Analysis of whole-of-force design and planning

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ABSTRACT

In just over a decade, the Capability-Based Planning (CBP) paradigm has become the standard methodology used for force-level Defence and whole-of-government security planning. While the Australian Defence CBP approach has undergone several iterations through the years and various lessons have been identified, there are some challenges that re-appear and warrant the further development of techniques for force design.

This paper presents experiences of CBP implementation from an Australian perspective. A number of persistent challenges in the application of the CBP approach and the resultant decision-making process will be discussed. In particular, the organisational alignment, joint culture, and foremost, defining capability goals to inform portfolio decisions and subsequent capability development. We do not challenge the CBP philosophy, instead this paper proposes a modified CBP approach that is tailored to the Australian Defence Organisation requirements and presents some guiding principles for whole-of-force design. We propose that embedding CBP into Defence portfolio management, that is necessarily multi-disciplinary, should emphasise the interrelated and temporal nature of capabilities.

1. INTRODUCTION

Whole-of-force design incorporates consideration of the existing forces, organisation, personnel and operating costs in addition to the future environment and capability needs. The aim of this paper is to examine how whole-of-force design has been conducted in recent years, build upon its strengths and take into account important challenges to improve the quality of advice to decision makers for future planning, assessment and review activities. As indicated by de Spiegeleire [1] there are emerging challenges influencing capability planning. We will discuss some challenges he notes that we have experienced and show how force design and the use of evolved CBP techniques can begin to address some of them.

We begin the paper by providing background information on force design and some key challenges we have experienced that have shaped our implementation and use of CBP toward portfolio management techniques which we discuss briefly in the following section. Then, using a generic and scalable force design model, we identify a number of guiding principles for force design. Within this framework we then overlay an evolved CBP activity model.

2. BACKGROUND ON FORCE DESIGN AND CBP

When referring to force design we include whole-of-force and enterprise considerations. We define force design as the exercise of conceiving and producing a plan for Defence capabilities in order to achieve the desired Defence posture. Defence force posture describes the national military capability and its orientation in relation to other nations. There are a number of elements that constitute the force design including considerations of preparedness (readiness) plans, presence (locations) and force structure, and each of these underpin an assessment and review process.

Capability based planning is a generic methodology [2] that has been widely used in force design. In the refinement and development of the generic CBP model [3] as shown in Figure 1, the representation is necessarily simple to highlight common areas of The Technical Cooperation Panel (TTCP)[1] nations' force planning. The figure shows key data and information inputs in pink and orange and the stages of analysis in light-blue with the final product being the affordable capability development plan in dark blue.

[1] The Technical Cooperation Panel has representation from the United Kingdom, Canada, New Zealand, United States, and Australia.

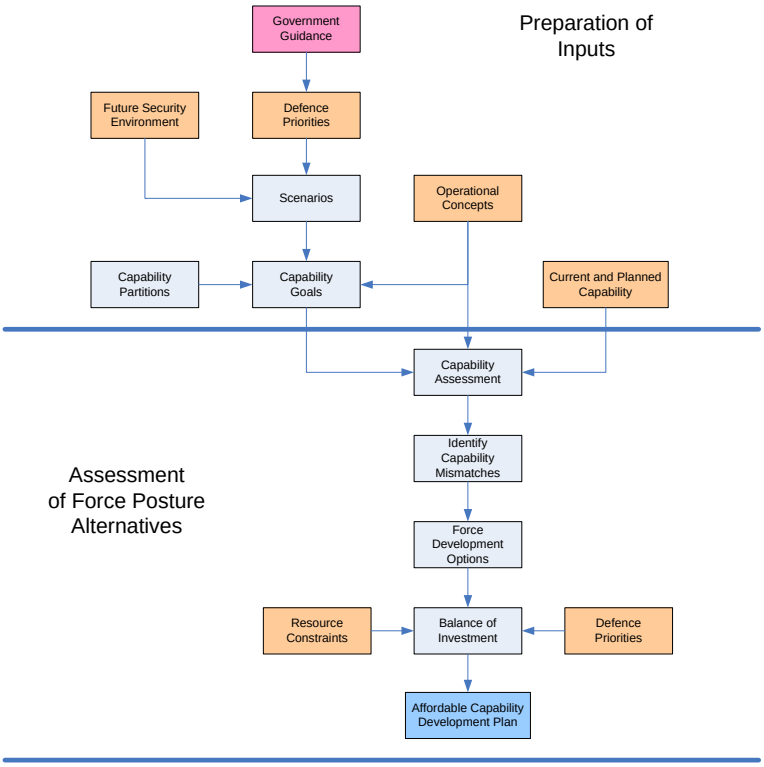

Figure 1. The generic CBP methodology.

It is common for the actual implementation of CBP to be somewhat different to the one shown in Figure 1. The implementation is varied to address key decisions to be informed, and has to align with the organisational structure and management of the portfolio. There are important differences in the use of CBP in force design. The model is usually shown as a single discrete instance of a process, to inform an investment decision. In reality, the use of CBP in force design informs decisions in an iterative portfolio management process that continually evolves. It continually requires consideration of risks and adjustments to inform decision making [4, p13]. Some of the key inputs, decision points and feedback paths between different stages of a Defence capability life-cycle are shown in the stylised view in Figure 2 which we have developed for this work.

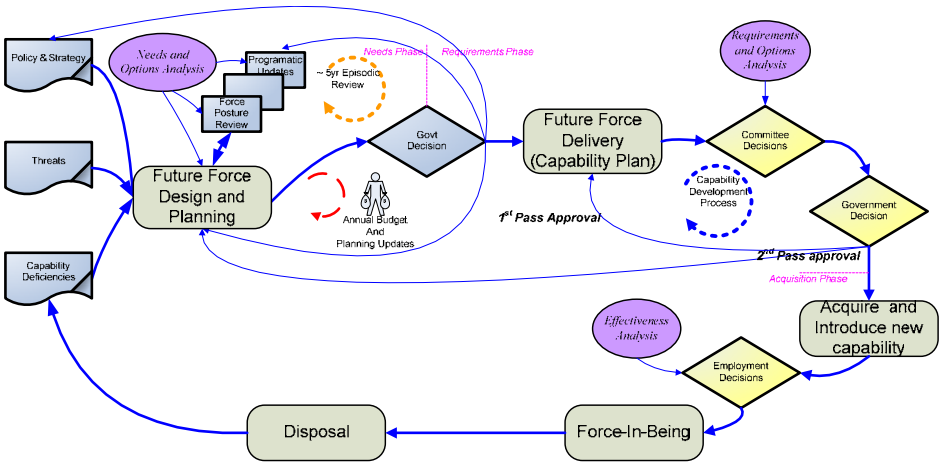

Figure 2. Exemplar flowchart of decisions, key inputs and feedback paths influencing the stages of a capability life-cycle.

A key consideration in capability assessment of the CBP model is recognising the temporal nature of capability. In most cases it takes many years for capability to be acquired and introduced into service from the date of its initial conception. As the result, decisions about the delivery of new capabilities into a force need to be coordinated with other interdependent capabilities to achieve the desired

operational effects at a particular epoch. This temporal aspect of planning affords Government and decision makers the flexibility to postpone or hedge their decisions about capabilities.

The future force design and planning stage is influenced by many factors such as policy, budgets and emerging deficiencies. These factors can be related or independent of one another and can evolve at different rates. Most importantly, the outputs of design and planning must inform government decisions both in annual budgeting and during episodic reviews like a force posture or programmatic review as shown here. This then proceeds to inform Future Force delivery. Hence, the evidence from future force design and planning provides the basis for all capability development processes which involves two separate approvals from Government before moving into acquisition.

3. IMPORTANT AND PERSISTENT CHALLENGES

With many years experience and observation of force design activities, there are a number of challenges that recur. These align with most of the trends identified by de Spiegeleire [1]. Some are more difficult than others to resolve, but the force designer should be cognisant of these factors in the planning and execution of activities.

a) Coherently presenting affordable, deliverable, portfolio options

In force design, money ultimately sets limits for portfolio investment choices. In Defence organisations, this balance is split between maintaining current operations and capabilities (the force-in-being), personnel costs, and investment in future capabilities (future force). Whilst costs of the force-in-being and personnel can be relatively accurate and easy to gather supporting evidence, the prediction of future costs is always challenging and introduces sunk costs into the future budgets for future Governments. The force design process needs to incorporate sensitivity analysis on portfolio budgets and the investment and divestment options to be able to coherently present a range of achievable options or approaches such as: strengthening the case for funding; reducing ambitions; or accepting greater risks [5]. This leads to a need for temporal analysis of force-level transitions, avoiding the mistake of planning for all issues or risks to be resolved by one particular epoch.

b) Leadership and a joint culture – *"the Who"*

It is apparent from past experiences that force design requires ongoing senior leadership and management. The responsible authority should ensure they have: a clear purpose and objectives; an understanding of what they need to produce in terms of a coherent plan; and how the outcomes will be used throughout the capability systems lifecycle. Without such a senior champion it is common to fall into a social trap referred to as *"the tragedy of the commons"*. This is applicable in the force design context where resources are finite and demands exceed the available resources. What is noteworthy about this dilemma is that there is no intent to destroy the common resource – its combined actions of all acting in their own self-interest that lead to the tragic result [5]. In Defence organisations this can be embodied in joint, parent-Service or technical specialisations. The overseer of force design needs to be empowered and accountable for investigating options, inevitably in-palatable to some stakeholders, to provide advice to Government about difficult decisions. There are also other strategic factors that influence the force design process, and the leadership needs to be able to incorporate them, and any other "directed decisions", and demonstrate the impacts of the options clearly.

c) Concepts – *"the How"*

Concepts should form an integral part of Defence planning as key references for military planning attest [2, 4]. They help to develop and experiment with ideas of how strategic objectives might be met, before the actual acquisition of capabilities. This is necessary when a new problem arises, or when a new solution to an old problem is required. Risks can be identified early in the process by developing concepts and conceptual plans, and validating concepts before heading down the path of change or procurement. Concepts, hence, form the link between tasks that achieve objectives, to needs and requirements for acquisition programs [4]. With a sense of affordability built into them, they can provide an early indication of dollar-bound strategy.

Concepts can be articulated with different levels of fidelity [4, 6 p77-78] and the lack of a shared lexicon for different level concepts can be problematic. They can be broad (such as operating

concepts), or narrow and more specific (such as a concept plan or concept of operations for a particular contingency). Both are important for force design and the development of key assessment inputs and criteria, but most important is a development of a shared understanding for the analytic team, participants, and operators who may ultimately have to use them.

We use an informal hierarchy of concepts, with each layer possessing differing functions and associated applications. The capstone concept articulates how the organisation operates; the future operational concepts below this conceptualise how major systems work with each other to meet strategic objectives; and underlying concepts at the operational and tactical layers define how individual systems operate and set requirements for future capabilities. In order for concepts at each layer to be logical and analytically rigorous, they need to be transparent and traceable, and hence be clearly structured and have clear linkages between different layers, and to extant organisational artefacts.

The future operational concepts can initiate forerunners of capability goals, risks and integration issues that could be tested and validated to assess the solution space. These have been absent in whole-of-force design activities. This missing layer implies that there is nothing that currently conceptualises how capabilities come together as a whole-of-force to meet strategic objectives, and there is no clear guidance for developers of capability acquisition in terms of goals that need to be achieved.

d) Defining tasks, missions and goals – "*the What*"

Whilst strategy articulates the strategic factors that bound the force posture, concepts and scenarios are used to distil what needs to be done and how the organisational elements might "fight" in the future. Portfolio assessments, using a military appreciation process, need indicative *mission-level* tasks for a concept plan to be articulated. These indicative tasks allow exploratory analysis of boundary conditions (for example, task location, distance or duration) and pre-conditions later and therefore are not necessarily the most difficult tasks.

To conduct a capability assessment in a force design process requires capability goals to be articulated. The goals provide a linkage from strategy and concepts to capability[2] via a measurable objective. They define a *desired level* of capability that is needed under certain conditions. The purpose of capability goals is to facilitate the assessment and comparison of the potential mission system options to achieve each goal under a defined set of conditions.

Capability goals were first introduced in the Australian force design process in the period prior to 2000. But, preparing them at the appropriate level for force design activities has been troublesome. Some goals have been too generic to infer force design priorities, while some have been too specific to individual platforms or solutions to facilitate assessment and consideration of trade-offs. Examples of the latter can occur when a military appreciation process is applied and a deliberate planning exercise is completed, going beyond *what* needs to be done and designing *how* force elements are best allocated for a particular course of action. Other analysts also note this as a common pitfall [8, p393]. Experience from more successful activities and other planners indicate that analyst-assisted military appreciation processes are a suitable mechanism for defining capability goals for force design assessment.

e) Managing interdependency

In Australia, interdependency challenges are acknowledged, though treatment and the ability to examine them in whole-of-force design is still maturing. The impact of failures to address interdependency issues can be seen through a number of types of events. These can include: schedule slippage; scope changes; integration difficulties; cost overruns; deferrals; and delays.

The operations research and management science literature possess a deep history in project interdependencies beginning with the seminal review by Weingartner [9] and a large body of work on the subject has followed. The US has led developments in Defence application of systems engineering techniques, but making this a part of portfolio planning is still in its infancy. Treatment of interdependency remains a critical limitation of projects and programme management [10].

[2] A capability will be defined in a framework or partitioning scheme to define the achievement of an effect or outcome.

There are various typologies and taxonomies on relationships between projects. To demonstrate this, processes or workflow models [11, 12] divides relationships into:

- Sequential *or* Contiguous (where a project depends on the completion or output delivery of previous project(s);
- Parallel *or* Concurrent (where projects are not dependent on the outputs of each other; but they can run or operate concurrently without influencing each other;
- Reciprocal *or* Pre-requisite (where projects depend on each other to deliver an outcome. In order to complete project A, specific aspect(s) of project B must be considered and vice versa.

In a different context, Liesiso et al. [13] also identified a number of interdependency types:

- Budget constraints (where project costs and the budget level (including cost saving projects) are fixed;
- Logical constraints (where there are mutually exclusive projects or other rigid interdependencies, such as follow-up projects);
- Positioning constraints (where the composition of the portfolio is aligned with strategic requirements, such as starting a minimum number of projects in a new technological or geographical area);
- Threshold constraints (where the performance of the portfolio and its constituent projects must fulfil minimum requirements: for example, where the aggregate net present value may have to exceed a minimum acceptable level);
- Project synergies (or cannibalisation) where the overall value and/or the cost of a set of projects differs from the sum of the individual projects' overall values and costs.

4. EVOLUTION OF CAPABILITY PORTFOLIO MANAGEMENT

Whilst CBP applies a portfolio framework [2,p xxi], it is important to consider developments in portfolio management techniques and how CBP can be evolved and applied in portfolio decision making, particularly where the capability investment is just one part of the evolving portfolio.

In recent years, portfolio management has attracted considerable interest from Defence organisations internationally. In particular, the U.S. Deputy Secretary of Defence mandated in his 2008 directive that all U.S. DoD agencies are to use capability portfolio management to optimize capability investments and minimize risk in meeting the U.S. DoD needs across the Defence enterprise. Methods and frameworks for Defence capability portfolio management are being actively developed by Defence research organizations around the world. The best practices in Defence capability portfolio management include the recent portfolio management methods developed by RAND [14,15,16], the MITRE PALMA method [17,18] and other international studies [19,20,21,22].

In response to several external reviews into Defence acquisition, procurement and accountability [23,24,25] steps have been taken in Australia to initiate a more structured portfolio approach. Key parts of reforms that are relevant to this literature review have been focused on applying some of the principles outlined in the UK Office of Government Commerce Portfolio, Programme and Project Offices business model [26]. Aligning with the “Leadership and culture” challenge, the portfolio manager needs to have an enterprise view and responsibility for overseeing the force design.

5. DEVELOPING A GENERIC, SCALABLE, APPROACH TO FORCE DESIGN

We have highlighted some of the factors and analytic techniques that are relevant to whole-of-force design and planning. What is clear is that there is no unique method to solving the problem, but treating it will require multiple and multi-disciplinary methods.

From the force design experience outlined in the previous section we have grouped theme areas into five blocks as part of the generic force design model shown in Figure 3. It illustrates preparation, assessment and post-analysis elements that are able to be periodically repeated. These align with the Soft-Systems Methodology and action learning approach [27] and more recent thinking from the Defence community on analytic support to strategic planning [28]. There is ongoing work that is used to inform the preparation and assessment blocks and it is shaped by the post analysis block. The approach involves consistent governance, to focus the role and alignment on the overall Defence and National Security planning objectives and oversee preparation for specific force design activities. With knowledge of the key outcomes and decisions required to be informed, such a model can be tailored to

suit the generation of a suitable evidence base that may be needed for different types of force design activities. An intended outcome of an ongoing business-as-usual force design process is a scalable approach that can provide reduced peak demand during hasty or short-notice force design activities, improved awareness of the roles and responsibilities and a body of knowledge to enhance accountability and contestability.

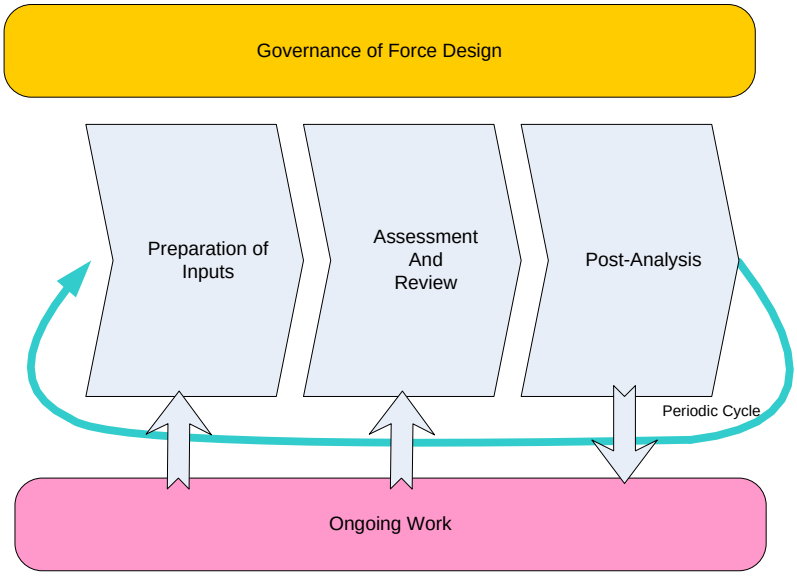

Figure 3 Generic model of whole-of-force design process.

5.1 GOVERNANCE OF FORCE DESIGN

Leadership guidance, oversight, and alignment of force design activity is crucial, but can be problematic where rational approaches are not always followed. Whilst force design activities are generally top-down, strategy-led processes, the leadership of force design processes also need to be prepared to revise and adjust force posture options, noting that not all strategic decision making follows a purely rational decision making process [29]. Any force design model needs to be able to inject possibly non-rational and, or, directed inputs into the process.

There needs to be a clear understanding of the desired outcomes from force design, as experience has shown that the focus on provision of advice to Government can result in a limited articulation of assumptions for enterprise activities that deliver the means to achieve government objectives. Therefore, the body of knowledge developed through an ongoing force design process needs to deliver two primary outcomes:

a) provision of force design advice to Government; and,
b) provision of capability information and assumptions to the Defence enterprise.

The products for each of these outcomes are likely to be quite different, and designed to suit different audiences, but both need to be aligned to, and based upon, the same underpinning information. These are generally products from an accountable and contested process and all assist with the capability development documentation.

Identification and prioritisation of needs requires guidance from the Government or delegated authority for action by senior decision-makers on issues such as priorities, political imperatives, directed solutions, funding envelopes, objectives, missions, and risk tolerance. These help to define the intended outcomes of any assessment and review process and identify actions necessary to prepare inputs.

Political direction can be provided at any point in the force design process, which can create challenges for the force design team and stakeholders, often resulting in changes to key assumptions, force options and the underpinning analysis that is needed.

It may become clear that a force is either unaffordable or unachievable (in capability, resources or time) and needs a revision of the strategy, concepts or goals. All of these uncertainties lead to a requirement for an approach to force design that is iterative, building upon a knowledge base and scalable to be able to tackle planned or short notice activities.

5.2 PREPARATION OF INPUTS

One of the critical requirements for the successful execution of the force design activity is stakeholder involvement, and this is particularly true in the preparation of inputs. Stakeholders generally have the authority for, and control, of the information and resources, which are the key inputs required for the activity. Thus, the stakeholders need to be engaged in the process and aware of their responsibilities and what they needed to prepare.

Historically approaches to force design activities have varied significantly as a result of the type of review to be conducted. The approaches, such as those from the U.S. [5], might be in the form of expansion, or finding savings by modifying force posture, or ambition, or a combination of these types of factors. In seeking and preparing inputs, a decision on the proposed approach and *level of analysis* that is to be conducted is needed in sufficient time to allow ongoing work to be prepared as suitable inputs to the force design process. This can be very difficult in the absence of a "warm-base" of ongoing force design analysis.

There are a number of essential inputs that should be available before undertaking a force design assessment activity. These align with the inputs to generic planning models[3] and include:

a) Strategic guidance including strategic risk assessments and indicative budgets;
b) Review approach – Less with less, More with more; or the posture priorities to be prepared as part of the options etc;
c) Scenarios and operational concepts to provide the context and articulate goals;
d) Key decisions, potential inter-related decisions and trade-offs; and
e) System level details containing performance measures and limitations of capabilities.

In order to conduct an assessment of alternatives, it is necessary to develop mature planning scenarios and operating concepts, and endorse capability goals, to ensure that goals align with concepts and selected capability frameworks or taxonomies. Development of the concepts, force options and goals is part of an iterative process to develop a set of options for assessment.

As a recent Defence Secretary stated, citing one of his predecessors, *"If you haven't talked dollars you haven't talked strategy"* [30]. Force posture options arising from strategy are ultimately governed by affordability, and it can be difficult to develop suitable robust cost estimates for the options. However, the trade-off between time and detail needs to be managed. The desire for accuracy can dramatically increase the time to obtain data, but have limited impact on the decision for broad force design considerations during the assessment process. It is most important that estimates include acquisition through-life costs such as those associated with maintenance, facilities and workforce.

Measures and metrics need to be determined based on available data inputs and the capability goals to assist any trade-off or balance of investment questions in the assessment stage.

An understanding of key force design decisions provides insight to the team who will need to develop the force posture options under a defined set (or sets) of constraints such as budgets, capability or industry priorities. This is a difficult step as changes to the planned force are unlikely to be agreed to by all stakeholders, particularly in a constrained financial environment where an increase in one area has to be offset by a decrease in another. This step needs senior oversight (and adjudication) to ensure the process considers different perspectives objectively and presents distinct options that are both plausible and realistic and based on the guidance given for the review.

System information that defines the exemplar force options, the level of integration and interoperability required and key performance assumptions are critical to assessing the effectiveness of the suite of systems, including enabling capabilities, against specified capability goals. In a Defence portfolio,

[3] A variation of Mintzberg's *"The design school"* model cited in TTCP JSA-TP3 video conference March 2013.

keeping up to date system information on everything (current and all potential future options) is unlikely to be possible, so effort should be focussed on furnishing information that relates to the key identified decisions and the associated force posture options.

5.3 ASSESSMENT

Assessment involves the evaluation of one or more force posture option alternatives against the predefined set of objectives. Assessment can come from a variety of analytic methods and tools and varies depending on the subject and the available inputs from ongoing work. Using the most suitable method available can include quantitative analysis, analysis from operations, and expert judgement [31]. Experience has shown that assessment, based upon functional areas (or effects) is most effective when relevant subject matter experts are engaged for assessments.

The force design activity must show a demonstrable link between force posture choices and the underpinning policy and strategy objectives. In addition, presentation of the choices (or options) needs to identify and assess risks (for example operational, capability transition, programme or project delivery risks) and demands for future decisions in the delivery of the different options. Whilst the process in the generic CBP model follows a set of sequential steps, the process it supports is iterative and can include refinement, elimination and creation of new options.

The development and refinement of realistic and distinct force options evolves during the assessment process. Options development and refinement can utilise capability mismatches (gaps or excess capability) identified in the assessment process to explore alternative force posture options in more detail, but this is recognised as an activity that might include Government, Groups and Services preferences. Experience has shown that poorly articulating capability goals (e.g. level of goal inappropriate for the force design activity) can limit the development of a set of distinct force options.

Consideration of capabilities and capability interdependence is more difficult now than in the past as capability is achieved not by individual platforms, but by a collection of interconnected [32] ones. Interdependencies between the Defence capability and existing force elements, planned future projects, and in-acquisition projects cannot be ignored. For the force design activity, this requires less detail than later in the acquisition process; however, it is still very challenging and there are currently shortcomings as it requires the input of technical and operational subject matter experts, analysts and skilled personnel from different Groups and Services, and the data needs to be maintained and updated.

Consideration of temporal perspectives of capabilities assists with identification of where tipping points might exist in analysis of options. Tipping points are revealed by analysing portfolio elements and the consequences of changes portfolio. These changes can come from adding or removing capabilities and changes to schedules and other external factors such as threats. Figure 4 outlines an exemplar temporal planning perspective for a particular capability area. It shows some of the types of events that occur, such as: the arrival new threats; the retirement of contributing capabilities (enablers and infrastructure); and the underlying portfolio plan to address gaps and surpluses or risks that have been identified. Working back from a functional assessment event can identify the key portfolio milestones for both programme of projects of which there might be many, and the enterprise.

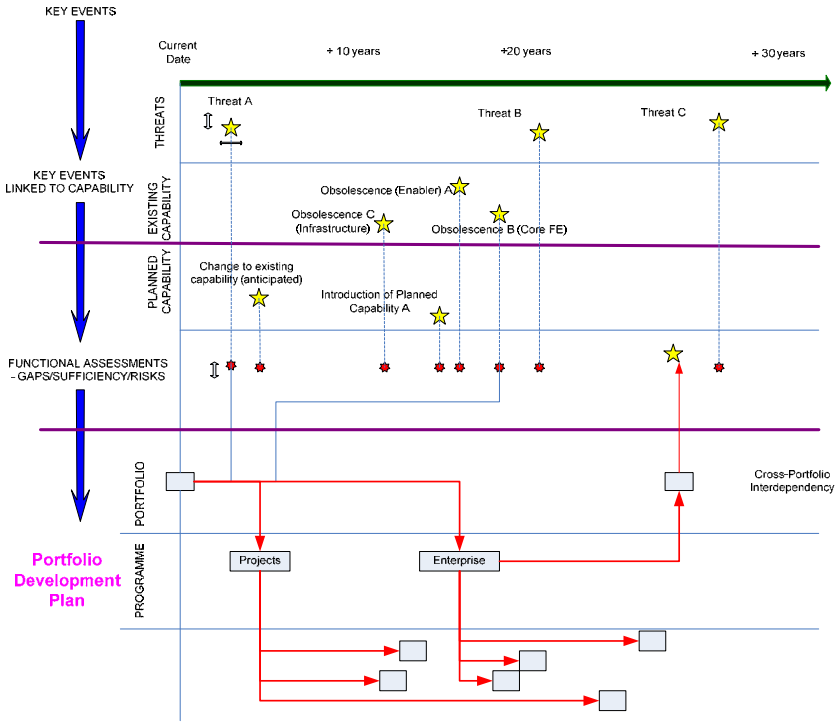

Figure 4. Temporal portfolio planning perspective for a capability area.

Such an approach requires some assessments to be made about capabilities. These can be either judgement based, use quantitative analytic evidence or a combination of these. These assessments can be articulated in a number of ways, with two common representations being abilities and risks. A hypothetical example is provided in Figure 5 for a particular capability area. Over a number of epochs and across different scenarios (shown as S1-S4 in figure 5), assessments of portfolio capabilities and alignment with key capability or threat milestones are estimated. In this example, we show that a marginal capability exists and is degrading with the withdrawal of a platform. This is a low risk for two of the four scenarios, but the introduction of new threats worsens the assessed risks. Repeating this across the range of capability areas allows consequence of changes to be better understood. This provides the decision makers the ability to judge the impact of variations of the design decisions.

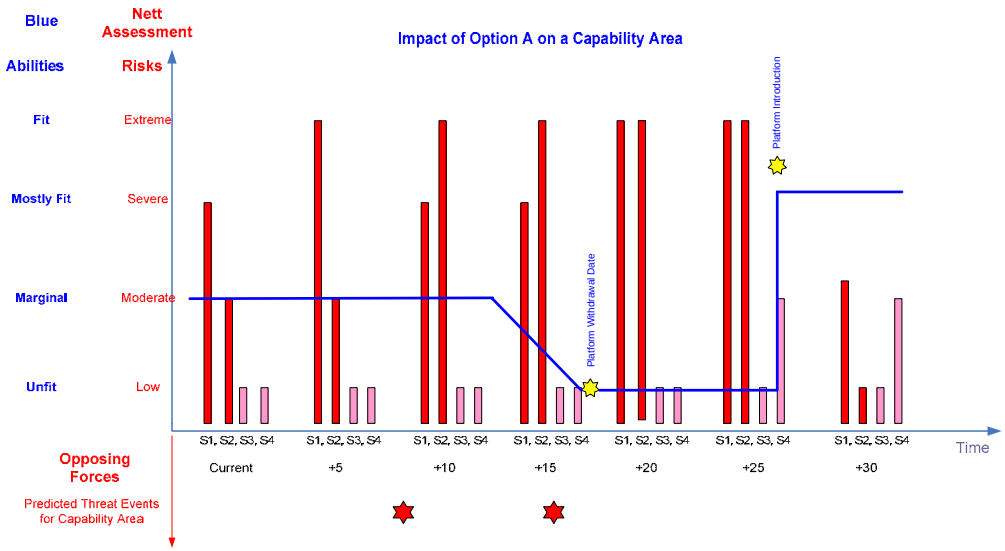

Figure 5. Temporal capability assessment perspectives.

In a portfolio context, looking across all capability areas, this is applying strategic programming to convert options into executable capability programmes of projects (acquisition and enterprise changes) and analysing the many linked and sequential decisions in the process to identify potential problems. To assist with the development of shared understanding of the portfolio and programmatic interdependency aspects, visualisation tools have been developed.

The challenge for tools such as this is they require an underlying body of data, design rules and the ability to modify the data and present the results at an appropriate level, which is very difficult for something the size of a Defence portfolio. These types of interactive tools provide the force designers and leadership with a mechanism to explore the consequences of one or more actions on costs, schedules or capability.

The outcomes from assessments can identify problems with some of the initial assumptions relating to strategy, concepts, affordability or the ability to achieve goals. It is also important to be able to show the impact of directed decisions on other capabilities. This can require revisiting those assumptions. Hence, rather than being a top-down force design process it needs to be iterative. As competition between Groups and Services in a portfolio is unavoidable, it is important to acknowledge and incorporate the positive aspects of competition in the assessment process, as competition and contestability can lead to good outputs if managed appropriately.

5.4 POST-ANALYSIS

Post-analysis is required to document the findings of the assessment process. It will articulate all aspects of the force option capability assessments such as limitations, scope, costing assumptions, uncertainties and perceived risks. These produce the advice to decision makers regarding the options that have been examined, *and* evidence and rationale for activities that must follow the decisions.

For endorsement by senior Defence and Government decision makers the options, the risks, the costs, the implications for industry, implications for electorates, and future budgets need to be presented at the appropriate level.

5.5 ONGOING WORK

Establishing an ongoing strategic joint planning "warm base" is considered essential for force design. The leadership and oversight of the ongoing work has similar challenges to those outlined earlier for the role and responsibilities. From these experiences it is clear that developing and maintaining data[4], models, tools and scenarios for force design and planning would enhance the outcomes.

In order to provide continuity of effort it is necessary to maintain a pool of subject matter experts and skilled personnel who have the right knowledge and experience in this area. In addition, having a central organisation permanently responsible for overseeing force design and ongoing work; and constructing a common repository for input data to be used for and between force design activities are worthwhile initiatives.

6. GUIDING PRINCIPLES FOR WHOLE-OF-FORCE DESIGN

From the experiences outlined in this paper, a set of guiding principles for force design have been developed. These are shown in Figure 6. The guiding principles provide a template for determining the necessary actions to undertake and embed an evolved CBP approach.

[4] It is important to recognise that data is perishable, particularly if the organisation relies more heavily on data intensive systems analysis tools, it is necessary to validate and maintain data for ongoing activity.

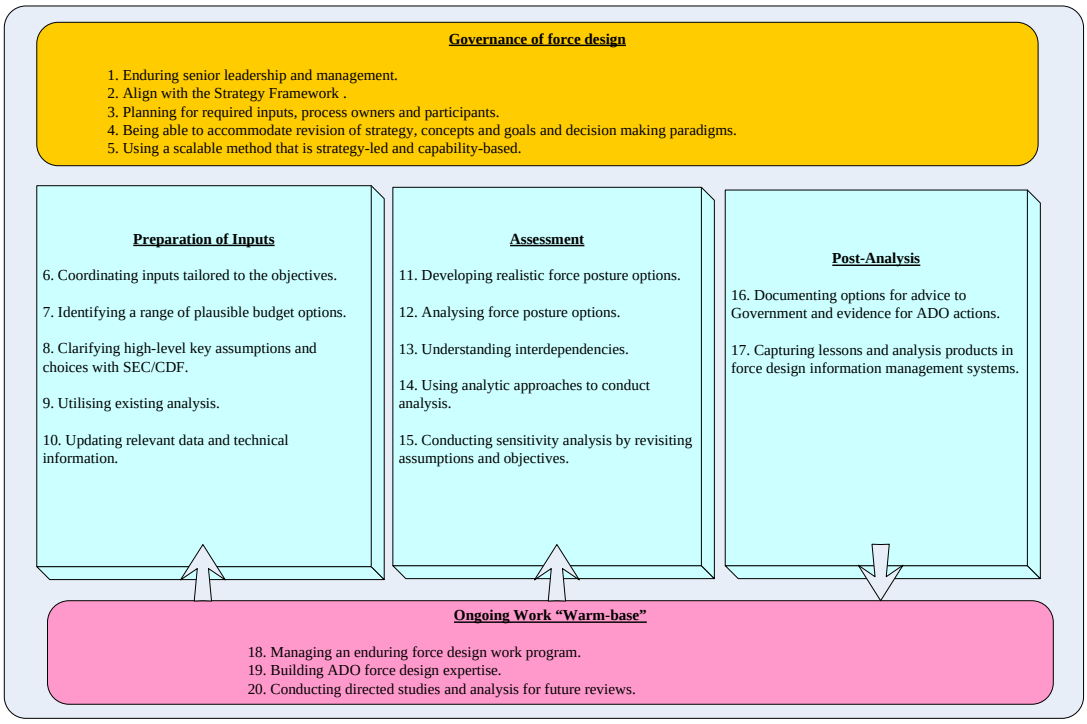

Figure 6. Guiding principles for force design.

7. EVOLVING CBP WITHIN THE GUIDING PRINCIPLES

Using the guiding principles as outlined in this paper, we have considered the actions that are needed to contribute to force design activities within the force design model, based on the CBP model in Figure 1. The insights from many years of force design activities have been overlaid on the model and can be seen in Figure 7.

The activity flow model emphasises the cycles that occur within a force design process. It is not a straightforward sequential process, with several feedback paths, which creates challenges for implementation. At each stage this evolved CBP model can allow refinement of inputs and assumptions. It enables iterations of option development and the development of realistic capability plans that include a both acquisition and enterprise elements.

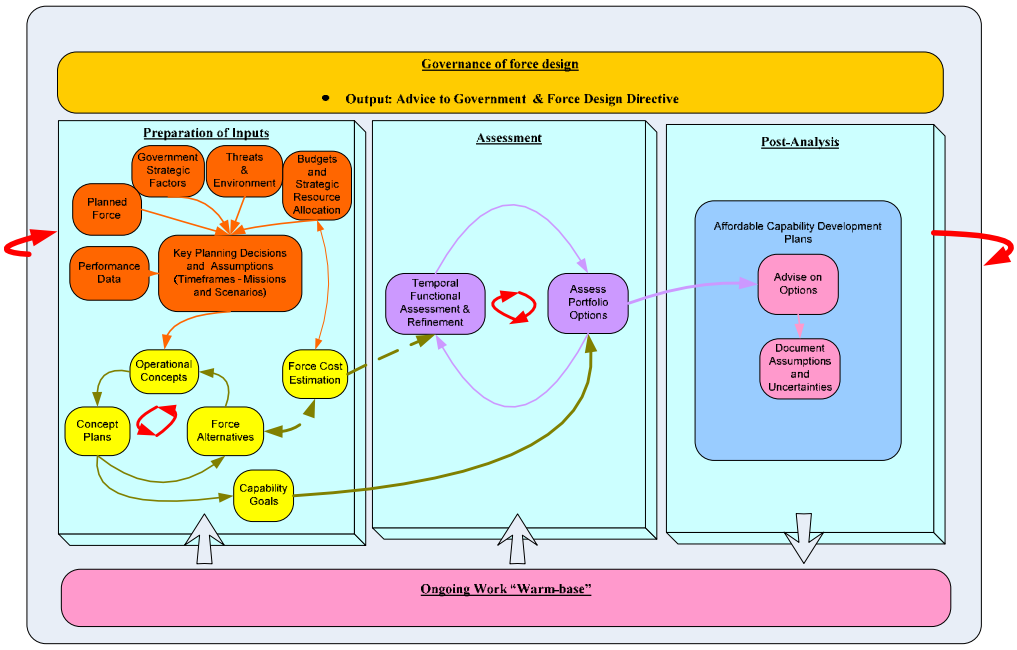

Figure 7. Iterative force design process with an embedded CBP approach.

8. SUMMARY AND FURTHER WORK

This paper contributes to the development of force design methodologies beginning with a brief review of past force design initiatives. We have highlighted the importance of an iterative process that uses all aspects of a generic CBP model and reflects the broad enterprise considerations necessary to inform force design.

We have introduced five main areas in the generic model: Governance of force design; preparation of inputs; assessment; post assessment; and ongoing work. Each is considered to be an essential element in the process. In the generic model we have identified a number of guiding principles that we believe are critical to improving force design in Defence. We expect the guiding principles and the evolved CBP model can provide a basis for further improvement in force design, rather than being an instant solution.

The model attempts to formalise many of the considerations that occur in the force design process already. Hence, we believe there should be limited overheads in applying it, but present benefits for maintaining an evidence base for force design decisions. The articulation of the guiding principles and an evolved CBP model is just the first step. Work is currently ongoing to embed the ideas within the corporate strategy framework and force design planning.

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