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Defense Resource Management Studies: Introduction to Capability and Acquisition Planning Processes

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About This Publication

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Deserving of special thanks, the authors acknowledge the contributions of Bill Fedorochko, who tirelessly developed the system of management systems approach for Philippine Secretary of National Defense, Avelino J. Cruz, Jr., in 2006 that was subsequently modified and implemented by Philippine Secretary of National Defense, Gilberto C. Teodoro, Jr., in Department of National Defense Circular 05, "The Defense System of Management (DSOM)," dated September 19, 2008. With assistance from this paper's authors along with Mart Lidy, and Hal Laughlin, Bill Fedorochko also developed the original seminar workshop materials on capability and acquisition planning that were presented in the Philippines and subsequently modified for use in Indonesia and Colombia. Other members of the Defense Resource Management Study that made contributions to the development of these preliminary products include Jim Wilson, Milt Tulkoff, Denny Lawrence, Kent Fasana, and Iain MacArthur.

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Executive Summary

This paper documents work performed by the Institute for Defense Analyses (IDA) for the Office of the Secretary of Defense, Cost Assessment and Program Evaluation (CAPE) under the Defense Resource Management Studies (DRMS). DRMS fits within the broader rubric of U.S. Government efforts aimed at international 'Security Sector Reform' as agreed to by the U.S. Agency for International Development (USAID), the Department of Defense (DOD), and the Department of State (DOS) in February 2009.

Resource management in many countries centers on the well-known Planning, Programming, Budgeting, and Execution (PPBE) system process flow, originally developed in the early 1960s, under former U.S. Secretary of Defense Robert S. McNamara (January 21, 1961 – February 29, 1968). In many countries, security sector reform begins with work on a core and improved PPBE system. This was the case for the countries that were initially the focus of IDA's DRMS efforts. To support this work, IDA's DRMS team developed teaching 'simulations' to demonstrate possible improvements in a country's resource management process.

This paper details "best practices" in resource management, refined through IDA's more than fifteen years (since the early 1990s) of experience and the presentation of simulations in more than thirty countries throughout Europe, Asia, the Middle East, and Latin America. The culmination of this experience is presented here as instructional materials that may be used to conduct a simulation, whether a command and staff planning exercise (military training setting) or its companion graduate-level academic course (school setting). The goals of this paper are to:

1. Publicize across the defense community the intellectual and analytic achievements from these years of research; and
2. Jump-start the efforts of new DRMS country teams with ready, high-quality, "off-the-shelf" instructional materials that can be tailored and applied to an individual country's unique situation.

The DRMS team distilled its understanding of international best practices in resource management into a Defense Management System comprised of four inter-related planning processes: Strategic planning, Capability planning, Acquisition planning, and Resource Management planning. Both the command and staff planning exercise and the academic course presented in this paper are designed to improve understanding and

facilitate implementation of the Capability Planning and Acquisition Planning Processes, two of the four, core planning processes of the Defense Management System.

Participants involved in either the planning exercise or the academic course investigate processes that translate security policy into mission areas and capabilities and determine if resourcing gaps exist between the policy objectives and existing or planned military capabilities. Participants further consider approaches and alternatives (solutions) to close those gaps. If a materiel solution is necessary, they investigate a process that transforms a multi-service (joint) operational need into a contract for materiel. Throughout the course, participants make use of simplified examples that illustrate the processes and their linkages.

The planning exercise includes seminars that highlight key management concepts, the importance of analysis and collaborative problem solving, and potential implementation challenges. These seminars also provide participants hands-on experience with the intended end-states resulting from the Capability and Acquisition planning processes.

The objectives of both the command and staff planning exercise and the academic course are to:

- Introduce Capability and Acquisition planning processes.
- Demonstrate key management concepts and linkages using simplified examples.
- Provide limited practical experience with briefing analysis results and preparing decision products.
- Provide practice in the distillation of complex subjects into simpler elements for presentation to senior leadership.
- Expose potential country-specific decision implementation challenges for seminar discussion.

If configured as a graduate-level academic course, the instructional materials could be an appropriate part of a host country's professional military education system, suitable at either the intermediate (senior Captain-Major level) or senior level (senior Lieutenant Colonel-Colonel level). To serve as a graduate-level course, eight lesson attendances are required and result in twenty-one contact hours or about one and a half semester credits. An expanded three credit hour option includes a term paper and four more lesson attendances.

The instructional materials in this paper are designed to serve as an off-the-shelf baseline that could be customized further and tailored to a specific country's needs. Packaged as either a one or two week command and staff planning exercise or management seminar, several configuration alternatives are possible: 1) Capability planning only, 2) Acquisition planning only, or 3) or both scheduled sequentially. Alternatives include stand-alone management process exercises that could be executed

together, separately, or in either order. In a compressed command and staff exercise option, homework assignments listed in the syllabus would not be assigned.

Other Defense Resource Management Studies (DRMS) Publications

This paper, *Defense Resource Management Studies: Introduction to Capability and Acquisition Planning Processes*, represents only a portion of the work that IDA has pursued with the Department of Defense regarding the Defense Resource Management Studies (DRMS) task. The following publications document other aspects of IDA's work in this area.

Best Practices in Defense Resource Management, IDA Document D-4137. C. Vance Gordon, Wade P. Hinkle. Alexandria, VA: Institute for Defense Analyses. January 2011.

Planning, Programming, and Budgeting System (PPBS) / Multi-Year Programming Reading Guide, IDA Document D-4057. Wade P. Hinkle, Milton L. Tulkoff, C. Vance Gordon, Rachel D. Dubin. Alexandria, VA: Institute for Defense Analyses. September, 2010.

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Overview

This paper documents work performed by the Institute for Defense Analyses (IDA) for the Office of the Secretary of Defense, Cost Assessment and Program Evaluation (CAPE) under the Defense Resource Management Studies (DRMS) program. This paper distills "best practices" in resource management, refined through IDA's more than fifteen years of experience and the presentation of simulations in more than thirty countries throughout Europe, Asia, the Middle East, and Latin America, into instructional materials. The purpose of this paper is to:

1. Publicize across the defense community the intellectual and analytic achievements from these years of research; and
2. Jump-start the efforts of new DRMS country teams with ready, high-quality, "off-the-shelf" instructional materials that can be tailored and applied to an individual country's unique situation.

This paper serves as formal documentation of the instructional materials that may be used to conduct a command and staff planning exercise and its companion graduate-level academic course. Both the planning exercise and the academic course are designed to improve understanding and facilitate implementation of Capability Planning and Acquisition Planning, two of the four core planning processes of the Defense Management System (the other two processes are Strategic Planning and Resource Planning).

Organization

The paper is designed to serve multiple purposes. When read in its entirety, the paper provides an overview of the Defense Resource Management Studies and an in-depth presentation of Capability Planning and Acquisition Planning, two of the four core planning processes in a defense management system. In addition, the paper is designed to be separated and produced as three notebooks: the *Participant's Notebook*, the *Facilitator's Notebook*, and the *Student's Notebook* (used in lieu of the *Participant's Notebook* when implementing the academic course option) following the instructions described in Appendix F, Instructions for Assembling Notebooks.

The section "Defense Resource Management Studies" provides details about the history of DRMS and how DRMS projects are conducted.

The section "Introduction to Capability and Acquisition Planning Processes" provides information about how resource management simulations evolved and were subsequently developed by the DRMS Project team into a Defense Management System that encompasses four core planning processes: strategic, capability, acquisition, and resource.

The section "Syllabus for 'Applying Capability and Acquisition Planning Processes'" provides administrative information about the academic course including the purpose, objectives, structure, and student requirements. The syllabus is intended to be provided to students who participate in the course when it is offered as a graduate-level academic course.

The section "Lesson Plans for 'Applying Capability and Acquisition Planning Processes'" provides both the Lesson Plans and Teaching Notes for each lesson in the academic course (and each corresponding block in the command and staff planning exercise). The Lesson Plans are intended to be provided to the facilitators, who present the command and staff planning exercise, as well as to the students who participate in the graduate-level academic course. The Lesson Plans include references, discussion, objectives, questions for consideration, key terms, and homework assignments. The Teaching Notes are intended to be provided to the facilitators only, and include administration, lecture, and seminar instructions.

Participant, Facilitator and Student Notebooks

The *Participant's Notebook* may be produced and provided to participants who attend the command and staff planning exercise. The notebook includes the Advance Reading, Republic of X, Blocks 1 though 8 (MS PowerPoint slides and memos for use in the simulation), Appendix A-Planning Process and Key Products, Appendix C-Glossary, and Appendix D-Abbreviations. Note: Appendix B-Fire Support Addendums is not included in the *Participant's Notebook*, but can be provided to participants at the discretion of the facilitator.

The *Facilitator's Notebook* may be produced and provided to facilitators who present the command and staff planning exercise. The facilitator's version of the notebook is identical to the *Participant's Notebook* with the addition of the exercise outcome slides (answer slides with blue borders for Blocks 2 through 7), the Lesson Plans and Teaching Notes for Lessons 1 through 8 or 12 (depending on the credit hour option), and Appendix B-Fire Support Addendums.

The *Student's Notebook* may be produced and provided to students who participate in the graduate-level academic course. This version of the notebook includes the Advance Reading, Republic of X, Lesson Plans for Lessons 1 through 8 or 12 (depending on the credit hour option), the Syllabus, Appendix A-Planning Process and Key Products,

Appendix C-Glossary, Appendix D-Abbreviations, and Appendix E-References. The answer slides with blue borders for Blocks 2 through 7 and Appendix B-Fire Support Addendums are not included in the *Student's Notebook,* but are provided to students at the discretion of the facilitator. Note: The facilitator may elect to distribute the slides for Blocks 1 – 8 prior to each lesson in lieu of providing them in the *Student's Notebook* at the onset of the course.

Audiences

There are several audiences who will benefit from this paper:

- **DRMS Country Teams:** This paper serves as authoritative documentation that shares best practices as they have evolved through the history of the DRMS Project team's work.
- **Foreign Participants:** This paper serves as an instructional reference resource for use in training and education subsequent to the DRMS engagement (after DRMS teams are no longer actively and regularly engaged with the host country).
- **Other Organizations:** This paper serves as a reference resource containing subject matter expertise in the demonstration of successful teaching techniques that other organizations may use to develop materials that support work in countries outside IDA's capacity; and to support those organizations working to assist the U.S. Government's efforts in building partner capacity.
- **Defense Community:** This paper serves as formal documentation that captures a snapshot of the DRMS processes as evolved and being practiced; and to share among those who could benefit from IDA's work in this area.

Recommended Changes

This paper provides a snapshot that captures IDA's current understanding of a generic application of DRMS with respect to two of the four planning processes. We[1] recognize that this paper will not work, as is, for use in any country; however, it can be tailored to a specific country's cultural, social, political, and organizational climate. Additionally, as we receive feedback, we plan to periodically update this paper as appropriate. It is helpful to know about organizations that are actively engaged in DRMS-like activities (advising, mentoring, training, and educating Ministries or Departments of Defense on resource management processes and reform), both so that we can learn from those experiences and so those organizations may benefit from changes to this publication. Send requests for this publication and changes to:

Strategy, Forces, and Resources Division
Attn: DRMS Project Leader
Institute for Defense Analyses
4850 Mark Center Drive
Alexandria, VA 22311

[1] Use of the pronoun 'we' in this paper refers to IDA's DRMS project team.

Defense Resource Management Studies (DRMS)

The Defense Resource Management Studies (DRMS) program contributes to the United States Department of Defense's broader, worldwide, bilateral program to strengthen a host country's defense resource management practices. The Office of the Under Secretary of Defense for Policy (OUSD (P)) and the Office of the Secretary of Defense, (Program Analysis and Evaluation) (OSD (PA&E)) (recently reorganized and renamed Cost Assessment and Program Evaluation (CAPE)) established the Defense Resource Management Studies program in the early 1990s to help the United States' security partners increase their military capabilities through improved defense resource management.

The program has three primary objectives:

- Assisting key security partners in meeting security challenges through more effective and efficient resource management practices;
- Strengthening and enhancing the defense linkages between the United States and its partners through professional exchanges at the staff and senior levels;
- Enhancing transparency and accountability in partner countries through appropriate management and decision-making processes.

Origin of DRMS

The DRMS program evolved from a request for U.S. assistance from the Egyptian Ministry of Defense in 1990. OSD (PA&E) was asked by OUSD (P) to develop analytic techniques to assist the Egyptians in formulating an affordable multi-year plan for defense capabilities in light of the significant U.S. security assistance program. Shortly after the work in Egypt concluded, the North Atlantic Treaty Organization (NATO) asked its aspirant members in Eastern Europe to improve their capacities for defense resource management. In the early 1990s, OSD (PA&E) was asked to build on its Egyptian experience to devise ways to assist the NATO effort. Over the next decade, DRMS teams worked with their counterparts in all of the new NATO member and Partnership for Peace member countries except for Russia and Belarus. The program was subsequently extended to include U.S. security partners in other regions of the world. In total, the Institute for Defense Analyses (IDA) DRMS teams have conducted programs in thirty-nine countries in Europe, Asia, the Middle East, and Latin America.

How Defense Resource Management Studies Are Conducted

Since each country's defense resource management needs are unique, practices used in one country cannot be transferred in cookie-cutter fashion to another. In particular, the Planning, Programming, Budgeting, and Execution System (PPBES), as practiced in the United States, is complex and staff-intensive. As a result, DRMS adapts the principles used in U.S. defense resource management to the scale and circumstances of the host nation. These same principles are utilized in other defense ministries that employ modern management practices, and are also advocated by many international institutions that specialize in public resource management.

The program continually assesses the lessons DRMS country teams have learned from their experiences working with host nations. IDA has synthesized these lessons into a "standard" methodology that is complemented by materials that support work in new countries. This modular concept provides a four-phase, building block approach to management reform. The four phases are:

1. **Assessment:** A DRMS country program typically begins with a detailed assessment of the host country's current approach, including force, resource, and budget planning activities to document how well the existing system functions and identify opportunities for improvement.
2. **Preparation and Skill-Building:** The next phase focuses on suggestions to improve existing systems and procedures while concurrently preparing the host country to implement new management processes and procedures. A critical part of this phase involves identifying the personnel and organizational realignment needed to implement the new processes, and assisting in the development of specialized skills and information systems.
3. **Implementation:** The host country creates its first resource-constrained, multi-year program and budget using the new processes and procedures. The host country creates or modifies management and implementation directives to align with necessary adjustments.
4. **Sustainment:** Finally, a sustainment effort supports institutionalization of the defense reform effort, primarily from an advisory role.

The duration of a full DRMS program with a host nation that encompasses all four phases shown above, will vary from country to country, but it could be on the order of three years or more. (See Figure 1 for a notional timeline.)

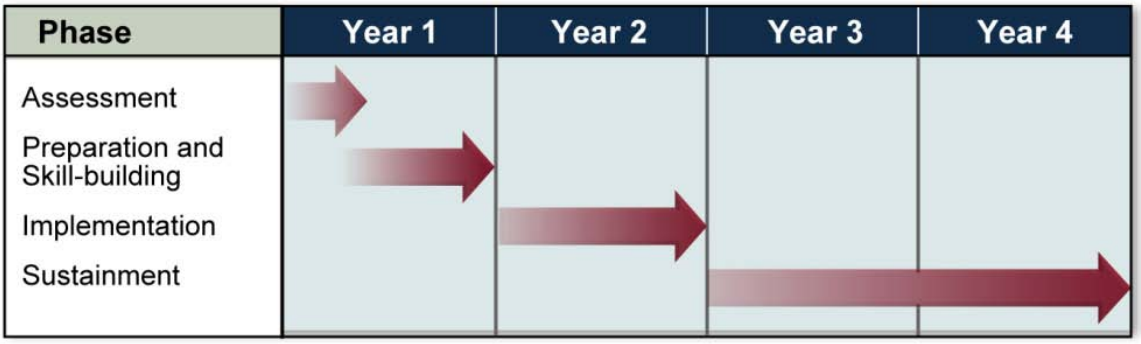

Figure 1. Modular Approach Time Line

A complete set of supporting materials has been developed to present concepts and principles common to effective defense planning as it is practiced in many countries. The materials illustrate the steps needed in an integrated process from national-level policy-making through submission of the annual budget request. The materials consist of separate "modular" packages that include concept briefings, seminar-like skill-building exercises, and assessment questionnaires. They are complemented by computer-assisted simulations and skill-building analytic seminars.

Together, the materials are used to introduce concepts, assist the host country in exploring how best to design its internal management and decision-making process, build the staff skills necessary to implement the system, and begin analyzing the real-world resource issues confronting the host country's military and its budget. The modular approach is structured so that a host country need not commit itself at the outset to devising and implementing a completely revised management process. The host country can use results from the first two phases to determine the desirability and scope of such "process re-engineering," or simply elect to make a more targeted set of improvements.

In some countries, DRMS work is constrained in scope from the outset. These projects are shorter in duration (typically about six months) and are centered on introducing modern management concepts, skill-building, and demonstrating techniques. They can involve seminars, workshops, and staff exercises using materials adapted from the standard DRMS "modular" package, or off-the-shelf materials that previous DRMS teams have developed on specialized topics. Shorter-duration visits can also be used to assist host countries in completing specific studies of resource issues or to create specialized spreadsheet tools for analysis of particular issues.

All DRMS materials are designed to be used either early in the engagement with the host country, to present the broad concepts leaders need to understand the benefits of adopting these practices, or later, after a country has decided to implement these practices, to inform staffs of the specific process steps and analyses. In addition, the materials balance the broad concepts and theoretical underpinnings of resource

management with specific drills and practice. The latter focus on specifics is, arguably, more immediately useful to staffs because it enables them to more fully appreciate roles and workloads.

Throughout their engagements, the DRMS teams are careful to not press a host country into adopting U.S. practices or to adopt a U.S. Government policy position. Instead, the teams suggest a set of international best practices. These practices represent what has worked best from DRMS program experiences in more than thirty countries.

Products Typically Used by DRMS Country Teams

Resource management in many countries is centered on the well-known PPBES process flow, originally developed in the early 1960s under U.S. Secretary of Defense Robert S. McNamara (January 21, 1961 – February 29, 1968). In many countries, work on a core and improved PPB system begins first. This was true for the NATO expansion countries that were initially the focus of IDA's DRMS efforts. To support this work, the DRMS program developed its first teaching simulation to demonstrate possible improvements in resource management.

Once a host country, with DRMS team assistance, has determined the types of improvements it desires in its resource management process, the DRMS team assists in the development of a work plan to introduce those improvements in a way that is culturally sensitive and most likely to produce the desired results within the project's timeframe. The work plan helps to achieve these common, essential objectives:

1. **Building Know-How:** Improving the skills and introducing the tools needed for sound practices.
2. **Organizing for Success:** Thinking through shifts in office organization, rules, and functions that are likely to result from the desired improvements.
3. **Developing Products and Obtaining Decisions:** Formulating recommendations and linking new analytic products to improvements in senior-level decision making processes.

To help accomplish these objectives, DRMS teams generally use three types of products (described below), based on the stated need and the lead time associated with the product (part of the approved work plan).

1. **Seminars:** Developed specifically for a country or adapted from a generic product and tailored for a country's specific needs. Generally, seminar development requires longer lead times as preparation and coordination can be extensive.
2. **Opportunity Instruction:** Developed in-country to address specific time-sensitive questions, these classes can be formal, but are, more often, informal

and ad hoc. Generally, these needs are not well known in advance so lead times will be short and can involve intense, overnight preparation.

3. **Real-World Document Preparation:** Developed both in- and out-of-country to support a host country's actual implementation of DRMS. This process is continuous and teams can be drawn into these activities with little notice.

Introduction to Capability and Acquisition Planning Processes

This section provides information about how resource management simulations evolved and were subsequently developed by the DRMS team into a Defense Management System that encompasses four core planning processes: strategic, capability, acquisition, and resource.

Resource Management Simulation

In 2003, the DRMS team developed an interactive, computer-assisted defense Resource Management simulation. The simulation was presented initially to NATO aspirants to improve understanding of the roles, responsibilities, and techniques used in a typical western-style planning, programming, and budgeting system. In late 2007, work began to adapt the simulation to an East Asian setting. Simulation and instructional materials were revamped to focus on issues of counter-insurgency, maritime surveillance, national development, and disaster relief.

The revised simulation, presented in this paper as a command and staff planning exercise or its companion graduate-level academic course, is set in a notional, democratic Southeast Asian country with a market-based economy and a medium-sized military. Participants play the roles of civilian and military decision-makers who must balance readiness, force structure, and modernization goals within the fiscal resources available. Simple force structure and associated cost factors are provided in an easy-to-use MS Excel spreadsheet (provided separately upon request) that enables participants to calculate costs of current and potential alternative future forces and programs over a six-year program period.

The simulation is designed to give participants hands-on experience in:

- Preparing the analytic products needed in a typical cycle of strategy development, capability and force planning, programming, budgeting, and performance evaluation.
- Developing program alternatives that are consistent with national and senior leadership objectives within fiscal constraints.

- Drafting selected work products (force plans, defense planning guidance, program proposals, program review issues, program decisions) generated within a defense resource management system.
- Working in an interagency environment and on resource issues requiring regional and international collaboration.

During the simulation, the DRMS team coaches host country facilitators so they are ready to conduct future simulation exercises on their own. The instructional materials may be configured for use in either a one- or two-week command post-style exercise (military training exercise setting) or as a graduate-level academic course (school setting).

In the Philippines and other Southeast Asian countries in which DRMS was implemented, it became apparent that host countries needed improvements in systems that feed PPBS, namely strategic planning, capability planning, and acquisition planning. DRMS thus expanded its characterization of a "best practices" resource management system into a system-of-systems that would integrate the four core planning processes (strategic, capability, acquisition, and resource).

Planning Processes in a Complete Defense Management System

The DRMS team distilled its understanding of international best practices in resource management into a Defense Management System comprising four inter-related and linked planning processes (see Figure 2).

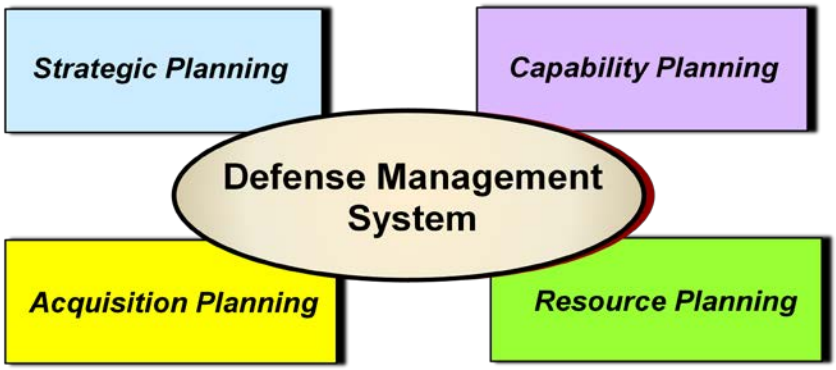

Figure 2. Defense Management System

By design, each planning process depicts a subsystem within a Defense Management System. An overarching Defense Management System should provide the following:

- From a national security perspective, identify security environments and scenarios of greatest concern.
- Develop objectives.
- Translate objectives into statements of desired mission capabilities, and explore approaches to address priority challenges.
- Utilize analytically-based planning focused on outputs (missions and capabilities).
- As a specialized step, analyze what long-term investments (capital expenditure) are needed.
- Link policy, strategy, and force planning with resources.
- Prepare a multi-year program and then an annual budget that funds the most important capabilities within financial limits and other constraints (e.g., delivery times, personnel ceilings).
- Evaluate programs and budgets by comparing the capabilities funded to priorities and objectives.

The core planning processes are described as follows:

- **Strategic Planning:** Identifying the priority security challenges that should be addressed in capability planning.
- **Capability Planning:** Identifying capability gaps and areas of declining relevance by conducting mission area assessments and analyzing potential approaches to either reduce risk or accept more risk.
- **Resource Planning:** Aligning funding to priorities within fiscal limits in the form of defense programs and budgets; and relating money spent to spending objectives by conducting performance reviews.
- **Acquisition Planning:** If a materiel solution is required, recommending what approaches (kinds of systems) are better at closing priority capability gaps; and which alternatives (types of systems) and sources are best for the preferred approach.

The DRMS team then began developing methodologies for designing and introducing this system-of-systems into host country defense sector management practices and policies. It was clear that an instructional tool (a simulation) was needed to expand beyond the original resource management simulation into capability and acquisition planning.

Capability and Acquisition Planning Simulation

Developed subsequently to the Resource Management simulation, the Capability and Acquisition Planning Simulation addresses two of the four core planning processes that make up the Defense Management System. The DRMS team recognizes that multi-year programming is most effective when senior leaders are comprehensively informed

about capability shortfalls and investment requirements prior to being asked to make decisions on priorities and allocation of resources. To assist partner countries in developing management processes and analytical techniques in those areas, the DRMS team developed an interactive capability and acquisition planning simulation in late 2008 (Institute for Defense Analyses, 2009, p. 5).

The seminars are designed to give participants hands-on experience in:

- Conducting capability-based assessments.
- Developing acquisition plans that are consistent with the results of capability planning.
- Developing proposed alternatives to identified challenges that are consistent with national and senior leadership objectives and resource constraints.
- Drafting selected work products (mission area assessments, capability planning proposals, and acquisition planning assessments).

Eventually, the DRMS project team plans to link the Capability and Acquisition Planning Process simulation into a single, end-to-end simulation, using a common force structure and future year program. All supporting materials would be interchangeable and useful in a common contextual framework. Currently, both simulations use a common scenario, the same fictitious country, and similar cost calculations.

Use of Instructional Materials as an Interactive Simulation[2]

From the beginning and as recently executed in two Southeast Asia countries, the DRMS project team's plan was to use these instructional materials (e.g., the slides, memos, etc.) to educate host country personnel about capability and acquisition planning processes. Possible engagement options include interactive seminars, a command or staff planning exercise, an executive management seminar, or the integration of the course offerings within a professional military education system. Once developed, a single, continuous simulation (described above) could be used in either a two or more week command or staff planning exercises or uncoupled and used separately in shorter training exercises.

The appropriate time to introduce these instructional materials can be either early or later in the DRMS engagement with a host country. If used early in the engagement, these materials can serve as a practical example of international best practices in capability and acquisition planning and potentially shape future process reforms. If used later in the engagement and defense management practices are generally aligned, then these materials can serve to exercise staffs in new, perhaps unfamiliar roles. An

[2] In a military training environment, the interactive simulation is often executed as a Command Post Exercise or Staff Planning Exercise as these titles are better known to military participants.

additional benefit is that staffs also learn methods to interact productively with senior leaders, formulating recommendations and documenting decisions that advance these processes. Whether to use these materials early or later in the engagement depends on how far along the host country is in reforming its defense management system.

Regardless of option, these instructional materials are designed to serve as an off-the-shelf, generic baseline that could be customized further and tailored to specific country's needs. Packaged as either a one or two week command and staff planning exercise or as a management seminar, several alternatives are possible: 1) capability planning only, 2) acquisition planning only, or 3) or both scheduled sequentially. Alternatives include stand-alone management process exercises that could be executed together, separately or in either order (see Figures 3 and 4 for suggested schedules). In the compressed command and staff exercise option, homework assignments listed in the syllabus would not be assigned.

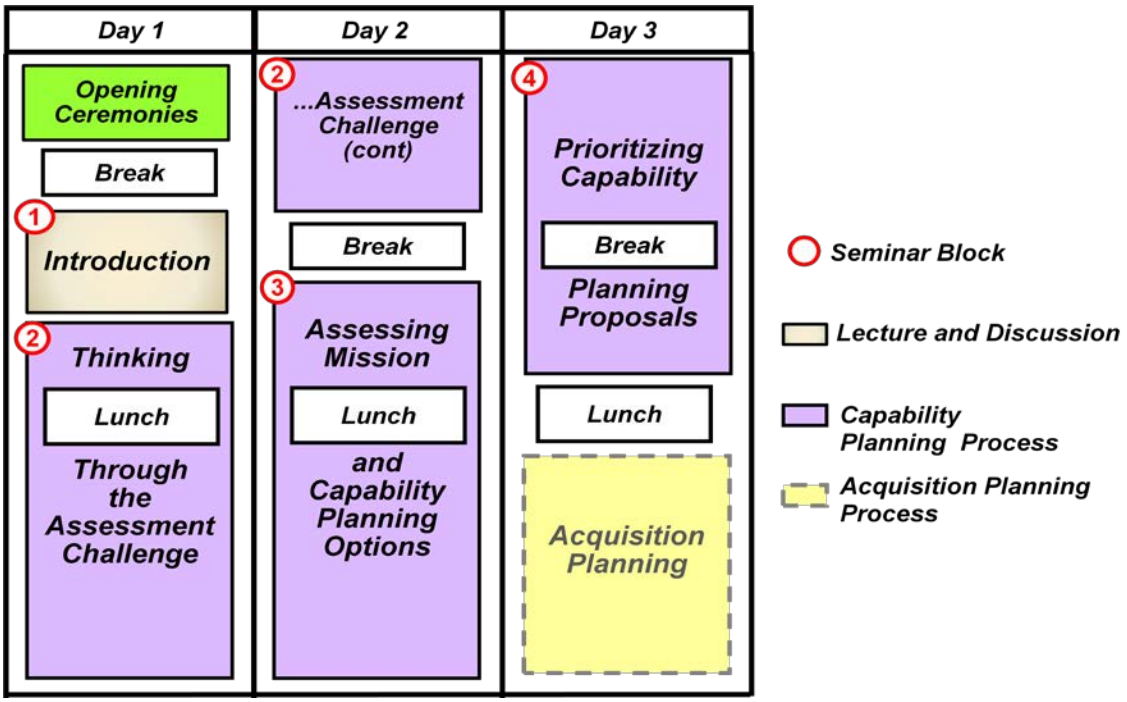

Figure 3. Exemplar Capability Planning Staff Exercise Schedule

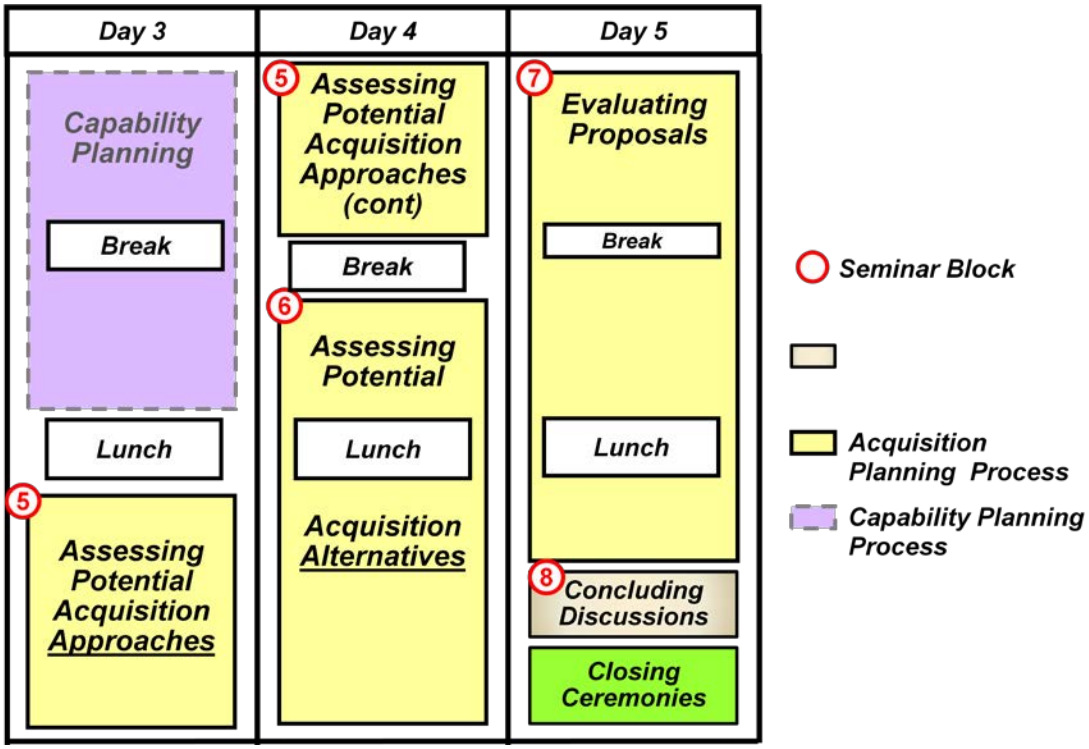

Figure 4. Exemplar Acquisition Planning Staff Exercise Schedule

Resources Needed to Start

The DRMS team suggests planners ensure that the following resources are available to conduct the course:

- A printed copy of the *Participant's Notebook* in a three ring binder. Provide a binder for each participant that contains the translated[3] contents of the *Participant's Notebook* available in this paper. The electronic version of the *Participant's Notebook* is contained on the companion CD. Prior to printing, the *Participant's Notebook* may be customized by replacing the generic placeholder labeled "flag button" in the upper right corner of the slide masters with either an actual country flag, a button fashioned from the flag, or the crest or emblem used by the Ministry or Department of Defense.
- Translation capabilities, either sequential or simultaneous. Sequential will add time to presentations. Simultaneous usually requires room for a sound booth.
- A suitable location (quiet, climate controlled) for plenary sessions with chairs and desks for all participants.
- Suitable locations (quiet, climate controlled) with chairs and desks for break-out work groups (including additional translators).
- Chalk or dry-erase boards for each break-out workgroup.

[3] Translation can take 6 or more weeks, depending on translator skill and availability.

- Virus-free computers with Microsoft Office 2007 (Word and PowerPoint) loaded; and projection system for use in the plenary session and break-out workgroups.
- Capability to transfer electronic files between computers either through a local area network, or, alternately, using plug-n-play memory sticks to transfer files from one computer to another.[4]
- A lectern, if preferred, and laser pointer for use in plenary sessions.
- A photographer with camera (optional).

Use of Instructional Materials in an Academic (Classroom) Setting

The instructional materials could also be offered as part of a country's professional military education system, suitable at either the intermediate (senior Captain and Major level) or senior level (senior Lieutenant Colonel and Colonel level). When configured as a graduate-level academic course, the *Student's Notebook* includes the Advance Reading, Republic of X, lesson plans for Lessons 1 through 8 or 12 (depending on the credit hour option), the syllabus, Appendix A-Planning Process and Key Products, Appendix C-Glossary, Appendix D-Abbreviations, and Appendix E-References. The answer slides for Blocks 2 through 7 and Appendix B-Fire Support Addendums are not included in the *Student's Notebook,* but are provided to students at the discretion of the facilitator. Note: The facilitator may elect to distribute the slides for Blocks 1 – 8 prior to each lesson.

Inviting Host Country Participation

In order to solicit staff participation, the DRMS project team suggests providing the host country a memorandum with contents and format similar to the following:

> **Subject:** Invitation to Participate in a Defense Resource Management Training Simulation
>
> **Purpose:** The simulation is designed to improve understanding of the roles, responsibilities, and interdependence of the processes, participants, and products used in Capability and Acquisition planning. The simulation seminars, which are interactive, emphasize key management concepts, the importance of analysis and collaborative problem solving, and potential implementation challenges.
>
> **Objectives:** The seminars are designed to give participants hands-on experience in:

[4] In accordance with most organizational and U.S. government system security procedures, it is highly recommended that memory sticks, once used in host country computers, not be introduced to facilitator team systems. Many persistent and highly malicious viruses can be difficult to detect and can lead to catastrophic system failures. The DRMS team usually purchases new memory sticks for this purpose and leaves those sticks with the host country representatives.

- Conducting capability-based assessments.
- Developing proposed alternatives to identified challenges that are consistent with national and senior leadership objectives.
- Developing acquisition plans that are consistent with the results of capability planning.
- Drafting selected work products (mission area assessments, capability planning proposals, and acquisition planning assessments).

Participants: The simulations are designed for those personnel involved in capability-based mission area assessments and acquisition planning. A minimum of 16 participants is required, and as many as 45 can be accommodated. Much of the work in the interactive seminars will be performed in small workgroups. (The number of workgroups and the size of each workgroup will depend upon the number of attendees.)

Approach: Participants will be asked to analyze, draft, and debate the key work products used in capability assessment and acquisition planning. This includes assessing mission areas; developing capability planning proposals that address identified challenges; assessing potential materiel approaches and alternatives to capability-related shortfalls; and preparing appropriate senior leader decision materials.

Activities: Participation will be limited to 6 hours per day, with an additional hour allowed for lunch. There are eight event blocks in the simulation, as shown in the schedule below. Each block consists of a short introduction, a simulated group event, and a structured group discussion to evaluate results of participants' work. Participants will work on each block in workgroups of approximately 8-15 persons, and then report results for plenary discussion.

Schedule: [insert appropriate schedule, similar to Figures 3 and/or 4]

Future uses: The simulation was developed specifically for use by ministries of defense engaged in reform of defense resource management. All materials for facilitators and participants will be in [official government language]. All materials will be left behind for future use.

If the Ministry of Defense wishes to make future use of the materials, at least three participants should be designated for training as facilitators during the simulation events.

The simulation is designed for use as a command and staff planning exercise and can be readily expanded and used as a semester-long war college course.

//signed// [Senior Host Country Sponsor][5]

[5] Typically, the signature authority should be a civilian at the level of Deputy or Vice Minister of Defense.

Syllabus for "Applying Capability and Acquisition Planning Processes"

This section provides administrative information about the course including the purpose, objectives, structure, and student requirements for the course. The syllabus is intended to be provided to students who participate in the course when it is offered as a graduate-level academic course.

Purpose

This graduate-level academic course is designed to improve understanding and facilitate implementation of Capability Planning and Acquisition Planning, two of the four core planning processes of a Defense Management System (the other two processes are Strategic Planning and Resource Planning).

The seminars in the course highlight key management concepts, the importance of analysis and collaborative problem solving, and potential implementation challenges. They also provide students hands-on experience with the intended end-states resulting from the Capability and Acquisition planning processes.

Students investigate a process that refines security policy into mission areas and capabilities and determine if a gap exists between the policy objective and the existing military capabilities. Students further consider solutions to close the gap. If a materiel solution is necessary, they investigate a process that transforms a multi-service (joint) operational need into a contract for materiel. Throughout the course, students make use of simplified examples to illustrate the intended process and its linkages.

Objectives

The objectives of the academic course are to:

- Introduce capability and acquisition planning processes.
- Demonstrate key management concepts and linkages using simplified examples.
- Provide limited practical experience with briefing analysis results and preparing decision products.
- Provide practice in the distillation of complex subjects into simpler elements for presentation to senior leadership.

- Expose potential country-specific implementation challenges for seminar discussion.

Overview

This course is entitled "Applying Capability and Acquisition Planning Processes." This course begins with an overview and introduction to Capability Planning.

Throughout the course, simplified examples are used to illustrate the process and its linkages. These examples are not intended to be comprehensive; and may not even be relevant to real world requirements. By no means does the course suggest or imply a particular solution to a real world problem, even if the example appears very similar to the real world problem. Students are asked to address only a few selected examples of the types of issues that will typically be addressed in Capability and Acquisition Planning. The simplification is necessary to permit students to complete assignments within the time available.

The course portrays a fictitious country – the Republic of X – that is situated in Southeast Asia. The security situation, objectives, the military force structure, estimated costs, and specific management issues employed in the seminars are all fictional. They have been invented solely to provide realistic examples of the types of issues that will likely be addressed by Capability and Acquisition Planning.

Structure

The course structure includes a schedule, lesson plans, seminars, and workgroup exercises.

Schedule

To serve as a graduate-level seminar course, eight lesson attendances are required. Attendances for Lessons[6] 1 and 8 are scheduled for one and a half hours; and attendances for Lessons 2 through 7 are scheduled for three hours, resulting in twenty-one contact hours or about 1.5 semester credits. Note: The facilitator will announce the dates for each class (attendance).

Table 1. Academic Course Schedule

Lesson/Block	Topic	Date
1	Introduction	
2	Mission Area Assessment	
3	Assessing Mission Areas and Capability Planning Options	
4	Prioritizing Recommended Capability Planning Proposals	
5	Assessing Potential Acquisition Approaches	
6	Assessing Potential Acquisition Alternatives	
7	Evaluating Proposals	
8	Summary Discussions	

A three credit hour option (See Table 2) includes a term paper and four additional lesson attendances.

Table 2. Three Credit Hour Option

Lesson	Topic	Date
9	Term Paper Introduction	
10, 11, 12	Term Paper Preparation and Presentations	

Lesson Plans and Teaching Notes

Each block of instruction in the *Participant's Notebook* has a corresponding Lesson Plan and Teaching Notes. The Lesson Plan provides a guide for students to prepare for

[6] Lessons 1-8 are also referred to as a "Blocks" 1 though 8 with the same titles. The term "block" is preferred outside the academic setting and more suited for use in the military training exercises. Lessons 9-12 are included in the 3 credit option academic course only and not in the military training exercises.

that lesson. The Teaching Notes provide facilitators information needed to prepare their presentation of the material and are included in the *Facilitator's Notebook* only.

Plenary Sessions and Seminars

When presenting these materials as an academic course, the DRMS team suggests presenting a lecture in a plenary session that includes all participants followed by a series of facilitator-led, structured small group seminars. These small groups (workgroups) meet in seminars to work through an exercise provided for that lesson and discuss the lecture topic. Seminar time may also include student presentations of assigned academic assignments such as homework, oral reports on a special topic, reviews of a special reading, or presentations of short papers on special topics.

Exercises

Students are tasked to develop reasoned solutions to a problem based on information in this syllabus, lecture, and professional experience. These problems may involve analytical steps such as problem identification, analysis of options, ordering of priorities, and rationalization of conclusions and recommendations. As directed by facilitators, the work may be accomplished either by the entire workgroup, in smaller teams, or individually.

Student Requirements

Participation Requirement

This course will combine lectures and seminars. Students are strongly encouraged to participate actively in plenary session lectures as well as in breakout seminar. In seminar, students are strongly encouraged to participate, both by listening actively and by making contributions to the discussions and workgroup assignments. Part of each seminar will be set aside to discuss implications of that day's topic to existing practices and processes in student countries.

Students should provide feedback, using the end-of-course individual surveys, to help improve this course for future participants.

Briefing Requirement

Students will also share the responsibility with several of their seminar mates for presenting, in the form of a briefing, the results of group work after each seminar. Students assigned to lead these seminars will be expected to give prepared presentations.

Homework Assignments

(Applicable to academic course options only.)

Each lesson includes homework assignments. These assignments may be reading assignments or exercises. These assignments are intended for students to complete prior to the lesson that it is assigned—as preparation for that lesson. If a student is participating in this course for Service School (academic) credit, then the student should complete these assignments as further described by his or her facilitator. If a student is participating as part of a staff planning exercise, the student is not required to complete these assignments. However, all participants should complete the reading assignments described in the next paragraph. If participants are not clear which applies to their situation, they should ask the facilitator for clarification.

Command & Staff Exercise Reading Assignments

In addition to the advance reading, the DRMS team has found it extremely helpful to staff planning exercise participants to also review Republic of X (RoX) strategic planning memos (see memos located at end of Block 2 [Lesson 2] in the *Participant's Notebook*) prior to starting the exercise on Day 1. Further, it is very helpful to read and understand the assigned workgroup's Initial Analyses Memorandum (see memos located at end of Block 3 [Lesson 3] in the *Participant's Notebook*) prior to Block 3 attendance. Otherwise, all materials can be read during the seminar time provided.

Academic Course Reading Assignments

Refer to the Lesson Plans.

Writing Assignment

(Applicable to academic course <u>3 hour credit</u> option only.)

If a student is not sure that this assignment applies, they should ask the facilitator. For those to whom this does apply, during Lesson 9, the facilitator will introduce the course writing requirement. Shortly thereafter, the facilitator will ask students to submit a topic and a thesis statement for their papers. The paper should argue and support the thesis statement. The thesis statement, then, should be stated in the form of a position that the reader, initially, may or may not agree but that the student's argument, at a minimum, caused serious thought and consideration.

The student's paper, submitted as an essay, should be limited to no more than twenty pages, double spaced lines, in length. Students can select a topic from the list below or suggest a different one. The facilitator must approve the topic and thesis statement before the student starts the writing assignment. Lessons 10, 11, 12 are planned as attendances for students to present their papers to their class. This requires

that the student prepare a slide presentation (typically done in MS PowerPoint) or use another comparable technique (handouts, white boards, etc.) to assist in conveying their argument to the class. The facilitator will ask for volunteers to present during one of the three attendances. All students will present their papers.

Suggested Paper Topics

Assessment: Refer to a current, unclassified, defense policy document and assess whether your country's defense structure has one or more needed capabilities.

Resource Reform: Suggest a change to how your country's defense resources are managed that could improve one or more needed capabilities.

Analysis: Refer to an earlier defense assessment, if available, in your country, and either agree or disagree with a key finding.

International Cooperation: Suggest the adoption of a defense management system practice you have observed in another country that could benefit your country.

Student Choice: Student suggests a topic relating to something the student has learned in the course that applies to student's country's defense management processes.

Student Resources

- *Student's Notebook*.
- A virus-free computer for each workgroup with MS Office (loaded minimally with MS PowerPoint).
- MS PowerPoint electronic briefing templates for each workgroup assignment provided by facilitators during each seminar.
- A computer projection system to collaborate within each workgroup; and to share workgroup products in the plenary session

Lesson Plans for "Applying Capability and Acquisition Planning Processes"

This section presents the Lesson Plans and Teaching Notes for the *Applying Capability and Acquisition Planning Processes* course. The Lesson Plans are included in the *Facilitator's Notebook* and are also intended to be provided to the facilitators who present the command and staff planning exercise. The Lesson Plans are also included in the *Student's Notebook* and are intended to be provided to the students who participate in the graduate-level academic course. The Teaching Notes are included in the *Facilitator's Notebook* and are intended to be provided to the facilitators only.

Each lesson is presented in two parts. The first part of each lesson consists of the Lesson Plan that is provided to the students. Each Lesson Plan includes the following sections:

- Lesson #: Title of Lesson
- References
- Discussion
- Lesson Objectives
- Questions for Consideration
- Key Terms
- Homework Assignment

The second part of each lesson consists of the Teaching Notes. Each set of Teaching Notes includes the following sections:

- Overview
- Administration
- Lecture
- Seminar

Additionally, some of the Teaching Notes may also include one or more of the following sections:

- Workgroup Briefings
- Conceptual Points to Emphasize
- Optional Discussions
- Examples

Common Seminar Approaches

The DRMS team recommends several approaches to seminar facilitation. Regardless of the approach selected, facilitators must **not** let the participants fail to accomplish the seminar assignment in the time allotted. Note, if a facilitator initially "spoon-feeds" their work group, it is difficult to later adjust to another, less engaged approach, as the participants will likely expect continued assistance, displaying little or no initiative. Alternatively, if facilitators adopt the "sink or swim" approach early-on, without assessing the participant's skill and interest level, and they fail or nearly fail, this can be equally as disruptive to the learning objectives. Regardless of the approach, the facilitator should remind the participants when there are only five minutes remaining of the time allotted. At that time, the designated workgroup leader should complete the briefing and prepare the products for submission.

1. **Sink or Swim:** An extreme approach where the facilitator initially reviews the requirement with the workgroup as stated in the plenary session; answers any questions pertaining to what is expected; and leaves the work group to themselves to discuss and discover with little or no further facilitator guidance.
2. **Spoon-feed:** The other extreme approach where the facilitator walks the work group through the requirements step by procedural step.
3. **Fire-and-Forget:** In this approach the facilitator supplements the "Sink or Swim" with some initial guidance, points out a suggested way forward and provides a conceptual bridge for the participants.
4. **Short Leash:** This approach is the middle ground between the "Fire-and-Forget" and "Spoon-feed" approaches. It calls for the facilitator to provide some initial guidance, point out a suggested way forward, and then observe the progress of the workgroup. The facilitator engages the workgroup only as necessary in order to steer the group away from common pitfalls but does not necessarily provide a clear way forward. Mindful of the time constraints, facilitator direction may become less suggestive and more prescriptive as a non-responsive group draws closer to the end time.

Effective Seminar Teaching Principles

The DRMS team recommends facilitators implement the following teaching principles to ensure the quality of the seminar.

- Before the seminar, decide major teaching points (2-5) but remain alert to participants providing better ones during discussion.
- Design a seminar strategy to approach the teaching points and draw out the students. Have a general idea of how things should flow and how much time should be spent on each point.

- Use the whiteboard (if available) to summarize what the participants are saying. This serves to validate participant thoughts. Avoid paraphrasing. Welcome participant challenges to what is summarized. Adjust, if challenged and as necessary, to gain participant consensus.
- Ask participants to summarize the discussion along the way. Ask one or two participants what they think were the most important points made. By all means, provide a summary before the end of the workshop, highlighting the main points presented or discussed.
- Remain flexible!
- Avoid statements of opinion. Critical thinking[7] challenges assumptions.
- Challenge assumptions participants may be making.
- Create a climate that encourages all to participate and share the burden of making class productive and interesting.
- Designate a student leader, who is responsible for ensuring the work group completes the assignment and briefs during the plenary session that follows.

Reaching Agreement in the Workgroup

Facilitators can use several methods to resolve disagreement in the workgroup. Among the more popular are:

- Discuss the issue and permit the student **leader to decide** based on merits of the arguments.
- **Consensus** (majority agree).
- **Consensus with dissenting opinions noted** and as time permits, work through the dissenting opinions. This is the preferred method.
- **Break out** into smaller teams to explore specific information voids further and report back to the workgroup and use one of the methods above.

Suggested Rules for the Seminar

The DRMS team recommends the facilitator review the following seminar rules with students.

1. Speak English (if everyone can understand English) or speak in a language that the interpreters understand as facilitators will need to rely upon them to explain what is being discussed.
2. Everyone needs to participate. The work can only be enriched with the valuable insights of each participant.
3. These are student problems to chew on, not facilitator problems.

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[7] Critical thinking [generally] consists of an awareness of a set of interrelated critical questions, plus the ability and willingness to ask and answer them at appropriate times (Keeley, 2001, p. 3)

4. Each seminar needs a leader, a recorder (builds slides), and a briefer (usually the leader). These duties will rotate and will be designated at the beginning of each seminar. It may be best for the leader to also brief. Are there any volunteers? If no one volunteers, the facilitator will pick one of the participants to be the leader.
5. Deliverables: Each seminar will produce a set of MS PowerPoint slides to share at the plenary session. The facilitator will transfer student files to the plenary session computer immediately after the work is completed. Two or more workgroups will be asked to brief their results. Students should leave each seminar prepared to brief or add to another workgroup's findings.

Lesson 1: Introduction

> "A little neglect may breed mischief: for want of a nail the shoe was lost; for want of a shoe the horse was lost; and for want of a horse the rider was lost."
>
> —Benjamin Franklin (1706-1790)
>
> "Never tell people how to do things. Tell them what needs doing and they will surprise you with their ingenuity"
>
> —General George S. Patton, Jr. U.S. Army (1885-1945)

Lesson 1 (Month Day, hh:mm)[8], Lecture only

References

- Advance Reading, Republic of X, and Block 1 [Lesson 1] of the Participant's Notebook.

Discussion

Responsible stewardship of public resources necessitates a broad, oftentimes consuming process to turn policy statements and objectives into fielded capabilities that can deliver desired effects in the envisioned operational environment. At first, this may seem counterproductive, given time constraints and the ever-present need for expediency in staff work. Instead, the DRMS team suggests the intended steps and resulting process are necessary to fully capture as many aspects of the issues and problems as possible. Only in this manner can decision making be fully informed and win the widest possible acceptance. This transparency affords both the support and momentum necessary to continue the process and implement the decisions that result. The alternative is potentially poor decisions that may not result in desired effects in the field, perhaps even unaffordable, unsustainable, and unlikely to gain widespread support.

****Key Point**** Implementation Plan: It is important to recognize, up front, that any planning process also needs an implementation plan that properly overlays leadership expectations and the availability of participants onto a work schedule (a master planning calendar) that is properly integrated with other processes ongoing at the same time, competing for staff effort. Without a collective and clear understanding of who will participate in the process; who will make decisions; when those decision makers are available; what decisions are needed; when those decisions are needed; and a reasonable timeline to fulfill what is expected; the process is not likely to achieve its desired results. We recognize that staffs have many competing priorities and multiple daily demands that

[8] Insert date of lesson and start time.

can sabotage the very best intentions. The best safeguard against unintended failure is an implementation plan that includes a master planning calendar, agreed to by the participants prior to starting the processes that are described here as Capability Planning and Acquisition Planning.

Note: As with any process, improvements can always be made. The DRMS Project team asks that as you participate in this course, you consider improvements and discuss them. However, for instructional simplicity follow the processes suggested in this course.

Lesson Objectives

1. Introduce Capability and Acquisition Planning processes.
2. Understand and describe the purpose of each core planning process of a Defense Management System (Strategic Planning, Capability Planning, Acquisition Planning, and Resource Planning).
3. Understand the idea of the Republic of X and important aspects relevant to this course, including RoX military organization and capabilities.

Questions for Consideration

1. How closely do the Republic of X staff structures simulated in this exercise compare to those in your country? Do you see advantages to either?
2. Defense Management System, as described in this course, has several overlapping, concurrent processes, each potentially focused on different planning horizons. Do you agree that it would be helpful to have a master planning calendar to deconflict staff requirements?

Key Terms

See the Glossary in Appendix C for definitions of terms.

- Capability Planning
- Acquisition Planning
- Mission Area
- Strategic Planning
- Resource Planning

Homework Assignment

- Read the following sections of the *Participant's Notebook*:
  - Advance Reading
  - Republic of X (background information)
- Read Block 2 [Lesson 2] in the *Participant's Notebook*:

  - Strategic Planning Decision Memo, dated March 2, 2010
  - Reflecting the Strategic Planning Decisions in the Upcoming Mission Area Assessments Memo, dated March 7, 2010
  - Republic of X Program Structure
- Scan reference materials in the appendices:
  - Appendix A, Planning Process and Key Products
  - Appendix C, Glossary
  - Appendix D, Abbreviations

Teaching Notes for Lesson 1 and Block 1

Note: Offices within the host country's defense establishment should endeavor to share information and work collaboratively and constructively in a seminar environment. If this is not the case, the DRMS team suggests that facilitators give extra consideration and thought as to how to effectively create the required collaborative learning environment presumed to exist for the purpose of this course.

Overview

This lesson begins with an overview of the seminar schedule and administrative announcements that are presented in a plenary session which includes all participants. Participants will be introduced to the Capability and Acquisition Planning processes and their linkages to the larger Defense Management System concept. Also covered will be how seminars are conducted and what to expect. Other topics include the organization of the Republic of X (RoX) Ministry of Defense and joint staffs, and an overview of the simulated RoX setting and force structure.

Administration

- Ensure each participant has a *Participant's (or Student's) Notebook* before beginning (provide at registration).
- The slides that correspond to this lesson are found at Block 1 [Lesson 1] of the *Participant's Notebook* (page 1-1 of this paper).
- Generally, four types of materials are provided to the participants (all of which are included in this paper):

    1. Instructional slides (in the *Participant's Notebook*) used in lecture that include seminar templates.
    2. Supporting documents (memoranda, notes, tables, glossary, etc.) in the *Participant's Notebook*.
    3. Outcomes that are distributed to participants after the workgroups have presented their briefings. Outcome slides are easily distinguished from other instructional materials by the multi-lined blue border around the slides.
    4. The Fire Support Addendums in Appendix B may be handed out to individual participants at the facilitator's discretion. All pages of Appendix B are easily distinguished by a multi-lined red top and bottom border.

- Before dismissing the participants, distribute workgroup assignments for remaining lessons/blocks[9] and direct participants to read the references included as memos in Block 2 [Lesson 2].

Lecture Only (no seminar)

Participants should be seated for the plenary session.

Note for Lecturer

It is appropriate to mention that if the lecturer is using translators (either sequential or near-simultaneous), then it is helpful for the lecturer to speak in one or two sentence bursts, facilitating a more accurate translation. Speaking longer invariably leads to mistranslated or untranslated information. If using a near-simultaneous translator, it is helpful as well to place an ear phone in one ear only. In this way, the lecturer can monitor the progress of the translation while also remaining audibly aware of the situation around him. These techniques take some practice and may seem awkward at first. A general rule of thumb is to speak less, speak simply, and speak clearly.

Note for U.S. Facilitators

On 2 February 2009, a three department (3D) paper was simultaneously signed by of U.S. Agency for International Development (USAID), Department of Defense (DOD), and Department of State (DOS), entitled "Security Sector Reform." The DRMS program fits within the broader rubric of U.S. government (USG) efforts aimed at international Security Sector Reform (SSR). The paper recognizes the need for programs that tap the contributions from the entire U.S. Government and the requirement for unity of effort. Inasmuch, guiding principles for this course include:

- **Support Host Nation Ownership:** Inform efforts with host nation's history, culture, legal framework, and institutions.
- **Incorporate Principles of Good Governance and Respect for Human Rights:** Stress accountability and oversight mechanisms to prevent abuses of power and corruption, and to build public confidence.
- **Balance Operational Support with Institutional Reform:** Success and sustainability depend on institutions and processes that support security forces as well as the human capacity to lead and manage them.

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[9] Whether to work in-seminar and homework assignments individually or in groups is an important facilitation consideration. Factors to consider are: seminar size, time allotted for workgroup briefings, participant aptitude, and cultural preferences. Whatever the choice, the DRMS team recommends all students have the expectation of sharing their seminar workgroup assignments either as chosen to present to the plenary session or comment from their own work, if not chosen.

- **Link Security and Justice:** Security policies and practices must be founded upon the rule of law.
- **Foster Transparency:** Foster awareness of reform efforts among host nation officials and population, neighbors, and others with a stake in outcomes.
- **Do No Harm:** Conduct risk assessments prior to implementation in order to minimize adversity, unanticipated or unintended, on the host nation population and structures.

Additionally, this instruction supports "Building Partnerships" Joint Capability Area[10] (JCA, Tier 1 Area 8). Specifically, as a "Shape" activity (8.2), these materials could be used to support host country instruction related to the "Build the Capabilities and Capacities of Partners and Institutions" task (8.2.3); and the "Determine Partner Requirements" (8.2.3.1) and "Enhance Partner Capabilities and Capacities" subtasks (8.2.3.2).

[10] Collections of like DOD (U.S.) capabilities functionally grouped to support capability analysis, strategy development, investment decision making, capability portfolio management, and capabilities-based force development and operational planning.

Lesson 2: Mission Area Assessment

> "The most serious mistakes are not being made as a result of wrong answers. The truly dangerous thing is asking the wrong question."
>
> —Peter F. Drucker (1909-2005)

Lesson 2 (Month Day, hh:mm), Lecture and seminar

References

Block 2 [Lesson 2] of the *Participant's Notebook*, including:

- Strategic Planning Decision Memorandum, dated March 2, 2010
- Reflecting the Strategic Planning Decision in the Upcoming Mission Area Assessments Memo, dated March 7, 2010
- Republic of X Program Structure

Discussion

Ideally, the strategic planning process produces a set of strategic documents (see Appendix A) that both inform and frame the highest priority challenges that need to be addressed in capability planning. This process should identify for each defense mission area the security issues of greatest concern and broad planning options for senior leaders to consider. This strategic direction is especially necessary when "whole of government"[11] solutions are needed to properly inform and generate interagency coordination and planning. A national defense strategy and a national military strategy, if available, should inform these assessments. For the purpose of capability planning, mission area assessments are strategically informed but the assessment is performed at the operational-level of warfare. The context of these operations will set the conditions and point to the capabilities desired in the defense force structure.

The Republic of X (RoX), just as in the real world, faces great uncertainty. War is no longer a force-on-force conflict in predictable geographic areas against adversaries we already know. We face enemies who can and will strike without warning, perhaps on our own soil, against economic and symbolic targets, using any means available. To counter these new threats, reorganization of the Ministry of Defense may be necessary. To counter adversaries who rely on surprise, deception, and asymmetric warfare, the improved organization must be able to identify new capabilities and to deliver those capabilities. Capability Planning is more than a simple change from old ways of thinking. Capability Planning provides a clear link between operational needs and the

[11] The term "whole of government" is used to refer to a government-wide approach, involving authorities, resources and capacity beyond just what is traditionally associated with the security sector.

analysis and assessment of those needs to provide the best solutions possible, but also recognizing that everything needed cannot be provided. So, in response, problems must be prioritized; the costs of proposed solutions carefully considered; and lower priority areas that may be candidates for fewer resources should be recognized.

Mission Area Assessments provide the basis for assessing the adequacy of capabilities by mission area; and identifying shortfalls for senior leader consideration and prioritization. Preparing for the assessments requires defining the missions to be analyzed; subdividing the mission definitions to provide a framework for analytic work; and ensuring that the analytic workload does not exceed available staff resources (if so, it may be necessary to realign the staff according to analytic priorities or obtain contractor support).

Lesson Objectives

- Recognize how strategic planning focuses capability planning.
- Understand the steps in the mission area assessment process.
- Analyze an example of mission area assessment and construct an assessment decomposition matrix.
- Provide practical experience that illustrates some potential challenges.
- Recognize and describe the shift from traditional thinking (threats based) to thinking in terms of joint capabilities.
- Discuss the roles and responsibilities of key players in capability planning.
- Describe the major inputs and outputs for the capability planning process.
- Recognize the challenges to capability planning and some root causes.
- List the desired attributes of capability-based planning.

Questions for Consideration

1. What strategic planning documents are available in your country? Do these documents outline information that could be useful for capability planning?
2. What should be the desired attributes of a capability-based planning process?
3. What activities should be considered part of capability planning?
4. Do you agree that we first must consider the mission we need to accomplish and potential threats; then define the capabilities we need to accomplish the mission in the given threat environment; and finally, if we do not have solutions on hand, then formulate capability gaps in order to deliver materiel or non-materiel solutions that can provide the capabilities to accomplish the mission?
5. List some of the challenges to capability-based planning in your country.
6. Who are the key players in your country for such a process to be successful?
7. What is your role in this process?
8. What other ways could you support this process?

Key Terms

See the Glossary in Appendix C for definitions of terms.

- Mission Area Assessment
- Capability Planning Proposal
- Capability (Military)
- Decomposition
- Program
- Program Element[12]
- Operational Context/Environment
- Capability Assessment Area
- Capability Gap/Shortfall
- Materiel Approach
- Non-Materiel Approach
- Readiness (Levels: R1, R2, R3)

Homework Assignment

Based upon your military staff experience, you might agree that a good action plan is necessary to successfully perform extended, perhaps complicated, staff actions requiring the collective, timely input from many. Capability Planning is such a collective staff action. Do you agree? If so, what do you consider essential to be included in a plan for the staff to properly conduct mission area assessments and draft directed capability planning proposals? If not, why not and what do you suggest instead that would better ensure success?

[12] Charles Hitch, often referred to as the father of the Planning, Programming, and Budgeting System (PPBS) used by the U.S. Department of Defense, described a program element as "integrated combinations of men, equipment, and installations whose effectiveness could be related to our national security objectives." (Hitch, 1967, p. 32)

Teaching Notes for Lesson 2 and Block 2

Overview

This lesson begins with a lecture on mission area assessment that is presented in a plenary session which includes all participants. Following the lecture, participants will complete an exercise in smaller breakout workgroups and then move return to brief their results to the other breakout workgroups in a plenary session.

Administration

The slides that correspond to this instruction are found at Block 2 [Lesson 2] of the *Participant's Notebook* (page 2-1 of this paper). A seminar will follow this lecture. Ensure your seminar classroom is set up with computer, projection system, and screen. A dry erase board with markers is helpful, too.

Lecture

Participants should be seated for the plenary session. Time permitting, consider holding a short question and answer period.

Seminar

The seminar will last 105 minutes.[13] In that time, facilitators should be able to accomplish two things:

1. Answer questions about the mission area assessment process.
2. Complete the assigned exercise and briefing slides.

Workgroup Briefings

Upon conclusion of the seminar, bring an electronic copy of the workgroup's slides to the plenary session and load to the computer connected to the projection system. The course director will designate which workgroups will brief their results. All workgroups should be prepared to brief. Following the briefing, provide participants with the outcome slides (slides with blue border) located at the end of Block 2 [Lesson 2] of the *Participant's Notebook*. Facilitators may want to briefly discuss, if there are questions. Facilitators should point out to participants that for lessons/blocks 3 and 4, each seminar will be assigned as one of three capability assessment teams (Maneuver, Maritime, or Reconstruction).

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[13] This and all seminar times provided in the Teaching Notes are the suggested times, appropriate for non-English speaking countries that require translation services.

Conceptual Points to Emphasize

- Planning processes produce products that facilitate decision making. Senior leaders must make necessary decisions for advancement of the issues. The processes do not make decisions.
- The principles of fiscal restraint and responsible stewardship of public resources both strongly suggest that throughout the capability and acquisition planning processes cost estimates must be considered in all recommendations to senior leaders.
- Strategic planning should be a focusing mechanism for capability planning. As such, strategic planning should precede capability planning.
- Conveying the idea that mission areas, properly defined and further decomposed into capabilities, can relate resources to objectives.
- Constructing a decomposition and assessment matrix can also serve to organize work. The number of levels and detail should be adjusted so that the number of analytic teams required does not exceed staff available. The availability of staff to perform the assessments and the time available will restrict decomposition.

****Key** Point:** The decomposition of capabilities and the program structure are separate, yet parallel and linked (see slide 19, Analysis Matrix and Program Structure) in the mission area assessment process. The capability decomposition is created for use in analyses. The program structure should be the actual database formation that husbands resource allocations for future years. Mission Areas are common to both structures. Mission areas should be well defined and are initially derived from strategic assessments and assigned to major force components. Capability areas and sub-areas are derived from mission areas and should logically correspond to program elements that are also derived from mission areas. Simply put, program elements are groupings of like resources in categories. Program elements may be linked to more than one capability sub-area for assessment purposes. It is this linkage that translates capabilities into the resources (force structure) needed to achieve them. The capability assessment matrix we suggest (see slide 20, Sample Capability Assessment Matrix) combines these decompositions.

Optional Discussion (if time permits)

Ask the group to consider the implications of these ideas to the practices and processes used in their country.

1. What implementation challenges are foreseen?
2. How could these challenges be addressed?

Capability Example

The following capability example (Defense Acquisition University, 2009) illustrates the need to approach needs from a joint perspective.

Situation: As a requirements manager responsible for identifying future capabilities, consider yourself, for this example, as the commander in the field. You need to move your battalion task force of 1,000 troops over the distance of 100 kilometers in 10 hours. You must task an available system that offers this capability.

Discussion: What are some of the challenges that might result, depending on the mode of transportation tasked?

> **Land vehicles** may need to traverse hostile territory and unfavorable terrain, and moving heavy equipment may prove time-consuming and hazardous.
>
> **Water-borne** transportation may not be available, often requires long lead time to coordinate, and requires embarkation and debarkation facilities which may not be nearby.
>
> **Air** transportation for that many troops may not be available or would require runways, staging areas, or landing zones. Perhaps your equipment may require different aircraft than are available with different payload capacities.

Without a joint capabilities-based planning process, each military service would take its own approach to developing transportation equipment as a solution. This type of development oftentimes leads to specializations that build on the knowledge and strength of each individual service, but service specializations run the risk of slow coordination and limited support for other services. A capability-based process encourages the entire development process to think in terms of capabilities, rather than to think in terms of specific system solutions. A capabilities-based solution to this transportation problem would consider the needs of commanders with a range of capabilities that offer multiple hardware systems, quick coordination, and flexibility to accomplish a mission.

Think about capabilities first! In this example, when the field commander finds his or her unit without appropriate transport, the lack of options identifies a capability gap. As previously stated, the response to a capability gap may have been to develop new, but potentially duplicative, equipment. Because individual services would develop their own new systems, each solution represents the particular priorities of the sponsor service. As we strive to develop capabilities, we aim to use processes that consider solutions to meet mission needs, and not solutions tailored to each service. Rather than suggesting new weapons systems, a capabilities approach would call on field units to describe their problems and needs.

Should field information or national strategy identify a capability gap? Developing a materiel (major equipment) solution remains an option, but weapons development remains time consuming and expensive. Keep in mind that new equipment may not be the most appropriate solution to the problem of moving the task force.

Thinking in terms of capabilities may seem counterintuitive, if we are accustomed to thinking in terms of equipment. We will continue to need military equipment to solve problems, but focusing on equipment encourages constant re-work and modification which exacerbates some problems and sidesteps others. Focusing on capabilities encourages comprehensive, interoperable solutions. The overall payoff is that we have a process that is proactive. We will be able to meet sudden military challenges without excessive delay or confusion and avoid being placed into a reactive mode against new threats and challenges.

Key Players

Key Players might include those that influence, identify, develop, and maintain the capabilities needed: Examples include:

- The Head of Defense Acquisition or an Under Secretary of National Defense for Acquisition (senior managers)—military or civilian official having responsibility for supervising the Defense Acquisition System.
- Each service's Acquisition Executive (senior managers) having the same responsibility as above but within a military department or defense agency.
- The program officers/managers (developers)--military or civilian official with the primary responsibility for directing major defense acquisition programs and for assigned major system and non-major acquisition programs.
- The Service Chiefs (providers).
- The major commanders (users).

Concerning the Questions for Consideration

What is your role in this process?

An Answer (Defense Acquisition University, 2009): To determine your role, you must first realize how your overall role combines being a war fighter, a decision maker, and a member of a support staff. This is not always easy because these roles certainly overlap. For example, war fighters—who make decisions all the time —find themselves identifying shortfalls and recommending new capabilities to other key players on a support staff. It might be helpful to ask the following:

1. What does your organization produce to support strategy to develop joint capabilities?
2. Does your organization produce requirements documents?
3. What impact does or could your organization have on identifying and developing new capabilities?

What other ways can you support the capability planning process through your role?

An Answer (Defense Acquisition University, 2009): Know your customers and your reporting chain because you need to know who will receive the information you generate and how your customers will use that information. Is the information accurate, timely, and in a useful format? In other words, are your products clear and helpful so you facilitate the flow of information?

Lesson 3: Assessing Mission Areas and Capability Planning Options

> "You can have your study good, fast, or cheap…pick two."
>
> —unknown
>
> "Everything that can be counted does not necessarily count; everything that counts cannot necessarily be counted."
>
> —Albert Einstein (1879-1955)
>
> "There have been many cases in history where the cheaper and technically less efficient weapon proved to be the best, simply because its lower cost permitted it to be acquired in much greater numbers" (Hitch, 1967, p. 47)
>
> —Charles J. Hitch, U.S. Department of Defense Comptroller (1961-1965) under Robert McNamara

Lesson 3 (Month, Day, hh:mm), Lecture and seminar

References

Block 3 [Lesson 3] of the *Participant's Notebook*, including:

- Initial Analyses of Ground Combat and Amphibious Warfare (Maneuver) memorandum (Work Group A)
- Initial Analyses of Maritime Surveillance and Interdiction Capabilities memorandum (Work Group B)
- Initial Analyses of the National Development Program (Reconstruction) memorandum (Work Group C)

Discussion

In this lesson, we will examine capability planning proposals and assess non-materiel approaches. We provide examples of some initial analysis that could support an early understanding of non-materiel approaches to meeting the operational need. The examples demonstrate simple trade-offs. That is, they display some of the estimated implications of "trading" one set of controllable variables (such as performance) for another (such as cost).

Generally, the more time and cost expended, the less uncertain the analysis results. It is important to find the balance among time, cost, and uncertainty that meets the needs of decision makers.

A word on data: Data can have a defining impact on the quality of the analysis (Defense Acquisition University, 2009).

- To ensure a timely product is delivered, identify needed data as early as possible.

- To ensure an accurate product, data should be selected from the most reliable and current sources to be sure the data is accurate and valid. Limitations in data should be considered in establishing error bounds in results.
- To ensure traceability, document sources of all data.

Lesson Objectives

- Understand how mission area assessments identify capability shortfalls.
- Explain how capability planning proposals are developed.

Questions for Consideration

1. Does your country conduct a process similar to mission area assessment?
2. What options are generally available to correct capability shortfalls?
3. Who is responsible for collecting data that can be used in analysis?

Key Terms

See the Glossary in Appendix C for definitions of terms.

- Data
- Operational Risk
- Measures of Effectiveness (MOEs)

Homework Assignment

Read and understand your assigned workgroup's Initial Analyses memorandum (see memoranda located at end of Block 3 [Lesson 3] of the *Participant's Notebook*).

Teaching Notes for Lesson 3 and Block 3

Overview

This lesson begins with a lecture on assessing capabilities needed as either adequate or not that is presented in a plenary session which includes all participants. Following the lecture, participants will complete an exercise in smaller breakout workgroups and then return to brief their results to the other breakout workgroups in a plenary session.

Administration

- This slides that correspond to this instruction are found at Block 3 [Lesson 3] of the *Participant's Notebook* (page 3-1 of this paper).
- A seminar will follow this lecture. Ensure your seminar classroom is set up with computer, projection system and screen.

Lecture

Participants should be seated for the plenary session. Time permitting, consider holding a short question and answer period.

Seminar

The seminar will last 150 minutes. In that time, facilitators should be able to accomplish four things:

1. Begin by walking your workgroup through their assigned workgroup's memorandum. Plan on this taking about 45 minutes but experience has shown that this may take an hour or more. It is important that participants understand what is contained in their workgroup's memorandum. The workshop exercise cannot proceed without this understanding. We suggest picking as leader for this exercise the participant who appears to have the best understanding of the memorandum.
2. Some participants may question the inclusion of new equipment (materiel solution) in several of the options (see Memoranda for Work Group's A and B) at this point in the assessment. Stress that participants should first explore non-materiel solutions. Explain that the new equipment quantities in these options were previously programmed. Although not yet acquired, the concern at this point is whether the new equipment is providing better cost-effectiveness than other options as determined using the chosen effectiveness measures.
3. Next, answer questions about the capability assessment process in general, if time permits.
4. Complete the assigned exercise and briefing slides.

****Warning**** Do not allow the workgroup to sum, average, apply weights, or other analytical methods to assist them in rank-ordering the options.[14] Dependent on parameters that can be highly subjective, such methods can mislead the staff to recommend an option that has serious flaws, masked by clever mathematics. The ratings help us understand an option's story that should be discussed and compared to other options. We strongly suggest explaining to participants that the array of ratings (numbers) is more a mental puzzle than an invitation to sum, average, or apply some other method to achieve a single score for each option. Instead, suggest participants inspect the rankings in each category assessed, and rationalize which is best based on a discussion of what is most important to consider. Participants must be able to explain what is recommended.

Workgroup Briefings

Upon conclusion of the seminar, as before, bring an electronic copy of the workgroup's slides to the plenary session and load to the computer connected to the projection system. The course director will designate which workgroups will brief their results. All workgroups should be prepared to brief. Following the briefing, provide participants with the outcome slides (slides with blue borders located at the end of Block 3 [Lesson 3] in *Participant's Notebook*).

Conceptual Points to Emphasize

- The logic of constructing capability options (one option is always the approved program, another option always meets full need, then intermediate options explore cost and capability trade-offs and factor in affordability).
- Analysis must be joint; the analytical question should be answered in terms of a net contribution to the total joint warfight.
- The charts in each enclosed memorandum are designed to illustrate the conceptual simplification of seemingly complex information and the reduction of this information in a short paper for senior leader consumption.
- An understanding of risk (see components of risk below).

[14] "Occam's Razor" is a rule in science and philosophy that may apply here. The rule states that entities should not be multiplied needlessly. It is interpreted to mean that the simplest of two or more competing theories is preferable, and that an explanation for unknown phenomena should first be attempted in terms of what is already known. In other words—the simplest explanation is most likely the best.

Components of Risk

(Defense Acquisition University, 2009)

- A *future root cause* (yet to occur) – the most basic reason for the existence of the risk; which, if eliminated or corrected, would prevent a potential consequence from occurring,
- A probability, or *likelihood* (greater than zero and less than 100 percent), assessed at the present time of that future root cause occurring; and
- The *consequence*, or effect (such as a loss, injury, disadvantage or gain), of that future occurrence, expressed qualitatively or quantitatively.

An *issue*, different from risk, is a matter, usually a problem or consequence that has occurred (or is certain to occur) due to the realization of a root cause about which there are alternative views or proposals concerning required resolution.

For example: During a program review, a program manager presents a chart titled, "Program Risks." He states that the program's current highest risk is that the program will not be completed on schedule. One of the senior leaders present asks for more information about the potential delay. The program manager responds by stating the software design phase of the program is five months behind schedule.

This is not a "risk," it is an "issue," exclaimed the senior leader. The potential root cause (unidentified in this example) for the software design activities not being completed on schedule (and its impact of being behind schedule) has already occurred. Since these activities were considered part of the project's critical path, there is no future uncertainty regarding the current phase of the program being completed on schedule, although it is theoretically possible that this "issue" could be resolved in such a way that the program is returned to schedule.

Optional Discussion (if time permits)

Ask the group to consider the implications of these ideas to the practices and processes used in their country.

1. What implementation challenges are foreseen?
2. How could these challenges be addressed?

Lesson 4: Prioritizing Recommended Capability Planning Proposals

> "The study of detail must never be allowed to cloud the picture as a whole."
>
> — Gerhard Johann David Von Scharnhorst, Chief, Prussian General Staff (1755-1813)

Lesson 4 (Month, Day, hh:mm), Lecture and seminar

References

- Block 4 [Lesson 4] of the *Participant's Notebook*
- *(Distributed at the discretion of the facilitator – both memos are located in Appendix B, Fire Support Addendums*)
  - Initial Analysis of Indirect Fire Support Capabilities memorandum
  - Initial Analysis of Fire Support Capability Planning Proposal memorandum

Discussion

In this lesson, we will examine a method for integrating and rank ordering capability proposals. In Lesson 3, we formed assessment teams to study specific capability gaps, each with its own best approach. However, in practice we will need to make holistic recommendations to senior leaders that take all priority needs into consideration. Piecemeal decisions resulting from individual assessment team recommendations can lead to misalignment of limited funding and stated priorities. On this grander scale, affordability becomes a central issue as we can seldom afford all that we need. Senior leaders need integrated recommendations that provide for different levels of capability across all priority needs and the risks associated with each explained in simple terms. Our process suggests identifying the "preferred" and "next best" options as the preferred option may not be affordable.

Lesson Objectives

- Identify and explain the preferred approach based on cost and other relevant factors, including risk.
- Understand how to integrate approaches.

Questions for Consideration

1. What should be considered when comparing approaches in order to identify which approach should be preferred over others?

2. Assertion: Operational risk is the more important consideration and should be weighted more heavily when comparing approaches. What do you think about this assertion? Do you agree?

Key Terms

See the Glossary in Appendix C for definitions of terms.

- Risk

Homework Assignment

Select a Mission Area applicable to your country's defense strategy. Identify and describe a capability needed and discuss whether you consider current resources adequate or not. Assume resources are not adequate, list and describe two or more non-materiel approaches that might improve this capability.

Teaching Notes for Lesson 4 and Block 4

Overview

This lesson begins with a lecture on integrating and prioritizing Capability Planning Proposals that is presented in a plenary session which includes all participants. Following the lecture, participants will complete an exercise in smaller breakout workgroups and then return to brief their results to the other breakout workgroups in a plenary session.

Administration

- The slides that correspond to this instruction are found at Block 4 [Lesson 4] of the *Participant's Notebook* (page 4-1 of this paper).
- A seminar will follow this lecture. As before, ensure your seminar classroom is set up with computer, projection system and screen.

Lecture

Participants should be seated for the plenary session. Time permitting, consider holding a short question and answer period.

Seminar

The seminar will last 135 minutes. In that time, facilitators should be able to accomplish two things:

1. Answer questions about the prioritization process.
2. Complete the assigned exercise and briefing slides.

****Warning**** Do not allow the workgroup to sum, average, apply weights or other analytical methods to assist them in rank-ordering the options.[15] Dependent on parameters that can be highly subjective, such methods can mislead the staff to recommend an option that has serious flaws, masked by clever mathematics. Simply put, the ratings cannot be combined mathematically as they are not scalar. Instead the ratings are relative, helping us understand an option's story that should be discussed and compared to other options. We strongly suggest explaining to participants that the array of ratings (numbers) is more a mental puzzle than an invitation to sum, average, or apply some other method to achieve a single score for each option. Instead, we suggest inspecting the rankings in each category assessed, and rationalizing which is best based

[15] "Occam's Razor" is a rule in science and philosophy that may apply here. The rule states that entities should not be multiplied needlessly. It is interpreted to mean that the simplest of two or more competing theories is preferable, and that an explanation for unknown phenomena should first be attempted in terms of what is already known. In other words—the simplest explanation is most likely the best.

on a discussion of what is most important to consider. Participants must be able to explain what is recommended.

Workgroup Briefings

Upon conclusion of the seminar, bring an electronic copy of the workgroup's slides to the plenary session and load to the computer connected to the projection system. The course director will designate which workgroups will brief their results. All workgroups should be prepared to brief. Following the briefing, provide participants with the outcome slides (slides with blue borders located at end of Block 4 [Lesson 4] of the *Participant's Notebook*).

Conceptual Points to Emphasize

- Integrating and prioritizing individual capability proposals.
- How to deal with affordability as an issue.

Optional Discussion (if time permits)

Ask the group to consider the implications of these ideas to the practices and processes used in their country.

1. What implementation challenges are foreseen?
2. How could these challenges be addressed?

Addendum Materials for Block 4 (Lesson 4)

The analysis materials in Appendix B, Fire Support Addendums, are to be used at the discretion of the facilitator only. Provided as addendums to this block are two memoranda that analytically expand the transition from capability planning instruction (as described in Blocks (Lessons) 2, 3, 4 of this course) to acquisition planning instruction (as described in Blocks (Lessons) 5, 6, and 7 of this course), using the more specific fire support example, nested within the Internal Security Mission Area Assessment. Participant skill levels can vary widely and while most will not question the transition, a few might. Even fewer might want to know more.

Refer to Appendix B for more information.

Lesson 5: "First Pass" Assessing Potential Acquisition Approaches

> "The very act of making a choice—and all we are doing when we choose weapons—involves weighing the utility or benefits to be gained against the cost which must be incurred." (Hitch, 1967, p. 44)
>
> —Charles J. Hitch, U.S. Department of Defense Comptroller (1961-1965) under Robert McNamara

Lesson 5 (Month, Day, hh:mm), Lecture and seminar

References

- Block 5 [Lesson 5] of the *Participant's Notebook*
- *(Distributed at the discretion of the facilitator*): "First Pass" Analysis (Fire Support Approaches) memorandum (located in Appendix B, Fire Support Addendums)

Discussion

As suggested earlier, capability planning serves to focus efforts so that only the gaps requiring potential materiel (equipment) solutions transition into the acquisition planning process. Not all capability gaps require investments in new equipment. The preferred approach, almost always monetarily cheaper, is a non-materiel (no new equipment) approach. We suggest beginning with the question (operational need) rather than the answer (specific type of system or item of equipment). The "first pass" technique opens the aperture to many possible materiel (equipment) approaches and applies objective logic to down select from these possible approaches to the few that appear most promising. As we progress through acquisition planning, we must be careful not to over-specify the requirement. Needless or poorly conceived and not properly justified requirements can lead to unaffordable solutions. The last 10 percent of capability can often drive about half of the total cost of a new system, particularly if what is supposedly needed is not readily available.

Lesson Objectives

- Understand how to identify the most promising materiel approaches for addressing the capability shortfall or gap.
- Understand the basic elements of the Life Cycle Cost (LCC).

Questions for Consideration

1. What is important to consider in assessing the relative merits of potential approaches?
2. At this point, is cost an important consideration? Why or why not?
3. Who should decide which approaches are most promising?
4. Why is it important to document (in writing) this decision? What product records the decision?

Key Terms

See the Glossary in Appendix C for definitions of terms.

- Approach
- Alternative
- Procurement and Contracting
- First Pass Technique
- Second Pass Technique
- Affordability
- Supportability
- Life Cycle Cost
- Acquisition Planning Memorandum

Homework Assignment

This assignment has three parts. Complete them in order.

1. Suppose you need a way to travel to your new place of work. What would be important to know about the context of this need in order to assess approaches to meet this need? Suggest three or four approaches that do not involve purchasing a materiel means of conveyance.
2. Your new boss is quite impressed with your creative thinking. He has also learned you know much about defense management system practices and, as a result, has grown heavily dependent on your expertise. He wants you to arrive earlier and stay later. Public transportation and other non-materiel approaches no longer appear suitable to satisfy your need in part 1 (above). You are considering the purchase of a privately owned vehicle. Suggest five to six considerations that are important to assess.
3. What types of costs are important to consider in this purchase and why?

Teaching Notes for Lesson 5 and Block 5

Overview

This lesson begins with a lecture on assessing potential approaches that is presented in a plenary session which includes all participants. Following the lecture, participants will complete an exercise in smaller breakout workgroup and then return to brief their results to the other breakout workgroups in a plenary session.

Administration

- The slides that correspond to this instruction are found at Block 5 [Lesson 5] of the *Participant's Notebook* (page 5-1 of this paper).
- A seminar will follow this lecture. As before, ensure your seminar classroom is set up with computer, projection system and screen.

Lecture

Participants should be seated for the plenary session. Time permitting, consider holding a short question and answer period.

Seminar

The seminar will last 135 minutes. In that time, facilitators should be able to accomplish two things:

1. Answer questions about the "First Pass" process.
2. Complete the assigned exercise and briefing slides.

****Warning**** Do not allow the workgroup to sum, average, apply weights, or use other analytical methods to assist them in rank-ordering the options.[16] Dependent on parameters that can be highly subjective, such methods can mislead the staff to recommend an option that has serious flaws, masked by clever mathematics. Simply put, the ratings cannot be combined mathematically as they are not scalar. Instead the ratings are relative, helping us understand an option's story that should be discussed and compared to other options. We strongly suggest explaining to participants that the array of ratings (numbers) is more a mental puzzle than an invitation to sum, average, or apply some other method to achieve a single score for each option. Instead, we suggest inspecting the rankings in each category assessed, and rationalizing which is best based

[16] "Occam's Razor" is a rule in science and philosophy that may apply here. The rule states that entities should not be multiplied needlessly. It is interpreted to mean that the simplest of two or more competing theories is preferable, and that an explanation for unknown phenomena should first be attempted in terms of what is already known. In other words—the simplest explanation is most likely the best.

on a discussion of what is most important to consider. Participants must be able to explain what is recommended.

There may be confusion concerning slides 3 and 7. Do not let participants be confused by the separate but interrelated processes for Acquisition Planning and Procurement and Contracting. In practice, there is a difference between the two most profoundly observed in the purpose of each and the staffs that execute each. Acquisition Planning is more strategic in that it supports senior level decisions as to whether we need to invest in something new or not; and if so, what approach and alternative is preferred. Military staff officers with operational experience are well suited to support this process. However, procurement and contracting is much more technical; and is usually highly regulated with very rigid procedures, perhaps even laws, that enforce fair and open competition and evaluations. Staffs that support this process usually have specialized training and are typically civilian with careers dedicated in these specialized skills.

In this lesson, we will extract a portion of what is typically part of Procurement and Contracting and inject it in the Acquisition Planning process – bid evaluation. Bid evaluation should be based on key performance parameters, produced in acquisition planning; and recommendations should be offered by military staffs, familiar with the operational need and not specialized staffs that technically administer a procedurally intensive procurement and contracting process.

Workgroup Briefings

Upon conclusion of the seminar, bring an electronic copy of the workgroup's slides to the plenary session and load to the computer connected to the projection system. The course director will designate which workgroups will brief their results. All work groups should be prepared to brief. Following the briefing, provide participants with the outcome slides (slides with blue borders located at the end of Block 5[Lesson 5] of the *Participant's Notebook*).

Conceptual Points to Emphasize

- Capability planning sets the agenda for acquisition planning; only gaps requiring investment make it into the Acquisition Planning Process.
- Not all capability gaps require investments in new equipment. The preferred approach, almost always cheaper, is a non-materiel (no new equipment) approach.
- Start with the question (operational need) rather than the answer (specific type of system or item of equipment).
- Do not over-specify the requirement.
- Do not let the last 10 percent of capability drive 40 percent of the total cost without a valid reason.

Optional Discussion (if time permits)

Ask the group to consider the implications of these ideas to the practices and processes used in their country.

1. What implementation challenges are foreseen?
2. How could these challenges be addressed?
3. What capability gaps in your own country seem to require materiel approaches? Have non-materiel approaches that could address these gaps been demonstrated as insufficient?

Refer to Appendix B for more information.

Lesson 6: "Second Pass" Analysis of Potential Acquisition Alternatives

> "..Military effectiveness or military worth on any given weapon system cannot logically be considered in isolation. It must be considered in relation to its cost—and, in a world in which resources are limited, to the alternative uses to which the resources can be put." (Hitch, 1967, p. 26)
>
> —Charles J. Hitch, U.S. Department of Defense Comptroller (1961-1965) under Robert McNamara

Lesson 6 (Month, Day, hh:mm), Lecture and seminar

References

- Block 6 [Lesson 6] of the *Participant's Notebook*

Discussion

The "second pass" technique further selects among potential materiel alternatives that could be pursued, given the "first pass" decision that identified the most promising approaches. In the second pass, we suggest considering: estimated effectiveness in intended operational environments, cost estimates (annual operating, support, and life cycle), potential delivery schedules, and the ability to integrate the equipment into the force, and affordability.

Upon deciding on the preferred alternative, a limited set of key performance parameters (KPPs) must be developed for inclusion in a "Circular of Requirements" document and later included in the invitations to bid. These KPPs become the basis for bid evaluation (see Block 7 [Lesson 7]) upon receipt.

KPPs should relate directly to the desired operational requirements or objectives. We suggest limiting the number of KPPs to a few. KPPs must be measurable or they are essentially meaningless for our purposes. Be sure to consider what is known concerning cost and performance trade-offs and provide a range of acceptable values.

Similarly, we often tend to think in terms of specific (point) values when we measure performance. In reality these values are better represented by a range of possible values, reflecting some degree of uncertainty in what we have measured and think we know. In practice we deal with uncertainty with descriptive approximations that we label as statistics. In the simplest sense we may only know a potentially high and a low value that defines a range of possible values. The introduction of a range of values further suggests that outcomes resulting from a range of inputs will also have a range of values to consider. The sensitivity of our recommendations to changes in input values along their range should also be considered. This is known as sensitivity analysis. We may find that

two very different outcomes that relied upon point values could, in fact, be considered similar and indistinguishable using sensitivity analysis.

Lesson Objectives

- Among the most promising approaches, identify alternatives that best meet the capability shortfall or gap.
- Understand how sensitivity analysis can affect recommendations.
- Understand the role and importance of KPPs.

Questions for Consideration

1. What written products are produced upon conclusion of the second pass? What is the purpose of each product?
2. Why must we be careful when selecting and constructing KPPs?

Key Terms

See the Glossary in Appendix C for definitions of terms.

- Key Performance Parameter
- Circular of Requirements
- Sensitivity Analysis
- Bid and Evaluation Plan
- Effectiveness Hierarchy
- Mobility
- Survivability
- Circular Area Probable (CEP)

Homework Assignment

Using the Comparative Analysis Matrix your workgroup developed in Block 5 [Lesson 5] exercise, describe a possible uncertainty in the input data (contained in the Block 5 [Lesson 5], Staff Developed Estimates and Assessment Tables, slides 20-21) and perform a sensitivity analysis. Discuss whether your recommendations are now affected and how.

Teaching Notes for Lesson 6 and Block 6

Overview

This lesson begins with a lecture on the analysis of potential alternatives that is presented in a plenary session which includes all participants. Following the lecture, participants will complete an exercise in smaller breakout workgroups and then return to brief their results to the other breakout workgroups in a plenary session.

Administration

- The sides that correspond to this instruction are found at Block 6 [Lesson 6] of the *Participant's Notebook* (page 6-1 of this paper).
- A seminar will follow this lecture. As before, ensure your seminar classroom is set up with computer, projection system and screen.

Lecture

Participants should be seated for the plenary session. Time permitting, consider holding a short question and answer period.

Seminar

The seminar will last 135 minutes. In that time, facilitators should be able to accomplish two things:

1. Answer questions about the "Second Pass" process.
2. Complete the assigned exercise and briefing slides.

Workgroup Briefings

Upon conclusion of the seminar, bring an electronic copy of the workgroup's slides to the plenary session and load to the computer connected to the projection system. The course director will designate which workgroups will brief their results. All workgroups should be prepared to brief. After the briefing, provide participants with the outcome slides (slides with blue borders located at the end of Block 6 [Lesson 6] of the *Participant's Notebook*.

Conceptual Points to Emphasize

- The key is to recommend selection of a promising alternative (type of system) without pre-supposing the exact item of equipment or supplier.
- Goal is to permit competitive bidding to occur.

- Even at the end of the Second Pass, one will not know "the winner." The Contracting and Procurement process will execute the planning guidance that results from acquisition planning and determine a "winner."

Optional Discussion

(If time permits)

Ask the group to consider the implications of these ideas to the practices and processes used in their country.

1. What implementation challenges are foreseen?
2. How could these challenges be addressed?
3. Are there laws or regulations in your country that specify certain procedures for acquisition planning?

More on Key Performance Parameters (KPPs)[17]

A description of key performance parameters from the [U.S.] Joint Chiefs of Staff is provided here for those unfamiliar with the concept. (Chairman, Joint Chiefs of Staff Memorandum (CJCSM) 3170.01C, Enclosure B, 2007):

> KPPs are those attributes or characteristics of a system that are considered critical or essential to the development of an effective military capability and those attributes that make a significant contribution to the characteristics of the future joint force. Whenever possible, attributes should be stated in terms that reflect the range of military operations that the capabilities must support and the joint operating environment intended for the system.
>
> There are compatibility and interoperability attributes (e.g., databases, fuel, transportability, ammunition) that might need to be identified for a capability to ensure its effectiveness. These statements will guide the acquisition community in making tradeoff decisions between the threshold and objective values of the stated attributes. Because operational testing will assess the ability of the system(s) to meet the production threshold values as defined by the KPPs and other performance attributes, <u>these attributes must be testable [measurable]</u>.
>
> a. Each attribute will be supported by an operationally oriented analysis that takes into account technology maturity, fiscal constraints, and the timeframe the capability is required before determining threshold and objective values. Below the threshold value, the military utility of the system(s) becomes questionable.

[17] This extract from CJCSM 3170.01C is not intended for distribution to students but rather is provided to facilitators as a well developed source of KPP examples to use as a reference. Keep in mind that a given system should have only a few KPPs.

b. The *threshold value* for an attribute is the minimum acceptable value considered achievable within the available cost, schedule, and technology at low-to-moderate risk. Performance below the threshold value is not operationally effective or suitable.

c. The *objective value* for an attribute is the desired operational goal achievable but at higher risk in cost, schedule, and technology. Performance above the objective does not justify additional expense. The difference between threshold and objective values sets the trade space for meeting the thresholds of multiple KPPs. Advances in technology or changes in Joint Operational Concepts may result in changes to threshold and objective values.

On the Development of KPPs

a. The following questions should be answered in the affirmative before a performance attribute is selected as a KPP [what's important]:

1) Is the attribute a necessary component of the mandatory KPPs (statutory, sustainment, or net-ready) or is it essential for providing the required capabilities?

2) Does it contribute to significant improvement in warfighting capabilities, operational effectiveness, and/or operational suitability?

3) Is it achievable and affordable (total life-cycle costs)?

4) Is it measurable and testable?

5) Are the definition of the attribute and the recommended threshold and objective values reflective of fiscal constraints, applicable technology maturity, timeframe the capability is required, and supported by analysis?

6) Is the sponsor willing to consider restructuring the program if the attribute is not met?

7) Did the analysis determine the need for system training as a KPP? If not, did the analysis provide quantifiable justification for not having system training as a KPP?

8) Did the life-cycle analysis determine the applicability of energy efficiency as a KPP (utilizing the fully burdened cost of fuel)? If not, ensure the analysis is available for review.

b. A KPP will normally be a rollup of a number of supporting attributes that may be traded off to deliver the overall performance required. The following steps outline one of several possible methods for developing KPPs:

1) Step 1: List required capabilities for each mission or function as described in the [Capability Planning Proposal (CPP)]. This review should include all requirements that the system described

in the CPP is projected to meet, including those related to other systems.

2) Step 2: Prioritize these capabilities.

3) Step 3: Compile a list of potential attributes using Appendix A (below) as a starting point and include any other performance attributes that are essential to the delivery of the capability. Cross walk this list with the capabilities in Step 2 to assist in identifying potential performance attributes to be considered for designation as KPPs.

4) Step 4: For each mission or function, build at least one measurable performance attribute using the list from Step 3 as a starting point.

5) Step 5: Determine the attributes that are most critical or essential to the system(s) and designate them as KPPs. (Note: A KPP need not be created for all missions and functions for the system(s). In contrast, certain missions and functions may require two or more KPPs.)

6) Step 6: Document how the KPPs are responsive to the capability performance attributes.

Appendix A—[Potential] Attributes [to Consider] for Potential Key Performance Parameter Designation

The following information is provided to assist in identifying the realm of potential performance attributes for a system. For each possible characteristic, a definition is provided as well as a indented list of potential performance attributes that could be considered for each. The list of potential performance (KPP) attributes represent an iterative consolidation of more than 400 KPPs historically used [across US military programs]; and serves as a useful aid in quickly generating potential KPP options.

a. Knowledge Empowered--Better decisions made faster; understanding environment, adversaries, and cultures; enhanced collaborative decision making.

1) Coded message error probability

2) Contact--detect/discriminate/classify type/identify friendly

3) Coverage/focus areas

4) Frequency range

5) Initial report accuracy

6) Onboard platform range of surveillance systems / sensors / communications

7) Sensor collection performance parameters

8) Tracking--number/altitudes/depths/velocities

9) Training

10) Transmitted data accuracy

11) Geophysics/atmospherics

a) Atmospheric vertical moisture profile

b) Global sea surface winds

c) Atmospheric vertical temperature profile

b. Networked--connected and synchronized in time and purpose

1) Access and control

2) Communication throughput while mobile/non-mobile

3) Interoperable/net ready

4) Multi-channel routing/retransmission/operation on the same net

5) Networked with specific sensors/units

6) Paired time slot relay capability

c. Interoperable--Able to share and exchange knowledge and services; allows the joint force to act in an integrated and interdependent way; systems, capabilities, and organizations working in harmony.

1) Air vehicles -- land-takeoff distance/ship launch-recover parameters/deck spot factor

2) Compatible on aircraft/aircraft carriers/ships

3) Physically interoperable with other platforms / systems / subsystems / warheads / launchers

4) Water vehicles--land-launch spots/compatibility with other water vehicles

5) Waveform compatibility

6) Weapon--launch envelope/weight/number on launchers

7) Weight/volume to fit expected carrying platforms

8) Works with legacy systems

d. Expeditionary--organized, postured, and capable of rapid and simultaneous deployment, employment, and sustainment; converges mission tailored capabilities at desired point of action; capable of transitioning to sustained operations.

1) Ability to transport aircraft / vehicles / cargo / fuel / passengers / troops / crew

2) Lift capacity

3) Logistics footprint

4) Platform transportability

5) Self-deployment capability

e. Adaptable/Tailorable--can handle disparate missions; scalable in applying appropriate mass and weight

1) Air vehicles--vertical-short take-off and landing/aerial refueling/ classes of airspace/altitude (max-min-on station-intercept)

2) Ground vehicle--fording

3) Information--ability to create, store, modify, or reconfigure

4) Internal growth

5) Platform--weapons systems/launchers/firing-storing capacity

6) Platform range--maximum/minimum/combat-mission radius

7) Types of broadcast supported/scalability

8) Water vehicles--draft/weight/stability/electrical generating capacity/ test depth

9) Weapon--off axis launch angle, off bore sight angle, all weather,

10) day-night

f. Enduring/Persistent--depth and capacity to sustain operations over time

1) Operational availability (down-time versus up-time)

2) Platform--weapons systems/launchers/firing-storage capacity

3) Sustained operations

4) Time

5) Various reliability measures

g. Precise--exact application of force to achieve greater success at less risk.

1) Accurate engagement decision/engagement sequence

2) Intercept/circular error probable

3) Threat challenges--countermeasures/radar cross section-size

h. Fast--speed of action across domains

1) Acceptable engagement sequence time

2) Cargo transfer rate

3) Data--transfer-distribution rate/update rate

4) Mission response time

5) Platform speed--maximum / minimum / cruise / flank / sustained / acceleration / land-sea-air

6) Power-up/fire/re-fire/weapon launch rate

7) Sortie rate--generated/sustained/surge

8) Speed of initial report

i. Resilient--able to protect and sustain capabilities from adversaries or adverse conditions; able to withstand pressure or absorb punishment.

1) Ability to withstand hit/blast/flood/shock

2) Assured communications to national and missile defense forces

3) Covertness--radiated noise/active target strength/radar cross section/ electro-magnetic quieting/radio frequency signature

4) Information assurance

5) Jam resistance

6) Tactics, techniques, and procedures/countermeasures

j. Agile--move quickly and seamlessly; timeliness.

1) Air vehicle--climb rate-gradient/G-load capability

2) Automated mission planning

3) Data variable rate capability

4) Ground vehicles--fording

5) Platform specified timelines

6) Weapon in-flight re-targeting

k. Lethal--Ability to destroy adversary and/or systems in all conditions.

1) Detect to engage scenarios

2) Expected fractional damage

3) Jamming capability

4) Probability of kill/mission kill

5) Weapon range

Lesson 7: Evaluating Proposals

> "True genius resides in the capacity for evaluation of uncertain, hazardous, and conflicting information."
>
> —Sir Winston L. S. Churchill (1874-1965)
>
> "One of the great mistakes is to judge policies and programs by their intentions rather than their results."
>
> —Milton Friedman (1912-2006)

Lesson 7 (Month, Day, hh:mm), Lecture and seminar

Reference

- Block 7 [Lesson 7] of the *Participant's Notebook*

Discussion

Previously in this course, we produced and made available to the private sector, a Circular of Requirements for our capability gap. We also suggested developing a Bid and Evaluation Plan that identifies, explains, and approves key performance parameters (KPPs) that we intend to use in evaluating bids. Next, we invited the private sector to submit bids. Now we must review those bids and decide if those bids meet our requirements and if so, which is best.

Lesson Objectives

- Provide practical experience with using KPPs to evaluate proposals.
- Identify the provider that offers the most effective system at the best price.

Questions for Consideration

1. If a bid is received without information concerning one or more key performance parameters (KPPs), how do you respond and proceed with the evaluation?
2. What kinds of risk should be considered in evaluating bids?
3. How can the staff verify the accuracy and validity of data submitted for evaluation?

Key Terms

See the Glossary in Appendix C for definitions of terms.

- Delivery Schedule
- Contract Logistics Support
- Full Operational Capability
- Acquisition Decision Memorandum

Homework Assignment

Refer to your homework assignment in Lesson 5. Despite the costs, you have decided to purchase a car as it offers the only way to meet your need. Your friends have offered several suggestions for you to consider. Develop an effectiveness hierarchy that could assist in developing KPPs to use in evaluating these suggestions; and using this effectiveness hierarchy, illustrate the applicability of each KPP you propose.

Teaching Notes for Lesson 7 and Block 7

Overview

This lesson begins with a lecture on evaluating proposals that is presented in a plenary session which includes all participants. Following the lecture, participants will complete an exercise in smaller breakout workgroups and then return to brief their results to the other breakout workgroups in a plenary session.

Administration

- The slides that correspond to this instruction are found at Block 7 [Lesson 7] of the *Participant's Notebook* (page 7-1 of this paper).
- A seminar will follow this lecture. Ensure your seminar classroom is set up with computer, projection system and screen.

Lecture

Participants should be seated for the plenary session. Time permitting, consider holding a short question and answer period.

Seminar

The seminar will last 120 minutes. In that time, facilitators should be able to accomplish two things:

1. Answer questions about the process for evaluating proposals.
2. Complete the assigned exercise and briefing slides.

Undoubtedly, questions will surface concerning how to proceed when data is not available (i.e., system X, Tube Life, slide 7) and performance characteristics not meeting the KPP threshold value (i.e., system Z, weight, slides 11, 13). Technically, neither system can be evaluated unless all requested parameters are provided in the bid response; nor if any parameter value is under the threshold as that system must be disqualified from further consideration. Both situations are obviously subject to a country's acquisition and procurement laws and regulations. Both situations are designed to flush out this discussion in seminar. Additionally, we hope to underscore the importance of the KPP's role and values. If knowing the value of the parameter is critically important to decision making (established as a KPP) and if certain values are unacceptable (below KPP threshold), then the data must be provided or the system disqualified.

Workgroup Briefings

Upon conclusion of the seminar, bring an electronic copy of the workgroup's slides to the plenary session and load to the computer connected to the projection system. The

course director will designate which workgroups will brief their results. All workgroups should be prepared to brief. After the briefing, provide participants with the outcome slides (slides with blue borders located at the end of Block 7 [Lesson 7] of the *Participant's Notebook.*

Conceptual Points to Emphasize

- Bid evaluation is not the point for new thinking on requirements.
- The exercise demonstrates how important it is to define operational requirements thoughtfully and with the understanding that 80 percent may be good enough.
- The role and importance of properly stated KPPs: As the materials demonstrate, an approach for down selecting proposals is to use the minimum acceptable and desired thresholds for KPPs, choosing the preferred alternative based on whether or not the alternative meets or exceeds these thresholds. This lesson demonstrated we should base our recommendation on a clear, unbiased picture of the analytic results and findings.
- In this lesson we try to find a way to clearly state or show for the decision makers the advantages and disadvantages of each alternative, especially how the alternatives address capabilities or requirements and satisfy high-level guidance that we developed into KPPs. We may also want to consider the impacts of various risk types (see "Typical Risk Sources" section of this Teaching Note) to justify the selection of the preferred alternative.
- The simpler the presentation, the easier it is for others to understand the differences among the alternatives. In reality, this final picture of the analytic results and findings can be more complicated than our example and can take several weeks or more of effort to develop. Objective thinking in this part of the process is critical and in many countries prescribed in law. We may be fortunate and discover a single "recommended winner." More often, the case is that no such clear-cut conclusion can be drawn. Regardless, our aim is to provide the decision maker the best available information in order to better understand the alternatives.

Optional Discussion (if time permits)

Ask the group to consider the implications of these ideas to the practices and processes used in their country.

1. What implementation challenges are foreseen?
2. How could these challenges be addressed?

Typical Risk Sources

Typically and throughout these lessons, participants struggle with identifying and quantifying risk. In the simplest sense, the risks that typically affect resource management decision-making can be categorized as either operational or programmatic. More specifically, and for this course, programmatic risks can be thought of in terms of acquisition programs.

The sources of potential risks in an acquisition program are nearly endless. Many sources of risks apply across all acquisition programs, and others are unique to specific types or categories of systems, or to a specific system. Some examples of typical sources of risk in acquisition programs are listed below (Defense Acquisition University, 2009).

Threat. The sensitivity of the program and system to uncertainty in the threat description; the degree to which the system design could change to respond to changes in threat capabilities.

Requirements. The sensitivity of the program and system to uncertainty or changes in the system description and requirements.

Technical Baseline. The ability of the system configuration to achieve the program's engineering objectives based on the available technology, design tools, design maturity, etc.

Test and Evaluation. The adequacy and capability of the T&E program to assess attainment of performance specifications, and determine whether the system is operationally effective, operationally suitable, and interoperable.

Modeling and Simulation. The adequacy and capability of M&S to support all life cycle phases of a program using verified, validated, and accredited models and simulations.

Technology. The degree to which the technology proposed for the program has demonstrated sufficient maturity to be realistically capable of meeting all of the program's objectives.

Integration. The sensitivity of the program and system to uncertainty in incorporating lower-level system elements into higher-level system elements; the degree to which the system design could change to respond to problems with system integration.

Logistics. The ability of the system configuration and associated documentation to achieve the program's logistics objectives based on the system design, maintenance concept, support system design, and availability of support data and resources.

Production and Facilities. The ability of the system configuration to achieve the program's production objectives based on the system design, manufacturing processes chosen, and availability of manufacturing resources (repair resources in the sustainment phase).

Industrial Capability. The abilities, experience, resources, and knowledge of the contractors to design, develop, manufacture, and support the system.

Cost. The ability of the system to achieve the program's life-cycle support objectives. This includes the effects of budget and affordability decisions and the effects of inherent errors in the cost estimating technique(s) used (given that the technical requirements were properly defined, and taking into account known and unknown program information).

Management. The degree to which program plans and strategies exist, and are realistic and consistent. The government’s acquisition and support team should be qualified and sufficiently staffed to manage the program.

External Factors. The availability of government resources external to the program office that are required to support the program such as facilities, resources, personnel, government furnished equipment, etc.

Budget. The sensitivity of the program to budget variations and reductions, and the resultant program turbulence.

Environmental, Safety and Occupational Health. The sensitivity of the program to environmental issues and hazards, and identification of strategies for compliance with environmental regulations and laws.

Lesson 8: Summary Discussions

Friend to Groucho Marx: "Life is difficult!"

Marx to Friend: "Compared to what?"

Lesson 8 (hh:mm), Lecture only

References

- Block 8 [Lesson 8] of the *Participant's Notebook*

Discussion

We have covered a significant amount of material in this course. The work flow from strategic planning to capability planning to acquisition planning can be complex. We have simplified much for the purposes of instruction. Making these planning processes work in practice as in theory will require formally defined and approved procedures. Keys to practical success include: keeping on schedule and keeping expectations realistic with regard to available staff capacity. Additional workloads resulting from these processes can be difficult to predict. Staff time and energy is a finite resource. Use it wisely. Keep in mind, too, that formal does not have to mean complicated or expensive computer models. As we have shown, simple spreadsheets and tables can go a long way and are much faster and simpler to explain to leadership. Expert military judgment, expressed in formal panels using evaluation matrices like the ones presented in this course, completed by operational and functional experts, is an excellent starting point for discovering much of what we need to know to complete the staff work that can advance the capability and acquisition planning processes.

Lesson Objectives

- Review and summarize the materials in the previous seven lessons.
- Critically reflect on the capability and acquisition planning processes in your own country.
- Assess potential first steps toward a wider understanding of a way forward in your country.

Questions for Consideration

1. In your own words, summarize each planning process in terms of what information is needed to start and what the process produces.
2. What important insights have you drawn from these processes?
3. We assert that one important insight is that these planning processes require analytical expertise. Consider these questions:

a. Where will this expertise come from?
b. Considering personnel management policies in your service, where will people with this expertise be assigned?
c. Do career paths need adjustment?
d. How will your service develop this expertise and keep those with these skills competitive for advancement (promotions)?
e. Could civilians or contractors perform this work?
f. What mix (military, civilian) would be effective?
g. How many analysts are needed?
h. Would a central analytical cell that supports multiple assessments work better than distributing analysts to various offices charged with performing assessments?

4. Reflect back on your role, or your observation of others, in the role of workgroup leader. What does it mean to be accountable to senior leaders for a recommendation? Does the leader necessarily have to accept the consensus of the group? If a leader disagrees with the group, how might this change the recommendation?

Key Terms

None

Homework Assignment

Reflect on what you have learned in this course. Be prepared to discuss your answers to Questions for Consideration 1-4 above in the plenary session. Further, suggest at least one thing that could improve this course.

Teaching Notes for Lesson 8 and Block 8

Overview

This lesson serves as a course conclusion and is presented in a plenary session which includes all participants. Previous instruction is summarized and reviewed. If time permits, a question and answer period should follow to resolve remaining concerns.

Administration

The slides that correspond to this instruction are found at Block 8 [Lesson 8] of the *Participant's Notebook* (page 8-1 of this paper).

Lecture Only (no seminar)

Participants should be seated for the plenary session. After presenting the summary materials, ask the participants to reflect on what they have learned. Ask the participants to share their responses to Questions for Consideration 1 through 4 from Block (Lesson) 8.

Participant Survey

Before dismissing the participants, ask them to record on a blank sheet of paper, at least one substantive (not administrative) thing that could improve this course.

Conceptual Points to Emphasize

- Work flow from strategic planning to capability planning to acquisition planning can be complex; a formally defined process can make it work.
- Keeping on schedule is critical.
- Work flow must be realistic with regard to available staff capacity.
- "Formal" doesn't have to mean complicated or expensive computer models.
- Expert military judgment, expressed in formal panels using evaluation matrices completed by operational and functional experts, is an excellent starting point.

Optional Discussion (if time permits)

Ask the group to consider the implications of these ideas to the practices and processes used in their country.

1. What implementation challenges are foreseen?
2. How could these challenges be addressed?

Lessons 9 through 12: Term Paper Preparation and Presentation

Lessons 9 through 12 comprise the expanded three credit hour option when the course is presented as a graduate-level academic course. As such, these lessons apply only to students enrolled in a three credit hour academic course.

> "The difference between theory and practice is that in theory there is no difference, in practice there is."
>
> —Yogi Berra (born 1925)

Lesson 9 (Month, Day, hh:mm), Lecture only

Lessons 10, 11, 12: Student Presentations

Instructor will provide the schedule.

References

None

Discussion

If you are not sure that this assignment applies to you, ask the instructor. For those to who this does apply, during Lesson 9, the instructor will introduce the course writing requirement. Shortly thereafter, the instructor will ask you to submit a topic and a thesis statement for your paper. If you have not already done so, this is your homework assignment for Lesson 9. Come to class prepared to submit your topic and thesis statement. If you need help, the instructor will provide assistance.

In essay format, the paper should argue and support the thesis statement. The thesis statement, then, should be stated in the form of a position that the reader, initially may or may not agree but that your argument at a minimum, causes serious thought and consideration.

As an essay, your paper's length should be limited to no more than twenty (20) pages, double spaced lines. You can select a topic from the list below or suggest a different one to the instructor. The instructor must approve your topic and thesis statement before you start this writing assignment. Lessons 10, 11, and 12 include attendances for you to present your paper to the seminar. This requires that you prepare a MS PowerPoint slide presentation or use another comparable technique (handouts, white boards, etc.) to assist in conveying your argument to the seminar. The instructor will ask for volunteers to present during one of the three attendances. All students will present their paper.

You are not required to cite references unless you are quoting, summarizing, paraphrasing, or otherwise using the works of others outside of these course materials. This paper is expected to be primarily your own work, communicating your own argument, thoughts, and ideas. If this is not the case, appropriately cite those whose work or ideas you have included in your paper. If others have assisted you in preparation of the paper, appropriately cite those who provided that assistance. When citing references, use endnotes rather than footnotes.

Suggested Paper Topics

(As stated in the Syllabus for the "Applying Capability and Acquisition Planning Processes" course.)

Assessment: Refer to a current, unclassified, defense policy document and assess whether your country's defense structure has one or more needed capabilities.

Resource Reform: Suggest a change to how your country's defense resources are managed that could improve one or more needed capabilities.

Analysis: Refer to an earlier defense assessment, if available, in your country, and either agree or disagree with a key finding.

International Cooperation: Suggest the adoption of a defense management system practice you have observed in another country that your country could benefit.

Student Choice: Suggest your own topic relating something you have learned in this course to your country's defense management system processes.

Lesson Objectives

- Lesson 9 - Gain approval for your paper topic and thesis.
- Lessons 10-12 - Demonstrate a comprehensive understanding of a topic related to the Defense Management System.
- Lessons 10-12 - Collaterally benefit from the research, conclusions, and positions of workgroup mates.

Questions for Consideration

None

Key Terms

None

Lesson 9 Homework Assignment

Reflect on what you have learned in this course and your own experiences on staffs and in operational assignments. Come to class prepared to suggest a topic for your paper and a thesis statement you intend to support in your paper.

Participant's Notebook:
Applying
Capability Planning and Acquisition Planning Processes

Day Month – Day Month 20##

City, Country

Defense Resource Management Studies

Contents of Participant's Notebook

Advance Reading

Today, many nations lack the military capabilities needed to address the security challenges confronting them. In some countries, military capabilities can be improved simply by obtaining equipment and training via budget increases or foreign assistance. In other countries, however, lack of modern management techniques and tools is a significant impediment to improvement.

No military has resources sufficient to reduce military risk to zero. This resource insufficiency makes effective resource planning critical. Creating such a planning capability requires use of modern analytical techniques, development of skilled and appropriately organized staffs, and use of decision-making processes to set priorities and allocate scarce resources.

The purpose of this course is to improve understanding of two of the four core planning processes within the overall construct of defense resource management. Those two processes have different names in different countries, but in this course, they are called **capability planning** and **acquisition planning**. This course demonstrates how those functions can be effectively performed within the context of an overall resource management process that is designed in accordance with international best practices. Those best practices include preparation of multi-annual military programs within financial limits, translating national-level security policies and priorities into statements of required mission capability, expressing program and budget proposals in terms of capabilities, and evaluating program proposals by comparing the capabilities offered to those required by government policy.

Of necessity, the course represents a highly simplified version of reality. The simplification is necessary to permit participants to complete assignments within the time available for the simulation.

The simulation portrays a *fictitious* country, called the Republic of X, situated in Southeast Asia. Participants will find that this fictitious country and its military have many of the characteristics of countries within the region. But these same characteristics are also shared by many other countries around the world.

The security situation and issues presented in the seminar situations of the course are illustrative. They were developed solely to provide examples of issues likely to be encountered in capability and acquisition planning. In particular, the characteristics of weapons systems mentioned in the materials, while they are realistic, do not represent the actual performance of any specific weapon.

The Republic of X

This advance reading summarizes the conditions in the Republic of X as of January 2010, the status of the armed forces, and the management processes used within the Ministry of Defense (MOD) for resource planning.

Topography and Environment

The RoX, a densely populated archipelago in Southeast Asia, is divided into four regions (see Figure P-1). Foreign-sponsored terrorists and insurgents are active in the south (Regions III and IV).

Located in a geologically active region, the Republic experiences several natural disasters annually. These have killed, injured, and displaced large numbers of people. Projected shifts in global weather patterns may intensify these problems in the future.

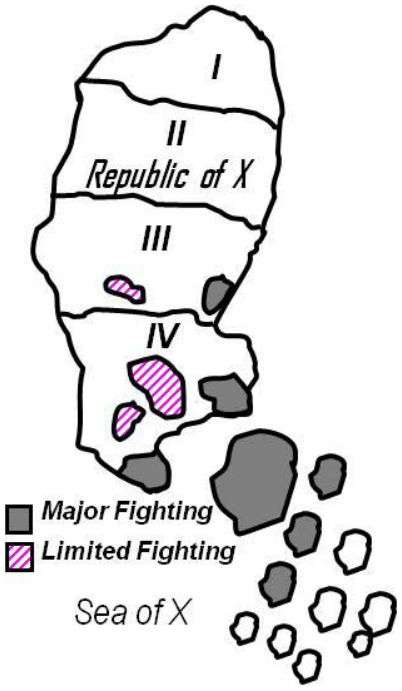

Figure P-1. The Republic of X

Politics

The republic is a representative democracy. Elections were held in the Republic of X in late 2009 and were won by the opposition party. The new administration took office in January 2010.

Economy

Recent growth in the national economy and awareness of strong economic performance in neighboring countries have contributed to a tide of rising economic expectations. The Republic's economic prospects are clouded, however, by the global economic downturn. In addition, per capita income within the Republic of X is unevenly distributed. The people living in the north are relatively prosperous, while those in south live in substandard conditions.

Gross Domestic Product (GDP) increased 6 per cent per year from 2005 through 2009. The benefits of this growth, however, have mainly been realized in the north, where the campaign against the terrorists and insurgents was successfully concluded two years ago.

The previous administration's financial reforms, coupled with its commitment to rebuild war-torn infrastructure and restore essential public services in the south, have proved popular. But worsening economic conditions forced the previous administration to realign its fiscal priorities. Defense spending in 2009 was accordingly limited to the 2008 level plus inflation. The new administration's planning forecasts for 2012 through 2017 are similar: zero growth in defense spending net of inflation.

Defense and Security

Foreign-sponsored terrorist and insurgent factions have been active for more than three decades. They operate from small bases in remote economically depressed areas, often with the active or tacit support of the local population who receive minimal government services. The previous administration's decision to pursue a "whole-of-government" (i.e., political, military and socio-economic), approach to fighting the terrorist and insurgent factions did produce positive results. As a result, the insurgency in the north was effectively eliminated two years ago.

The administration's current defense and security objectives include:

- Successfully ending the military campaigns in Regions III and IV by 2014;
- Rebuilding war-damaged infrastructure and restoring essential public services in the south;
- Aligning military capabilities to the anticipated future security environment; and
- Reforming the defense management system.

National Security Strategy

In the Republic of X, each new administration prepares an assessment of security challenges and statement of fundamental security objectives called the *National Security Strategy*. The new administration promulgated its National Security Strategy shortly after taking office. Excerpts follow.

Threats, Challenges, and Objectives

1. Direct Attack: The threat of direct military attack by neighboring nations is virtually non-existent for the foreseeable future.
2. Terrorism and Insurgency: Terrorism and insurgency are the most important threat to the Republic's security. Our goal is restore security in the south militarily while achieving political reconciliation by the end of 2014.
3. The switch to a "whole-of-government" political, military and socio-economic approach to fighting the terrorist and insurgent factions in the north succeeded in restoring peace there. So the priority now is to achieve peace in the south. However, if the economy in the north deteriorates and/or military capabilities in

the north are reduced imprudently, terrorists and insurgents may seek to resume the war there.

4. Weapons of Mass Destruction: There is a moderate potential for weapons of mass destruction to be smuggled into the country by terrorists. This threat is expected to become greater in the mid- to long-term
5. Maritime and Border Security: Our nation remains vulnerable to piracy, smuggling, illegal border crossings, illegal fishing, etc., due to our and our neighboring nations' current inability to effectively monitor our maritime approaches. Currently, illicit maritime traffic is minimal. It may increase, however, as peace in the south stimulates maritime traffic.
6. Natural Disasters: The Republic has experienced several natural disasters in the past three years that have killed, injured, and displaced large numbers of people. Projected shifts in global weather patterns are expected to intensify these problems in the future.

Defense Mission Areas (based upon the National Security Strategy)

Table P-1. Defense Mission Areas

Mission Area	Definition
Internal Security	Defeat irregular forces that use violence against constitutional government.
Territorial Defense	Detect and defend against external threats, including surveillance of national borders, EEZ, and airspace.
National Development	Conduct economic development projects in regions where security is problematic.
International Operations	Participate in UN-mandated humanitarian assistance, peacekeeping, and peace enforcement operations.
Common Support	Perform command and control, training, and support functions.

Defense Management System Reform

The RoX recently implemented a new Defense Management System. This new process has four interrelated planning processes, i.e., strategic planning, capability planning, acquisition planning, and resource planning) and employs a mission area framework for capabilities planning. (See Appendix A, Planning Process and Key Products) for more in-depth information on the key features of the Defense Management System).

Ministry of Defense Headquarters

The new Ministry of Defense Headquarters structure and management system responsibilities are shown in Figure P-2.

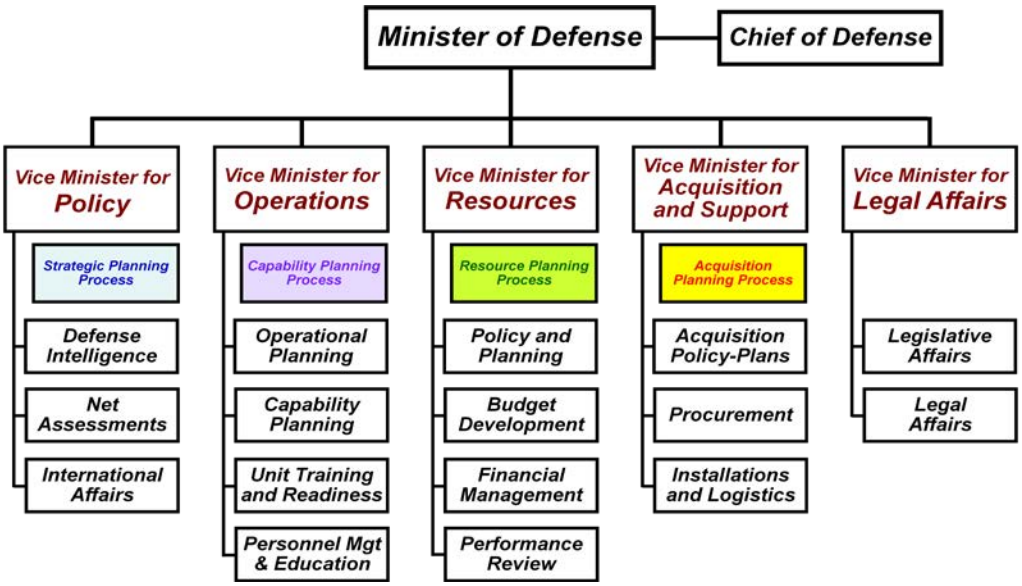

Figure P-2. Ministry of Defense Headquarters Organization and Management Process Responsibilities

Armed Forces

The armed forces' structure and management responsibilities are shown in Figure P-3.

Figure P-3. Military Forces Organization and Management Responsibilities

Defense Management System

The management "system of systems" in the Ministry of Defense has four mutually supporting interrelated planning processes (Figure P-4). These planning processes and the linkages among them are described in subsequent paragraphs.

Figure P-4. Defense Management System

Planning Processes

1. The **Strategic Planning** process is used to identify mid- and long-term security challenges and planning options that must be addressed in subsequent capability planning.
2. The **Capability Planning** process is used to assess, on a mission-area basis, the present and planned ability of forces to meet national security objectives and identifies and analyses options for correcting gaps or shortfalls.
3. The **Resource Planning** process is used to develop fiscally constrained multi-year defense programs and annual budgets that allocate limited resources among competing priorities within and among defense mission areas; and to evaluate results achieved against established performance objectives during budget implementation.
4. The **Acquisition Planning** process is used to assess options for addressing capability shortfalls that require new investment and to develop affordable acquisition proposals that meet operational needs in a timely manner and at a reasonable price.

Key Management Products and Linkages

Figure P-5 highlights the key products and intended linkages among the four mutually supporting planning processes.

Figure P-5. Key Management Products and Linkages

Master Planning Calendar

The four planning processes operate in accordance with a centrally-managed master planning calendar that synchronizes all efforts. The master planning calendar for the planning process used in this seminar is shown in Figure P-6.

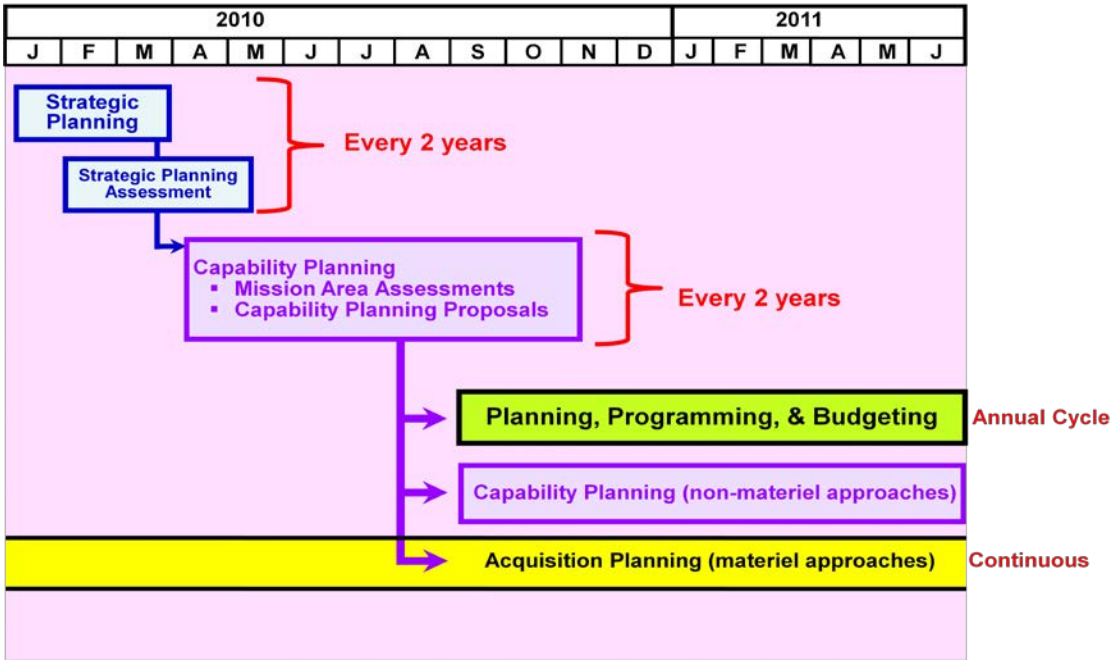

Figure P-6. Master Planning Calendar

The capability planning process simulated in this seminar will be used to set objectives for the defense program covering the years 2012 through 2017 by assessing the capabilities set forth in the last approved multi-annual defense program, which covers the years 2011through 2016.

Table P-2. Anticipated Status of Military Forces – January 2012

(as represented in FY 2011-2016 program)

Personnel	Authorized*	Actual
Land Forces	94,800	75,517
Air Forces	5,670	4,420
Naval Forces	12,710	9,971
MoD & Joint Staff	9,050	8,806
Total	122,230	98,354

*Authorized = 100% of the Table of Organization & Equipment (TO&E)

Table P-3. Anticipated Status of Military Equipment – January 2012

Equipment	Authorized*	On Hand
Land Forces		
Armored personnel carriers	480	336
Trucks	2,270	1,490
Artillery	648	389
Mortars	486	292
Engineer vehicles	126	76
Naval Forces		
Landing ship tanks	6	3/3**
Trucks	414	248
Artillery	36	32
Mortars	54	48
Engineer vehicles	18	16
Air Forces		
C-130	6	3/3**
Helicopters	18	18
Attack helicopters	9	9
Maritime patrol aircraft	6	6

***** Authorized = 100% of the Table of Organization & Equipment (TO&E)

** Available for use / requires major overhaul

Table P-4. Major Force Structure

Land Forces Units	
Infantry battalions	54
Engineer battalions	6
Division headquarters	6

Air Forces Units	
Airlift squadrons	1
Helicopter squadrons	2
Maritime patrol squadrons	1
Air base units	4

Naval Forces Units	
Corvettes	3
Patrol boats	36
Landing ship tanks	6
Coastal radars	8
Support units	3
Naval infantry battalions	6

Joint Staff Units	
Deployable multi-service task force HQ	1
Multi-service operations HQ	1

Block 1 [Lesson 1]:
Introduction

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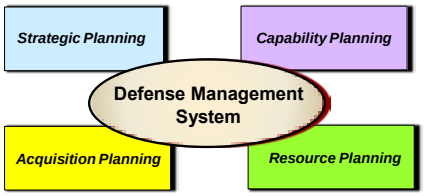
Block 1

Introduction

(75 minutes)



The Seminars

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- Objectives are to acquaint you with:
  - Techniques and processes for
    - – ***Capabilities Planning***
    - – ***Acquisition Planning***
  - ***Key interrelationships and linkages*** between these two planning processes
- Approach: ***interactive seminars*** that:
  - Apply key concepts
  - Stress the importance of analysis and staff collaboration
  - Highlight some potential challenges

Outline

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- Concepts for each planning process
- Introduction to the “Republic of X” simulation
- Organization of the seminar
- Administrative notes
- Questions

Outline

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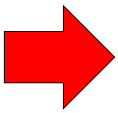

- Concepts for each planning process
- Introduction to the “Republic of X” simulation
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- Administrative notes
- Questions

Defense Management System

Flag Button

- From a national security perspective, identifies security environments and scenarios of greatest concern
- Translates objectives into statements of desired mission capabilities, and explores approaches to address priority challenges
- As a specialized step, analyzes long-term investment (capital expenditure) that are needed
- Prepares a multi-year program and then an annual budget that funds the most important capabilities within financial limits
- Evaluates programs and budgets by comparing the capabilities funded to priorities and objectives

Defense Management System

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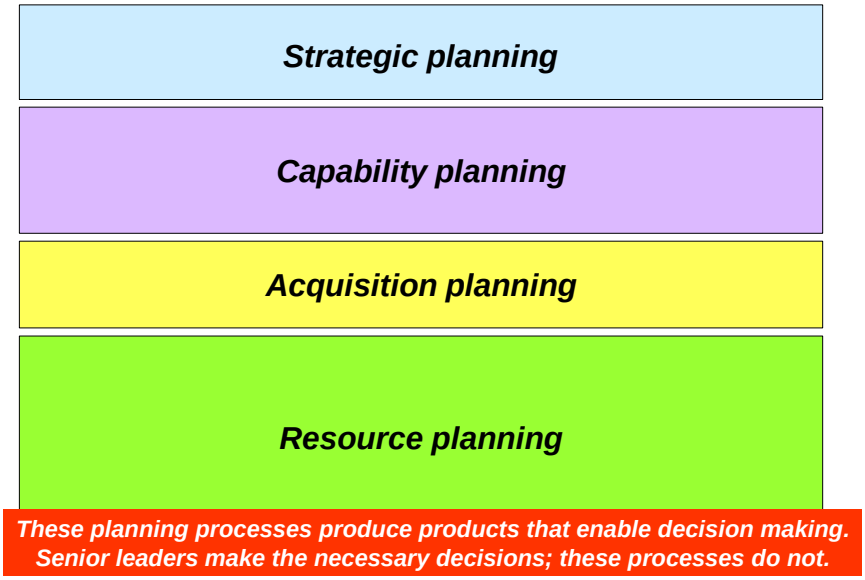


These planning processes produce products that enable decision making. Senior leaders make the necessary decisions; these processes do not.

Strategic Planning

Flag Button

- If not previously specified, identifies national security objectives and military mission areas
- Assesses strategic environment and scenarios of greatest concern and rank orders these challenges
- Assesses broad planning options for priority challenges
- Most importantly, with respect to capability planning,
  - Identifies the security challenges that are likely to be most acute
  - And if senior leaders agree, these challenges are addressed in capability planning

Capability Planning

Flag Button

- Two underlying areas of staff work
  - First, a mission area assessment process to:
    - Specify the military capabilities needed to address priority challenges
    - Determine whether current programs provide those capabilities
      - Identify gaps or shortfalls
      - Identify areas of declining relevance
  - Second, capability planning proposals are developed for the highest priority needs
    - By analyzing non-materiel approaches for closing gaps
    - If insufficient, recommends consideration of materiel approaches

Acquisition Planning

Flag Button

- Analyzes highest priority capability gaps that need investment* to correct
- Two major steps:
  - A "1st Pass" to examine broad materiel approaches and determine which are preferred (what kinds of systems are better?)
  - A "2nd Pass" to examine potential sources for the preferred approach; and to identify key performance parameters to facilitate competition among the sources

** Capital spending on items such as weapon systems, equipment, facilities*

Resource Planning

Flag Button

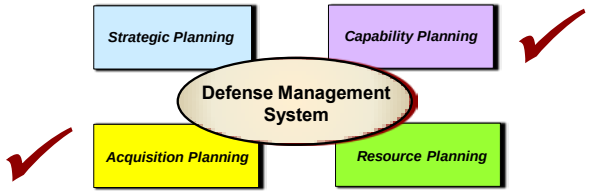
- Produces multi-year defense programs that include proposed funding for priority capabilities that:
  - Fit within financial limits
  - Require analysis of options as funding is seldom sufficient to address all priorities
- Matches proposed programs to policy priorities and prepares annual:
  - Budgets
  - Spending plans

The quality of resource planning is determined by the quality of capability and acquisition planning

The Focus of Seminar is…

Flag Button

- Capability planning
- Acquisition planning



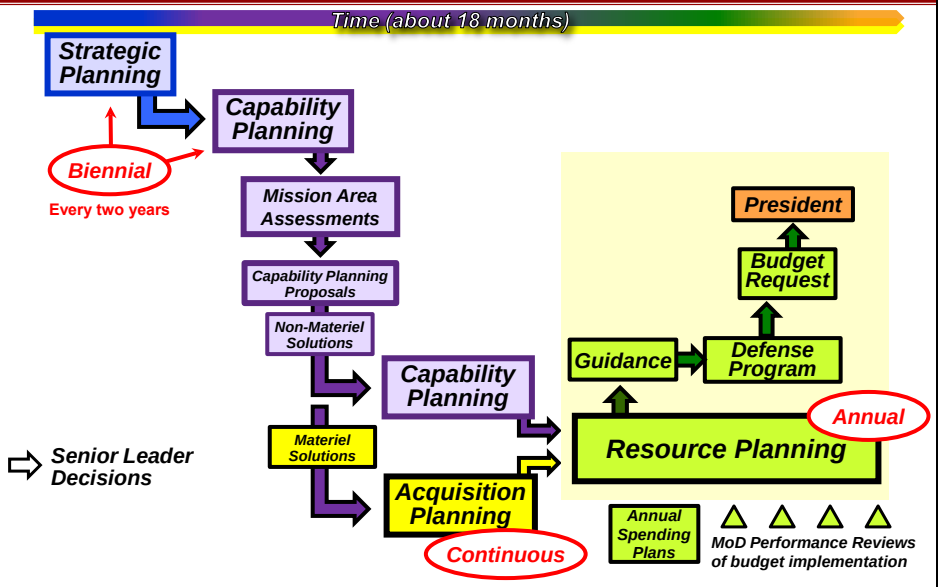
Process Timing and Horizons

Flag Button

- Frequency of planning processes vary
  - Biennially (every two years)
  - Annually
  - Twice per election term

  Illustrated on next slide
- Planning horizons also vary by type of planning
  - Most planning is keyed to the mid-term programming period
  - Five to six years into the future
  - Investment planning may extend further

Planning Process Sequence



Planning Process Summary

Strategic Planning
Strategic Assessments: Identify security challenges to be addressed in capability planning

Capability Planning
Mission Area Assessments: Identify capability gaps and areas of declining relevance
Capability Planning Proposals: Analyze potential approaches to highest priority gaps and lowest priority areas

Resource Planning
Defense Programs/Budgets: Aligns funding to priorities within fiscal limits
Performance Reviews: Relates money spent to spending objectives

Acquisition Planning
Preferred Approach: What kinds of systems are better at closing priority capability gaps?
Preferred Alternatives: Which sources for the preferred approach are best?

Outline

Flag Button

- Concepts for each planning process
- Introduction to the "Republic of X" simulation
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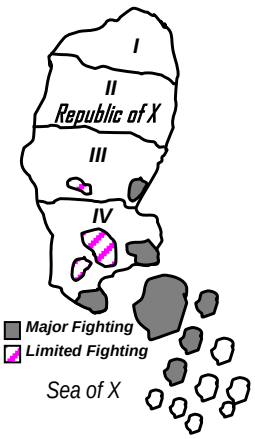
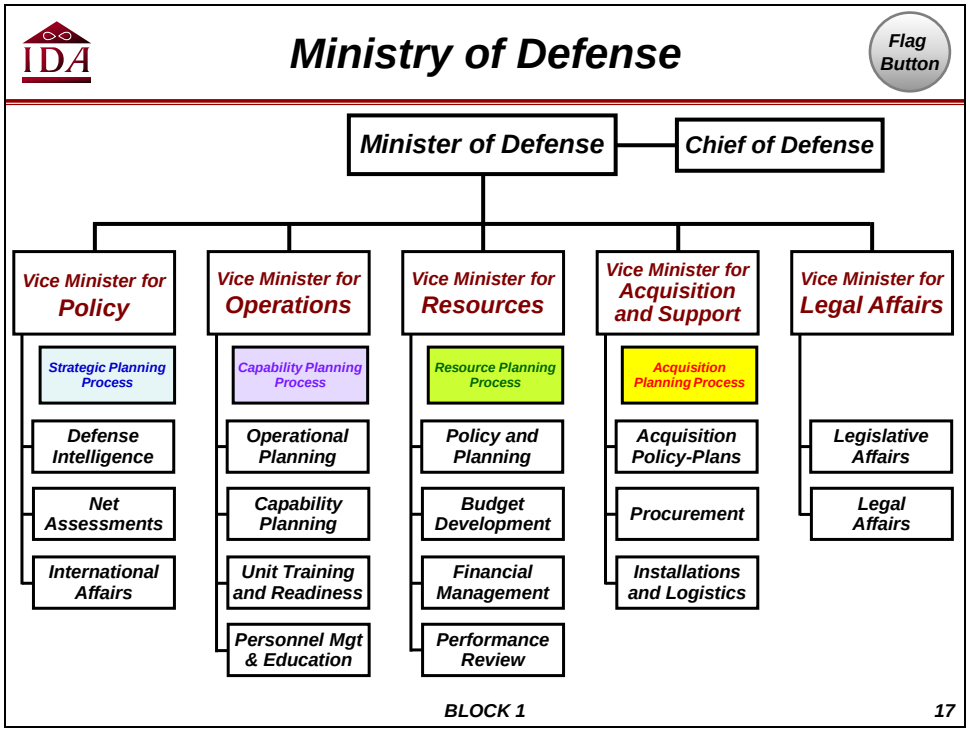
- Questions

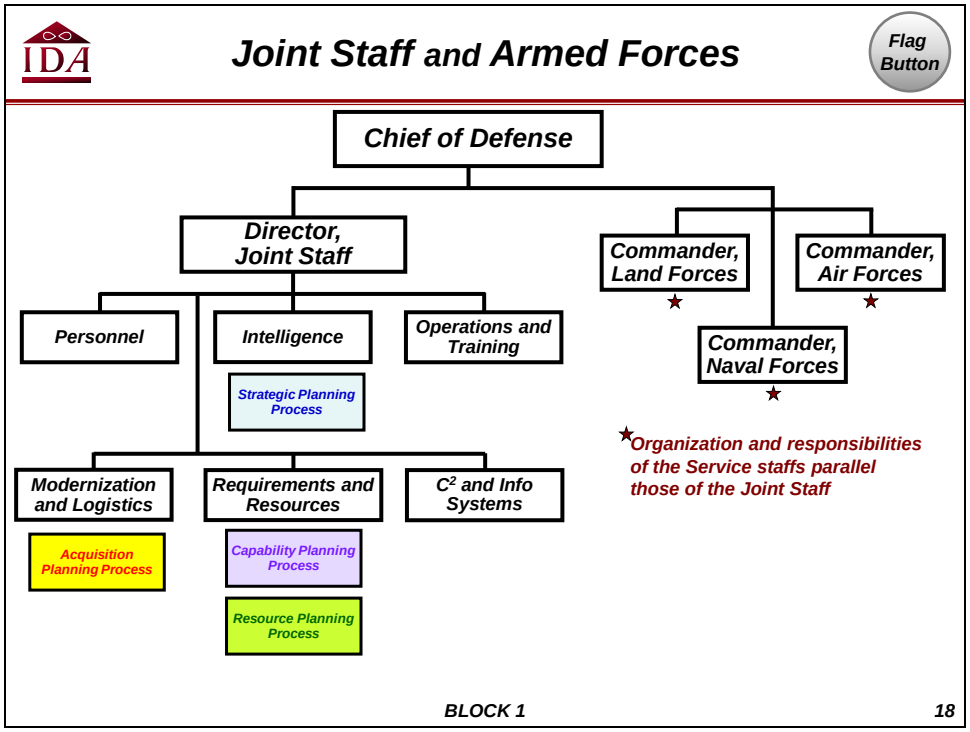
The Republic of X

Flag Button

- An archipelago in Southeast Asia
- Prone to natural disasters
- Disparity in ***income distribution***
  - Prosperous north; poor south
- Suffers from a long-running ***insurgency***
  - The north is now peaceful
  - Fighting continues in the south
- Fighting has damaged ***infrastructure*** and impeded delivery of ***public services***




Ministry of Defense
Flag Button
Minister of Defense
Chief of Defense
Vice Minister for Policy
Strategic Planning Process
Defense Intelligence
Net Assessments
International Affairs
Vice Minister for Operations
Capability Planning Process
Operational Planning
Capability Planning
Unit Training and Readiness
Personnel Mgt & Education
Vice Minister for Resources
Resource Planning Process
Policy and Planning
Budget Development
Financial Management
Performance Review
Vice Minister for Acquisition and Support
Acquisition Planning Process
Acquisition Policy-Plans
Procurement
Installations and Logistics
Vice Minister for Legal Affairs
Legislative Affairs
Legal Affairs
BLOCK 1
17


Joint Staff and Armed Forces
Flag Button
Chief of Defense
Director, Joint Staff
Personnel
Intelligence
Operations and Training
Strategic Planning Process
Modernization and Logistics
Acquisition Planning Process
Requirements and Resources
Capability Planning Process
Resource Planning Process
C2 and Info Systems
Commander, Land Forces
Commander, Air Forces
Commander, Naval Forces
★Organization and responsibilities of the Service staffs parallel those of the Joint Staff
BLOCK 1
18

National Security Strategy

Flag Button

- Successfully end the military campaigns in south by 2014
- Rebuild damaged infrastructure and restore essential public services
- Realign military capabilities to projected post-2014 security challenges

Major Force Structure

Flag Button

Land Forces

Infantry battalions	54
Engineer battalions	6
Brigade headquarters	18
Division headquarters	6

Air Forces

Airlift squadrons	1
Helicopter squadrons	2
Attack squadrons	1
Maritime patrol	1
Air base units	4

Naval Forces

Corvettes	3
Patrol boats	36
Landing ship tanks	6
Coastal radars	8
Support units	3
Marine battalions	6

Major Equipment

Flag Button

Land Forces	Authorized	On Hand
Armored personnel carriers	480	336
Trucks	2,270	1,490
Artillery (105mm towed)	648	389
Mortars	486	292
Engineer vehicles	126	76
Naval Forces		
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Mortars	54	48
Engineer vehicles	18	16
Air Forces		
C-130	6	3/3*
Helicopters	18	18
Attack helicopters	9	9
Maritime patrol aircraft	6	6

* Inoperable

Outline

Flag Button

- Concepts for each planning process
- Introduction to the “Republic of X” simulation
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- Questions

Seminar Schedule (1 of 2)

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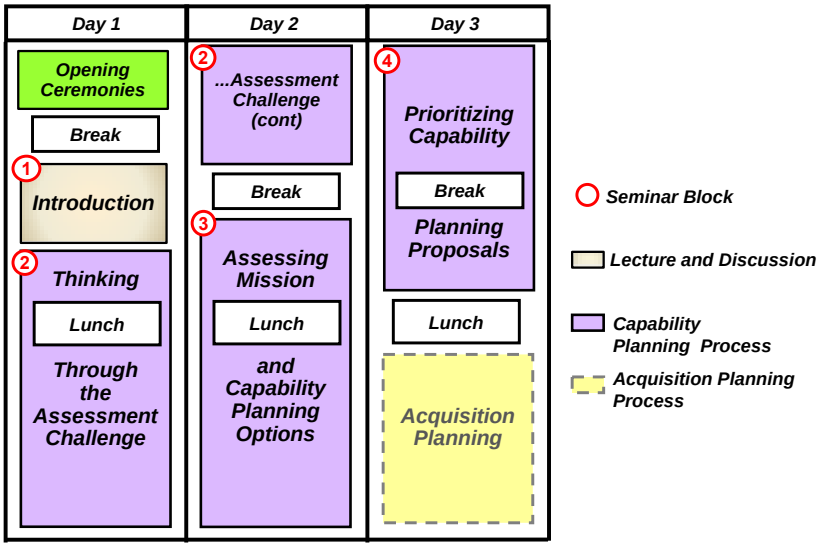

Seminar Schedule (2 of 2)

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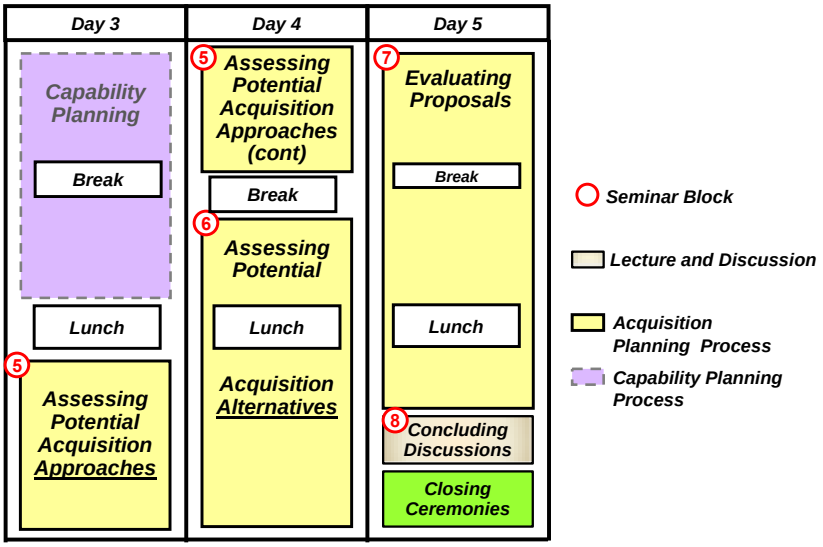


Interactive Seminars

Flag Button

- Highlight important ***planning concepts and relationships***
- Provide ***hands-on experience*** in:
  - Analyzing planning issues
  - Preparing and presenting options to complex problems for senior leader decision
- Provide the ***opportunity to discuss*** potential challenges

Typical Seminar

Flag Button

(Facilitators) **(Participants)**

- **Introductory briefing (10 – 30 minutes)**
  - Key concepts
- **Interactive workgroup (60 – 120 minutes)**
  - Explain simulated situation
  - Describe task
  - Analyze proposed solutions
  - Develop a short briefing
- **Workgroup briefings (30 – 45 minutes)**
  - Present proposed solution
  - Decision announced; decision documents distributed
- **Concluding discussion (10 minutes)**

Outline

Flag Button

- Concepts for each planning process
- Introduction to the “Republic of X” simulation
- Organization of the seminar
- Administrative notes
- Questions

Administrative Notes

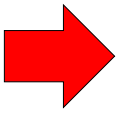
Flag Button

- ***Workgroup Assignments***
  - Provided in handouts
- ***Workgroup Roles*** – change for each seminar
- ***Breaks***
  - Between simulation blocks
  - During seminars – Facilitator decision

Outline

Flag Button

- Concepts for each planning process
- Introduction to the “Republic of X” simulation
- Organization of the seminar
- Administrative notes
- Questions



Block 2 [Lesson 2]:
Mission Area Assessment

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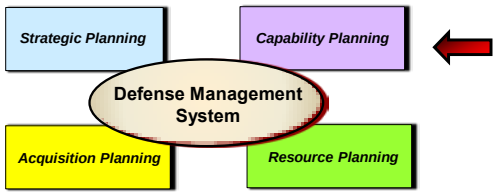
Block 2

Mission Area Assessment

(200 minutes)



Organization of Blocks 2, 3 and 4

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- Blocks 2, 3 and 4 cover capability planning
- Block 2 shows how:
  - Strategic planning focuses capability planning
  - The mission area assessment portion of capability planning is organized
- Block 3 shows how:
  - Mission area assessments identify capability shortfalls and areas of declining relevance (needs)
  - Approaches for correcting the most important needs (capability planning proposals) are identified
- Block 4 shows how:
  - Capability planning proposals are integrated and prioritized

Outline

Flag Button

- Mission Area Assessments — **50 minutes**
- Interactive Seminar — **105 minutes**
  - Situation and Task (15 minutes)
  - Workgroup Discussions (90 minutes)
- Workgroup Briefings — **30 minutes**
- Wrap-up Discuss — **15 minutes**

Planning Process Summary

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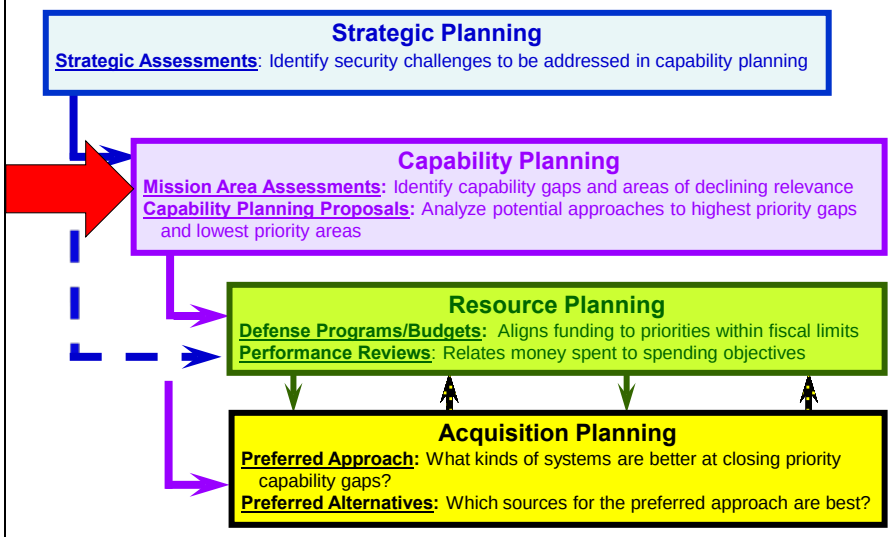

Strategic Planning

Flag Button

- In the RoX, strategic planning first identifies national security objectives from the national security strategy
- It also specifies the mission areas relevant to those objectives
- Then it focuses capability planning by
  - Identifying security challenges that are most important for upcoming mid-term planning
  - Recommending that the most pertinent challenges be assessed in the ensuing capability planning cycle

Strategic Planning Results

Flag Button

- As this simulation begins, strategic planning has just been completed in the RoX
- The mission areas of greatest concern to the Minister are*
  - Internal Security
  - Territorial Defense
  - National Development
- These areas will receive explicit attention during capability planning

** See Memo at pg 2-21*

Capability Planning

Flag Button

- The capability planning process in the Republic of X has two components
  - Mission area assessment
    - What capabilities will the currently-approved multi-year program provide? **Block 2**
    - Are resources programmed about right, not enough (gap), or over what is needed and greater risk can be accepted (potential for reduction)? **Block 3**
  - Capability planning proposals (highest priority challenges)
    - What are the most promising non-materiel approaches? **Block 3**
    - How should these approaches be integrated and rank ordered? **Block 4**
    - Which approaches remain insufficient and need materiel approaches? **Blocks 5-7**

Two Important Definitions

Flag Button

- Military capability
  - A military unit's ability to preplan and accomplish a mission and achieve effects desired in a specified time, operational environment, and state of preparedness
- Decomposition
  - The logical breakdown of a broad concept (e.g. mission area) into a hierarchy of just enough parts (e.g. capability areas/sub-areas) necessary for analysis purposes

Mission Area Assessments

Flag Button

Analytic concept:

1. From earlier strategic planning:
   - Identify the set of priority mission areas
   - Specify operational context to be used for assessment (derived from approved, highest priority security environments and scenarios of greatest concern)
2. Now, decompose mission areas in a way suitable for analysis (capability areas/sub-areas)
3, Attribute forces in the approved program to the capability areas/sub-areas
4. Assess their adequacy *Block 3*

Step 1: Mission Area Definitions

Flag Button

- National level strategic planning normally identifies the mission areas for the armed forces
- Strategic planning within the MoD provides an understanding of potential strategic environments, scenarios, and the risks in which the mission areas will be performed
- Mission area definitions are normally enduring
  - And therefore also suitable for designing the multi-year resource management structure
  - The implementation of this concept in the Republic of X is shown on the next slide

Program Structure

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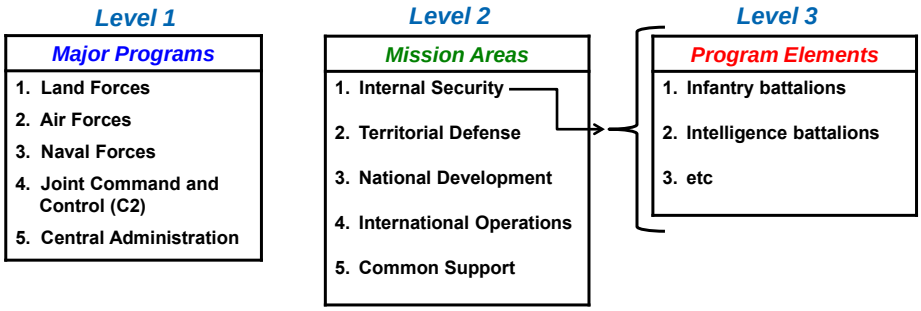
- In the RoX, **mission areas** are ***Level 2*** of the program structure



- ***Level 3***, **program elements**, contains all units (and activities) in the entire force
  - Each program element, named accordingly, should contain all units (or activities) in the force of a single type
  - Program elements are then matched to the specific mission area that *best* represents that unit type's **primary** mission

Step 1: Mission Area Definitions – continued

Flag Button

Mission Area	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
National Development	Conduct economic development projects in regions where security is problematic
International Operations	Participate in UN-mandated humanitarian assistance, peacekeeping, and peace enforcement operations
Common Support	Perform command and control, training, and support functions

Step 2: Operational Context

Flag Button

- Each mission's operational context must be specified
  - From the expected operational environment
    - – Specify desired operational approach per applicable joint doctrine
    - – Determine objectives and desired tasks or effects (based on policies, directives, operational plans)
      - Policy example that eliminates ground combat-related tasks from desired peacekeeping capabilities:
        - ➢ *RoX will only contribute to peacekeeping missions where hostilities are not on-going*

Mission Area Assessments are operational-level assessments

Step 3: Mission Area Decomposition

Flag Button

- Decompose the mission areas in a way suitable for analysis
  - Identify relevant operational concepts and environments for the mission area assessment
  - Disaggregate each mission area into objectives and major tasks
  - Relate higher level categories to mission area objectives (capability areas)
  - Focus lower level categories on major tasks (capability sub-areas)
  - The lowest level should be logical groupings of the types of units (program elements) needed to perform the types of tasks envisioned (capability sub-areas)

On Decomposition…

Flag Button

- How many levels?
  - Meaningful and sufficient to understand what types of units will be needed to provide the capabilities necessary within a mission area
- But, do not create unnecessary levels
  - The number of levels and branches will drive workloads; be mindful of…
    - Staff expertise and availability
    - Time available for the assessment
    - Scheduling conflicts
- In capability planning, the completed decomposition is called an ***assessment matrix***

Constructing an Assessment Matrix

Flag Button

First, identify the mission area and specify the operational context

Constructing a Matrix – continued

Flag Button

Second, subdivide into assessment areas

Mission Area	Capability Assessment Areas	
	Primary Areas	Sub-Areas
International Operations	Humanitarian Assistance	Joint Command and Control
		Engineer Construction Support
		Tactical Airlift
		Bulk Water Transport
	Peacekeeping	Battalion Task Force (Combat)
		Tactical Airlift
		Engineer Construction Support
	Peace Enforcement	Battalion Task Force (Combat)
		Tactical Airlift

Step 4: Identify Pertinent Forces

Flag Button

- Once the analysis matrix is complete, the next step is to determine what types of units are required to accomplish the tasks of a given capability sub-area
- This can be done by matching existing program elements to capability sub-areas
  - See next slide for an illustration of this concept

Assessment Matrix & Program Structure

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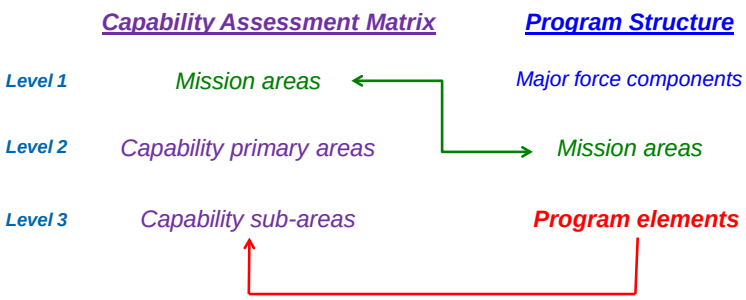
- In many countries, ***program elements***, the lowest level of a *program structure*, contain a single type of unit
- This makes determining which types of units are relevant to which ***capability sub-areas*** easy



Sample Capability Assessment Matrix

Flag Button

Mission Area	Capability Assessment Areas		Major Programs* Program Elements				
	Primary Areas	Sub-Areas	1	2	3	4	5
International Operations	Humanitarian Assistance	Joint Command and Control				X	
		Engineer Construction Support	X				
		Tactical Airlift		X			
		Bulk Water Transport	X	X	X		
	Peacekeeping	Battalion Task Force (Combat)	X		X		
		Tactical Airlift		X			
		Engineer Construction Support	X				
	Peace Enforcement	Battalion Task Force (Combat)	X		X		
		Tactical Airlift		X			

X = Major Program contains a Program Element with units of relevant type

* *for titles, see slide 11*

Rule for Multi-Purpose Units

Flag Button

- In a program structure, each unit can be in only one program element

Analogous to taking a census of all units; all must be counted, but only once

- But in mission area analysis, each unit can be attributed to several different mission areas (multi-purpose units)
  - A unit can be attributed to as many different capability sub-areas as are relevant
  - Multiple appearances connote that a unit is multi-mission capable
  - This is useful to know in interpreting results. For example:
    - "Tactical airlift capability is adequate for peacekeeping and peace enforcement; inadequate for humanitarian assistance."
    - Helpful in conveying proper context and rank ordering the shortfall

Step 5: Assess Adequacy

Flag Button

- Goal is to identify:
  - Gaps or shortfalls
  - Potential areas of declining relevance (areas in which capabilities may exceed requirements or greater risks can be accepted)
- Techniques for Step 5 are the subject of **Block 3**

Summary

Flag Button

- Mission Area Assessments provide a basis for:
  - Assessing adequacy of programmed capabilities by mission area
  - Identifying shortfalls and potential areas of declining relevance for senior leader consideration
- These assessments require:
  - A plan for conducting the assessment (good idea to have sorted this out before starting the Capability Planning process)
  - Mission area decomposition
  - Possibly adjusting the original plan to ensure that the resulting analytic workload and senior leader decisions on the way ahead do not exceed available staff resources

Capability Planning Process Seminar

Flag Button

Block 2 Interactive Seminar

Building a Mission Area Assessment Matrix

(105 minutes)

Your Assignment

Flag Button

- You are a part of a Joint Staff team that is developing the capability assessment matrix
- Each mission area has already been decomposed into capability assessment areas
- Your workgroup must:
  1. Write a definition of the primary capability area you have been assigned
  2. Decompose that primary capability area into its relevant sub-areas that would be necessary for analysis
  3. Identify which types of units (program elements) are relevant to each sub-area (see pg 2-24, RoX Program Structure)
  4. Identify multi-purpose units

Schematic of Assignment

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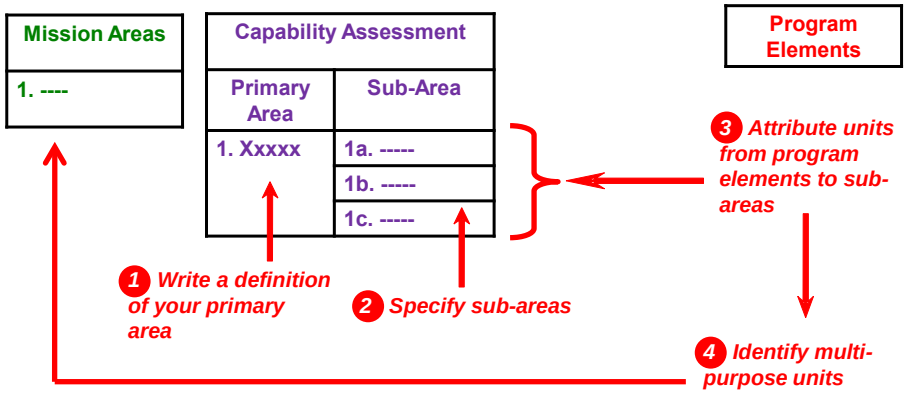

Work Group Assignments

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Work Group	Mission Area	Primary Capability Area
A	Internal Security	Ground and amphibious warfare
B	Terriorial Defense	Maritime surveillance and interdiction
C	National Development	Reconstruction

Seminar Roles and Materials

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- **Role**: Joint Staff-led working groups developing part of a capability assessment matrix
  - Use your personal military expertise plus the information you know about the Republic of X
- **Materials**
  - Read-ahead materials
  - Slides in Block 1
  - Materials in your notebooks at end of Block 2
  - MS PowerPoint templates have been provided for your workgroup's report
- **Time**
  - You have 90 minutes

Flag Button

Proposed Mission Area Assessment Framework

(enter Work Group and Mission Area)

Definitions

Flag Button

- Mission Area: [as assigned]
  - Definition: [from slide 12]
- Primary capability assessment area: [as assigned]
  - Definition: [discuss and record here]

(Enter Primary Assessment Area)

Flag Button

- This primary capability assessment area should be decomposed into the following sub-areas
- The capabilities of the units shown in the table should form the basis of the assessment of the sub-area

Sub-Area	Relevant Units

[Make as many slides as needed to list all sub-areas and units]

Multi-Purpose Units

Flag Button

The units listed on the previous slide will also be relevant in assessing the following mission areas:

Unit Type	Also Relevant to These Mission Areas (enter Mission Area)			

Staffing the Assessment

Flag Button

The following Republic of X organizations and offices should participate in this assessment

Staff Organization	Office

Block 2 Seminar – Outcome

Flag Button

- Chief of Defense has issued a revised assessment work plan. It includes:
  - Definitions of key terms and assumptions
  - Assessment priorities requiring capability planning proposals *Block 3*
  - The primary area / sub-area assessment matrix (see next slide)
  - Staff assignments
  - Timetable
- There will be four assessment teams:
  - Ground Combat and Amphibious Warfare (Maneuver): Work Group A
  - Maritime Surveillance and Interdiction: Work Group B
  - National Development (Reconstruction): Work Group C
  - Ground Combat and Amphibious Warfare (Fire Support): Work Group D (played by facilitators)

Blocks 3 and 4

Mission Area Decomposition*

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Mission Area	Capabilities	
	Primary Area	Sub-Area
Internal Security	Ground Combat and Amphibious Warfare	**Maneuver** A
		Fire Support D
	C3I	C3
		Intelligence
Territorial Defense	**Maritime** B	Surveillance
		Interdiction
	Airspace	Surveillance
		Interdiction
National Development	**Reconstruction** C	Vertical Construction
		Horizontal Construction
	Transportation	Route Engineering
		Horizontal Construction

* simplified for instructional purposes—not complete

workgroup formed to assess this area workgroup designation

March 2, 2010

From: Minister of Defense, Republic of X

To: Chief of Defense, Republic of X Armed Forces

Subject: Strategic Planning Decision Memorandum

1. **General**. I have reviewed the recommendations forwarded to me at the end of the Strategic Planning process. The purpose of this process was to identify the issues of sufficient importance that we must ensure are addressed in the upcoming capability planning cycle. This memorandum records my decisions.

2. **Internal Security Operations**. We must improve unit readiness in order to successfully conclude the insurgency by 2014. At the same time, we must begin to consider whether forces in this mission area can be prudently reduced once the conflict is over.

a. **Unit Readiness**. The readiness of all internal security forces is low, although some improvement of readiness in the south has been achieved by diverting resources from units in the north. What other improvements are possible?

b. **Ground Combat and Amphibious Warfare Capability**. Our current program maintains large ground combat and amphibious warfare forces beyond 2025. Our need to maintain all of these forces, and at high readiness rates, however, may be reduced once we successfully conclude the military campaigns in the south. Develop several options that gradually reduce some of these forces and/or their planned readiness level. At least one option will establish rapid reaction forces. Any savings could then be applied to other priorities.

c. **Fire Support Capability**. Please review whether we have adequate capability in this area. Our counterinsurgency strategy is based on small-unit operations. We need to ensure that those units receive timely fire support.

3. **Territorial Defense –Maritime Surveillance and Interdiction**. Our current and planned maritime surveillance and interdiction capabilities are limited. Unit readiness is low and modernization has stalled. The threat is low now, but may grow over the mid-term. Develop three options for improving these capabilities towards the end of the mid-term period.

4. **Support to National Development**. Defeating the insurgency requires rebuilding war-torn areas as soon as they are secured militarily. Develop three options that complete the projects in the south much sooner than the current program.

5. **Summary**. Our defense program for 2011–2016 focuses on our most important near-term priority – successfully concluding the military campaigns in the south by 2014. This defense program entails risks. These risks can be managed and corrected in whole or part by sound planning. The table below summarizes the taskings for the upcoming Capability Planning cycle.

Table 1: Tasking to Capability Planners

Mission Area	Capability Planning Issue	Tasking to Capability Planners
Internal Security	**Ground combat and amphibious warfare (maneuver)**—do capabilities match anticipated threat?	▪ Meet counter-insurgency needs in the south ▪ Consider requirement for post-conflict capabilities ▪ Develop and prioritize three options; at least one should include establishing rapid reaction forces
Internal Security	**Ground combat and amphibious warfare (fire support)**—do capabilities match the anticipated threat?	▪ Define the requirement for more decentralized operations using smaller units (counter-insurgency) ▪ Explore approaches to meet the requirement
Territorial Defense	**Maritime surveillance and interdiction**—do capabilities match anticipated threat?	▪ Develop and prioritize three options for realigning planned maritime surveillance and interdiction forces and capabilities
National Development	**Reconstruction**—can program in the south be accelerated?	▪ Develop and prioritize three options for completing reconstruction sooner

March 7, 2010

From: Chief of Defense, Republic of X

To: Director, Joint Staff

Reference: Memorandum from Minister of Defense to CHoD, Subject: Strategic Planning Decision Memorandum, dated 2 March 2010 (enclosed)

Subject: Reflecting the Strategic Planning Decisions in the Upcoming Mission Area Assessments

1. The Minister provided guidance on the topics of greatest interest resulting from the recently conducted Strategic Planning Process (Reference and enclosed)

2. As a first step, I am directing that you develop a framework for assessing these topics and organize the Joint Staff in order to conduct the necessary assessments.

Enclosure: as stated

Republic of X Program Structure

1 **Land Forces**
- 1.1 Internal Security
  - 1.1.1 Division headquarters + support
  - 1.1.2 Brigade headquarters + support
  - 1.1.3 Infantry battalions
- 1.2 Territorial Defense
- 1.3 National Development
  - 1.3.1 Engineer battalions
- 1.4 International Operations
- 1.5 Common Support

2 **Air Forces**
- 2.1 Internal Security
  - 2.1.1 Airlift squadrons
  - 2.1.2 Helicopter squadrons
- 2.2 Territorial defense
  - 2.2.1 Maritime patrol squadrons
  - 2.2.2 Attack helicopter squadrons
- 2.3 National Development
- 2.4 International Operations
- 2.5 Common Support
  - 2.5.1 Airbase units

3 **Maritime Forces**
- 3.1 Internal Security
  - 3.1.1 Landing ship tanks
  - 3.1.2 Marine battalions
- 3.2 Territorial defense
  - 3.2.1 Corvettes
  - 3.2.2 Patrol boats
  - 3.2.3 Coastal radars
- 3.3 National Development
- 3.4 International Operations
- 3.5 Common Support
  - 3.5.1 Support units

4 **Joint command and control**
- 4.1 Internal Security
- 4.2 Territorial defense
- 4.3 National Development
- 4.4 International Operations
- 4.5 Common Support
  - 4.5.1 Joint Staff
  - 4.5.2 Joint deployable headquarters

5 **Central Administration**
- 5.1 Internal Security
- 5.2 Territorial defense
- 5.3 National Development
- 5.4 International Operations
- 5.5 Common Support
  - 5.5.1 Ministry of Defense staff

Key
- x Major program
- x.x Mission area
- x.x.x Program element

NB: This is a highly simplified example of a program structure used only to demonstrate instructional points.

In a **program structure**, units can be entered in one and only one program element. The counting rule is to assign program elements to the mission area that most closely aligns with a unit's *primary* mission.

In **mission area assessment**, one objective is to recognize which units have multi-mission capabilities. In constructing a Capability Assessment matrix, units may be entered in as many capability sub-areas as necessary to reflect how each different mission area will be performed.

Block 3 [Lesson 3]:
Assessing Mission Areas and Capability Planning Options

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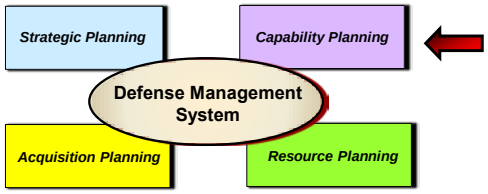
Block 3

Assessing Mission Areas and Capability Planning Options

(210 minutes)



Objectives

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- Show how mission area assessments identify:
  - Capability gaps or shortfalls
  - Potential areas of declining relevance
- Explain how capability planning proposals for correcting priority shortfalls are developed (not covered but equally or more important are potential areas of declining emphasis)
- Practice the analytic techniques

Mission Area Assessments

Flag Button

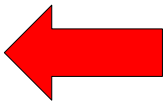
Analytic concept:

✓ 1. From earlier strategic planning:

- Identify the set of priority mission areas
- Specify operational context to be used for assessment (derived from approved, highest priority security environments and scenarios of greatest concern)

✓ 2. Now, decompose mission areas in a way suitable for analysis (capability areas/sub-areas)

✓ 3. Attribute forces in the approved program to the capability areas/sub-areas

4. Assess their adequacy 

Outline

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- Background — **10 minutes**
- Interactive Seminar — **150 minutes**
  - Memo Walk Thru (30 minutes)
  - Workgroup Discussions (120 minutes)
- Workgroup Briefings — **40 minutes**
- Wrap-up Discussion — **10 minutes**

Assessing Capabilities – 1

Flag Button

- After the mission area assessment matrix is completed, assessment teams may need adjustment
  - Composed of staff members with relevant functional expertise and recent operational experience
- The assessment team
  - First, determines what capabilities are provided through funding in the ***currently-approved multi-year program***
    - Types and numbers of units
    - Programmed readiness of units
      - Authorized personnel & fill
      - Authorized equipment & its fill
      - Training status
      - Facilities & their maintenance

Assessing Capabilities – 2

Flag Button

- Some illustrative assessment questions
  - Are the capabilities provided by relevant forces adequate to perform the mission area and capability in the agreed operational context?
  - If not, why not?
  - What are the consequences, if capabilities are shown inadequate?
  - Can a more fully resourced non-materiel approach address the shortfall?
- Related questions
  - Concerning potential areas of declining relevance, are there more resources funded than needed?
  - Can resources be redirected to higher priorities at an acceptable risk?

Assessment Techniques

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- Even simple techniques are powerful when applied formally and systematically
  - Discussions with experts must begin with transparent statements of assumptions and logic
  - Evaluation criteria (reporting tables) should be agreed upon first to guide review deliberations
  - Simple spreadsheets can be sufficient, if more sophisticated tools are lacking
- Tell senior leaders more than just the conclusions
  - Present the key assumptions and the reason for each
  - Briefly and simply describe the method used
  - Summarize the key findings and offer recommendations

Assessment Example

Flag Button

- **Mission Area**: International Operations
  - **Primary Capability Area**: Humanitarian Assistance
  - **Capability sub-area:** Bulk water delivery
    - **Task Definition:** Provide bulk fresh water within 2 days after a natural disaster for 10,000 displaced civilians
    - **Capability Required**: Move, store, or produce bulk fresh water
    - **Approach** (from joint doctrine): Army engineer units utilize portable water bousers and purification equipment; moved to scene via airlift or sealift
    - **Assessment of Current Program:** Engineers have no bousers to move amounts needed or purification equipment to produce on site; within 2 days requires airlift which is fully committed to higher priority mission area (Internal Security)
    - **Capability Gap**: Engineer units have very limited capabilities to move and store bulk fresh water; and no capability to produce bulk fresh water

Bouser

Multi-Purpose Units

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Units with capabilities relevant to several mission areas or capability primary areas or sub-areas may receive mixed assessment findings

- Example: Tactical Airlift Capability Sub-Area
  - Consider three primary capability areas requiring tactical airlift capability within the **International Operations mission area**
  - Assessment may differ across areas

Primary Capability Area	Sub-Area Assessment (Tactical Airlift)
Humanitarian Assistance	**Inadequate**
Peacekeeping Operations	**Adequate**
Peace Enforcement Operations	**Adequate**

Multi-Mission Units (cont)

Flag Button

- Example (cont): Tactical Airlift Sub-Area
  - As a further step to consider, consider other primary capability areas requiring tactical airlift capability within **other mission areas** (being worked in other groups)
  - Again, our collective assessment may differ across areas
  - Further, consider whether the capabilities resourced within a sub-area are adequate under simultaneous mission area demands. Consider the likelihood of simultaneous demands.

Mission Area	Primary Capability Area	Sub-Area Assessment
Internal Security	Maneuver	**Inadequate**
Territorial Defense	Maritime surveillance and interdiction	**Adequate**

Present and Document Findings

Flag Button

- To conclude the mission area assessments, analytic teams:
  - Document Mission Areas Assessments (MAAs) findings
  - Integrate findings and rank order challenges
  - Present findings and challenges to senior leaders

MAA

  - Gain decision on major challenges for which Capability Planning Proposals (CPPs) will be developed

CPP

Capability Planning Proposals

Flag Button

- Are developed, as directed and in operationally relevant terms by assessing:
  - Non-materiel options for correcting highest priority capability gaps or shortfalls that require senior leader decision
  - Options for reducing capabilities in areas that have more resources funded than potentially needed or where greater risks can be accepted
- Use the following work sequence
  - Identify non-materiel options for addressing a single gap
    - Assess the cost and capability realized for each option;
    - Identify the preferred option (best)

Memos in this Block are examples

  - Using all preferred options across all mission areas, integrate into a single rank-ordered list

Content of a Single Proposal

Flag Button

- A Capability Planning Proposal (Gap)
  - Describes the capability gap (shortfall) in broad terms and the applied operational context
  - Explains approaches for closing the gap
    - **Non-materiel approaches** (consider first) – usually cost less and can be implemented quickly (changes in joint doctrine, training and equipment readiness, etc)
    - **Materiel Approaches** (considered only after non-materiel solutions deemed inadequate or insufficient) – can be costly and take much longer
    - **Combinations** of Non-Materiel and Materiel
  - Assesses the relative merits of these approaches
  - Presents the results and provides recommendation (options)

Logic for Developing Options

Flag Button

- One option should always be the current program
  - Although its capability was preliminarily judged inadequate
- A second option normally provides full capability
  - But most likely is the most expensive option
- Intermediate options could explore compromises between cost and capability
  - Capability compromises can also include adjustments to the timing that the capability is provided—longer timelines reduce annual costs but may increase total costs
- Senior leaders seek the best combination of capability, cost, and risk

Capability Planning Proposal (CPP) Example

Flag Button

- **Mission Area**: International Operations
  - **Capability Area**: Humanitarian Assistance
    - **Task**: Provide bulk fresh water within 2 days after a natural disaster
    - **Capability Required**: Move, store, or produce bulk fresh water
    - **Capability Gap**: Little or no ability to **move** (1), **store** (2), or **produce** (3) bulk fresh water
    - **Approaches**:
      - **Non-materiel (preferred):**
        - Encourage development of this capability in another government agency or private sector (dual use **production**) (3)
        - Regional cooperation agreements (**store**) (2)
        - Contract for stand-by airlift (**move**) (1)

CPP Example – continued

Flag Button

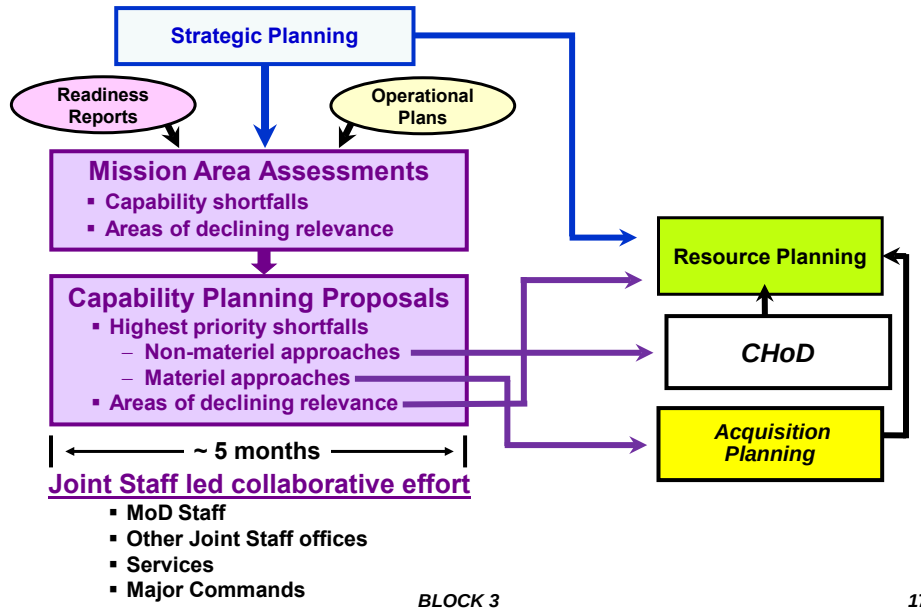
- **Approaches** (continued):
  - **Materiel (only if non-materiel approaches are not considered adequate):**
    - Purification systems (3)
    - Light-weight, transportable bulk storage containers and dispensers (2)
    - Stockpile bottled water (2) (3)

Potential Approaches to "First Pass" of Acquisition Planning Process

  - **Combination:**
    - Procure limited set of bottled stores and purification systems
    - Offer help to close-by neighbors using contracted stand-by airlift
    - Participate in more distant operations only if lift is provided

(2) **Store,**
(3) **Produce** bulk fresh water

Capability Planning Process



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Capability Planning Process Seminar

Block 3 Interactive Seminar

Assessing Mission Areas and Developing Capability Planning Proposals

(150 minutes)

Flag Button

Situation and Roles

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- Joint Staff-led teams are evaluating the following capability assessment areas:
  - Ground Combat and Amphibious Warfare—Maneuver: Work Group A
  - Maritime Surveillance and Interdiction: Work Group B
  - National Development—Reconstruction: Work Group C
  - Ground Combat and Amphibious Warfare—Fire Support (played by facilitators)
- Senior Leader Review Group will review the assessment results next week

Block 3 Seminar

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- **Seminar Materials** (in Participant's Notebooks)
  - Decision Memorandum to CHoD (see Block 2, pg 2-21), Tasking Memorandum to Director, Joint Staff (see Block 2, pg 2-23)
  - Program Structure (see Block 2, pg 2-24)
  - Draft workgroup assessments (end of this Block)

Block 3 Seminar Task

Flag Button

- Each workgroup has 150 minutes to complete a 15 minute briefing for the Senior Leader Review Group that includes:
  - Assessment findings
  - Evaluation of options and rank ordering
  - Additional factors to consider
  - Challenges with conducting the assessments
- Use the slide template provided

Are there any questions?

Block 3 Seminar Briefing Template

Flag Button

Assessment Results and Capability Planning Options

(Enter Work Group and Capability Assessment Area)

Findings and Options

Flag Button

- Key findings from the assessment (summarized from work group memo):
  1. _____
  2. _____
  3. _____
  4. _____
- Options being considered (briefly describe):
  - **A. Current Program**
  - B. _____
  - C. _____
  - D. _____

Findings and Options

Flag Button

Medical Example

- Key findings: [*derived from the assessment memorandum for your workgroup*]
  1. Insufficient combat casualty care
  2. Evacuation time to reach surgical care is key factor to reducing "died from wounds rate."
- Options being considered (briefly describe): [*from the assessment memorandum for your workgroup*]
  - **A. "Current"** program option provides 60% of desired capability
  - **B. "Full"** option provides 100% of desired capability; cost 150% of A
  - **C. "Middle"** option provides 75% of desired capability; cost 110% of A
  - **D. "Low"** option provides 60% of desired capability; cost 80% of A

Evaluation of Options

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Option	Relative Ranking (1 – 4)*				Overall Relative Ranking (1 – 4)**
	Completes Objective Soonest (if known)	Estimated Mid-term Costs	Additional Funding Required Through 2017	Operational Risk	
A. Current Program					
B. (title)					
C. (title)					
D. (title)					
	1 = Best 4 = Worst	1 = Lowest 4 = Highest	1 = Lowest 4 = Highest	1 = Least 4 = Most	

** Highlight the major factor that led you to assign rankings 1 and 4. Do not add or average relative rankings.

* With 4 options, we used relative scores from1 to 4. If there were more or less options, use relative scores from 1 to the number of options considered.

Evaluation of Options

Flag Button

Medical Example

Option	Relative Ranking (1 – 4)*				Overall Relative Ranking (1 – 4)**
	Completes Objective Soonest (if known)	Estimated Mid-term Costs	Additional Funding Required Through 2017	Operational Risk	
A. Current	3	2	2	3	3
B. Full	1	4	4	1	2
C. Middle	2	3	3	2	1
D. Low	3	1	1	4	4
	1 = Best 4 = Worst	1 = Lowest 4 = Highest	1 = Lowest 4 = Highest	1 = Least 4 = Most	

** Highlight the major factor that led you to assign rankings 1 and 4. Do not add or average relative rankings.

* With 4 options, we used relative scores from1 to 4. If there were more or less options, use relative scores from 1 to the number of options considered.

Additional Factors to Consider

Flag Button

The following additional factors should be considered in assessing the options:

1. _____
2. _____
3. _____
4. _____
5. _____

Potential Assessment Challenges

Flag Button

Following are some potential challenges associated with developing mission area assessments and proposed capability planning options:

1. _____
2. _____
3. _____
4. _____
5. _____

Block 3 Seminar – Outcome

Flag Button

Senior Leader Review Group:

- Endorsed the assessment results
- ***Identified a preferred and a next best option for each issue***

Work Group	Mission Area	Capability Assessment Area	Options Selected by Senior Review Group
A	Internal Security	Ground Combat and Amphibious Warfare (Maneuver)	**Option B** (Preferred) Option C (Next Best)
B	Territorial Defense	Maritime Surveillance and Interdiction	**Option B** (Preferred) Option D (Next Best)
C	National Development	Reconstruction	**Option D** (Preferred) Option C (Next Best)

Block 3 Seminar – Outcome (cont'd)

Flag Button

Senior Leader Review Group also tasked the Joint Staff to:

- Present a proposed ***rank ordered and integrated list of capability planning options*** at the next review
- ***Consider the following factors, as a minimum***, in developing that list:
  - Cost
  - Operational effectiveness
  - Risk

Mission Area Assessments and Capability Planning Options

Block 3 Interactive Seminar

Seminar Materials for Participants

(See following pages)

Recently, the MoD forwarded a memorandum to the CHoD summarizing an assessment of the medium-term Defense Program for 2011 – 2016 (i.e., the previous FYDP). The memorandum highlighted the status of the RoX Armed Forces and defense establishment and the challenges and risks inherent in the fiscally constrained defense program.

As the start point of the new Capability Planning cycle, and in accordance with the agreed upon mission area assessment work plan, workgroups began analyzing the capability assessment areas of each mission area. The workgroups also developed capability planning options that are consistent with the guidance provided by the MoD – CHoD as a result of the Strategic Planning process. When these options are finalized they will provide the basis for developing the Capability Planning Proposals forwarded for senior leader consideration.

Each workgroup has now completed its initial analysis. The emerging results of each effort, which are to be reviewed by the Senior Review Group next week, are summarized in the attached memoranda to the Head of the Review Group from the chair of each workgroup.

The task of each workgroup now is to rank order the options developed and present those findings to the Senior Review Group with an accompanying rationale.

Republic of X Work Group A (RoX WG A)

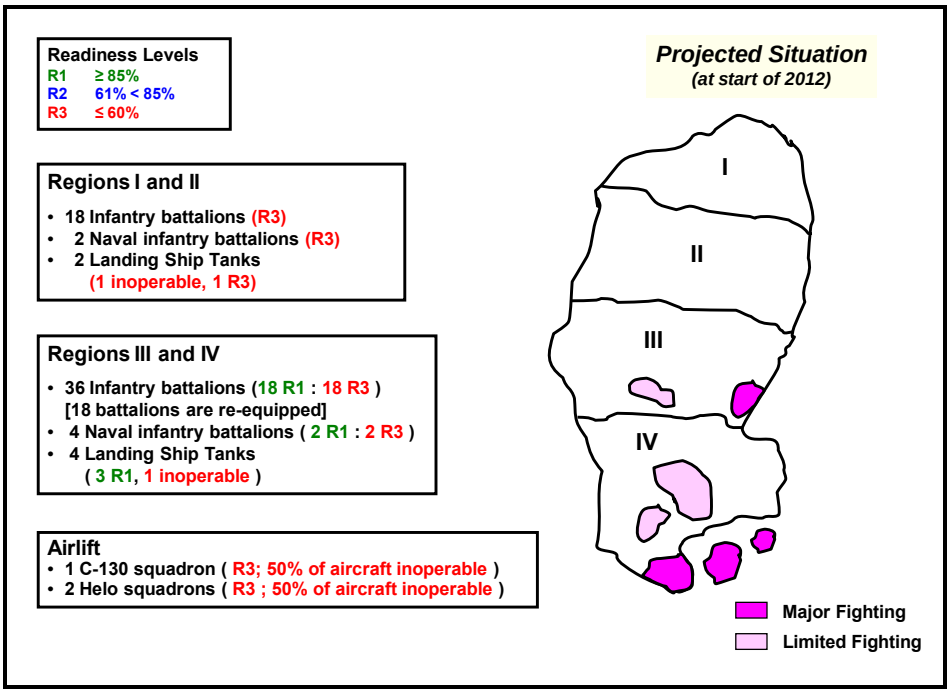
From: **Chair, Work Group A**

To: **Chief of Defense**

Subject: **Initial Analyses of Ground Combat and Amphibious Warfare (Maneuver)**

With regard to land units, current capabilities are inadequate because of the low readiness of units assigned to Regions III and IV. The key modernization project for land units is the Army's Capability Upgrade Program for re-equipping infantry battalions and bringing them to full personnel and equipment fills. Under the current program, 33 of 54 battalions will be upgraded by 2017.

With regard to naval and air forces, the primary capability shortcoming is lift. The current program lacks funding to repair and return to service C-130 aircraft and Landing Ship Tanks. In addition, air and naval lift units are generally at low readiness levels.

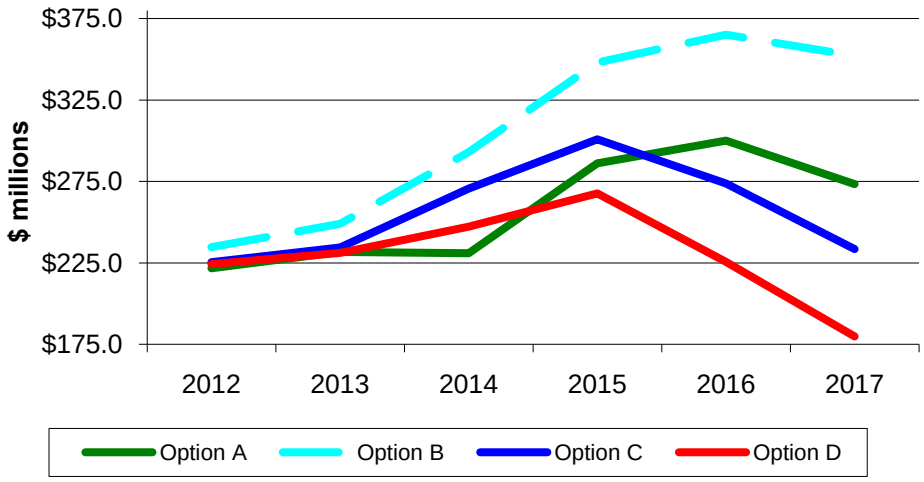


Status of Forces Beginning 2012

Increasing lift capacity would permit formation of Army rapid reaction units and enhance the utility of naval infantry battalions. Such improved mobility might permit reductions in the total number of ground maneuver battalions if the remaining units are raised to high readiness levels. The following options have been developed to explore that tradeoff, and to evaluate the costs.

Capability Options: Results at End of 2017

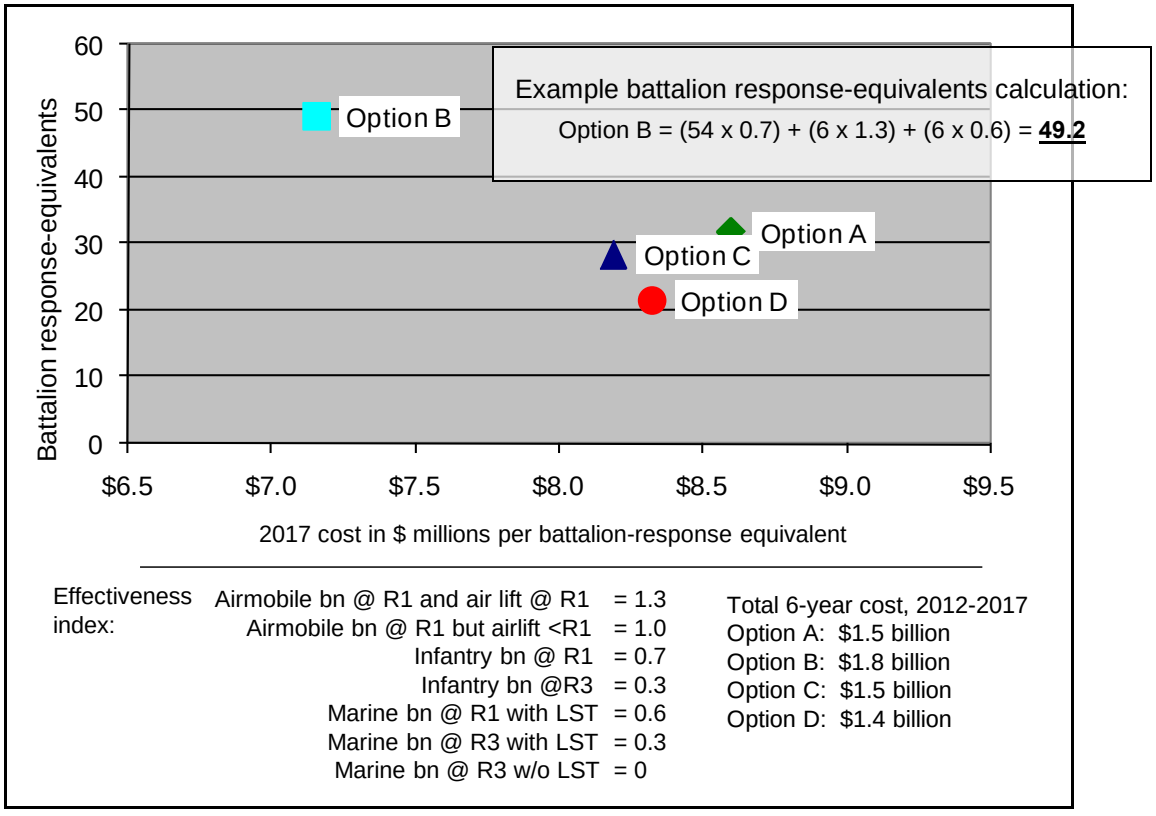
Option	Infantry battalions	Brigades and divisions	Airmobile battalions	Naval infantry battalions	Landing Ship Tanks	C-130s	Helicopter squadrons
A (current plan)	54 33 upgraded @ R1 21 @ R3	All @ R3	0	6 4 @ R1 2 @ R3	4 operational @ R1 2 inoperable 1 overhaul	5 operational @ R3 1 inoperable 2 overhauls	2 @ R3
B	54 upgraded @ R1	All @ R1	6 @ R1	6 @ R1	6 operational @ R1 3 overhauls	6 operational @ R1 3 overhauls	2 @ R1
C	30 24 upgraded @ R1 6 @ R3	Regions I & II @ R3 Regions III & IV @ R1	6 @ R1	4 3 @ R1 1 @ R3	4 operational @ R1 2 inoperable 1 overhaul	6 operational @ R2 3 overhauls	2 @ R1
D	24 18 upgraded @ R1 6 @ R3	Regions I & II @ R3 Regions III & IV @ R1	6 @ R1	2 @ R1	2 operational @ R1 4 inoperable	6 operational @ R2 3 overhauls	2 @ R1



Cost of Options, 2012-2017

R1: Fully Mission Capable; R2: Mission Capable; R3: Partly Mission Capable

Options C and D are less expensive than the others, due to the much smaller force structure they contain. To evaluate the relative cost-effectiveness of the options, we constructed a measurement of the response capability of the ground and Marine units[1] in each option. Response capability is a function of the responding unit's readiness and the availability and readiness of supporting air- and sealift. The measurement is based on a calculation of how far a battalion can move a company-sized reaction force in one day. The results are summarized below. They show that Option B has the greatest response capability by a large margin. This means that Option B has the lowest military risk in terms of being able to (1) successfully conclude counterinsurgency operations by the end of 2014, and (2) maintain a rapid response capability to deter renewed fighting once a peace settlement is agreed.



Cost-Effectiveness of Options

Measured in terms of response capability, Option D has the least capability and Option B the most. This is not surprising in that Option D has the smallest number of ground units, while Option B has the largest.

[1] This measure illustrates, in simple terms, an assessment method. This is not the only measure that could be used. Other measures may be more appropriate.

- Options A, C, and D have less capability than Option B (due to their smaller force structure). Option B has the lowest cost per battalion equivalent of response capability, and Option C has the next lowest.
- Option C is the best choice if the risk of a substantially smaller force structure composed of highly ready and very mobile units in Regions III and IV is acceptable.
- Option B has the least risk due to having the greatest response capacity, but its total cost over the six year period is $303 million more than Option C.

Republic of X Work Group B (RoX WG B)

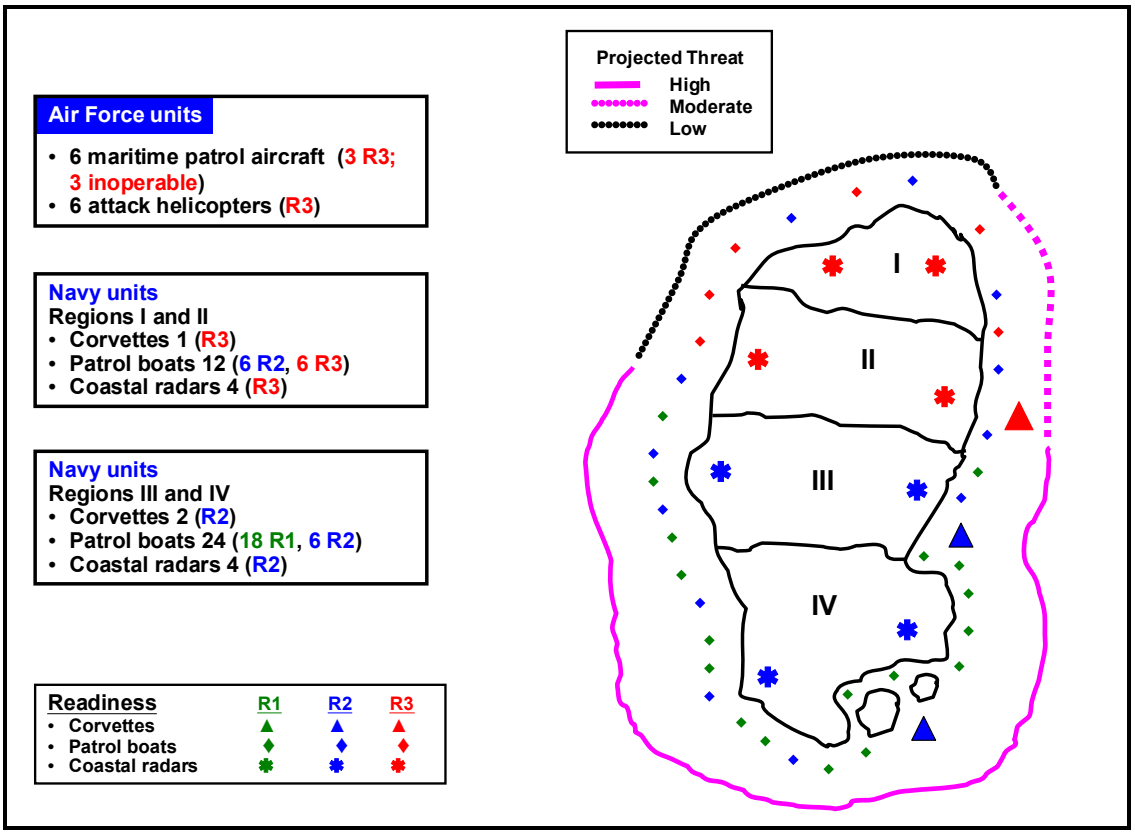
From: **Chair, Work Group B**

To: **Chief of Defense**

Subject: **Initial Analyses of Maritime Surveillance and Interdiction Capabilities**

In the National Security Strategy and National Military Strategy, maritime surveillance and interdiction capabilities have a lower priority than internal security operations over the mid-term period. The importance of these capabilities, however, is expected to increase over the longer-term.

Capabilities in this mission area under the previous administration's multi-year program were low, primarily due to low unit readiness and the slow pace of modernization. The chart below shows the projected status of units under the old plan at the start of 2012.



Status of Forces Beginning 2012

The previous administration hoped that regional collaboration would reduce the need for indigenous maritime capability, so the existing multi-year capability plan calls

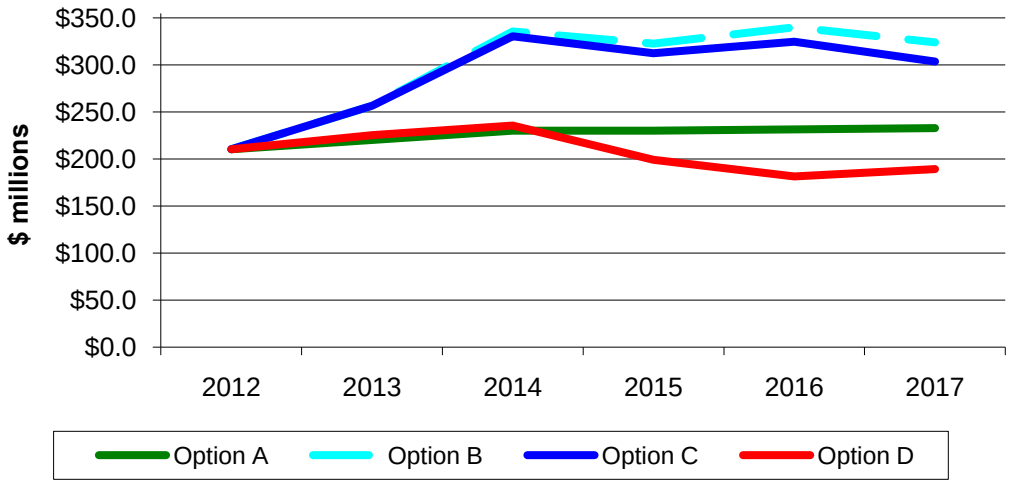
for only modest improvements in unit readiness and modernization. The three additional alternatives show options for different mixes of improvements over the mid-term. A summary of each option is presented in the chart below.

Capability Options: Results at End of 2017

Option	Corvettes	Patrol boats	Radars	Attack helicopters	Maritime patrol aircraft
A (current plan)	3 2 @ R2 1 @ R3	36 18 @ R1 12 @ R2 6 @ R3	8 4 @ R2 4 @ R3	9 @ R3	6 @ R3
B	3 @ R1	36 @ R1	8 @ R1	18 @ R1 9 new helos 1 new sqdn	6 @ R1
C	3 @ R2	36 18 @ R1 18 @ R2	6 4 @ R1 1 @ R2 1 @ R3	18 9 @ R1 9 @ R2 1 new sqdn	6 @ R2
D	2 @ R2	24 18 @ R1 6 @ R3	2 @ R2	9 @ R1	6 @ R2

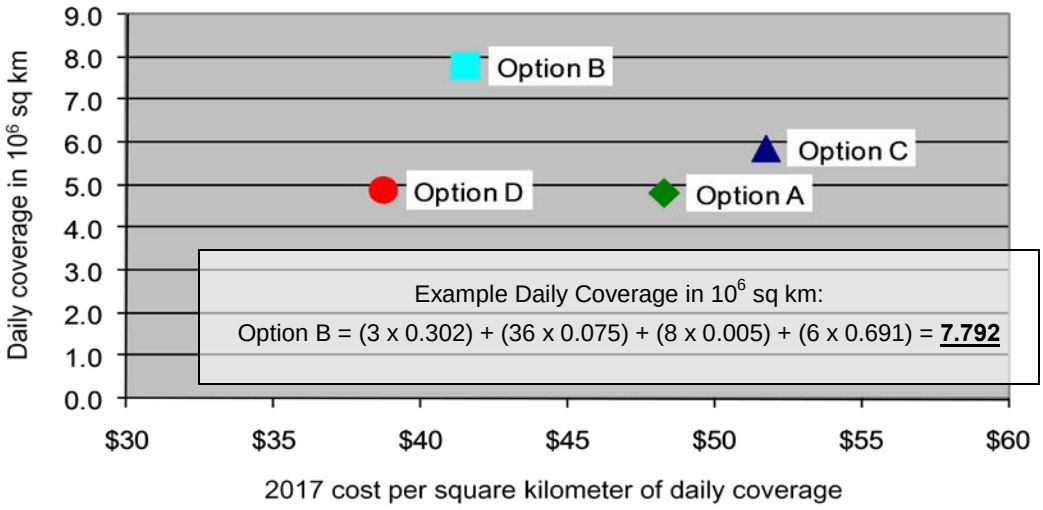
R1: Fully Mission Capable; R2: Mission Capable; R3: Partly Mission Capable

The cost of these options is shown below. Several factors drive the costs. The operating cost of large naval vessels (corvettes) is quite high. The operating cost of multi-engine maritime patrol aircraft is also high. The capital cost of acquiring additional attack helicopters is also high.



Cost of Options, 2012-2017

Because the current threat of illicit maritime activity is low, surveillance capability is more operationally important than interception capability. Accordingly, we evaluated the cost effectiveness of the options primarily in terms of surveillance coverage[2]. (Each option other than A also provides some enhancement of interception capability by increasing the readiness of assets that can be used for interception, principally the corvettes, patrol boats, and attack helicopters.) Surveillance cost-effectiveness is defined as the area scanned by sensors on each platform per day, divided by spending for the mission area in 2017. The resulting metric is the cost in $USD per million square kilometers per day of surveillance coverage. Results are shown below.



Effectiveness index:	Daily coverage by sensors in sq km R1	R2	R3
Corvette	302,000	211,000	136,000
Patrol boats	75,000	53,000	34,000
Radars	5,000	4,000	2,000
Maritime a/c	691,000	484,000	311,000

Total 6-year cost, 2012-2017
Option A: $1.4 billion
Option B: $1.8 billion
Option C: $1.7 billion
Option D: $1.2 billion

Cost-Effectiveness of Options

Our preliminary assessment of the options is highlighted below:

- Options B and D are more cost-effective than the others using this measure of effectiveness. And Option D costs $548 million less over the six-year period than Option B.

[2] This measure illustrates, in simple terms, an assessment method. This is not the only measure that could be used. Other measures may be more appropriate.

- But Option D also has nearly 40% less daily coverage area than Option B and only three-quarters of the interception assets. So Option D has greater operational risk than Option B.

Republic of X Work Group C (RoX WG C)

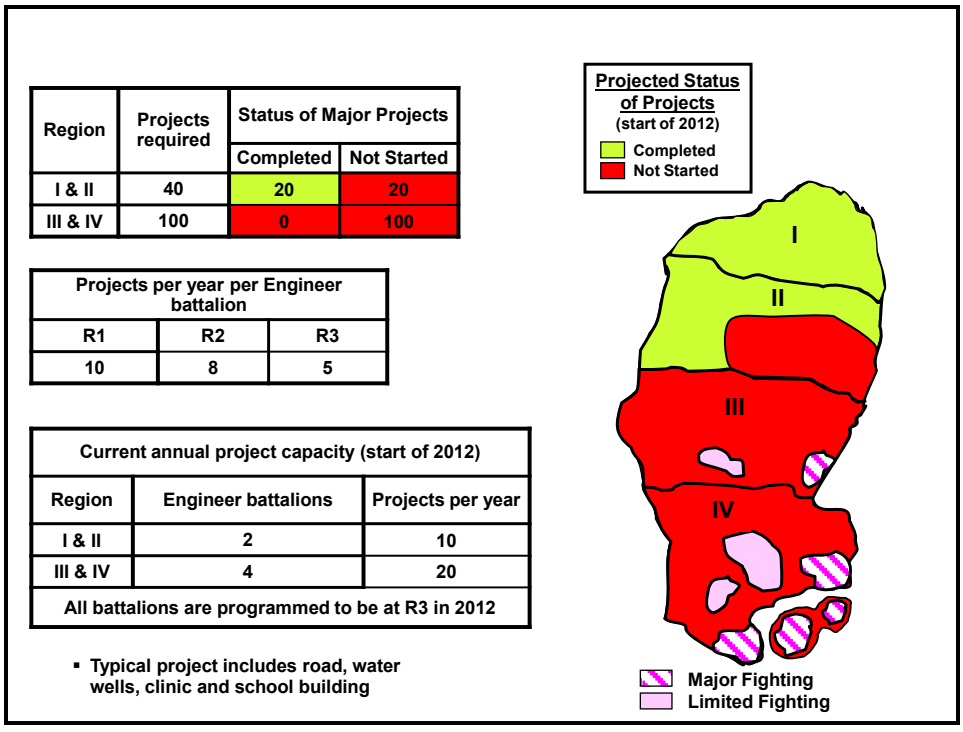
From: **Chair, Work Group C**

To: **Chief of Defense**

Subject: **Initial Analyses of the National Development Program (Reconstruction)**

The concept of the NDP is to construct improvements in rural villages to improve economic conditions and thereby reduce support for terrorists and insurgents. The NDP is part of the "whole of government" approach to internal security. The Ministry of Defense is responsible for development projects in areas where the security situation does not permit civilian agencies to operate.

Overall, the military has been given responsibility for completing 140 projects: 40 in Regions I and II, 100 in Regions III and IV. Progress has been slow, as shown below.



Region	Projects required	Status of Major Projects	
		Completed	Not Started
I & II	40	20	20
III & IV	100	0	100

Projects per year per Engineer battalion		
R1	R2	R3
10	8	5

Current annual project capacity (start of 2012)		
Region	Engineer battalions	Projects per year
I & II	2	10
III & IV	4	20
All battalions are programmed to be at R3 in 2012		

- Typical project includes road, water wells, clinic and school building

Projected Status of NDP Projects at Beginning of 2012

Ideally, the pace of NDP construction projects should be matched to military operations. Our campaign strategy calls for successfully concluding counterinsurgency operations in Regions III and IV by 2014. The current multi-year program, however, will not complete the NDP until 2021. Inadequate funding is the chief problem: we do not have enough funding for the projects themselves or to increase the readiness of the engineer units. (Readiness of engineer units determines the number of projects each battalion can

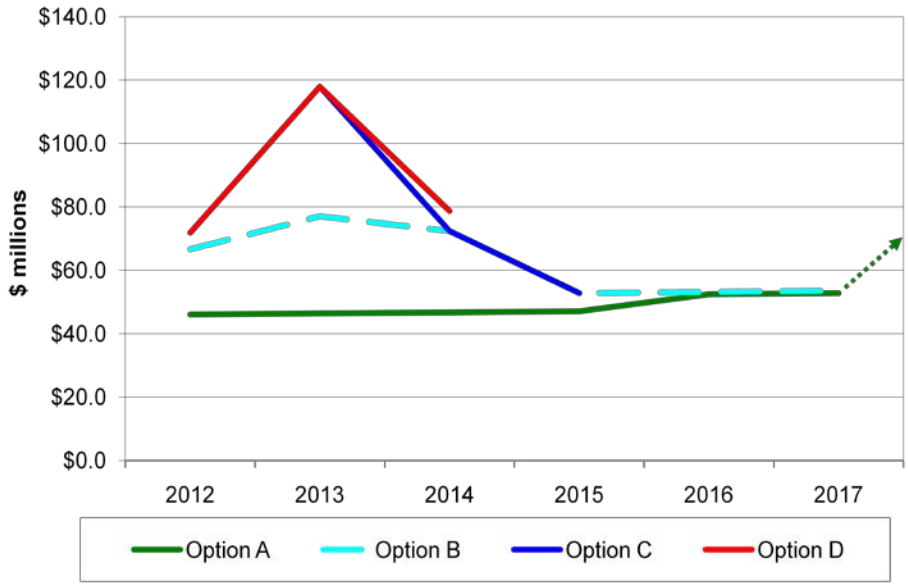
complete in one year.) Options have been developed that would speed completion of NDP projects. Details and costs are summarized below.

National Development Program (NDP) Capability Options

- Option A (current program)
  - Engineers are at R3
  - Completes all projects in Regions I & II by 2015
  - Complete all projects in Regions III & IV in 2021
  - Cost: **$ 292 million** through **2017**; **$ 267 million more** through 2021
- Option B
  - Engineers are at R3
  - Completes all projects in Regions I & II by 2015
  - Completes all projects in Regions III & IV in 2017
  - Cost: **$ 376 million** through **2017**
- Option C
  - Completes all projects in Regions I & II by 2015
  - Increase Engineers in Regions III & IV to R1 effective 2012
  - Completes all projects in Regions III & IV in 2015
  - Cost: **$ 315 million** through **2015**
- Option D
  - Completes all projects in Regions I & II in 2013
  - Increase Engineers in Regions III & IV to R1 effective 2012
  - Completes all projects in Regions III & IV in 2014
  - Cost: **$ 269 million** through **2015**

Option A, the approved 2011 – 2016 Defense Program, maintains readiness of engineering units at low levels (R3), and funds construction projects at a lower building rate than would have been possible even at those low readiness levels. Option B accelerates construction to the limit of engineer capacity at the R3 level. Option C increases engineer readiness substantially (to R1) effective in 2013, and ramps up the number of projects initiated each year starting in 2013. Option D is the same as Option C except that Option D also accelerates construction in 2012 to the extent possible with engineers still at R3 in that year.

The cost of each option is shown in the chart on the next page. Note that the cost of Option A continues through 2021, when the last project is completed. In making the cost estimate, the assumption has been made that the cost of engineering support ceases when the final project is completed. At that point, the engineering units could be reassigned to other functions, or deactivated if there is no other requirement for them.

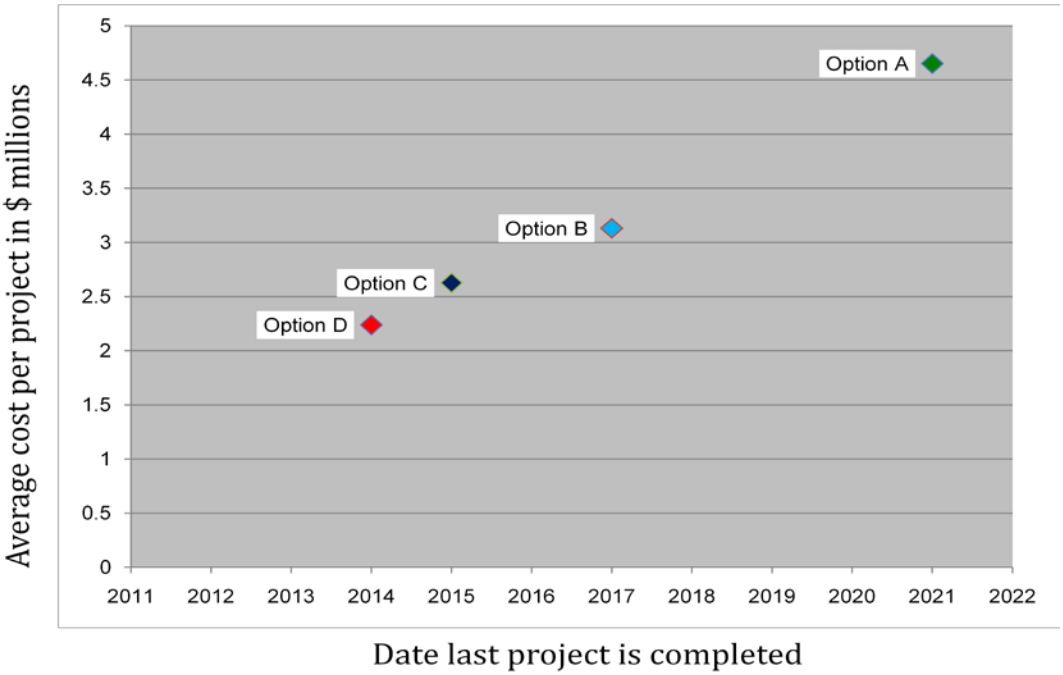


Option A requires $ 267 million additional funding 2018-2021 to complete

Note: includes cost of engineer battalions ***only*** while they are assigned to construction duties

Cost of NDP Capability Options

The average cost per project under each option is shown in the next graph. The difference results chiefly from the assumption that engineers will be deployed to other duties once construction is completed and thus no longer represent a "charge" against the national development capability area.



Average Cost per Project

Block 4 [Lesson 4]:
Prioritizing Recommended Capability Planning Proposals

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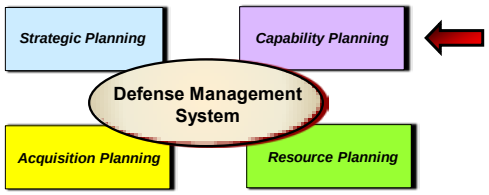
Block 4

Prioritizing Recommended Capability Planning Proposals

(180 minutes)



Capability Planning Situation

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- At this point, each workgroup has completed and presented analysis of its assigned capability area
- The Senior Review Group:
  - Approved mission area assessment findings
  - Provided preferred and next best options for each capability planning proposal and expressed these concerns:
    - Preferred options are low risk, but
    - Costs may not be affordable
    - Need to explore tradeoffs between costs and risks
- We must now integrate the decisions concerning the other workgroups and recommend a combined way forward

Outline

Flag Button

- Interactive Seminar — **135 minutes**
  - Situation and Task (30 minutes)
  - Workgroup Discussions (105 minutes)
- Workgroup Briefings — **30 minutes**
- Wrap-up Discussion — **15 minutes**

Estimated Cost of Options

Flag Button

($ Millions)

Capability Area	Options	2012	2013	2014	2015	2016	2017	Total
Ground Combat and Amphibious Warfare (Maneuver)	Preferred Option B	$235	$249	$293	$348	$365	$352	$1,842
	Next Best Option C	$225	$234	$271	$301	$274	$233	$1,538
Maritime Surveillance and Interdiction	Preferred Option B	$211	$257	$336	$323	$340	$324	$1,789
	Next Best Option D	$211	$225	$236	$199	$181	$190	$1,242
National Development Plan (Reconstruction)	Preferred Option D	$ 72	$ 118	$ 79	$ 0	$ 0	$ 0	$ 269
	Next Best Option C	$ 67	$ 77	$ 72	$ 53	$ 53	$ 54	$315
TOTAL COST								
Preferred Options		$518	$624	$708	$671	$705	$676	$3,902
Second Best Options		$503	$536	$579	$553	$508	$477	$3,156

SRG Guidance to Workgroup

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- SRG directed the integration workgroup use the following four step process to develop an integrated list:
  1. Identify the ***estimated costs*** of:
     - All the preferred options together as a package
     - All the next best options together as a package
  2. Assess the potential ***risks*** of each package
  3. With that as a baseline, develop an ***integrated options package*** (using either the preferred or next best options from each workgroup)
  4. In finalizing your proposed way forward, revisit previously stated mission area assessments
     - Does your proposed way forward place proper emphasis on resourcing our most important challenges?

Block 4 Seminar

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- **Role**: You are a member of the group developing the integrated list of capability planning options
- **Seminar Materials**
  - Advance reading and seminar materials from Blocks 2 and 3
  - Preferred and next best cost option estimates

Block 4 Seminar Task

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- Each workgroup has 105 minutes to complete a 15 minute briefing that highlights the consensus regarding:
  - Key features of the group's recommended list
  - What the proposed list does and does not do in terms of the Government's objectives
  - Associated risks
  - Dissenting views
- Use the briefing template provided

Are there any questions?

Block 4 Seminar Briefing Template

Flag Button

Integrated List of Potential Capability Planning Options

Work Group __

Options Summary

Flag Button

Issue	Current Plan *			Preferred Proposals		
	Capability in existing plan	Risk	Cost-effectiveness	Proposed capability	Risk	Cost-effectiveness
Ground Combat and Amphibious Warfare (Maneuver)	32 battalion-response equivalents		$8.6 million per battalion response equivalent			
Maritime Surveillance and Interdiction	5 million sq km coverage daily		$48 per sq km of daily coverage			
National Development (Reconstruction)	Last project completed in 2021		$4.7 million average cost / project			

*** The information shown for the Current Plan extrapolates the approved 2016 program into 2017**

Estimated Cost of Integrated Proposal

Flag Button

P Preferred
NB Next Best

($ Millions)

Integrated Proposal	Option P / NB	2012	2013	2014	2015	2016	2017	TOTALS
Ground Combat and Amphibious Warfare (Maneuver)		$	$	$	$	$	$	$
Maritime Surveillance and Interdiction		$	$	$	$	$	$	$
National Development (Reconstruction)		$	$	$	$	$	$	$
TOTAL COST		$	$	$	$	$	$	$
2012 – 2017 Defense Program*		$480	$495	$502	$557	$577	$562	$3,173

*** Extrapolates the approved 2011-2016 program into 2017. Includes all the resources programmed for these three capability areas.**

Factors Considered

Flag Button

The Working Group considered the following factors in developing its recommendations:

1. _____
2. _____
3. _____
4. _____
5. _____

The two most important factors in developing the recommendations were:

1. _____
2. _____

Points of Contention

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Within the study team there is disagreement on the following points:

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____

Seminar 4 – Outcome

Flag Button

Key stakeholders met and:

- Endorsed the decisions on the next slide
- The slide also contains a decision from a **fire support** capability assessment for Internal Security operations
  - A fourth workgroup, simulated by your facilitators, conducted this assessment
  - The analysis showed that non-materiel approaches were insufficient to fill the estimated capability gap
  - The Minister of Defense directed further study to include materiel approaches to close the remaining capability gap (see next slide). We will examine this further in Acquisition Planning (Blocks 5 through 7)

Minister's Decisions

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Work Group	Mission Area	Capability Assessment Area	Options Selected by Senior Review Group
A	Internal Security	Ground Combat and Amphibious Warfare (Maneuver)	Option B (Preferred) Option C (Next Best)
B	Territorial Defense	Maritime Surveillance and Interdiction	Option B (Preferred) Option D (Next Best)
C	National Development	Reconstruction	Option D (Preferred) Option C (Next Best)
D (facilitators)	Internal Security	Ground Combat and Amphibious Warfare (Fire Support)	Option B (Preferred)* Option A (Next Best)

* Increases readiness of all artillery and mortar units to R1 (partially closes capability gap). Minister also directed further study of materiel approaches to close he remaining capability gap (see next slide).

Initial Indirect Fire Support Capability Assessment

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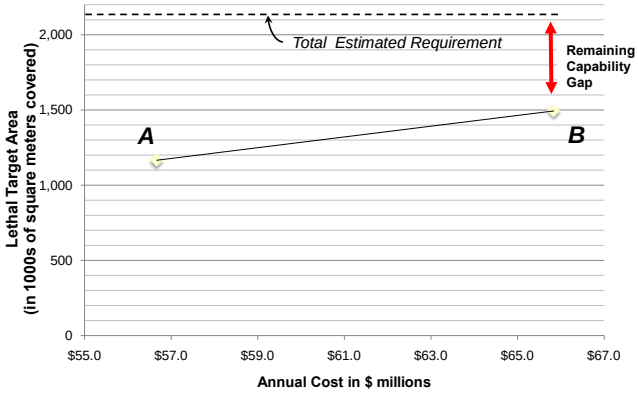


Cost vs Lethal Square Meters Covered*

* An illustrative measure of firepower (see block 5, slide 12)

Option A is the estimated indirect fire support capability (towed artillery and mortar units) available to forces deployed for internal security in the south, funded as planned at the R3 readiness level through the next 6 years.

Option B increases artillery and mortar unit readiness for these same units from R3 to R1

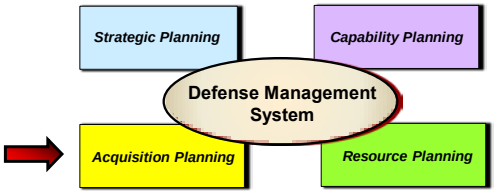
Option	Annual operations ($ millions)	Total Area Covered (1000s of Square Meters)
A	$56.7	1167
B	$65.8	1494

Block 5 [Lesson 5]:
"First Pass" Assessing Potential Acquisition Approaches

Block 5

"First Pass" Assessing Potential Acquisition Approaches

(225 minutes)



Organization of Blocks 5, 6, and 7

- Blocks 5, 6 and 7 cover acquisition planning
- Block 5 shows how to:
  - Address materiel approaches approved for further study
  - Identify the most promising approaches
- Block 6 shows how to:
  - Address the preferred materiel approaches
  - Analyze alternatives that could meet the operational need
  - Develop key performance parameters that address the operational need and facilitate competition among potential suppliers
- Block 7 shows how to:
  - Evaluate contractor proposals
  - Integrate and prioritize acquisition planning bid proposals

Acquisition Planning

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The Acquisition Planning process in the RoX has three components

- "First Pass" assessment
  - What are the most promising materiel ***approaches*** for addressing the capability shortfall (gap)? — ***Block 5***
- "Second Pass" assessment
  - What ***alternatives*** are available?
  - Which alternative best meets the capability shortfall?
  - What measures should be used to evaluate contractor bids of preferred alternative ***systems*** — ***Block 6***
- Bid Evaluation (part of Procurement and Contracting)
  - Which provider offers the most effective ***system*** at the best price? — ***Block 7***

Important Definitions

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- **Acquisition Planning**: A deliberate process that entails assessing potential materiel approaches and alternatives; and developing affordable acquisition proposals that meet broadly stated operational needs in a timely manner and at a reasonable price
- **Approach**: A broad materiel category that could provide a desired capability
- **Alternative**: A specific system type that can provide the desired capability or potentially meet the operational need
- **Procurement and Contracting**: The process for providing materiel specifications to potential providers; soliciting and evaluating contract proposals; and the award of contract for the delivery of defense materiel and services

Outline

Flag Button

- Key Concepts, Products, and Important Linkages — **30 minutes**
- Interactive Seminar — **135 minutes**
  - Situation and Task (25 minutes)
  - Workgroup Discussions (110 minutes)
- Workgroup Briefings — **45 minutes**
- Wrap-up Discussion — **15 minutes**

Planning Process Summary

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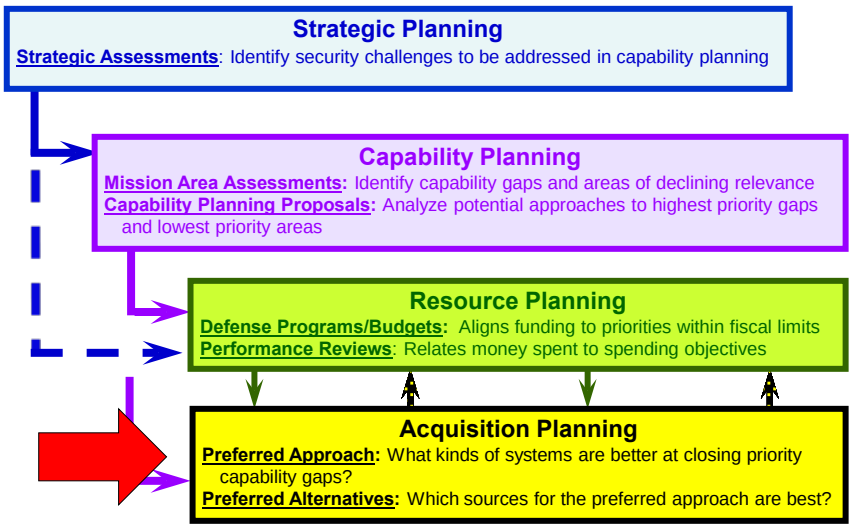

Acquisition Decision-Making

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- In many countries **acquisition planning** and **procurement and contracting** are treated as separate processes but these are closely related
  - In the RoX, **Acquisition planning process** includes specification of key performance parameters which are typically used to evaluate bids
  - **Procurement and Contracting process** typically includes as an initial step the evaluation of bids with regard to performance, schedule, and price
- Both are included in this seminar to show their interrelationship

Acquisition Planning Process

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- Addresses ***materiel approaches approved for further study*** resulting from an MoD directed Capability Planning Proposal that demonstrated non-materiel approaches were insufficient
- Develops fiscally realistic materiel proposals (approaches and then alternatives) for senior leader decisions using:
  - ***"First Pass" and "Second Pass" techniques***
  - ***Funding information provided by Resource Planning process***
- Develops ***Bid and Evaluation Plans*** for MoD approved alternatives with assistance from Procurement and Contracting staffs

Procurement & Contracting Process

Flag Button

- Issues invitations to bid, evaluates bids, and administers contracts complying with:
  - Laws
  - Implementing Rules and Regulations
- Executes ***Bid and Evaluation Plans*** (BEPs)
  - Establishes how the MoD approved, procurement action will proceed
    - Dates for requesting and receiving bids
    - Evaluation period
    - Decision points
  - Ensures bids are received that contain the desired system characteristics on performance, cost, and delivery schedule
  - Provides a fair and open basis to review and evaluate bids

"First Pass" Analysis

Flag Button

- Assesses ***relative merits*** for MoD approved ***approaches*** for further study from the Capability Planning process
- Identifies ***most promising*** approach(es) after considering:
  - ***Effectiveness*** (is capability improved in the intended operational context?)
  - ***Cost Estimates*** (is the price reasonable?)
  - ***Affordability*** (does the approach cost too much?)
- Senior leader decisions are documented in ***Acquisition Planning Memorandum***

Key Points

Flag Button

- Candidate approaches (referenced in Capability Planning Proposals) address capability gaps
- Among the possible approaches, the materiel approaches are carried into acquisition planning only after determining that non-materiel approaches cannot satisfy the documented capability gap
- Our immediate objectives in acquisition planning are:
  - To evaluate the relative merits of the proposed materiel approaches
  - To decide which approach is most promising

Cost is important. How should cost be considered?

Estimating Life Cycle Cost (LCC)

Flag Button

- The government's total cost over a program's full life
- Generally, four categories of costs
  - Research, development, test and evaluation *(if appropriate)*
  - Investment *(all procurement accounts and construction)*
  - Operating and Support *(personnel, training, parts, etc)*
    - *Over a system's life can be much more than investment costs*
    - *Must be programmed and funded in future budgets to achieve the desired capability—easily overlooked*
  - Disposal/Retirement *(if appropriate)*

Which approach provides the needed operational capability at affordable costs?

Illustrative Life Cycle Cost Distributions
(for Aircraft Systems)

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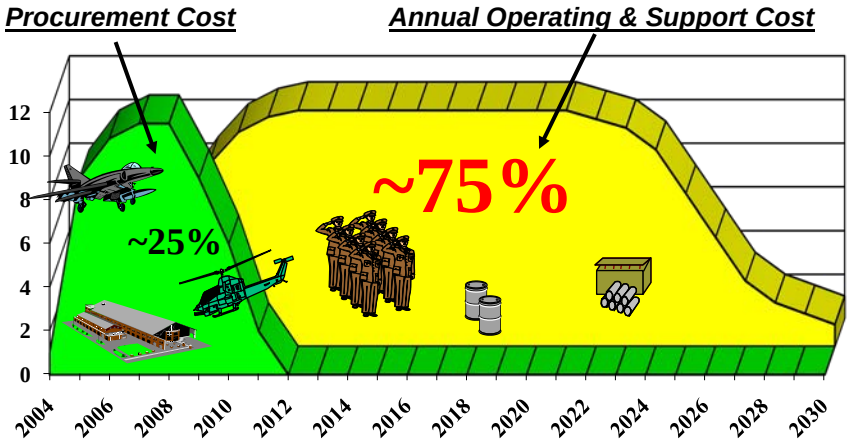

Some Acquisition Decision Questions

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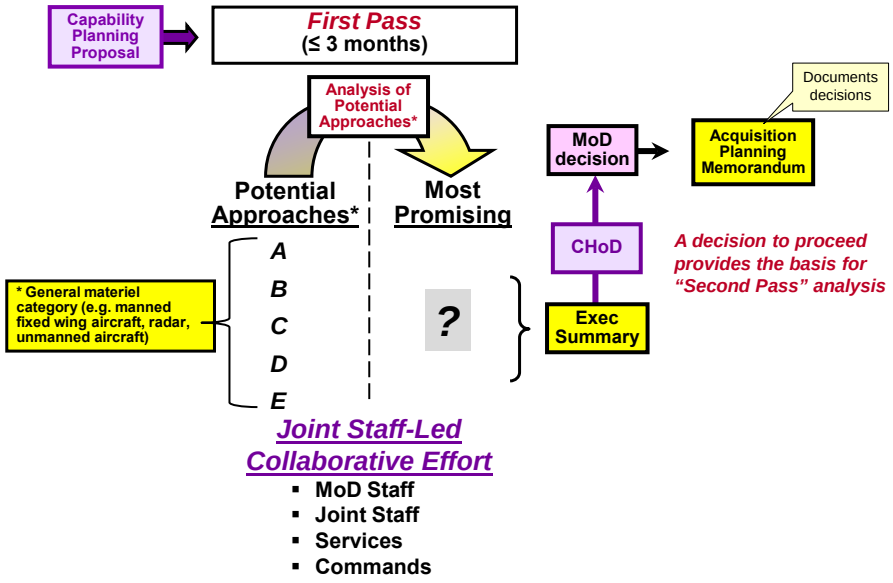
- What capabilities do we need to invest in? — **Capability Planning**
- Among materiel approaches and alternatives, what are the most promising approaches and alternatives to gain those capabilities? — **Acquisition Planning**
  - Which alternative is the least expensive, considering all costs of ownership? — ***Life Cycle Cost***
  - Will future budgets be adequate to pay for the required number of systems and the recurring operation and support costs? — ***Affordability***
  - Can we afford the system in question as well as all of our other commitments and plans? — ***Affordability***

Process and Products



"First Pass" Analysis in Brief

- Objective of the "First Pass" is to:
  - Assess the ***relative merits*** of the approaches selected from Capability Planning for further study
  - Discover the ***most promising*** approach(s) considering:
    - ***Effectiveness (operational factors)***
    - ***Cost Estimates***
    - ***Affordability***
- Provide summary results for senior leader review
- Document senior leader decisions

Situation

Flag Button

- Carrying over from Block 4, we provided an assessment memorandum (see Block 4 Outcome, Initial Fire Support Capability Analysis) that investigated a ***fire support capability gap***.
- The ***Capability Gap*** identified was:
  - ***Quickly improve capability to provide fire support to forces engaged in fighting insurgents operating in mountainous and jungle terrain in day/night and all weather conditions***
- A Joint Staff working group gathered a considerable amount of information to support the "First Pass" assessment of four (4) potential materiel approaches identified in the MoD-approved Fire Support Capability [Gap] Planning Proposal

Acquisition Planning Process Seminar

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"First Pass" Assessment of Fire Support Capability Planning Approaches

Block 5 Seminar

Flag Button

- **Role**: You are a member of the Joint Staff work group conducting the "First Pass" assessment of the five potential materiel approaches for improving ***fire support capability***
- **Seminar Materials**
  - Advance reading
  - Initial Fire Support Capability Analysis Results (Block 4 Outcome)
  - Staff developed estimates and assessment (highlighted on next two charts)

Staff Developed Estimates

Flag Button

Approach	Units Req'd	Systems Req'd	Projected Costs ($US Millions)		Projected Dates (months from now)	
			New Procurement	LCC (20 yr)	Equipment Received	1st Unit Operational
Fighters	1 – 2 Squadrons	8 – 16	333 – 667	3,900 – 4,860	36 – 48 mo	48 – 60 mo
Assault Helicopters	4 – 8 Squadrons	40 – 80	240 – 480	3,080 – 4,840	24 – 36 mo	36 – 48 mo
Towed Artillery	1 – 3 Battalions	29 – 61	6 – 13	1,360 – 1,410	12 – 24 mo	24 – 36 mo
Mortars	15 – 30 Platoons	44 – 87	5 – 9	1,320 – 1,360	12 – 24 mo	24 – 36 mo
Frigates*			500	2,500	48 – 60 mo	60 – 72 mo

*** Not considered effective for stated operational need—eliminated from further study**

Rationale: Using frigates to provide fire support for land forces can be problematic. While frigates have heavy-caliber guns and high rates-of-fire that can generate a large lethal barrage, frigates can only fire into land areas close to coastlines. Further, their fires are not well suited for close support in jungle and mountainous terrains. Frigates have tremendous capabilities and are well suited to meet many other needs. However, based solely from the perspective of this capability need, frigates will no longer be considered as a potential approach.

Staff Developed Assessment

Flag Button

Approach	Operational Employment Considerations						
	Response Time		Range	Day – Night Ops	All Weather Ops	Fire Support Coordination Challenge	
Fighters	Variable	minutes – days	NA	YES	NO	Multi-Service	Major
Assault Helicopters	Variable	minutes – hours	NA	YES	NO	Multi-Service	Major
Towed Artillery	Rapid	seconds – minutes	Long	YES	YES	Service	Minor
Mortars	Rapid	seconds – hours	Short	YES	YES	Unit	Minor

Block 5 Seminar Task

Flag Button

- Each workgroup has 110 minutes to:
  - Analyze the staff developed estimates and assessment provided (previous 2 charts)
  - Complete a 10-15 minute briefing that highlights the consensus regarding:
    - The two most promising approaches based on the information provided
    - Other analytical factors to consider
    - Other organizations to include in this assessment
  - Include dissenting views
- Use the briefing template provided

Are there any questions?

Flag Button

"First Pass" Assessment of Fire Support Capability Planning Approaches

Work Group __

Comparative Analysis Matrix

Flag Button

Approach	Major Advantages	Major Disadvantages
Fighters		
Assault Helicopters		
Towed Artillery		
Mortars		

Comparative Analysis Matrix

Flag Button

Approach	Relative Ranking (1 – 4)				Overall Relative Ranking (1 – 4)*
	Capability Provided	Support-ability	Affordability	Other (Specify)	
Fighters					
Assault Helicopters					
Towed Artillery					
Mortars					

1 = Best
4 = Worst

* Highlight the major factor that led you to assign rankings 1 and 4. Do not add or average relative scores

Additional Data and Information

Flag Button

The following additional data and information is needed to determine the most promising approaches:

- A…
- B…
- C…
- etc…

Staff Organization Involvement

Flag Button

The following staff organizations and offices should be involved in this assessment:

Staff Organization	Office

Major Concerns with Proposal

Flag Button

The following major concerns exist with regard to the consensus view presented:

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____

Block 5 Seminar – Outcome

Flag Button

- The Joint Staff submitted a draft Acquisition Planning Memorandum (APM) to the MoD that included "First Pass" assessment results
- After consulting stakeholders, the MoD approved the APM
- The signed APM directed a "Second Pass" assessment of:
  - **Towed Artillery** (consider between 29 and 61* new systems)
  - **Dismounted Mortars** (consider between 44 and 87* new systems)

* Upper limit using current force structure. Adding more would require creating additional units not currently planned or programmed

Minister's Guidance

Flag Button

Objective is to improve, as rapidly as possible, the capability ***to provide fire support to forces engaged in fighting insurgents operating in mountainous and jungle terrain in day/night and all weather conditions***. In this regard:

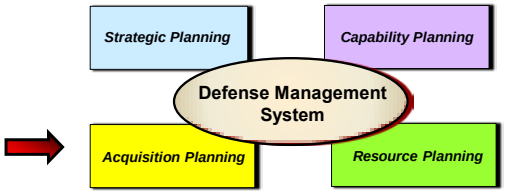
- Assess the potential **towed artillery** and **dismounted mortar** alternatives readily available from international sources
- Develop an invitation to bid, meeting our critical operational requirements while fostering necessary competition
  - ***Use open source materials and information we have***
  - ***Do not advertise that we are considering this course of action***

Block 6 [Lesson 6]:
"Second Pass" Analysis of Potential Acquisition Alternatives

Block 6

"Second Pass" Analysis of Potential Acquisition Alternatives

(210 minutes)



"Second Pass" Analysis

- Identifies the ***potential materiel alternatives*** that could be pursued, given the "First Pass" decision
- Assesses the ***relative merits*** of the potential materiel alternatives, considering:
  - ***Projected effectiveness*** in intended operational environment
  - ***Cost estimates*** (annual operating, support, and life cycle)
  - ***Potential delivery schedules*** and the ***ability to integrate the equipment into the force***
  - ***Affordability***
- Develops a limited set of ***key performance parameters*** that facilitate competition among potential suppliers of the preferred alternative

Outline

Flag Button

- Key Concepts, Products and Important Linkages — **30 minutes**
- Interactive Seminar — **135 minutes**
  - Situation and Task (45 minutes)
  - Workgroup Discussions (90 minutes)
- Workgroup Briefings — **30 minutes**
- Wrap-up Discussion — **15 minutes**

Key Performance Parameters

Flag Button

Should…

- Be essential and relate directly to the ***desired operational requirement and/or objective***
- Be ***limited*** in number (a few)
- Be ***measurable***
- Consider ***cost-performance tradeoffs***
- Facilitate competition by providing ***ranges of acceptable values***

Cost vs. Performance Tradeoffs

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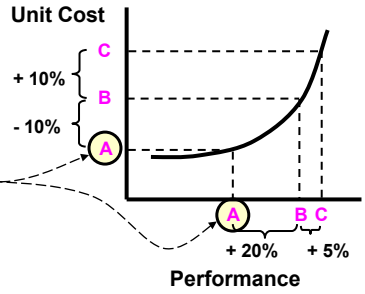
Estimated Costs
105mm Howitzer (Towed)

System	Cost per Unit ($1000)
A	270
B	300
C	330

Cost versus Performance Tradeoffs



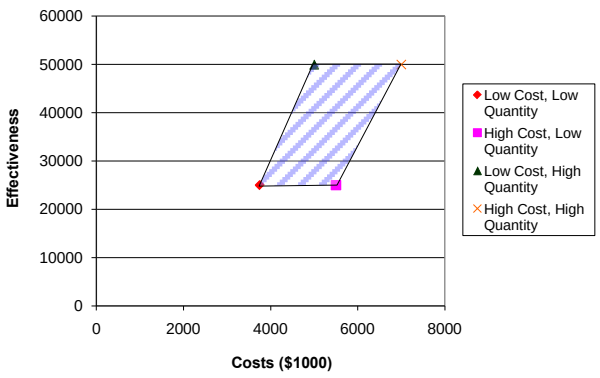
- *How much "performance" do we really need?*
- *If we need B or C, can we afford the quantity we need?*
- *Are our key performance parameters reasonable?*
- *How sure are we of our data? (see next slide for example)*

Sensitivity Analysis Example

Flag Button

1. A low quantity and high quantity are being considered (either 100 or 50)
2. Costs estimates are not completely known and can vary depending on the quantity of the order (results in a cost range at each quantity)
3. Total Effectiveness depends on the quantity ordered

	#	Cost Low	Cost High	Total Cost Low	Total Cost High	Total Effectiveness
High	100	50	70	5000	7000	50000
Low	50	75	110	3750	5500	25000



Key Products

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"Second Pass" process produces…

- Concise ***executive summary*** that:
  - highlights the analysis method and results
  - recommends funding level and source
- Proposed ***Circular of Requirements (COR)***, containing key performance parameters
- Proposed ***Bid and Evaluation Plan (BEP)***

Next chart highlights the intended process and products

Intended Process and Products

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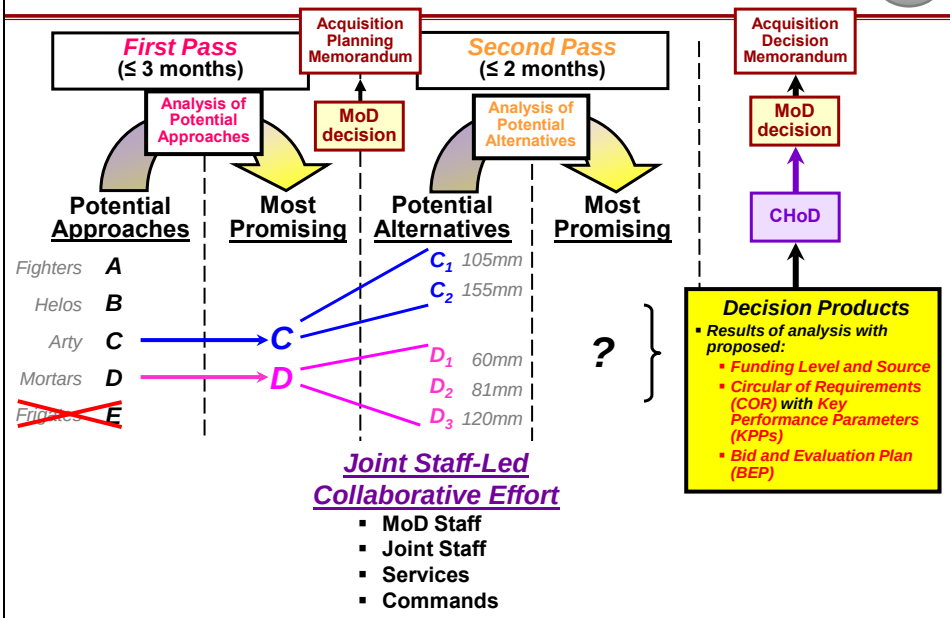

"Second Pass" Analysis in Brief

Flag Button

- Assessment involves both ***capability, acquisition, and procurement – contracting planners***
- Objective of the "Second Pass" is to:
  - Identify and assess potential materiel alternatives and determine the most promising alternative
  - Develop a proposed COR and BEP
  - Identify a proposed funding level and source
- Summarize results for senior leader review
- Document senior leader decisions

Acquisition Planning Process Seminar

Flag Button

Block 6 Interactive Seminar

"Second Pass" Assessment of Potential Fire Support Acquisition Alternatives

Situation

Flag Button

- Joint Staff-led workgroup is finalizing its "Second Pass" assessment of potential alternatives for:
  - Towed Artillery
  - Dismounted Mortars
- Director, Joint Staff will be briefed on the workgroup's results next week

Block 6 Seminar

Flag Button

- **Role**: You are a member of the Joint Staff-led workgroup conducting the "Second Pass" assessment of potential alternatives for Towed Artillery and dismounted mortars
- **Seminar Materials**
  - Advance reading and workgroup materials from Block 5
  - Staff developed assessments of potential alternatives (highlighted on slides 13-18)

Cost : Firepower Comparison of Indirect Fire Systems

Flag Button

Illustrative Methodology

FIREPOWER MEASURE we examined was Lethal Area

Lethal Area is a mathematical function* of:

Lethal radius of each round fired;
The Circular Error Probable (CEP**);
Number of rounds fired in 2 minutes;
A reduction for complex terrain

PROJECT COSTS we examined were:

Procurement Cost = Cost of procuring the required number of systems
Life Cycle Cost = The estimated 20 year cost of procuring, operating, maintaining, supporting, (and disposing) the required number of systems

* For more information about how this area was calculated, see Block 4--Outcome, Fire Support Capability Analysis
** CEP measures a weapon system's accuracy. t is defined as the radius of a circle into which a missile, bomb, or projectile will likely impact at least half of the time at a given range (indirect fire).

Firepower Comparison for Indirect Fire System Alternatives

Flag Button

Effect per Tube	155mm artillery	105mm artillery	120mm mortar	81mm mortar	60mm mortar
Lethal radius per round (m)	50	30	35	25	15
Circular Error Probable (m)	60	40	75	60	30
Rounds in 2 minutes	5	12	35	40	40
Lethal Area (m^2)*	**6756**	**4936**	**7267**	**3378**	**1751**

* For more information about how this area was calculated, see Addendums

Analysis of Potential Alternatives

Procurement Cost Perspective

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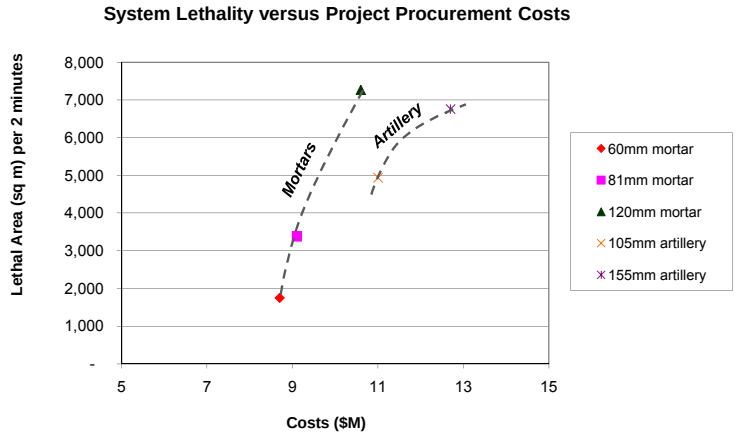

Analysis of Potential Alternatives

Annual Cost Perspective

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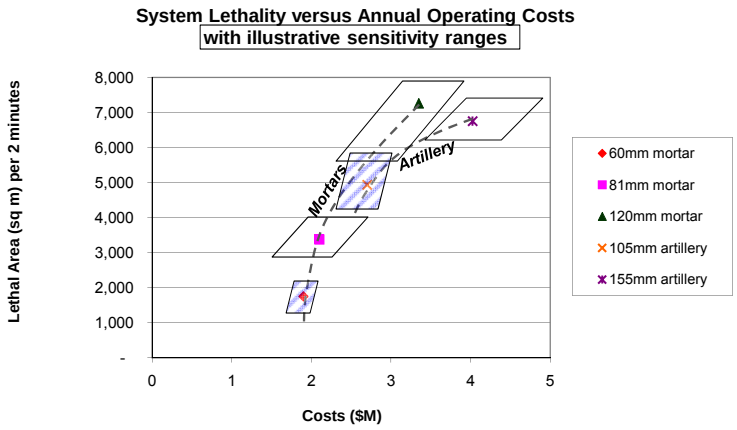


Bottom Line Staff Assessment

Flag Button

- 105mm Artillery (Towed) appears to be the most promising alternative, particularly in terms of Annual Operating Cost-Effectiveness
- Must now determine the key performance parameters to include in an invitation to bid for a 105mm Artillery (Towed) system that complies with the MoD guidance

Data Gathered by the Staff

Flag Button

Illustrative – Data shown are notional

Source	Min – Max Range (Km)	Weight (pounds)	Rates of Fire[3]		CEP @ 10 km (meters)[4]	Emplace/ Displace Time (minutes)	Crew Size	Projectile Weight (pounds)
			Normal (rds/min)	Max (rds/duration)				
A[1, 2]	1 – 20	4,000	3	5 / 3 min	20	2 / 2	4	17
B[1]	0.9 – 18	4,400	3	4 / 2 min	26	2 / 2	5	16
C[1, 2]	0.8 – 22	6,200	3	4 / 2 min	29	3 / 2	4	17.5

NOTES

1. Contract logistic support potential
2. Co-production potential
3. Earlier staff work used an estimate 12 rounds fired in 2 minutes (see slide 14)
4. Earlier staff work used an estimate of 40 meters (see slide 14)

Block 6 Seminar Task

Flag Button

- Each workgroup has 90 minutes to:
  - Analyze the information provided
  - Complete a 15 minute briefing that highlights the consensus regarding:
    - Key performance parameters to include in an invitation to bid, complying with MoD's guidance
    - Additional information – data important to include in the invitation to bid
    - Organizations to involve
    - Dissenting views
- Use the briefing template provided

Are there any questions?

Block 6 Seminar Briefing Template

Flag Button

Block 6 Seminar

Key Performance Parameters for 105mm Artillery (Towed)

Work Group __

Operational Considerations

Flag Button

The following key operational considerations will probably influence the selection of key performance parameters

- A…
- B…
- C…
- etc…

Key Performance Parameters

Flag Button

Include the following key performance parameters in the invitation to bid:

Key Performance Parameter	Recommended Value

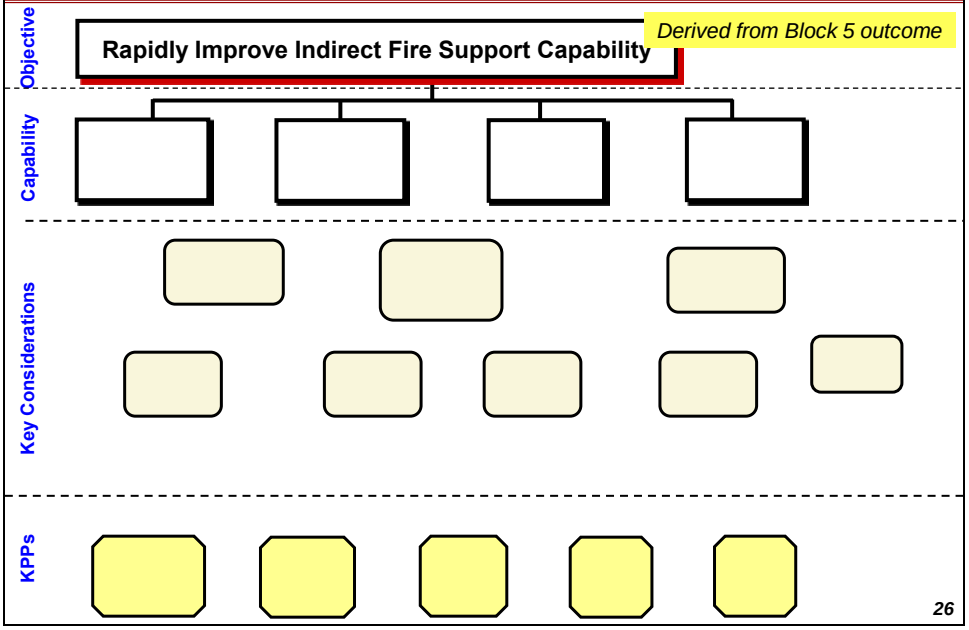
MoD's Guidance (from Block 5)

Flag Button

Objective **is to improve, as rapidly as possible, the capability *to provide fire support while operating against insurgent forces in mountainous and jungle terrain in day/night and all weather conditions***

Illustrative Framework

Flag Button



Situation (from Block 5)

Flag Button

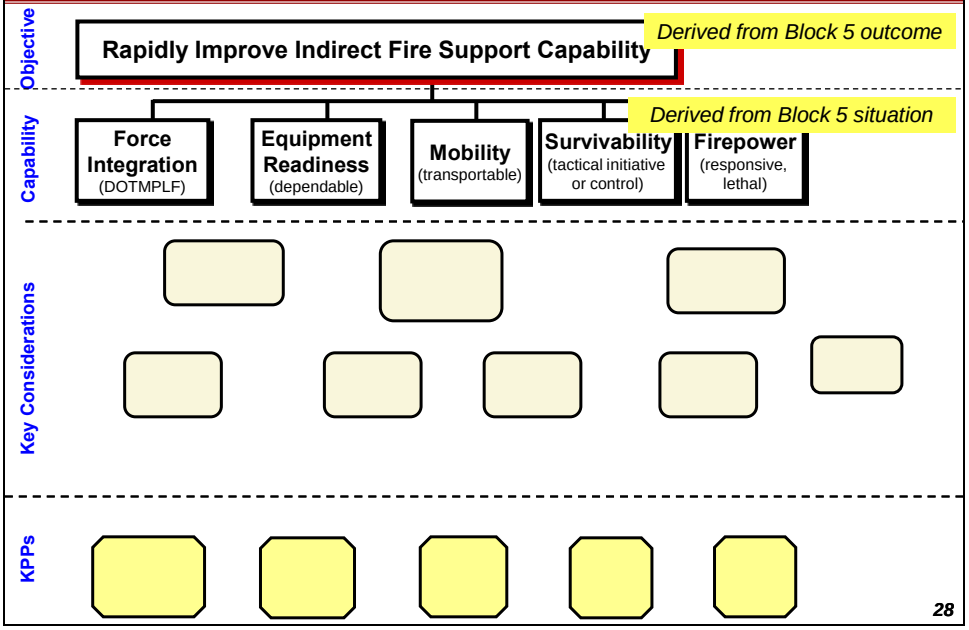
- After an earlier assessment of the ***Internal Security*** mission area and ***Ground Combat and Amphibious Warfare*** submission area, in the counter-insurgency context (remote mountainous, jungle terrain), a ***Capability Gap*** was identified
  - ***Fire support while operating against insurgent forces in mountainous and jungle terrain in day/night and all weather conditions***
  - In this regard and under these conditions, we suggest that ***effective*** fire support should:
    - Be **dependable, transportable**, **responsive,** and **lethal**
    - Permit forces to retain or regain the **tactical initiative (control)**

BLOCK 6

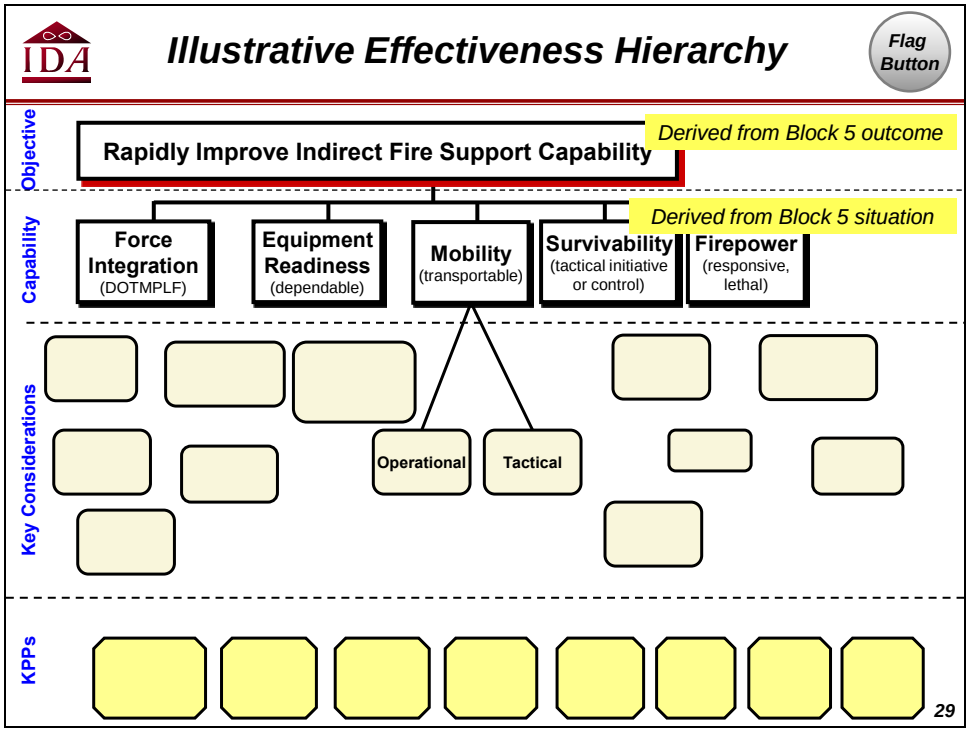
27

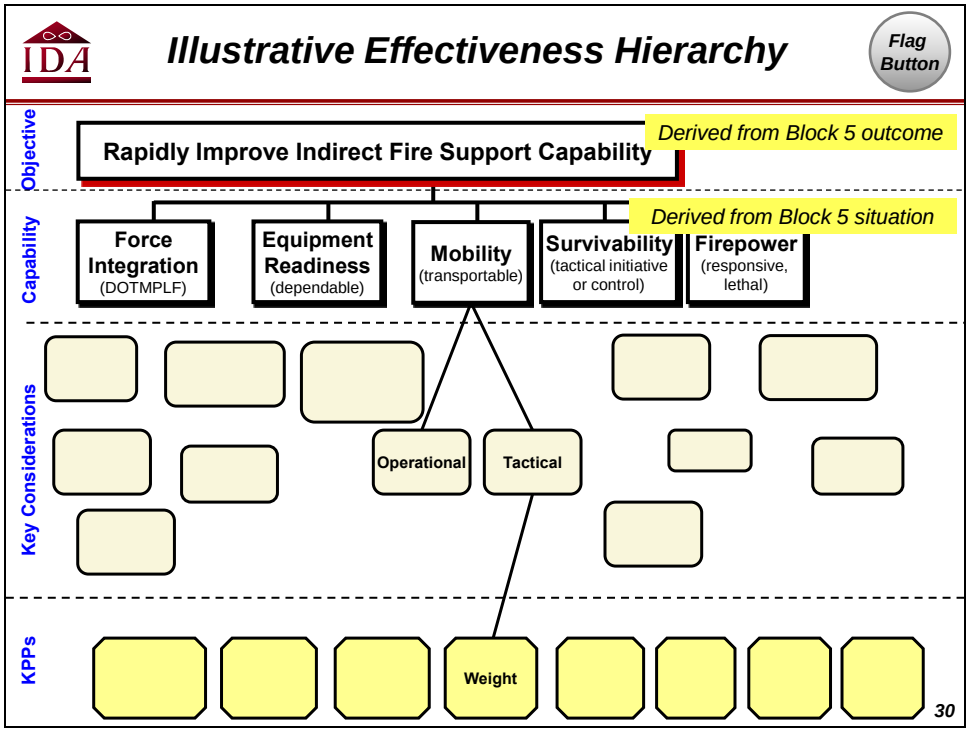
Illustrative Framework

Flag Button



28


IDA
Illustrative Effectiveness Hierarchy
Flag Button
Objective
Rapidly Improve Indirect Fire Support Capability
Derived from Block 5 outcome
Capability
Derived from Block 5 situation
Force Integration (DOTMPLF)
Equipment Readiness (dependable)
Mobility (transportable)
Survivability (tactical initiative or control)
Firepower (responsive, lethal)
Key Considerations
Operational
Tactical
KPPs
29


IDA
Illustrative Effectiveness Hierarchy
Flag Button
Objective
Rapidly Improve Indirect Fire Support Capability
Derived from Block 5 outcome
Capability
Derived from Block 5 situation
Force Integration (DOTMPLF)
Equipment Readiness (dependable)
Mobility (transportable)
Survivability (tactical initiative or control)
Firepower (responsive, lethal)
Key Considerations
Operational
Tactical
KPPs
Weight
30

Weight: considering the objective, what should be the reasonable limits? Example:

"Shall not exceed 6,000 pounds; 4,500 pounds or less is desired"

Rationale: Explains the reason. Example:

Fixed-wing and some rotary-wing aircraft can internally transport howitzers under 6,000 pounds. The 4,500 pounds or less desired weight would enable both tactical rotary-wing lift (external sling load operations) and ground movement over more difficult terrain under more severe weather conditions.

Block 6 Seminar – Outcome (ADM)

Flag Button

- The Joint Staff submitted a draft Acquisition Decision Memorandum (ADM) to the MoD that included "Second Pass" assessment results
- After consulting stakeholders, the MoD approved the ADM
- The signed ADM directed the Joint Staff to proceed with procurement and contracting for 105mm towed howitzers (61 tubes)

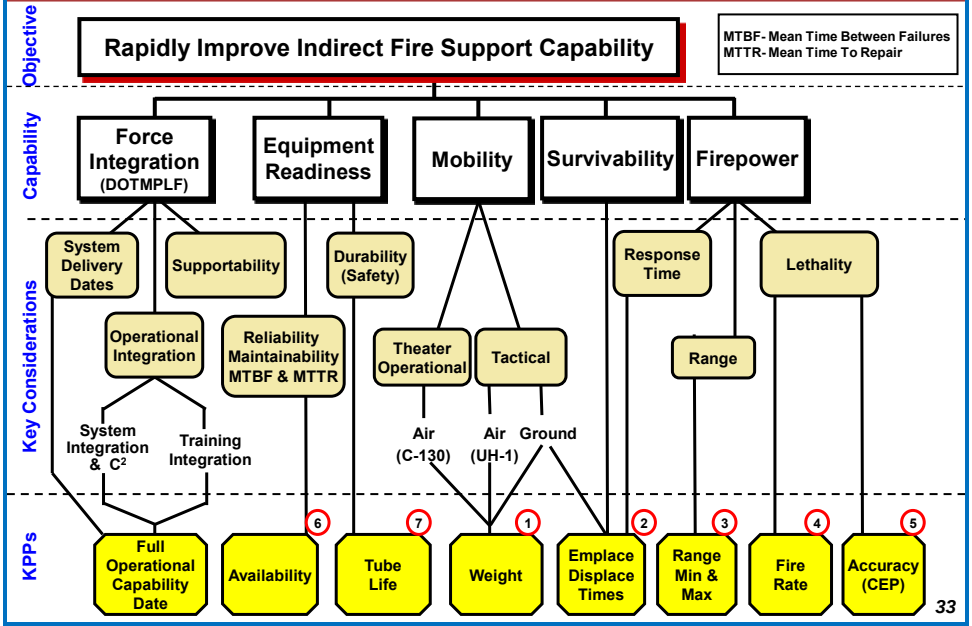
Block 6 Seminar – Outcome (BEP)

Flag Button

- The Joint Staff also developed an "effectiveness hierarchy" that was included in the Bid and Evaluation Plan (BEP)
- Both the BEP and the final invitation to bid included these key performance parameters (see next charts):
  - Weight
  - Range
  - Emplacement/Displacement Times
  - Rate of Fire
  - Accuracy
  - System Availability
  - Cannon Tube Durability

Proposed Effectiveness Hierarchy

Flag Button



33

Key Performance Parameters & Rationale

Flag Button

NOTIONAL – FOR INSTRUCTIONAL PURPOSES ONLY

Weight: Shall not exceed 6,000 pounds; 4,500 pounds or less is desired

Rationale: *Air transportability limits weight to 6,000 pounds. The 4,500 pounds or less desired weight further enables both tactical lift (sling load operations) and ground movement over more difficult terrain under more severe weather conditions.*

Range: Shall have an indirect fire minimum range using high angle fire of less than 1,000 meters. Desired minimum range is 750 meters. Maximum range shall be greater than 17 kilometers. Desired maximum range is 18,500 meters.

Rationale*: Engaging close-in targets in complex terrain is essential. The desired minimum range assures coverage for very close-in targets masked from effects of direct fire (e.g. deep defilade). Desired maximum range of 18,500 meters extends tactical depth, reducing vulnerability to enemy counter fires.*

BLOCK 6

34

Key Performance Parameters & Rationale

Flag Button

NOTIONAL – FOR INSTRUCTIONAL PURPOSES ONLY

Emplacement/Displacement: Shall be emplaced and ready to fire in 3 minutes or less. Shall be displaced in 3 minutes or less. Desired emplacement and displacement times are 2 minutes or less.

***Rationale**: Emplacement and displacement in 3 minutes permits responsive on-the-move capability, mitigating the counter-fire threat. Reducing times to the desired 2 minutes or less significantly improves responsiveness and survivability.*

Rate of Fire: Sustained rate of fire will be at least 2 rounds per minute for an indefinite period. Desired rate is 3 rounds per minute.

***Rationale**: A sustained rate of fire of 2 rounds per minute is essential for suppression or denial missions that can continue indefinitely. Increasing the desired rate of fire to 3 rounds per minute improves single gun suppressive effects, permitting the assignment of multiple missions to a firing unit.*

Key Performance Parameters & Rationale

Flag Button

NOTIONAL – FOR INSTRUCTIONAL PURPOSES ONLY

Accuracy: Shall have a circular error probable (CEP) of no more than 50 m at range 10 kms. Desired CEP is 25 m or less

***Rationale**: Ensures effective and safe close-in fires. Further reducing CEP to the desired 25 m significantly reduces collateral damage in congested and built-up areas.*

System Availability: Shall be at least 90 percent. Desired availability is at least 95 percent

***Rationale**: Standards for system availability are typically set at 90 percent. Availability directly relates to operational readiness (OR) rates. Consequently, desirable OR rates cannot be achieved without high system availability. The desired availability of 95 percent significantly improves the likelihood of achieving higher OR rates.*

Key Performance Parameters & Rationale

Flag Button

NOTIONAL – FOR INSTRUCTIONAL PURPOSES ONLY

Cannon Tube Durability: Shall have a replacement life of at least 2,500 Equivalent Full Charge (EFC) rounds. Desired is 3,000 EFC rounds or more.

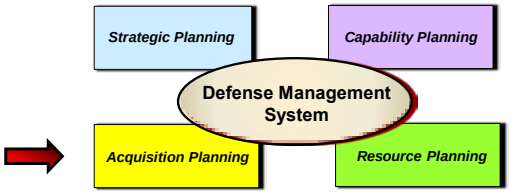
***Rationale**: The 2,500 EFC round requirement reflects current manufacturing standards. Increasing cannon tube life to 3,000 EFC rounds improves system availability over cannon life and reduces tube replacement and maintenance costs.*

Block 7 [Lesson 7]:
Evaluating Proposals

Block 7

Evaluating Proposals

(165 minutes)



- Provide ***practical experience*** that illustrates:
  - The importance of key performance parameters
  - Some challenges

Outline

Flag Button

- Interactive Seminar — **120 minutes**
  - Situation and Task — (30 minutes)
  - Workgroup Discussions — (90 minutes)
- Workgroup Briefings — **30 minutes**
- Wrap-up Discussion — **15 minutes**

Situation

Flag Button

- Invitation to bid on 105mm Artillery (Towed) was advertised. Required information:
  - Key performance parameters (from Block 6)
  - Delivery schedule
  - Costs
    - Procurement and Initial Support Costs[1]
    - Annual Operating and Support Cost
    - Projected Life Cycle Cost [2]

[1] Initial Support Costs include initial spares and support equipment cost (e g., test, measurement, and diagnostic equipment), technical manuals, etc.

[2] The sum of the Procurement and Initial Support Costs in a proposal + Government calculated estimates of projected Annual Operating and Support, Construction and Infrastructure, and Disposal costs.

Situation (continued)

Flag Button

- Three proposals received from makers of 105mm Artillery (Towed)
- Some analysis is necessary
- From the invitation to bid, consider:
  - The specified information requirements
  - Other costs to the government

Block 7 Seminar

Flag Button

- **Role**: You are a member of the team assessing the three proposals received
- **Seminar Materials**
  - Advance reading and workgroup materials from Blocks 5 and 6
  - Staff developed materials (next 2 slides):
    - Matrix highlighting key information from each proposal
    - Effectiveness hierarchy developed to facilitate understanding and proposal evaluation

Information Received in Proposals

Flag Button

Bid	Min – Max Range (Km)	Weight (Pounds)	Firing Rate (per min)	CEP @ 10 KM (meters)	Emplace/ Displace Time (minutes)	Proc Cost ($mil)[4, 5]	Unit Cost ($USD)		Co-Produce
							Proc	Annual CLS[3]	
X [1]	0.8 – 20	4,000	3	20	2 / 2	11	180 K	3,000	Yes
Y [2]	0.9 – 18.5	4,400	3	25	2 / 2	9.8	160 K	2,200	No
Z [2]	0.8 – 17.4	6,200	3	29	3 / 2	8.5	140 K	1,500	Yes

NOTES

1. System is currently in final stage of Developmental Testing. Engineering design estimates provided are in the Table 1 below.
2. Systems fielded in operational units for more than 5 years. Engineering design estimates updated by actual operational data are shown in Table 1.
3. Unit average annual cost of three year contractor logistic support cost in bid.
4. Equipment delivery schedules are shown in Table 2.
5. Total Procurement Cost based on 61 tubes.

Table 1	X	Y	Z
Crew Size	4	4	4
Mean Time to Repair (hrs)	5.5	5	4.5
Mission Reliability	.95	.98	.93
System Availability	.9	.95	.90
Cannon Tube Durability (# rounds)	TBD	3,000	3,000

Table 2 – Equipment Delivery Schedules

	2011			2012									
	O	N	D	J	F	M	A	M	J	J	A	S	O
X			6	12	18	18	7						
Y						6	7	12	12	12	12		
Z				9	10	10	10	11	11				

Proposed Effectiveness Hierarchy

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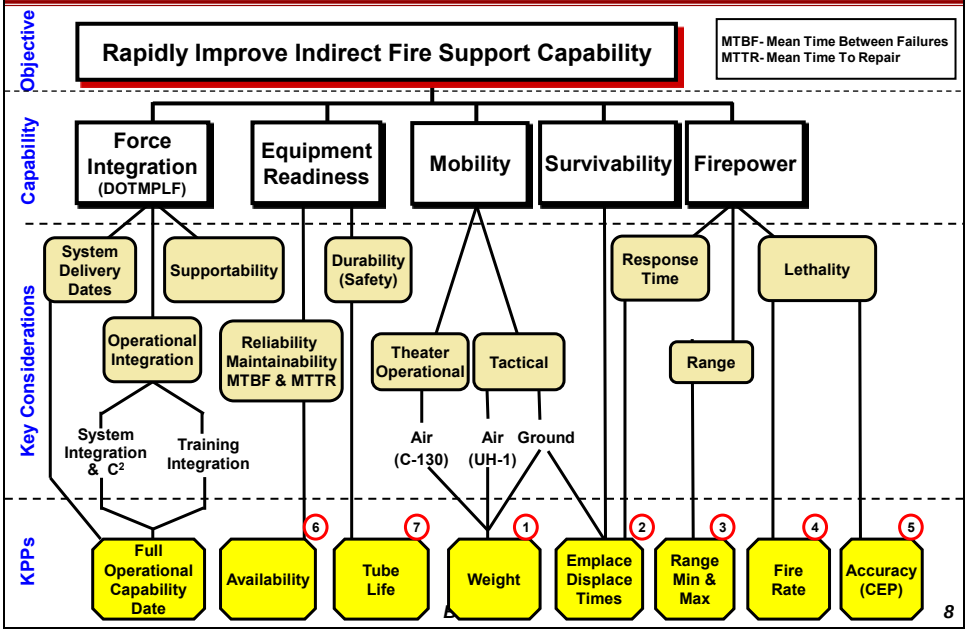


Block 7 Seminar Task

Flag Button

- Each workgroup has 90 minutes to:
  - Analyze the information provided
  - Complete a 10 minute briefing that highlights the consensus regarding:
    - The most promising proposal
    - Additional information needed
    - Highlight dissenting views
- Use the briefing template provided

Block 7 Seminar Briefing Template

Flag Button

Block 7

Evaluation of Proposals for 105mm Artillery (Towed)

Work Group __

Bid Evaluation Matrix

Rating Criteria

KPP Value — THRESHOLD ★ DESIRED ★ →

R | Y | G

Key Performance Parameter	Threshold	Desired	X	Y	Z
1. Weight (pounds)	≤ 6,000	≤ 4,500	☐	☐	☐
2. Emplace/Displace Time (min)	≤ 3 / ≤ 3	≤ 2 / ≤ 2	☐ / ☐	☐ / ☐	☐ / ☐
3. Min Range (Km) Max Range (Km)	≤ 1 ≥ 17	≤ 0.9 ≥ 18.5	☐ / ☐	☐ / ☐	☐ / ☐
4. Fire Rate (rounds/minute)	≥ 2	≥ 3	☐	☐	☐
5. Accuracy (CEP in meters)	≤ 50	≤ 25	☐	☐	☐
6. Availability	≥ 90%	≥ 95%	☐	☐	☐
7. Tube Life (EFC[2] rounds fired)	≥ 2,500	≥ 3,000	☐	☐	☐
Full Operational Capability (months from now)	≤ 30	≤ 30	☐	☐	☐
Unit procurement cost					
Unit average annual Contractor Logistics Support (CLS) cost[1]					

Note 1 Other Operating and Support costs are identical

Note 2 Effective Full Charge = 10 rounds fired with less than full charge

BLOCK 7 *11*

Additional Data and Information

Flag Button

In retrospect, the following additional data and information should have been included in the proposed invitation to bid

Data - Information	Rationale

BLOCK 7 *12*

Evaluation Outcome

Rating Criteria

KPP Value: THRESHOLD … DESIRED — R | Y | G

Key Performance Parameter	Threshold	Desired	X	Y	Z
1. Weight (pounds)	≤ 6,000	≤ 4,500	G	G	R
2. Emplace/Displace Time (min)	≤ 3 / ≤ 3	≤ 2 / ≤ 2	G / G	G / G	Y / G
3. Min Range (km) Max Range (km)	≤ 1 ≥ 17	≤ 0.9 ≥ 18.5	G / G	G / G	G / Y
4. Fire Rate (rounds/minute)	≥ 2	≥ 3	G	G	G
5. Accuracy (CEP in meters)	≤ 50	≤ 25	G	G	Y
6. Availability	≥ 90%	≥ 95%	Y	G	Y
7. Tube Life (EFC[2] rounds fired)	≥ 2,500	≥ 3,000	?	G	G
Full Operational Capability (months from now)	≤ 30	≤ 30	G	G	G
Unit procurement cost			180 K	160 K	140 K
Unit average annual Contractor Logistics Support (CLS) cost[1]			3,000	2,200	1,500

Note 1 Other Operating and Support costs are identical
Note 2 Effective Full Charge = 10 rounds fired with less than full charge

Block 7 Seminar – Outcome

Flag Button

MoD approved proceeding with proposal Y:

- Contract awarded and signed
- New equipment fielding plan identified required training, logistics support, and other important matters
- Full operational capability planned for 2013

Some Concluding Thoughts

Flag Button

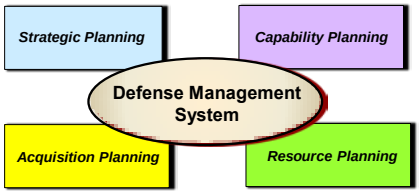
- Achieving a desired operational capability can take many years
  - ***Changes in doctrine and organizations*** (some non-materiel solutions) can be controversial
  - ***Affordability*** is usually an issue with materiel solutions
- In the simulated environment
  - The information in the invitation to bid is directly traceable to information gathered during the mission area assessment process
  - The simulated proposal evaluation process considered the key performance parameters

Block 8 [Lesson 8]:
Summary Discussions

Block 8

Summary Discussions

(45 minutes)



Purpose

- Summarize Capability and Acquisition Planning processes
- Provide opportunity to discuss and share final insights

Mission Area Assessment Process

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Provides systematic basis for:

- ***Assessing adequacy*** of future campaign plans and capabilities by Mission Area
- Identifying ***capability planning issues and proposals*** for senior leader consideration

Process and products influence:

- Doctrine, organization, training, etc.
- Resource planning priorities and objectives
- Program and budget development processes
- Acquisition planning process

The Implementation Challenge

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Intended Capability Planning end-states:

- May involve ***new ideas – potential departures from traditional practices.***
- May require ***organizational and personnel realignments***

Capability Planning

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- ***Capability Planning*** develops:
  - Defense Mission Area Assessments
  - Capability Planning Proposals for highest priority needs and areas of declining relevance

An Approach…

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- Definitions developed should be derived from and relatable to applicable laws and directives
- Establish an approval process for definitions and uniformly apply during:
  - Mission area assessment process
  - Program (budget) development processes
- ***Decompose Mission Areas*** of the current Defense Program Structure into:
  - Capability assessment areas/sub-areas

Following charts highlight a concept for accomplishing this

An Approach…

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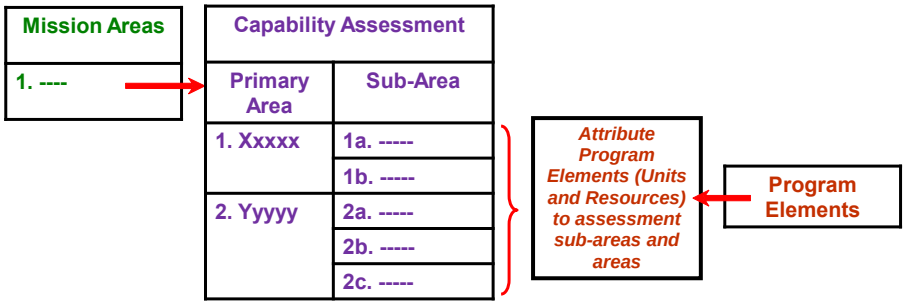
Decompose Mission Areas for assessment purposes



Capability Assessment Areas/Sub-Areas

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- Define capability assessment areas/sub-areas key to accomplishing each mission – objective
- ***Areas and sub-areas*** selected:
  - Will ***narrow the assessment scope and direction***
  - Will determine the ***number and make-up of assessment teams*** required
  - Can ***complicate integration***

Illustrative Capability Assessment Matrix

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Mission Area	Capability Assessment Areas		Major Programs / Program Elements				
	Primary Areas	Sub-Areas	1	2	3	4	5
International Operations	Humanitarian Assistance	Joint Command and Control				X	
		Engineer Construction Support	X				
		Tactical Airlift		X			
		Bulk Water Transport	X	X	X		
	Peacekeeping Operations	Battalion Task Force (Combat)	X		X		
		Tactical Airlift		X			
		Engineer Construction Support	X				
	Peace Enforcement Operations	Battalion Task Force (Combat)	X		X		
		Tactical Airlift		X			

Important to consider demands on the staff resulting from proposed assessment framework

Process Flow

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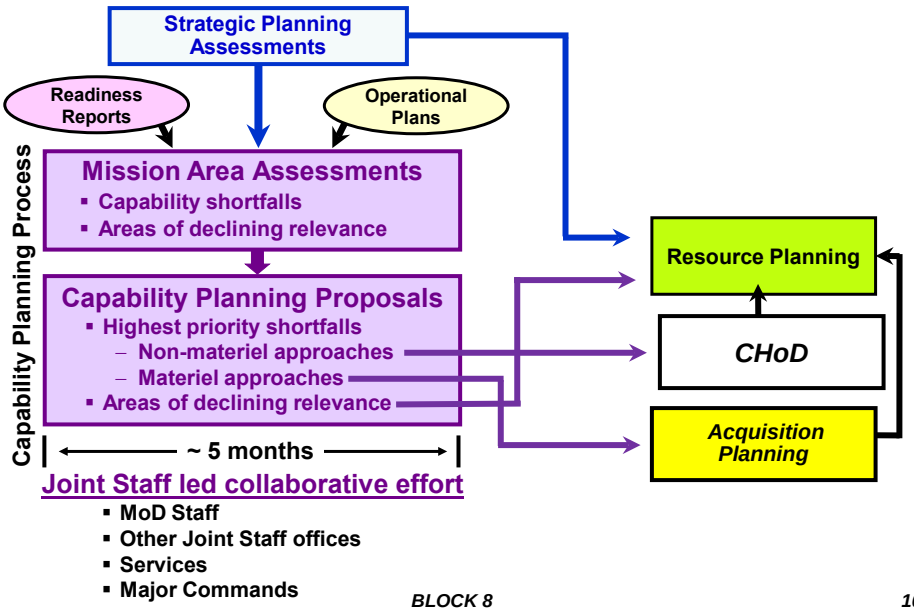

Acquisition Planning Process

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- **Directly linked to other processes:**
  - Capability planning
  - Resource planning
- **First Pass**
  - Assesses broad materiel approaches – MoD and CHoD select most promising for further study
- **Second Pass**
  - Analyzes alternatives to most promising approaches and rank orders the most cost-effective for senior leader decision

Intended Process and Products

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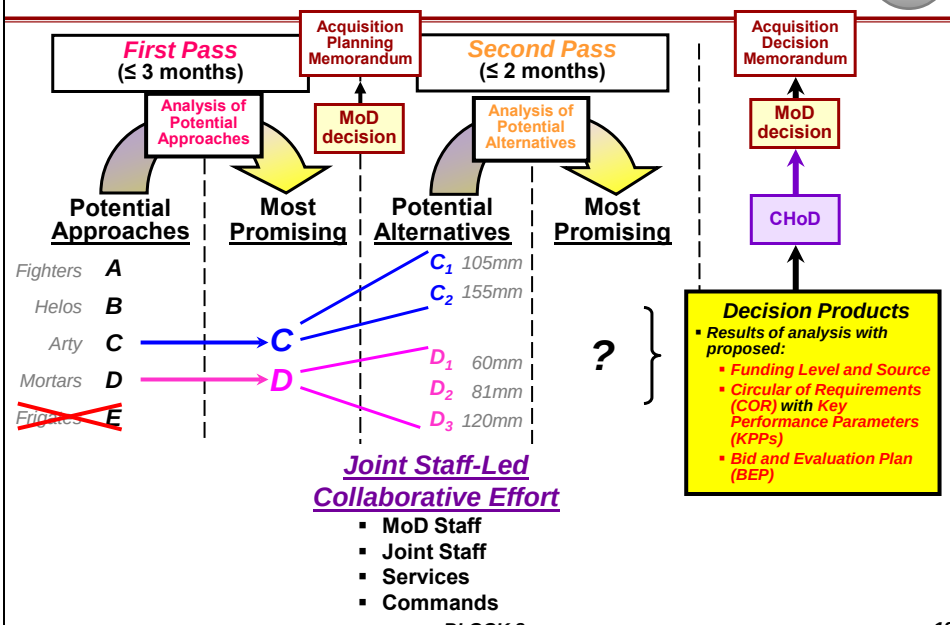

Cost vs. Performance Tradeoffs

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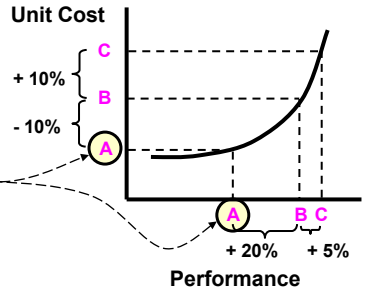
Estimated Costs
105mm Howitzer (Towed)

System	Cost per Unit ($1000)
A	270
B	300
C	330

Cost versus Performance Tradeoffs



- *How much "performance" do we really need?*
- *If we need B or C, can we afford the quantity we need?*
- *Are our key performance parameters reasonable?*
- *How sure are we of our data? (see next slide for example)*

Sensitivity Analysis Example

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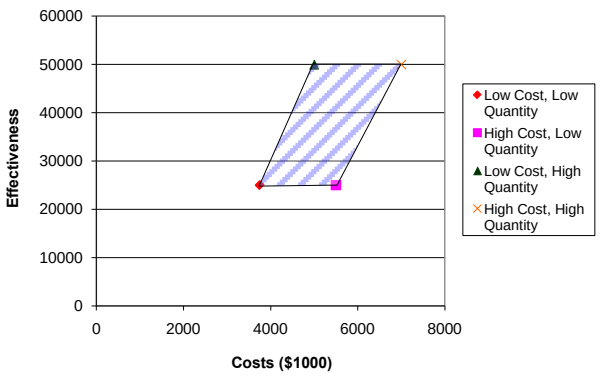
1. A low quantity and high quantity are being considered (either 100 or 50)
2. Costs estimates are not completely known and can vary depending on the quantity of the order (results in a cost range at each quantity)
3. Total Effectiveness depends on the quantity ordered

	#	Cost Low	Cost High	Total Cost Low	Total Cost High	Total Effectiveness
High	100	50	70	5000	7000	50000
Low	50	75	110	3750	5500	25000



Key Performance Parameters (KPPs)

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- Intentionally, KPPs have great impact. Ranges and the rationale for each must be provided and explained to senior leaders
- KPPs are included in the invitation to bid
- Do not accept a proposal that does not meet KPPs (unacceptable)

Determining Proposed KPP Values

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In developing proposed KPP values in a COR:

- Establish some ***initial values*** for each (research current industry specifications)
- ***Develop an effectiveness hierarchy*** that visually relates KPPs to major operational objectives and goals (ensures sufficiency)
- ***Vary the initial values*** to gain insights on:
  - Operational impacts
  - Cost – performance tradeoffs
  - Range of acceptable values

Effectiveness Hierarchy from Block 6

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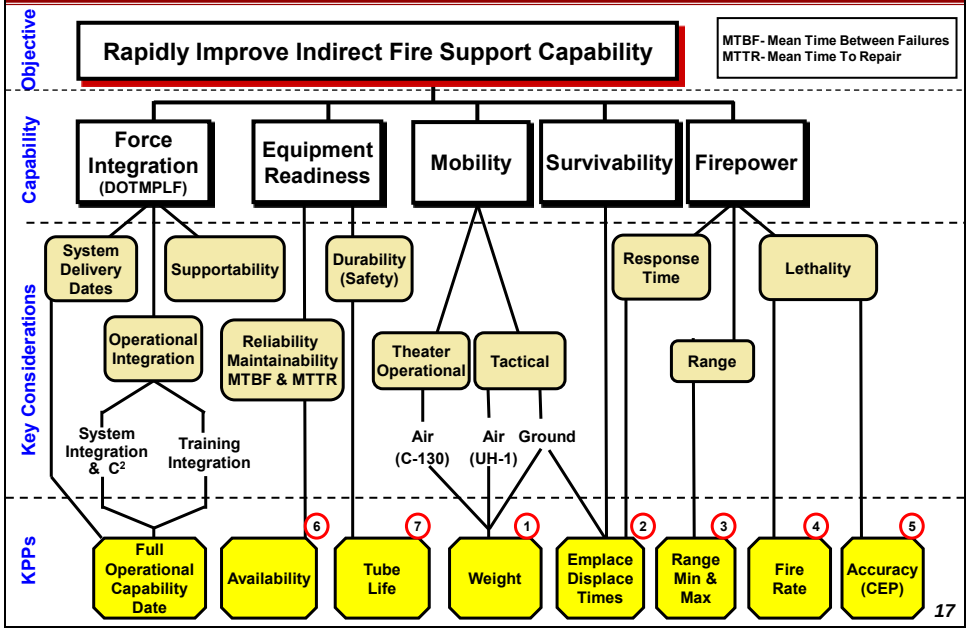

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Benefits and Pitfalls of Analysis

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- Analytical techniques can be useful… ***if the data used are reasonably accurate***
- Most senior leader problems can be quite complex—many considerations
  - Decompose into ***simpler, logical elements***
  - Understand and focus on what is ***most important***
  - ***Involve senior leaders*** early in the analytical process—keeps process focused and on track
- Simple cost – effectiveness charts can be helpful, but can require a lot of data

Planning Process Summary

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Strategic Planning

Strategic Assessments: Identify security challenges to be addressed in capability planning

Capability Planning

Mission Area Assessments: Identify capability gaps and areas of declining relevance

Capability Planning Proposals: Analyze potential approaches to highest priority gaps and lowest priority areas

Resource Planning

Defense Programs/Budgets: Aligns funding to priorities within fiscal limits

Performance Reviews: Relates money spent to spending objectives

Acquisition Planning

Preferred Approach: What kinds of systems are better at closing priority capability gaps?

Preferred Alternatives: Which sources for the preferred approach are best?

BLOCK 8 19

Planning Process Sequence

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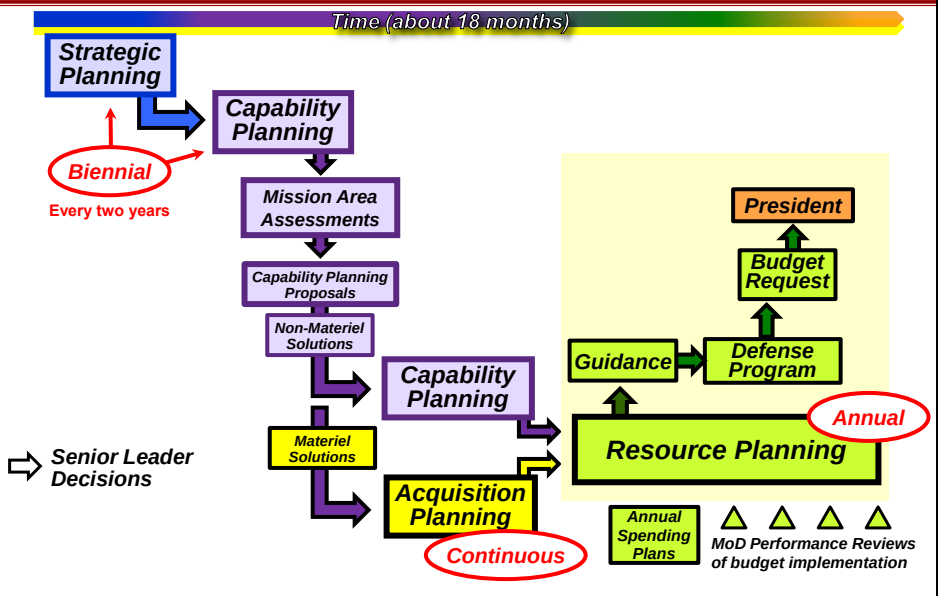

BLOCK 8 20

Appendix A.
Planning Process and Key Products

Note: The following discussion applies to the Republic of X (RoX). It is not intended to replicate or mandate defense management practices in your country.[1]

1. **General**. Defense Management planning has four interrelated phases of activity [i.e. planning processes]: strategic planning, capability planning, acquisition planning, and resource planning. The key features of each phase and interrelationships among the phases are summarized below.

   a. The Strategic Planning process produces strategic assessments and plans that are collaboratively developed by representatives of MoD Offices. The strategic assessments address current and emerging threats and concerns in the near and mid-term planning horizons and help shape the National Security Strategy. The strategic plans identify the responsibilities of the MoD, RoX military forces and other government departments and agencies with regard to accomplishing national objectives and priorities that require a "whole of government" approach.

      The strategic assessments and approved plans provide the basis for developing the detailed plans and assessments produced during the Second Phase of activity and help shape the MoD's resource planning guidance, which is produced by the Resource Planning process in the Fourth Phase.

      Key Strategic Planning process products include the following:

      - *Strategic Environment Assessment – biennial*
      - *Strategic Planning Assessment – biennial*
      - *Strategic Plans – as required*

   b. The Capability Planning process develops a comprehensive MoD-RoX Armed Forces plan to implement the objectives and tasks assigned by the MoD and the approved strategic plans. It also develops Mission Area Assessments and Capability Planning Proposals.

      1) Derived from the strategic assessments and plans produced by the Strategic Planning process, the operationally-oriented Mission Area Assessments evaluate the readiness and capability of organizations to perform their

[1] Derived from Philippine Department of National Defense Circular 05, "The Defense System of Management (DSOM)," September 19, 2008.

assigned and projected missions and tasks and, in the case of RoX Military Forces, to conduct existing campaign plans. The objective here is to identify and prioritize capability shortfalls and lower priority capabilities that may be reduced to free resources for higher priorities.

2) Capability planning proposals that address the priority requirements and the lower priority capabilities that may be reduced are developed for senior leader consideration.

3) A capability planning proposal for a capability shortcoming identifies the capability required in broad terms and proposed solutions that address the shortcoming. The solutions proposed can include:

   a) Non-materiel approaches such as changing doctrine, organization, tactics and procedures; improving the personnel readiness of forces; and, realigning resources to support a higher operational tempo. Non-materiel approaches must be examined and deemed inadequate or insufficient before a materiel approach is considered.

   b) Broad materiel approaches that do not predetermine the selection of a specific system (i.e., the types of systems that potentially could meet an operational requirement and merit further analysis).

   c) Combinations of non-materiel and materiel approaches.

Key Capability Planning process products include the following:

- *Capability Plan – as required*
- *Mission Area Assessments – biennial*
- *Capability Planning Proposal s– as required*

c. The MoD-approved results of the second phase are documented in a MoD decision memorandum collaboratively developed with the CHoD and are processed as follows:

1) Decisions to revise or develop new campaign plans or to implement non-materiel solutions to capability shortfalls are returned to the CHoD and readdressed within the Capability Planning process.

2) Decisions to examine capability planning proposals involving materiel solutions are assessed by the Acquisition Planning process using the First Pass (Analysis of Materiel Approaches) and Second Pass (Analysis of Materiel Alternatives) technique. These analyses, which address affordability, consider projected fiscal constraints provided by the Resource Planning process are collaboratively developed by teams consisting of representatives from MoD, the General Staff, and the staffs of the concerned Resource Managers. The MoD's decisions on the First Pass analysis are documented in an Acquisition Planning Memorandum (APM) and determine if the Second Pass analysis will be conducted. The MoD's decisions on the Second Pass analysis are documented in an Acquisition Decision Memorandum (ADM).

3) Matters involving planning priorities and financial resource-related issues and decisions, including the resource-related requirements associated with

pursuing non-materiel and materiel solutions are addressed by the Resource Planning process during the Fourth Phase.

Key products of the Capability Planning process (non-materiel related) and Acquisition Planning process (materiel related) include the following:

- *Campaign Plans (new and revised) – as required (Capability Planning)*
- *Changes in doctrine, organization, tactics and procedures, etc.–as required (Capability Planning)*
- *Analysis of Materiel Approaches (First Pass) – as required (Acquisition Planning)*
- *Analysis of Materiel Alternatives (Second Pass) – as required (Acquisition Planning)*
- *Acquisition Planning Memorandum (APM) and Acquisition Decision Memorandum (ADM) – as required (Acquisition Planning)*

d. The Resource Planning process includes the planning, programming, budgeting, and financial management of defense resources. This process integrates the results of the first three phases. It provides the framework and processes for addressing how limited resources are allocated among competing priorities and establishes clear lines of authority, responsibility and accountability with regard to resource planning, financial management and execution, and performance reporting. The Resource Planning process operates as follows during this phase of activity.

1) Planning. The Defense Planning Guidance (DPG) contains the MoD's guidance on strategic environment, defense strategy, objectives, priorities, and force and resource planning and the six year fiscal guidance estimates. The policy and resource planning direction in the DPG is shaped by the products of the Strategic Planning, Capability Planning, Acquisition Planning, and CHoD and Resource Manager (Service Chief) programming advice.

2) Programming. Resource Managers analyze the DPG and consider potential alternatives that are consistent with the DPG. After analyzing the alternatives they select their preferred approaches and submit their proposed programs for MoD consideration. These proposals are called POMs (Program Objective Memoranda).

a) The POMs provide the Resource Managers' detailed proposals for implementing the MoD's guidance, as well as descriptions of any high priority unfunded requirements they anticipate over the six year program period.

b) The POMs are reviewed by the CHoD who provides his independent assessment of them to the MoD.

c) The MoD Staff also reviews the POMs, considers the independent program assessment submitted by the CHoD, and recommends potential major issues for consideration by the MoD, CHoD and other senior leaders. Major issues are considered during the program review process.

d) Major issue papers are provided to the MoD, CHoD, Resource Managers and other key stakeholders; these papers are developed collaboratively by issue teams consisting of representatives from MoD staff, the General Staff, and the staffs of the concerned Resource Managers. Each issue paper highlights a specific problem to be resolved (for example, if a POM does not support attainment of a particular objective contained in the MoD's guidance). The issue papers also identify alternatives that could be undertaken to resolve the problem.

e) The MoD, after consultation with the CHoD, Resource Managers and other key stakeholders, decides what will be done on each issue. The MoD's decisions are documented in a Program Decision Memorandum (PDM). The Resource Managers then resubmit their Programs in accordance with all PDMs thereby locking the formal record of the MoD-approved six-year Defense Program.

3) Budgeting (not discussed for this seminar)

4) The Resource Managers implement their approved budgets with spending plans and submit periodic performance reports that integrate and compare results achieved and money spent against established programmatic and financial management objectives containing in the spending plans. These reports, which provide the basis for MoD-CHoD performance reviews, ensure senior leaders are aware of the progress being made in accomplishing key objectives and facilitate realignment of existing plans and programs, objectives, and budget year resources to ensure the highest priority needs are protected.

Key products of the Resource Planning Process include the following:

- *Program Advice (CHoD and Resource Managers) – annual*
- *Defense Planning Guidance (DPG) – annual*
- *Program Objective Memoranda (POM) – annual*
- *Major Issue Papers – annual*
- *Program Decision Memorandum (PDM) – annual*
- *Defense Program – annual*
- *Defense Budget – annual*
- *Spending Plans – annual*
- *Performance Report – quarterly*
- *Program-Budget Realignment Directive – as required*

Appendix B.
Fire Support Addendums

Addendum Materials for Blocks 4 and 5 Interactive Seminars

<u>Optional</u> Seminar Materials for Selected Participants

(See following pages)

The materials in this appendix will be used at the **discretion of the facilitator only**. Provided are three memoranda that analytically expand the transition from capability planning instruction (Blocks (Lessons) 2, 3 and 4 of this course) to acquisition planning instruction (Blocks (Lessons) 5, 6, and 7 of this course), using a more specific fire support example.

Participant skill levels may vary widely and while most may not question the transition, a few might. Even fewer might want to know more. The materials in this appendix serve as illustrative analyses that derive three sets of major findings necessary for simplicity of the acquisition planning instruction. First, that a fire support capability gap exists according to how we chose to quantify the operational need (see "Initial

Analysis of Indirect Fire Support Capabilities"). This finding provides the basis for further assessment using capability planning options consisting initially of non-materiel approaches to close the gap. A second memorandum (see "Initial Analysis of Fire Support Capability Planning Proposal") demonstrates that non-materiel approaches are insufficient to close the calculated gap. This provides the basis for addressing the gap with materiel approaches in acquisition planning. The third finding is that among the materiel approaches proposed, the stated procurement quantities provide the needed additional capability as calculated at the costs estimated ("First Pass" Analysis, Block (Lesson) 5). This finding permits the comparison of approaches (Block [Lesson] 5); and the follow-on comparison of alternatives within the preferred approach (Block [Lesson] 6) using the calculated quantities for each approach. A MS Excel spreadsheet, entitled Appx B - Spt Calcs.xlsx (referring to Supporting Calculations for Fire Support Addendums at Appendix B), is included on the companion CD that also includes the electronic files comprising the contents of the *Participant's* and *Facilitator's Notebooks*. This spreadsheet includes all the tables and the underlying calculations that support the results in the memoranda in Appendix B.

The materials in this appendix use mathematical techniques similar to those embedded in the assessment memoranda at Block 3. The memoranda in Block 3 provide options and assessments of improvements to a recognized capability gap. Missing is a quantitative understanding of how big this gap might be. Determining the potential size of a capability gap can be complicated and data to support an analysis of this kind may not be available. In the example here, we have assumed this data is available.

Because these methods can be complicated and require data that may not exist, a simplified, subjective-based approach to gap determination may be sufficient. These approaches could be based on corroborated, real-world observations and can be perfectly acceptable. Subjective approaches are certainly much more expedient and their results can be more easily explained. However, in countries where analytic capacity is well developed within the defense or security sector, a logically structured analysis may be possible and prove helpful. In the case of a more structured analysis, transparency is important. We suggest clearly laying out the logic used and the simplifying assumptions necessary to complete the assessment. We provide an example in this appendix.

Finally, in both the materials in Block 3 and in this appendix, we have selected what we consider reasonable measures to assess capabilities. These measures serve to illustrate an assessment method. We are not suggesting these are the only measures or even the proper ones to base assessments, findings, and recommendations. Selecting the appropriate measures to base recommendations may be the most important part of any analytical endeavor.

Initial Analysis of Indirect Fire Support Capabilities (Addendum to Block [Lesson] 4)

Note to Participants: The other capability planning assessments in your notebook (memoranda in Block 3) are simplified to permit their use in the time available during the seminar. This appendix presents an example of a more detailed capability analysis. It shows, step-by-step, the assumptions and calculations used to reach its conclusions.

The materials in this appendix use mathematical techniques similar to those embedded in the assessment memoranda in Block 3. The memoranda in Block 3 provide options and assessments of improvements to a recognized capability gap. Missing is a quantitative understanding of how big this gap might be. Determining the potential size of a capability gap can be complicated and data to support an analysis of this kind may not be available.

For these reasons, a simplified, subjective based approach to gap determination may be sufficient. These approaches could be based on corroborated, real-world observations and can be perfectly acceptable. Subjective approaches are certainly much more expedient and more easily explained. However, in countries where analytic capacity is well developed within the defense or security sector, a logically structured analysis may be possible and helpful. In the case of a more structured analysis, transparency is important. This tab is an example of a transparent, logically structured analysis.

Finally, in both the materials in Block 3 and in this appendix, we have selected reasonable measures to assess capabilities. These measures serve to illustrate an assessment method. Clearly, these are not the only measures to base assessments, findings, and recommendations.

From: **Chair, Fire Support Assessment Team**

To: **Chief of Defense, Republic of X**

Subject: **Initial Analysis of Indirect Fire Support Capabilities**

Issue: Does the currently-approved multi-year program provide adequate fire support for Internal Security [mission area] operations?

Summary: Republic of X (RoX) ground forces typically operate in small teams as part of the counter-insurgency campaign. The operational concept for these small-unit operations calls for providing prompt indirect fire support when those units come in contact with the enemy. Indirect fires are used to disrupt and reduce insurgent forces, preserve the initiative, and block egress routes. At present only artillery and mortars are available to provide fire support. The RoX armed forces do operate gun frigates and

armed helicopters, but those assets are now devoted exclusively to another mission area (Territorial Defense--Maritime Surveillance and Interdiction). As reported below, the currently-approved program can provide the indirect fire support required in only 6% of all battalion operating areas in the south (where the enemy is active). The fire support shortfall will be exacerbated, if additional maneuver units are added to the force structure.[1] Improving readiness of existing forces would provide required coverage in 11% of the operating areas. Closing the remainder of the shortfall will require acquisition of new equipment.

Operational Requirement and Current Capabilities: The operational concept for small-unit operations calls for supporting each operation with prompt indirect fire support when those units come in contact with the enemy. To assess the demand for indirect fire capabilities, the assessment team first reviewed the records of the previous three years' Internal Security operations[2]. Fighting is now occurring only in the south (Regions III and IV). As shown in Table B-1, based on the historical data, a high percentage of operations in the south are conducted in rough terrain (85%) and bad weather (70%).

Table B-1. Terrain and Weather

Terrain Type	Weather	% of Engagements
Mountain/Jungle	Adverse	60
	Clear	25
Open	Adverse	10
	Clear	5

As shown in Table B-2, in Regions III and IV, there are 36 battalion operating areas. In the current multi-year program, 40 Army and Marine battalions are available for operations there. They are supported by 48 Army artillery batteries and 4 Marine artillery batteries. Normally, one Army battalion is supported by an attached artillery battery from its parent brigade or division. Marine artillery batteries are organic to Marine battalions and are not cross-attached to Army units.

On average, four Army battalions are training, repositioning, or otherwise not available for operations. This leaves 36 battalions available (32 Army + 4 Marines) to cover the 36 operating areas (one battalion per area). Six Army artillery batteries are normally supporting Special Forces operations, and ten additional batteries are training or

---

[1] The capability planning proposal for Internal Security ground operations (see Block 3) contains an option for creating new rapid-reaction units.

[2] Historical data of this kind may not be available. We assume in the RoX it is available as indirect fire units are required to keep fire mission logs that include target location and description. If not, some other characterization of operational demand should be estimated.

otherwise not available to support infantry operations. This leaves 32 Army artillery batteries available to cover the 32 Army operating areas (one battery per area). Under the currently approved program, half of the Army units and half of the Marine units are at low readiness (R3 level) and half are at high readiness (R1 level). We have assumed that readiness is evenly distributed between available and non-available units.

Table B-2. Forces in Current Mid-Term Program

Unit	In Regions III & IV (available for use)	# at R1 (available for use)	# at R3 (available for use)	Authorized tubes each	
				Mortars	Artillery
Army infantry battalions	36 (32)	18 (16)	18 (16)	9	--
Army artillery batteries*	48 (32)	24 (16)	24 (16)	--	6
Marine infantry battalions	4	2	2	9	--
Marine artillery batteries**	4	2	2	--	9

* Artillery batteries attached to battalions as needed
** Marine artillery is organic to Marine battalions
R1 readiness = 85% equipment & personnel fill up; 85% maintenance
R3 readiness = 60% equipment & personnel fill up; 60% maintenance

Low readiness limits the amount of indirect fire support that operating units can now receive. Table B-3 shows the number of tubes available at programmed levels of readiness. The table reflects the assignment policy described above: each of the 36 battalion operating areas has either one Army infantry battalion and one Army artillery battery or one Marine battalion with its organic artillery battery.[3]

[3] In Table B-3 and all tables thereafter some totals may not add due to rounding.

Table B-3. Available Fire Support Systems

Type	Authorized	On hand	Mission Capable	Average per battalion
Army mortars	288	210	158	5
Army artillery	192	140	105	3
Marine mortars	36	27	21	5
Marine artillery	36	27	21	5

In order to understand the amount of indirect fire support that a deployed battalion typically requires, the analysis team reviewed the data on operational history. Each battalion conducts numerous small unit patrols within its operating area. These patrols should be supported by on-call indirect fire in case of enemy contact. Table B-4 shows the historical data on the average size of enemy formations.

Table B-4. Size of Average Enemy Contact in South

Size of enemy formation	$\overline{X}$ frequency	Size of single target area (m^2)
> Company	3%	40,000
Company	8%	15,000
Platoon	37%	6,000
Squad	52%	1,500
$\overline{X}$ = average	from all operations areas	

As stated previously, only artillery and mortars are available for fire support. The Republic of X armed forces do operate gun frigates and armed helicopters, but those assets are now devoted to maritime surveillance and interdiction.

In order to estimate the fire support requirement in a typical battalion operating area, the team derived from historical data an estimate of the both the peak and the average demand for near-simultaneous fire support in any operating area over the past three years.

Table B-5 shows the historical data on how frequently a given operating battalion encountered more than one enemy contact on a near-simultaneous basis.[4]

[4] Defined as contact with the enemy occurring within 12 hours of one another.

Table B-5. Near-Simultaneous Incidents per Operating Area

Quartile	*n* in quartile	Quartile $\overline{X}$	Standard deviation	$\overline{X}$ simultaneous target area (m^2)*
1st	350	11.0	1.20	59,400
2nd	350	8.0	0.60	43,200
3rd	350	4.0	0.20	21,600
4th	350	2	0.05	10,800
All *n*	1400	5.8	0.19	31,118

* Right-most column computed as shown in Table B-6
$\overline{X}$ = average

Table B-6 uses the data from Tables B-4 and B-5 to estimate the *peak* demand for prompt fire support. Near-simultaneous demand for fire support is determined by the frequency with which a given friendly infantry unit comes into multiple enemy contacts and calls for indirect fires. Peak demand was determined by arraying the data on all near-simultaneous enemy contacts (1400 instances) into quartiles (Table B-5) and averaging the number of contacts with requests for indirect fires in the top quartile (350 instances). Table B-6 expands that information with data on typical size of enemy formations from Table B-4.

Table B-6. Peak Near-Simultaneous Enemy Contacts

Size of enemy formation	B. $\overline{X}$ frequency (Table B-4)	C. $\overline{X}$ expected peak demand by target size	D. Target area (m^2) (Table B-4)	E. $\overline{X}$ simultaneous target area (m^2)
> Company	3%	0.3	40,000	13,200
Company	8%	0.9	15,000	13,200
Platoon	37%	4.1	6,000	24,420
Squad	52%	5.7	1,500	8,580
A. Total $\overline{X}$ expected, peak near-simultaneous demand (Table B-5):		11	F. Total area:	59,400
Calculations: A*B = C E = C*D F = $\sum$ E $\overline{X}$ = average n = 350 (1st Quartile of Table B-5)				

Table B-7 uses the data from Tables B-4 and B-5 to estimate *average* demand for prompt fire support.

Table B-7. Average Near-Simultaneous Enemy Contacts

Size of enemy formation	$\overline{X}$ frequency (Table B-4)	$\overline{X}$ expected demand by target size	Target area (m^2) (Table B-4)	$\overline{X}$ simultaneous target area (m^2)
> Company	3%	0.2	40, 000	6,915
Company	8%	0.5	15, 000	6,915
Platoon	37%	2.1	6, 000	12,793
Squad	52%	3.0	1, 500	4,495
Total $\overline{X}$ expected, near-simultaneous demand (Table B-5):		5.8	Total area	31,118
* Right-most column computed similarly as shown in Table B-6 $\overline{X}$ = average n = 1400 (all Quartiles from Table B-5)				

The towed artillery and mortars that are currently used to provide fire support have the performance characteristics shown in Table B-8.

Table B-8. Current Fire Support Systems

System	Warhead	Range	CEP	Killing Radius	Barrage
Towed 155mm howitzer	High explosive	17.5 km	60m	50m	5 aimed rounds in 2 minutes
60mm mortar	High explosive	4.8 km	30m	15m	40 aimed rounds in 2 minutes
CEP = circular error probable; 50% of rounds fall within this distance of aimpoint					

Using the performance data in Table B-8, a calculation can be made of the lethal area those systems can create in a prompt two-minute barrage.[5] The results are shown in Table B-9.

[5] We consider 2 minutes as the extent of lethal fires. Fires beyond the initial 2 minutes have marginal additional lethal effects.

Table B-9. Lethality of Current Systems[6,7]

Effect per tube	155mm artillery	60mm mortar
A. Lethal radius per round (m)	50	15
B. Lethal area per round (m^2) ($A^2*\pi$)	7,854	707
C. Circular Error Probable (m)	60	30
D. Area within CEP (m^2) ($C^2*\pi$)	11,310	2,827
E. Inner Lethal Ratio B/D (see note 1 below)	0.694	0.250
F. 3σ (m) (see note 2 below)	265	132
G. Outside Error area (m^2) ($F^2*\pi$)	220,129	55,032
H. Total Impact Area (m^2) (G-D)	208,819	52,205
J. Impact Ratio (B/H) (see note 1 below)	0.038	0.014
K. Total Lethal Ratio (E+J)	0.732	0.264
L. Rounds in 2 minutes	5	40
M. Lethal area (m^2) per barrage (.5*B*K*L)	14,374	3,726
N. Lethal area (m^2) after 53% terrain reduction (M*0.47) (see note 3 below)	6,756	1,751

Notes:

1. Percent of area that is lethal for each round fired.
2. Assuming the rounds fired are normally distributed, half the rounds fired land within CEP = 0.68σ; and 3σ is sufficient to include all rounds fired (over 99%).
3. Complex terrain can reduce HE lethal blast radius by an estimated 53%

Table B-3 showed that, on average under the current program, each Army battalion operating area will typically have three tubes of artillery and five mortar tubes. Each Marine battalion operating area will have on average five tubes each of towed artillery and mortars. Those figures can be combined with the lethality calculations in Table B-9 to determine whether the fire support systems in the current multi-year program are capable of meeting the peak demand as defined above. Those calculations are shown in Table B-10.

Table B-10 shows that fire support will meet peak demand in the two Marine battalion operating areas where the battalions are at R1 readiness but fall short in all other operating areas. (Fire support will be adequate in 2 of 36 operating areas.) The prompt-fire coverage shortfall in the average Army operating area under peak demand conditions is just over 28,000 square meters, about 52% of the coverage needed in a single Army operating area during peak demand. In Marine areas where the battalions are at R3 readiness, the shortfalls are about 14,000 square meters, about 76% of the coverage needed.

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[6] Row M represents the cumulative, expected lethal area delivered in 2 minutes in open terrain.

[7] Row N represents an adjustment to Row M for complex terrain which defines most of the operational areas in the south. Experience has shown that blast effects in RoX jungle and mountainous environments are reduced by about 53%.

Table B-10. Current Capability vs. Requirement

Capability	$\bar{X}$ Marine operating area	$\bar{X}$ Army operating area
A. Lethal area per mortar (m^2) (Table B-9)	1,751	1,751
B. Average # mortars (Table B-3)	5	5
C. Lethal area per artillery tube (m^2) (Table B-9)	6,756	6,756
D. Average # tubes (Table B-3)	5	3
E. Total lethal area (m^2) ((A*B)+(C*D))	42,534	29,023
F. Lethal area required (m^2) (Table B-6)	59,400	59,400

$\bar{X}$ = average
NB: Lethal area of Marine battalion at R1 is 59,548
Lethal area of Marine battalion at R3 is 34,027

As mentioned, *peak* demand was defined in Table B-6 as the average number all of near-simultaneous enemy contacts in a single operating area in the *top quartile* of data covering the past three years. Table B-10 can also be used to evaluate current ability to meet demand for fire support (Table B-7) in each quartile of demand (Table B-5). Those comparisons show that the current fire support capability is adequate only for the frequency of fire missions in the lowest two quartiles of Table B-5.

Intermediate Conclusion: Based on this analysis, we conclude that the current capabilities are extremely inadequate to meet potential peak demand, a situation that in the opinion of the Joint Staff poses an unacceptable risk to the RoX internal security strategy.

Initial Analysis of Fire Support Capability Planning Proposal (Addendum to Block [Lesson] 4 continued)

From: **Chair, Fire Support Assessment Team**

To: **Chief of Defense, Republic of X**

Subject: **Initial Analysis of Fire Support Capability Planning Proposal**

Background: As previously concluded, current capabilities are extremely inadequate to meet potential peak demand, a situation that in the opinion of the Joint Staff poses an unacceptable risk to the RoX internal security strategy.

Issue: What are the non-materiel options for correcting the fire support capability shortfall?

Non-materiel options for correcting the capability shortfall: Funding improvements in the planned readiness of Army units in the south would enhance personnel fill-up, training, and maintenance. Inoperable equipment would be returned to service. Additional personnel would be available to operate and maintain equipment, and proficiency should improve.

Increasing personnel fill-up and training of all Army and Marine units in the south to R1 readiness levels (the highest), plus planning to maintain in operable condition 100% of all on-hand equipment, would place an additional 58 mortars and 41 artillery pieces in service. About $9 million per year in additional funding would be required over the six-year mid-term period to do so. Table B-11 below shows the improvement in average coverage that would occur as a result.[8] The option would fully meet peak demand in all four Marine operating areas, meaning that 11% of all operating areas would have adequate capability. But no Army operating area would receive adequate support. Three Army operating areas denoted as "Level III" in Table B-11 would come the closest, with 78% of needed area coverage. Another 17 Army areas ("Level II" in Table B-11) would improve to 66% of the estimated requirement.

In the Joint Staff's opinion, the shortfall in required capability under this option still presents an unacceptable risk to the RoX Internal Security strategy.

[8] The equations for calculating Table B-11 are the same as those used for Table B-9.

Table B-11. Coverage at Increased Readiness—R1

Distribution of Repaired Artillery in Army Areas (3 Distribution Levels for Repaired Systems)	# of areas	New Average Tube # in Army Areas	
		Mortars	Artillery
I. Operating areas receiving only +1 tube each type	12	6	4
II. Operating areas receiving +2 mortars & +1 artillery	17	7	4
III. Operating areas receiving +2 tubes each type	3	7	5
In each average operating area	**Army**	**Marines**	**% of required**
Lethal area required (m^2) (Table B-6)	59,400	59,400	--
Lethal area in current program (Option A) (m^2) (Table B-10)	29,023	--	49%
Lethal area for Level I above	37,529	--	63%
Lethal area for Level II above	39,280	--	66%
Lethal area for Level III above	46,036	--	78%
Lethal area in all Marine areas	--	59,548	100%
N.B. All Marine battalions are brought to R1 in this option (all cases)			

Table B-11 shows the maximum improvement in fire support possible with the current inventory of weapon systems. Table B-11 thus exhausts the non-materiel options for capability improvements.

Finally, the team calculated the approximate costs for each option (see Table B-12).

Table B-12. Option Costs and Coverage

Option	Annual operations ($ millions)	Total Area Covered (1000s of Square Meters)
A (Current Program)	$56.7	1167
B (R1)	$65.8	1494

The cost-effectiveness of all options is shown in Figure B-1.

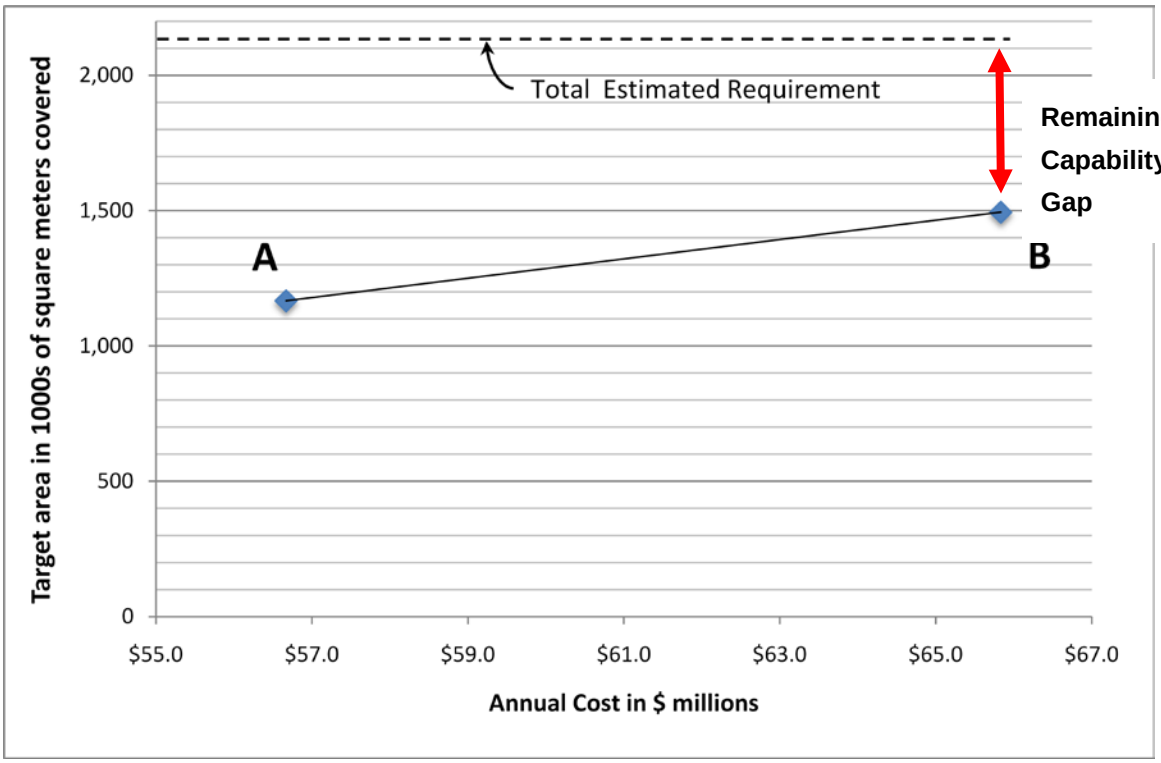

Figure B-1. Cost vs. Square Meters Covered

Recommendation and Conclusion: The analysis team recommends Option B as the preferred option. For a modest increase in annual cost (about $9 million), this option improves coverage by nearly 30%. By default, the next best is Option A. Specifically, the analysis team concludes that:

- Existing fire support (Option A) for Internal Security infantry units is inadequate.
- Improvements in unit readiness (Option B) offer attractive cost-effective increases in fire support capability, but readiness improvements alone will not close the capability gap.
- Further development of a materiel solution to close the remaining capability gap is also recommended.

Outcome for Participants: The Chief of Defense and the Minister of Defense accepted the recommendations presented and endorsed the development of a materiel solution. Table B-13 represents the decision result from the capability planning process incorporating the analysis from the Fire Support work group.

Table B-13. Revised Decision Chart

Work Group	Mission Area	Capability Assessment Area	Options Selected by Senior Review Group
A	Internal Security	Ground Combat and Amphibious Warfare (Maneuver)	**Option B** (Preferred) Option C (Next Best)
B	Territorial Defense	Maritime Surveillance and Interdiction	**Option B** (Preferred) Option D (Next Best)
C	National Development	Reconstruction	**Option D** (Preferred) Option C (Next Best)
D (facilitators)	Internal Security	Ground Combat and Amphibious Warfare (Fire Support)	**Option B** (Preferred)* Option A (Next Best)

*Also directed study of materiel approaches to close the remaining capability gap.

"First Pass" Analysis (Fire Support Approaches) (Addendum to Block [Lesson] 5)

From: **Chair, Fire Support Assessment Team**

To: **Chief of Defense, Republic of X**

Subject: **"First Pass" Analysis (Fire Support Approaches)**

References:

1. Memorandum, Subject: Initial Analysis of Indirect Fire Support Capabilities

2. Memorandum, Subject: Initial Analysis of Fire Support Capability Planning Proposal

Discussion: Earlier analysis from this assessment team (references above) concluded that improvements in readiness alone would not completely fill the assessed fire support capability gap. To support a "first pass" assessment, the analysis team examined potential materiel approaches.

Materiel Options Considered: Based on the approved capability planning proposal, we have constructed several fire support materiel approaches. One potential approach would be to procure additional quantities of artillery and/or mortar models currently in service. We have already performed much of that analysis and understand potential contributions to needed capability. Another alternative approach would be to acquire other types of systems capable of delivering fire support but featuring greater mobility than the current land-based systems. The assessment team selected three such new systems for analysis:

- Light attack jets
- Armed assault helicopters
- Light (2,500-ton) frigates with 127 mm naval guns

We will now focus our analysis on these systems and integrate options that include greater numbers of existing mortar and artillery systems in an overall assessment of options. A representative equipment model was identified for each new system to provide a baseline for estimating capabilities. These candidate systems have the performance characteristics shown in Table B-14.

Table B-14. Candidate New Fire Support Systems

System	Warhead	Range	CEP	Killing Radius	Delivery Capacity
Light attack jet	113 kg HE bomb	not applicable*	185m	175m	4 bombs
Armed assault helicopter	70mm HE rocket	not applicable*	35m	15m	114 rockets
Light frigate with 3 x 127mm guns	127mm shell	20 km	80m	45m	60 aimed rounds in 2 minutes

* Greater than battalion operating area
HE = high explosive

Using the performance characteristics in Table B-14, the lethal area of single airstrike or two-minute barrage conducted using the systems in Table B-14 can be calculated. The results are shown in Table B-15.

Table B-15. Lethality of Candidate New Systems

Effect	Fighters		Helos	Frigates
A. Lethal radius per round (m)	175		15	45
B. Lethal area per round (m^2) ($A^{2}*\pi$)	96,211		707	6,362
C. Circular Error Probable (m)	185		35	80
D. Area within CEP (m^2) ($C^{2}*\pi$)	107,521		3,848	20,106
E. Inner Lethal Ratio B/D (see note 1 below)	0.895		0.184	0.316
F. 3σ (m) (see note 2 below)	816		154	353
G. Outside Error area (m^2) ($F^{2}*\pi$)	2,092,751		74,905	391,340
H. Total Impact Area (m^2) (G-D)	1,985,231		71,056	371,234
J. Impact Ratio (B/H) (see note 1 below)	0.048		0.010	0.017
K. Total Lethal Ratio (E+J)	0.943		0.194	0.334
	All Bombs			
L. Rounds in 2 minutes	4	Each Bomb	114	60
M. Lethal area (m^2) per barrage (.5*B*K*L)	181,508	45,377	7,801	63,657
N. Lethal area (m^2) after 53% terrain reduction (M*0.47) (see note 3 below)	85,309	21,327	3,667	29,919

Notes:
1. Percent of area that is lethal for each round/rocket fired/bomb dropped.
2. Assuming the rounds/rockets fired/bombs dropped are normally distributed, half will land wi hin CEP = 0.68σ; and 3σ is sufficient to include all rounds fired.
3. Complex terrain can reduce HE lethal blast radius by an estimated 53%

The next step in the team's analysis was to determine the quantities of additional systems that should be purchased to provide as close to completely-adequate fire support to southern operations as possible. Because of the uncertainties generated by assumptions about the dispersion of enemy formations and system reliability, the team defined a

minimum procurement quantity ("low buy") and a maximum quantity ("high buy"). The following factors were taken into consideration:

> **Readiness option:** The option for improving readiness of existing units and equipment to R1 (Table B-11), is an extremely cost-effective way of increasing capability quickly. This option was included as a starting point for the calculations of all other options in Table B-17.
>
> **Mortars:** The team calculated for the low-buy quantity the number of additional tubes needed to fill up each operationally deployed Army battalion to eight tubes (**+44** additional tubes).[9] The high buy option fills all Army and Marine battalions to 100% of authorized levels (**+87**).
>
> **Howitzers:** With regard to artillery, the low buy option fills each Army battery assigned to support an infantry battalion to five tubes (**+29** additional tubes required). The high buy option fills all Army and Marine battalions in the south to 100% of authorized levels (**+61** tubes).
>
> **Air-based fire support in general:** Ground-based fire-support systems are available to support infantry units in contact with the enemy as long as the friendly units are within firing range. In this analysis, it has been assumed that ground-based fire support systems will be positioned correctly to support maneuvering infantry units. Aircraft, by contrast, must be based close enough to operating areas to arrive in timely fashion in order to provide support in any given incident. In addition, an individual aircraft can service more than one contact incident only if the distance and timing between nearly-simultaneous incidents is such that the aircraft can transit rapidly from one to the other or if the aircraft has sufficient speed to return to base to refuel/rearm and then return to the next location while the next incident is occurring.

Regions III and IV together encompass 108,000 square kilometers, and within them the average battalion operating area is approximately 3,600 square kilometers. Both the regions themselves and the battalion operating areas are somewhat square-shaped.[10] So the outside boundaries of Regions III and IV run about 320 km on each side and battalion operating areas cover about 60 km on each side.

Forward operating airbases have been established roughly in the mid-points of each quadrant in the south (Regions III and IV). This means that the longest flying distance to any target in the region is about 160 km, or about 11 minutes flight time by jet.[11] And the longest distance between two points within an operating area is about 85 km (diagonally

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[9] As previously stated, on average 32 of the 36 Army battalions are available for deployment. The "low buy" option assumes the additional mortars are cross-leveled to the deployed battalions only.

[10] This assertion is added to permit distance calculations to be performed using geometry rather than calculus.

[11] Assuming the jet flies at speed of 880 km per hour.

from one corner to the other), 6 minutes flight time by jet. While operational commanders would prefer a faster response time, 11 minutes as a worst-case is marginally acceptable. Accordingly, the team assumed as a counting rule that one aircraft, if launched and flown to the target successfully, could provide adequate additional fire support to as many as four nearly-simultaneous incidents.[12] Using these assumptions, three aircraft was calculated sufficient to service the peak requirement of 11 nearly simultaneous targets. Finally, the team assumed that one additional aircraft would be required as a maintenance and training float for every three aircraft.

The high buy quantity (**16**) provides four aircraft at each of the four bases, which is sufficient to meet all requirements. Organizationally, this equates to two squadron sets. The Republic of X Air Force has no attack jets at present and acquiring this capability will be costly and may not be affordable. A low buy option would require only one new squadron (**8** aircraft). The personnel and unit operating costs for these squadrons are included in the cost computations in Table B-18.

Helicopters: Helicopters fly more slowly than jets,[13] so they will require forward operating bases (FOB) in addition to the four airbases in order to be respond to enemy contacts within ten minutes. Ten minutes flight time is approximately 25 km, so at least two FOBs will be needed to cover a battalion area. Four helicopters at each FOB would provide enough additional firepower to cover a battalion's expected targets.[14] The team assumed two additional helicopters float would be needed to maintain each eight deployed to FOBs, so 10 helicopters would be needed to provide continuing protection for one battalion area. Providing coverage for the entire south would be prohibitively expensive. The team defined a low-buy option to cover four battalions and a high buy option to cover eight. The low buy option operationally requires creation of four new squadrons (**40** helicopters, 10 for each squadron), and the high buy option requires creation of eight new squadrons (**80** helicopters).

Frigates: Using frigates to provide fire support for land forces can be problematic. As shown in tables B-14 and B-15, frigates do have heavy-caliber guns and a high rate-of-fire, and can thus generate a large lethal radius in a single barrage. But frigates can only fire into land areas close to coastlines. Regions III and IV together cover 108,000 square kilometers, making the mean distance from shore about 160 km, while 127mm naval guns have a range of 20 km (Table B-14). At 20 km range, one frigate, which can of

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[12] Per Table B-15, each bomb generates 21,327 square meters of lethal area and is assumed to be deliverable against a single target. This firepower, when added to the additional firepower generated from raising ground unit readiness levels to R1 (at least 37,529 square meters, see Table B-11), is considered adequate to cover the 59,400 square meters of lethal area required.

[13] 250 km per hours is assumed here.

[14] Assuming each battalion has its organic firepower at R1 readiness status.

course be positioned only on the boundary of an operating area (60 kilometers x 60 kilometers), can at best cover only about one third (33%) of the average operating area. For these reasons, frigates were dropped from further consideration. While we recognize that frigates have tremendous capabilities and are well suited to meet other needs, we cannot rightfully continue to consider them as a potential approach, justified solely from the perspective of this capability need.

Table B-16. Potential Acquisition Quantities

System	Low buy	High buy
155mm artillery	29	61
60mm mortars	44	87
Light attack jets	8	16
Armed helicopters	40	80

The acquisition quantities in Table B-16 were used to compute the fire support improvement offered. The results are shown in Table B-17.

Table B-17 shows that neither the low nor the high buys of mortars fully satisfies the coverage requirement (Options C and D). That is also true of the low and high buys of additional artillery (Options E and F), although the high buy comes close (90%) in the 14 areas where coverage is still below the desired level.

The difference in attack aircraft coverage (Options G and H) is due to the time and distance to target issues discussed above. Helicopters (Options I and J) have even more severe time and distance limitations, and suffer as well from having relatively light armament. The combination of slow speed (relative to jets) and light armament would make it prohibitively expensive to procure in numbers sufficient to meet the full fire support requirement, and the firepower they do contribute is relatively cost-ineffective (see Figures B-2 and B-3).

Finally, combining the high buy quantities of mortars and artillery (Option K) fully meets requirements and so is an especially attractive option given its low cost (Table B-18).

Table B-17. Coverage Based on Acquisition Quantities in Table B-16

Options		Areas with adequate coverage	M^2 covered
A	Current program	6%	51%
B	R1 readiness	11%	70%
C	Mortar low buy	11%	75%
D	Mortar high buy	11%	78%
E	Artillery low buy	11%	80%
F	Artillery high buy	19%	90%
G	Jets low buy	56%	94%
H	Jets high buy	100%	118%
I	Helos low buy	22%	81%
J	Helos high buy	33%	92%
K	D + F*	100%	98%

* Actual area covered is slightly less than required for Case A Operations Areas

Finally, the team calculated the approximate costs for each option (see Table B-18).

Table B-18. Option Costs

Option		Acquisition	Annual operations	Mid-term total	LCC
A	Current program	$0	$57	$340	$1,133
B	R1 readiness	$0	$66	$395	$1,317
C	Mortar low buy	$4	$68	$405	$1,340
D	Mortar high buy	$9	$69	$415	$1,363
E	Artillery low buy	$6	$69	$413	$1,361
F	Artillery high buy	$13	$72	$432	$1,410
G	Jets low buy	$333	$193	$1,160	$3,090
H	Jets high buy	$667	$321	$1,926	$4,863
I	Helos low buy	$240	$182	$1,091	$3,077
J	Helos high buy	$480	$298	$1,787	$4,837
K	D + F	$21	$75	$452	$1,457

LCC = 20-year life cycle cost
Figures in $ millions without inflation

The cost-effectiveness of all options is shown in Figures B-2 and B-3.

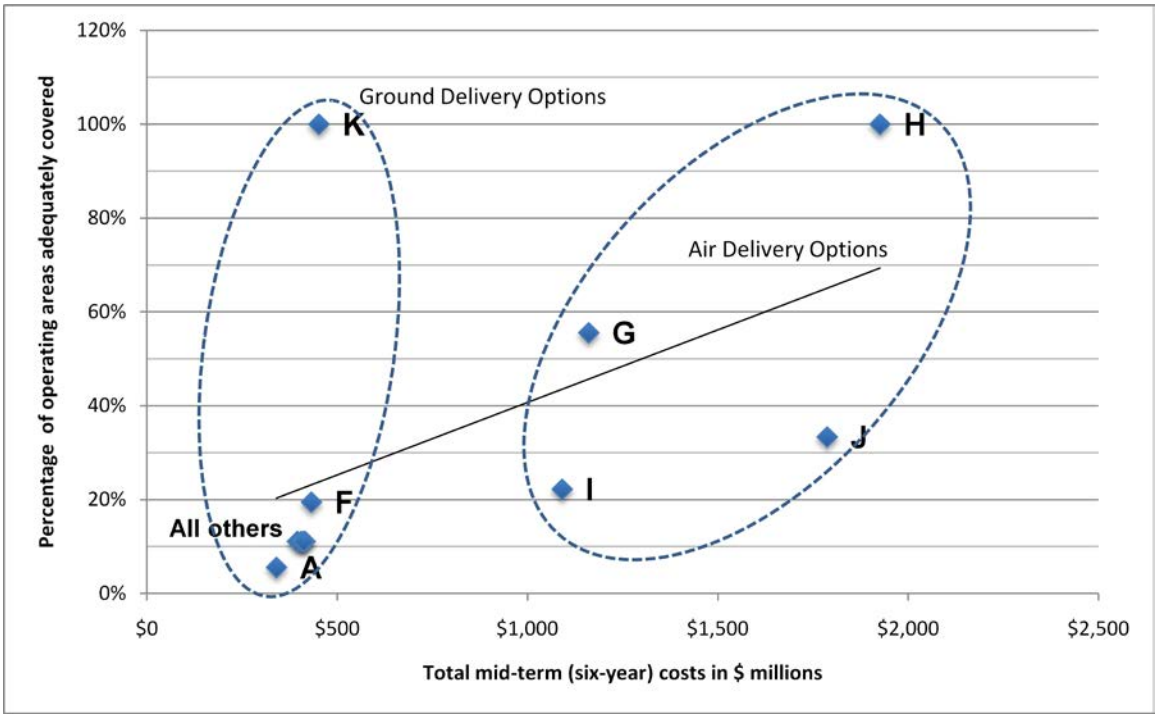

Figure B-2. Cost vs. % of Areas Adequately Covered

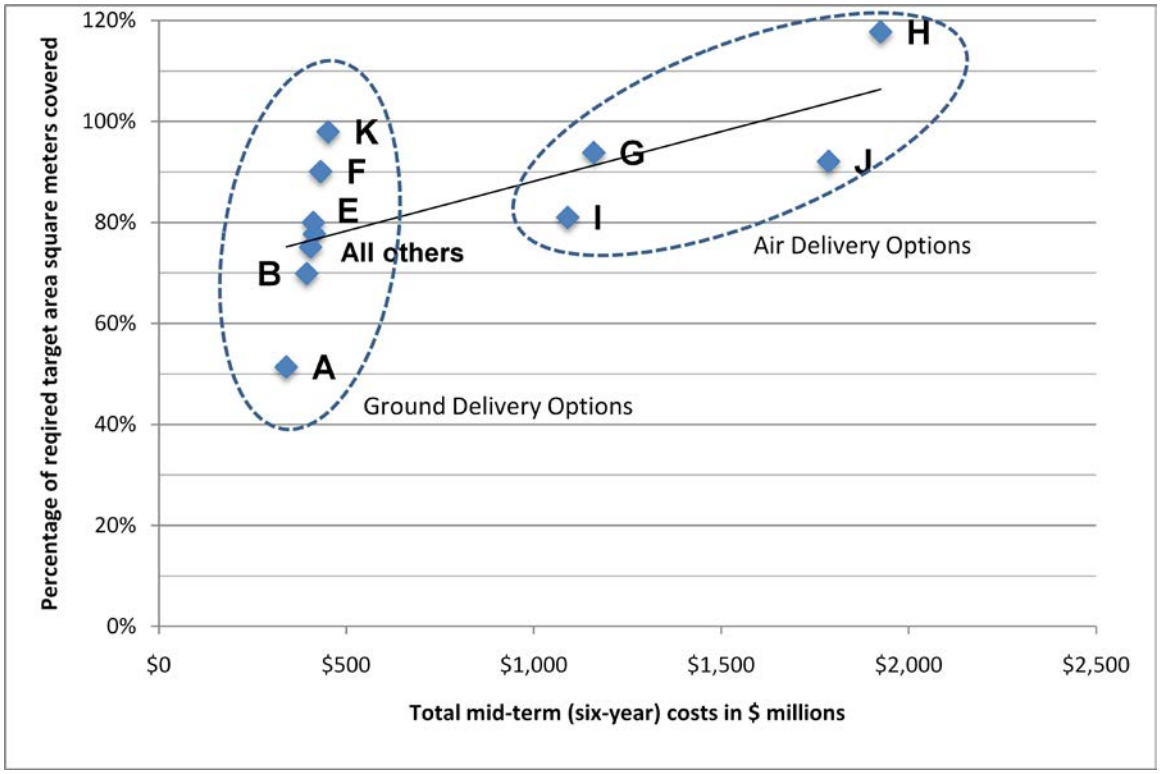

Figure B-3. Cost vs. % of Required Square Meters Covered

Conclusion: The options for additional purchases of either artillery alone (Option F) or a combined acquisition of artillery and mortars (Option K) are attractive. In general, the high acquisition costs of jets and/or helicopters (air delivery options), coupled with the need to create units to operate them, makes their cost unattractive. But those calculations are completely dependent upon assumptions about the timing of nearly-simultaneous enemy contact and the basing assumptions used here for quick analysis. Different assumptions might make Option G more attractive.

So the analysis team recommends Option K as its preferred option for analysis in subsequent acquisition planning. It also rates Options F and G as potentially attractive second-best options. It is less likely that the assumptions about helicopter availability will change sufficiently to make helicopters appear cost-effective after more careful analysis, but the team recommends that helicopters be included in the first-pass acquisition analysis until that assumption is confirmed.

Specifically, the analysis team concludes that:

- Existing fire support (Option A) for Internal Security infantry units is inadequate;
- Improvements in unit readiness (Option B) offer attractive cost effective increases in fire support capability; but,
- Readiness improvements alone will not close the capability gap; and so,
- Purchases of additional howitzers and mortars (Option K) appear to be the preferred option.
- Purchases of additional howitzers alone (Option F) is next most attractive given the assumptions used by the team on aircraft availability, but,
- Different assumptions about aircraft availability might change these conclusions, and so the acquisition first pass analysis should consider them also.

Outcome for Participants: the Chief of Defense and the Minister of Defense accepted the recommendations. Table B-19 represents the decision result from the capability planning process incorporating the analysis from Work Group D (played by facilitators).

Table B-19. Revised Decision Chart

Work Group	Mission Area	Capability Assessment Area	Options Selected by Senior Review Group
A	Internal Security	Ground Combat and Amphibious Warfare (Maneuver)	**Option B** (Preferred) Option C (Next Best)
B	Territorial Defense	Maritime Surveillance and Interdiction	**Option B** (Preferred) Option D (Next Best)
C	National Development	Reconstruction	**Option D** (Preferred) Option C (Next Best)
D (faciltators)	Internal Security	Ground Combat and Amphibious Warfare (Fire Support)	**Option K** (Preferred) Options F or G (Next Best)

Recommendation: The team recommends that all but the frigate materiel approach examined be forwarded to acquisition planning in order to better identify an approach that is most promising and a specific system type that can best meet the stated requirement, considering effectiveness, costs, and affordability and other important criteria.

Table B-20 shows the quantities recommended for further examination in acquisition planning.

Table B-20. Recommended Approaches and Quantities

Approach	Low buy	High buy
Artillery	29	61
Mortars	44	87
Light attack jets	8	16
Armed helicopters	40	80

Appendix C.
Glossary

Analyst	A person who gathers relevant information, develops and objectively assesses alternative solutions to issues, and provides recommendations for consideration to a superior.
Appropriation	A sum of money provided or set aside for a particular purpose and time period (typically a year) by the legislative branch of a government.
Acquisition Decision Memorandum (ADM)	A document that formally records the decision of a senior leader on the results of a Second Pass assessment [see also Second Pass Assessment]. An ADM documenting a decision to proceed further and obtain proposals or bids should identify the approved funding amount and funding source(s) that are to be used; and approve or modify the key performance parameters [see also Key Performance Parameters] in the proposed Circular of Requirements [see also Circular of Requirements] and the Bid and Evaluation Plan [see also Bid and Evaluation Plan] that have been developed by the staff and provided to the senior decision maker.
Acquisition Planning Memorandum (APM)	A document that formally records the decision of a senior leader on the results of a First Pass Assessment [see also First Pass Assessment]. An APM documenting a decision to conduct the Second Pass Assessment [see also Second Pass Assessment] should identify the materiel approach or approaches that are to be further evaluated.
Acquisition Planning	A deliberate process that entails assessing potential materiel options and developing affordable acquisition proposals that are designed to meet broadly stated operational needs in a timely manner and at a reasonable price. The First Pass – Second Pass technique is one way of organizing and conducting the acquisition planning effort.
Affordability	A judgment that entails comparing the expected costs and benefits of an alternative and the financial resources that are available to implement the alternative.

Alternative	Commonly defined as one of more things to be chosen. With regard to defense management, a specific system type that can provide the desired capability or potentially meet the operational need [see also Capability].
Analysis	Gathering and objectively evaluating relevant information on a subject or issue.
Approach	Commonly defined as the taking of preliminary steps toward a particular purpose. With regard to defense management, a broad materiel category that could provide a desired capability [see also Capability].
Area (or a capability) of Declining Relevance	An area (or a capability) that will become less important in the future and could be resourced at a lower level in order to free up resources for higher priority needs.
Assessment	An objective evaluation of an area or issue that considers the results of an analysis and other factors and evaluates the relative merits of potential alternatives/options or opposing points of view.
Bid and Evaluation Plan	A document that describes the procedures and time lines that will be employed to initiate and conduct a procurement action. It includes preparing materiel specifications for potential bidders, developing required procurement documents, soliciting and evaluating proposals or bids, and awarding and administering a contract [see also Procurement and Contracting].
Budget	A plan for a given period of time or a specific project that relates the fiscal and other resources (e.g., personnel, equipment, training, and infrastructure) that are required to accomplish a stated objective.
Capability (General)	An organization's ability to preplan and accomplish an objective and achieve the effects desired in a specified time period and operating environment. Capability is generally a function of organizational structure, including personnel and equipment on hand, the readiness of personnel and equipment, training, and sustainment.
Capability (Military)	A military unit's ability to preplan and accomplish a mission and achieve the effects desired in a specified time, operational environment, and state of preparedness, where preparedness is the sum of readiness and sustainment.
Capability Assessment Area	A group of capabilities that are essential to accomplishing the major objectives, missions, tasks, or priorities in a defense mission area.

Capability Gap (or shortfall)	The inability of an organization or military unit to preplan and accomplish a mission and achieve the effects desired in a specified time, operational environment, and state of preparedness. In general, a gap (or shortfall) may be due to a lack of personnel, equipment, training, or infrastructure and funding.
Capability Planning	A deliberate process that provides a coherent basis for (1) implementing the major missions or objectives assigned in a strategic plan; (2) assessing the capability [see also Capability] to accomplish assigned major defense missions or objectives; and (3) developing broadly stated non-materiel or materiel-related approaches that address the most important capability-related challenges.
Capability Planning Proposal	A document describing a high priority capability planning issue (i.e., a capability gap or shortcoming or an area of declining relevance) that warrants senior leader attention and the broad non-materiel or materiel approaches that could be pursued to address the issue. Non-materiel approaches should be examined first and deemed inadequate or insufficient before recommending a materiel approach Materiel approaches should be stated in broad operational terms that do not preordain selection of a specific weapon system or type of materiel.
Capability Plans	Implement the objectives and tasks assigned in a Strategic Plan [see also Strategic Plan] or by a senior civilian or military leader.
Circular Error Probable (CEP)	Commonly used to measure a weapon system's accuracy. Defined as the radius of a circle into which a missile, bomb, or projectile will likely impact at least half of the time at a given range (indirect fire) or altitude (bomb).
Circular of Requirements	A document that identifies the key performance parameters a weapons system or item of equipment must possess to achieved the effects desired in an operational environment. A key performance parameter [see also Key Performance Parameter] should preferably be stated in terms of ranges (e.g., a threshold and a desired level) instead of a specific point value to facilitate competition among potential suppliers.
Concept of Operations	A commander's guidance for accomplishing a military operation or objective in a given time period using the military forces that have been made available for the operation.

Contingency Fund	A budget term. A sum of money provided for a circumstance which may not occur. Money in a contingency fund is typically available to be used only if the circumstance for which it is provided occurs.
Contract Logistics Support (CLS)	Logistics support of defense equipment performed under contract by commercial organizations. Support provided may include materiel, facilities, supply and distribution, maintenance, training, software support, and rebuild/overhaul. Also includes on-site logistical support provided by the system's manufacturer as part of the initial fielding of a new system.
Data	Useful factual information (number, statement, figure).
Decision maker	A person or persons authorized to make decisions in a management system or an organization.
Decomposition	The logical breakdown of a broad concept (e.g., mission area) into a hierarchy of just enough parts (e.g., capability areas/sub-areas) necessary for analysis purposes.
Defense Management System	The collection of planning processes and products that effectively and efficiently allocates available resources among competing priorities to accomplish the most important defense objectives; and, as appropriate, to realign resources during budget implementation to ensure accomplishment of the most important objectives.
Defense Resource Planning	The process used by a government to allocate available resources to accomplish stated defense objectives. [See also Defense Management System.]
Delivery Schedule	Timing or rate of delivery as required by a buyer, or as agreed between a buyer and a seller, for goods or services purchased for a future delivery period [Source: www.BusinessDictionary.com[1]].
Deployment Planning	An element of military planning that deals with the movement of forces and their necessary supplies to an area of operation.
Effectiveness	The capability of an organization to carry out an assigned mission and achieve the effects desired in the time allotted.

[1] Business Dictionary website, www.businessdictionary.com.

Effectiveness Hierarchy	A multi-level breakdown that logically links each level to its neighboring levels from top to bottom. The top level is a stated objective and the bottom level consists of key performance parameters. In this way, every element within each level links to an element in its neighbor level(s). [Derived from multiple definitions at www.BusinessDictionary.com]
Employment Planning	An element of military planning that defines how military forces will be used to attain military objectives.
Execution	A budget term. The process of implementing a budget during the budget period.
Fiscal Guidance	A document typically issued by the senior leadership or chief financial officer that specifies the annual aggregated funding level to be used in resource planning by major components of the defense establishment for a multi-year medium-term planning period (e.g., three to six years).
First Pass Assessment	The process for assessing the relative merits of materiel-related approaches that have been approved for further planning by a decision maker and identifying the most promising approach or approaches for decision.
Fixed Costs	Costs that do not change between alternatives under consideration.
Force	A group organized to fight: a body of military personnel, ships, or aircraft brought together to fight in a battle or a war.
Force-Oriented Cost Information System (FOCIS)	A computer-based tool for estimating the cost of military forces and relating these costs to defense mission areas and major defense programs.
Full Operational Capability	The point in time that all required systems have been delivered [see also Delivery Schedule] and are considered capable of completing the mission.
Functional Plan	A plan for accomplishing a specific functional area objective such as meeting recruitment and personnel fill objectives, equipment readiness levels, etc.
Guidance	The policy, direction, decisions, or instructions provided by a higher authority.

Key Performance Parameter	A critical system attribute or characteristic that is essential to effectively operating in an intended operational environment and achieving desired results. A key performance parameter is typically stated in terms of ranges (i.e., a threshold and a desired level) instead a specific point value in order to facilitate competition among potential suppliers. Must be testable and measureable.
Implementer	A person or organization responsible for carrying out decisions made by a higher authority.
Information	Processed, relevant, and summarized data [see also Data].
Input	Data or information that is considered in decision making or entered into a model, e.g., the Force-Oriented Cost Information System (FOCIS). In programming and budgeting--things which must be present and funded to create a defense capability, (e.g., the manpower, training, facilities and equipment that are required and the funds that are associated with them).
Instruments of National Power	The means available to a nation-state to accomplish its national objectives. The instruments of national power typically include diplomatic, informational, military, economic, and legal or law enforcement means.
Integrated	All relevant parts or elements are brought together into a whole.
Interoperability	The ability of a military force, or unit, to operate effectively with another service's or country's military forces or units in the execution of assigned missions and tasks.
Issue	A matter, usually a problem or consequence that has occurred (or is certain to occur) due to the realization of a root cause about which there are alternative views or proposals concerning required resolution.
Iterative	To perform the same set of actions repeatedly to gain a more informed basis for making recommendations or decisions.
Joint	Term used to describe activities, operations, or organizations in which elements of two or more military services or departments participate, preferably but not necessarily under the charge or management of a single commander or director
Life Cycle Cost	The total cost to the government of obtaining, operating and maintaining, and disposing of a system over the life time of the system. These costs typically include research and development, procurement, operating and support (including infrastructure and construction), and disposal costs.

Long-Term Planning Horizon	The twelve-year planning horizon beyond the six-year medium-term planning period.
Major Mission	A primary objective to be accomplished by an organization.
Materiel Approach	A proposed way of addressing a capability gap (or shortfall) that entails acquiring new equipment or modifying existing equipment.
Mean-Time-To-Failure	The average time a system remains operational prior to a failure that places the system into a non-mission capable status.
Measure of Effectiveness (MOE)	A criterion for determining the effectiveness of a proposed solution to a problem. A qualitative or quantitative measure of a system's performance or a characteristic that indicates the degree to which it performs the task or meets a requirement under specified conditions.
Medium-Term Planning Horizon	A six-year period of time that encompasses the upcoming budget year plus five years.
Military Strategy	The art of fielding, deploying, and employing military forces to accomplish national objectives.
Mission Area	A grouping of interrelated activities that must be performed effectively to accomplish a national level objective.
Mission Area Assessment	The process for evaluating the adequacy of the capabilities that are contained in an approved Defense Program for a defense mission area. It entails identifying capability gaps (or shortfalls) by defense mission area and, as appropriate, areas of declining relevance that can be reduced to free up resources for higher priority needs.
Mission Reliability	The percentage of time the system is mission capable.
Mission Sub-Area	A major component of a defense mission area that can be evaluated.
Mobility	The system's ability to support the intended scheme of maneuver.
Mobilization Planning	An element of military planning that entails bringing military forces to a state of readiness for war or other national emergencies.
National Military Strategy	The overarching basis for developing military plans and applying military power during peace and war to attain national objectives.
Mission	A task assigned by proper authority to an organization.

National Interests	Elements that constitute a state's needs, -- including preservation, independence, military security and economic health.
National Military Objectives	The fundamental aims, goals, and purposes that a military force must be prepared to accomplish.
National Objectives	The fundamental aims, goals, or purposes of a state.
National Power	The combined resources (political, economic, technological, social, scientific, military, and geographic) of a state that comprise its strength. Also referred to as **elements** of national power.
National Security Concept	A concept for employing the components of national power (including political, economic, cultural, geographic, technologic, information, military) to attain national objectives.
National Security Policy	A broad statement of national security principles, goals, interests, and priorities that is intended to guide government security planning.
National Security Strategy	The application of political, economic, psychological, and military powers of a state during peace and war to attain national objectives.
Non-Materiel Approach	Changes in doctrine, organization, training, personnel, leadership and education, and facilities that can be pursued to address a capability gap (or shortfall).
Objective	A desired end-state or desired effect.
Operational Context /Environment	The expected operating conditions that an organization or activity will encounter. With regard to military operations, it includes the expected terrain, climatic conditions, engagement ranges, etc. that define the potential battle space.
Operations Plan	A plan for accomplishing a stated objective using assigned and attached forces.
Operational Risk	Sensitivity of the system to uncertainty in the specified operational environment.

Partnership for Peace (PfP)	Partnership program between NATO and individual European and former Warsaw Pact countries and former Soviet Union republics, aimed at enhancing security and stability and addressing such issues as terrorism, disaster response, and proliferation of weapons of mass destruction. Current PfP countries are: Armenia, Austria, Azerbaijan, Belarus, Bosnia and Herzegovina, Finland, Former Yugoslav Republic of Macedonia, Georgia, Ireland, Kazakhstan, Kyrgyzstan, Malta, Moldova, Russia, Serbia, Sweden, Switzerland, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan.
Planning	A systematic way of (1) establishing goals or objectives or (2) determining how to accomplish current or projected missions, objectives, or tasks.
Planning, Programming, and Budgeting System (PPBS)	A systematic, calendar, date-driven process for identifying and funding defense and security-related needs; and assessing results achieved against established programmatic and financial management objectives.
Procurement and Contracting	The process for providing materiel specifications to potential providers; soliciting and evaluating contract proposals; and the award of contract for the delivery of defense materiel and services [see also Bid and Evaluation Plan].
Program	A group of related activities and the resources required to achieve a specific capability or performance-based objective. A program in this context relates a desired output (capability) to resource inputs (personnel, operating and support, training, equipment, and facility costs).
Program Element	The smallest aggregation of functional or organizational entities and related resources that are needed to perform a specific mission. For programming and budgeting purposes, each program element should be mutually exclusive and only assigned to one defense mission area. For mission area assessment purposes, “multi-purpose” program elements (e.g., units that can perform more than one mission) can be identified and attributed to more than one defense mission area.
Programmatic Risk	Sensitivity of a program to uncertainty. Categories include: Requirements, Test and Evaluation, Modeling and Simulation, Technology, Integration, Logistics, Production, Industrial Capability, Cost, Management, Budget, Environmental.

Quality	Term used to describe useful information to the decision making process. To be useful, the information must be: focused, timely, accurate, complete, traceable, and objective.
Readiness	A descriptor of the degree to which an organization or military force is prepared to carry out an assigned mission or task. Degrees are typically denoted as R1, R2, and R3 (R1 being the highest degree of readiness).
Recommender	A person who makes recommendations to a decision maker.
Redeployment Planning	Military planning that is directed towards moving military units, individuals, supplies, or equipment from an area to their home station or to another designated location.
Requirement	Something that is essential to accomplishing a stated objective.
Resource	An input (e.g., funding, personnel, equipment, etc.) that is needed to accomplish an objective or provide a capability [see also Capability].
Resource Planning	A systematic basis for identifying the resources required to accomplish assigned or potential objectives or provide a capability [see also Capability]. In resource-constrained environments it usually entails developing multi-year plans or annual budget proposals that allocate limited resources to the highest priority objectives.
Resource Management System	A systematic basis for allocating scarce resources among competing priorities and assessing results achieved against established programmatic and financial management objectives.
Risk	Sensitivity to uncertainty. Can be categorized as either operational [see also Operational Risk] or programmatic [see also Programmatic Risk].
Second Pass Assessment	The process used to identify the most promising materiel alternatives and the key performance parameters that facilitate competition among potential suppliers and are essential to achieving the effects desired in an intended operational environment. The process also entails developing for senior leader decision the recommended funding sources and amounts, a Circular of Requirements containing the key performance parameters, and a Bid and Evaluation Plan.

Sensitivity Analysis	A technique for assessing the extent to which changes in assumptions or input values will affect the ranking of alternatives.
Strategic Assessment	Examines the future security environment and identifies security challenges based on an objective analysis of national security policies, priorities, threats, and opportunities.
Strategic Planning	A deliberate process that identifies mid- and long-term challenges and planning options.
Strategic Plan	A plan for accomplishing national-level objectives that entails a "whole-of government" approach (see also "whole of government").
Strategic Setting	The current or projected global or regional environment and its potential ramifications for defense-related planning.
Strategy	The science or art of planning and conducting a war or a military campaign.
Supplemental Appropriation	A budget term. Additional funds provided by the Legislative Branch for a specific purpose. These funds are in addition to those provided in the regular budget,
Supportability	The ability to provide essential logistics support to a force. It entails providing the fuel, repair parts, ammunition and maintenance, and other support that is needed by the force to attain and maintain desired readiness levels or to accomplish a stated mission or objective.
Survivability	The capabilities of a system and its crew to avoid, withstand, or defeat lethal attacks or effects.
Sustainment Planning	An element of military planning directed toward maintaining a force so that it can continue to carry out operations in support of a military mission.
System Availability	Measure of the percentage of time the system is in a mission capable status [See also Mean-Time-To-Failure].
Taxonomy	The decomposition of a concept into a hierarchy of logically-related subdivisions for the purpose of analysis.
Transfer Authority	A budget term. The authority to transfer appropriated monies from one account to another account and use them for a different purpose.
Variable Costs	Costs that change depending upon the alternative under consideration.

"Whole of government"	A phrase introduced in DOD's *2010 Quadrennial Roles and Missions Review Report* that refers to the holistic concept whereby national security planning and budgeting is accomplished by all of a government's national security partners - a unified effort with participation from multiple agencies including, among others, defense, intelligence, state, transportation, and homeland defense.

Appendix D.
Abbreviations

ADM	Acquisition Decision Memorandum
APM	Acquisition Planning Memorandum
Arty	Artillery
BEP	Bid and Evaluation Plan
C2	Command and Control
CAP	Capability Planning
CEP	Circular Error Probable
CHoD	Chief of Defense
CONOP	Concept of Operations
COR	Circular of Requirements
CPP	Capability Planning Proposal
CPX	Command Post Exercise
DOD	U.S. Department of Defense
DOS	U.S. Department of State
DOTMLPF	Doctrine, Organization, Training, Materiel, Leadership, Personnel and Education, Facilities
DPG	Defense Planning Guidance
DRMS	Defense Resource Management Studies
EEZ	Exclusive Economic Zone
EFC	Equivalent Full Charge
FOCIS	Force-Oriented Cost Information System
FUNCPLAN	Functional Plan
FYDP	Future Years Defense Plan/Program
GDP	Gross Domestic Product
KPP	Key Performance Parameter

LCC	Life Cycle Cost
MAA	Mission Area Assessment
Maint	Maintenance
MoD	Minister/Ministry of Defense
MOE	Measure of Effectiveness
MTBF	Mean-Time-Between-Failures
MTTF	Mean-Time-To-Failure
MTTR	Mean-Time-To-Repair
NB	Note Well, Next Best
NDP	National Development Program
NMS	National Military Strategy
OPLAN	Operational Plan
PE	Program element
PDM	Program Decision Memorandum
POM	Program Objective Memorandum
PPBES	Planning, Programming, Execution and Budgeting System
PPBS	Planning, Programming, and Budgeting System
R1, R2, R3	Readiness Level 1, 2, 3
RoX	Republic of X
SSR	Security sector reform
Tng	Training
USAID	U.S. Agency for International Development
USD	U.S. dollars
USG	U.S. Government

Appendix E.
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Appendix F.
Instructions for Assembling Notebooks

This appendix provides information on assembling and printing the *Participant's Notebook*, the *Facilitator's Notebook* and the *Student's Notebook* that are used in the *Applying Capability Planning and Acquisition Planning Processes* course.

The following table shows the components of this paper that should be printed for each of the notebooks.

Section	Participant's Notebook	Facilitator's Notebook	Student's Notebook
Notebook Cover	Yes	Yes	Yes
Contents of Notebook	Yes	Yes	Yes
Lesson Plans 1 – 12		Yes	Yes
Teaching Notes for Lessons 1 – 12		Yes	
Syllabus		Yes	Yes
Advance Reading	Yes	Yes	Yes
Republic of X	Yes	Yes	Yes
Slides for Block 1 [Lesson 1] through Block 8 [Lesson 8]	Yes	Yes	Yes. Facilitator to distribute prior to lesson on date of attendance.
Outcome (answer) slides for Block 1 [Lesson 1] through Block 8 [Lesson 8]	Yes. Print separately. Facilitator to distribute after workgroups brief results.	Yes	Yes. Print separately. Facilitator to distribute after workgroups brief results.
Appendix A. Planning Process and Key Products	Yes	Yes	Yes
Appendix B. Fire Support Addendums	Print and distribute at Facilitator's discretion	Yes	Print and distribute at Facilitator's discretion
Appendix C. Glossary	Yes	Yes	Yes
Appendix D. Abbreviations	Yes	Yes	Yes
Appendix E. References		Yes	Yes
Appendix F. Instructions for Assembling Notebooks		Yes	
CD with electronic copy of this paper	Yes, but provide at end of training exercise	Yes	

Example Map Graphics for Slides

Before printing, the Notebooks may be customized by replacing the generic placeholder labeled ‘flag button’ in the upper right corner of the slide masters with an actual country flag, a button fashioned from the flag, or the crest or emblem used by the country’s Ministry of Defense. Below are graphics of buttons fashioned from flags.

Colombia

Iraq

Botswana

Kazakhstan

Japan

Facilitator's Notebook:
Applying
Capability Planning and Acquisition Planning Processes

Day, Month – Day Month 20##

City, Country

Defense Resource Management Studies

Contents of Facilitator's Notebook

Student's Notebook:
Applying
Capability Planning and Acquisition Planning Processes

Day, Month – Day Month 20##

City, Country

Defense Resource Management Studies

Contents of Student's Notebook

* Instructor will distribute slides for Lessons 1-8 prior to lesson on attendance date.

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13. SUPPLEMENTARY NOTES

14. ABSTRACT

This paper is intended to serve as baseline documentation for capability and acquisition planning processes as we have practiced and refined them in at least three countries outside the United States. This paper contains a syllabus and instruction materials that can be used in exercises for military staffs or as graduate level seminar courses suitable for a foreign staff college or war college. We intend for these materials to be a start point for adaptation to specific country needs, facilitating more rapid exercise and course development, rooted in theory that has been demonstrated successfully. We have designed the exercises and courses to improve basic understanding and facilitate implementation of two component processes of Defense Management -- Capability Planning and Acquisition Planning. The seminars highlight key management concepts, the importance of analysis and collaborative problem solving, and potential implementation challenges while also providing participants hands-on experience with the intended end-states resulting from the Capability and Acquisition planning processes.

15. SUBJECT TERMS

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