Coast Guard Publication 7-0

Capability Management

May 2013

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THE COMMANDANT OF THE UNITED STATES COAST GUARD

Washington, DC 20593-0001
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Commandant's Letter of Promulgation

Readiness is achieved by matching the appropriate capability to validated requirements. Retaining the effectiveness of capability throughout its life cycle is critical to sustaining readiness. The ever-changing environment and multi-mission requirements the Coast Guard must address to enhance performance and mitigate risk present a challenge. Not only do we need to be concerned about current requirements and current capability, but we must also project forward through strategic planning processes and forecast emerging risks, new requirements, and sourcing for new and extended authorities, capabilities, competencies, capacities and partnerships to perform our mission. A strategic planning perspective allows the Coast Guard to shape its future and obtain and sustain the resources needed to perform evolving missions. A continued vigilance toward capability management ensures that the Coast Guard will have the capability to minimize risk to the public, maximize readiness of forces and optimize the return on investment in capability.

The Coast Guard is held in high regard by those we serve because of our dedicated approach to performing our missions in an effective, efficient, and cost-effective manner. Publication 7-0, *Capability Management*, provides organizational doctrine that will further enhance our ability to build on that well-deserved reputation as we face the challenges of today and prepare for the demands of tomorrow.

Publication 7-0 explains how the Coast Guard analyzes and manages capability in a systematic, transparent and comprehensive manner to conduct operations as described in *Operations* (Pub 3-0).

ROBERT J. PAPP, JR.
Admiral, U.S. Coast Guard

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Preface

The Coast Guard has a proud history of being always ready to perform its missions. This is achieved through translation of strategic intent into key policy, doctrine and plans, and identification of necessary capability to meet validated requirements. The Coast Guard is highly respected for its exemplary stewardship of resources in applying limited capability to the wide variety of missions it is charged with carrying out. It is essential that Coast Guard personnel have the capability and flexibility to safely and effectively perform in all kinds of operating environments.

Coast Guard Publication 1 states that the Coast Guard's "ability to field versatile platforms and develop multitalented Coast Guard men and women is perhaps our most important strength." Maintaining capabilities that can be applied to multiple needs across competing demands and risks requires an organizational perspective toward capability management. Capabilities must be leveraged to satisfy multiple requirements and work seamlessly with other capabilities to achieve the desired outcome. Proper stewardship of capabilities also requires forecasting and planning to sustain, replace and retire resources as they become obsolete and reach the end of their life cycles.

The Coast Guard must continuously be prepared to conduct operations through the provisioning of capable, trained and interoperable forces guided by operational policy; doctrine; tactics, techniques and procedures (TTP); and deliberate plans. These forces will be exercised, resourced and ready to meet all present and future steady state and surge operations. The Coast Guard will continue to measure and assess the match between requirements and capability to sustain the readiness of forces and their ability to execute all Coast Guard missions.

The Coast Guard conducts dangerous work in hostile and unforgiving environments. Our heritage and identity are rooted in the courageous men and women who have selflessly executed Coast Guard missions throughout its long history. This tradition continues today. Without a continuing and observable commitment to the safety, training and outfitting of personnel, assets and infrastructure, Coast Guard forces would be unnecessarily endangered and missions jeopardized. This is the heart of capability management.

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Introduction

Publication 7-0 serves as an authoritative statement for conducting capability management activities in the U.S. Coast Guard. It is intended to serve as organizational doctrine, and as such is not in itself directive in nature. Doctrine requires judgment in its application. Organizational-level doctrine in Publication 7-0 provides underlying principles for the development of more specific operational-level doctrine and TTP to manage cutters, boats, aircraft, facilities, C4ISR, personnel and special resources used for mission execution and mission support. This doctrine identifies four disciplines that together form the Capability Analysis and Management Framework (**Figure 1**), and which form Chapters 2-5 of this document:

- **Chapter 1: Capability Management Doctrine** – Description of capability management within the Coast Guard, stakeholder relationships and consideration of risk and readiness assessments in capability decision-making.
- **Chapter 2: Requirements and Capability Analysis** – Analysis and assessment of how well capability is satisfying requirements based on strategic objectives and identifying capability gaps.
- **Chapter 3: Requirements Generation and Management** – Maintaining traceability of validated requirements within a requirements inventory through all derived requirements and to an organizationally recognized source.
- **Chapter 4: Capability Sustainment** – Monitoring capability to ensure it meets design requirements, both now and in the future.
- **Chapter 5: Process Management Interfaces** – Establishing governance processes aligned to both internal and external processes and mandates.

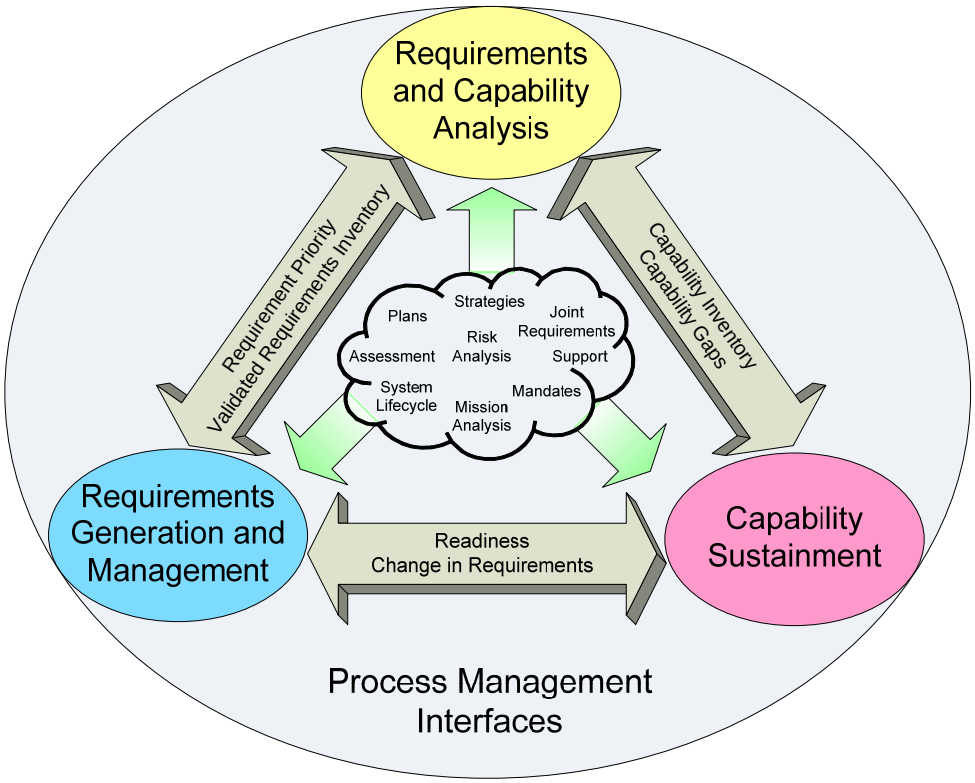

Figure 1: Capability Management and Analysis Framework

Chapter 1

Introduction

Capability management doctrine presents the objectives of Publication 7-0 and introduces key concepts that appear throughout the document, including definitions, the value of capability management to the Coast Guard, the Customer-Provider relationship and the relationship between capability management, readiness and risk. A description of how Publication 7-0 relates to the other organizational doctrine is presented, which also serves to introduce the Technical Authorities that are addressed in Chapter 5.

In This Chapter

This chapter contains the following sections:

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Section 1.A. Capability Management Objectives

1.A.1. Purpose

Publication 7-0 is intended to provide a common understanding of Coast Guard capability management. It provides background, context and increased overall awareness to principles, frameworks and guidelines for capability management. In doing so, it will assist leadership in developing coordinated, capability-related service-wide policy and processes to meet mission requirements. This includes:

- Communicating the relationship between capability management and mission execution;
- Providing a common framework and lexicon to improve communications and strengthen unity of effort within the Coast Guard regarding capability management;
- Promoting and understanding the requirements hierarchy and capability spectrum;
- Providing insights into the relationship between capability and requirements, and the analysis and management of each;
- Describing capability management roles and responsibilities within a Customer-Provider construct;
- Identifying the relationships with strategic planning, performance assessment and budget development cycles;
- Identifying the relationship between capability management and other planning processes and doctrine;
- Defining the relationship between capability management, and readiness and risk management; and
- Defining the relationship between the strategic/operational/tactical levels regarding capability management, readiness and risk management.

1.A.2. Scope

This internal document is scoped to the frameworks and guidelines necessary to develop effective requirements and capability management and analysis processes. There are many external factors that result in modifications, additions, or deletions of requirements (e.g., assessment, mission analysis, external mandates). This, in turn, results in a review of capability to meet those requirements. Once alternatives are identified, developing or establishing the appropriate capabilities is carried out by other processes (e.g., establishing new authorities, acquisition).

This document is focused on clarifying the understanding and management of requirements and capabilities and the relationship between the two – often referred to as readiness. Performance measures identify how well

capability is satisfying requirements. Assessing performance and providing feedback on the effectiveness of capability are processes external to this doctrine but serve as important inputs to capability management.

Publication 7-0 is one of a collection of organizational doctrinal publications that provide guidance to Coast Guard personnel on effective capability management. Other policy and doctrinal publications provide additional guidance on roles, responsibilities and authorities, and delineate specific processes or practices to implement an effective capability management program. Publication 7-0 is used as guidance and reference in developing and implementing the more-specific processes.

1.A.3. Audience

The principal audiences for Publication 7-0 include:

- Executive leadership;
- Capability/platform/facility, strategic/mission, acquisition, and support program directors and managers;
- Planning, programming, budgeting and policy staffs at Headquarters, Areas and Districts; and
- Operational commanders, in concert with the tactical commanders, who must use capability within the performance and design parameters so that it can be sustained, and are responsible for identifying gaps and emerging needs as asymmetric threats develop. All references to operational commanders henceforth will be inclusive of their tactical commanders.

Organizationally, the Deputy Commandant for Operations (DCO) determines strategic goals for Coast Guard programs and missions, and establishes appropriate strategies and policies to achieve the necessary performance. The Deputy Commandant for Mission Support (DCMS) establishes mission support goals and technical requirements, and maintains capability to meet these requirements. Within DCMS:

- The Force Readiness Command (FORCECOM) is inextricably linked to capability management, standardization and force interoperability through its delivery of operational and mission support training and assessment, TTP and exercise support; and
- The Director of Operational Logistics (DOL) supports capability sustainment through mission support logistics for both steady-state and contingency operations across the Coast Guard.

External customers (e.g., DHS, OMB and Congress) will receive insights into Coast Guard capability management through higher level documents generated as a result of strategic planning and external outreach efforts.

Section 1.B. Capability Management Key Concepts

1.B.1. General

This section defines the key terms, frameworks and overarching value of capability management in the Coast Guard. In addition, capability management Customer-Provider roles and relationships are discussed. Finally, the central roles of readiness and risk management are defined.

1.B.2. Capability Spectrum

In simplest terms, a *capability* is the ability to execute a specified course of action. A capability may be accomplished through any combination of material and non-material solutions. Various characterizations of the capability management spectrum are implemented in varying degrees. One thing they all have in common is exposure to a breadth of approaches that must be considered when discussing "capability" and a means to satisfy requirements:

- The Coast Guard's Strategic Blueprint presented capability as authorities, competencies, capabilities and partnerships (ACCP). Capacity has since been added as a quantitative measure of the preceding components to form ACCCP. Not to be confused with overall capability, the word "capabilities" within ACCCP refers to platforms or systems that are physical assets, such as planes, ships, buildings, information systems, etc;
- Coast Guard Business Intelligence (CGBI) identifies facets of readiness through a readiness management framework of people, equipment, supplies, training, infrastructure and information (PESTII); and
- The Department of Defense's capability management framework includes doctrine, organization, training, materiel, leadership, personnel and facilities (DOTMLPF). The DHS version expands on this framework to incorporate regulations, grants and standards (R/G/S).

1.B.3. Capability Management

Capability management is a disciplined approach to planning, organizing, leading and directing efforts to deliver and sustain capability while maintaining consistent and accurate organizational capability and requirements information. Capability management involves assessment and analysis that will identify and source new and extended authorities, capabilities, competencies, capacities and partnerships to meet mission requirements. Capability management processes develop optimal, cost-effective, standardized and interoperable solutions through the application of existing capability, adjustments to capability or the pursuit of new non-material or material capabilities. In principle, non-material solutions should be sought before material ones in determining the most cost-effective solution that meets the requirement. Capability management functions include, but are not limited to:

- Aligning capability with strategic goals;
- Identifying capability shortfalls and championing future material and non-material capabilities;
- Managing standardization and readiness of operational forces – sustaining the match between requirements and capabilities; and
- Using readiness metrics to make decisions, mitigate expected mission degradation and risk, and influence future readiness.

1.B.4. Value of Capability Management

An effective capability management program will improve the ability to:

- Collect, verify, validate and analyze requirements and capabilities, and develop alternative solutions to mitigate risks and meet requirements;
- Integrate capability development efforts from an organizational perspective, providing a formal path for the operational commander to provide the strategic level input and feedback on planning and capability management;
- Allocate the appropriate capability at the right capacity to meet capability gaps;
- Prioritize capability development and sustainment efforts;
- Increase Coast Guard readiness by improving the match between validated requirements and available capabilities;
- Provide Coast Guard personnel with the tools and equipment they need to perform their duties;
- Enhance mission execution by providing the necessary support and operational capability;
- Anticipate capability and capacity gaps; and
- Identify end-of-life and retirement plans for capability.

1.B.5. Requirements Hierarchy

In capability management the word *requirement* can convey a broad range of meanings depending on how it is used. In general, requirements are documented user needs of what a solution should accomplish. Requirements can describe desired functions (i.e., what something does in response to something else), non-functional qualities (e.g., reliability or dependability), performance (i.e., more specific functions and qualities) and external mandates and constraints (i.e., laws, regulations and policies). Requirements are defined at multiple levels and at varying degrees of specificity (**Figure 2)**. Ideally, lower level, more-specific requirements are derived from higher level requirements in the hierarchy and are traceable back to them.

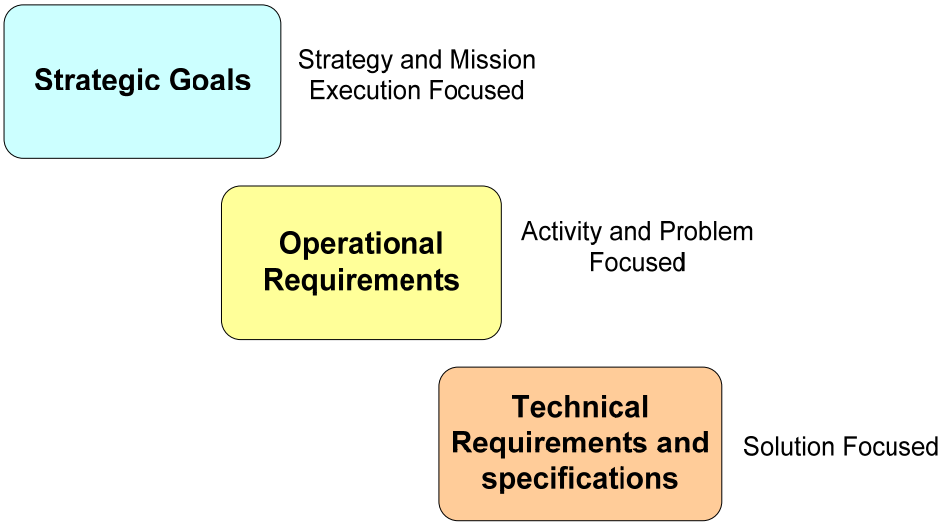

Figure 2: Requirements Hierarchy

All of these types of requirements may be found at each level, with the focus on function-based requirements at the higher levels and performance-based requirements at the technical level. The levels can be described as follows:

- **Strategic goals** encapsulate broad, overarching goals as specified in strategic plans. Strategic goals are driven by authorities and are the end results an organization seeks to achieve its mission. Strategies are formulated and implemented to ensure the activities of the organization are coordinated to achieve its goals;
- **Operational requirements** are derived from the adopted strategies and provide a clear definition and articulation of the performance needed to achieve strategic goals. They must be actionable, testable and traceable to user needs, and defined to a sufficient level to enable the next level of systems engineering. Operational requirements are activity and problem-focused, vice solution-focused. They are best written: “Shall have the ability to [perform activity] under [conditions] to a standard”; and
- **Technical requirements and specifications** provide the guidelines for implementation of systems upon which more-detailed engineering specifications are based. They describe how the capability or system will operate to solve the identified problem.

1.B.6. Customer/ Provider Relationship

It is essential that the roles of those involved in capability management be clearly understood - those responsible for strategic performance and operational execution (the Customer) and those who provide and sustain capabilities (the Provider). The Customer-Provider relationship is depicted in **Figure 3**. The Customer role of Strategic Program Managers is to focus on the effectiveness of program strategies and policy. The Customer role of

operational commanders is to focus on mission execution in the most effective manner with the capabilities provided. Analysis conducted by the Customer helps to identify performance shortfalls and unsatisfied mission requirements. The operational commander has a responsibility to work with planners to ensure strategic goals are understood and performance targets reasonably established. A change in program results and/or capability performance is an indication of a capability gap they as the Customer should report to the Provider.

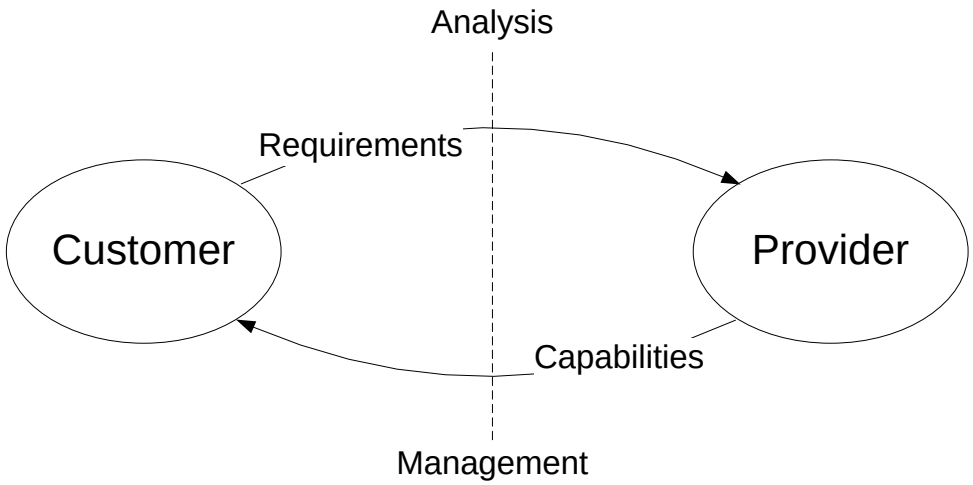

Figure 3: Customer/Provider Relationship

Together, the Customer and Provider should analyze the requirements to verify, validate and prioritize them to ensure that the capability delivered addresses the needs of the Customer and supports Coast Guard missions. The role of the capability Provider is to work with the Customer and other entities (e.g., technical authorities, acquisition, partners, etc.) and deliver the capability to the Customer. After delivery of a capability, it is necessary to manage the capability to ensure that it continues to satisfy the designed requirements throughout its life cycle. Performance assessment and analysis is used by both the Provider and Customer. The Provider should monitor the capability to ensure that it continues to meet the Customer's specified needs and is performing as expected. The Customer should monitor performance of the mission to verify the continued effectiveness of the capability to contribute to mission performance. The development of capability performance measures requires a comprehensive understanding of the desired mission outcomes shared between the Customer and the Provider.

Throughout this document the roles of Customer and Provider will be used as a common framework, and will center on the above description unless specifically stated otherwise. However, it is important to note that although this description centers on the capability directorate's roles and relationships, capability management spans the entire organization, and each organizational element should find itself fulfilling either a Customer or

a Provider role with respect to capability management. An organizational element may have multiple roles as both a Customer and a Provider.

1.B.7. The Relationship Between Readiness, Risk, and Capability Management

Readiness is the state of match between validated requirements and capabilities, and is achieved by matching the appropriate capability to validated requirements. Obtaining and sustaining the appropriate capabilities to meet requirements ensures that the Coast Guard maintains mission readiness. Retaining the effectiveness of a capability is critical to sustaining readiness. Whether it be material or non-material (such as training or competencies), the status, consumption and replenishment of capability must be effectively monitored to maintain expected performance levels. The dynamic environment, flexibility and multi-mission requirements the Coast Guard must address to sustain performance and mitigate risk present a challenge.

Risk management includes processes for identifying, analyzing and communicating risk, and accepting, avoiding, transferring or controlling (reducing) it to an acceptable level considering associated costs and benefits of any actions taken. Consistent with the *Principle of Managed Risk* presented in *Publication 1*, the Coast Guard cannot completely avoid risk; rather, it must determine ways to work safely, effectively and consistently within an inherently risky environment. Risk management is applied on many levels, from long-term strategic risk at the organizational level all the way down to operational planning and mission execution. Based on an understanding of the environment in which the Coast Guard works and the requirements to achieve the mission, operational concepts are developed, appropriate capability is identified and personnel are trained and prepared to leverage that capability to meet mission requirements.

While it may be desirable to prevent all maritime incidents and accidents before they occur, prevention is never perfect. This requires a balance between allocating resources toward prevention and allocating resources toward response to minimize consequences when an event does occur. The Coast Guard's overall effectiveness depends on the synergy between these two very different ways of achieving readiness. Along these lines, risk management is a key component of capability management, allowing the organization to prioritize which capabilities might have the greatest return on investment, identify which capabilities are most relevant to the organization, identify potential capability gaps and enable comprehensive approaches to measure performance and detail progress.

Section 1.C. Relationship to Other Organizational Doctrine

1.C.1. General

Publication 7-0 is one of a series of planned organizational publications that are intended to communicate unity of effort and guide professional judgment across all Coast Guard activities.

Areas of organizational doctrine have been identified and aligned to offices within Coast Guard Headquarters; these offices in turn have the lead for describing organizational doctrine within their particular areas of expertise or authority. The collection of organizational doctrine needs to be aligned across all offices having lead in each area. Pub 7-0's relationship with other high level doctrine is envisioned as follows.

Pub 1

Coast Guard Publication 1, *U.S. Coast Guard: America's Maritime Guardian (Pub 1),* provides overarching principles and culture communicating the intent, purpose, history, ethos, values and reason for the existence of the Coast Guard, its missions and its workforce.

Pub 1 provides common guidance and context to govern development of all organizational doctrine described in the following sections. Additionally, Pub 1 provides:

- Terms of common reference for the Service regarding Coast Guard ethos; and
- Common meeting ground of beliefs about the Coast Guard – especially its nature.

Pub 1-0 – Workforce

The workforce is an enormous capability that must be effectively managed to meet mission requirements. Workforce competency or capacity shortfalls can impact all segments of the organization because of the strong dependency on the workforce to execute both operational and support missions. Workforce requirements will drive the capabilities necessary to sustain workforce competencies and skills. "Readiness" of the workforce is determined by how well the capability of workforce satisfies those requirements. A Technical Authority will establish workforce requirements and report on the readiness of the workforce.

Pub 2-0 – Intelligence

As with the workforce, determining necessary intelligence capability will be accomplished by application of requirements and capability analysis. Intelligence is a capability that can be used to satisfy requirements (and mitigate risks). A recurring analysis and readiness assessment of intelligence operations helps to identify gaps in intelligence capability that should be addressed. The Technical Authority on intelligence matters should review and establish intelligence requirements and provide final

decisions on how well delivered capability is satisfying those requirements.

Pub 3-0 – Operations Operational outcomes are achieved by performing activities. To perform those activities, requirements need to be satisfied. Capabilities satisfy those requirements. The constantly changing operational picture gives rise to new risks and new requirements. Mission assessments will provide feedback and provide an indicator of how well the capability being delivered is satisfying the requirements so that activities can be performed.

Pub 4-0 – Logistics Logistics operations focus on sustaining and delivering necessary capability to meet mission requirements. The Technical Authority for logistics will evaluate the capability and availability of Coast Guard system(s) to execute mission requirements in accordance with standards. "Standards" provide a baseline for quantitative measurement. Coast Guard logistics are designed to maximize the availability that make up readiness that is consumed by operational and support activities. Monitoring and assessing readiness gives the Coast Guard the ability to identify imbalances, apply risk management principles and, most importantly, do something to address any current or projected gaps in capability.

Pub 5-0 – Planning Planning processes – including mission analysis and performance assessment – articulate and establish requirements for mission performance. Plans assume the capability will be provided and available to meet mission performance requirements. Using concepts presented in this chapter, plans provide the "customer" perspective, and capability management responds and "provides" the capability. Planning activities may modify requirements. As requirements or priorities are adjusted, the necessary capability to meet those requirements may be adjusted. Plans may impact a capability's availability or capacity, thereby either leading to a gap or creating an excess capacity.

Pub 6-0 – C4&IT Capability delivery and performance improvement are cornerstones of a Command, Control, Communications, Computer and Information Technology (C4&IT) program. Effectiveness in mission execution and mission support is significantly impacted by C4&IT infrastructure and systems. Capability management practices support the Sponsor's role in translating strategic goals and mission needs into system requirements and monitoring the application of C4&IT solutions to address capability gaps. Managing the delivery of C4&IT capability through an identified Technical Authority at the organizational level ensures C4&IT systems are delivered to satisfy crosscutting requirements.

Pub 8-0 – Resources Capability gaps identified through requirements and capability analysis compete for limited resources within the budget. The ability to forecast emerging requirements and new or replacement capabilities supports strategic analysis and helps shape the budget request. Carrying out plans

within the budget execution cycle may cause a reevaluation of existing capability priorities. Capability management balances the portfolio to address both operational and support requirements and investments in capability to address both prevention and response.

Pub 9-0 – Acquisitions

Material solutions to capability gaps are satisfied through the acquisition process. Clear, validated and testable operational requirements and technical specifications provide the foundation for an effective, efficient and cost-effective acquisition. While the Technical Authority for the acquisition oversees the process to ensure the acquisition is carried out in accordance with regulations, capability management helps the Sponsor review and monitor requirements throughout the acquisition process to ensure an effective capability is acquired and delivered. Performance metrics will then be assigned to monitor how well the capability satisfies the requirement once the capability is delivered.

Chapter 2

Introduction

Requirements and capability analysis includes the examination of strategic goals, strategies, supporting plans and documentation to determine the validity of requirements. A comparison against the capability applied to meet these requirements is then made, with the ultimate intent of achieving the proper balance between performance, resources and costs.

Requirements and capability analysis aids requirements generation and management, as well as capability sustainment (**Figure 4**). Requirements and capability analysis should ensure that capability gaps are analyzed in a transparent and traceable manner. Both the Customer and Provider participate in the review of requirements inventories and priorities compared against capability inventories. A determination is made as to whether sufficient capabilities exist to satisfy requirements and performance standards. If not, a capability gap is reported and alternative solutions are identified. An effective requirements and capability analysis process ensures that risk identification, requirements validation and capability sustainment processes are integrated with established strategic planning, performance assessment, mission analysis and budget development cycles. Using an effective requirements and capability analysis process facilitates cogent, defendable recommendations that feed the planning, budgeting and acquisitions processes.

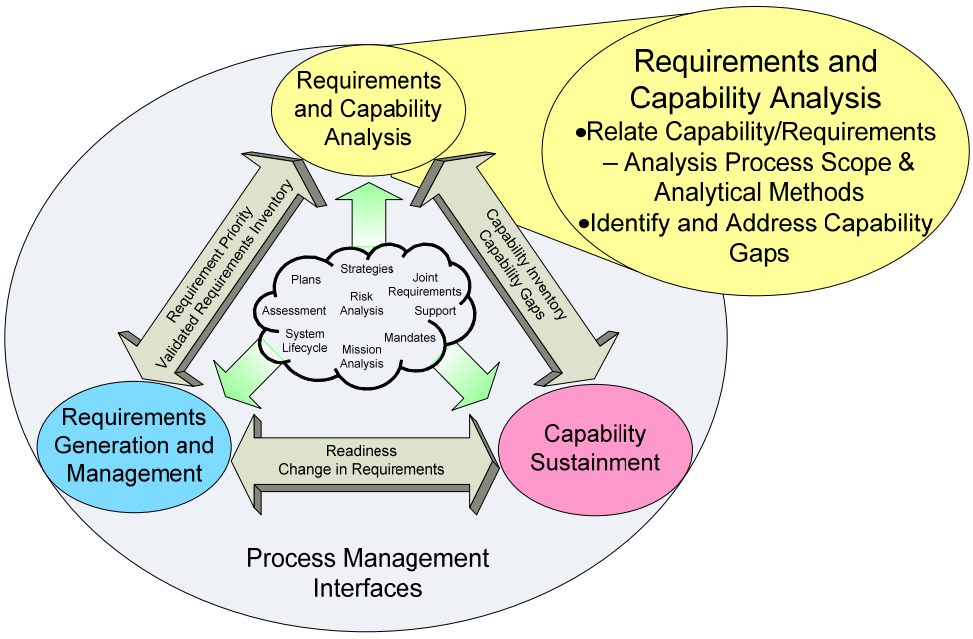

Figure 4: Requirements and Capability Analysis

In This Chapter This chapter contains the following sections:

Section 2.A. Relate Capabilities and Requirements – Analysis Process Scope and Analytical Methods

2.A.1. General

A key aspect of requirements and capability analysis is the identification of the relationship between capabilities and requirements, and how well capabilities are satisfying requirements. Visibility into this relationship helps determine whether a capability (material or non-material) is no longer performing as desired, and which requirements are no longer being met as a consequence. Likewise, as requirements change, current capability or capacity may no longer match the demand. A particular gap that is identified may signify an emergent need in response to ongoing operations, or it may be a more deliberate need that will be addressed within planning or recapitalization processes.

Requirements and capability analysis is inextricably linked to the way the Coast Guard makes decisions and conducts business. Requirements and capability analysis is closely tied to and supports the Planning, Programming, Budgeting and Execution (PPBE) process, which is addressed as a capability management internal interface in Chapter 5.B.4, and is described in greater detail in other doctrine and policy. Beginning at the tactical level, gaps are identified and sent to the operational level where they are merged, synergized and validated. These gaps are then validated and prioritized at the strategic level and merged with gaps identified through the mission analysis process, in coordination with operational commanders. The validated and prioritized gaps are then incorporated into the calendar-based PPBE cycle.

Ultimately, requirements and capability analysis provides decision makers and planners with requirements, an inventory of existing capabilities to satisfy requirements, as well as potential material and non-material solutions. This helps ensure the capability available and delivered will be tied to operational activities and mission execution.

2.A.2. Analysis Process Scope

Requirements and capability analysis takes place in both the short and long-term timeframes, and can be both narrow and broad in scope. Regardless of the type, analysis plays an essential role in the identification of potential or existing capability gaps or redundancies.

In the short term, for example, readiness evaluations may provide indicators of gaps in current or desired performance targets, or a mismatch between requirements and capability. Current operational capabilities or requirements may then be adjusted by addressing the DOTMLPF+R/G/S spectrum. This may represent either a permanent solution, or a short-term one intended to fill the gap until the ultimate solution, such as a material

capability, can be acquired.

For shorter-term capability gaps that cannot be funded with existing resources, it is important to note that getting a resource request into the budget any time within the coming five year period will require competing with established budget priorities, likely requiring the identification of an offset to free up funds.

Looking farther out, a more formalized mission analysis process takes into consideration strategic intent and performance targets identified in strategic plans. Ideally, gaps leading to new requirements or capabilities identified through mission analysis are identified far enough in advance to allow for 15–20 years to resolve strategic plans, identify alternatives, prioritize efforts, compete with other gaps for resources through the PPBE process or negotiate changes in mandates or partnerships.

2.A.3. Analysis Methods

Requirements and capability analysis is centered on the concept of the formal, iterative mission analysis. Mission analysis represents a collaborative process between the Customer and Provider that identifies current mission gaps as well as performance demands far into the future; additionally, it should provide a range of potential solutions. Mission analysis forms the basis of capability management by establishing mission demands against which capabilities, either material or non-material, are applied. Many analysis methods exist and are conducted at all organizational levels in support of the mission analysis process and capability management in general. Various methods are described in lower level doctrine, policy and process guides to achieve specific ends whether it be operations or operations support-related. Regardless of the type of analysis, the common thread they all share is a comparison of requirements against capability. The results can then be communicated so that gaps and/or redundancies are addressed at the appropriate level to reduce risk and improve efficiency. In general, analysis methods:

- Include quantitative and qualitative tools;
- Include iterative processes as well as one-time events;
- May be mission execution (activity and/or outcome) based or asset/system performance based. *Operational Analysis* is an example of an iterative asset/system analysis required for large acquisitions; and
- Emphasize modeling and simulation (M&S) early in the capability development cycle to provide cost-effective risk evaluation of various configurations in a realistic and secure environment.

Section 2.B. Identify and Address Capability Gaps

2.B.1. General

Requirements and capability analysis facilitates the validation of Coast Guard capability needs. When a potential capability gap is identified, further analysis may be required to determine whether the capability gap is within the scope of authority or responsibilities of the identifying organizational entity. The organizational entity determines if a solution can be identified within the existing capability resources and within the parameters of existing plans and priorities. If not, or if only a partial solution/bridging strategy is possible, then a gap exists that must be communicated up the chain so that a material or non-material capability development may be pursued to acquire additional capability. These capability gaps can then be cataloged, prioritized and pursued with a cross-programmatic view.

2.B.2. Addressing Capability Gaps at the Tactical / Operational Level

Operational commanders are responsible for executing the mission and applying existing capability within approved plans, priorities and resources to accomplish the mission under both routine and surge operational conditions. During the normal course of performing various missions, issues may arise that lead to capability gaps. Although operational commanders respond based on operational risk assessment, impacts on overall organizational readiness should be reported through feedback mechanisms.

As covered in the discussion of internal interfaces, Chapter 5.B.3, Strategic Program Managers promulgate direction, establish priorities and develop plans for meeting strategic intent with a Fiscal Year plus one to two-year outlook. Assignment of capability to the established priorities may cause capability shortages for lower priority items or inadequate capability to meet the performance targets established by DCO. Additionally numerous other processes exist that support operational commanders in the identification of capability gaps. Operational commanders determine the best course of action within allocated capabilities, plans and priorities to continue to perform the mission, maintain readiness and manage risk. Those that go beyond the capabilities of the operational commanders should be validated, prioritized and communicated up the chain to Headquarters if not resolvable at lower levels. These recommendations may identify a capability gap and/or areas of redundant capability.

2.B.3. Addressing Capability Gaps at the Strategic Level

At the strategic level, Headquarters elements should take into account input from operational commanders as well as from other relevant stakeholders to help systematically manage and prioritize capability gaps to arrive at a holistic view of Coast Guard capability needs. Complementing requests can then be leveraged to provide for more advanced capability than would be possible through addressing singular capability requests. The priorities

established for capability acquisition should align with the overarching priorities of the organization during the budget negotiation process. Even the pursuit or development of non-material capability will require the commitment of resources. These efforts, too, need to be prioritized from an organizational perspective to ensure that efforts complement one another rather than conflict.

The Coast Guard manages a portfolio of capability for both short-term and long-term service benefit. Independent (and sometimes competing) processes have identified capability gaps, and those interests must be collectively balanced and integrated so the primary responsibilities to the public are met.

Requirements and capability analysis helps the Coast Guard inventory capability gaps, validate mission requirements and identify the need for more in-depth analysis. An organizational approach to requirements and capabilities analysis provides cross-organizational recommendations on how best to address the capability gap either through short-term work-around solutions or long-term solutions covering both material and non-material approaches. Recommended alternatives will be implemented through existing processes and monitored. To summarize, addressing capability gaps is a systematic and transparent process that:

- Includes the operational commanders' perspective of identified gaps and the impact felt at the tactical and operational levels;
- Defines and scopes the problem in a consistent manner across the organization;
- Develops recommended approaches to address the capability gap;
- Prioritizes implementation plans taking into consideration the entire capability needs of the organization;
- Identifies implementation responsibilities and provides sufficient guidance for developing implementation alternatives; and
- Monitors the progress of implementation.

Chapter 3

Introduction

Requirements generation and management entails the elicitation, verification, validation and ongoing management of the requirements inventory while maintaining transparency and traceability. Applied effectively, requirements generation and management isolates component functions of a capability and explores their interrelationships, priorities and guidelines in selecting alternative capability designs.

Requirements generation and management's role within the larger capability management framework is displayed in **Figure 5**. Requirements generation and management should be conducted in a unified effort at the strategic, operational and tactical levels to proactively manage continuing changes in requirements as unforeseen capability needs arise from analysis processes, and as knowledge is gained during development and sustainment of existing capabilities. Customer and Provider should work together to establish traceability through the hierarchy of requirements, from capability performance metrics through influence on strategic goals. Active cooperation between the Customer and Provider is needed to ensure derived requirements support mission execution. Change control processes for requirements should be developed to keep both the Customer and Provider aware of possible impacts on capability or mission performance.

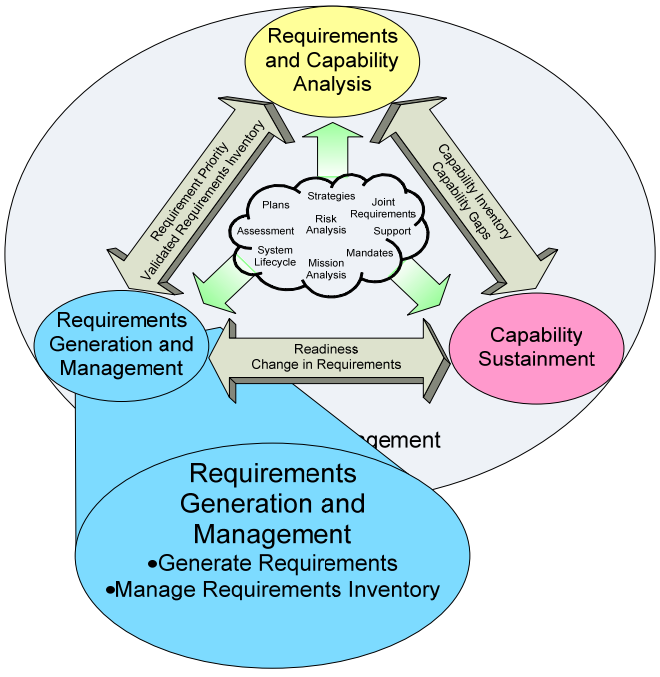

Figure 5: Requirements Generation and Management

In This Chapter

This chapter contains the following sections:

Section 3.A. Generate Requirements

3.A.1. General

Requirements generation defines the requirements for a capability that will provide the services needed by the Customer in a defined environment. The process should identify all of the stakeholders who will be involved with the system throughout its life cycle, and inventory their needs, expectations and desires. It should analyze and transform these needs into a common set of requirements that express the intended interaction the system will have with its operational environment. Each requirement should be verified with the Customer (via the chain of command) and validated against organizational mandates, objectives and priorities. The collection of requirements can then be used to test the effective operation of delivered capabilities. Consistent with roles provided in Chapter 2, the operational level acts as the customer fusion point between Headquarters Providers and the tactical levels for requirements generation.

In the process of generating requirements, further detailed requirements will be derived. Maintaining traceability of requirements is an important aspect of requirements generation and management. Traceability provides a path from high-level organizational objectives to lower level technical requirements and specifications and vice versa. Accurate traceability or requirement information supports the assessment of changing a requirement at one level of detail and its impact on satisfying requirements at another. This is particularly relevant when tradeoffs are conducted.

Proper stewardship of capability dictates organizational verification and validation of requirements. To optimize return on investment, only those requirements recognized by the organization should be pursued. In essence, a requirement establishes a contract between the Customer and Provider. Verifying and validating requirements exposes all conditions of that contract and provides visibility into the objectives or purpose of the requirement. Further, the verification and validation of requirements:

- Ensures requirements accuracy;
- Supports traceability and transparency of the requirement;
- Provides a baseline for performance results;
- Results in requirements that are correct, unambiguous, complete, consistent, ranked for importance, testable and modifiable; and
- Facilitates continuous involvement of key stakeholders, which may lead to recognition of existing capabilities to satisfy requirements.

3.A.2. Eliciting Requirements

All stakeholders should be involved in requirements elicitation to ensure sufficient and varied perspectives are provided during the requirements

generation process. Lower level doctrine, TTP and directives are necessary to dictate prescribed methods and products produced in connection with requirements gathering. Stakeholders include:

- Operational commanders;
- Strategic (Program) Managers;
- Sponsors;
- Acquisition personnel; and
- Technical Authorities.

During the elicitation process, potential requirements may be generated at many different levels based on a particular stakeholder's perspective. All potential requirements should be gathered and appropriately categorized as they arise. Other activities during the process will filter out those that have priority.

Requirements gathering techniques provide project team members with a choice of methods for eliciting needs and validating requirements from stakeholders. Certain techniques are appropriate in gathering detailed requirements, while other techniques are more helpful in defining high-level strategic goals. Methods for gathering requirements include, but are not limited to:

- **Interviewing stakeholders** individually or in small groups. Interviews should be structured; however, the process may need to be updated as the process continues;
- **Facilitated meetings** with multiple stakeholders. Facilitation involves simultaneously gathering requirements and resolving the need for each requirement; it is essential to make sure that requirements are clearly stated and commonly understood. Maintaining traceability will support the verification of requirements process later (e.g., Standard Operational Planning Process (SOPP));
- **Questionnaires** provide a rapid means to gather requirements from an individual perspective from a large group of stakeholders. The questionnaire should be tested with small groups and adjusted as required before being distributed to a larger group;
- **Use Cases** are initial implementations of a Concept of Operations (CONOPS) that outline who will be using the capability and in what manner. Documenting the thought process often uncovers hidden aspects that leads to further requirements;
- **A Proof of Concept** is an initial implementation based on initial requirements and functionality. Interacting with the proof of concept may refine or uncover further requirements. Additional functionality

- **Requirements negotiation** attempts to resolve conflicts between stakeholders wanting incompatible features, conflicts between requirements and resources or conflicts between capabilities and constraints.

For larger capability development efforts, a large number of requirements will be generated. Classifying and grouping requirements into logical entities for planning, reporting and tracking within an inventory supports requirements management. Classification can be done on a number of dimensions, including source, type, priority, risk, scope and volatility. Formal products such as the Mission Need Statement (MNS), CONOPS, Preliminary Operational Requirements Document (PORD) and Operational Requirements Document (ORD) are developed to generate requirements for major acquisition projects, and are discussed further in Chapter 5.

3.A.3. Deriving Requirements and Maintaining Traceability

Deriving requirements is the process of breaking down broad capability gaps gleaned from mission analysis into more specific descriptions and requirements that can be implemented in a design and capability delivery. The higher level requirements identified to meet organizational objectives lead to operational requirements reflecting more specific activities required of a capability solution.

Bi-directional traceability improves the transparency of requirements. As illustrated in **Figure 6**, forward traceability looks at:

- Tracing the requirement validation source(s) to its (their) resulting product requirement(s) to ensure the completeness of the specification;
- Tracing each unique product requirement forward into the design that implements that requirement and the tests that verify the requirement has been met; and
- Addressing how each high level requirement is decomposed into lower level derived requirements.

Backward traceability looks at:

- Tracing each unique capability function back to its associated requirement. Backward traceability can verify that the requirements have been kept current with the design;
- Tracing each requirement back to its validation source(s); and
- Addressing why a particular requirement is necessary.

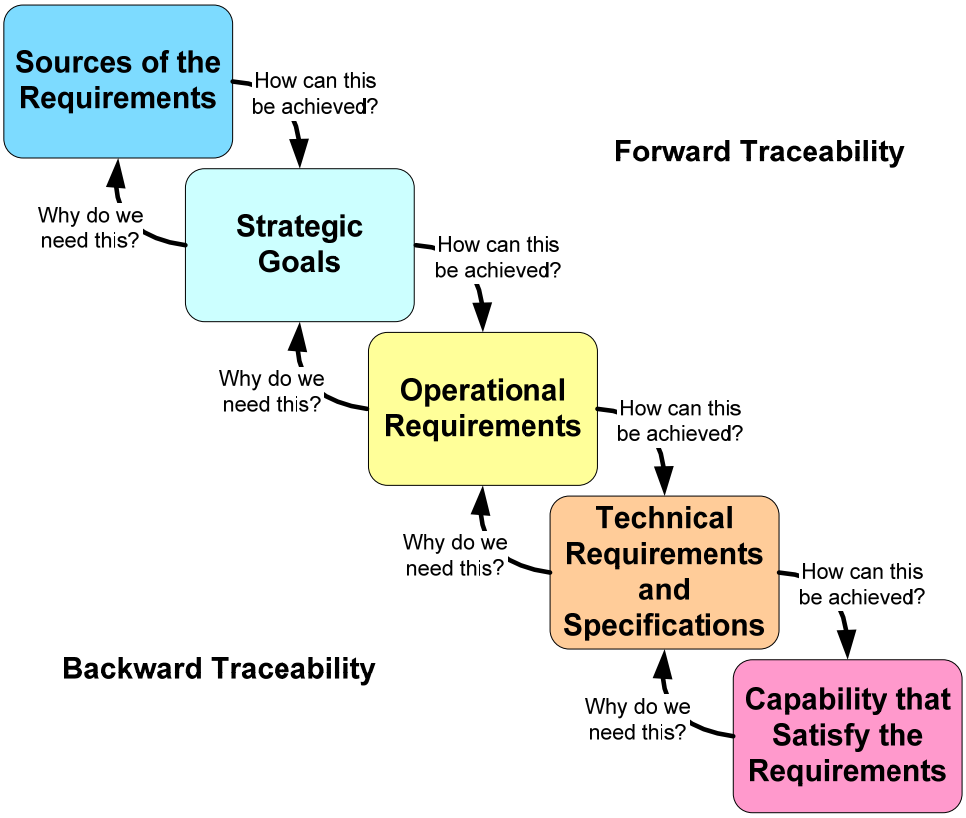

Figure 6: Requirements Traceability

3.A.4. Verifying Requirements

When a potential requirement is received, it needs to be verified that the requirement accurately represents the originator's description and specifications and that, if fulfilled, will support achieving organizational objectives.

The Customer and Provider work together to verify requirements and maintain traceability to a valid source. This relationship is necessary to ensure the appropriate capability is provided.

3.A.5. Validating Requirements

The goal of requirements validation is to ensure organizational resources are not consumed without recognition of an organizational requirement. Requirements validation ideally provides traceability of each requirement to an organizationally recognized and approved source. Developing capability to validated requirements ensures the capability development effort is supporting an organizationally recognized objective, risk or priority before resources are committed. A validation process should be substantiated by a reference source and approved documentation for each requirement.

Examples of reference sources for requirements include:

- **Mandates** – Strategic-Level Requirements specifically called out in

federal statute or in Presidential directives (HSPD, NSPD, etc.);

- **National Policy** – Policy issued at the departmental level such as National Strategies or the Maritime Operational Threat Response (MOTR) Plan;
- **Commitments** – Operational Requirements that are derived from commitments include Departmental level plans, CONPLANs, etc. Only plans approved at the Headquarters level can substantiate a requirement. Traceability from operational commander plans to Headquarters plans must be established to validate a requirement; and
- **CG Guidance** – Coast Guard guidance or policy reflecting the above may already exist and inform new requirements. For example, the Maritime Law Enforcement Manual (MLEM) is a source of requirements for various capabilities.

The Customer should provide the source for validation of requirements pertaining to mission execution and mission performance. The Provider should identify the source for mandates dictating the development, implementation and sustainment of capabilities.

Validation of requirements requires cooperation between the Customer and Provider and an organizational perspective of requirements and capability. This cooperative relationship allows the Provider to prioritize, analyze, resource and sequence those capabilities that optimize return on investment, address identified risks and meet validated requirements.

Section 3.B. Manage Requirements Inventory

3.B.1. General

To allow for further review and refinement, the Customer and Provider should maintain an inventory of verified and validated requirements across the organization. An inventory provides a critical management tool that:

- Assigns points of contact, responsibilities and authorities for changing or deleting requirements;
- Supports the setting of priorities, managing changes, maintaining validation sources and maintaining a history of requirements for the organization (organizational knowledge base);
- Needs to be reviewed on a regular basis to see if the requirements are still valid and verified with the users or stakeholders. Requirements may only be valid for a specific period of time or may become obsolete;
- Supports a review of new requirements for duplication, identification of gaps in requirements, redundancy or conflicts among requirements;
- Maintains the relationships between requirements so that if one is changed, its impact on other requirements can be determined; and
- Facilitates the identification of evolving capabilities to meet requirements via linkage of the inventory of requirements to capability.

3.B.2. Providing Requirements Traceability

A requirements inventory supports the Customer and Provider in the tracing of requirements. Tracing requirements provides visibility and accountability on the origins of requirements, and helps to identify any overlaps, gaps and conflicts. It is important to provide this traceability so that if one of the mandates or policies is changed or a higher level requirement is changed, other requirements that are impacted can be identified. Requirements need to be traced back to:

- The authority for the requirement for validation of any changes or deletions;
- The higher level requirement the requirement was derived from and a determination if any related requirements are impacted; and
- The mandate or policy that provided the initial requirement to identify requirements impacted by changes in policy or mandates.

3.B.3. Revalidating Requirements

Requirements need to be periodically revalidated to ensure external and internal forces have not invalidated them. Requirements traceability supports this process. If a source changes, all requirements related to that source should be reviewed. Requirements derived from any impacted requirements can also be identified, and so on, through requirements

traceability.

The Customer is typically influenced by the source of a requirement and should monitor those sources in the course of performing planning activities. Technical requirements and specifications may be impacted when mandates for operating or developing capability are adjusted. The Provider should have visibility into adjustments to these sources. The following factors can affect requirements:

- Timeframe for the requirement (i.e., when a requirement "expires");
- Environmental changes;
- Technology/obsolescence;
- Geography adjustments that make the requirement necessary in one geography but not another; and/or
- Organizational priorities.

3.B.4. Requirements Configuration Management

Maintaining configuration management (CM) and change control of the requirements and capability inventories is necessary for effective requirements management. A requirements and capability inventory should also maintain the relationships of which capabilities are satisfying which requirements, as established during requirements and capability analysis. The essence of configuration management is in knowing what you have, what it does and where it is. Systematic change processes to the inventories should be implemented to maintain their currency, consistency and validity. These processes need to be linked for both the requirements and the capabilities inventory. Changes to requirements will lead to changes in capabilities and vice-versa.

Governance processes for implementing configuration management should be identified in applicable organizational and operational doctrine, policy and TTP. The establishment of a governing body may be helpful in acting as an arbitrator and reviewer of changes to the requirements inventory. Membership on these boards should comprise sufficient representation so that changes can be evaluated for their impact across the organization and across the capability spectrum.

Because there is a hierarchy of requirements, the level and type of requirement will determine who is responsible for overseeing a particular set of requirements. Strategic goals and certain operational requirements will more likely be overseen by the Customer, who has responsibility for defining and executing the mission. Further down the hierarchy, the Provider may oversee the requirements inventory where operational requirements derive technical requirements and specifications. Communication between the Customer and Provider is necessary in all

circumstances, because a modification in a requirement in one part of the hierarchy can very well impact requirements both higher and lower in the hierarchy.

Chapter 4

Introduction

Capability sustainment is a disciplined approach to planning, organizing, leading and directing efforts to effectively deliver and sustain capability while maintaining consistent and accurate organizational capability information (**Figure 7**). The capability inventory should be assessed at each planning level by the Provider to determine the ability to meet the Customer's current and future organizational, operational and mission support needs. Capability sustainment also includes measurement of the system's ability to perform specific actions and compare that measurement with a desired benchmark or level of performance. A capability gap exists when there is a deficiency or anticipated shortfall between the measured ability of the system and the desired ability of the system defined in the requirements (see Chapter 2). When these gaps are identified, capability sustainment addresses the gap by considering a range of capabilities (both material and non-material) within the capability inventory, developing new capabilities as needed and replacing capabilities as they near the end of their life cycle.

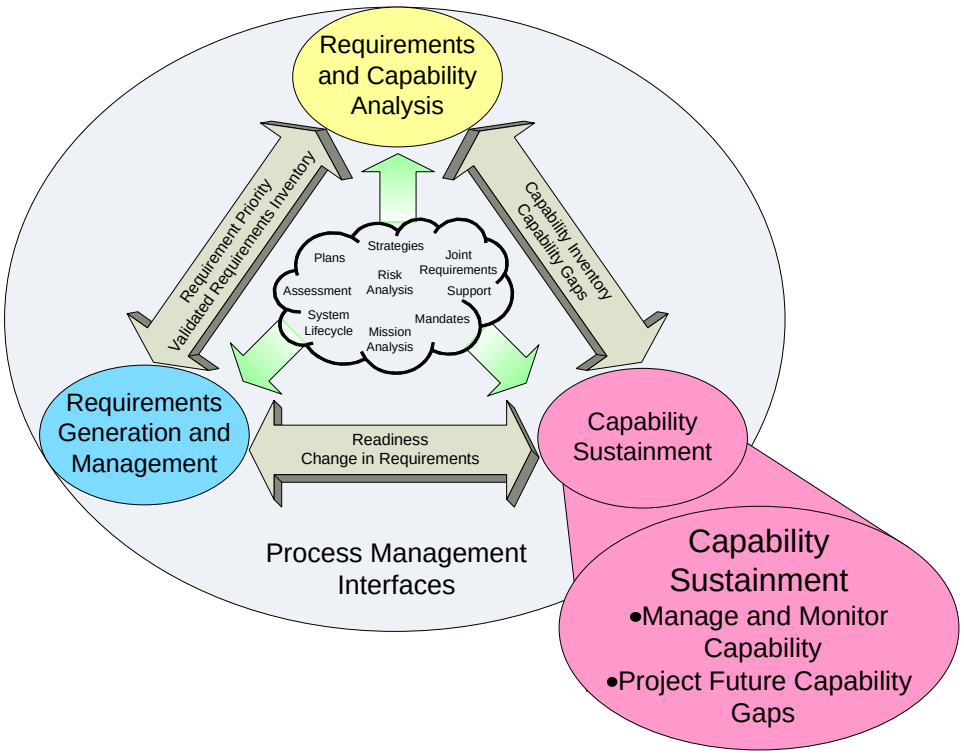

Figure 7: Capability Sustainment

In This Chapter This chapter contains the following sections:

Section 4.A. Manage and Monitor Current Capability

4.A.1. General

Capability sustainment encompasses a variety of management activities as well as monitoring and measurement to ensure capability and capacity is being applied in the most effective way possible. It is a forward-looking process, particularly when considering a range of possible operational requirements. The capability Provider monitors and evaluates current performance measures and projects forward possible gaps in capability. Any designed decrease in the level of performance of a capability as it ages must be known. Consumption rates of capability must be monitored to sustain readiness. A capability gap may be triggered from a variety of activities, including:

- A change in operational requirements (see Chapter 3) that may be traced to a number of higher level requirements resulting from;
  - A change in external mandates or threats;
  - Changes in the environment or operating area for the capability;
  - Technological and other advances that enhance effectiveness and safety and/or;
- Degradation of a capability and/or reduction of capacity near the end of its life cycle to the point it will no longer satisfy requirements or becomes impractical to maintain.

4.A.2. Managing Current Capability

Working in close cooperation with strategic planners and operational commanders (Customers), as well as mission support and acquisitions entities, the capability Provider performs the following activities within its respective product lines to manage current capability:

- Manage capability portfolios/ inventories;
- Develop optimum force structures; coordinate associated force distribution, initial integration of required capability solution sets and platform decommissioning plans and schedules, respectively;
- Measure capability performance and compare to benchmarks;
- Identify gaps in performance;
- Address capability gaps considering the full range of potential solutions;
- Develop and approve readiness standards for staffing, training, equipping, sustaining, maintaining and employing capability; and
- Monitor Developmental Testing and Evaluation (DT&E) and

4.A.3. Capability Performance Monitoring and Measurement

Failure to achieve performance targets specified in Program Performance Plans may trigger further analysis and assessment of capability. Further down the requirements hierarchy, indicators such as availability of a system or applicability of a policy or partnership may warrant a review of capability.

Performance measures assess effectiveness, efficiency and cost-effectiveness in translating strategic intent to action. Readiness is a measure to determine if sufficient capability and capacity are being delivered to meet requirements:

- **Effectiveness.** Effectiveness measures indicate the degree to which outputs influence outcomes and whether those outcomes approximate published goals. Effectiveness measures reflect the quality of the work performed;
- **Efficiency.** Efficiency measures capture skillfulness in executing mission programs, implementing activities and achieving results, while avoiding wasted resources (effort, time or money). Efficiency can be described as the ratio of the progress achieved toward the outcome or output to the resource inputs to achieve that progress. Examples of efficiency measures include:
  - Cost per unit or cost per activity (including actual maintenance costs);
  - Time on sortie (a form of cycle-time);
  - Percent parts ordered and received within a given time limit (e.g., Just-in-Time);
- **Cost-effectiveness.** Cost-effectiveness measures combine elements of performance effectiveness and efficiency into a single indicator. Frequently they are difficult to formulate as many CG activities do not link directly to outcomes; but where the data can be accurately captured, they provide extremely valuable information to planners and decision makers. Cost-effectiveness is related to return on investment (ROI). Examples of cost-effectiveness measures include:
  - Cost to improve performance by some unit of measure;
  - Cost per percent increase in drugs removed;
  - Cost per percent increase in lives saved;
- **Readiness.** Readiness measures determine the state (quality of match) between validated needs (requirements) and current status. Readiness

measures must provide additional knowledge regarding the consumption and replenishment rates of capability. Examples of readiness measures include:

- Quality of personnel match;
- Equipment availability rates;
- Medical and dental status to deploy; and
- Adherence to safety standards and minimizing risk to the workforce

A rigorous, systematic process improves the confidence in the data collected and the analysis that results. Exercising those processes ensures that measures, or their proxies, provide the necessary indicators on outcomes. Characteristics inherent in well-chosen performance measures include:

- Quantitative;
- Timely (i.e., they can be evaluated within a specified time period);
- Relevant (i.e., related to requirements that may change with time);
- Inserted at the appropriate points in the management hierarchy;
- Meaningful to the management level;
- Recorded; and
- Tested (to ensure that data is not biased).

Deciding where to place these measurement points is a critical issue in the design of the capability sustainment processes. At all levels, measurement points must be capable of capturing information relevant to the operational requirement of the capability. The three principal classes of performance information (which will be measured against performance benchmarks) are:

- Technical;
- Financial; and
- Human (for example, training and in-service support competencies).

4.A.4. Continued Performance through Capability Sustainment

As the performance of a capability may degrade over time, requirements and performance parameters are established during capability development to support monitoring the capability through its life cycle. An effective performance measurement program, coupled with requirements management and analysis that maintains the relationship of capability satisfying requirements, provides indicators of an emerging capability gap even under constant operating conditions. The management process includes assessment to answer the questions “how well has the current

capability satisfied the current requirement?" and "how well will the current capability satisfy future requirements?" Establishing monitoring measures provides indicators of performance that are used to assess whether the current capability can adequately meet operational requirements during its projected life cycle. An effective capability sustainment program:

- Monitors capability and assists in identifying capability gaps;
- Leverages measures to provide indicators of future capability degradation: As noted previously,
  - Capability is consumed/degraded over time and needs to be replenished (updated, recapitalized);
  - Requirements may change, resulting in a capability that no longer meets the requirement;
- Provides feedback mechanisms to communicate performance and expectations from the Customer to the Provider (operational level acts as fusion point for bi-directional communication); and
- Applies to both non-material capabilities and material capabilities.

The support community uses systems and processes to monitor the maintenance needs of a capability (e.g., the Casualty Reporting System, Training Management Tool). Organizational entities responsible for capability sustainment may leverage these systems to provide indicators of systemic problems that should be addressed with a change in capability rather than continued maintenance of a persistent problem.

Section 4.B. Project Future Capability Gaps

4.B.1. General

It is important that the capability sustainment process remains linked to capability development processes. During the development phase, performance characteristics of assets are often evaluated under "test-bed" conditions that may not reflect actual performance in the operational environment. Additionally, new roles and tasks for a capability may evolve after its operational life begins. Consequently, management processes, including sustainment activities, may be created based on inaccurate assumptions. To counter this, suites of metrics may be utilized to assess mission and capability performance in support of both the Customer and Provider's reporting requirements.

The desired capability of assets and their support requirements should be reviewed and updated throughout their life cycle. Known as *operational analysis*, this periodic analysis is conducted to assess an asset or system's ability to continue to perform its missions in a cost-effective manner. It may also reveal the need to adjust performance measures or targets.

Decisions to change the capability or introduce a new capability involve application and analysis of risk information and reevaluation of operational requirements. The greatest difficulty with capability sustainment is assessing how the capability will meet operational requirements in the future – mostly because of the uncertainty of future requirements. Because of lengthy acquisition timeframes for some capabilities, a 10–20 year outlook may be necessary. Emerging or forecasted requirements should be reviewed under the same guidelines as known requirements, which includes asking the questions:

- Is the requirement valid, and
- What is the Coast Guard's response to the requirement?

4.B.2. Sustaining Capability in Changing Environments

The use of quantitative measures allows capability performance to be tracked over time. This data can be used to continuously improve capability sustainment processes. The quantitative measures used need to be periodically tested to determine their appropriateness to the evolving operational conditions and organizational priorities. It is not sufficient to put performance measures in place and assume they will never require modification. Changing environments, requirements or priorities can impact the validity of a measure.

Performance measurements are needed for various operational tempos (OPTEMPOs), operational scenarios and the changing operational environment. Coast Guard capability sustainment processes are typically done to meet requirements established for routine or known operating

conditions. These requirements are scoped to "typical" operations and may not apply during contingency operations or in an environment with modified threat levels. Management processes for routine operations may become less relevant and/or inaccurate when the OPTEMPO changes and capacity requirements vary. To meet this challenge, capability sustainment must include contingencies to ensure preparedness of assets under all operational conditions. This includes maintaining surge capacity for multiple concurrent operations.

It is clear that capabilities cannot be provided and sustained to meet all requirements beyond routine operations. Risk-informed decision-making and management aids in establishing reasonable capability and capacity performance targets.

As new or modified capabilities are introduced into the Coast Guard, new assessment methods may be required. Measurement points may no longer be appropriate or located in the same place in the management process. Additional procedures may be required as the capability ages. Capability sustainment must be sufficiently responsive such that it captures the changing support services and is responsive to any changes.

4.B.3. Resolving Capability Gaps

Appropriate action needs to be taken if the requirements and capability analysis process described in Chapter 2.B. validates that requirements are no longer being met, or will not be met in the future. Maintaining transparency in the process allows capabilities to be jointly leveraged to address gaps. Other organizational priorities, existing capabilities or developing initiatives can be evaluated to determine if they are of benefit in closing the identified gap. Organizational review at the strategic level, in cooperation with operational commanders, serves to verify alignment with organizational priorities and confirms whether a solution is not already being pursued.

There are a variety of methods to resolve a capability gap (see the *Capability Spectrum* introduced in Chapter 1). In addition to pursuing a material solution, capability gaps may be addressed through non-material solutions, such as:

- Updating policy and guidance on mission execution or operating procedures (e.g., deploying a particular asset for a different purpose), or modifying a training program to provide the proper competencies;
- Establishing additional partnerships to support the objectives of the Coast Guard through external partner activities; and
- Expanding data collection by an information system or integrating data across existing information systems to produce the desired information.

Chapter 5

Introduction

Interfaces, information, and defined roles and responsibilities are necessary to ensure an effective and transparent approach to systematically govern the Coast Guard's capability management processes **(Figure 8)**. Process management interfaces span all layers of the organization and occur simultaneously in different parts of the organization. From operational commanders who use capability and provide feedback on its performance in supporting mission execution, to DCO, who validates and sets strategic operational direction, every level in this continuum must understand its role in identifying and sustaining capability effectively and efficiently. An effective governance structure empowers those involved in a coordinated effort to achieve a common goal.

Established Coast Guard processes provide inputs to capability management and depend on capability management services at the same time. External mandates and partnership requirements also influence capability management processes. CG-7, as capability manager, oversees policies and procedures to maintain effective capability management. When developing governance processes, CG-7 works across all stakeholders to consider internal processes and maintain awareness of external processes and mandates to ensure:

- Requirements validation and capability identification are synchronized organization-wide;
- Systematic and transparent approaches are applied to manage capability and establish organizational priorities; and
- Stakeholders at every level of the Coast Guard understand their role and responsibilities pertaining to capability management.

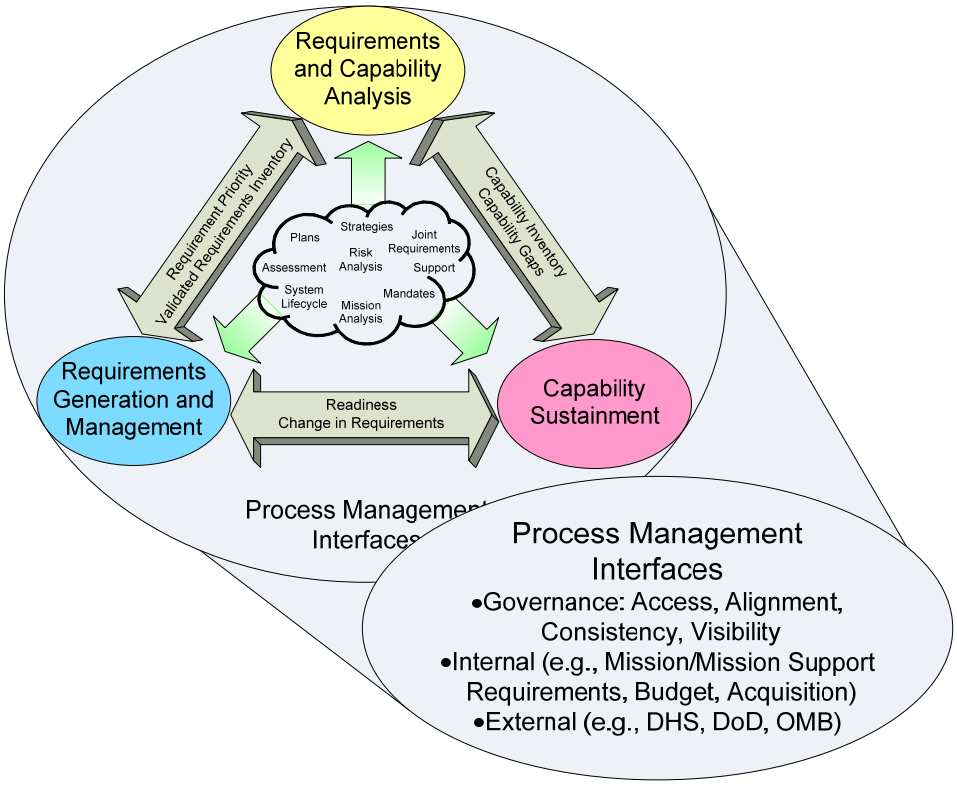

Figure 8: Process Management Interfaces

In This Chapter This chapter contains the following sections:

Section 5.A. Governance

5.A.1. General

Governance is a system of management and controls exercised in the stewardship of an organization. A governance structure clearly delineates roles, responsibilities and interactions. Effective governance ensures access, alignment, consistency and visibility of information shared across roles to achieve a common goal.

This section identifies aspects of comprehensive and effective capability management governance. These aspects are foundational for any governance structure, occur through all levels of the organization and may occur simultaneously in different parts of the organization. Participants need to recognize the responsibilities for their role and the information that must be shared with other roles to foster cooperation and achieve alignment. Each role is responsible for a particular aspect of governance and sharing that information across the other roles. Specific processes to implement these responsibilities are reserved for lower level doctrine and TTP.

5.A.2. Policy and Procedures

Policy and procedures ensure consistency, visibility and a systematic approach to capability management. They clarify roles, responsibilities and authorities through the following:

- Developing and managing policy, doctrine, processes and planning guidance to provide standardization while empowering extension and flexibility to meet needs at varying levels of the organization (strategic, operational and tactical) in the areas of:
  - Requirements and capability analysis and management;
  - Enterprise measurement, data collection and alignment; and
  - Risk-informed decision-making and management, including analysis of lessons learned and conducting root cause analysis;
- Coordinating risk analysis between the strategic, operational and tactical levels;
- Developing and maintaining alignment and knowledge management methods to address the full spectrum of enterprise requirements and capabilities;
- Monitoring consistent application of guidance;
- Overseeing the assessment and refreshment of analysis and assessment procedures and management controls; and
- Performing skills gap analyses in determining training requirements to maintain an organizational knowledge base for analysis and performance assessment.

5.A.3. Resource Management

Effective resource management involves proper prioritization and allocation of capability and capacity to meet requirements. These decisions should be supported by sound analysis and reviewed by the organization to ensure they align with strategic objectives. Efforts to ensure the proper allocation or pursuit of resources include:

- Developing, implementing, overseeing and evaluating financial management analysis, measurement and evaluation processes. Coordinating and integrating resource planning, performance and business analysis;
- Developing multiyear budget and investment strategies using capability management and performance assessment. Providing budgetary analysis in support of capability and performance assessment;
- Developing cost-benefit analysis, resource change proposals, acquisition plans and performance measurement plans for new capabilities;
- Recommending appropriate resource allocations based on analysis and priorities;
- Validating requirement and capability gaps and recommended courses of action to address the gaps between the Customer and Provider;
- Carrying out analysis of suitability, proposed effectiveness and unintended consequences/secondary effects of resource requests; and
- Providing top-level management attention to the analysis and identification of capability acquisition goals and objectives in an integrated and systematic approach.

5.A.4. Adjudication and Integration

Adjudication and integration provides the overarching, Coast Guard-wide perspective to capability management. Appropriate stakeholders representing all organizational levels should be brought together so that varying perspectives can be evaluated (e.g., operational priorities, budget constraints, technical feasibility, human performance, etc.). As necessary, Technical Authorities are designated to provide input in those areas requiring subject matter expertise and organizational authority to comply with internal policy or external mandates. See section 1.C. for further descriptions of how capability management relates to other organizational disciplines that are represented through each Technical Authority.

Integrated product teams (IPTs) are frequently used to bring together these cross-functional perspectives and expertise as necessary for specific projects. Additionally, the use of standing, functionally-based integrating bodies focused on specific capability types (aviation, boats, shore, cutter and C4ISR) and/or human performance and capability interfaces is another

means of achieving collaborative solutions across directorates and providing recommendations to higher level governing bodies (e.g., the Executive Oversight Committee). Adjudication and integration functions include:

- Overseeing analysis across competing perspectives;
- Maintaining awareness of organizational strategies, requirements and capabilities inventories to identify synergies;
- Recommending priorities for capability development initiatives; and
- Transforming and standardizing data developed and maintained by individual Sponsors into groomed organizational data repositories to serve as a basis for alignment and synergies supporting measurement, analysis and knowledge management.

5.A.5. Enterprise Information Access

Effective management and sharing of information across the organization accelerates the growth of knowledge and supports analysis and decision-making. Efforts regarding enterprise information access within capability management include:

- Supporting organizations in the use and development of IT systems to support requirements and capability analysis and performance assessment;
- Making analysis and performance data available, supporting a shared model of information and capturing, aligning and reusing measurement and analysis results;
- Developing and maintaining a knowledge management tools repository to address the full spectrum of enterprise requirements and capabilities; and
- Aligning mission analysis and performance management systems with the Coast Guard's Enterprise Architecture and enterprise-wide data sources (e.g., MISLE, AOPS) managed within the Coast Guard data warehouse.

5.A.6. Organizational Requirements and Capability Analysis

Organizational requirements and capability analysis includes:

- Conducting extensive analytic research required to support Coast Guard requirements definition and evaluations that address Coast Guard strategic objectives;
- Managing and leading the performance assessment within and across all Coast Guard missions to identify performance gaps and opportunities for increased efficiency, risk reduction and alternative courses of action;

- Facilitating measurement and analysis of performance toward meeting established goals and providing information to decision makers;
- Developing, sustaining and providing mission analysis and performance assessment expertise (consulting) to support enterprise uses, including creation, alignment, utilization and reconciliation of analysis information;
- Capturing, aligning and reusing mission analysis and performance assessment results to create synergies and alignment in supported measurement, analysis and knowledge management;
- Modeling relationships between capability, requirements, activities, outcomes and organizational goals; and
- Providing Coast Guard senior leadership with appropriate analysis and advice regarding international issues impacting Coast Guard strategic interests.

5.A.7. Mission Execution/ Mission Support Requirements

Mission execution and support are performed primarily by tactical and supporting units.

Mission execution and support roles include:

- Applying capability in accordance with mission program and support program guidance. Document performance through existing prescribed reporting processes and systems;
- Maintaining a unit view of performance assessment, including an analysis of mission and support execution and performance against identified standards. This view is summarized and documented in regular performance reports, and provides critical field input to the overall Coast Guard planning process in support of requirements and capability analysis, budget and resource justification;
- Assessing readiness, focusing on specific elements of the capability. For example, boat readiness focuses on platform materiel condition, knowledge of the crew, underway exercises, personal protective equipment and personnel training programs – a variety of aspects of capability;
- Providing feedback, evaluation, assessment and recommendations back up the chain of command for input into higher level mission analysis and performance assessment; and
- Staying abreast of mandates, authorities and National strategies either directly or through organizational policy.

Section 5.B. Internal Interfaces

5.B.1. General

Capability management processes and integrating bodies interface with and connect the planning, acquisition, mission execution and mission support processes within the Coast Guard. This section provides a high-level description of the relationships between those key processes and capability management.

5.B.2. Strategic Planning

Coast Guard strategic planning is a systematic process performed primarily at Headquarters by senior leaders; managers; and planning, programming, budgeting and policy staffs. However, it is also informed by assessments conducted at the operational and tactical levels. Operational commanders provide input into strategic planning by addressing current and future demands for services, internal and external stakeholders, and environmental and performance trends through assessment of:

- Resource levels and readiness;
- Readiness and performance;
- Performance and demand; and
- Demand and capability.

Strategic planning facilitates decision-making by compelling all stakeholders to better understand the existing and anticipated internal and external environment, examine associated assumptions and determine an appropriate course of action. Among other things, strategic planning provides a long-term view, allowing for:

- Planning of capability gaps requiring long lead times; and
- Projection of evolving requirements for current capabilities.

Strategic planning should consider options to balance constrained resources to influence outcomes in support of all Coast Guard mission and program priorities. These plans should describe the necessary capabilities to meet anticipated future environments and mission needs.

Mission Analysis and Program Evaluation

Mission analysis and program evaluation constitute core strategic planning processes that examine the Coast Guard's missions and programs. Although they differ in many respects, together mission analysis and program evaluation are both closely tied to capability management and the identification of capabilities that allow the Coast Guard to accomplish its missions. In comparison,

- Mission Analysis:
  - Is prospective;
  - Identifies current and projected capability gaps;
  - Identifies alternative ways and means of resolving mission responsibilities; and
  - Initiates and supports capability management analysis and requirements generation processes by serving as a framework for acquisition planning, capability delivery and performance evaluation.
- Program Evaluation:
  - Is retrospective;
  - Examines how well a program works relative to its intended purpose;
  - Provides a more in-depth study of performance than is normally available from regular reporting and review of performance metrics;
  - Is supported by capability management processes; and
  - Must account for the fact that major program changes that substantially modify concepts of operation typically require investment in existing capability, capacity or competencies, requiring changes to DOTMLPF+R/G/S.

Annual Performance Plans and Reports

The Coast Guard produces annual reports for the President, Congress, DHS and the public. These reports should incorporate and inform capability management processes and provide:

- Strategies for success in the maritime domain including:
  - Strategic Context (e.g., emerging opportunities and threats);
  - Strategic Intent;
  - Strategic Priorities for the upcoming year;
- Current budget in brief request with justification; and
- Annual performance summaries, including overall mission program performance across strategic, operational and tactical levels.

DCO Internal Assessments

Within the DCO organization, resource planners, program managers and capability managers work together to identify mission performance, capacity and capability deficiencies that merit the awareness of DHS and Coast Guard leadership.

5.B.3. Standard Operational Planning / Global Force Management Process

The Standard Operational Planning (SOPP)/Global Force Management (GFM) process translates strategy into mission execution through:

- Mission guidance and direction;
- Priorities;
- Performance targets;
- Resource apportionment and allocation; and
- Effective feedback, including operational status and assessment of desired outputs, outcomes and effects.

This process reviews readiness issues, short-term force apportionment and other operational planning factors. Four planning and execution stages constitute the process:

- The Initial Planning Stage focuses on understanding past and current performance as well as key drivers and trends that may affect future performance. Program priorities and data are collected, operational and intelligence assessments are solicited, operational requirements are vetted and historical and current-year mission performance is assessed;
- The Out-Year Apportionment Stage focuses on the review of current-year force apportionment and the development of the Coast Guard's short-term force apportionment. Interagency requests are reviewed and out-year force apportionment recommendations developed. Strategic planning guidance is updated as needed. Area and District commanders will employ guidance and apportionment guidance to develop their own operational and contingency preparedness planning direction and force apportionment that is adaptable to the threats and risks within their area of responsibility;
- The Plan Promulgation Stage focuses on promulgation of Area and District planning direction and updating of operational plans to guide mission execution. This includes promulgation of guidance, priorities, and resource apportionment and allocation supported by feedback during plan promulgation pending ORAM risk analysis with Areas; and
- The Operational Execution and Reporting Stage focuses on execution of operational plans and development of performance assessments to inform the chain of command.

5.B.4. Budget Management

Coast Guard budgets, performance assessments and strategies either inform or are informed by capability management processes. Annual budgets reflect the required funding to maintain, reduce or acquire capability. The USCG follows the calendar-driven Planning, Programming, Budgeting and Execution (PPBE) process to articulate a budget strategy; identify size, structure and equipment for operating forces; allocate resources; and evaluate actual outcomes against planned performance to adjust resources as appropriate. The PPBE is DHS's primary method of resource allocation and provides the basis for decisions that will ultimately affect the President's Budget. The Future Years Homeland Security Program (FYHSP) is the method by which DHS competes for resources within the President's Budget. The FYHSP lays out DHS's projected resource requirements in a continuous sliding five year-window for each strategic goal and includes alignment of agency mission programs to the strategic goals.

Capability management processes described throughout this doctrine are central to developing the Coast Guard's resource requirements reflected in the FYHSP.

Shaping the Budget

A foothold in the Federal budget must be established when all potential non-material solutions have been exhausted and a material solution is desired. To successfully drive the budget rather than be caught competing for limited resources within an established budget, input from supporting strategic plans needs to be developed well in advance of the FYHSP submission. A 10 to 15-year outlook for identifying necessary resources to meet mission priorities and requirements allows the Coast Guard to develop the momentum to change the FYHSP.

Many capability acquisitions have long lead times. A comprehensive view of the remaining service life of existing capabilities and development timeframes for new capabilities aids the Provider in ensuring timely inclusion into established budget planning processes. For larger acquisitions, such as a new aircraft or cutter, it may be necessary to look ahead as much as 30 years or more. Conducting periodic assessments and analysis permits the forecasting of capability needs to support the acquisition of new capabilities.

Working within the Budget

Addressing capability gaps during the current year must be done through the Coast Guard and other agencies' existing resources. Risk-informed decision-making should be employed to address these gaps. If an identified gap is enduring, out-year non-material and material solutions should be sought through the annual budget process.

5.B.5. Acquisition Processes

Effective acquisition processes incorporate aspects of capability management as follows:

- Before initiating an acquisition project, a business case should present requirements analysis results, the gap between existing capability and validated requirements, and alternatives to address the gap;
- Managing requirements during system development provides traceability to validated sources and user needs of the system. Derived requirements incorporated in the design should be traced to mission objectives as the system is built; and
- Managing capability after delivery ensures continued performance and effectiveness of the capability in meeting the identified requirements.

The following processes govern material capability development during acquisitions. Activities and products necessary to effectively develop capability are delineated within these processes.

Major Systems Acquisitions

The Major Systems Acquisition Manual (MSAM) defines the policy and process for major systems acquisition projects, and is designed to align Coast Guard major acquisition policy with DHS. Detailed procedures are provided for applying a uniform and disciplined approach to acquisition planning and project management from mission analysis and requirements generation through design, development, production and deployment. The project identification and need phases of the MSAM identify the gap and articulate the capability necessary to fill that gap. Capability alternatives are identified in the Analyze/Select phase. Once specifications are clearly defined, the capability is obtained, produced and deployed. During the Support phase, the system will be reviewed for continued performance and sustainment of requirements it was intended to satisfy.

Acquisition Decision Events (ADEs) occur periodically within the process to ensure the capability development effort is proceeding as desired. Technical Authorities are designated for each ADE to obtain approval from a specific discipline or perspective (e.g., Sponsor/mission, technical, logistic, workforce).

With the exception of the Mission Analysis Report (MAR), which is developed by Strategic Program Managers, the MSAM-related capability development products below are developed by the Sponsor as the capability Provider. All efforts should include collaboration from IPT membership spanning all Headquarters directorates as well as operational commanders. These include:

- Mission Analysis Report. The MAR documents the results of ongoing mission analyses and supports initial acquisition strategies. The purpose of the mission analysis is to assess the ability of the Coast

Guard to successfully carry out a specific mission in the future. The projected future mission is described as the current mission gap and the impact of current deficiencies on operational effectiveness. Potential solutions are identified that would fulfill the mission requirements. A life cycle cost is determined for a range of alternatives;

- Mission Needs Statement (MNS). The MNS describes specific functional capabilities required to accomplish Coast Guard missions. The MNS is normally derived from a business case, summarizes the results of thorough analysis and bounds the scope of the project. Approval of the MNS provides formal Coast Guard executive-level acknowledgment of a justified and supported need to allocate scarce resources to resolve a mission deficiency;
- Concept of Operations (CONOPS). The CONOPS describes the operational view of the proposed system(s) from the user's perspective. A CONOPS is used to communicate high-level, conceptual, future business and mission operations to the project Sponsors, end users, planning and design teams, and other stakeholders;
- Preliminary Operational Requirements Document (PORD). The PORD is the first requirements document that incorporates the vision set out in a CONOPS and assigns desired operational performance expectations. It sets the context of the capability gaps to be addressed to guide the development and evaluation of alternative design concepts; and
- Operational Requirements Document (ORD). The ORD is a top-level decision document that establishes the minimum acceptable standards of performance (thresholds) and optimum performance goals (objectives) for the capability.

Non-Major Acquisitions

The Non-Major Acquisition Process (NMAP) is a means to efficiently acquire assets and systems to meet Coast Guard mission objectives, while employing an appropriate level of oversight and project management discipline that is tailored for the effort, yet is robust enough to address the risk associated with smaller projects. A process similar to the MSAM is established with fewer review points and simplified decisions reviews.

Systems Engineering Life Cycle

The Systems Engineering Life Cycle (SELC) process is executed in accordance with the MSAM and in alignment with the Acquisition Life Cycle Framework. The initial SELC process stages - Solution Engineering, Planning and Requirements Definition - are where the Acquisition Directorate and the Technical Authorities apply Systems Engineering techniques and tools to evolve the approved CONOPS and ORD into a structured set of system requirements that are fully traceable and serve as the basis for asset design. In the course of the early SELC

stages, any ambiguities or omissions in the CONOPS and ORD will be revealed and corrected, and life cycle costs will be projected. For operational requirements that have more than one possible solution, trade studies and other analyses should be conducted to inform the selection. Logistics support strategies are established. Contracting and acquisition strategies are developed where required.

System Development Life Cycle

The System Development Life Cycle (SDLC) is specific to development and management of non-major C4IT systems. Identification of business needs and operational requirements occurs among the first phases of the SDLC. Requirements validation is necessary to enter into the SDLC. During the SDLC process, requirements will continue to be reviewed and updated. Designs will be tested to verify the proper capability is being delivered in the process. During operations and maintenance, continued performance monitoring by review of identified performance measures will verify that the capability delivered is addressing the intended organizational objectives.

Section 5.C. External Interfaces

5.C.1. General

The Coast Guard is a participating agency of the DHS, works with and supports DoD operations, and interfaces with other federal, state and local government agencies. These other agencies will generate requirements satisfied, in part, by Coast Guard capability. Partnering and participating in activities with these agencies consumes Coast Guard capability. The Coast Guard should be familiar with the processes and mandates of these agencies so the Coast Guard can properly identify and validate external agency requirements and provide effective capability.

5.C.2. DHS

DHS provides guidance to its component agencies to manage consistent approaches to performance and operations. DHS is charged with managing a capability portfolio to meet mission needs across all organizations. Alignment with DHS requirement and capability practices is necessary to support multi-agency operations and shared capability across the department.

Performance Measurement

DHS has established performance goal and measurement guidelines that drive Coast Guard requirements and the capability to meet performance targets. This guidance is subject to change; therefore, the Coast Guard must monitor DHS guidelines and adjust its requirements and capability appropriately. Input to DHS performance measurement includes:

- **Agency-Wide Performance Measures.** These measures include input into the Performance Budget Overview (PBO) and the Performance and Accountability Report (PAR);
- **Program-Specific Performance Measures.** Measures identified during performance and metric reviews must be reported by the Coast Guard in the DHS FYHSP system; and
- **Investment-Specific Performance Measures.** These measures include performance measures listed in Exhibit 300 documents and Earned Value Management measures developed to meet Office of Management and Budget (OMB) requirements.

The capability requirements of the Coast Guard to meet DHS performance goals are transmitted to DHS via annual budget submissions and the annual update of the FYHSP.

Acquisition Procedures

As referenced in the discussion of internal CG interfaces, CG acquisition procedures governing the development of material capabilities follow the overall acquisition guidance promulgated by DHS in a series of Acquisition Management Directives. This overall alignment helps to:

- Define and stratify acquisition programs for enhanced support and oversight;
- Provide further guidance and discipline on the requirements management and capability development processes;
- Establish an adaptable life cycle framework for all capability acquisitions;
- Create common acquisition standards and practices across all agencies; and
- Promote visibility and sharing of capability across agencies. Acquisition projects that leverage similar programs across other DHS components and OGA should be pursued whenever practicable to facilitate cost savings and ensure increased interoperability between stakeholders, both internal and external, to DHS.

5.C.3. External Agencies

The Coast Guard operates with and supports external agencies on a range of operations requiring mission analysis and performance assessment. An external perspective providing information to external agencies to perform their analysis and assessment and an internal perspective providing feedback and information to the Coast Guard should be maintained. This strengthens the information, priorities, assumptions and targets used in analysis within the Coast Guard. External agency interfaces include but are not limited to:

- Following external organization (e.g., DHS/Joint/DoD/OGA) doctrine for mission analysis and performance assessment when operating with those organizations;
- Responding to the assessment and analysis requirements of external agencies, such as DHS, DoD, the Government Accountability Office (GAO) and Congress;
- Performing required analysis to prepare budgetary reports and documents as required by the Congress, OMB and DHS;
- Managing and coordinating external performance reviews (e.g., DHS audits, GAO audits);
- Acting as point of contact on matters relating to maritime strategic analysis and capabilities;
- Analyzing changing conditions and mandates and reporting impact to

Coast Guard mission analysis and performance assessment policy, doctrine and TTP;

- Providing analysis, research and evaluation for special studies, items of importance to the Commandant, legislative initiatives, congressional inquiries and public interest matters; and
- Supporting and participating in the DoD Global Forces Management Process (GFMP). The GFMP provides insights into the global availability and operational readiness of forces, joint force requirements and the impact and risk of proposed allocation, assignment and apportionment changes.

Appendix A: Glossary

Introduction This appendix contains a listing of acronyms used in this publication and terms used within the scope of this document and their definitions.

ACRONYMS

ACCP	Authorities, Competencies, Capabilities and Partnerships. When combined with Capacities, is referred to as ACCCP.
AOR	Area of Responsibility
C4&IT	Command, Control, Communications, Computers and Information Technology
CGBI	Coast Guard Business Intelligence
CONOPS	Concept of Operations
DHS	Department of Homeland Security
DoD	Department of Defense
DOTMLPF+R/G/S	Doctrine, Organizations, Training, Material, Leader Development, Personnel, Facilities plus Regulations, Grants and Standards.
FYHSP	Future Years Homeland Security Program
GAO	Government Accountability Office
GPRA	Government Performance and Results Act (1993); Modernization Act (2010)
IPT	Integrated Product Team
MAR	Mission Analysis Report
MOE	Measure of Effectiveness
MOP	Measure of Performance
MNS	Mission Need Statement
MSAM	Major Systems Acquisition Manual
OGA	Other Government Agencies
ORAM	Operational Risk Assessment Model
ORD	Operational Requirements Document
PAR	Performance and Accountability Report
PESTII	People, Equipment, Supplies, Training, Infrastructure and Information
PBO	Performance Budget Overview

ROI	Return on Investment
SOPP/GFM	Standard Operational Planning Process/Global Force Management
TTP	Tactics, Techniques and Procedures

TERMS

Capability	The ability to execute a specified course of action. A capability may be accomplished through any combination of material and non-material solutions.
Capability Analysis	The examination of information and data to provide a basis for effective decisions, establish priorities and identify capabilities to meet requirements. Analysis requires a determination and understanding of cause-and-effect relationships and relies on expert review and interpretation.
Capability Gap	A mismatch of requirements and current capabilities that results in the inability to satisfy those requirements.
Capability Management	A disciplined approach to planning, organizing, leading and directing efforts to deliver and sustain capability while maintaining consistent and accurate organizational capability and requirements information.
Capacity	The maximum quantity of resources and capabilities that can be obtained, maintained and allocated in time to sustain mission execution requirements and related support within the prescribed limits of an asset or system as directed by proper authority.
Configuration Management	Technical discipline through which engineering and logistics documents communicate and control the configuration of assets through configuration identification, configuration control, configuration status accounting and configuration audits. It establishes a baseline and institutes a process where change is properly documented ensuring that all assets are configured to requirements throughout their life cycle.
Enterprise Architecture	A discipline that synthesizes key business and technology information across the organization to support better decision-making. Enterprise architecture (EA) provides useful information products and governance services to the end-user while developing and maintaining the current and target (to-be) architectures and transition plan for the organization. The information in EA includes: results of operations, business functions and activities, information requirements, supporting applications and technologies, and security.

Initiatives	Approved ways and means of addressing identified gaps and issues that are designed to transcend normal operating planning and nominal improvement efforts. They may include significant temporary changes to base management or substantially modified concepts of operation that typically require changes in DOTMLPF+R/G/S.
Mission Analysis	The continuous, iterative analysis of assigned mission responsibilities to identify deficiencies in current and projected capabilities. Mission Analysis is a two-step process that validates public needs and demands and examines alternative methods of service delivery.
Operational Commander	For the purposes of this doctrine, the term *operational commander* refers to Area commanders inclusive of their subordinate commands at the operational and tactical levels.
Operational Analysis	The assessment tool used to measure the performance and cost of assets or systems against an established baseline. An operational analysis (OA) should demonstrate a thorough examination of the need for the asset or system, the performance being achieved by the asset or system, the advisability of continuing the asset or system and alternative methods of achieving the same asset or system results. As such, OA may indicate that a current asset is not meeting the intended needs of the Coast Guard and therefore needs to be redesigned, modified or replaced. Sponsors are required to perform annual OA on each major acquisition.
Performance Assessment	The process of assessing progress toward achieving predetermined goals, including information on the efficiency with which resources are transformed into goods and services (outputs); the quality of those outputs (how well they are delivered to customers and the extent to which customers are satisfied) and outcomes (the results of a program activity compared to its intended purpose); and the effectiveness of government operations in terms of their specific contributions to organizational goals and objectives.
Performance Goal	A target level of performance over time expressed as a tangible, measurable objective, against which actual achievement can be compared. A performance goal comprises a performance measure with targets and timeframes.
Performance Management	A systematic approach to performance improvement through an ongoing process of establishing strategic performance objectives; measuring performance; collecting, analyzing, reviewing and reporting performance data; and using that data to drive performance improvement through updated plans, doctrine or policy.

Performance Measurement	A means of evaluating efficiency, effectiveness and results. Performance measurement should include program accomplishments in terms of outputs and outcomes. Indicators, statistics or metrics used to gauge program performance.
Performance Measures	Quantitative or qualitative measurements that determine whether a target or goal has been met. Coast Guard performance measures are focused on risk management, readiness management and effective stewardship.
Performance Targets	A designated level of expected performance expressed as a tangible, measurable target, against which actual achievement can be compared, including a goal/objective expressed as a quantitative standard, value or rate. Standards should be established based on systematic assessment of requirements, updated to reflect changing conditions and clearly defined for each performance measure.
Planning, Programming, Budgeting and Execution process	The USCG follows the Planning, Programming, Budgeting and Execution (PPBE) process to articulate a budget strategy; identify size, structure, and equipment for operating forces; allocate resources; and evaluate actual outcomes against planned performance to adjust resources as appropriate. The PPBE establishes the framework to evaluate for future programs and programmatic decisions in the present environment (e.g., evolving threat, changing economic conditions, etc.). This includes examining existing base funding levels when service wide program priorities change.
Program	A system of projects, services, and/or resources that provides policy and guidance in support of internal or external customers. A major ongoing endeavor that fulfills statutory or executive requirements and which is defined in terms of the principal actions required to achieve a significant end objective. Programs are not always missions; they typically cut across missions.
Program Assessment	A determination, through objective measurement and systematic analysis, of the manner and extent to which federal programs achieve intended objectives.
Program Manager	The staff officer designated by and responsible to the Program Director for the detailed management of a Coast Guard program. In the context of Strategic Program Management, a *Strategic Program Manager* is delegated strategic management responsibility for a Coast Guard program listed in the DHS Future Years Homeland Security Program.

Program Performance Plan	A strategic overview that explains a strategic program's mission, long-term goals and general ways and means by which these are achieved. They present the challenges, threats and opportunities likely to have the greatest impact on program performance, as well as recent program evaluation findings and any such future evaluations scheduled. They also present vetted and approved *initiatives*, indicators used for performance measurement and assessment, and annual targets.
Readiness	The state of match between validated requirements and capabilities.
Requirement	A documented user need of what a specific system should be or do. It identifies a necessary attribute, capability, characteristic or quality a system must possess to provide value or utility to the user. Operational requirements must be actionable, measurable, testable and traceable to user needs and defined to a sufficient level to enable the next level of systems engineering.
Requirements Analysis	The examination of requirements, supporting plans and documentation to determine validity of the requirement and provide insight into organizational priorities.
Requirements Management	A process that provides visibility, transparency and traceability in support of submission, review, and verification and validation of requirements.
Resources	Human capital, finances, information or other capital assets, consumed by work activities.
Return on Investment (ROI)	Ensuring operational outcomes (risk mitigation) are balanced with force requirements (readiness) within constraints of available resources.
Risk	The potential for an unwanted outcome resulting from an incident, event or occurrence, as determined by its likelihood and the associated consequences. Risk is calculated as the product of threat, vulnerability and consequence.
Risk Management	The process for identifying, analyzing and communicating risk and accepting, avoiding, transferring or controlling it to an acceptable level considering associated costs and benefits of any actions taken.
Sponsor	The Sponsor is the identified organizational element that develops and documents the business case, defines and validates functional requirements and accepts capability needed to support Coast Guard mission or business performance.
Strategic Goal	The Coast Guard's broad, overarching goals as specified in Coast Guard Strategy that describe what the Coast Guard intends to achieve or influence as an organization.
Strategic Program Manager	See *Program Manager*.

Strategic Objectives	An organization's articulated aims or responses to address major change or improvement, competitiveness issues and organizational advantages. Objectives should be stated in terms of end state and outcomes.
Target	A quantifiable or otherwise measurable characteristic that tells how well or at what level a program aspires to perform. Targets are specific interim levels of performance achieved in support of attaining an overall goal.
Technical Authority	Technical Authorities serve as the Coast Guard's authoritative experts in providing the authority, responsibility and accountability to establish, monitor and approve technical standards, tools and processes, and certify projects in conformance with statute, policy, requirements, architecture and standards.

Appendix B: References

B.1 Introduction This appendix contains a list of references used in the development of this publication which may be useful in providing amplification to the concepts and ideas discussed in this document.

B.2 References

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Appendix C: Programmatic Capability Management

The Coast Guard has established the directorate under the Assistant Commandant for Capability (CG-7) to oversee the practices associated with capability management. In accordance with CG-DCO Functional Statements version 3.0, an overview of each office within CG-7 is presented here along with unique requirements and capability management functions associated with each office within CG-7. These unique functions are in addition to the general functions identified below.

Appendix C.1. CG-7 Overview

The Assistant Commandant for Capability is responsible for identifying and sourcing new and extended capabilities, competencies, and capacities and asset capability related service-wide policy to meet mission requirements. CG-7 develops, for DCO concurrence, the optimal mix of solution sets (ACCCP), within specified constraints, to meet specific mission requirements to achieve the Commander's Intent.

In short, CG-7 is the capability Provider. Collectively, the offices of CG-7 perform the following activities:

- Assess, analyze and identify ACCCP necessary to meet future mission requirements;
- Provide programmatic solutions that optimize operational effectiveness;
- Define, maintain, evaluate, validate and articulate business and operational requirements;
- Obtain capabilities, competencies and capacity to meet operational requirements (Note: CG-5P and CG-5R drafts and sponsors new authorities);
- Develop and approve platform, people and equipment standards for staffing, training, equipping, sustaining, maintaining and employing;
- Monitor all Developmental Testing and Evaluation and Operational Testing and Evaluation of Coast Guard capabilities;
- Produce a periodic assessment report on current and future capability gaps and associated mitigation plans;
- Represent Coast Guard operations policy and capability requirements equities within the Administration, with the Congress, among federal, state, local, academic, individual citizen, international and private

sector stakeholders;

- Provide CG operations policy and capability requirements input at each stage of the Coast Guard resource management cycle from mission performance assessment, to gap analysis and capability requirements generation, through budget build, budget defense and budget execution;

- Provide the CG operations policy and capability requirements "data feed," both internally and externally, that will allow representation, analysis and requirements generation to be successfully completed in an efficient and effective manner;

- Develop optimum operational unit force structures; coordinate associated force distribution, initial integration of ACCCP solution sets, and platform decommissioning plans and schedules respectively; and

- Approve readiness measures.

Appendix C.2. Force Management Staff (CG-7D-1)

The Force Management Staff provides oversight on specific issues that impact the operational specialties and ratings they manage, as well as provides input into force management initiatives that impact the entire Warrant Officer and Enlisted workforce. CG-7D-1 manages the structure of their workforce and ensures that personnel are prepared to meet current and future missions to coincide with program goals. CG-7D-1 manages new workforce capability requirement through mission and capability analysis:

- Translating mission training requirements into competencies and the requirements to satisfy those competencies. In managing competencies, CG-7D-1 performs manpower requirements determination analysis to ensure the appropriate competencies are assigned to positions;
- Providing input to maintain a force pyramid with adequate opportunities for advancement and professional growth of personnel; and
- Providing input into forecasting recruitment and training programs to fill appropriate rating streams.

Appendix C.3. Office of Aviation Forces (CG-711)

The Office of Aviation Forces provides Coast Guard aviation with capability in the form of resources, doctrine, oversight and training programs to support safe and effective execution of Coast Guard missions. CG-711 assesses current capability and develops and manages new capability competencies and capacities. CG-711 serves as the Sponsor's Representative for all new aviation platforms and life-extending

capabilities initiatives and evaluates operational effectiveness on all new aviation capabilities.

Appendix C.4. Office of Specialized Capabilities (CG-721)

The Office of Specialized Capabilities develops, promulgates and maintains the Coast Guard's Use of Force, Dive and Reserve capabilities. The Use of Force Branch oversees Small Arms, Less Lethal Ammunition and Navy Type Navy Owned weapons systems. The Dive Branch oversees the Coast Guard's diver training program and conducts program oversight for the Coast Guard's dive lockers. The Reserve Capabilities Branch oversees the Reserve's capabilities needs.

Appendix C.5. Office of Boat Forces (CG-731)

The Office of Boat Forces assesses, analyzes and identifies capability necessary to meet boat force mission requirements. They provide safe and effective boat operations in support of all Coast Guard missions. CG-731 develops the Boat Force capability structure and coordinates associated force distribution.

Appendix C.6. Office of Shore Forces (CG-741)

The Office of Coast Guard Shore Forces provides unity of command and aligns shore structures to improve mission execution. CG-741 develops Shore Force structure, coordinates associated force distribution and manages capability to meet requirements. CG-741 is the Headquarters Planning Coordinator (HQPC) for all assigned Shore Forces and is responsible for budget sustainment for all Shore Forces along with capital investment input management of initial operating budgets. CG-741 has unique responsibilities overseeing and managing the Vessel Traffic System (VTS) and Sector Command Centers in the following areas:

- Training and competency management;
- Strategic program oversight;
- Primary program advocate within Coast Guard Headquarters; and
- Operational standards/requirements determination.

Appendix C.7. Office of Cutter Forces (CG-751)

The Office of Cutter Forces oversees acquisition, planning, managing and training of all Coast Guard cutter capability. CG-751 has the following unique responsibilities to effectively manage Coast Guard cutter capability:

- Provide representation to and make recommendations on the results of Ship's Structure and Machinery Evaluation Boards (SSMEBs) and Service Life Evaluation Boards (SLEBs);
- Oversee evaluation and selection of cutter homeports. Establish requirements for homeport preparation for new cutters; and
- Formulate and administer plans and strategies for delivery and integration of new assets into cutter fleet inventory. Coordinate fleet

transition plans through engagement on out-year budgeting strategy.

Appendix C.8. Office of C4 and Sensors Capability (CG-761)

The Office of C4 and Sensors Capability represents all mission communities that combine Coast Guard operations experience and various C4 and Sensors knowledge to achieve mission execution capability and system interoperability with outside agencies. CG-761 operates as the C4ISR Life Cycle Program Managers responsible for all C4IT projects, and liaises between stakeholders, user communities and technical authorities as the Sponsor's Representative. CG-761 researches, documents and validates business requirements in an effort to standardize and improve the management of C4ISR capabilities. CG-761 has the specific responsibilities to:

- Collaborate with C4ITSC/CG-6/CG-9 on actions to develop material solutions to meet requirements based on acquisition thresholds;
- Provide governance and oversight for standardization, effectiveness, suitability and survivability of C4I capabilities across platforms; and
- Institute C4ISR capabilities ownership and assessment processes from concept inception to system disposal.

Appendix C.9. Office of Requirements and Analysis (CG-771)

The Office of Requirements and Analysis coordinates the assessment, analysis and identification of Authorities, Capabilities, Competencies, Capacities and Partnerships necessary to meet Coast Guard mission requirements. The office oversees the development and management of a standardized, defendable and repeatable process to generate and maintain Coast Guard capability (operational) requirements in support of follow-on CG-9 acquisition activities. The office also develops and maintains modeling and simulation tools and conducts robust analysis of the Coast Guard System to improve the performance of all Coast Guard missions.