

SECTION 2

OVERVIEW OF MARAD CAPITAL PLANNING AND INVESTMENT CONTROL PROCESS

2.1 Introduction

MARAD will follow the Department of Transportation (DOT) Capital Planning and Investment Control (CPIC) Process. MARAD will apply the Select, Control, and Evaluate Phases of the CPIC process as described below to formulate, manage, and maintain MARAD's portfolio of IT investments. Figure 2.1 illustrates the DOT/MARAD CPIC Process.

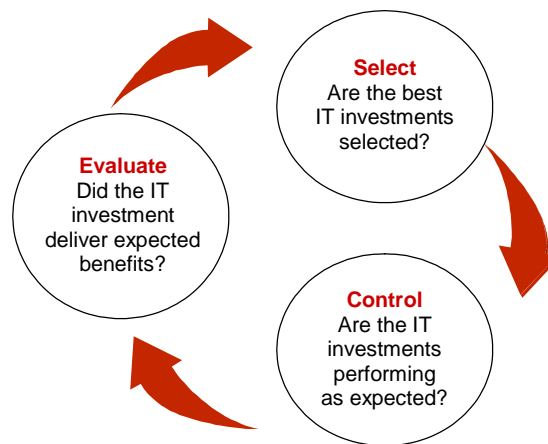


Figure 2.1 DOT/MARAD CPIC Process

2.1.1 Select Phase

The Select Phase is used to determine priorities and make decisions about which projects (new and ongoing) will be funded and included in the IT portfolio.

The objectives of the Select Phase are to ensure:

- Investments that are critical to addressing MARAD mission needs and strategic objectives are funded.
- Certify that only sound viable investments are included in the MARAD IT portfolio.
- Governance bodies screen, score, rank and select proposed investments based on enterprise value, benefit, cost, risk and other criteria, including broader portfolio objectives.

- Capture lessons learned and provide feedback to the Governance Process to continually improve the CPIC process.

2.1.2 Control Phase

The Control Phase is an ongoing management process designed to monitor the progress of initiatives against project cost, schedule, performance, risks, and expected mission benefits.

The objectives of the Control Phase are to:

- Ensure that the investment activities comply with MARAD policies and procedures and that investments remain viable and with cost, schedule, and performance goals.
- Certify that only sound and viable investments remain in the MARAD IT portfolio.
- Conduct Governance bodies investment performance reviews on a quarterly basis or as necessary.
- Provide input to the annual MARAD selection process supporting budget submission.
- Capture lessons learned and provide feedback to the Governance Process to continually improve the CPIC Process.

2.1.3 Evaluate Phase

Once initiatives are fully implemented, actual versus expected results are evaluated to: (1) assess the project's impact on strategic performance; (2) identify any changes or modifications to the project that may be needed; and (3) revise the investment management processes based on lessons learned.

The objectives of the Evaluate Phase are to:

- Determine the affect of an investment on MARAD business operation.
- Ensure investments are evaluated to compare actual to expected results upon deployment.

2.1.4 Governance Activities

MARAD has established governance bodies to review all MARAD IT investment performance, including cost, schedule, and continuing business value. The governance bodies are the MARAD Investment Review Board (IRB) and the MARAD Information

Technology Investment Council (ITIC). The MARAD governance process allows management the opportunity to continually balance the MARAD IT portfolio against the DOT and MARAD mission, vision and strategic objectives. This process allows the governance bodies to make enterprise decisions regarding capital planning and investment. The MARAD governance process provides consistent management across the MARAD portfolio.

2.2 MARAD's IT CPIC Policy

2.2.1 MARAD's IT CPIC Principles

MARAD's CPIC process and policies are guided by the following principles:

- Ensure that MARAD IT-related investments are directly linked to the accomplishment of MARAD's mission, strategic plan, and business objectives.
- Ensure that MARAD makes sound IT-related investment decisions based on thorough planning, risk identification, and resource management.
- Ensure that IT CPIC, strategic planning, budget and acquisition processes are properly coordinated.
- Ensure that Enterprise Architecture (EA) and Security considerations are given proper emphasis in the IT CPIC process.
- Enable MARAD management to identify opportunities for consolidating requirements and investments affecting multiple Project Managers ("cross-cutting" investments) to increase interoperability, limit duplication, and save costs when appropriate.

2.2.2 CPIC Related Policies and Guidance

The MARAD IT CPIC process addresses a wide range of Federal, DOT and MARAD mandates, including, but not limited to:

2.2.2.1 Chief Financial Officers' Act of 1990: Requires agencies to develop and effectively operate and maintain financial management systems. CFOs are responsible for developing and maintaining integrated accounting and financial management systems that include systematic measurement information on agency performance.

2.2.2.2 The Government Performance and Results Act of 1993 (GPRA): Requires agencies to prepare strategic plans and annual performance plans covering each program activity displayed in the budget. The performance plans are to establish performance goals in objective, quantifiable and measurable form and performance indicators to be used in measuring relevant outputs, service levels and outcomes.

2.2.2.3 Federal Acquisition Streamlining Act of 1994 (FASA): Requires agencies to define the cost, schedule and performance goals for major acquisition programs and to monitor and report annually on the degree to which those goals are being met.

- 2.2.2.4 The Paperwork Reduction Act of 1995 (PRA):** Minimizes the paperwork burden resulting from collection of information by or for the Federal Government.
- 2.2.2.5 The Clinger-Cohen Act of 1996 (CCA):** Requires each agency to undertake capital planning and investment control by establishing a systematic process for maximizing the value, and assessing and managing risks of IT acquisitions of the executive agency.
- 2.2.2.6 The Government Paperwork Elimination Act of 1998 (GPEA):** Requires Federal agencies to allow the option of submitting information or transacting business with an agency electronically.
- 2.2.2.7 Federal Information Security Management Act of 2002 (FISMA):** Permanently authorizes and strengthens the information security program, evaluation, and reporting requirements for federal agencies.
- 2.2.2.8 E-Government Act of 2002 (P.L. 107-347):** A comprehensive act that makes it easier for citizens and businesses to access government information and services by encouraging interagency IT investments, consolidating redundant systems and decreasing paperwork. The E-Government Act of 2002 establishes a new Office of Electronic Government within the Office of Management and Budget (OMB).
- 2.2.2.9 OMB Circular A-11:** Provides guidance on the planning, budgeting and acquisition of fixed assets, which includes IT capital assets, and requires agencies to provide information on these assets in budget submissions, and provides guidance for planning. Included within this annual OMB issuance are the Exhibit 53 (Agency IT Investment Portfolio) and Exhibit 300 (Capital Asset Plan and Business Case).
- 2.2.2.10 OMB Circular A-130:** Establishes policy for the management of Federal information resources. A-130 provides information resources management policies on Federal Information Management/Information Technology (IM/IT) resources required by the Paperwork Reduction Act (PRA) of 1980, as amended.
- 2.2.2.11 Department of Transportation (DOT) Capital Planning and Investment Control (CPIC) Process Manual:** Provides DOT policies, guidance and requirements for IT Management.
- 2.2.2.12 Department of Transportation (DOT) Information Technology Project Management Guidebook, November 2004:** Specifies validation requirements for IT Project Managers.
- 2.2.2.13 MARAD MAO 220-11, Information Technology Management:** Establishes policies, processes and procedures to provide flexibility, where possible, while ensuring that MARAD's Information Technology (IT) management complies with all federal laws and polices.
- 2.2.2.14 MARAD Information Technology Administration Manual:** This manual is authorized by MAO 220-11. It provides detailed information of management of all MARAD IT resources and contains information on day-to-day MARAD IT operations.

The ITAM also provides guidance for IT investments and deliverables during each System Development Life Cycle (SDLC) phase.

2.3 Types of IT Systems or Investments

MARAD IT investments are divided into two groups: Major and Non-Major. These groups define pertinent oversight and management requirements from the CPIC and SDLC processes. The characteristics of each group are listed in Table 2.1 below.

2.3.1 Major IT Investments

For all Major IT capital assets, acquisitions, investments, or systems, an OMB Exhibit 300 (Capital Asset Plan and Business Case) must be prepared and submitted annually to OMB in order to be considered for funding.

2.3.2 Non-Major IT Investments

All systems, investments, projects that are not classified as Major are considered Non-Major. MARAD will require submission of tailored Business Cases for these investments.

Classification	Characteristics
<p>Major</p>	<p>Each Major investment requires generation and submission of an <u>OMB Exhibit 300 report (Capital Asset Plan/Business Case)</u> annually, and typically has one or more of the following characteristics:</p> <ul style="list-style-type: none"> • Life-cycle cost of \$150 million or more. • Financial system with a life-cycle cost of \$500,000 or more. • Investment is directly tied to top two layers of the Federal Enterprise Architecture Business Reference Model (Services for Citizens and Mode of Delivery). More information regarding the Business Reference Model is located at http://www.feapmo.gov/. • Investment is an integral part of the agency’s IT Modernization Blueprint (EA). • Requires special management attention because of importance to Agency mission. • Investment has high executive visibility. • Investment has significant program or policy implications. • Directly supports the President’s Management Agenda. • Investment is E-Government in nature or uses e-business technologies. • Investment is <u>Mission-Critical</u> regardless of dollar value. A Mission Critical system is any telecommunications or information system used or operated by an agency or a contractor of an agency, or other organization on behalf of an agency that:

	<ul style="list-style-type: none"> • Is defined as a national security system under Section 4152 of the Clinger-Cohen Act of 1996 (40 U.S.C. 1452); or • Is protected at all times by procedures established for information which has been specifically authorized under criteria established by an Executive Order or an Act of Congress to be classified in the interest of national defense or foreign policy; or • Processes any information whose loss, misuse, disclosure or unauthorized access or modification would have a debilitating impact on the mission or an agency.
Non-Major	All systems/investments/projects that are not classified as Major are considered Non-Major. Non-Major investments do not require that an Exhibit 300 be submitted to OMB. However, these systems are required to be documented in eCPIC and participate in capital planning processes.

Table 2-1 IT Investment Classifications

2.4 MARAD Capital Planning and Budget Cycle Activities and Milestones

Table 2-2 outlines fiscal year activities for the CPIC Process. MARAD’s major budget milestones and procurement activities are derived from the DOT CPIC schedule. For planning purposes, MARAD events are scheduled to complete the quarter prior to the DOT submission requirements.

MARAD TIME PERIOD	DOT TIME PERIOD	EVENTS	DELIVERABLES
DECEMBER - OCTOBER	MARCH - JANUARY	<u>Select</u> <ul style="list-style-type: none"> Initial Budget Guidance (FY + 2 years) Present proposed portfolio to DOT IRBs (FY + 2 years) Begin FY Budget Guidance training (FY + 2 years) Identify FY Enterprise Initiatives (FY + 1 year) <u>Control:</u> <ul style="list-style-type: none"> Control review <u>Evaluate</u> <p>Conduct Post Implementation Reviews (PIR) Systems and Technology Succession Management Portfolio Performance IT CPIC Process Improvement</p>	<ul style="list-style-type: none"> IT Budget Guidance Updated IT portfolio Draft Exhibit 300/53s Control Review scorecards and Corrective Action Templates Post Implementation Review (PIR) results Portfolio Performance Evaluations Update CPIC guidance as required
MARCH - JANUARY	JUNE - APRIL	<u>Select:</u> <ul style="list-style-type: none"> Project Managers submit Exhibit 300s to DOT CIO (FY + 2 years) Project Managers Budget requests due to the Budget Office Project Managers submit Exhibit 53 information to CIO (FY + 2 years) Continue Budget Guidance training (FY + 2 years) <u>Control:</u> <ul style="list-style-type: none"> Control review Portfolio assessment <u>Evaluate:</u> <p>Conduct PIR Systems and Technology Succession Management Portfolio Performance IT CPIC Process Improvement</p>	<ul style="list-style-type: none"> Updated IT portfolio Draft Exhibit 300/53s Control Review scorecards and Corrective Action Templates PIR results Portfolio Performance Evaluations Update CPIC guidance as required
JUNE - APRIL	SEPTEMBER - JULY	<u>Select:</u> <ul style="list-style-type: none"> Exhibit 300s reviewed by the Capital Planning Working Group (CPWG) and CIO staff; Exhibit 300s submitted to OMB (FY + 2 years) Final IT portfolio approved by IRB (FY + 2 years) Exhibit 53 submitted to OMB (FY + 2 years) OMB Exhibit 300s and Exhibit 53s are prepared and for submittal to OMB via eCPIC <u>Control:</u> <ul style="list-style-type: none"> Control review <u>Evaluate:</u> <p>Conduct PIR Systems and Technology Succession Management Portfolio Performance IT CPIC Process Improvement</p>	<ul style="list-style-type: none"> Updated IT portfolio OMB Exhibit 300s/53s Control Review scorecards and Corrective Action Templates PIR results Portfolio Performance Evaluations Update CPIC guidance as required

MARAD TIME PERIOD	DOT TIME PERIOD	EVENTS	DELIVERABLES
SEPTEMBER - JULY	DECEMBER - OCTOBER	<u>Select:</u> <ul style="list-style-type: none"> • IRB assesses/reports on final FY IT budget submission (FY + 1 year) • OMB recommends funding levels for upcoming fiscal year (FY +1 year) during the Passback phase of the budget process • Develop screening and scoring criteria for major IT investments (FY + 2 years) • Project Managers update Exhibit 300s and Exhibit 53 to reflect guidance from OMB Passback (FY + 1 year) <u>Control:</u> <ul style="list-style-type: none"> • Control Review initiatives identified for the fiscal year • Control review • IT Portfolio Assessment <u>Evaluate:</u> <ul style="list-style-type: none"> • Post-Implementation review (PIR) schedule identified for the fiscal year • Systems and Technology Succession Management • Portfolio Performance • IT CPIC Process Improvement 	<ul style="list-style-type: none"> • OCFO issues current funding allocation for funds appropriated by Congress • Project Plan Draft • IT Project Manager Review • Updated IT portfolio • Updated Exhibit 300s and Exhibit 53 • Control Review scorecards and Corrective Action Templates • Revised Select scoring criteria • PIR Schedule for next fiscal year • Portfolio Performance Evaluations • Update CPIC guidance as required

Table 2-2 Major Fiscal Year Activities

2.5 Select Phase

2.5.1 Select Phase Objective

2.5.1.1 The objective of the Select Phase is to ensure that only sound and viable investments are included in MARAD’s IT portfolio. During the Select Phase, MARAD develops an IT portfolio composed of those investments that best support MARAD’s mission and strategic objectives. Proposed IT investments are screened, scored, and ranked based on benefit, cost, risk and a set of other predetermined criteria. Selection criteria include support of Strategic Goals and Objectives, benefit to MARAD, project management considerations, cost-benefit analysis, and support of the MARAD enterprise architecture.

2.5.1.2 MARAD IT Budget Guidance is issued annually by the MARAD Budget Office. The MARAD Office of the Chief Information Officer (CIO) will assist Project Managers in developing sound IT investment proposals. MARAD IT Budget Guidance provides specific guidance and investment priorities for the fiscal year.

2.5.1.3 Each IT investment must have documented rationale supporting the business need for the investment. Key questions to be addressed during the Select Phase are:

- Is the IT portfolio aligned with MARAD’s mission and Strategic Plan?

- Has MARAD identified and analyzed feasible alternatives associated with this investment?
- Has MARAD calculated the Return on Investment (ROI) for the selected IT investments?

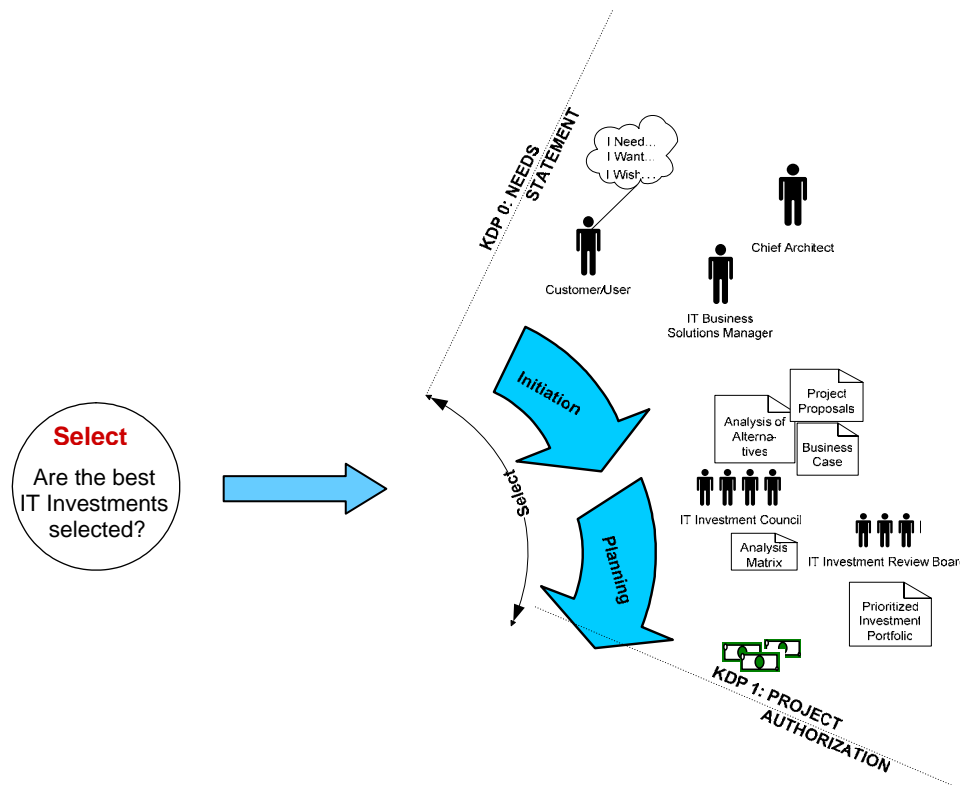


Figure 2-2 Select Phase

2.5.1.4 Relationship to SDLC

The Select Phase begins after the need has been identified at Key Decision Point (KDP) 0. The need moves through the initial planning phase to develop the information required for initial scoring and for KDP 1 Project Authorization. (Section 3 of the ITAM contains detailed information of the SDLC Phase and documentation requirements during each phase.)

2.5.2 Roles and Responsibilities

The following individuals have key roles in the Select Phase.

2.5.2.1 MARAD IT Customer

- Identifies need

2.5.2.2 Business Solutions Managers

- Initial review of customer's identified need
- Shepherd the need through the MARAD IT process
- Provide recommendations concerning the technical feasibility of MARAD IT initiatives
- Provide recommendations for initial funding and adjustments for the assigned MARAD IT initiatives

2.5.2.3 MARAD Chief Architect

- Reviews all IT investments for compliance with OMB Circular A-11 requirements prior to MARAD IT Investment Council review and Investment Review Board (IRB) review and approval
- Oversees adherence to the MARAD EA Technical Reference Model (TRM), Data Reference Model (DRM), Business Reference Model (BRM), Service Component Reference Model (SRM), and Performance Reference Model (PRM) for cross-cutting activities

2.5.2.4 MARAD IT Investment Council

- Analyzes and weighs all IT investment for selection and approval
- Prepares a recommendation for the MARAD IT IRB

2.5.2.5 MARAD Chief Information Officer

- Identifies crosscutting and enterprise wide initiatives, as well as opportunities for investment or system integration
- Develops procedures and guidelines to select IT investments
- Conducts analyses and creates reports on IT portfolio data for the MARAD IRB
- Provides the information and insights needed to support investment selection and executive decision-making
- Ensures IT projects are in line with the MARAD Strategic Plan
- Manages the selection, control, and evaluation of MARAD's IT projects

2.5.2.6 MARAD IT Investment Review Board

- Evaluates IT Investment Council's recommendation
- Approves the MARAD annual IT Portfolio

2.5.2.7 Project or Initiative Manager

- Is assigned by the MARAD CIO or IRB
- Generates the investment documentation
- Develops investment performance measures and outcomes
- Is responsible for completing the OMB Exhibit 300 for a major investment
- Is responsible for completing required budget documentation and justifications as required by the MARAD IRB, IT Council and/or CIO.

2.5.3 Select Phase Activities

2.5.3.1 Step 1: Identify IT Investment:

2.5.3.1.1 The MARAD IT Investment Council will conduct an organizational review to identify potential IT investments

2.5.3.1.2 The requesting activity will prepare initial documentation as required by the IT Investment Council to support the identified need

2.5.3.2 Step 2: Screening Investments

2.5.3.2.1 The principal objective of screening investments is to determine whether an investment's OMB Exhibit 300 or business case is properly documented before it is ranked against other cases, and submitted to the MARAD CIO for review. During the screening process, Project Managers make an initial assessment to determine whether their business cases are complete and meet the requirements outlined in OMB Circular A-11 and MARAD's IT Budget Guidance. Project Managers may use the following example questions when screening their respective business cases:

- Is the investment clearly relevant to mission and priorities outlined in MARAD's strategic or business plan?
- Is the investment feasible to design and execute given the initial assessment demonstrates capability to deliver?
- Is there commercial-off-the-shelf software/systems (COTS) available that will achieve the goal of the investment?
- Has the public sector, private sector, or another government agency performed this type of an initiative before? Have alternatives been considered to pursuing this investment?
- Does the initiative conform to the MARAD and/or the DOT Modernization Blueprint, as well as MARAD's technology and information architecture?

- Will the initiative be executed in well-defined stages, including decision points for continuing, modifying, or canceling the initiative?
- Does the initiative reduce the time it takes for internal or external customers to respond to or receive information from the government?
- Does the initiative minimize the burden on respondents and/or the cost of information collection to Project Managers?

2.5.3.2.2 If the OMB Exhibit 300 is required, MARAD Project Managers will use the [eCPIC tool](#). Information on the eCPIC tool is found in [Appendix B](#) of DOT CPIC Process Manual. For each major IT investment, Project Managers will be required to provide the following information, where applicable:

- A description of the initiative, the benefits of the initiative to MARAD if funding is provided, and the funding requested for design, development, hardware, system operation & maintenance for the entire life cycle of the investment;
- How the investment supports the President's Management Agenda (PMA), Secretarial priorities, Congressional mandates, and MARAD's Strategic Plan and Objectives;
- How the investment resolves Government Accountability Office (GAO)/Inspector General (IG) findings and material weaknesses;
- How the investment impacts DOT's and MARAD's EA;
- An analysis of alternatives;
- Use of an incremental or modular funding approach;
- Investment milestones and deliverables and associated costs;
- Performance measures and performance goals as documented in the Performance Reference Model (PRM);
- How risks will be mitigated and security and privacy controls implemented; and
- How the investment supports Government Paperwork Elimination Act (GPEA) and MARAD/DOT's e-Government Strategic Plan.

2.5.3.2.3 OMB Exhibit 300s failing to meet the requirements outlined in OMB Circular A-11 and the DOT/MARAD Budget Guidance are returned to Project Managers and program offices for review and correction. Corrected business cases are then reviewed in a structured process by the MARAD ITIC to ensure conformance with OMB and DOT/MARAD Budget Guidance.

2.5.3.3 Step 3: Scoring and Ranking Investments:

2.5.3.3.1 Investments that have been screened for completeness are then scored and ranked by the ITIC. The scoring criteria established by the DOT/MARAD CIO using

DOT/MARAD criteria as guidelines, should be designed to help quantify the characteristics associated with each investment and draw uniform comparisons against each. The MARAD IT Investment Council will develop a ranked listing of investments and forward to the IRB for concurrence.

2.5.3.3.2 At the end of this step, MARAD will have a prioritized list of proposed IT investments with supporting documentation and analysis. The IT investment portfolio is then submitted to the MARAD CIO. Once MARAD has screened, scored, and prioritized the proposed IT investments, the responsible Project Managers will present them to the MARAD IRB. The approved investments (projects) will become a part of the MARAD IT portfolio upon concurrence from the MARAD IRB.

2.5.3.4 Step 4: Selecting Investments for IRB Portfolio Review

2.5.3.4.1 The MARAD CIO will consider the MARAD IT Investment Portfolio following concurrence of the individual projects by the MARAD IRB. The MARAD CIO will be assisted by the IT Investment Council. The IT Investment Council is the body that provides staff support for the MARAD IRB. IT Investment Council is chaired by the MARAD CIO. The team members are selected from each MARAD code. As required, the IT Investment Council will include MARAD CIO staff and other MARAD advisors with architecture, technical, contract, budget, and security expertise.

2.5.3.4.2 The IT Investment Council will conduct a functional review of assigned Exhibit 300 business case section(s) after Project Manager's portfolios are submitted (and the MARAD IRB agrees upon the MARAD IT Portfolio) and prior to final MARAD budget submission to DOT. The functional review, rather than a 'top-down or beginning-to-end' review of each Exhibit 300, ensures evaluation consistency and efficiency. The scoring criteria used by the IT Investment Council are consistent with the ratings used in the OMB Exhibit 300. The scoring criteria are listed in Appendix 2-A of this section. The IT Investment Council provides feedback to Project Managers with recommendations to improve specific sections of each business case. A business case scoring template example that IT Investment Council members may use for OMB Exhibit 300 review is located in [Appendix C](#) of the DOT CPIC Process Manual.

2.5.3.4.3 The IT investment scoring results are submitted to the MARAD IRB for use in approving the MARAD IT portfolio. The MARAD IRB renders approval of the MARAD's selected IT Investment Portfolio prior to submission to MARAD. The IRB will consider additional factors when making selection decisions by reviewing scoring results and other factors including legal mandates, operational criticality, political sensitivity, security arrangements, funding availability, etc.).

2.6. Control Phase

2.6.1. Overview

2.6.1.1 After IT investments are selected, budgeted, and receive funding, their progress will be monitored in the IT CPIC Control Phase. The Control Phase ensures that the MARAD's IT investments are performing as expected as they progress through the System Development Life Cycle (SDLC) Phases. The Control Phase promotes successful implementation of IT investments and ensures these investments are being completed on time and within budget.

2.6.1.2 The process includes on-going efforts to monitor, review, and correct, as necessary, the performance of MARAD's IT investments. This will be accomplished by conducting periodic Control reviews. The Control review objectives are currently to measure an investment's health in terms of actual performance against baseline expectations for cost, schedule, performance, risk and security; identify investments that are performing below expectations; and define and enforce corrective actions.

2.6.1.3 Key questions to be addressed during the Control process are provided below:

- Does the IT investment address a current business need and perform as expected?
- Have the requirements for the IT investment been documented and approved?
How will the requirements be validated once the system is built?
- What is the status of the investment in terms of cost, schedule, performance, risk, security and changing requirements?
- Have investment risks, contingencies and corrective actions been addressed?
- Are IT development activities being conducted in accordance with approved methodologies?

2.6.1.4 The process for Control reviews of IT investments is depicted in Figure 2.3.

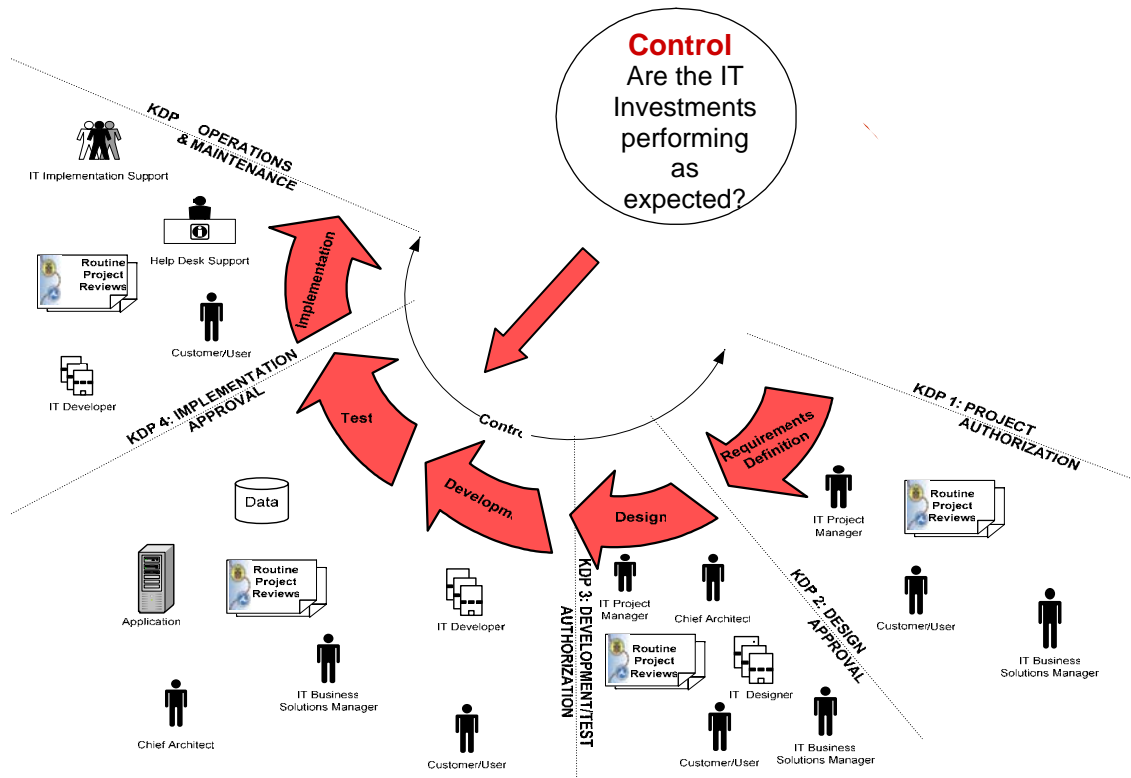


Figure 2-3. Control Phase

2.5.1.5 Relationship to SDLC

The Control Phase begins after KDP 1, Project Authorization. During the Control Phase, the investment will complete the detailed Requirements Definition to obtain KDP 2, Design Approval. If it is a new development it will complete the Design and proceed to KDP 3, Development/Test Authorization. If the investment is not a new development item and does not require design modification or integration planning, the investment may bypass the Design and Development SDLC Phases and go directly to the Test Phase. After proper testing, the investment will move to KDP 4, Implementation Approval. Once the system has transitioned to Operations and Maintenance (KDP 5) it will enter the Evaluate Phase.

2.6.2 Roles and Responsibilities

The roles and responsibilities of the individuals and organizations involved in the portfolio and investment control processes are provided below.

2.6.2.1 Project (or Investment) Managers

- Monitor and manage on-going investment control activities and risks; evaluate investment status and performance.
- Regularly update investment performance documentation in eCPIC (such as actual costs, milestones achieved, schedule and performance variances, performance measurements, risk and security data, etc.).
- Make adjustments to the project/investment plan, schedule, and contingency plans, as necessary.
- Adjust OMB Exhibit 300 to reflect updated information and data.
- Provide regular status reports and alert the ITIC/IRB to significant deviations in cost, schedule, and performance baselines.
- Implement corrective actions required to be completed by the MARAD IRB.
- Monitor performance outputs and outcomes. Analyze whether the investment is meeting established performance measures.

2.6.2.2 IT Business Solutions Managers

- Hold ultimate responsibility and accountability for sponsored investments(s).
- Ensure that their investments are properly managed. Communicate regularly with Project Managers.
- Determine the Federal Enterprise Architecture (FEA) Business Reference Model (BRM) and Performance Reference Model (PRM) Business Area Mapping, Line of Business, and Sub-function for each investment.
- Determine the Federal Enterprise Architecture (FEA) Service Component Reference Model (SRM) Service Domain, Service Type, and Component for each investment.
- Establish performance metrics for each IT investment. Ensure that performance metrics are captured in the Performance Reference Model (PRM)
- Initiate and conduct regular investment reviews.
- Work with the Project Manager to ensure that eCPIC is updated with current and accurate information on investment cost, schedule, and technical performance.
- Work closely with MARAD CIO to provide feedback on investment performance in preparation for quarterly portfolio Control reviews.

2.6.2.3 MARAD Office of the Chief Information Officer (CIO)

- Establish and manage the IT portfolio and investment Control process, and schedule and facilitate quarterly IT portfolio and investment control meetings.
- Develop methodologies and procedures to collect and analyze information on investment cost, schedule, and technical performance.

- Provide analyses and recommendations to the MARAD IRB, as requested.
- Develop final scorecards and corrective actions, if necessary, for major IT initiatives.

2.6.2.4 MARAD Chief Architect

- Ensure all IT investments are incorporated into MARAD’s Enterprise Architecture.
- Maintain up-to-date Reference Models (PRM, BRM, SRM, DRM, and TRM, by including each IT investment.
- Review integration with DOT and MARAD’s Common Operating Environment.
- Review investments for compliance with OMB A-11 requirements.

2.6.2.5 MARAD Investment Review Board (IRB)

- Conduct portfolio and investment Control reviews.
- Perform an assessment of the IT portfolio by reviewing the information provided by the Project Manager and independent assessment provided by the MARAD CIO.
- Review Control review findings and take appropriate next steps.
- Meet with the managers of projects the Control review has identified as being “at risk”.
- Maintain or adjust the IT portfolio by recommendations for the continuation, modification, or cancellation of IT investments.
- Consider the institutional and organizational dimensions, risks, and impacts of portfolio and investment actions.

2.6.3 Control Review Activities

Project management is a continuous process through the life cycle of an investment. The Project Manager and the MARAD CIO are responsible for the day-to-day execution of the investment. This includes employing sound project management techniques and practices and complying with the MARAD and DOT’s reporting requirements, which include:

- Regularly updating investment performance documentation in DOT eCPIC system, if required (such as actual costs, milestones achieved, schedule and performance variances, and scope changes);
- Making adjustments to the project plan, schedule, and risk management plan, as necessary;

- Adjusting the business case to reflect updated information and data;
- Identify significant deviations in cost, schedule, and performance baselines to the IT Business Council;
- Defining and implementing corrective actions or risk mitigation strategies to avoid, alleviate, or minimize the impact of problems identified;
- Preparing and maintaining accurate and complete investment documentation (Level 1 Investment maintained in eCPIC), including the actions and results associated with investment level reviews; and
- Monitoring performance outcomes and analyzing whether the investment is meeting established performance measures.

2.6.3.1 Step 1: MARAD CIO Provides Control Review Guidance

2.6.3.1.1 Project management practices and methodologies can vary across DOT. To achieve DOT-wide consistency, standing operating procedures are established to guide project monitoring and reporting. These guidelines include standards for analyzing cost and schedule variance, performance, risk, security, and architecture. Evaluation criteria will also be identified in the Control review guidance, along with deadlines for Project Managers to update initiative information. MARAD will provide tailoring guidelines and additional review guidance, as required, for MARAD reviews.

2.6.3.1.2 The MARAD CIO will periodically review all major MARAD IT initiatives and non major initiatives as required, but no less than every 6 months. Project Managers are required to present their respective investments and all required information to MARAD CIO during this review. For major MARAD IT initiatives, data will be reported in the respective OMB Exhibit 300 business cases in eCPIC. For non major initiatives, data will be reported as outlined by the MARAD CIO.

2.6.3.2 Step 2: Control Review Analysis

2.6.3.2.1 During the Control review analysis, MARAD CIO staff, with assistance from the IT Investment Council, will assess data for each project against established evaluation criteria in the areas of cost and schedule variance; performance measures; risk assessment and mitigation; security and privacy; and architecture (the scoring criteria and other DOT Control Review information are located in [Appendix F](#)) of the DOT CPIC Process Manual).

2.6.3.2.2 The MARAD CIO will also meet periodically with Project Managers for all MARAD IT initiatives during the Control review analysis process. These sessions provide an opportunity for project staff to present project data, and for the MARAD CIO to better understand the current status of the initiative. The Project Manager is responsible for ensuring that documentation is current. The primary areas to be analyzed by MARAD CIO staff are detailed below.

2.6.3.2.3 Cost and Schedule Variance

MARAD CIO staff will review cost and schedule information. For major initiatives this information must be submitted into eCPIC by the Project Manager. For non major initiatives this information will be submitted directly to the MARAD CIO staff. Planned cost and schedule figures will be compared with actual cost and schedule information to compute the variances for the IT investment. MARAD will utilize the earned value in calculating planned versus actual cost and schedule information. Earned value is a performance based management tool that relates resource planning to schedules and to technical costs and schedule requirements. All work is planned, budgeted, and scheduled in time-phased “planned value” increments captured in a cost and schedule measurement baseline. Information about earned value management can be found in [Appendix E](#) of the DOT CPIC Process Manual.

2.6.3.2.4 Performance Measurement

2.6.3.2.4.1 Performance measurement is an iterative and continuous process that is used to gauge and communicate an investment's progress. As part of the performance measurement process, Project Managers are required to develop performance metrics that measure the alignment and contribution of IT initiatives to MARAD’s business and strategic goals and objectives. By regularly evaluating investment performance, MARAD can determine whether proposed performance improvements and mission-related benefits are being achieved by its IT investments.

2.6.3.2.4.2 After identifying appropriate performance metrics, Project Managers are responsible for establishing a performance baseline. Baseline performance metrics must be established for future reference and to set target goals. In order to assess future performance, investments must have a clear record of their current level of performance; otherwise, there is no way to track improvements and benefits realized as a result of the initiatives.

2.6.3.2.4.3 Project Managers are also responsible for estimating the degree of improvement that will be accomplished through the initiation, maintenance, development, and/or enhancement of the IT investment over the next year. Once performance targets are established, actual IT performance data should be collected and analyzed to determine if, and how well, performance measures are being met. This will allow for the comparison of actual performance with target performance. If targets are not being met, then steps can be taken to recommend corrective actions for improving performance.

2.6.3.2.5 Risk Management

2.6.3.2.5.1 Risk assessment identifies any parts of the initiative where there are uncertainties regarding future events that may prevent or delay completing an initiative from meeting its performance measures. Project Managers must develop a thorough Risk Management Plan. The plan addresses the actual responses and mitigation strategies, to the identified risks. The Project Manager will use the plan to prepare for and coordinate risk mitigation efforts.

2.6.3.2.5.2 The MARAD CIO will review the investment's Risk Assessment and mitigation strategies to determine how well the Project Manager has foreseen possible cost and/or schedule overruns. Key points in Risk Management that the MARAD CIO will consider are:

- Risk Mitigation Strategy and its ability to effectively manage and mitigate identified risks.
- Project Management Plan – A poor investment management plan with unrealistic technical, cost, and schedule is a common cause of risk.
- Risks that are measured in terms of probability of occurrence and the probability of failure to meet one or more of an initiative's objectives.
- Changes to the investment's Acquisition Strategy – An initiative's risk will change if there are changes to the investment's Acquisition Strategy.
- Technical and Program Risk – These factors often drive cost and schedule risk.
- For major initiatives, that the investment has addressed the 19 areas of risk identified by OMB in their business case – Agencies are required to address all areas as defined by OMB Circular A-11.

2.6.3.2.5.3 Security

Planning and budgeting for IT security are essential for meeting Federal, DOT & MARAD Security mandates. Project Managers are responsible for compliance with security and privacy guidelines and should work with the MARAD Information Systems Security Officer (ISSO) to determine the compliance needs of their individual investment. After identifying appropriate security and privacy requirements for the investment, Project Managers are responsible for addressing all necessary security and privacy issues. For major initiatives, security and privacy information should be entered in investment documentation and eCPIC for the entire life-cycle of the investment. For non major initiatives this information will be provided to the MARAD CIO and MARAD ISSO. This information should demonstrate that Project Managers have fully considered security and privacy in the context of the investment.

2.6.3.2.5.4 Architecture

Enterprise Architecture (EA) establishes the roadmap to achieve MARAD's Mission and Strategic Objectives through the optimal performance of its core business processes within an efficient information technology (IT) environment. EA defines the blueprint for systematically and completely defining the Agency's current (as-is) and desired (to-be) environment. The EA also includes the means by which the Agency will evolve from the current to the desired environment. Project Managers must ensure that each initiative is in compliance with MARAD's EA and is included in the CPIC process. Capturing each investment in MARAD's EA ensures that the Agency maintains its Federal Reference Model requirements. The Federal Reference Models are: the Business Reference Model (BRM), the Performance Reference Model (PRM), the Service Component Reference Model (SRM), the Data Reference Model, and the Technical Reference Model (TRM).

2.6.3.3 Step 3: Release of Control Review Results and Corrective Actions

Based on the outcome of the investment reviews and sessions with Project Managers, each investment will receive a rating from IRB. The ratings are based upon data submitted by the Project Manager and the presentation before MARAD IT Investment Council or IRB if required. This is reflected through an evaluation rating, of *green*, *yellow*, or *red*. A green rating indicates that the project is under control and on schedule. A yellow light indicates that management action is necessary to avoid potential problems affecting project outcomes. A red light indicates that major problems have been identified with the project.

After the initial Control rating for each initiative is completed, the MARAD CIO may recommend that the Project Manager address problem areas in order to improve the initiative's health. If project deficiencies are identified, the MARAD CIO, in coordination with the IT Investment Council, will issue a Corrective Actions Template. The Corrective Actions Template defines the source of and possible solutions to the investment problem areas. The MARAD CIO will work with project sponsors and managers to determine if they can bring the investment(s) under control. If the Project Manager can quickly address the deficiency, the MARAD IT Investment Council may modify its initial scores. If the initiative problem areas are not addressed, the MARAD CIO will report the Control review ratings and incomplete Corrective Actions Template to the MARAD IRB. A Corrective Actions Template and Project Scorecard are located in [Appendix F](#) of the DOT CPIC Process Manual.

2.6.3.4 Step 4: MARAD CIO Presents Final Rating and Corrective Actions to the IRB

The MARAD CIO will brief the MARAD IRB on the IT project Control review results. This briefing includes final project rating, evidence of completed Corrective Action Templates, and a recommendation as to whether the projects should be continued, modified, or canceled. The IRB will make final determination on the IT project Control review by concurring with the DOT CIO recommendations or requesting additional information on specific projects.

2.6.3.5 Step 5: MARAD IRB Control Review Briefing

2.6.3.5.1 Only “at risk” initiatives are presented before the IRB during the Control review process unless they are considered “at risk”. The following “triggers” identify an initiative as “at risk”:

- CIO to modify or recommend cancellation of an initiative during a Control review;
- The agreed upon investment requirements are not being met or cannot be validated;
- Changes in business conditions and or processes have forced a change in investment requirements;
- Inability to successfully address the requirements established in the Corrective Actions Template following a Control review within the agreed-upon timeframe;

- Receiving an overall score of “red,” based upon the Control review criteria as applied by the IT Investment Council;
- Cost and schedule variances exceeding 10 percent in two consecutive quarters;
- An initiative is not certified and accredited, if currently operational;
- A major milestone is reached, such as completing a significant phase of the IT investment, implementing a functional module in an IT system, or completing testing;
- Significant performance changes, deviating from agreed-upon performance Project Managers established in the Exhibit 300 or business case; or significant changes to business or mission requirements;
- Changes in key personnel; and/or
- A major or E-Gov initiative that will be implemented within the next 12 months will have an impact on the initiative.

2.6.3.5.2 In addition to these criteria, the IRB has the authority to request that project staff of any initiative present before the IRB. These meetings will usually be reserved for initiatives that have high visibility or are critical to the MARAD meeting its business and strategic performance measures.

2.6.3.5.3 The Control Phase for an initiative concludes after all Control review corrective actions and recommendations have been fully implemented or cancelled. A monthly status report is maintained by the CIO to track the completion of corrective actions and any other outstanding investment Control activities.

2.7 Evaluate Phase

2.7.1 Overview

2.7.1.1 The Evaluate Phase of the IT CPIC process begins after an IT investment goes operational. The purpose of the Evaluation Phase is to examine whether an IT investment has met its intended objectives and yielded expected benefits. The Evaluate Phase is also intended to help identify lessons that can be applied back into the MARAD’s IT CPIC process. The Evaluate Phase is comprised of the following activities: Post Implementation reviews (PIRs); Systems and Technology Succession Management; Portfolio Performance Evaluations; Operational Analysis; and IT CPIC Process Improvement. The Evaluate Phase process is outlined in Figure 2-5.

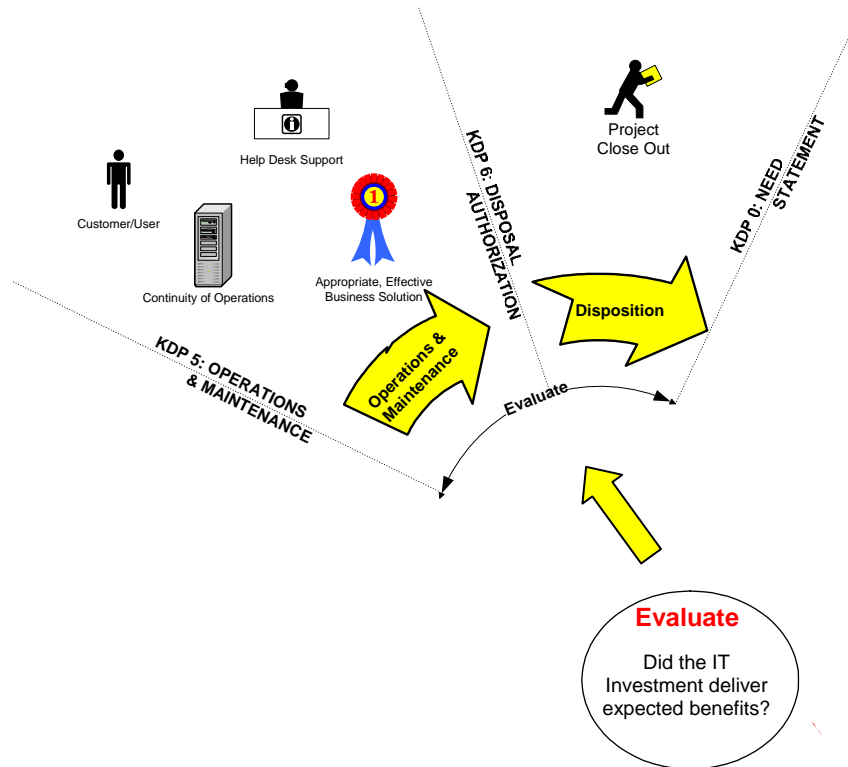


Figure 2-5. Evaluate Phase

2.7.1.2 Relationship to SDLC

The Evaluate Phase begins at KDP 5, Operations and Maintenance approval. The investment is continually monitored and evaluated for corrective/preventive maintenance, upgrades, and eventual replacement. Once the investment has completed its useful life it transitions to KDP 6, Disposition.

2.7.2 Roles and Responsibilities

2.7.2.1 MARAD Investment Review Board (IRB)

- Conduct the quarterly portfolio and investment control reviews.
- Perform periodic assessments of the IT Project by reviewing the information provided by the Project Manager and independent assessment provided by the MARAD CIO.
- Meet with the managers of projects identified as special interest or with “high risk”.

2.7.2.2 MARAD Chief Architect

- Maintain up-to-date Reference Models (PRM, BRM, SRM, DRM, and TRM, by including each IT investment.

- Evaluate integration with DOT and MARAD's Common Operating Environment.

2.7.2.3 MARAD Office of the Chief Information Officer (CIO)

- Manage the IT portfolio and investment Control process, and schedule and facilitate quarterly IT portfolio and investment control meetings.
- Develop methodologies and procedures to collect and analyze information on investment cost, schedule, and technical performance.
- Provide analyses and recommendations to the MARAD IRB, as requested.

2.7.2.4 IT Business Solutions Managers

- Hold ultimate responsibility and accountability for sponsored investments(s).
- Ensure that their investments are properly tested and evaluated. Communicate regularly with Project Manager.
- Continually review performance metrics for each IT investment. Ensure that performance metrics are captured and updated in the Performance Reference Model (PRM)
- Initiate and conduct regular investment reviews.
- Work with the Project Manager to ensure that eCPIC is updated with current and accurate information on investment cost, schedule, and technical performance.
- Work closely with MARAD CIO to provide feedback on investment performance in preparation for quarterly portfolio Control reviews.

2.7.2.5 Project (or Investment) Managers

- Monitor and manage on-going investment control activities and risks; evaluate investment status and performance.
- Regularly update investment performance documentation in eCPIC (such as actual costs, milestones achieved, schedule and performance variances, performance measurements, risk and security data, etc.).
- Make adjustments to the project/investment plan, schedule, and contingency plans, as necessary.
- Adjust OMB Exhibit 300 to reflect updated information and data.
- Provide regular status reports and alert the ITIC/IRB to significant deviations in cost, schedule, and performance baselines.
- Implement corrective actions required by the MARAD ITIC/IRB.
- Monitor performance outputs and outcomes. Analyze whether the investment is meeting established performance measures.

2.8 Evaluate Phase Activities

2.8.1 Post-Implementation Reviews (PIR)

One of the key activities of the Evaluate process is the PIR. The PIR examines whether an IT initiative has attained, or is on course to attain, the desired results and meet the strategic outcome measures predicted by the MARAD within the planned cost and schedule. The PIR offers an opportunity to perform a comprehensive analysis of an investment's successes and disseminate the best practices across the agency. PIRs also provide a forum for identifying lessons learned that may be cycled back into the IT CPIC process. Key questions to be addressed during a PIR are provided below:

- How well did an IT investment meet cost, schedule and performance objectives?
- How did an IT investment meet the strategic outcome measures prepared by the MARAD?
- How can the IT investment be improved to enhance portfolio and individual investment performance?
- How can the IT CPIC process be improved to enhance IT portfolio contribution to achieving MARAD's mission?
- Were there aspects or phases of the investment that were performed particularly well? Are there project management lessons learned that could be shared with other Project Managers?

2.8.2 IT CPIC Process Improvements

The activities conducted during the Evaluate process are essential to the ongoing improvement of the MARAD IT CPIC process and to the contributions that IT investments make towards the accomplishing MARAD strategic goals and objectives. Careful attention by Program Sponsors and Managers to the factors that contribute to investment difficulties and failures help ensure that mistakes are not repeated. In addition, the lessons learned from investment performance can be used to refine the MARAD IT portfolio selection criteria, improve risk management, and determine appropriate work increments and associated levels of funding. The MARAD CIO solicits input from key process users and stakeholders to improve the MARAD IT CPIC process. The key questions and considerations of this activity include:

- Is MARAD's IT spending and investment performance consistent with expectations? If not, what adjustments are needed?
- Do MARAD's IT CPIC procedures help or hinder the management of individual IT investments?
- Is MARAD effectively identifying business needs and subsequently developing IT solutions?
- How can MARAD modify its PIR methodology to make it more efficient?

Appendix 2-A

IT INVESTMENT COUNCIL OMB Exhibit 300 Scoring Matrix - Rollup Report

Project Manager		Program ID	Program Name	
Scoring Element	Score	Scoring Element	Score	
Business Case (BC) Total Acquisition Strategy (AS) Program Management (PM) Enterprise Architecture (EA) Alternative Analysis (AA) Risk Management (RM)		Performance Project Manager (PC) Security (SE) Performance Based Management System Life Cycle Costs Formulation (LC) Supports the President's Management Agenda Items		
<p>Business Case (BC) (composite of all categories). Total Score for Business Case. Investments scoring 5 and meeting program requirements are automatically recommended for funding. Investments scoring an overall 4, meeting performance measures, and scoring a 4 on the performance based management criteria and security, will be recommended for funding, but will be instructed to continue improvements in the areas identified as needing work. Investments scoring 3 or below have the opportunity to improve to a 4 or degrade to a 2 rather easily. Investments scoring a 2 or below are not recommended for funding. Score Definitions: 5 41-50 Strong Documented business cases (including all sections as appropriate). 4 31 -40. Very few weak points within the BC but still needs strengthening. 3 21-30. Much work remains to solidify and quantify BC. BC has the opportunity to either improve or degrade very quickly. 2 11-20 Significant gaps in the required B1 categories of the BC. 1 1-20 Inadequate in every category of the required BC.</p>				
Score	Range	Definition		
5	41-50	Strong documented business cases (including all sections as appropriate)		
4	31-40	Very few weak points within the BC but still needs strengthening		
3	21-30	Much work remains to solidify and quantify BC. BC has the opportunity to either improve or degrade very quickly.		
2	11-20	Significant gaps in the required categories of the BC.		
1	1-10	Inadequate in every category of the required BC.		
<p>Source: Scoring Elements, Ranges, and Definitions are derived from OMB Circular No. A-11 (2003)</p>				