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CRITICAL ANALYSIS OF CAPABILITIES BASED PLANNING

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Abstract

In military planning, resources are never enough to achieve all that leaders want to do with the desired minimal level of risk. In addition, since the end of the "cold war", the military has faced a constant stream of new challenges. Now, rather than being prepared to face old threats in conventional warfare scenarios, military must be prepared to respond to a larger number of more diverse scenarios with varied attributes and to do so in circumstances involving complex and uncertain risk.

1. Introduction

In military planning, resources are never enough to achieve all that leaders want to do with the desired minimal level of risk. In addition, since the end of the "cold war", the military has faced a constant stream of new challenges. Now, rather than being prepared to face old threats in conventional warfare scenarios, military must be prepared to respond to a larger number of more diverse scenarios with varied attributes and to do so in circumstances involving complex and uncertain risk. There has always been uncertainty, but today, the scope of uncertainties is better recognized, making it more difficult to decide what quantities and qualities of forces are preferred within available resource limits. Decisions need to be based on assuring flexible capabilities. Changes that have contributed to this need include the following:

- In the not-too-distant past, planners often assessed the adequacy of the services separately. They performed analyses, in which the services' forces were used to a large extent independently, a reflection of reality. Over the past few years, the military had to place great emphasis on increasing jointness, and in today's networked world, the necessity for this emphasis, including jointness at smaller unit levels within the services, is more apparent than ever.

- In recent years, the adversaries have come to recognize that they can not deal with an alliance' forces head-to-head and must therefore adopt what are sometimes referred to as the tactics of asymmetric warfare.

- The war against terrorism has had profound and continuing effects on NATO operations, including the extremely deep operations into Afghanistan and the increased emphasis on the need, upon occasion, to strike preventively at adversaries abroad, rather than planning only for response operations.

As a result of these and other factors, the current world environment has created an increased demand for assessing the capabilities of packages of different types of forces

with the expectation that they will need to be used in many different ways, some of them unanticipated.

2. Differences

In addition to the demand to respond to new challenges, technological advances and innovative thinking by warriors and planners provide the opportunity to develop new and different concepts of operation, for using both older collections of force units and new types of force units. Thus, even if adversaries were not adaptive in responding to NATO military operations, there would be a continuing need to assess new combinations of technology and military tactics, techniques, and procedures.

It is not new to the military to assess varied aggregations of different types of military units for use in a wide range of circumstances (different and proper mix of assets) so that decision makers can decide how best to allocate resources among them. Nor is the concept of assessing "how much is enough" (i.e. the magnitude of capability at which decision makers believe that the risks in the given area are tolerable and that additional resources should instead be applied to a different area).

Many nations are implementing a Capability-Based Planning (CBP) system for long-term force structure planning. Due to differences in organizational, planning and legislative processes, each nation is implementing its "more-or-less" own variant of CBP. While there are strong similarities between these variants, there are also important differences. For having a common understanding of CBP, we have to start from the definitions:

- Planning, under uncertainty, to provide capabilities suitable for a wide range of modern-day challenges and circumstances while working within an economic framework that necessitates choice; [1]

- This method involves a functional analysis of operational requirements. Capabilities are identified based on the tasks require. Once the required capability inventory is defined, the most cost effective and efficient options to satisfy the requirements are sought. [2]

While individual interpretations vary, CBP is substantially different from legacy "threat-based" analysis that was focused on point (or individual) scenarios. Indeed, the shortcoming in the earlier analysis was more the point scenarios than use of threats (obviously, planning should consider a range of specific threats). The primary distinctions between these types of analysis are in the manner of dealing with uncertainty, in the considering the risk and in the manner of making choices. The main idea of the CBP approach is to confront, rather than discount, uncertainty, to express risk in meaningful terms, and to weigh costs and benefits simultaneously. The objective is to put premium value on portfolios of assets, including organizations and skill sets, that best satisfy joint needs and offer attributes like flexibility, adaptability and robustness, to hedge risk across a wide range of possible futures.

Capability-Based Planning (CBP) was developed as an alternative to threat-based planning. It represents an attempt to break down traditional stovepipes and provide for transparency and coherence in planning processes. CBP provides a more rational basis for taking decisions on future acquisitions and makes planning more responsive to uncertainty, economic constraints and risk. CBP provides a framework to support analysis and facilitate risk management. It focuses on goals, end-states and encourages innovation. It starts by asking questions regarding

What do we need to do?

rather than

What equipment are we replacing?

CBP has two fundamental differences from other forms of traditional capability planning:

1. It concentrates on what you need to do, rather than what you have;
2. It attempts to move away from suggesting solutions too early in the planning process.

The aim of delaying a decision on narrowing options is to encourage the development of more innovative alternatives and to help overcome simply replacing platforms and/or equipment with like-for-like. For example, questions such as "what options are there for new artillery?" is replaced with "how can we provide fire support to land forces?".

The goal of CBP is to improve the power of an organization to identify and analyze broad choices, provide sharp-edged implications, make clear the key assumptions and fragility of those judgments and meaningfully express risk in the context of an uncertain future.

"The concept of CBP recognizes the interdependence of systems (including materiel and people), doctrine, organization and support in delivering defence capability, and the need to be able to examine options and trade-offs among these capability elements in terms of performance, cost and risk so as to identify optimum force development investments. CBP relies on scenarios to provide the context against which to measure the level of capability." [3]

3. Applicability

Capabilities-based planning is a class of all-hazards planning. It addresses the under conditions of uncertainty and the growing uncertainty in the threat environment by using a wide range of possible scenarios. It tries to bound requirements capabilities suitable for a wide range of threats and hazards, within an economic framework that necessitates prioritization and choice. Elements of each capability include personnel, planning, organization leadership, equipment and systems, training, and exercises.

CBP is a systematic approach to force development that aims to advice on the most appropriate force options to meet government priorities. The force options developed should respond to strategic objectives, minimize cost and risk and comply with other constraints.

CBP has several major building blocks:

1. As CBP is output oriented, it must have high-level capability objectives derived from government guidance;
2. CBP needs to consider the manner in which the force will fight (top-level doctrine, some overarching operational concept);
3. CBP uses standard groupings (capability clusters or capability partitions) to make the process more manageable;
4. The resulting capabilities are realized within available resources.

An "Operational Concept" (how a force plans to operate in the future) includes strategic, operational and tactical level utilization concepts. These concepts must be validated because testing a force using an invalid concept will result in a force not suitable for its planned employment. Innovative concepts, that use emerging technologies in new ways, need to be considered. For the successful implementation of CBP, the employment

of personnel experienced in concepts and operations is critical. Thus, CBP is "concept-led".

Defence capability should be assessed using plausible situations shaped in planning scenarios. These help to provide context. Scenario types can be on a spectrum ranging from real world planning scenarios, through illustrative but real to the generic. Whichever type they are, these scenarios should reflect the type of tasks that the government may want its defence force to perform, and also should be reasonably stressful for the force. CBP uses a wide range of scenarios to better prepare for the uncertainty in the challenges we face. These scenarios also provide a basis for developing goals against which capabilities are assessed.

Capabilities, or the ability to perform a certain task, provide the common framework used for relating and comparing disparate elements of a defence organization. CBP is based on a structured view of the world to divide the organization into more manageable groupings. These groups are referred to as capability partitions, which rely on the ability to perform tasks, or to deliver effects.

When CBP is properly implemented, one of the key benefits consists in its ability to help take the focus away from single-service stovepipes. This derives from the need to usually use systems and concepts from multiple services to achieve each capability in the capability partition space. This joint focus encourages decision-makers to make judgements in the context of broad defence force goals, rather than considering only their own service when taking capability decisions. CBP accomplishes this by providing the instruments to compare different options for achieving the same capability.

Capability-Based Planning provides a method for identifying the levels of capability needed to achieve the strategy, a problem common across many defence forces. Using the scenarios, CBP explicitly connects capability goals and strategic requirements. These goals in turn allow for a holistic assessment of defence capability and thus, the development of robust force options within the available budget, in order to meet the range of contingencies expected by government.

The outcome of CBP should be an effective investment strategy that develops and sustains the capability priorities identified through the planning process. These capability development directions can then be used to conceive an integrated Capability Development Plan. A systemic approach will ensure an audit trail and suggest a performance management framework.

Due to the complex nature of the problem being addressed and the analytical rigor needed, an incremental approach which develops a number of products on the way is probably most practical. The CBP process starts with the overarching guidance, identifies capability gaps or excesses, explores options and ends with an affordable investment plan.

Most defence equipment is multi-role and thus contributes to several capability partitions. Thus it is important to share the information from one capability partition with the others and to prepare analysis using consolidated force development options when providing insights on the final force structure.

4. Implementation

The beginning in implementing CBP is to build an appropriate management structure and division of responsibility. Achieving this requires commitment at senior levels (sometimes referred to as "institutionalizing" CBP) and without it the benefits of CBP will be limited. The goals of designing the CBP process should include the following:

- Determine who will do the effectiveness analysis, cost-benefit analysis, trade-off studies within and among capabilities etc.;
- Determine who has responsibility for the approval and coordination of outcomes;
- Determine the resources required (e.g. for analysis, research & development);
- Determine the duration of a planning cycle;
- Determine the outcome / outcomes of the process;
- Determine the products is needed for;
- Ensure the process meets constraints (e.g. timeliness).
- There are many inherent challenges involved in implementing a CBP process. These include:
- Pluralism among defence interests and the number of stakeholders;
- The need to reflect the coalition context within which operations will be performed;
- The need for cost estimates on a consistent basis, including costs for force elements that could may not yet exist;
- Resource provision for the development and execution of the CBP process. CBP may need the development of new tools such as force structure analysis tools and costing models, if are not already in the national inventory.
- It can be difficult to work at the high level of abstraction, as CBP requires;
- Program alignment is problematic given differing timescales for generation of capability components (e.g. people, equipment);
- The planning environment itself is subject to change considering:
  - Technology,
  - Defence policy,
  - Threats,
  - Resources,
  - Management organization;
- Options and processes are constrained by government and public service policies and requirements;
- Ethics and values may be constrains for options, and as a result the will to explore all the options in the option space may be lacking;
- Setting capability goals and assessing against them is difficult;
- CBP considers endorsed operational concepts to be input. Highlighting the potential benefits of emerging or novel concepts may be difficult.

5. Customers of Capability-Based Planning

When developing the products and processes of CBP, there are two main groups of customers to be considered:

- Decision-makers:
- Capability developers.

Generally, they need different products owing to their differing requirements.

Decision-makers are typically senior defence leadership and government officials. They are responsible for taking decisions about trade-offs in defence capability development. Decision-makers will generally be interested in information such as how they can achieve their strategic objectives, what risk is there for defence due to various decisions or constraints and what will be the impact of choosing a portfolio of options on capability.

Capability developers include the planners who are required to implement the chosen initiatives and projects. Capability developers want to provide the best options to achieve capability goals and need to understand the "big picture", to identify the synergies between their options and the rest of defence capability, which is a complex and subjective task, but it will make success in CBP more likely.

6. Stakeholders

One of the first requirements for a successful implementation of CBP is stakeholder involvement. This must be achieved early in the process because the stakeholders generally control the information, resources and authority required to support CBP. The areas affected in capability planning are far reaching and are ranging from strategic policy through to operations. It is important to identify these areas as early as possible to ensure that the stakeholders are involved and their requirements are considered from the beginning.

Stakeholders must be early included in CBP to ensure that their requirements and concerns are considered. Key stakeholders will eventually control the CBP process and it is therefore important that they feel they have ownership of it. It is also important to ensure that stakeholders have an understanding of each other's perspective and an appreciation of the different, even competing, requirements. The overall defence priorities promulgated by government and senior defence leadership should provide unifying vision.

Defence decision-makers may need to be convinced that CBP is useful for their work. Facilitated workshops involving key stakeholders in developing the process and understanding the products are useful in addressing this issue. The use of workshops provides a forum for the stakeholders to debate their concerns and come to a common understanding of the process and other stakeholders requirements.

7. Inputs

Capability-Based Planning requires a large amount of information to be successful. Desirable inputs include:

<u>Objectives</u>

- Strategic guidance that allows priorities and objectives to be associated with different scenarios;
- Understanding of the future strategic environment.

<u>Context</u>

- Information on future allied and adversary capabilities;
- Endorsed scenarios;
- Agreed operational concepts.

<u>Constraints</u>

- Programming requirements (capability balance, industry imperatives, scheduling, cash flow, projects, platforms etc.).

<u>Framework</u>

- Accurate information on all inputs to capability;
- Capability partition scheme.

<u>Force Characteristics</u>

- Characteristics of current and planned force elements;
- Lessons identified from operations and experimentation.

The format for these data should be easy to understand and easy to synthesize. This requires the development of detailed process descriptions, product templates and a common definition of terms.

8. Use of Scenarios

Scenarios are a critical part of CBP. They provide the most important link between defence policy and capability objectives. The scenarios employed should be common across the defence force, and should accommodate the range of all operation types that a government expects its forces to perform.

The intent is not to use these scenarios as alternative futures, but to provide context. This use of scenarios assists in the development of realistic capability goals and the provision of a defence force that meets strategic requirements at a minimum cost. Scenarios should also provide a series of time frames to facilitate an assessment of capability through time, not at a single arbitrary point in the future.

It is important that a broad range of scenarios is used in CBP. The use of a small number of scenarios, or scenarios that are too similar, will result in a defence force that is unable to cope with a wide range of circumstances. On the other hand, the use of too many scenarios will significantly increase the required workload for CBP.

To understand fully capability requirements and obtain meaningful gap assessments, it is important to test a given force structure using scenarios that appropriately challenge the force. Scenarios that do not completely test a force structure will not identify where problems and weaknesses exist and thus may contribute to proposing a force structure that is unsuitable for a wide range of situations. Concurrency may also be a force determinant and defence policy with regard to concurrent operations must be considered. This will determine the combinations of scenario types that a force structure under assessment will need to be able to support.

Scenarios have to be developed at the operational level to aid in the refinement of capability goals. Developing capability goals based on specific implementation of scenarios allows the incorporation of more detail and greater fidelity, thus facilitating the use of complex simulations and war games. This needs to be approached with caution because the capability planners risk changing the focus from “what” to “how”, which may constrain the range of possible solutions.

9. Capability Goals

Goal setting provides the means for setting the desired level of capability needed to achieve the objectives. Goal setting is the hardest part of the process and requires both imagination and subject matter expertise. These goals need to be developed across the same set of time periods for which planning scenarios have been identified.

Capability goals should be developed based on (among other considerations):

- Defence priorities;
- Partitions chosen;
- Threats appreciation;
- Scenarios used;
- The possible impacts of future friendly / threat technology, especially disruptive changes;
- Affordability;
- Risk (military, national power, concepts failure etc.);
- The concepts employed.

Capability goals should be set based on ensuring success (appropriately defined) in the most stressing task, facing a particular capability, in a specific scenario. This helps establish the required maximum capability level and reduces the number of goals that have to be developed, for each capability.

A critical stage in establishing the goals is determining the level of aggregation to be used in the analysis:

- Higher levels of aggregation mean fewer (but more complex) goals and thus fewer assessments. These assessments will require analytical tools and subject matter expertise appropriate to more aggregated capabilities.

- Lower levels of aggregation result in more (but simpler) assessments, as the goals may be similar to requirement statements for individual systems performing single tasks. The risk with working at a lower level is that the presence of certain force elements or the need to perform certain tactical tasks may become an input assumption.

10. Capability Assessment

Capability assessment involves summing the various elements of the capability against the capability goals developed at different times in the future. The assessment should be derived from the most suitable method available (analysis, outcomes from real operations, expert judgement).

It is important to assess capability from the near-term to the far future. This is to allow for changes in defence capability to be tracked over time and to determine when changes happen. Some nations practicing CBP typically assess capability three or four times over approximately fifteen years to strike the balance between excessive work and large gaps in the assessment.

Capability assessment needs to consider all of the inputs to capability and must allow for entire force picture to be developed. This requires an extension of the analysis from single scenario assessments of force structure to assessments that cover multiple concurrent operations, where required. This will lead to founded decisions as to the required balance among force elements in both the quality and the quantity dimension.

The identification of capability mismatches (gaps or excesses) have to be comprehensive, although the way each assessment is made should not be prescriptive. Using the objective analysis is preferred. In cases where objective analysis is of low quality or missing entirely, expert subjective judgement must be employed.

11. Conclusion

Capability-Based Planning has many strengths:

- CBP caters to a more diffuse and dynamic strategic environment;

- CBP links acquisition / resource allocation decisions to strategic goals and provides an audit trail;

- CBP encourages innovation through moving away from determining assets solutions prematurely;

- CBP enhances the quality of information available to assist decision-makers and capability developers.

However, the process requires:

- Senior management commitment;

- Creation of an appropriate organizational context;

- Allocation of appropriate resources.

CAPABILITIES BASED PLANNING ADVANTAGES AND CHALLENGES

Capability-Based Planning can be used to achieve a capability development plan for a robust defence force that meets strategic objectives. CBP involves the partitioning and assessment of defence capabilities. It provides a detailed picture of defence capability and helps defence to allocate its scarce resources among very different capabilities. It also provides a more flexible and cost effective basis for defence planning than like-for-like replacement of systems along single-service lines.

References:

[1] NATO Research and Technology Board: Panel On Studies, Analysis and Simulation (SAS), *Handbook in Long Term Defense Planning*, 2001.
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[3] NATO Research and Technology Board: Panel On Studies, Analysis and Simulation (SAS), *Handbook in Long Term Defence Planning*, 2001