INSTITUTE FOR DEFENSE ANALYSES

Defense Governance and Management:

Improving the Defense Management Capabilities of Foreign Defense Institutions

A Guide to Capability-Based Planning (CBP)

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This publication was a three year effort of research, reflection, writing and revising. For now, it is complete. As we continue to study and analyze planning systems, our understanding and explanation of how to create them will improve and our work as documented in this paper will be improved – if not by us – then by someone else.

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Executive Summary

This is the Institute for Defense Analyses' (IDA) fourth major methodological publication in its continuing series on *Defense Governance and Management Improving the Defense Management Capabilities of Foreign Defense Institutions.* The first three publications covered policy and strategy development, program budgeting, and the necessity and utility of relational databases for nations that desire to do multi-year force planning and budgeting.[1] This manuscript describes capability-based planning.

Recognizing the terms capability-based planning (CBP) or capability planning are a cause for confusion, Chapters 1–3 define what CBP is. Chapter 1 describes CBP and how it is different from another means of force planning (threat-based planning), Chapter 2 defines the essential components of CBP, and Chapter 3 describes how CBP fits within an overall system of defense management.

Like any management process, CBP has prerequisites and structural requirements that are necessary to implement the process. No nation that desires to design its force structure using CBP will be capable of doing so if the prerequisites and structural requirements are not in place. IDA refers to these prerequisites and structural requirements as year zero problems. In other words, year 1 of introducing CBP to a defense management system cannot begin until the prerequisites and structural requirements are apparent. A nation that wants to adopt CBP may find itself in year zero for a long time developing the ability to produce the prerequisites and build the required structure before CBP can begin. Chapters 4 and 5 describe the prerequisites and structural requirements.[2]

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[1] See the following IDA publications: Martin Neill et al., *Defense Governance and Management: Improving the Defense Management Capabilities of Foreign Defense Institutions,* Part 1: *Defense Policy and Strategy Development for Foreign Defense Institutions*, Part 2: *Defense Governance and Management: Defense Policy and Strategy Seminar Material*, IDA Paper NS P-5350 (Alexandria, VA: Institute for Defense Analyses, March 2017); Aaron C. Taliaferro et al., *Defense Governance and Management: Improving the Defense Management Capabilities of Foreign Defense Institutions,* Part 1: *Program Budgeting*, Part 2: *Program Analysis Seminar*, IDA Paper NS-P-5317 (Alexandria, VA: Institute for Defense Analyses, March 2017); Thomas J. Wallace, Aaron C. Taliaferro and Wade Hinkle, *Defense Governance & Management: Improving the Defense Management Capabilities of Foreign Defense Institutions Using a Relational Database (FOCIS) to Improve Defense Force Planning and Budgeting, An Overview for Project Leaders*, NS P-5361 (Alexandria, VA: Institute for Defense Analyses, March 2017).

[2] IDA Paper NS P-5350 has extensive treatments of many of CBP's prerequisites to include planning scenarios, risk assessment frameworks, and the development of operational challenges.

The main thrust of the document is found in Chapter 6, which describes the CBP process step by step. IDA's recommended approach is built upon its more than two decades of experience assisting foreign nations improve their force planning processes and, in some cases, implementing a capability-based approach to force planning. Chapter 6 builds on the preceding chapters, which describe some individual nations' approaches to CBP. A unique feature in IDA's approach is a Mission Area Framework, which is described within chapter six. Mission Areas, a unique IDA contribution to the topic, are described in detail in Appendix A.

Finally, the document ends with a bridge from CBP to actual capability through the planning and execution of a budget process. This is also a bridge to IDA's earlier work on Program Budgeting.[3]

[3] See Taliaferro et al., *Defense Governance and Management*, IDA Paper NS-P-5317.

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1. Introduction to Capability-Based Planning (CBP) and Its Comparison to Threat-Based Planning

Since the last decade of the twentieth century, asymmetric security challenges have been the most prevalent threats to the national security of most nations. These challenges are not what defense planners typically considered in preceding decades—planners that developed a force plan that other elements of the defense enterprise use to organize, train, equip, and sustain national armed forces. A number of nations, to adapt and modernize forces so they are better postured to address asymmetric security challenges, redesigned their defense force planning processes.

From the middle part of the 1990s through the early years of the twenty-first century, armed forces were responding to multiple and diverse challenges—sometimes simultaneously. These challenges included revolutionary violence and genocide in Africa and insurgent and revolutionary warfare in diverse places such as Colombia, Sri Lanka, the Balkans, and East Timor. Military services were used to counter the proliferation of chemical, biological, radiological, and nuclear agents and weapons; fight transnational organized criminal and terrorist networks; combat piracy; and respond to devastating natural catastrophes. These demands stressed armed forces that were primarily designed to deter, respond to, or engage the armed forces of another state.

As nations demanded more versatility from their armed forces, there tended to be an inconsistent yet concomitant desire to reduce the resources allocated to the defense sector, given the lack of a singular, unifying threat to sovereignty. As the security challenges confronting armed forces became more diverse, the challenge of justifying and defending the defense budget became much more difficult. Given these dynamics, defense ministries and armed forces turned to capability-based planning (CBP). CBP is a process to determine an efficient and effective mix of military forces and to provide logic and evidence in support of defense budget requests.

The most widely cited definition of CBP was offered by Paul Davis, of the RAND Corporation, in 2002. Davis wrote that CBP "is 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] The objective of CBP

[1] Paul K. Davis, *Analytic Architecture for Capabilities-Based Planning, Mission-System Analysis, and Transformation*, MR-1513-OSD (Santa Monica, CA: RAND Corporation, 2002), xi, https://www.rand.org/pubs/monograph_reports/MR1513.html.

is to develop a flexible, adaptable, robust, and sustainable (i.e., technically manageable and financially affordable) force structure postured to address all the challenges associated with a given nations' strategic defense and security environment, considering budgets and uncertainty.

Davis explains that "[w]hen done well, then, capabilities-based planning confronts uncertainty and the need to make choices within constrained budgets. Properly understood, it has always considered both generic possibilities and specific threats."[2] The consideration of generic possibilities differentiates CBP from threat-based planning; however, it is important to acknowledge that CBP still considers threats when it is used to construct a force plan.

To paraphrase U.S. Army War College Professor John Troxell, whether using threat-based planning or CBP, the force planner has to accomplish three things. First, determine how much force structure is needed to respond to the challenges the security environment is expected to present within an acceptable degree of risk. Second, determine how to arrange the force structure into units with an appropriate amount of assigned resources. Third, provide the rationale needed by defense leadership to convince the national legislature and the public that the solutions for the first two tasks are reasonably correct and worth the investment.[3]

To accomplish these three tasks, force planners can use either threat-based planning or CBP. Threat-based planning is useful when threats are easily recognized and can be described by one or a few reasonable scenarios. Force planners then determine the amount of force needed to prevail in those scenarios at an acceptable risk. CBP is most useful when threats and challenges are multi-faceted and uncertain and do not lend themselves to description in one or a few scenarios.

Australian defense analysts describe threat-based planning as focusing on one of a small number of fundamental threats and then designing a force structure so it is able to match the contingencies associated with those fundamental threats. This approach is appropriate, according to the Australian analysts, when the threats are substantially understood. By contrast, CBP considers more scenarios covering a broader range of threats and challenges. Its purpose is to design a force structure that can acceptably respond to the

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2 Paul K. Davis, *Analysis to Inform Defense Planning Despite Austerity*, RR-482-OSD (Santa Monica, CA; RAND Corporation, 2014), xiv, https://www.rand.org/pubs/research_reports/RR482.html.

3 John F. Troxell, "Sizing the Force for the 21st Century," chap. 2 in *Revising the Two MTW Force Shaping Paradigm*, ed. Steven Metz (Carlisle, PA: The Strategic Studies Institute, U.S. Army War College, April 2001), 7–8, https://apps.dtic.mil/dtic/tr/fulltext/u2/a389627.pdf.

wider range of contingencies and hazards associated with the wider range of threats and challenges being considered.[4]

To summarize, threat-based planning has always been concerned with developing appropriate capabilities to match the contingencies associated with specific threats. The unwritten assumption in threat-based planning is that a force designed to successfully meet the challenges of a few, well understood, specific threats will be adequate to meet the less significant challenges of any other threats that could arise. In contrast, CBP embraces all threats and associated contingencies an armed force is expected to meet and then seeks to design the most effective and affordable force structure possible. Implicit in CBP is an assumption that no single threat or highly discrete set of threats is sufficient for properly designing a force that will be required to respond to multiple and highly varied challenges.

[4] Leung Chim, Rick Nunes-Vaz, and Robert Prandolini, "Capability-Based Planning for Australia's National Security," *Security Challenges* 6, no. 3 (Spring 2010): 80–82, https://www.regionalsecurity.org.au/Resources/Documents/vol6no3ChimNunes-VazPrandolini.pdf.

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2. What Is a Capability, and What Are the Components of Capability?

The focus of CBP is to generate a force development plan, which, through directed actions and the allocation of resources, creates armed forces that can achieve strategic objectives assigned to the defense sector. Another way to describe CBP's purpose is to design an appropriate force. According to analysts from the Australian Defence Science and Technology Organization (DTSO), "force design [is] 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."[5]

The implied assumption behind CBP is that armed forces need capabilities to achieve objectives. Therefore, capability has to be defined in the context of CBP.

Nations that use CBP to develop their armed forces do not have a singular definition of capability. The following is a sample of national definitions:

- **Colombian Ministry of National Defense.** The ability to perform a task, under a specified set of standards and conditions (such as time, environment, distance, etc.) through a combination of the components of capability (doctrine, organization, material & equipment, personnel, and infrastructure).[6]
- **Australian Department of Defence.** The capacity or ability to achieve an operational effect. An operational effect may be defined or described in terms of the nature of the effect and of how, when, where and for how long it is produced.[7]

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[5] Anthony Ween et al., "Analysis of Whole-of-Force Design and Planning" (Canberra, ACT: Defence Science and Technology Organisation, Joint and Operations Analysis Division, 2013), 1, http://ismor.cds.cranfield.ac.uk/30th-symposium-2013/analysis-of-whole-of-force-design-and-planning/@@download/paper/30ismor_ween_paper.pdf.

[6] Republic of Colombia, *Whereby the Public Forces' Capability Planning and Development Model Is Created, the Guidelines for Its Institutionalization Is Established,* Resolution Number 7144 (Bogotá, Columbia: Ministry of National Defense, October 4, 2018).

[7] Australian Government, *Defence Capability Development Handbook* (Canberra BC ACT: Department of Defence, 2014), http://www.defence.gov.au/publications/docs/Defence%20Capability%20Development%20Handbook%20(DCDH)%202014%20-%20internet%20copy.pdf.

- **Canadian Ministry of National Defence.** A particular ability that contributes to the production of a desired effect in a given environment within a specified time and the sustainment of the effect for a design period.[8]
- **United States Joint Chiefs of Staff.** The ability to complete a task or execute a course of action under specified conditions and level of performance.[9]
- **United Kingdom Ministry of Defence.** The enduring ability to generate a desired operational outcome or effect, [which] is relative to the threat, physical environment and the contributions of coalition partners.[10]

Three elements are evident in each definition. First, each definition includes the idea of wherewithal—the wherewithal to complete a task or produce an effect. Second, each definition describes capability as the means to overcome temporal and physical constraints or hindrances in completing a task or producing an effect. Third, each definition refers to a performance standard. All three elements are important because capability is "only a meaningful concept for defense planning when it is specific about whose capability, to do what, and under what circumstances,"[11] which means that capability is dependent on the context and capacity or amount of capability considered. To synthesize these definitions, we propose that *capability is the wherewithal to complete a task or produce an effect within a set of specified performance standards and environmental conditions.*

Given the definition of capability, the next important questions to answer are as follows: What is capability comprised of? How is it created? Each nation listed previously has its own list of capability components. Creating capability requires defense planners to identify these components and then propose a plan that integrates them within a force structure. The components provide a means for defense planners to analyze the sufficiency and effectiveness of capability.

The United States Joint Military Staff and the Colombian defense sector describe capability using similar sets of components and, like all the nations listed previously, rec-

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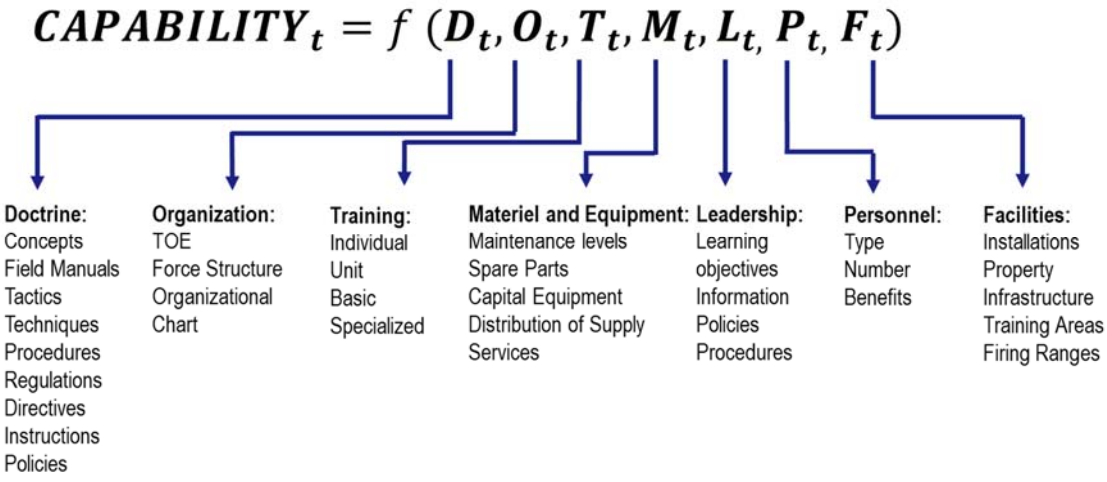
[8] Mark Rempel, *An Overview of the Canadian Forces' Second Generation Capability-Based Planning Analytical Process*, DRDC CORA TM 2010-198 (Ottawa, Ontario, Canada: Defence R&D Canada, Centre for Operational Research and Analysis, Strategic Planning Operational Research Team, September 2010), 1, http://cradpdf.drdc-rddc.gc.ca/PDFS/unc103/p534121_A1b.pdf.

[9] Joint Chiefs of Staff, "Charter of the Joint Requirements Oversight Council," Chairman of the Joint Chief of Staff Instruction (CJCSI) 5123.01G (Washington, DC: The Pentagon, 12 February 2015), GL-7, https://www.mccdc.marines.mil/Portals/172/Docs/MCCDC/FDSP/FDS%20References/CJCSI%205123.01G.pdf?ver=2018-05-01-115226-067.

[10] Yi Yue and Michael Henshaw, "A Holistic View of UK Military Capability Development," *Defense and Security Analysis*, 25, no. 1 (2009): 55, https://www.tandfonline.com/doi/pdf/10.1080/14751790902749900?needAccess=true.

[11] Ibid, 54.

ognize capability as a function of multiple components. These components produce capability when integrated within a defense sector force element. Figure 1 is the United States and Colombian Army's depiction of the components of capability, known as DOTMLPF. The "t" subscript acknowledges that capability exists at a point in time, which is determined by the epoch that defense planners are considering.



Note: TOE = table of organization and equipment.

Figure 1. Capability Is a Function of Its Components

DOTMLPF is defined as follows:

- **Doctrine.** Military doctrine is based on experience and expertise. It provides fundamental principles that guide the employment of the military forces in coordinated action toward common objectives. It is the component that should describe what tasks will be done and, to an appropriate degree, how to do them. It describes how capabilities are used. Beyond military doctrine, this component of capability also refers to any applicable documentation that provides guidance to units and organizations in the defense sector. For new or experimental capabilities, concepts may take the place of doctrine.
- **Organization.** Organization considers how armed forces arrange their resources to accomplish tasks and produce effects. Organization is the functional and spatial structure of force elements. The physical components of capability (i.e., personnel, facilities, materiel and equipment) are provided to force elements and then these resources interact (according to doctrine) to achieve a level of capability. How elements are organized is a function of the doctrinal component of capability.
- **Training.** Training prepares personnel and force elements to execute their assigned tasks in accordance with doctrine.

- **Materiel and Equipment.** Materiel and Equipment is the aggregate of items necessary to equip, operate, maintain, and support military activities without distinction to its application for operational, support, or administrative purposes.
- **Leadership and Education.** Education is the articulation of approved learning objectives and curriculum and its associated policies, procedures, and standards. It is formal learning to prepare military leaders to develop and command armed forces. As a component of capability, education is distinguished from training primarily by its purpose. Training prepares individuals and units to perform according to their occupational specialty or assigned doctrinal function. Education prepares individuals to lead armed forces.
- **Personnel.** Personnel are the military and civilian individuals required by force elements to accomplish tasks and produce effects. The military services, in support of the Ministry of Defense or Department of Defense (DOD), are responsible for recruiting, developing, and assigning personnel to meet established organizational requirements.
- **Facilities.** Facilities include hangars, runways, maintenance bays, supply or repair depots, barracks, training ranges, shipyards and other industrial facilities, and any other type of real property[12] needed to produce and sustain military capability.

DOTMLPF is the capability analysis framework used by the United States Armed Forces, and its use is maturing within the Colombian Armed Forces. This framework, however, is not the only one in use. Canada, Australia, and the United Kingdom have their own framework:

- **Australia.** The Fundamental Inputs to Capability[13]
  - *Personnel.* Developing and retaining active and reserve military personnel and civilians with appropriate core skills to meet defence needs.
  - *Organisation.* The appropriate balance of competencies and structure to endure appropriate command and control.
  - *Collective training.* The comprehensive and ongoing training regime validated against the preparedness requirements for operations, derived from government guidance.
  - *Major systems.* Significant platforms, fleets of equipment, and operating systems that enhance Defence's ability to engage military power.

[12] Real property is any subset of land that has been improved through legal human actions. Real properties include buildings, ponds, canals, roads and machinery, among other things.

[13] Australian Government, *Defence Capability Development Handbook*, 2–3.

  - *Supplies.* That which is needed for force elements to conduct the necessary training activities and administrative tasks required to maintain an operational level of capability as well as the stocks required to respond to contingencies.
  - *Facilities and training areas.* Real properties and the through-life maintenance and utilities necessary to support capabilities at home base and in deployed locations.
  - *Support.* The infrastructure and services integral to the maintenance of effort in Australia and worldwide to support deployed capability. Support includes, but is not limited to, training/proficiency support; supply support, movement, and transport; infrastructure support; garrison and other shared services support; housing, relocations, and family support; health support; research and development; communications and information technology support.
  - *Command and management.* The responsibilities, defined command and control mechanisms, doctrine, security, processes, and procedures to enhance military effectiveness; processes to plan, apply, measure, monitor, and evaluate the functions an agency performs, with due cognizance of risk assessment and subsequent risk management.
- **Canada.** The Functional Component of Capability – PRICIE[14]
  - Personnel
  - Research and development/operations research
  - Infrastructure and organization
  - Concepts, doctrine, and collective training
  - IT infrastructure
  - Equipment, supplies, and services.
- **United Kingdom.** The Defence Lines of Development (DLOD) – TEPID OIL[15]
  - Training
  - Equipment

[14] PRICIE's components are descried and defined in handbooks published by the Canadian Armed Forces Chief of Force Development. These handbooks are not publicly accessible on the World Wide Web.

[15] Acquisition Operating Framework (AOF), "Defence Lines of Development," version 2.0.15 (August 2009), https://webarchive.nationalarchives.gov.uk/20090804193002/http://www.aof.mod.uk/aofcontent/strategic/guide/sg_dlod.htm.

- Personnel
- Information
- Concepts and doctrine
- Organisation
- Infrastructure
- Logistics.

The United Kingdom also includes interoperability as an overarching theme that must be considered for each DLOD. Interoperability covers interaction between services, UK defence capabilities, other government departments, and the civil aspects of interoperability, including compatibility with civil regulations.[16]

Given the components of capability, the defense planner's task is to determine whether a given capability can improve by changing the mix of components. To borrow another definition of capability from Canadian defense analyst Ben Taylor, capability, "implies integrating resources and methods for their organization and employment – [the] inputs to capability – to generate a desired end result or effect."[17] Therefore, describing capability in terms of its components (or its inputs) is vital to the CBP process so that, as Ben Taylor writes, "the costs and risks associated with capabilities can be known and managed … otherwise inputs may be misaligned leading to inefficiencies (e.g., taking delivery of [major equipment] platforms for which no training system exists."[18]

Ultimately, force elements embody capability. If a given force element has a proper balance of capability components, it will be capable. If not, there will be a degradation of capability. Capability components must be able to be independently analyzed, described, and managed, and defense planners must understand how they integrate to produce capability within force elements.

Figure 2 depicts the ultimate goal of capability planning: to produce capable force elements by striking a balance between people, investment, and readiness. It also illustrates how capability and cost go hand-in-hand. A unit will not be able to accomplish its tasks and produce effects with only people and equipment (investment). It also requires the budget to train personnel and maintain the equipment. Not all components of capability are shown explicitly in this figure. Doctrine, organization, leadership, and education are

[16] Ibid.

[17] Ben Taylor, *Analysis Support to Strategic Planning*, TTCP Technical Report TR – JSA – 2 – 2013 (Ottawa, Canada: Department of National Defence, The Technical Cooperation Program, June 2013), http://cradpdf.drdc-rddc.gc.ca/PDFS/unc190/p801995_A1b.pdf.

[18] Ibid, 12.

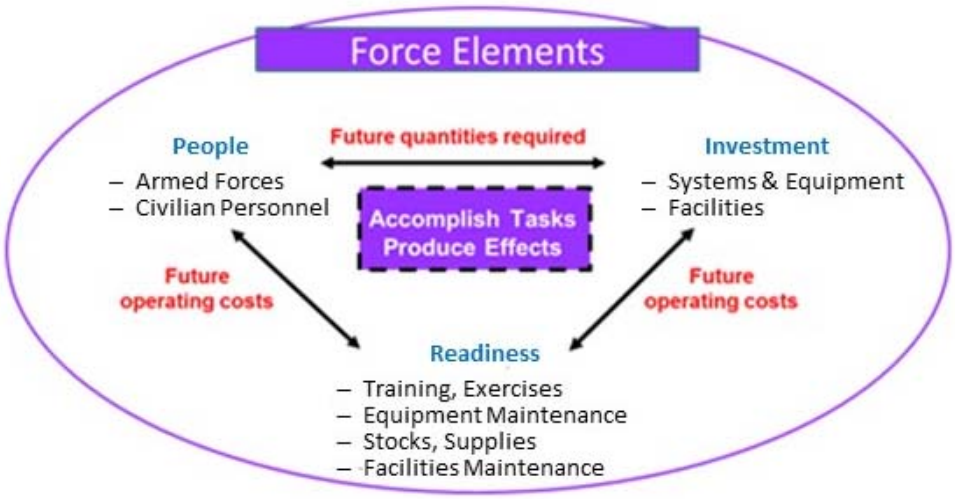


Figure 2. Capability Is Produced When Its Components Are Balanced within a Force Element

assumed. A force element not designed according to some doctrinally described purpose either will not be continued or will be an ad hoc unit that will not be sustained. Organization flows from doctrine, and all force elements require good leadership or else they will lack the cohesion necessary to use resources to accomplish tasks and produce effects.

To summarize, the definition of capability needs to include the three elements of wherewithal, the means to overcome temporal and physical challenges, and a performance standard. Given a definition, capability must be described in terms of its components or inputs. These components must be able to be independently analyzed, described, and managed, and defense planners must understand how they integrate to produce capability within force elements.

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3. Where Does CBP Fit in an Overall System of Defense Management?

CBP is focused on developing the future force—not the employment of the current force. Force development is an organizing construct of processes, policies, organizational information, and tools. This construct informs senior leader decision making on how to organize, train, equip, resource, and provide capability to force elements in support of policy objectives—within allocated resource limits—to carry out armed forces' activities and operations. Once capability has been provided to force elements, their commanders must prepare the forces to be employed. To that end, force employment is the strategic, operational, or tactical use of force elements.

Force development and force employment flow from defense policy and strategy, but their view of the future is different. Force development is forward looking. It entails planning to invest in and build the future force structure through defense resource management, human resource management, and logistics. Modifying an existing force structure takes time; thus, force development processes focus beyond the time period considered by ongoing operational planning. Force employment is focused on the near term. It is planning and then preparation (through training and exercises) to use the existing force to accomplish objectives assigned to the defense sector within the near future. Figure 3 illustrates the different processes and relationships of force development and force employment.

CBP focuses on force development, and it is one of four Defense Resource Management Processes (the other three being acquisition planning, program planning,[19] and budget planning). Because CBP focuses on force development, it looks to the future. CBP is not a process to correct operational deficiencies in today's force. That is a job for the commanders—the leaders of the force elements—who are responsible to use operational art[20] to maximize the effectiveness of their units.

[19] Program planning is briefly covered in Chapter 7. Other aspects of resource management are not covered in this guide.

[20] Operational art is "the cognitive approach by commanders and staffs—supported by their skill, knowledge, experience, creativity, and judgment—to develop strategies, campaigns, and operations to organize and employ military forces …" (Joint Chiefs of Staff, *DOD Dictionary of Military and Associated* Terms (Washington, DC: The Pentagon, November 2018), http://www.jcs.mil/Portals/36/Documents/Doctrine/pubs/dictionary.pdf).

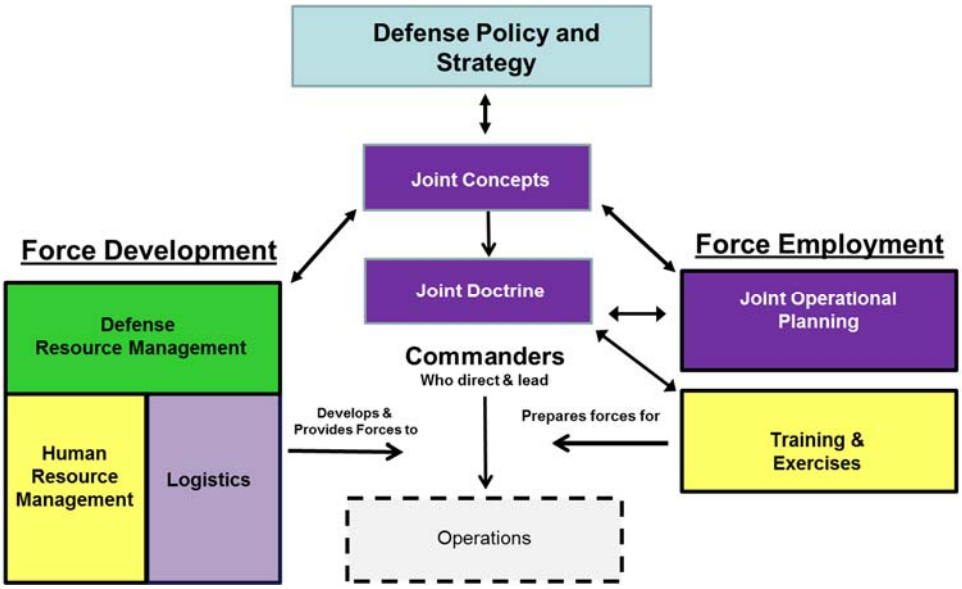

Figure 3. Defense Management Processes Relate to Force Development and Force Employment

CBP's goal is to produce a future force postured to adequately deal with the challenges of the future. How far into the future is subject to a choice of defense leadership. If near-term problems abound, then leadership may focus CBP to correct gaps in capability as soon as possible. If the near future appears secure, then leadership may assess the current force against a longer term planning horizon.

An absolute requirement of CBP is that the process must conclude far enough in advance to inform the program and budget planning processes. If it does not, then the budget will not align to the capability plan. Thus, we say CBP must look at least two years into the future. Nearly all national budget planning cycles are at least a one year process. Furthermore, the timelines are set by national legislation, which means no line ministry determines when it will submit its budget. Therefore, if the Ministry of Defense wants to propose changes to its previous budget submission in response to CBP, a lead time of at two years in advance of the legislated budget cycle will be required to complete all the steps required before budget planning starts.

Defense resource management processes connect defense policy to budget execution. Collectively, capability planning,[21] program planning, and budget planning direct how defense resources (money, personnel, equipment, facilities, and so forth) are allocated to produce capability. These planning processes are interrelated, like gears in a machine. They

[21] The term capability planning is interchangeable with CBP.

drive and provide feedback to one another. Figure 4 is a force development model. It illustrates how defense resource management planning processes (capability planning, program planning, and budget planning) link policy to budget execution.

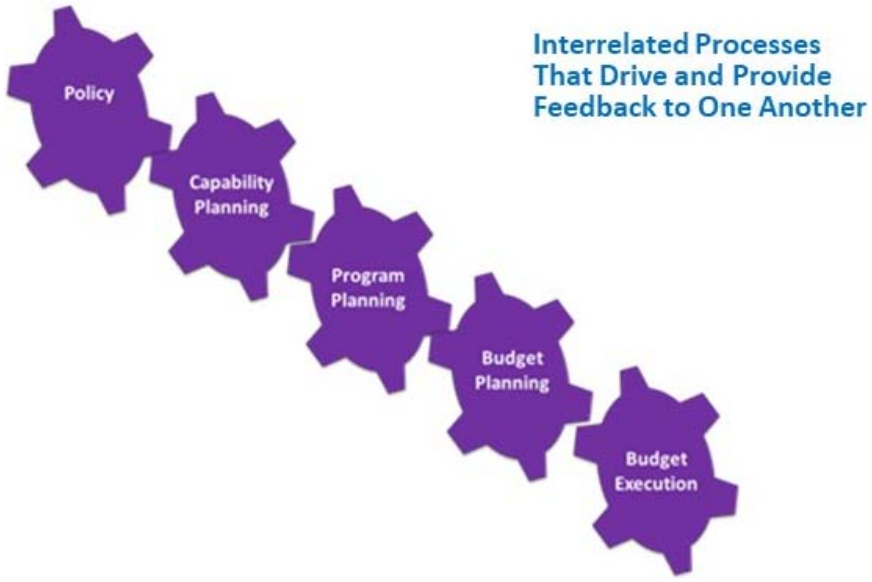

Figure 4. Force Development – Planning Links Policy to Budget Execution

A defense minister's policy provides guidance for the development of the force. In response to that guidance, CBP determines the means necessary to achieve the minister's guidance. Program and budget planning allocate resources to develop the capabilities over a multi-year period. Finally the budget is executed, whereby force elements will be provided the planned capabilities.

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4. Prerequisites of CBP

As already discussed, two prerequisites for CBP are an approved definition of defense capability and a framework that describes the components of capability. This chapter will describe five other necessary prerequisites for using CBP: leadership, a joint culture, and a planning staff with high analytic capability; strategic policy guidance; scenarios; concepts; and risk assessment using a risk matrix.

The 2014 Australian Defense Capability Development Handbook states that "[t]he aim of Capability Development is to develop and maintain the most operationally effective and cost-efficient mix of capabilities required to achieve Government's strategic objectives."[22] Likewise, the Chairman of the Joint Chiefs of Staff (CJCS) describes the main purpose of the U.S. Joint Capabilities and Integration Development system as managing, validating, and prioritizing capability requirements across the joint force.[23] Given the variety, complexity, and cost of armed forces capabilities and all its attendant stakeholders, the first prerequisites to use CBP are addressed in Sections A–E.

A. Leadership, a Joint Culture, and a Planning Staff with High Analytic Capability

In a previous work for the Korean Institute for Defense Analyses (KIDA), the Institute for Defense Analyses (IDA) recommended that the Korean Ministry of National Defense (MND) continue increasing joint perspective in Republic of Korea capability planning. The IDA authors wrote that increasing and maintaining a joint perspective requires "a strong, joint organization to lead the process."[24]

A strong joint perspective is needed to overcome typical military services' bias to close capability gaps with new equipment purchases. Planning should produce capability

[22] Australian Government. *Defence Capability Development Handbook*, 5.

[23] Joint Chiefs of Staff, "Charter of the Joint Requirements Oversight Council (JROC) and Implementation of the Joint Capabilities Integration and Development System (JCIDS)," CJCSI 5123.01H (Washington, DC: The Pentagon, 31 August 2018), http://acqnotes.com/wp-content/uploads/2018/11/CJCSI-5123.01H-Charter-of-the-Joint-Requirements-Oversight-Council-JROC-and-Implementation-of-the-JCIDS-31-Aug-2018.pdf.

[24] Patrick Goodman et al., *Observations on the Republic of Korea Force Requirements Verification System*, IDA Document D-5044 (Alexandria, VA: Institute for Defense Analyses, October 2013), 70.

to achieve the strategic objectives of the government—not to satisfy the needs of a particular military service. Not long after the U.S. DOD had shifted to CBP, U.S. Army War College students identified challenges in the U.S. implementation of CBP. These challenges are quite similar to those IDA observed in the Korean Force Requirements Verification System. Writing in 2005, Colonel Scott Walker, U.S. Army, observed the following:

> Within the United States Department of Defense, the intent of introducing capability based planning was to define the warfighting vision and strategic direction of the force from a joint perspective at the start of the process. This does not imply that the services do not participate in determining the required capabilities. Rather, their participation is a part of the process. The joint capabilities required to achieve the warfighting vision are derived jointly and then the services (based on their delegated warfighting or supporting functions) are directed to develop the capabilities through experiments, analyses, and evaluation of existing programs. The intent of CBP is to be joint from the beginning.[25]

Walker asserted that CBP must be joint because no matter how great an individual service capability may be, if it does not add value to a joint capability required by the customer, then it ought to have no inherent value to the system overall. Further, he asserted there must be an unquestionable senior authority overseeing the process. This oversight is necessary because CBP may result in short-term losses for specific stakeholders within the defense enterprise, and a consensus approach generally does not allow for such losses. Finally, Walker suggested that CBP implementation needs a dedicated organizational structure, specifically a department-level organization able to identify current and future capability gaps and excesses, along with leading defense-sector-wide tradeoff analysis across all warfighting and enterprise (support) functions.[26]

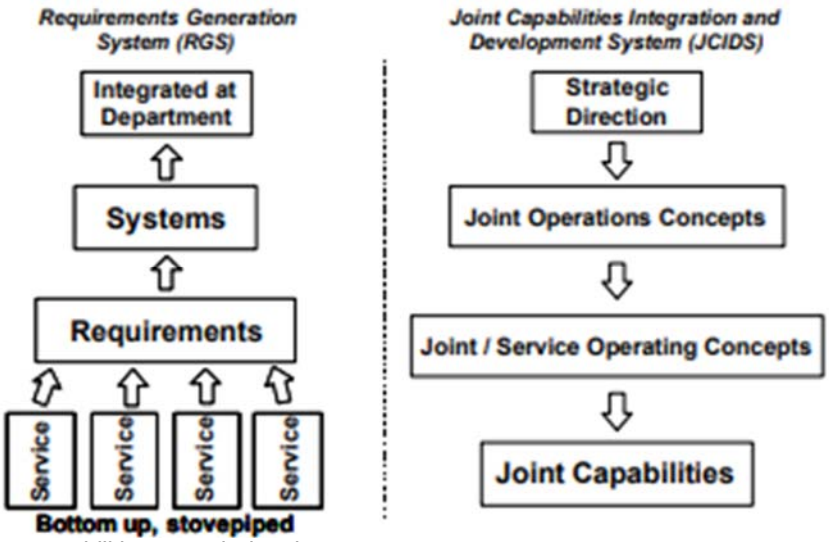
Figure 5 is Colonel Walker's depiction of U.S. force planning process before and after the change to a capabilities-based process. The old requirements generation system determined the posture of the U.S. Armed Forces based on needs articulated by each individual military service. The focus was on systems acquisition. The integration of these systems into the force occurred (usually) after the decision to purchase a system was made.

The new approach intended to place the CJCS in charge of the process. The requirements for force planning were determined in consultation with joint force commanders who are responsible for using capability to accomplish tasks and produce effects in service of national objectives. What the new process lacked, as Colonel Walker's paper identifies, was a dedicated analytic and planning staff who reported to a flag officer acting on behalf

[25] Mixture of paraphrase/direct quote from Stephen K. Walker, *Capabilities-Based Planning – How It Is Intended to Work and Challenges to Its Successful Implementation*, USAWC Strategy Research Project (Carlisle Barracks, PA: U.S. Army War College, 18 March 2005), 2–3, https://apps.dtic.mil/dtic/tr/fulltext/u2/a434864.pdf.

[26] Ibid.

of the Chairman to ensure compliance with his strategic guidance throughout the process. Walker's observations are echoed by a host of authors, a sample of which follows.



Source: Walker, *Capabilities-Based Planning*, 2.

Note: U.S. Force planning before (left) and after (right) moving to CBP.

Figure 5. Capability-Based Approach

Anthony Ween, Thitima Pitinanondha, Ivan L. Garanovich, and Nitin Thakur of DSTO, Joint and Operations Analysis Division, Australian Ministry of National Defence, write:

> Force design requires ongoing senior leadership and management. This overseer should ensure a clear purpose and objectives; and have the ability to produce a coherent plan and able to explain and enforce the planning group's march toward a coherent plan. Without a senior champion, *the tragedy of the commons*[27] will result. In force design, resources are finite, and demands exceed the available resources. Without intent to destroy the common resource, the combined actions of all stakeholders acting in their own self-interest lead to this tragic result. A joint culture is imperative. The senior champion needs to be empowered and accountable for investigating options, inevitably unpalatable to some stakeholders, [and] to provide advice to the government about difficult decisions.
>
> Furthermore, maintain your planning staff. Establish an ongoing strategic, joint, planning office. Ongoing work between planning cycles can include the development and maintenance of data, models, tools, and scenarios for force planning. It is necessary to maintain a pool of subject matter experts

[27] The 'tragedy of the commons' is a phrase to describe what happens to common resources as a result of greed or selfishness. In group settings, individuals tend to take actions that are in their self-interest even if those actions are detrimental to the group as a whole. These actions are a tragedy because, in seeking their own gain, the members of the group ultimately hurt themselves.

> and skilled personnel who have the right knowledge and experience of the planning process. These personnel within the planning office should be permanently responsible for overseeing force design and other ongoing work related to these efforts.[28]

The Technical Cooperation Program—a five nation group of analysts from Australia, Canada, New Zealand, the United Kingdom, and the United States—recommends the following in its guide to capability planning,

> CBP should flow from the top of the defense sector downward and it should be joint at inception. The joint focus allows decision makers to judge alternative force structures in the context of overall defense goals rather than considering each military service's contribution individually.
>
> Appoint a very senior sponsor empowered to make decisions despite the anticipation of rancor or displeasure that some stakeholders will express as a joint view will go against parochial, service-specific views.
>
> Align an organization responsible for the planning process and on-going analysis under the sponsor.[29]

The observations of these authors have been noticed, and their recommendations are now reflected in official government documents. The Australian government's *Defence Capability Development Handbook*, published by the office of the Chief of the Capability Development Group,[30] states that a key tenant of capability development is that it not only must be joint, but also whole of government. The handbook states, "Every proposal provided to Government must consider its relationships to, and impact on, the broader force structure and, where appropriate, Whole-of-Government requirements."[31]

The U.S. Joint Chiefs of Staff Capabilities-Based Assessment (CBA) User's Guide, Version 3, published by the Force Structure, Resources, and Assessments Directorate of the United States Joint Chiefs of Staff, states that capability requirements must derive from a joint perspective and from joint concepts that challenge existing approaches and provide impetus for improvement.[32]

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[28] Mixture of paraphrase/direct quote from Ween et al., "Analysis of Whole-of-Force Design and Planning," 3–10.

[29] Paraphrased from The Technical Cooperation Program, "Guide to Capability-Based Planning" (Joint Systems and Analysis Group, Technical Panel 3, n.d.), https://www.acq.osd.mil/ttcp/reference/docs/jsa-tp-3-cbp-paper-final.doc.

[30] When the 2014 handbook was published, the Chief was Vice Admiral Peter D. Jones.

[31] Australian Government. *Defence Capability Development Handbook*, 5.

[32] Joint Chiefs of Staff, *Capabilities-Based Assessment (CBA) User's Guide*, version 3 (Washington, DC: The Pentagon, Force Structure, Resources, and Assessments Directorate (JCS J-8), March 2009), 5, http://acqnotes.com/wp-content/uploads/2014/09/Capabilities-Based-Assessment-CBA-Users-Guide-version-3.pdf.

B. Strategic Policy Guidance

Assuming a joint planning staff with an empowered leader, the next prerequisite for the planning chief and his or her staff is guidance that directs and bounds the capability planning process. A good planner should be able to plan for anything he or she must consider; however, no one can plan for everything. Strategic policy guidance is necessary to overcome this common planner's dilemma.

The Australian DTSO analysts outline exactly what guidance planners need from the government. To start, the planning chief needs to know the range of delegated authority he or she has to decide on issues such as priorities, political imperatives, directed solutions, funding envelopes, objectives, missions, and risk tolerance. In addition to the limit of delegated authority, the analysts write, the planning chief needs to understand the following:

- How does the government perceive and prioritize risk?
- How does the government expect to allocate anticipated, future government revenues?
  - Can force planners assume concurrency of operations against multiple scenarios as they attempt to design the future force?
- Are there force elements in the existing force structure that may not be considered for elimination?[33]

This guidance shapes the intent and the output of the planning process and identifies actions necessary to prepare specific inputs to CBP.

Mr. Jeffrey Kendall, in a paper written for the U.S. National War College, echoes this sentiment. He writes that CBP requires "national-level direction."[34] When he published his paper, neither the U.S. National Security Strategy nor the National Military Strategy had been updated to reflect the significant changes effected by the terrorist attacks of September 11, 2001. This lack of national-level direction hindered the ability of force planners to tie military force structure to implied national and military objectives.

National-level direction, Kendall wrote, should include prioritization of mission areas the armed forces are expected to undertake. For example, planners may have to consider whether the military should be designed for peacekeeping missions and traditional force-

[33] Ween et al., "Analysis of Whole-of-Force Design and Planning."

[34] Jeffrey B. Kendall, "Capabilities-Based Planning: The Myth" (Washington, DC: National Defense University, National War College, Fort Lesley J. McNair, 17 April 2002), 8, https://apps.dtic.mil/dtic/tr/fulltext/u2/a442167.pdf.

on-force conflict or whether the military should be designed only for force-on-force conflict and assume that peacekeeping contributions would be limited to those provided by traditional force-on-force capabilities.[35]

Kendall also addresses risk and concurrency. He asks what risks to national interests are undesirable vs. unbearable or unacceptable. Given the prioritization of risk, should the armed forces be designed to deal with the most stressing scenarios that present the most unacceptable risk or the most impactful scenarios that present a politically unbearable risk? On concurrency, Kendall asks the same questions as the DTSO analysts: Will the force be expected to operate against multiple scenarios at the same time? If so, which ones? Is concurrency a valid or invalid assumption for planning the size and composition of the force?[36]

Ultimately, CBP is output oriented. The output is a capability plan. To determine what kind and how much capability the plan is intended to create, the planning staff requires strategic policy guidance.

C. Scenarios

Scenarios are an obvious prerequisite for CBP because CBP's intent is to design a force that can contend with a broad range of challenges and associated contingencies. Force planners need a library of approved scenarios that describe how future challenges may present themselves, and each scenario needs defined success criteria that correspond to an armed forces' response. Success criteria are used by force planners to determine the type and amount of capability necessary.

If the scenarios available to planners are not robust enough to describe all expected challenges, then the force will be designed with known blind spots. In other words, there will be known risks; however, the armed forces will not be designed with those risks in mind.

Success criteria are critical for determining the number and the readiness levels of the force elements within a force structure. If success criteria are not provided within the scenarios, then it will be left to defense planners to define the criteria to decide how much force is enough. As Yue and Henshaw write, "Military capability is vested in Force Elements at Readiness (FE@R). A force element is a building block of a force structure, for instance a ship, or a company of ground forces; readiness implies that those elements will be able to deploy with planned performance levels within a given notice period."[37]

Three authors from the U.S. Naval Postgraduate School specifically describe scenarios as an input to the CBP process. The input is not just one scenario, but a library of

[35] Ibid, 8.

[36] Ibid, 8–10.

[37] Yue and Henshaw, "A Holistic View," 58.

scenarios that capture possible future environments in which the defense sector may operate and reflect the challenges the armed forces will have to overcome. The authors specify that each scenario needs to include the following:

- The political military context, e.g., how the situation came about, who is allied with whom, the degree of strategic warning, forward stationing of forces, etc.;
- The objectives and strategies of all actors involved [i.e., success criteria];
- The forces, such as size, character, nominal capabilities;
- Force effectiveness, accounting for cohesion, morale, etc., of all involved forces;
- The natural environment;
- Other assumptions.[38]

To conclude, the authors state, "Once planners agree on a set of scenarios, they use the scenarios to identify the complete set of capabilities considered necessary to meet the quantitative and qualitative ambitions set out in the political guidance for defense planning through a structured, comprehensive, transparent, and traceable process."[39]

The U.S. CBA user's guide further emphasizes the importance of scenarios to CBP with the following points:

- Scenarios provide the means to assess capabilities associated with the mission areas [of the armed forces].
- Scenarios provide a way to connect capability assessment to existing strategic guidance.
- Scenarios provide a way to test concepts against the breadth of the defense strategy.
- Scenarios [should] provide the spectrum of conditions to be considered [… a range of enemies, environments, and access challenges].[40]

Scenario selection will be an area of contention because parochial interests will attempt to promote scenarios that require a particular capability that is best addressed by a particular solution.

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[38] Natalie J. Webb, Anke Richter, and Donald Bonsper, "Linking Defense Planning and Resource Decisions: A Return to Systems Thinking," *Defense and Security Analysis* 26, no. 4 (December 2010): 390–391, https://www.tandfonline.com/doi/pdf/10.1080/14751798.2010.534647.

[39] Ibid, 392.

[40] Joint Chiefs of Staff, *Capabilities-Based Assessment (CBA) User's Guide*, 37.

Lumping scenarios into the previous section on strategic policy guidance may be appropriate because scenarios should reflect policy. They should provide the government's view of the challenges and threats the nation expects it may face. However, we call them out separately to highlight their importance and to expound upon their content and relationship to capability planning. Previous IDA publications provide additional reading on the development and use of scenarios and comparisons of how different nations use them in force planning.[41]

D. Concepts

Concepts describe how the armed force may operate or how the leadership of the armed forces desires to operate, given an expected future operating environment and its attendant challenges. Paraphrasing the U.S. Joint Staff definition, a concept describes a method for employing capabilities to achieve a stated objective or aim within the context of a specified operating environment or against specified challenges.[42] In this way, a concept links the ways the Armed Forces will accomplish its objectives to the ends specified in strategic policy guidance and to the means the defense resource management process should produce.

The Australian analysts agree that concepts are key references for defense planning. Concepts help to develop and experiment with novel ways of responding to strategic guidance before the acquisition of new capabilities. Concepts may also initiate capability goals and provide insight into future risk or integration issues.[43]

Colonel Stephen Walker also describes concepts as an input to CBP, quoting multiple joint staff instructions and other briefing slides from the early days of the U.S. introduction of CBP. Concepts should define how the joint force intends to operate in the future. Concepts may describe how the joint force will fulfill a particular military function (e.g., logistics) or accomplish strategic objectives through the conduct of operations within a military campaign.[44]

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[41] Wade P. Hinkle et al., *Defense Planning Scenarios: Best Practice and International Comparisons*, IDA Document D-5434 (Alexandria, VA: Institute for Defense Analyses, April 2015); Martin Neill, Wade P. Hinkle, and Gary Morgan, *Scenarios – International Best Practice: An Analysis of Their Use by the United States, United Kingdom, and Republic of Korea*, IDA Document D-5665 (Alexandria, VA: Institute for Defense Analyses, February 2016).

[42] Joint Chiefs of Staff, "Guidance for Developing and Implementing Joint Concepts," CJCSI 3010.02E, (Washington, DC: J7, 17 August 2016 (Directive Current as of 16 Aug. 2018)), A-1, https://www.jcs.mil/Portals/36/Documents/Library/Instructions/CJCSI%203010.02E.pdf?ver=2018-10-26-171040-997.

[43] Ween et al., "Analysis of Whole-of-Force Design and Planning," 3–4.

[44] Walker, *Capabilities-Based Planning*, 4.

Finally, TTCP defines CBP as "concept led." The TTCP's CBP guide specifies that concepts are a required input of CBP.[45] Dr. Ben Taylor, sponsored by the TTCP, describes a capability-based approach as "forecasting then 'backcasting'; determining what effects need to be created in the future and then working back to put in place plans to create a force that can deliver them."[46] Concepts, which should describe how the force can operate to overcome challenges presented by scenarios, help a planner to calculate or predict a future event or condition (forecast) and then work backwards to identify policies and programs that will connect the future to the present (backcast). How to develop concepts for CBP is further discussed in Chapter 5.[47]

E. Risk Assessment Using a Risk Matrix

Combined with strategic policy guidance and scenarios, a risk matrix enables a risk assessment, which is another prerequisite of capability planning.

Scenarios describe the potential security challenges a nation may face within a given mission area. Implied within the challenges are security risks. Defining which security risks are tolerable, acceptable, unbearable, or otherwise is a policy decision. However, planners need a way to assess and describe risk so policy makers can decide whether the identified risk is acceptable or unacceptable. A risk matrix is a tool to assess and describe risk.

Figure 6 is an example of a two-dimensional matrix, where consequence increases in severity going up the matrix, and likelihood increases toward the right. Consequence is related to impact. If the armed forces did not respond or could not successfully respond to a given threat or challenge, what impact would the nation feel? Likelihood is related to probability. Are the security challenges presented in a scenario likely to occur? The colors represent priority. High-impact, high-probability risks (top right corner) are high priority (shaded in red). Low-impact, low-probability risks are low priority (shaded in green). The numbers along the vertical and horizontal access are used for scoring risk. The scales on each axis and the color coding (priorization of risk) are policy decisions.

Figure 7 is a notional depiction of maritime security challenges in a developing nation that has a poor economy and a history of violent, internal unrest. Some of the biggest threats to the security of nation, as articulated by the president and senior cabinet officials, are high unemployment and the inability of the government to earn revenue to pay for national priorities.

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[45] The Technical Cooperation Program, "Guide to Capability-Based Planning," 2.

[46] Taylor, *Analysis Support to Strategic Planning*, 20.

[47] A useful reference for developing and writing concepts is John F. Schmitt, "A Practical Guide for Developing and Writing Military Concepts," Working Paper #02-4 (McLean, VA: Hicks & Associates, Defense Adaptive Red Team (DART), December 2002), 15–19, http://www.au.af.mil/au/awc/awcgate/writing/dart_paper_writing_mil_concepts.pdf.

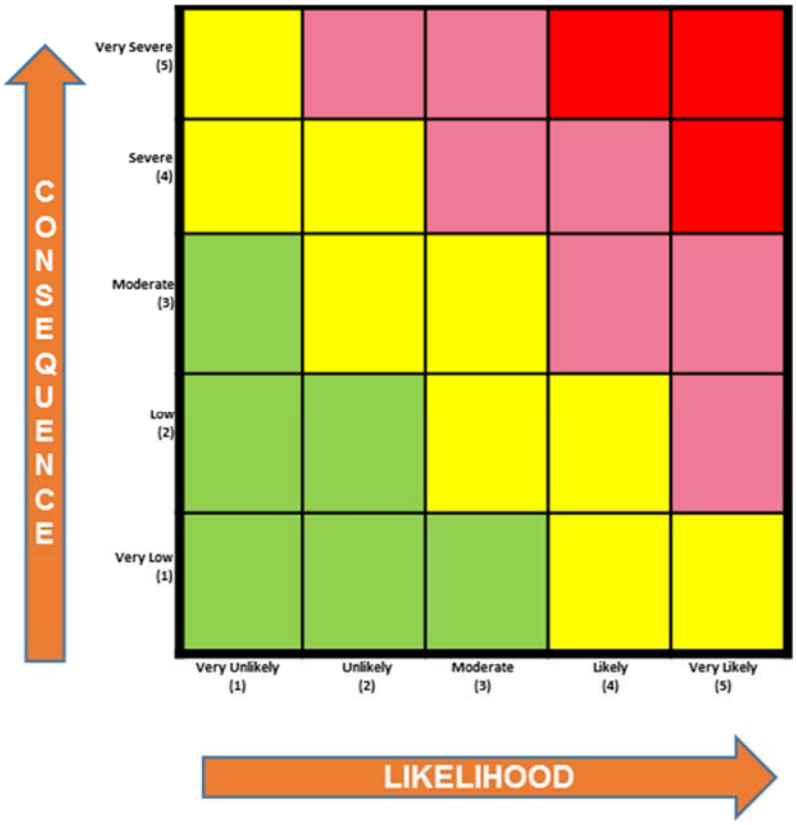

Figure 6. A Risk Matrix of Consequence and Likelihood

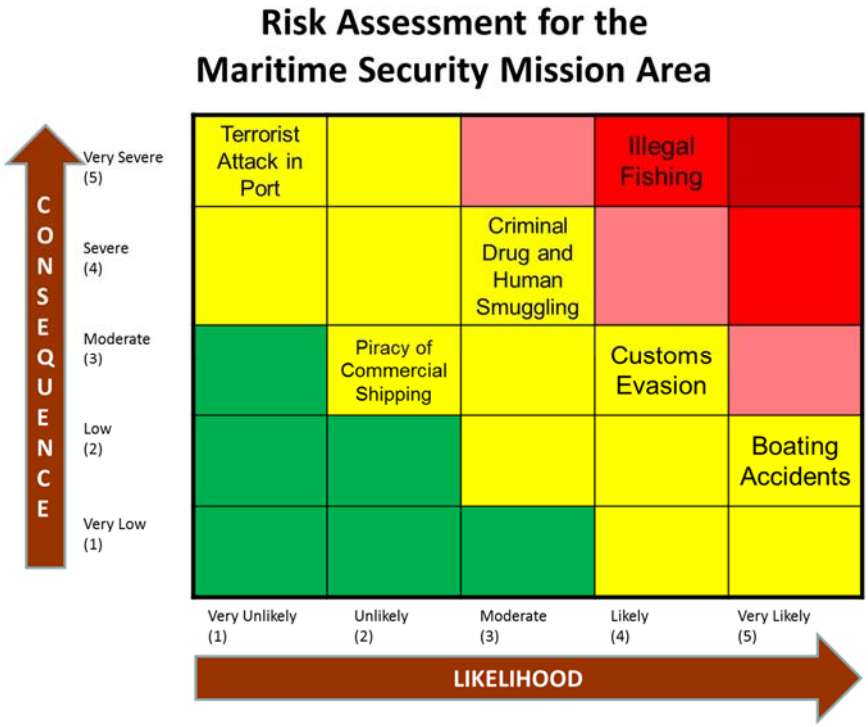

Figure 7. An Example Risk Matrix with Maritime Security Challenges

The Defense Ministry and the Armed Forces are responsibile for Maritime Security. The challenges, in this example, were placed into the matrix according to strategic policy guidance given to the Defense Ministry by the president and the cabinet. The ministry was directed to use armed forces in support of the economy's growth and development. Given that guidance, illegal fishing was scored as the highest priority risk because fishing is the biggest legal driver of the economy.

The risks are scored as the product of consequence and likelihood. Therefore, illegal fishing scores 20, smuggling and customs evasion score 12, boating accidents score 10, and other challenges are even lower priorities. If the national security leaders of the nation approve this matrix and its scoring, then force planners have a risk assessment, which provides clear guidance for force planning.

The two-dimensional model may not be robust enough for nations with planning horizons that cover an extended time. In this case, a third variable can be added to the model. Figure 8 is a three-dimensional risk matrix.

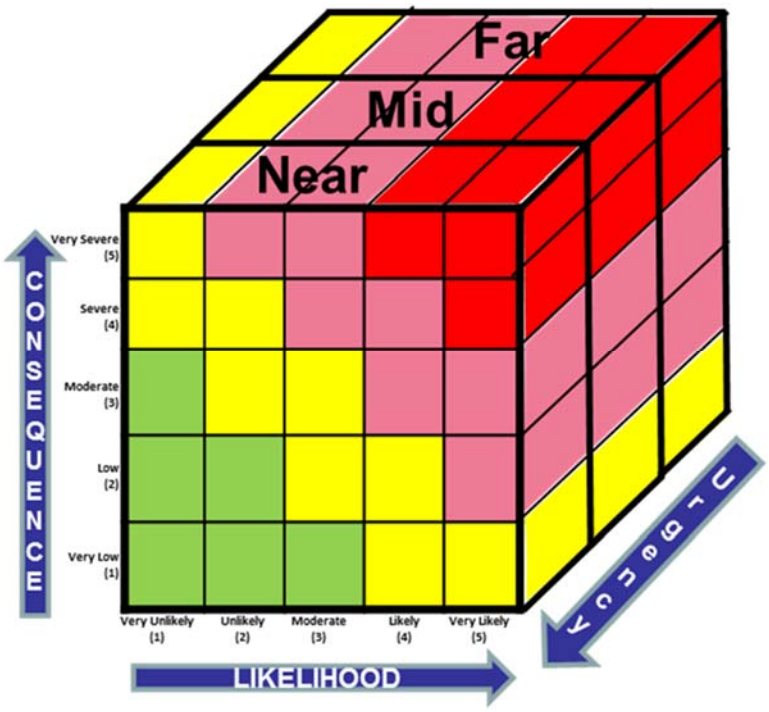

Figure 8. Risk as the Combination of Consequence, Likelihood, and Urgency

In this model, the urgency of a challenge is also considered in the risk assessment. Returning to the notional case, perhaps there is an assumption that illegal fishing is less likely in the far term due to promised international efforts to police regional waters. Thus, the scoring and the priority of the risk will decrease over time. Given that scenario, will

policy makers choose to close potential, near-term capability gaps in the armed forces' inability to prevent illegal fishing? Even though the impact of illegal fishing is the biggest risk to the economy in the short term, the policy makers may forgo allocating resources to illegal fishing to enable an urgent military response in favor of paying for the armed forces to address a similarly urgent risk that will not decrease in priority over time. Perhaps customs evasion is as urgent as illegal fishing and there are no known efforts to mitigate this risk; therefore, it will remain a high priority risk well into the future. In this case, policy makers may choose to fund a response to customs evasion.

A risk assessment,[48] approved by policy makers, is a prerequisite for force planners trying to design a force with appropriate, acceptable capabilities.

F. Summary

The following list summarizes CBP prerequisites:

- Accepted definition of military capability,
- Description of capability's components,
- Senior leadership of the CBP process,
- A joint planning culture,
- A dedicated planning staff with analytic capability,
- Strategic policy guidance,
- Scenarios,
- Concepts, and
- Risk assessment.

If all prerequisites of CBP are present, then a force development strategy can emerge and provide a vision of how to design the armed forces of the future. In other words, the integration of these prerequisites into a coherent approach to force development is a force development strategy. Strategic policy guidance should provide the objective ends of CBP and the constraints, restraints, or obligations of the planning effort. Capabilities are used to determine the means to achieve those ends, and concepts are the bridge between ends and means. Concepts describe the ways armed forces will use their means to achieve ends—in other words, how military forces will complete tasks and produce effects with their capability. Risk assessment allows the planning staff to make informed tradeoffs as they work

[48] The method of assessing risk is not a fixed science. Some nations use quantitative models and databases while others rely on Delphi techniques. However, risk assessment techniques are not the subject of this section.

to identify what capabilities should be developed, given finite resources. Figure 9 depicts this idea, that concepts form the bridge between capabilities and strategic guidance.

Figure 9. A Force Development Strategy

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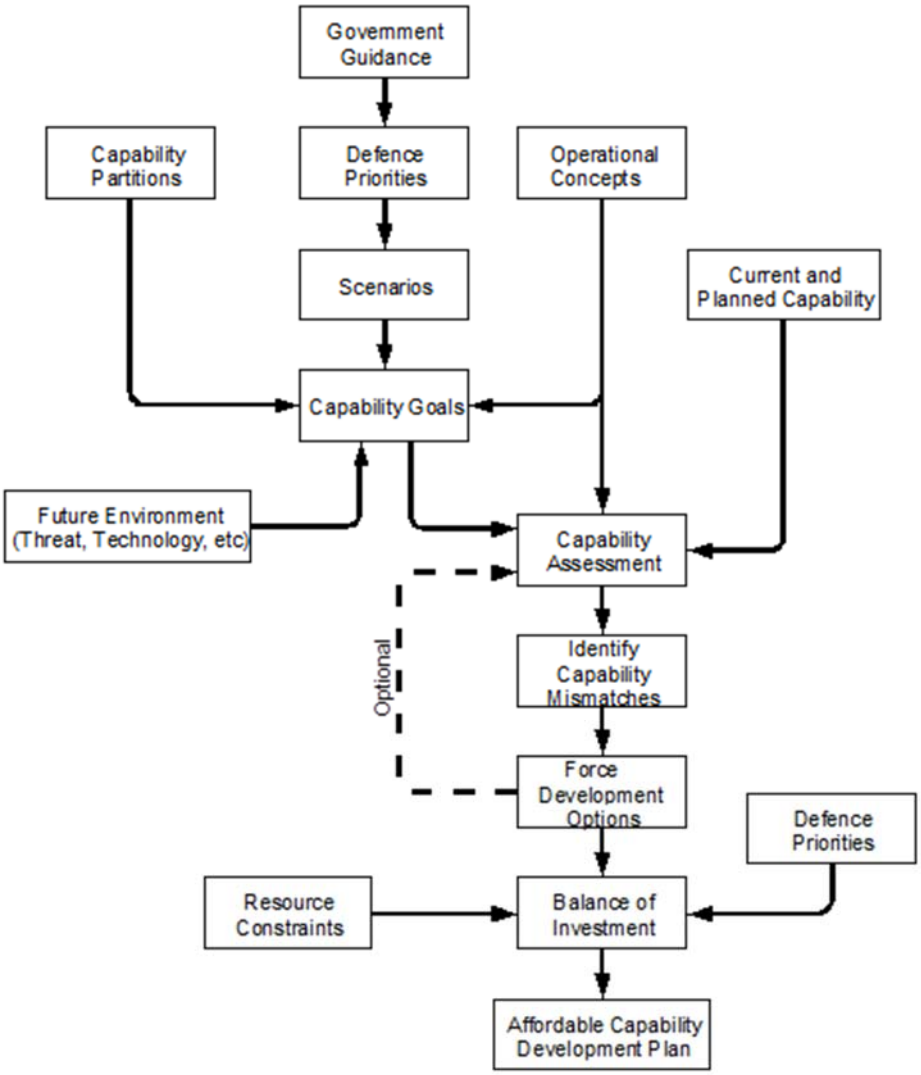
5. A Structural Requirement of CBP Itself – The Capability Partition

The previous chapter discussed prerequisites of capability planning. This chapter discusses an enduring requirement of CBP itself: the TTCP guide to capability planning's illustration of the CBP process. Figure 10 identifies this requirement.



Source: The Technical Cooperation Program, "Guide to Capability-Based Planning," 4.

Figure 10. The TTCP Generic Process Chart of Capability Based Planning

Figure 10 has five blocks above the block labeled "Capability Goals." The previous chapter discussed government guidance, defence priorities, scenarios, and operational concepts. This chapter addresses the fifth block: capability partitions.

A capability partition is a framework for analyzing and ultimately planning for capabilities. It is similar to a budget account structure. A budget account structure is not budgeting; however, budgeting is not possible without a budget account structure. Likewise, CBP is not possible without a capability partition.

The TTCP planning guide describes a partition as groupings of capabilities that are based around the ability to perform tasks or produce effects. For example, the "control and denial of the underwater battle space" may be an aggregate capability partition that has numerous sub capabilities within.[49]

Dr. Ben Taylor describes a capability partition as a scheme that decomposes the entire strategic policy domain into a defined hierarchy. "A partition scheme is required," he writes, "because without one there is no way to characterize and categorize the analysis problem and facilitate supporting subsidiary analyses and, therefore, no way to aggregate insight and provide decision makers with a composite picture e.g., of where the force was relatively strong or weak. Capability partitions also divide the complex problem into more manageable pieces simplifying the analysis…."[50]

Webb, Richter, and Bonsper describe a capability partition as a hierarchy that visually represents the elemental capabilities required to address a scenario. They write that the hierarchy starts with general descriptions of a capability and then refines each level, illustrating smaller and more precise capabilities needed to produce the more general capability.[51]

IDA describe this partition as a Mission Area Framework.[52] The Mission Area Framework decomposes major mission areas assigned to the armed forces into groupings of capabilities. These capabilities are further decomposed into as many subcapabilities as required to account for the requirements to accomplish objectives in a given mission area. Ideally, the objectives would be defined by the success criteria in a scenario specific to the mission area, and the capabilities would be found within or derived from a concept.

[49] The Technical Cooperation Program, "Guide to Capability-Based Planning," 2–3.

[50] Taylor, *Analysis Support to Strategic Planning*, 17.

[51] Webb, Richter, and Bonsper, "Linking Defense Planning and Resource Decisions," 392.

[52] Goodman et al., *Observations on the Republic of Korea Force*, 20–21.

The Canadian Forces refer to their partition as a capability framework. At the top of the hierarchy are six domains of the armed forces:

- Command
- Sense
- Act
- Shield
- Sustain
- Generate[53]

Under each domain, there are capabilities. For example, the "Act" domain contains five capabilities:

- Aerospace Effects Production
- Land Effects Production
- Maritime Effects Production
- Special Ops Effects Production
- Non-Kinetic Effects Production[54]

Under each of these capabilities are functions, followed by activities, and finally subactivities. When performing an analysis of the forces' ability to respond to challenges in a given scenario, force elements are mapped to the subactivities required and then analyzed for their ability and sufficiency to respond.[55]

Table 1 displays the Canadian Forces' Aerospace Effects Production capability framework. Depending on the scenario or scenarios being analyzed, the force elements assigned to provide the subactivities (i.e., example activities, as referred to in the last column) would be mapped to the capability and analyzed.

There is no single way to define a capability partition. The United States Joint Staff groups all its armed forces capabilities into a taxonomy of eight Joint Capability Areas (JCAs). This JCA taxonomy does not reflect prioritization or importance. Rather, it is a mutually exclusive and exhaustive list of the capabilities of the Armed Forces of the United

[53] Gary Christopher et al., *Strategic Capability Roadmap Version 1.0 Analytic Framework*, DRDC CORA TR 2010-198 (Ottawa, Ontario, Canada: Defence R&D Canada, Operational Research Division, Strategic Planning Operational Research Team, December 2009), 8–9, https://docplayer.net/50214314-Strategic-capability-roadmap-version-1-0-analytic-framework.html.

[54] Ibid, 9

[55] Ibid, 9–13.

Table 1. The Canadian Forces' Capability Framework for the Aerospace Effects Production Capability

Capability	Functions	Activities	Example Activities
Aerospace Effects Production	Deny Aerospace to the Opposing Force (OPFOR)	Defend Friendly Aerospace	Conduct Air Intercept
			Conduct Defensive Counter Air
		Defeat OPFOR Aerospace Assets	Conduct Ground Based Air Defense
			Conduct Anti-Air Warfare
			Conduct Fighter Sweep
	Provide Freedom of Manoeuvre in the Aerospace	Combine Forces for Ops	Provide Aerospace Control
			Conduct Combined Air Operations
		Destroy or Suppress OPFOR Aerospace Assets on the Ground or at Sea	Conduct Suppression of Enemy Air Defense
			Conduct Covert Operations
			Conduct Suppression of Surface-to Air and Surface-to-Air Missile Threats
			Conduct Offensive Counter Air
		Protect Own Aerospace Assets	Conduct Air Escort
			Conduct Combat Air Patrol
			Monitor Aerospace

Source: Christopher et al., *Strategic Capability Roadmap*, 9.

States. They are used to support capability analysis and decision making for future force development. To that end, each JCA has a definition that is devoid of solutions, prescriptions, or references to specific weapon systems.[56]

The JCAs also decompose into lower level capabilities. Each of the lower level capabilities can then be linked to a joint-staff-approved universal armed forces task list. Force elements are mapped to a task or tasks and then analyzed for their ability to perform that task successfully against a given challenge or set of challenges described in a scenario approved for use during force planning.[57]

The Colombian Ministry of Defense describes the ultimate responsibilities of its armed forces in terms of eight mission areas. Each mission area is decomposed into its requisite capabilities and subcapabilities. In Colombia, organizations that have domestic law enforcement responsibility and authority (i.e., National Police, Coast Guard, General Maritime Directorate) fall under the defense ministry. Therefore, the Colombian partition includes mission areas (e.g., citizen security and protection of the environment and natural

[56] Joint Chiefs of Staff, "Charter of the Joint Requirements Oversight Council (JROC)," Enclosure E.

[57] Enclosure A of CJCSI 3500.02B defines a joint task, a joint capability area, and describes the relationship between joint capability areas and joint tasks (Joint Chiefs of Staff, "Universal Joint Task List Program," CJCSI 3500.02B (Washington, DC: The Pentagon, 15 January 2014), http://www.jcs.mil/Portals/36/Documents/Library/Instructions/3500_02.pdf?ver=2016-02-05-175035-187).

resources) as well as capabilities (e.g., forensic investigation) not usually associated with defense ministries.[58]

In Colombia, the challenges of each mission area are described by scenarios. The scenarios are used to analyze the proficiency and sufficiency of the force elements to respond. The capabilities of the Colombian force elements are grouped into nine functional capability areas that encapsulate all the capabilities of the Colombian defense sector, which includes force elements of the Ministry of Defense, Army, Navy, Air Force, National Police, Coast Guard, Marine Infantry, and the General Maritime Directorate.[59]

Given that a universally applicable model of a capability partition does not exist, a logical question is, how does a nation define its capability partition? IDA's research cannot yet provide an answer that it would describe as a best-practice to answer this question. However, without a capability partition, capability planning is not possible.

Defining a capability partition, along with all other CBP prerequisites, is a potential year zero problem in implementing a CBP process because a year zero problem is one that confronts the defense enterprise when it tries to do something for the first time (e.g., capability planning) and realizes it lacks some prerequisite. The lack of a capability partition is a typical year zero problem for any nation that wants to install a capability-based approach to its force planning efforts.

Reflecting on the Colombian experience, none of the inputs discussed in the previous chapter or a capability partition existed when the decision was made to transform their force structure based on capability planning. The Ministry of National Defense had to take steps to satisfy all the prerequisites and establish a capability partition before planning could proceed. The Colombian capability partition came out of analysis led by the Ministry of National Defense.[60]

The partition was developed through an analysis to determine the elemental capabilities required by the concepts and scenarios developed for each Colombian mission area. Every armed service eventually agreed to the partitions, which were used by the Ministry to frame capability analysis once capability planning had started. In other words, the Colombians discovered their partition through an analysis of the scenarios that described their expected future operating environment and the concepts developed in response to those scenarios.

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[58] Republic of Colombia, *Strategic Planning Guide 2016–2018* (Bogotá, Colombia: Ministry of National Defense, June 2016).

[59] Ibid.

[60] See Lina M. Gonzalez, Aaron C Taliaferro, and Wade P. Hinkle, *The Colombian Ministry of National Defense's "Transformation and Future Initiative": Retrospective on a 9-Year Cooperative Effort Between the United States Department of Defense and the Colombian Ministry of National Defense*, IDA Paper NS-P 8588 (Alexandria, VA: Institute for Defense Analyses, October 2017).

Each nation's experience in creating its own partition has been and will be unique. What can be said is that creating a partition is an activity within the scope of year zero problems, along with the steps required to get all stakeholders to agree with a partition. Even though how to create a partition is not yet well defined, there is an accepted description of the necessary attributes of a capability partition.

Widely cited across the literature on capability planning are Vencel, Moon, and Cook's six heuristics for designing a capability partition.[61] The word heuristic was deliberately chosen. The defense sector is a complex enterprise, and designing an architecture (i.e., a capability partition) that incorporates all the sector's attributes in an appropriate enterprise framework is also complex. A heuristic approach is one that uses the subject matter expertise of the system's architects and applies that expertise to a set of decision rules that guide the design of the framework. The capability partition is the architecture for capability planning, and the system's architects are defense analysts and experienced, uniformed personnel who have practice using defense capability in operational settings.

Vencel, Moon, and Cook's six heuristics are as follows:[62]

- **Simplicity.** The partition should not contain unnecessary, redundant, or unduly complicated aspects.
- **Form, function, and fit.** The form, function, and fit of the partition should reflect organizational and management processes, guidelines, rules, and legal, political, and societal constraints.
- **Aggregation.** Capability elements in a partition should be independent of one another. There should not be more than a handful of elements at each level and the interface between elements needs to be describable.
- **Sensitivity.** The performance of the defined capability elements should be as insensitive as possible to external influences. Performance standards should be inherent attributes.
- **Intermediate forms.** The various levels in the capability partition (the intermediate forms) should be stable. They should meaningfully represent a whole rather than a partial state of affairs to allow the architecture to evolve.
- **Compatibility.** The capability elements in a partition should take account of the cultural, social, and behavioral nature of the people it serves. It easier to match a system to the humans it supports than to try to a get humans to accept a system not matched to prevailing norms.

[61] Les Vencel, Terry Moon, and Stephen Cook, "Partitioning National Defense into Portfolios," *INCOSE 2002* 12, no. 1 (August 2002): 99–104, https://doi.org/10.1002/j.2334-5837.2002.tb02448.x.

[62] Ibid, 99–100.

To conclude, a capability partition is a necessary element of capability planning. No two nations describe their partitions the same way. IDA recommends the term "Mission Area Framework," as explained in Goodman, Neill, Hinkle, and Oh Hassig's work.[63] There is no one way to develop a partition; however, for nations that have never used a systematic force planning approach such as CBP, the partition is likely to emerge from the year zero activities and analyses that must take place before capability planning begins. The assessment of whether a given partition is good enough can be done using Vencel, Moon, and Cook's six heuristics.[64]

[63] Goodman et al., *Observations on the Republic of Korea Force*.

[64] Vencel, Moon, and Cook, "Partitioning National Defense," 99–100.

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6. The CBP Process

Essentially, CBP is a two-step analytic process. The first step considers whether the force elements are able to perform tasks and produce effects under a specified set of standards and conditions. If yes, then these elements are capable. If not, then a capability gap exists. The second step considers how to close or mitigate capability gaps within the parameters provided by strategic policy guidance and known fiscal restraints.

Capability requirements can be derived from analyses of strategic policy guidance, scenarios, and concepts. Comparing a force element's capability to its requirements uncovers any potential gaps. Gaps are mitigated or closed by considering how to rearrange, increase, or decrease the components of capability (e.g., DOTMLPF) within the force elements. Figure 11 illustrates this idea. Force elements are the focus of analyses.

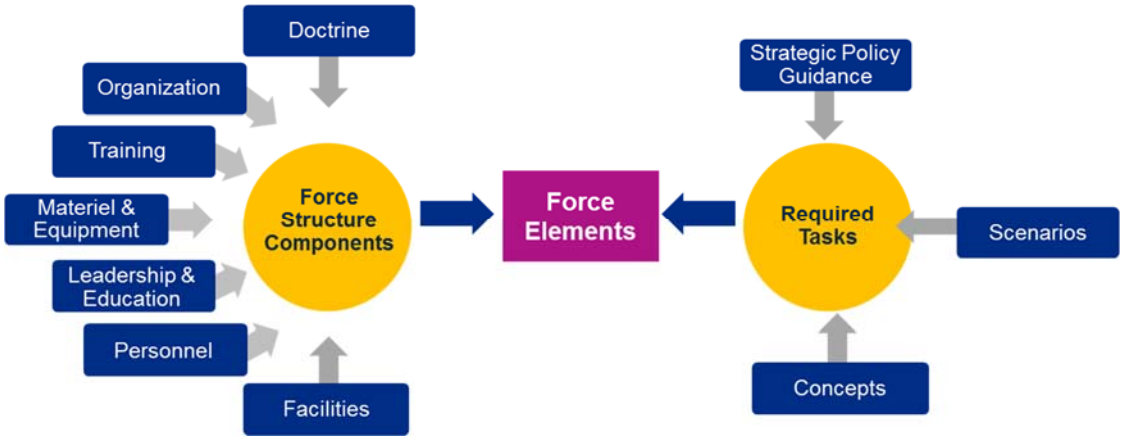

Figure 11. Capability Planning: Force Elements Are the Focus of Analyses

Capability planning completes both analytic steps through a deliberate process. Figure 10 is the TTCP's generic CBP process. Each of the TTCP member nations modified this generic process to create its own process for its context. Given IDA's experience in helping nations develop a CBP process, we recommend the three-phase approach depicted in Figure 12. This approach is mindful of year zero problems. It does not assume that a nation has all the requirements for CBP before it begins CBP. Each phase is depicted by a dashed red line surrounding a number of steps. Grey boxes outside of the phases describe the inputs needed for each step.

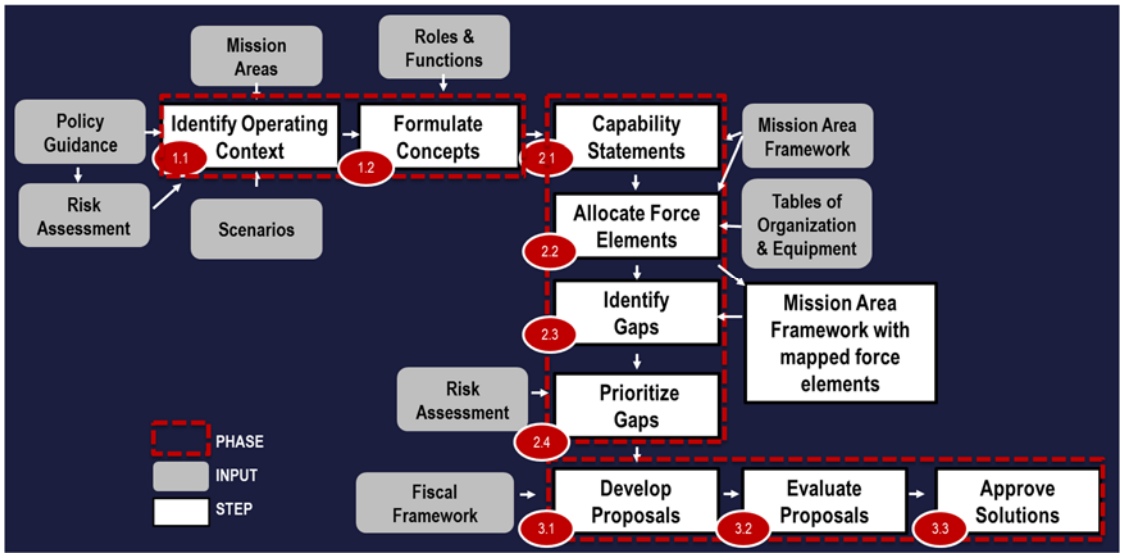

Figure 12. IDA's Recommended CBP Process

A. Phase 1. Building the Prerequisites

The purpose of phase 1 is first to identify the operational context and the challenges it will present to effective defense operations and then to develop concepts that satisfy the success criteria in the scenarios given. Inputs to determining the operational context include the major mission areas of the armed forces (information that comes from strategic policy guidance), scenarios, and any other policy guidance that obligates or restricts armed forces' actions. This phase tackles year zero problems head-on by ensuring that the CBP prerequisites of strategic policy guidance, scenarios, risk assessment, and concepts are developed. If a nation has already developed all the prerequisites, this phase will be short since it only gathers what has already been done.

The operational context characterizes expected medium- and long-term threats and challenges and identifies the adversaries' most likely courses of action. Supported by risk-analysis techniques, this part of the process prioritizes threats and challenges based on their probability and impact and translates them into the operational challenges the military services will confront.

Having collectively agreed on the context, the military services then jointly develop concepts that describe how joint force elements will respond to threats and challenges in the operational context. The concepts describe how the armed forces will employ their resources and conduct operations. Based on the roles and functions[65] assigned to each military service by the defense ministry, individual service concepts may be needed and can be developed further based on the joint concept.

[65] Roles and functions are the broad, general, and enduring roles or functions for which an organization is designed, equipped, and trained. For example, a function of the United States Air Force is to conduct

1. Phase 1, Step 1. Identify the Operational Context

The operational context is the environment, conditions, and circumstances that affect the timeliness and effectiveness of armed forces when responding to threats or challenges. The context is the product of analyzing scenarios and following policy guidance. The operational context describes or identifies the following:

- The operational environment—where are armed forces likely to perform;
- All stakeholders relevant to armed forces activities or operations in a given context;
- Adversaries in terms of their most plausible manifestations or courses of action; and
- A risk assessment that prioritizes threats and challenges.

To augment the operational context, IDA recommends the following:

- **Describe the operational environment.** Examine the different factors (politics, environment, social, demographic, infrastructure, legal, communications, and so forth) relevant to the employment of the armed forces in the geographic region associated with the scenarios under analysis.
- **Identify relevant stakeholders.** List all the known, relevant actors in the scenarios analyzed. Document the respective interactions between stakeholders that are relevant in fashioning a concept.
- **Identify and describe adversaries and their likely courses of action.** Use the expertise and experience of armed forces personnel and defense analysts to characterize the current behavior of adversaries and then forecast any changes from this baseline.
- **Risk assessment.** If a risk assessment methodology does not exist, create one for approval by policy makers. In this context, a risk assessment prioritizes threats and challenges in terms of their consequence and likelihood and in accordance with any policy guidance provided.

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global integrated command and control for air and space operations. A rule for developing a joint concept is that no service can ascribe a role to itself within a concept if that role is already assigned to another service. Defense policy should assign roles and functions. The U.S. assignment of roles and functions of the armed forces is documented in Department of Defense Directive (DODD) 5100.01 (Department of Defense, "Functions of the Department of Defense and Its Major Components," Department of Defense Directive (DODD) 5100.01 (Washington, DC: DA&M, December 21, 2000), https://fas.org/irp/doddir/dod/d5100_01.pdf).

2. Phase 1, Step 2. Formulate Concepts

A concept clearly and concisely expresses the set of tasks an aggregation of force elements must perform to eliminate or mitigate prioritized risks and satisfy the success criteria within a scenario or set of scenarios. The concept should be developed jointly. Not all required tasks may demand a joint operation; however, the defense sector must jointly determine a coordinated response to establish the role of each service in the fulfillment of the concept and to limit the parochialism of any one service.[66]

If existing concepts, or modifications of the same, are adequate responses to the context, then they should be used. Existing doctrine may also adequately describe how force elements will operate in response to the operational context. If existing concepts or doctrine do not satisfy the requirements of the context, new concepts should be developed. The following steps provide a standard guideline to develop concepts:

- **Introduction.** Describe the purpose of the concept and summarize the operational challenge(s) and the operational context to be addressed.
- **Time horizon (scope) and assumptions.** Identify the time horizon for use of the concept (e.g., between three to ten years into the future). List all assumptions used for the concept, especially those that derive or carry over from the description of the operational context. Also, list what is not known, including a statement about the future, which is uncertain and requires continued analyses.
- **Describe the challenge.** Describe the challenge(s) and other factors that may affect the conduct of activities and operations. State why the concept is necessary.
- **Synopsis of the central idea.** Describe the central idea of the concept.
- **Solution.** Summarize how force elements' capabilities will be applied and integrated to overcome or mitigate the challenges.
- **Narrative.** Describe how capabilities will be used and how they relate to one another in time and space. This narrative explains, broadly, what force elements will need to do.
- **Sketch.** Provide a sketch or set of sketches that illustrate the concept. These graphic representations of the concept depict the roles of the force elements.
- **Necessary capabilities.** Describe broad capabilities essential to implement the concept, with a focus on capabilities that would be new to the existing force

[66] If no policy describing the roles and functions of the armed services exists, then it will be necessary to compile force elements and describe their doctrinal functions at that time to define the roles and functions of the armed services.

> structure or existing capabilities that will be used in new or unique ways. (Specific capability statements can be derived later in planning and should be added to the concept once completed.)[67]

To summarize, concepts should shape the future of the force structure. They describe the way force elements will operate to achieve strategic policy objectives within an anticipated, future operational context. Concepts that accurately summarize the operational challenges of the future and point to the essential capabilities to overcome those challenges place flexible, robust, and adaptable capabilities suited to the future environment at the disposal of defense leaders.

To elaborate with an historical example, consider the U.S. concept for Transpacific Warfare developed in advance of World War II. The concept originated with Chester Nimitz while he was a student at the Naval War College. Nimitz's war college thesis was a synopsis of the main idea:

> The operations imposed on the U.S., in a future Pacific war will require the U.S. Fleet **to advance westward with an enormous train** in order to be able to seize and establish bases en route.… The possession by the enemy of numerous bases in the Western Pacific will give her fleet a maximum of mobility while the lack of such bases imposes on the U.S. the **necessity of refueling at sea en route or of seizing a base from the enemy** for this purpose in order to maintain even a limited degree of mobility (bolding added).[68]

Reading Nimitz's thesis and using the benefit of hindsight, one can understand why the United States developed aircraft carriers, organized its Pacific fleet into carrier battle groups, deemphasized the use of battleships, and developed means for amphibious warfare in the period between World War I and World War II. Furthermore, the insight from this concept and the experience gained during World War I led to the development of future concepts that pointed to the need for a nuclear navy—one not limited by the necessity to refuel at sea.

B. Phase 2. Capability Analysis

Phase 2 has four steps. For each scenario and its corresponding concept or set of concepts, phase 2 identifies specific capabilities required to implement each concept. Then, existing force elements are allocated to each capability, and the force structure is analyzed

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[67] Schmitt, "A Practical Guide," 15–19.

[68] Paraphrased from Chester W. Nimitz, "Naval Tactics," *Naval War College Review* 35, no. 6 (Article 4): (November–December 1982), 12–13, https://digital-commons.usnwc.edu/cgi/viewcontent.cgi?article=5011&context=nwc-review.

to identify capability gaps. Finally, the gaps are prioritized and provided to the Defense Minister or Chief of Defense for approval.

1. Phase 2, Step 1. Capability Statements

Capability statements are detailed descriptions of the tasks that force elements must accomplish to implement the concepts. Given that a capability is *the wherewithal to complete a task or produce an effect within a set of specified performance standards and environmental conditions*, capability statements must include a description of what needs to be done, the performance standards of the action, and the expected environmental conditions. The following steps are integral for writing capability statements:

- **Identify specific tasks.** Decompose the broad capability areas described in the concept into discrete military tasks. For instance, Nimitz wrote, "advance westward … [with] an enormous train."[69] Using simple analytic questions (e.g., how far west?, starting from where?, what does enormous mean?, and how much train is required to achieve the operating objective?), the broad statement can be decomposed into more specific tasks.
- **Develop and apply standards.** Apply standards to the tasks. Use the description of the operational context to develop standards. Standards must be objective, measurable, realistic, and understandable.

An example capability statement is "notwithstanding terrain or weather conditions, in less than forty-eight hours and with not more than ninety-six hours notice, simultaneously deploy up to two brigades a distance of 900 km from their garrison." This is a specific task with stated performance standards and environmental conditions.

For nations with a year zero problem, this step is where the need for a capability partition will show itself. If a capability partition already exists, it will be the starting point for this step, and analysis should consider whether the existing partition already contains a description of the capabilities required.

2. Phase 2, Step 2: Allocate Force Elements

A force element is a doctrinally organized, distinguishable collection of people, materiel and equipment, and facilities at a specified level of preparation required to accomplish tasks and produce effects within a given time period. Described from a different angle, an organized unit is a force element at readiness.[70] In this sense, a force element embodies capability.

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[69] Nimitz, "Naval Tactics," 12.

[70] Yue and Henshaw, "A Holistic View," 58.

A force element can be a standard military unit (e.g., a battalion, a ship, or a squadron). It can also be a headquarters organization, a defense agency, or a training center. To assess whether the existing force structure can provide capability, the elements of the force structure must be allocated to the capability statements.

Referring back to Table 1, force planners in the Canadian Defence Staff need to know what force elements have the assigned doctrinal responsibility to conduct air interdiction, defensive counter-air, ground-based air defense, and so forth. The force elements with the required capabilities are mapped to the capability statements. In some cases, there may not be any force elements able to provide a required capability, which is acceptable at this point in the process.

In some nations, force elements are listed in tables of organization and equipment (TOE) for the defense sector. Nations with previous experience in capability planning will also have a preexisting capability partition to use a TOE that should contain force elements mapped to capability statements. If neither a capability partition nor a TOE existed before the start of the capability planning process (potential year zero problems), then this step will take much longer.

To address year zero problems, the planning staff will have to compile a list of all the force elements in the defense sector and determine—or at least propose and agree to—their primary doctrinal functions. If there is no organizational doctrine that describes the primary function of units of the same type, then a way to derive units' doctrinal function is to ask questions about the origin and raison d'être of the unit. For example,

- Why was the unit designed and created in the first place?
- Why was a decision made to spend the public's money to create this unit?
- If this unit did not exist, what functionality would no longer be available that would create a noticeable and negative effect on defense capability?

Military units can do many different things. The point is not to describe all that they can do, but to determine their primary reason for existing (i.e., their doctrinal function or their designed operational capability).

3. Phase 2, Step 3. Identify Capability Gaps

Table 2 is a completed capability partition with units allocated. Consistent with IDA's methodology, the partition depicted is a Mission Area Framework.

Table 2. An Example of a Capability Partition: A Mission Area Framework

Mission Area	Joint Capability Area	Sub-Capability Area	Allocated Force Elements
Humanitarian Assistance/ Disaster Relief	Airfield Opening	Aerial Port Operations	1st Aerial Port Squadron
		Engineer Construction	1st Contingency Response Group
		Tactical Airlift	128th Tactical Airlift Squadron
		Airfield Operations	1st Contingency Response Group
	Humanitarian Relief Operations	Bulk Water Supply	1st Engineering Company
		Field Mess	Army Field Mobile Kitchen Task Force
		Engineer Construction	3rd Naval Mobile Construction Battalion
	Field Medical Operations	Triage and Emergency Medical Care	
		Tactical Airlift	128th Tactical Airlift Squadron

Using the Mission Area Framework with its mapped force elements, three types of gaps can be identified during this step:

- **Type 1.** No force elements of the type needed exist in the current or already planned force structure.
- **Type 2.** Not enough units of the correct type exist within the current or planned force structure to provide the capability required by the scenarios and concepts under analyses.
- **Type 3.** Enough units of the correct type exist; however, they lack the capacity to provide needed capability.

The type 1 and type 2 gaps describe a deficient force. The force does not have the elements it needs. In these cases, it is possible that no doctrine corresponding to the required capability exists, and, thus, no organized force elements exist. A type 3 gap is a sufficiency gap. The force elements lack adequate capacity. At this point in the process, it is sufficient to document the existence of type 1 and type 2 gaps.

Type 3 gaps require documented justification. Referring to Table 2, within the capability area of Field Medical Operations, Triage and Emergency Medical Care is a type 1 gap because no medical units are available to allocate. No type 2 gaps are present. Every force element depicted may have a type 3 gap. A type 3 gap is determined by the capability required compared to the capability a given force element is able to provide. Note that two force elements in the example—1st Contingency Response Group and 128th Tactical Airlift Squadron—are listed twice. This double listing may or may not be a problem. It depends on the capacity of the force element and the concurrency of required activities to implement the concept.

To determine and document type 3 gaps, do the following:

- For each force element, estimate its current capability relative to the capability statement(s) to which it is associated.
- For any identified type 3 gap, analyze and document root causes of the gap.

As an example, perhaps a rotary wing aviation unit was mapped to the capability statement of "notwithstanding terrain or weather conditions, in less than forty-eight hours and with not more than ninety-six hours notice, simultaneously deploy up to two brigades a distance of 900 km from their garrison." The actual capability of the unit may be limited to one brigade at a time, the unit may not be able to operate at elevations above 4,000 meters, or the unit may not be able to respond given less than ninety-six hours notice.

If the estimate of current capability is less than what is required, a type 3 gap exists. Using Table 2, the 1st Contingency Response Group may not have a capability gap for the capability area of engineering construction, but it may lack capability for airfield operations. Therefore, it has a type 3 gap in one capability area but not another, which may be the case because it cannot concurrently engineer and construct facilities and operate an airfield (if this is what the concept requires) or it may be a simple lack of resources for one capability but not another.

Gap analysis requires the planning team to analyze each capability component within the force element that has an identified type 3 gap. Referring to Figure 12, if a force element cannot accomplish its required tasks, then an analysis of each capability component (DOTMLPF) is necessary to determine the root causes. Using the 1st Contingency Response Group from Table 2, a notional analysis may be as shown in Table 3.

If doctrine and organization gaps exist, then further analysis may not be required. A force element with a doctrine gap may have no basis for its subsequent T, M, L, P, and F requirements.[71] A force element not organized well enough to accomplish its doctrinal function may increase its capacity through a reorganization. It may be presumptive to assign a force element more resources before a reorganization.

Based on this analysis, the planning team can justify and document the gaps. Although it may appear that the solution to close these gaps is obvious, this point in the process is not the time to propose solutions. These gaps are isolated to force elements under consideration for a specific scenario and concept. When looking at all force elements in the force structure, other means may be discovered that render this gap moot, or solutions not inherent to the Contingency Response Group may be discovered. It is also possible the gap will be deprioritized because potential solutions cause a rippling negative effect on other capabilities or because gaps in other mission areas are more important.

[71] T = Training, M = Materiel and Equipment, L = Leadership and Education, P = Personnel, F = Facilities.

Table 3. A Notional Analysis for a Type 3 Gap

Capability Component	Status	Justification
Doctrine	Adequate	The functions of the Contingency Response Group are defined and lower level doctrine, which specifies how those functions are performed, exists.
Organization	Adequate	The design of the Contingency Response Group and its resultant organizational structure are sufficient given current doctrine.
Training	Adequate	Contingency Response Group personnel are sufficiently trained to perform all their assigned doctrinal functions
Materiel and Equipment	Inadequate	Standard supply sets enable the Contingency Response Group to deploy and operate for fourteen days without need for resupply. The concept describes long-term deployments in environments where resupply may be limited to every thirty days.
Leadership and Education	Inadequate	Contingency Response Group commanders and senior non-commissioned officers (NCOs) will be called upon to negotiate with local leaders in the area of operations and to act as de facto governors in austere environments where local governments have no reach or effective presence. Military leaders are not educated or prepared to conduct negotiations and act as civil governors.
Personnel	Inadequate	Air traffic controllers are only assigned to the Contingency Response Group on an as-needed basis. When requested, air traffic controllers arrive at the unit within fourteen days. This does not meet the concept's requirement to deploy and open an airfield within ninety-six hours of a disaster occurring.
Facilities	Adequate	Storage facilities that support the operational requirements of the Contingency Response Group have sufficient capacity to support long-term deployments up to thirty days as the concept describes. Training infrastructure is sufficient to meet readiness requirements.

For example, considered in isolation, one may assume that permanently assigning air traffic controllers to the Contingency Response Group is the solution to the personnel gap. However, air traffic controllers may be limited in quantity and in high demand throughout the force structure. Implementing this solution will exacerbate capability gaps throughout the rest of the force structure. Before that decision is made, all capability gaps need to be considered in total. If the solution is rejected, other solutions, such as changing the way the personnel system responds to requests, must be proposed and analyzed.

4. Phase 2, Step 4: Prioritize Gaps and Submit to Minister or Chief of Defense for Approval

The last step of phase 2 is to produce a list of prioritized gaps and submit it to the Minister of Defense or the Chief of the Defense Staff, as appropriate, for approval. In addition, the decision memorandum should suggest that the Minister or Chief approve a selection of the prioritized gaps for further study during phase 3. Gaps must be prioritized and selected for solution analysis (phase 3 work) because fiscal limitations will prevent defense leadership from closing or reducing all the gaps. Because capability and risk are correlated, decisions on which capability gaps to close, reduce, or accept are policy decisions and must be made by the individual ultimately responsible for the formulation and execution of defense policy.

In addition to the prioritization of gaps, areas of potential excess capability need to be identified. Identifying this excess capability will be important during the next phase of analysis, when it will be necessary to find the means to close prioritized gaps. In the Republic of the Philippines, the capability assessment process (phase 2 in our description of the process) ends when the Armed Forces Joint Staff Chief of Planning presents a decision memorandum to the Minister of Defense. The memo details the most important capability shortcomings and provides a list of capabilities of declining relevance, with the supporting rationale for each list.[72] Capabilities of declining relevance is the Philippine way of identifying capabilities important to near-term operational needs but expected to be less relevant during the time period analyzed by capability planning. The implication is that these capabilities are targets for reduction or elimination to pay for higher priorities.

Gap prioritization should flow from the previous steps and the inputs provided. A list of specific criteria to use for gap prioritization follows:

- **Risk.** Capability statements are specific tasks to counter a threat or challenge within a given scenario. Thus, capabilities and their respective gaps are associated with risk. Using input from a risk assessment (which requires strategic policy guidance and a risk matrix), prioritize those gaps associated with capability statements that address challenges with the highest risk.
- **Urgency.** Gaps that address long-term challenges may be more or less important, depending on the initial assessment of how to close the gap. If deficiencies in types of people or equipment cause the gap, near-term action may be required to implement a solution to close a far-term gap and will depend on the lead time needed to recruit and train new personnel types, to acquire and field new types of equipment, and to procure the necessary budget authority. Other

[72] William Fedorochko, Jr., et al., *The Defense System of Management (DSOM), Republic of the Philippines*, IDA Document D-4785 (Alexandria, VA: The Institute for Defense Analyses, February 2013), 26.

long-term challenges may not be urgent, even if they are high risk, because the lead time to implement possible solutions is short. Urgency relates to immediacy. How soon must action start and resources be allocated to initiate a solution to close a gap?

- **Flexibility, adaptability, and robustness (FAR).** Capabilities that are employed across a wide variety of challenges should probably be a higher priority than niche capabilities. Paul Davis writes that a force with FAR capabilities will be better postured to confront uncertainty. Flexible capabilities are able to respond to multiple mission requirements. Adaptive capabilities are relevant in multiple circumstance or operating environments. Robust capabilities are resilient and durable despite shocks.[73] Capabilities that embody these attributes should be a priority.
- **The size of the gap.** A smaller gap implies less risk. All other factors being equal, prioritize larger gaps over smaller gaps.

C. Phase 3. Capability Proposals

Phase 3 contains three steps. The purpose is to evaluate and analyze the prioritized capability gaps approved for further study at the end of phase 2 and to develop solutions to close or mitigate those gaps. Approved solutions, depending on their nature, may be referred to the defense enterprise's budget or acquisition process. Alternately, the solution may require the armed forces to develop new doctrine or to reorganize their force elements. Complex solutions may require all the above.

1. Phase 3, Step 1: Develop Capability Proposals to Close Prioritized Capability Gaps

A capability proposal presents alternatives for closing priority gaps. Each alternative should describe how to close the gap in terms of the components of capability and provide enough detail for a cost estimate to be prepared. In broad terms, two types of alternatives are those that require a materiel solution and those that do not.

Materiel solutions require the acquisition of new equipment or infrastructure. They are usually subject to approval processes that require a long lead time and rely upon a budget account (e.g., the procurement or the investment account) different from the one used to pay for day-to-day operating expenses. These solutions tend to be expensive. When a materiel solution calls for a new equipment type, it must also include the actions needed to expand, build, or reset the personnel, training, and logistics base so the new equipment adds capability (see Figure 2). The real cost of a materiel solution may be reduced if it

[73] Davis, *Analysis to Inform Defense Planning.*

allows for a personnel reduction; however, trading personnel for technology is not a panacea. A joint planning staff should carefully evaluate the cost, risk, and benefit of materiel solutions that promise or imply long-term benefit at limited real cost.

Non-materiel solutions do not require the acquisition of new equipment or infrastructure. They focus on rearranging force elements and their component capabilities. For example, a capability gap caused by a lack of personnel in infantry units may be closed by reallocating and retraining personnel from units that are underused or not assigned to a high-priority area.

To reiterate, a capability proposal presents alternatives. Therefore, the planning staff needs to present more than one way to close each prioritized capability gap. Defense leaders need to be able to choose from a range of force development options and their associated costs and risks. Webb, Richter, and Bonsper describe it as follows:

> CBP aims to delay decisions on [replacing] specific systems by … encouraging the development of alternatives. This process helps leaders overcome the tendency to replace [existing] platforms and equipment with the latest models of each.[74]

To be simplistic, closing a high percentage of the highest priority gaps may be possible. However, if the solution is expensive and complex and absorbs all the available investment budget and much of the capacity of the personnel and logistics system, defense leaders will want alternatives that close some of this gap and leave resources available for other priorities. As a rule, a non-material solution should always be put forward as an alternative within a capability proposal.

2. Phase 3, Step 2: Evaluate Capability Proposals

The evaluation for each proposal and its alternatives should be based on the following criteria:

- **Relevance.** Does the proposal relate to a prioritized capability gap, and does it make an appreciable difference in a force element's ability to accomplish a task and produce an effect?
- **Cost.** Each alternative solution within each proposal needs to have an associated cost estimate. If the solution does not contain enough detail to prepare a cost estimate, then it is not valid. If it does, then is it affordable given the national fiscal framework?[75] Are the costs justifiable given the priority of the gap?

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[74] Webb, Richter, and Bonsper, "Linking Defense Planning and Resource Decisions," 389.

[75] Fiscal framework: In many nations, the Ministry of Finance or an equivalent provides fiscal guidance that estimates total government revenues and how these revenues will be allocated to each ministry's budget account. Revenue forecasts usually cover ten years, and budget forecasts cover four to five years.

- **Feasibility.** An alternative may appear relevant and affordable but still be impossible to implement. Feasibility must be the considered judgement of the planning staff, with input from the personnel, training, logistics, and acquisition communities that may implement the solution. For example, an alternative that proposes moving a ship from one naval station to another within two years' time is plausible, but it may be infeasible because the proposed location does not have enough spare capacity to accommodate the logistics needs of the incoming ship and its crew. An evaluation of the proposal may recommend adding two years to the implementation period to prepare the base for the added ship.

3. Phase 3, Step 3: Approve Solutions

The final step collates all proposals and their relevant, affordable, and feasible alternatives and submits them to the Minister of Defense or Chief of Defense for approval. Materiel solutions are referred to the acquisition community, and non-materiel solutions are referred to the defense budget process. The approved solutions and all the supporting documentation of the entire CBP process need to be archived. These solutions/documentation will serve as the starting point for the next round of capability planning.

An important rule to remember during this step is that the priority of the solutions inherits the priority of the gaps. Individual services may lobby to increase the profile of solutions that most serve their parochial needs; however, prioritization needs to be joint—not service—specific. Adhering to this rule ensures that the process finishes with a joint perspective in place.

If the finance ministry does not provide such a framework, then the defense ministry will need to internally estimate revenue and budget allocation since these allocations need to be a considered restraint on capability proposals.

7. From Capability Planning to Actual Capability

The end of CBP is an output, not an outcome. Capability planning does not result in actual capability. As described in Chapter 3 and illustrated in Figure 3 and Figure 4, capability planning is a process within an interconnected series of processes in a force development model. The collective outcome of the entire force development process is to provide effective defense capability to commanders who employ force elements during operations. To conclude this document, we will briefly discuss aspects of program planning, the next cog in the force development model (see Figure 4).

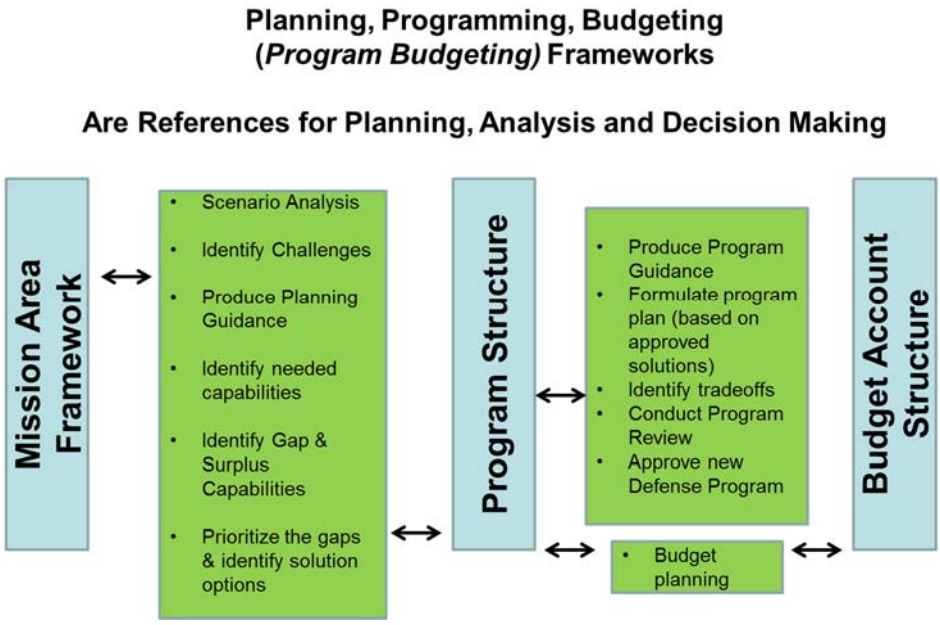
In the experience of IDA's research staff, nations that use CBP to design their force structure have the ability to estimate the cost of capabilities, express those costs in a program budget structure spanning multiple years, and use a relational database to model the relationship between capability inputs and their costs and budget accounts. A nation must also have the ability to effectively link the outputs of a defense capability plan to the inputs required by the budget process. Just as a Mission Area Framework (i.e., a capability partition) is an inherent requirement of capability planning and a budget account structure is an inherent requirement of budget planning, a program structure is an inherent requirement to link capability plans to the budget.

Discussing the relationship between capability planning and a program structure, Webb, Richter, and Bonsper write:

> Decision-makers need a framework in which to analyze alternative weapons and forces, their costs, and their substitutability or complementarity.
>
> Thus, to implement CBP requires organizations to explicitly link inputs (budgets) to outputs thought to reflect the choices and preferences made during the planning process (capabilities).
>
> Program budgeting through the program structure provides a two-way flow of information from threats or challenges to national interests, to policies and strategies to respond to the threats, to capabilities needed to implement strategies, to forces or weapons systems needed to provide capabilities, to budgets and back again:
>
> National interests ↔ Threat ↔ Policy/Strategy ↔ Capabilities ↔ Forces ↔ Budget

> The program structure classifies – *for budgeting purposes* – outputs relative to purpose by major policy, function served, capability desired, geographical area or other meaningful defense or security constructs.[76]

A program structure, like a capability partition, is a hierarchy that relates capability to its force elements. Collectively, a capability partition, a program structure, and a budget account structure are three necessary frameworks. These frameworks enable planning, analysis, and decision making that ultimately connects policy objectives to budget execution. Figure 13 illustrates the idea using IDA's Mission Area Framework as the capability partition.



Note: Modified from Webb, Richter, and Bonsper's original work.

Figure 13. Program Budgeting Frameworks and Their Relationships

A program plan is the output of program planning. When modeled in a relational database that contains a program structure, this plan allows decision makers to understand the costs and tradeoffs required to implement a capability proposal. It is a plan that allocates resources (inputs) to force elements over time in order to create capability (outputs).

Table 4 depicts a structured program plan for one group of force elements, and Figure 14 depicts how the elements of the program plan relate to one another within the program structure.

[76] Webb, Richter, and Bonsper, "Linking Defense Planning and Resource Decisions," 394.

Table 4. Program Plan for the Mechanized Infantry Battalion Program

	Base Year	Program Year 1	PY2	PY3	PY4
Funding					
Salaries	1000	1000	1500	2500	2500
Benefits	1000	1000	1500	2500	2500
Operations	1000	1000	1000	2000	4000
Investment	0	0	1000	2000	0
Total Funding	3000	3000	5000	9000	9000
Personnel					
Officers	50	50	75	125	125
Enlisted	750	750	1250	2250	2250
Equipment					
Armored Personnel Carriers (APC)	100	100	100	200	400
Operations					
KM/APC/Year	500	500	500	500	500
Rounds of Ammo/Year	2000	2000	2000	4000	8000

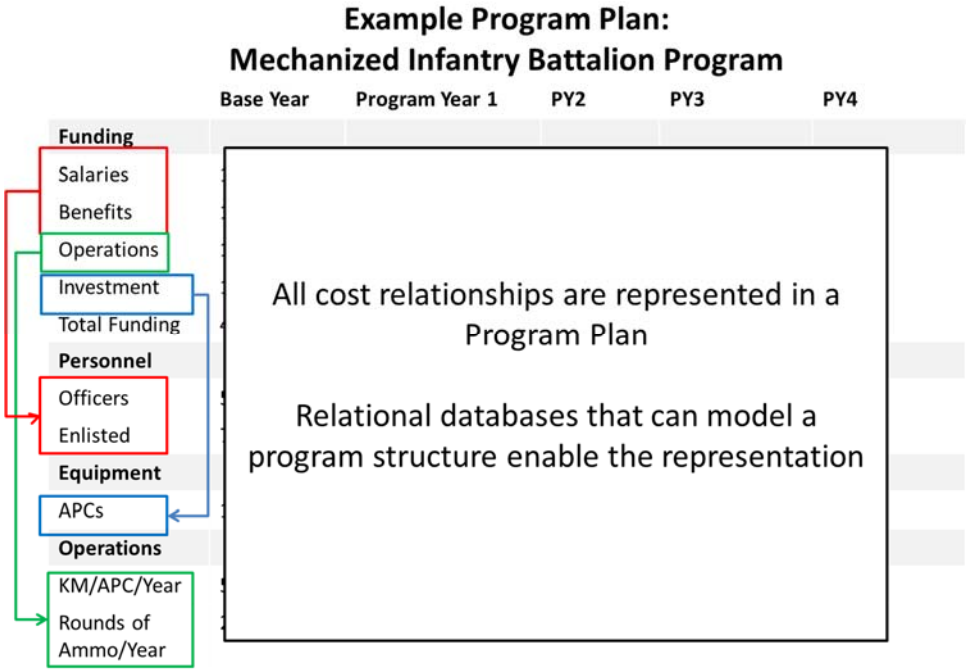


Figure 14. Properly Structured, a Program Plan Relates Capability Components to Their Respective Costs

Given that a capability plan must be "programmed" to make an actual impact, IDA recommends that nations implementing CBP should also develop program planning capabilities. As mentioned, developing these capabilities requires a relational database. To that

end, IDA developed the Force Oriented Cost Information System (FOCIS). FOCIS models force elements according to their capability components and allows defense analysts to estimate the cost of each force element in the force structure. Furthermore, the database allows defense planners to model proposed alternatives to close capability gaps, which makes it much easier to analyze each alternative for cost and feasibility. In fact, without a relational database, the multi-variate analysis capability and program planning require is not possible.[77]

To conclude this section, we return to Paul Davis' definition of CBP, which is "planning under uncertainty to provide capabilities for a wide range of modern-day challenges and circumstances, while working within an economic framework that necessitates choice."[78] The program plan is documentation of the ultimate choices capability planners make due to existing economic conditions.

[77] See the following IDA publications: Thomas J. Wallace, Aaron C. Taliaferro, and Wade Hinkle, *Defense Governance & Management: Improving the Defense Management Capabilities of Foreign Defense Institutions Using a Relational Database (FOCIS) to Improve Defense Force Planning and Budgeting, An Overview for Project Leaders*, NS P-5361 (Alexandria, VA: Institute for Defense Analyses, March 2017); James L. Wilson et al., *Force Oriented Cost Information System (FOCIS) User's Manual Update*, IDA Document NS-D 8950 (Alexandria, VA: Institute for Defense Analyses, October 2018).

[78] Davis, *Analysis to Inform Defense Planning*, 119.

Appendix A.
Mission Areas

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The Case for Mission Areas

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What are Mission Areas?

- **Important: Mission Areas are not "missions"**
- Mission Areas are developed as a mean to assess different force structure options during capability planning or when evaluating tradeoffs during program budgeting
- Mission Areas provide a *conceptual bridge*, linking policy and strategy to what is practical and doable, given the resources available to the defense/security sector
- **Definition of Mission Areas: Major groupings of interrelated activities that must be performed effectively to accomplish national level objectives**
  - A list of Mission Areas should include all that is expected from the defense/security services of a given nation or
  - All that is expected of the armed forces under a Ministry of Defense if your analysis is limited to forces under the Defense Ministry

IDA

Why Develop Mission Areas?

- Mission Areas help organize choices
  - Consider them to be high-level, priority investment* categories that need further assessment
- Mission Areas also
  - **Reduce complexity** by providing a basis for a more complete understanding of all that is expected of the defense/security sector
  - **Establish a common reference** for further guidance and planning
  - **Provide a structure for analysis**, during capability planning and program budgeting, that allows for validation of or discovery of more desirable solutions for resetting and/or resourcing the defense/ security sector

* The term "investment" refers to a deliberate outlay of resources with the expectation of a positive return (i.e., increased capability) in the Mission Area in which the investment is made

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Considerations in Constructing Mission Areas

- Need to be comprehensive and inclusive (the entirety of that charged to the defense and/or security sectors)
- Enduring
  - Should not change from year to year
- Each Mission Area defined to be distinct from every other Mission Area
- Limited in number (usually 5–8 or so)

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How to Determine Mission Areas

Page A-11 presents a six step process that leads to a well-informed list of Mission Areas and definitions suitable for use in Policy and Strategy formulation, Capability Planning, and Program Budgeting

A-9

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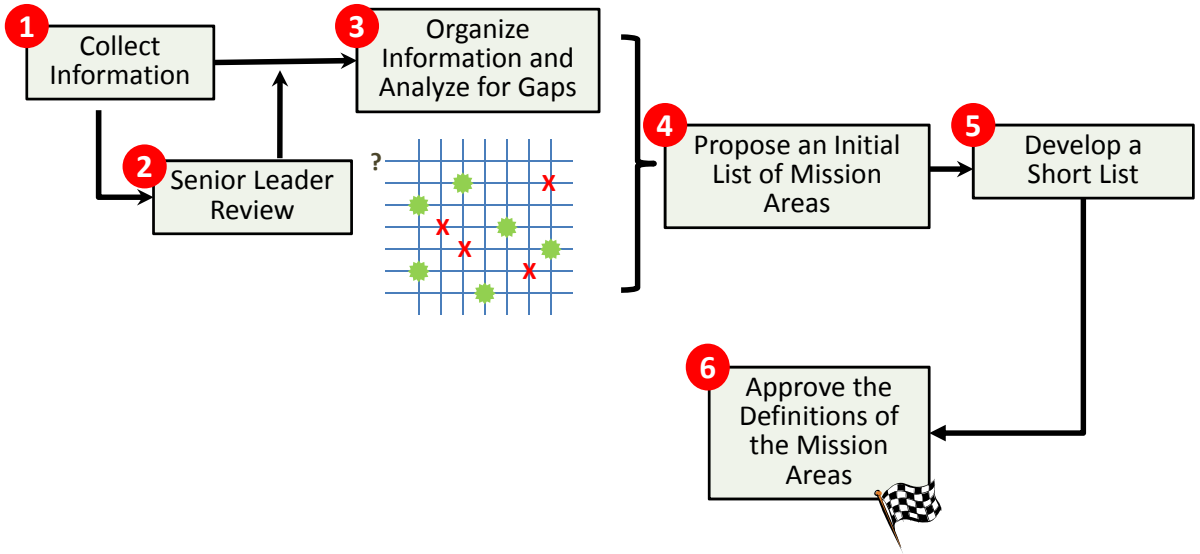
Process Flowchart



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Step 1: Collect Information

- Collect all available and relevant defense/security sector guidance and extract pertinent elements of information and then consider
  - Strategies and policy statement/documents
  - Existing defense and security plans
  - Laws or statutes that prescribe role of armed forces and/or security services
  - Strategic realities—"facts of life"
  - Existing armed forces doctrine or operating concepts
- Develop a list of important terms and definitions from these documents
  - Study team ***must formally agree*** on these terms and definitions as the processes' "*Terms of Reference*"

This step provides a reference to properly relate the various elements of context to the upcoming Mission Area formulation. This step attempts to answer the following question: "What do we need to know that is important to consider?"

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IDA

Step 2: Senior Leader Review

- Open a dialogue with senior leaders and ask
  - What are the national intentions?
  - What role does the defense/security sector have in realizing these intentions?
  - What is important to get right?** What is less important?
  - What could change these intentions?
- Attempt to draw out relative (prioritized) importance of what senior leaders say

* **OPTIONAL**: This step may not be necessary if the documents collected in Step 1 accurately reflect senior leader priorities

** **WHAT IS RIGHT?** Senior leaders have to consider the political risk of actions as well as national security risk. In all democratic nations, some issues are going to be more important than others due to the concerns of the main constituencies of the political party that holds executive power

This step closes a potential information gap that could exist between published materials and current policies

A-14

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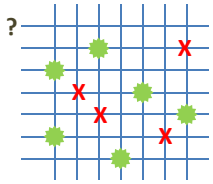
Step 3: Organize Information and Analyze for Gaps

- Capture pertinent information in a format that integrates all information and allows for comparisons
  - Matrixes are a good tool for summarizing and organizing information



- Analyze for gaps in information or understanding
  - May refer the planning team back to Step 1 or 2 for clarification
- Provides a concise, ready reference for subsequent steps and processes

This step helps visualize the scope and completeness of the information gathered. It allows the team to understand what they do not know and to determine whether it is relevant

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IDA

Step 4: Propose an Initial List of Mission Areas

Assume all the information gathered and analyzed in Steps 1–3, led to this proposed list of Mission Areas:

- Counterterrorism
- Counterinsurgency
- Counternarcotics
- Border and Maritime Security
- Counterpiracy
- Stabilizing Post-Conflict Areas/Situations
- Metro Area Control
- National Development (Construction)
- Conventional Warfare (land control operations)
- Contributing to Regional Security
- Humanitarian and Disaster Relief
- Territorial Defense
- Logistics
- Combat
- Combat/Deployed Support
- Central/Rear Support

Remember the definition: Mission Areas are not missions.
They are **major groupings of interrelated activities** that must be performed effectively to accomplish national level objectives

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IDA

Step 5: Develop a Short List (1 of 2)

- Using the tests below, eliminate proposed Mission Areas until the list is narrowed to those that are most important to assess
  - ***Timeframe Test***: A proposed Mission Area must remain relevant for the next five to ten or more years or its not important enough
  - ***Significance Test***: The major groupings of interrelated activities that make up the Mission Area should require at least 10 percent of the defense/security sector's resources or its not important enough
  - ***Feasibility Test***: Planners can plan for anything, but there are limits to their capacity to analyze and plan for everything. So there cannot be more "*important*" Mission Areas than there is capacity to analyze them. (Rule of thumb: more than four but less than eight)
- Develop draft definitions for the shortened list

This step reduces the proposed Mission Areas to a prioritized handful, recognizing that time constrains the capacity to analyze everything people may feel is important

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IDA

Step 5: Develop a Short List (2 of 2)

- ***Comprehensiveness Test***: Examine the shortened list and assess if the entire defense/security sector force structure could be assigned to one of these areas
  - If not, add additional areas that could be used for the remaining force structure or
  - Reconsider the definitions of the areas in the shortened list
- Modify existing definitions and/or develop draft definitions for any added Mission Areas
- Repeat Comprehensiveness Test

Important note: Later, as part of the capability planning process, the planning staff *must* allocate every unit in the defense/security force structure to a capability statement derived from one of these Mission Areas

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IDA

Step 6: Approve the Definitions of the Mission Areas

- Defined Mission Areas
  - Need to be comprehensive and inclusive (the entirety of what is charged to the defense and/or security sectors)
  - Enduring, not subject to change from year to year
  - Distinct from every other defined Mission Area
- Mission Areas provide an analytic basis for analyzing and resourcing the defense/security sector; therefore, they must be approved by senior leaders
  - Seek approval through a formal, documented, coordinated and signed Ministerial or Chief of Defense resolution, directive, policy statement, regulation (i.e., a recognizable, authoritative defense/security sector document)
- Later, it may be prudent to expand or even reduce the Mission Area set, adjust the definitions, or change the levels of effort
  - All changes should be approved in the same way that the original list was approved

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IDA

You May Arrive at Something Like This
Republic of X - Mission Areas

1. Internal Security
2. Territorial Defense
3. Disaster Risk Assessment
4. Support to National Development
5. International Defense and Security Engagements
6. Humanitarian Assistance and Peacekeeping Operations
7. Central Command and Control, Training, and Support

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IDA

Example Mission Area Definitions (RoX)

Example Mission Area	Example Definition
Internal Security	Defeat irregular forces that use violence against lawful government
Territorial Defense	Detect and defend against external threats, including surveillance of national borders, Exclusive Economic Zone (EEZ), and airspace
Support to National Development	Conduct economic development projects in regions where security is problematic
International Defense and Security Engagements	Participate in UN-mandated humanitarian assistance, peacekeeping, and peace enforcement operations
Central Command and Control, Training, and Support	Perform centralized command and control, training, and support activities that support all operating forces across the force structure

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Appendix B.
Illustrations

Figures

Tables

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Appendix D.
Glossary

Capability: The wherewithal to complete a task or produce an effect within a set of specified performance standards and environmental conditions.

Capability-Based Planning (or Capability Planning): A force planning process to determine an efficient and effective mix of military forces and to provide ample logic and evidence in support of defense budget requests.

Concepts: Documented ideas that describe how the armed force may operate or how the leadership of the armed forces desires to operate given an expected future operating environment and its attendant challenges.

Capability Statements: Detailed descriptions of the tasks that force elements must accomplish to implement the concepts.

Capability Partition (Mission Area Framework): Groupings of capabilities that are based around the ability to perform tasks or produce effects.

Defense Resource Management: The planning processes to ensure that the resources (money, personnel, equipment, facilities, and so forth) of defense organizations are used in the most efficient and effective manner to achieve desired objectives.

Doctrine: Documents that provide fundamental principles to guide the employment of the military forces in coordinated action toward common objectives.

Force Development: An organizing construct of processes, policies, organizational information, and tools that informs senior leader decision maker on how to organize, train, equip, resource, and provide capability to force elements in support of policy objectives within allocated resource limits to carry out armed forces' activities and operations.

Force Element: A doctrinally organized, distinguishable collection of people, materiel and equipment, and facilities at a specified level of preparation required to accomplish tasks and produce effects within a given time period. A force element can be used to provide capability. The force element can perform tactical, operational, and strategic functions. Operationally, a unit specified as a force element is the lowest level unit considered for deployment as part of a force package. Administratively, a force element is a distinguishable unit or organization that performs functions necessary to develop, sustain, employ, or generate forces.

Force Employment: The strategic, operational, or tactical use of force elements.

Force Planning: Planning associated with the creation and maintenance of defense capabilities, whose purpose is to ensure the means created to achieve policy's ends are consistent with a nation's desires.

Program Budgeting: A type of budgeting that relates all the costs of an organization's inputs (e.g., salary and benefits, supplies, and material, investment, research and development, construction, maintenance, rent, utilities, and so forth) to the outputs an organization intends to achieve over a multi-year period that normally spans between four to six years. Ultimately, a program budget is a plan to allocate resources within a known fiscal framework to produce outputs that can achieve outcomes, which are the national policy objectives.

Tables of Organization and Equipment (TOEs): Each table describes exactly which personnel and equipment are required for a unit to accomplish its tasks, as specified by doctrine.

Appendix E.
Abbreviations

ACT	Australian Capital Territory
APC	armored personnel carrier
CBA	Capabilities-Based Assessment
CBP	capability-based planning
CJCS	Chairman of the Joint Chiefs of Staff
CJCSI	Chairman of the Joint Chiefs of Staff Instruction
CORA	Centre for Operational Research and Analysis
CRG	Contingency Response Group
DA&M	Director of Administration and Management
DART	Defense Adaptive Red Team
DLOD	Defence Lines of Development
DOD	Department of Defense
DODD	Department of Defense Directive
DOTMLPF	Doctrine, Organization, Training; Materiel and Equipment, Leadership and Education, Personnel, Facilities
DRDC	Defence Research and Development Canada
DSOM	Defense System of Management
DSTO	Defence Science and Technology Organisation
EEZ	Exclusive Economic Zone
FAR	Flexibility, Adaptability, and Robustness
FE@R	Force Elements at Readiness
FOCIS	Force Oriented Cost Information System
IDA	Institute for Defense Analyses
INCOSE	International Council on Systems Engineering
IT	Information Technology
JCA	Joint Capability Area
JCIDS	Joint Capabilities Integration and Development System
JCIDS	Joint Capabilities Integration and Development System
KIDA	Korean Institute for Defense Analyses
KM	kilometer
MND	Ministry of National Defense
MR	Monograph Report (RAND)
MTW	major theaters of war
NCO	non-commissioned officer
nm	nautical miles
PRICIE	Personnel; Research and Development/Operations Research; Infrastructure and Organization; Concepts,

	Doctrine, and Collective Training; IT Infrastructure; Equipment, Supplies, and Services
OSD	Office of the Secretary of Defense
RGS	Requirements Generation System
RR	Research Report (RAND)
TEPID OIL	Training; Equipment; Personnel; Information; Doctrine and Concepts; Organisation; Infrastructure; Logistics
TM	Technical Manual
TOE	tables of organization and equipment
TR	Technical Report
TTCP	The Technical Cooperation Program
U.S.	United States
UK	United Kingdom
UN	United Nations
USAWC	U.S. Army War College

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14. ABSTRACT

Capability Based Planning (CBP) is a force planning process that analyzes a broad range of threats and challenges and aligns defense budgets to defense policy. Developing armed forces through capability creates a future force optimized toward tackling a large number of prioritized threats instead of a small number of specific threats. Capability is the product of a set of components (e.g., personnel, training, equipment, and facilities). These components facilitate the force development processes of program planning and budget planning (i.e., tie capability to budget). The CBP prerequisites are the accepted definition capability and its components, an empowered senior leader who has a dedicated planning staff with analytic capability, a joint planning culture, strategic guidance, scenarios, concepts, risk assessments, and a capability taxonomy or partition. A taxonomy or partition is a hierarchy that describes and categorizes the capabilities within a force structure and allows analysts to match capabilities with the units of the armed forces' structure. Nations beginning to implement CBP will often run into year zero problems due to their lack of the prerequisites. IDA proposes a three-phase CBP process, the first of which directly addresses the development of the CBP prerequisites.

15. SUBJECT TERMS

Capability Planning; Capability Based Planning; Defense Institution Building; Institutional Capacity Building; Security Cooperation

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