PROJECT MANAGEMENT GUIDELINE

SECTION 3 – PROJECT PLANNING PHASE

Section 3: Project Planning

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Introduction

Planning Phase Overview

Project planning is the process of defining an orderly arrangement of activities and resources to deliver a unique product or service. The project plan is the primary document developed during the planning phase and communicates project activities in terms of: what tasks will be performed; who will perform the tasks; when will the tasks be performed; what resources will be applied to accomplish the tasks; and how the tasks will be sequenced. Time spent developing the appropriate structure for organizing and managing project activities improves performance in the Execution and Control Phase. Figure 3.1 depicts the components of Commonwealth Project Management, as discussed in Section 1. The Project Planning Phase begins after approval of the project charter and concludes with approval of the project plan.

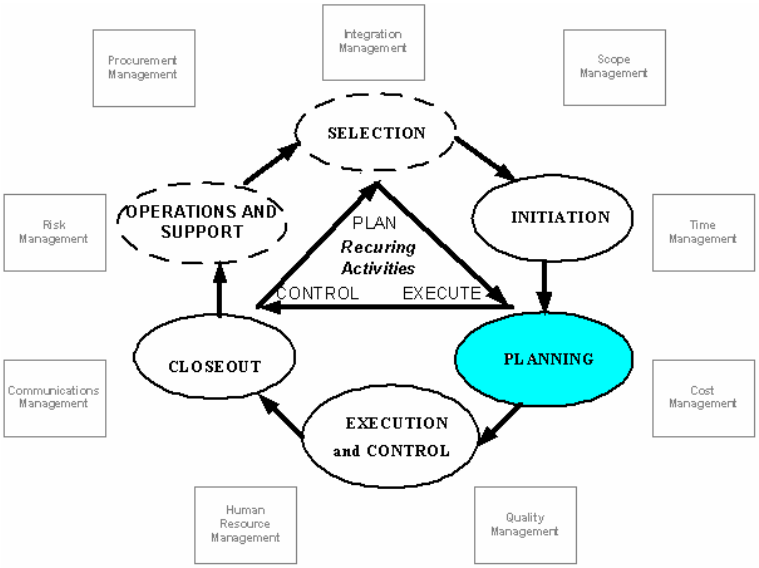

Figure 3.1
Project Management Knowledge Areas, Lifecycle, and Recurring Activities

Activities and Documents in the Planning Phase

The project plan is actually a combination of numerous component plans that are developed during the Project Planning Phase. The Project Planning Phase consists of two sets of interrelated processes, Core Processes and Facilitating Processes. The relationships between the Core and Facilitating Processes are depicted below (See figure 3.2.).

Core Processes represent a set of critical activities that are dependant on each other and are executed in an explicit order. A brief description of the Core Processes cycle and the resulting

plan deliverables is given below. For each plan deliverable, a more detailed description and a development template with instructions is provided in this section.

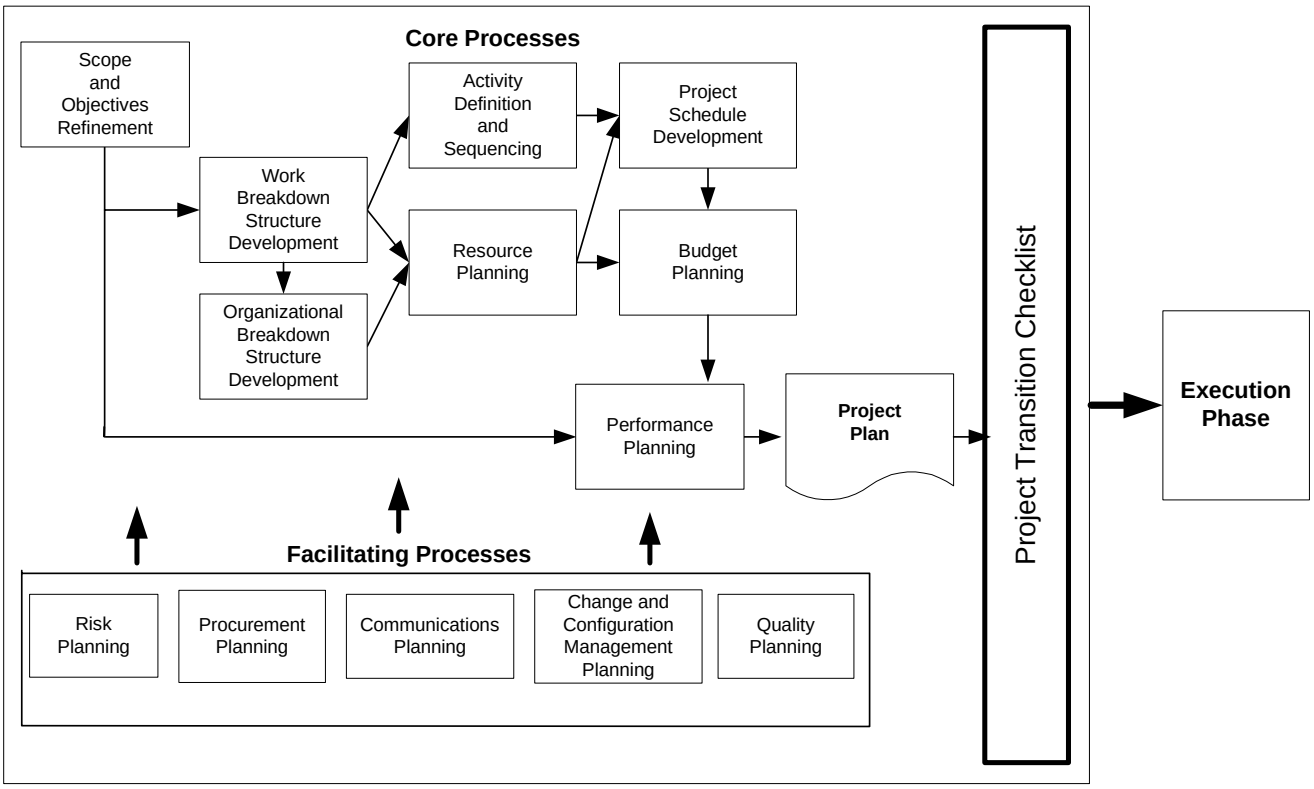

Figure 3.2
Planning Processes

Execution of the Core Processes begins with the review and refinement of the project scope and objectives found in the project charter. From the refined project scope and objectives, the work breakdown structure (WBS) is built. The WBS is a deliverable-oriented grouping of project components that organizes and defines the total scope of the project (PMBOK). The WBS becomes the foundation for development of the organizational breakdown structure (OBS), the sequencing of activities, and the development of the resource plan. Development of the resource plan also requires input from the OBS. The OBS defines the organizational units responsible for a specific project component or task, and the resource plan identifies the specific resources, which will be allocated to the project component or task. Project schedule development is dependent on input from the resource plan and activity sequencing processes. The project schedule provides a representation of predicted tasks, milestones, dependencies, resource requirements, task durations, and deadlines. The project schedule and resource plan provide input to the budget planning process. The budget plan identifies the available funding and costs associated with a defined set of activities during a specified time period. Finally, the performance planning is developed with input from the refined scope and objectives and the

budget plan. The performance plan defines how the project success or failure is measured. The project plan component documents that result from execution of the Core Processes are:

- Work Breakdown Structure
- Resource Plan
- Project Schedule
- Project Budget
- Performance Plan

Facilitating Processes represent planning activities that are not dependent on other processes. The Facilitating Processes are performed intermittently during the Project Planning Phase on an as needed basis. However, Facilitating Processes ***are not optional***. These processes will frequently affect components of the plans developed from the Core Processes. The planning documents resulting from the Facilitating Processes are:

- Risk Management Plan
- Procurement Plan
- Communications Plan
- Change and Configuration Management Plan
- Quality Management Plan

For each planning process, the Project Management Guideline includes a methodology for performing the process. Immediately following the planning process methodology, instructions and templates for each plan and document developed during the planning process are included.

Project Plan

The project plan is used to guide execution and control of the project. It forms the basis for all management efforts associated with the project. The project plan can also be used to communicate with project stakeholders and gain support and understanding of the project. The project manager and project team develop the project plan through execution of the project planning processes and present the plan to management for approval.

What is a Project Plan?

A project plan is a formal, approved document that is used to guide both project execution and project control.

PMBOK, 2000

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Information documented in the project plan evolves as the project moves through multiple iterations of the planning process. Changes made to any component of the project plan can affect other plan components and thus requires the review of all planning documents. The main body of the project plan provides a summary of the project plan with details provided in appendices that represent specific components of the project plan. The project plan should include the following:

- General Project Information
- Project Executive Summary
- Project Performance Plan
- Work Breakdown Structure
- Resource Plan
- Project Schedule
- Project Budget
- Procurement Plan
- Risk Plan
- Communications Plan
- Change and Configuration Management Plan
- Quality Management and IV & V Plan

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Project Plan Instructions and Template

Project Plan Approval Cover Page – Complete the project name (see A.), project working title (see A.), and names of the signatories. The cover page provides space adequate for the approving signature of all management levels in the Commonwealth. Project Plan approval requirements are derived from organization and Commonwealth Policies and Standards as well as Commonwealth of Virginia Code.

A. General Information – Basic information that identifies the project.
Project Title – The proper name used to identify this project.

Project Working Title – The working name or acronym used to identify the project. If an acronym is used, define the specific meaning of each letter.

Proponent Secretary – The Secretary to whom the proponent agency is assigned to or the Secretary that is sponsoring an enterprise project.

Proponent Agency – The agency that will be responsible for the management of the project.

Prepared by – The person(s) preparing this document.

Date/Control Number – The date the plan is finalized and the change or configuration item control number assigned.

B. Points of Contact – List those individuals that may be contacted about this project. Provide the title, name, organization, phone number, and email address of the following individuals:

Project Sponsor - An individual, usually part of the organization management team, who makes the business case for the project. This individual has or should have the authority to define project goals, secure resources, and resolve organizational and priority conflicts.

Program Manager – The individual responsible for the management and coordination of a group of related projects that will include the project being planned.

Project Manager - The individual appointed and given responsibility for management of the project.

Procurement Contact – The person responsible for procurement activities from planning to preparation and processing of a requisition, through receipt, acceptance of delivery, and processing of a final invoice for payment.

Project Team Members - The individuals that report either part time or full time to the project manager and are responsible for the completion of project tasks.

Stakeholders - Individuals and organizations that are involved in or may be affected by project activities.

Other – Any person, not listed above, who may be contacted about this project.

C. Contractor Information – Identify each company contracted to work on this project and list the names, telephone numbers, and email addresses for the representatives of each company. Positions that should be addressed are the Senior Manager, Account Manager, Project Manager, Technical Lead.

D. Project Plan Summary

1. ***Business Problem*** – Insert the business problem as stated in the Project Charter (Section C).
2. ***Assumptions*** - List the Assumptions made about the project in the Project Charter (Section D). List and identify any changes to the original assumptions or additional assumptions made during project planning.
3. ***Project Description*** - Provide the project approach, specific solution, customer(s), and benefits. The Project Description is stated in the Project Charter (Section E). If there are changes to the description because of project planning, clearly identify the changes or additions made to the project description.
4. ***Project Scope*** – Provide the Project Scope found in the Project Charter (Section E) and identify any additions or changes resulting from detailed project planning.
5. ***Performance Plan Summary*** – Measures of success are metrics that measure the success or failure of a project. The measures of success are based on the project scope and objectives. Provide a summary of the Measures of Success from the Performance Plan in Appendix A. In the table below, list the Project Objectives, the Performance Goal for each objective, and briefly describe how the Performance Goal is measured.
6. ***Critical Milestone Summary*** – Summarize the Project Schedule by listing the Milestones or Events on the critical path of the Project Schedule (Appendix D). The critical path is: a series of activities, which determine the earliest completion time for the project. For each event, provide the Projected Date of Completion and a brief description of the Significance of the Milestone or Event listed.
7. ***Budget Planning Summary*** – Provide a summary in table form of the expenditures and source of funding for the project during the life of the project. Identify and explain deviations from the approved funding outlined in the Project Charter. This budget does not include expenditures and funding for the life of the asset produced. Lifecycle cost for the asset are addressed in Project Initiation.
8. ***Procurement Plan Summary*** – Summarize the Procurement Plan for this project. Include information about major procurements, procurement strategies, and projected dates for critical procurement activities.
9. ***Risk Planning Summary*** – Summarize the Risk Management Strategy for the project. Describe the process for identification of risk, evaluation and prioritization of risk, identification of options for mitigating risk, the process for maintaining the risk plan and risk monitoring, and the responsibilities of individuals.

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10. Top Ten Risk(s) – Provide a list of the ten highest risks to the project's success, including the probability of their occurrence, level of impact anticipated, and a brief description of the Mitigation Strategy for each.

PROJECT PLAN APPENDICES – Detailed plans and tables are attached as appendices. These appendices are summarized in the project plan summary paragraphs listed above.

Appendix A. Project Performance Plan

Appendix B. Work Breakdown Structure

Appendix C. Resource Plan

Appendix D. Project Schedule

Appendix E. Project Budget

Appendix F. Procurement Plan

Appendix G. Risk Plan

Appendix H. Communications Plan

Appendix I. Change and Configuration Management Plan

Appendix J. Quality Management and IV&V Plan

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Project Plan

The attached Project Plan has been reviewed and is approved for execution by the undersigned.

Project Title: _____ ***Project Working Title:*** _____

Signature Date	Signature Date
Program Manager	**Project Sponsor**
Signature Date	Signature Date
Agency Head	**Cabinet Secretary**
Signature Date	
Secretary of Technology	

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Project Plan

A. General Information

Provide basic information about the project including: Project Title – The proper name used to identify this project; Project Working Title – The working name or acronym that will be used for the project; Proponent Secretary – The Secretary to whom the proponent agency is assigned or the Secretary that is sponsoring an enterprise project; Proponent Agency – The agency that will be responsible for the management of the project; Prepared by – The person(s) preparing this document; Date/Control Number – The date the plan is finalized and the change or configuration item control number assigned.

Project Title: _____ ***Project Working Title:*** _____

Proponent Secretary: _____ ***Proponent Agency:*** _____

Prepared by: _____ ***Date / Control Number:*** _____ | _____

B. Points of Contact

List the principal individuals who may be contacted for information regarding the project.

Position	***Title/Name/Organization***	***Phone***	***E-mail***
Project Sponsor			
Program Manager			
Project Manager			
Procurement Contact			
Project Team Member			
Project Team Member			
Stakeholder			
Stakeholder			

Other (DTP, Secretariat)			

C. Contractor Information

Identify each company contracted to work on this project and list the names, telephone numbers, and email addresses for the representatives of each company.

Company Name:

Position	***Name***	***Phone***	***E-mail***
Senior Manager			
Account Manager			
Project Manager			
Technical Lead			
Other			

Company Name:

Position	***Name***	***Phone***	***E-mail***
Senior Manager			
Account Manager			
Project Manager			
Technical Lead			
Other			

Company Name:

Position	***Name***	***Phone***	***E-mail***
Senior Manager			
Account Manager			
Project Manager			
Technical Lead			
Other			

Company Name:

Position	***Name***	***Phone***	***E-mail***
Senior Manager			
Account Manager			
Project Manager			
Technical Lead			
Other			

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Company Name:

Position	*Name*	*Phone*	*E-mail*
Senior Manager			
Account Manager			
Project Manager			
Technical Lead			
Other			

D. Project Plan Summary

1. Business Problem

Insert the Business Problem as stated in the Project Charter (Section C).

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2. Assumptions

List the Assumptions made about the project in the Project Charter (Section D). List and identify any changes to the original assumptions or additional assumptions made during project planning.

3. Project Description

Provide the Project Description stated in the Project Charter (Section E). If there are changes to the Description because of Project Planning, clearly identify the changes or additions made to the Project Description.

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4. Project Scope

Provide the Project Scope found in the Project Charter (Section E) and identify any additions or changes resulting from detailed Project Planning.

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5. Performance Plan Summary

Provide a summary of the Measures of Success from the Performance Plan at Appendix A. In the table below, list the Project Objectives, Performance Goal for each objective, and briefly describe the Methodology for how the Performance Goal is measured.

Project Objective	***Performance Goal***	***Methodology***

6. Critical Milestone Summary

Summarize the Project Schedule by listing the Milestones or Events on the critical path of the Project Schedule (Appendix D). The critical path is: a series of activities, which determine the earliest completion time of the project. For each event, provide the Projected Date of completion and a brief description of the Significance of the Milestone or Event listed.

Milestone or Event	***Projected Date of Completion***	***Significance***

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7. Budget Planning Summary

Provide a summary in table form of the expenditures and source of funding for the project during the life of the project. Identify and explain deviations from the approved funding outlined in the Project Charter. This budget does not include expenditures and funding for the life of the asset produced. Lifecycle costs for the asset are addressed in project initiation. The complete Budget Plan is attached at Appendix E.

Planned Expenditure *($000)*						
	FY 200_	***FY 200_***	***FY 200_***	***FY 200_***	***Total***	***Comments***
Internal Staff Labor						
Services						
Software Tools						
Hardware						
Materials and Supplies						
Facilities						
Telecommunications						
Training						
Contingency (Risk)						
Total						
Explanation:						

Funding Source *($000)*						
	FY 200_	***FY 200_***	***FY 200_***	***FY 200_***	***Total***	***Comments***
General Fund						
Non-General Fund						
Federal						
Other						
Total						
Explanation:						

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8. Procurement Plan Summary

Summarize the Procurement Plan for the project found in Appendix F. Include information about major procurements, procurement strategies, and projected dates for critical procurement activities.

9. Risk Planning Summary

Summarize the Risk Management Strategy for the project.

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10. Top Ten Risk(s)

Provide a list of the ten (10) highest risks to the project's success, including the probability of their occurrence, level of impact anticipated, and a brief description of the Mitigation Strategy for each.

#	***Description***	***Probability %***	***Impact 1= low 5 = high***	***Mitigation Strategy***
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

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PROJECT PLAN APPENDICES

The attached appendices are the detailed plans and tables. These appendices are summarized in the executive summary paragraphs listed above. Templates and worksheets supporting development of the plans attached are available in Section 3 and Appendix B of the Guideline as well as in the template section of the Commonwealth project Management Web Page.

Appendix A. Project Performance Plan

Appendix B. Work Breakdown Structure

Appendix C. Resource Plan

Appendix D. Project Schedule

Appendix E. Project Budget

Appendix F. Procurement Plan

Appendix G. Risk Plan

Appendix H. Communications Plan

Appendix I. Change and Configuration Management Plan

Appendix J. Quality Management and IV&V Plan

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Core Processes and Project Plan Components

The Core Processes are a set of critical planning activities linked together with clear dependencies and performed in a specific sequence. The Core Processes and related project plan components are described below.

Project Scope and Objective Analysis

The scope and objectives of the project were defined at a high level in the project initiation phase. The project manager and team members developing the project plan may not have been involved in the project initiation phase. Before project plan development begins, the project manager and team must develop a thorough understanding of the project scope and the project objectives.

A detailed project scope identifies:

- What the project deliverables are
- Where, when, and to whom the deliverables are distributed
- What process or technology solution is proposed
- Who (group, organization, or key person) performs the work
- When and where the work is performed
- When, where, and to whom the project will deliver the intended product or service

Project objectives are the desired outcome of a project and should align with the business needs of the organization. The project objectives are directly related to the deliverables described in the scope and to business objectives described in the project proposal and project charter. The project charter presents the project objectives in relation to the organization's strategic plan. The project objectives should be refined to facilitate development of detailed project plans. Ultimately, project objectives represent the criteria used to determine success or failure of the project.

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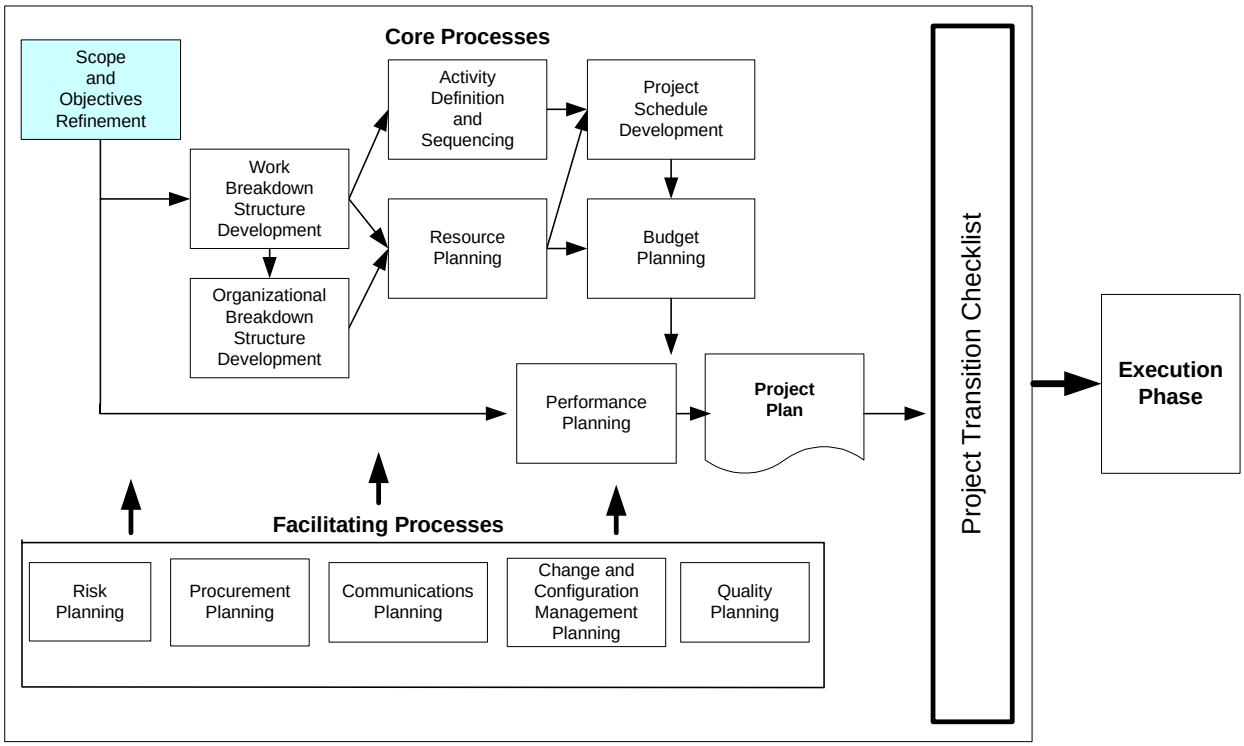

Figure 3.3
Project Scope and Objectives Refinement as Identified in the Planning Processes

Project Scope Refinement

Aligning information provided in the project proposal and project charter with the topic headings provided in the project scope and business objective worksheet refines the project scope. Each element of project scope information from the project proposal and project charter should be reviewed and refined to a level that provides a specific, clear, and concise statement of fact. This list of facts provides a clearly defined framework within which the project will be planned and executed. When refining the project scope, it is essential that the project manager communicate any concerns about the project scope to the project sponsor. The project sponsor should assist the project manager by answering questions about the scope and clarifying any ambiguous statements in the project charter or project proposal.

Project Objective Refinement

At this point in the planning process, the objectives provided in the project proposal and project charter are reviewed and refined to provide a clear understanding of the desired outcomes of the project. A business objective is defined as a desired result produced by a project that answers or resolves a business problem. The project manager must determine how successful completion of an objective is measured. If the objective includes more than one outcome or is too broad to measure, divide the objective into parts that contain only one measurable outcome.

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Project Scope and Business Objective Worksheet Instructions and Template

The Project Scope and Business Objective Worksheet is not intended to be a project deliverable or an appendix to the project plan. The worksheet is provided to assist the project manager and project team in preparing the project plan. Additional information or modifications to the project scope and objectives should be included in the Project Summary Section of the Project Plan. Project managers, appointed at the time a project is chartered, will conduct a review and analysis of the project scope and objectives as part of the project plan development.

A. General Information - Basic information that identifies the project.
Project Title – The proper name used to identify this project.

Project Working Title – The working name or acronym used to identify the project. If an acronym is used, define the specific meaning of each letter.

Proponent Secretary – The Secretary to whom the proponent agency is assigned or the Secretary that is sponsoring a particular enterprise project.

Proponent Agency – The agency that will be responsible for the management of the project.

Prepared by – The person(s) preparing this document.

Date/Control Number – The date the plan is finalized and the change or configuration item control number assigned.

B. Project Scope

1. **Deliverables** – A deliverable is any measurable, tangible, verifiable outcome, result, or item that is required to complete a project or part of a project. The term is often used more narrowly in reference to an external deliverable (i.e. This deliverable is subject to approval by the project sponsor or customer). Analyze the project scope and objectives outlined in the Project Proposal and Charter to develop a list of:

a) *What are the project deliverables?*
b) *Where, when, and to whom are the deliverables provided?*

2. **Project Approach and Solution** – Describe the approach that will be used and whether the project will be done internally or require outside assistance. Analyze the project description and scope to understand the solution and approach to the project to answer the following questions:

a) *What is the process or technology solution proposed?* - Describe the type of process or technology that is to be used.
b) *Who will perform the work?* - Describe who will perform the work.
c) *When and where is the project executed?* - Describe when and where the project work will be done.

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C. Project Business Objectives – Desired result(s) produced by a project that answers or resolves the stated business problem. Using the objectives outlined in the Project Charter, list the objectives and any additional detail necessary to clarify what results the project is intended to attain.

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Project Scope and Business Objective Worksheet

A. General Information

Provide basic information about the project including: Project Title – The proper name used to identify this project; Project Working Title - The working name or acronym that will be used for the project; Proponent Secretary - The Secretary to whom the proponent agency is assigned or the Secretary that is sponsoring an enterprise project; Proponent Agency – The agency that will be responsible for the management of the project; Prepared by – The person(s) preparing this document; Date/Control Number – The date the plan is finalized and the change or configuration item control number assigned.

Project Title:		***Project Working Title:***	
Proponent Secretary:		***Proponent Agency:***	
Prepared by:		***Date / Control Number:***	

B. Project Scope

1. Deliverables

Analyze the project scope and objectives outlined in the Project Proposal and Charter to understand the Project Deliverables. Answer these questions:

a) What are the Project Deliverables?

b) Where, when, and to whom are the Deliverables provided?

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2. Project Approach and Solution

Analyze the project description and scope to understand the solution and approach to the project. Answer the following questions:

a) What is the process or technology solution proposed?

b) Who will perform the work?

c) When and where is the project executed?

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C. Project Business Objectives

Using the objectives outlined in the Charter, list the objectives and any additional detail as necessary to clarify what results the project is intended to attain.

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Work Breakdown Structure

A work breakdown structure (WBS) is a hierarchical representation of all the discrete products, services, activities, tasks, and subtasks that comprise a project. The WBS represents the total scope of the project. Work not identified in the WBS is outside the scope of the project. Using a WBS, the project scope is broken down into progressively lower levels of detail. The lowest level of the WBS is a work package. The work package is a task or activity that can normally be completed in 80 hours or less.

Each level of the WBS is referred to as a tier. Tier I represents the highest level of the WBS.

Example: Tier I. Project Management
Tier II. Project Plan
Tier III. Project WBS
Project Resource Plan
Project Schedule
Project Budget

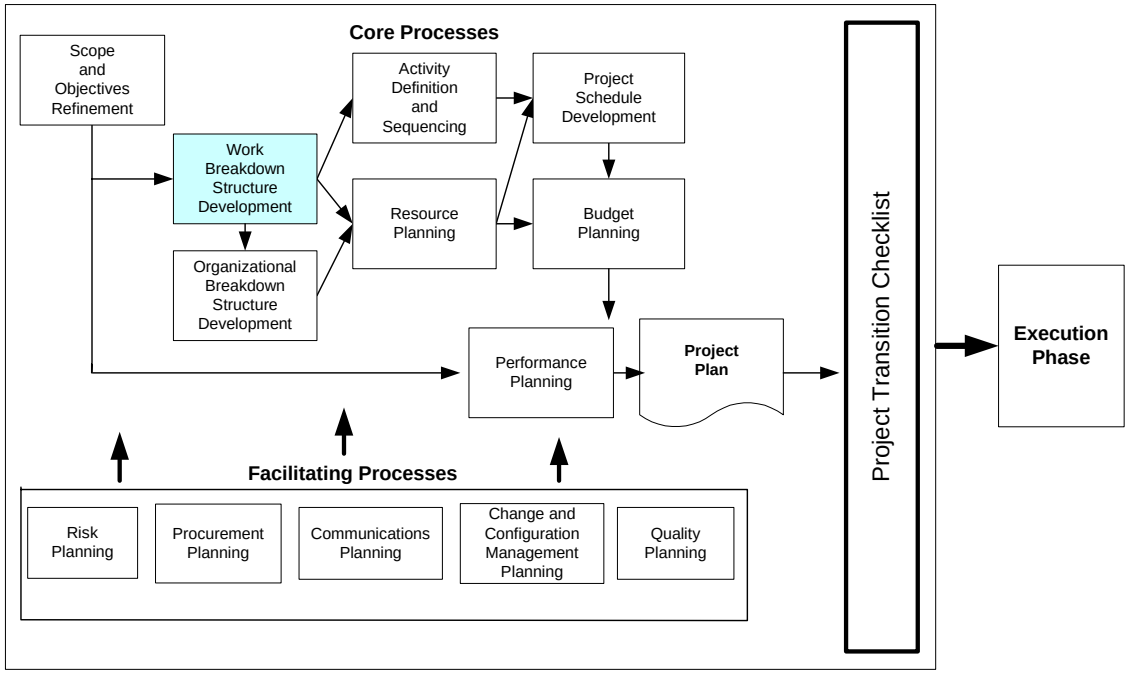

Figure 3.4
Work Breakdown Structure Identified in the Planning Processes

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Work Breakdown Structure Development

Develop Tier I of the WBS

Typically, the scope described in the project charter is the basis for defining the first tier of activities in a WBS. Tier I activities are the major project activities identified as deliverables in the project scope.

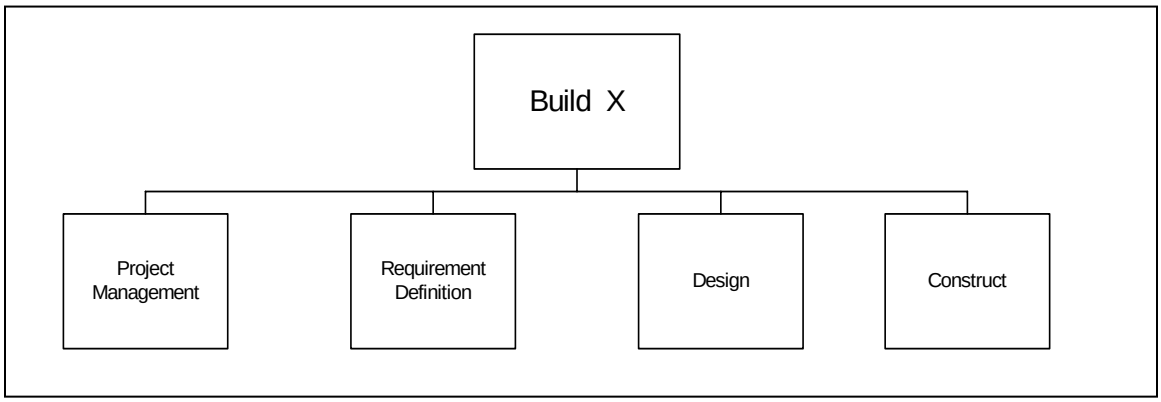

Figure 3.5
WBS Tier I.

Assign High-Level Responsibility

On large projects, it is often difficult for a single person or group to develop the WBS. In such cases, when defining the first tier of the WBS, the project manager should identify the organization or person responsible for each Tier I activity. Those responsible can then assist with the decomposition of the Tier I deliverables. Assignment of responsibility for high-level WBS activities ensures management is responsible for the entire project scope.

Decompose WBS

The WBS is decomposed into discrete tasks or work packages to be accomplished during the project. A project WBS normally is decomposed to at least three levels or tiers of tasks. Projects are decomposed to a level that represents a distinct package of work. Distinct work packages are characterized by the following:

- A discrete product or service is identified
- Responsibility for the element can be assigned to one person or functional group
- Scope is clearly understood
- Cost is reasonably estimated

- The element is manageable (normally not more than 80 hours of work)

Assign Responsibility to Elements

After the WBS is decomposed to the lowest level (the work package), responsibility is assigned for each element. Individuals assigned to an element are responsible for planning, controlling, and executing the specific task.

Define WBS Elements

A collection of activity, task, and subtask descriptions is referred to as a WBS dictionary. The purpose of the WBS dictionary is to clearly describe each element of the WBS to facilitate planning and management of the element. The description includes what is to be delivered, attributes of the product or service delivered, and, in some cases, what is not included within the element. Defining what is not included ensures that the responsible individual does not allow additional scope to be added to the project. The WBS dictionary can be used to communicate scope to contractors or subcontractors, often forming the basis for a statement of work. The WBS Table Template provided allocates one column to the definition of the WBS elements.

Review and Approval of the WBS

Management, as identified in the project charter, reviews and approves the WBS. This step ensures management is committed to the project and understands the total project scope. The WBS may be approved when the project plan is approved; however, it is prudent to review the WBS with the project sponsor or program manager before continuing development of the project plan.

Baseline the WBS

A baseline is defined as the original plan for a project plus or minus approved changes. When the WBS is approved, it becomes the WBS baseline. Changes to the WBS baseline are controlled through a defined change control process addressed later in the methodology.

Work Breakdown Structure Format

The WBS is simple in its intent but can be elaborate in its presentation. A WBS may be a simple list of activities or a detailed spreadsheet of tasks and subtasks. The WBS Table provided in this methodology is in table form and captures key information about the activities, tasks, and subtasks of the project. Another example of a WBS (in a graphical representation) is shown in Figure 3.6. Project managers may choose to use automated tools like Microsoft Project, which will allow development of a WBS in a list format associated with a schedule.

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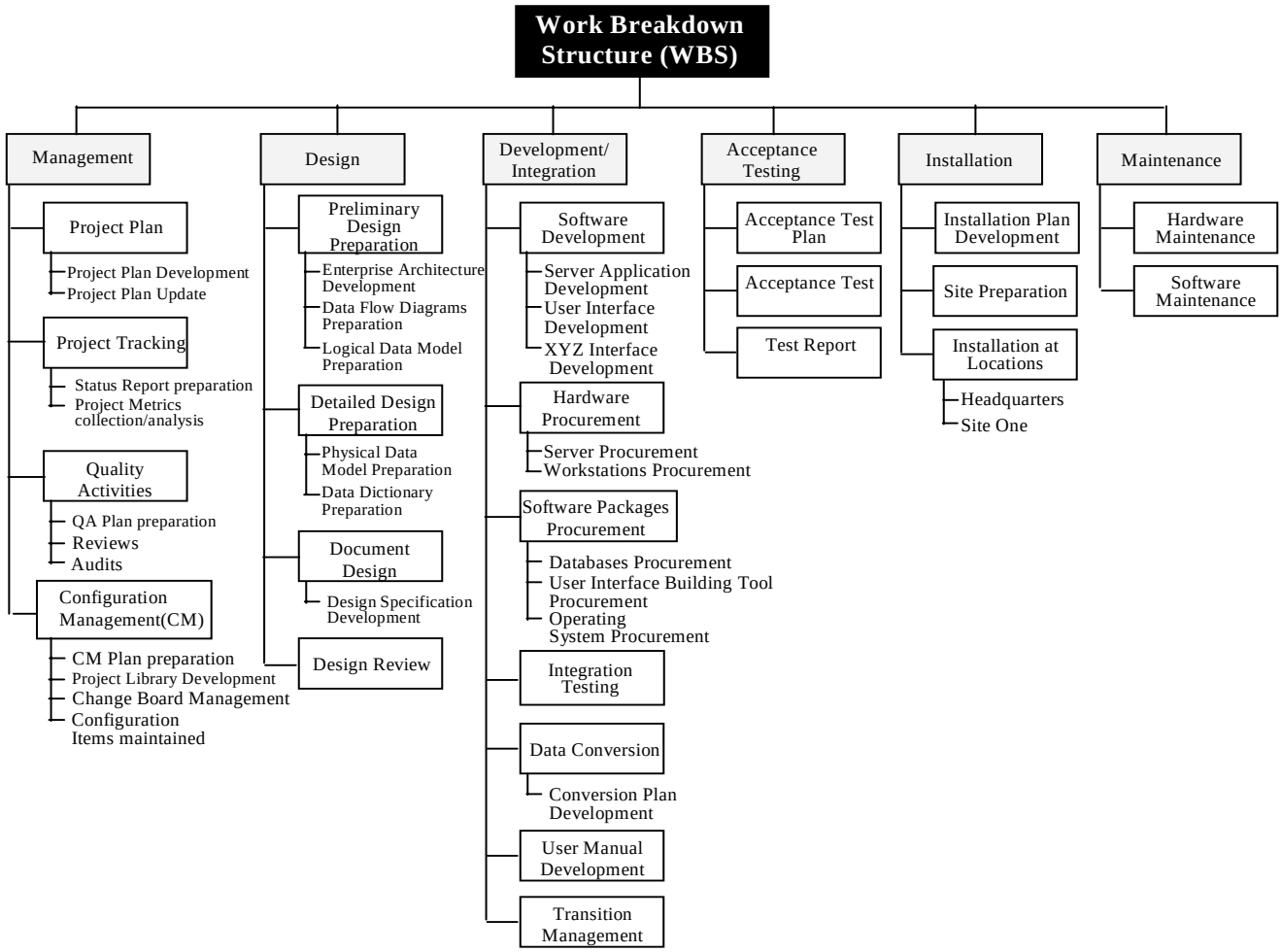

Figure 3.6
Hierarchical Work Breakdown Structure in Tree Format

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Helpful Hints for Developing the Work Breakdown Structure

Product and Service Orientation

The WBS is derived by refining the scope of a project and is focused on the products and services the project team will deliver. The project will, in all likelihood succeed, if management focuses attention on the individual products and services being delivered. Schedules focus on *how* a product or service is delivered. By design, schedules focus on activities and actions characterized by a verb-noun format. Products and services are not verbs. Therefore, verbs do not belong in a WBS. When verbs are used in the WBS, there is a tendency for management to focus on how the project is being delivered instead of the products and services being delivered.

Simplicity

Defining the scope of a project can be difficult even for simple projects. As a management tool, WBS size is important. If the WBS is too large, it can be a management burden. Many WBSs are more complex than the project demands.

Coding Scheme

Many projects are complex and require automated tools to assist in managing and reporting project information. A WBS, because of its hierarchical nature, requires that a parent-child (hierarchical) relationship be established and captured for automated reporting. To achieve the parent-child relationship, a coding scheme is used to identify each element. The simpler the coding scheme the better. The identification codes should not be assigned until the WBS is stable. This eliminates the use of complex schemes and the need to reassign codes due to changes in the WBS.

As shown in the simplified example below, a WBS is a family tree of related deliverables that comprise the project.

Project XYZ Work Breakdown Structure

1.0 CMS Project
1.1 Project Management
1.2 Communications
1.3 Documentation
1.4 Hardware
1.5 Software
1.6 Systems Engineering
1.7 Facilities
1.8 Training

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Work Breakdown Structure Template Instructions and Template

General Information – Basic information that identifies the project.
Project Title – The proper name used to identify this project.

Project Working Title – The working name or acronym used to identify the project. If an acronym is used, define the specific meaning of each letter.

Proponent Secretary – The Secretary to whom the proponent agency is assigned or the Secretary that is sponsoring a particular enterprise project.

Proponent Agency – The agency that will be responsible for the management of the project.

Prepared by – The person(s) preparing this document.

Date/Control Number – The date the plan is finalized and the change or configuration item control number assigned.

Complete the columns in the table as described below.
Element Number - A Work Breakdown Structure (WBS) requires that a parent-child (hierarchical) relationship be established. To achieve the parent-child relationship, a simple coding scheme will be used to assign a numerical identification number to each element. For example: the number 1 is assigned to a deliverable or major activity. Subordinate task that make up the next tier would be numbered 1.1 to 1.xxx. The next level below that is 1.1.1 to 1.xxx.xxx and so on until lowest level of decomposition (the work package, normally not more than 80 hours work) is reached. Assign an appropriate Element Number to the Element, Activity, Task, or Sub-task.

WBS Elements, Activity, Task, or Sub-Task – Give a specific name to the Element, Activity, Task or Sub-Task. Indent Subordinate Elements within this column. For example indent all tasks for an Activity and then indent the Sub-Task for the Task.

Definition of Activity, Task, or Sub-Task (Description) – Define the Activity, Task, or Sub-Task in the previous column.

Responsible Person or Group – Assign responsibility for the WBS Element to a person or group on or associated with the project team. Further decomposition of the WBS Element and cost estimation may be part of the assigned responsibility. The information in this column is used in developing the organizational breakdown structure.

Estimated (E) or Actual (A) Cost – Provide an estimated or actual cost, if known, for the completion of the WBS Element. This column is completed after the decomposition to the

lowest task level is complete. Begin at the smallest element and roll up cost to the larger elements. This provides a foundation for the budget (expenditures) plan.

Project Phase – Most complex projects are executed in phases. Identify the phase in which the WBS Element will occur. The phase must be synchronized with the project schedule.

Section 3: Project Planning

Work Breakdown Structure Table

Provide basic information about the project including: Project Title – The proper name used to identify this project; Project Working Title - The working name or acronym that will be used for the project; Proponent Secretary - The Secretary to whom the proponent agency is assigned or the Secretary that is sponsoring an enterprise project; Proponent Agency – The agency that will be responsible for the management of the project; Prepared by – The person(s) preparing this document*; Date/Control Number – The date the plan is finalized and the change or configuration item control number assigned.*

Project Title: _____ ***Project Working Title:*** _____

Proponent Secretary: _____ ***Proponent Agency:*** _____

Prepared by: _____ ***Date / Control Number:*** _____ | _____

Element Number	*WBS Elements Activity, Task, or Sub-Task*	*Definition of Activity, Task, or Sub-Task (Description)*	*Responsible Person or Group*	*Estimated (E) or Actual (A) Cost (Cross reference to budget)*	*Project Phase (Cross reference to schedule)*

Organizational Breakdown Structure

An organizational breakdown structure (OBS) is a representation of the WBS from an organizational perspective. The OBS is an organization chart that relates WBS work packages to organizational units. The hierarchical nature of the OBS provides the ability to aggregate project information to higher levels until the top level is reached. The OBS ensures all project elements are assigned to a responsible organization.

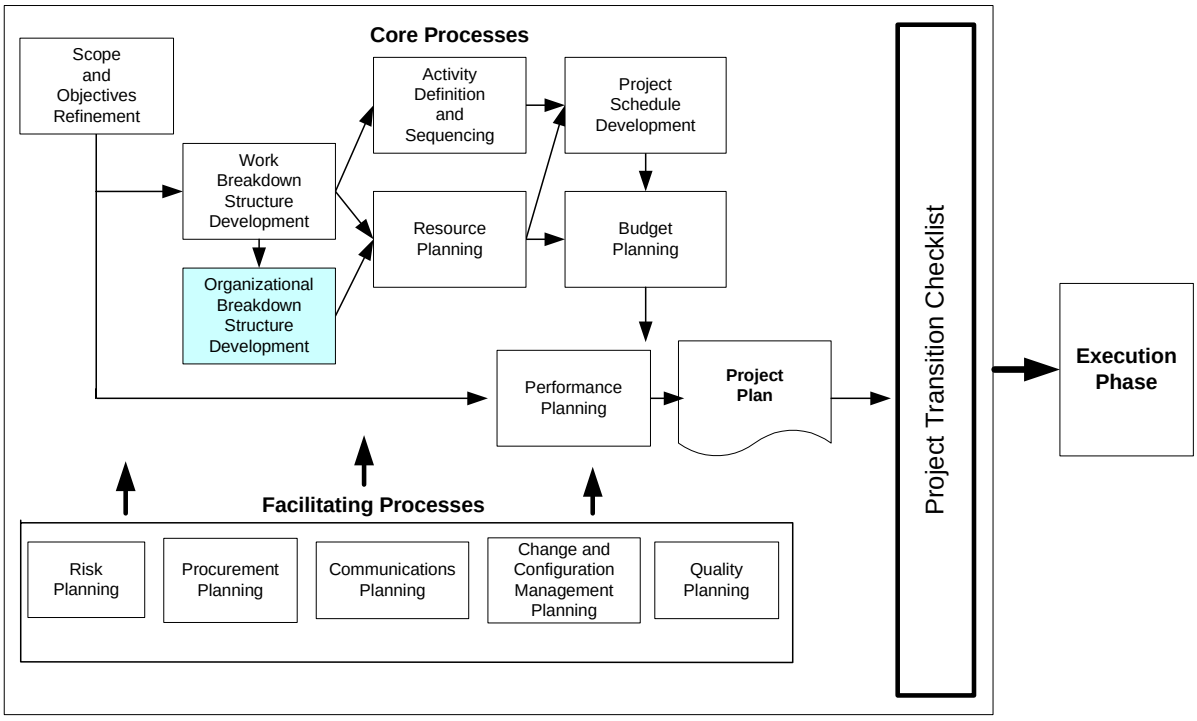

Figure 3.7
Organizational Breakdown Structure Identified in the Planning Processes

Section 3: Project Planning

Organizational Breakdown Structure Format

Like the WBS, an OBS can be represented in a diagram or table. Both structures represent hierarchical relationships. The OBS is not included as an appendix to the project plan however; development of an OBS facilitates the process of planning organizational workload and resource and fund allocation. The template provided with this methodology is based on a table format. An example of the diagram format is provided below.

Organizational Breakdown Structure Diagram Example

The OBS should be coded in a hierarchical (parent-child) manner to achieve aggregation from lower to higher-level organizational elements. Project components such as tasks, costs, and risks, can then be related to the OBS in order to assign organization responsibility for the components. The OBS can be then be used to display a variety of management information. Figure 3.8 is an example of budget information contained within a WBS and displayed functionally.

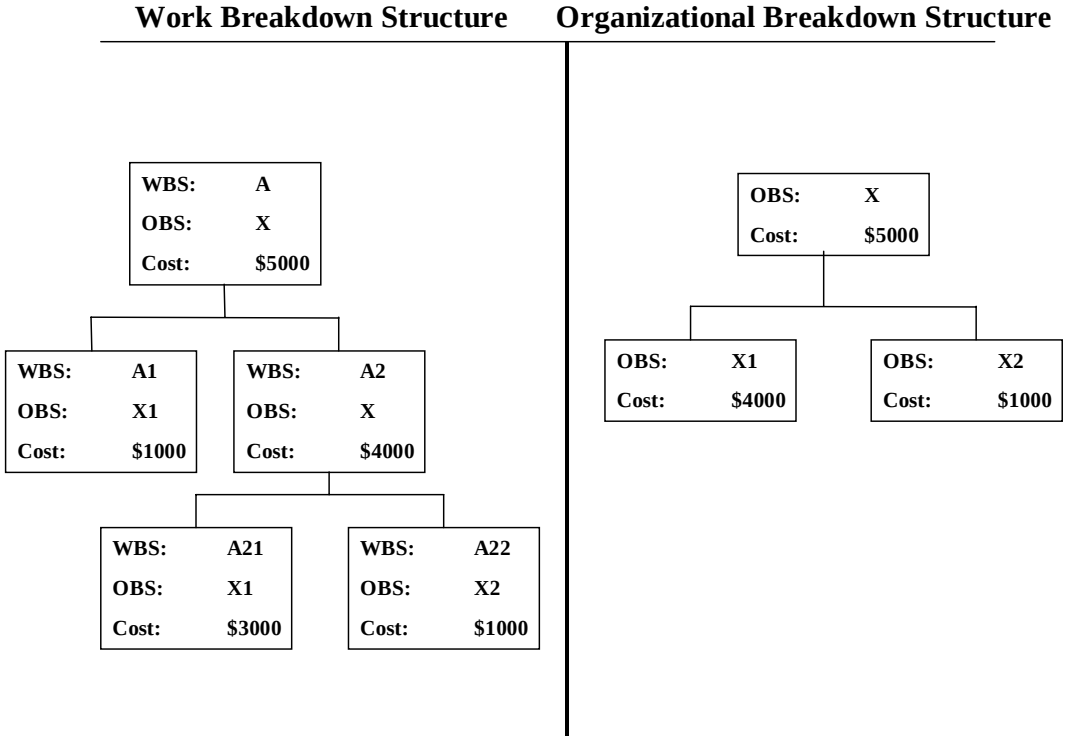

Figure 3.8
Work/Organizational Breakdown Structure Budget Comparison

Section 3: Project Planning

Organizational Breakdown Structure Template Instructions and Template

The organization breakdown structure (OBS) Worksheet assists in reporting project tasks by organization. The OBS provides an organizational perspective of the project rather than a task-based perspective. The hierarchical structure of the OBS allows aggregation of project information to higher levels. By using the OBS and WBS together, it is assured that all elements (scope) of a project will be assigned to a responsible organization.

General Information – Basic information that identifies the project.
Project Title – The proper name used to identify this project.

Project Working Title – The working name or acronym used to identify the project. If an acronym is used, define the specific meaning of each letter.

Proponent Secretary – The Secretary to whom the proponent agency is assigned or the Secretary that is sponsoring a particular enterprise project.

Proponent Agency – The agency that will be responsible for the management of the project.

Prepared by – The person(s) preparing this document.

Date/Control Number – The date the plan is finalized and the change or configuration item control number assigned.

Complete the columns in the table as described below.
Responsible Person or Group – Identify the group or person responsible for accomplishing the WBS element. The OBS focuses on assigning the total set of WBS elements, resources required and costs to responsible organizational units of the project team. The responsible person or group may be a person in a small project, a group of people lead by a team leader, or an existing functional organization. List the person or group first. Leave a number of rows between each person or group listed. Next, complete the WBS Element Number and Name columns.

Element Number – Identify the task(s) assigned to the person or group in the first column by listing the WBS Element Numbers as defined on the WBS worksheet.

WBS Elements, Activity, Task, or Sub-Task – Identify the task(s) assigned to the person or group in the first column by listing the WBS Element, Activity, Task or Sub-Task that corresponds with the Element Number in the second column. Indent subordinate elements in the WBS element column. For example indent all tasks for an Activity and then indent the Sub-Task for the Task.

Resources Required – Identify what physical resources (personnel, facilities, equipment, software) are needed to accomplish this WBS element.

Section 3: Project Planning

Estimated (E) or Actual (A) Cost – Provide an estimated or actual cost based on the resource requirements identified and estimates developed in the WBS worksheet. This column is completed after the decomposition to the lowest task level is complete. Begin at the smallest element and roll up costs to the larger elements.

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Organization Breakdown Structure Worksheet

Provide basic information about the project including: Project Title – The proper name used to identify this project; Project Working Title – The working name or acronym that will be used for the project; Proponent Secretary – The Secretary to whom the proponent agency is assigned or the Secretary that is sponsoring an enterprise project; Proponent Agency – The agency that will be responsible for the management of the project; Prepared by – The person(s) preparing this document; Date/Control Number – The date the plan is finalized and the change or configuration item control number assigned.

Project Title: _____ ***Project Working Title:*** _____

Proponent Secretary: _____ ***Proponent Agency:*** _____

Prepared by: _____ ***Date / Control Number:*** _____

Using the Work Breakdown Structure, reorganize the project activities and task by responsible person or group and identify the resources required. Aggregate the collective tasks, resources, and costs for each responsible person or group.

Responsible Person or Group	***Element Number***	***WBS Elements Activity, Task, or Sub-Task***	***Resources Required***	***Estimated (E) or Actual (A) Cost (Cross reference to budget)***

Section 3: Project Planning

Activity Definition and Sequencing

The process of defining and sequencing activities and tasks represents a further refinement of the WBS. Activity sequencing involves dividing the project into smaller, more manageable components, specifying the order of completion, and identifying the dependent relationships between activities and tasks.

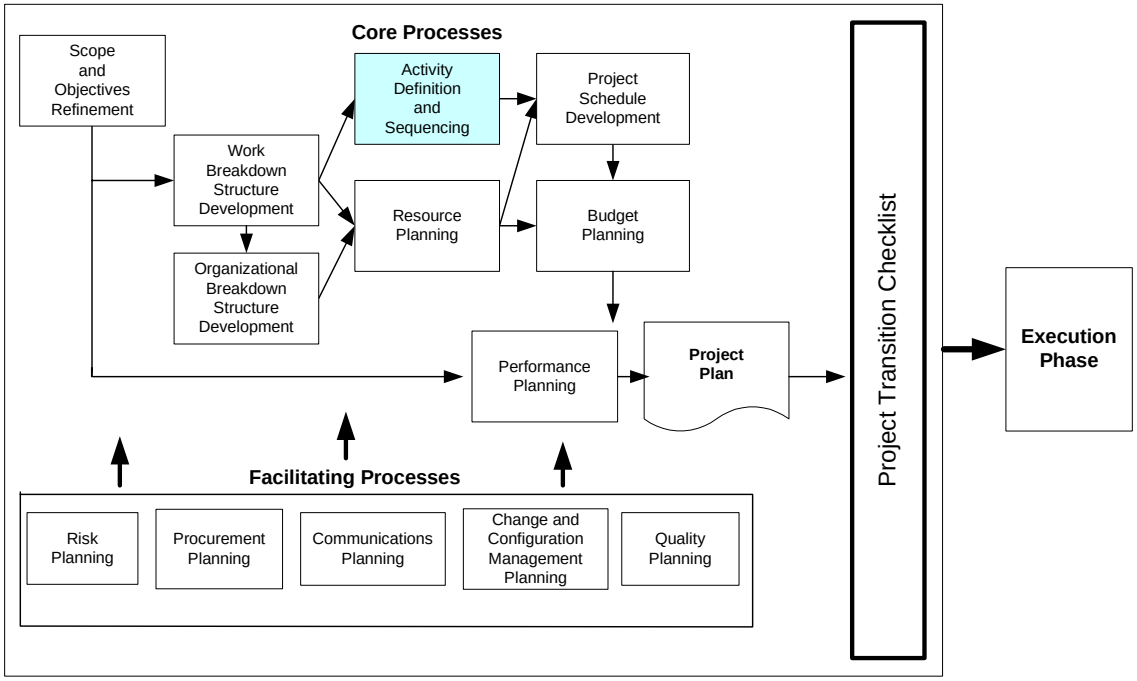

Figure 3.9
Activity Definition and Sequencing Identified in the Planning Processes

Defining Project Tasks

Use the WBS to identify the specific tasks necessary to accomplish the project objective. The WBS definition of the activity and task description is usually a general description that should be further refined in this step of the project planning process. The accuracy of the project schedule will increase in proportion to the level of detail reflected in this process. An unambiguous and detailed definition for each task will provide sufficient clarity to estimate duration, identify dependencies, and establish the correct sequence.

Duration Estimation

The project team must estimate the duration of the listed activities. Duration is the amount of time required to complete the defined task. The estimated duration combined with resource planning information and task relationships will define the project schedule. There are several techniques available to estimate task duration. The most common technique relies on historical experience. Collected and archived historical project data can be used in this estimation.

Section 3: Project Planning

Historical records greatly enhance the accuracy of duration and cost estimates. Additionally, data based on staff skills are far more valuable than generalized industry estimates. If historical data do not exist, seek the advice of experts and others who have completed similar tasks. Obtain estimates from multiple sources, compare the results, and estimate the duration based on the multiple inputs.

The duration of tasks (e.g., year, month, week, day, or hour) should be consistent with the amount of detail tracked and the risk associated with the task. Often tasks become so detailed that they become a checklist. In a complex project, checklists and schedules should be separated to ensure that the management reporting is not compromised by too much detail.

Defining Task Relationships

The WBS denotes a hierarchy of task relationships. Subtask completion eventually rolls up into task completion, which ultimately results in project completion. There can be relationships between tasks that are not within the outlined hierarchy (perhaps from other projects). These relationships need to be noted. The ultimate structuring of the tasks should minimize horizontal dependencies on other tasks. If the tasks are not organized efficiently, it is difficult to schedule and allocate resources to the tasks.

Section 3: Project Planning

Activity Definition and Sequencing Worksheet Instructions and Template

The Activity Sequencing Worksheet is a tool to organize WBS elements by defining activities, tasks and sub-tasks, the sequence in which they must be performed, and estimating their duration. This information is used to build the Project Schedule.

General Information - Basic information that identifies the project.
Project Title – The proper name used to identify this project.

Project Working Title – The working name or acronym used to identify the project. If an acronym is used, define the specific meaning of each letter.

Proponent Secretary – The Secretary to whom the proponent agency is assigned or the Secretary that is sponsoring a particular enterprise project.

Proponent Agency – The agency that will be responsible for the management of the project.

Prepared by – The person(s) preparing this document.

Date/Control Number – The date the plan is finalized and the change or configuration item control number assigned.

Complete the columns in the table as described below.
Element Number – List the element numbers assigned in the WBS.

WBS Elements, Activity, Task, or Sub-Task – Identify the task for the Element Number in the first column by listing the WBS Element, Activity, Task or Sub-Task as defined in the WBS worksheet. Indent Subordinate elements in the WBS element column. For example indent all tasks for an Activity and then indent the Sub-Task for the Task.

Definition of Activity, Task, or Sub-Task (Description) – Refine or revise the WBS definition of the Activity or Task in the previous column.

Estimated Duration – Estimate the length of time required to perform the WBS Element given the resources identified in the Resource Plan. Duration is the total period of time that it will take to perform the activity or task.

Task Predecessor Element Number - Provide the WBS Element Number(s) for WBS Element that must be completed before the WBS Element can start.

Section 3: Project Planning

Activity Definition and Sequencing Worksheet

Provide basic information about the project including: Project Title – The proper name used to identify this project; Project Working Title – The working name or acronym that will be used for the project; Proponent Secretary – The Secretary to whom the proponent agency is assigned or the Secretary that is sponsoring an enterprise project; Proponent Agency – The agency that will be responsible for the management of the project; Prepared by – The person(s) preparing this document; Date/Control Number – The date the plan is finalized and the change or configuration item control number assigned.

Project Title: _____ ***Project Working Title:*** _____

Proponent Secretary: _____ ***Proponent Agency:*** _____

Prepared by: _____ ***Date / Control Number:*** _____ | _____

Element Number	*WBS Elements Activity, Task, or Sub-Task*	*Definition of Activity or Task (Description)*	*Estimated Duration (Hours or Days)*	*Task Predecessor Element Number*

Section 3: Project Planning

Resource Planning

Projects have a limited number of resources. The project charter allocates resources (at a high level) to the project. One of the project manager's primary roles is to find a way to successfully execute a project within these resource constraints. Resource planning involves identifying a team that possesses the skills required to perform the work (labor resources), as well as identifying the tools, equipment, facilities, and other resources needed by the team to complete the project. A Project Resource Plan Template is provided at the end of this subsection.

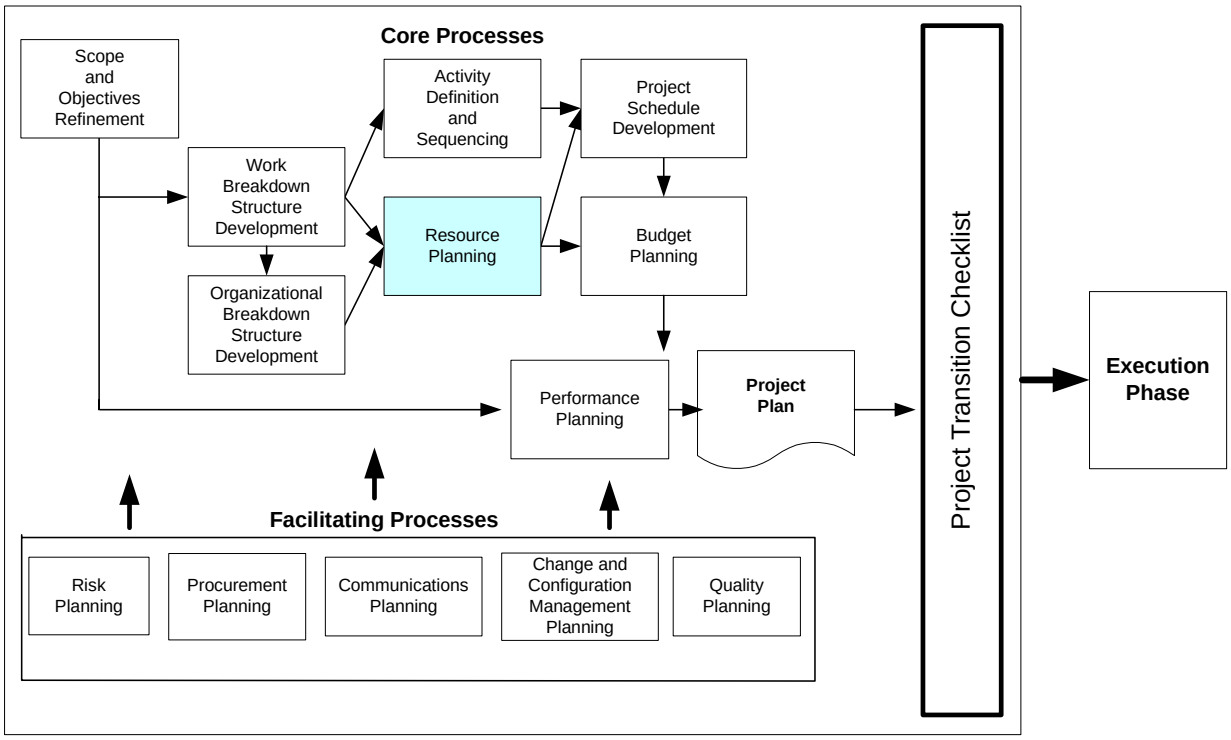

Figure 3.10
Resource Planning Identified in the Planning Processes

Labor Resources

Labor resources are human resources. There are several parts to planning for the labor resource needs of a project:

- Determining the resource pool
- Estimating the skill requirements
- Identification of resource costs
- Identification of risk associated with a particular resource
- Determining the size of the project team

Section 3: Project Planning

Determining the Resource Pool

Though the charter allocates resources to the project, specific resources may not be identified. The first step is to determine the specific resources that are available to the project. Typically, a collection of identified resources is called a resource pool. The resource pool specifies the skill type and experience level of the resources and the time period the resources are available to the project. Resource pool information is located in the detailed resource requirement section of the Project Resource Planning Template provided with this methodology.

Estimating the Skill Requirements

Task completion time is directly related to the skill level of the person performing the task. The project manager must pragmatically assess the skills of the available resources. The skill level or quality of the allocated resource will drive both schedule and budget. (Less than optimal resources may slow the project and increase cost even if their rate is lower than an optimal resource.)

Costs

Identification of resource costs is essential information to development of the project budget. Resources required by the project can be charged to the project in a variety of ways. Some costs are hidden costs and are not easily identified. The cost for each resource and the unit of measure by which the cost is calculated is recorded in the resource plan template.

Risk

The Project Manager must determine the risks associated with the available resources. Resource risk may include skill level availability and cost of the resource. Risks are inherently involved with scheduling resources. Sound resource planning makes allowances for dealing with risks in one or more of the following ways:

- When significant resource risks are identified, add a WBS task for risk management/risk reduction and add financial reserves to the budget to cover potential schedule delays.

- Add time to those tasks where resources are known to be a problem. There is no rule of thumb for this multiplier; it depends on the degree of risk and the overall impact resource problems can have on the project.

- Apply an additional percentage of time to the schedule for specific individuals, particularly if new technology is being used or if the person providing the estimate is extremely optimistic. Remember, technical staff typically underestimates the time required to complete tasks.

- When a skill shortage is identified, add time and resources for training. By recognizing resource shortfalls and providing the necessary training, a project manager mitigates some risk.

Section 3: Project Planning

Non-labor Resources

All project teams require tools to successfully perform assigned tasks. In scheduling resources, the project manager must ensure that both the people and the equipment necessary to complete assigned tasks are available simultaneously.

The need for adequate workspace is often overlooked when planning a project. If a 15-person project team is going to start work, there must be a facility to house the team. Ideally, the team should be collocated in one place to facilitate interaction and communication. Team spirit and synergy are enhanced, and the chance of project success is increased when everyone works closely together.

In addition to workspace, equipment for the team should be included in the Resource Plan. Ensuring the availability of equipment at critical points in the project is crucial in planning a successful project. Efficiency and morale are negatively affected by unavailability of equipment needed to perform a task. When considering equipment it is also important to remember to give each team member the right tools (for example computer software) to do the job from the beginning of the project

Section 3: Project Planning

Resource Plan Instructions and Template

A. General Information – Basic information that identifies the project.
Project Title – The proper name used to identify this project.

Project Working Title – The working name or acronym used to identify the project. If an acronym is used, define the specific meaning of each letter.

Proponent Secretary – The Secretary to whom the proponent agency is assigned or the Secretary that is sponsoring a particular enterprise project.

Proponent Agency – The agency that will be responsible for the management of the project.

Prepared by – The person(s) preparing this document.

Date/Control Number – The date the plan is finalized and the change or configuration item control number assigned.

B. Resources Allocated - When the project was chartered a set of resources was identified and committed to the project. Identify the resources, other than funding, allocated in the Project Charter by inserting the allocation and source in the table provided. The resources allocated to the project are found in the Project Charter, Section H. Resources include people, facilities, equipment, and funding. The resource categories provided are Project Team (people), Customer Support (people or man hours) Facilities, Equipment, Software Tools, and Other. The full scope of resources required to execute a project are usually unknown when the Project Charter is developed but are detailed in this plan (see Section B).

C. Detailed Resources Requirements - Using the Work Breakdown Structure and the Organizational Breakdown Structure, develop and provide a detailed breakdown of resources, other than funds, required to execute the project. Identify the cost and time constraints for each resource as well as the level of risk (high, medium or low) associated with that resource. Add as many rows as necessary for each resource category.

Resource – Identify the resources required in each category. Be as specific as possible when identifying resources.

Skill Level or Material Quality – Identify the experience or skill level of people or the acceptable condition level of other resources. An example skill level is *Level 1*. An example of Material Quality is *New*.

Associated Task(s) or Task(s) to Perform – Identify the specific task or tasks that rely on the resource requirement.

Duration Required – Identify the duration of time (days, weeks, hours) that the resource is needed.

Available Time Period – Identify when (dates) the required resource is available to the project. This column is essential because of the impact on the Project Schedule.

Cost – Identify what the resource will cost for the required period.

Unit of Cost – Identify the basis of cost. Cost may be based on an hourly, daily, weekly, or monthly calculation. Cost may also be fixed or a one time expenditure.

Level of Risk – There is risk associated with attaining and maintaining resources. Provide a subjective indication of the level of risk associated with each resource. The levels of risks are High, Medium, and Low.

D. Summary of Resources Required - Summarize the resources identified in the detail resource plan by the categories used in Section B above.

E. Resources Net Change - Compare Section B and Section C and identify the difference in resources. Provide an explanation for the variance in resources between what is allocated by the Project Charter and resources identified in Section C as required. A variance in the resources required and those allocate pose risk to the plan. The variance may be accommodated through risk mitigation or through reallocation of budgeted funds. The project sponsor should be consulted, if the change is not within the tolerance established by the Project Charter or Policy. The project sponsor or chartering authority will need to review and agree to a change in resource allocation.

Section 3: Project Planning

Resource Plan

A. General Information

Provide basic information about the project including: Project Title – The proper name used to identify this project; Project Working Title – The working name or acronym that will be used for the project; Proponent Secretary – The Secretary to whom the proponent agency is assigned or the Secretary that is sponsoring an enterprise project; Proponent Agency – The agency that will be responsible for the management of the project; Prepared by – The person(s) preparing this document; Date/Control Number – The date the plan is finalized and the change or configuration item control number assigned.

Project Title: _____ ***Project Working Title:*** _____

Proponent Secretary: _____ ***Proponent Agency:*** _____

Prepared by: _____ ***Date / Control Number:*** _____ | _____

B. Resources Allocated

Insert the information on the resources, other than funding, allocated to the project in the Project Charter (Section H of the Charter).

Resources	***Allocation and Source***
Project Team (Full and Part Time Staff)	
Customer Support	
Facilities	
Equipment	
Software Tools	
Other	

Section 3: Project Planning

C. Detailed Resource Requirements

Provide a detailed breakdown of resources, other than funds, required to execute the project. Identify the skill level, associated task, duration required, available time period, cost, unit of cost and the level of risk (high, medium or low) associated with that resource. Add as many rows as necessary for each resource category.

Resource *Describe the resource for example: "network engineer."*	***Skill Level or Material Quality***	***Associated Task(s)***	***Duration Required***	***Available Time Period***	***Cost***	***Unit of Cost (Hour, Day, Week, Month Fixed)***	***Level of Risk High, Medium or Low***
Project Team							
Customer Support							
Facilities							
Equipment							

Section 3: Project Planning

C. Detailed Resource Requirements (Continued)

Resource *Describe the resource for example: "network engineer."*	***Skill Level or Material Quality***	***Associated Task(s) or Task(s) to Perform***	***Time Period Required***	***Available Time Period***	***Cost***	***Unit of Cost (Hour, Day, Week, Month Fixed)***	***Level of Risk High, Medium or Low***
Software Tools							
Other							

Section 3: Project Planning

D. Summary of Resources Required

Summarize the resources identified in Section C above.

Resources	***Allocation and Source***
Project Team (Full and Part Time Staff)	
Customer Support	
Facilities	
Equipment	
Software Tools	
Other	

Section 3: Project Planning

E. Resources Net Change

Provide a breakdown and explanation for any resource where there is a difference between resource allocation in the Project Charter and those identified in Section C above.

Resources	*Resources Allocated*	*Resources Required*	*Net Change*	*Explanation*
Project Team (Full and Part Time Staff)				
Customer Support				
Facilities				
Equipment				
Software Tools				
Other				

Schedule Development

The project schedule provides a graphical representation of predicted tasks, milestones, dependencies, resource requirements, task duration, and deadlines. The process of developing the project schedule follows sequencing of activities and resource planning. The project schedule should be detailed enough to show:

- Each WBS element to be performed
- Resources scheduled for each task
- Start and end date of each task
- Expected duration of each task
- Required predecessor task(s)

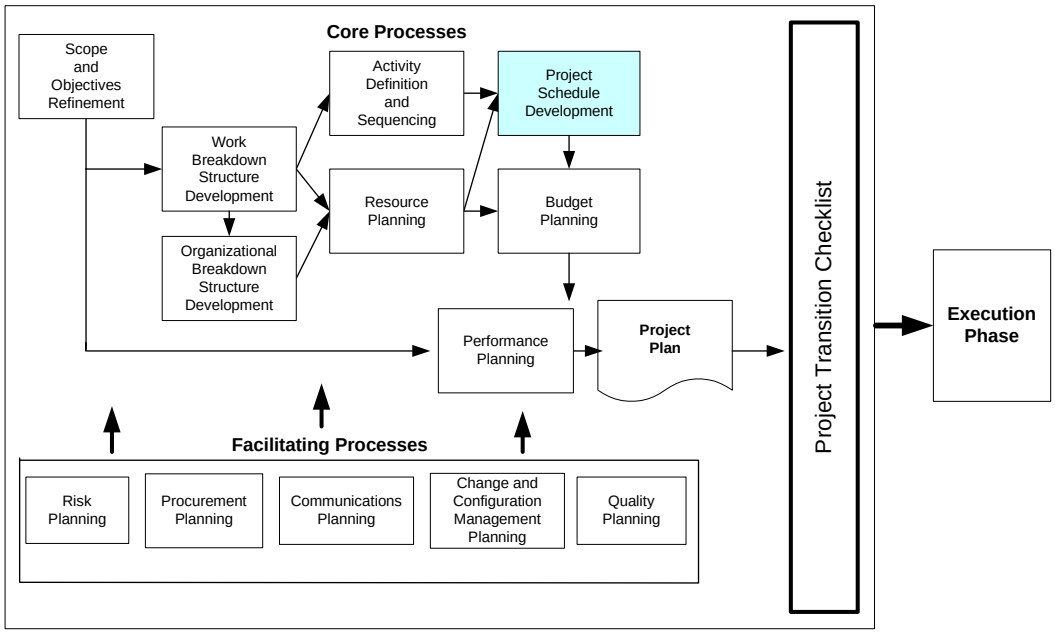

Figure 3.11
Project Schedule Development Identified in the Planning Processes

Developing a schedule is an interactive process. For example, Risk Management Planning may suggest additional tasks requiring further resources and the need to establish additional milestones. For large, complex projects, an overall master schedule is developed with sub-schedules for activities or task that provide additional detail necessary for management of the project.

During the life of the project, actual progress is measured against the approved schedule baseline. (A schedule baseline is defined as the original approved schedule plus or minus approved changes.) Changes to the schedule baseline are controlled through a defined change control process addressed later in the methodology.

Schedule Development and Maintenance

Schedule development and maintenance have the following objectives:

- Developing a project schedule that displays a logical sequence of tasks to deliver the project
- Providing an accurate status of the project to control the project work effort
- Providing a means for understanding the impact of change on the schedule baseline

Figure 3.12 depicts the process to develop initial schedules and maintain schedules during the life of the project

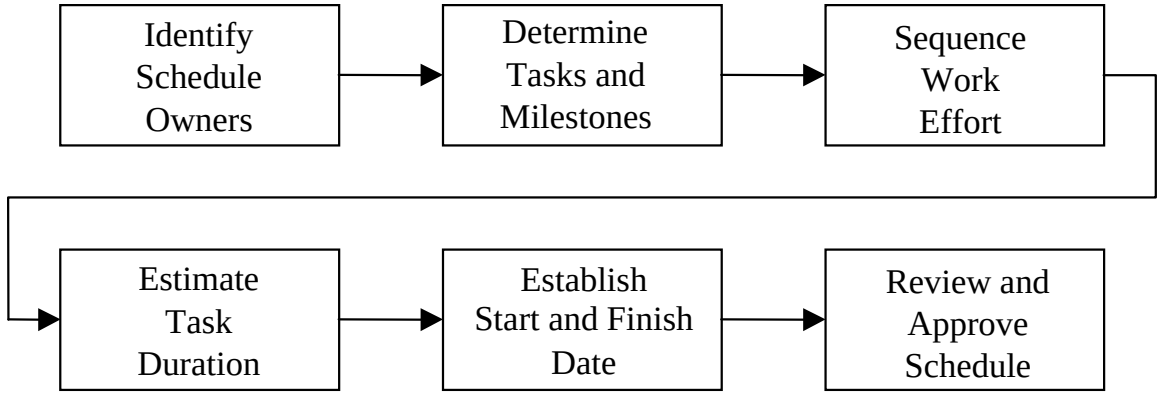

Figure 3.12
Schedule Development and Maintenance Process

Identify Schedule Owners

Development of a project schedule often requires the integrated efforts of project team members that are assigned activities or tasks to accomplish. Identifying the individuals responsible for developing and maintaining the project schedule is essential to good schedule control. The work breakdown structure, organizational breakdown structure, and resource plan are used as the basis for schedule development.

Determine Tasks and Milestones

Tasks are focused on work effort to produce a product. Milestones are a point in time used as management checkpoints to measure accomplishment. The number of tasks and milestones identified result from the specific product, the level of risk, and the level of detail required by management. The result is a listing of tasks and milestones required to deliver the product.

Milestones denote the completion of key project activities. A milestone has no duration. A deliverable is often represented as a milestone, while the effort to produce the deliverable is

identified as a task. Milestones can occur at the end of each work package in the work breakdown structure and serve as measurable items on which to evaluate success of a task.

For contracted work, milestones are often used as points in the project where interim payments are made. If this approach is used, mutual agreement is necessary on the content of each milestone and the cost associated with that milestone.

Sequence Work Effort

Logically sequencing tasks and milestones to deliver a product is critical to development of a project schedule. Sequencing establishes dependencies among tasks and milestones, which must be incorporated into the project schedule. Sequencing of WBS activities and tasks is performed during activity definition and sequencing discussed earlier in this section.

Estimate Task Duration

Estimating task duration is one of the most challenging aspects of project planning. It is also a key input to cost estimation. Estimating task duration is an iterative process occurring throughout the planning phase and is directly affected by the results of resource planning. Variables that impact task duration include staff availability, complexity of the task, the skill level of the person assigned to the task, unexpected events, efficiency of work time, and mistakes and misunderstandings during the execution of the project. A skilled schedule developer takes into account absenteeism, holidays, meetings, discussions, and interaction among the staff. No staff resource is 100% productive every hour of the workday. If a schedule assumes 100% productivity, the schedule rapidly falls apart. A successful schedule developer incorporates these factors into the duration estimates.

Establish Start Date and Finish Date

After the tasks and milestones are identified, sequenced, and estimated, the start and finish dates for each task must be specified. The date a task may start is impacted by the availability of resources to perform the task and the task's dependency on other tasks. The start date of a task is derived from the date resources required to execute the task are available and the finish date(s) of predecessor task(s). The finish date of a task is determined by adding the estimated task duration to the start date.

Review and Approve Schedule

The final steps in schedule development are reviewing the schedule to ensure it represents the most effective and efficient work effort and approving the schedule. The schedule developers may review the schedule multiple times before it is reviewed and approved by the project manager. Finally, the schedule is submitted as part of the project plan to the designated approval authority.

Other Helpful Hints for Project Schedule Development and Maintenance

Templates and Historical Information

Use schedule templates or historical information as the basis for schedule development, if applicable. Schedule templates and historical information can provide valuable insight about tasks that otherwise may be overlooked. The use of appropriate historical information can strengthen the cost and schedule estimates for resources.

Define Priorities

Clearly defining the priorities of the project tasks will help resolve scheduling or resource conflicts. Understanding the priorities and relationships between the tasks will further assist with schedule and resource conflict resolution.

Determine Critical Path

The critical path becomes apparent as the schedule is developed and refined. When the schedule is complete, the critical path will be the longest path of sequential tasks that must be performed in the precise order scheduled. The critical path must be carefully managed or the entire project will be delayed. The sequence and schedule are driven by task dependencies. The critical path identifies the earliest possible completion of all project work. Because there is no float time available on the critical path, the schedule cannot slip. In order to manage the project, the critical path is identified in the project schedule and the project manager remains aware of the importance of the critical path throughout project implementation.

Document Assumptions

Documenting the assumptions made when developing the project schedule is critical to the success of the project. Modifying the schedule without clear understanding of all assumptions made during schedule development adds substantial risk to the project. An example of an assumption that should be documented would be if the task duration for a specific task were relatively short because it was assumed a highly skilled person would perform the work. If a less skilled person is assigned to perform the task, the project manager can recognize the risk and make necessary schedule changes and decisions.

Identify the Risks

Risks are inherently involved with scheduling limited resources. Good scheduling makes allowances for risks in one or more of the following ways:

- When significant schedule risks are identified, add a WBS task for risk management/risk reduction. If possible, add financial reserves to the budget to cover potential schedule delays.

- Add additional time to those tasks where schedule risks are apparent. There is no rule of thumb for this multiplier; it depends on the degree of risk and overall importance of the schedule to the project.

- Apply a percentage of time to the schedule for specific individuals, especially if new technology is being used or if the person providing the estimate is extremely optimistic. Remember, technical staff typically underestimates the time required to complete tasks.

One Start—One Finish

A useful schedule is structured so that it provides management with a tool to understand the impact of an issue on the project completion. To accomplish this, the tasks within the schedule must be constrained (have dependencies between them) so that impacts can trickle through the schedule, and the effects of the issue can be seen. Therefore, a schedule should have only one task that starts the schedule; for example, "begin project." All other tasks are then constrained to the first task or subsequent ones. The schedule should have only one task that completes the project; for example, "project complete." No task should be entered into the schedule without affecting something. The constraints or dependencies should be realistic.

Descriptions

Schedules are displayed to many people within and outside the project. All potential recipients of schedule information should understand the descriptions of tasks and milestones. Cryptic or abbreviated descriptions should be avoided.

Task Responsibility

The schedule owner is usually a manager. The individuals performing the project tasks are usually not managers. To facilitate communication, a person responsible for completing each task should be identified. This improves communication between the individual performing the task and the schedule owner. The individual is provided with a list of tasks to be completed, and the schedule owner has a point of contact to obtain task status. Identifying the person responsible makes it possible to produce reports for each person.

Summary Tasks

A group of tasks can usually be combined to represent some aspect of the project that is important to management; for example, the schedule to deliver a WBS element or a particular phase of the project. Automated scheduling tools have the capability to define summary tasks, often referred to as hammocks, which allow tasks to be grouped. Task grouping improves communication and provides a framework to display summary information to upper management.

Management Concurrence

Usually the project manager and technical representatives of the project develop the schedule. However, management is typically the prime recipient of schedule benefits. Therefore, all management levels should understand the schedule. Management must concur with, own, and use the schedule as a tool to manage the project. Without management ownership, project performance may be less than optimal.

Simplicity

Developing and maintaining project schedules is difficult and time-consuming. Frequently, schedules are developed and never maintained to reflect current status. This may be due to a lack of discipline or the time-consuming process inherent in scheduling. Additionally, risk should be a factor when determining the degree of rigor required for project schedules. Areas

with a high degree of risk may require a greater degree of schedule control. Areas with a low degree may not require the same rigor.

Simplicity may be the best approach. Schedules should be developed to enable project participants to understand the delivery of the entire project. First developing schedules at a high level and then defining detailed schedules for high-risk areas should satisfy the need for improved control with reduced burden.

Automation

Schedules provide invaluable information to the management of a project. Automation can offer the means to improve reporting to management. Automated scheduling tools are commonplace in today's project environments. The Commonwealth of Virginia has adopted Microsoft Project for this purpose.

Schedule Format

The type of schedule format used for a project relates to the complexity of the implementation. For large, complex projects with a multitude of interrelated tasks, a Network Logic Diagram (commonly referred to as a PERT chart—Program Evaluation and Review Technique) may be used. The Network Logic Diagram depicts interdependencies and associations and allows planning to include these relationships. A key feature of this method is the ability to determine and to show the critical path of the project (see below for a discussion of critical path). A sample Network Logic Diagram is shown in Figure 3.13.

Section 3: Project Planning

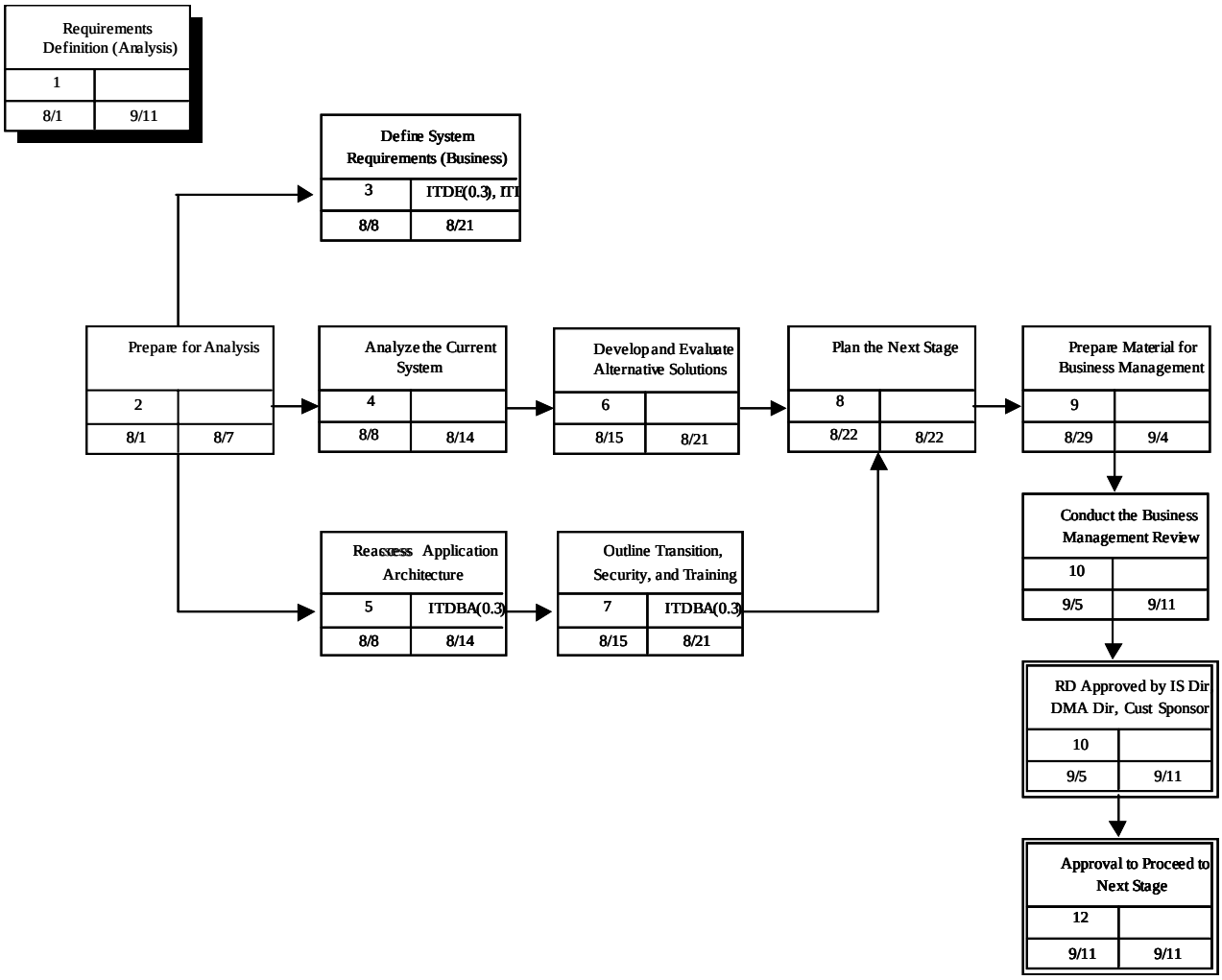

Figure 3.13
Sample Network Logic Diagram

Section 3: Project Planning

A Gantt chart is another frequently used method to display a schedule. The Gantt chart (or bar graph, named after Henry Gantt) is a two-dimensional representation showing tasks and the time frame for completion. A sample Gantt chart is shown in Figure 3.14

ID	WBS	Task Name
1	1	Requirements Definition
2	2	Prepare for Analysis
3	3	Define System Requirements (Business Mode)
4	4	Analyze the Current System
5	5	Reassess Application Architecture Requirements
6	6	Develop and Evaluate Alternative Solutions
7	7	Outline Transition, Security, and Training Plans
8	8	Plan the Next Stage
9	9	Prepare Material for Business Management
10	10	Conduct the Business Management Review
11	11	RD approved by IS Dir, DMA Dir, Cust Sponsor, and process team
12	12	Approval to Proceed to Next Stage

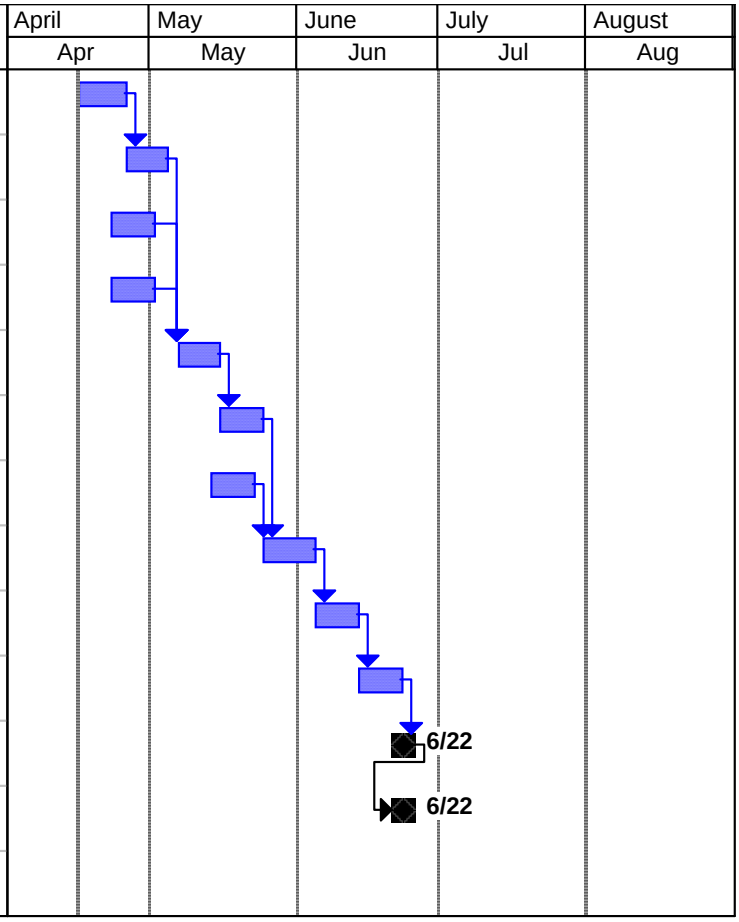

Figure 3.14
Sample Gantt Chart

The simplest display of a schedule is the table format. Other displays such as Gantt and Pert charts can be developed from the table format. Microsoft Project and other automation tools can also be used in a similar manner by developing the schedule in a table format and then using the automated tool to visualize the table in a Gantt chart or Network Diagram.

Project Schedule Instructions and Template

The project schedule is based upon information in the WBS, OBS, Activity Definition and Sequencing Worksheet, and Resource Plan. The schedule should address at least three levels of WBS Elements. The schedule may be prepared using an automated scheduling tool like Microsoft Project. If an automated tool is used, format the data entry table to include all of the data elements identified in the table section of the Project Schedule Template.

General Information - Basic information that identifies the project.
Project Title – The proper name used to identify this project.

Project Working Title – The working name or acronym used to identify the project. If an acronym is used, define the specific meaning of each letter.

Proponent Secretary – The Secretary to whom the proponent agency is assigned or the Secretary that is sponsoring a particular enterprise project.

Proponent Agency – The agency that will be responsible for the management of the project.

Prepared by – The person(s) preparing this document.

Date/Control Number – The date the plan is finalized and the change or configuration item control number assigned.

Complete the columns in the table as described below.
Element Number – Insert the assigned Work Breakdown Structure Element Number (for example: 1.1.1) for the activity, task, or subtask listed on the Activity Definition and Sequencing Worksheet.

WBS Elements, Activity, Task, or Sub-Task Names – Insert the activities, tasks, and sub-tasks from the Activity Definition and Sequencing Worksheet for the corresponding Element Number inserted in the first column. Indent Subordinate elements in the WBS element column. For example indent all tasks for an Activity and then indent the Sub-Task(s) for the Task.

Estimated Duration – Insert the estimated length of time required to perform the WBS element from the Activity Definition and Sequencing Worksheet for the corresponding Element Number inserted in the first column. Duration is defined as the number of work periods (not including holidays or non-working periods) required to complete an activity or other project element.

Start Date - Point in time when an activity can start, based on sequence, resource availability, and any other specific schedule constraints.

Finish Date - Point in time when the uncompleted portions of an activity can finish based on the network logic, resource availability, and any other schedule constraints.

Resources Required - Identify what physical resources are needed to accomplish this WBS element. This column refers to personnel, facilities, equipment, and software (see Resource Plan).

Task Predecessor Element Number – Insert the Task Predecessor Element Number from the Activity Definition and Sequencing Worksheet for the corresponding Element Number inserted in the first column.

Section 3: Project Planning

Project Schedule

Provide basic information about the project including: Project Title – The proper name used to identify this project; Project Working Title – The working name or acronym that will be used for the project; Proponent Secretary – The Secretary to whom the proponent agency is assigned or the Secretary that is sponsoring an enterprise project; Proponent Agency – The agency that will be responsible for the management of the project; Prepared by – The person(s) preparing this document; Date/Control Number – The date the plan is finalized and the change or configuration item control number assigned.

Project Title: _____ ***Project Working Title:*** _____

Proponent Secretary: _____ ***Proponent Agency:*** _____

Prepared by: _____ ***Date / Control Number:*** _____ | _____

Complete the columns below using information developed in the WBS, OBS, Activity and Sequencing Worksheet, and Resource Plan. Indent subordinate elements in the WBS element column. For example indent all tasks for an Activity and then indent the Sub-Task(s) for the Task. The schedule should address at least three levels of WBS elements. The schedule may be prepared using an automated scheduling tool like Microsoft Project. If an automated tool is used, format the data entry table to include all of the data elements in the table below.

Element Number	***WBS Elements Activity, Task, or Sub-Task***	***Estimated Duration (Hours or Days)***	***Start Date***	***Finish Date***	***Resources Required***	***Task Predecessor Element Number***

Section 3: Project Planning

Budget Planning

Budget planning is the determination of available funding and costs associated with a defined set of activities during a specified time period. The steps associated with budget planning are highly dependent on both the estimated duration of tasks and the resources assigned to the project. The budget plan is dependant upon the project schedule, the resource plan, the quality management plan and the independent validation and verification plan, and the risk management plan.

Overview of Project Budget Planning

Initial budgetary estimates from the project proposal and project charter are based on availability of funds and gross estimates of project costs derived from historical data or experience. The availability of funds may or may not coincide with the actual funds needed to execute the project. For this reason, budget estimates are refined in the Project Planning Phase and baselined with approval of the project plan.

Budgeting serves as a control mechanism where actual costs can be compared with and measured against the baseline budget. When a project schedule begins to slip, cost is affected. When project costs begin to escalate, the project manager should revisit the Project Plan to determine, whether the scope, budget, or schedule needs adjusting.

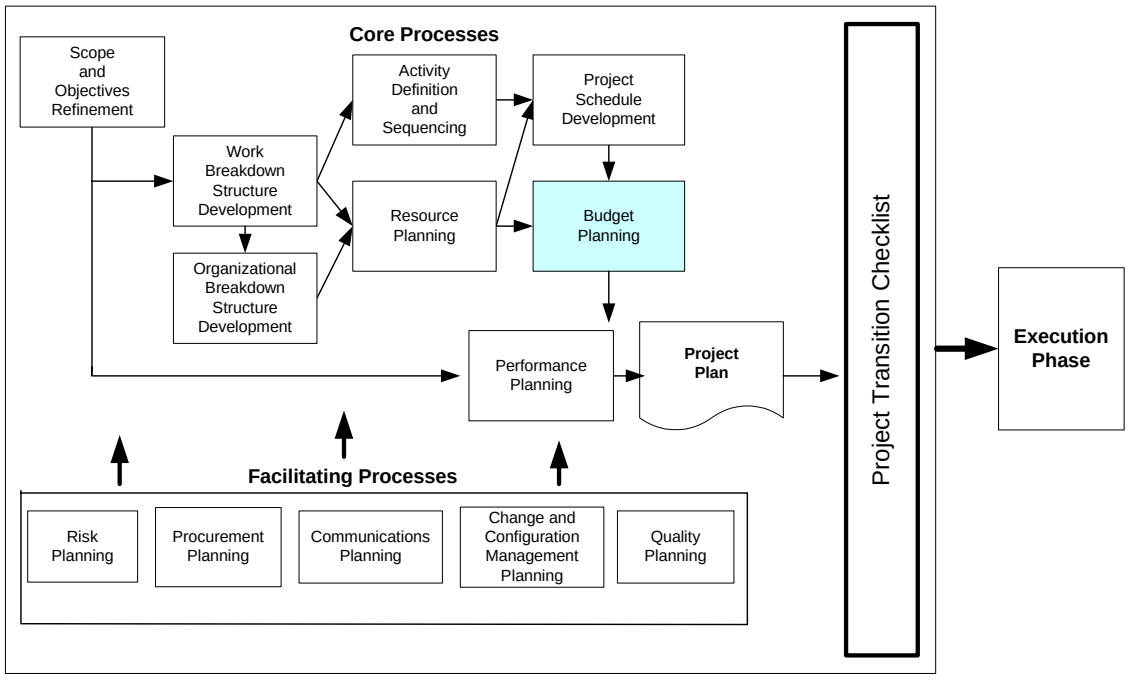

Figure 3.15
Budget Planning Identified in the Planning Processes

Section 3: Project Planning

Cost Factors and Estimate cost for WBS Elements

To develop the budget, the applicable cost factors for each WBS element must be estimated. The cost factors are:

- Internal Staff Labor Cost
- Services (External) Cost
- Development Tool Cost
- Software Tool Cost
- Hardware Cost
- Materials and Supplies
- Facilities
- Telecommunications
- Training

A cost for each factor can be determined from information contained in the project schedule and resource plan. Section C of the budget plan template, contains a table for developing WBS cost estimates using the factors listed above. The cost for each factor should be totaled by fiscal year as well as the costs of all factors associated with a WBS element.

Contingency Cost

Identifying and quantifying project risk is critical to the development of a project budget. Good budgeting practices make allowances for handling risk. The risk management plan template described later in this section provides an area to estimate contingency cost for risk. Risk funding or contingency cost is forecast for each fiscal year and allocations made according to the needs identified in the risk management plan.

Spend Plan

The project spend plan is a part of the project budget and allocates funding against the identified cost factors for a particular time period. Normally spend plans forecast the spending expected in each quarter using the WBS as the basis for the forecast. Monitoring the spend plan against actual spending provides a metric that readily identifies deviation of a project from its budget.

Section 3: Project Planning

Budget Instructions and Template

A. General Information – Basic information that identifies the project.
Project Title – The proper name used to identify this project.

Project Working Title – The working name or acronym used to identify the project. If an acronym is used, define the specific meaning of each letter.

Proponent Secretary – The Secretary to whom the proponent agency is assigned or the Secretary that is sponsoring a particular enterprise project.

Proponent Agency – The agency that will be responsible for the management of the project.

Prepared by – The person(s) preparing this document.

Date/Control Number – The date the plan is finalized and the change or configuration item control number assigned.

B. Funds Available - Provide the amount of project funding for each fiscal year by fund source category identified in the Project Charter. Provide the specific reference for the source of funding within each category. Provide the Grand Total of Funds Available in the box below the Funding Source tables. The Grand Total is the total of all four (4) fiscal year totals.

C. Planned Expenditures by WBS Element - Using the WBS, provide a breakdown of expenditures for each WBS element using the expenditure categories shown. Balance expenditures with resources available or allocated in Section B. If funding is scheduled to be expended in multiple fiscal years or quarters, list the WBS Element Number again and prorate the expenditures over the fiscal years or quarters.

WBS Element Number - List the WBS Element Number in the first column.

Fiscal Year and Quarter - For each WBS element, identify the Fiscal Year and Quarter when funds are scheduled to be expended. (See Project Schedule.)

Internal Staff Labor, *Services*, *Development Tools*, *Software*, *Hardware*, *Materials and Supplies*, *Facilities*, *Telecommunications*, *Training* - Identify the funds that are scheduled to be expended for the specified fiscal year and quarter for each listed category (columns 3 through 9 in table).

Total – Total cost for each category.

D. Contingency (Risk) Budgeting - The expenditures in this section are developed in the Risk Plan under (see Section F) and are copied into the *Total Planned Contingency Expenditure*

column of the table provided. The Total Planned Contingency Expenditure must be balanced against the funds available identified in Section B.

E. Planned Expenditures - Summarize from Section C the total planned expenditures by fiscal year for the categories listed. Develop the total planned expenditures by balancing the estimated cost for all WBS elements and risk mitigation expenditures in a fiscal year against the available funding. Provide comments where necessary to clarify expenditures. Provide the Grand Total of Funds Available in the box below the Planned Expenditures tables. The Grand Total is the total of all four (4) fiscal years.

If planned expenditures and allocated funding cannot be balanced, notify the project sponsor and provide a rational for requesting additional funding. If additional funding is not available, reconsider the scope of the project and solution selected. Identify changes to the WBS and reevaluate cost.

F. Project Spending Plan - Document the spending plan, by category, for each quarter of the fiscal year. Derive these estimates using the tables in Sections C and D. Sum the cost, by category, for all WBS elements and risk(s) that occur during each quarter of each fiscal year. Total the columns for each quarter at the bottom of the table.

Section 3: Project Planning

Budget Plan

A. General Information

Provide basic information about the project including: Project Title – The proper name used to identify this project; Project Working Title – The working name or acronym that will be used for the project; Proponent Secretary – The Secretary to whom the proponent agency is assigned or the Secretary that is sponsoring an enterprise project; Proponent Agency – The agency that will be responsible for the management of the project; Prepared by – The person(s) preparing this document; Date/Control Number – The date the plan is finalized and the change or configuration item control number assigned.

Project Title: _____ ***Project Working Title:*** _____

Proponent Secretary: _____ ***Proponent Agency:*** _____

Prepared by: _____ ***Date / Control Number:*** _____ | _____

B. Funds Available

Provide the amount of funding for each fund source category in the tables below. Provide clear and specific reference for the source of funding within the categories listed.

Funding Source ($000)			
	200_-0_		***Specific Fund Cite, Grant, or Budget Line Number***
Category	***FY 200_***	***FY 200_***	
General Fund			
Non-General Fund			
Special Revenue			
Federal			
Other			
Total			

Funding Source ($000)			
	200_-0_		***Specific Fund Cite, Grant, or Budget Line Number***
Category	***FY 200_***	***FY 200_***	
General Fund			
Non-General Fund			
Special revenue			
Federal			
Other			
Total			

Grand Total of Funds Available	

Section 3: Project Planning

C. Planned Expenditures by WBS Element

Provide expense or cost breakdown for each WBS element by fiscal year and quarter using the expenditure categories below. Balance expenditures at the WBS level with funds available in Section B.

WBS Element Number	*Fiscal Year and Quarter*	*Internal Staff Labor*	*Services*	*Develop-ment Tools*	*Software*	*Hardware*	*Materials and Supplies*	*Facilities*	*Tele-communi-cations*	*Training*	*Total*
Total											

Section 3: Project Planning

D. Contingency (Risk) Budgeting

The expenditures below are developed in the Risk Plan Section F and copied into this table. The Total Planned Contingency Expenditures must be balanced against the funds available in Section B.

Fiscal Year	***Total Planned Contingency Expenditure***

Section 3: Project Planning

E. Planned Expenditures

Provide the total planned expenditures by year for the categories listed by summarizing Section C in this table. Provide comments where necessary to clarify expenditures. The totals are developed by balancing the estimated cost for all WBS Elements in a fiscal year against the available funding.

Planned Expenditures ($000)			
	200_-0_		***Comments***
	FY 200_	***FY 200_***	
Internal Staff Labor			
Services			
Development Tools			
Software			
Hardware			
Materials and Supplies			
Facilities			
Telecommunications			
Training			
Contingency (Risk)			
Total			

Planned Expenditures ($000)			
	200_-0_		***Comments***
	FY 200_	***FY 200_***	
Internal Staff Labor			
Services			
Development Tools			
Software			
Hardware			
Materials and Supplies			
Facilities			
Telecommunications			
Training			
Contingency (Risk)			
Total			

Grand Total of Funds Available	

Section 3: Project Planning

F. Project Spending Plan

In the columns below, document the spending plan by category for each quarter of the fiscal year. Derive these estimates, using the tables in Sections C and D, by summing the cost for all WBS elements that occur during a particular quarter of a fiscal year.

Budget Category	***FY200_ QTR 1***	***FY200_ QTR 2***	***FY200_ QTR 3***	***FY200_ QTR 4***	***FY200_ QTR 1***	***FY200_ QTR 2***	***FY200_ QTR 3***	***FY200_ QTR 4***
Internal Staff Labor								
Services								
Development Tools								
Software								
Hardware								
Materials and Supplies								
Facilities								
Telecommunications								
Training								
Contingency (Risk)								
Total								

Section 3: Project Planning

F. Project Spending Plan – continued

Budget Category	***FY200_ QTR 1***	***FY200_ QTR 2***	***FY200_ QTR 3***	***FY200_ QTR 4***	***FY200_ QTR 1***	***FY200_ QTR 2***	***FY200_ QTR 3***	***FY200_ QTR 4***
Internal Staff Labor								
Services								
Development Tools								
Software								
Hardware								
Materials and Supplies								
Facilities								
Telecommunications								
Training								
Contingency (Risk)								
Total								

Performance Planning

The project performance plan defines how project success or failure is measured. Project success is achieved by meeting the stated business objectives for the project and by satisfying customer needs. The performance plan identifies the relationship of the agency's business objectives to performance goals and specifies: who will measure the performance; how and when performance is measured; and, how performance is reported. The performance plan also identifies and defines the project deliverables and acceptance criteria for each deliverable.

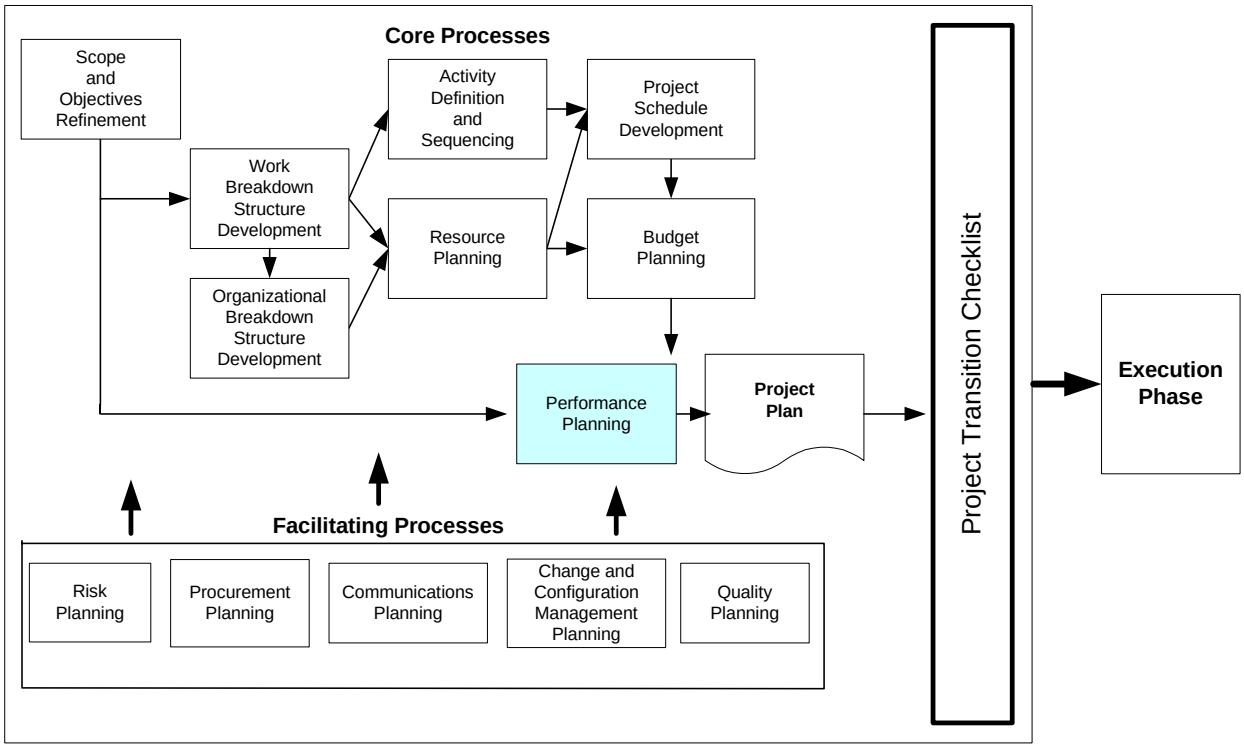

Figure 3.16
Performance Planning Identified in the Planning Processes

The performance plan is a result of the complete planning process that begins with the project scope and objectives defined by the project charter. All of the plans developed through execution of the core and facilitating processes provide information that is used in development of the performance plan.

Section 3: Project Planning

Performance Plan Instructions and Template

A. General Information – Basic information that identifies the project.
Project Title – The proper name used to identify this project.

Project Working Title – The working name or acronym used to identify the project. If an acronym is used, define the specific meaning of each letter.

Proponent Secretary **–** The Secretary to whom the proponent agency is assigned to or the Secretary that is sponsoring a particular enterprise project.

Proponent Agency – The agency that will be responsible for the management of the project.

Prepared by – The person(s) preparing this document.

Date/Control Number – The date the plan is finalized and the change or configuration item control number assigned.

B. Project Performance Plan Table
Project Business Objectives – The Project Business Objectives are found in the Project Charter and in the Scope and Business Objective Worksheet. List each of the Project Business Objectives in this column.

Performance Goal – Define success in relation to the Project Objective. Relate how the objective in the previous column is met. The goal should not be an ambiguous statement, but be clearly defined in terms of accomplishment. For example: *99% of users can log on to the site without error.*

Methodology – Describe how to measure the performance goal. This column should present the method used to measures success. Testing, surveys, and automated system measurements are just a few examples of the methodologies that can be used. The methodology must be specific and practical.

Schedule – Define how often progress toward achieving the goal will be measured by the methodology described in the previous column.

Responsibility – Assign responsibility for monitoring progress, making the measurements as scheduled and reporting to a specific group or individual.

Reports – Identify how progress or lack of progress toward achieving the goals will be reported. Information provided in this column should be consistent with the Project Communications Plan – Appendix H of the Project Plan.

C. Deliverable Description and Acceptance Criteria

Project Business Objectives – Insert the Project Business Objectives from the previous table (Section B).

Deliverable - A deliverable is any measurable, tangible, verifiable outcome, result, or item that must be produced to complete a project or part of a project. The term is often used more narrowly in reference to an external deliverable. A deliverable is subject to approval by the project sponsor or customer.

Description – Describe the Project Deliverable associated with the Project Objective identified in the first column.

Acceptance Criteria – Describe acceptance criteria for each deliverable. Acceptance criteria are the agreed upon standards of acceptable performance and functionality for a deliverable. A deliverable is required to meet the established acceptance criteria before it is delivered to the end user.

Section 3: Project Planning

Performance Plan

A. General Information

Provide basic information about the project including: Project Title – The proper name used to identify this project; Project Working Title – The working name or acronym that will be used for the project; Proponent Secretary – The Secretary to whom the proponent agency is assigned or the Secretary that is sponsoring an enterprise project; Proponent Agency – The agency that will be responsible for the management of the project; Prepared by – The person(s) preparing this document; Date/Control Number – The date the plan is finalized and the change or configuration item control number assigned.

Project Title: _____ ***Project Working Title:*** _____

Proponent Secretary: _____ ***Proponent Agency:*** _____

Prepared by: _____ ***Date / Control Number:*** _____ | _____

B. Project Performance Plan Table

List the Project Business Objectives in the first column. Identify the Performance Goal for each objective, the method of measuring the goal, when the measurement is taken, who is responsible for making the measurement, and how the progress toward the goal is reported.

Project Business Objective *Identify the desired result produced by the project that answers or resolves a business problem.*	***Performance Goal*** *Define success in relation to the Project Objective*	***Methodology*** *Describe how performance goal is measured.*	***Schedule*** *Describe when to measure.*	***Responsibility*** *Identify who measures.*	***Reports*** *Identify how progress toward meeting the performance goal is reported.*

Section 3: Project Planning

C. Deliverable Description and Acceptance Criteria

In the first column, insert the Project Objectives from the previous table, Section B. In the next two columns, list and describe Project Deliverables associated with the Project Objective identified in the first column. Describe Acceptance Criteria for each Deliverable.

Project Objective	***Deliverable***	***Description***	***Acceptance Criteria***

Section 3: Project Planning

Facilitating Process and Project Plan Components

Risk Management Planning

Risk management planning identifies how the project team responds to and manages risk throughout the execution and control phase of the project. Risk management is an ongoing process. Risk management planning identifies foreseeable risks, quantifies the threat posed by the risks, develops mitigation alternatives for the risks, and identifies responsible person(s) to manage or mitigate the risks. The risk management plan provides input to the budget and schedule plans.

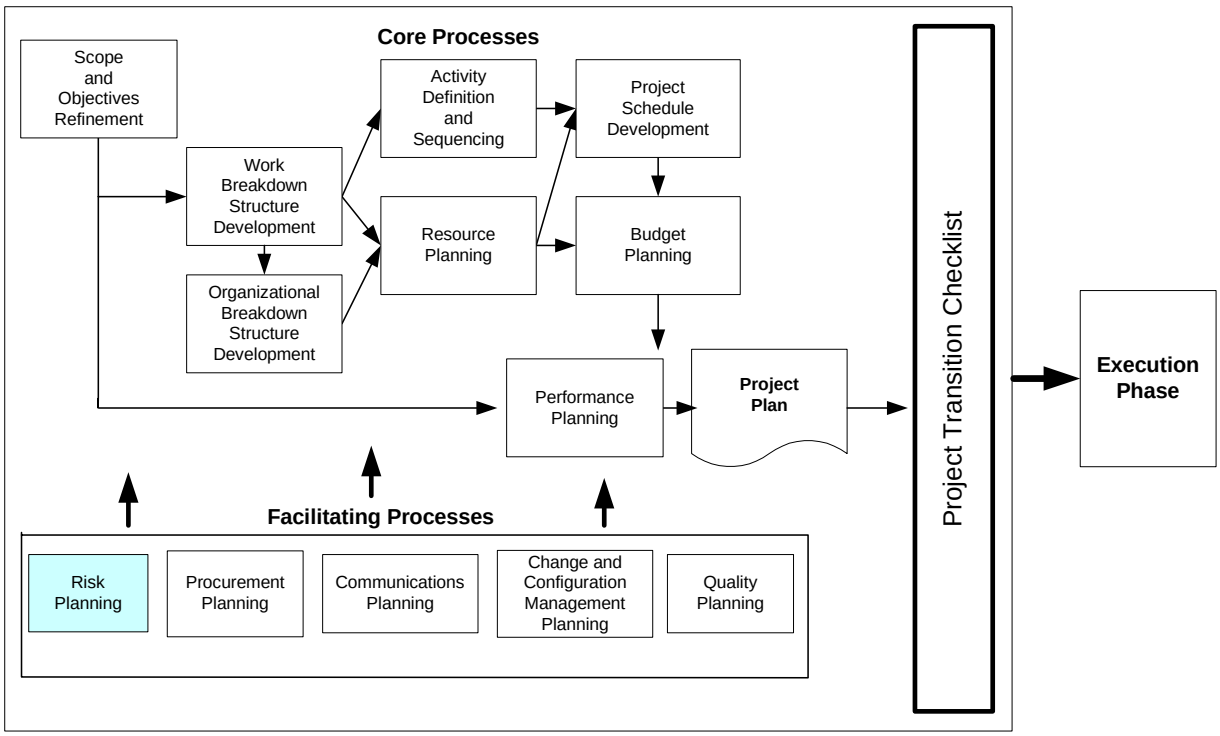

Figure 3.17
Risk Management Planning Identified in the Planning Processes

Risk Management Plan Process

The risk management plan has four functional components, these components are:

- Risk Management Strategy
- Risk Identification and Quantification
- Risk Response and Monitoring
- Risk Mitigation Cost Estimation

Section 3: Project Planning

The risk management strategy is the approach that will be taken to manage project risk. A risk management strategy describes the process for identification of risk, evaluation and prioritization of risk, identification of options for mitigating risk, the process for maintaining the risk plan and risk monitoring, and the responsibilities of individual project team members and other stakeholders relative to risk.

Risk identification and quantification require the project team to identify risks associated with execution of the project as well as external risks to the project. Risks are identified throughout project planning and project execution. Risks are frequently associated with resource and schedule constraints. One useful technique for expressing risk is to use an "if " and "then" statement. For example, "If" X thing happens "then" the result will be Y.

A risk is quantified by estimating the likelihood of occurrence of the risk event and, the effect the risk will have on the project. Probability of occurrence is the expression used to describe the likelihood of occurrence of the risk event. The probability of occurrence is expressed as a percentage. The higher the percentage, the more likely a particular risk event will occur. The impact of the risk event on the project is expressed as a numeric score of one (1) to five (5), with five identifying the highest level of impact.

Risk response and monitoring are driven by the results of identification and quantification. Risk priorities are assigned based on the level of impact and the probability of occurrence. Risks that are most likely to occur and have the highest level of impact are prioritized above less likely, lower impact risks. Prioritization of risks is used to focus the risk management effort and resources on those risk events that pose the greatest threat to the project. Once identified, a risk event is assigned to a project team member for continuous monitoring and evaluation. The person assigned to monitor a risk should be the individual most likely to direct the mitigation activities if the risk event becomes a reality. Mitigation actions for all risks should be documented. Response triggers, that signal the project team that the risk event has or will soon occur, should also be identified and documented.

Risk mitigation costs can be estimated, and funds planned for risk mitigation activities. The process requires the estimation of cost by budget category for the mitigation actions planned in risk response planning. It is not necessary to set aside all funding estimated to respond to any identified risk. A contingency funding budget is based on the total cost identified to mitigate risk reduced by the probability that the risk event will not occur. This calculation requires the multiplication of the total mitigation cost by the probability of occurrence.

The risk plan will change frequently throughout the planning and execution phases of a project. Risk identification and monitoring must be continuous. Regular reviews of the risk plan and reevaluation of project risks should be included in the project schedule.

Section 3: Project Planning

Risk Management Plan Instructions and Template

A. General Information – Basic information that identifies the project.
Project Title – The proper name used to identify this project.

Project Working Title – The working name or acronym used to identify the project. If an acronym is used, define the specific meaning of each letter.

Proponent Secretary – The Secretary to whom the proponent agency is assigned to or the Secretary that is sponsoring an enterprise project.

Proponent Agency – The agency that will be responsible for the management of the project.

Prepared by – The person(s) preparing this document.

Date/Control Number – The date the plan is finalized and the change or configuration item control number assigned.

B. Risk Management Strategy – Describes how risk identification and evaluation is performed, the general mitigation approach, and the plan for maintaining a current risk management plan.

1. ***Risk Identification Process*** – The processes for risk identification.
2. ***Risk Evaluation and Prioritization*** – How risks are evaluated and prioritized.
3. ***Risk Mitigation Options*** – Describe the risk mitigation options. They must be realistic and available to the project team.
4. ***Risk Plan Maintenance*** – Describe how the risk plan is maintained during the project lifecycle.
5. ***Risk Management Responsibilities*** – Identify all project team members with specific risk management responsibilities. (e.g., an individual responsible for updating the plan or an individual assigned as a manager).

C. Risk Analysis Summary - Using the table provided, list all risk identified and their probability of occurrence, the expected level, a description of the impact, and when the risk event is likely to occur.

Risk Number - Assign a Risk Number to each risk.

Risk Name - Provide a Risk Name or title for the risk.

Probability of Occurrence – Identify, as a percentage, the likelihood that the risk event will occur.

Impact Level - Provide a value (between 1 and 5) for the impact the risk will have on the project. A value of one (1) is the least impact and a value of five (5) is the highest impact.

Section 3: Project Planning

Impact Description - Describe the impact of the risk is if it occurs.

Time Frame - Estimate the actual date or timeframe in which the risk is most likely to occur. Timeframes are provided in fiscal years and quarters – if known.

D. Risk Responses Summary - Prioritize and describe the plans for responding to each risk identified and evaluated in Section C.

Risk Priority - Assign a numeric priority to the risk identified in Section C

Risk Number - Copy the Risk Number from Section C for each risk.

Risk Name – Copy the Risk Name from Section C for each risk.

Responsible Person - Identify the person responsible for monitoring the specified risk and executing the mitigation action(s).

Mitigation Action(s) - Describe the mitigation action(s) that are taken if the anticipated risk occurs.

Response Trigger - Identify an event, report, or activity that will initiate the mitigation action(s) identified in the previous column.

F. Risk Mitigation Cost - Detail the estimated cost for responding to each identified risk. Based on the Risk Response Summary in Section D, identify the total cost of responding to a particular risk using the most likely mitigation strategy and the planned expenditure categories provided in the table.

Risk Number - Copy the Risk Number from Section C for all identified risks.

Risk Name – Copy the Risk Name from Section C for all identified risks.

Internal Staff Labor, *Service*, *Development Tools*, *Software*, *Hardware*, *Materials and Supplies*, *Facilities*, *Telecommunications*, *Training* - Identify the planned expenditure for the mitigation actions associated with the identified risk for each of the following (items 3 through 9).

Total Cost – Total the cost of responding to each identified risk.

G. Contingency (Risk) Budget - Calculate the Contingency Budget for each fiscal year based on the Probability of Occurrence (from Section C) and the Total Cost for mitigation (from Section E) for each risk. Use one table for each fiscal year and list all risk anticipated for that fiscal year (see Section C). Calculate the Planned Contingency Cost for each risk in the last

column, by multiplying the Probability of Occurrence and the Mitigation Cost. Sum the Planned Contingency Cost for all risk anticipated in the fiscal year at the bottom of each table.

Contingency Budget for FY **–** Enter the correct fiscal year for each table

Risk Number - Copy each Risk Number for a fiscal year from Section C.

Risk Name – Copy each Risk Name for a fiscal year from Section C.

Probability of Occurrence - Copy the Probability of Occurrence for the risk from Section C.

Mitigation Cost – Copy the Total Cost for the risk mitigation from Section E.

Planned Contingency Cost – For each risk calculate the Planned Contingency Cost by multiplying Percentage Probability of Occurrence (Column 3) with the Mitigation Cost (Column 4).

Total – Sum the Planned Contingency Cost for the fiscal year.

Section 3: Project Planning

Risk Management Plan

A. *General Information*

Provide basic information about the project including: Project Title – The proper name used to identify this project; Project Working Title – The working name or acronym that will be used for the project; Proponent Secretary – The Secretary to whom the proponent agency is assigned or the Secretary that is sponsoring an enterprise project; Proponent Agency – The agency that will be responsible for the management of the project; Prepared by – The person(s) preparing this document; Date/Control Number – The date the plan is finalized and the change or configuration item control number assigned.

Project Title:		***Project Working Title:***	
Proponent Secretary:		***Proponent Agency:***	
Prepared by:		***Date / Control Number:***	

B. Risk Management Strategy

1. Risk Identification Process

Describe the process for risk identification.

Section 3: Project Planning

2. Risk Evaluation and Prioritization

Describe how risks are evaluated and prioritized.

3. Risk Mitigation Options

Describe, in general terms, the risk mitigation options.

4. Risk Plan Maintenance

Describe the methods for maintaining or updating the risk plan.

Section 3: Project Planning

5. Risk Management Responsibilities

Identify individuals with specified risk management responsibilities.

Individual	***Responsibility***

Section 3: Project Planning

C. Risk Analysis Summary

Using the table provided, list each risk identified, the probability of occurrence, the expected impact level, a description of the impact, and when the risk event is likely to occur.

Risk Number	***Risk Name***	***Probability of Occurrence (Note 1)***	***Impact Level (Note 2)***	***Impact Description***	***Time Frame (Note 3)***

Note: 1. Probability of Occurrence is the percentage of likelihood that the risk will occur.
2. Impact level is a score of one to five. One is the least impact and five is the highest impact.
3. Provide time frames in fiscal years and quarters, if known.

Section 3: Project Planning

D. Risk Response Summary

Prioritize and describe the plans for responding to each risk identified and evaluated in Section C.

Risk Priority	***Risk Number***	***Risk Name***	***Responsible Person***	***Mitigation Action(s)***	***Response Trigger***

Section 3: Project Planning

E. Risk Mitigation Cost

Detail the estimated cost for responding to each identified risk. Based on the Risk Response Summary in Section D, identify the cost of responding to a particular risk using the most likely mitigation strategy. The total costs are used to derive the fiscal year contingency budget.

Risk Number	*Risk Name*	*Internal Staff Labor*	*Services*	*Develop-ment Tools*	*Software*	*Hardware*	*Materials and Supplies*	*Facilities*	*Tele-commun-ications*	*Training*	*Total Cost*

Section 3: Project Planning

F. Contingency (Risk) Budget

Calculate the Contingency Budget for each fiscal year based on the Probability of Occurrence (from Section C) and the Total Cost for mitigation (from Section E) for each risk. Use one table for each fiscal year and list all risks anticipated for that fiscal year (see Section C). Calculate the Planned Contingency Cost for each risk in the last column, by multiplying the Probability of Occurrence by the Mitigation Cost. Sum the Planned Contingency Cost for all risks anticipated in the fiscal year at the bottom of each table.

Contingency Budget for FY _____				
Risk Number	***Risk Name***	***Probability of Occurrence***	***Mitigation Cost***	***Planned Contingency Cost***
Total				

Section 3: Project Planning

F. Contingency (Risk) Budget – continued

Contingency Budget for FY _____				
Risk Number	***Risk Name***	***Probability of Occurrence***	***Mitigation Cost***	***Planned Contingency Cost***
Total				

Section 3: Project Planning

F. Contingency (Risk) Budget – continued

Contingency Budget for FY _____				
Risk Number	***Risk Name***	***Probability of Occurrence***	***Mitigation Cost***	***Planned Contingency Cost***
Total				

Section 3: Project Planning

F. Contingency (Risk) Budget – continued

Contingency Budget for FY _____				
Risk Number	***Risk Name***	***Probability of Occurrence***	***Mitigation Cost***	***Planned Contingency Cost***
Total				

Section 3: Project Planning

Procurement Planning

Procurement planning is the process of identifying and planning for the purchase of products, goods, and services required by a project. In general, procurement planning deals with the following:

- Identifying the products, goods or services being procured
- Selecting the procurement method
- Identifying the quantities of the products, goods or services being procured
- Identifying when and where procured products, goods or services must be delivered
- Defining the procurement schedule for each step of the procurement methodology selected

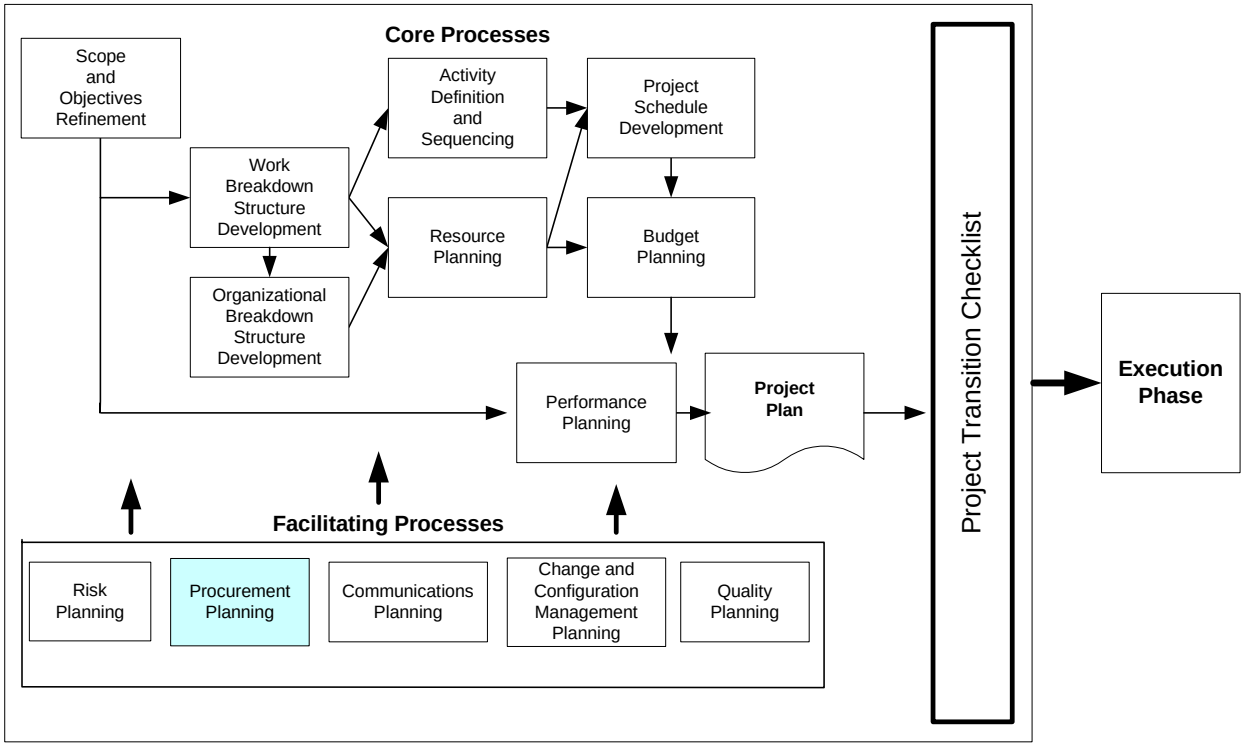

Figure 3.18
Procurement Planning Identified in the Planning Processes

Section 3: Project Planning

What to Procure

It is not common for an organization to internally create or supply all the products, goods, and services necessary to complete a project. Typically, an organization purchases the products, goods, or services from an external source or enters into a contract with an outside vendor to develop the products, goods, or services. The project resource plan and project budget plan are key inputs to the identification of what needs to be procured. The specifications associated with the products, goods or services being procured also impact the selection of the procurement method.

When developing the procurement plan, the project manager and project team must determine the following:

- How does this product, good, or service meet the needs of the project and the organization as a whole?
- Does the product, good, or service already exist within the organization?
- Is there a service provider available in the marketplace for the product, good, or service?
- Does the organization have the means (staff, money, contract, etc.) to produce or to acquire the product, good, or service?

Using the questions above as a guide, the project manager and team identify the products, goods, and services to be procured for support or completion of the project.

Selecting a Procurement Method

After the decision is made to purchase a product, good, or service, a procurement method to acquire the product, good, or service must be selected. Key inputs to the selection of a procurement method are the project budget, project schedule, and requirements established in the *Code of Virginia*. Procurement methods available to state agencies include: purchase from state contracts, purchase orders, or the procurement acquisition process.

Information on The Commonwealth of Virginia contract and purchase policies is located in the Agency Procurement and Surplus Manual (APSPM). APSPM is available on the Department of General Services web site. The Commonwealth of Virginia has organized its purchase methods into five procedures. The detailed procedures for the purchase methods are covered in the Code of Virginia 11-41, A,C,D,E, and F. The procedures are:

- **Competitive Sealed Bidding Procedure**
  (Code of VA 11-37, 11-41A)
- **Competitive Negotiation Procedure**
  (Code of VA 11-37, 11-41 C)
- **Sole Source Procedure**
  (Code of VA 11-41 D)

Section 3: Project Planning

- **Emergency Procedure**
  (Code of VA 11-41 E)
- **Small Purchase Procedure**
  (Code of VA 11-41 F)

Quantities procured

The quantities procured are derived from the needs of the project. Consideration must be given to the following questions:

- Is there need beyond the immediate project for this product?
- How much of the budget is allocated for this product?
- Is the need for the product defined so the agency knows exactly how much of the product, good, or service is required?

Underestimating or overestimating the quantity or cost of products, goods, and services will have a negative impact on the project budget.

When and where procured products, goods, or services must be delivered

Identifying when the project team needs the products, goods, or services and where the products, goods, or services will be used by the project team impacts when and where the products, goods, or services will be delivered. The project schedule will drive this decision. If the required item(s) are not available, the project may be delayed and additional cost or project failure may result. The project schedule and risk plans should reflect the required delivery dates and the risk associated with the procurement.

When each step of the procurement methodology must be completed for each item procured

The schedule of the procurement activities is determined by the selected method of procurement and the project schedule. Each procurement method has different requirements, and the time line to procure materials and services will vary accordingly. Backward planning is the best technique for establishing a schedule for procurement activities. Once the procurement method is selected, use the procedures identified in the Code of Virginia and by the appropriate procurement authority to develop a schedule for performing the required procurement procedures.

Section 3: Project Planning

Procurement Plan Instructions and Template

A. General Information – Basic information that identifies the project.
Project Title – The proper name used to identify this project.

Project Working Title – The working name or acronym used to identify the project. If an acronym is used, define the specific meaning of each letter.

Proponent Secretary – The Secretary to whom the proponent agency is assigned to or the Secretary that is sponsoring a particular enterprise project.

Proponent Agency – The agency that will be responsible for the management of the project.

Prepared by – The person(s) preparing this document.

Date/Control Number – The date the plan is finalized and the change or configuration item control number assigned.

B. Procurement Summary – Document all products, goods, or services that must be procured during the course of the project. Identify the Responsible Person for the procurement and indicate the Procurement Method Selected for each item. The procurement methods are: Emergency Procedures, Sole Source, Small Purchase, Competitive Negotiation, and Competitive Sealed Bid Procedures. (See DGS, Vendors Manual December 1998 Edition for detailed descriptions.) Using the WBS and Project Schedule, identify Quantity or Man-hours Required, Required Deliver Date, and Delivery Location.

Product, Good or Service - Identify the specific Product, Good or Service to be procured.

Responsible Person - Identify the person responsible for the procurement.

Procurement Method Selected - Indicate the procurement method planned for each Product, Good, or Service. The procurement methods are: Emergency Procedures; Sole Source; Small Purchase; Competitive Negotiation; Competitive Sealed Bid Procedures. (See DGS, Vendors Manual December 1998 Edition for detailed descriptions.)

Quantity/Man-hours Required - Identify the quantity being procured and the unit of measure (each, hour).

Required Delivery Date - Using the WBS and Project Schedule, identify the planned Delivery Date for delivery of the Product, Good or Service.

Delivery Location - Using the WBS and Project Schedule, identify the planned Delivery Location for delivery of the Product, Good or Service.

Section 3: Project Planning

C. Procurement Schedule - For every Procurement Method identified in column Procurement Method Selected in the Procurement Summary table, create a separate Procurement Schedule table. Identify the procurement method in the top row. For each procurement method, modify the column headings to record each step required to complete the procurement. These procurement steps should include agency and Commonwealth required actions. When the table(s) is (are) complete, add the procurement actions and dates as tasks in the Project Schedule.

Product, Good or Service - List individually the products, goods, or services procured with the procurement method identified in the first column.

Date of Action - Insert the dates for the procurement actions for each specified product, good, or service in the columns below the procurement action.

Section 3: Project Planning

Procurement Plan

A. General Information

Provide basic information about the project, including: Project Title – The proper name used to identify this project; Project Working Title – The working name or acronym that will be used for the project; Proponent Secretary – The Secretary to whom the proponent agency is assigned or the Secretary that is sponsoring an enterprise project; Proponent Agency – The agency that will be responsible for the management of the project; Prepared by – The person(s) preparing this document; Date/Control Number – The date the plan is finalized and the change or configuration item control number assigned.

Project Title: _____ ***Project Working Title:*** _____

Proponent Secretary: _____ ***Proponent Agency:*** _____

Prepared by: _____ ***Date / Control Number:*** _____ | _____

B. Procurement Summary

Document Products, Goods, or Services that must be procured during the course of the project. Identify the Responsible Person for the procurement and indicate the Procurement Method Selected for each item. The procurement methods are: Emergency Procedures, Sole Source, Small Purchase, Competitive Negotiation, and Competitive Sealed Bid Procedures. (See DGS, Vendors Manual December 1998 Edition for detailed descriptions.) Using the WBS and Project Schedule, identify Quantity or Man-hours Required, Required Delivery Date, and Delivery Location.

Product, Good, or Service	***Responsible Person***	***Procurement Method Selected***	***Quantity/Man-hours Required***	***Required Delivery Date***	***Delivery Location***

Section 3: Project Planning

C. Procurement Schedule

For every Procurement Method listed in the previous table, a separate Procurement Schedule Table will be created. Insert the Procurement Method documented in the previous table in the first row. Modify the column headings to record each step required to complete a procurement using the method identified. These procurement steps should include agency and Commonwealth required actions. List each Product, Good, or Service in the first column and insert a date in the action column when that action will be completed. When the tables are complete, add the procurement actions as tasks in the project schedule.

	Procurement Method:							
Product, Good, or Service	***(Insert required procurement action this method)***	***(Insert required procurement action this method)***	***(Insert required procurement action this method)***	***(Insert required procurement action this method)***	***(Insert required procurement action this method)***	***(Insert required procurement action this method)***	***(Insert required procurement action this method)***	***(Insert required procurement action this method)***
	(Action Date)	(Action Date)	(Action Date)	(Action Date)	(Action Date)	(Action Date)	(Action Date)	(Action Date)
	(Action Date)	(Action Date)	(Action Date)	(Action Date)	(Action Date)	(Action Date)	(Action Date)	(Action Date)
	(Action Date)	(Action Date)	(Action Date)	(Action Date)	(Action Date)	(Action Date)	(Action Date)	(Action Date)
	(Action Date)	(Action Date)	(Action Date)	(Action Date)	(Action Date)	(Action Date)	(Action Date)	(Action Date)
	(Action Date)	(Action Date)	(Action Date)	(Action Date)	(Action Date)	(Action Date)	(Action Date)	(Action Date)
	(Action Date)	(Action Date)	(Action Date)	(Action Date)	(Action Date)	(Action Date)	(Action Date)	(Action Date)
	(Action Date)	(Action Date)	(Action Date)	(Action Date)	(Action Date)	(Action Date)	(Action Date)	(Action Date)

Section 3: Project Planning

Communications Planning

Communication is the exchange of information between parties. Communications planning involves identifying and meeting the information needs of the project stakeholders. Specifically, identifying which people need what information, when the information is needed, and how the information is collected and communicated. Communications planning strives to simplify and document effective communications within the project organization.

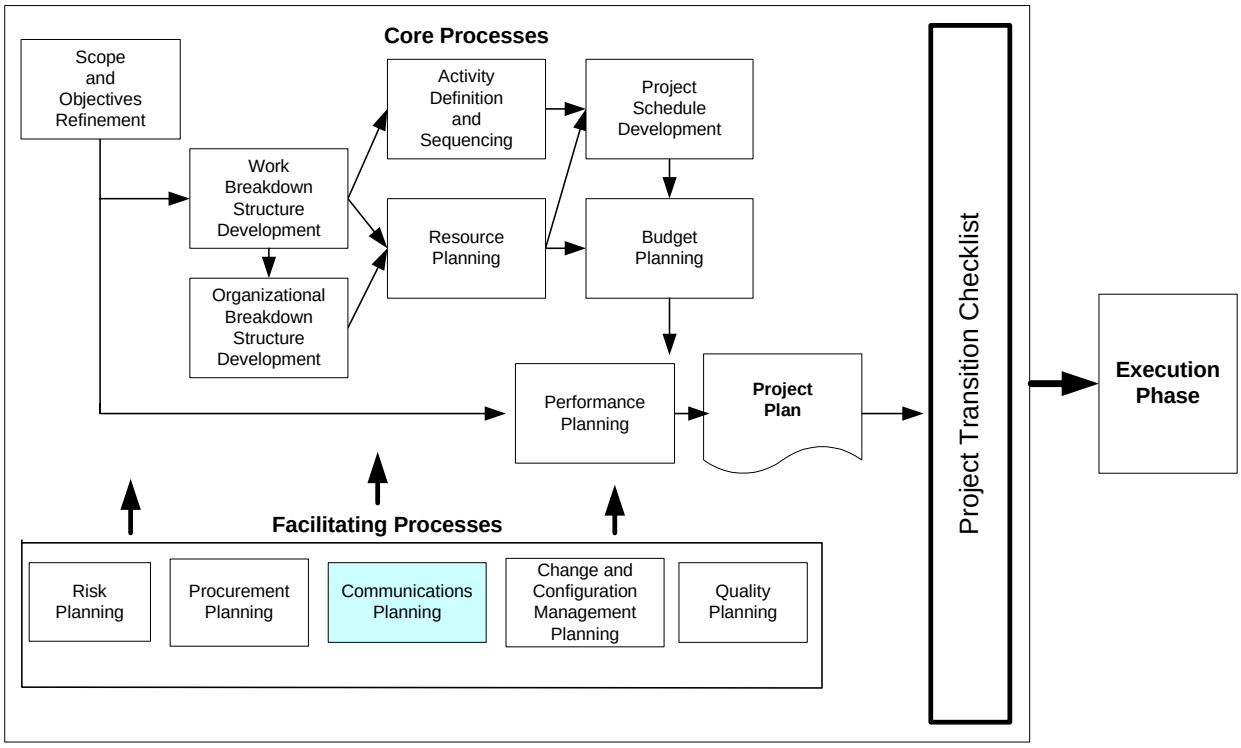

Figure 3.19
Communications Planning Identified in the Planning Processes

Communications Plan Development

The Communications Plan documents the information requirements of stakeholders and defines the procedures to meet those requirements. The plan details what, when, and how information is collected and reported. Information required in the communications plan includes:

- Identification of stakeholders with information needs
- Stakeholder information requirements
- Time frame or period the stakeholder needs the information
- Detailed description of the information need

Section 3: Project Planning

- Description of when and how information is collected and who collects it
- Description of document distribution methods and frequency of distribution
- Definition of the handling procedures for temporary storage and final disposition of project documents

Standard Reports

All projects have unique reporting requirements and information needs. Standardization of report formats is an integral part of the communications plan. Standard report formats are attached as part of the project plan.

Performance Reporting

Performance reports are typically required by all projects. These reports provide information on resource utilization by the project. (There are various types of performance reports.)

The most common type of performance report is the Project Status Report. Project Status Reports cover multiple areas, including scope, budget, schedule, risk, procurement, and quality. In order to produce status reports, the project team members must manage and monitor their project responsibilities closely.

Section 3: Project Planning

Communications Plan Instructions and Template

A. General Information – Basic information that identifies the project.
Project Title – The proper name used to identify this project.

Project Working Title – The working name or acronym used to identify the project. If an acronym is used, define the specific meaning of each letter.

Proponent Secretary – The Secretary to whom the proponent agency is assigned or the Secretary that is sponsoring a particular enterprise project.

Proponent Agency – The agency that will be responsible for the management of the project.

Prepared by – The person(s) preparing this document.

Date/Control Number – The date the plan is finalized and the change or configuration item control number assigned.

B. Information Requirements – List each stakeholder and their project information needs. Identify the specific Time Frame that the stakeholder needs to view this information (e.g., from the beginning of the project thru testing or after implementation).

C. Information Description, Collection, and Reporting – List each Information Need in the first column identified in Section B under column Information Needs. For each Information Need, provide the following:

Description of Information – Describe what information is collected and reported to satisfy the information need in the first column.

Provider of Information – Identify the person or organization that will provide the information described in the previous column.

When is Information Collected – Identify the scheduled time the information is collected.

How is Information Collected – Describe how the information is collected.

How is Information Reported - Identify how the information collected will be reported to stakeholders.

D. Distribution Methods – In the first column, list each report or document needed to communicate the information identified in the last column of Section C. For each report or document provide the following:

Section 3: Project Planning

Primary Distribution Method – Identify the primary distribution method (e.g., voice, electronic mail, spreadsheet, formal presentation).

Secondary Distribution Method - Identify the secondary distribution method (e.g., voice, electronic mail, spreadsheet, formal presentation).

Distribution Frequency - Identify the distribution frequency *(e.g., daily, weekly, monthly, quarterly, semi-annual, annual).*

E. Distribution Groups – Organize into logical groups, stakeholders identified in Section B, who have common information needs. List the stakeholder(s) for each group in the columns provided. Specify the common information needs for each group.

F. Communications Management Plan Summary - Based on sections B-E, summarize the Communications Management Plan. Specify how and where documents and reports are to be stored. Describe when and how to dispose of documents and reports.

Report or Document - Identify the specific report or document.

Prepared by - Identify the person responsible for preparing the report.

Information Provider - Identify the person(s) providing the information for the report or document.

Distribution Group - Identify the group(s) that will receive the report or document.

Transmittal Method(s) - Identify how the reports or documents will be distributed.

Distribution Frequency - Identify how often the reports or documents will be distributed.

Storage and Disposition - Explain how the reports or documents are stored (filed) and how the reports or documents will be disposed of when no longer needed.

G. Method for Updating the Communications Plan – Describe how the Communications Plan will be kept current. This section must identify who is responsible for maintaining the plan, who should make recommendations for changes to the plan, how frequently the plan is reviewed and changed, who has the authority to make changes to the plan, and how the changes are approved.

Section 3: Project Planning

Communications Plan

A. *General Information*

Provide basic information about the project including: Project Title – The proper name used to identify this project; Project Working Title – The working name or acronym that will be used for the project; Proponent Secretary – The Secretary to whom the proponent agency is assigned or the Secretary that is sponsoring an enterprise project; Proponent Agency – The agency that will be responsible for the management of the project; Prepared by – The person(s) preparing this document; Date/Control Number – The date the plan is finalized and the change or configuration item control number assigned.

Project Title: _____ ***Project Working Title:*** _____

Proponent Secretary: _____ ***Proponent Agency:*** _____

Prepared by: _____ ***Date / Control Number:*** _____ | _____

B. Information Requirements

List each stakeholder and their project information needs. Identify the specific Time Frame that the stakeholder needs to view this information (e.g., from the beginning of the project thru testing or after implementation).

Stakeholder Name	*Stakeholder Position*	*Information Needs*	*Time Frame*

Section 3: Project Planning

C. Information Description, Collection, and Reporting

List each Information Need in the first column identified in Section B, column Information Needs. For each Information Need, describe the information, the provider of the information, when and how is it collected, and how the information will be reported.

Information Need	*Description of Information*	*Provider of Information*	*When is Information Collected*	*How is Information Collected*	*How is Information Reported*

D. Distribution Methods

List each report or document needed to communicate the information (in the first column) identified in the last column of Section C. Identify the primary and secondary distribution methods for each report or document (e.g., voice, electronic mail, spreadsheet, formal presentation). Specify the frequency or distribution for each report or document.

Report or Document	*Primary Distribution Method*	*Secondary Distribution Method*	*Distribution Frequency*

Section 3: Project Planning

E. Distribution Groups

Organize into logical groups, stakeholders identified in section B, who have common information needs. List the stakeholder(s) for each group in the columns provided. Specify the common information needs for each group.

Group Name	***Group A***	***Group B***	***Group C***	***Group D***	***Group E***	***Group F***
Stakeholders:						
Common Information Needs:						

Section 3: Project Planning

F. Communications Management Plan Summary

Based on sections B-E, summarize the Communications Management Plan. Specify how and where documents and reports are to be stored. Describe when and how to dispose of documents and reports.

Report or Document	***Prepared By***	***Information Provider***	***Distribution Group***	***Transmittal Method(s)***	***Distribution Frequency***	***Storage and Disposition***

Section 3: Project Planning

G. Method for Updating the Communications Plan

Describe who, when, and how the Communications Plan will be maintained.

Section 3: Project Planning

Change and Configuration Management

The terms change management and configuration management are often used interchangeably. Some people view configuration management as part of change control, while others consider configuration management to be a rigorous change control system. This methodology defines configuration management as the management of the physical features, functionality, and documentation of hardware and software used by a project. The term change control will describe the management of change to the project baseline and includes project scope, cost, and schedule. Together, change and configuration management provide the means to control and manage change during the execution of the project plan.

Change and configuration management identify and manage change. Change and configuration management do not prevent change. Management of changes to the project or to the configuration of project deliverables includes: the administrative management (tracking, review, and assessment) of the proposed changes; the organized timely review and decision on recommended changes to controlled items; and the administrative process to ensure that the project team is informed of changes when they are approved.

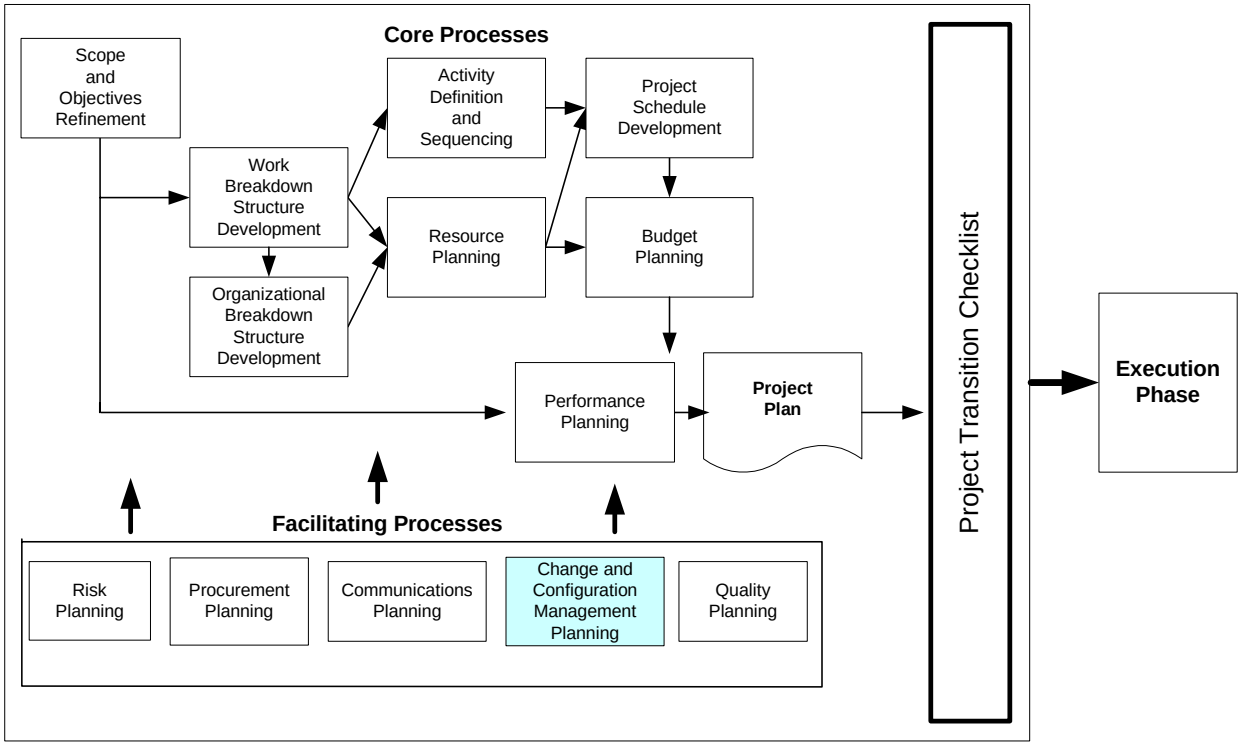

Figure 3.20
Change and Configuration Management

Section 3: Project Planning

Planning Identified in the Planning Processes

Basic Change Management Control Concepts

Change control requires the following:

- All Project Plan items are baselined when the Project Plan is approved. Once the project plan items are baselined, changes to the baseline are managed through a formal change process.
- The integrity of the performance measurement baseline must be maintained. Only project scope changes can impact the performance measurement baseline.
- Changes are coordinated among all knowledge areas of the project. For example, a proposed schedule change may also impact the cost, risk, quality, and staffing of the project.

Baseline

The baseline process, while key to project control, is often misunderstood.

A baseline is defined as the original plan, for a project, a work package, or an activity, plus or minus approved changes. A modifier (e.g., schedule baseline, performance measurement baseline) is usually included to further define the baseline.

A baseline provides the "ruler" by which a project can be evaluated. If the schedule baseline plan indicates that an activity should be 30% complete at a specific point, and the activity is 15% or 90% complete, a schedule variance exists. Baseline changes are significant events and should not be made without consideration of their impact. Baseline changes are made to reflect a change in project scope, not because the project is behind schedule. A baseline change adjusts the ruler by which performance is measured. A variance *does not* justify a baseline change; it may indicate that the initial plan was not accurate or that there are issues with project execution.

Change and Configuration Management Planning Terminology

Within the project management industry, the use of change and configuration management terms is not standardized. For the purposes of this methodology, the following terms apply to change and configuration management:

Control item is a project element that is considered a unit for the purpose of change and configuration management.

Section 3: Project Planning

Change control is the process of controlling, documenting, and storing the changes to control items. This includes proposing the change, evaluating it, approving or rejecting it, scheduling it and tracking it.

Change and Configuration Management Planning

During the Planning Phase, the project team identifies the control items for Change and Configuration Management, establishes the processes for both change management and for configuration management control, and documents procedures for:

- Naming and Marking Documents
- Submission and Retrieval of Control Items
- Version Control and Release Approval
- Storage, Handling and Disposition of Project Media

Section 3: Project Planning

Change and Configuration Management Plan Instructions and Template

A. General Information – Basic information that identifies the project.
Project Title – The proper name used to identify this project.

Project Working Title – The working name or acronym used to identify the project. If an acronym is used, define the specific meaning of each letter.

Proponent Secretary – The Secretary to whom the proponent agency is assigned or the Secretary that is sponsoring an enterprise project.

Proponent Agency – The agency that will be responsible for the management of the project.

Prepared by – The person(s) preparing this document.

Date/Control Numbr – The date the plan is finalized and the change or configuration item control number assigned.

B. Change Control Items – List those components of the project plan governed by this change control process. Change control items include the scope, schedule, budget, and performance plans.

C. Change Control Process – Describe or diagram the flow of a change request through the change process. Provide a "step-by-step" guide on how changes to the change control items are made.

D. Configuration Management Control Items – Describe the method of selecting configuration management control items and list the configuration management control items for the project.

E. Configuration Management Control Process – Describe or diagram the process for making configuration changes to configuration management controlled items. Provide a "step-by-step" process on how changes to a configuration management control item are made.

F. Naming and Marking Methods – Describe how documents, components, revisions, and releases are consistently named and marked.

G. Submission and Retrieval of Control Items – Describe the process for submission and retrieval of a controlled Item from the Project Repository to prevent the unauthorized modification of the controlled Item.

Section 3: Project Planning

H. Version Control – Define the document version control and release approval procedure. (Version control is not the same as naming and marking methods.) Address the release and approval procedures for any new version of a document, software, database, or other similar item under configuration control.

I. Storage, Handling, and Disposition of Project Media - Describe storage, handling, and disposition requirements for project media (both automated and paper). The information in this paragraph is included in the communications plan. Verify there is no conflict in the plans for storage, handling, and disposition of project documentation.

J. Change Management Responsibilities - Identify project stakeholders with specific change management responsibilities. Describe the change management responsibilities of the stakeholders in the second column.

K. Configuration Management Responsibilities - Identify project and configuration team members with configuration management responsibilities. Describe the configuration management responsibilities of the project and configuration team members in the second column.

Section 3: Project Planning

Change and Configuration Management Plan

A. General Information

Provide basic information about the project including: Project Title – The proper name used to identify this project; Project Working Title – The working name or acronym that will be used for the project; Proponent Secretary – The Secretary to whom the proponent agency is assigned or the Secretary that is sponsoring an enterprise project; Proponent Agency – The agency that will be responsible for the management of the project; Prepared by – The person(s) preparing this document; Date/Control Number – The date the plan is finalized and the change or configuration item control number assigned.

Project Title:		***Project Working Title:***	
Proponent Secretary:		***Proponent Agency:***	
Prepared by:		***Date / Control Number:***	

B. Change Control Items

List those components of the Project Management Plan governed by this Change Control Process. Change Control items typically include the Scope, Schedule, Budget and Performance Plans.

C. Change Control Process

Describe or diagram the flow of a Change Request through the Change Process.

Section 3: Project Planning

D. Configuration Management Control Items

Describe the method for selecting each Configuration Management Control Item and list the Configuration Management Control Items.

Describe how Configuration Management Control Items are selected for the project.

List identified Configuration Management Control Items selected for the project.

E. Configuration Management Control Process

Diagram or describe the process for making changes to a Configuration Management Controlled Item.

Section 3: Project Planning

F. Naming and Marking Methods

Describe how the documents, components, revisions, and releases are consistently named and marked.

G. Submission and Retrieval of Control Items

Describe the process for submission and retrieval of Controlled Items within the project.

H. Version Control

Define the Document Version Control and Release Approval procedure.

Section 3: Project Planning

I. Storage, Handling, and Disposition of Project Media

Describe storage, handling, and disposition requirements for project media (both automated and paper). The information in this paragraph is also included in the Communications Plan. Verify that there is no conflict in the plans for storage, handling, and disposition of project documentation.

J. Change Management Responsibilities

Identify project Stakeholders and their specific Change Management Responsibilities.

Stakeholders	***Change Management Responsibilities***

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K. Configuration Management Responsibilities

Identify members of the project or configuration team and outline their Configuration Management Responsibilities.

Team Member	***Responsibilities***

Section 3: Project Planning

Quality Management and Independent Verification and Validation (IV&V)

The objective of quality management planning is the successful delivery of products, goods, or services that meet organization needs and satisfy user expectations. Techniques for achieving quality management objectives are product testing, project audits, and independent verification and validation (IV&V).

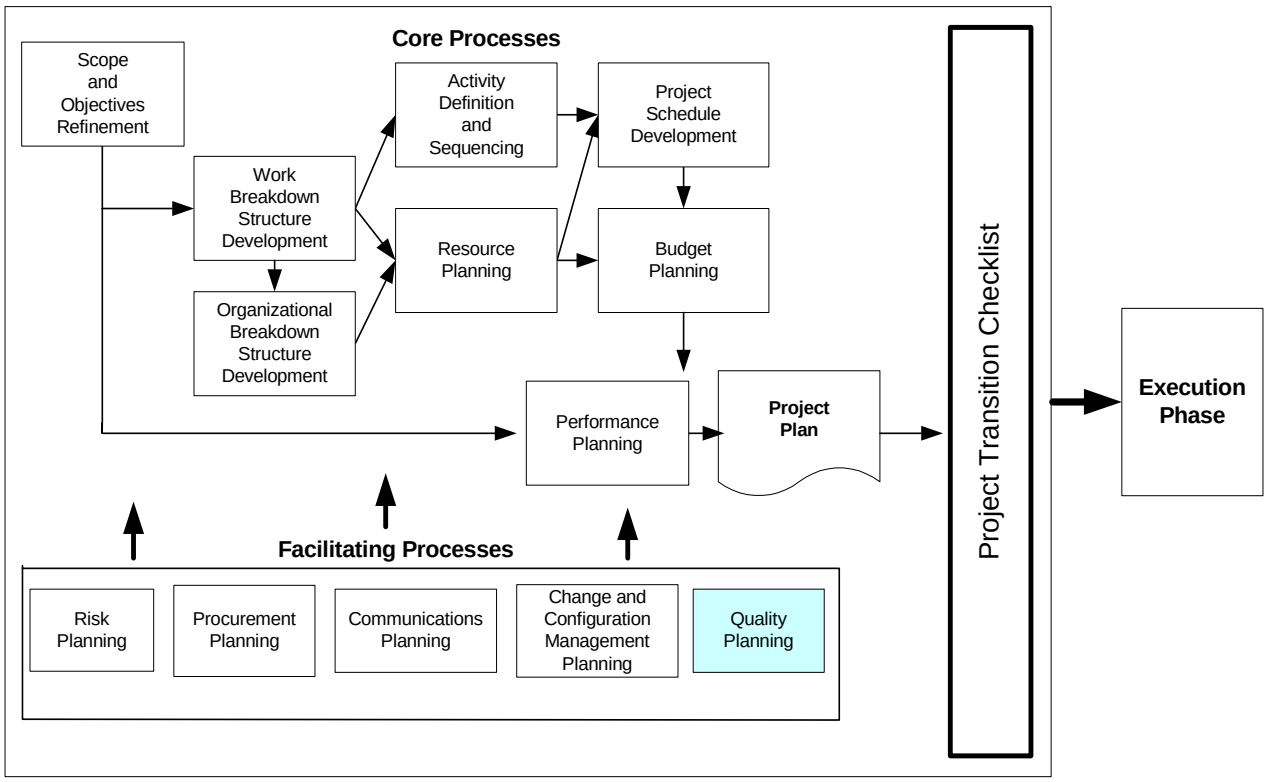

Figure 3.21
Quality and IV&V
Planning Identified in the Planning Processes

The quality plan defines how the project management team will implement the organization's quality policy. If the organization does not have a formal quality policy then the project management team should develop a quality policy for the project. The quality plan documents the processes, procedures, activities, and tasks necessary to implement the quality policy. The plan also assigns responsibilities and allocates resources for completion of the activities and tasks. The project performance plan is linked to the quality management plan. The performance plan documents project goals and project deliverables as well as the acceptance criteria for the project deliverables.

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Product testing, project auditing, and IV&V will focus on evaluation of the deliverables, project processes, and achievement of project performance goals. The IV&V effort will provide a thorough and independent review of the project processes and specified deliverables. In addition to the performance plan, the quality plan must be synchronized with the resource, schedule, budget, risk management, and procurement plans.

Section 3: Project Planning

Quality Management and IV&V Plan Instructions and Template

A. General Information – Basic information that identifies the project.
Project Title – The proper name used to identify this project.

Project Working Title – The working name or acronym used to identify the project. If an acronym is used, define the specific meaning of each letter.

Proponent Secretary – The Secretary to whom the proponent agency is assigned to or the Secretary that is sponsoring an enterprise project.

Proponent Agency – The agency that will be responsible for the management of the project.

Prepared by – The person(s) preparing this document.

Date/Control Number – The date the plan is finalized and the change or configuration item control number assigned.

B. Product Testing – Describe the Product Testing activities for the project including Testing Overview, Testing Schedule, Team Responsibilities, and Resource Requirements.

1. ***Product Testing Overview*** - Provide a general description of the plans for testing the product(s) developed by the project.
2. ***Product Testing Schedule*** - Define the specific schedule for testing activities and identify the person responsible for the activity. Integrate the Product Test schedule with the Project Schedule.
3. ***Project Team Responsibilities*** - Describe the Product Testing Responsibilities of the Project Team in general and the specific team member assignments such as acceptance test and audit. Cross-reference this information with the organizational breakdown structure, resource plan, and schedule.
4. ***Testing Resource Requirements*** - Describe the resources needed to execute the scheduled testing activities. Cross-reference this information with project resource plan and schedule.

C. Project Audit – Describe the Project Audit activities for the project including Audit Overview, Audit Schedule, Team Responsibilities, and Resource Requirements.

1. ***Project Audit Overview*** - Provide a general description of the plans for auditing the project. Identify what is audited, who conducts the audits, and when the audits are conducted.
2. ***Project Audit Schedule*** - Define the specific schedule for project audits and identify the person responsible for the activity. Integrate the project audit schedule with the project schedule.

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3. ***Project Team Responsibilities*** - Describe the project audit responsibilities of the project team in general and the specific team member assignments for project audits. Cross-reference this information with the organizational breakdown structure, resource plan, and schedule.
4. ***Project Audits Resource Requirements*** - Describe the resources needed to execute the scheduled audit activities. Cross-reference this information with project resource plan and schedule.

D. Independent Verification and Validation – Describe the Independent Verification and Validation activities for the project including Independent Verification and Validation Overview, Schedule, Team Responsibilities and Resource Requirements.

1. ***Independent Verification and Validation Overview*** – Provide a description of the plans for Independent Verification and Validation of the project.
2. ***Independent Verification and Validation Schedule*** – Define the specific schedule for independent Verification and Validation of the project and identify the person responsible for the activity. Integrate the Independent Verification and Validation Schedule with the Project Schedule.
3. ***Project Team Responsibilities*** - Describe the Independent Verification and Validation responsibilities of the Project Team in general and the specific team member assignments. Cross-reference this information with the organizational breakdown structure, resource plan, and schedule.
4. ***Independent Verification and Validation Resource Requirements*** - Describe the resources needed to execute the scheduled Independent Verification and Validation activities. Cross-reference this information with project resource plan and schedule.

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Quality Management and IV&V Plan

A. General Information

Provide basic information about the project including: Project Title – The proper name used to identify this project; Project Working Title – The working name or acronym that will be used for the project; Proponent Secretary – The Secretary to whom the proponent agency is assigned or the Secretary that is sponsoring an enterprise project; Proponent Agency – The agency that will be responsible for the management of the project; Prepared by – The person(s) preparing this document; Date/Control Number – The date the plan is finalized and the change or configuration item control number assigned.

Project Title:		***Project Working Title:***	
Proponent Secretary:		***Proponent Agency:***	
Prepared by:		***Date / Control Number:***	

B. Product Testing

Describe the Product Testing activities for the project including Testing Overview, Testing Schedule, Team Responsibilities, and Resource Requirements.

1. Product Testing Overview

Provide a general description of the plans for testing the product(s) developed by the project.

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2. Product Testing Schedule

Define the specific schedule for testing activities and identify the person responsible for the activity. Integrate the Product Test Schedule with the Project Schedule.

Activity	***Scheduled Date***	***Responsible Person(s)***

3. Project Team Responsibilities

Describe the Product Testing Responsibilities of the Project Team in general and the specific team member assignments. Cross-reference this information with the organizational breakdown structure, resource plan, and schedule.

General Responsibilities*:*

Team Member	Specific Task

4. Testing Resource Requirements

Describe the Resources needed to execute the scheduled testing activities. Cross-reference this information with project resource plan and schedule.

Activity	***Scheduled Date***	***Resources Required***

Section 3: Project Planning

C. Project Audit

Describe the Project Audit activities for the project including Audit Overview, Audit Schedule, Team Responsibilities, and Resource Requirements.

1. Project Audit Overview

Provide a general description of the plans for auditing the project. Identify what is audited, who conducts the audit, and when the audit are conducted.

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2. Project Audit Schedule

Define the specific schedule for Project Audit and identify the person responsible for the activity. Integrate the Project Audit Schedule with the Project Schedule.

Activity	*Scheduled Date or Phase*	*Responsible Persons*

3. Project Team Responsibilities

Describe the Project Audit responsibilities of the Project Team in general and the specific team member assignments for project audit. Cross-reference this information with the organizational breakdown structure, resource plan, and schedule.

General Responsibilities*:*

Team Member	Specific Task

4. Project Audit Resource Requirements

Describe the resources needed to execute the scheduled audit activities. Cross-reference this information with project resource plan and schedule.

Activity	*Scheduled Date or Phase*	*Resources Required*

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D. Independent Verification and Validation

Describe the Independent Verification and Validation activities for the project including Independent Verification and Validation Overview, Schedule, Team Responsibilities and Resource Requirements.

1. Independent Verification and Validation Overview

Provide a description of the plans for Independent Verification and Validation of the project.

Section 3: Project Planning

2. Independent Verification and Validation Schedule

Define the specific schedule for Independent Verification and Validation of the project and identify the person responsible for the activity. Integrate the Independent Verification and Validation Schedule with the Project Schedule.

Activity	***Scheduled Date or Phase***	***Responsible Persons***

3. Project Team Responsibilities

Describe the for Independent Verification and Validation Responsibilities of the Project Team in general and the specific team member assignments such as acceptance test and audit. Cross-reference this information with the organizational breakdown structure, resource plan, and schedule.

General Responsibilities*:*

Team Member	Specific Task

4. Independent Verification and Validation Resource Requirements

Describe the resources needed to execute the scheduled for Independent Verification and Validation activities of the project. Cross-reference this information with project resource plan and schedule.

Activity	***Scheduled Date or Phase***	*Resources Required*

Section 3: Project Planning

Project Planning Transition Checklist

The project transition checklist provides a vehicle to verify completion of a project phase before beginning the next phase. The Project Planning Transition Checklist is a tool to verify that necessary steps have been completed and establishes the exit criteria from the planning phase. The transition checklist focuses on completion of project plans and plan approval. It is important to make sure that all the necessary plans and supporting documents pertinent to the project are completed and approved by management as specified in the Project Charter.

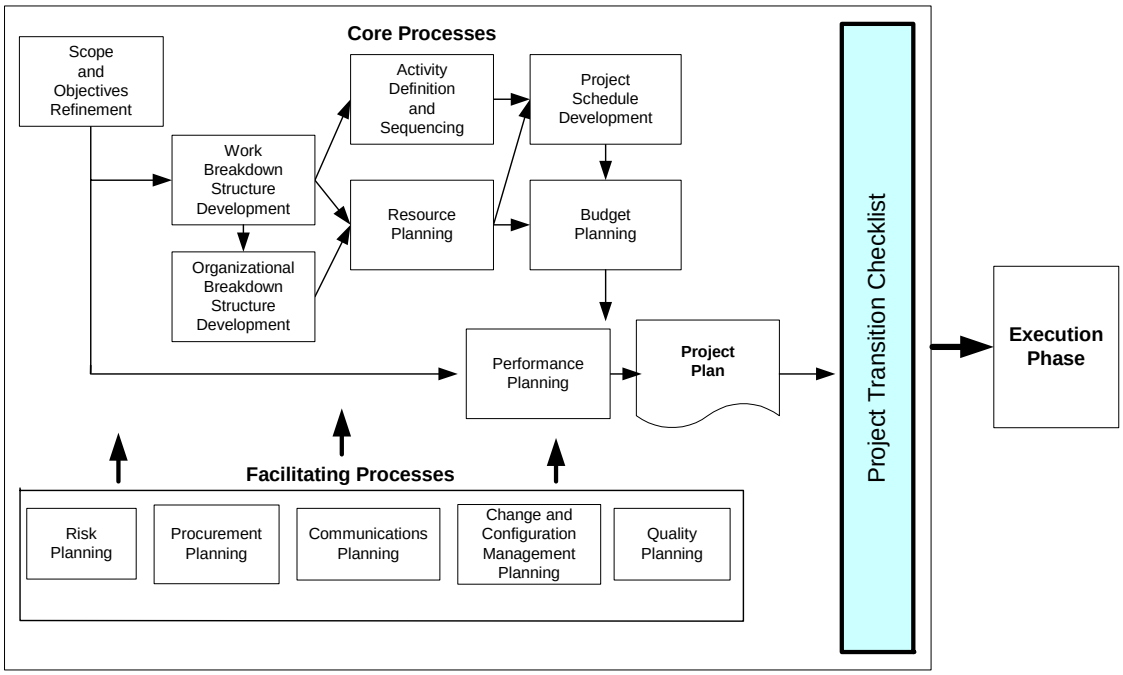

Figure 3.22
Project Transition Checklist in the Planning Process

Format of the Transition Checklist

Project Planning Transition Checklist is formatted as a list of actions that should be accomplished before completing the planning phase. Some actions must be completed and represent the exit criteria for the particular phase addressed. Other items in the list may not necessarily apply to every project-planning scenario. The mandatory items are highlighted in bold italic print. In the status column enter one of the answers shown below and, provide comments or document plans to complete the item in the column provided for that purpose.

- Y = Item has been addressed and is completed.
- N = Item has not been addressed, and needs to be to complete the process.
- N/A = Item has not been addressed and is not related to this project.

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Project Planning Transition Checklist

Provide basic information about the project including: Project Title – The proper name used to identify this project; Project Working Title – The working name or acronym that will be used for the project; Proponent Secretary – The Secretary to whom the proponent agency is assigned or the Secretary that is sponsoring an enterprise project; Proponent Agency – The agency that will be responsible for the management of the project; Prepared by – The person(s) preparing this document; Date/Control Number – The date the checklist is finalized and the change or configuration item control number assigned.

Project Title: _____ ***Project Working Title:*** _____

Proponent Secretary: _____ ***Proponent Agency:*** _____

Prepared by: _____ ***Date / Control Number:*** _____ | _____

Complete the Status and Comments column. In the Status column indicate: Yes, if the item has been addressed and completed; No, if item has not been addressed, or is incomplete; N/A if the item is not applicable to this project. Provide comments or plan to resolve the item in the last column.

	Item	***Status***	***Comments/ Plan to Resolve***
1	Are the project objectives, description, and scope the same as specified in the project charter?		
1.1	If the answer to 1 is No, has the change been approved by the appropriate authority specified in the project charter?		
1.2	Have cost and resource changes been reviewed and approved as necessary by management authority?		
2	Has the project plan been approved by the appropriate authority specified in the project charter?		
3	Does the baseline project plan include the following:		

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	Item	*Status*	*Comments/ Plan to Resolve*
3.1	Project Scope and Objectives		
3.2	Project Performance Plan		
3.3	Work Breakdown Structure		
3.4	Resource Plan		
3.5	Project Schedule		
3.6	Procurement Plan		
3.7	Project Budget		
3.8	Quality Plan		
3.9	Risk Management Plan		
3.10	Communications Plan		
3.11	Change and Configuration Management Plan		
3.12	Quality and IV&V Plan		
4	Have all business partners who have a role in execution of the project plan agreed to and signed off on the plan?		
4.1	Has the first management review been scheduled with all participants?		

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	Item	*Status*	*Comments/ Plan to Resolve*
4.2	Are all members of the project team designated and available to begin project execution on the scheduled project start date?		
4.3	Is a project kick off meeting scheduled?		
4.4	Have all project team leaders been briefed on the full project plan and have their individual roles and responsibilities been communicated?		
5	Are all required resources for initiation of project execution assembled?		
5.1	Are all resources required during the project scheduled and available to the project team?		
6	Have all contracts or purchases required to begin project execution been initiated or completed?		

Signatures

The Signatures of the people below relay an understanding that the key elements within the Planning Phase section are complete and the project team is ready to transition to the Execution Phase.

Position/Title	*Name*	*Date*	*Phone Number*

Section 3: Project Planning

Information Technology Project Planning

Project planning is the most important phase of any type of project, including information technology projects. During the planning phase, plan baselines and processes are developed that guide all project work. Information Technology (IT) Projects are initiated, planned, executed, controlled, and closed in the same manner as all projects. However, IT project planning involves unique considerations and development methodologies that are applied only to IT projects.

A review of the project management methodology reveals that the deliverables of the planning phase build on each other. For example, the work breakdown structure provides input to the resource plan and budget plan. Ultimately, the sum of all of these processes produces a project plan. All planning documents require input from the technical staff developing or implementing the information technology products.

Information Technology Work Breakdown Structure (WBS)

The WBS is one of the most important elements of the IT project planning process. IT projects are by their nature complex and typically require many different skill sets. The WBS takes the technical activities and tasks that need to be accomplished and breaks them down to their lowest element (work packages). These work packages help define the skills and resources needed to deliver a successful IT project. As input to the WBS, identify the major phases of the selected lifecycle development methodology. In addition, if a commercial off the shelf software product is involved, the WBS should include tasks identified by the product vendor for installation and implementation.

Information Technology Resource Plan

The resource plan will include technically skilled labor resources needed for project team and will define the actual management structure of the project. The plan also defines non-labor technology resources. Resources for an IT project include technically skilled people, computers and peripheral hardware, software tools, network connectivity, internet access, and physical facilities. The WBS is used to pinpoint the necessary skill sets and resources needed for a technology project. With the vast array of technology applications and varying levels of knowledge required to implement them, knowing which skill sets and resources are required, is critical to project success. Project managers have the responsibility to request specific skill sets and schedule their availability. It is the responsibility of the technical personnel then to perform the technical work.

Knowledge of the capabilities of the project staff in determining the duration of the project activities is critical. Being able to determine the difference in duration for an individual with a certain technical skill level versus one with another skill level can be difficult. Technical leadership must assist in assessing and evaluating the impact of staff capabilities as they relate to

the assigned task. Technology projects often suffer significant delays due to inaccurately evaluated staff skills.

Information Technology Schedule Development

Technology programs are especially time sensitive. As indicated above, special skill sets that are needed to execute specific tasks may only be available during limited times periods. It is also important to note that outputs from a particular segment of an IT project are often the inputs to other project deliverables. IT projects may have many deliverable dependencies and relationships that may not be obvious. It is also important for the technical team to be involved in determining the technical task durations and sequencing. Several attempts are typically required to develop a fully synchronized project schedule.

Information Technology Risk Planning

Risk is inherent in all parts of the IT Project Planning Phase. The excessively high failure rate of IT projects is a testimonial to this inherent risk. Change in the technical environment is constant and rapid. Business users are often uncomfortable with or intimidated by the requirements definition process for IT projects. The factors lead to the risk of having to do additional work (scope creep) because the project scope was not clearly understood. Resource risk occurs as it relates to being able to find and retain (at reasonable prices) the resources needed to accomplish a project. Risk to the project schedule revolves around the uncertainty of performing an activity that has never been attempted. Budget risk manifests itself in the uncertainty of labor and non-labor asset costs.

Project managers, along with the project team staff, must to identify as many of the known risks as possible during the planning phase. The use of scalable risk tools can significantly enhance risk planning in a technology project.

Information Technology Project Budgeting

Preparing a budget for an IT project is basically the same as for other projects. There are different types of cost factors, however, that may be associated with an IT project. For example, when working with new or developing technologies on an IT project, there may be costs for services or skills not available from within the organization. Advances in technology and competition within the marketplace can affect the prices of equipment and services dramatically between the time a project concept is developed and the time the budget estimate is drafted.

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Because of the issues described above, risk runs rampant in IT projects budget estimating. Subject matter experts who are available within the organization's financial area should review all cost estimates. There are several ways to obtain information on costs for technology and services, such as databases and vendor contract pricing schedules.

Information Technology Quality Planning

The IT quality planning process identifies the procedures and activities that the project team defines, plans, and executes for quality assurance. Quality management planning in a technology project must include detailed testing plans for the technology products, goods, and services. Testing plans should include testing of components as well as system tests. Tests are performed by the project staff, functional users and by independent teams who can verify and validate that the product, good, or service performs as described and meets acceptance criteria. Complex software and applications projects often require software-testing tools that automate the testing process and provide scalable load testing for both the product and the infrastructure.

Information Technology Communications Planning

Communications planning is a very important component of successful IT projects, because of the number of technical disciplines that are involved in developing and executing a project. Even if the project is structured according to a matrix format (see Project Management Overview Section—1), there is still a need for communication to take place between the project manager and project team leaders or functional managers.

The communications plan includes the project team and stakeholders, customers, agency management, vendors, contractors, and other organizations, which need project status updates or information. The communications plan for the IT project needs to consider all project stakeholders. Each stakeholder has different information needs, and the frequency at which they need them may be different.