Expanded Capability Portfolios to Steer Force Development under Strategic Uncertainty

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ABSTRACT

The paper reflects a methodology for long-term defence planning, developed by one of the authors at the request of the Bulgarian Ministry of Defence in the period July-November 2007. The methodology builds on good practices in long-term defence planning and capabilities-based planning in an attempt to make the force development process more sensitive and adaptive to significant changes in the environment (security, political, socio-economic, technological, etc.) while preserving the transparency of resource allocation decisions. The underlying approach combines two recent developments. The first one calls for the use of two levels of scenarios—'mission scenarios,' or 'planning situations' in NATO parlance, and 'context scenarios,' known also as 'alternative futures'—as a means to represent strategic uncertainty in the force development environment. The second one is based on an expanded definition of 'capability.' We distinguish three types of capabilities:

A. *Capabilities to perform operational and management tasks, the operational capabilities being in the focus of long-term planning so far;*
B. *Capabilities to shape the security environment, e.g. regional security cooperation, assistance to other countries, etc., and*
C. *Capabilities for strategic adaptiveness, including analysis of trends and forecasting changes in the force development environment, technology monitoring, R&D, concept development and experimentation, maintenance of mobilization capacity, etc.*

Since the decisions in the long-term planning process are made under constraints (although constraints may be more or less loose), all types of capabilities are thus placed on equal footing in the competition for resources, while the use of context scenarios allows to rationalize the balancing between type A capabilities and the investment in shaping and strategic adaptiveness.

***Keywords**: Long-term defence planning, strategic uncertainty, capability portfolio, adaptiveness, agility, investment management*

1.0 INTRODUCTION

The development of armed forces is planned and realised in an environment characterised by a high-level of uncertainty. Reasons for that are manifold: emergence of new challenges and threats to security, complex interactions among players in the security arena, rapid technological advances with potentially disruptive impact,[1] changing political agendas, socio-economic and demographic trends, climate and other environmental changes, etc.

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In this environment the armed forces are expected to respond to various, and often contradicting requirements. For example, given the low threat of military aggression, societies expect that the armed forces—while preserving their core competences—substantially increase their contribution to the prevention of and the protection against non-military threats, as well as in the mitigation of the consequences of terrorist acts, natural disasters and industrial catastrophes. Thus, the defence planning community is challenged to provide answers to a broad spectrum of threats and missions. Recent methodological developments allow to seek such answers in capability categories,[2] often in a process of long-term defence planning,[3] with a subsequent translation into a force structure and investment decisions.

The purpose of our study is twofold. The first research objective is to make the capability-based planning approach adequate to a force development environment, characterised by uncertainty, which Paul Davis calls deep, massive and ubiquitous.[4] In such uncertainty our ability to understand in detail, and especially to predict the evolution of the force development environment is very limited.

Inevitably, any attempt to account for such uncertainty will involve increase of the complexity of the planning approach.[5] Therefore our second research objective is to provide for preservation of rationality and transparency while treating comprehensively the issue of defence resource allocation.

The structure of the paper is straightforward. In section 2 we outline the place of our approach *vis a vis* known planning approaches widely considered as state of the art. Section 3 presents the use of two levels of scenarios as a basis for provision of flexibility and adaptiveness. Section 4 outlines the concept of "expanded capability portfolios" intended to maintain rationality and transparency of defence resource allocation. In the conclusion we touch on the challenges of implementation.

This work reflects results of a study performed on request of the Bulgarian Ministry of Defence from July till October 2007 [6] and the exchange of ideas with Swedish, Dutch and Austrian colleagues during the preparation of a joint research project proposal in the spring of 2007. While gratefully acknowledging the contribution of other scientists and practitioners, we bear sole responsibility for this text.

2.0 METHODOLOGICAL APPROACHES AND UNCERTAINTY LEVELS

Examining defence planning in uncertainty, it is possible to delineate approaches at three methodological levels.

Level I is the level at which a single scenario (or a single challenge) dominates the definition of force requirements and, respectively, decisions on the future force structure. This is the level with least uncertainty. Threat-based planning is a typical representative of this methodological level.

Level II is the level at which uncertainty is represented through a selected set of challenges (usually described through a respective set of scenarios). Then planners seek a robust set of capabilities to meet all challenges under consideration and the force structure that would provide these capabilities in a balanced and efficient manner. The SAS-025 study and the TTCP *Guide to Capability-Based Planning* provide general approaches for dealing with this level of uncertainty.[7]

Level III is the level where uncertainty is so high that we may witness—and should be prepared to respond to—'qualitative change' in the force development environment well within the planning horizon. A 'qualitative change' may be a result of the emergence of a new threat, geostrategic shifts, shifts in the political and/or societal agendas, significant change in the economic environment, the emergence of a new technology with a disruptive impact, etc. Such a qualitative change would likely make the force structure, designed under one set of scenarios and/or force development constraints (e.g., budget levels) inadequate to the changed circumstances.

For the purposes of this study we call the respective uncertainty "strategic"; that is, it requires novel strategies to account for uncertainty and a defence planning approach that would provide for adaptive force development and will accommodate changes that make previous decisions on long-term force development and defence programmes inadequate or even irrelevant.

The following two sections present the key concepts of the proposed approach to deal with this level of uncertainty. We utilise the capability-based planning, or rather *scenario-based capability-oriented planning* as the underlying planning paradigm and then build on it in two main directions: representation of uncertainty and expansion of the notion of defence capabilities.

3.0 TOWARDS FLEXIBLE FORCE DEVELOPMENT STRATEGIES: REPRESENTING UNCERTAINTY

Since it is not possible, in principle, to predict what type of a qualitative change will occur and when, a strategy to deal with massive and ubiquitous uncertainty needs to provide flexibility and adaptiveness of the force development process to such change in the environment,[8] while at the same time preserving a level of awareness and stability so that a defence organisation could cope with change.

In that respect our approach builds on the idea of "alternative futures."[9] Each alternative future describes a qualitatively different context for the development of armed forces. Thus, in itself an alternative future can be described by a scenario which we call "*context scenario*."[10]

Then we envision the application of current good practice in capability-based long-term planning to treat each individual context scenario and define the respective capability requirements and force structure.

3.1 Examples of Context Scenarios

The context for the development of the armed forces is defined by the security situation, political, socio-economic, technological, and environmental factors (called by Brian Nichiporuk of Rand Corporation "development variables"). Any combination of such factors would describe a respective context.

In a study for the U.S. Army Nichiporuk identifies five development variables – geopolitics, economics, demographics, technology, and the environment, including in the latter the issue of availability and accessibility of natural resources.[11]

In a study for the Bulgarian Ministry of Defence Valeri Ratchev emphasizes and presents at higher level of detail the impact of geopolitical factors. After thorough analysis he selects nine development variables:[12] "World Order," "EU security interests," "NATO," "Russia," "Balkans," "Terrorism," "Criminality," "Society," and "State Governance."

Context scenarios are designed using a small number of discrete values for each variable. Nichiporuk, for example, uses "good," "neutral," and "bad" slope of the trend lines of the five variables according to the estimated impact on U.S. national interests. Ratchev also uses three values for each variable, defined qualitatively. For example, the values used for the Russia factor are "Authoritarian and aggressive," "Authoritarian and cooperative," and "Cooperative and week."

Even with such small number of values for each variable, the possible combinations are rather high. Therefore, analysts need to define sets of compatible values of the development variables and then select a small number of clearly distinct context scenarios that span the space of possible futures reasonably well.

Thus, Nichiporuk decides to use for further defence planning analysis six alternative futures, described

under the following rubrics:

1. U.S. Unipolarity
2. Democratic Peace
3. Major Competitor Rising
4. Competitive Multipolarity
5. Transnational Web
6. Chaos/Anarchy.

Ratchev proposed to the Bulgarian authorities to consider in the long-term planning process five context scenarios:

1. Balkans Forever
2. Balkan Concert
3. The New East
4. Challenging the Hegemon
5. Democratic Peace.

Some of these are more favourable, while others are more challenging for the realisation of national security interests, or the values and interests of an alliance. Ratchev presents in this respect a continuum of context scenarios to be used in security policy-making and defence planning (Figure 1 [13]).

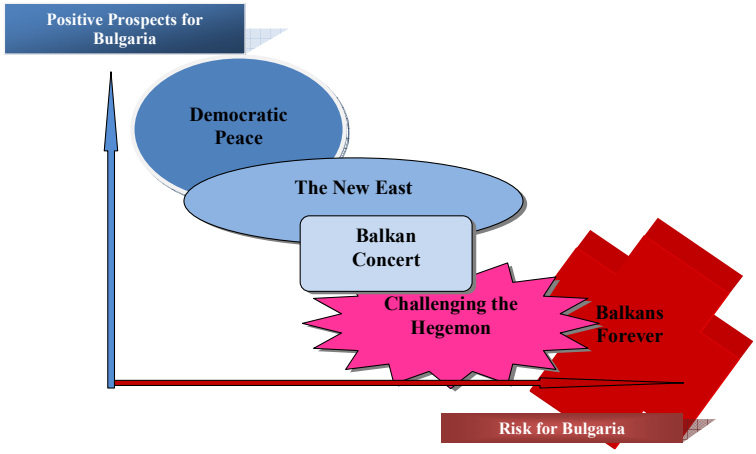

Figure 1: Continuum of context scenarios for Bulgaria's security policy making and defence planning

A number of threats and the respective mission scenarios may realise in each context. These mission scenarios are then used to define capability requirements and, consequently, a future force structure. It is very likely that any two context scenarios will share one or more mission scenarios (see Figure 2).

In addition, a good context scenario describes the dynamics of its own emergence. The dynamic description can be used to identify indicators (flags, signposts) for early warning in the force development process.

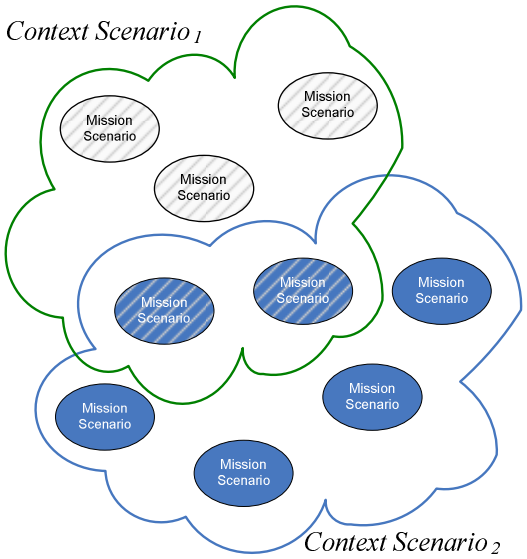

Figure 2: Mission scenarios within context scenarios

3.2 From Scenarios to Investment Decisions

The use of alternative futures, and the respective context scenarios, allows to treat rationally the issue of defence resource allocation under deep uncertainty.

As a first step we envision the application of proven approaches to long-term capability-based planning for each individual context scenario. Capability requirements, force structure and transition milestones are defined as a result.

Occasionally, there is an agreement on the future in qualitative terms, e.g. on the context for the development of the armed forces. That "future" (described by *Context Scenario* $_1$ on Figure 2) may be defined as "most likely," "desirable," "officially sanctioned," or any combination of these. If this is the case, the requirements of the respective mission scenarios will define the capabilities development trajectory up to the impact of minor changes in the force development environment, while other context scenarios serve the analysis of some trends and early deliberation in security and defence policy making.

If, for any reason, decision makers and analysts need to take into account alternative futures, even though they may not be considered very likely at the time planning takes place, then the respective context scenarios will influence the investment decisions.

An overlapping presentation of two alternative futures and the respective force development trajectories is presented on Figure 3. Thus, decision makers need to decide whether to invest, and at what level, in capabilities from Capabilities Development Trajectory CDT_2 different from the ones in Capabilities Development Trajectory CDT_1. Such investments may involve advanced technological research, maintenance of certain technology readiness level in specific areas, experimentation, maintenance of certain mobilisation capacities, etc.

The level of investment will depend on the early warning time. In particular, for a high threat scenario that does not belong to *Context Scenario* $_1$, the level of "CDT_2 - only" capabilities maintained should be such that the time necessary to increase it to the level of capabilities required to meet that threat will be no longer than the warning time. It is possible of course to invest also in increasing the warning time.

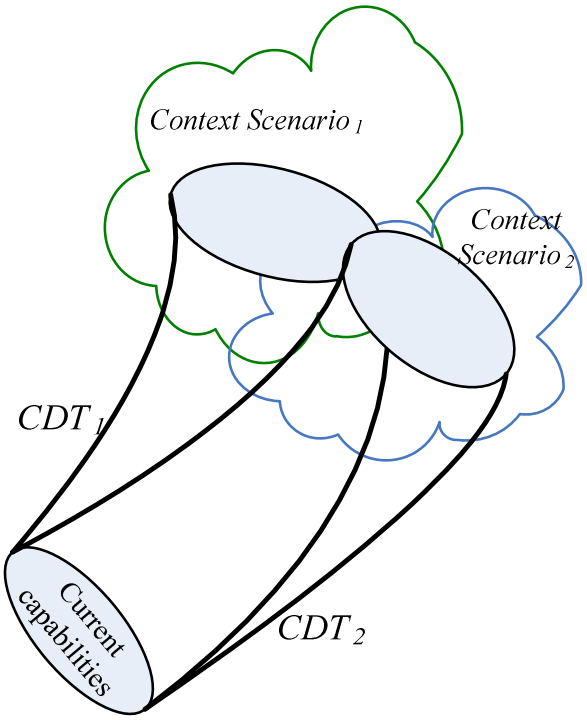

Figure 3: Diverging capabilities development trajectories for two alternative futures

At the margin, the level of investment in certain "CDT_2 - only" capabilities may be zero, i.e. such investments are postponed until an indication that the high threat scenario as part of the second alternative future is becoming more likely.

In a case when more than two context scenarios are in use, it is possible that the respective capabilities development trajectories do not overlap towards the end of the planning horizon, i.e., then the intersection of the respective capability sets would be an empty set (see Figure 4). Even so, the intersection of capabilities development trajectories in the early years of force development would indicate investments of value for all alternative futures under examination. Then it will be wise to make such investments even though they might involve, for example, high-risk technology research and development.

Finally, policy-makers and planners will use incoming information to anticipate a qualitative change in the force development environment and alter the force development plans accordingly.

Thus, a more elaborated treatment of uncertainty would allow defence planners to clarify and respond to concerns of variety of stakeholders in a rational manner. To preserve the transparency of decision-making, it is necessary to provide a single resource framework. The following section provides a brief description of our approach.

4.0 EXPANDED CAPABILITY PORTFOLIOS

In long-term defence planning, capability decisions are usually made in a resource-informed (resource-conscious) or resource-constraint decision framework.[14] To preserve this feature of the planning approach we introduce a single resource framework that provides for comprehensive and rational treatment of the issue of defence resource allocation.

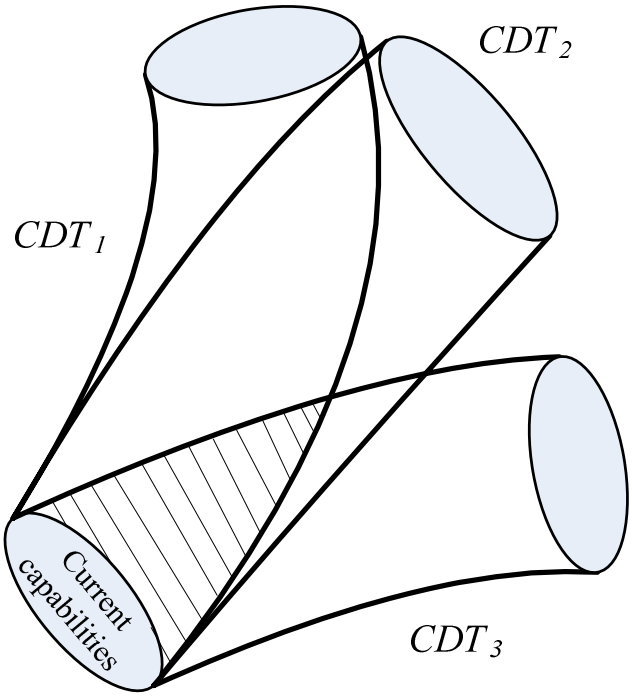

Figure 4: Capabilities development trajectories for three context scenarios

In this framework, decisions to invest in force structure need to be examined on a par with decisions to invest in provision of strategic adaptiveness, i.e., in capacity to adapt to quantitative changes in the force development environment, as well as in shaping of the environment, i.e. in efforts to keep the future force development environment close to that alternative future we consider desirable, and as benign as possible.

To this effect we expand the notion of capability currently used beyond the capabilities, required in mission scenarios, in three areas.

First is the area of defence management. It includes the capacities for policy making, development of strategies and doctrines, definition of requirements, management of financial and material resources, recruitment, education, recreation, welfare, and other components of the process of *capability generation*. The definition of metrics for this type of capabilities is straightforward – it does not differ principally from the metrics accepted for treating balance of investments in capability-based planning.[15]

The second area covers capabilities to shape the force development environment, and the security environment in particular.[16] It covers capabilities for (and efforts directed towards) bilateral and regional security cooperation, assistance to other countries, etc. It may include, for example, efforts to keep an opponent from turning into an enemy, activities to strengthen the cohesion of an alliance, maintaining enhanced partnerships and making them more operational, etc. The definition of metrics for this group of capabilities will involve measures of the distances between the future that is considered most desirable and the alternative futures with and without an investment of interest.

The third area cover capabilities that would allow to prepare for a threat, in a timely manner, that is not considered likely at the time of planning but may arise in an alternative context. Among these *capabilities for strategic adaptiveness* are the capabilities a defence establishment creates and maintains for analysis of trends and forecasting changes in the security environment (e.g., early warning capabilities), for technology monitoring, research and development, concept development and experimentation,

maintenance of reserve forces and mobilization capacity, etc. The metrics for this group will involve measures of the warning time for a shift to a new context and, respectively, the realization of a threat, as well as the time and cost necessary to increase the respective capabilities to a level required to meet that threat.

In the implementation of this approach during a follow-up study for the Ministry of Defence of the Republic of Bulgaria (November 2007 – January 2008) we proposed a capability partition with nine major capability groups:[17]

1. Effective Engagement
2. Effective Intelligence
3. Survivability
4. Logistics
5. Effective Command and Control
6. Mobility and Deployability
7. Capability Generation
8. Shaping the Regional Security Environment
9. Strategic Adaptiveness.

where groups 7, 8, and 9 correspond to the three additional capability areas outlined in this section.

5.0 CONCLUSION

Most permanent in today's world is change. To be successful, an organization must be ready to adapt to constantly changing circumstances. In the forward to *The Agile Organization*, David Alberts elaborated this observation in regard to defence:

> Traditional militaries and military analysis focus squarely on mission effectiveness for a set of selected missions (approved planning scenarios). Information Age militaries searching for a way to deal with the complexities, uncertainties, and risks associated with the 21st century security environment are *discovering the virtues of agility*, not only as a core competency in operations, but as *a value metric for policy and investment decisions*.[18]

Alberts also identifies attributes of an agile organization, such as robustness, flexibility, innovativeness, adaptiveness, and responsiveness, impacting organisational behaviour in synergy.[19] Being agile and adapting to fluid development, defence organizations and their leaders are still expected to make rational and transparent decisions on investing tax-payers' money.

A full methodological treatment of long-term defence planning under strategic uncertainty is still ahead. It is possible though, that a future methodology will incorporate the two approaches examined here – the concept of alternative futures defining the context for developing (and using) armed forces and an expanded understanding of the notion of capability.

6.0 ACKNOWLEDGEMENT

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colleagues from FOI (the Swedish Defence Research Agency), TNO (The Netherlands Organisation for Applied Scientific Research), the Hague Centre for Security Studies, and the Austrian Research Centres GmbH, with Dr. E. Anders Eriksson from FOI leading the preparation of the proposal. While benefiting from these interactions, the authors are solely responsible for this paper's final content.

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[8] Paul Davis uses the term FAR (flexible, adaptive, and robust) strategies. See for example Paul K. Davis, "Lessons from Defense Planning and Analysis for Thinking About Systems of Systems."

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[13] Ratchev, "Context Scenarios in Long-Term Defense Planning," p. 70.

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