United States Department of the Interior

OFFICE OF THE SECRETARY
Washington, DC 20240

TAKE PRIDE IN AMERICA

OCIO DIRECTIVE 2008-016

JUN 20 2008

To: Heads of Bureau and Offices

From: Michael J. Howell
Chief Information Officer

Michael Howell

Subject: Integrated Baseline Review Policy

This directive supersedes OCIO Directive 2005-14.

Policy: To ensure better oversight of Department of the Interior's (Interior) information technology (IT) investments and improve execution and performance, this directive requires that all major[1] investments have an independent Integrated Baseline Review (IBR) completed and approved by the Investment Review Board (IRB) before development-modernization-enhancement (DME) development begins.

Scope: All major projects (major investments authorized to go through DME) must have an IBR that assesses project planning, acquisition, budget and authorization documentation for quality, alignment, completeness and regulatory compliance which includes the:

- Risk adjusted baseline;
- Product scope, including appropriate architecture artifacts;
- Management scope, including the project's Integrated Management & Control Plan;
- Risk artifacts;
- Capital Planning & Investment Control (CPIC) and budget artifacts;
- Authorizing Records-of-Decisions;
- and Acquisition artifacts, including the project's ANSI/EIA 748-A Earned Value Management Systems (EVMS) Standards[2] compliance information.

Authorities:

FAR 34.202 Integrated Baseline Reviews:

(a) When EVMS is required, Government must conduct an IBR.
(b) Purpose of IBR:

(1) Verify technical content and realism of the related performance budgets, resources, and schedules;
(2) Provide a mutual understanding of inherent risks in offerors'/contractors' performance plans and the underlying management control systems; and
(3) Formulate a plan to handle these risks.

[1] OCIO Directive 2005-002, Implementation of Information Technology, Capital Planning and Investment Control Guide. (http://www.doi.gov/ocio/cp/cpic_guide.pdf)
[2] American National Standards Institute (ANSI) Government Electronic Industry Technology Association (EIA) Earned Value Management Systems (EVMS) Standards (November 2006)

Additionally, as stated in the Office of Management and Budget's Memorandum M-05-23 Improving Information Technology (IT) Project Planning and Execution:

> To better ensure agency and oversight authority efforts result in improved execution and performance, we now want you to:
>
> 1. For all new major IT projects, before beginning development, ensure cost, schedule and performance goals are independently validated for reasonableness.[5]
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>
> 5 An independent assessment may be performed by a qualified source provided such source is not involved in the project's development, implementation, management, or direct supervision. Provided they are qualified, such source may include the agency Inspector General, current independent verification and validation reviewers, or any other source internal to the agency or outside the agency including another agency. Agencies currently using Integrated Baseline Reviews (IBRs), may substitute an IBR for an independent assessment. Reasonable baselines are accurate, relevant, timely, and complete.

Purpose: The IBR provides insight to the project's strengths, weaknesses and risks. The IBR process:

- Determines and assesses whether the appropriate analysis and planning due diligence has taken place, resulting a mature plan needed for successful project execution. A mature plan includes the fully defined and validated scope, resources and management & control strategy; it includes plans for handling (managing) risk. Successful project execution means the project can produce the desired business goals, performance outcomes and maintain less than 10% variance of its planned baseline.
- Determines and assesses whether there is a mutual understanding between the government and contractor regarding Interior's business goals and desired performance outcomes; and what is necessary to successfully achieve the goals and outcomes.
- Documents project issues and recommendations for resolution.

Life Cycle Timing: In the context of Interior's *integrated life cycles* (ILC), the IBR is started, completed and approved before beginning DME Development, Illustration 1.

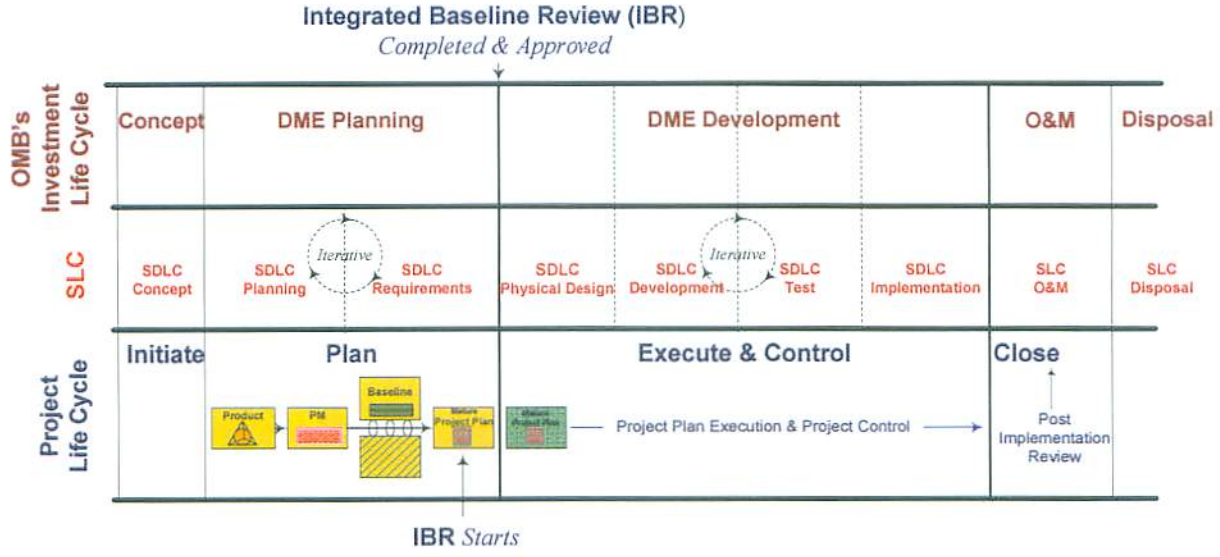

Illustration 1: IBR and Interior's Integrate Life Cycle

IBR Process[3]**:** The Department of the Interior's independent Integrated Baseline Review's process is a two part process, summarized as follows:

Part One: Assess Government's Project Planning and Preparation Due Diligence

- ❑ Identify Government's required project management artifacts, synchronizing project artifact nomenclature with ANSI standard artifact nomenclature.
- ❑ Assess project planning (Project Plan) and other artifacts for quality, alignment and completeness, including:
  - Risk adjusted baseline.
  - Product scope, including an appropriate alignment with architecture artifacts.
  - Management scope, including the project's Integrated Management & Control Plan.
  - Risk artifacts.
  - Capital Planning & Investment Control (CPIC) and budget artifacts.
  - Authorizing Records-of-Decisions.
  - Acquisition artifacts.
- ❑ Assess acquisition regulatory compliance, including EVMS-Standards compliance.
- ❑ Perform an initial analysis of findings.
- ❑ Present the initial analysis of findings to the Integrated Project Team (IPT).
- ❑ Interview principals for clarifications and explanations.
- ❑ Update findings.
- ❑ Develop and present the IBR Report (Part One) to the IPT for acceptance.

Part Two: Assess Contractor's Proposal Appropriateness

- ❑ Assess contractor's proposal for quality, alignment and appropriateness of the:
  - Management Plan addressing the Government's requirements.
  - Risk Adjusted Baseline for identified product scope, management scope and risks.
- ❑ Validate vendor's EVM corporate and/or program capability[4].
- ❑ Assess the proposal's (project level) compliance with EVM Standards.
- ❑ Update findings.
- ❑ Develop and present the final IBR Report to the IPT for acceptance.

Discussion:

The IBR evaluates and validates 1) projects plans and 2) CPIC & budget records-of-decisions; and 3) acquisition due diligence for regulations compliance. An independent assessment must be performed by a qualified "source" (organization or person) provided such source is not involved in the project's development, implementation, management, or direct supervision of project personnel. Provided they are qualified, such source may include Interior's Inspector General, current independent verification and validation reviewer, or any other source internal or outside the agency including another agency.

"Part One" of the IBR process *cross-walks* project artifact nomenclature with ANSI standard artifact nomenclature; and then evaluate governments produced artifacts to the standards. Standards include: ANSI/EIA 748-A EVMS Standards and Interior's Project Planning Standards based on the Project Management Institute (PMI), Project Management Body Of Knowledge (PMBOK), Third Edition, ANSI/PMI 99-001-2004.

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[3] Interior adopted key aspects the Department of Defense's[1] basic IBR framework: The Program Manager's Guide to the Integrated Baseline Review Process, June 4, 2003.

[4] National Defense Industry Association (NDIA) Program Management Systems Committee (PMSC), Surveillance Guide, October 2004 and EVMS Acceptance Guide, November 2006.

"Part Two" of the IBR process evaluates whether the contractors' proposal and management controls appropriately address the project requirements approved by Interior's Investment Review Board; and meet Federal acquisition regulation compliance, including the requirements for EVMS.

EVMS compliance means adherence to EVMS standards, specifically the thirty-two EVM criteria for compliance.

The IBR policy is based on project planning standards. Attachment 1: Project Planning Standard indentifies the major elements and artifacts of a mature project management plan. The Project Planning Standard is intended to offer a framework for organizing the project plan elements and artifacts. It is a synthesis of project management *best practices* and EVMS standards.

The Office of the Chief Information Officer has an *indefinite delivery indefinite quantity* (IDIQ) contract that provides IBR services. This IBR services contract has contractors that have been pre-selected and certified for independence and capability. The contract offers an option for easy cost-effective access to Integrated Baseline Review services.

Questions: Please direct questions regarding this directive to Will Brimberry, Program Manager, Project Management Office, at 202-208-6052.

cc: Bureau and Office Chief Information Officers

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Subject: Project Planning Standards

Guide Purpose: This document summarizes the major elements and artifacts of a project management plan and how they are developed.

Although its use is not intended to be 100% prescriptive, it is intended to offer a framework for organizing the project plan's elements and artifacts. When an artifact is not included, there should be some rationale given for its omission. This guide is a synthesis of project management *best practices* (see Standards).

Through Interior's independent *Integrated Baseline Review* (IBR) process, these standards are used to evaluate and validate the project's plans for quality, completeness and alignment to Interior's records of decisions and acquisition regulations.

Standard Reference: These standards are based on the Project Management Institute (PMI), Project Management Body Of Knowledge (PMBOK), Third Edition, ANSI/PMI 99-001-2004. Key references come from the PMBOK's Chapter 4.1 and Glossary.

Standard Definition: The project management plan defines how the project is initiated, planned, executed, monitored and controlled, and closed. The project plan documents the collection outputs (artifacts) from the planning processes of the Planning Process Group. This includes:

- Project management processes selected by the project management team.
- Level of implementation of each selected process.
- Tools and techniques descriptions selected to accomplish the selected processes.
- Description of how the selected process will be used for the specific project.
- Description of how work will be executed to accomplish the project objectives.
- Description of how change will be monitored and controlled.
- Description of how configuration management will be performed.
- Description of how the performance baseline will be maintained and used.
- Stakeholder communication requirements and plan.
- Selected project life cycle for multi-phase project.
- Management reviews processes for content, extent, and timing to address open issues and pending decisions.

The PMBOK glossary defines a project plan as "formal, approved document that defines how the project is executed, monitored and controlled. It may be summary or detailed and may be composed of one or more subsidiary management plans and other planning documents."

General Discussion: The project plan is used to:

- Guide project execution.
- Document project planning methodologies (rules) and assumptions.
- Document project planning decisions regarding alternatives choices.
- Facilitate communication among stakeholders.
- Defines key management reviews as to content, extent, and timing.
- Provide a baseline for progress measurements and project control.

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The project plan has several required elements, including:

- Project Authorization (Charter)
- Project Scope (that includes the product scope and project management scope),
- Integrated Management Control Plan
- Project Baselines (Schedule and Cost Estimates)

A collection of artifacts, the project plan's key elements are graphically represented in Illustration 1, as:

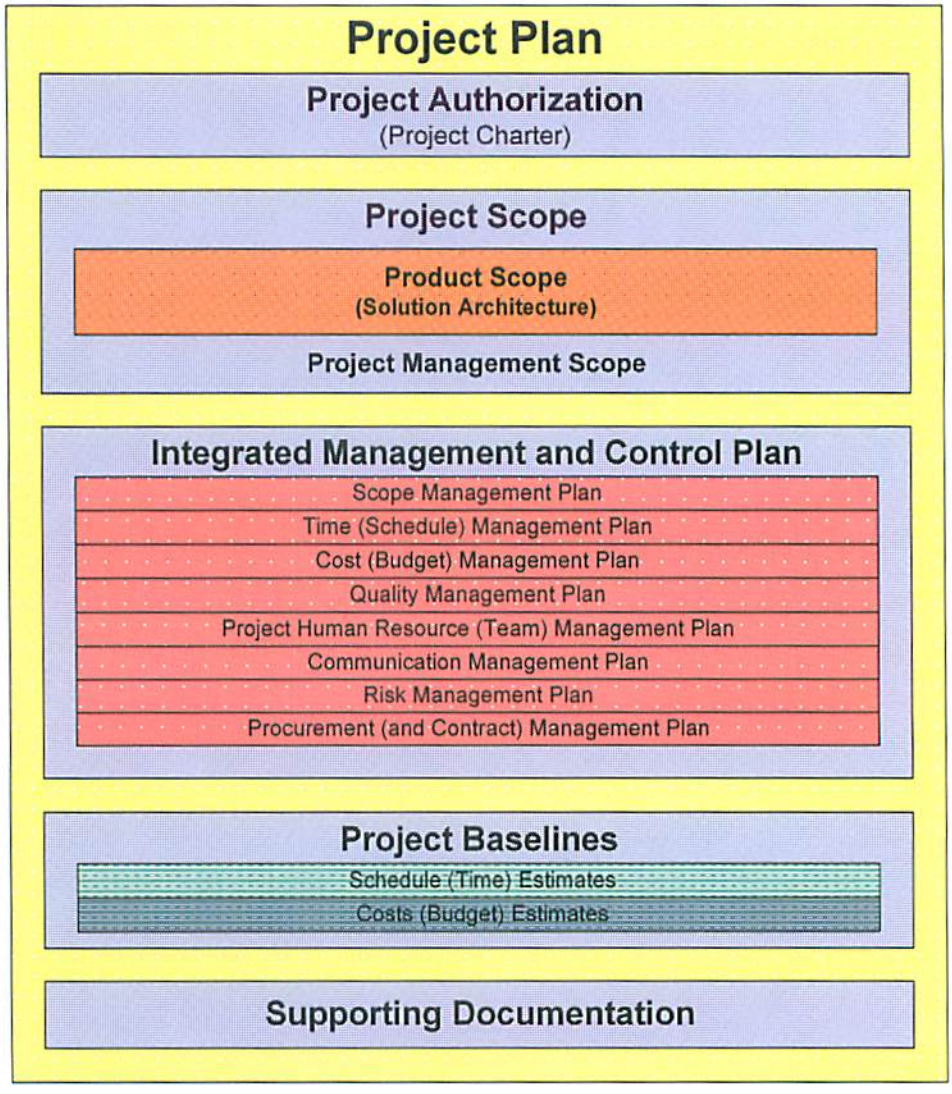

Illustration 1: The Project Plan's Key Elements

The plan is a consistent and coherent document that guides the project's execution. Threaded throughout, the plan references outputs of the other planning processes (including strategic planning artifacts). The project plan is the product of an iterative planning process. For example, the initial draft may include generic resource requirements and a sequence of activities; while the

final versions of the plan will include specific resources information and explicit activity dates.

Project Management and Governance Commentary: For Interior's Investment Review Board (IRB) to make an informed decision, it is expected that the project plan is mature, supporting realistic schedule and cost estimates. The project plan is based on a detailed project scope statement. To support the "*why*" a project should be allowed go from the "DME Plan" phase to the "DME Develop" phase, the IRB's decision dependents on quality planning information. The mature plan is assessed for standards adherence and reasonableness via the *Integrated Baseline Review* process. In the context of Interior's *integrated life cycle* (ILC), the IBR must be completed at the end of DME Plan phase, Illustration 2.

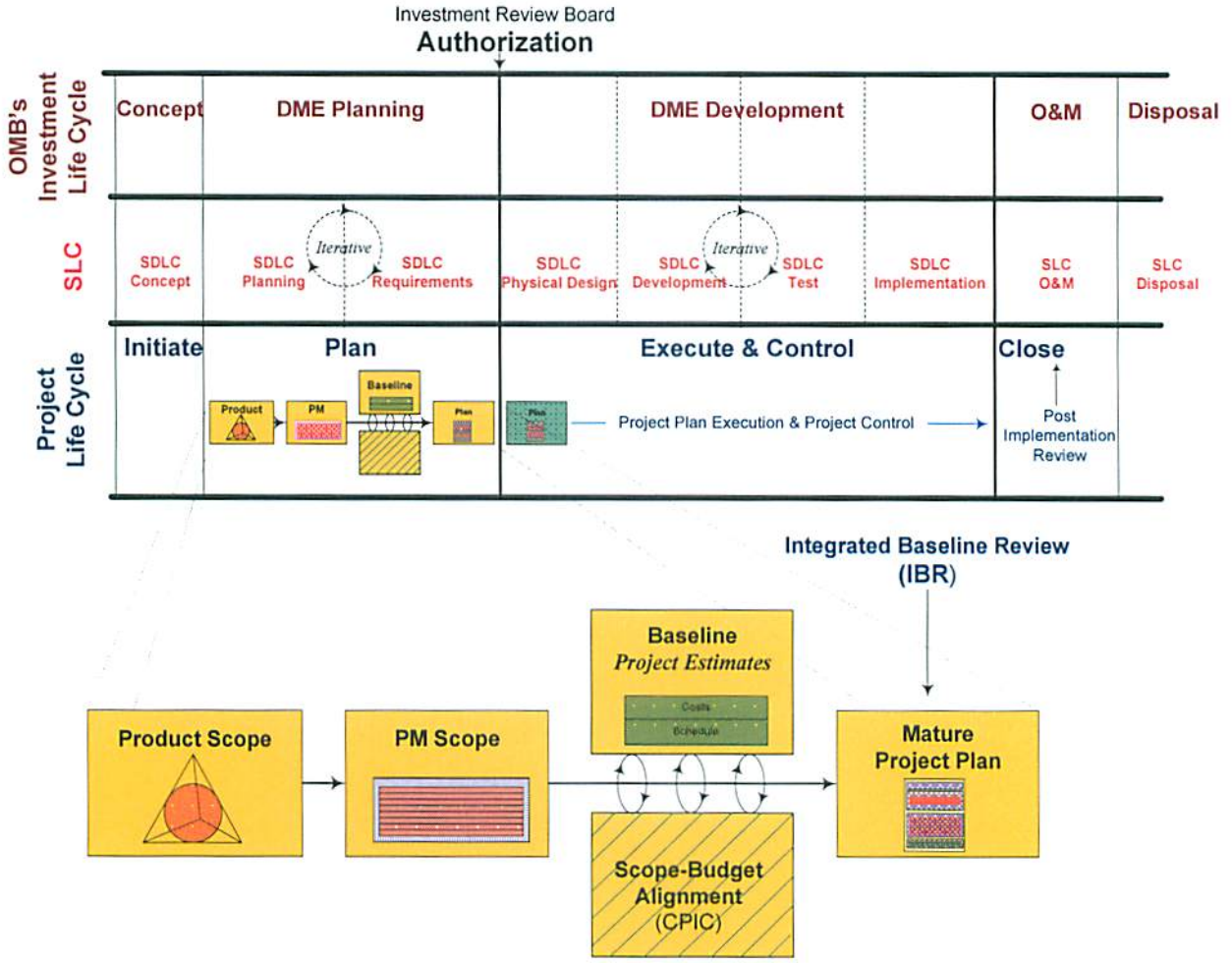

Illustration 2: Interior's Integrated Life Cycle (ILC) and Project Planning

The project planning process facilitates the development of a realistic mature project plan that is accepted by the organization (bought into). Generally, the PM planning process produces the *product scope* first, *management* (PM) *scope*, *cost & schedule estimates* leading to a *mature project plan* evaluated by an IBR.

The major artifacts (PMBOK reference) that make up the plan include:

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- Project Authorization Statement or Charter (Section 4.1)
- Project Management Approach or Strategy (Section 4.3)
- Scope Statement (Section 5.2.3.1)
  - Activity Sequence Analysis/Network Diagram (Section 6.2)
- Work Breakdown Structure, WBS (Section 5.3.3.2)
- Performance (Measures) Baseline
  - Schedule Estimate (Selection 6.5.3)
  - Major Milestones (Section 6.1.3.3)
  - Cost Estimates (Selection 7.1.3.1)
  - Cost Baseline (Selection 7.2.3.1)
- Integrated Management Control Plan
  - Scope Management Plan (Section 5.1.3.1)
  - Schedule (Management Plan) (Section 6.5.3.8)
  - Cost (Budget) Management Plan (Section 7.1.3.4)
  - Quality Management Plan (Section 8.1.3.6)
  - Staffing (HR) Management Plan (Section 9.1.3.3)
  - Communication Management Plan (Section 10.1.3.1)
  - Risk Management Plan (Section 11.1.3.1)
  - Procurement (and Contract) Management Plan (Section 12.1.3.1)

Within the plan, special attention should be given to the **work breakdown structure** (WBS) and **earned value management system**[1] (EVMS). The WBS is use as a planning and control & monitoring tool for all aspects of the project. EVMS is a set of integrated processes used for project monitoring & control. EVMS processes include planning, organizing, authorizing, accounting and monitoring & control.

The following sections describe and detail the key groupings of major artifacts of the project plan.

Section I:	Project Authorization (Charter) Documentation
Section II:	Project Scope
Section III:	Integrated Management Control Plan
Section IV:	Project Estimates (Schedule and Cost Baselines)
Section V:	Supporting (Background) Documentation

"Section VI" provides a recommended project plan outline.

[1] American National Standards Institute (ANSI) Government Electronic Industry Technology Association (EIA) Earned Value Management Systems (EVMS) Standards, November 2006

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Section I: **Project Authorization (Charter) Documentation**

Project authorization is documentation that officially recognizes the project and its formal start. By convention, project authorization document is usually the Project Charter. The project authorization document is a relatively short document. Stating directly or by summarized reference, the document should identify:

- Business and business need(s). This may be the project's mission statement that may summarize and/or reference more robust documents.
- Proposed solutions (products and/or services) that address the business need. A proposed solution may be in the form of a statement of objective. A proposed solution may reference specific Federal or Interior standards and requirements for adherence.
- Acquisition strategy addressing the business need. The acquisition strategy may explain how alternative will be identified. An example of a proposed acquisition approach/strategy is: "first, perform market research of COTS of solutions, followed by project planning, selection, development, testing, and implementation."
- The authorized use of organizational resources for the project.
- Project Manager (PM) and the PM's authorities.

The project authorization document is issued by the Program (Business) Executive of the project at a level appropriate to the project needs. It authorizes the project manager to start the project; manage the project; and to apply organizational resources for project activities. When a project is performed under contract, the signed contract may serve as the vendor's project charter.

Formatting: When possible and appropriate, the project authorization section uses the project charter or text from the Project Charter. If not, the authorization section should summarize the organizational documentation that gives the project authority. For more formatting information reference Project Management Institute's (PMI), Project Management Body Of Knowledge (PMBOK), Third Edition, ANSI/PMI 99-001-2004.

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Section II: **Project Scope**

The project scope defines all authorized work of the project. The project scope statement is based on detailed product scope (orange sphere) and project management scope (magenta sphere), Illustration 3.

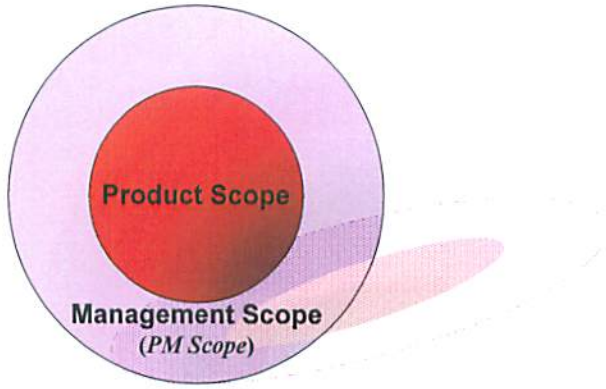

Illustration 3: Project Scope

The product scope includes all technical outputs and work activities produced throughout the development phases of the systems life cycle (SLC), Illustration 1. The project's management scope includes the planning, monitoring, control and quality assurance work activities produced throughout the project management life cycle, Illustration 1. Project scope is the output of the scope management processes.

Product Scope: The first body of work, product scope (addressing "*what is to be done*") is derived from the architecture/systems engineering process. Often the product scope includes the solutions architecture that should align to the enterprise architecture (EA) or system engineering analysis, Illustration 4.

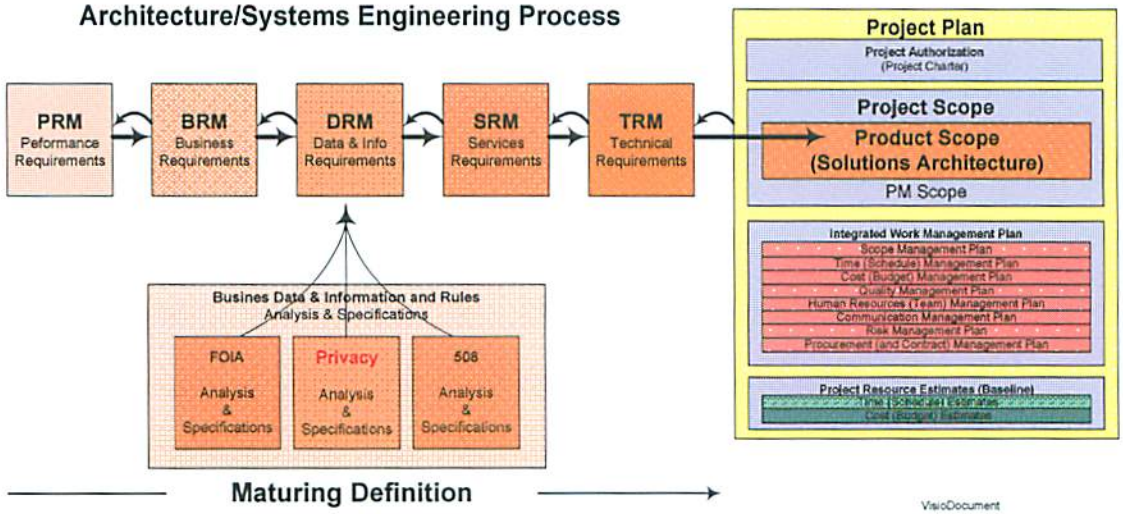

Illustration 4: Architecture/Systems Engineering Analysis derives Product Scope

The architecture/engineering analyzes, classifies, aligns (the respective reference models), documenting the business performance, business functions, business information, technical services and technical requirements. This process leads to the mature product scope that may include the solutions architecture. In the project plan, the product scope collects this information into one coherent document. Produced by other efforts, this information may originate in other artifacts, including:

- EA and Segment Architecture (including the Business Process Model)
- Business Alternatives Analysis
- Information and Records Management Plan (including the Logical Data Model)
- Privacy Analysis
- FOIA Analysis
- 508 Compliance Analysis
- Security Plan
- Solutions Architecture (Use Cases, Component, Deployment and Operational Models)
- Service and Technical Alternatives Analysis
- Requirements (Functional and Non-Functional Business)

Functional requirements are identified, defined and validated against business processes, use cases and the logical data model which should be in alignment; represented in Illustration 5.

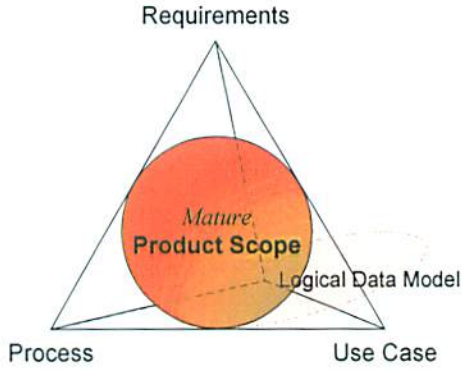

Illustration 5: Product Scope-Requirement Alignments
(*Business Process* • *Use Cases* • *Data Model*)

The representation standards include:

- Business Processes are defined using international Business Processing Model Notation Standards as specified by Object Management Group, OMG (OMG.org, document: dtc/2006-08-03).
- Use Cases are defined using international diagramming (UML) Standards as specified by OMG (OMG.org)

- Logical Data Models are defined adhering to IDEFIX data modeling standards in third normal form (3NF) convention.

Non-Functional business requirements must be identified and defined, adhering to Interior standards and Federal regulations (like A-130 requirements).

Project Management (PM) Scope: The second body of work, project management scope addresses "*how it gets done,*" (see next section: *Integrated Management and Control Plan*).

The PM Scope includes all of the project's management planning, monitoring & control and quality assurance events and deliverable. Examples of these events are scope validation exercises, quality assessment & assurance meetings, risk evaluation events, procurement planning meetings, team orientation meetings, status and budget reports and project status presentations.

In summary, the project scope includes all product and management (PM) work. Adhering to OMB's Circular A-11 policy, all funded work must be "authorized" by the agency's governing body; Interior's authorizing body is our Investment Review Board. Interior's IRB performs the important capital planning and investments control's (CPIC) portfolio decision-making function.

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Section III: **Integrated Management and Control Plan**

The Integrated Management and Control Plan addresses *how* the project's management (*PM*) operates and *why*. It details the integrative management processes of:

- Integrated change management process and procedures.
- Formal acceptance process.
- Monitoring & controlling triggering mechanisms.
- *How* EVMS standards will be applied.

This section details the management activities that contribute to the overall integrated management plan. The management activities include:

- Scope Management
- Schedule (Time) Management
- Cost (Budget) Management
- Quality Management
- Human Resource (Team) Management
- Communication Management
- Risk Management
- Procurement (and Contract) Management

The integration management processes include the 1) project plan development, 2) project plan execution, 3) integrated change control. Pulling together all of the management practices, these process relationships are represented in Illustration 6.

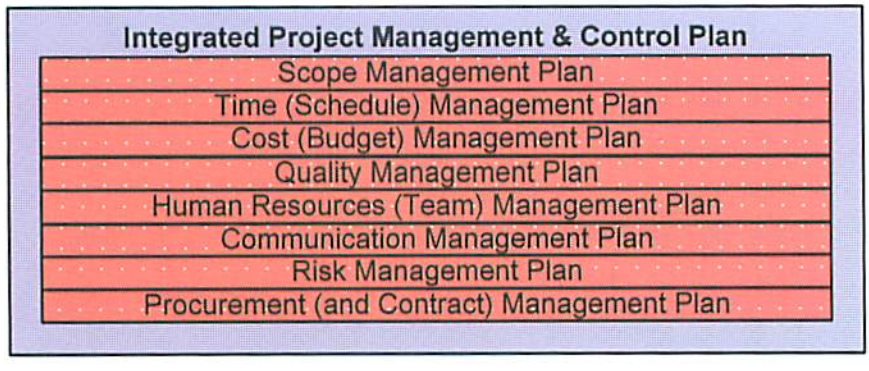

Illustration 6: Integrated Management and Control Plan

The integrated management & control plan details the integration of all management activities. All sub-processes interact with each other. These sections summarize *how* they will be/was determined, explaining its respective methodologies (ground rules) & assumptions (GR&A)[2], decisions and management approach used.

Below, the management areas are summarized for their respective management focus, planning elements, key sub-artifacts and their management processes.

[2] GAO Cost Estimate Guide, GAO-05-1134SP, July 2007, Chapter 9

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Scope Management Plan: Scope management identifies the project deliverables and all related work is accomplished. It includes 1) product outputs and work activities and 2) all project management work activities. This management section summarizes how they will be/were determined, including the planning methodology, assumptions and decisions. The scope management section underpins the verification and change control processes, including formal acceptance process. Key sub-artifacts produced in this section are:

- ❑ Project Objectives
- ❑ Product Scope (Functional & Non-Functional Business Requirements)
- ❑ Management Scope (PM Scope)
- ❑ Work Breakdown Structure (WBS)
- ❑ [The Project's] Organizational Breakdown Structure (OBS)
- ❑ WBS Dictionary
- ❑ Scope Verification Criteria and Verification Procedures
- ❑ Scope Management Control Plan

Management processes include: 1) scope planning, 2) scope definition, 3) create the WBS, 4) scope verification and 5) scope change control. Note: scope verification, a part of the formal acceptance process, is tightly coupled with integration and quality management's acceptance criteria.

Schedule (Time) Management Plan: Time management addresses the schedule issues and schedule needed complete project objectives. It includes the project schedule. This management section summarizes how it will be/was determined, including its planning methodology, assumptions and decisions. Key sub-artifacts produced in this section are:

- ❑ Project Schedule (Schedule Baseline)
- ❑ Project Network Diagram
- ❑ Other time artifacts (like Gantt" chart and milestone chart)
- ❑ Updated WBS
- ❑ Schedule Management Control Plan

Management Processes include the 1) activity definition, 2) activity sequencing, 3) activity resource estimating, 4) activity duration estimating, 5) schedule development, and 6) schedule control.

Cost (Budget) Management Plan: Cost management addresses the cost of the resources needed to complete project activities. *Additionally, project cost management should also consider the effect of project's decisions on the product's overall costs, often referred to as the life-cycle costing or total cost of ownership.* It includes the project cost estimates and baseline. This management section summarizes how they will be/were determined, including the planning methodology, assumptions and decisions. Key sub-artifacts produced in this section are:

- ❑ Resource Requirements
- ❑ Cost Estimating Methodologies (Ground Rules) and
- ❑ Assumptions[3]

[3] See Section V: Project Baselines (Schedule and Costs Estimates)

- ❑ Cost Estimates (Cost Baseline)
- ❑ Updated WBS
- ❑ Cost Management Control Plan

Management processes are 1) cost estimating, 2) cost budgeting, and 3) cost control.

Quality Management Plan: Quality management assures the product characteristics meet the stakeholders' expectation. The plan defines how the process assures that the product characteristics will be realized to meet the stakeholders' expectation. It includes details of work quality. This management section summarizes how they will be/were determined, including the planning methodology, assumptions and decisions. Key sub-artifacts produced in this section are:

- ❑ Quality Checklists
- ❑ Quality Metrics
- ❑ Quality Baseline
- ❑ Process Improvement Plan
- ❑ Quality Management Control Plan

Management processes includes 1) quality planning, 2) quality assurance, and 3) quality control.

Project Human Resource Management Plan: Human resource (HR) management addresses what appropriate human resources (internal staffing and external stakeholders) are needed and how to use them to accomplish project objectives. It includes descriptions of the team members and (all) stakeholders. This management section summarizes how they will be/were identified, including the planning methodology, assumptions and decisions. Key sub-artifacts produced in this section are:

- ❑ Stakeholder Analysis
- ❑ Role & Responsibility Assignments (Responsibility Matrix)
- ❑ Project Organization Charts (and project directories)
- ❑ Staffing Management Control Plan

Management processes include 1) human resource planning, 2) acquiring project team, 3) team development, and 4) managing project team.

Project Communication Management Plan: Communication management addresses how the project ensures timely and appropriate generation, collection, dissemination, storage, and disposition of project information. It includes stakeholder communications requirements. This management section summarizes how they will be/were determined, including the planning methodology, assumptions and decisions. Special attention should be given to earned value management (EVM) as an integrating practice and technique for project control and performance reporting. Key sub-artifacts produced in this section are:

- ❑ Control Data & Reporting Requirements
- ❑ Performance Reporting Specifications
- ❑ Communications Management Control Plan

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Management processes include 1) communication planning, 2) information distribution, 3) performance reporting, and 4) managing stakeholders.

Risk Management Plan: Risk management addresses how risks are systematically identified, analyzed and responded to throughout the project. It includes descriptions of the project risks. This management section summarizes how they will be/were determined, including the planning methodology, assumptions and decisions. Key sub-artifacts produced in this section are:

- ❑ Risk Inventory with Thresholds
- ❑ Ranked and Prioritized Probability-Impact Matrix
- ❑ Response Plan (with workarounds and corrective action plans)
- ❑ Risk Management Control Plan

Management processes include 1) risk management planning, 2) risk identification, 3) qualitative risk analysis, 4) quantitative risk analysis, 5) risk response planning, and 6) risk monitoring and control.

Procurement Management Plan: addresses how goods and service are attained from outside the performing organization. It includes descriptions of the project procurement strategies and actions. This management section summarizes how they will be/were determined, including the planning methodology, assumptions and decisions. Key sub-artifacts produced in this section are:

- ❑ Acquisition strategy
- ❑ Statement of Objectives/Work (SOO/SOW)
- ❑ Make-or-Buy decisions
- ❑ Request for changes procedures
- ❑ Product (Performance) acceptance criteria and procedures
- ❑ Request for Proposal (RFP) and Others (RFI and RFC)
- ❑ Contract
- ❑ Contract change process
- ❑ Contract Closure criteria and procedures
- ❑ Procurement Management Control Plan

Management processes include 1) plan purchases and acquisitions, 2) plan contracting, 3) request seller responses, 4) select sellers, 5) contract administration, and 6) contract closure.

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Section IV: **Project Baselines (Schedule and Costs Estimates)**

Schedule Estimate: This section of the project plan details the risk-adjusted schedule baseline, estimate assumptions and estimating methodologies. The schedule estimate is primarily the product of the Schedule (Time) Management processes.

Cost (Budget) Estimate: This section of the project plan details the risk-adjusted cost baseline, estimate assumptions and estimating methodologies. The cost (budget) estimates are primarily the products of the Cost (Budget) Management processes.

Particular attention must be given to the Government Accounting Office's (GAO) Cost Assessment Guide. "The objective of the technical baseline is to provide in a single document (artifact) a common definition of the program-including a detailed technical, program, and schedule description of the system-from which all *life cycle costs estimates* (LCCE) will be derived . . ."[4]

Discussion[5]: "Developing a good cost estimate requires stable program requirements, access to detailed documentation and historical data, well trained and experience cost analyst, a risk and uncertainty analyst, the range of confidence levels, and adequate contingency and management reserves. Cost estimating is nonetheless difficult in the best of circumstances. It requires both science and judgment. And, since answers are seldom–if ever–precise, the goal is to find a 'reasonable' answer. However, the cost estimator typically faces many challenges in doing so. These challenges often lead to bad estimates, which can be characterized as containing poorly defined assumptions, no supporting documentation, no comparisons to similar programs, inadequate data collection, inappropriate estimating methodology, irrelevant or out-of-date, no basis or rationale for the estimate, and no defined process for generating the estimate."

The WBS is the foundation of every project, because it defines in detail the work necessary to accomplish the project objectives. A typical WBS and WBS Dictionary detail the requirements, resources, and tasks that must be accomplished. The WBS should be defined in terms of the product oriented elements. This is considered a best practice in cost estimating because a product oriented WBS ensures that all cost are captured.[6]

"Cost estimates are typically based on limited information and therefore need to be bound by the constraints that make estimating possible. These constraints are usually in the form of [ground rules and] assumptions that bind the estimate's scope, establishing baseline conditions the estimate will be built from. Because of the many unknowns, cost analysts must create a series of statements that define the conditions the estimate is to be based on. These statements are usually in the form of ground rules and assumptions (GR&A)."[2] Ground rules are the agreed upon estimating standards (methodologies) that provide guidance and minimize conflicts in definitions. Assumptions are a set of judgments about past, present, or future conditions postulated as true in the absence of positive proof. These assumptions are not arbitrary and should be based on expert opinion. They should be treated as risks.

[4] GAO Cost Estimate Guide, GAO-05-1134SP, July 2007, Chapter 7
[5] GAO Cost Estimate Guide, GAO-05-1134SP, July 2007, Chapter 2
[6] GAO Cost Estimate Guide, GAO-05-1134SP, July 2007, Chapter 8

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Section V: **Supporting (Background) Documentation**

The supporting documentation section quotes, summarizes and/or references documentation that gives more meaning, understanding, context, authority to the project plan. Supporting documentation may include:

- Mission or Strategic Plans.
- Organizational Records-of-Decisions.
- Budget and Capital Planning & Investment Control (CPIC) documentation.
- Organizational Policies and Standards.
- Legal Mandates and Legislation.
- Technical and Management Standards.
- Lessons Learned.
- Business Issues Details (resulting in a formal project).
- Project Manager's and Team Credentials.
- Prior Business and Technical Studies.
- Business and Technical Alternative Studies.
- Issues Paper on Business or Project Assumptions and Limitations.

Formatting: If possible and appropriate, the supporting documentation should be directly quoted. If not, all documentation should be accurately concisely summarized and authoritatively referenced. If available, all documentation may include authoritative internet addresses.

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Section VI: **Project Plan Outline** (Recommended for Consideration)

This is not intended to be 100% prescriptive, it is intended to offer a framework for organizing the project plan elements and artifacts. If an artifact is not included, there should be some rationale given for its omission. When developing the project plan, consider the following items and format:

i.	Project Plan Introduction
*i.*1	Project management planning processes selected
*i.*2	Level of implementation of each selected planning process
*i.*3	Tools and techniques descriptions selected to accomplish the selected processes
*i.*4	Description of how the selected process will be used for the project planning
*i.*5	Stakeholder communication and plan for the planning process
*i.*6	The plan's management reviews processes for content, extent, and timing
1.0	Project Authorization
1.1	Business Needs
1.1.1	Project Objectives
1.2	Proposed (Generalized) Solution
1.3	Acquisition Strategy
1.4	Resource Authorization
1.5	Project Manager, Contract Information and PM's Authorities
1.6	Charter
2.0	Project Scope
2.0.1	Work Breakdown Structure (WBS) & Organizational Breakdown Structure (OBS)
2.0.1.1	WBS Dictionary
2.1	Product Scope Statement
2.1.1	Product Life Cycle Deliverables
2.1.1.1	Design Deliverables
2.1.1.2	Development Deliverables
2.1.1.3	Test and Validation Deliverables
2.1.1.4	Implementation Deliverables
2.1.2	Product Scope Requirements
2.1.2.1	Business Processes Requirements
2.1.2.2	User (Use Case) Requirements
2.1.2.2.1	Access Controls and Assurance Requirements
2.1.2.2.1.1	Security Requirements
2.1.2.2.2	Records and Data Requirements
2.1.2.2.3	Privacy Requirements
2.1.2.2.4	FOIA Requirements
2.1.2.2.5	508 Requirements
2.1.2.3	Business Records and Data Management Requirements
2.1.2.3.1	Quality Assurance Requirements
2.1.2.3.2	Management Requirements
2.1.2.3.3	Logical Data Relationships (Model)
2.1.3	Architecture/System Engineering Analysis Summary
2.2	Management (PM) Scope Statement
2.2.1	Life Cycle Management Plan
2.2.1.1	Design Management Plan
2.2.1.2	Development Management Plan
2.2.1.3	Test and Validation Management Plan
2.2.1.4	Implementation Management Plan
2.2.3	Management (PM) Scope Requirements

2.2.4	Management (PM) Scope Analysis Summary
3.0	Integrated Management and Control Plan
3.1	Integrated Control Plan
3.1.1	WBS-OBS Description: *and how it will be used to control the project*
3.1.1.1	WBS Dictionary meta-data information
3.1.2	EVMS Description: *and how it will be used to control the project*
3.2	Scope Management Plan
3.2.1	Project Objectives Information: *and how they were determined*
3.2.2	Product Scope (Functional & Non-Functional Business Requirements)
3.2.3	Management Scope (PM Scope)
3.2.4	Scope Verification Criteria and Verification Procedures
3.2.5	Scope Management Control Plan
3.3	Schedule Management Plan
3.3.1	Project Schedule (Schedule Baseline)
3.3.2	Project Network Diagram
3.3.3	Other time artifacts (like Gantt" chart and milestone chart)
3.3.4	Schedule Management Control Plan
3.4	Costs Management Plan
3.4.1	Resource Requirements
3.4.2	Cost Estimating Methodologies
3.4.3	Cost Estimates (Cost Baseline)
3.4.4	Methodology (Ground Rules) and Assumptions
3.4.5	Cost Management Control Plan
3.5	Quality Management Plan
3.5.1	Quality Checklists
3.5.2	Quality Metrics
3.5.3	Quality Baseline
3.5.4	Process Improvement Plan
3.5.5	Quality Management Control Plan
3.6	Project Human Resource Management Plan
3.6.1	Stakeholder Analysis
3.6.2	Role & Responsibility Assignments (Responsibility Matrix)
3.6.3	Project Organization Charts (and project directories)
3.6.4	Staffing Management Control Plan
3.7	Communication Management Plan
3.7.1	Control Data & Reporting Requirements
3.7.2	Performance Reporting Specifications
3.7.3	Communications Management Control Plan
3.8	Risk Management Plan
3.8.1	Risk Inventory with Thresholds
3.8.2	Ranked and Prioritized Probability-Impact Matrix
3.8.3	Response Plan (with workarounds and corrective action plans)
3.8.4	Risk Management Control Plan
3.9	Procurement Management Plan
3.9.1	Acquisition strategy
3.9.2	Statement of Objectives/Work (SOO/SOW)
3.9.3	Make-or-Buy Decisions
3.9.4	Request for changes procedures
3.9.5	Evaluation criteria
3.9.6	Request for Proposal (RFP) and Others (RFI and RFC)
3.9.7	Contract

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3.9.8	Contract Change Process
3.9.9	Formal Acceptance and Contract Closure Procedures
3.9.10	Procurement Management Control Plan
4.0	Project Baseline
4.1	Schedule Estimate (details)
4.2	Cost Estimate (details)
5.0	Supporting Documentation