementation will be decisive in achieving the desired result: the success of the Alliance in the fight against terrorism.

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**CURRENT CHALLENGES IN DESIGN, DEVELOPMENT AND  
IMPLEMENTATION OF GEOSPATIAL INFORMATION SYSTEMS**

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**Abstract:**

The value of quality geospatial information has been already proved to lay at the heart of decision making processes having impact in many fields of activity. While thinking about environment, social, climate change or security problems, the geospatial information is subject to new and more effective data acquisition, high performance computing or storage and archiving systems. However, higher and higher demand has led to more and more advanced systems providing access to huge quantities of data which today are estimated to reach very quickly rates of tera bytes per day. To face this obvious challenges, raised mainly by the quantity and the high speed, both technical and organizational aspects need to be considered. After analyzing the current context in which the new sources of geospatial data are presented together with their volume, variety and speed characteristics, some technical, legal and organizational challenges are emphasized and possible ways to treat them are also discussed.

*Key words: geospatial information, geographic location, big data, geospatial analytics, Earth observation satellites, spatial data infrastructure*

**Geospatial big data and geospatial information**

Traditionally, geospatial data can be categorized into raster, grid and vector data (fig.1). The raster data include geo-images typically obtained by aerial vehicles, security cameras, and satellites. Recently, the military is collecting huge amounts of raster data by utilizing drones, and the satellites keep providing the remote sensing data of the Earth. The raster data is made available to users directly or by means of map services like Google Earth.

Grid data is typically represented by elevation data used to express the height of the features above a reference surface. One of the most effective ways for collecting elevation data is by means of LIDAR - acronym for Light Detection and Ranging, a remote sensing technique that uses laser pulses to determine elevation with high accuracy, usually from an aerial survey.

The vector data consists of points, lines, and polygons that are modelling various data sources. For example, lines and polygons correspond to roads in OpenStreetMap[1], a collaborative project to create a free editable map of the world.



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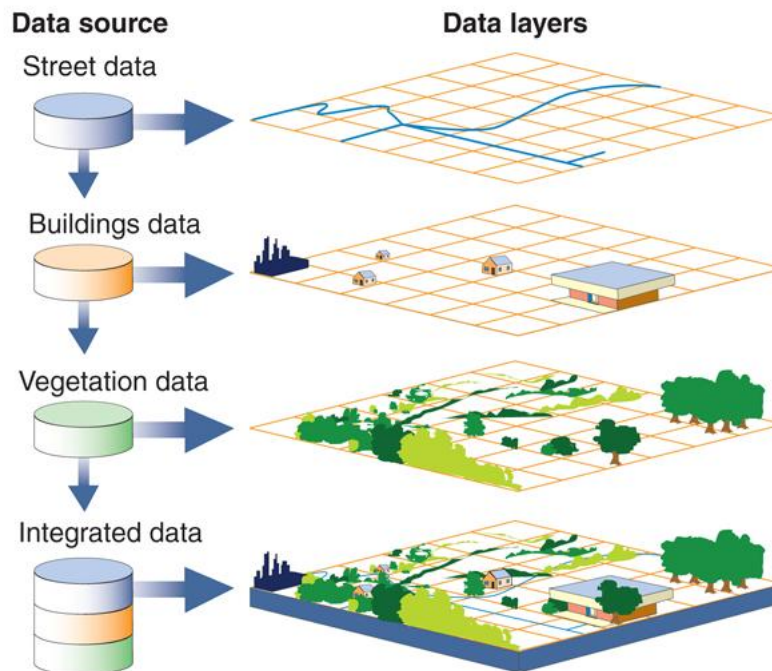


Fig. 1 Geospatial data types

### **Geospatial big data**

With the advancements of sensor and communication technologies, new sources of geospatial data are emerging. Examples can be traffic detectors on the roads, electrical grids or environmental sensors for measuring air quality (fig. 2). These sensors are usually connected through wired or wireless communications in sensor networks.

Also, mobile devices are emerging sources for huge quantities of geo-referenced data. Smart phones became versatile device for recording trajectories or other location aware data.

Another source considered to be significantly emerging the last years is the crowdsourcing, a term referring to a process of obtaining services, ideas, or content by requesting contributions from a large group of people, and especially from an online community, rather than from traditional suppliers [2].

The geospatial data collected from all these sources is characterized by 3 properties - volume, velocity, and variety – the big data characteristics, the velocity being the most obvious one when talking about the data coming from these new, emerging sources. For this data, instead of storing it analysing it later, it is a clear need to look at the data on the fly and make decisions in the shortest time. This is why the data analytics capacity and performance will play a more important, even crucial role.



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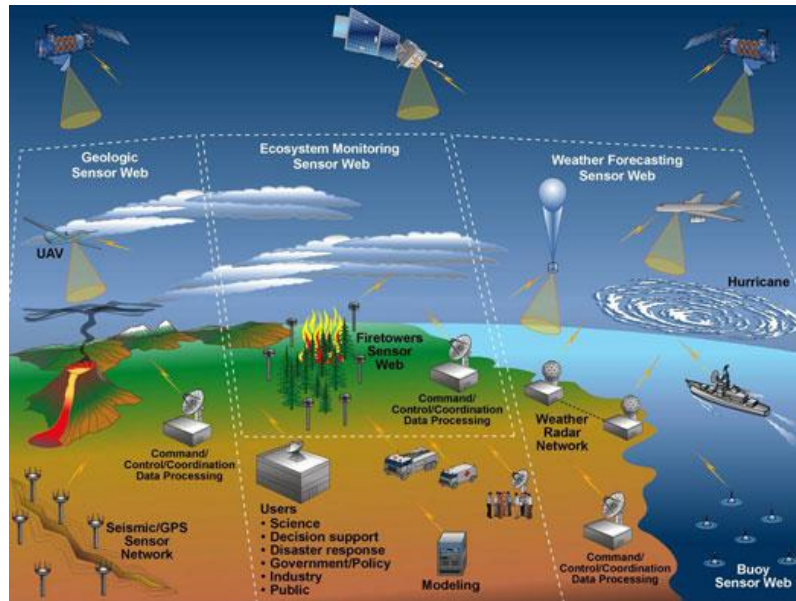


Fig. 2 Sensor networks [3]

### **The wide use of geospatial data**

In a recent post, the European Space Agency shows how Copernicus satellites support research on marine litter (fig. 3). This is done by providing the teams organizing expeditions trying to identify ocean garbage patches with forecasts of sea currents and sea-surface heights helping this way to identify most probable plastic convergence areas.



Fig. 3 The marine litter – a global environmental problem to solve with the help of Earth Observation satellites [4]

The satellites cannot detect marine litter so far by direct methods. In change, one can use satellite observations data to derive key information for feeding or calibrating models that predict its accumulation (fig. 4). Relevant parameters are altimetry, sea-surface salinity, sea-surface temperature, ocean colour and sea-ice data.

This fact is an example of effectively using big data coming from space assets becoming even more relevant now in an era in which Earth Observation is boosted by the launch of the Copernicus satellites, a series of satellite missions developed in the framework of the European Earth Observation programme Copernicus [5].



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Other major achievements like Digital Globe recent opening of commercial services making available 30 cm spatial resolution optical imagery [6] or Airbus Defence and Space TerraSAR-X data 25 cm spatial resolution [7] are strongly contributing to a wide range of application ranging from security to environmental.

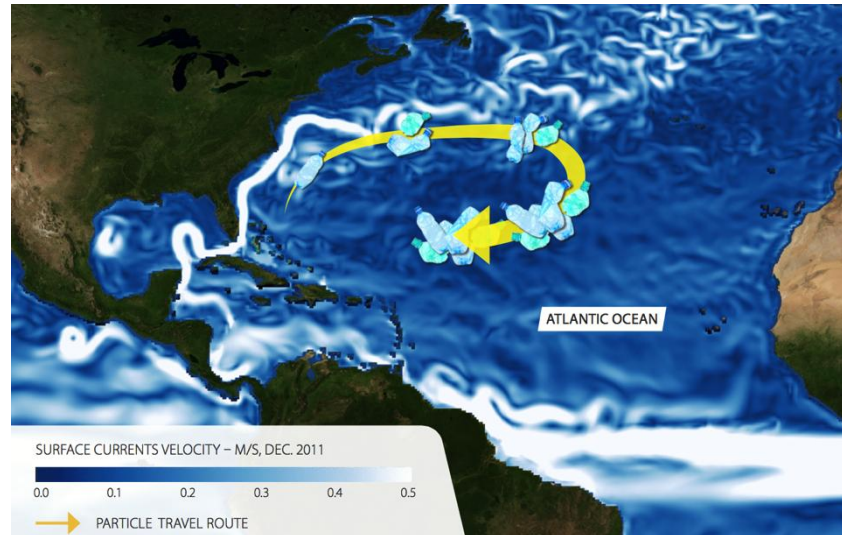


Fig. 4 Marine litter accumulation area predicted using satellite data feeding marine currents models

Together with the other types of geospatial data, the Earth observation data is considered and proved a tremendous capacity for contributing to a big number of global challenges. The Millennium Project [8] identified 15 global challenges that the human kind is facing [9].

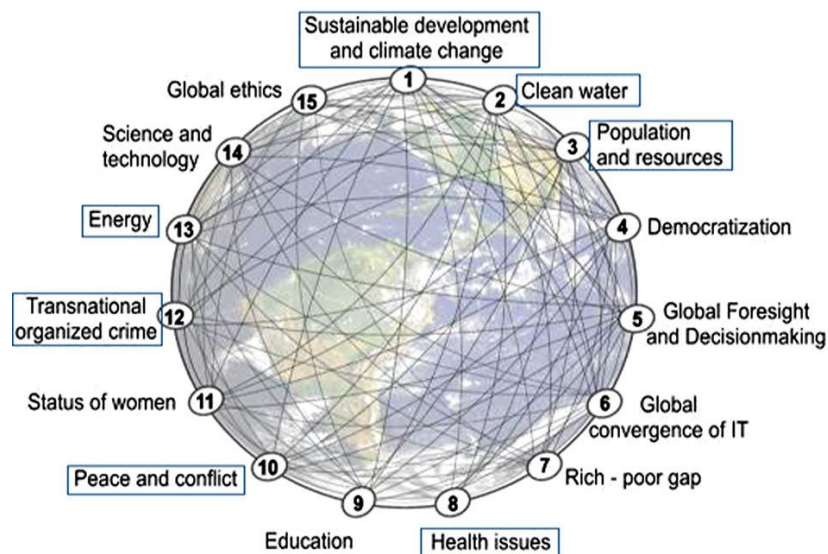


Fig. 5 Global challenges according to the Millennium Project

### **Geospatial technology**

Geospatial technology refers to equipment used in visualization, measurement, and analysis of earth's features, typically involving such systems as GNSS (global navigation satellite systems), GIS



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(geographical information systems), and RS (remote sensing). Its use is well known and widespread in the military and in homeland security, but its influence is everywhere, even in areas with a lower public profile, such as land use, flood plain mapping and environmental protection.

RS produce imagery and data collected from space or airborne camera and sensor platforms. Some commercial satellite image providers now offer images showing details of one-meter or smaller, making these images appropriate for monitoring humanitarian needs and human rights abuses.



Fig. 3 Geospatial technology components [10]

GIS refers to a suite of software tools for mapping and analysing data, which is geo-referenced (assigned a specific location on the surface of the Earth - geospatial data). GIS can be used to detect and analyse geographic patterns in support of, for example, urban planning and water management. As part of the GIS, the Internet Mapping Technologies are changing the way geospatial data is viewed and shared. The developments in user interface are also making such technologies available to a wider audience whereas traditional GIS has been reserved for specialists and those who invest time in learning complex software programs.

A GNSS is a network of satellites, which can give precise coordinate locations to civilian and military users with proper receiving equipment. The most known GNSS is the American GPS (Global Positioning System). Similar systems are developed by Russia (GLONASS), European Union (Galileo), China (Beidou & Compass). Regional navigation satellite systems are developed by India, France and Japan.

### **Challenges and possible approaches**

While the reality and status of technology development shows a clear need to face the new problems arising from the availability of new types of geospatial data in huge quantities and at higher speed, the existing technologies and infrastructure in place are not yet prepared to answer these increasing needs.

Geospatial data growing rates are considered to be at least by 20% every year. According to the estimation by United Nations Initiative on Global Geospatial Information Management (UN-GGIM), 2.5 quintillion bytes of data are being generated every day, and a large portion of the data is location-aware. Also, in Google, about 25 Petabytes of data is being generated per day, and a significant portion of the data is considered to be spatio-temporal data [2].

Along with this exponential increase of geospatial big data, the capability of high performance computing is being required for modelling and simulation of geospatially enabled contents. However,





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because of limited processing power, it is hard to fully exploit high-volume or high-velocity collection of geospatial data in many applications.

Recently, distributed, parallel processing on a cluster of computers or a cloud became widely available for use, breaking the existing limitations on processing power.

Also, at organisational level, new challenges can be identified when thinking about the operation and maintenance of data archives and information systems in this context. For example, related to the European Copernicus programme mentioned in the previous paragraphs, the European Commission has launched the Collaborative Ground Segment action and tasked the European Space Agency to coordinate EU and ESA member states actions towards reducing the burden of managing the Copernicus satellites data archives which for the moment is assumed by ESA.

### **The technical perspective**

Considering a system engineering view, current research shows a mostly unanimous trend for the systems to include at least three layers:

- geospatial big data integration & management,
- geospatial big data analytics,
- and geospatial big data service platform.

The first layer is responsible for quickly storing, retrieving, indexing, and searching geospatial big data.

The second layer is responsible for performing data analytics on the data. This layer is further decomposed into the module of interactive analytics for real-time or dynamic data and the module of batch analytics for static or archived data. In geospatial visual analytics the most important distinction is whether the reasoning is done primarily by the human analyst, with the support of interactive visual interfaces or the reasoning is primarily computational, with the interactive visual interfaces enabling control and interpretation of the computational methods.

One of the current problems in visual analytics is that, given the variety of the data and the problems to solve, the automatic data analysis community (machine learning, data analysis, statistics, etc.) is not represented sufficiently in the visual analytics research community to enable a fast progress of the field. While fully automatic techniques only work if the problem is clearly specified, they are essential for the success of the field of visual analytics. The visual analytics community has to make sure that more researchers from the above domains join the community and help to develop visual analytics systems. Even a number of successful applications of visual analytics have been developed over the last five years, the development of tightly integrated data analysis and visualization methods is still in the beginning and more research is needed to make progress in this respect [1].

Collection and analysis of data about individuals is vital for progress in many areas such as public health, transportation or security. Technologies enabling collection and analysis of various kinds of personal data have developed rapidly. A negative side of these developments is the growing threat to personal privacy [1]. This particularly applies to data containing locations of people. Analysis of such data may conflict with the individual rights to prevent disclosure of the location of one's home, workplace, activities, or trips. Visual analytics can contribute to privacy protection in two ways. First, visual analytics researchers can identify what kinds of information can be extracted from various types of data by means of visually supported analysis and consider potential implications to personal privacy. These findings can be communicated to privacy protection researchers for developing methods to remove or decrease the detected privacy threats. Second, to allow humans to deal with large datasets, visual analytics researchers often employ techniques for data generalization and abstraction.



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**The organizational perspective**

From the organizational perspective, the following questions can be of particular interest [4]:

- What is the best way to organize and manage the vast array of geospatial information that is acquired at many levels and that has a variety of potential uses?
- What is the best way to share data, particularly among central to local government stakeholders?
- What is the best way to coordinate among agencies?

A possible answer while trying to solve the organizational problems was given by the states all over the world by starting to develop Spatial Data and Information Infrastructures (SDI). Similar initiatives are sustained and have reached a more or less advanced status in USA, Canada, Australia as well as European Union and the Asian countries.

When developing SDIs, at least the following components are supposed to be operationally functional:

- Data themes: geodetic control, orthoimagery, elevation and bathymetry, transportation, hydrography, cadastre, and governmental units.
- Metadata: information about the data, its content, source, accuracy, method of collection, and other descriptions that help ensure the data are used appropriately.
- National Spatial Data Clearinghouse: an electronic service providing access to documented spatial data and metadata from distributed data sources. The Clearinghouse is intended to provide access to NSDI for spatial data users.
- Standards: common and repeated rules, conditions, guidelines or characteristics for data, and related processes, technology, and organization.
- Partnerships: promote cost-effective data collection, documentation, maintenance, distribution, and preservation strategies; include private sector geographic, statistical, demographic, and other business information providers and users.

In Europe, the spatial information infrastructure (INSPIRE) development is based on a number of principles[11]:

- Data should be collected only once and kept where it can be maintained most effectively.
- It should be possible to combine seamless spatial information from different sources across Europe and share it with many users and applications.
- It should be possible for information collected at one level/scale to be shared with all levels/scales; detailed for thorough investigations, general for strategic purposes.
- Geographic information needed for good governance at all levels should be readily and transparently available.
- Easy to find what geographic information is available, how it can be used to meet a particular need, and under which conditions it can be acquired and used.

INSPIRE is established by Directive 2007/2/EC of the European Parliament and of the Council of 14 March 2007 establishing an Infrastructure for Spatial Information in the European Community. Since this is a EU directive, it was transposed by all EU member states into their national legislation. The directive is complemented by a series of regulations related to publishing data, metadata and associated network service required as part of the implementation process.

Also, from the organizational perspective, experience showed that when establishing coordinating bodies, such as those established inside NSDIs, one should consider a number of criteria:

- strategic and business plans;
- a GIS coordinator and staff;
- clearly defined authority and responsibility for coordination;
- a relationship with the upper and lower level chief information officers;



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- a political or executive actor for coordinating GIS;
- a connection to the national spatial data infrastructure and clearinghouse programs;
- the ability to work with local governments, academia, and the private sector;
- sustainable funding, especially for producing and maintaining geospatial data;
- the authority for the GIS coordinator to enter into contracts.

### **Licensing and liability**

When addressing the liability related to geospatial data and associated services, there is a number of complexities and uncertainties that need to be tackled related to information products and services generally, as well as by legal theory uncertainties surrounding liability. Application of geospatial technologies may require integration of different types of data from multiple sources, assimilation of attributes, adherence to accuracy and fitness-for-use, and selection of processing methods. All of these actions may be affected by possible errors. A variety of software programs may be run against a single geographic database, while a wide range of users may have very different use objectives.

The complexity of the legal questions surrounding liability for geospatial data, combined with the diversity of problems to which geospatial data and technologies may be applied and the continually changing technological environment, have created justified concerns over liability for geospatial technology development and use.

Because it is unlikely to reach a uniformity in recording the licensing or use right associated to geographic data sets that would allow legally sharing of this data the liability for the quality of the data still remain an issue.

While a lot of people and organizations are adhering to free and open source types of licensing or crowdsourcing, the geospatial data made available in this way remains a valuable resource and, if documented with appropriate metadata, this can represent a web-wide resource providing legal authorization use of datasets, extract from databases, provide web mapping and web feature services and engage in data mining.

### **Conclusions**

The analysis presented in this paper refers to geospatial data - data assigned to a specific location on the surface of the Earth – being equally represented in vector, raster or grid format.

Because of sustained investment in space technologies, the Earth Observation satellites are today producing huge quantities of data that are used for solving complex problems at global level. On another hand emerging technologies are creating a large variety of geo-referenced data allowing location aware analysis and complex data analytics. However, due to the lack of experience or the absence of a legal framework, the use of a significant quantity of data made available free of charge over the Internet may be affected by the missing liability for its quality.

While data storage is today no more a problem, the very high rates or the speed characterising the new data flows are creating a context in which the need to effectively retrieve and process large quantities of data become obvious, which makes the data analytics research and development activities very much needed.

Based on previous experience acquired during initial development of spatial data infrastructures at different levels, regional initiatives adopted for example at European level towards developing spatial data infrastructures seem to create strong premises for a more effective management and dissemination of this type of data. Policy adopted at regional level, transposed into the regulatory framework of the participating actors and then implemented at the appropriate levels by



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applying the subsidiarity principle is already showing promising results but still need further development.

The technical perspective shows a clear need for a multi-disciplinary approach in research and development activities towards developing effective geo-spatial data analytics – algorithms and workflows capable to deal with huge quantities of data arriving at very high speed.

The same time, on the organizational side, the collaboration becomes a keyword associated with the need to share various tasks related to data management as well as with processing and data access services.

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**THREATS AND OPPORTUNITIES IN ACTUAL DEFENCE  
 MANAGEMENT**

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**Abstract:**

The actual international context is characterized by several important threats, like terrorism, local wars, huge immigration, and the lack of raw materials resources, new markets and others. Nevertheless these threats are causing more challenges for the defense management. This paper is aiming to discuss some of the opportunities that the defense management might take into account, having in view the most important international threats. The activity planning, costs, resources allocation, risks and other management tasks are to be considered in order to strengthen the defense capability.

*Key words: security environment, security threats, opportunities, strategic actions, defense management strategy*

**Introduction**

The world security environment is characterized ‘as extremely fluid and unpredictable’ (Adrian, 2012). The national conflicts between different ethnical groups in countries and over their borders located in Asia and Africa have enhanced the danger of the third world war’s beginning.

Since Russia has extended its territories in Crimean Peninsula and its conflicting influence in Ukraine and other former Soviet Union countries, the UE territory is also in danger.

But, the main focus for a new world war is located in the Asian countries.

The actual conflicting threat and allied interests are summarized by Cordesman (2015) offering a general picture of the main players and world defense environment (table 1).

<b>Player</b>	<b>The main actions</b>
Iran	Expanding regional influence, role in Syria and Iraq, Challenge to U.S.
Russia	Ukraine, basing, regional influence, support of Assad, U.S. is destabilizing region, Putin’s desire to reassert Russia.
Lebanon	Hezbollah, Shi’ite Alignments, ties to Iran, refugees.
Iraq	Shite-dominated government with deep sectarian and ethnic tensions, distrust of reliance on U.S.
Kurds	Wide mix of factions and interests in Syria, Iraq, Turkey, refugees
Turkey	Erdogan’s ambitions, Kurdish issue (s), focus on Assad, higher tolerance of Islamist movements, own security, refugees.
Israel	Focus on Palestinians, Iran and nuclear, own security.
Saudi Arabia, UAE, Qatar, Kuwait	Focus on Assad in Syria matches focus on ISIS, support Sunni Arabs in Iraq, Iran in Gulf a primary threat, uncertain trust in U.S.
Bahrain	Focus on tensions with own Shi’ites (Base 5th fleet in the Gulf)
Egypt	Internal struggles, uncertain trust in U.S., Sinai unrest.



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Jordan	Major internal security concerns, border threats, uncertain trust in U.S., Palestinian issue, refugees.
Europe	helping Ukraine and refugees, with no common interest in region and focus on domestic needs and limit defense spending and military efforts.
US strategy	support moderate forces and Kurdish and Arab Sunni forces by expediting light weapons and providing air support and advises, but with little progress.

**Table 1 The main players in the Middle East conflicts**  
(Source: Cordesman, 2015, p.29)

Having in view the above presented general picture of the world security environment and some of the opinions stressed by reputed authors, this paper is aimed to analyse the main international security threats and to find out the strategic actions that the defence management might apply, according to the international opportunities.

### **International security threats**

Stephen M. Walt describes threat as a composite of different variables: capabilities, intentions, geography, domestic political institutions, and external support (cited in Lanoszka, 2015). But, the security threat may be defined as being the danger of the nations' losing the peace, safety and freedom. The term includes the social, economical, political, democratical, informational and borders threats.

Considering the international security, the main identified eight threats are the followings (fig.1): corruption; terrorism; chemical and biological weapons; nuclear and radiological weapons; infectious diseases; smuggling, counterfeit and piracy; territorial expansion strategy, and the last, but not the least, the cyber weapons.

#### **Corruption**

The corruption may be considered as being the source of all security vulnerabilities. The “corruption is a feature of all conflicts, playing a key role in the power-struggle between competing groups for resources and power. This places mission leaders in a challenging situation because it means engagement with corrupt entities is frequently inevitable” (Williams, 2014). The author is underlining ten main corruption pathways: criminal patronage networks, factionalism, elections, organized crime, narcotics, exploitation of natural assets, land title and expropriation, borders, foreign aid and military, police and militias explaining how they are sources for corruption.

Military and aid spending have often been driving factors in increase in corruption and distorting economy to dependence on outside spending (Cordesman, 2015). The author underlines that the poor governance and the low income per capita distribution, in the condition of population increase (6.5 times in 2015 comparing with 1950 in Libya, Syria and Iraq) are sources of corruption, as well. The lowest rate of the government effectiveness is in the Middle East countries, as Libya, Yemen, Syria and Iraq and the highest rate of corruption may be found in the same countries, followed by Lebanon, Egypt, Algeria and others.

The author is also arguing that the economic factors that divided and sometimes shattered a nation are largely ignored and the government is focused on getting money and spending, not auditing the use of the money and measuring its effectiveness.



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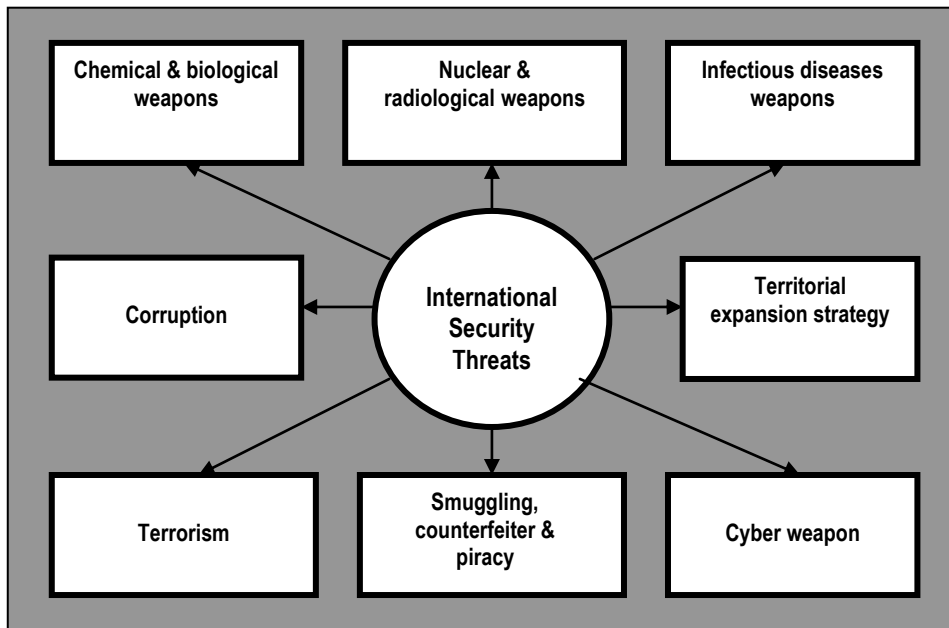


Fig. 1 The international security threats

### **Terrorism**

ISIS and Al Qaida acting on a large global area and Hezbollah acting regionally are the main terrorist groups that are causing international disorders (including jihadist bombings and kidnapping threat).

ISIS or Islamic State of Iraq and Syria, is “the Only One Threat, and Key ISIS Countries Face Many Equal or Great Challenges” (Cordesman, 2015). The author is emphasizing a big picture of what are the terrorism sources and how it is developing:

- ISIS ‘Caliphate’ is the product of two sets of civil wars, growing out of Sunni and Al Qaida hostility to U.S. invasion of Iraq; it assumes ‘provinces’ in several Islamic states like Syria, Iraq, Saudi Arabia, Yemen, Egypt, Libya, Algeria, Nigeria, Afghanistan and Pakistan. It is also absorbing terrorist groups of Philippines and Malaysia and others are affiliating to ISIS, as Jordan, Lebanon, Saudi Arabia, Palestinian, Chechnya and Dagestan and Maldives. ISIS groups are the most violent Islamist extremists.

- Al Qaida, with its core in Afghanistan is dominant Sunni Islamist extremist faction in Arabian Peninsula, acting in Syria, Yemen, and Algeria and is supporting Al-Shabab in Somalia;

- Hezbollah has the Iran’s support and interests of the Shiites against Sunni monarchy and people, acting in Lebanon, Syria, Iraq, Bahrain and Yemen (Houthi movement);

- The main causes of the terrorism jeopardizing and ISIS free space of acting are: the ‘authoritarianism, failure to cope with internal divisions, poor governance and corruption, failed economy development and equity, population pressure and youth bulge, repression and violence by internal security forces, traditional and corrupt military’;

- Security remains a key problem that often is not taken into account in economic and human development estimates: rising sectarian, ethnic, tribal, regional and other internal divisions often are ignored and nevertheless the progress in life expectancy, education, medical services, job creation, electric power, agriculture, and roads raise major questions about quality of data;

- Foreign volunteers joining ISIS groups estimated by USA on September 2015 at a nominal of 30,000.



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However, the ISIS groups are and remain in the next years the most dangerous threat for all countries' defense and intelligence management.

### **Chemical & biological weapons**

The conventional weapons are more and more replaced by chemical and biological weapons that hardly may be controlled. The biotechnology revolution is mostly based on chemical compounds (Kelle et al., 2012). The authors' book “responds to a growing concern that changes in the life sciences and the nature of warfare could lead to a resurgent interest in chemical and biological weapons (CBW) capabilities”.

The increasingly blurred lines between biology and chemistry are especially apparent in new processes for drug discovery using combinatorial chemistry and high throughput screening to generate significant numbers of new chemical compounds, some of which may be highly toxic (Heyman et al. 2009).

Apart of the anthrax, one of the most dangerous biological weapons is the ricin powder. “The primary concern regarding ricin as a biological threat agent is the ease with which it can be manufactured. The process requires no advanced laboratory skills or equipment. As a result, it is possible for individuals with relatively little experience with biological agents to successfully produce ricin” (Temoshchuk, 2013).

The Centers for Disease Control and Prevention categorizes pathogens by their perceived threat based on criteria such as lethality, ease of production and distribution, and availability of treatment or vaccine. Well-known biological threat agents such as anthrax and smallpox fall under Category A due to their lethality, public health impact, and ability to instill panic in a population. On the other hand, ricin falls under Category B, qualifying it as only a moderate threat (Temoshchuk, 2013).

### **Nuclear and radiological weapons**

The nuclear weapons have changed the world security dynamics with increasing risks. The states possessing the nuclear weapons, such as USA, Russia, China and other countries, have to avoid any confrontation.

„As the security dynamics in Asia change, it is increasingly important for China and the United States to remain engaged with each other on nuclear weapons issues with a view toward strengthening communication, regional peace, and strategic stability”(Ahn, 2015).

Bilateral agreements as between the nuclear forces in the world like USA and China, USA and Russia might discourage the other states ambitions to develop new weapons, such as Iran, North Correa, India and Republic of South Africa, maybe Japan, which “has sufficient nuclear material and technological capabilities to produce nuclear weapons and their associated delivery vehicles” (Lin, 2015) and is not to be neglected the ISIS and “al Qaeda interest in nuclear weapons and radiological material” (Squassoni & Armitage, 2015).

Nevertheless, the USA decision to place ballistic missile defense (BMD) in Europe have made Russia to make strong opposition, “arguing that it will cause a breakdown in strategic stability and threaten space security. (...) However, following the announcement and formalization of plans to place ground-based the BMD stations in Poland and Romania, Russian opposition has further increased” (Davydov, 2015).

Even the radiological materials, like cesium, are very dangerous to the people's health, small quantities of them are sold on the black market by smuggling to be used in hand-made weapons, usually be terrorists. „There are some indications that material that entered the black market then may still be for sale today. In addition to Moldova, most states in the Black Sea region have had similar cases - including Georgia, Ukraine, Kazakhstan, and Tajikistan. (...) Cesium - a highly radioactive material cannot be used in a nuclear weapon but could be paired with ordinary explosives





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to create a radioactive mess. This kind of “dirty bomb” is considered to be within most terrorist groups’ wherewithal, as opposed to the more technically demanding challenge of acquiring/manufacturing a nuclear weapon. A dirty bomb would disperse radioactivity, potentially contaminating a wide area and causing panic” (Squassoni & Armitage, 2015).

The radiological the risk is coming from the lack of information about how much materials are still on the black market, the authors are underlining.

### **Smuggling, counterfeiter and piracy**

As a transnational organized crime the smuggling has different subjects (weapons, drugs, inventions, others and people) and it is developing al over the word. The “human smuggling, one very important aspect of irregular migration, is widely described as a threat to the security of a receiving country” (Nadig, 2002). The author is arguing that “that the increase in human smuggling and the development of restrictive access policies to EU states are interlinked and reinforce each other”. Nevertheless, the huge migration to UE in the last 2 years from Syria and other Asia’s countries is a real proof of it.

The counterfeiters are dangerous for the economies and people health.

The piracy, specifically to South Asia and Pacific areas is also dangerous for the maritime security. “The menace of counterfeiting, piracy and smuggling has assumed enormous proportions across the world, and is not only hurting industry and governments in terms of economic loss, but these are also a major source of funding for terrorist outfits and organized crime” (Ernst & Young, 2013).

These forms of the organized crime are representing important threats to the national and international security, mostly because they are financing the terrorism.

### **Infectious diseases**

Another form of threats is the infectious diseases spreading. “Traditional diseases have greater impact in crowded societies that increase the opportunities for diseases to develop and spread. New diseases continually emerge as microorganisms evolve in ways that evade or overcome the human immune system and as humans spread into new environments and become exposed to formerly unfamiliar pathogens. (...) Trade and travel disruptions that result from ad hoc or coordinated attempts to control a disease’s spread can have severe economic impacts. (...) Far less familiar to governments and policymakers is the threat that disease will be used deliberately as a weapon. In fact, few security threats facing society manifest as great a discrepancy between the potential for large-scale harm and the paucity of historical use as biological weapons and bioterrorism” (Heyman et al., 2009).

### **Territorial expansion strategy**

In the name of the ethnic liberation from oppression and protection of minority rights, similar to the USA intervention in Kosovo, Russia tends to increase its influence by using the forces towards new territories annexation. “Despite Russia’s annexation of the Crimean Peninsula, however, events have not derailed wider strategic initiatives favored by the United States that necessitate some level of Russian support or that require acquiescence to continue. In cases such as the Iranian nuclear negotiations, the removal of Syrian chemical weapons, and the continued monitoring of existing arms control treaties with the United States, Russian interests have not been affected by events in Ukraine, and therefore no substantive change in policy would improve Russia’s position. Despite analysis to the contrary, Russia has no incentive to scuttle these negotiations, as this would needlessly antagonize the other members of the process and would see Russia gain little in return” (Fargo, 2015).



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### **Cyber weapons**

The cyber weapons derives from the information technologies and it is used by intelligence and military organizations as Internet viruses to destroy the servers with huge data basis or other techniques to use the data in the criminal ways. The “cyber weapons are cyber means of warfare that are by design, use, or intended use, capable of causing either injury to, or death of, persons. The ‘Methods’ of cyber warfare are the cyber tactics, techniques and procedures, by which hostilities are conducted” (Paganini, 2015).

“These military and intelligence organizations are preparing the cyber battlefield with things called ‘logic bombs’ and ‘trapdoors’, placing virtual explosives in other countries in peacetime” (Clarke & Knake, 2012).

The bigger threat in our days and in the future is a cyber war. “Another serious issue to address is the attribution of responsibility for the cyber war acts; in the majority of cases it is quite impossible to discover the origin of the attack and to identify the attacker. (...)A cyber attack is cyber operation, whether offensive or defensive, that is reasonably expected to cause injury or death to persons or damage or destruction to objects” (Paganini, 2015).

All these threats, presented briefly above, have determined a huge global population displacement. Nearly 60 million people are displaced around the world because of conflict and persecution, the largest number ever recorded by the United Nations. Over 14 million of those fled in 2014 (Pecanha & Wallace, 2015). By August 2015, the number of refugees in Syria alone had risen to around 4 million. In total, around 12 million out of a population of 18 million (Taylor, 2015) has displaced from their countries of origin.

### **Opportunities for the defense management**

Considering the vulnerabilities that are deriving from the eight threats identified bellow, the defence management may consider the existing main opportunities that could be found in the international environment: international organizations strategies (as the United Nations and the United Nations Children's Fund), the diplomacy, the NATO alliance, the bilateral defence agreements, the use of worldwide experts for protection and peace instruments and the communities support.

All these opportunities could be retrived in the strategic actions, in order to strengthen the defense capability. The most important strategic actions that the defense and intelligence might approach are presented in the figure 2.



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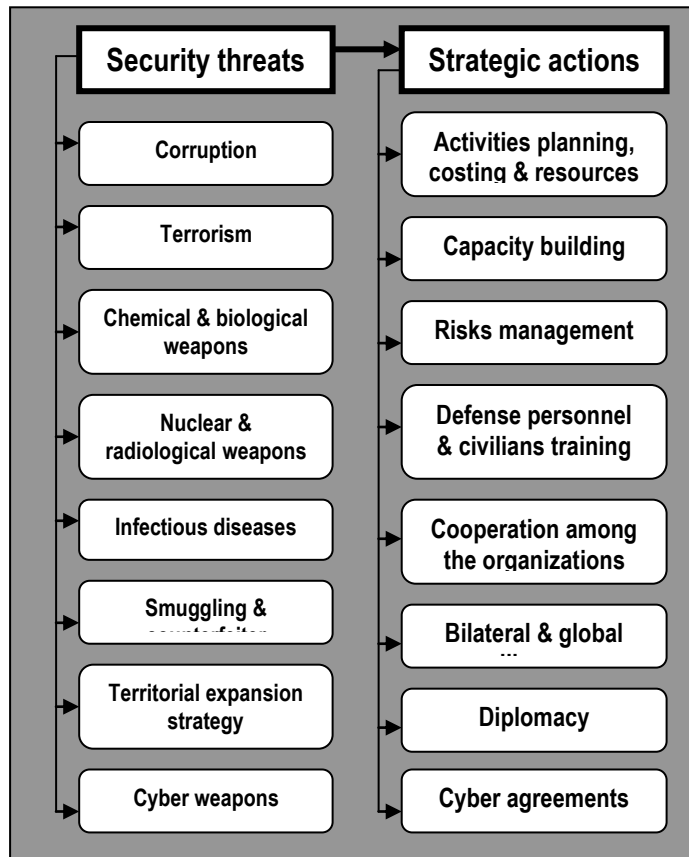


Fig. 2 Strategic actions for the international security

**Activities planning & costing, including resource allocation**

The defense and intelligence activities plans, including the resource allocation, have to be evaluated in terms of effectiveness.

Moreover, the military budgets have to be increased in order to extend the expenses for the new weapons aroused protection because they are in progress of development (such as the cyber weapons).

In the same time, all countries need to fight against the corruption in any form.

**Capacity building**

The defense capacity (equipment and trained defense personnel), has to be extended in order to avoid the threats coming from the terrorism, smuggling, chemical, biological, nuclear, radiological and infectious diseases weapons. “It is essential that all involved participants are equipped with the requisite training and skill sets to effectively implement anti-counterfeiting, piracy and anti-smuggling initiatives to detect and prevent financing of terrorism” (Ernst & Young, 2013).

In the same time, the defense capacity and the anti nuclear missiles need to be developed to counter some countries and terrorist groups’ tendency for seizure new territories.

**Risks management**

The risk management needs to become the main attribute for all organizations involved in the security, stability and peace assurance. The three lines of the Defense model, considered by the Institute of Internal Auditors to be in the management attention for an effective risk management, are: the operational management (including overseeing risks and provide independent assurance), risk management and compliance functions and the internal audit (IIA, 2013).



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### **Defense personnel and civilians training**

Defense personnel training and joint practical exercises of the defense teams have to be developed in all countries. A well trained army may act efficiently against terrorism (ISIS groups especially).

Moreover, the civilians of all countries need to get public education, advises from experts and to be well informed about the security threats and their own actions for protection.

### **Cooperation among the organizations**

The cooperation among the organizations worldwide, mostly in the research area, may lead to a better protection against the nuclear weapons, terrorism, smuggling, and chemical, biological, nuclear, radiological and infectious diseases weapons.

Moreover, the humanitarian actions have to be extended and the way of delivering to be improved, in order to provide water, education, medical assistance and children protection to decrease the sufferings impact on the population living in the countries of conflicts or displaced in other countries.

### **Bilateral & global alliances**

Prevention from nuclear and biological weapons, including the letters scanning, is the most important way. “These weapons have the potential to impair citizens and resources in different ways, requiring a distinct response capability for a host of potential events” (Nelson & Wise, 2012).

“The current stated goal of the U.S. government is the achievement of a nuclear weapons-free world, and consequently we must be prepared for that possibility. However, vital capabilities will begin to be at risk even before Global Zero is reached” (Moore, 2015)

### **Diplomacy**

The diplomacy remains the main instrument in the security development for the direct bilateral communication, negotiations and agreements.

### **Cyber agreements**

The harder task for the defense management is to avoid the cyber attacks. The moral rules and the acceptance of the international agreements may protect the civil people, but the criminal organizations’ hackers have no morals. The proper strategy may be the international teams of the information technology’s experts forming to find out the better ways of cyber protection.

### **Conclusion**

The international security environment is today as a Vulcan that is going to erupt. The EU, USA and the other countries are worried facing new threats coming from the Middle East. The worries are increasing considering the threats coming from the territorial expansion tendency and the terrorism actions.

The terrorism and the other unconventional weapons, like: chemical, biological, nuclear, radiological and infectious diseases weapons, smuggling, counterfeiters and piracy and the cyber weapons are jeopardizing the threats against the countries security and world peace.

In this context, the defense management worldwide has to consider the international existing opportunities and to develop some strategic actions to protect their countries and citizens: activities planning & costing, including resource allocation; capacity building, risks management; defense personnel and civil people training; cooperation among the organizations; bilateral & global alliances; diplomacy and cyber agreements.

The proposed approaches regarding the international security threats identified and the strategic actions necessary in relation with the existing opportunities to be considered by the defense management in order to avoid and defense the threats may be useful instruments in the military strategy building.

New developments might improve the present analyze.



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**INTERPERSONAL CONFLICT (TO MANAGE OR NOT TO  
MANAGE)**

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**Abstract**

The shift in global power has led not only to a diffusion of power, but also to a diffusion of ideas, concepts, principles, value and preferences in the last decades. A comprehensive approach called “security governance” has been introduced in order to cope with the problems caused by this conceptual change. Security governance, which presents an understanding of the concept of security beyond the issue of defense and encompasses the ‘more diverse, less visible and less predictable’, has become one of the most controversial issues both for academicians and defense experts. In this study, we aim to discuss the present condition of security governance both in Turkey and in the world in a comparative manner.

**Keywords:** *interpersonal, conflict, management, consequences*

**Introduction**

Conflict is natural in all workplaces and circumstances. It happens usually in everyday situations and can differ in level and intensity. When people work together, there are inevitably divergences. Some of these divergences are minor, but some can convert into major conflict. If conflicts are not resolved, they can conduct to long-term pressure and discontent amongst employees.

On the other hand conflicts may have a negative impact on organizations and people, including productivity, cooperation, communication and the quality of life at work and home.

Human interaction is at the center of our existence; we are all interconnected. Since conflict - differing opinions, goals, needs, desires or perceptions of entitlement - is a fact of life, the mode in which we manage conflict affects the quality of our interactions, our lives, and our organizations.

My paper goal is to determine how to reduce the negative consequences of workplace conflicts and how to strengthen interpersonal relationships by learning to manage interpersonal conflict situations and the responses to them.

In the first part of this paper I explain some general aspects regarding interpersonal conflicts in organizations, such as what are interpersonal conflicts, different approaches about conflicts, causes and factors of the conflicts.

In the second part I illustrate some techniques, strategies and practical skills for conflict resolution that can be readily applied within a variety of contexts to reduce the conflict impact on you at the work place.

At the same time, I hope that knowledge of these techniques can help avoid the negative effects the managers can assume to consolidate a positive climate within the organization, based on mutual trust and motivation.

**General aspects regarding interpersonal conflicts in organizations**

**What is interpersonal conflict?**

**Interpersonal conflict** is a process that happens when one person, group, or organizational department prevents another from the achievement of the proposed goal. In its classic form, conflict involves antagonistic attitudes and behaviours such as name calling, sabotage, or even physical aggression.



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or

It is a process that begins when one party perceives that another party has negatively affected, or is about to negatively affect, something that the first party cares about.

**When may conflict happen?**

According to Roloff (1987), conflict may **happen** when:

- a party is required to engage in an activity which is incongruent with his or her needs or interests.
- a party holds behavioral preferences, the satisfaction of which is incompatible with another person's accomplishment of his or her preferences.
- a party wants some reciprocally attractive resources that is in small supply, such that the needs of everyone may not be fulfilled entirely.
- a party possesses goals, values, attitudes, and skills that are significant in directing his or her behavior but are perceived to be exclusive of the goals, values, attitudes, and skills held by the other(s).
- two parties have partially exclusive behavioral preferences regarding their mutual actions.

**Positive and negative consequences of conflict in organizations**

**Traditional view of conflict**

This view underlines the idea that all conflicts are dangerous and must be avoided. The traditional view focuses on attitudes and group behavior. It was advanced in the 1930s and 1940s when conflict was seen as a dysfunctional result.

**Human Relations view of conflict**

The human relations position is that conflict is a normal result in all groups and organizations. Because conflict was inevitable, the Human Relations school supported acceptance of conflict. This means that it cannot be eliminated and there are even times when conflict may benefit a group's performance. The human relations view dominated conflict theory from the late 1940s through the mid 1970s.

**Interactionist view of conflict**

Whereas the human relations approach accepted conflict, the inter-actionist approach encourages conflict on the justification that a peaceful, harmonious, supportive and cooperative group is exposed to becoming static and nonresponsive to requirements for change and innovation. This gives confidence to group leaders to maintain a constant minimum level of conflict.





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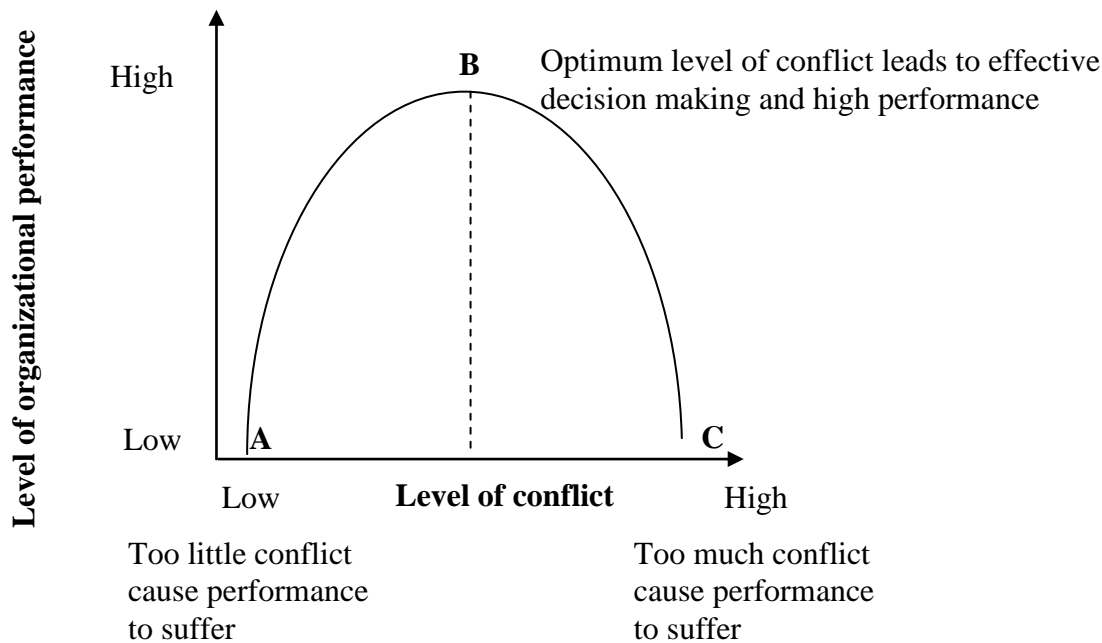


Fig. 1 The effect of conflict on organizational performance[1]

The employees' efficiency is optimal at a moderate level of conflict and the absence of conflict expresses a certain ceiling of their performance. On the other hand when conflict is high, failures that occur can even threaten the existence of that organization.

#### **Causes of conflict in organizations**

When people work together, conflict becomes a part of doing business - it's a normal event in any workplace. Interpersonal conflict can happen from various causes for instance personal differences, lack of information, environmental stress and role incompatibility. Some examples are listed and explained below.

- A. Lack of information:** Conflict may occur when information is not received, or information is not understood as anticipated. To facilitate avoidance of this type of conflict it is good to be as clear and careful in communications as possible.
- B. Confidence problems:** Confidence is the base of a good relationship and disputes may begin when one partner in a relationship does not trust the other with telling the truth.
- C. Communication:** Poor communication conducts to misunderstanding and dissension among employees. For instance, misunderstandings can occur if the manager asks one employee to transmit important instructions to the other employees, but the employee fails to do so correctly. Transmission wrong information can conduct to projects being improperly done and to employees blaming each other for the end result. The possibility of a conflict increases when too little or too much communication is.

#### **D. Group identification and intergroup partiality**

This is the predisposition of persons to develop a more positive view of their own "in-group" and a less positive view of "out-groups" of which they are not a member.

This predisposition is expected to grow when group membership is fundamentally random. The best prediction is that people who identify with some groups are inclined to be doubtful of out-group members.



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### **E. Interdependence**

The potential for conflict subsists when persons or subunits are reciprocally dependent on each other to achieve their own objectives. The potential for the power abuse in such relationships and the constant call for coordination are both potential problem areas.

### **F. Differences in status, power and culture**

Conflicts may explode when parties are different in status, power or culture.

**Status.** Status differences contain the maximum potential for conflict when an inversion of anticipated roles happens; for example, when a high status person, like a manager, finds themselves being learned on computer practice by their administrative subordinate. Some managers are suspicious regarding this inversion of roles.

**Power.** If confidence is not reciprocal, but in one direction an inequity in power can happen and the potential for conflict increases.

**Culture.** When two or more different cultures appear in an organization, the disagree in beliefs and values may outcome in explicit conflict.

### **G. Ambiguity**

Ambiguous purposes, rules, or performance criteria are conflict sources. Ambiguous performance criteria are a regular cause of conflict between managers and employees. In ambiguity the formal and informal roles that rule interaction fail and it is difficult to establish responsibility.

### **H. Insufficient resources**

Differences in power are increased when resources are in small quantity. Resources insufficiency has the ability to transform conflicts masked or latent into clear and acute conflicts. For instance two colleagues who do not get along too well stand an armistice until a reduction in the office space that causes everyone to defend own domain.

## **Behavioral, Cognitive, and Affective Aspects**

The *behavioral aspect* refers to someone who, due to the conflict, interferes with the goals of another through their behavior. An illustration of this is somebody who may try to obstruct a project you are working on at the office to stop you from being promoted.

The *cognitive aspect* of difference among people consists of a disagree between the two sides that illustrates their different visions, goals and interests. For example when the manager responsible of fabrication disagrees with the product development manager concerning how resources must be allocated due to having different goals for his department.

The *affective aspect* addresses the negative emotional contact on the incompatible persons such as irritation, stress, and frustration.

## **Techniques for managing interpersonal conflicts**

### **What is Conflict Management**

Conflict management is the practice of being able to identify and handle conflicts prudently, efficiently, and fairly.

### **Styles of Managing Conflict**

Conflict specialist Kenneth Thomas has developed a set of five conflict management styles that illustrate how assertive you are in trying to assure your own or your group's concerns and how cooperative you are in trying to satisfy those of the other party or group.

#### **A. Avoiding**

*Avoiding* is a conflict management style characterized by low assertiveness of one's own interests and low cooperation with the other party. This is the "hiding the head in the sand" response



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to conflict. Its efficiency is often limited. This type of conflict style does not help the other workforce members reach their goals and does not help the manager who is avoiding the issue and cannot assertively follow his or her own goals. This management style works well when the issue is unimportant or when the manager has no chance to win.

**B. Accommodating**

*Accommodating* is a conflict management style in which one party cooperates with the other party, despite the fact that not promoting one's own interests. This may be seen as a sign of weakness.

This approach is useful when the other person is experienced or has a better solution.

**C. Competing**

*Competing* is a conflict management style that maximizes assertiveness for your own position and minimizes cooperative responses. This is the win-lose scenario. A manager is performing in a very assertive mode to obtain his own goals without looking for cooperating with other employees. This approach may be suitable for urgent situations when time is essential.

**D. Compromise**

*Compromise* is a conflict management style that combines middle levels of assertiveness and cooperation. This is the lose-lose approach where neither employee nor manager really reaches what they want. Compromise does not always result in the most inspired answer to conflict. This approach may be suitable when it is needed a momentary solution or when both sides have similarly essential goals.

**E. Collaborating**

*Collaborating* is a conflict management style that maximizes both assertiveness and cooperation. It requires deep analysis of the problem, to identify key issues for stakeholders and find that beneficial alternative. Managers become associates to realize both of their goals in this style. Collaboration works as a problem-solving scenario where the purpose is to establish a win-win solution to the conflict that wholly satisfies the interests of both parties. Valuable collaboration frequently improves productivity and success. It is presumed that the solution to the conflict can leave both parties in a better situation. This approach is useful when the issue is too important for a compromise.

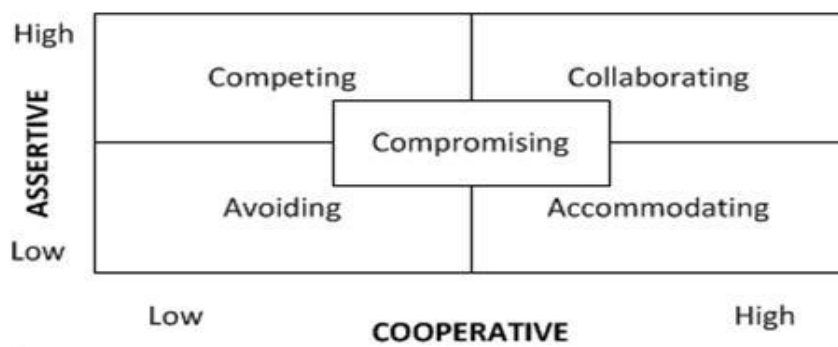


Fig. 2 Thomas-Kilmann Conflict Mode Instrument[2]

**Managing conflict through negotiation**

**Negotiation** is a decision-making process between inter-dependent parties who do not share the same preferences. Negotiation represents conflict management, in that it is also a try to avoid conflict or to resolve existing conflict. It is a try to arrive at a reasonable exchange between the parties.

It can be distinguish between distributive and integrative negotiation tactics.



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**Distributive negotiation** suppose a win-lose situation in which a fixed quantity of resources is divided between parties.

**Integrative negotiation** is a win-win situation that supposes that mutual issue solving can increase the resources to be divided between the parties.

Distributive and integrative negotiations may occur simultaneously.

**A. Distributive negotiation tactics**

Distributive negotiation is essentially a negotiation dedicated to a single issue. Many conflict situations fit this scenario. Let's say you find a second-hand car that you like more. The problem comes down to price. You want to buy for the lowest reasonable price while the seller wants to get the highest price reasonably. Realization a satisfactory resolution in distributive negotiation involves both parties reaching at a point in the "settlement range", an area of overlap between each party's target and their resistance point. Several techniques can influence how that point is determined.

**Threats and promises.** Threats consist of involving that punishment will approach if the adversary does not compromise to your position. Even if it seems threats are not an appropriate form of conflict management, they can be interpreted as a sign that warns that other side is on the point on which discussion is not willing to give. Promises are guarantees that compromise guides to potential rewards in the future.

**Inflexibility versus concession.** Intransigence is often met by the same and the negotiations are deadlocked. A series of small concessions early in the process is often being matched.

**Persuasion.** Verbal persuasion is frequent in negotiations. It is a try to modify the position of the other party in the direction of your target position.

**B. Integrative negotiation tactics**

The imagination required to move past "fixed-pie" bargain can be well worth the effort. For example a number of factors can help to make it happen.

**Extension of the Information Exchange.** Most of the information exchanged in distributive transactions attacking the other party's position and trying to convince the correctness of their positions. A free flow of information is crucial for an integrative arrangement. One suitable method is to give the first little nonessential information. Parties need to give away non-critical information early to start the ball rolling, ask lots of questions and listen to the answers. Trust must be built slowly so that "positions" give way to the communication of true interests.

**Costs Reduction.** Integrative solutions are particularly attractive when it can be decrease costs for all parties in a dispute.

**Resources Increase.** The final resolution to "fixed-pie" negotiating is to include the parties utilize their collective power to get bigger resources which they can then divide.

**Introducing Superior Goals.** *Superior Goals* are attractive results that can be accomplished only by cooperation. Neither party can reach the goal on its own.

**C. Third Party Involvement**

Third parties may intervene between negotiating parties when an impasse is reached (management disagreements) or may be involved from the start as a normal part of the process of dealing (real estate agents).

There are 4 basic third party roles:

**Mediator** is a neutral third party who facilitates a negotiated solution by using reasons and persuasion, suggesting alternatives .This happens when a neutral third party assists to facilitate a negotiated agreement by helping the process of bargaining or by intervening in the content of the negotiation.

It has to mention that without the cooperation of both parties, mediation is likely to fail.

**Arbitrator** is a third party with the authority to dictate an agreement.The big benefit of arbitration more than mediation is that it always results in a resolution. This happens when a third



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party is given the authority to order the conditions of settlement of a conflict. In standard arbitration, the arbitrator can choose any result, such as dividing the difference between the two parties. Finally each party makes a final offer and the arbitrator chooses one of them.

**Conciliator** is a trusted third party who provides an informal communication link between the negotiator and the opponent

**Consultant** is an impartial third party, skilled in conflict management, who tries to make possible creative problem solving through communication and analysis.

### **Ways to manage interpersonal conflicts**

Most conflicts happen at two levels at the same time: the content level and the relationship level. The content level is the common problem such as the dishes needing to be washed. The relationship level engages elements such as status, chain of command, and keeping reputation and respect of other people. The results of conflicts can be win-lose, lose-lose, or win-win. In the win-lose result, one party in the conflict is pleased in the short time but sooner or later the situation turn into a lose-lose for both parties. Approaches to manage or resolve conflict may contain finding ways to reduce feelings of dissatisfaction by helping people to see things from the other point of view.

**Use “I” Language:** When managing with disputes, avoid using terms that exaggerate such as “always”, “never”, “nothing” or “can’t”, or using negative speech. Use “I” language, even when referring to the other person’s performance, and explain how you feel instead of attacking the other person. For instance, instead of saying “you just don’t care”, say “I feel that you don’t care about this problem.” Using “I” language makes it less probable that the other person will find defensive and will permit you to achieve a resolution sooner.

**Use Exploring Questions:** Ask questions to discover what the other person think and feel such as “What views would you like to share with me?” Encourage people to fully communicate what they think and feel. This allows you to see the entirety situation.

**Stay Positive:** Stay as positive as possible and look for encouraging things to say about the other person even if one or both of you is angry. For example, you may say “I respect you for bringing this problem to my attention.”

### **Inefficient strategies for dealing with conflicts**

#### Passivity

It is perhaps the most common managerial attitude, believing that if we do nothing and ignore the problem, it will disappear. But not really happen like that. Ignoring the problem can only serve to increase feelings of frustration and anger of those involved.

#### Bureaucratic measures

In some cases managers acknowledge that there is a problem but do not take a serious measure. Instead, they write reports showing that the problem is under investigation but that there is insufficient information.

#### Hidden passivity

With this tactic managers aim tricking people dissatisfied while they declare that settlement procedure is open.

#### Discretion

Often managers believe that acting discreetly may lead to the fulfilment of a controversial decision with minimum resistance.

“Assassination” of the character A person who is dissatisfied (e.g. pretending to be treated discriminatory) is labelled as provocative trouble. Attempts are made to discredit and isolate it from other group members, hoping that the problem will be solved.



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**Managing interpersonal conflicts at work**

***How can a manager handle a conflict between employees?***

It is usual to try to avoid a conflict, but a manager has to deal often with conflicts between employees. In this case you must try to do this without showing any partiality to one or the other, in the most fair way possible. Bellow are shown five steps that a manager has to follow in order to handle a conflict between employees.

**Step 1**

Speak to each employee separately. This gives you a chance to listen to each side without interruption. Also, try to determine not only the employee’s accusation, but also his needs.

**Step 2**

Establish the basic issue in the conflict. For instance, some troubles arise when employees have different styles of working or thinking - if one employee is systematic while the other is vague. Some issues may have their basis outside the office - an employee is short with others because he has problems at home.

**Step 3**

Meet with both employees together to talk about the issue. In most situations, the employees have not yet spoken their true feelings to the other employee.

**Step 4**

Propose solutions to the problems. These solutions need both employees to make sacrifices.

**Step 5**

Keep close contact with the employees.

***Learning conclusions:***

- Analyse an existing conflict situation.
- Learn how your communication style can realize spectacular outcomes. It is not about complicated situations or difficult people.
- Learn strategies for managing conflict.
- Learn to identify and analyze conflict in the workplace – is it good? Is it bad?
- Learn and understand factors that influence our perception and reaction.
- Understand how to improve productivity by the effective handling of conflict.
- Achieve skills to contribute to a collaborative and open work environment.
- Remember each conflict style and when to use it, as follows:

<b>Conflict style</b>	<b>When you should consider using a specific conflict style effectively?</b>
Avoidance (lose-lose situation)	<ul style="list-style-type: none"> <li>● When an issue is not important</li> <li>● When the cost of confrontation outweighs benefits</li> <li>● To let people cool down and regain perspective</li> </ul>
Accommodation (lose-win situation)	<ul style="list-style-type: none"> <li>● When you realize you are wrong</li> <li>● When issues are more important to others than to yourself and to satisfy others and maintain cooperation</li> <li>● To build up social “credits” for future issues</li> <li>● When the long-term cost of winning isn’t worth the short-term gain</li> <li>● To let others learn from their own mistakes</li> </ul>



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Competition (win-lose situation)	<ul style="list-style-type: none"> <li>• When there is not enough time for collaboration</li> <li>• Where unpopular actions need implementing (in cost cutting, enforcing unpopular rules, discipline).</li> <li>• When the issues is not important enough to discuss at length</li> <li>• When you are convinced that your position is correct and necessary</li> <li>• To protect yourself against people who take advantage of noncompetitive behavior.</li> </ul>
Compromise (partial lose-lose situation)	<ul style="list-style-type: none"> <li>• When the issues are moderately important but not enough for a impasse</li> <li>• When opponents are strongly committed to mutually exclusive goals</li> <li>• To achieve quick, temporary solutions</li> <li>• As a backup when collaboration doesn't work</li> </ul>
Collaboration (win-win situation)	<ul style="list-style-type: none"> <li>• When the issue is too important for a compromise</li> <li>• When a long term relationship between you and the other person is important</li> <li>• To merge insight with someone who has a different perspective on the problem</li> <li>• To develop a relationship by showing commitment and concern for both parties</li> <li>• To come up with creative and unique solution to the problem</li> </ul>

**Table 1**

### **Conclusion**

The employees' attitude towards work is a complex factor. On one hand, it is influenced both by the organizational climate and the organizational culture and, on the other hand, by the style of management.

Interpersonal conflicts within organization can interfere with business operations and can have a negative impact on the relationships, so it is important to learn to recognize and deal with this type of conflict to minimize its negative effects. Acknowledging that a difficult situation exists is the first step to handle a conflict. Also, when the conflict becomes too serious, it can be a good idea to get a mediator involved to have another point of view and to help resolve the dispute.

As it can see from this paper, an important component of management skills is the ability to manage interpersonal conflicts. Management skills are critical but nevertheless difficult to gain and improve. Even the best and most experienced manager can often find themselves tested in difficult situations. That means acquiring the management skills required to help him avoid crisis situations before they ever occur.

In conclusion conflicts are inevitable, but what matters is how a manager deals with those conflicts before they become destructive. Consequently, a manager has to develop the ability not to take sides but to mediate impartiality.

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## **CRYPTOGRAPHIC KEY MANAGEMENT IN CLOUD COMPUTING**

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### **Abstract:**

Cloud security has gained increasingly emphasis in the research community, with much focus primary concentrated on how to secure the operation system and virtual machine on which cloud system runs on. Companies considering moving to a cloud based infrastructure need to understand various aspects of specific encryption and key management – regulation guidelines, the impact of key status on application performance and the differences between the software and hardware key management implementations.

*Key words: cryptography, key management, encryption, cloud computing, security protocols, standards*

### **Introduction**

Cloud computing is the technology that uses network connectivity and central remote servers to store and manage data and to run applications. Since its appearance cloud computing proved its ROI advantages to managers and has become an important business model where computational resources are rented to customers by providers. The key term for cloud computing is the virtualization technology, not a new one but a “reinvented” one with the full advantages of the hardware and software developments which appeared since its discovery.

Since its appearance, even if the technology promised great advantages to stakeholders, cloud computing spread has been limited by the security risks implied by outsourcing data to third party infrastructure. Traditional network architecture with its local data storing and manipulation mechanisms and corresponding security mechanism has been quickly forgotten and data storage, manipulation, and even computer and networking hardware has been moved to the cloud. This poses a tremendous new challenge to the cloud security developers to ensure the security of data as a typical cloud user doesn’t know the exact location of their data or the other sources of the data collectively stored with theirs and he can’t apply most of the tradition defense mechanisms.

To mitigate the data security risks (confidentiality, integrity, availability) and to increase cloud computing acceptance developing companies, organizations, and specialists proposed various systems and procedures based on the different cloud computing implementation model.

The main method of limiting access to information is through encryption and selective distribution of keys used to encrypt group information. A data encryption system takes input data (e.g. a group message) and performs some transformations on it using cryptographic primitives and a cryptographic key. This process generates a ciphered text. There is no easy way to recover the original message from the ciphered text other than by using a specific algorithm and the right key [Schneier 1996].

All data encryption systems are comprised of the following three elements:

- The data: the object or objects to encrypt. The nature of the data to be encrypted (fixed size or stream) and the place where it is located influence the way the encryption system is developed;
- The encryption engine: is the core of the system. He is responsible for the actual scramble of original data based on implementation of cryptographic primitives and



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some other manipulation algorithms. It can be implemented at a software level or at the hardware level of the system.

- The key manager: the component that handles the keys and passes them to the encryption engine.

Encryption key management solutions have the primary goal of managing and protecting encryption keys and making them available to authorized applications in a secure fashion. Key management solutions vary greatly in the complexity of the key retrieval process. The more complex the key retrieval interface, the greater the challenge for the enterprise IT team in deploying key retrieval in applications. Understanding this fact can help IT decision makers assess different vendor solutions and determine the approximate costs of deploying a solution in their companies.

Many key management providers developed their own particular solutions to address the key management process as software products sometimes, in order to achieve superior performance and reliability, even implemented it on a dedicated hardware infrastructure HSM (Hardware Security Module). In cloud computing key management software can be deployed as a service. Even the HSM platform can be virtualized and provided as a service by cloud providers like currently Amazon Web Services and Microsoft Azure do. Having so many products to the key management security problem each one with different approaches and implementations was another obstacle in cloud acceptance. The diversity of approaches generated confusion and lack of application interoperability.

However in the latest years some standards are being established in the industry by specific organizations. In this direction NIST (National Institute of Standards and Technology) developed requirements and standards for cryptography modules that include both hardware and software components FIPS 140-2 standard and OASIS organization (Open Standards for the Information Society) proposed the Key Management Interoperability Protocol (KMIP) which stands as a basis for achieving interoperability between cryptographic systems by defining message formats for the manipulation of cryptographic keys on a key management server.

### **Key Management attributes**

Successful key management is critical to the security of a cryptosystem. This includes dealing with the generation, exchange, storage, use, and replacement of keys. Cryptographic systems may use different types of keys, with some systems using more than one. These may include symmetric keys or asymmetric keys.

The following are the important key management attributes:

- **Generate Key:** The generation of good-quality keys is critical to security. Keys for a cryptographic algorithm should be generated in cryptographic modules that have been approved for the generation of keys for that algorithm.

- **Bind Key and Metadata:** A key may have associated data, such as the time period of use, usage constraints (such as authentication, type of encryption, and/or key establishment), domain parameters, and security services for which they are used, such as source authentication, integrity, and confidentiality protection.

- **Activate Key:** This function transitions a key to the active state. It is often done in conjunction with key generation.

- **Deactivate Key:** This function is generally done when a key is no longer needed for applying cryptographic protection. For example, when a key has expired, or is replaced by another key.

- **Backup Key:** A key is backed by the owner, the key management infrastructure, or a third party in order to reconstitute the key when it is accidentally destroyed or otherwise unavailable.



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- **Recover Key:** This function is complementary to the key backup function and is invoked when the key is unavailable for some reason and is required by the authorized parties. Key backup and recovery generally applies to the symmetric and private keys.

- **Modify Metadata:** This function is invoked when metadata bound to key needs to be changed. The renewal of a public key certificate is an example of this function where the validity period for the public key has expired and the time period has to be changed or another key has to be generated.

- **Rekey:** This function is a critical one used to replace the existing key with a new key because the old key is obsolete. In traditional cryptographic systems many times the delivery of the new key is done by encrypting it with the old key. However when the current key is compromised or in modern cloud computing systems which are based on secure group communication the rekeying process of the group key can't be based on the old group key and some other protocol has to be developed.

- **Suspend a Key:** This function is used to temporarily cease the use of a key. It is similar to reversible revocation. This function may need to be invoked if the status of a key is undetermined or if the key owner wishes to temporarily suspend its use (e.g., for extended leave). For secret keys, this can also be accomplished via key deactivation. For public keys and the companion private key, this is generally done using suspension notification of the public key.

- **Restore a Key:** This function is used to restore a suspended key once its secure status is ascertained. For secret keys, this can also be accomplished via key activation. For public keys and the companion private keys, this is generally done using a revocation notification where the revoked public key entry is deleted implying the key is valid.

- **Revoke a Key:** revoking a key or certificate is the process of invalidates the key or certificate as a trusted security credential. There are a number of reasons why a certificate, as a security credential, could become untrustworthy prior to its expiration. Examples include: compromising, fraudulent usage, changes in the status of the owner,

- **Archive a Key:** This function is used to store a key in long-term storage after it has been deactivated, expired, and/or compromised.

- **Destroy a Key:** In cryptography, zeroisation is the practice of erasing sensitive parameters (electronically stored data, cryptographic keys) from a cryptographic module to prevent their disclosure. This is generally accomplished by altering or deleting the contents to prevent recovery of the data.

- **Manage TA Store:** This function is used by the relying party to determine what trust anchors to trust and for what purpose. A trust anchor is a public key and its associated metadata that the relying party explicitly trusts and uses to establish trust in other public keys via transitive trust, such as a public-key certification path that is a series of public key certificates where the digital signature in one certificate can be used to verify the digital signature on the next certificate.

## **Risks Associated with Key Management**

The ability to manage security operations built on cryptography—such as digital signing or data encryption—depends directly on the ability to manage effectively the cryptographic keys that govern these processes. Cloud computing implementations brings new paradigms and key management challenges are increasing as cryptography is employed more broadly within an organization's IT infrastructure, driving up the number and diversity of keys to be managed. The understanding of different approaches to key management, key management best practices, and



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technology alternatives for implementing those practices are critical to a good implementation of a company cryptographic security system.

Key management is not just an operational challenge. As regulatory bodies become more aware of the importance of key management, the security and audit requirements specific to these processes are becoming more stringent. In addition, standards such as the OASIS Key Management Interoperability Protocol (KMIP) are maturing and will improve key management interoperability between different devices and systems. Given these trends, organizations need to consider, operational, security, and audit requirements when building a key management strategy.

The risks associated with key management are the followings:

- Keys compromising – keys can fall into the wrong hands, giving unauthorized persons or applications access to sensitive or high-value information. Data breaches can result in embarrassing disclosures, risk of customer identity theft, and perhaps fines or legal challenges;
- Unavailability of cryptographic services – if a cloud key management solution as a service is used then the unavailability of the service can be devastating for the activities of a company;
- Cryptographic keys can become lost or unrecoverable, rendering data unreadable. Depending on the specific nature of the data, key loss can result in major problems for the business in the form of interruptions to business operations, lost customers, or legal consequences;
- The limited protection offered by the key management system can leave sensitive keys and the data they protect vulnerable to attack;
- Lack of interoperability between key management systems protocols and the proliferation of fragmented key management systems can increase the complexity and cost of security management, resulting in business processes that are difficult to manage and to scale;
- Poorly documented key management activities can increase the burden of compliance reporting activities.

#### **Cloud key manager solutions:**

Townsend Security Alliance Key Manager - is an application that helps organizations meet compliance requirements with FIPS 140-2 compliant encryption key management. The symmetric encryption key management solution creates, manages, and distributes 128-bit, 192-bit, and 256-bit AES keys for any application or database running on any Enterprise operating system. It can be implemented as a standing application, as a virtual instance or as a physical hardware security module (HSM). It was thoroughly investigated by one of the main cloud solution providers and has achieved VMware's highest level of endorsement: VMware Ready status.

Azure Key Vault helps safeguard cryptographic keys and secrets used by cloud applications and services running on Microsoft Cloud platform: AZURE. Key Vault can be used to encrypt keys and secrets (such as authentication keys, storage account keys, data encryption keys, .PFX files, and passwords) by using keys that are protected by hardware security modules (HSMs). For added assurance, you can import or generate keys in HSMs (keys never leave the HSM boundary). The HSMs are FIPS 140-2 Level 2 validated. Developers can create keys for development and testing in minutes, and then seamlessly migrate them to production keys. Security administrators can grant (and revoke) permission to keys, as needed.

Amazon Web Services (AWS) Key Management Service (KMS) is an encryption and key management service used in the Amazon Cloud Platform. KMS keys and functionality can be used by other AWS services and can provide security mechanisms for protecting data but also be integrated in applications.

The IBM Distributed Key Management System (DKMS) provides online key management to the Integrated Cryptographic Service Facility (ICSF) as well as to IBM cryptographic products on



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other platforms. ICSF is a software element of z/OS that works with hardware cryptographic features and the Security Server to provide secure, high-speed cryptographic services in the environment. ICSF provides the application programming interfaces by which applications request the cryptographic services.

DKMS offers centralized key management for symmetric and asymmetric keys and for certificates. DKMS automates the key management process, and exchanges and replaces keys and certificates on demand. Further, to assure continuous operation DKMS maintains backup copies of all critical keys.

### **Conclusion**

Public and private organizations which want to take advantage of cloud-based solutions to reduce costs and improve business performance have to implement security mechanisms in order to secure their data. The basis for this process is the encryption process and the critical point in this process is the key management solution. Cloud services providers like Amazon, Microsoft, IBM, VMware and other companies saw the importance of this and developed or adopted different key management solutions.

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## **ROMANIA’S NATIONAL SECURITY AFTER THE EVENTS IN UKRAINE**

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**Abstract:**

The 21<sup>st</sup> century has presented us with the emergence of distinctive and new kinds of security challenges. These new challenges have specific intelligence components. The risks and the conditions needed for the occurrence of a traditional war on the European continent are not the same as during the Cold War. Nevertheless, at the sub-regional level there is still an occurrence of crisis and instability phenomena, trends of fragmentation and isolation of certain states.

The crisis in Ukraine poses as a factor of instability, considering Romania’s position as a state located on the eastern border of the EU and NATO.

*Key words: security, new challenges, NATO, European Union, border, conflict, threats, cyber-attacks*

### **Introduction**

*“Ukraine will not go anywhere if Russia has something to say”*  
*George Friedman*

When NATO heads of state gathered in Bucharest back in April 2008, the President of the Russian Federation, Vladimir Putin “stole the show”. The Kremlin leader strutted away triumphantly from that summit after persuading Western leaders not to offer Georgia and Ukraine road maps to eventually join the alliance. Four months later, in August, Russian troops rolled into Georgia, a move seen by many observers as a dress rehearsal for last year's intervention in Ukraine.

For the first time since the end of the Cold War, the Atlantic alliance is now treating Russia not as a potential partner with whom it can do business but as a problem that needs to be addressed and a threat that must be confronted.

Diplomats described the decisions made in Wales, setting up military facilities in Estonia, Latvia, Lithuania, Poland and Romania, establishing a new rapid-response force that could assist endangered members within two days as the alliance is returning to its core mission.

NATO has returned to doing the things it is supposed to do. Collective defense is the primary task of the organization.

In 1989 in Romania, the totalitarian regime was changed with a democratic one and through the process of transition that required a major change. Nowadays Romania is in a position to show that it has achieved its objectives and that the country became a democratic state well integrated and connected to the new European geography and its geopolitical transformations under way.[1]

In a context marked by a deep conflict of both social and economic instability, the security of any country is based on anticipation and pro-active action, as a prerequisite for progress and prosperity.

In the current Ukrainian crisis, Russia ignores the right to territorial integrity of a sovereign and independent state and amid the need of NATO to strengthen the security on the eastern Border,



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Romania plays an important role since it has assumed the nation's leading Fund NATO (Trust Fund) for support in combating cyber threats against Ukraine.

Thus, Romania has glimpsed an opportunity to strengthen its position within both organizations - NATO and the EU, acting as a conductor of European interests and pro-European states in the Black Sea region. Supporting Ukraine and assisting the interests of Kiev Administration to the detriment of Russia, Romania has won a true enemy in Europe.

In order to know the context, the nature of alternatives, size and objectives of the decision to assist Ukraine on the landing prevention and countering of threats on cyber security, the present work aims to achieve a cost-benefit analysis and to highlight implications on Romania's national security.[2]

### **NATO and the conflict in Ukraine – Romania's role**

The events in Ukraine, which started in autumn 2013, have sharpened the need to reconfigure the geopolitics of Europe and Euro-Atlantic area. Russian tendency to impose its influence in Eastern Europe and to regain the place of great power on the world stage is increasingly visible.

After the end of 2013 and the beginning of the next year rallies in Kiev against the pro-Russian and anti-EU turned into street battles between demonstrators and security forces, with loss of lives, which appeared to be a compatibility issue between the public and the government of Ukraine, has taken a completely different turn when the Crimea through a referendum challenged both internally and externally, declared independence a day later and joined the Russian Federation.

The incident had a strong international echo; Russia was heavily criticized for its involvement in the events. Based on this precedent, several regions in eastern Ukraine have expressed the desire to become independent and to join the Russian Federation, resulting in an armed conflict between pro-Russian rebels and Ukrainian armed forces, conflict still ongoing. European great powers, but also non-European countries, including the United States, have condemned Russia's involvement in the internal conflict in Ukraine imposing economic restrictions aimed at limiting the support which the Russian Federation is granting to the Ukrainian rebels. International institutions, particularly NATO and the EU have adopted a clear position against this situation, condemning the violation of territorial sovereignty of Ukraine and taking measures in the strengthening of the eastern flank against threats created by the aggressive policy of Russia, oscillating between "consultation with US and Western Europe and the desire to be recognized and comply with at least one power in Eastern Europe and Central Asia.

Diplomats and analysts stress that going back to basics does not mean returning NATO to anything resembling the hair-trigger footing of the Cold War era, when tens of thousands of troops faced off across the Iron Curtain. The size of NATO's new rapid deployment force, is a sufficient deterrent should Russia decide to make trouble along the alliance's eastern frontier. The new force will be drawn from the existing 13,000-strong NATO Response Force, which can be deployed anywhere in the world within five days. The new, smaller force will be deployable to any member state in trouble within two days.

But despite NATO's move towards confronting Russia and the alliance's suspension of all formal cooperation with Moscow, there is still opposition among many members to burn the bridge entirely. This manifested itself in Wales in a behind-the-scenes struggle over the fate of the Founding Act, the agreement the alliance made with Russia in 1997 to assuage Moscow's fears about former Warsaw Pact members Poland, Hungary, and the Czech Republic joining NATO.

In the Founding Act, which alliance officials say is a "political" and not a "legal" document, NATO pledged that it would not station "permanent" or "substantial" forces on the territory of its new eastern members.[3]



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In the end, a compromise was reached that kept the Founding Act intact, with NATO explicitly stating that Russia had “breached” it with its actions in Ukraine. Even as NATO moves to beef up its defenses in the east, diplomats and officials admit that the alliance is struggling to find ways to counter the type of stealth and hybrid tactics Russia is using in Ukraine. By relying on local proxies and unmarked Russian irregular forces, Moscow has been able to claim a degree of plausible or somewhat plausible deniability that it is involved in the Ukraine conflict. It has also very effectively utilized well-organized subterfuge, diversion, and deception, a highly disciplined disinformation campaign, and coordinated economic warfare, analysts say.

At the NATO Summit held in Wales NATO allies have agreed to increase their help Ukraine through the implementation of four support funds aimed at the following areas: capacity to command, control, communications and IT (C4); logistics and standardization; cyber defense; career transition management in the military. It was also decided to assist Ukraine in the rehabilitation of military wounded personnel.

Over time, NATO has developed a number of mechanisms and instruments to support cooperation with partners outside the alliance through combinations of policies, programs and action plans. Support funds involve voluntary involvement of NATO member states through coordination and financial support for a project in a partner state (non-NATO), which focuses on areas such as security and defense that are in accordance with the legal framework of the Policy support funds within NATO Partnership for Peace.[4]

Cyber-security Trust Fund is headed by Romania, following the decision of the Supreme Defense Council (CSAT) on 03.09.2014, as a nation-leading, supported by two additional contributors: Hungary and Estonia (started on 2014, December the 1st). This project is developed through RASIROM RA, state-owned company under the authority of the Romanian Intelligence Service, which has a staff of engineers, foremen and highly skilled technicians with certifications in Germany, England, Holland, France at leading companies worldwide involved in research, design, development and implementation of security systems. It must be said that the Romanian state is the executive agency responsible for operating support fund and its implementation period is 24 months.

Among the main objectives of this project include: developing technical capabilities to counter cyber threats; establishment of an Incident Management Centre in order to monitor cyber events, and to supply hardware; setting up specialized laboratories for investigating cyber security incidents; delivery of training programs by Ukrainian staff to use equipment and technology supplied through this program.

By H. G. no. 1130 of 23 December 2014, the Romanian Government approved the Agreement of Financial Management between Romania and the Office of Financial Control of the NATO Trust Fund NATO for Ukraine in the field of cyber defense signed on 2 December 2014 and which states that there will be allocated 500,000 Euros by this project, the approved budget amount coming from the Romanian Intelligence Service 2015.

### **Romania's military capabilities**

From the military point of view, after 2004, our country has emerged as the second NATO military regional member after Turkey and a strong partner of the US in central and Southeastern Europe. "Even though budget cuts have affected the preservation of the Romanian army to capacity, Romania has considerable military resources to other countries in the area. Thus, Romania has over 70,000 active troops, plus 80,000 retired military personnel. For active people, more than half took part in military operations, in conflict zones theaters of operations under the aegis of the UN or NATO. In 2007, nearly 2,000 Romanian troops participated in military missions on three continents, and in 2008 1,800 military ground forces were engaged in a wide range of missions with a very high





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level. In this way, Romania has ensured that its troops have the experience of a real conflict, in addition to military exercises carried out with international partners.

To defend the airspace, aviation transport troops and other missions, Romania has 16 attack aircrafts, fighter 16, 19 and 74 transport training. In addition, the Army longer fall 81 helicopters without attack capabilities. At their disposal there are 45 usable airports. Romania has an ongoing project to purchase 24 F-16s in use, six of which are already optimized on which the Romanian pilots are currently running flights without assistance. Other aircrafts will be gradually delivered until 2018, when the Mig21 Lancers with which the Romanian army is currently equipped will leave the household. The purchase of these aircrafts is a part of the multi-role program of the Strategic Partnership between Romania and the US. This program includes the acquisition time of 48 aircrafts, 24 F-16s in the midway, and 24 F-35 Joint Strike Fighters. During the full endowment of the Romanian army, the acquisition of these aircrafts is the ultimate goal of the program. Also present at the motion is a project that would involve the purchase of additional twelve F-16 devices in use, given the evolution of the conflict in Ukraine.

Army includes 875 tanks, 1,450 vehicles, 413 artillery tractors and 188 missile systems. Last but not least, Romania also has three frigates, corvettes and 5 destroyers. Although the state is partially landlocked with a line exceeding 200 km of coastline, our country has no aircraft carrier or submarine. The only submarine in the Romanian Army is inoperative due to technical reasons. Romania's military fleet is not at its best, considering the importance of the "economic, political and strategic Black Sea Area that has the bond with the Mediterranean", providing a "significant opening (...) to Middle-East and to Asia".

Romania's capacity to defend itself lies not entirely in its military capabilities. A segment of the partnership between our country and the United States is the establishment in Romania of US military bases. Besides the safety factor assured by the presence of these bases, they have also created the opportunity for the Romanian military to train and have modern standards joint exercises of implementation. Also, this partnership has led to an influx of investment in the defense sector and the development of research and development programs in the military.[5]

Another important step is the project of installing on the Romanian territory of the missile shield project components that will be completed in 2016. Thus, the defense of our country has been enriched by the addition of capabilities in the event of ballistic missile attacks.

The development of military capabilities in the region represents a major challenge in terms of the "gap between political ambitions and real military capabilities or the balance between current capabilities and requirements of the organization's mission. With few exceptions, collective capabilities of the European members of NATO are below those of the US, which spends more than double on defense compared to all other partners in the Alliance together. "This technological gap between European Union states and the United States "has grown so much that can create interoperability problems including difficult operations (...) and may hamper decision-making within NATO"

#### **Romania's involvement in Ukraine. Costs and benefits**

As a border state of the European Union and NATO membership, Romania has a major interest in neighboring stability, democracy and prosperity, creating community pluralism and predictable security. This challenge, successfully implemented over the last decade, is now at a turning point, Romania being faced with threats posed by armed conflict in the territory of a neighboring state. Also, the same conflict threatens security in the Black Sea, giving birth vulnerabilities both in terms of trade in the area and where exploitation of hydrocarbon reserves in the basin of the Black Sea, an important component of Romania's energy independence policy.



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It should be noted that Romania's involvement in the conflict in Ukraine, in cooperation with two other NATO member states (Hungary and Estonia) and while keeping the other actions of NATO comes to the events generated by strained relations between Russia and Ukraine and the Fund need Alliance to consolidate its eastern border.

Below I outline what are the costs and benefits of Romania's national security posed in support of Ukraine on the landing prevention and countering of cyber security threats, given the current events which are taking place north of the border of our state.

Costs	Benefits
<ul style="list-style-type: none"> <li>• <b>Financial resources (500.000 euros);</b></li> <li>• <b>Human resources;</b></li> <li>• <b>Exposure to cyber threats.</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>Image within NATO;</b></li> <li>• <b>Strengthening the position of authority in cyber security;</b></li> <li>• <b>Contribution to regional security regional stability.</b></li> </ul>

**Table 1 – Romania’s involvement in Ukraine. Costs and benefits**

Some benefits are also mentioned by the Government in the explanatory note of the Government Decision no. 1130/2014 and refer to the fact that this project will enhance the visibility of our country among Allies and reinforce support for Ukraine is likely to boost security at regional level, as targeted by NATO.

We know that Romania has actively contributed, over time, to support measures to deal with the issue of cyber security in NATO, including supporting initiatives to implement the new Strategic Concept of the Alliance. The current approach to the North border can be an opportunity to define and consolidate a new status within NATO.[6]

In terms of costs involved in the current approach, we can easily grasp that this measure has no macroeconomic implication, considering the amount that Romania has allocated to this project (0.5 mil. Euros). Given that a judicious pre involvement analysis has not been conducted and cyber security threats to Ukraine may occur, the initially allocated financial resources will certainly increase.

Although Romania has a respectable educational system geared towards engineering and science and has a base for the IT industry and a long history of education in information technology, when it comes to information systems it is known that this calls for human resources skills and expertise, highly qualified professionals and it is necessary to foresee a number of issues such as efficient allocation of human resources, employee motivation and satisfaction, turnover of staff due to competition in the labor market etc.

Given those listed above I must say that security, when it comes to human resources, must ensure continuity so that in the issues that we are discussing, we mean human resources both in terms of a cost and in terms of vulnerability.

Given the quality of national leadership, Romania can play a significant role in this project. We see that in recent years attacks on information and communication infrastructures of European level have occurred. We estimate additional costs involving both government institutions and business environment. For example cyber attacks against Georgia and Estonia in 2012 showed long-term destructive effects arising on the functioning of civil society and economy.[7]



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### **Conclusions**

Through its membership of NATO, Romania, in addition to the responsibilities that this adhesion involved benefits from the protection offered by Article 5 of the Washington Treaty which stipulates that if a member state of the Alliance suffers a military aggression from another state actor, the other Member States are obliged to provide support and act on the principle that an attack against one is an attack on all members. These protections alone can not ensure the security of the territorial integrity and sovereignty of Romania. Our country must be able to repel an armed aggression by its own, giving allies time to intervene.

The events in Ukraine and the aggression shown by Russia have called into questioning the issues of security and defense. Increasing the budget of the Ministry of Defense is more than necessary. Upgrading existing military capabilities, the acquisition of modern military equipment and providing a tactical and combat training for Romanian soldiers should be at the top of the list of Romania's priorities. An increased budget for the defense sector could lead to the development of military research, the development of the projects within international partnerships designed to revitalize the production of arms and military equipment in our country. Thus, in the event of conflicts in the region, Romania could provide military capabilities in a very short time, which would improve the reaction of the Alliance to support its partners in this geographical area.

National security is a fundamental right derived from people's full sovereignty; constitutional order is based on and fulfilled in the context of European, Euro-Atlantic cooperation and global developments. The membership of an important political and military alliance such as NATO has had an impact on attitudes and behaviors of the country, building confidence in itself and in its partners, taking voluntary and conscious responsibilities on national security and defense at regional and global levels.

The adoption of the Agreement for Financial Management between Romania and the Office of Financial Control of the Trust Fund NATO for Ukraine in the field of cyber defense is an agreement which brought Romania both benefits and some costs and disadvantages.

With the support of Ukraine's case for joining the Atlantic and Euro-Atlantic structures, Russia has become a real enemy. Therefore, be it cyber attacks against the country, or shared propaganda of existing information warfare or threat from Russian military aircraft overflying close to borders, Romania is continuously a subject of constant attacks from Russia.

Despite these very negative aspects, Romania's decision to support Ukraine on the level of cyber threats was a decision that brought a number of significant benefits. Thus, considerable financial resources have been mane, which have not had implications at the macroeconomic level. Considering the risk of being exposed to potential cyber threats, Romania has consolidated its capabilities in NATO proving that it is prepared to meet the expectations of the Alliance and contribute directly to reducing risks and increasing safety in the region.

Given the investments made by supporting Ukraine we believe that in the next period it is necessary to pay attention when they will effectively contribute to strengthening the cyber-security of Romania, in the context of threats coming at this level in ambiguous, complex and volatile nature.

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**COST ANALYSIS AND LIFE CYCLE COST USES IN IMPROVING  
THE MILITARY CAPABILITIES**

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**Abstract:**

Military assets, and mostly the expensive ones are generally appraised at the acquisition stage on the basis of their total life cycle costs. This study provides a theoretical foundation and a parametric cost model for forecasting the life cycle cost for the C-27J Spartan airplane.

*Key words: life cycle costs, parametric model, methods, maintenance cost, repair, exchange, flight profile*

**Introduction**

Accurate cost estimation of military equipment plays a crucial role in any military acquisition strategy. Military assets are generally appraised at the acquisition stage on the basis of their total life cycle costs (LCC). Life cycle costing is an economic assessment that looks beyond the initial purchase cost of an item. It also includes the cost of operating and maintaining the item over its entire operational life. This technique was designed in the early 1960s for procurement purposes in the US Department of Defence.

The purpose of a LCC model is to estimate the overall costs of an item. It can be used as an evaluation tool in two situations. The first situation occurs when assessing the economic impact of a given investment such as the procurement of new equipment. If the decision has already been made, LCC can assist in budget allocation [Liu, 2006]. The second takes place when comparing various alternative courses of action with the objective of choosing the best way to use scarce resources [Fabrycky and Blanchard, 1990]. In this case, LCC assists in selecting the alternative that ensures quality at minimal cost [Fuller, 2010].

From the perspective of the equipment user, LCC may be subdivided into three categories: Acquisition cost, ownership cost, and disposal cost. The acquisition cost includes the purchase price and the cost of potential equipment improvements. Ownership cost is composed of operation and maintenance (O&M) costs. O&M costs may include consumables, engineering services, repairs, overhaul and spares. Maintenance cost can be grouped in two categories: scheduled and unscheduled maintenance costs. Scheduled maintenance is generally programmed and suggested by the manufacturer for prevention purposes. Unscheduled maintenance is not programmed and it can be caused by equipment failures. Disposal cost occurs when equipment is withdrawn from service.

O&M is an important facet of the total ownership costs of military equipment. The cost of operating and maintaining equipment can exceed the cost of capital over the life of the equipment [Solomon and Sokri, 2013]. With greater national interest in reduced public spending, emphasis would be placed on O&M from the cost standpoint. However, when attempting to apply life cycle costing concepts, analysts have been thwarted by the lack of accepted methodology to arrive at appropriate decisions (Al-Hajj, 1998).

Life cycle costs are summations of cost estimates from inception to disposal for both equipment and projects as determined by an analytical study and estimate of total costs experienced during their life. The objective of LCC analysis is to choose the most cost effective approach from a series of alternatives so the least long term cost of ownership is achieved.



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LCC analysis helps engineers justify equipment and process selection based on total costs rather than the initial purchase price. Usually the cost of operation, maintenance, and disposal costs exceed all other costs many times over. Life cycle costs are the total costs estimated to be incurred in the design, development, production, operation, maintenance, support, and final disposition of a major system over its anticipated useful life span [DOE 1995]. The best balance among cost elements is achieved when the total LCC is minimized [Landers 1996].

## The role of Life Cycle Costs (LCC) in NATO

### The use and limitation of the life Cycle Costs

LCC is the total sum of the direct, indirect, recurring, non-recurring and other related costs incurred, or estimated to be incurred, in the design, development, production, operations, maintenance and support of a major system over its anticipated life span. The LCC analysis is a typical task that starts early in the life cycle of the project and must be carried out throughout the entire life cycle of the system [NATO Logistic Handbook].

The use of life cycle costs should, support the process by which managers can make the best decisions on options presented to them. These options may include evaluation of future expenditure, comparison between alternative solutions, management of existing budgets, options for procurement and evaluation of cost reduction opportunities. Life cycle costing is also used for affordability assessment and determining the cost drivers associated with the Key User Requirements.

Life cycle costs must be used as a benchmark against which options can be measured for ‘value for money’ during the acquisition/production and in-services phases.

However, it must be appreciated that the greatest opportunities to reduce life cycle costs usually occur during the early phases of the programme (as shown in Figure 1-1). It follows therefore that life cycle costs is used as a decision and optimisation criteria in the search of the best compromise between performance, cost and time.

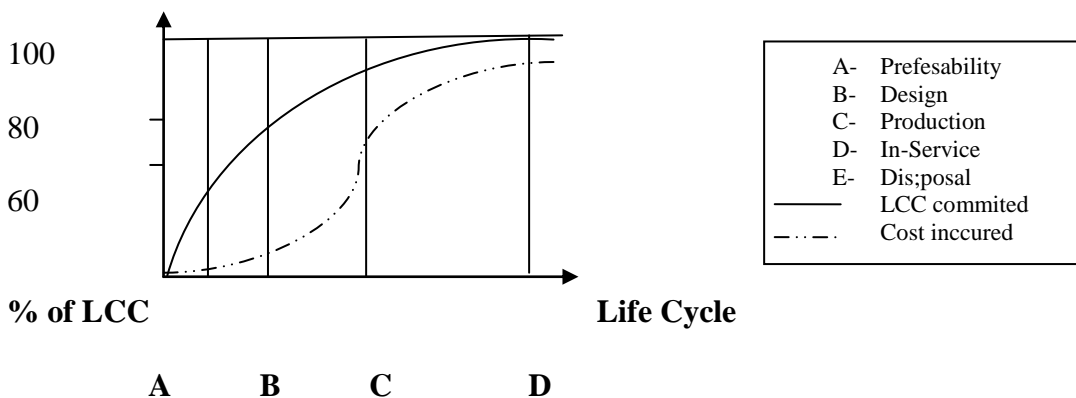


Fig.1.1 Traditional LCC Committed versus Incurred Cost Curve

Life cycle costs should be recognised as an ongoing activity throughout the life cycle to evaluate all programme changes and exploit cost saving opportunities. Although this report focuses on the importance of conducting life cycle cost analysis, it should be recognised that there are limitations of such an analysis. Some of the limitations are (Reference: LCC Tutorial by Paul Barringer and David Weber):



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- Life cycle costing is not an exact science. A life cycle cost analysis does not provide an exact number of the costs; it merely gives an insight in the major cost factors and an insight into the magnitude of the costs.

- The life cycle cost estimate is only an estimate. Estimates can never be more accurate than the inputs and the inputs are often estimates themselves or expert opinions

- Life cycle cost models require volumes of data and only a few handfuls of data is likely to exist when conducting the estimate. Therefore many assumptions have to be made. The life cycle cost estimate therefore only counts given the assumptions used. If one of the assumptions changes, it is possible that the cost estimate will change too.

- Life cycle cost results are used for several purposes and, in some instances, are not compatible. For example, the life cycle cost used for a comparison or a trade-off study may not always be suitable for budgeting purposes.

These limitations should be carefully considered when conducting a life cycle cost analysis.

### **Phases and the use of life cycle costing**

It is recognized that individual nations may use their own nomenclature for these early phases (e.g. user requirement, system requirement, etc.) and may conduct their own pre-feasibility or early conceptual work to assess the level of their capability gap. For clarity and consistency the NATO nomenclature has been used throughout. However, the processes and techniques described here are equally applicable to national and multi-national programmes.

Early in the project life cycle, studies need to address the capability gap, the numbers of equipment or platforms required and the technologies that can help to fill the gap at lowest cost. This requires a ‘strategic’ approach that can provide a capability to look at the ‘big picture’. At this phase in the life cycle it is unlikely that the costs can be identified in a great deal of detail, rather an understanding of the holistic values (i.e. the whole is more than the sum of its parts) in terms of the primary cost breakdown structure elements and the uncertainty surrounding these figures is required. The level of life cycle costing at this phase will support the NATO MND (Mission Need Document) and ONST (Outline NATO Staff Target).

It is important to recognize in these early phases that only broad estimates or a range of estimates will be available – it is more important to ensure that they are as complete as possible (e.g. nothing large is missing).

Once the NST (NATO Staff Target) has been developed, the focus turns to the performance, cost and time envelope of various options that will meet the NST. Forecasts of the likely life cycle costs for new equipment(s) and platform(s) are needed so that the cost breakdown structure can be developed and extended to reflect the acquired knowledge of the expected system characteristics and associated costs.

The life cycle costs at this phase will support the NSR (NATO Staff Requirement) by providing reasonably accurate estimates of development and production costs. However, due to the likely lack of design data the in-service costs will be more uncertain. During the project definition phase the usage patterns and system design will mature to provide a much improved basis for establishing more accurate in-service costs.

When the preferred options are identified, industry is generally asked to provide information and compete for its supply. Assessments of the bids are conducted on a life cycle cost basis and need to address all the economic and financial requirements set out by each nation. At this stage the cost breakdown structure should be fully developed such that all the cost elements are identified.

For in-service equipment a forecast of the costs for the remaining life is required. This will assist in any budget adjustment studies and provide a realistic baseline upon which to measure and



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compare with the effect of change due to utilization, incremental updates, overhauls or even the procurement of new equipment.

In summary, it is not possible or desirable to collect and analyze information at the same level of detail throughout the life cycle although there should be a common thread in terms of programme phases, cost breakdown structure grouping and resource consumption. What should be seen is a life cycle cost estimate that evolves, in terms of detail, as the programmes progresses through the different phases.

## **Organisation And Ownership Of The Life Cycle Cost**

### **Owner of the LCC**

The life cycle cost analyst or manager should be the owner of the development of any life cycle cost estimate and the configuration management of the supporting documentation.

The role of the life cycle cost analyst is to ensure the smooth running and facilitation of the total life cycle cost management process. In summary, the analyst should be responsible for:

- Ensuring that an appropriate life cycle cost management plan is in place and updated where necessary.
- Supporting the programme by providing robust and credible life cycle costs in a timely manner.
- Ensuring that the life cycle costing process is appropriate, workable and supports the programme requirements.
- Eliciting life cycle cost information from both the government and contractor project teams.
- Reviewing all assumptions and contractual change notices from the project teams and advising the programme manager of any points of issue.
- Providing guidance and assistance for the cost risk analysis and associated reports.
- Ensuring the smooth running and facilitation of the total life cycle cost management process, including the regular reporting procedures.

To achieve the above in the most practicable, auditable and robust manner it may be necessary to conduct the life cycle cost analysis using multiple methods and/or independent experts. This will depend on the overall value of the likely programme costs and the level of robustness needed for the government approval process.

### **Typical applications of life cycle costing**

One of the principal objectives of life cycle costing is to reduce or control the life cycle cost by assessing the financial impacts of the decisions taken about the complete system.

Three broad classes of applications rely on the output from life cycle costing and are discussed in detail below. These are:

- Determining the forecast of future spending.
- Examining comparisons between alternative solutions (e.g. alternative assets, design trade-off, supply chain analysis, etc.).
- Supporting the tender evaluation process.

In all cases, the output of the life cycle costing provides information to support the decision making process. Note however, that cost is just one of many criteria that could influence the decision. Other criteria such as operational effectiveness, technical risk, political and industrial policy constraints, etc., also have to be considered in the decision making process and are sometimes more important than cost.

## **Determine the Forecast of Future Spending – Defence Budget Planning**





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### **Applications**

Budget planners are often confronted with choices between several distinct systems (e.g. aircraft or UAV or missiles; ships or forward bases, etc.). The life cycle cost estimate can help the decision process by addressing the following typical questions:

- In consideration of long term planning applications (~10+ years):
  - What will be the cost of the systems currently being designed (both in terms of money spent annually and of the number of service personnel required to man the systems)?
  - What is the best ratio between money spent on investment (new systems or upgrades of old ones?) and that spent in order to keep the readiness of currently available systems?
- In consideration of short term planning applications (~next 1 to 4 years):
  - How many systems (or individual platforms) can we afford (now) and still maintain some flexibility in future budgets (considering their estimated in-service costs)?

### **Examining Comparisons between Alternative Solutions**

Comparative studies are particularly valuable in the early stages of planning when the primary objective is to establish an efficient and economical course of action. Comparative studies are, actually, used throughout all phases of a system's life cycle; they are also used in selecting in-service options such as in-house or contractor support.

An analytical comparison of the operational effectiveness, suitability and life cycle cost of alternative programmes that satisfy established capability needs is referred to as AoA (Analysis of Alternatives).

An AoA broadly examines multiple elements of programme alternatives including technical risk, design maturity and cost. AoAs are intended to:

- Illuminate the risk, uncertainty and the relative advantages and disadvantages of the alternatives being considered.
- Show the sensitivity of each alternative to possible changes in key assumptions.
- Help decision makers in determining whether or not any of the proposed alternatives offer sufficient operational and/or economic benefit to be worth the cost. As a general rule, the preferred alternative is the alternative that provides the greatest amount of benefits in relation to its cost.

### **Supporting the Tender Evaluation Process**

In the tender evaluation process the life cycle costs can be used to ensure that the contract award is made to the tenderer who offers a system that meets all technical and availability requirements at minimum life cycle cost. The cost of investment in reducing maintenance resources and the cost of lifetime support will be weighed against the cost of investment in the overall system. The resulting life cycle cost will therefore be beneficial to the overall tender evaluation process.

To establish a cost-effective in-service phase it is essential to consider operating and maintenance issues at the same time as the procurement of the system. The life cycle cost from the evaluation process can often be used as a baseline for negotiation on contractor logistic support contracts.

The choice of a proper time period (system life) in the life cycle cost evaluation process must be considered. For example, many parameters can influence the selection of a well balanced time-period.

Very often the total technical life of a system may not be the most appropriate time period for the life cycle cost evaluation. A shorter time-period takes more consideration of the initial acquisition costs, and a longer time-period takes more consideration of the recurrent ownership costs.

Figure 2-1 presents the life cycle costs for two competing systems A (green) and B (red). The initial acquisition price for System B is less expensive than for System A. However, System A has



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lower annual cost for ownership than System B. At year 10 the cost-lines intersect, and after year 10 System A has a lower life cycle cost compared to System B. The example shows the complexity of choosing the “correct” time period to include in a tender evaluation. This example clearly demonstrates that the selection of a life cycle time period must be tailored and well balanced to fit its purpose.

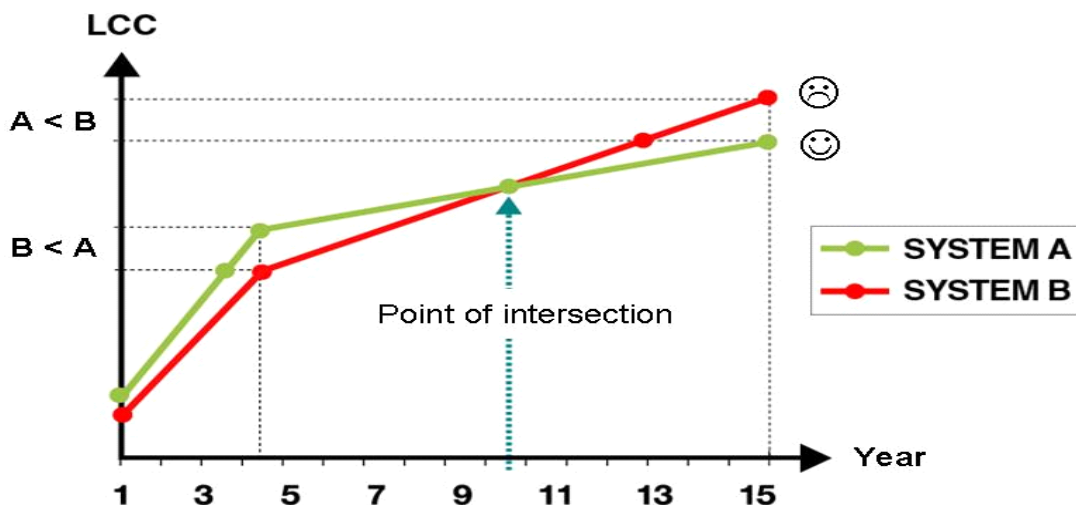


Fig. 2.1: Example of Time-Period Consideration.

To ensure that all the tenders are impartially evaluated it is vital that the cost breakdown structure is defined by the procurement agency. This should include a definition of all the cost elements. Sufficient data on the likely use of the system should also be included in the request for quotation. This will improve the prospective supplier’s ability to independently assess and possibly improve their offer.

***It is recommended that a life cycle cost questionnaire is issued with the request for quotation so that the procurement agency can conduct an independent comparative life cycle cost evaluation on all the tenders. This will improve the understanding of the tender offer and provide a degree of credibility in the life cycle cost results.***

However, before the request for quotation is issued, it is important that all the preparatory work has been independently conducted and that the Key User Requirements are well balanced between functionality and likely costs.

A life cycle cost evaluation starts with the quality of the submitted tender data. In most cases it is necessary to iterate the process several times in order to obtain clarification and to explore opportunities for improvements. Figure 2-2 shows the tender evaluation process with specific feedback to the tenderers in order to exploit opportunities for cost reduction. The tender evaluation process is completed by documenting the LCC results in an evaluation report before the contract can be awarded.



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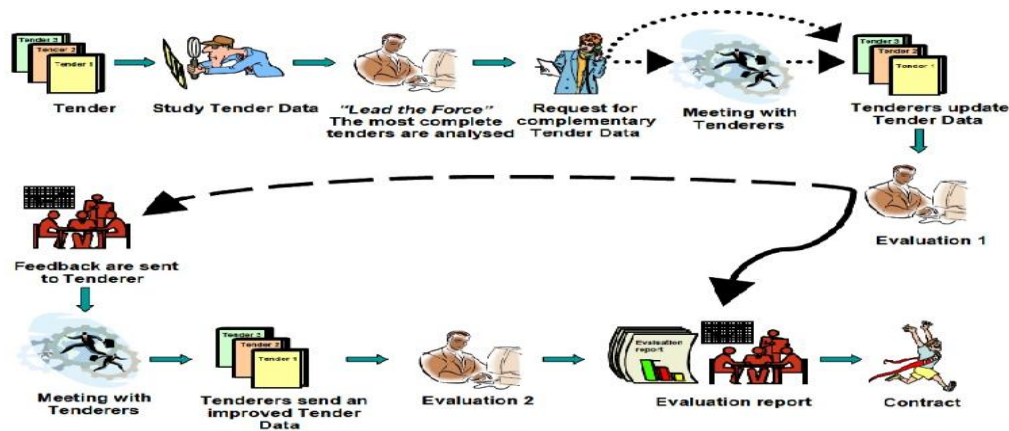


Fig.2.2 tender evaluation process

## Methods for estimate the LCC

### Literature overview

LCC analysis has been an active research area in the military sector. The other sectors appear to make acquisitions of capital items simply on the basis of initial purchase cost [Woodward, 1997]. This literature it is divided into three main approaches to estimating LCC: (i) engineering approach, (ii) analogy, and (iii) parametric method [Fabrycky and Blanchard, 1990]. Later on it was identified the use of a variety of methods.

### Overview of the methods

A different approach may be used for each area of the estimate so that the total system methodology represents a combination of methods. Sometimes a second method may be used to validate the estimate.

When choosing an estimating method, the cost estimator must always remember that cost estimating is a forecast of future costs based on a logical interpretation of available data. Therefore, availability of data will be a major factor in the estimator’s choice of estimating methodology.

The best combination of estimating methods is the one which makes the best possible use of the most recent and applicable historical data and systems description information and which follows sound logic to extrapolate from historical cost data to estimated costs for future activities.

An example of this is would be to use data gathered through expert opinion combined with methods for simulation to obtain reliable data to conduct simulations on different support behavior.

These values can then be used in the parametric techniques employed in estimating the total life cycle costs for the programme.

The following table shows how the methods have been organized for easy reference.

Method Category	Methods	Method Category	Methods
Optimisation	Linear programming	Heuristics	
Simulation		System Dynamics	
		Discrete Event	
		Monte Carlo	
Calculation/Estimation		Analogy	



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				Parametric Bayesian Engineering Catalogue Rule of Thumb Expert Opinion
Decision Hierarchy Process	Support	Analytical		Multi-Criteria Analysis
				Decision

**Table 1**

A short description for some of the most frequent use of the methods will be presented in the next pages.

**Engineering Approach**

The engineering approach assigns costs to each element of the asset and then combines them into a total for the whole asset. This approach is time consuming and requires a huge amount of detailed data to perform the calculations. Sandberg et al. (2005), for example, presented a model for LCC prediction in the conceptual development of jet engine components. The model evaluates manufacturing and post-manufacturing activities and gives LCC feedback on potential design changes.

**Analogy Approach**

The analogy approach uses similar systems to estimate cost when needed data are not available. This method is used to gain a rapid assessment of the LCC of a new system. Compared to the engineering approach, this cost comparison method has the significant advantage of exploiting relatively few data. But it has the drawbacks of being relatively inaccurate and requiring a high degree of judgment to draw analogies. To study how the costs of maintaining military aircraft change as aircraft age, Dixon (2006), for example, used an analogy between commercial aviation and military aviation. The author found that airline maintenance costs grow at a fairly sharp rate in the first six years of age, increase moderately between 6 to 12 years, and grow slightly after the 12 years of aircraft ownership. This study also suggests that different types of aircraft maintenance costs, e.g., airframe maintenance versus engine maintenance, may show different cost patterns. Even if one can assume that the commercial airlines’ experience is meaningfully analogous to the Air Force’s experience, there are limits to this analogy. No profitable commercial airline would operate an aircraft like the military do. For instance, military aircraft commonly fly 500 hours per year whereas commercial aircraft fly thousands of hours per year.

**Parametric Approach**

The parametric approach applies econometric techniques to historical data to identify the major cost drivers of a given system and determine their effects on its LCC. The estimated parameters are then used in the cost estimating relationships of the analyzed systems. A growing body of literature recognizes the parametric method as an effective approach to forecast the LCC. Brandt (1999), for example, formulated a parametric cost model to determine the annual O&M costs of U.S. Navy surface ships. Using standard regression and data analysis techniques, the author developed cost estimating relationships for three major cost drivers: ship light displacement<sup>1</sup>, ship overall length, and ship manpower. Kiley (2001) used regression analysis to estimate the relationship between an aircraft’s characteristics and operating tempo and its O&M costs. Results indicate that spending on



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O&M for aircraft increases by 1% to 3% for every additional year of age, after adjusting for inflation. Younossi et al. (2002) explored most of the possible performance and technology parameters that affect the development and production costs and the development schedules of engines. These authors employed least-squares regression methods to develop a series of parametric relationships for forecasting the development cost, development time, and production cost of military turbofan engine programs.

Other methods have also been suggested for life cycle costing. Emblemsvag (2001), for example, suggested the activity-based costing (ABC) method to estimate the life cycle cost. This accounting-oriented methodology identifies activities and segregates their direct and indirect costs to identify their respective cost drivers. ABC has mostly been used in fixing the price of products and improving production processes. However, ABC requires extensive activity-cost data and is not easily employed to forecast the life cycle cost. The literature has also used the proportional models to estimate the life cycle cost. These models predict the future O&M costs of aircraft, for example, simply by multiplying the historical cost per flying hour and the estimated number of flying hours (Wallace et al., 2000). Wallace et al. (2000) showed that these models are not able to adequately predict future costs during periods of radically different flight behavior. They indicated that during the First Gulf War proportional models overestimated removals by more than 200%. Unger (2007) stated that the proportional models may misestimate budgets when the relationship between cost and usage is either nonlinear or includes nontrivial fixed costs. The presence of fixed costs in the average cost factor would cause an exaggeration in estimated budget for a given number of flying hours. More recently, Maybury (2011) showed that the forecast of national procurement spending could not be improved using flying hours as an explanatory variable.

The literature has also used multimethodology or mixed methods to enhance forecasting quality. Parker (1991), for example, used an accounting model and a parametric model to evaluate alternative configurations within the same life cycle cost model. The accounting model was used to examine activities such as planning, engineering design, production, distribution, maintenance, and equipment disposal. The parametric method was utilized to determine cost estimating relationships during the cost determination phase of life cycle costing. More recently, Desmier (2012) used analogy and parametric approaches to forecast national procurement costs for F-35A aircraft. The author based his analogy on the assumption that the F-35A fleet fulfills the same mission profiles as the CF-18 fleet. Considering life cycles of 20 and 30 years, the parametric approach used the spending and usage history of the CF-18 fleet to define the trend in spending for the F-35 fleet. An interesting review of published case studies can be found in Korpi and Ala-Risku (2008). This paper also provides directions for further research on the LCC concept.

While many important findings have been reported in the military sector, the existing models on LCC still suffer from a lack of generality and simplicity. The existing models are usually tied to specific systems. These models cannot generate general insights because their validity, assumptions and results need to be tied to data from these specific systems. The lack of generality and simplicity also seems to be an unavoidable consequence of the use of time series theory while building models. Another feature of the existing models is that the project horizons remain highly arbitrary. LCC is not always bound to the optimal replacement horizon. A key implication of the arbitrary horizon is that overall costs of equipment are reduced (amplified) if the horizon is considerably shorter (longer) than the optimal age.

Building on the existing literature, this paper seeks to address these deficiencies. Generality and simplicity are achieved by developing a minimal model that focuses on the most relevant aspects of equipment. As discussed in Greenfield and Persselin (2003), Maybury (2009), and Sokri (2011), age is thought to replace all related factors affecting the equipment O&M costs. For an aircraft, examples of such factors include (but are not limited to) engine cycles, number of sorties and flying



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hours. The range of applicability of such formalism is very large. It can be applied to any kind of heavy military equipment. A dynamic programming procedure is also developed in this paper to identify the optimal planning period. This planning period, referred to below as the optimal assessment horizon, is the length of time costs are accumulated. It actually corresponds to the optimal replacement horizon of military equipment.

## **Models of the LCC**

### **Definition**

In everyday cost analysis language, the terms models and tools are often used with the same understanding.

*“A Cost Model: is a set of mathematical and/or statistical relationships arranged in a systematic sequence to formulate a cost methodology in which outputs, namely cost estimates, are derived from inputs. These inputs comprise a series of equations, ground rules, assumptions, relationships, constants, and variables, which describe and define the situation or condition being studied. Cost models can vary from a simple one- formula model to an extremely complex model that involves hundreds or even thousands of calculations. A cost model is therefore an abstraction of reality, which can be the whole or part of a life cycle cost.”*

Using this definition, both a graphic description of the relationships that represent the abstraction or simplification of reality as well as a series of connected, specially developed computer programmes, can be a model.

### **Overview of models**

This section is presenting different models that are currently in use by the nations. The first conclusion that can be drawn from the matrices is that no specific model for a certain phase is mandatory for any nation. Many nations do, on the other hand, have some recommendation on what type of model that should be used.

To begin with, among the models used by the nations, four different types of models have been categorized. These are: models for optimisation, simulation, estimation and for decision support. Each is briefly described below.

### **Estimation Models**

This represents a broad spectrum of models that are used at the core of the life cycle costing process.

Estimation models are all types of models dealing directly with the estimation and calculation of cost.

The estimation of cost can, in turn, be supported by some other type of method, but in the case of the estimation model the main objective is to come to some sort of conclusion as to the level of cost for a system or sub-system.

Since this is a wide model category there are many examples of the estimation type models being used, both in terms of commercially available and those developed in-house. One common feature often found is that all the models employ a defined cost breakdown structure. These models are often tailored to a specific programme and, for those developed in-house are often implemented in a spreadsheet environment.

### **Decision Support Models**

In this category, many types of operational research models with the purpose of choosing or ranking between different alternatives can be found. The models are typically based on soft



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management science approaches such as analytical hierarchical process or on multi-criteria decision analysis techniques.

### **Simulation Models**

This category contains all the models based on one of the simulation methodologies outlined **Table 1**.

This therefore includes models using system dynamics and discrete event simulation. In addition, models using Monte Carlo simulation have also been included.

### **Optimisation Models**

This category contains all the models that are based on some type of optimisation method, be it mathematical programming, heuristics, or other types of optimisation approaches. These models are most frequently used as support methods for the life cycle cost estimation process. For example, they are frequently employed to determine stock levels, maintenance regimes and supply chain impacts.

### **Desired model attributes**

The characteristics of a high quality cost estimates are:

- Accuracy;
- Comprehensiveness;
- Ability to Replicate and Audit;
- Traceability;
- Credibility; and
- Timeliness.

Each of the above should demonstrate these quality characteristics in the following ways:

- **Accuracy** – Cost estimating relationships (CERs) will be the result of regression analysis with good curve fits and minimal error bands, making them valid predictors of cost. Estimates should be unbiased, not ‘low balled’ or overly conservative, but based on an assessment of the most likely costs. Underlying data will have been correctly normalised for technical baseline and for inflation using appropriate guidance. The time phasing of the estimate should also be logical and accurate.

- **Comprehensiveness** – Estimates should use a cost breakdown structure that is at a level of detail appropriate to ensure that cost elements are neither, omitted or double-counted. All the cost driving ground rules and assumptions must be detailed in the documentation of the cost estimate.

- **Replicability and Auditability** – The estimate should be presented in a cost breakdown structure and work breakdown structure that is fully traceable to the system specification. The estimate documentation should include source data, significance and goodness of fit statistics for CERs, clearly detailed calculations and results and explanations for why a particular method or reference was chosen. An independent reviewer must be able to follow the estimating process, repeat the calculations and arrive at the same answer.

- **Traceability** – Data should be traceable back to the source documentation.

Without these characteristics the estimate will not be **credible**, which is the most important quality of a good estimate and the benefits just discussed will be much harder to realise. Finally, an estimate must be **timely**. The best estimate in the world does no good if it is too late to provide decision makers the insight needed.

A cost model must therefore be able to demonstrate that it meets the characteristics listed above and is fully documented in order to justify the life cycle cost estimate produced.



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## Life Cycle Cost and Models

### Life Cycle Cost Tree

The basic tree for LCC starts with a very simple tree based on the costs for acquisition and the costs for sustaining the acquisition during its life as shown in Figure 5.1.

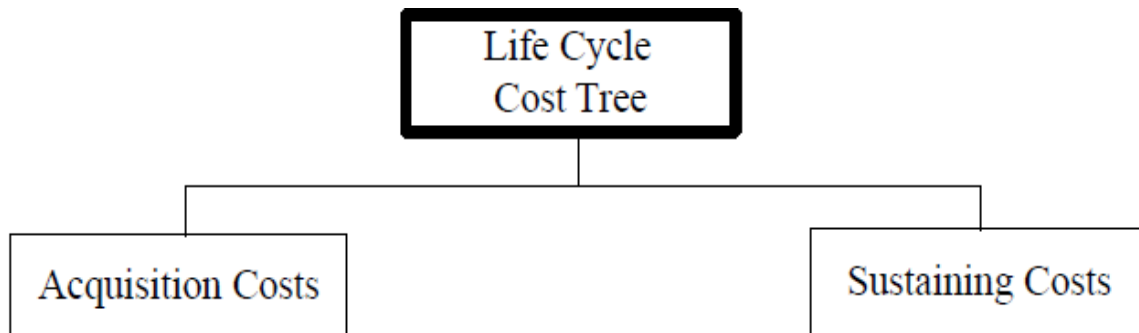


Fig. 5.1

Acquisition and sustaining costs are not mutually exclusive. If you acquire equipment or processes, they always require extra costs to sustain the acquisition, and you can't sustain without someone having acquired the item. Acquisition and sustaining costs are found by gathering the correct inputs, building the input database, evaluating the LCC and conducting sensitivity analysis to identify cost drivers.

The first obvious cost (hardware acquisition) is usually the smallest amount of cash that will be spent during the life of the acquisition and most sustaining expenses are not obvious. Finding LCC requires finding details for both acquisition and sustaining costs with many details involved in the effort

Acquisition costs have several branches for the tree as shown in Figure 5.2.





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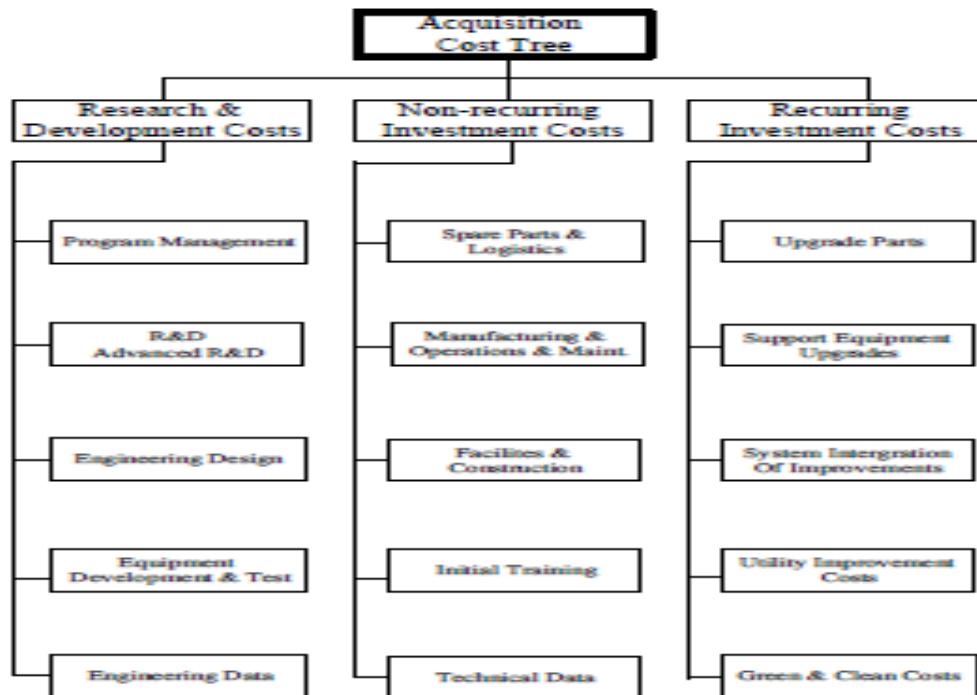


Fig. 5.2

Each branch of the acquisition tree also has other branches which are described in detail in other references [SAE 1993] and [Fabrycky 1991].

Sustaining costs have several branches for the tree as shown in Figure 5.3.



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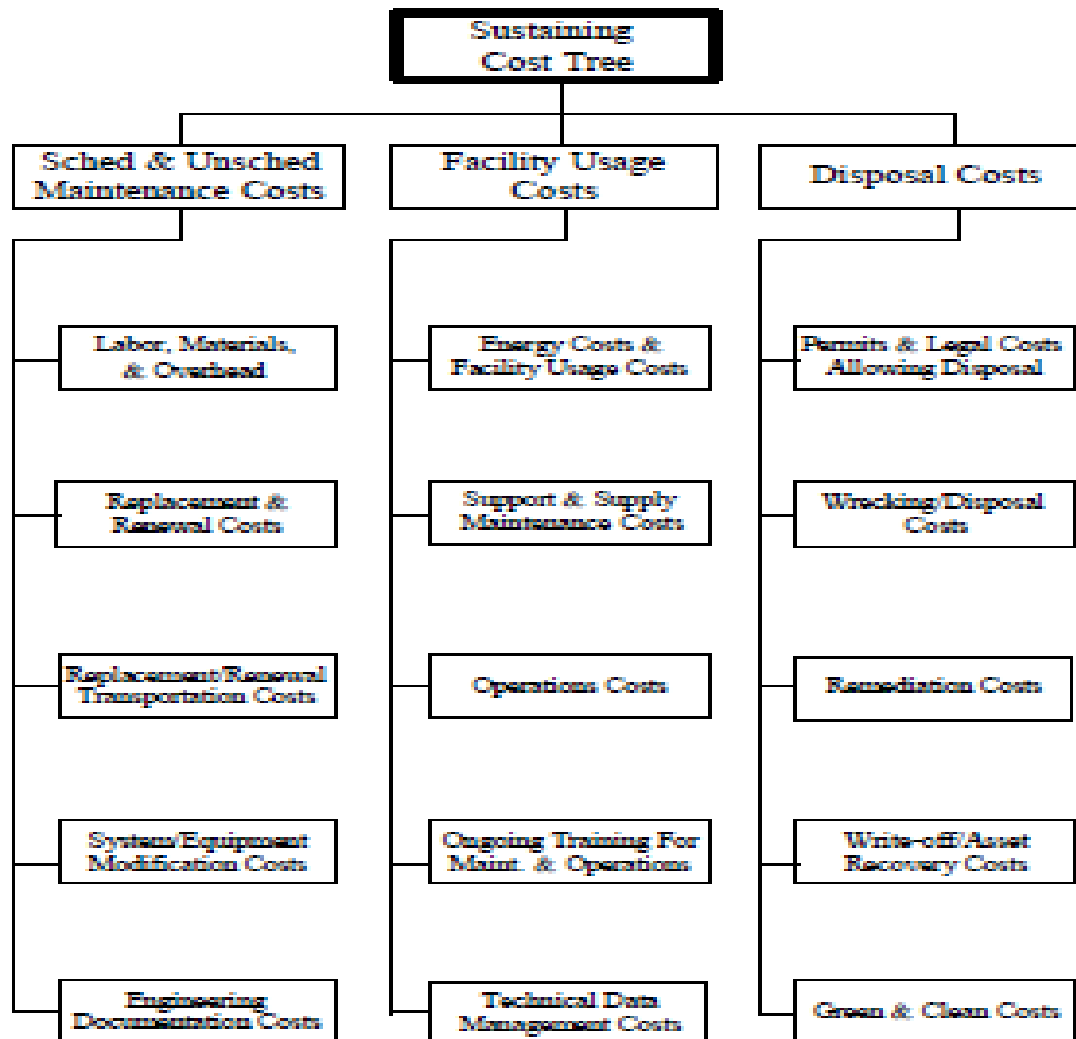


Fig. 5.3

What cost goes into each branch of the acquisition and sustaining branches? It all depends on the specific case and is generally driven by common sense. Consider the details under each category which is shown below. Of course, building a nuclear power plant to generate electricity requires special categories under each item of acquisition cost and sustaining cost. Building a pulp and paper mill or modifying coker drums at a refinery to prevent characteristic over-stress which occurs during quench cycles would have different cost structures than for building a nuclear reactor.

Include the appropriate cost elements and discard the elements which do not substantially influence LCC.

Consider these alternative LCC models as described by (Raheja 1991):

- 1) LCC = non-recurring costs + recurring costs,
- 2) LCC = initial price + warranty costs + repair, maintenance, and operating costs to end users;
- 3) LCC = manufacturer's cost + maintenance costs and downtime costs to end users.
- 4) LCC = acquisition costs + operating costs + scheduled maintenance + unscheduled maintenance + conversion/decommission.



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**Example of LCC model**

SAE (SAE 1993) has a LCC model directed toward a manufacturing environment  
The SAE model breaks down the costs as shown in Figure 5.4.

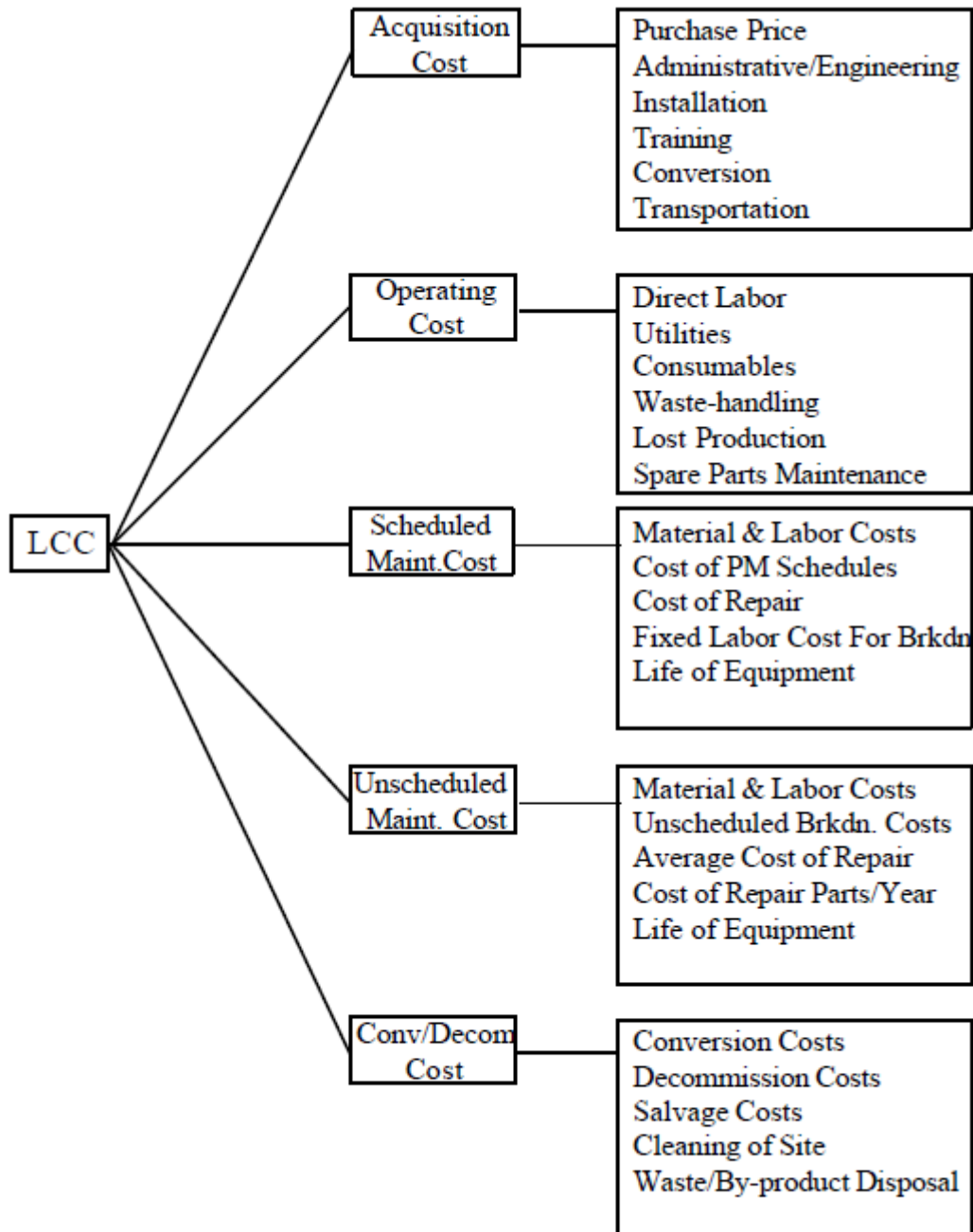


Fig. 5.4

The LCC models above, and much more complicated models described in the British Standards BS-5760 (BSI 1983), include costs to suppliers, end users, and “innocent bystanders”—in short, the costs are viewed from a total systems perspective. LCC vary with events, time, and conditions. Many cost variables are not deterministic but are truly probabilistic. This usually requires



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starting with arithmetic values for cost and then growing the cost numbers into the more accurate, but more complicated, probabilistic values.

### **Model case study for C-27J Spartan**

#### **General consideration for “in-house” parametric model**

The analysis is based on C-27J aircraft fleet, composed from 7 aircrafts. The time frame is 2014 - 2018.

The lifecycle costs analysis was completed and is presented as a comparison for two separate options: repair costs versus exchange costs for 5 years.

The analysis was also completed with two separate utilization scenarios: 150 flight hours per aircraft annually and 200 flight hours per aircraft annually.

The most likely maintenance model was chosen based on the follows:

- Aircraft spares (including estimates for parts with high replacement rates such as tires)
- Scheduled programmed interval maintenance and inspections
- Major component and airframe overhaul maintenance (e.g. propeller, landing gear, power plant overhauls)
- Operating costs, e.g. fuel, fuel additives, lubricants, oxygen, etc.
- Training for maintenance and navigation personnel is included
- The initial investment cost is included and it was shared for the 30 years.

Application of this model it have the purpose to identify the maintenance costs as part of the LCC. This model could be extent/modified with other inputs in order to keep a most accurate LCC of the C-27J fleet.

#### **Costs and calculation of the LCC**

The LCC was calculated, basically for the two flight profiles (150FH and 200FH) and based on two maintenance approaches (cost of spares repairing and cost of spares exchange). These two maintenance approaches is giving minimum costs and bigger time of return for repairing and bigger cost and minimum time of return for exchange.

Acquisition cost is equal and is shared annually on the entire life cycle of the aircrafts.

Scheduled maintenance includes all types of checks incurred within the time frame.

Unscheduled maintenance does not include manpower, but includes repairing costs (repairing/exchange).

Services, includes annual fixed costs referring at Technical Publication Updating and Technical Assistance – on line support.

The minimum pool of spares cost is considered based on fixed price of the spares for every year as is in the annex of the maintenance contract.

Operational costs include POL (Petroleum, Oil and Lubricants) products costs and training of the personnel air and ground crew based on the two flight profiles.

The acquisition costs is presented in the next table and results from the unit price of acquisition for one aircraft divided with 30 and then multiplied with the no. of the aircraft.



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<b>Acquisition cost - shared</b>	.521.66 9	.521.66 9	.521.66 9	.521.66 9	.521.66 9	<b>2.608.34 5</b>
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**Table 4**

Scheduled maintenance, unscheduled maintenance and services costs are presented in the table no. 5, 6 and 7, the figures were calculated starting from the price catalogue, with a historical data base assumption for the unscheduled maintenance which could occur.

<b>Scheduled maint. Costs</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>TOTAL</b>
<b>Repair Costs</b>	22.929 <sup>5</sup>	10.590 <sup>2</sup>	678.595 <sup>1.</sup>	94.419 <sup>5</sup>	96.731 <sup>5</sup>	<b>603.264<sup>3.</sup></b>
<b>Exchange Costs</b>	01.368 <sup>6</sup>	37.221 <sup>2</sup>	035.791 <sup>3.</sup>	78.280 <sup>6</sup>	76.881 <sup>6</sup>	<b>229.541<sup>5.</sup></b>

**Table 5**

The pool of spares costs is also considered based on historical database and by an estimation of a defection rate, total figures being calculated by product between unit price and estimated quantities.

<b>Pool of spares</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>TOTAL</b>
<b>Spare &amp; Consumables Acquisition</b>	400.000 <sup>1.</sup>	50.000 <sup>8</sup>	00.000 <sup>6</sup>	200.000 <sup>1.</sup>	400.000 <sup>1.</sup>	<b>450.000<sup>5.</sup></b>

**Table 8**



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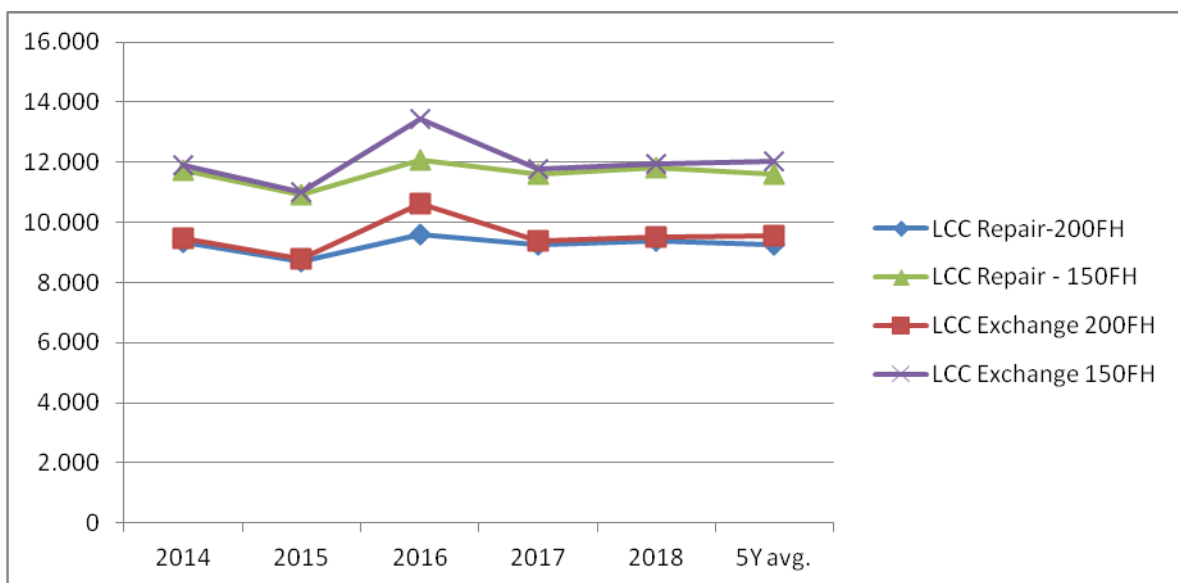


Operational costs were calculated starting from initial offer made on tender process by the year 2006 after which was applied a multiplication factor of 4 units.

<b>POL &amp; Training</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>TOTAL</b>
<b>POL - 200FH</b>	.140.60 0	.140.60 0	.140.60 0	.140.60 0	.140.60 0	<b>0.703.00</b>
<b>POL - 150FH</b>	.605.45 0	.605.45 0	.605.45 0	.605.45 0	.605.45 0	<b>8.027.250</b>
<b>Training for Crew + Eng - 200FH</b>	87.600	87.600	87.600	87.600	87.600	<b>8.730.250</b>
<b>Training for Crew + Eng - 150FH</b>	65.700	65.700	65.700	65.700	65.700	<b>6.757.500</b>
<b>Operational Costs - 200FH</b>	.028.20 0	.028.20 0	.028.20 0	.028.20 0	.028.20 0	<b>5.141.000</b>
<b>Operational Costs - 150FH</b>	.271.15 0	.271.15 0	.271.15 0	.271.15 0	.271.15 0	<b>1.355.750</b>

**Table 9**

A graphic representation of the Life Cycle Cost for the next 5 years is illustrated on the chart below:



**Fig 6.1**



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### **Conclusion**

Life cycle costs of a system consist of all costs to be made by the owner of the system from the whole procurement process (design, production, acquisition, et.) to the end of service and disposal. A very useful instrument for decision on acquisition process, but still an estimation depending on the inputs requested. I consider it is more useful to forecast the future expenses of a system.

This is a generic definition of Life Cycle Cost and does not give a decisive answer about how the elements or expenses can be attributed to a system. In fact many nations uses their own approach to calculate the LCC, based on their available information and on the acquired system. There are many models, including mathematic models, but nations are also developing “in-house” models which are more appropriate to their needs.

Concerning the case study results is it obvious the fact that less flight hours we fly the higher costs we pay. But the chart presented shows us also a very useful information about strategies should be applied to the budget and contract management, due to the fact the exchange approach (red line) of flying 200 hours it costing less than repair approach (green line) of flying 150 hours. That means is more effective and less timely consuming (shorter terms of delivery) to repair spares by exchange in the case of flight profile of 200 hours instead of flying 150 FH and choosing the repairing approach which have longer time of delivery.

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**SUSTAINABLE DEVELOPMENT – ECONOMIC AND SECURITY  
ISSUES**

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**Abstract:**

Sustainable development analysed from economical and security perspective have multiple aspects interconnected. If from economical perspective we can make predictions using the available tools and indicators about efficiently balancing between present and future actions or investments, from security perspective, issues are more sensitive and complicated in terms of unstable environment and in terms of necessity to assure security now but also in the future. One of the main aspects regarding this is the strong interconnection between economy and security, as parts of an entire system. Inputs from economy are used in providing security, but also the security provided or not influences almost directly the economic development.

*Key words: sustainable development, security, technology, long term, progress.*

**Introduction**

"Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs." [1]

Development generally means progress, which is desirable for the society. In order to advance in the future, sometimes is necessary to sacrifice the present (generation of sacrifice, or “save now for tomorrow” are good examples of this concept). But in real life sometimes is adopted the reverse approach and for our welfare we sacrifice our children chances. Going deeper and deeper in debt or in deficit may come with the assumed risk that somebody else will finally pay our expenses. Like in a family, our society borrows money now and pay later with an attached interest. If debt is for consumption only, it is obviously not so desirable. But if debt is for investing in something that will last in next years, there is a debatable issue taking in considerations the permanent evolution in time of needs, of technology and the general decrease of costs involved. As an example, a family who borrowed 20 years ago a large amount of money being in debt and paying interest until now, just to buy a state of the art computer at that time, will be in the situation to made sacrifices for future but with poor results in terms of efficiency. To make a development sustainable must take in consideration the balance between now and tomorrow in both senses. We do not have to sacrifice the present or the future. Constructing a highway today (a good thing overall) we must think that our children will pay for that and they will have less money to invest at that time in teleportation for example. On the other hand, if we save money now and do not invest in infrastructure we may find in situation that our children can not even think in developing new technologies because they can not even go to school as a cause of a poor road infrastructure. Development must be well managed and we must think on long term about this balance between present and future.

Same problem of balance can be identified and in security of a society, but with more sensitive aspects. If in economical terms we can do analyses regarding future values, return of investments rate, multiannual cash-flows, forecasts, trends and measurements of utility, in security terms the problems are more unpredictable. In that reasoning, we can not sacrifice our present security for future security (means saving now for the future investments and research of new types of equipments) because if we do that thing can be very risky for our and also for the next generations. If we are not able to assure





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our security now, tomorrow can be too late and money which we just saved can be lost, the economy can go down and we can put in doubt the development of the entire society. On the other hand we must see things as a process in permanent evolution and we must take in consideration not only the present but also the fact that we must adapt to the future new technologies and the necessity to have a more proactive attitude regarding security development instead of a reactive one.

### **Sustainable development from economical perspective**

There is an interconnection between economic, social and environmental goals of humanity, the ideal been a socially inclusive and environmentally sustainable economic growth. With the help of recent technologies can be made predictions about the future world taking in consideration larger amount of data, an increasing number of available indicators and can be simulated scenarios with different courses of action. These simulations can be run introducing data about population, growth rate, age distribution, distribution of wealth, existent natural reserves, economic data about industries, agriculture. Of course, we can not control everything, but in major or sensitive areas we can give some directions by taxes on pollution, measures on fuel consumption, interdiction of destructive technologies or investing in sustainable measures.

#### **Population**

From economical perspective sustainable development must face a big problem of social inequities inside of a generation but also between the generations [2]. The exponential growth of the population and the finite space available on the planet can make the problem of space needed an important one. Inequality of income distribution and consumption between different social categories, with malnutrition in some places of the globe is an argument that the way of development adopted is not in the advantage of the global society. Similarly, if our generation consume the majority of resources available on the planet and for future generations we no not allow having forests, clean rivers, fossil combustibles, and even a breathable air we must think if it is ethical or not and if we do not condemn humankind to extinction through our actions.

Of course, in the last years the problem of population growth in a limited space was resolved somehow by new approaches. For example, the expansion of living spaces was not made only on the horizontal but also in the vertical space by constructing skyscrapers.

A solution adopted in some countries regarding the increase of the people in an limited space consists in measures of birth control (like "one-child policy" in China)

Maybe the problem of exponential growth of the population has its regulator in pollution, ending of resources and starvation as a self capacity of a system to adapt.

#### **Food**

Food production is a research theme for scientists in order to adapt to the situation of increasing demand and the limits of land available. If we take in consideration that by population increase the total surface of arable land (as a primary resource) is decreasing in order to be transformed in living spaces, the problem is even more complex.

Of course, from technology (mechanisation, fertilizers, genetic transformation, production of synthetic food) some steps ahead have been made, but we can not hide the facts that always are secondary effects, on short or long term. Mechanisation consumes resources of fossils combustibles, fertilizers produces pollution with negative health effects, genetic transformation is also a debatable issue in terms of ethics and synthetic food comes with increase of resources and possible health issues.



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The intensive agriculture is more and more used as a solution but the direct relation to the capital needed raise again the social inequity issue. In industrialised countries is a normal way of food production but in poorer countries is only a dream.

One solution adopted in order to obtain a sustainable development in food production was crop rotation (with purpose to give nutrients to the soil, to make an effective pest control and to reduce the erosion).

The agroforestry is based on idea of combining in same area trees, shrubs, crops and livestock for creating a sort of ecosystem that have a better impact on the environment. Also the greenhouses can improve production of plants in almost every season.

Composting technology can also give a new use for organic waste and transform it in fertilizer been used in organic farming

### **Capital**

The world trade system has a huge impact on wealth distribution, in access to food, water or resources. The globalization is more and more active in the way in which the goods and services pass the boundaries, electronic commerce is a tool in development of a free market but we must not forget that there are still areas on the globe that do not have access to technology, to a reliable transport infrastructure or even to sources of potable water. The capital flow around the globe takes us in the situation in which the rich will be richer and the poor will be poorer.

Also the existing capital on the planet is limited. It is true that by technological advance, there is an increase in productivity but also we must consider the fact that pollution increased, with consequences in health population and in global equilibrium. Extinguished species are a consequence of massive industrialisation.

The transportation is responsible for a large part of greenhouse gas emissions. If we can find a feasible solution to produce the goods needed near the consumption places that thing can be a great step ahead. Of course, the specialization, the availability of resources and the qualification of the personnel can be barriers in that model of optimisation, but we must think twice if it is good for environment to buy a bottle of water transported from hundreds or thousands of kilometres, with a huge consumption of resources.

Of course, free market has its own mechanism of price regulation, because the transportation is not for free. On the other hand the freedom of movement of goods, services, capital and people is a fundamental right. The possibility to communicate via internet with people at long distances in some cases reduce the need for people to travel but in most of the cases the modern man has a in its blood the desire to commute, to go on trips, on holydays, to knew new places and new peoples. That has a direct effect in quantity of chemical substances released in the atmosphere, in the materials used for roads, airplanes or cars, in fuel consumption.

If the reason for increase of transportation is the fact that the human is a social animal, we must consider that the estimated population was in 1800 about 7 times less then now, sharing almost same areas and the communication was not so “instant” as in our days.

About inequities in world distribution of income, we must see that as an evolving process, and to reanalyse the data and to observe that are some tendencies in different spaces on the globe and to avoid the preconceptions and myths. It is all about how data can be used and can be presented in an easy to understand manner [3].

If we see every human as a shareholder of the planet, the increase of the population will minimize the unitary value of its own share, even in an ideal state of equal distribution of wealth. Of course, technological progress can increase the value of the entire enterprise but in case of insolvency, even those who have more than one share in the end will have nothing. That is why must be a common goal to make our planet to develop in a sustainable way.



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### **Pollution**

In terms of pollution, the increasing quantity of residual substances released in the environment can have a delayed effect. Part of these pollutants can be absorbed, but another part can be introduced in natural cycle with side effects on long term and on wider areas. For example a chemical substance used in agriculture can be absorbed in plants, in land, in water, can be dispersed in air by evaporation, taken by wind to the oceans, eaten by fish and finally ingested by humans. This cycle can last a longer period and if the decision of stopping the use of that substance can be made now, there is a long interval of time until the effects can disappear, maybe decades. [4]

One solution for reducing the pollution generated by transportation is the encouraging of biking and walking by creating pedestrian zones in crowded cities and routes for bicycles simultaneously with increasing of fees and taxes for automobiles, parking and fuel prices. For sure this solution may have its own disadvantages and can not be applied on a very large scale, but if we consider also the benefits in increasing health maybe worth to be taken in consideration, even if must be made and some arrangements in time of effective work, because on same distance you have different speeds for walking, biking or driving (with some exceptions), and this solution can have a impact on the time available for work.

Maybe we must think about work from home in some professions as a solution to reduce pollution and maybe we can find solutions to encourage that practice by fiscal measures for example.

A solution in managing pollution is selective waste collection with the main purpose of recycling materials. The production of goods with a longer lifetime may reduce the quantity of waste disposed but it is not so wanted by producers because of the sales decreases on the long term.

### **Resources**

In terms of use of resources, starting from the presumption that the natural resources are not infinite, we can draw the conclusion that with a higher level of demand and a lower level of offer, the prices will grow up. A consequence of higher prices must be, logically, the decrease of consumption. If the decrease is viewed at global level that may be like a regulator but, in practice, even that the average level of consumption per capita may drop, there are inequities in distribution of goods consumed.

The sustainable development has its own limits set in the limits of the planet, viewed as a finite system of resources. Why not to think much larger and see space colonization as a feasible alternative not only as a theme for movies? The technology grew up in the last decades and such solution is not so far from our times. Of course, there are a lot of costs involved in research phases, a lot of things that must be considered, but if we think that before 1973 a mobile phone was only described in fiction works as a dream, and now we talk about smartphones, geographical location, mobile banking and mobile internet, that approach of space colonization seems not be so unrealistic.

Some of the essentials resources needed are used to produce energy and the problem consists in the relative finite quantity available. As solution are considered nuclear energy, energy of the waves, solar panels and wind turbines. If these can be developed on a large scale and with lower costs, the limited resources problem can be partially resolved.

### **Sustainable development from security perspective**

#### **Classical resources**

The scarcity of resources it is a potential source of tension or crises [5] and even for a war. The conflicts like that in Iraq can influence the price of oil on the global market, the link between economy and security becoming visible in such cases.



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As a consequence of the economic crises and inevitable budgetary cuts, as a NATO member “we need to be aware of the potential long-term negative effects if we implement defense cuts that are too large and disproportionate”[6]. The allocated budget can be viewed as an indicator of sustainability of defence sector [5].

In building a predictable and stable environment for Romania, the foreign policy will focus on consolidation of its role in NATO and enhancing the contribution to the adjustment of the international security systems to the demand of the globalization. [7]

The arms race was considered one of the main problems of the humanity [4] and social stability and peace as a condition for economical development. That means that the security must not be treated as a barrier in front of development. Instead, we must see the security of a nation, of a region or of entire world as a prerequisite for social peace and economical development.

An important aspect in maintaining security according with principles of sustainable development is the fact that fossil combustibles are in a finite limited amount on this planet, in conditions of an increasing consumption. Looking for alternatives sources of energy is not only NGOs business but also must be a research theme for the military system. In a medium or long term approach, we must take in consideration the transition from classical equipments functioning with this type of fuel to new technologies (electric, solar, wind). If now this is not feasible and might be a dream, in perspective we have to think about it because at a specific moment in time the reserves will be finished.

Regarding waste management problem and the fact that some materials used in the military system are not biodegradable, if we think on long term about limited capacity of our planet to store the garbage, we must take in consideration the fact that it is needed a strategy on that domain.

If we think at nuclear energy as a form of alternative energy not only as a use in weapons systems, the long term or the sustainable approach must take in consideration management of the risks associated, remembering the problems faced by society only from an accident like that in Chernobyl in 1986.

The potential use of weapons of mass destruction in a military conflict can affect not only combatants and civilian personnel but can destroy an entire natural habitat, with effects on long term.

### **Technology**

The development of technology raised a new kind of problems concerning security. In our days the subjects of hacking, cyber attacks, phishing, identity theft or tracking are not reserved only for specialists. The technology can be a tool in hands of government but also in hand of „bad guys” (individuals or smaller or larger organizations or even states). In future security will no longer be involved only cannons, airplanes or ships but also will be involved hardware (sensors, radars, cameras, satellites), software (for surveillance, for monitoring, for decision making) and, most important, people with high IT skills. For the global security as a step in achieving economic growth it is necessary a very close approach on what means technology, what are the implications, what are the new vulnerabilities and how can be resolved the new problems.

In history was proved that the technological advancement of society sometimes came from the defence sector. „World War I heralded major advances in aviation; and World War II brought advances in computers, radar, semiconductors, rocketry, antibiotics, communications, semiconductors, and countless other advances led by state-supported research [...]”[8]

The sustainable development in security area can be viewed and as a development of the current infrastructure and equipments thinking on the long term about possibility of sustaining the operating and maintenance expenditures. The life cycle cost concept must be viewed as a tool in a responsible analysis of the future implication in acquiring a new type of equipment. In procurement process must be taken in consideration not only the price offered but also the entire picture of later costs and of



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salvage values. It is a big challenge in estimating operating costs in an uncertainty regarding viability of products, the rate of use, the environment in which will operate. But the real difficulty is to transpose those costs in a number of quantifiable criteria in order to make possible choosing of the offer most advantageous from economic point of view with a high degree of objectivity.

Measuring sustainability of a system can be a difficult job without a set of indicators that can be monitored in order to make adjustments for obtaining the desired results. It is necessary an approach based on an analysis in terms of costs involved and outcomes resulted, mandatory on long term. It is hard to foresee the facts in terms of decades or centuries when the day of tomorrow it is uncertain, but we must see the big picture, the overall goal and the direction. The speed is useless if you go in the wrong direction and can be even destructive if the direction is to an abyss.

### **Conclusion**

At global level, a more crowded planet [8] can be a factor of possible fight for resources with consequences even in the survival of the humanity if are not taken in considerations alternative ways for a more efficient use of existing resources without destroying „the infrastructure” which is our planet.

The answer of the question who governs the sustainable development can be hard to be given [9]. On the other hand there are a series of multinational companies that take active measures in this domain, spending huge amount of money for better environmental performance.

If we all of us think only in terms of imediate time and nearest space [4] we do not see the large picture and we can be in a farmer position which is so concentrated on own crops and not see the world war that will affect him (and his crops) or in a firm so devoted to produce some goods without seeing that these goods are no longer needed or demanded. We must adopt a much larger perspective in terms of time and space and do not concentrate on the problems from here and now (important or not, urgent or not). We must adopt a top to bottom way of thinking, starting from long term planning to short term actions and from top level of an organization to the lower levels of implementing our plans.

We must see the security issues not only on short term but in the perspective of a sustainable development with a permanent view of the future as a whole not only in some specific areas.

The decision of do nothing regarding sustainable development it is a way to collaps. After knowing the situation and seeing the right direction, even one small step if is made by a majority of people, can make the difference.

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## THE IMPACT OF FORMAL VERSUS INFORMAL REWARDS IN A MILITARY ORGANIZATION

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### Abstract

During our life time, we experience situations in which we must motivate or be motivated, to overcome the challenges. We learn what tools to use and how to do it, by observing what our parents or elders do, or by the education we receive. Most organizations have formal motivating systems, which consist of formal rewards and guidance, when and how these tools should be used, by whom and towards whom. Leaders’ personal know-how reveals that besides the formal rewards, there are informal rewards that might be used to motivate employees, which augment the formal rewarding system. These informal rewards are derived from the structural improvement of the organization, are adapted in accordance with the managerial conduct and act as an interface between employees’ queries and their supervisors’ good will. Nevertheless, they are mostly used for situations which are not covered by the formal rewarding system or, when an informal reward might better fulfill employees’ needs. The aim of this paper is to understand if the use of informal rewards influences the use of the formal ones within a military organization, using the cluster method of the Analytic Hierarchy Process (AHP).

*Keywords: motivation, clusters, AHP, consistency, perception, military, formal rewards.*

### Introduction

Rewards in an organization are granted by managers, in accordance with the available pools, both formal and informal, and their desired outcome. According to Poleanschi [4], there is a degree of subjectivity when granting rewards, especially due to the individual perception of the presumable outcome. In order to understand the influence of the informal over the formal awards, the research was based on Saaty’s cluster method [3]. Formal rewards were treated as random variables with attached priority vectors, using decisional matrices with consistency indexes, to which a parallel computation of consistency index was performed, according to Benitez [1].

### Formal versus informal rewards: Clusters setting

Informal rewards augment formal ones in unperceived ways, depending on the formal versus informal interchange. While some agreement can be achieved on the way formal and informal rewards are grouped in clusters, yet the order of importance inside clusters, clusters’ sequence and the choice of the pivots, are definitely a result of the differences in the perceived importance of formal versus informal rewards, among the decision makers.

Formal rewards were arranged into two clusters (F1, F2), ascending in accordance with their official recognized importance. In Poleanschi (2013), the importance order of each formal reward was asserted through the consideration of a hierarchy and the outcome, the perceived importance derived in that specific context, partly matched the order of importance as set by regulations [4]. Nevertheless, in this paper the order of the items within every cluster of formal rewards is kept fixed, following the recognized importance assigned in the official regulation, as presented in Table 2.1.

F1				F2			
F1-1	F1-2	F1-3	F1-4	F2-5	F2-6	F2-7	F2-8
F1-1 Appreciations				F2-5 Money or personal items			
F1-2 Felicitations				F2-6 Special ribbons			
F1-3 Diploma of excellence				F2-7 Small arms			
F1-4 Citation in the official log				F2-8 Medals			



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**Table 2.1 Formal Rewards Clusters**

The list of the informal rewards, as well as their position within clusters (I1, I2) was agreed among a number of twenty experts with significant experience as decision makers and it is shown in Table 2.2.

I1				I2			
I1-▲	I1-►	I1-▼	I1-◄	I2-♣	I2-♠	I2-♥	I2-♦
I1-▲ Complex task assignment				I2-♣ Appeal for promotion			
I1-► Project management				I2-♠ Leadership education			
I1-▼ Development courses				I2-♥ Function promotion			
I1-◄ Share of personal experience				I2-♦ Rank promotion			

**Table 2.2 Informal Rewards Clusters**

Unlike formal rewards, the weight of importance, in terms of rewards effectiveness and increased motivation among subordinates, is prone to significant subjective variations. This justifies why arbitrary symbols instead of numbers, were assigned to distinguish among each informal reward. Items' order in clusters, succession of formal and informal clusters and pivot's selection were decided by the experts, divided into four teams. The succession of the informal and formal rewards' clusters and the pivots, within the four alternatives (A1 to A4) is depicted in Table 2.3.

A1		A2		A3		A4	
F1	F1-1 0.21	I1	I1-▲	I1	I1-▲	F1	F1-1
	F1-2 0.05		I1-►		I1-►		F1-2
	F1-3 0.57		I1-▼		I1-▼		F1-3 0.55
	F1-4 0.03		I1-◄		I1-◄		F1-4
I1-▲ (pivot)		F1-1(pivot)		F1-1(pivot)		I1-▲ (pivot)	
I1	I1-▲ 0.12	F1	F1-1	F1	F1-1	I1	I1-▲
	I1-► 0.25		F1-2		F1-2		I1-►
	I1-▼ 1.23		F1-3 0.14		F1-3 0.17		I1-▼
	I1-◄ 0.52		F1-4		F1-4		I1-◄
F2-5 (pivot)		F2-5 (pivot)		I2-♠(pivot)		I2-♠ (pivot)	
F2	F2-5 3.07	F2	F2-5 0.36	I2	I2-♣	I2	I2-♣
	F2-6 3.29		F2-6		I2-♠		I2-♠
	F2-7 3.07		F2-7		I2-♥		I2-♥
	F2-8 3.41		F2-8		I2-♦		I2-♦
I2-♠ (pivot)		I2-♠ (pivot)		F2-5(pivot)		F2-5(pivot)	
I2	I2-♠ 16.97	I2	I2-♠	F2	F2-5 1.73	F2	F2-5 3.66
	I2-♣ 16.97		I2-♣		F2-6		F2-6
	I2-♥ 109.61		I2-♥		F2-7		F2-7
	I2-♦ 309.66		I2-♦		F2-8		F2-8

**Table 2.3 Alternatives and clusters**

At this point, it is worth mentioning that the cluster method, as in Saaty (2011), is adapted to the versatile value of the pivot in the informal rewards' clusters. When considering intangible sets like informal rewards, the pivot weight of importance does not necessarily take the highest or the smallest numerical value within its cluster. Yet, the inference of the assigned importance of the pivots, from one cluster to the next one, was done after the weights of importance within a cluster were normalized by their division to the correspondent minimum weight.

The weighted importance of the items within A1 is depicted with two decimals on the second column in Table 2.3, while selective values for two of the formal and informal rewards are respectively reported in the next columns of this table. For quantifying the sensitivity in the weights of importance, asserted to a certain formal reward along the four alternatives considered, as a result of different informal rewards' reinforced effect over the formal ones, every formal reward was thought to be modeled by a random variable, whose four realizations are the four correspondent values in the priority vectors, derived for each of the four columns in the previous table.

For simplicity, the random variable will keep the same notation as the one used for the formal reward. If for a formal reward F, there are four values available ( $f_{A1}$ ,  $f_{A2}$ ,  $f_{A3}$ ,  $f_{A4}$ ), corresponding to the four alternatives A1 to A4, the correspondent random variable would be





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$$F: \begin{pmatrix} f_{A1} & f_{A2} & f_{A3} & f_{A4} \\ p_1 & p_2 & p_3 & p_4 \end{pmatrix}$$

The probabilities in the second row are derived as follows. For each alternative  $(A_i)_{i=1,\dots,4}$ , it is counted the percentage of times  $p_i^{\text{preferred}}$  in which the formal reward F was preferred against other formal or informal rewards. The probabilities in the second row represent the normalized counterparts of the vector, formed by the percentages calculated above. The mean of the random variable F is interpreted as an average value expressing the importance of the formal reward F, against the alternatives considered. The variance of the random variable F is interpreted as a sensitivity indicator of the mean to the grouping order within the clusters, and represents how important is the influence of the informal rewards over the formal ones, as a result of the rewards' perceived importance and location.

**The impact of cluster setting on the perceived importance of rewards in a military organization: An experiment.**

For each decision matrix enclosed in clusters, the Consistency Index (CI) was computed together with the associated priority vector (PV). Since over the collaborative discussions, a satisfactory consensus did not yield an acceptable CI value, the closest consistent decision matrix was derived and the corresponding priority vector recalculated, as in Benitez (2011). This manner of achieving consistency is further referred to as “Bold Consistency”. The consistency index for the original decision matrices, F1 to I2 in alternative A1 are shown on the first column in the Table 3.1.

A1 <sup>BC</sup>		A1		
F1 <sup>BC</sup>	F1-1	0.21	F1-1	0.21
	F1-2	0.05	F1-2	0.05
	F1-3	0.57	F1-3	0.57
	F1-4	0.03	F1-4	0.03
CI = 0		CI = 0.28		
	I1-▲ (pivot)		I1-▲ (pivot)	
I1 <sup>BC</sup>	I1-▲	0.12	I1-▲	0.12
	I1-►	0.24	I1-►	0.25
	I1-▼	1.20	I1-▼	1.23
	I1-◄	0.51	I1-◄	0.52
CI = 0		CI = 0.42		
	F2-5 (pivot)		F2-5 (pivot)	
F2 <sup>BC</sup>	F2-5	3.00	F2-5	3.07
	F2-6	3.25	F2-6	3.29
	F2-7	3.00	F2-7	3.07
	F2-8	3.38	F2-8	3.41
CI = 0		CI = 0.98		
	I2-♣ (pivot)		I2-♣ (pivot)	
I2 <sup>BC</sup>	I2-♣	18.92	I2-♣	16.97
	I2-♠	18.92	I2-♠	16.97
	I2-♥	118.86	I2-♥	109.61
	I2-♦	335.77	I2-♦	309.66
CI = 0		CI = 0.40		

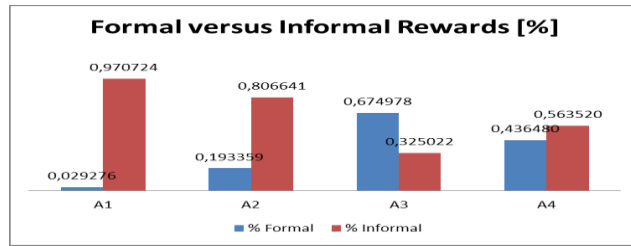
**Table 3.1 Priority Vectors and Consistency Index Values**

The corresponding components of the extended priority vector, after the cluster method was inferred, are indicated in the second column of the Table 3.1. The fourth column reports the priority vector for the bold consistency (BC) versions of each priory decision matrices.

It is interesting to observe in figure 1 that the cumulated weight of importance for the informal rewards highly overpasses the one for the formal ones in three out of the four alternatives considered.



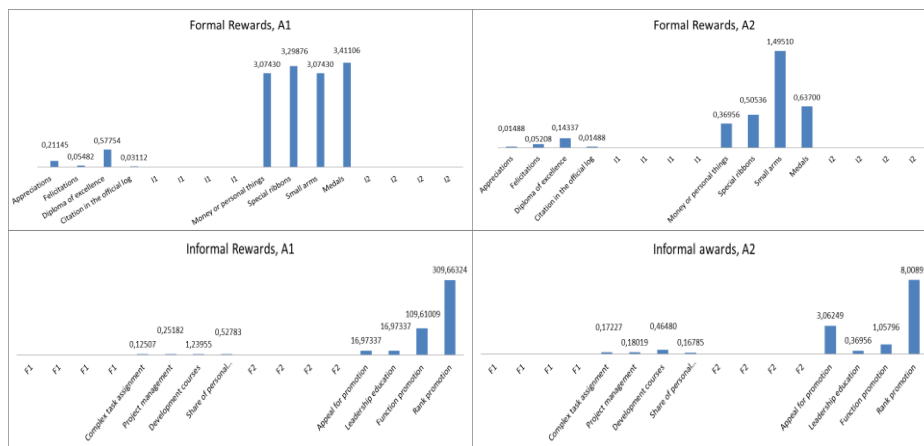
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**Fig 1 Formal vs. informal Rewards – cumulated weight of importance**

In order to further detail the importance of formal and informal cluster setting, we analyze the clusters which had the closest values of the informal rewards, namely alternatives A1 and A2.

As an example, values of formal rewards show variations of cluster F2: “Medals” has the highest value in A1, while “Small arms” has the highest value in A2 (Fig. 2). As of informal rewards, “Rank promotion” exceeds all other formal and informal rewards, with an unexpected value of 309.66 in A1 and with 8.00 in A2.



**Fig. 2 Values of Formal and Informal Rewards – Alternative 1 and 2**

The above numerical findings point towards two directions: first, the use of informal rewards does influence the perception over the formal rewards and, second, cluster setting within each alternative influences the perception over both formal and informal rewards. It also indicates, through the associated mean and variance values that, the higher the importance associated with the formal rewards, the higher the level of individual subjectivity in granting that reward (Fig. 3).

Formal Rewards	Mean	Variance
Appreciations	0,11160	0,00766
Felicitations	0,06220	0,00012
Diploma of excellence	0,38907	0,04075
Citation in the official log	0,00000	0,00000
Money or personal things	1,99200	1,75609
Special ribbons	3,96805	2,72041
Small arms	6,16791	24,49765
Medals	23,65129	461,33808

**Fig. 3 Mean and Variance for Formal Rewards**



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## **Conclusion**

This paper shows an experiment for measuring the influence of the informal rewards over the formal ones in a military organization. The analysis was performed by adapting the cluster method for intangible items as in Saaty (2011), when magnitude is not obvious. Whenever the decision matrices displayed an unsatisfactory Consistency Index, they were replaced by the closest consistent matrix as in Benitez (2011).

The priority vectors corresponding to the improved decision matrices, in terms of consistency, were very close to the priority vectors corresponding to the initial decision matrices. Whether this finding holds true for the particular decision matrices in this experiment or the result is more general, is a topic to be addressed in a future research. Informal rewards reinforce the formal ones in numerous ways and, in that perspective, experts divided into four teams identified different sequences in four alternatives.

The values among these four sequences for a particular formal reward were assumed to be realizations from a random variable that was modeling that formal reward. The associated probabilities were derived from the preference percentages of the considered item among the four alternatives. The comparative variances for the random variables modelling the formal rewards were interpreted as sensitivity measures of the cluster grouping of the informal rewards among the formal ones.

The numerical results show a correspondence between the size of the mean and the size of the corresponding variance, in the sense that for a small mean values show incremental variances while for larger means correspond almost quadratic values of the associated variances. The interpretation associated with these findings is that when stakes are high, so is the degree of subjectivity embodied in decision makers' perception over the importance of the rewards. Secondary, these findings show that the cluster method adapted for intangible items is highly dependent on the perceptions associated to the content, the pivots and the succession of the considered clusters.

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**PERCEIVED ORGANIZATIONAL SUPPORT AND  
ORGANIZATIONAL PERFORMANCE**

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**Abstract:**

Employees who feel an emotional connection with the organization are more dedicated to their job. However, generally, such an attitude appears in response to how the employees perceive the organization's attitude towards them. The more they feel appreciated, respected, rewarded for their work, the more they will try to respect and accomplish the organizational standards and goals. The organizational support theory states that Perceived organizational support (POS) shows the degree to which employees trust the appreciation of their organization.

*Key words: Perceived Organizational Support, performance, objectives, risk taking*

Success is the ultimate goal of every organization, managers develop strategies to increase performance and to maintain their competitive advantage, but in order to attain performance certain prerequisites should be fulfilled. These prerequisites are not only of financial, material or human resources, they also include emotional resources. Even if, at a first view, such a statement may appear exaggerated, it should not be dismissed easily. For the employees to perform very well in their tasks, they should be involved and connected to the organization at a deeper, more emotional level because performance is the result of a „set of behaviours that is under individual's control and affects the organizational goals [1]”.

Perceived Organizational Support (POS), according to organizational support theory, refers to employees' perception concerning the extent to which the organization values their contribution and cares about their well-being. POS has been found to have important consequences on employee performance and well-being [2].

**Perceived organizational support and performance**

The decision making process, even if it should be a very rational one, must not be conceived without taking into consideration the less objective factors like the emotional attachment of the employee towards the organization or the degree in which the employee perceives the organizational support. Employees who feel such an emotional connection are more dedicated to their job. However, generally, such an attitude appears in response to how the employees perceive the organization's attitude towards them. The more they feel appreciated, respected, rewarded for their work, the more they will try to respect and accomplish the organizational standards and goals. The organizational support theory states that Perceived organizational support (POS) shows the degree to which employees trust the appreciation of their organization

Such behavior is based on reciprocity, employees trade their “effort, loyalty and commitment to the organization for the tangible benefits and rewards that the organization can provide” [3]. Following the principle of action and reaction both parties involved will reciprocate positive treatment thus obtaining mutual benefits.



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The relationship employer (organization) – employee is generally perceived as a personal one. Any favourable action will be more appreciated if it is seen as a sign of good will on the organization’s part than the result of an external constraint imposed by the legislation (such as a salary raise, a bonus etc.). Apparently, what we receive is better appreciated if it is seen as voluntary (based on choice and discretion) rather than something circumstantial (for example, the result of applying the legislation).

Perceived organizational support can function as an assurance that the organization will offer assistance in difficult work related situations and as an incentive for high work performance. Employees will try harder to comply with the decisions taken, they will feel greater obligation to support the organization towards reaching its goals thus, an increase in work performance.

The effective implementation of any organizational strategies depends on the communication between management and employees because it can reduce or eliminate uncertainty or fear regarding change and evolution. Employees perceive managers as agents of the organization [4] so, all their doings can be interpreted as putting into practice the organization’s intentions.

#### **Perceived organizational support and decision making**

There is a significant correlation between perceived organizational support and cooperation in decision making. The decision making process includes a series of activities carried out by the decision maker with regard to choosing the optimal course of action of all possible ones, actions which will be carried out by the members of the organization.

Preparing the decision requires identifying and defining the problem by taking into account the objectives set, the risks identified, the quality and quantity of information, the necessary resources and the existing ones.

The decision making involves a comparative analysis of all the options in order to into account the pros and cons of each course of action so that, in the end to be chosen the most advantageous alternative.

Applying the decision involves a series of organizational measures such as the establishment of dealing with tasks, establishing the responsibilities and skills of those involved in the activity, etc. It carries out practical activities as well as motivational activities: explaining and supporting the decision. The more engaged in the organization the employees feel, the harder they will try to accomplish their tasks.

Cooperation (in taking decision) connotes the sense of being involved in organizational activities such as taking decision by managers and supervisors in higher position. Allowing the voice of the employees in the decision making procedures helps increase their trust and dedication for attaining the organizational goals. Accuracy and consistency in the decision making process can be perceived as discretionary actions on the part of the organization and they strengthen their perceived organizational support. Perceiving the decision making process as being correct would increase their trust and therefore performance.

For the managerial process, taking a decision means choosing a course of action among several possible. This choice is a deliberate act of thinking, which aims at accomplishing the objectives by influencing the activity of an individual or group of individuals. Such influence is highly dependent on how the employee perceives the organization, the support and recognition it offers for the activity performed its members. POS is based on the experiences regarding the positive or negative impact and results of the policies, norms, procedures existing in the organization and the way they affect the employees. POS will influence organizational commitment, behavior and job



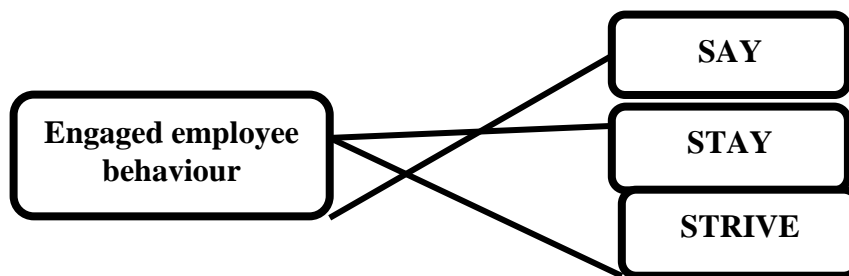
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performance. POS meets socio-emotional needs, provides assurance that help will be available when needed and indicate the organization’s readiness to recompensate efforts made on its behalf [5]. Since perceived organizational support is built on the reciprocity norm, the way the decisions taken by the management are accepted and implemented by the employees reflects their relationship with the organization, how much they feel the obligation to repay the benefits received.

POS should enhance not only acceptance and dedication towards the organization, but also job performance and the number of actions performed that exceed the limits and responsibilities listed in the job description. The voluntary involvement in the organizational life should also increase.

POS clearly influences the engagement of the employee to the organization as we can see from the scheme below (Figure 1). An engaged employee will say positive words about the organization, will show intention to stay in the organization and will do everything possible to accomplish the tasks, will even show initiative to do more than the usual tasks. Engaged employees will work with more passion and will feel a deeper connection to their company.



**Fig. 1 Hewitt Engagement Measure**

### **POS and risk taking**

Perceived organizational support (POS) is closely linked to trust or to lack of trust among subordinates and supervisors which, in turn, influences the approach to risk taking or no risk taking in the activity. Employee risk taking represents a willingness to face uncertainty and overcome mistakes as new ideas are explored, to take unconventional or unpopular positions, or dive into challenging problems without obvious solutions, in order to increase the likelihood of accomplishment.

All policy-makers want to know the size and nature of the risk posed by the choice of a particular course of action. The risk consists of two elements: the likelihood that the work will not develop as planned and the negative consequences of this. When undertaking a risk analysis there must be identified the possible threats and their level of materialization.

Employee risk-taking is clearly associated with greater trust among supervisors and subordinates, it involves actions having an uncertain outcome, but with potentially high returns. Employees with high levels of trust in the support provided by the organization safe in engaging in potential risks to benefit the organization without fear of negative consequences

This suggests that too little and too much risk taking are both dangerous for organizations’ long-term welfare. There is no optimal degree of risk taking, but a very well structured decision making process could help forecast the outcomes of certain actions thus maintaining the degree of risk at a fairly reduced level.



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Summing up, we can say that employees would be more willing to respond to high POS not only with harder and better work performance but also with higher propensity towards risk taking that will contribute to better results for the organization.

### **Conclusion**

Perceived organizational support among managers and employees is related to increased performance and the development of employees' risk taking through trust that the organization will respond positively to failure. Employees who believe that the organization appreciates their contributions and cares about their prosperity and comfort are also more willing to take risks on behalf of the organization trusting the fact that the organization will recognize their own positive intent and dedication to the organization.

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## MANAGING SUPPLIES IN WAR

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### Abstract:

In any war, if the troops do not have *ammunition*, they cannot inflict damage to the enemy. Without *food* and water, the soldiers will lose the will to fight and switch their attention to getting nourishment instead of seizing military objectives. No *fuel* means that everything that runs on it will stop running – and nowadays it’s hard to conceive war without planes and mechanized equipment. All these mean that *supplies* in war are paramount.

### Introduction

The paper will be focused on the importance of supplies when conducting warfare, describing the importance of each class of supply and the way it influences operations. All considerations will be made from a strategic point of view but sometimes, for better understanding, operational or even tactical level aspects will be used.

### Supplies: definition and classification

This chapter will present and describe supplies as they are defined by the military organizations in NATO. The word in itself is leading towards a definition: according to FARFLEX online free dictionary *supplies* mean **an amount available or sufficient for a given use; stock** [3].

The NATO definition is not far away: **supply covers all materiel and items used in the equipment, support and sustainment of military forces** [1]. Taking out *the military forces* from the definition, you get the broad definition that is used by all organizations starting with the lowest level – let’s say a household - and up to an organization as large as NATO or UN.

Supply is also a functional area of logistics: **the supply function includes the determination of stock levels, provisioning, distribution and replenishment** [1]. In other words, when talking about supplies it is not enough to just have them somewhere, you need to estimate (sometimes even to guesstimate) the quantity the fighting forces need it, and the figure out a way to distribute them to the beneficiary in sufficient time to be used accordingly. I will cover this briefly later on, since the two topics, supply and distribution, are closely related.

In NATO, supplies are classified in five main groups, named *classes of supply*, and each of them will be described below. But even in NATO some countries considered different approaches when classifying supplies. For instance, the US armed forces has ten classes of supply, but classes I, III, IV and V are the same, and this goes for the other NATO countries, mainly class II being broken down into other classes or sub-classes.

### Class I

The definition of class I in NATO is as follows: **items of subsistence, e.g. food and forage, which are consumed by personnel or animals at an approximately uniform rate, irrespective of local changes in combat or terrain conditions** [1]. In other words, food and water (for drinking, not for other activities such as laundry) for soldiers and for livestock. The definition may be misleading when it says that the consumption rate is uniform, no matter what the terrain or the combat conditions are. The explanation is that, yes, the rate of consumption is the same, but what the soldier is consuming will vary pending on the abovementioned conditions: in a hot environment the water





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apportionment is different than in a temperate one, or when we send a military formation in a long patrol mission their rations are different than what they get when stationing in a base (i.e. more calories, less volume).

### **Class II**

This class is where some nations chose to either break it down in sub-classes or in separate classes on their own. It is not the purpose of this paper to go on and explain which way is the better. Let us see first how NATO defines it: **supplies, for which allowances are established by tables of organization and equipment, e.g. clothing, weapons, tools, spare parts, vehicles [1]**. Easy to understand why some nations decided to break it down further: whilst the definition of class I is narrow enough to be easy to comprehend and use, the definition for class II is very broad and may lead to confusions. A *table of organization and equipment* is basically a descriptive document of a military structure which comprises all authorized positions for personnel (to include details for their military rank, military occupational specialty etc.) and their authorized equipment (i.e. weapons and weapon systems, vehicles, communication equipment and so on). The easiest way to identify a class II item is to compare it with the other four classes of supplies. By the end of the definition chapter you will understand why.

### **Class III**

The importance of this class comes from its definition: **petroleum, oils and lubricants (POL) for all purposes, except for operating aircraft or for use in weapons such as flame-throwers, e.g. gasoline, fuel oil, coal and coke [1]**. For aviation, there is class IIIa – aviation fuel and lubricants. The division of class III for aviation was necessary due to the fact that the fuel and lubricants' specifications for aircraft are different (i.e. anti-freezing agents), but some nations decided a different approach: the single fuel policy. In the US Armed forces, the fuel for aircraft, called JP-8 or Jet Propellant-8, is used also by most of army's equipment – tanks, trucks, power generators etc. Still, due to the costs involved, not many nations can afford this solution, so class IIIa is used by the majority of NATO countries. In a nutshell, class III is mainly *fuel* and all kinds of other products from oil refining process. The type of fuel is irrelevant, being jet fuel, gasoline or diesel, since fuel in general is very important not only in war but also in peace time.

### **Class IV**

Class IV may seem less important, but in Crisis Response Operations (CRO) proved to make the difference, especially in what the military calls Force Protection. So, class IV is **supplies for which initial issue allowances are not prescribed by approved issue tables. Normally includes fortification and construction materials, as well as additional quantities of items identical to those authorized for initial issue (Class II) such as additional vehicles [1]**. To better understand it, focus only on *fortification and construction materials*. As I mentioned before, this class of supply was very important in CRO operations in Afghanistan and Iraq, being used for protecting the troops in their bases as well as helping local populace with different construction projects (schools, official buildings etc.). It ranges from the ubiquitous sandbags and concertina to different concrete walls and shelters for self-protection against artillery rounds and small arms fire.

### **Class V**

This is also a very important class of supply, because it comprises **ammunition, explosives and chemical agents of all types [1]**. Along with class III they are the most important classes of supply in modern warfare. Nowadays weapon systems are very different when looking at caliber, type of projectiles, type of missiles, and so on. This class ranges from the simple infantry cartridge to the



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most sophisticated inter-continental nuclear missile. It gets even more complex because it also involves the chemical and biological weapons, along with the nuclear arsenal.

As a conclusion of this chapter, all classes of supply have their own importance in warfare, but some of them can have a more immediate effect in winning or losing a battle or the whole war, such as classes III and V, and this fact has been proved by history.

### **Supplies in war**

In order to have a better understanding of supplies, I have to introduce you to a new term used in army terminology: Day of Supply or DOS. A DOS will always be used in connection with a specific class of supply, i.e. class III *number* of DOS, and it represents the quantity of a supply to be consumed / fired / burned / eaten by a consumer (be it a weapon system, a vehicle or a soldier) in one day. It has a reference value and can be altered by different factors. The un-altered DOS is sometimes called Standard DOS or SDOS, whilst the affected DOS is called Combat DOS (CDOS) or Modified DOS (MDOS). Let us take an example for a better understanding. A truck has, according to its technical specifications, a fuel consumption of 40 liters of diesel for running 100 kilometers fully loaded. So the SDOS for this truck is 40 liters. In an operation conducted in a mountainous terrain this truck will consume more fuel, due to the terrain conditions and the operational tempo, so the SDOS will be corrected by a terrain factor, let's say  $t$ , and an operational tempo factor, we can call it  $o$ . The correction factors are usually known, being determined using statistical methods or by special computer programs. In the end, the CDOS (or MDOS) is  $SDOS \times t \times o$ . The same goes for the other classes of supply, except for class I (remember the *uniform rate* from the definition).

The introduction of DOS was necessary for planning purposes and for making it easier to a commander to understand the level of supplies of his forces. Its usage starts from the lowest level, soldier, and goes up to the whole armed forces of a country. It is easier for a commander to know that he's got 4 DOS of class III, 2 DOS of class I and 6 DOS of class V, meaning fuel for approximately four days, food for only two days and ammunition for another six days. What if the logistic officer would report him that the level of supplies was as follows: 1,360 liters of diesel, 2.5 tons of food and 10.5 tons of ammunition? For a small military formation, i.e. a squad or even a platoon, this may be clear enough for the commander to understand where he is at, but for larger formations, DOS will give him a better picture. As we go higher in the military structure, the need for using DOS is more obvious.

### **Preparing for war**

Most nations prepare for a possible conflict by stockpiling supplies in peace time. The reason for doing that is to make sure that the national economy has some time to turn from peace time production to a war time one. Some countries plan to stockpile supplies for 30 or more days (30 DOS) and this quantity is all the troops have for that period of time until the economy is supposed to pick up the pace and start producing for war (also debatable but not for this paper). This amount of supplies (let us consider 35 DOS) is broken down to the soldier/weapon system level, where the value is usually 1. So the soldier/weapon system has 1 DOS, the battalion/similar may have additional 5 DOS, the brigade/similar has another 2 DOS and the division has 17 DOS. That means that a division has a total of 25 DOS, the remaining 10 DOS being stored by the respective service (Army, Navy etc.) or a specialized one. As you may have already guessed, two problems emerge out of this method of stockpiling: where do you store all supplies and for how long?

To answer to the former question, usually, each echelon is responsible for storing their allotted number of DOS for all classes of supply. For smaller, maneuverable units (up to brigade level), the supplies are stored in peace time installations (barracks) and are ready to be loaded and transported by



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its organic means of transportation. For the higher formations, things get more complicated, mainly because of the quantities involved. Obviously all class V and class III dumps are primary targets for an enemy. There are ways to overcome this problem (especially for class V) by storing these commodities on ships or trains, but the solution is costly and can be applied only for specific items (i.e. nuclear warheads).

The other issue is about the storage time. Fuel and ammunition are perishable goods. While fuel can be continuously replaced by normal usage, in close conjunction with the national economy consumers, class V cannot keep the peace time pace. The Soviet Union had a policy of storing 90 DOS of class V, until most of the ammunition exceeded its shelf life and had to be destroyed. Moreover, after significant amount of time, the ammunition becomes unreliable, and in combat the worst surprise is to pull the trigger and see that nothing happens. In 1982 Falkland war, a large number of bombs did not go off, even when hitting the target, to the frustration of Argentinian pilots. In Russia, after the disintegration of Soviet Union, many ammunition dumps suffered catastrophic explosions due to degradation of explosives and propellants stored for too long. So the solution for this problem is not an easy one. New ammunition has a longer shelf life, but in the same time class V stocks are decreased to a level that can insure a replacement plan through peace time usage.

For class II, when looking at major equipment such as tanks and other vehicles, it is hard to create stockpiles. The first thing to do is to select a list of class II items that are considered critical, have an increase rate of loss or attrition in war and then establish the amount to be stockpiled. Even so, mothballing equipment is costly, and there are some other factors to take into account: some subsystems of the more complex equipment (i.e. communications gears, fire control systems and such) have to be upgraded from time to time to keep the pace with the same equipment in use. Modularity concept in manufacturing the equipment is the best solution, and can be applied for all complex items, but it is costly.

The storage facilities to preserve complex equipment have to be large enough, with a controlled environment and protection from the elements. Not so difficult for vehicles, but way more challenging for aircraft or ships. The US found a solution by using an area in the country that meets the requirements naturally: the Arizona desert (see below).



Fig.1 B-52 Bombers mothballed in Tucson, Arizona

Another critical issue in stockpiling class II is repair parts. All nations are reluctant to produce extra repair parts besides what is needed for maintaining the equipment operational in peace time. A way to alleviate this was to create a kit of repair parts that accompanies the equipment at the delivery, and will have its inventory kept at 100% throughout its life cycle. The kit consists of items more prone to break down, but they are destined for basic repairs, usually performed by the crew. Another way of solving this problem is to have a flexible economy that can react quickly to war necessities. In



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1991 Iraq war, the US economy quickly adapted to the new, unpredicted requirements generated mainly by the harsh climate. This may always work when you do not wage war on your backyard. Once war reaches your facilities, things will not go that smoothly. In World War II (WWII), Germany faced this situation, when its research and production facilities came under direct attack by allied forces, whilst the Soviet Union and the US factories kept producing goods without any fear of enemy fire.

As a conclusion, all nations must prepare for war by stockpiling some of the supplies, but the quantity and the selection varies according to their economic strength and the flexibility of their economy. NATO has its own policy in this respect, setting the number of DOS for units belonging to its force structure and, whenever there is a NATO led operation (usually a CRO), dictating the level of support for all actors involved. In the latter instance, NATO commander sets the number of DOS for all classes of supply to be available in the Theatre of Operations (TO) and nations have to comply individually or, most of the times, collectively. For instance, in TO Afghanistan, the level set by NATO Commanding General was 30 DOS for classes I, III and V. Whilst class V is most of the times a national responsibility and it is covered individually, for classes I and III there were collective (multinational) solutions that decreased the costs and the logistic footprint.

### **Supply in war**

Once the war breaks out, supplies will be in high demand by fighting forces, but with respect to classes of supply the demand is not even: up to 60% of the weight of supplies moved in an operation is fuel (class III), almost 20% is ammunition (class V) and the rest is made of small percentages of classes I and II. Class IV may see an increase when preparing a thorough defense operation or setting temporary or permanent military bases. The percentages changed throughout history, but class III started its increase during WWII. The German Army at that time required 28 pounds per day per man, out of which 40% was ammunition, 38% fuel and the rest was class I and II (especially repair parts). Nowadays, a US division requires between 100-500 pounds per day per man, of which classes III and V comprise more than 75%.

History has showed that usually class I is overlooked in favor of classes III and V. That forced the soldiers to make do with whatever they encountered on the ground. This may go somewhat for infantry, but not so much for navy, where class I plays a crucial role (especially food, since water can be obtained from the sea water using desalinization equipment). For instance, for vessels with nuclear propulsion, class I is setting the operational range, which is not the case for land forces.

For the air force, the operational range is dictated by class III, but the number of sorties is closely related to the availability of repair parts and the ground facilities for maintenance.

In war, supply is always a high value target for the opponent. A well skilled commander will always try to deny the enemy its supply whilst protecting his own stocks. The worst case scenario is when forces are encircled, preventing a normal or any of the supplies to flow in. The battle of Stalingrad is the “by the book” example, when German forces could not maintain an aerial re-supply system and eventually had to surrender. In 1991 Iraq war, Iraqi army found itself isolated in the desert, with dire consequences.

At the national level the main concern is to protect the facilities producing supplies. This may be relatively easy when the war is waged far enough from the country’s borders, but way more complicated when it reaches them. In WWII German factories were bombed day and night by allied forces. To protect them, Germany took two main courses of action: increased their defense, by moving the facilities under thick concrete walls, using artificial fog for daylight bombing, concentrating Air Defense equipment and fighter squadrons around, and so on; the other course of action was to decentralize production throughout the country (in other words not having all the eggs in



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one basket). The architect behind this strategy was Albert Speer, who managed to increase war production to the highest level in the second half of 1944. This worked very well until Germany was completely cut out from all raw materials, and consequently the war industry starved out.

The very first commodity to get critical in war is class III. Fuel is what is driving the war machine on, and without it the forces have to stop the operations. Whenever the attacking forces overtook the supply line, they had to stop. Rommel saw it happen in North Africa, and the US troops encountered this situation in Iraqi desert in 1991. Napoleon Bonaparte tried to solve this by establishing intermediate temporary depots with food and ammunition, but the Russian forces made sure he never used them.

Most of the countries rely on national reserves and the output of their economies, but sometimes that is not enough. In WWII, one of the reasons the German forces advanced so quickly in France was because they seized French fuel reserves. The French government did not take action to prevent it, and consequently the invading forces had enough fuel to top off their tanks and all they had to do was to pull over at the French gas stations, thus allowing the Wehrmacht to maintain a high tempo of the offensive operation. The Soviet Union took a completely different approach: they destroyed all oil facilities that were in danger of being occupied by German forces, whilst moving their own resources deep in the country, out of the reach of German Luftwaffe. When German troops advanced towards Baku (now in Azerbaijan), the soviets prepared all oil installation to be destroyed, Stalin's order to his man in charge of Baku was clear: if you destroy the installations unnecessarily, you will get shot, if the Germans seize them before you destroy them you get hanged. Stalin also ordered all technicians from the oil industry in Baku to be evacuated deep in the Soviet Union. Thus, the little oil shafts that the German did seize could not be used immediately, and by the time they could be put in action it was too late.

Still, lack of fuel cannot prevent troops to fight a guerilla war, as it happened in Vietnam. The North Vietnamese troops (NVA) used bicycles and livestock to supply their forces, transporting the goods covered by the thickness of jungle. The famous Ho Chi Minh road was never completely cut off by US bombing campaign, so ammunition and food kept flowing to supply NVA in South Vietnam.

But supply is all about numbers, so below there are some estimates of the supplies required in a day (1 DOS) by a US armor division in two types of operation: offense and defense.

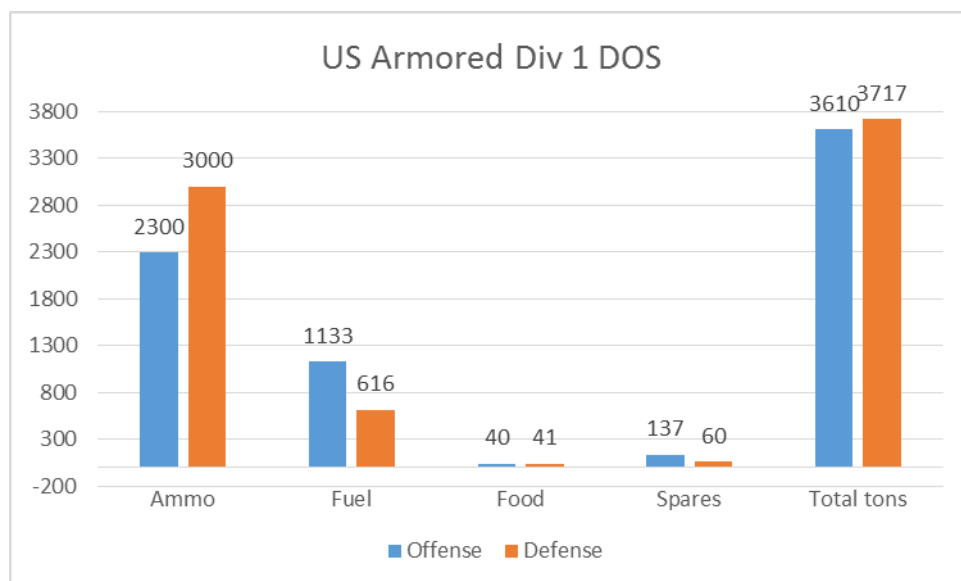


Fig.2 Break down of 1 DOS for offense and defense operations [2]



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Out of the chart it is easy to notice that ammunition and fuel take the lion’s share. Also notice that for defense the total amount necessary is slightly higher than for offense. Of course, the numbers come from statistics and simulation programs, reality may be very different. But let us consider these numbers and try to create 30 DOS of stocks for the division in case. For that we will consider the highest amount of supplies, since the division has to be able to fight both operations. These leads us to the following numbers:

Supply type	1 DOS	30 DOS	60 DOS
Ammo	3,000	90,000	180,000
Fuel	1,133	33,990	67,980
Food	41	1,230	2,460
Spares	137	4,110	8,220
Total tons	4,311	129,330	258,660

Fig.3 The amount of supplies needed for one day, one month, and two months

It is easy now to understand that stockpiling 90,000 tons of ammunition for one division for only one month of combat is not an easy task. It would require 450 ammunition storage bunkers (usually they have a 200 tons capacity). In a regular ammunition dump you may have around 50 bunkers, so that would lead to 9 ammunition dumps only for one division.

For the air force, the number estimates are depicted in the table below:

Aircraft	Tons carried		Average sorties per day	1 DOS
	Fuel	Warload		
MIG-21	2.1	1.5	1	<b>3.6</b>
MIG-25	15.1	2	0.5	<b>8.55</b>
MIG-29	4	4.5	2	<b>17</b>
MI-24	1.5	1.7	4	<b>12.8</b>
F-16	3.2	6.9	3	<b>30.3</b>
A-10	6.1	7.2	5	<b>66.5</b>
UH-60	2	3	5	<b>25</b>
AH-64	7	1.7	4	<b>34.8</b>
F-18	5.1	7.7	3	<b>38.4</b>

Fig.4 The amount of classes III and V for 1 DOS [2]

So for a squadron of MIG-21 with 24 aircraft, for 30 DOS you will need to store 1,512 tons of fuel and 1,080 tons of warload (class V). For an A-10 squadron, the numbers grow more, with 4,392 tons of fuel and 5,184 tons of class V (see below the comparison). Also from the comparison you can notice that the amount required by western design aircraft is far bigger than that of the Russian types, mainly due to a higher number of sorties.



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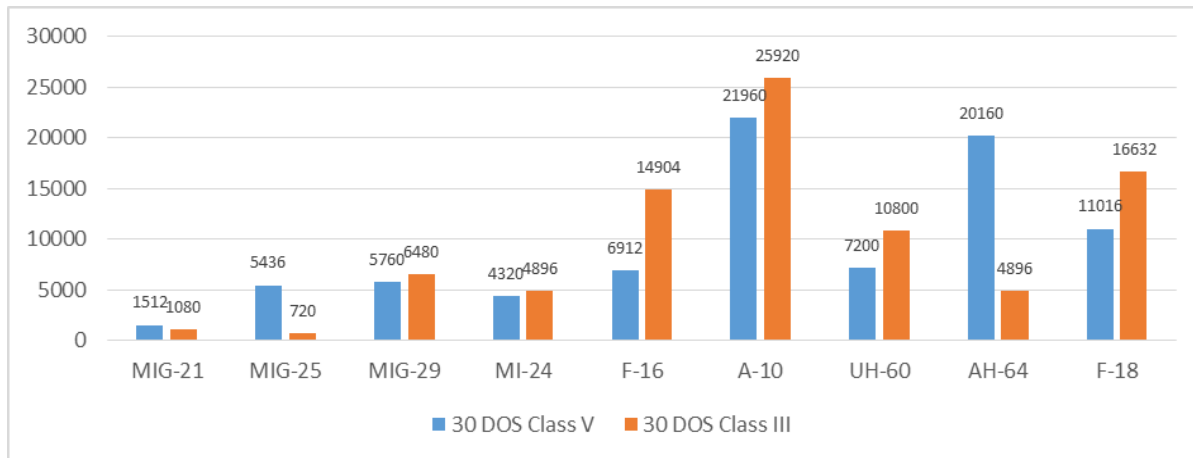


Fig.5 The amount (tons) for classes III and V for 30 DOS/aircraft squadron

Luckily, airbases are usually far away from fighting areas and have plenty of space around them, but that is not the case of the aircraft carrier. The F-18 requirements from the chart above are for an aircraft carrier. So if the carrier has 72 aircraft, then it will need no less than 1,101 tons of fuel and 1,663 tons of ammunition for 1 DOS. A carrier task force can consume up to 5,000 tons of supply per day at sea, therefore the task force includes several support vessels to re-supply, not to mention strategic ports all over the world.

### **Supply as a functional area of logistics**

As I mentioned at the beginning of chapter 2, supply is also a functional area of logistics, meaning that logisticians are in charge for determination of stock levels, provisioning, distribution and resupply.

In preparation of an operation, the logisticians always have to estimate the supplies needed to achieve success. This process is conducted at all levels, and the figures are compared with the real possibilities to meet the demand, the outcome being the shortfalls that a commanding officer has to be aware of. There are several ways to estimate the amount of supply for a specific operation. Some armies rely on historical data, but the wars in the modern era have gotten very complex and thus the method is not very accurate, leading to higher than necessary amounts, especially for class V. In NATO there are two computer programs that help the logisticians to estimate the supplies for a specific operation: Sustaining Planning Module, or SPM, and Allied Commands Resource Optimization Software System, or ACROSS. They both take into account the possible enemy to be encountered, and based on the composition of own forces determine the estimated amounts of supplies necessary to achieve success. The tools are useful for higher echelons, division and above, since they are in charge of re-supplying the lower echelons (brigades and below). The higher echelon will set the tempo and the amount of resupplying the lower echelon, based on the estimates and on the supply on hand.

There are two systems of distributing supplies: *push* and *pull*. The *push* system is used when consumption follows a uniform rate, such as class I. The only adjustment needed is based on the strength of the unit and the types of rations. As the name implies, the higher echelon is pushing the supplies downwards regularly, without the risk of exceeding the stocks. The *pull* system is based on the unit's request to its higher echelon. This is usually done at the end of each day of the operation, based on the level of supply estimated prior of the beginning of the operation and the current stocks. In this way the unit will avoid excessive stockpiling, with the inherent risk of having to discard or



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destroy them due to lack in means of transportation. The system addresses mainly class V and in some cases class III.

### **Conclusion**

In war supplies play a very important role. Some of them are utterly showstoppers, due to their importance in warfare, such as classes III and V. There is always the debate of how much to stockpile in preparation for war, and ammunition is in lead when it comes to difficulties in storing it. Still, lack of class V stocks might be seen as a chance to prevent a WWII type war, whilst a nation that suddenly increases class V production can signal to the others that it is preparing for something.

Today's nations commit less money to the armed forces, the trend starting after 1990. Initially, that left the armies, which shrank continuously, with large amounts of supplies, especially classes II and V. But in the past 25 years the ammunition stocks have decreased drastically, by degrading or by fueling small wars over the world. Class II supplies have become obsolete and useless, the major equipment being sold to poorer countries. With the nuclear deterrence in place, one might consider that a classic WWII war is almost impossible, but the evolution of the global economy, the degradation of global environment and the struggle for resources may change that. How to set the balance right is never an easy task, and it will always involve both political class and military expertise to struggle to reach a compromise.

NATO, as an alliance, provides some advantages concerning the provision of supplies in war. In the first place, NATO promotes the concept of interoperability, and the technical part of the concept helps alleviate some of the supply problems. For instance, the NATO calibers for small arms are generally the same throughout the whole alliance: 5.56 mm, 7.62x51 mm, 9x19 mm, 12.7x99 mm. Even for artillery, NATO has its standardized calibers: 105mm, 120mm, 125mm and so on. During the war, if a country has problems supplying class V, it can turn to another NATO country for provisioning. Also, it is hard to believe that all NATO countries' facilities for war production will be under direct enemy fire. In this way, supplies can be shifted within the alliance's territory. So even though some NATO countries do not have all stocks at the required level, before their economies can switch to war production they can very well import the needed supplies from within the alliance. The higher the degree of interoperability, the easier to provide supplies among NATO countries.

For class II, things are somehow different, since major equipment is normally produced within the country. There are exceptions, especially for multinational projects (Typhoon multirole plane, Tiger attack helicopters, A-400 transport plane etc.), and this would seem the right solution for the whole alliance, but for the existing equipment the producing countries try to get their invested money back or have special policies concerning the exports of what is considered strategic items (see F-22 fighter plane). But the main idea is that generally speaking, an alliance is less costly and provides more security than what the nations individually can do in this respect.

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## **THE EUROPEAN SECURITY STRATEGY, A CRITICAL ANALYSIS**

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### **Abstract:**

This paper is focused on the European Security Strategy and its content. The main idea is to try to have an overlook from the pragmatic point of view on whether the strategy is still a viable one, due to the fact that it was adopted twelve years ago. By pointing out the historical background, the context and its provisions, the role of NATO and US in the security of Europe, and also the new regional threats, the paper is underlining the necessity of a new European Security Strategy.

*Key words: Security Strategy, European Union, key threats, terrorism, NATO, ambivalence, preventive engagement.*

### **Introduction**

The first European Security Strategy (ESS) was adopted in 2003, in the merge of Iraq War, and, in that point of time, given the political context and the geostrategic situation, it was an important asset for the European Union (EU). For the first time since its foundation, all members' states agreed on a path to follow when discussing common security issues, identifying key threats and vulnerabilities. Twelve years after, the ESS adopted in 2003 is still in place. The question if it's still a viable document for the EU, considering the changes in the world and the role of the EU, is more pregnant than ever. Is indeed the ESS a security strategy, as define by specialist? Is there a place and time for a new security strategy or not? Does EU really need a strategy of a sort, considering its characteristic as a union and a non-state actor? How can European leaders reach an agreement on this issue? These are some of the question that this paper is trying to find an answer.

### **The European Security Strategy – ESS**

In order to better understand the European Security Strategy and its importance we have to keep in mind what European Union (EU) represents, its past, and, also the background of the adoption of the ESS.

#### **The European Union- General Facts**

Constituted as a politico-economic union of 28 member states, EU has a system of supranational institutions and functions through intergovernmental decisions of the members' states. The European Commission, the European Council, The Court of Justice of the European Union, the European Parliament are just a few of the EU institutions.

The European Union was at the beginning an economic community, started in 1952 with the European Coal and Steel Community (ECSC), considered to be the beginning of a federative Europe, which had as member states Belgium, France, Italy, Luxembourg, the Netherlands and West Germany. In 1957, the Treaty of Rome was signed by the same six countries. The treaty extended the earlier co-operation within the European Coal and Steel Community (ECSC) and created the European Economic Community (EEC), establishing a customs union. This community have grown over the years by the coming of new member states and also in power by new policy domains. At present, the UE has 28 member states. The Maastricht Treaty established the name “European Union” in 1993 and the European Citizenship. In 2009, the latest major amendment to the constitutional basis



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of the EU, the Treaty of Lisbon came into force. During the years, the EU grown a single market. Also, the freedom of movement of people, goods, services and capital are guaranteed and common policies on trade, agriculture, regional development and so on, are in place. In 1999 the monetary union came into practise. The EU has also a Common Foreign and Security Policy, through which it developed external relations and defence. It, also, have diplomatic missions throughout the world, a Military Committee and a Military Staff. EU has over 500 million inhabitants, 7.3% of the world population. In 2012 the nominal gross domestic product (GDP) was 16.584 trillion US dollars - approximately 23% of global nominal GDP. If it were a country, the EU would come first in nominal GDP.[1]

**Adopting the European Security Strategy – “A Secure Europe in a Better World”**

On December 12, 2003 the heads of states and governments of the EU members’ state, adopted the European Security Strategy, proclaiming an intention “to share in the responsibility for global security and in building a better world”. [2] What the ESS did was to summon up the dimension of external activity of the EU, “in a manner that transcends the metaphorical ‘pillars’ intended to visualize the workings of the Union.” [3] The ESS emerged the foreign and security policy, which comes from the Common Security and Defence Policy (CSDP) and the High Representative of the Union for Foreign Affairs and Security Policy.

It was considered at the time an important document, because it represented the EU’s political project, its hopes and its ambitions. Actually, we can say that it wasn’t what the document had to say, but what it represents: a common political view of the key threats, global challenges and vulnerabilities. And it was a step forward because for the first time the political leaders reached consensus on a common strategy.

The issue of a common security strategy came during the Iraq crisis, which made obvious the lack of common policy grounding among the EU states. It was the 2003 Iraq crisis and the opposite opinions of the world leaders that pull the trigger and it is also surprising how little discussions were concerning what should or should not a Security Strategy contain. Basically, the decision to adopt a security strategy came from the pressure of the public opinion, when the leaders of the EU failed on handling the Iraq crisis. Thus, the basic goal of the document was to give the EU leaders a common and agreed platform on which they could be able to formulate common and meaningful policies.

**Report on Implementation of the ESS (RI-ESS) – Providing Security in a Changing World.**

Five years after the adaptation of ESS, it was obvious that the document needed to be changed or at least upgraded, mostly because, as we are going to discuss later on, it failed to its purpose, which is to create outputs. It is well known that even when the military capabilities and institutional policy are present, EU does not have clear guidelines in order to use them properly.

As it was said at the time, wishing to write history, in 2008, the French presidency of the EU called for a review on the ESS. “ It was clear for us, from the beginning that we wanted to write an updated version of the ESS, in much the same way that the US updates their National Security Strategy at regular intervals”, a member of the EU Policy Unit about the updating the ESS. But, as it sometimes happens, the leaders of the EU couldn’t reach a consensus regarding this issue. Some considered that a new or even a revised ESS would be an impediment for the implementation of the Lisbon Treaty, others, like Great Britain and Germany find it irrelevant or had to face some other internal problems. But, the European Council reached consensus on writing an “implementation report“. The Implementation Report of ESS (RI-ESS) aimed to complement the ESS and it didn’t offer “concrete recommendations for the future, nor is any follow-up mechanism provided”. Indeed it is



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debatable wheatear or not the RI-ESS is compulsory or not for the members ‘states, as we are going to discuss further on about the differences between this document and the ESS.

## **The European Security Strategy – A Strategy?**

### **Strategy, a definition**

One definition stipulates that “a strategy is a policy-making tool which, which on the basis of the values and interests outline the long-term overall policy objectives to be achieved and the basic categories of instruments to be applied to that end. “[5]It is basically a framework for policy making in a continuously shifting geopolitical situation. A strategy must define goals; establish priorities in order to achieve policy objective, and must adapt to shifting geopolitics. When talking about a national security strategy we have to bear in mind that it is “the development and use of political, economic psychological powers to secure predefined objectives.”[6]

During the years after its adoption, there have been questions whether the ESS is or not a strategy, as define by specialists.

In a first opinion,[7] the critics of ESS suggest that this document falls short on some very important criteria, such as a lack in defining the means to use in order to fulfill the specific purposes. Also, taking into consideration that strategies link the means and political goals, the greatest weakness of the ESS is considered to be, according to its critics the fact that the ESS doesn’t provide the directives as to the ways “the EU foreign policy tool kit can be administrated to deliver concrete results.”[8] Another opinion is that the ESS is indeed a strategy, by all means, that it has the guidelines, the overall policy objectives to be achieved and the basic categories of instruments to be applied in the end. Some experts statues that “a strategy is not meant to be an operational document, but a mission statement, which has to be translated into sub-strategies for specific policy fields and then into concrete policies and actions. This mission statement does contain a number of explicit choices.”[9] Considering this the ESS is a strategy by all means. Anyway, the discussion if the ESS is or not a strategy is somehow irrelevant. It is obviously not perfect and it some ways is vague, due to the lack of consensus. In some other way, maybe the question we should ask ourselves is in what way the ESS is still relevant in a shifting geopolitics context, after twelve years.

### **The ESS and the RI- ESS– Shifting Away from Strategic Culture towards Human Security?**

At the beginning of this section it must be said that in 2003 the geopolitical situation was no doubt different that nowadays. Although it uses general and overall terms when coming to define global challenges and key threats, the world has change dramatically in the last few years. And when adopted the EU had only 15 members’ state in comparison with 2013 when the EU counts 28 members’ states. It is obviously that almost half of them didn’t get the chance to influence the strategy. It must be said from the beginning that the ESS is based on the “founding myth” of the EU, specifically to the historical responsibility for creating lasting peace among democratic European states. But “founding myth” is been proven to not to be a useful tool on which to base the use of force which is what a security strategy is mainly about.

The ESS implies, also, the “need to develop a strategic culture that fosters early, rapid and when necessary, robust intervention.”In other terms, the ESS is talking about strategic culture which “means the management and exercise of hard power.” But, it does not offer guidelines when the hard power, meaning, using of military power or economic coercive power can and must be used. It only stipulates that in: “In failed states military instruments may be needed to restore order”.The explanation can be that the members’ states failed to reach an agreement. Another explanation is that the European leaders took a different approach in order not to replace NATO’ role and to stay



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committed to “founding myth”. Hence, the EU is concerned only to be involved in low intensity crisis management.

It this aspect we have to say that the RI-ESS takes a step back and does not refer to this concept of strategic culture anymore. In other words, the RI-ESS brings into discussion the concept of human security, which means that the national security is replaced with the individual welfare. It is considered that the ESS and also the RI-ESS focus on a status-quo, and making sure that the in nowadays the current challenges demand cooperation between nations. The human security is obviously the opposite of the strategic culture and the EU ambitions are no longer the ones of a great power. Regional crisis management, safeguarding European interests on a global scale or focusing on the need for UN mandates and common assessment of the mission, these are still subjects to debate for the EU leaders’. In other words, when talking about EU foreign and security policy we must admit that even if the EU is beginning achieving military capabilities it is, meanwhile, maintaining the civilian power characteristics [10], which is synonymous to less coercion and more peacekeeping. The fact situation is due to the decision-taking process within the EU, and therefore on the difficulty on making consensus among the members’ states, but also to the belief that the EU must be more of a soft power. An important aspect of the strategy is the emphasis on an effective multilateral system. Cooperation between member states, as well as international cooperation, is an important aspect of the strategy.

The United Nations (UN), the World Trade Organization (WTO), the United States (US), and NATO are seen as important actors in the international order. Regional cooperation is also mentioned. The ESS clearly states that the EU doesn’t want, nor is able to face global challenges alone.

**The ESS and the RI- ESS- Terrorism, a crime or not?**

In the ESS, adopted in 2003, the potential of a classical war is considered to be improbable. Its place is taken by what it is defined as a “less visible and less predictable threat”: terrorism. Also, the ESS identifies “failed states” as a primary threats, as they are known to offer support and hosting the terrorist activities. Seen in connection with the weapon of mass destruction proliferation (WMD) and the “failed states”, the ESS assumes that these threats can result in the situation when WMD are placed in the hands of terrorist with the help of “failed states “. These can result in a serious threat, and it is closer to the US concept known as: “war on terror”, which define terror as a military matter.

The other threats are regional conflicts, state failure, and organized crime. The RI-ESS changes the way of dealing with terrorism. In fact, the document is referring to terrorism under the section of: “terrorism and organized crime”, meaning that it is not seen as a distinctive threat, but as a severe form of crime. So, it is no more a military matter. As for the other threats as defined in the ESS, they are replaced with “energy security” and “climate change”. In other words, it is minimizing the importance of this threat. In some views this change can be easily explain on the basis there is a limited understanding between the European states on how terror can be defined.

We can also find a contradiction with the RI-ESS in the body of the treaty of Lisbon, where it is stipulated in clear that the terrorist attacks is the basis of the new “solidarity clause”. And with terror described as a crime in the RI-ESS, “mobilizing military resources to fight crime is somehow excessive.” If the ESS clearly separated and defined the key threats and challenges, having separate section for each of them, the RI-ESS doesn’t prioritize them, but treats them together. There is a lack of prioritizing and the RI-ESS does not detail the matter. And also, we can find in the RI-ESS what it is known as a policy overload, due to the statement according to which EU should be “still more capable, more coherent and more active”. The coherence of ESS and the lack of it in the RI-ESS could be explained by the difference between the political and the strategically thinking of EU. In other words, whether there was at the time a willingness of the EU to define its own priorities, different from the US agenda, these couldn’t be reflected at the level of strategically thinking.



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**The ESS and the RI- ESS – Hedging strategy as a counterweight to the United States?**

The ESS adopted in 2003, provided that “preventive engagement can avoid more serious problems in the future”, and also the RI-ESS stipulated “prevention threats from becoming sources of conflict must be at the heart of our approach.” Diplomacy, aid and sanctions are the tools to achieve it. It is largely admitted that by preventive engagement it is understood the possibility to weaken a conflict before it begins, which is what the RI-ESS is implying. These can be interpreted as an opposite position from the US, dialogue and cooperation being seen as instruments to handle problem making states. Also, the ESS states that Europe must “share responsibility for global security and in building a better world”. All in one, Europe is seen in the ESS as a balance for the US, a position sustained also by the public opinion and the intellectuals even nowadays.

The American way of solving hot issues by military interventionism is not seen as positive to the EU. What the ESS and the RI-ESS tried to do is to find new ways of dealing with conflicts, in order to have a different approach than the US. This soft approach, that deals with diplomacy, aid and sanctions is not always a good way to solve problems nowadays. A good example is the redefining and restraining the EU police mission in Afghanistan, from its original goals and objectives. The EU position as defined in the RI-ESS is seen by specialists as **hedging** – a financial term meaning the minimizing of risks. Related to foreign policy, its goal is to destabilize unilateral actions (US, in these cases), by rising its costs. EU accepts all the profit from the US being a great power, but does as little as possible to sustain it in military costs or spending's.

On one hand both U.S and EU are talking about engagements, and on the other hand they search for alternative security cooperation. The best example is the RI-ESS where we can find a list of other “partners” such as China, Russia and India. The role assumed by EU as a buffer between emerging powers such as China, Russia and Iran and the U.S. is also considered to be a good example of hedging. Although the threats differ in both documents, it concurs on the means to maintain the global security. In fact, multilateralism is the key word. Multilateralism commits the EU members' states to work for “an effective multilateral system” – UN Security Council, The World Trade Organization and NATO are the relevant institutions when talking about imposing security. Iraq, Kosovo independence, Afghan stabilization mission and the South Ossetia conflict in 2008 are recent examples of multilateralism and the results are questionable.

## **The future of ESS**

### **Twelve years after, a changing world**

Twelve years ago, in 2003, the world looks different than nowadays. During all this time, the world, from geopolitics to threats changes considerably. In 2004 and 2007, the EU has expanded. New European members' states, mean new issues on the EU' agenda. The threats situation changed also. Terrorism -including cyber security-, weapon of mass destruction proliferation, regional conflict, state failure, organized crime, energy security, and climate change, are still there, but the context and nature may be different.

The changes in North Africa and Middle East, the rising of a so called “new auto declared state” –I.S.I.S- a terrorist organization spread in the North of Iraq and Syria, responsible for the latest terrorists attacks in Paris-, phenomenon of uncontrolled migration – a supranational security issues-, economic crisis- the most fundamental security threat so far-, trans boundary threats and another new phenomenon- the migration of young European Muslims to Middle East to join I.S.I.S, and then return to Europe to organize terrorists attacks-, are all to be considered in the immediate future. And we must not forget the recent crisis from Ukraine - the invasion of Crimea, and the fear that Russian will invade Ukraine - that threats to affect the stability of Europe and the security of its eastern border.



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Some other important issues are related to the international system and shifting geopolitics. Different opinions concerning the Ukraine –Russia conflict are to be found among the EU member states. Greece, Bulgaria and Hungary, have different opinions than the majority, partially, in support to Russia.

The time for a new strategy has come if EU wants to have a word to say. One of it is related to EU relations with different global powers such as Russia, Turkey and Iran. There is no definite position on the relationship with these countries. Some other countries like US, India and Brazil cause only small divergence among the EU members' states. The rise of China, also, creates problems when talking about a common EU position. China roles grow up considerably in EU from the economical point of view, but also from a political and less obvious approach – in the UN context, in Africa, in climate negotiations. The EU leaders failed to have a common approach and that allows China to exercise a “divide and rule” strategy.[11] The US ambivalence must be, also, taken into consideration. After the crisis in Libya it was clear for all, that US wants EU to increase its responsibility in its neighborhoods. The changes in the US foreign policy are from “unilateral intervention” to “unilateral retrenchment”.[12] And if Europe wants to be a global actor it has to start acting like one and assume some of the responsibilities involved when talking about the security environment.

#### **EU and NATO, for the security of Europe**

At the NATO Summit in Lisbon 19-20 November 2010, the heads of State and Government adopted NATO Strategic Concept. US have for certain a considerable influence over NATO and no one doubts this, although 21 NATO members' states are members of the EU. Collective defense, crisis management, and cooperative security are all important for NATO and represents “essential source of stability in an unpredictable world”[13]. A partnership with NATO implies ‘shared values and interest’.[14]

Conventional threats in NATO's concept are the following: terrorism, energy security, proliferation of ballistic missiles, nuclear weapons and weapons of mass destruction. It is for certain that the Alliance was and will be based also on nuclear weapons, seen as a security warranty for the Allies. UN and EU are considered important international organizations to cooperate with.

The strategic importance of a ‘NATO-Russia cooperation’ is mentioned in the document, and it is stipulated that “NATO poses no threat to Russia”.[15] As stated before, 21 of 28 member states are also part of NATO. The most important contributor to NATO, from the financial point of view is US. As both organizations are concerned about the security of Europe and 21 EU member states are contributing with military resources to NATO forces, and in the same time to the EU peacekeeping operations, the financial issues is needed to be taken into consideration, also from the perspective of the financial crises. Which one should prevail? And, is it necessary to talk about EU participating in military or peacekeeping operations when the majority of its states are also involved in NATO operations? To what extend? These are the problems to which a new or at least a revised ESS must provide clear solutions.

#### **Reinvigorate, revise or reinvent?**

Twelve years from its adoption, considering the change in the security environment and much more, the question if the ESS is still a viable document for the common security still hasn't found an official answer from the EU leaders. It has, on another hand, created a wide intellectual dispute. A study issued by The Swedish Institute of International Affairs, published in 2011,[16] “The European Security Strategy: Reinvigorate, Revise or Reinvent?” brought to discussion three possible solutions.

First alternative, **reinvigorate** the current ESS involves maintaining the relevant elements of the ESS, to animate the EU “geographical and topical sub-strategies along with country-specific



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strategies.”[17] These sub-strategies ought to make the ESS more approachable and workable strategy.

The second alternative consists in the **revision** of the current ESS. This implies to evaluate and revise the various section, “while keeping the incipient layout and substance of the original document -what goals and methods are still relevant nowadays and an update of the threats menacing Europe”[18]

The third alternative is a considered by this study to be the “more ambitious”: “**reinvention of the ESS into a new comprehensive ‘European External Action strategy’**” This implies starting from scratch towards amplifying the goals of the document “to guide all of EU’s external action, from aid and trade to diplomacy and CSDP missions.”[19]

### **Conclusion**

Security Strategies are not always produced on regular basis. They are created whenever political emergencies require them. It is also the case of the ESS who was written in a crisis situation mainly the opposite opinions of US and European states in respect to the invasion of Iraq. But, when talking about ESS, we also have to take into discussion that many things have chance since 2003.

In 2015, we can say that for Europe, as for the entire civilized world, the time of crises didn’t stop to exist. Weather we discuss about the economic crises, the Russians potential threats to the security of Europe, the terrorists attacks, not far then January, 2015, when Paris was for a few days under terror, the Middle East uncertainty, it is clear that for the European leaders the time has arrived to sit together at the negotiation table in order to elaborate and adopt a new and more appropriate strategy. The time for divergent opinions is over. If the European Union wants to become a reliable character on international level it must start by conciliating its divergences. No one says that it will be an easy task to achieve. As there is no doubt that due to the dynamics of the European Union and its internal situation, there is no wonder that both ESS and RI-ESS are not to be considered strategies in the academic understanding of the notion.

The current international situation, the rapidly development in the change of the nature of threats, their complexity and multifaceted character are mainly the reason why it is so difficult to create a strategy. Also, the lack of an agreed policy platform, of an own intelligence service, a nonexistent will to subordinate national positions to EU foreign policy, made it hard for the EU experts to come with an efficient security strategy.

It is important to understand that a new security strategy shall provide the basis for the EU leaders to respond promptly to various threats and to have a constant way of action. The lack of a consensus makes it most of the time difficult for the EU to reach consensus on sensitive matters. A new strategy shall also provide a more detailed way of action and of using the military forces. Lately, there have been some discussions at the level of European Commission, concerning the creation of an EU Armed Forces. A positive attitude towards the need for a European Armed Forces is obvious. The details are still missing, but it is a necessary step in the right direction. The future will tell us if the European leaders will reach an agreement on this matter. The creation of an EU Armed Forces will also give the means for reaching the ESS objectives’.

We must not forget the relations with NATO and US, and nevertheless with Russia. A new strategy shall also have to be more concise on these matters. But, as long as the European Union remains divide on whether a new strategy is opportune or not, has divergent opinions about what represents or not threats and about the way of actions concerning them, and has no intention of taking off the veil that covers all the sensitive subjects on its agenda, such as its relations with US, it is obvious that the time for a strong, secure and united Europe did not came yet.

And, what else can be said, but the fact that a fragmented EU is a vulnerable one, and a vulnerable Europe means less security in the world.



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## **CRITICAL INFRASTRUCTURES UNDER CYBER THREATS**

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**Abstract:**

Critical infrastructure refers to processes, systems, facilities, technologies, networks, assets and services essential to the health, safety, security or economic well-being of a modern society and the effective functioning of their government. Disruptions of critical infrastructure could result in catastrophic loss of life, adverse economic effects and significant harm to public confidence. The cyber-attacks on the SCADA systems of the Iranian nuclear facilities as well as those targeting the telecommunication and power grid infrastructures of Estonia and Georgia show how cyber-attacks against critical infrastructures are becoming increasingly prevalent and disruptive. In the next future, cyber-attacks are expected to increase in scale, to become more accurate and therefore to become real cyber weapons.

*Key words: critical infrastructures, cyber security, cyber threats.*

### **Introduction**

The world has entered a new era called "the information age". The development of new technologies such as mobile telephony, communication satellites, computers, the Internet, has made the world become more interconnected. The development of computers and convergent communication technologies using digital tools for processing, transmission, storage information, changed the entire society activity. Media joined this revolution; we are bombarded almost daily with articles about the new world of cyberspace. Economic publications are awash with business in information technology and communications which incidentally are today one domain - information and communication technology - ICT.

But computer connectivity began in 1969 with the creation of ARPANET - a network of computers which connected four American research institutions: UCLA who was connected in September 1969, Stanford Research Institute in October 1969, the University of California in November 1969 and Utah University in December 1969. The network ARPANET was originally a project of the US DoD, was designed to satisfy business needs and therefore not put security issues. The internet today is known as the enfant terrible of Arpanet network, which over the years has become global network that interconnects people worldwide. Huge amount of money are now transacted through Internet. Strategic Activities are conducted via the Internet as the main means of communication. Also, public services are controlled via the Internet.

Computing power has increased exponentially while reducing the cost per unit, to the point that, nowadays, computers are ubiquitous. Connecting them through the Internet has made communication possible throughout the world with insignificant costs. Access to a computer has allowed a large number of people to obtain various levels of expertise, which was impossible in the past. The positive effects of this technology serving humanity more than any other in the past. The global information infrastructure has become vital economies in the world so that infrastructure itself became the main target for terrorists worldwide.

Developed countries shall endeavour to create national and global information infrastructure, so-called information highways which originally hoped that they will be paved with "gold and good intentions." The international environment after the Cold War, characterized by information age has proven to have a significant impact on security sector.

Information technology has become one of the integral elements of contemporary society. Whether in your personal life or in professional life, the cyber world has become a dominant factor in



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everyday life. Most experts agree that the information revolution is the most significant global transformation since the industrial revolution began in mid-century. XVIII. Increasing dependence on information technology contemporary society entailed transforming information systems particularly important targets cyber terrorists which represents a significant threat to military, economic, and ultimately to the national security.

And this information revolution will increase further if not exponentially, even Moore's Law (computer processing power for some costs will be doubles every 18 months).

### **The concept of critical infrastructures**

The term *critical infrastructure*, doesn't have an universally recognized definition, or at least a definition that provides a classification suiting the characteristics of each nation. Generally speaking, critical infrastructure is that part of the national infrastructure whose incorrect functioning, even for a short time period, may negatively affect the economy of individual subjects or groups, involving economic losses and/or even expose people and things to a safety and security risk [1].

The EU definition of Critical Infrastructure is “*an asset, system or part thereof located in member states which is essential for the maintenance of vital societal functions, health, safety, security, economic or social well-being of people, and the disruption or destruction of which would have a significant impact in a member state as a result of the failure to maintain those functions*” [2]. While a European Critical Infrastructure (ECI) is defined as a “*critical infrastructure located in Member States the disruption or destruction of which would have a significant impact on at least two Member States. The significance of the impact shall be assessed in terms of crosscutting criteria. This includes effects resulting from cross-sector dependencies on other types of infrastructure*”. [2]

In Romanian laws, National Critical Infrastructures are defined as “*an asset, system or part thereof located on national territory, which is essential for maintaining vital functions of society, health, safety, security, economic or social well-being of people and whose disruption or destruction would have a significant impact at national level as a result of the failure to maintain those functions*”. [3]

United States defines critical infrastructure as “*systems and assets whether physical or virtual, that are so vital to the United States that the incapacity or destruction of such systems and assets would have a debilitating impact on security, national economic security, national public health or safety, or any combination of those matters*”. [4]

In these three definitions above, there are small differences, but all of them look at identifying potential threats like human error, occasional accidents and attacks that can lead to a malfunction or onset of the crisis of the Critical Infrastructures under observation.

According the European Union Directive 2008/114/EC, there are three criteria for identification of European critical infrastructures:

- potential victims, in terms of number of fatalities or injuries;
- potential economic effects, in terms of financial losses, deterioration of products or services, and environmental effects/damages;
- potential effects on population, in terms of impact on public confidence, physical suffering and disruption of daily life, including the loss of essential services.

With that three criteria, EU defined 11 sectors and 29 sub-sectors (see Table 1).



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**List of EU Critical infrastructure sectors [5]**

Sector	Sub-sector
I Energy	1 Oil and gas production, refining, treatment, storage and distribution by pipelines 2 Electricity generation and transmission
II Nuclear industry	3 Production and storage/processing of nuclear substances
III Information, Communication Technologies, ICT	4 Information system and network protection 5 Instrumentation automation and control systems (SCADA etc.) 6 Internet 7 Provision of fixed telecommunications 8 Provision of mobile telecommunications 9 Radio communication and navigation 10 Satellite communication 11 Broadcasting
IV Water	12 Provision of drinking water 13 Control of water quality 14 Stemming and control of water quantity
V Food	15 Provision of food and safeguarding food safety and security
VI Health	16 Medical and hospital care 17 Medicines, serums, vaccines and pharmaceuticals 18 Bio-laboratories and bio-agents
VII Financial	19 Payment and securities clearing and settlement infrastructures and systems 20 Regulated markets
VIII Transport	21 Road transport 22 Rail transport 23 Air transport 24 Inland waterways transport 25 Ocean and short-sea shipping
IX Chemical industry	26 Production and storage/processing of chemical substances 27 Pipelines of dangerous goods (chemical substances)
X Space	28 Space
XI Research facilities	29 Research facilities

**Table 1**

In the Romanian laws there are some differences: it is included as critical infrastructures the sector for national security (defence, public order and national safety, Integrated border security system, defence industry), the sector of government but the finance sector is completely ignored.



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## **Threats**

Like any other area of interest to humanity, and critical infrastructures are subject to threats. Among them we'll present only two cases in which critical infrastructure was attacked. One case relates to financial and banking system attacking and the other shows what is believed to be the first weapon used in cyberspace, an attack against a nuclear plant.

### **The Carbanak case**

Starting late 2013 onwards, a big number (more than 100) of financial institutions suffered an cyber-attack organized and executed by an unknown group of offenders. All these attacks, had the same modus operandi. The cumulative losses of these attack, according to victims and the law enforcement agencies involved in the investigation, was up to 1 billion USD. [6]

What happened ? In Ukraine a bank's ATMs were programmed to spew cash at certain times to people located near them but with no physical interaction according to security cameras. The same scenario happened in Russia later. In order to investigate these attacks, a Russian software company, Kaspersky Lab was involved in a forensic analysis of ATMs dispensing cash. No malware was detected on these ATMs. However, a cyber-malware was found on a computer that was connected to them via VPN – this malware was called Carbanak.

Carbanak is a remote backdoor, created for espionage, data exfiltration and to provide remote control to infected machines. After the access into the victim computer is achieved, attackers perform a manual reconnaissance of the victim's networks. This malware, before proceed to stealing money, made a large reconnaissance including video recordings of the activities of bank employees, particularly system administrators. The videos recorded were sent to the C2 server. With information gained by reconnaissance step, the attackers use different lateral movement tools in order to get access to the critical systems into the victim's infrastructure. After the victim's network was compromise, the primary target from inside are money processing services, Automated Teller Machines (ATM) and also, the financial accounts. Sometimes the attackers used the Society for Worldwide Interbank Financial Telecommunication (SWIFT) network in order to transfer money to their accounts.

Please note that the attackers abused the aforementioned services by impersonating legitimate local users who had the permissions to perform the actions later reproduced by the cybercriminals. Of the 100 banking entities was targeted by this malware, at least half have suffered financial losses, with most of the victims located in Russia, USA, Germany, China and Ukraine [6]. This cyber-tool made a huge amount of financial losses.



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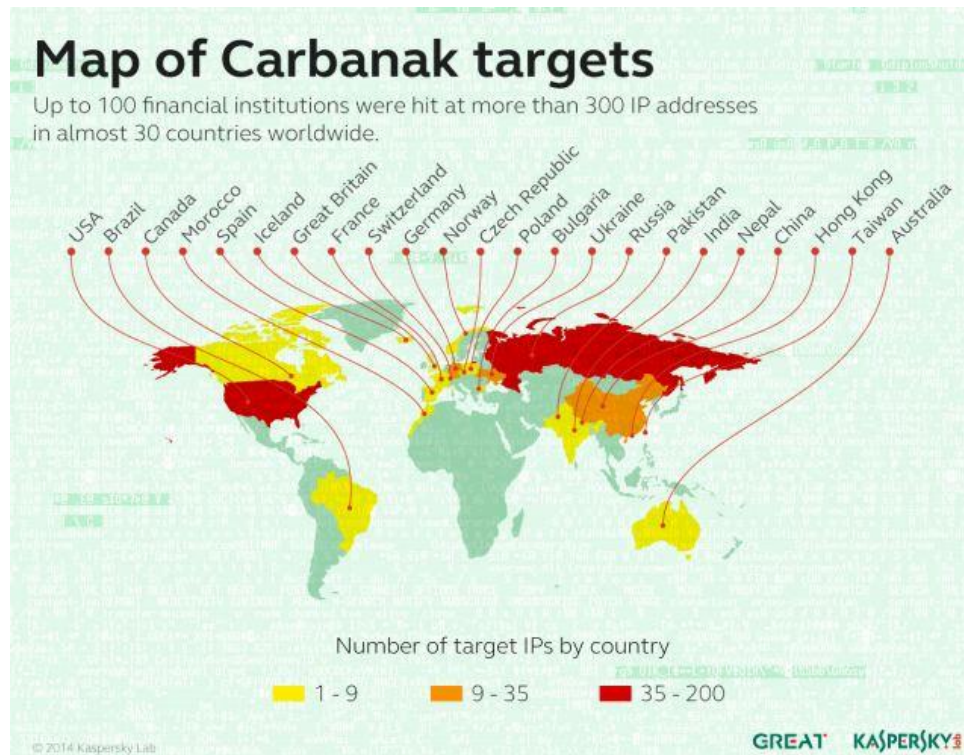


Fig. 1 – Carbanak targets on the world map [6]

This malware prove the importance of applying some strong measures for cyber security even in financial sector.

### **Stuxnet – the first cyber weapon**

Much of our critical infrastructure is controlled by cyber-physical systems responsible for monitoring and controlling different processes.

The Supervisory Control And Data Acquisition (SCADA) system are industrial control systems responsible for a wide range of industrial processes e.g. manufacturing, power generation, refining, as well as infrastructure e.g. water management, oil & gas pipelines, wind farms, and facilities e.g. airports, space stations, buildings.

In 2010, the Symantec Corporation, an American technology company headquartered in [Mountain View, California, United States](#), reported about a new and highly sophisticated worm called Stuxnet. This worm became known as the first malware that was used as a cyber-weapon. According to three top management responsible of Symantec Corp, Stuxnet was designed to take control over industrial plant machinery and making them operate outside of their safe or normal performance envelope, causing damage in the process [7].

German expert Ralph Lagner describes this worm: “*Stuxnet is like the arrival of an F-35 fighter jet on a World War I battlefield. The technology is that much superior to anything ever seen before, and to what was assumed possible. An aspect that should be kept in mind is that there is no precedence for this type of attack*” [8].

The Stuxnet generate a deviation from normal comportment of the industrial plant machinery, but this deviation has to be so small for become noticeable only after a long period of time. More than that, great effort was put by the Stuxnet author’s in hiding those changes from the operators, even imitating “legitimate” behaviour of instalations. In order to increase the success rate a lot of security holes and vulnerability was used like rootkits.



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A geographical analysis (see Figure 2) points out that more than 80% of the infected systems rely mainly in Iran but also in Indonesia and India. Although the main attacks were detected in mid-2010, early variants of the Stuxnet piece of code from 2009 have been found. Some analysts believed that the development of this highly sophisticated worm was made by experts from different background and with a massive investment in both time and cost.

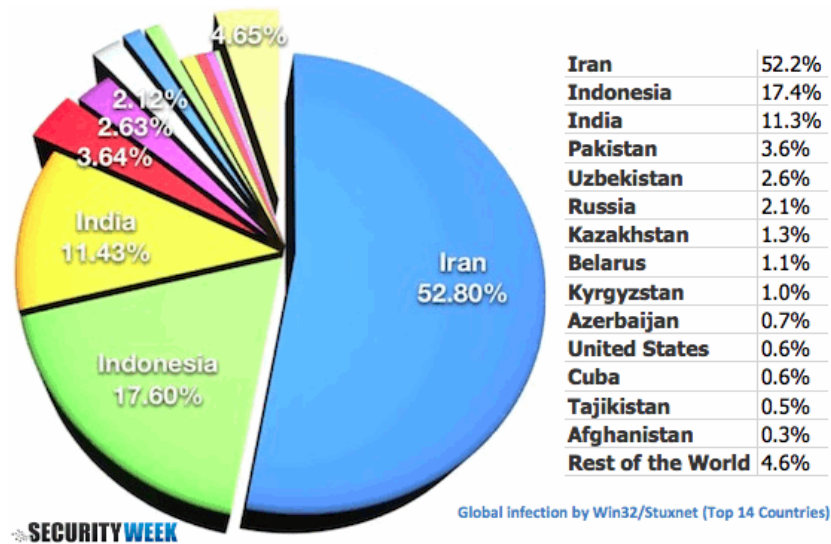


Fig. 2. Stuxnet – geographical spread rate [9]

In our days, is known that the target was that industrial systems which had device for controlling the processes (SCADA) furnished by Siemens Company.

The original infection of the Windows computer could be done by simply plugging in a USB stick or from the internal network if an infected machine exists.

Additionally it has installed the first known industrial rootkit which fakes industrial process control sensor signals; hence no alarms or shutdown is done due to abnormal behaviour. This slowly deviating behaviour in combination with the projection of “legitimate” data results in difficulty to assess what is malfunctioning and to pinpoint the faults before it is too late.

According Symantec, this cyber worm device attack modifies the state of the valves used to feed UF<sub>6</sub> ([uranium hexafluoride gas](#)) into the uranium enrichment centrifuges. Most of them were located in Iran. The worm goal is to closes the valves causing disruption to the flow and possibly destruction of the centrifuges and related systems. Additionally, the worm will take snapshots of the normal running status of the system, and then replay normal operating values during an attack. In this way, the human operators are unaware that the system is not working normally. If the operator tries to change any settings during the course of an attack cycle, the code will prevent modification to the valve status.

## Conclusion

The problem is that cyber threats successfully demonstrated the feasibility of a very targeted and highly sophisticated cyber-warfare attack. However Stuxnet’s design and architecture are not domain-specific and it can be used as a tool for Advanced Persistent Threats (APTs). With some modifications, Stuxnet could be tailored as a platform for attacking other systems e.g. in the nuclear power plants. Its highly sophisticated actions may prevent detection until it is too late.

In the hands of cyber criminals this kind of cyber tools may be a very effective cyber weapon with significant impact over the huge group of people or even countries. The fear that we may have



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seen only a successful capability demonstration in 2010, is strengthened by the distribution of modern SCADA and PLC systems over the world, the majority of which rely on USA, EU or Japan. Hence it is imperative to invest on the security as a process by looking holistically the emergent cyber-physical system of systems infrastructures.

The two kind of attacks also show that no sector of business cannot be considered immune to cyber-attacks neither nuclear plants, neither financial sector. It is need for all to constantly be worry about cyber security procedures. So in our opinion even the financial sector is mainly owned by foreign company, it deserve local population and companies and it have to be considered as a critical infrastructures and to be protected as it.

When we discuss about the protection of critical infrastructures, we have to realize we are living in a real, global and interconnected world in which nothing and no one can no longer be considered secure. Every field has become a potential target: citizens, companies, governments. Conventional protection is no longer adequate to block threats, which are becoming more sophisticated and are beyond the majority of control systems.

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## **CHALLENGES IN AIRSPACE MANAGEMENT RELATED TO NEW INVADERS - DRONES**

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### **Abstract**

UAV represents one of the great challenges of the 21st century. They are here and will not go away from our lives, because of the economic, social and political nature, which no longer require explanation. Mankind is not going to stop soon, its technological development although technology presents itself periodically with a payment order for its creators, the payment being made with no card but with human lives.

*Keywords: Airspace management, drones, challenges.*

### **Introduction**

Probably the use of airspace began when homo sapiens first raised a stone and threw it into the opponent's head.

Subsequently, over time, people have gradually thrown against each other with arrows, bombs and rockets, discovered trajectories' characteristics and founded the exterior ballistics. The airspace was used only in the Earth's near area without feeling the need for specific regulations.

The appearance of first aerostats marked an important step in fulfilling the most beautiful dream of human beings: the flight.

The aerostat, that later became airship, boosted the development of the civil sector of the economy through passenger air transport services, courier, entertainment, etc. Probably, during that times appeared first air traffic rule: see and avoid (collision with another user of airspace). Seen initially in disbelief, the aerostat receives military destination, especially for observing the movement of troops columns, observation and correction of artillery fire, personal transport and courier.

One time mark in the history of the conquest of the air was created by the Romanian pilot Traian Vuia on May 18, 1906 being the first person who performed the first autonomous flight with a heavier than air. A novel invention, our Romanian inventor Traian Vuia, happily binds to that of Nicolae Tesla. The aircraft, the radio station and radio transmission became an inseparable binomial.

Mankind took full advantage of the two Romanians gifts, the propeller aircrafts giving an undeniable boost to the European and world economic development. Barriers fell down, there were born ties and there were continents united via airplane. Everything that was once thought to be impossible has become tangible. Air space and electromagnetic spectrum had become resources, their exploitation pioneering relying almost exclusively on the experiences lived by pilots daily.

For the second time in the history of the conquest of the air space, the military adopted a civil invention and turned it into the most feared weapon, military aircraft, the vector that would cause a revolution in the use of force. Subsequent developments in the field of civil and military aircrafts, both constructively and in terms of use procedures are made on two parallel directions without a minimum correlation of the mode of operation in common at the same period of the 2 resources.

Fortunately, the exploitation of some particularly complex resources (air space and electromagnetic spectrum) governed only by the wild lure of profit and the lack of civil-military coordination in the use of airspace field was expensively paid with hundreds of offerings.





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The marking stone at the foundation of the beginning of air space management can be considered the third conference of the International Commission for Air Navigation (ICAN) held in London in 1912, when the first radio indicative was set for aircrafts.

Political and economic implications determined the subsequent transformation of ICAN in ICAO (International Civil Aviation Organization), as the UN agency that adopts standards and makes recommendations on air navigation, its infrastructure, flight inspection, prevention of unlawful interference, and facilitation of border-crossing procedures for international civil aviation.

Airlines incidents and accidents that have continued to occur led to a more complex approach to airspace management process.

International standards and clear principles on the use of airspace have been established and implemented and states have defined and legislated their national policies in the field, covering both the economic and the military side of the issue.

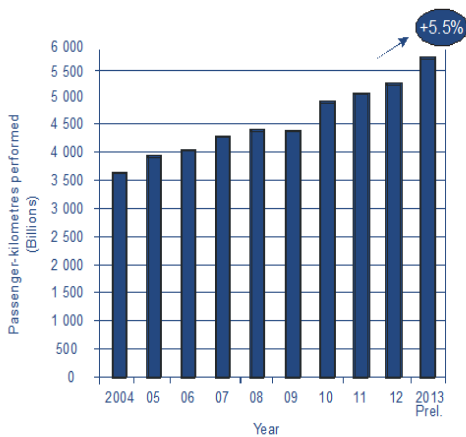


Figure 1. Total scheduled traffic, passenger-kilometres performed, 2004-2013

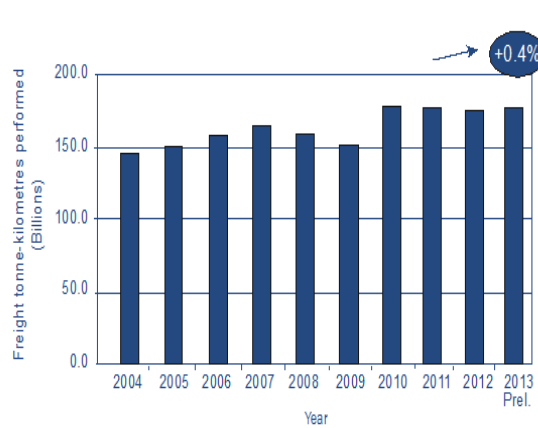
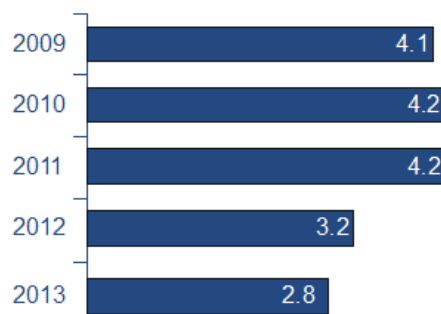


Figure 2. Total scheduled freight traffic, freight tonne-kilometres, 2004-2013



Global Accident Rate  
(accidents per million departures)

Figure 3. Global accident rate and trend, 2009-2013

On the other hand, the electromagnetic spectrum was practically invaded, particularly by exploiting the exponential radio domain, both by the civilians and the militaries, currently being almost inconceivable the existence of an electronic device that does not use the radio spectrum.

Neither the air space, nor the electromagnetic spectrum are inexhaustible resources.



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Sometime it seemed inconceivable in the XXI century there are made adjustments of the use of the two areas often, in order to allow a more intense exploitation, even with the price of a huge loss or non-observance of safety measures.

And paradoxically in the middle of this cocktail appears a new toy for grown people, a toy that enchants and claims its right to attention and use: the unmanned air vehicle.

## **Challenges imposed by the UAV**

### **Implications of air space resources and the electromagnetic spectrum exploitation**

UAV systems development with military destination has gained an unexpected transparency after 1990, the military of the 21st century toy being live on TV, being ever-present in the pages of the magazines and newspapers. Observation flights, technical trends of miniaturization the systems, endurance tests and even ground attacks are mentioned almost daily. Because underneath the angelic-aura of an UAV that conquers everything, there are seen the HELLFIRE missiles. It has become a habit for an UAV to be on TV, lately, to display its strengths in achieving military objectives, especially for achieving strategic goals (the discovery of terrorist camps, the annihilation of terrorists leaders by exploiting the information obtained from the UAV, or by direct attack executed by them).

The recent deck-arrestor of the Boeing X-47 prototype, a comparable-sized UAV with a classic fighter jet, has practically certified the military superpowers tendency to replace, in the not-too-distant future, even hunting and chatting with the UCAV. This is a new way to use air power, as the prime security provider!

If from the point of view of the wide range of tasks that can be executed, the flexibility of the UAV cannot be put to doubt, than in turn it requires a thorough analysis of the use in safety the air space and the security of the communication system.

How impenetrable is the connection between the navigator/pilot comfortably installed at the joystick and the aircraft in the mission, as well as which is the probability that it will not affect the evolution of classic aircraft, nobody can possibly answer. “The elegant capture” of an American UAV flying by the Iranian army has shown without any comments some of the risks associated with an aircraft without pilot. If in case of a system malfunction the pilot of a classic aircraft apply procedures tested and validated for long in order to restore the control, the emergency landing or removal of the aircraft from a populated area, in case of losing control the navigator/pilot does not have anything else to do but to engulf the cigar!

The crowd in the electromagnetic spectrum is obvious, most systems used by modern man is being based on the emission and/or reception of radio waves. Signal encoding is no longer enough; sometimes a simple interference happens to be just enough to produce noise and to disturb the electromagnetic spectrum. Interruption of connections with an aircraft without pilot can be made for a variety of reasons, starting with a voluntary action and continuing with the lack of radio coverage or even a trivial interference.

In terms of airspace resource, the key word is still, “crowded area”. The Single European Sky’s initiative and the vertical reducing of minimum space required between two flight levels have facilitated an unprecedented intensification of the European air traffic, with a huge profit, of course, but at the same time they reduced to the minimum the time required for carrying out safety measures in case of an incident. A special case is Romania, which received additionally in the national air space most of the flow diverted from Simferopol, following the events in Ukraine.

The giant Google’s intention to use the UAV as a mean of transport/messaging seemed to has open widely the eyes of structures responsible for airspace management.

Funny thing, the UAV has become a trend and for the young generation who loves the mobile phone. More and more youngsters have the Apple application that allows the management of a



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mini UAV with the mobile phone. *And if God made the world, he can sit quiet and watch how the Chinese deals for the rest, today!* The profile stores are already full of mini UAVS that can be purchased at a low price, without requiring authorization. New toys are handled anywhere you can, because there are not too many restrictions. It is nearly impossible to determine which will be the situation in case of some crowded additional bands of frequency and what incidents might occur in the air close to the ground.

So, the civil society reserves its right to claim the aircraft without pilot. Starting as a security generator, UAV turns to be a profit source. A huge profit if we will take into account the use of aircraft without pilot of high capacity for carrying goods. The UAV does never get tired, does not require a salary raise, does not organize strikes, it is a model employee, the dream of every patron. How much it will cost this dream and what are the consequences of it, it is hard to predict. The possibilities of using UAVS are limited only by the imagination: from surveillance and aerial photography, entertainment, spying, transport of goods and people, to fight autonomous aircrafts in a not very distant future.

### **Implications of terrorism expanding**

It has been 14 years since the attack on the Americans’ “Twin towers ”and globally the security situation does not give any signs of improvement. Bomb attacks, aircrafts jacking or kidnappings have existed before this unfortunate milestone but the terrorist phenomenon had no strategic coverage. Nowadays there are terrorist organizations with the financial power of a State, with tens or hundreds of thousands of followers, who fight with modern weaponry for the conquest of the territories.

It is unlikely that the 21st century “toy” will not come to the attention of those who are already targeted by the aircrafts without pilot. If the leaders of terrorists are hunted with UAVS, what do you think can stop them to acquire the idea to develop their own fleet of UAVS and to use these objects as vectors of terrorist attack? No one, perhaps.

A terrorist attack with an UAV can be catastrophic. Taking off and departing almost from anywhere with a relatively small charge of explosive, difficult to be detected with radars but being accurately guided to targets, UAV can become the perfect weapon.

Laws of Big Brother have sparked a wave of protests and indignation in many countries, mostly European. The modern man hardly give up on the privacy of the mobile phone and the Internet, the secret services and authorities are pressing on the need to control the terrorism ... the truth is somewhere in the middle. Hard to predict what will be the reaction of the modern man who, although accepting the “rape of his privacy”, finds himself in the head with an UAV full of explosive.

### **Airspace sovereignty**

In the midst of this Madhouse of the 21st century, the militaries have enough reasons to worry. The air space control is assigned by law to the Ministry of Defence, almost in all States of the world. Airspace sovereignty of each State is a matter of major importance, both military and political.

Regardless of the type of mission, destination, as users of air space and electromagnetic space the aircrafts without pilot must be found, tracked on the correct use of the paths of the two resources, or determined to enter the legality if it is noticed a violation of the law.

UAV will pose a real challenge to NATINADS and will determine the most likely, massive investments in modernization of air monitoring system, the standardization of data packet transmissions, as well as the taking into account of some new interception vectors.



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## **The UAV phenomenon approach**

### **At the international level**

As it has been expected ICAO provided the guidelines for approaching the concept of the aircrafts without pilot. In circular 3284, in 2011 it was made a recommendation for a unitary approach to the aircraft status, regardless of whether they are manned or are ordered remotely, under the aspect of licensing the operators with the compliance of technical standards and standards of using the airspace. In order to have a unitary approach there was proposed an update of the UAV definition and this was defined as Remotely-Piloted Aircraft-RPA1.

Thus, it is recommended that Nations should have the general framework considered necessary for the new systems to meet in order to operate in the same air space with the conventional aircrafts:

- Certification: RPA, operator, remote pilot
- Approval: RPAS as a complete system
- Collision and hazard avoidance
- Interact with ATC and other aircraft
- Security: data links, RPA, remote pilot station
- Predictable actions (not autonomous!)
- Contingency procedures

The implications of these guidelines will determine changes in two directions:

- companies producing RPA will have to adapt their production to meet the technical standards;
- companies that will operate the RPA will have to provide the training and certification of their operators, as well as certification of RPAS as a whole.

A wide range of individual users of UAVS that use these aircrafts, both for entertainment or for small scale business, it is likely to consider that these regulations are particularly harsh and made to hinder their freedom. It is expected that they will not obey the rules or will not operate at their limit, creating a risk area.

In some NATO Member States civil aircrafts without pilot had already been identified as being extremely useful tools of terrorist groups or of some groups which have as their objective the mission to make vulnerable and unclassified the national security objectives.

Following the repeated survols/air inspections of some important strategic objectives (nuclear power plants), France has banned the use of airspace by civil aircrafts without pilots.

### **In Romania**

The aircraft without pilot has been in the attention of the Romanian specialists, military, and civilians since its apparition. Discussions were held with representatives of all institutions with responsibilities in the field of management of airspace and the electromagnetic spectrum during the Working Group sessions established at the initiative of MoND.

Free flight aircraft without pilot that exceed the weight of 1 kg has been forbidden from flying through an order of the Minister of transports, this year, in January. "Aircrafts without pilot on board", as they are officially called, need an official certificate of registration and flight authorization to be lifted up in the air and if they have over 150 kg they can fly in "areas of temporarily segregated airspace that have been established, assigned and activated in accordance with the regulations in force".



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However, any miracle lasts three days, because a modification of this order is already projected through a ministerial order that is in full process of debating and this order will give more freedom for users of UAVS.

## **Conclusion**

UAV represents one of the great challenges of the 21st century. They are here and will not go away from our lives, because of the economic, social and political nature, which no longer require explanation. Mankind is not going to stop soon, its technological development although technology presents itself periodically with a payment order for its creators, the payment being made with no card but with human lives.

For Romania the UAV can represent an opportunity for strategic interest, both from the civil point of view and for the military. Having a civil aviation working far below actual/real possibilities, a military aviation that survived during hard times, chronically badly financed, transformed and retransformed during 25 years, the Romanian authorities, the Government should take full advantage of the opportunities created by the phenomenon of UAVS - opportunities such as international recognition and high rate employment.

Firstly, legislation adopted by Romania must be an example worldwide/ internationally. Even if the national legislation has restrictions, as it is normal to be, regarding the UAV, it must be supported by proper laws, made by experts in the field. It is not normal in a State of law that an order issued by a national authority in its field of responsibility could be attacked and rescinded in justice of any merchant. Furthermore, amending and completing the law, for the purposes of restrictions relaxation, it may be appropriate to be carried out only at the initiative of experts, after completing some technical and procedural steps, not at the proposal of any individuals whose contact with the issue is just the airplane ticket.

Secondly, the involvement of State or private Romanian specialists, under a single coordination in the development of some technical solutions for UAVS. Romania has internationally recognized very good experts in the field of aerodynamics, in the field of software, in the management of airspace and the electromagnetic spectrum. Their effort in the national service could generate an exponential gain, both politically and economically and could take Romania from the area of exporting labor force and put it in the circle of the KNOW HOW exporters.

Active involvement in the two above mentioned directions could generate a correct, optimal result in the field of National Security that should be the number one priority of political decision makers.

Just being part of the solution to a problem, not just a chibit on the edge, a modern State has the possibility to adapt permanently national security strategy, to be able to face any challenges successfully.

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