

Information Resources Management

**INFORMATION TECHNOLOGY CAPITAL PLANNING AND INVESTMENT PROGRAM**

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BY ORDER OF THE DIRECTOR



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**AUTHORITY:** Defense Commissary Agency Directives Management Program is established in compliance with DoD Directive 5105.55, Defense Commissary Agency (DeCA), November 1990.

**MANAGEMENT CONTROLS:** The OPR has determined that this directive does not contain management control provisions that are subject to evaluations, testing, and other requirements of DeCAD 70-2, Management Control Program and DeCAD 70-3, Management Control Plan, and as specified by the Federal Manager's Financial Integrity Act.

**APPLICABILITY:** This directive applies to the DeCA activities.

**HOW TO SUPPLEMENT:** Regions may not supplement this directive.

**HOW TO OBTAIN:** This directive will be included on DeCA's Publication CD, distributed quarterly.

**SUMMARY:** This directive describes the policies and procedures for the Information Technology Capital Planning and Investment Program within DeCA.

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**OFFICE OF PRIMARY RESPONSIBILITY (OPR):** HQ/DeCA/CIID

**COORDINATORS:** HQ DeCA/CIF/CIP/CII/CIID/CIS/CIE/SS/SSI/SSP/SSE/RM/RMF/RMFS/  
RMFA/DOM/DOMT/DOSEP/IG/GC/CC/LL/Regions

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## CHAPTER 1

### INTRODUCTION

**1-1. PURPOSE.** This directive implements the policies and procedures for the Information Technology (IT) Capital Planning and Investment Program within the Defense Commissary Agency (DeCA) as required by the Clinger-Cohen Act of 1996, the Office of Management and Budget (OMB), the General Accounting Office (GAO), and the Department of Defense (DoD). This directive also incorporates the establishment of a Chief Information Officer (CIO), responsible for information management leadership, and for coordinating information technology activities both in the enterprise and with business partners and customers. The CIO is a resource for the enterprise, a partner with business units, and accountable to the Executive Director for Capital Investment, Deputy Director, and Director of the agency. This directive is written at the enterprise level to portray the corporate view DeCA will be employing in its decisions to approve Capital Investment dollars on IT solutions. The approach is to treat DeCA as a “system of systems” (Ref Appendix F) to facilitate implementation of DoD-wide mandates in the most cost-effective manner, while establishing an integrated enterprise with alignment between DeCA’s technical architecture and its applications software.

**1-2. REFERENCES.** In order to ensure that management of IT investments is focused on achievement of strategic business objectives in support of DoD Agencies’ vision, mission and goals, Congress enacted the following pieces of legislation:

- a. Information Technology Management Reform Act (ITMRA) of 1996 (a.k.a. Clinger-Cohen Act) (Division E of Public Law 104-106) (“Information Technology Act”).
- b. Paperwork Reduction Act of 1995 (Public Law 104-13).
- c. Federal Acquisition Streamlining Act (FASA) of 1994 (Public Law 103-355).
- d. Government Performance and Results Act (GPRA) of 1993 (Public Law 103-62).
- e. The Defense Acquisition System, DoDD 5000.1, Change 1.
- f. Operation of The Defense Acquisition System, DoDI 5000.2, Change 1.
- g. Mandatory Procedures for Major Defense Acquisition Programs (MDAPS) and Major Automated Information Systems (MAIS) Acquisition Programs, DoDD 5000.2R, Change 1.
- h. DoD Directive S-3600.1, “Information Operations (IO) (U),” December 6, 1996, NSTISSI No. 4009, “National Information Systems Security (INFOSEC) Glossary,” January 1999.
- i. DoD Directive 8000.1, “Global Information Grid,” (TBP).
- j. DoD Directive 8500.aa, Information Assurance (IA), TBP.
- k. DeCA Director’s Policy 500-08, Information Technology.

**1-3. POLICY.** Under direction of the DeCA CIO, the Policy and Plans Division (CIID), Information Technology (CII), is responsible for establishing, implementing, and conducting the DeCA IT Capital Planning and Investment Process (ITCPIP). CIID will also serve as liaison with the action officer(s) of the Resource Working Group (RWG) and the Resource Management Council (RMC).

**1-4. OBJECTIVES.** The objectives of the ITCPIP are:

- a. To establish an analytical framework for linking IT investment decisions to strategic objectives and business/action plans.
- b. To ensure that senior management is able to maximize the benefits of IT investments by balancing potential benefits against costs and risks, measuring performance, and ensuring that DeCA's IT dollars are spent effectively.

**1-5. ALIGNMENT WITH DeCA's STRATEGIC PLAN.** Strategic planning defines DeCA's mission, goals, and objectives, and provides a basis for aligning Agency organization and budget structure with the strategic plans. The ITCPIP, in turn, identifies the IT initiatives that implement these strategies in terms of specific actions, schedules, and resources. The resulting process requires DeCA to:

- a. Determine the baseline of existing Agency functions and processes, as they relate to information systems.
- b. Identify IT strategies and alternative solutions to support agency goals and objectives, and to facilitate the reengineering process.
- c. Utilize a zero-based methodology to develop the costs associated with IT investments.
- d. Ensure, wherever possible, that IT investments have an acceptable return on investment.
- e. Monitor performance of IT in reducing unit cost.

**1-6. ALIGNMENT WITH DeCA's PLANNING, PROGRAMMING AND BUDGETING SYSTEM (PPBS) REQUIREMENTS.**

a. Methodology. The ITCPIP provides a methodology for identifying and introducing new and existing systems' funding requirements for consideration during the annual, long-term planning cycle, as well as the quarterly Business Area performance reviews during the execution year.

(1) A complete inventory of IT projects will be presented to the RWG/RMC during the annual budget review process for prioritization and funding.

(2) During the quarterly Business Area review cycles new projects and projects not approved in previous reviews will be addressed as applicable.

(3) Tradeoffs between IT investments and other opportunities for cost reduction, increased sales, and increased savings will be discussed.

b. Funding Visibility. Funding is allocated to the Business Area Managers (BAM) for all approved projects within their respective areas. If funding issues are encountered, visibility and corrective action for these deltas occurs at three levels:

(1) Project Manager (PM) must review total project funding to determine whether or not the funding issue can be satisfied by reallocation of resources, efficiencies within project elements, schedule adjustments, or tradeoffs in requirements. If the problem cannot be solved at the project level, an unsatisfactory rating in funding status will be briefed during the project status review cycle (Ref Paragraph 4-3b). All project stakeholders participate in this process.

(2) Business Area – BAM must review total business area funding to determine if the problem can be solved within the Business Area. If unallocated funds are not available, all projects and expenses should be reassessed to determine if current prioritization is still valid, if any projects can be delayed with minimal impact, or if other adjustments or efficiencies can be made to satisfy the requirement. However, allocation of additional funds or reallocation of funds from one project to another within the Business Area must have prior approval of the RMC.

(3) Agency – All funding issues will be reviewed by the RWG/RMC during the project status reviews. A determination will be made with regard to providing additional funding, reallocating funds between Business Areas, or directing the owning Business Area to delay/cancel lower priority projects. Results of this process will be briefed to the Resources and Capital Investment Committee of the Commissary Operating Board (COB).

#### **1-7. ROLES and RESPONSIBILITIES.**

a. DeCA Director/Deputy Director.

(1) Overall responsibility for ensuring the effective implementation and execution of DeCA's Capital Planning Program.

(2) Ensuring all IT investments deliver substantial business benefit to the Agency and/or a substantial Return On Investment (ROI).

(3) Ensuring a capital planning process is established and rigorously used to define and validate all IT investments.

(4) Make recommendations to the COB for approval and termination of Capital Investments.

(5) Chair the RMC.

b. Comptroller.

(1) Establish PPBS guidance that integrates the IT Capital Investment activities into the appropriate funding cycles of DeCA's overall financial management business area.

(2) Serve as a permanent member of the RMC to provide funding and priority recommendations to the Director/Deputy Director on IT projects, based on results of the RWG.

(3) Chair the RWG.

c. Chief Information Officer.

(1) Provide enterprise leadership for all IT-related activities and issues (includes supporting future projects for competitive business value).

(2) Provide management/oversight of the daily delivery of required IT services.

(3) Establish and maintain continued execution of the ITCPIP.

(4) Oversee all capital planning activities relating to IT investments in DeCA's programs and businesses.

DeCAD 35-13, September, 2001

(5) Provide advice and assistance to the DeCA Director and other senior Agency officials to ensure that all IT investments support the Agency's strategic objectives, thus enabling the business areas to achieve a substantial business benefit to the Agency and/or expected ROI.

(6) Serve as a permanent advisor to the RMC and the RWG, and assist them by providing the methodologies, analyses, and information needed to make key business, funding, and technical decisions pertaining to the selection, continuation, and termination of IT investments.

(7) Chair the Configuration Control Board (CCB).

d. Functional Proponents/Business Area Directors/Regional Directors.

(1) Identify and define functional requirements, which may require IT investment.

(2) Appoint a PM.

(3) Defend requirements and funding (through documented benefits and ROI) to the RMC and RWG.

(4) Provide functional expertise during the development, testing, and implementation of their respective IT projects.

## CHAPTER 2

### ORGANIZATION AND PROCESS

#### 2-1. ORGANIZATION.

a. Commissary Operating Board. This organization is the official DoD oversight authority for DeCA. It has membership from all Services and has final authority for approval and termination of all DeCA IT Capital Investments.

b. Resource Management Council.

(1) Chair: Director

(2) Members: Deputy Director  
Regional Directors  
Headquarters' Business Area Executive Directors

(3) Advisory Members: General Counsel  
Chief Information Officer

(4) Secretariat: Office of the Executive Director of the Resources  
Business Area

(5) Functions:

(a) Review IT projects submitted by BAMS for approval. The functional proponent for each project must be prepared to justify/defend the requirement, as well as its associated funding and ROI to the board. Project reviews will be held in conjunction with planning, programming and budget reviews held annually, quarterly, or as required. The board will rank all projects based on priority criteria, availability of funding, and recommendations from the CCB and RWG. A final recommendation and request for approval will be submitted to the COB. Projects not approved will be annotated and returned to the originator for inclusion in the next quarterly or annual review cycle.

(b) Conduct status reviews on all ranked projects on a pre-determined frequency, as well as any project that is rated yellow (marginal) or red (unsatisfactory). Review of any or all projects can be conducted at the discretion of the RMC.

(c) Preparation and distribution of minutes from RMC meetings.

c. Resource Working Group.

(1) Chair: Executive Director of the Resources Business Area

(2) Members: Deputy Regional Directors  
Headquarters Business Area Executive Directors

(3) Advisory Members: General Counsel  
Director of Human Resources & Workforce Management  
Chief Information Officer  
Director of Facilities

(4) Secretariat: Office of the Executive Director of the Resources  
Business Area

(5) Functions:

(a) Initiate calls for project submissions in conjunction with planning, programming, and budget reviews held annually, quarterly, or as required.

(b) Ensure that all projects going before the RMC have been reviewed for credibility of cost and ROI, and that they have been coordinated with the CIO and IT organization to ensure technical soundness and verify compatibility with existing or planned IT architectural infrastructure.

(c) Prepare an agenda for IT project presentation, and develop a recommended priority sequence for submission to the RMC.

(d) Authorize funding for approved projects to be moved to IT budget.

(e) Conduct status reviews on projects prior to review by the RMC.

(f) Preparation and distribution of minutes from RWG meetings.

d. Configuration Control Board.

(1) Chair: Chief Information Officer

(2) Members: Business Area Managers (Functional Proponents)  
IT Team Members  
Field Users as required

(3) Secretariat Office of the Director of Information Technology (CII)

(4) Functions:

(a) Provide technical review and recommended priority sequence for IT projects under consideration during the upcoming budget year and subsequent quarterly cycles. The CCB ensures that all projects are effectively analyzed, and that all technical information needed to make informed funding and priority decisions is present in the Project Decision Package (PDP) (Ref Appendix A) going to the RMC or RWG. To ensure the appropriate level of technical expertise is applied to all projects, the CIO established the DeCA Technical Architecture Review Team (TART), which includes leads in all key disciplines of the IT infrastructure. The TART charter will be documented in the CIO's Enterprise System Management Plan (ESMP) (Ref Appendix F). The primary functions of the TART include:

(1) Plan, budget, and manage the enterprise technical architecture for the agency.

(2) Prepare and monitor a Technical Architecture Plan which forecasts requirements for hardware, system software and other infrastructure requirements over a five-year period to insure the viability of DeCA's processing capacity.

(3) Provide technical review and integration oversight of new systems and modification of existing systems to ensure technical compliance.

(b) Conduct status reviews on all IT projects. Meetings will be held quarterly. The Secretariat (CIID) will publish an agenda prior to the meeting, which will reflect which systems are scheduled for review. Briefing Template is contained in Appendix G.

(c) Prioritize Engineering Change Proposal (ECP) and Problem Report (PR) workload in conjunction with new projects.

(d) Ensure compliance with procedures as outlined in this directive as well as DeCADirective 35-5, Configuration Management for Automated Information Systems (AIS). The CIO has established a documentation hierarchy, which identifies enterprise level and project level documentation(Ref Appendix F). Plans will be written at the enterprise level wherever possible, and individual projects will reference these plans in project level documentation, adding any unique requirements if applicable. This will reduce the amount of discrete documents, which must be produced at the project level. The appendix lists the full range of project documentation; however, not all documents will necessarily be required for all projects. This determination will be made during CCB reviews as projects proceed through the process.

(e) Publish minutes of each CCB (electronically). Minutes will consist of copies of charts briefed, direction provided, and any action items assigned with suspense dates.

e. Integrated Product Teams.

(1) Chair: Project Manager

(2) Members Functional Team Members  
Technical Team Members  
System Users  
Other Representatives as required  
(Contracting, Finance, Management Analysis, etc)

(3) Functions:

(a) Develop Acquisition Strategy (Ref Paragraph 3-2e).

(b) Develop Project Management Plan (PMP). (Ref Paragraph 3-4).

(c) Manage project from conceptual phase through implementation and/or deployment.

(d) Prepare Baseline Change Requests (BCR) as required, and maintain a BCR Log as part of the Program Management Plan (Ref Paragraph 4-3c).

(e) Provide status reviews to CCB as required. (Ref Paragraph 4-3b and 4-3d).

(f) Track Benefits (Ref Paragraph 4-4d).

(g) Conduct a Post-Implementation Review (PIR) and prepare a Post-Implementation Report (PIRT) upon completion of project implementation (Ref Paragraph 4-4.e(2) and 4-4e(3)).

(h) Prepare and execute a Project Management Responsibility Transfer (PMRT) Plan after deployment, which will deactivate the Integrated Product Team (IPT) and transfer responsibility for the system to the Operational Function of the IT Infrastructure. (Ref Paragraph 4-4e(4)).

(4) IPTs are established at the initiation or approval of a project and function as a Project Management Office (PMO) once a PM is assigned/selected. The IPT is led by the PM, and consists of a multi-discipline membership, as indicated above, to ensure that appropriate expertise is available from conceptual through deployment phases of the project. IPTs should be kept as informal as possible with assignment of full-time members kept to a minimum. It is the PM's responsibility to insure that all project information and documentation is reviewed by all members of the IPT, and that results of

the reviews are fully documented. Attendance at key meetings and status reviews is required. Minutes of meetings (decisions and action items) will be published electronically. Minutes will be retained as part of overall system documentation.

(5) The System User Group is key to the success of the system, and should contain representation from headquarters, regional and store levels to insure that the software being developed will satisfy the requirements specified in the functional description, and that these requirements are accurately translated into operational capability for the field-level user of the system. Active participation in the IPT provides all users the opportunity to review and approve documentation as the software development effort progresses. Screen and report design as well as project processes can be reviewed and discussed early, when changes cause the least impact on project cost, schedule and performance. This incremental review reduces the risk of major disconnects during testing and implementation/deployment of the software. Issues with cost, schedule, performance, scope and risk should be documented throughout by the IPT, and briefed at status reviews which include assessments by the PM, Contractor/Organic Developer and System Users.

**2-2. PROCESS FLOW.**

While technology is recognized as the enabler for the other objectives, IT projects must compete for capital investment with non-IT projects submitted by all Business Areas and Regions within DeCA. Figure 2-1 illustrates the basic process flow of requirements through each of the groups involved in the Capital Investment Process.

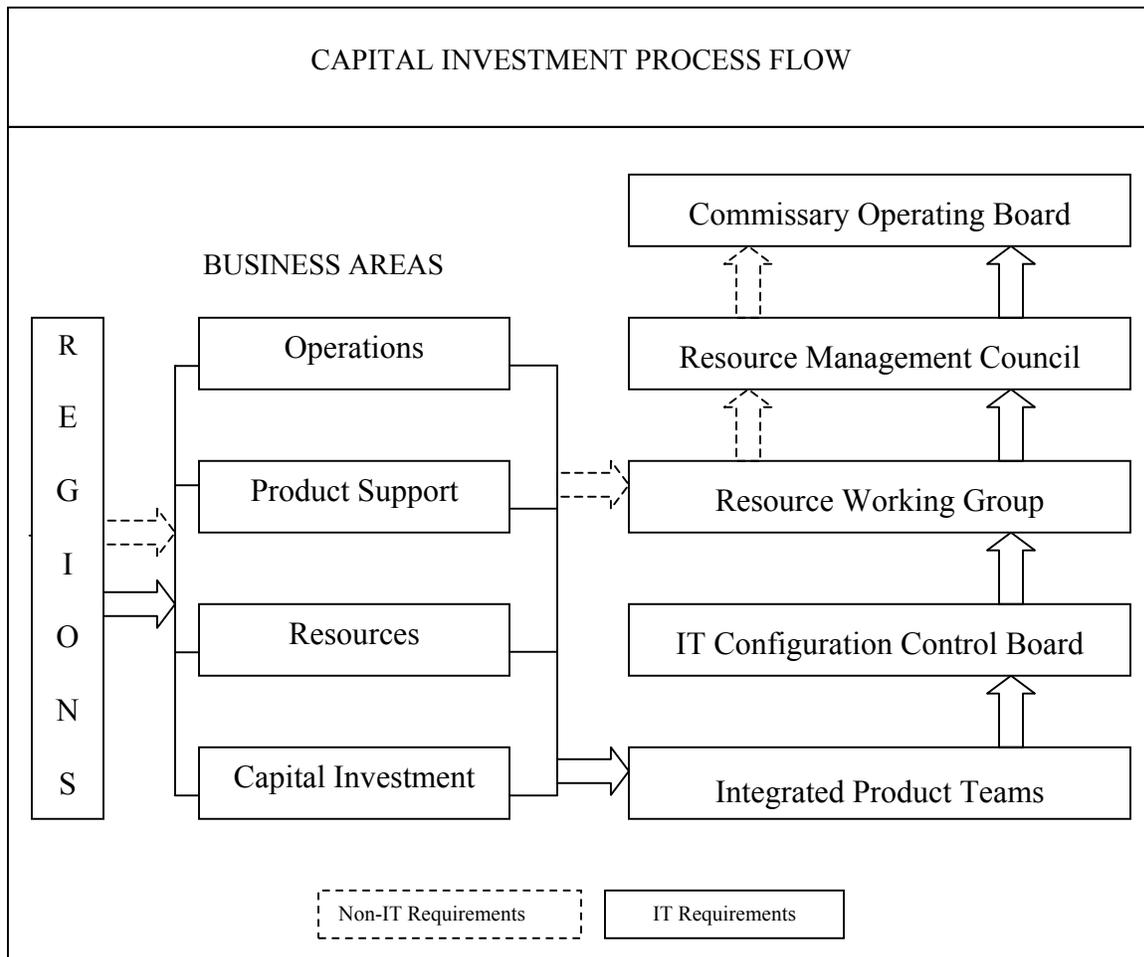


Figure 2-1

**2-3. PROJECT FUNDING/TOTAL SYSTEM COST.**

a. Zero-Based Budgets. DeCA has instituted a zero-based methodology for all IT investments, which covers both Operations and Support (O&S) and new initiatives. All project budgets will be developed utilizing a “bottoms-up” approach. This concept reinforces use of a Work Breakdown Structure (WBS) methodology, which identifies all elements of a project and assigns dollar values to each element. The summation of these element values then becomes the budget estimate. The annual DeCA IT infrastructure budget (Ref Paragraph 3-5b) is based on only those costs necessary to maintain the current production systems, referred to as “must-pay” items in the IT budget. This includes organic personnel costs as well as contract support requirements. As new initiatives (i.e., projects) are taken to the various boards for approval, all costs (hardware and software, organic and contract) necessary to develop and maintain them must be allocated to the individual projects. This will be referred to as Total System Cost.

b. Total System Cost.

(1) Development Costs. All costs related to procuring a system from project initiation through project deployment. This will include cost of hardware purchase or lease, software development, purchase, or lease, contract and organic support for IPTs, training, travel, deployment and any other cost which can be directly allocated to the specific project. These costs will be tracked and reported by the respective PM.

(2) Maintenance (O&S) Costs. All costs related to post-deployment of systems. This will include annual cost of lease or maintenance contracts and any additional costs of personnel or hardware upgrade to current infrastructure necessary to accommodate the deployment. (Example: additional help desk personnel, increased communications capacity, additional processing capacity, servers, etc.) These costs will be identified in the ROI calculations, and will be allocated as a plus-up to the DeCA Infrastructure Budget in the appropriate year based on the Project Master Schedule (PMS).

## CHAPTER 3

### PROJECT PLANNING AND DEFINITION

#### 3-1. OVERVIEW.

a. Functional proponents are required to initiate planning for IT projects well in advance of the annual and quarterly planning, programming and budgeting cycles, so that the required documentation can be completed, staffed, and coordinated in time for submission through the process. The purpose of this planning is to determine the functional requirements that the IT investment must meet and the related costs and benefits of any alternatives. Analysis can be tailored based on factors such as projected cost and criticality to strategic objectives of the agency. Depending on the size of the project, it may be necessary to obtain funding for completing the analyses that are part of the project's planning phase prior to submitting the project itself for approval.

b. DeCA's current IT portfolio contains some systems which utilize Commercial Off The Shelf (COTS) software only, some which were designed and developed specifically for DeCA, and some which are a combination of COTS and developed software. The selection of development, COTS, or combination of the two is a key factor in the acquisition strategy of a project (Ref Paragraph 3-2e).

**3-2. PROJECT DECISION PACKAGE.** A Project Decision Package (PDP) is required when presenting projects for approval and/or selection. The information contained in this package will be used by the CCB/RWG/RMC to validate that the project warrants the expenditure of Capital Investment dollars on an IT solution to solve a business need. It is important to have as much definitive information in each portion of the document as possible, but it is recognized that some documentation will be augmented and/or updated as the project proceeds. The CCB and RWG will determine whether or not there is sufficient detail in each element to allow the project to proceed to the RMC. The elements of the PDP are discussed below. A sample format for the PDP is contained in Appendix A.

a. Decision Summary Sheet (DSS) (DeCAD Form 35-51).

- (1) Project Name and Sponsor
- (2) Executive Summary
- (3) Projected Cost
- (4) Return on Investment
- (5) Strategic Objectives Supported
- (6) Key Benefits
- (7) Major Risks
- (8) Impact Statement if not approved

b. Information Systems Requirement (DeCA Form 35-10). This is the standard form for initiating the project. It will serve as the functional description for small projects, or will have a full Functional Description (FD) document attached.

c. Functional Description. The functional description must contain a detailed definition of the total project requirements to be satisfied with an IT solution. This is the most crucial document for the project because it is the basis of the government and/or contractor cost estimate, and it is the document against which acceptance testing will be validated. For this reason, the requirement should be stated in terms that are clear, concise, and unambiguous so that tests can be constructed to illustrate satisfaction of the requirement.

(1) To allow flexibility in evaluating various solutions, functional requirements should not be described in equipment and software terms, but in terms of business outcome, mission, purpose, capability, project components involved, schedule and cost objectives, and operating constraints.

(2) CIO assistance in preparation, and coordination of the requirements document will ensure that wherever possible, requirements for IT systems are stated using an open system architecture which encompasses the following characteristics:

- (a) User applications not tied to a single hardware/system software manufacturer.
- (b) Functionality can be added from different contracts without significant effort.
- (c) Other systems can be tied into the system without significant efforts.
- (d) The system fits DeCA's IT Architecture Infrastructure.

d. Return on Investment. The decision to undertake an IT investment or project is based on the assumption that the business improvements resulting from the proposed system exceed the costs of modifying business operations and maintaining the current IT investment or system (if it exists). An ROI calculation makes explicit the assumed business rationale that justifies investments in IT systems. Intangible benefits can also be an important factor in deciding to proceed with the development of an information system. Intangible benefits should be documented as part of the ROI and included in the narrative that describes the proposed system. Intangible benefits should be considered with the benefit-cost ratio for determining the rationale for continuing with the proposed system. The ROI document can be tailored to the size and complexity of the project as required, but it is important that the ROI process itself remain consistent

(1) Every project will require an ROI as part of the PDP. If the PM elects or is required to accomplish an Analysis of Alternatives, Market Research, Proof of Concept, or Prototype (Ref Paragraphs 3-2g and 3-5a(4)) as a preliminary step prior to presenting the project itself for approval, an ROI must be developed which covers this preliminary effort as well the project it supports. While ROI is not a factor in approval of mandatory projects for funding, it is nonetheless important to develop the ROI data to document budget impacts..

(2) Total business costs with the IT investment/new system.

(a) Business costs are the total costs to carry out the business functions and processes to be automated by the IT investment/system. Business costs are presented as a total budget projection for the business operations affected by the proposed IT investment/system. Analysis of business costs should consider the same factors that are applied in developing multi-year budget projections. The estimates for the ROI should be comparable to those produced in other budget exercises.

(b) Costs required for an IT investment/system are for design, acquisition, development, implementation and operation. These are the costs related to the IT investment/system itself and **not** the business functions it supports. Costs include both business and system costs with and without the IT investment/system. This cost comparison quantifies the financial impacts of a "go" or "no go" decision. The cost of operating the business with the new or enhanced system highlights the tangible bottom line payoff of the proposed system. Total costs with the IT investment or new information system will, in most cases, be more than continuing current operations. Savings can accrue in the business operations that exceed the additional costs associated with design, development, acquisition, and maintenance of the IT investment/information system itself over a projected life-cycle.

(3) Total business costs without the IT investment/new system. The cost of operating the business without the IT investment/system highlights the investment managers would be forced to make in maintaining current business practices and system operations.

(4) Appendix B details a recommended approach for developing the ROI, which determines the economic impact of the IT investment. This requires estimates of costs and savings documented for four elements:

- (a) Economic benefit
- (b) Current operating costs
- (c) Development costs
- (d) Future operating costs

These elements are combined to determine the net annual cash flow or economic impact of the project. The project's economic benefit is evaluated through use of Internal Rate of Return (IRR) and/or Net Present Value (NPV). Figure 3-1 provides a high-level summary view of the ROI process as provided in Appendix B.

RETURN ON INVESTMENT	
ECONOMIC IMPACT = CASH FLOW (DISCOUNTED) - INVESTMENT	
CASH FLOW	INVESTMENT
<p><u>Economic Benefit</u> Increased Market Share Increased Productivity</p> <p><b>PLUS</b></p> <p><u>Reduction in Operating Costs</u> Decreased Inventory Decreased Capital Requirements Elimination of old system</p> <p><b>MINUS</b></p> <p><u>On-Going (Recurring Costs)</u> Cost of New System</p>	<p><u>One-Time (Non-Recurring Costs)</u> Development Costs Retraining/Implementation</p> <hr/> <p style="text-align: center;"><b>DISCOUNTED CASH FLOWS</b> (Time Value of Money)</p> <hr/> <p><u>Internal Rate of Return (IRR)</u> Interest rate at which the investment in a project "breaks even."</p> <p><u>Net Present Value (NPV)</u> Application of a pre-determined minimum rate of return or "hurdle rate" to the cash flow values.</p>

Figure 3-1

e. Acquisition Strategy. The CIO manages the DeCA IT Acquisition Strategy Process to insure that the Agency continues to move toward an integrated enterprise structure with alignment between technical architecture and application software. DeCA employs a complex structure, which includes a combination of contract and organic development capability; COTS and specially developed software; and multiple contract types.

(1) There are several key factors as outlined in the Federal Acquisition Regulation (FAR) involved in the acquisition strategy selected for a given project:

- (a) Price competition
- (b) Price/cost analysis
- (c) Type and complexity of requirement
- (d) Urgency of requirement
- (e) Period of performance
- (f) Contractor's technical/financial responsibility

- (g) Concurrent contracts
- (h) Extent and nature of proposed sub-contracting
- (i) Acquisition history

(2) The CIO will work with PM and Contract Officers to insure that the acquisition strategy for each project is both consistent with the integrated enterprise structure, and best suits the requirements of the specific project. Based on the selected strategy, the PM will prepare a Statement of Work and forward to the Policy & Plans Division (CIID) for processing.

(3) Acquisition strategy for all IT projects will be conducted in a full and open competitive environment. Whenever it is in the best interest of DeCA and whenever available, General Services Administration (GSA) schedules; established DoD and other agency Indefinite Delivery/Indefinite Quantity (IDIQ) contracts; and Government Wide Agency Contracts (GWAC) will be priority sources used to ensure streamlined and timely acquisitions.

f. Risk Assessment. Risk can be defined as a discrete occurrence that may affect the project for better or worse. Risk has two components: probability that the risk will occur; and consequence should the risk occur. One of the greatest risk factors to the success of IT projects is the amount of development that is planned. Full-scale development has the greatest potential for significant cost and schedule overruns and lowered performance goals. Risk analysis estimates of the probability that an IT investment will fail and the impact this would have on the business, can be subtracted from the expected benefits to adjust the ROI or NPV calculations to reflect risk. Requiring a higher return for projects determined to be of higher risk can accommodate risk.

(1) Risk Identification. The objective of this process is to identify the possible circumstances and events, which could cause problems. The best vehicle for this purpose is the WBS already available as part of the Master Schedule. This structure will guard against overstating risk by counting the same risk against more than one project element or activity. Using the WBS encourages integration of risk management into the overall structure of the project, and reinforces the fact that risk identification is not a one-time event, but occurs continuously throughout the planning and execution of the project. Typically, a project is at risk of failure in one or more the following:

- (a) The product does not or cannot meet specified performance levels
- (b) Actual costs are higher than budgeted
- (c) Delivery of the product takes longer than planned

The types of risks in an IT project include schedule risk, cost and/or funding risk, risk of technical obsolescence, technical feasibility, dependencies between a new project and other projects or systems, requirements growth, and supportability.

(2) Risk Quantification.

- (a) Probability that a risk will occur
- (b) Range of possible outcomes should that risk occur
- (c) Expected timeframe when the risk is likely to occur
- (d) Anticipated frequency of the risk occurring

(3) Risk Management. Risk management is an organized method of identifying and measuring risk, and developing, selecting, and managing options for handling risks. The goal of risk management is to maximizing the results of positive events while minimizing the impacts of the consequences of adverse events on the project. Having a strategy to deal with the risk that is inherent in IT investments/projects is critical. Each PM will develop a Risk Management Plan either as a separate

document, or as a sub-element of the PMP. The plan will document procedures that will be used to manage risk throughout the project, and assign responsibilities for monitoring and responding to risk events. While risk can never be fully eliminated or completely transferred, it can be mitigated by having pre-defined contingency plans, workarounds, and planned risk responses. Depending on the contract type involved, both government and contractors have a role in managing risk.

g. Pre-Development Analyses/Activities. Should one or more of the following be required, the results will be included in the PDP. (Ref Paragraph 3-5a(4)).

- (1) Analysis of Alternatives
- (2) Market Research
- (3) Proof of Concept
- (4) Prototype

**3-3. INFORMATION ASSURANCE (IA)/SECURITY.** IA as defined by DoD is “Information Operations that protect and defend information and information systems by ensuring their availability, integrity, authentication, confidentiality, and non-repudiation. This includes providing for the restoration of information systems by incorporating protection, detection, and reaction capabilities.”

a. Mandates. Information Assurance requirements shall be identified and included in the design, acquisition, installation, operation, upgrade, or replacement of all information technology dependent systems in accordance with directives listed in Paragraphs 1-2i and j.

(1) Global Information Grid (GIG). All DoD systems, regardless of classification, are considered part of the GIG as defined in DoD Directive 8000.1 (Ref Paragraph 1-2i).

(2) DoD Directive 8500.aa (Ref Paragraph 1-2j) establishes policy to achieve DoD GIG information assurance through a strategy of Defense-in-Depth that integrates the capabilities of personnel, operations, and technology.

(3) DoDI 5000.1, Change 1 (Ref Paragraph 1-2f) requires all mission critical (MC) or mission essential (ME) IT systems be registered with the DoD CIO. Failure to register systems could result in withholding funds for awarding contracts or prohibit implementation.

(4) Public Key Infrastructure (PKI) /Public Key Enabling (PKE).

(a) Technical methodology that underlies DoD IA Defense-in-Depth strategy in which layers of defense are used to achieve varying assurance levels and, upon failure of deterrence or prevention, to contain the consequences of a breach in security to achieve a balanced overall IA posture.

(b) PKI is a key element in DoD’s capability to provide integrated voice, video, and data transmission services that meet both war-fighting and business needs as an integral part of the DoD global information enterprise.

(c) The goal of the DoD-wide infrastructure is to provide general-purpose PKI services (i.e., issuance and management of certificates and revocation lists in support of digital signature and encryption services) to a broad range of applications, at levels of assurance consistent with operational imperatives. DoD policy encourages widespread use of public-key-enabled applications and provides specific guidelines for applying PKI services throughout the Department.

b. Requirements. As part of the planning process for new systems, PMs must develop an information assurance strategy, participate in the accreditation and certification of their system, and develop a contingency plan. The PM must coordinate his project/initiative with the IT IA Office to determine:

- (1) Mission category and system's unique IA requirements.
- (2) If IA and Security should be considered in the acquisition strategy process to insure any unique requirements are made part of the developer's (contractor or organic) statement of work.
- (3) If additional funding is required for IA
- (4) If IA unique requirements should be included as a key milestone in the system's master schedule.

c. IA Statement. The results of this coordination will be a documented IA strategy that has been certified by the Agency CIO.

### **3-4. PROJECT MANAGEMENT PLAN.**

a. Purpose: The PMP is developed and used by the PM to manage and control the execution of a project. It should also be signed/approved by the Customer, Sponsor, and CIO. Its purpose is to:

- (1) Define goals and objectives
- (2) Define roles and responsibilities as they relate to the project
- (3) Develop master schedule
- (4) Document the way progress will be measured
- (5) Document the way changes will be managed
- (6) Define approach for accomplishing the work

b. Content: Appendix C contains a template reflecting key elements required in the PMP.

**3-5. PROJECT DEFINITION.**

a. Development. Projects in this category include:

(1) New functionality that results in a completely new system within the IT Enterprise.

(2) New functionality which results in a major modification or technical refresh to an existing system in the IT Enterprise.

(3) ECPs which are new functionality to be incorporated into an existing system, but are outside the scope of the annual maintenance budget for the system. Multiple ECPs for the same system can be grouped together as a project if it is more economical or more efficient to do so.

(4) Pre-Development Analyses/Activities. Based on size and complexity of a proposed development project, the CCB and/or the RWG may require the PM to conduct one or more of the following:

(a) Analysis of Alternatives. Study of available options to solve a business need with an IT solution. The analysis will typically include at least two alternatives in addition to the current situation without an IT solution. Each alternative will be documented to reflect cost and schedule along with pros and cons should it be selected. Based on this information, a recommended alternative will be identified.

(b) Market Research. Market Research is a study of the market place to determine if there are COTS solutions available to solve an identified requirement, or if there are other organizations which have encountered and/or solved a similar requirement either with a COTS solution or development effort.

(c) Proof of Concept. A Proof of Concept is a one-time study to determine the feasibility of initiating a Development Project through the Capital Investment Process. It will consider all areas of the proposed project to include the technology, data availability, as well as impacts to the business area and end-user community.

(d) Prototype. Similar to a proof of concept, a prototype takes the analysis one step further, and actually builds a test version of functionality, which will have operational capability, but with limited scope. While a prototype can be run in a production environment, it typically does not go through the same rigorous process in terms of configuration, testing and documentation; and, therefore, should not be used indefinitely in a prototype environment.

b. Maintenance. All elements in this category will be combined in one annual PDP, but each system or infrastructure component will have its own budget projection. The Maintenance PDP constitutes the basic IT infrastructure requirement necessary for the current production environment.. Projects in this category include:

(1) Software/Hardware Maintenance. Annual maintenance/lease charges for system-level software and hardware.

(2) Problem Reports. Software fixes for reported problems in existing systems and for procedural or hardware problems.

(3) Operations/Corporate Information Utility (CIU)/Communications. Individual requirements for office automation hardware and software, which occur outside the normal infrastructure refresh cycle for the year will be funded by the requesting organization.

c. Major Infrastructure Upgrades.

(1) Planned Upgrades. It is the responsibility of the CIO to:

(a) Insure the IT Infrastructure will support current and known future processing requirements.

(b) Plan for replacement or upgrade to the infrastructure driven by the need for capacity growth, obsolescence, or improvements in technology that are required by DeCA.

The DeCA Technical Architecture Plan (Ref Paragraph 2-1d(5)) documents these upgrade requirements, and forms the basis or rationale for funding projections over a five-year period in the DeCA budget submission.

(2) Out of Cycle Upgrades. Out of cycle upgrades can be driven by external DoD mandates, which were not known and therefore were not included within the five-year planning window. They can also be driven by internal projects, which were not part of the planned upgrade cycle or will be implemented earlier than originally planned. These new or accelerated requirements (external or internal), are identified as projects proceed through the Capital Investment Process. As part of the review process, the CIO will determine and recommend the best methodology for satisfying these infrastructure needs:

(a) Purchase the minimum requirement for the impacted project.

(b) Accelerate a planned upgrade, which would not only accommodate the capacity of the deploying system, but would also cover needed "growth" capacity for other projected initiatives contained in the current DeCA budget based on efficiency and/or cost effectiveness from a long-range planning perspective.

(c) Adjust project schedules if funding for upgrades cannot be obtained or upgrade cannot be implemented on accelerated schedule.

(3) Funding Methodology. From a process standpoint, the infrastructure upgrade can be handled in one of two ways:

(a) Include the costs of the major upgrade as part of the overall funding required for whichever project requires additional capacity first. The ROI for the project would have to reflect specific return expected from the project implementation itself, but also document the fact that the project cannot be implemented without an infrastructure upgrade.

(b) Treat the major upgrade as a separate project, but tied directly to the approval of whichever project requires additional capacity first.

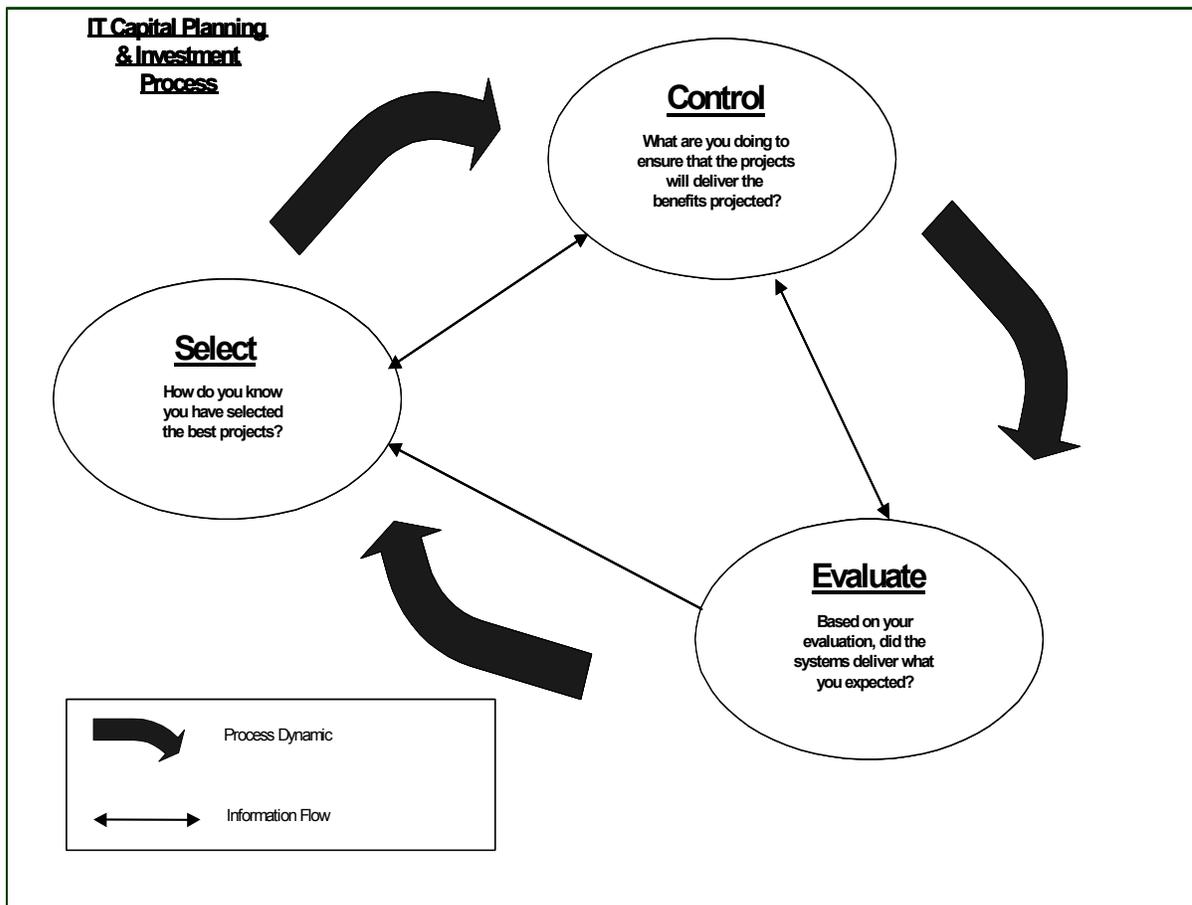
## CHAPTER 4

### CAPITAL INVESTMENT PROCESS

#### 4-1. OVERVIEW.

a. DeCA's ITCPIP is a systematic approach to managing the risks and ROI for a given mission. It is crucial in high dollar value, high risk, and complex IT projects. This process requires discipline, executive management involvement, accountability and focus on risks, and returns using quantifiable measures

b. The CIO Model, depicted in Figure 4-1 below, consists of three phases: select, control, and evaluate. The three phases of the process occur in a continuous cycle. Information from each phase flows freely among all of the other phases with the exception of evaluation. The evaluation component has a unidirectional information flow to the selection component and is used to verify or modify the criteria used during selection.



CIO Model

Figure 4-1

c. As endorsed by GAO, OMB, and DoD, ITCPIP consists of three phases with key steps in each. In addition, various management techniques and tools have been established for incorporation/use within each phase. Figure 4-2, below, further defines this information.

Phase	Steps	Management Tools and Techniques
Select	<ol style="list-style-type: none"> <li>1. Screen IT Project Proposals</li> <li>2. Analyze Risks, Benefits, and Costs</li> <li>3. Prioritize Projects by Risk and Return</li> <li>4. Determine the Right Mix of Projects</li> </ol>	<ul style="list-style-type: none"> <li>• An executive management team that makes funding decisions on the basis of objective comparisons and trade-offs between competing projects.</li> <li>• Documented decision criteria that examine ROI, technical risks, project effectiveness, customer/user impact, and project size and scope.</li> <li>• Predefined thresholds and authority levels to put investment decisions in the right hands.</li> <li>• Minimal acceptable ROI values to minimize risk and increase returns.</li> <li>• Risk assessments to expose potential technical and managerial weaknesses.</li> </ul>
Control	<ol style="list-style-type: none"> <li>1. Monitor Actual vs. Expected Performance</li> <li>2. Taking Action to Correct Deficiencies</li> </ol>	<ul style="list-style-type: none"> <li>• Processes that involve senior management in ongoing project reviews and force decisive steps to resolve problems early in the project.</li> <li>• Explicit measures and data to monitor expected vs. actual cost, schedule, and performance outcomes.</li> <li>• Positive incentives for identifying real and potential problems for management attention and action.</li> </ul>
Evaluate	<ol style="list-style-type: none"> <li>1. Conduct Post-Implementation Reviews</li> <li>2. Decide on Adjustments</li> <li>3. Identify and Implement Lessons Learned</li> </ol>	<ul style="list-style-type: none"> <li>• Post-implementation reviews to determine actual project cost, benefits, risk, and returns.</li> <li>• Maintain accountability for project performance and success on the basis of quantifiable measures and positive management incentives.</li> <li>• Modifications of selection and control processes to reflect lessons learned and ensure continuous improvement.</li> </ul>

Phases, Steps and Management Tools

Figure 4-2

**4-2 SELECT PHASE.** *CIO Model: How do you know you have selected the best projects?*

a. Purpose. The selection phase creates a portfolio of IT project investments designed to improve overall organizational performance. This phase combines rigorous technical evaluations of project proposals utilizing executive management business knowledge, direction, and priorities. Key to this phase is the use of uniform, consistent decision criteria that will allow senior management to make comparisons of costs, benefits, risks, and returns across project proposals. A selection process incorporates the following functions:

(1) Screening IT Project Proposals. IT proposals will be screened to ascertain the level of review as well as relevance and feasibility.

(2) Analyzing Risks, Benefits, and Costs. The proposals will be reduced to those with the highest potential to support the Agency’s critical mission and/or operations.

(3) Prioritizing Projects by Risk and Return. IT projects are rigorously compared against one another to create a prioritized list of all investments under consideration.

(4) Determining the Right Mix of Projects. The RMC will determine which projects should be funded based on the completed analyses.

The final list of projects for the annual/quarterly cycle will be presented to the COB for final approval.

b. Project Approval Flow. As indicated in Figure 4-3 below, all project PDPs will be reviewed by the CCB and the RWG prior to submission to the RMC.

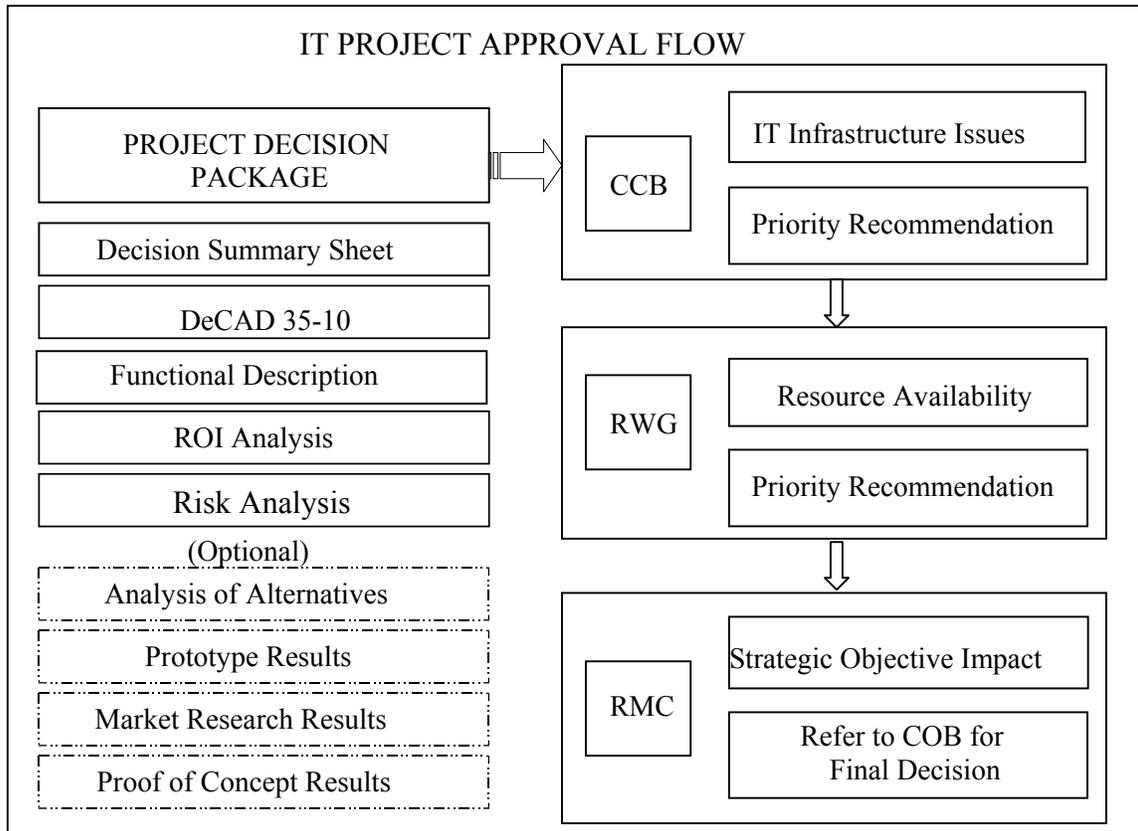


Figure 4-3

(1) Projects are briefed at the CCB by the respective PMs. At this point, the PDPs will have been supported and/or reviewed by the CIO's IT technical staff and open issues discussed. The CIO will concur/non-concur based on infrastructure and architectural considerations, prepare a priority recommendation, and schedule the projects for the next RWG.

(2) Projects are presented to the RWG/RMC by the functional proponent or the CIO. However, it is the responsibility of the functional proponent to justify or defend the requirement. Based on resource availability, the RWG will update the priority recommendation as necessary for presentation to the RMC.

(3) The RMC will finalize the prioritization of projects for recommendation to the COB. Those projects, which are approved by the COB, will be aligned with the agency's budget planning process, and scheduled accordingly. Projects that are approved, but are scheduled to start

beyond the current year, will have to be reviewed jointly by the CIO and Business Area Manager for startup of IPTs and planning workload. Projects not approved by the COB will be returned to the originating Business area for resubmission at a later date, if warranted, or cancellation.

(4) It is recognized that the Project Approval Process is iterative, and that projects will start through the process with varying levels of information contained in the PDP based on the strategy being employed. For example, a project might start out with a PDP containing a Decision Summary Sheet, a DeCA Form 35-10 with a Mission Need Statement (MNS) and a Rough Order of Magnitude (ROM) for ROI Analysis, requesting approval for funding to accomplish a Market Analysis, Prototype, or Proof of Concept. As more detailed information is obtained through these efforts, the PDP is updated until sufficient information is developed to justify full development. In all iterations, however, the same process is followed. Figure 4-3 depicts the final pass through the Project Approval Process.

c. Project Prioritization.

(1) Mandatory Projects. Projects in this category will automatically receive the highest ranking. These will include:

(a) Annual Maintenance for IT infrastructure (Ref Paragraph 3-5b).

(b) Projects related to new releases of systems mandated by law or other DoD Agencies. While these projects may or may not result in a positive return on investment to DeCA, it is important to capture the costs to DeCA. This data could then be used to justify or defend funding in the budget process.

(2) All other projects will be ranked based on the following factors:

(a) Strategic Objectives. If all projects in this category cannot be funded, the members of the RMC will prioritize these projects based on which strategic objectives are supported in conjunction with associated factors in paragraphs (b) through (d) below. Weighting factors may also be applied to the strategic objectives, if necessary, to achieve the appropriate priority. Recommendations from the RWG will also be taken into consideration.

(b) Return on Investment. Can be used as an additional factor to rank order projects within a particular category.

(c) Risk. Can be used to change order of projects within a category, i.e., if a particular project has a high return on investment, but has a lot of technical risk, it could rank lower than a project with a lower rate of return, but lower risk.

(d) Other.

(1) Cost avoidance

(2) Intangible benefit (customer, political, infrastructure)

(3) Changes driven by interfacing systems

**4-3. CONTROL PHASE.** *CIO Model: What are you doing to ensure that the projects will deliver the benefits projected?*

a. Purpose. The control phase is a continuing activity to review new and ongoing projects, as well as operational systems. This phase has two primary functions:

- (1) Monitor actual versus expected performance
- (2) Take action to correct deficiencies

Senior management must be able to judge whether a project is on track to achieve its projected mission and monetary benefits. The key is to use a consistent set of performance measures that provide an early warning of potential or actual problems. It is essential to refresh these measures as costs, benefits, and risks become better known to ensure the continued viability of an information system prior to and during implementation. This phase stresses the need for management accountability by creating pre-arranged checkpoints for projects and forcing corrective action when necessary. If a project is late, over cost, or not being developed according to expectations, the appropriate board must then decide whether to continue, modify, or cancel the project.

b. Progress Tracking. The CCB, RWG, and RMC will regularly track the progress of ongoing IT projects against projected cost, schedule, performance, scope, risk and delivered benefits. Each element will be assigned a rating of green, yellow or red. Based on the element ratings, an overall project rating will be determined. All yellow and red ratings must be briefed with an explanation for the rating and a get-well plan. Any project with a yellow or red rating will be briefed to the RMC. Criteria for assigning ratings is provided in Appendix D.

(1) Cost and Schedule. Color ratings for cost and schedule, the primary drivers in determining the health of a project, are objectively determined by Earned Value Analysis (Ref Appendix E for definitions and sample calculations).

(a) Earned Value Analysis. Earned value is a management technique that relates resource planning to technical cost and schedule requirements. All work is planned, budgeted and scheduled in time-phased “planned value” increments constituting a cost and schedule measurement baseline. The continuous measurement of actual achievement against this detailed plan identifies “as of” status, but more importantly, provides the capability to predict or forecast final cost and schedule. Earned Value Analysis provides an early warning signal whenever project spending exceeds actual accomplishment to allow for course correction. There are two major objectives of an earned value system:

1 To encourage contractors to use effective internal cost and schedule management control systems.

2 To permit the Government to rely on timely data produced by those systems for determining product-oriented contract status.

(b) Earned Value provides visibility through:

1 Variance Analysis – a comparison of actual project results to planned or expected results. This can be expressed as a cost of schedule variance.

2 Trend Analysis – a comparison of project results over time to determine if performance is improving or deteriorating.

(c) To fully implement Earned Value requires the developer (contract or organic) to generate a detailed work breakdown structure and utilize a data collection system which has the capability to schedule and resource tasks, track actuals, and compute earned value. The initial implementation of Earned Value concept will require a minimum of Cost Variance and Schedule Variance due to availability of data currently requested in contracts. The CIO will review the process to determine whether or not the cost of more extensive cost data collection is justified by the additional visibility obtained. At that time a recommendation will be provided to the RMC for decision.

(2) Performance, Scope and Risk. Color ratings for performance, scope and risk are subjective in nature; however, unfavorable ratings in these areas will ultimately result in impacts to cost and schedule.

(3) Corrective Action. When a project has a rating of yellow or red in Cost and/or Schedule, there are three levels for corrective action, which should be pursued prior to requesting action by the RMC:

(a) PM – review budget and schedule to determine if there are trade-offs, which can be made to offset the variance.

(b) BAM – review the Business Area budget and determine if reallocation of dollars within the Business Area or tradeoffs within other projects of the Business area can offset cost and/or schedule variance based on priority.

(c) RWG – look across the organization to see if there are dollars/trade-offs, which can be reallocated.

Regardless of the level at which proposed resolution occurs, the assessment going forward to the RMC should reflect the current yellow/red rating with the proposed resolution reported as the get-well plan. Color assessment will revert to green when corrective action proves successful. Any change in cost or schedule must be approved by the RMC, and documented in accordance with baseline change procedures (Ref paragraph 4-3c below).

c. Baseline Adjustments. Baseline adjustments occur whenever a serious breach in cost, schedule or performance is identified, which the PM cannot accommodate within the current baseline. This situation can be the result of contract negotiations, new or overlooked requirements, or unanticipated project delays, etc. The PM is responsible for preparing and coordinating a Baseline Change Request (BCR) initially through his BAM. He will then take the BCR through the regular process, i.e., CIO/CCB, RWG, and RMC. This will insure that impacts to other areas can be identified and documented prior to approval of the BCR. Whenever a BCR is critical enough that it cannot wait until the next scheduled CCB, it can be expedited through an out-of-cycle coordination process. BCRs can only be approved by the RMC, and once approved, all subsequent reviews will be tracked against the new baseline. The PM will maintain a BCR Log as part of his PMP. (Ref Appendix H for BCR and BCR Log Templates).

d. Level of Reviews.

(1) PM/IPT. Project reviews at this level can be held at the discretion of the PM, but at least monthly the PM will provide an official assessment to the CIO consisting of an assessment chart and issue charts for any areas rated yellow or red. Figure 4-4 shows a running 12-Month History which would have the appropriate “green/yellow/red” ratings inserted by the PM for each month. Figure 4-5 provides a sample Issue Chart.

MONTHLY PROJECT MANAGER’S ASSESSMENT

STRATEGIC SUB-OBJECTIVE TITLE												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
COST												
SCHEDULE												
PERFORMANCE												
SCOPE												
RISK												
OVERALL												

Figure 4-4

SAMPLE ISSUE CHART

STRATEGIC SUB-OBJECTIVE TITLE			
RATING AREA:	COST	RATING:	RED
PROBLEM: (Brief description of problem)			
ACTIONS TAKEN TO DATE: (What has been done to correct the problem.)			
GET WELL PLAN: (Remaining actions necessary to achieve “Green” rating.)			
GET WELL DATE:			

Figure 4-5

(2) CCB. Project reviews at this level will be held quarterly. CCB Briefing Template is provided in Appendix G. Based on results of this review, CCB assessment charts will be generated for input to the RWG/RMC. Quarterly CCB rating will typically reflect the most recent PM’s Monthly Assessment unless there are significant changes, which impact the ratings. If the CIO assessment differs from the PM’s assessment, the CIO will resolve the issue with the BAM along with the PM. If agreement cannot be reached, both assessments will be taken to the RWG for resolution. Individual project charts will be available as back-up to be used at the discretion of the RWG/RMC. Issue charts will be generated for all areas rated Yellow or Red. Not every project will be briefed at each CCB. The CIO will publish an agenda which will identify projects selected for review. ; Figure 4-6 shows a running 4-Quarter History which would have the appropriate summary “green/yellow/red” ratings inserted by the CIO for each quarter.

QUARTERLY CCB ASSESSMENT

STRATEGIC SUB-OBJECTIVE TITLE				
	QTR 1 (Specify Months)	QTR 2 (Specify Months)	QTR 3 (Specify Months)	QTR 4 (Specify Months)
COST				
SCHEDULE				
PERFORMANCE				
SCOPE				
RISK				

Figure 4-6

(3) RWG/RMC. Project reviews will be held quarterly. The CIO will produce a consolidated overview of the Leverage Technology Area, which will reflect the color ratings for all sub-objectives pertaining to Operations/Product Support, Resources, and Capital Investments. The CIO will brief the entire IT enterprise, with support from the BAM and PM as required. Figure 4-7 represents a notional view of these charts. Only those projects that are red or yellow will be reviewed individually along with their respective issue charts.

CCB INPUT TO RWG/RMC

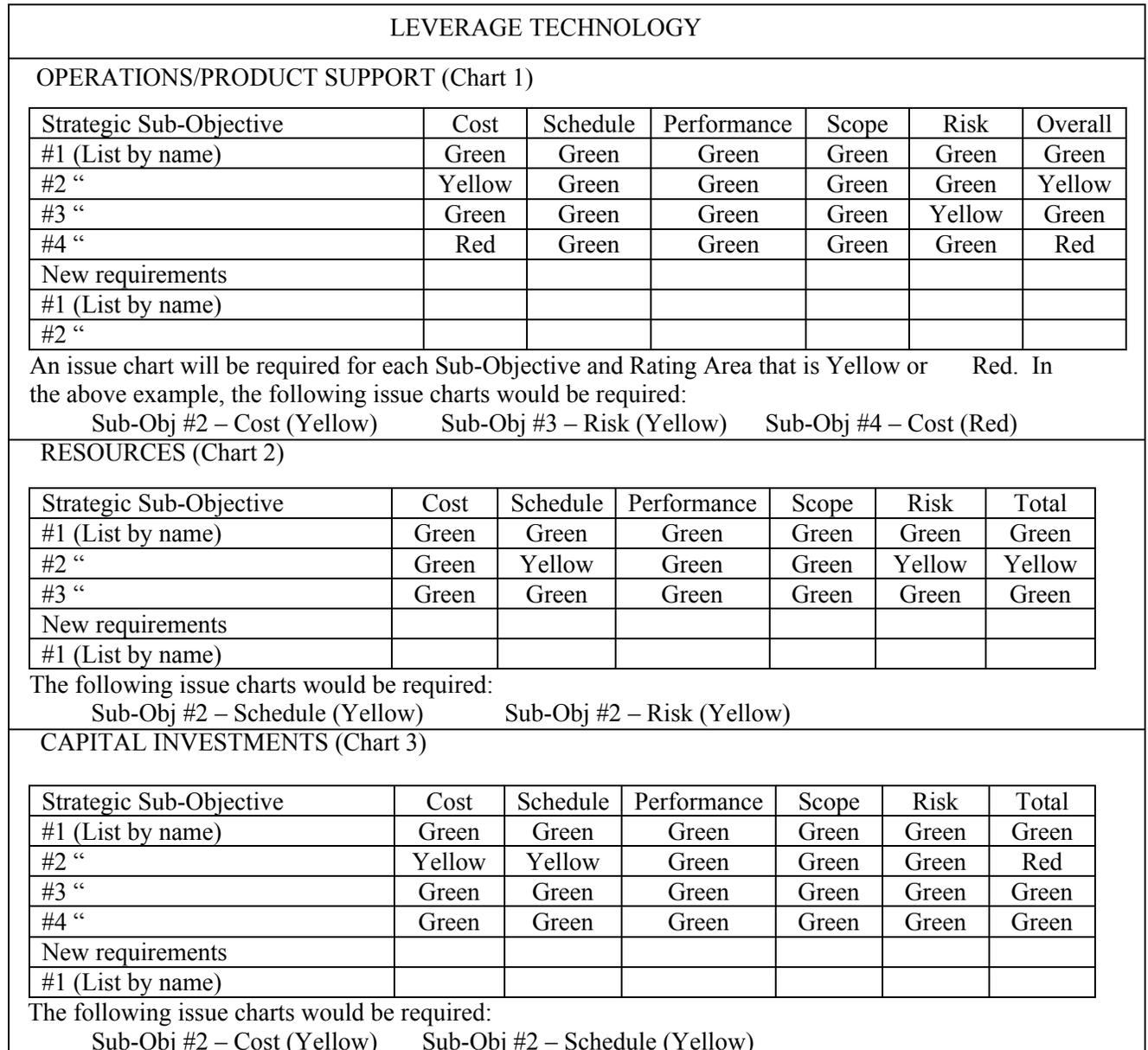


Figure 4-7

**4-4. EVALUATE PHASE.** *CIO Model: Based on your evaluation, did the systems deliver what you expected?*

a. Purpose. The evaluation phase provides a platform for continuous performance measurement of selected IT investments as well as ongoing IT infrastructure. Primary functions include:

- (1) Post-implementation reviews to measure overall achievement of selected projects.
- (2) Maintain accountability by insuring quantifiable measures are applied to projects.
- (3) Modify Selection and Control processes to reflect lessons learned.

The information utilized by this phase is provided by the status reports and reviews held in the Control Phase.

b. Performance Measurement Principles/Guidelines.

(1) IT strategic goals support the Agency's strategic goals. IT performance measures actually measure the efficiency and effectiveness of improvements that IT contributes to Agency/program outcomes or outputs, and therefore are linked with project performance measures. Performance measures are a key aspect of DeCA's IT Program and an opportunity for the CIO to demonstrate IT's contribution to mission performance. Projects are approved based on support of strategic objectives. Performance metrics should demonstrate the degree to which this was accomplished.

(2) A performance measurement process is required so that DeCA's senior executives can determine the success of DeCA's IT project and measure progress toward achieving mission objectives. Performance measures seek to improve the performance and accountability of an organization, process, project, product, or service, and are a quantifiable metric of results (e.g., number of dollars saved, number of days saved in a business process, or recorded improvements in customer satisfaction.)

(3) Performance measures must relate to goals and objectives listed in the DeCA Strategic Plan. It is essential that this linkage be clear. To effectively link strategic planning, capital planning, and the budget process, action plans must: link mission to goals/objectives, link goals/objectives to strategies and IT initiatives, monitor IT investments/projects through performance measures, and address whether investment/projects are accomplishing objectives. Goals in the DeCA Strategic Plan and some goals in Business Area performance plans are defined in broad, general statements relating to the mission and describing a desired outcome toward which the Agency or Business Area directs its efforts.

c. Measurement Criteria.

(1) Performance measures must address specific IT projects in support of strategic objectives, as well as the DeCA-wide IT infrastructure. To be valid and useful, performance measures at each level (Agency-wide, Business Area, and project) should meet a number of criteria. BAMS and the CIO must accept joint responsibility for planning IT participation and measuring achievement of results.

(2) IT contributions to mission performance are measured in terms of improved efficiency (cost reduction) and effectiveness (increased productivity). Specific IT project performance requirements must be clear, measurable specifications that a project is to accomplish in a given period of time based on identified criteria in the functional description, which can be tested for user acceptance of the system. If a test case cannot be built for a given requirement, additional detail must be provided such that a pass/fail test can be accomplished.

(3) The key in determining the success or failure of a project, program or function is establishing its current or baseline state before any changes are considered or implemented. Performance measures, regardless of type, must have a baseline measurement so that goals can be set and measured, and to show the changes/improvements a project undergoes as it achieves its goal. Establishing a baseline measure is essential in establishing the validity of a performance measure. Measures are selected that show the projected vs. actual results. Gap analysis, for example, uses the baseline to show the difference between the existing state and the target goal or objective. Subsequent measurements may be defined as the new baseline if substantial changes to the system make the earlier baseline obsolete or reduce the effectiveness of a particular performance measure. The Figure 4-8 lists questions/criteria for consideration in developing performance measures.

<b>Are We Measuring the Right Thing?</b>	<b>Do We Have the Right Measures?</b>	<b>Are the Measures Used in the Right Ways?</b>
<p>Does the performance measure:</p> <ul style="list-style-type: none"> <li>• Address improvement in performance of mission, goals and objectives.</li> <li>• Assess the “value-added” contribution made by the organization’s overall investment in information management, individual projects, or applications.</li> <li>• Capture the requirements of internal and external customers.</li> <li>• Address the internal performance of the function.</li> <li>• Reflect improvements in organizational learning and innovation.</li> <li>• Address costs, benefits, savings, risk, or ROI.</li> </ul>	<p>Is the performance measure:</p> <ul style="list-style-type: none"> <li>• Targeted to a clear outcome (results vs inputs or outputs).</li> <li>• Linked to a specific and critical process in the organization.</li> <li>• Understood at all levels that have to evaluate and use the measures.</li> <li>• Effective in prompting action.</li> <li>• Credible and possible to communicate effectively to internal and external stakeholders.</li> <li>• Accurate, reliable, valid, and verifiable.</li> <li>• Built on data that are available at reasonable cost, appropriate, and timely for the purpose.</li> </ul>	<p>Is the performance measure used:</p> <ul style="list-style-type: none"> <li>• In strategic planning (for example, to identify baselines, gaps, goals, and strategic priorities).</li> <li>• To guide prioritization of project initiatives.</li> <li>• In resource allocation decisions.</li> <li>• In day-to-day management of tasks, dollars, and personnel.</li> <li>• To communicate results to stakeholders.</li> </ul>

Effective Performance Measures

Figure 4-8

d. Benefits Tracking.

(1) One of the primary factors in justifying a project is the value of the benefits it provides to the organization. Therefore, benefits tracking and reporting are key to the project justification process.

(2) The major focus of tracking benefits is to ensure that managers are accountable for identifying, capturing, monitoring, and reporting on quantifiable benefits resulting from the proposed investment. The tracking and reporting of benefits is fundamental to ensuring a sound and rigorous capital investment process.

(3) Tracking benefits is the responsibility of the PM/BAM. Benefit achievement should be tracked throughout the project life cycle, and documented in the PIRT (Ref Paragraph 4-4e(3)).

e. Evaluation Tracking.

(1) During project development. Control Phase reviews conducted by the PM (IPT reviews), CIO (CCB reviews), RWG, and RMC, provide DeCA Management the opportunity to delay or cancel projects which are not achieving the desired results in an effective or timely manner.

(2) Post-Implementation Review.

(a) The purpose of the PIR is to determine how well the project met the users' requirements, and to compare the overall results achieved against its projected cost, schedule, benefits, and risks. The review will highlight the successes of the project, and it will identify managerial, organizational, or technical issues/problems which should be avoided on future projects. The PM will present the review to the CCB within three months after the system has become operational, or at the discretion of the CIO.

(b) Mandatory slides for the review include:

1 Project Master Schedule – high level schedule showing key milestones with base-lined and actual dates reflected.

2 Project Funding – original funding level approved at the beginning of the project and all subsequent additions or deletions with appropriate rationale for change.

3 Benefits – Key benefits anticipated and actual benefits achieved.

4 Risks – major risk areas with risk mitigation identified.

5 Customer Satisfaction – user perspective of the system (requirements, training, implementation issues, help functions, etc).

(c) Optional slides for the review include:

1 Process Improvement – areas where actions taken improved operational, technical, or managerial functions.

2 Key Issues – any significant problem area that surfaced during the project that had either a positive or negative impact. In particular, those issues and their solutions which could be beneficial to future projects.

3 Accomplishments – specific items which reflect positively on the project or project management process.

(3) Post Implementation Report.

(a) This report will provide a standardized method of recording the results of the associated PIR. It will provide historical data for future projects, as well as documenting the budget impacts of mandated projects, which were not specifically budgeted by DeCA, but had to be accomplished with current year funds.

(b) Appendix I provides the format for the PIRT.

(4) Project Management Responsibility Transfer. Once the project is complete and, the system successfully implemented/deployed, execution of the PMRT activities will verify and/or validate operational support requirements. These activities include:

- (a) Deactivating the IPT
- (b) Reassigning personnel
- (c) Transferring control of the implemented system to Enterprise Operations

Feedback from execution of the Operational Support Plan will identify any need to update or augment the IT Checklist, tracking mechanisms, or other Selection/Control activities.

f. Lessons Learned. Using the collective results of development and post-implementation reviews across all initiatives, as well as the production infrastructure, the CIO can determine if the organization's existing selection and control processes require modification based on lessons learned.

**APPENDIX A  
PROJECT DECISION PACKAGE (PDP)**

<b>CAPITAL INVESTMENT DECISION SUMMARY SHEET</b>		<b>CURRENT DATE:</b>
<b>1. PROJECT NAME:</b>		
<b>2. PROJECT ID NBR:</b>	<b>3. SPONSORING BUSINESS AREA MGR (BAM):</b>	
<b>4. EXECUTIVE SUMMARY:</b>		
<b>5. PROJECT TYPE:</b> <input type="checkbox"/> NEW PROJECT <input type="checkbox"/> MODIFICATION <input type="checkbox"/> MAINTENANCE		
<b>6. STRATEGIC OBJECTIVE:</b> SUB-OBJECTIVE:		<b>7. DoD MANDATE:</b> <input type="checkbox"/> YES <input type="checkbox"/> NO
<b>8. PROJECT COST:</b> \$ _____ <b>LIFE CYCLE COST:</b> \$	<b>9. RETURN ON INVESTMENT:</b> \$ _____ / _____ %	
<b>10. KEY BENEFITS:</b>		
<b>11. MAJOR RISKS:</b>		
<b>12. IMPACT IF NOT APPROVED:</b>		
<b>13. CIO:</b>	<input type="checkbox"/> CONCUR	<input type="checkbox"/> NONCONCUR
<b>COMMENTS:</b>		
<b>14. RWG:</b>	<input type="checkbox"/> APPROVE	<input type="checkbox"/> DEFER <input type="checkbox"/> DISAPPROVE
<b>COMMENTS:</b>		
<b>15. RMC:</b>	<input type="checkbox"/> APPROVE	<input type="checkbox"/> DEFER <input type="checkbox"/> DISAPPROVE
<b>COMMENTS:</b>		
<b>DeCA Form 35-51</b>		

Figure A-1

<b>INFORMATION SYSTEMS REQUIREMENT</b> <i>(For use of this form see DeCAD 35-5: IMP is OPR.)</i>		CURRENT DATE 12 6 98
1. TO:	2. FROM	
3. ORIGINATOR NUMBER		
4. <input type="checkbox"/> ENGINEERING CHANGE PROPOSAL (ECP)  5. PRIORITY CLASSIFICATION <i>(Check one)</i>  <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	3. NEW REQUIREMENT <i>(Check one)</i> <input type="checkbox"/> HARDWARE <input type="checkbox"/> SOFTWARE  10. DATE REQUIRED  11. SHORT TITLE OF REQUIREMENT  12. COST 13. ECONOMIC ANALYSIS <input type="checkbox"/> YES <input type="checkbox"/> NO    DATE:	
6. SYSTEM NAME	14. BUDGETED <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> UNKNOWN    EY: <input type="checkbox"/> REQUISITE <input type="checkbox"/> D&CAIM	
7. BASELINE/VERSION NUMBER	15. FUNDED <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> UNKNOWN    EY: <input type="checkbox"/> REQUISITE <input type="checkbox"/> D&CAIM	
8. SHORT TITLE OF PROBLEM	15. DESCRIPTION OF PROBLEM OR REQUIREMENT	
16. RECOMMENDED SOLUTION		
17. POINT OF CONTACT/PHONE #	SIGNATURE AND DATE	
18. NAME AND TITLE OF AUTHENTICATOR	SIGNATURE AND DATE	
19. TYPED NAME AND TITLE OF APPROVING OFFICIAL APPROVED                      DISAPPROVED	SIGNATURE AND DATE	

Figure A-2

<b>FUNCTIONAL DESCRIPTION (TITLE OF PROJECT)</b>	
<b>PARAGRAPH</b>	<b>EXPLANATION</b>
1. Purpose	A brief description or high level overview of the system to be developed.
2. Major Functions	Identify each major function with as much detail as possible. If prototyping is to be done, explain the purpose and expected results.
3. Inputs/Outputs	Specify the format, range of values, accuracy, volumes and sources, and data input edit criteria where requirements are definite. All input and output requirements should be sufficiently defined to permit development of a design proposal.
4. Processes	Identify processes and data manipulations, including formulas, mathematical processes, source of input, transfer of output, retention criteria, and interfaces with process and data. Identify processes that are functionally dependent and those that are machine or process dependent to assist in possible conversion analyses.
5. Data Characteristics	Describe individual and composite data elements, their related coded representations as well as relevant dictionaries, tables, and reference files. Estimate total storage requirements.
6. Performance Criteria	<u>Accuracy.</u> Mathematical, logical, legal, and transmission. <u>Validation.</u> Approach to be taken. This is not the system acceptance and validation test; it is for functional requirement input/output and processing acceptance and validation. <u>Timing.</u> Response, processing, data transfer, and transmission throughput. <u>Flexibility.</u> For changes in modes of operation, environment, interfaces, accuracy and validation, volumes, and enhancements.
7. Interfaces	Identify existing systems with which it interfaces, including hardware, data communications, and processing mandated by either manual or automated systems. If there are constraints, indicate the manner in which the interface is to be achieved.
8. Failure Contingencies	Describe and justify failure backup and recovery requirements.
9. Security Specifications	Identify unique security requirements beyond those provided to all systems by the infrastructure.
10. Other	Any other pertinent information, which could assist or impact the functional analysis of this requirement.

Figure A-3

<b>ADDITIONAL PDP DATA</b>
Include any of the following documents as part of the PDP Package where available.
ROI Data
Acquisition Strategy
Risk Assessment
Analysis of Alternative Results
Market Research Results
Proof of Concept Results
Prototype Results

Figure A-4

## APPENDIX B

### RETURN ON INVESTMENT

#### B-1 SECTION 1 – BENEFITS

a. Identifying and Estimating Benefits. Functional proponents should identify and describe all benefits, both quantifiable and non-quantifiable. However, to the extent possible, benefits should be expressed in quantifiable terms, and clearly linked to the agency's goals and strategic objectives. Most benefits will be in terms of improvements in effectiveness, efficiency, or customer satisfaction, or compliance with law or regulation.

(1) Tangible benefits. Tangible benefits can be measured as specific costs savings to DeCA. Tangible benefits are the cost savings resulting from changes in business and system operations. Each item in the cost analysis that has a projected saving must be associated with an operational change that will produce the reduction in projected expenditures. For example, the cost of continuing operations without the IT investment/new system may include the hiring of additional clerical staff to continue to manually process projected increases in workload. If the proposed IT investment/new system were implemented, technology would replace these manual processes, and no additional personnel would be hired.

(2) Intangible benefits. Intangible benefits are difficult to measure in financial terms. Despite their lack of financial rationale, they may be sufficient to justify the system independent of cost. In the Federal environment, compliance with legal and regulatory requirements is an intangible benefit that can, on its own, justify the investment in information systems. Other examples of intangible benefits are improved customer satisfaction, faster service, and increased employee job satisfaction. Intangible benefits must be supported by a clear link to specific outcomes of system implementation.

#### b Types of Quantifiable Benefits

(1) Reduced resource requirements (such as support services, supplies, personnel, training, lease, rental, maintenance, computers).

(2) Improved data entry (resulting in reduced staff time, lowered error rates).

(3) Improved operational effectiveness (resulting in reduced error rates, improved timeliness, increased productivity, better quality products).

(2) Cost avoidance (by eliminating future staff growth, minimizing penalties for delays, eliminating additional equipment requirements).

c. There may be several economically acceptable projects but only limited financial resources. Qualitative evaluation considerations, including non-quantifiable benefits, may override quantitative criteria in the ranking or acceptance of projects. Such considerations include relationship to business strategy, schedule risk, organizational and technical risks, social benefits, and legal/regulatory requirements.

d. Benefit Considerations. In identifying tangible and intangible benefits of the new system, the following should be considered:

Reliability Improvements	The benefit gained in reduced risk of system malfunction or failure, and reduced downtime for batch program operations versus a comparison system for performing the same or equivalent tasks.
Error Improvements	The benefit gained in process simplification and streamlining. Ease of entry, data input, and accuracy rates that reduce overall errors are reported here.
Labor Productivity Improvements	The benefit gained in performing the same functions and tasks for fewer hours of personnel time. These improvements may allow staff to work on other activities, but do not result in an actual reduction in personnel.
Grade of Service Productivity Improvements	The benefit gained in performing a service more efficiently or effectively to the direct benefit of the taxpayers that interact with the functions of the system.
Compliance with Legal and Regulatory Requirements	The benefit gained by meeting procedural or performance guidelines specified in laws and regulations.
Customer Satisfaction	The benefit can be in terms of a reduction in time spent responding to customer complaints and a larger customer base.

Table B1-1

**B-2. SECTION 2 – COSTS**

a. Cost Element Structure (CES).

(1) The CES and definitions below are aids in identifying all of the potential costs associated with an IT project. They also standardize the accumulation and presentation of project cost information for use in calculating the IRR.

(2) The CES is divided into two types of costs: One-time (Non-recurring) Costs and On-going (Recurring) Costs. Each type of cost is divided into several cost categories. Some of these cost categories are subdivided one or more times. The lowest subdivision of any cost category is the level of detail at which an estimate should be prepared. Note: If an element of cost does not apply to a project, then the element does not require an estimate. Sometimes, enough information will not be available to make an estimate at the lowest level of detail. In those cases the estimate should be made at the level reflecting the information available. Document how each element was estimated, so that the numbers can be explained, and as more detail becomes available, the elements can be accurately updated. After the lowest level estimates are complete, the costs are summed to the next highest level until each category and each type of cost is determined.

(3) The types of cost and cost categories are the same as those shown in the One-time (Non-recurring) Costs Worksheet and On-going (Recurring) Costs Worksheet that are part of the economic benefit analysis methodology in Section 3. After the costs are estimated and categorized using the CES, the category totals can transfer to the appropriate IRR worksheet.

## Cost Element Structure

1. One-time (Non-recurring) Costs			
1.1 Systems Engineering/Project Management			\$
1.1.1 Systems Engineering		\$	
1.1.1.1 Requirements Analysis/Definition	\$		
1.1.1.2 System Design	\$		
1.1.2 Project Management		\$	
1.2 Hardware			\$
1.2.1 Mainframe		\$	
1.2.2 Servers		\$	
1.2.3 Desktop Client		\$	
1.2.4 Hardware Services		\$	
1.3 Telecommunications			\$
1.3.1 Communications Services		\$	
1.3.2 Communications Hardware		\$	
1.3.3 Communications Software		\$	
1.3.4 Communications Labor		\$	
1.4 Software			\$
1.4.1 Applications Development		\$	
1.4.1.1 New	\$		
1.4.1.2 Modification/Enhancement	\$		
1.4.1.3 Interfaces	\$		
1.4.1.4 Vendor, Contractor, and Consultants	\$		
1.4.2 Commercial-Off-The-Shelf (COTS)		\$	
1.4.2.1 Purchase	\$		
1.4.2.2 Lease	\$		
1.4.2.3 Customization	\$		
1.4.2.4 Documentation	\$		
1.4.3 Data Conversion		\$	
1.4.3.1 Electronic Data Conversion	\$		
1.4.3.2 Paper Data Conversion	\$		
1.4.4 Software Tools and Aids		\$	
1.4.4.1 Purchase	\$		
1.4.4.2 Lease	\$		
1.4.4.3 Documentation	\$		
1.5 Systems Integration, Test and Evaluation			\$
1.5.1 Functional Team Members		\$	
1.5.2 IT Personnel		\$	
1.5.3 Vendor, Contractor, and Consultants		\$	
1.6 Data			\$
1.6.1 Data and Database Administration		\$	
1.6.2 DSS Requirements		\$	
1.6.3 Security Requirements		\$	
1.7 Training			\$
1.7.1 Training Course Development		\$	
1.7.1.1 Technical	\$		
1.7.1.2 User	\$		

Table B2-1(1)

1.7.2 Course Instruction/Training		\$	
1.7.2.1 Technical	\$		
1.7.2.2 User	\$		
1.7.3 Training Suite		\$	
1.7.3.1 Technical	\$		
1.7.3.2 User	\$		
1.8 Facilities			\$
1.8.1 Construction		\$	
1.8.2 Modification		\$	
1.8.3 Lease/Purchase		\$	
1.9 Site Implementation/Activation			\$
1.9.1 Site Surveys		\$	
1.9.2 Site Preparation		\$	
1.9.3 Site Installation/Implementation		\$	
1.9.4 Acceptance Testing		\$	
1.9.5 Technical Support		\$	
1.10 Warranties			\$
1.11 Travel			\$
1.11.1 Functional Team Members		\$	
1.11.2 IT Personnel		\$	
1.11.3 Vendor, Contractor, and Consultants		\$	
1.12 Other			\$
2. On-going (Recurring) Costs			
2.1 Project Management			\$
2.2 Operations			\$
2.2.1 Systems Operators		\$	
2.2.2 Support Personnel		\$	
2.2.3 Contract Services		\$	
2.2.4 Facilities		\$	
2.2.5 Consumables		\$	
2.2.6 Utilities		\$	
2.3 Hardware			\$
2.3.1 Hardware Lease		\$	
2.3.2 Hardware Maintenance		\$	
2.4 Telecommunications			\$
2.4.1 Communications Services		\$	
2.4.2 Communications Hardware Lease/Maintenance		\$	
2.4.3 Communications Software Lease/maintenance/License Fees		\$	
2.5 Software			\$
2.5.1. Developed Software Maintenance		\$	
2.5.2 COTS Software Support		\$	
2.5.2.1 Software Lease	\$		
2.5.2.2 Software Maintenance	\$		
2.5.2.3 Software License Fees	\$		

Table B2-1(2)

2.5.3 Tools and Aids		\$	
2.5.3.1 Software Lease	\$		
2.5.3.2 Software Maintenance	\$		
2.5.3.3 Software License Fees	\$		
2.5.4 Vendor, Contractor, and Consultants		\$	
2.6 Training			\$
2.6.1 Recurring Course Instruction/Training		\$	
2.6.2 Training Suite		\$	
2.7 Site/Installation Support			\$
2.8 Travel			\$
2.8.1 Functional Team Members		\$	
2.8.2 IT Personnel		\$	
2.8.3 Vendor, Contractor, and Consultants		\$	
2.9 Other			\$

Table B2-1(3)

b. Cost Element Structure Definitions

Cost Element Structure Definitions
1 One-time (Non-recurring) Costs. Those elements of cost, which generally occur only once in the life cycle of a project. Software design and development, all test activities, publications, hardware specification and acquisition, and system implementation requirements are included.
1.1 Systems Engineering/Project Management. The technical and business management efforts that support design and development of a project. It includes: Technical and administrative planning; organization; direction; coordination; control; approval actions to define and accomplish program direction; plus manpower and travel costs associated with these cost elements.
1.1.1 Systems Engineering. The systems engineering effort to transform an operational need or statement of deficiency into a description of system requirements and a viable system configuration. This includes requirements analysis, definition and system design.
1.1.1.1 Requirements Analysis/Definition. Includes specifying the problem, analyzing alternate requirements, defining firm requirements, assessing technology for needed hardware and software, developing software and hardware requirements specifications, etc.. This also involves the effort to take a stated user requirement and transform it into a feasible system solution.
1.1.1.2 System Design. The effort to specify the working relationships between all parts of the project in terms of its characteristic actions. It includes selecting a basic architecture; assigning portions of the project to hardware and software elements; and verifying the selected solution meets the requirements. Resolution of technical interface and system integration issues, development of block and flow diagrams, and functional sequence diagrams are included. This also includes: The effort to develop and validate system hardware and communication hardware requirements; sizing system hardware; analyzing connectivity issues; determining network hardware requirements; resolving hardware interface issues; and defining hardware performance requirements. This begins after requirements analysis and ends at the completion of the system design review
1.1.2 Project Management. The efforts to plan, organize, direct, coordinate and control a project through the design and development of the system to accomplish overall project objectives. This includes: Project management; configuration management; planning and scheduling; quality assurance; plus the preparation of the project management plan; requirements management; WBS management; project reviews; cost estimating and tracking benefits.

Table B2-2(1)

1.2 Hardware. The lease/purchase of a machine or group of interconnected machines which use electronic circuitry in the main computing element to automatically perform logical operations from internally stored or externally controlled programmed instructions. The machines consist of input, storage, computing, control, and output devices. This equipment can be mechanical, electromechanical, electrical, or optical in nature and is generally at the terminal ends of data communication lines. This element can also include software; that is, operating system software, if the software is bundled with the hardware and cannot be costed separately. Warranty costs are also included, if the warranty is bundled with the hardware and cannot be costed separately.
1.2.1 Mainframe. Any element of the mainframe system.
1.2.2 Servers. Computers that function as providers of data and/or applications to users.
1.2.3 Desktop Client. Computers primarily on the user's desktop.
1.2.4 Peripheral Hardware Devices. Printers, FAXes, DeCA unique devices such as cash registers.
1.2.5 Hardware Services. The cost of services not included in the cost of the hardware.
1.3 Telecommunications. The equipment and software used to receive and transmit messages of data from a host computer to another computer, or from one person or place to another. This includes internal communications used to transmit and receive the messages within the complex, leased-lines used for communication purposes, and communications usage charges.
1.3.1 Communications Services. The services used to transmit and receive both data and voice information. This includes satellite, microwave, DDN (Defense Data Network) or DCTN (Defense Commercial Telephone Network), and commercial charges during development, testing, etc.
1.3.2 Communications Hardware. Hardware equipment used to transmit and receive data. This includes modems, line drivers, transmitters, etc.
1.3.3 Communications Software. A computer program(s), which performs procedures to control the flow of data between communicating processes. This includes buffer management, terminal control, etc.
1.3.4 Communications Labor. The labor required for procurement, installation and implementation activities not bundled in the cost of the other communication elements.
1.4 Software. Programs or routines containing instructions used to direct the computer to perform a desired operation or sequence of operations. This includes in-house developed, (COTS), conversion software, software tools and aids, and warranties associated with the software. Costs associated with lease/purchase of COTS, development of new software or modifications to existing software, and conversion costs required are included. Software modifications required after acceptance are included in ongoing cost elements.
1.4.1 Applications Development. The systematic use of technical knowledge to meet specific project performance requirements through the design and development of new computer programs or significant modifications to existing programs.
1.4.1.1 New. The development of new applications.
1.4.1.2 Modification/Enhancement. The modification and/or enhancement of existing applications.
1.4.1.3 Interfaces. The development, modification or enhancement of interfaces between the project and other applications. This includes any requirements for integration of COTS systems to existing application software.
1.4.1.4 Vendors, Contractors, And Consultants. Vendor, contractor and/or consultant services costs to be paid by DeCA that is not included in any other cost element.
1.4.2 Commercial-Off-The-Shelf. Commercially available, third party purchased software. Also includes costs for minor rehosting efforts or modifications to permit the COTS to operate in the new environment.
1.4.2.1 Purchase. The purchase price to be paid for commercial software.
1.4.2.2 Lease. The lease price to be paid for commercial software.
1.4.2.3 Customization. The cost of rehosting and/or functional capability modifications to the commercial software. This does not include the integration of COTS systems to existing application software (See 1.4.1.3.)

Table B2-2(2)

1.4.2.4 Documentation. The cost of commercial software documentation not included in the lease or purchase price.
1.4.3 Data Conversion. The systematic use of technical knowledge to meet specific project performance requirements through the transformation of existing digital, electronic or paper management data bases to the new project environment (software or hardware).
1.4.3.1 Electronic Data Conversion. The cost of converting electronic data into a new environment.
1.4.3.2 Paper Data Conversion. The cost of converting paper data into a new electronic environment.
1.4.4 Software Tools And Aids. Automated tools, which improve the efficiency and productivity of software development and conversion activities; for example, macro assembler, CASE tools, etc.
1.4.4.1 Purchase. The purchase price to be paid for tools and aids.
1.4.4.2 Lease. The lease price to be paid for tools and aids.
1.4.4.3 Documentation. The cost of tools and aids documentation not included in the lease or purchase price.
1.5 Systems Integration, Test And Evaluation. The integration of the system components (hardware, software, and telecommunications) to validate data on the performance of the system using simulated or live data. This includes the conduct, support and facilities to support testing, and all system items, which are consumed or planned to be consumed during such testing. Testing which can be specifically associated with an individual unit is excluded.
1.5.1 Functional Team Members. Includes costs for OPR (non-IT) employees.
1.5.2 IT Personnel. Includes costs for IT personnel.
1.5.3 Vendors, Contractors, And Consultants. Costs to be paid by DECA.
1.6 Data. All deliverable data required. This element includes only those efforts that are not part of other end item deliverables (those efforts that can be reduced or will not be incurred if the data item is eliminated). Efforts associated with acquiring, writing, assembling, reproduction, packaging and shipping are included.
1.6.1 Data And Database Administration. Any applications required to convert or validate data, and development of specific requirements necessary to maintain the accuracy of the data.
1.6.2 Decision Support System Requirements. Specific software or query tools required to provide support for management decisions or tracking.
1.6.3 Security Requirements. Special requirements necessary to secure the data by user profile other than access to the system itself.
1.7 Training. The development of training (that is, services, devices, accessories, aids, manuals, equipment and software) used to simplify instruction to personnel who will acquire sufficient concepts, skills and aptitudes to develop, implement, operate or maintain the system with maximum efficiency. This includes all efforts associated with the design and development of training equipment and the execution of development training.
1.7.1 Training Course Development. The planning, development, and modification of training courses for information services personnel (programmers, analysts, and so on) and user personnel. This will entail the definition of course requirements and the development of training course content (video, classroom, and computer-based training).
1.7.1.1 Technical. Course development for technical training.
1.7.1.2 User. Course development for user training.
1.7.2 Course Instruction/Training. The actual conduct of training courses.
1.7.2.1 Technical. The instructor, student, and other costs for technical training.
1.7.2.2 User. The instructor, student, and other costs for user training.
1.7.3 Training Suite. The equipment, services, and facilities needed to accomplish training requirements. Training Equipment: Distinctive end items required to meet specific training objectives, including the development and/or acquisition of hardware (terminals, communication lines, and so on) and software (applications software, computer-aided instruction software, and so on). Training Services:

Table B2-2(3)

Services, devices, accessories, and aids needed to accomplish the objectives of training; that is, the development and/or acquisition of lesson guides, instruction guides, computer-aided instruction manuals, training materials and contractor-conducted training. Training Facilities: The special construction or facility leases needed to accomplish the objectives of training.
1.7.3.1 Technical. The training suite for technical training.
1.7.3.2 User. The training suite for user training.
1.8 Facilities. The construction, modification, lease, or purchase of facilities required for the project.
1.8.1 Construction. The cost to build a new (for example, brick and mortar) construction including power and telecommunications installation.
1.8.2 Modification. The cost to modify and prepare an existing facility, which is needed to satisfy project requirements. This includes power and telecommunications installations.
1.8.3 Lease/Purchase. The cost to lease or purchase an existing facility, which is needed to satisfy project requirements.
1.9 Site Implementation/Activation. The defining of requirements for operational facilities to house, service and operate the project, installation of the system, and acceptance test activities to provide an operational system for each site. This includes surveys and site planning, system assembly, installation and acceptance testing, technical support, and initial supplies during the site activation period.
1.9.1 Site Surveys. The detailed examination of facility requirements (power, environment, etc) needed to support system operational status.
1.9.2 Site Preparation. The activities needed to define and verify facility requirements to meet a condition of readiness for system installation. This includes site planning and site inspections.
1.9.3 Site Installation/Implementation. The manpower, travel, and material costs to install the hardware at each site, load the software, and interface with the telecommunications. This includes the "burn-in" of the system by the installation team and completes when the system is turned over for acceptance.
1.9.4 Acceptance Testing. The evaluation of the operational capability of the system at each operational site. This testing includes specification of test duration and performance requirements that must be attained during the test period. This evaluation is complete when the system meets the specifications.
1.9.5 Technical Support. Services related to site implementation and activation after the system has been turned over for site acceptance testing. This includes repair of reparable, stand-by services, final turnover, etc.
1.10 Warranties. The period of parts and service necessary to support equipment which is guaranteed with the hardware, software and telecommunications. Only use this element when the warranty is not bundled with the cost of the specific elements.
1.11 Travel. This includes all travel-related costs connected with the development of the project.
1.11.1 Functional Team Members. Travel-related costs for functional team members.
1.11.2 IT Personnel. Travel-related costs for IT personnel.
1.11.3 Vendor, Contractors, And Consultants. Travel-related costs for vendors, contractors and consultants.
1.12 Other. Nonrecurring costs not accounted for in any other nonrecurring cost element detailed above.
2 On-going (Recurring) Costs. This includes those elements of cost occurring repeatedly during the operation of the project. This includes operation of the system after acceptance, maintenance, lease costs, license fees, and recurring training.
2.1 Project Management. The effort to plan, organize, and control the project during the operation of the system. This includes project management, configuration management, planning, scheduling, and quality assurance.
2.2 Operations. The recurring effort to operate the system after recurring implementation and acceptance test completion. This also includes the recurring supplies, services, facilities, and utilities needed to operate the system.

Table B2-2(4)

2.2.1 Systems Operators. The IT personnel required to support the operational objectives of the system. This includes system operators who are responsible for performing system backups, loading software updates, etc.
2.2.2 Support Personnel. The IT personnel required to coordinate and manage system operations activities. This includes scheduling system backups, customer (user) interface, planning workload, etc.
2.2.3 Contract Services. The system and support services provided by a contractor on a daily basis, involving the operation of the system. This element could also include the cost of facilities, consumables, and utilities if these costs are bundled in a usage rate charge by the contractor providing the service. In addition, this includes the cost associated with operating the computer support facility; that is, computer operators, network control center operators, etc.
2.2.4 Facilities. The recurring cost to lease an existing facility which is needed to satisfy system operational requirements. This includes the lease of a facility for any operational site/base.
2.2.5 Consumables. All consumable supplies and materials required to operate the system. This includes disks, computer paper, tapes, forms, toner, etc.
2.2.6 Utilities. The recurring costs of power and electricity associated with daily system operations.
2.3 Hardware. The recurring effort to update/repair the hardware and lease hardware after recurring implementation and acceptance test completion.
2.3.1 Hardware Lease. The recurring use (not ownership) of hardware based on a contract for a specific fee.
2.3.2 Hardware Maintenance. The continual maintaining of the hardware in a fully operational state. This includes repairs and modifications to the hardware according to maintenance agreements.
2.4 Telecommunications. The recurring effort to update/repair the telecommunications hardware and software, the lease of telecommunications hardware and software, and the telecommunications charges after recurring implementation and acceptance test completion.
2.4.1 Communications Services. The continuing services used to transmit and receive information, data and voice. This includes satellite, microwave, DDN or DCTN, and commercial charges during day-to-day system operations.
2.4.2 Communications Hardware Lease/Maintenance. The recurring use (not ownership) or maintenance of communications hardware based on a contract for a specific fee. Maintenance includes repairs and modifications to the hardware according to maintenance agreements.
2.4.3 Communications Software Lease/Maintenance/License Fees. The recurring use (not ownership) and/or maintenance of communications software based on a contract for a specific fee. Maintenance includes repairs and modifications to the software according to maintenance agreements, or organic maintenance of software to correct deficiencies or problems uncovered during day-to-day system operations. License Fees refers to a recurring software license for a specified time (usually annually) based on a specific fee, which grants ownership or use of the software.
2.5 Software. The recurring effort to update/repair the software, the lease of software and the software license fees after recurring implementation and acceptance test completion.
2.5.1 Developed Software Maintenance. The continual maintenance of the software in a fully operational state. This includes repairs and modifications to the software according to maintenance agreements, or organic maintenance of software to correct deficiencies or problems uncovered during day-to-day system operations.
2.5.2 COTS Software Support. The lease, maintenance and/or license fees paid to support the commercial software regularly used during normal business operations.
2.5.2.1 Software Lease. The recurring use (not ownership) of software based on a contract for a specific fee.
2.5.2.2 Software Maintenance. The recurring use (not ownership) of software based on a contract for a specific fee.
2.5.2.3 Software License Fees. A recurring software license for a specified time (usually annually) based on a specific fee which grants ownership or use of the software.

Table B2-2(5)

2.5.3 Tools And Aids. The lease, maintenance and/or license fees paid to support the tools and aids software.
2.5.3.1 Software Lease. The recurring use (not ownership) of software based on a contract for a specific fee.
2.5.3.2 Software Maintenance. The recurring use (not ownership) of software based on a contract for a specific fee.
2.5.3.3 Software License Fees. A recurring software license for a specified time (usually annually) based on a specific fee which grants ownership or use of the software.
2.5.4 Vendor, Contractor, and Consultants. Recurring costs for non-DeCA personnel.
2.5 Training. The conduct of recurring training and the training suite (that is, services, devices, accessories, aids, equipment and software), used to simplify instruction to personnel who will acquire sufficient concepts, skills and aptitudes to operate or maintain the system with maximum efficiency. This includes all efforts associated with the execution of recurring training, required to maintain the operational proficiency of previously trained personnel and new personnel who are added to the project due to turnover or replacement.
2.6.1 Recurring Course Instruction/Training. The conduct of recurring training of personnel to maintain operational proficiency, and the costs to train new personnel added due to attrition or replacement.
2.6.2 Training Suite. The equipment, services, and facilities needed to accomplish training requirements. Training Equipment: Distinctive end items required to meet specific training objectives, including the cost of hardware lease and communications charges. Training Services: Services, devices, accessories, and aids needed to accomplish the objectives of training; that is, the reproduction of lesson guides, instruction guides, computer-aided instruction manuals, and training materials. Training Facilities: The facility leases needed to accomplish the objectives of training. This includes using any specialized rooms or areas specifically to train personnel.
2.7 Site/Installation Support. The efforts to maintain the existing operational facilities and the cost to provide ancillary site support for DeCA personnel.
2.8 Travel. Includes all travel-related costs of ongoing activities.
2.8.1 Functional Team Members. Costs incurred by OPR (non-IT) personnel.
2.8.2 IT Personnel. Travel costs incurred by IT personnel.
2.8.3 Vendor, Contractors, and Consultants. Travel costs incurred by non-DeCA personnel.
2.9 Other. Recurring costs not accounted for in any other recurring cost element detailed above.

Table B2-2(6)

## c. Project Cost Summary Example

Project Title:	Date:
One-time (Non-recurring) Costs	(Sample Data)
1.1 Systems Engineering/Project Management	\$ 4,000
1.2 Hardware	0
1.3 Telecommunications	61,778
1.4 Software	0
1.5 Systems Integration, Test & Evaluation	0
1.6 Data	0
1.7 Training	0
1.8 Facilities	0
1.9 Site Implementation/Activation	0
1.10 Warranties	0
1.11 Travel	0
1.12 Other	0
Total One-time (Non-recurring) Costs	\$65,778
On-going (Recurring) Costs	
2.1 Project Management	\$ 500
2.2 Operations	0
2.3 Hardware	0
2.4 Telecommunications	0
2.5 Software	0
2.6 Training	0
2.7 Site/Installation Support	0
2.8 Travel	0
2.9 Other	0
Total On-going (Recurring) Costs:	\$ 500
Total Project Cost:	\$ 66,278
Include Detailed Calculations on a Separate Sheet.	

Table B2-3

**B-3. SECTION 3 - ECONOMIC IMPACT**

a. Determining a project's economic impact is a key factor management considers when formulating short and long-range IT decisions. The IRR and NPV calculations provide a common basis for comparing the initial estimates of different projects. The economic impact worksheets ensure a standard format for documenting cost and benefit components.

b. Economic impact requires that estimates of cost and savings be developed and documented for each of four elements: (1) economic benefit, (2) current operating costs, (3) development costs, and (4) future operating costs. Once the estimates for each element are completed, the economic benefit, current operating costs, and future operating costs are combined to figure out the net annual cash flow associated with the project. This analysis is called the economic impact. The paragraphs below further describe the elements of the IRR and NPV, and show how they are calculated. Example of IRR and NPV calculations begins at paragraph B-3i.

c. Discounted Cash Flows. The basic concept underlying the time value of money is that a dollar today is worth more than a dollar tomorrow. Therefore, it is essential that the time value of money be considered when evaluating long-term decisions. The two most commonly used methods for measuring the time value of money are the IRR and NPV. Both involve the process of discounting future cash flows. IRR and NPV must be considered when evaluating a project's economic benefit.

(1) Internal Rate of Return. The IRR on a project is the rate at which the stream of cash flows, discounted at a selected time, which equals the cost of the project. In other words, it is the interest rate at which the investment in a project "breaks even."

(2) Net Present Value. The NPV method assumes in advance a minimum rate of return or "hurdle" rate. The hurdle rate is the rate of return that must be generated by a capital project if it is to be judged as acceptable. If the sum of the present values of the net cash flows exceeds the present value of the proposed investment, then the rate of return exceeds the target and the project meets the required return. Conversely, if NPV is negative the project fails to meet the required return. In the case of competing projects, the one with the higher NPV may be ranked higher even though it may have a lower IRR.

d. The Economic Benefit Worksheet (Table B3-1) identifies the benefits expected to be achieved through implementing a project and the associated cash-flow impact for each category. Economic benefit focuses on the effect the project will have on business performance. It is different from operating cost reductions because it focuses on increasing something (market share, productivity, capital, revenue, cash flow) as opposed to decreasing something (inventory, capital requirements, cost). Identify each business function affected and the impact of the project on each function (for example, alter, add, eliminate). Estimate the cash flow associated with the change in each business function. Document the rationale and estimating methods for historical and validation purposes.

Economic Benefit Worksheet

Economic Benefits	Year 1	Year 2	Year 3	Year 4	Year 5	Total
1						
2						
3						
4						
5						
Total						

Table B3-1

e. Reduction in Current Operating Costs. The Operating Cost Reduction Worksheet (Table B3- 2) identifies current operating costs in which reductions are anticipated from starting a project and the associated cash flow. Estimate the cash flow associated with the change in each function. Document the rationale and estimating methods for historical and validation purposes.

Operating Cost Reduction Worksheet

Operating Cost Reduction	Year 1	Year 2	Year 3	Year 4	Year 5	Total
1						
2						
3						
4						
5						
Total						

Table B3-2

f. The One-time (Non-recurring) Costs Worksheet (Table B3-3) identifies the non-recurring costs expected to be associated with implementing a project. The categories of costs are the same as those in the One-time (Non-recurring) Costs portion of the DeCA Cost Element Structure (see Section B2). The data can be directly transferred to the worksheet once the estimate is complete.

One-time (Non-recurring) Costs Worksheet

One-time Costs (Non-recurring)	Year 1	Year 2	Year 3	Year 4	Year 5	Total
1.1 Systems Engineering/ Project Management						
1.2 Hardware						
1.3 Telecommunications						
1.4 Software						
1.5 Systems Integration Test and Evaluation						
1.6 Data						
1.7 Training						
1.8 Facilities						
1.9 Site Implementation/ Activation						
1.10 Warranties						
1.11 Travel						
1.12 Other						
Total						

Table B3-3

g. The On-going (Recurring) Costs Worksheet (Table B3-4) documents the costs associated with operating the new system. The categories of cost are the same as those in the On-going Costs portion of the DeCA Cost Element Structure (see Section B2). The data can be directly transferred to the worksheet once the estimate is complete.

On-going (Recurring) Costs Worksheet

On-going Costs (Recurring)	Year 1	Year 2	Year 3	Year 4	Year 5	Total
2.1 Project Management						
2.2 Operations						
2.3 Hardware						
2.4 Telecommunications						
2.5 Software						
2.6 Training						
2.7 Site/Installation Support						
2.8 Travel						
2.9 Other						
Total						

Table B3-4

h. The Economic Impact Worksheet (Table B3-5) combines the one-time costs and on-going costs with an estimated financial impact this project has on overall corporate strategy or goals. The sponsor must calculate the project's Net Cash Flow to the organization by estimating net benefits and net costs. For example: What quantitative impact does this project have on sales, costs-of-goods sold, inventory management, etc.? Detail is required to understand and justify the conclusions to each element of economic impact.

Economic Impact Worksheet

A. Investment Required (From One-time (Non-recurring) Costs Worksheet) \$ _____						
B. Yearly Cash Flows: Five Consecutive Following Implementation						
	Year 1	Year 2	Year 3	Year 4	Year 5	Total
1. Economic Benefit						
2. Operating Cost Reduction						
3. = Income (1+2)						
4. Less Ongoing Costs						
5. = Net Cash Flow (3-4)						

Table B3-5

i. Economic Benefit Example. XYZ organization proposes a new information technology system development project estimated to increase its revenues by 10% a year, while decreasing the costs-of-goods sold by \$50,000 a year. The system is a COTS solution costing \$92,000. Some modification to the COTS is required and is estimated at \$9,200. A PM is needed to manage this development at \$60,000. Five contractors are needed for this development activity at a cost of \$250,000. Six personal computers, six modems, two printers, and one T1 line costing \$18,000 are needed to support the effort. Training costs, to include manuals and instruction, is \$6,000. Travel costs, for site surveys and system installation, are estimated at \$22,000. Costs associated with operating the new system include \$10,000 for software maintenance; \$7,000 for data storage; \$2,500 for software leases; and \$900 for supplies. The current system costs \$18,000 for software maintenance, \$14,000 for data storage, \$1,000 for software leases, and \$1,100 for supplies. The Net Present Value and Internal Rate of Return are shown in the completed worksheets below.

j. The Economic Benefit Worksheet for this project is shown at Table B3-6. Multiplying \$1,000,000 times 10% gives the expected annual cash flow increase if the project is carried out.

Economic Benefit Worksheet

Economic Benefits	Year 1	Year 2	Year 3	Year 4	Year 5	Total
1. Increase in Revenues from 10% Sales Increase	100,000	100,000	100,000	100,000	100,000	500,000
2.						
3.						
4.						
5.						
Total	100,000	100,000	100,000	100,000	100,000	500,000

Table B3-6

k. Table B3-7 shows the operating costs reduction for this example. The \$34,100 is the sum of the current system costs identified above.

Operating Cost Reduction Worksheet

Operating Cost Reduction	Year 1	Year 2	Year 3	Year 4	Year 5	Total
1. Decrease in cost of goods sold	50,000	50,000	50,000	50,000	50,000	250,000
2. Eliminate Old System	34,100	34,100	34,100	34,100	34,100	170,500
Total	84,100	84,100	84,100	84,100	84,100	420,500

Table B3-7

l. Table B3-8 shows the One-time (Non-recurring) Costs by category as described in the example. Total One-time (Non-recurring) Costs are \$457,200.

One-time (Non-recurring) Costs Worksheet

One-time Costs (Nonrecurring)	Year 1	Year 2	Year 3	Year 4	Year 5	Total
1.1 Systems Engineering/ Project Management	60,000					60,000
1.2 Hardware	18,000					18,000
1.3 Telecommunications						
1.4 Software	351,200					351,200
1.5 Systems Integration Test and Evaluation						
1.6 Data						
1.7 Training	6,000					6,000
1.8 Facilities						
1.9 Site Implementation/ Activation	22,000					22,000
1.10 Warranties						
1.11 Travel						
1.12 Other						
Total	457,200					457,200

Table B3-8

m. Table B3-9 details the costs to operate the new system by category as described in the example. The total On-going (Recurring) Costs are \$102,000.

On-going (Recurring) Costs Worksheet

On-going Costs (Recurring)	Year 1	Year 2	Year 3	Year 4	Year 5	Total
2.1 Project Management						
2.2 Operations	7,000	7,000	7,000	7,000	7,000	35,000
2.3 Hardware						
2.4 Telecommunications	12,500	12,500	12,500	12,500	12,500	62,000
2.5 Software						
2.6 Training						
2.7 Site/Installation Support	900	900	900	900	900	4,500
2.8 Travel						
2.9 Other						
Total	20,400	20,400	20,400	20,400	20,400	102,000

Table B3-9

n. Table B3-10 represents the culmination of all data collection and documentation. Net Investment (Item A) required is \$457,200 (from One-time (Non-recurring) Costs Worksheet). The Net Economic Benefit (Item B1) is data extracted from the Economic Benefit Worksheet. The Operating Cost Reduction (Item B2) is obtained from the On-going Costs Worksheet. Income (Item B3) is the sum of Items B1 and B2. For the On-going (Recurring) Costs (Item B4), the information is on the worksheet. Finally, subtracting On-going (Recurring) Costs from Income provides the Net Cash Flow per year (Item B5).

Economic Impact Worksheet

A. Investment Required (From One-time (Non-Recurring) Costs Worksheet)	<u>\$457,200</u>					
B. Yearly Cash Flows: Five Consecutive Following Implementation						
	Year 1	Year 2	Year 3	Year 4	Year 5	Total
1. Economic Benefit	100,000	100,000	100,000	100,000	100,000	500,000
2. Operating Cost Reduction	84,100	84,100	84,100	84,100	84,100	420,500
3. = Income (1+2)	184,100	184,100	184,100	184,100	184,100	920,500
4. Less On-going (Recurring) Costs	20,400	20,400	20,400	20,400	20,400	102,000
5. = Net Cash Flow (3-4)	163,700	163,700	163,700	163,700	163,700	818,500

Table B3-10

o. IRR Example. Using our example, we have an investment of \$457,200 and annual projected cash flows of \$163,700 over five years. The IRR or break-even rate would be 23.23%. This can be calculated by using a computer model (such as Microsoft Excel) or by using Present Value tables and interpolation (trial-and-error) to arrive at the exact percentage. See Tables B3-11 and B3-12.

Manual Computation of IRR  
(Use Trial-and-Error to Find the Discount Rate for Breakeven)

Discount Rate Applied					
Year	Estimated Cash Flow	20% Factor	Amount	24% Factor	Amount
0	< 457,200 >	1.0000	< 457,200 >	1.0000	< 457,200 >
1	163,700	.8333	136,411	.8065	132,024
2	163,700	.6944	113,673	.6504	106,470
3	163,700	.5787	94,733	.5245	85,861
4	163,700	.4823	78,953	.4230	69,245
5	163,700	.4019	65,791	.3411	55,838
			489,561		449,438

Neither 489,561 nor 449,438 hits our breakeven target of 457,200, but the rate is between 20% and 24%  
Table B3-11

Using Trial-and-Error (Interpolation) to Find Rate		
Interpolation	=	20% + 4% ((489,561 – 457,200) / (489,561 – 449,438))
Interpolation	=	20% + 4% (32,361 / 40,123)
Interpolation	=	20% + 4% (.806545)
Interpolation	=	20% + 3.2262%
Interpolation	=	23.23%

Table B3-12

p. NPV Example. Using our example, we have an Investment of \$457,200 and annual projected Cash Flows of \$163,700. Assuming a minimum required rate of return of 10%, the NPV is projected as follows:

Year	Cash Flows	Discount Factor @ 10%	NPV
0	(\$457,200)	1.0000	(\$457,200)
1	163,700	.9091	148,820
2	163,700	.8264	135,282
3	163,700	.7513	122,988
4	163,700	.6830	111,807
5	163,700	.6209	<u>\$101,641</u>
			\$163,338

Table B3-13

q. Summary: The project is projected to yield \$163,338 over its useful life. Using our example, both economic measures are favorable and, therefore, the project can be accepted: IRR = 23.23, and NPV = \$163,338.

## APPENDIX C

PROJECT MANAGEMENT PLAN (TITLE OF PROJECT)	
TABLE OF CONTENTS	
PARAGRAPH	EXPLANATION
1. Purpose	Short description of the project's purpose
2. Project Scope	Synopsis of the scope covered by this plan. (I.e., Development, Test, Total Life Cycle, etc.
3. Concept of Operations (CONOPS)	Defines how you are going to achieve project goals. Involves establishing and institutionalizing processes that will be used on the project. Assumptions and Constraints should be included in applicable/all sub-sections. Document is not limited to just the topics listed below
3-1 Management Concept	
3-1-1	Describes how the project will be managed
3-1-2	How progress will be measured
3-1-3	Frequency of collecting, analyzing, and reporting metrics data
3-1-4	How changes and risk will be managed (can be separate plans if required)
3-1-5	How contractors/sub-contractors will be managed
3-1-6	Decision making process
3-1-7	Project Team organizational structure to include roles and responsibilities
3-2 Technical Concept	Describes how technical aspects of the project will be conducted
3-2-1	Technical product development approach
3-2-2	How technical oversight of the performing organization will be conducted
3-2-3	Requirements for testing and/or independent verification and validation
3-2-4	Product acceptance criteria and procedures. Entrance and exit criteria for each phase/milestone should be included.
3-3 Implementation Concept	Defines how the new software will be installed and normal business operations resumed.
3-3-1	Time line for implementation
3-3-2	Downtime projections
3-3-3	New equipment installation
3-3-4	Data conversion and user training
3-3-5	Technical support and initial trouble calls
4. Project Master Schedule	Scheduling system generated (major milestones will be reflected in the Acquisition Baseline document)
5. Project Budget and Spending Plan	An overall funding plan which includes the entire life cycle funding for the project with more detailed information for the current year. (Key values will be reflected in the Acquisition Baseline document)
6. Quality Assurance	Strategy to be employed to insure that quality checks are built into the process rather than "testing" at the end of the project. (This can be a separate plan if required)
7. Information Assurance and Security Plan	Include any specific security requirements which cannot be satisfied by the standard security measures employed for the IT enterprise as a whole. (This can be a separate plan, if required) Requires a PM statement that project will be fully compliant with DeCA's IA Program.
8. Project Metrics	Specific metrics by phase which will be collected, analyzed and reported. These metrics must be specified in the Statement of Work if they are to be provided by the developer.
9. Task Descriptions.	Outline and define all tasks which must be accomplished by the Project Management Team.

Figure C-1

**APPENDIX D**

**COLOR RATING CRITERIA**

Status on projects are tracked for five major elements and an overall rating based on the individual element ratings. The elements are: Cost, Schedule, Performance, Scope, and Risk.

COST AND SCHEDULE: Ratings for these areas are objective based on Earned Value calculations.

RATING	VARIANCE
Green	Less than 5 %
Yellow	5 % through 10 %
Red	11 % and higher

Table D-1

**EARNED VALUE CHART EXAMPLE**

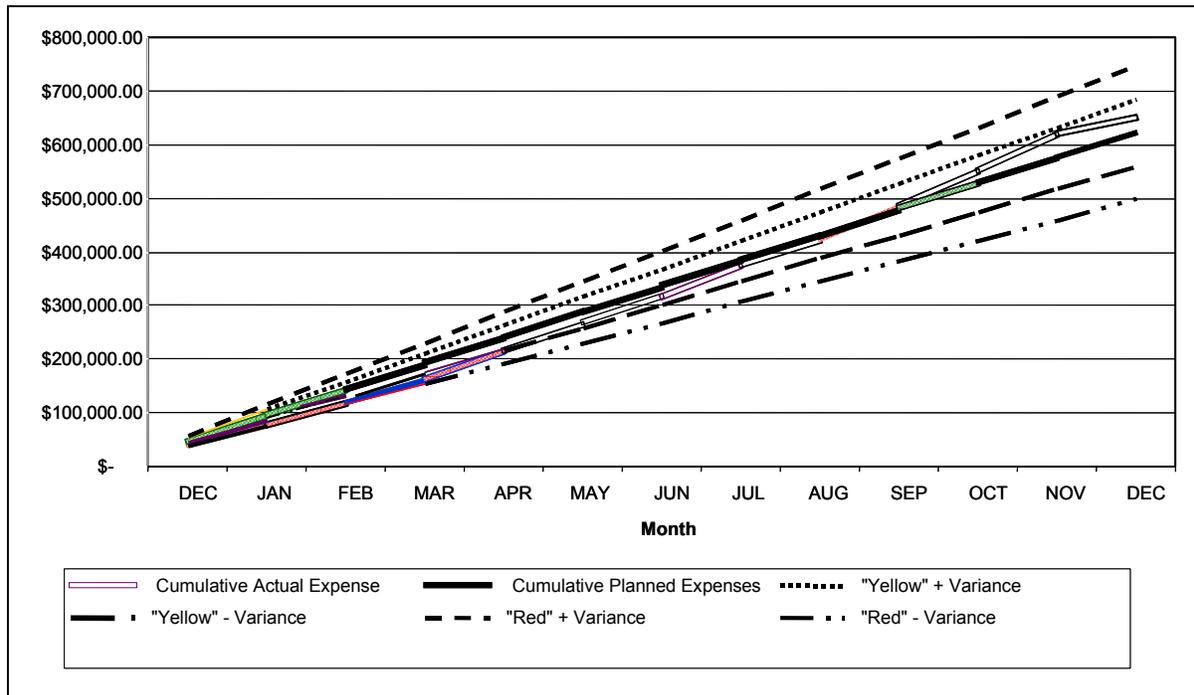


Figure D-1

PERFORMANCE: (Dependent upon type of contract and phase within development cycle.)

RATING	CONDITION
Green	Performance is acceptable or can be corrected without impacting Cost or Schedule
Yellow	Performance cannot be corrected within Cost and Schedule, but system can be fielded pending correction in first block change.
Red	Performance cannot be corrected within Cost and Schedule, and system is not acceptable without correction.

Table D-2

(All Performance issues should be documented regardless of disposition.)

SCOPE: (Dependent upon type of contract and phase within development cycle)

RATING	CONDITION
Green	No scope issues or any required functionality changes are minor and can be accommodated within Cost and Schedule; or functionality tradeoffs can be made to avoid impacting Cost and Schedule.
Yellow	Minor functionality change required (whether in-scope or out-of-scope), which cannot be accommodated within Cost and Schedule, and system is unacceptable without it.
Red	Major functionality change required (whether in-scope or out-of-scope), which cannot be accommodated within Cost and Schedule, and system is unacceptable without it.

Table D-3

(All Scope issues should be documented regardless of disposition.)

RISK:

RATING	SEVERITY	PROBABILITY OF OCCURRENCE		
		Low	Medium	High
Green	Low	1	2	3
Yellow	Medium	4	5	6
Red	High	7	8	9

Table D-4

RULES FOR OVERALL SYSTEM RATING

COST/SCHEDULE	PERF/SCOPE/RISK	OVERALL RATING
Red in either		Red
Yellow in both		Red
Yellow in either	1 Yellow	Yellow
Yellow in either	2 or 3 Yellow	Red
Yellow in either	1 Red	Red
Green in both	1 or 2 Yellow	Green
Green in both	3 Yellow	Yellow
Green in both	1 Red	Yellow
Green in both	2 or 3 Red	Red

Table D-5

COST	R	Y	Y	Y	Y	Y	G	G	G	G
SCHEDULE	G	Y	G	G	G	G	G	G	G	G
PERFORMANCE	G	G	G	Y	Y	R	Y	Y	G	G
SCOPE	G	G	G	G	Y	G	Y	Y	R	R
RISK	G	G	G	G	G	G	G	Y	G	R
OVERALL	R	R	Y	Y	R	R	G	Y	Y	R

Ratings on this chart are “notional” to illustrate the rules.

Table D-6

**APPENDIX E**

**EARNED VALUE ANALYSIS**

ELEMENT		DEFINITION
Budgeted Cost of Work Scheduled	BCWS	The sum of the approved cost estimates for activities scheduled to be performed during a given time period.
Budgeted Cost of Work Performed	BCWP	The sum of the approved cost estimates for activities completed during a given time period.
Actual Cost of Work Performed	ACWP	The total of direct and indirect costs incurred in accomplishing work on activities during a given time period.
Schedule Variance	SV	The difference between the budgeted cost of work performed and the budgeted cost of work scheduled. <b>(BCWP - BCWS)</b>
Cost Variance	CV	The difference between the budgeted cost of work performed and the actual cost of work performed. <b>(BCWP - ACWP)</b>
Schedule Performance Index	SPI	The ratio of the budgeted cost of work performed to the budgeted cost of work scheduled. SPI is used to forecast the project completion date. <b>(BCWP / BCWS)</b>
Cost Performance Index	CPI	The ratio of the budgeted cost of work performed to the actual cost of work performed. The cumulative CPI is used to forecast project cost at completion. <b>(BCWP / ACWP)</b>
Estimate at Completion	EAC	A value representing the projected final costs of work when completed. <b>(BCWS - BCWP / CPI + ACWP)</b> or <b>(BCWS - BCWP / (CPI x SPI) + ACWP)</b>

Table E-1

**EARNED VALUE EXAMPLE**

BASELINE PLAN

The Baseline Plan in Table E-2 shows that 6 work units (A through F) are planned for completion at a cost of \$100 by the end of the first month (or applicable reporting period).

As of EOM	A	B	C	D	E	F	Total
Planned Value \$(BCWS)	10	15	10	25	20	20	\$100

Table E-2

SCHEDULE VARIANCE

As work is performed, it is “earned” on the same basis as it was planned, in dollars or other quantifiable units such as labor hours. Planned value compared with earned value measures the dollar volume of work planned vs. the equivalent dollar value of work accomplished. Any difference is called a schedule variance. In contrast to what was planned, Table E-3 shows that Work Unit D was not completed and Work Unit F was never started, or \$35 of the planned work was not accomplished. As a result, the schedule variance shows that 35 percent of the work planned for this period was not done.

As of EOM	A	B	C	D	E	F	Total
Planned Value \$(BCWS)	10	15	10	25	20	20	\$100
Earned Value \$(BCWP)	10	15	10	10	20	0	65
Schedule Variance (SV=BCWP-BCWS)				-15		-20	-\$ 35 = - 35%

Table E-3

COST VARIANCE

Earned value compared with the actual cost incurred (from contractor accounting system) for the work performed provides an objective measure of planned and actual cost. Any difference is called a cost variance. A negative variance means more money was spent for the work accomplished than was planned. Table E-4 shows the calculation of cost variance. The work performed was planned to cost \$65, but actually cost \$91. The cost variance is 40%.

As of EOM	A	B	C	D	E	F	Total
Planned Value \$(BCWS)	10	15	10	25	20	20	\$100
Earned Value \$(BCWP)	10	15	10	10	20	0	65
Actual Cost \$(ACWP)	9	22	8	30	22	0	91
Cost Variance (CV=BCWP-ACWP)	1	-7	2	-20	-2	0	-\$ 26 = - 40%

Table E-4

EARNED VALUE CHART (ACWP/BCWP)

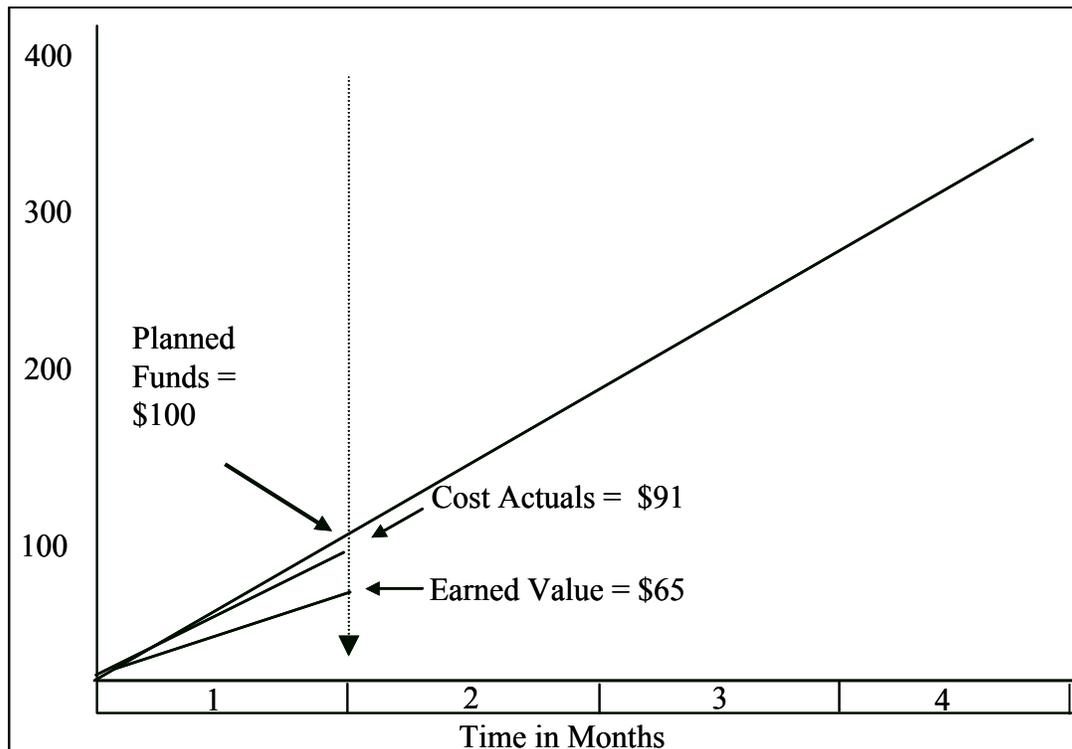


Figure E-1

ESTIMATE AT COMPLETION

A value representing the projected final costs of work when completed. The EAC equals the actual costs incurred, plus the estimated costs for completing the remaining work. Table E-5 shows the minimum and maximum estimate at completion based on current accomplishment.

Planned Value \$(BCWS)	10	15	10	25	20	20	\$100
Earned Value \$(BCWP)	10	15	10	10	20	0	65
Actual Cost \$(ACWP)	9	22	8	30	22	0	91

SPI = BCWP / BCWS	$65 / 100 = .65$
CPI = BCWP/ACWP	$65 / 91 = .71$
EAC = BCWS - BCWP / CPI + ACWP	$100 - 65 / .71 + 91 = 140$ (Min Range)
EAC = BCWS - BCWP / (CPI x SPI) + ACWP	$100 - 65 / (.65 \times .71) + 91 = 167$ (Max Range)

Table E-5

EARNED VALUE CHART (CPI/SPI)

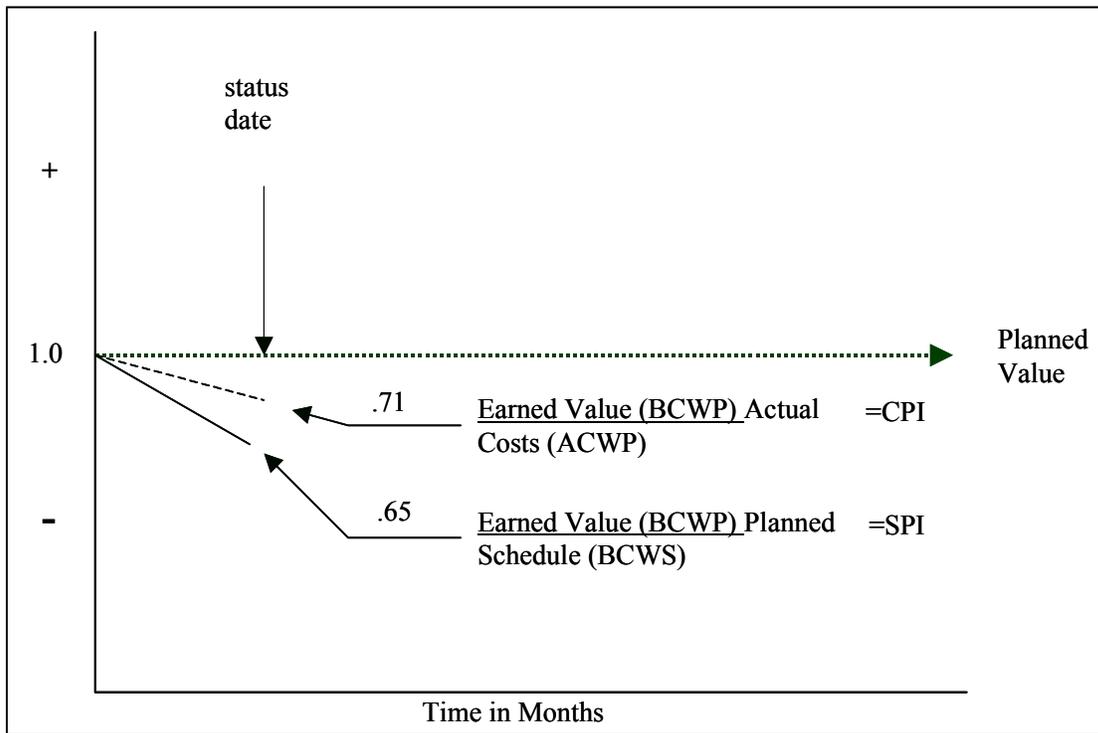


Figure E-2

SPEND COMPARISON

The typical spend comparison approach, whereby contractors only report actual expenditures against planned expenditures, and do not relate these expenditures to work that was actually accomplished is not nearly as useful and can be misleading. Table E-6 shows a simple comparison of planned and actual spending without a relationship to work performed. Without the “earned value” line, all that is really known is (1) Work Unit F has not started, and (2) the total amount spent was \$9 less than planned for the period. What is not apparent is that Work Unit D is still incomplete and the \$5 overrun shown has been incurred on 40% of the work.

As of EOM	A	B	C	D	E	F	Total
Planned Value \$(BCWS)	10	15	10	25	20	20	\$100
Actual Cost \$(ACWP)	9	22	8	30	22	0	91
Cost Variance	-1	+7	-2	+5	+2	-20	-\$ 9 = - 9%

Table E-6

APPENDIX F

DeCA IT ENTERPRISE STRUCTURE

Figure F-1 displays the various entities of the enterprise structure. The External line reflects examples of customer groups which use or provide data to DeCA programs. The Strategic line reflects systems that access or provide data across the entire IT Enterprise. The Internal Programs are the individual programs that process for the IT Enterprise.

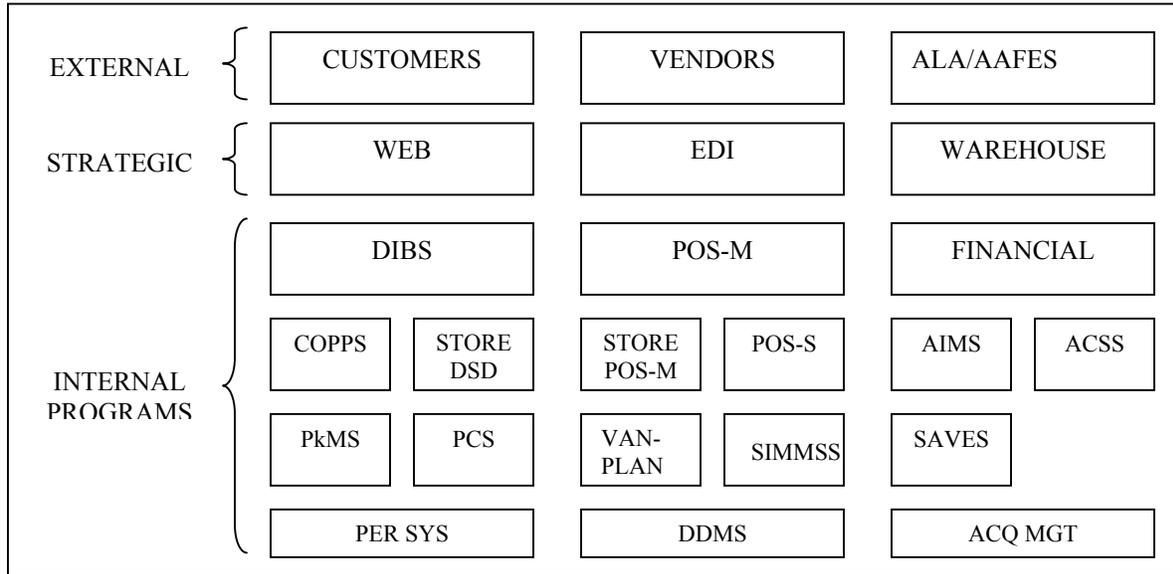


Figure F-1

Figure F-2 displays the various levels of the IT enterprise structure itself. The System line reflects DeCA as the identity of the total enterprise, comprised of all IT software. The Program line reflects examples of individual programs that make up the IT Enterprise. The Project (Initiative) line reflects examples of projects that impact programs across the enterprise, and may ultimately become specific programs as well.

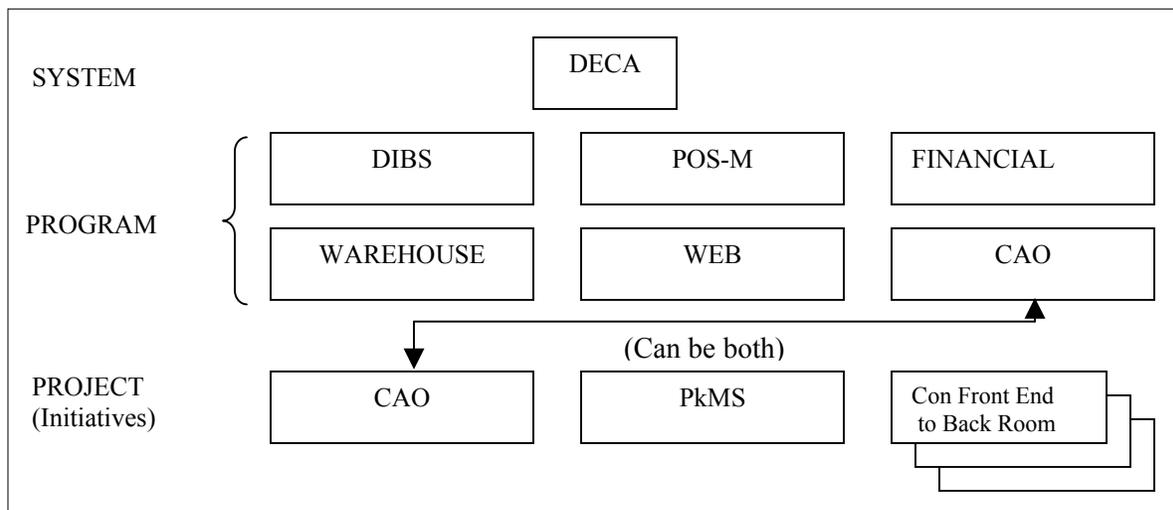


Figure F-2

**DeCA DOCUMENTATION HIERARCHY**

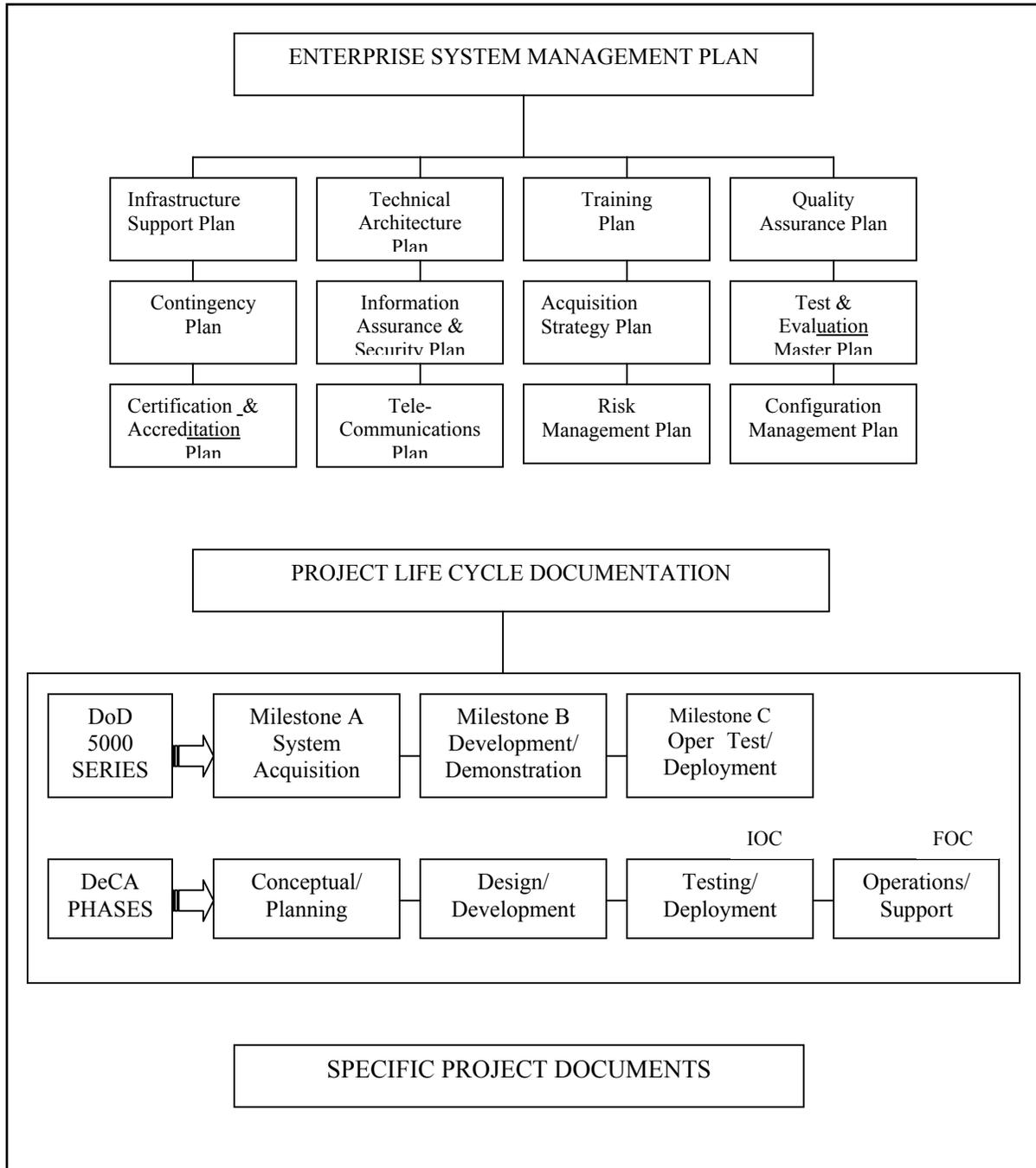


Figure F-3

DeCA PROJECT DOCUMENTATION				
DoD 5000 SERIES	Milestone A Acquisition	Milestone B Dev/Dem	Milestone C Op Tst/ Dep	
DeCA PHASES	Concep/ Planning	Design/Dev	Testing/ Deploy	Opns/Supt
DOCUMENTS				
Mission Need Statement	X			
Functional Description	X			
Cost Benefit Analysis/ROI	X			
Alternative Analysis Results	X			
Market Research Results	X			
Prototype Results	X			
Proof of Concept Results	X			
Acquisition Strategy Plan***	X			
Source Selection Plan	X			
Request for Proposal	X			
Project Management Plan	X			
Concept of Operations	X			
Project Master Schedule	X			
Acquisition Project Baseline	X			
Interface Rqmts Agreement		X		
Risk Management Plan***		X		
Inf Assur/Security Plan***		X		
Telecommunication Plan***		X		
Contingency Plan***		X		
Quality Assurance Plan***		X		
Configuration Mgt Plan***		X		
System Specifications		X		
Detail Design Specifications		X		
Test & Evaluation Plan***			X	
System Test Plan			X	
Development Test Plan			X	
System Support Plan***			X	
Conversion Plan			X	
Training Plan***			X	
Deployment Plan			X	
User Manual			X	
Operations Manual				X
Maintenance Manual				X
***Enterprise Level Plan can be referenced in Project Management Plan, along with any unique project-level requirements, in lieu of creating a separate project document.				
Note: Documents are "X'd" in the Milestone/Phase in which they are to be complete.				

Figure F-4

**APPENDIX G**

**CCB BRIEFING TEMPLATE**

(Use DeCA approved format)

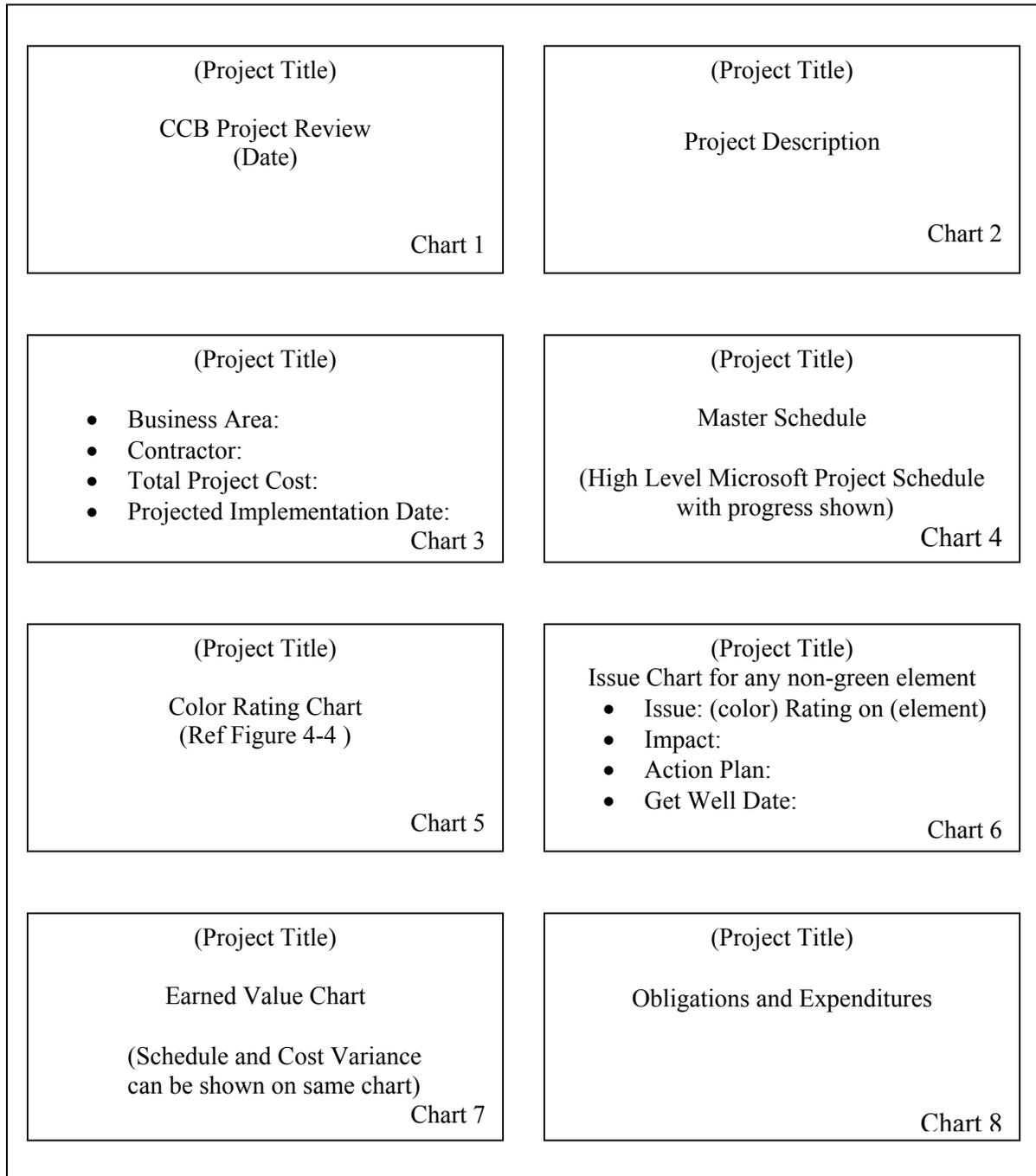


Figure G-1(1)

**APPENDIX G**

**CCB BRIEFING TEMPLATE**  
(Use DeCA approved format)

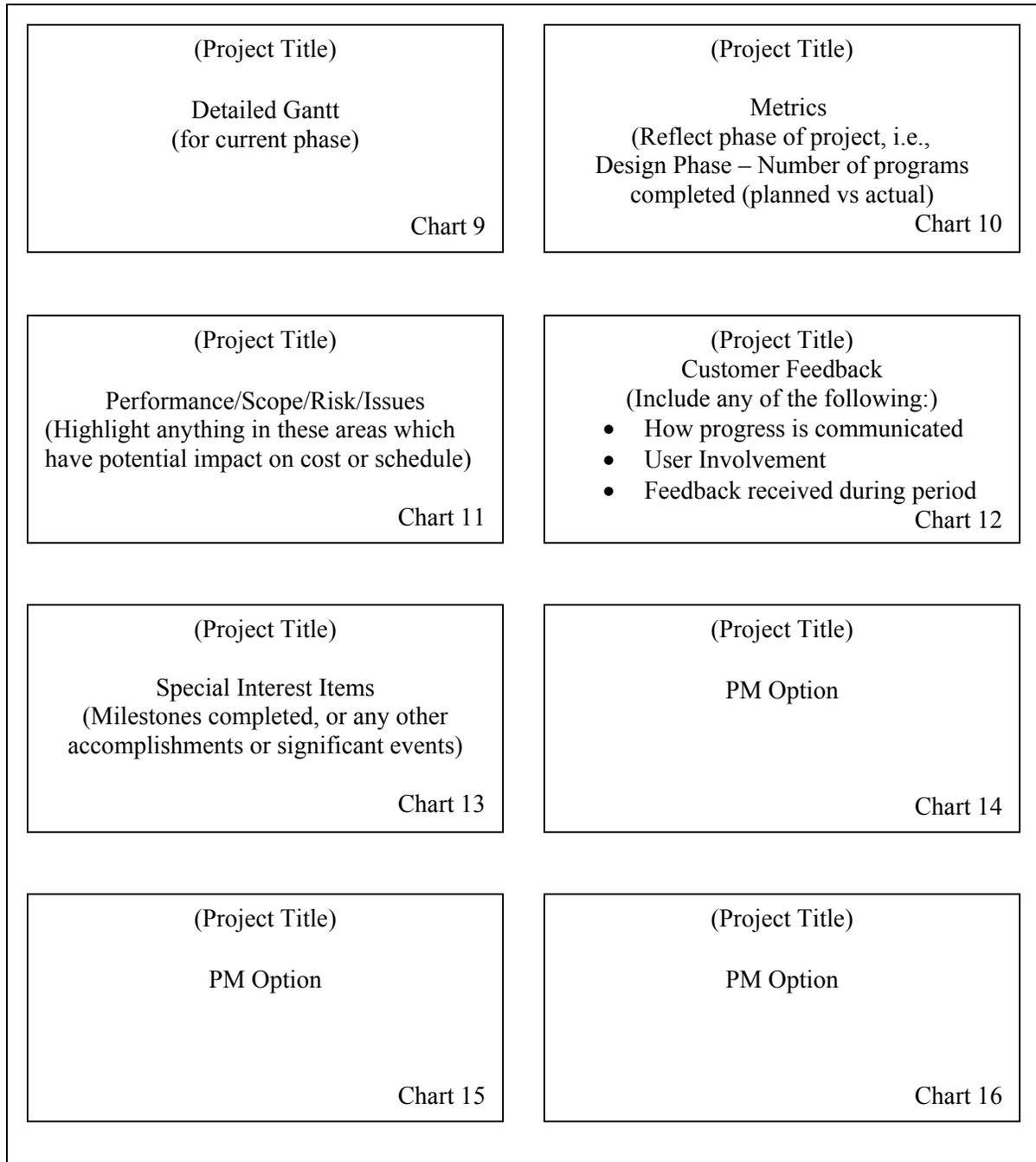


Figure G-1(2)

**APPENDIX H**  
**BASELINE CHANGES**

<b>BASELINE CHANGE REQUEST</b>	BCR NBR: _____	CURRENT DATE: _____
PROJECT NAME: _____		PROJECT ID NBR: _____
PROJECT MGR: _____	SPONSORING BUSINESS AREA MGR (BAM): _____	
FUNDING: <input type="checkbox"/> INCR <input type="checkbox"/> DECR	SCHEDULE: <input type="checkbox"/>	REQUIREMENTS: <input type="checkbox"/>
NARRATIVE:		
COORDINATION/APPROVAL:		SIGNED:
BAM: <input type="checkbox"/> CONCUR <input type="checkbox"/> NONCONCUR	_____	
CIO: <input type="checkbox"/> CONCUR <input type="checkbox"/> NONCONCUR	_____	
RWG: <input type="checkbox"/> CONCUR <input type="checkbox"/> NONCONCUR	_____	
RMC: <input type="checkbox"/> APPROVE <input type="checkbox"/> DISAPPROVE	_____	
DeCA Form 35-__		

Figure H-1



**APPENDIX I**  
**POST IMPLEMENTATION REPORT**

Project Name:	
Business Area:	
Program Manager:	Phone:
Planned Completion Date:	Actual Completion Date:
Estimated Project Cost: \$	Final Project Cost: \$
Estimated Return on Investment	Actual Return on Investment:
Strategic Objective(s) Supported:	
User's Evaluation:	
Program Manager's Comments:	
Technical Manager's Comments:	
Attachment: (Selected Post-Implementation Review Charts)	

Figure I-1

## APPENDIX J

## GLOSSARY

		PAGE
ACWP	Actual Cost of Work Performed .....	54
AIS	Automated Information System .....	6
BAM	Business Area Manager .....	2
BCR	Baseline Change Request.....	7
BCWP	Budgeted Cost of Work Performed.....	54
BCWS	Budgeted Cost of Work Scheduled.....	54
CCB	Configuration Control Board .....	4
CES	Cost Element Structure .....	34
CIO	Chief Information Officer .....	1
CIU	Corporate Information Utility .....	16
CKO	Chief Knowledge Officer.....	7
COB	Commissary Operating Board.....	3
COTS	Commercial Off The Shelf.....	10
CPI	Cost Performance Index.....	54
CTO	Chief Technical Officer .....	7
CV	Cost Variance.....	54
DCTN	Defense Commercial Telephone Network.....	38
DDN	Defense Data Network.....	38
DeCA	Defense Commissary Agency.....	1
DoD	Department of Defense .....	1
DoDD	Department of Defense Directive .....	1
DoDI	Department of Defense Instruction.....	1
DSS	Decision Summary Sheet.....	10
EAC	Estimate at Completion.....	54
ECP	Engineering Change Proposal.....	6
EOM	End of Month.....	54
ESMP	Enterprise System Management Plan .....	7
FAR	Federal Acquisition Regulation .....	12
FASA	Federal Acquisition Streamlining Act .....	1
FD	Functional Description.....	10
FOC	Final Operating Capability.....	59
GAO	General Accounting Office.....	1
GIG	Global Information Grid .....	14
GPRA	Government Performance and Results Act.....	1
GSA	General Services Administration .....	13
GWAC	Government Wide Agency Contracts .....	13
IA	Information Assurance.....	14
IDIQ	Indefinite Delivery/Indefinite Quantity .....	13
INFOSEC	Information Systems Security.....	1
IO	Information Operations.....	1
IOC	Initial Operating Capability .....	59
IPT	Integrated Product Team.....	7
IRR	Internal Rate of Return .....	12
IT	Information Technology .....	1
ITCPIP	IT Capital Planning and Investment Process .....	1
ITMRA	Information Technology Management Reform Act.....	1

**GLOSSARY**

		PAGE
MAIS	Major Automated Information Systems .....	1
MC	Mission Critical.....	14
MDAPS	Major Defense Acquisition Programs.....	1
ME	Mission Essential .....	14
MNS	Mission Need Statement .....	21
NPV	Net Present Value .....	12
O&S	Operations and Support .....	9
OMB	Office of Management and Budget.....	1
PDP	Project Decision Package.....	6
PIR	Post-Implementation Review.....	7
PIRT	Post-Implementation Report.....	7
PKE	Public Key Enabling .....	15
PKI	Public Key Infrastructure .....	15
PM	Project Manager .....	2
PMO	Project Manager Office.....	7
PMP	Project Management Plan .....	7
PMRT	Project Management Responsibility Transfer.....	7
PMS	Project Master Schedule .....	9
PPBS	Planning, Programming and Budgeting System .....	2
PR	Problem Report .....	6
RMC	Resource Management Council .....	1
ROI	Return on Investment.....	3
ROM	Rough Order of Magnitude.....	21
RWG	Resource Working Group .....	1
SPI	Schedule Performance Index .....	54
SV	Schedule Variance .....	54
TART	Technical Architecture Review Team .....	7
TBP	To Be Published.....	1
WBS	Work Breakdown Structure .....	9

**APPENDIX K**

**INTERNAL MANAGEMENT CONTROL REVIEW CHECKLIST**

TASK: DeCA IT Capital Planning and Investment Program

THIS CHECKLIST: IT Capital Planning and Investment

ORGANIZATION:

ACTION OFFICER:

REVIEWER:

DATE COMPLETED:

ASSESSABLE UNITS: The assessable units are HQ DeCA and the Field Operating Activities. Each test question is annotated to indicate which organization(s) is (are) responsible for responding to the question(s). Assessable unit managers responsible for completing this checklist are shown in the DeCA MCP.

---

EVENT CYCLE 1: Selection Phase of IT Capital Investment Process

Risk: Failure to follow procedures in selection of capital investment projects could result in non-compliance with provisions of the Clinger-Cohen Act.

Control Objective: Ensure IT projects requiring capital investment are properly documented and prioritized for approval by the Commissary Operating Board.

Control Technique: Verify through review of prescribed documentation.

Test Questions:

1. (All) Did each project have a properly executed Project Decision Package?

Response: Yes \_\_\_ No \_\_\_ NA \_\_\_

Remarks\*

2. (All) Were projects presented to the board structure (CCB/RWG/RMC) in alignment with PPBS requirements, and did they support agency strategic plan?

Response: Yes \_\_\_ No \_\_\_ NA \_\_\_

Remarks\*

3. (All) Are project budgets zero-based, and do they include maintenance costs?

Response: Yes \_\_\_ No \_\_\_ NA \_\_\_

Remarks\*

4. (All) Was each project supported by an acceptable return on investment?

Response: Yes \_\_\_ No \_\_\_ NA \_\_\_

Remarks\*

5. (All) Did each project address Information Assurance requirements?

Response: Yes \_\_\_ No \_\_\_ NA \_\_\_

Remarks\*

6. (All) Did each project prepare a Project Management Plan?

Response: Yes \_\_\_ No \_\_\_ NA \_\_\_

Remarks\*

---

EVENT CYCLE 2: Control Phase of IT Capital Investment Process

Risk: Failure to follow procedures for monitoring progress of approved capital investment projects could result in increased cost and impact ability to reach projected return on investment.

Control Objective: Monitor approved projects to insure they are developed and delivered within prescribed cost and schedule limitations, provide the customers' requirements, and achieve projected benefits in the form of return on investment.

Control Technique: Verify that projects are reported monthly to the CIO and quarterly or as required at CCB/RWG/RMC meetings. Verify that progress on the IT enterprise as a whole is reported quarterly at Resource Working Group and Resource Management Council meetings.

Test Questions:

1. (All) Are projects generating monthly status reports to the CIO?

Response: Yes \_\_\_ No \_\_\_ NA \_\_\_

Remarks\*

2. (All) Are project reviews being held at CCB, RWG, and RMC meetings?

Response: Yes \_\_\_ No \_\_\_ NA \_\_\_

Remarks\*

3. (All) Are projects utilizing earned value to report cost and schedule progress?

Response: Yes \_\_\_ No \_\_\_ NA \_\_\_

Remarks\*

4. (All) Are projects submitting official Baseline Change Requests for approval prior to making changes to cost, schedule or requirements baselines?

Response: Yes \_\_\_ No \_\_\_ NA \_\_\_

Remarks\*

5. (All) Are Baseline Change Logs kept up to date?

---

EVENT CYCLE 3: Evaluate Phase of IT Capital Investment Process

Risk: Failure to properly evaluate projects during development and after implementation could result in projects continuing when they should be terminated, or not getting benefit of lessons learned for use in future projects and initiatives.

Control Objective: Insure that projects are terminated if failing to meet specified requirements and guidelines; or if completed, that projected benefits are validated, and lessons learned are captured and utilized in future projects as applicable.

Control Technique: Validate that projected benefits are achieved, and that lessons learned are captured and reported.

Test Questions:

DeCAD 35-13, September, 2001

1. (All) Is the total IT performance being measured for efficiency and effectiveness of improvements to demonstrate it's contribution to mission performance?

Response: Yes \_\_\_ No \_\_\_ NA \_\_\_

Remarks\*

2. (All) Are projects tracking benefits throughout their life cycle to validate return on investment projections?

Response: Yes \_\_\_ No \_\_\_ NA \_\_\_

Remarks\*

3. (All) Are Post-Implementation Reviews being held on each project?

Response: Yes \_\_\_ No \_\_\_ NA \_\_\_

Remarks\*

4. (All) Are Post-Implementation Reports being generated on each project?

Response: Yes \_\_\_ No \_\_\_ NA \_\_\_

Remarks\*

---

\* Explain rationale for YES response or provide cross-reference where rationale can be found. For NO responses, cross-reference to where corrective action plans can be found. If the response is NA, explain rationale.

I attest that the above-listed management controls provide reasonable assurance that DeCA resources are adequately safeguarded. I am satisfied that if the above controls are fully operational, the management controls for this subtask throughout DeCA are adequate.

---

CHIEF INFORMATION OFFICER

---

Date

I have reviewed this subtask within my organization and have supplemented the prescribed management control review checklist when warranted by unique environmental circumstances. The controls prescribed in this checklist, as amended, are in place and operational for my organization.

---

ASSESSABLE UNIT MANAGER

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Date