INFORMATION PROCEDURE

CPIC Procedures for the OMB Exhibits	
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Issued by the EPA Chief Information Officer,
Pursuant to Delegation 1-19, dated 07/07/2005

Capital Planning and Investment Control Procedures for the Office of Management and Budget Exhibits

1. PURPOSE

This document describes the Environmental Protection Agency's (EPA) Information Technology (IT) Capital Planning and Investment Control (CPIC) process. It documents the process that EPA staff should follow to manage an IT investment.

These procedures provide CPIC requirements and guidance necessary for developing sound, cost-effective, and compliant IT investment justification in preparation for the Office of Management and Budget's (OMB) review and approval. This in turn supports the portfolio management approach, and addresses the strategic planning needs of EPA. Investment justification must be prepared according to the criteria in these procedures to ensure that they will meet OMB's statutory requirements, as well as to ensure continued investment funding to meet Agency mission goals. IT investments without strong investment justification and with inefficient performance management, risk possible repercussions. These include delays, reductions in future funding and possible cancellation.

2. SCOPE AND APPLICABILITY

The procedures apply to EPA IT Investments and IT projects throughout their entire life cycle, regardless of funding source, whether owned and operated by EPA or operated on behalf of EPA. EPA organizations are expected to manage their IT Investment portfolios in the form of a major, medium or lite investment or the captured under the small/other category within the EPA CPIC Program.

3. AUDIENCE

The procedures apply to EPA and contractor personnel participating in the acquisition, development, management and disposal of EPA IT systems.

4. BACKGROUND

In 1997, following the enactment of the Clinger-Cohen Act (CCA) of 1996, EPA developed a process for managing major IT investments. The process was developed using the requirements of CCA, and guidance from OMB. According to OMB, federal agencies must effectively manage their portfolio of capital assets, including information technology, to ensure that scarce public resources are wisely invested. Capital Planning and Investment Control integrates the planning, acquisition and management of capital assets into the budget decision-making process and it is intended to assist

agencies with improving asset management in compliance with results-oriented requirements. Capital planning is an essential part of the E-Government Strategy and assists project managers and agency officials with managing their portfolio of technology projects so that agency mission goals may be achieved and citizens are better served.

The subsequent passage of the Federal Information Technology Acquisition Reform Act (2014) further clarified the authority of the Chief Information Officer (CIO) in planning and acquisition decisions for IT procurements. These authorities are drafted here.

5. AUTHORITY

The links to the documents listed below can be found at http://intranet.epa.gov/cpic/laws.htm.

- *Federal Information Technology Acquisition Reform Act (FITARA).* This Act requires CIO involvement in IT budget formulation, IT planning, IT acquisition, and IT delivery. As part of this new role, the CIO will conduct program portfolio reviews, called "pre Exhibit 100 reviews" (see the references to Exhibit 100 below) to ensure that all programs and the CIO are meeting the requirements of FITARA.
- *Clinger-Cohen Act of 1996 (formerly the Information Technology Management Reform Act (ITMRA))* – requires the head of each agency to implement a process for maximizing the value and assessing and managing the risks of the agency's IT acquisitions.
- The *E-Government Act of 2002* – aims to enhance the management and promotion of Electronic Government services and processes by establishing a Federal Chief Information Officer within the OMB, and by establishing a broad framework of measures that require using Internet-based information technology to enhance citizen access to government information and services, and for other purposes.
- *Paperwork Reduction Act of 1995 (PRA)* – requires agencies to use information resources to improve efficiency and effectiveness of their operations and fulfillment of their mission.
- *Federal Acquisition Streamlining Act of 1994 (FASA)* – requires agencies to define cost, schedule and performance goals for federal acquisition programs and to ensure that these programs remain within prescribed tolerances.
- *Government Performance and Results Act of 1993 (GPRA)* – requires agencies to set goals, measure performance, and report on their accomplishments.
- *Chief Financial Officers (CFO) Act of 1990* – focuses on the need to significantly improve the financial management and reporting practices of the federal government. Having accurate financial data is critical to understanding the costs and assessing the returns on IT investments.
- *Federal Information Security Management Act of 2002 (FISMA)* – requires agencies to integrate IT security into their capital planning and enterprise architecture processes, conduct annual IT security reviews of all programs and systems, and report the results of those reviews to the OMB.
- *OMB Circular A-130 Management of Federal Information Resources* – incorporates the PRA and provides guidance concerning information dissemination and sharing, planning, training, security, standards, privacy and records management.
- *OMB Circular A-11 Annual Budget Guidance* – provides unified budget guidance and emphasizes that estimates for information systems reflect the agency's commitment to planning and are consistent with the CCA.
- *OMB Circular A-123 Appendix D Compliance with the Federal Financial Management Improvement Act (FFMIA) of 1996* – defines new requirements for determining compliance with the FFMIA in order to transform a compliance framework to contribute to efforts to reduce the cost, risk, and complexity of financial system modernizations by providing additional flexibility for Federal agencies to initiate smaller-scale financial modernizations as long as relevant financial management outcomes (e.g., clean audits, proper controls, timely reporting) are maintained.

6. PROCEDURE

The CPIC process is a dynamic process in which proposed and ongoing initiatives are continuously monitored throughout their life cycles. Initiatives are evaluated both to assess the impact on future proposals and to benefit from any lessons learned. The CPIC process consists of four phases: Pre-Select, Select, Control and Evaluate.

The CPIC Process Overview describes the four phases using the following common elements:

1. **Purpose** – Describes the objective of the phase;
2. **Entry Criteria** – Describes the phase requirements and thresholds for entering the phase;
3. **Process** – Describes the type of justification, planning and review that will occur in the phase; and
4. **Exit Criteria** – Describes the actions necessary for proceeding to the next phase.

6.1 Process Overview

The term "capital planning and investment control process" means a management process for ongoing identification, selection, control and evaluation of investments in information resources. The process links budget formulation and execution, and is focused on agency missions and achieving specific program outcomes.

At the highest level, the CPIC process is a circular flow of EPA's IT investments through four sequential phases of Pre-Select, Select, Control and Evaluate.

- **Pre-Select Phase** – EPA assesses a new investment to determine if the investment supports EPA's strategic goals and objectives. The process includes an assessment of new IT investments which should continue into the Agency-wide Select Phase based on strategic alignment, a high-level business need justification, a determination that an investment is not a duplicate or redundant investment and other indicators (as customized by the program office). Also, see Appendix 1 for an overview of current guidelines about how to develop an investment justification.

- **Select Phase** – Project Managers compile the information necessary to support a detailed proposal assessment. Executive decision makers assess each proposed investment's support of EPA's strategic and mission needs. Investment analyses are conducted and the Information Investment Review Board (IIRB) chooses the IT investments that best support the mission of the organization, adhere to federal and Agency security requirements, and align with EPA's Enterprise Architecture (EA) approach (See Appendix 2).

- **Control Phase** – EPA ensures, through timely oversight, quality control and executive review, that IT initiatives are developed and implemented in a disciplined, well-managed and consistent manner.

- **Evaluate Phase –** Actual results of the implemented projects are compared to expectations. This is done to assess the project's impact on mission performance, identify any project changes or modifications that may be needed and revise the investment management process based on lessons learned. Mature or steady state systems are assessed to ascertain their continued effectiveness in supporting mission requirements, evaluate the cost of continued maintenance support, assess potential technology opportunities and consider retirement or replacement options.

Each of the four phases is structured in a similar manner using a set of common elements. These common elements provide a consistent and predictable flow and coordination of activities within each phase. The common elements are defined by the OMB-developed Major IT Business Case (commonly called Exhibit 300) template. Contact the CPIC Team (cpic@epa.gov) for the most recent version of the OMB Major IT Business Case, and question-by-question EPA guidance.1
Throughout the life cycle of every IT investment, changes occur. These may include changes in investment types like upgrades or downgrades (e.g. medium to major, or medium to lite), splits (i.e. divesting an investment into two or more investments), consolidation, and retirement. Any change to investment status requires completion of the "Investment Change in Status form" and the appropriate approval signatures. Contact the CPIC Team before submitting the form. Pursuant to OMB requirements, investments in the retirement phase must continue to report for a period of three consecutive years from the last year receiving funding. New investments, upgrades to a Major and both the splits and downgrades of Major investments do require IIRB approval. In addition, the EPA CPIC Program requires that downgrades continue to report for three years as the same original CPIC category. Upgrades of any EPA CPIC categories assume the new EPA CPIC category immediately for reporting purposes.

Completing one CPIC phase is necessary before beginning a subsequent phase. Each phase is overseen by the IIRB, which ultimately approves or rejects an investment's advancement to the next phase. This ensures that each investment receives the appropriate level of managerial review and that coordination and accountability exist.

6.1.1 CPIC Investment Owner

The CPIC process is primarily supported and maintained by the CPIC team. Contact the CPIC Team with questions about the CPIC Procedures or the CPIC process.

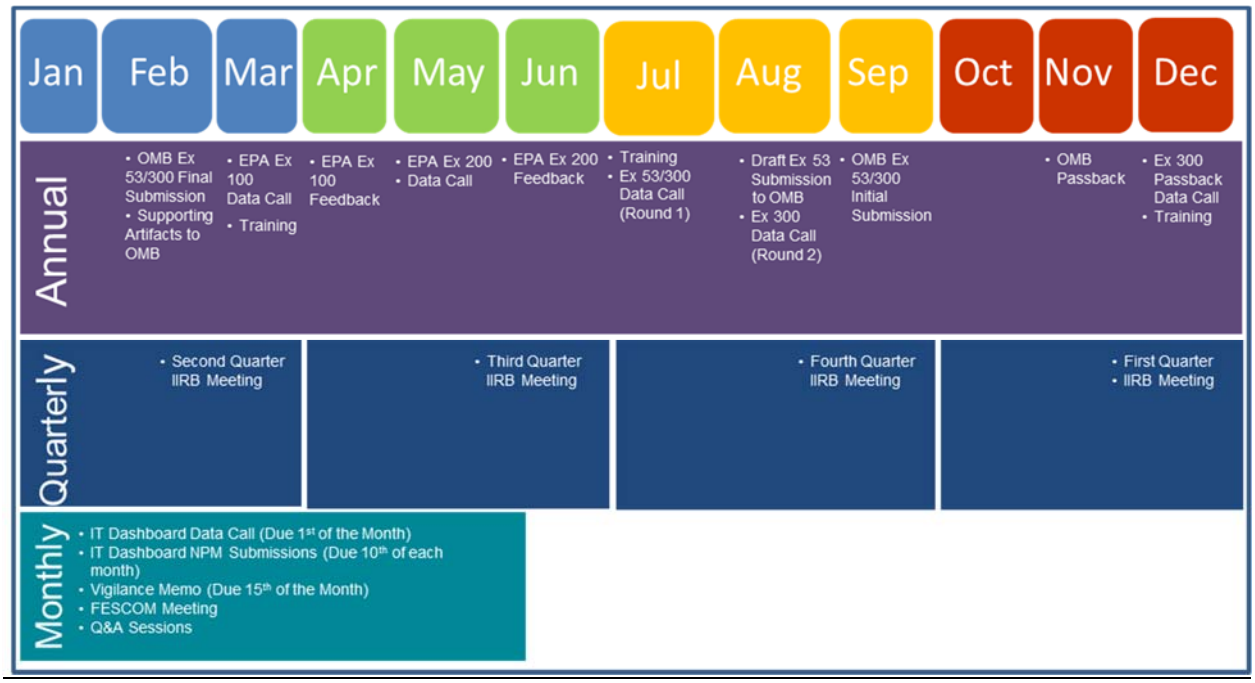
While the CPIC Team is responsible for the enterprise and portfolio process and guidance, each Program Office must maintain its own investment planning and management functions to fulfill CPIC goals and objectives.

At EPA, prior to submitting documentation to the CPIC Team, all investment justification documentation must be reviewed and signed by the Program Office's Senior Information Official (SIO).

[1] Each fiscal year (FY), there is a possibility that OMB guidance for the Exhibit Major IT Business Case process will vary from the previous year's guidance. To assist Major IT Business Case preparers, EPA produces a question-by-question guidance document separate from this document, and distributes it to the preparers. It contains more specific "how-to guidance" for each OMB Major IT Business Case question than these procedures, and can be found on the OEI intranet after publication. The current version of the OMB Major IT Business Case can be found by accessing the current version of Circular A-11, via the following link: http://www.whitehouse.gov/omb/circulars/index.html. Current versions of the Agency's CPIC guidance can be located via the following link: http://intranet.epa.gov/CPIC/.

6.1.2 EPA CPIC Calendar

Table 1. CPIC Calendar



6.2 The Pre-Select Phase

6.2.1 Purpose

Pre-Select is the phase for assessing a proposed investment to determine if the investment supports EPA's strategic goals and objectives. It is expected that each EPA program office will have a process to manage its portion of the EPA IT portfolio. In the subsequent Select phase, the EPA Chief Information Officer (CIO) working with Senior Agency Information Security Officer (SAISO) will only review IT investments that have been pre-selected by the program offices through their respective processes. This section describes how program offices may implement the Pre-Select process, and details the threshold of data quality and completeness, as well as security requirements that should be met before an investment is promoted for Agency review. Investment Categories are documented in Section 6.1 of the CPIC Policy.

6.2.3 Entry Criteria

Prior to entering the Pre-Select Phase, investments must have a defined business mission need that is anticipated to include an IT component.

6.2.4 Process

The Pre-Select Phase can happen anytime, but generally occurs when an IT investment portfolio is being compiled as part of the EPA 100 process. During the Pre-Select Phase, program offices will conduct a review process of the current investment list within their IT portfolio, and then the

new investments to avoid any redundancy. Program offices will promote their investments through their program office for reviews, assessments and recommendations, and then to the IIRB for final approval. This process will typically include a determination that an investment is not a duplicate or redundant investment, and other indicators (as customized by the program office). For any new investment, the Program Office is required to work with the Office of the Chief Financial Officer (OCFO) to establish an IT code for it, and submit a new investment request form to the CPIC Team if it's a major, medium or lite investment.

6.2.5 Exit Criteria

Prior to exiting the Pre-Select Phase, an IT code must be assigned to the new investment and the new investment request form must be submitted to the IIRB for a major, medium or lite investment. In addition, the investment must be presented to and reviewed by the IIRB and obtain IIRB approval for the mission need and concept.

6.3 The Select Phase

6.3.1 Purpose

During the Select Phase, the Program Office will explain the solution and finalize the CPIC submission that complies with Agency and federal planning and information requirements. In this phase, the Program Office will need to demonstrate to the IIRB that this investment is the best use of Agency funds to fill the mission performance gap and should be included in the Agency's IT Investment Portfolio.

The Program Office then prepares the initial investment justification for the IIRB approval. Initial investment justification documentation consists of a summary of the proposed system that includes a description of the system, its goals and objectives, a summary of spending, security requirements and its role in the Agency's EA. Refer to Appendix 1 regarding how to develop an investment justification.

Proper planning, documentation, and review not only are critical to funding, but also set success expectations for this solution and the Integrated Project Team (IPT) that manages it. For a non-major investment, the IPT should, at a minimum, consist of an Information Management Officer (IMO) and a Project Manager. For a major investment, its IPT must consist of at least the following members:

- IT Project Manager
- Business Process Owner or Subject Matter Expert (SME)
- Contracting Specialist
- IT Specialist
- IT Security Specialist

The Program Office will decide whether each member of IPT should be assigned full time to the project.

When the initial investment justification is approved, it will be the baseline by which to evaluate the progress and performance of the investment through the remainder of its life cycle. For more information about baseline management, please refer to OMB Information Technology Investment Baseline Management Policy.

6.3.2 Entry Criteria

Prior to entering the Select Phase, all of the following criteria must be met:

1. IIRB approval from pre-select phase was obtained;
2. A gap in Program office mission success was identified;
3. An IPT was established to analyze solutions to fill that gap;
4. The IPT developed solutions for the entire life cycle of this investment;
5. An investment funding justification was developed to propose the solution for funding; and
6. The Project Sponsor gained a funding commitment from the Office.

6.3.3 Process

Program offices will comply with the OMB Agency IT Portfolio (commonly called Exhibit 53) investment process for all Investments. Also, the following exhibits must be completed and filed with the EPA CPIC: EPA Exhibit 100 for Major, Medium and Lite, EPA Exhibit 200 for Major and Medium, and OMB Major IT Business Case for Major Investments. Definitions for each investment category can be found in the CPIC Policy Section 6.1. In addition, Program offices will work with the EPA Chief Architect (CA) to meet the System Life Cycle Management (SLCM) requirements. The Information Security Officers (ISOs) within their respective offices should conduct detailed IT security analyses and review business cases for security requirements.

The IIRB will review the recommended investments, decide the investment categories, and select those that will be included in the IT Investment Portfolio.

To obtain IIRB approval for the investment to be included in the IT Investment Portfolio, the investment owner must:

1. Submit the new investment form to the IIRB if it's a major, medium or lite investment;
2. Present the investment at IIRB meeting; and
3. Pass the SLCM Control Gate 1 and 2 reviews.

The preparation of the investment justification is important, as it provides documentation that supports the later development of a more detailed investment justification.

6.3.4 Exit Criteria

The requirements to exit the Select Phase are:

1. Completed listed in Table 2;
2. Made presentation at IIRB meeting;
3. Passed the SLCM Control Gate 1 and 2 reviews; and
4. Received approval from the IIRB to become part of the IT Investment Portfolio along with IIRB recommended investment category.

Projects that are not selected may be resubmitted for IIRB approval at subsequent reviews.

If the system(s) that support the investment meet the qualifications to be registered in the Registry of EPA Applications and Databases (READ) (see http://www.epa.gov/read) they must be registered within READ.

Table 2. Required documentation by Investment Category

Investment Category	New Investment Request Form	Investment Justification Documents	EPA Exhibit 100	EPA Exhibit 200	OMB Major IT Business Case (a.k.a. Exhibit 300)	OMB Agency IT Portfolio (a.k.a. Exhibit 53)
Major	X	X	X	X	X	X
Medium	X	X	X	X		X
Lite	X	X	X			X
Small and Other						X

6.4 The Control Phase

6.4.1 Purpose

The Control Phase and the Evaluate Phase are continuous. The objective of the Control Phase is to ensure that the acquisition, development and implementation of investments are done in a controlled manner on schedule and within budget. Emphasis is placed on the Project and Funding Plan. Additionally, investments should be closely tracked against the various components identified in the Risk Management Plan (Appendix 3).

Although EPA usually selects new investments annually, the Control Phase is an ongoing activity. It requires the continuous monitoring of ongoing IT initiatives through the development and implementation life cycle. Additionally, periodic summary reviews will be conducted during the Control Phase.

The focus of these reviews will be on the investment's progress through development and implementation, as costs and benefits change. Reviews also focus on schedule and performance goals being met; risks being minimized and managed; and whether the investment will continue to meet Agency goals and strategic needs.

Depending on the review's outcome, decisions may be made to suspend funding or make future funding releases conditional on corrective actions.

6.4.2 Entry Criteria

All investments must receive documented approval of the IIRB to enter the Control Phase. Documented approval validates that the investments have been selected and approval for funding has been granted. In the Control Phase, investments are required to comply with the EPA internal reporting requirements and OMB requirements. The CPIC Team collaborates with EPA's senior leadership team and other investment stakeholders to provide governance and reporting requirements for investments in the Agency's portfolio.

6.4.3 Process

During this process, planning, development, deployment, and maintenance and operations are documented. Ongoing monitoring and reporting throughout the investment life cycle are keys to successfully achieving the benefits outlined in the investment justification documentation. The primary objective of the Control Phase is to assess the performance of investments and to facilitate effective management of all IT investments. During the Control Phase, all investments are documented in the Electronic Capital Planning and Investment Control (eCPIC) System, and are reported to OMB in accordance with OMB's guidance. eCPIC is a Federal Government owned application that is designed to assist federal agencies with the management and control of their initiatives, portfolios and investment priorities.

During the Control Phase, all stakeholders of the investment work closely with the CPIC Team, which provides guidance and assistance in complying with EPA's and OMB's requirements. The reporting requirements for investments in EPA's investment portfolio are shown in Table 3, CPIC Investment Reporting Criteria. Additional guidance is provided in Section 6 of the EPA CPIC Policy.

Table 3. CPIC Investment Reporting Criteria

Control Phase Report	Reporting Criteria
OMB Major IT Business Case (a.k.a. Exhibit 300)	Annual Budget Year report to OMB for all Major IT investments.
OMB Agency IT Portfolio (a.k.a. Exhibit 53)	Annual Budget Year report to OMB for all IT investments.
OMB Agency IT Portfolio (Passback)	Amended Agency IT Portfolio report to OMB for all investments based on adjustments for the President's Budget.
OMB Monthly ITDB Submission	Report monthly cost, schedule, risk and operational performance to OMB for all Major IT Investments based on monitor and control of current budget year.
EPA 100	EPA's internal preliminary budget planning report of all Major, Medium and Lite IT investments to be included in the Agency's portfolio for the following Budget Year.
EPA 200	EPA's internal report of all Major and Medium IT investments to be included in the Agency's portfolio for the following Budget Year. It includes new updates since the EPA 100 submission.

In order to request investment data for all reports in the Control Phase as shown in Table 3, the CPIC Team issues separate data calls to all stakeholders. Typically, the stakeholders enter the required performance updates in eCPIC and the CPIC Team analyzes the data, compiles and presents the report to Senior Management stakeholders for approval. Documented prior approval by Senior Management is required for all reports submitted to OMB. For information about monthly IT Dashboard (ITDB) submission process, see Table 4.

Table 4. OMB Monthly ITDB Submission Process

Step	Day(s)	Process Step	Responsible Individual or Group
1	1	Develop the ITDB data call and disseminate to IMOs and PMs	ITDB Lead/CPIC Analyst (alternate)
2	1	Post a notice in eCPIC regarding the data call and its associated dates	ITDB Lead/CPIC Analyst (alternate)
3	7	Update the investment data for each major Investment	Project Manager (PM)
4	7	Respond to the ITDB data call via email and certify that updates have been made	Information Management Officer (IMO), Information Security Officer (ISO), Senior Information Official (SIO)
5	9	Verify updates and lock all major investments	ITDB Lead/CPIC Analyst (alternate)
6	9	Run a validation report and troubleshoot errors	ITDB Lead/CPIC Analyst (alternate)
7	14	Prepare the ITDB package and submit to ITSPB Chief for review	ITDB Lead/CPIC Analyst (alternate) and CPIC Team Lead
8	15	Submit ITDB package to CIO via e-mail	ITSPB Chief
9	15	Submit ITDB package to CMS	ITSPB chief
10	19	OTOP Director signs off on package and submits to CIO	OTOP director
11	19	CIO provides feedback on CIO ratings and approval to submit package	CIO
12	20-21	CPIC team submits data to OMB	ITDB Lead/CPIC Analyst (alternate) and CPIC Team Lead
13	20-21	Send CIO concurrence of the memo to CPIC Team	AA/OEI CIO and ISO

While the IT Dashboard process is usually monthly, certain situations may require that the monthly ITDB process be cancelled. Below is a list of situations where the monthly IT Dashboard may be cancelled:

- The ITDB is usually not submitted in September since the OMB Exhibit 300 submission is considered as an update to the ITDB as per OMB guidance.
- The ITDB is not usually submitted in January due to the fact that E-CPIC is not available to investment PMs while the OMB Exhibit 53 is prepared and submitted.
- The ITDB is usually not submitted in February since the OMB Exhibit 300 submission is considered an update to the ITDB as per OMB guidance.
- The ITDB may be cancelled due to other schedule conflicts as approved by the CIO and communicated by the CPIC team.

6.4.4 Exit Criteria

There are no exit criteria for the Control Phase. All investments must move from the Control Phase into the Evaluate Phase.

6.5 THE EVALUATE PHASE

6.5.1 Purpose

As noted in the Government Accountability Office's (GAO) *Assessing Risks and Returns: A Guide for Evaluating Federal Agencies' IT Investment Decision-Making*, "the Evaluation Phase 'closes the loop' of the Information Technology (IT) investment management process by comparing actual against estimates in order to assess performance and identify areas where decision-making can be improved." This is done to assess the investment's impact on mission performance, identify any investment changes or modifications that may be needed, and measure benefits to the Agency. All major investments must use Earned Value Management (EVM). The Evaluate Phase focuses on outcomes:

- Determine whether the IT investment met its performance, cost and schedule objectives;
- Ascertain the continued effectiveness in supporting mission requirements and evaluate the cost of continued maintenance support; and
- Consider potential retirement or replacement of the investment.

6.5.2 Entry Criteria

An investment must be in the Control Phase before entering the Evaluate Phase.

6.5.3 Process

The Evaluate Phase is a continuous operational phase to evaluate the following:

1. Monthly ratings by CIO, SAISO and SIO which identify the level of risk inherent to the investment;
2. Monthly review of the investment by the IMO and ISO;
3. IIRB review and approval of the EPA 100 report;
4. IIRB review and approval of the EPA 200 report;
5. IT security analyses and business case review for security requirements by ISO within their respective offices;
6. EA review of the investment for alignment with the EA Roadmap;
7. Support provided by the CPIC Team to the IPT and other stakeholders in preparation for the monthly ITDB reporting to OMB;
8. Annual evaluation by the IPT and approval by the IIRB of all Major investments in the EPA's portfolio in preparation for OMB Major IT Business Case submission;
9. Annual OMB Feedback on Major Investment as part of the Agency IT Portfolio President's Budget Passback submission;
10. Evaluation of alignment of artifacts in the investment justification documentation with current investment performance;
11. Evaluation criteria by the stakeholders for possible changes in the investment's criteria; and
12. Periodic TechStat reviews.

6.5.4 Exit Criteria

Exiting the Evaluate Phase means one of the following:

1. The investment will revert back to Control Phase automatically because it is meeting all performance goals and targets, it is performing as expected and it continues to enable services/business functions that meet program mission needs.
2. The investment may have to go back to Select Phase to get re-approved because significant

deficiency has been identified with the system which must be re-engineered or re-architected.

3. The Program Office or investment owner has determined that the investment has reached the end of useful life, and therefore has to be terminated.
4. The Program Office or investment owner has determined that the investment requirements, features or capabilities should be integrated into another existing investment, so this investment will be terminated and its functionality will be moved to another investment.

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7. RELATED DOCUMENTS

- Data Exchange Procedure http://intranet.epa.gov/oeiintra/imitpolicy/qic/ciopolicy/CIO_2122-P-04.0.pdf
- Data Standards Policy http://intranet.epa.gov/oeiintra/imitpolicy/qic/ciopolicy/2133.0.pdf
- Enterprise Architecture Governance Procedures http://intranet.epa.gov/oei/imitpolicy/qic/ciopolicy/CIO-2122-P-01.1.pdf
- EPA Acquisition Regulation (EPAAR) http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?sid=52c48b59c02b4481b8576a658c6e69ab&c=ecfr&tpl=/ecfrbrowse/Title48/48cfrv6_02.tpl
- EPA Records Management Policy http://intranet.epa.gov/oei/imitpolicy/qic/ciopolicy/CIO-2155.3.pdf
- FIPS 199 – Standards for Security Categorization of Federal Information and Information Systems http://csrc.nist.gov/publications/fips/fips199/FIPS-PUB-199-final.pdf
- General Accountability Office (GAO) Cost Estimating and Assessment Guide http://www.gao.gov/new.items/d093sp.pdf
- GAO Information Technology Investment Management (ITIM) Framework http://www.gao.gov/assets/80/76790.pdf
- Improving Agency Performance Using Information and Information Technology (Enterprise Architecture Assessment Framework v3.1) http://intranet.epa.gov/architec/pdfs/OMBs-EA-Assessment-Framework-v3-1-June-2009.pdf
- EPA Information Security Policy http://intranet.epa.gov/oei/imitpolicy/qic/ciopolicy/CIO-2150-3.pdf
- Privacy Policy http://intranet.epa.gov/oei/imitpolicy/qic/pdfs/cio2151.0.pdf
- Procedures for Preparing and Publishing Privacy Act Systems of Records Notices http://intranet.epa.gov/oei/imitpolicy/qic/ciopolicy/CIO2151-P-03.1.pdf
- Security and Privacy Controls for Federal Information Systems and Organizations - NIST SP-800-53 Rev. 4 http://nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.800-53r4.pdf
- Security Considerations in the System Development Life Cycle – NIST SP-800-64 Rev. 2 http://csrc.nist.gov/publications/nistpubs/800-64-Rev2/SP800-64-Revision2.pdf
- Integrating IT Security into the Capital Planning and Investment Control Process – NIST SP-800-65-Final http://csrc.nist.gov/publications/nistpubs/800-65/SP-800-65-Final.pdf
- EPA System Life Cycle Management (SLCM) Policy http://intranet.epa.gov/oei/imitpolicy/qic/ciopolicy/CIO_2121.1.pdf
- 25 Point Implementation Plan to Reform Federal Information Technology Management https://www.whitehouse.gov/sites/default/files/omb/assets/egov_docs/25-point-implementation-plan-to-reform-federal-it.pdf

8. ROLES AND RESPONSIBILITIES

Assistant Administrators and Regional Administrators, General Counsel, and Inspector General: Shall ensure, in their areas of responsibility, compliance with these procedures.

Chief Information Officer (CIO):

- Approves CPIC Policy and Procedures, ensuring Agency compliance with CPIC Procedures by providing guidance and tools to senior managers for program oversight. Assists senior agency officials with IT issues.
- Develops and maintains an Agency-wide information security program.
- Develops and maintains risk-based information security policies, procedures, and control techniques.
- Designates a senior agency information security officer (SAISO) to carry out CIO directives as required by FISMA.
- Ensures IT training for agency staff and oversees IT security personnel. Designs, implements, and maintains processes for maximizing the value and managing the risks of IT acquisitions.
- Works with the Quality and Information Council (QIC) to establish criteria, threshold levels, and formats for CPIC submissions.
- On the advice of the QIC and QIC's IIRB, the CIO shall review and select the investments to be funded, present proposed IT portfolios to the IIRB, provide final portfolio endorsements and recommend proposals to the CFO for investment consideration during the Agency's budget formulation process.
- Additionally, the CIO, in consultation with the CFO, Senior Procurement Official (SPE), SAISO and senior program officials on IIRB, shall provide the appropriate review, monitor compliance with this policy, present, recommend, control and evaluate decisions and recommendations.
- The CIO will review the requests for waivers from this policy, and grant the policy waivers whenever appropriate.

Chief Financial Officer (CFO): Shall provide, in consultation with the CIO and other senior program officials, the appropriate review and selection of investments to be funded, and monitored for compliance with this procedure.

Quality and Information Council (QIC): Chaired by the CIO, addresses and resolves intra-Agency cross-media, cross-program, and interdisciplinary information technology/information management and related policy issues.

QIC's Information Investment Review Board (IIRB): Advises and assists the QIC on all matters pertaining to information investment management. The IIRB supports the QIC in making recommendations to the CIO on the appropriateness of information investments, and monitors the Agency's IT investments from inception to completion throughout the pre-select, select, control, and evaluate phases of the CPIC program.

Senior Procurement Executive (SPE): Ensures that acquisition strategy considerations for each project are appropriate and investment proposals are consistent with the EPA acquisition policies and procedures.

Chief Architect (CA): The CA is responsible for leading the development, alignment and maintenance of the Agency's target Enterprise Architecture in conjunction with the SLCM Policy. EPA's SLCM Framework facilitates the identification, planning, and implementation of IT systems by integrating EA, CPIC, SLCM, and Security life cycles (See Figure 3 in SLCM Procedure). The CA shall certify that Solutions Architectures required for IT projects are compliant with the

Enterprise Architecture (EA). EA is the discipline that synthesizes key business and technology information across the organization to support better decision-making. EA provides useful and usable information products and governance services to the end-user while developing and maintaining the current and target (to-be) architectures and transition plan for the organization. The information in the EA includes: results of operations, business functions and activities, information requirements, supporting applications and technologies, and security.

Senior Information Officials (SIO): SIOs shall coordinate the development of the information resource investment proposals within their respective offices. This includes monitoring the implementation of information resource investments in order to ensure that the information technology utilized and managed by their organization supports their business needs and mission to achieve EPA's strategic goals. SIOs shall also review and concur on waiver requests to the CPIC Policy and the CPIC Procedure.

Information Management Officers (IMO): IMOs shall support the SIOs with development of information resource investment proposals within their respective offices, and monitor the implementation of information resource investments. IMOs shall review and concur on waiver requests to the CPIC Policy and the CPIC Procedure.

Senior Agency Information Security Officer (SAISO): The SAISO is responsible for carrying out the CIO responsibilities under the EPA Information Security Policy and relevant information security laws, Executive Branch policy, and other directives. The SAISO will also maintain professional qualifications required to administer the functions of the EPA Information Security Program. For more information about SAISO's role and responsibilities, please refer to Information Security – Roles and Responsibilities Procedures.

Information Security Officers (ISO): The ISOs shall conduct detailed information security analyses, and review CPIC business cases for security requirements within their respective offices, as well as support system owners and project managers in developing and maintaining CPIC information security documentation.

Senior Budget Officers (SBO): SBOs shall support the IMOs, SIOs, and Senior Resource Officials (SROs) in the process of developing information resource investment proposals within their respective offices, and monitor the implementation of information resource investments. The SBOs ensure the alignment of resources between the Agency's authoritative budget source and the IT investments' business cases.

Project Managers (PM):

- PMs develop and maintain viable, appropriate and achievable CPIC business cases that support EPA's goals for information management, thereby supporting the Agency's senior management in the process of selecting, reviewing, and evaluating IT investments.
- PMs ensure that the investment's goals and objectives are aligned with those of the Agency through the CPIC process.
- PMs must be qualified in accordance with federal and Agency requirements for IT project management, and must possess documented knowledge and skills as prescribed by the qualifications guidance.
- PMs shall work with the ISO within their respective offices to ensure that products developed incorporate security and meet user requirements and provide performance measures to evaluate the security of the delivered IT initiative.

9. DEFINITIONS

Capital Planning and Investment Control (CPIC) Process: A process to acquire, implement, maintain, and dispose of IT. The CPIC process is a dynamic process in which IT investments are selected and then continually monitored and evaluated to ensure each chosen Capital Investment is well managed, cost effective and supports the mission and strategic goals of the government organization. The process integrates strategic planning, budgeting, procurement, and the management of IT in support of Agency missions and business needs, as defined in the Clinger-Cohen Act (CCA) of 1996.

Control Phase (of CPIC Process): Process to ensure that IT initiatives are developed and implemented in a disciplined, well-managed, and consistent fashion; that project objectives are being met; that the costs and benefits were accurately estimated; and that spending is in line with the planned budget. This promotes the delivery of quality products and results in initiatives that are completed within scope, on time, and within budget.

Enterprise Architecture: A strategic information asset base that provides a definition of the mission, the information and technologies necessary to perform the mission and transitional processes for implementing new technologies in response to changing mission needs.

Lite IT Investment: Has development, operating, or maintenance annual expenditure costs equal to or greater than $250K, but less than $2M.

Medium IT Investment: Has development, operating, or maintenance annual expenditure costs equal to or greater than $2M, but less than $5M.

Evaluate Phase (of CPIC Process): Processes and guidance on comparing actual to expected results once an IT investment has been implemented; it provides an understanding of how to evaluate "mature" systems and their continued effectiveness in supporting mission requirements, and evaluates the cost of continued support or potential retirement and replacement.

Information Technology (IT):

- Any equipment or interconnected system or subsystem of equipment used in the automatic acquisition, storage, manipulation, management, movement, control, display, switching, interchange, transmission or reception of data or information.
- IT includes equipment used by the executive agency directly or used by a contractor under a contract with the executive agency that:
  - Requires the use of such equipment, or
  - Requires the use, to a significant extent, of such equipment in the performance of a service or the furnishing of a product.
- IT also includes computer, ancillary equipment, software, firmware, and similar procedures, services (including support services), and websites, subscriptions to electronic services and products, and related resources.

IT Investment: The expenditure of resources on selected information technology or IT-related initiatives with the expectation that the benefits from the expenditure will exceed the value of the resources expended (GAO-04-394G, IT Investment Management, A Framework for Assessing and Improving Process Maturity, March 2004, v.1.1). The acquisition and management of an IT asset through its life cycle.

IT Portfolio: A collection of the Agency's IT investments.

IT Project: A temporary planned endeavor funded by an approved information technology investment; thus achieving a specific goal and creating a unique product, service, or result. A Project has a defined start and end point with specific objectives that, when attained, signify completion.

Life Cycle: The duration of all activities associated with the investment from initiation through the disposal of assets.

Major IT Investment: An IT Investment that meets at least one of the criteria listed below:

- Is designated by the EPA CIO as critical to the EPA mission or to the administration of programs, finances, property or other resources
- Is for financial management and obligates more than $500K annually
- Requires special management attention because of its importance to the mission of EPA
- Has a significant program or policy implication, or congressional interest
- Has high executive visibility
- Has high development, operating, or maintenance annual expenditure costs greater than $5M

Performance Management Baseline: A primary tool to measure IT Investment, IT project, or IT contract performance and identifying risk. The baseline identifies the work that will be accomplished, and defines the cost and schedule to accomplish that work. The Performance Measurement Baseline, which consists of the cost, schedule, and scope baseline, is derived from the scope of work described in a hierarchical Work Breakdown Structure (WBS) – which, in turn, decomposes the entire project into a logical structure of tasks and activities tied to deliverables and to assigned responsibilities – and the associated WBS dictionary. The Performance Measurement Baseline comprises:

- The cost baseline, which defines the approved, projected, time-phased, life-cycle costs for acquiring, operating, and disposing of the physical and/or logical system represented by the scope baseline.
- The schedule baseline, which is the approved timeline for acquiring, operating, and disposing of the physical and/or logical IT asset/system.
- The scope baseline, which represents the configuration of the product of the project as developed and described in the project's technical documentation.

The Performance Measurement Baseline is integrated where the time-phased cost baseline is consistent with the schedule baseline, and the costs are related to acquiring, operating, and disposing of the physical and/or logical IT asset represented by the scope baseline.

Select Phase (of CPIC Process): Process to ensure that IT investments are chosen that best support the Agency's mission and align with EPA's approach to enterprise architecture.

System (Information System): NIST defines an information system as "A discrete set of information resources organized for the collection, processing, maintenance, use, sharing, dissemination, or disposition of information" (NIST SP 800-18 Rev. 1). Federal guidance gives agencies flexibility in constituting an information system and system managers must establish system boundaries to define the information resources allocated to the system. A single system may consist of several subsystems (*a component of a system that performs specific functions*). These subsystems fall under the governance of the overall system and should be included in the system documentation, but they do not require separate documentation. A system or subsystem may include information resources e.g. applications, web pages, databases, or spreadsheets. On their own these resources

are not considered an information system, but once combined with other resources to perform a specific function or process it becomes a system or subsystem.

System Life Cycle: Complete time span of an IT system from the origin of the idea that leads to the creation of the system to the end of its useful life. The life cycle is divided into discrete phases with formal milestones established as points of management control.

10. WAIVERS

Waivers to the requirements of these procedures must be submitted by the SIO to the CIO for final approval. All waivers to the CPIC Policy and Procedures must be approved by the CIO.

11. RELATED PROCEDURES, STANDARDS AND GUIDANCE

- Earned Value Management (EVM) Procedures
  http://intranet.epa.gov/oei/imitpolicy/qic/ciopolicy/2120-p-01.2.pdf
- System Life Cycle Management (SLCM) Procedure
  http://intranet.epa.gov/oei/imitpolicy/qic/ciopolicy/CIO_2121-P-03.0.pdf
- System Life Cycle Management (SLCM) Requirements Guidance
  http://intranet.epa.gov/oei/imitpolicy/qic/ciopolicy/CIO_2121-G-01.0.pdf
- Information Security – Roles and Responsibilities Procedures
  http://www.epa.gov/irmpoli8/policies/CIO-2150-3-P-19-1.pdf

12. MATERIAL SUPERSEDED

The procedures supersedes EPA Information Directive: CIO 2120-P-02.0 IT CPIC Procedures.

Ann Dunkin
Chief Information Officer
U.S. Environmental Protection Agency

APPENDIX 1
Develop Investment Justification

Investment justification is the tool the Agency uses to ensure that its IT dollars are invested wisely, and put to use in areas where the Agency's needs are greatest. They also help to ensure that the system owner has a solid plan in place for achieving results that provide mission-critical capabilities and efficiencies where they did not exist previously.

Investment justification development involves matching the investment to business requirements and Agency strategic goals and showing that risk, security, cost and development have been planned for appropriately. The goal of the investment justification is to show the Agency that this investment is the best alternative for the Agency.

The investment justification will include the following sections as well as the documents listed in the appendices.

Investment Description

The investment description summarizes the investment from a user and technical perspective. It describes who the customer is, what the need is, and what the system solution is.

It describes the system assumptions, such as:

- On what other Agency departments will this system rely?
- What are the data and process inputs that the system requires to function properly?

The description may include support for assumptions such as user interview documentation, process diagrams (showing touch-points between departments), data diagrams, etc.

Justification

The justification will begin with a performance gap analysis to identify mission gaps in EPA's strategy. A performance gap analysis is a forward-looking and continuous analytical activity that evaluates the capacity of the Agency and/or the Agency's assets to satisfy existing and emerging demands for services.

Examples of potential needs include those related to economic and demographic trends, statutory requirements, or an industry-developed technological opportunity.

The Project Sponsor determines how analysis should be conducted to validate, quantify, and prioritize the proposed need by challenging the IPT to "think outside the box." It is important to have a functionally diverse project team that will provide different perspectives to this strategic analysis. The types of questions the team can ask itself are:

- What are the strengths, weaknesses, opportunities and threats to the Agency that have resulted in this performance gap?
  - Identify and quantify projected demand for services based on input from diverse sources such as: state and educational communities; architecture and strategic plans; and performance and supportability trends of established systems.
  - Identify the affected user and customer bases.
- What are the Agency's goals, and the organizational pains that will prohibit those goals from being reached?
- Does the Agency have the organizational capacity to fulfill its goals now and in the future?

Identify and quantify projected technological opportunities that will enable EPA to perform its mission more efficiently and effectively.

- Identify and quantify the need for existing and projected services based on information from field organizations, the EA, and IT investment portfolio that defines what is in place and what is approved for implementation.

The justification should clearly describe either: the capability shortfall and the impact of not satisfying the shortfall on customers and stakeholders, or the technological opportunity and the increase in efficiency it will achieve. Do this by describing how the investment will help achieve EPA's strategic goals. The justification should also include efficiency, for staff or external partners, and confirm a lack of duplication. In addition, the justification should address integration requirements and dependencies, use of shared services and data dictionary alignment to enable data analytics. The justification must also describe the criticality and timeframe of the need, and roughly estimate the resources the Agency should commit to resolving it based on worth, criticality, and the scope of likely changes to the Agency's IT Investment Portfolio. This information forms the basis for establishing the priority of this need in competition with all other Agency investments.

Performance Goals and Measures

The Government Performance and Results Act (GPRA) provides a mandate to federal agencies to account for program results through the integration of: strategic planning, budgeting, and performance measurement. GPRA requires agencies to prepare strategic plans, annual performance plans and annual performance reports, by linking program effectiveness with expenditure of funds. Performance goals and measures are a critical part of the investment's justification documentation, and provide a baseline by which to evaluate its success.

The goals and measures should be designed by leveraging the federal enterprise architecture (FEA) performance reference model (PRM) framework which is comprised of three layers:

- **Goal (Top Layer)**: It allows investment owners to identify and align their investment justification to specific performance elements of EPA's GPRA strategic plans. The PRM recognizes three types of goals and objectives currently subject to GPRA reporting: Strategic Goals (long term, five year plan), Agency Priority Goals (duration of 24 months), and Cross-Agency Priorities (set by the Administration every four years).

- **Measurement Area (Secondary Layer)**: It recognizes up to 13 Measurement Areas that help the investment owner to describe how the investment supports the achievement of performance elements in the GPRA. This layer looks at 13 areas for setting performance indicators that can show progress towards business results and/or technology performance in support of government operations improvements.

- **Measurement Category (Third Layer)**: It recognizes from two to seven Measurement Categories under each Measurement Area. This layer refines the Measurement Area by establishing the metrics to establish targets that can help to determine business results and technology performance.

Each measure should be categorized using a PRM Measurement Category. Investment owners must ensure that the measures are balanced and drawn from multiple measurement categories.

The Project Sponsor will facilitate developing quantifiable performance measures that focus on outcomes.

The Project Manager is responsible for documenting the goals and measurements in a format for CPIC review. Be sure to include baseline trends for comparison to new targets.

Acquisition Strategy

A smart acquisition strategy can help mitigate many of the project risks discussed in the previous section. If using contractors to develop the system, EPA promotes the use of fixed price or performance-based contracts to help spread schedule and cost risk away from the Agency and onto the contractor.

The IPT's Contracting Officer can provide advice to help establish a contracting strategy that will mitigate risk to the government while utilizing performance-based contracts.

The use of pre-packaged components over custom programs usually reduces the amount of time to implementation, and also alleviates small programming bugs and testing issues.

Also, the acquisition strategy must allow for a solution that is Section 508 compliant. Section 508 of the Rehabilitation Act of 1973 requires that federal agencies develop, procure, maintain or use electronic and IT that is accessible to federal employees and citizens with disabilities.

APPENDIX 2
Enterprise Architecture Analysis

The CPIC process emphasizes alignment of the investment with Federal and Agency architectures. The IIRB and OMB will rate investments that closely map to the reference models higher than those that do not. Investments that don't map to the architecture reference models are at risk of losing funding.

Enterprise Architecture (EA) analysis will review the alignment of proposals to the EPA and Federal Enterprise Architectures.

To learn more about EPA's EA, reference the Enterprise Architecture and E-Government or engage the Program Office Architect on the IPT staff. Contact the Offices' EA personnel or the EA Team at OEI for more help. There are also web pages on the EPA website that contain information on the EPA's EA, accessible via the following link: http://intranet.epa.gov/architec. Additionally, the Federal Enterprise Architecture (FEA) Framework also contains a wealth of information on the FEA Reference Models.

The IIRB will evaluate the new solution against alternatives to determine if it is the most viable solution that encompasses all layers. If not, the solution may need to be redesigned before the investment is approved.

Answers to the following questions will help determine if the investment solution has been adequately planned:

- Does the solution support core/priority mission functions that need to be performed by the Agency and the federal government?
- Have business process efficiencies been considered as part of the solution?
- Does the solution provide opportunities for interfaces or system sharing with other Agencies?
- Does procurement for the solution take advantage of enterprise-wide IT acquisition contracts?
- Does the solution support work processes that have been simplified or otherwise redesigned to reduce costs, improve effectiveness, and make maximum use of commercial-off-the-shelf (COTS) technology?
- Does the solution align with Agency standards for EA Planning, Security & Privacy, and E-Government Planning?

APPENDIX 3
Risk Management Plan

OMB requires that a risk inventory and assessment is completed for all major IT investments, and that risk is actively managed. Many projects fail because risks, both obvious and hidden, aren't identified and planned for.

The first thing to know is that there is no way to eliminate risk completely. The focus of a Risk Inventory in the CPIC Select Phase is to identify risks and plan how to manage risks to an appropriate level in order to protect invested funds. OMB requires the Risk Inventory to cover the 19 risk types listed below.

1. **Schedule** – the project schedule slips.
2. **Initial Costs** – Actual costs exceed estimates.
3. **Life-cycle Costs** – Actual costs exceed estimates.
4. **Technical Obsolescence** – The technology chosen becomes outdated prior to the end of the life-cycle, and the return on investment isn't realized.
5. **Feasibility** – The selected alternative is wrong.
6. **Reliability of Systems** – The system doesn't meet uptime standards and expectations.
7. **Dependencies and Interoperability Between This System and Others** – Success of this investment relies heavily on the success and continuation of other systems.
8. **Asset Protection** – The investment is difficult to protect, for example it is located in an unsecured building.
9. **Risk of Creating a Monopoly for Future Procurements** – The investment relies on one contractor for operations and maintenance, so costs cannot be controlled through procurement procedures.
10. **Management Capability** – The Program Offices do not have the capacity to manage the investment and surrounding processes and systems.
11. **Risk of Failure –** The investment has a high probability of not closing the mission gap and will not return the benefits expected.
12. **Organizational and Change Management** – Employees are resistant to learning new processes and accepting the new investment.
13. **Business** – Decision to develop and implement the investment is a bad business decision.
14. **Data/Information** – Success of the investment relies heavily on accurate data and information.
15. **Technology** – Success of the investment relies heavily on technology components.
16. **Strategic** – The investment will not close mission performance gaps.
17. **Security** – Protected data may be compromised. Classify the risks here as high, medium or low.
18. **Privacy** – Data contained in the system is regulated by privacy laws and requires special planning.
19. **Project Resources** – The development of the system relies heavily on specific project resources, or required resources are scarce.

In the documentation, describe how each risk type will potentially affect the project. If the risk type will not affect the project or investment, describe why. Think about the ways in which risks can be managed, such as "Security risk will be managed by conducting periodic security reviews", or "The project will be managed by a PMI- certified Project Manager." Include the date the risk was identified and the probability of occurrence.

The risk plan should include milestones and target dates for each risk mitigation strategy. In the Risk Inventory, describe what milestones need to occur until the risk is adequately managed.