Chapter 5: Project Scope Management

Information Technology Project Management, Sixth Edition

Note: See the text itself for full citations.

Announcements

- ~~8/25 – Chapter 1, Syllabus and Class Overview~~
- ~~9/1 – Chapter 2, Term Project Guidance, Team Breakouts~~
- ~~9/8 – Chapter 3, Team Breakouts~~
- ~~9/15 – Chapter 4, Team Breakouts~~
- 9/22 – Chapter 5, Team Breakouts
- 9/29 – No Class, Thursday follows Monday schedule….
- 10/6 – Chapter 6, Team Breakouts
- 10/13 – Midterm (chapters 1-6)
- 10/20 – 1st Team Presentations, due and presented.

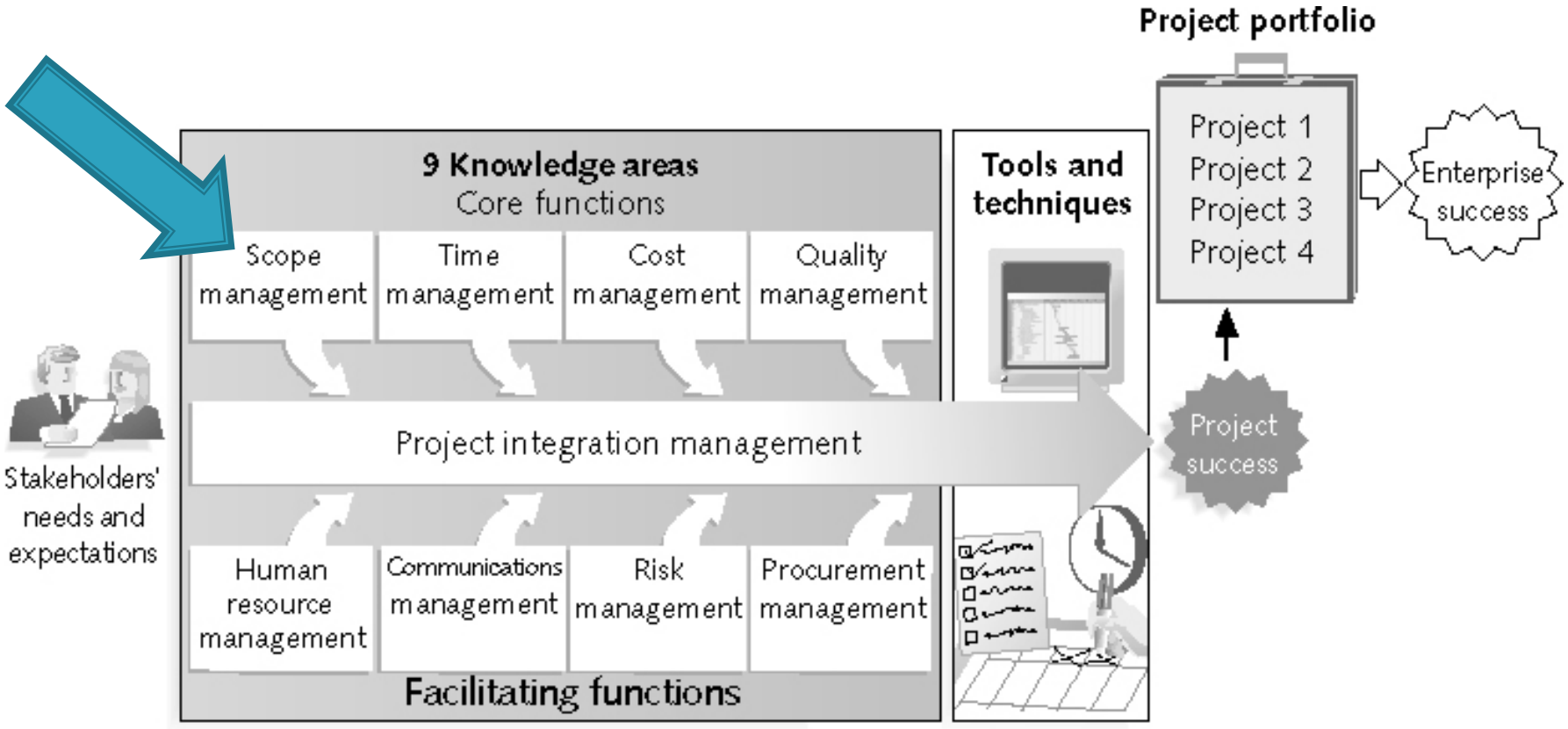
Learning Objectives

- Understand the importance of good project scope management
- Discuss methods for collecting and documenting requirements in order to meet stakeholder needs and expectations
- Explain the scope definition process and describe the contents of a project scope statement

Learning Objectives (continued)

- Discuss the process for creating a work breakdown structure (WBS)
- Explain the importance of verifying scope and how it relates to defining and controlling scope
- Understand the importance of controlling scope and approaches for preventing scope-related problems

Project Management Framework – 9 Knowledge Areas



Project Management Process Groups and Knowledge Area Mapping*

Knowledge Area	Project Management Process Groups				
	Initiating	Planning	Executing	Monitoring and Controlling	Closing
Project Integration Management	Develop project charter	Develop project management plan	Direct and manage project execution	Monitor and control project work, Perform integrated change control	Close project or phase
Project Scope Management		Collect requirements, Define scope, Create WBS		Verify scope, Control scope	
Project Time Management		Define activities, Sequence activities,		Control schedule	

*Source: PMBOK® Guide, Fourth Edition, 2008.

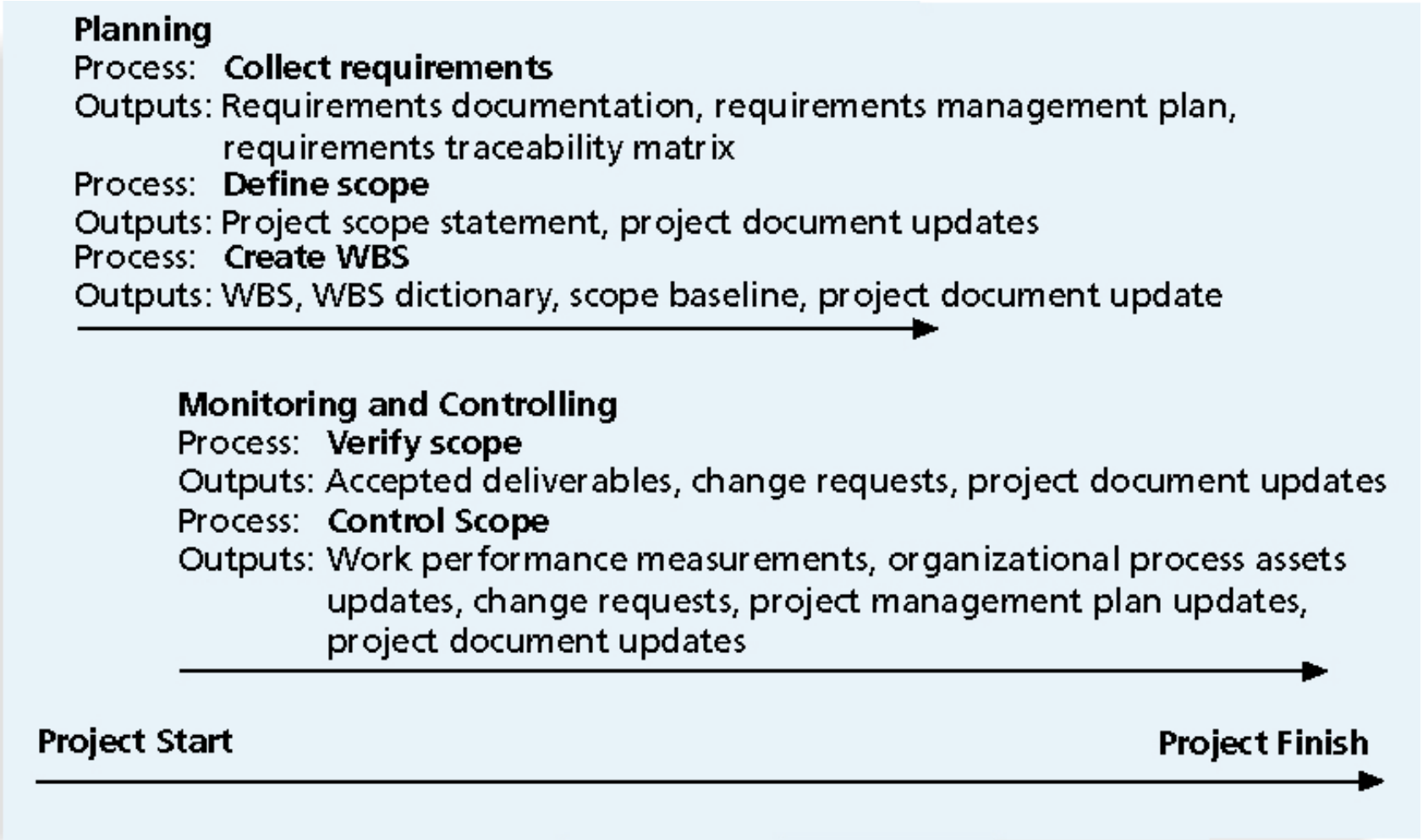
What is Project Scope Management?

- **Scope** refers to *all the work involved* in creating the products of the project and the processes used to create them
- A **deliverable** is a product produced as part of a project, such as hardware or software, planning documents, or meeting minutes
- Project scope management includes the processes involved in defining and controlling *what is* ***or*** *is not* included in a project

Processes for Project Scope Management:

- **Collecting requirements**: defining and documenting the features and functions of the products produced during the project as well as the processes used for creating them
- **Defining scope**: reviewing the project charter, requirements documents, and organizational process assets to create a scope statement
- **Creating the WBS**: subdividing the major project deliverables into smaller, more manageable components
- **Verifying scope**: formalizing acceptance of the project deliverables
- **Controlling scope**: controlling changes to project scope throughout the life of the project

Figure 5-1. Project Scope Management Summary

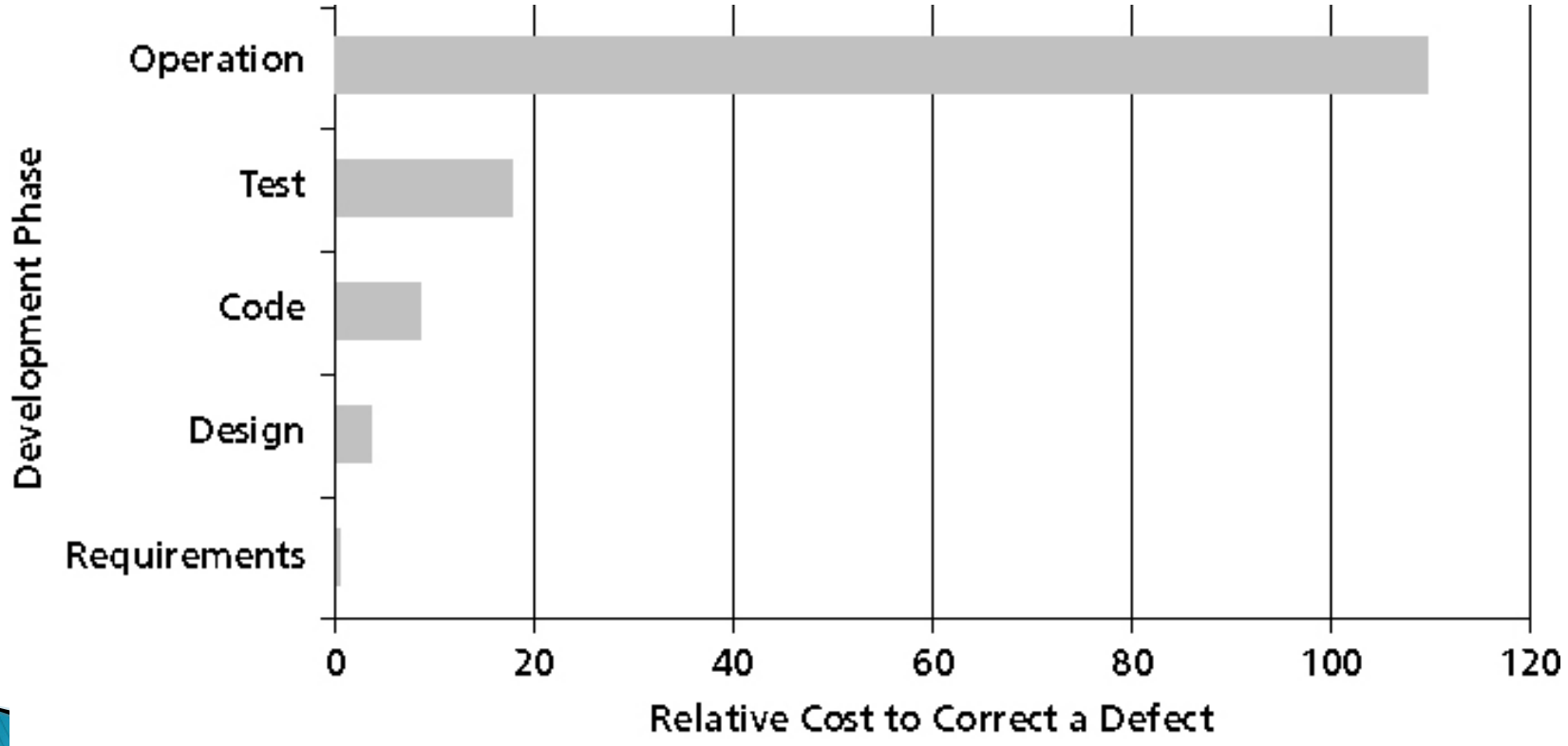


Collecting Requirements

- A **requirement** is a condition or capability that you "**must meet"** or possess to satisfy a contract, standard, specification, or other formal document
- For some IT projects, it is helpful to divide requirements gathering into categories:
  - Elicitation – get it
  - Analysis – study it
  - Specification – specify it
  - Validation – test it
- It is important to use an iterative approach to defining requirements since they are often unclear early

Figure 5-2. Relative Cost to Correct a Software Requirement Defect

Why are defining requirements important?



Source: Robert B. Grady, "An Economic Release Decision Model: Insights into Software Project Management." *Proceedings of the Applications of Software Measurement Conference* (Orange Park, FL: Software Quality Engineering, 1999), pp.227–239.

Methods for Collecting Requirements

How to effectively collect requirements:

- Interviewing
- Focus groups and facilitated workshops
- Using group creativity and decision-making techniques
- Questionnaires and surveys
- Observation
- Prototyping
- Software tools

Documenting Requirements

- Requirement documents are often generated by software and include text, images, diagrams, videos, and other media; they are often **broken down into different categories** such as functional, service, performance, quality, training requirements, and so on

What do you think a functional or performance requirements are?

- A **requirements management plan** describes how project requirements will be analyzed, documented, and managed

- A **requirements traceability matrix (RTM)** is a table that lists requirements, various attributes of each requirement, and the status of the requirements to ensure that all requirements are addressed

Table 5-1. Sample Requirements Traceability Matrix - RTM

Requirement No.	Name	Category	Source	Status
R32	Laptop memory	Hardware	Project charter and corporate laptop specifications	Complete. Laptops ordered meet requirement by having 4GB of memory.

Defining Scope

- Key inputs for preparing project scope statements include; the project charter, requirements documentation, and organizational process assets such as policies and procedures.

- As time progresses, the scope of a project should become more clear and specific

Table 5-3. Further Defining Project Scope

Project Charter: Upgrades may affect servers . . . (listed under Project Objectives)
Project Scope Statement, Version 1: Servers: If additional servers are required to support this project, they must be compatible with existing servers. If it is more economical to enhance existing servers, a detailed description of enhancements must be submitted to the CIO for approval. See current server specifications provided in Attachment 6. The CEO must approve a detailed plan describing the servers and their location at least two weeks before installation.
Project Scope Statement, Version 2: Servers: This project will require purchasing ten new servers to support Web, network, database, application, and printing functions. Virtualization will be used to maximize efficiency. Detailed descriptions of the servers are provided in a product brochure in Appendix 8 along with a plan describing where they will be located.

Creating the Work Breakdown Structure (WBS)

- A **WBS** is a deliverable-oriented grouping of the work involved in a project that defines the scope of the project
  - You can use a Gantt chart for the WBS
- WBS is a foundation document that provides the basis for planning and managing schedules, costs, resources
- **Decomposition** is subdividing project deliverables into smaller pieces
- A **work package** is a task at the lowest level of the WBS

Figure 5-5. Intranet WBS and Gantt Chart in Microsoft Project

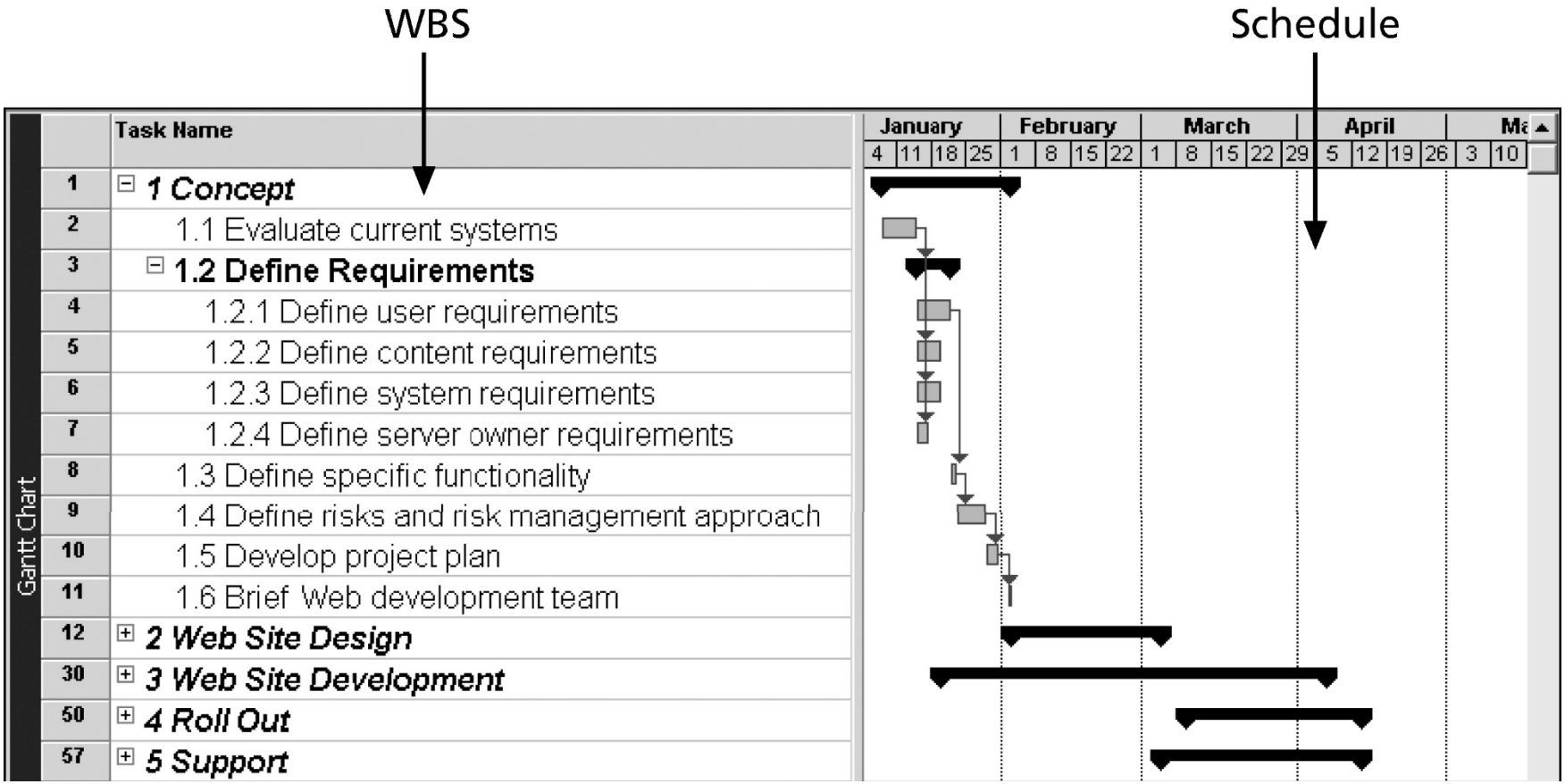
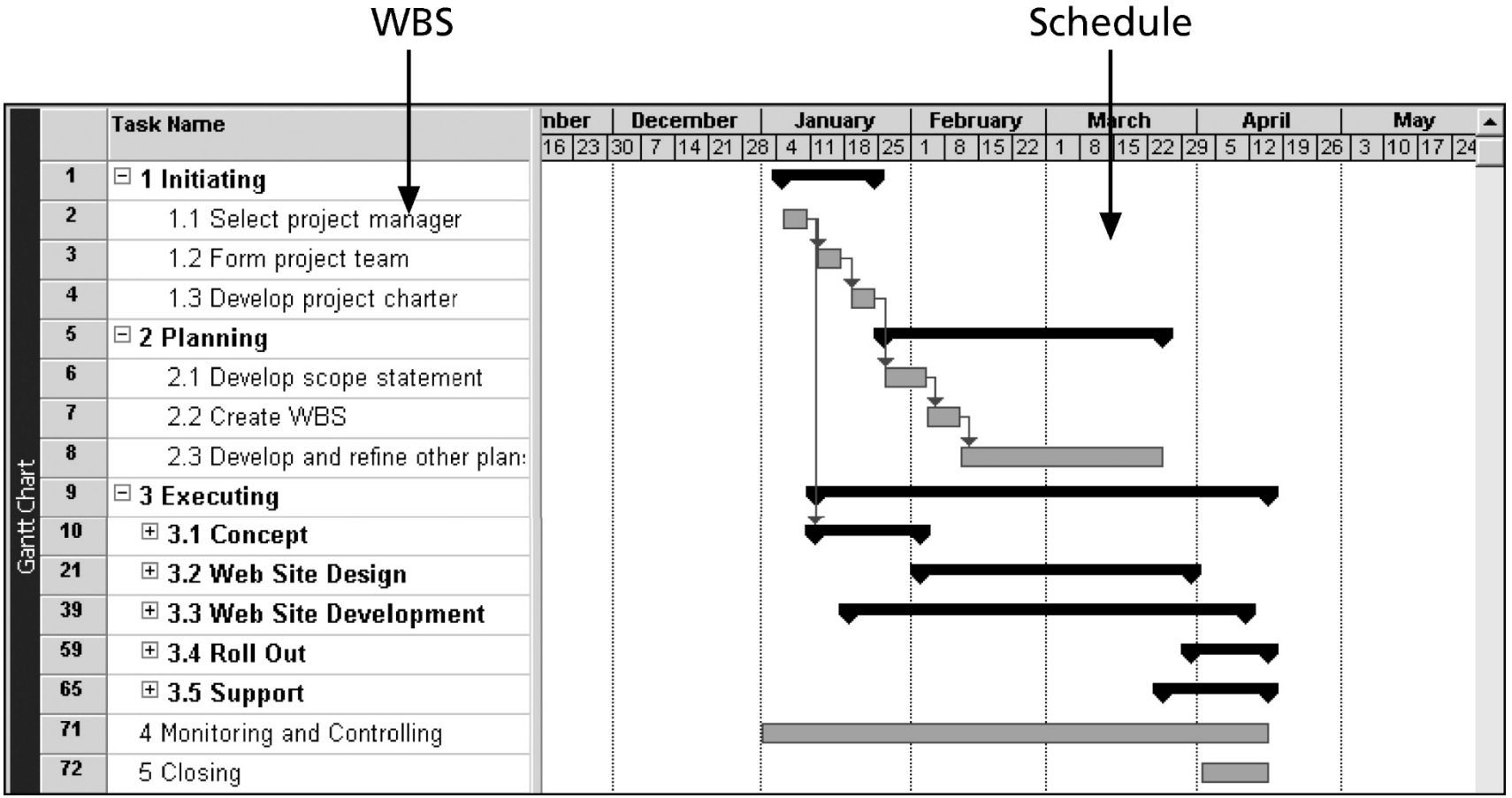


Figure 5-6. Intranet Gantt Chart Organized by Project Management Process Groups



Verifying Scope

- **Scope verification** involves formal acceptance of the completed project scope by the stakeholders
- Acceptance is often achieved by a customer inspection and then sign-off on key deliverables

Controlling Scope

- Scope control involves *controlling changes* to the project scope
- Goals of scope control are to:
  - Influence - the factors that cause scope changes
  - Assure - changes are processed according to procedures developed as part of integrated change control
  - Manage - changes when they occur
- **Variance** is the difference between planned and actual performance

Best Practices for Avoiding Scope Problems

1. Keep the scope realistic. Don't make projects so large that they can't be done.

2. Involve users in scope management. Assign key users to the project team and give them ownership of requirements and scope verification.

3. Use off-the-shelf hardware and software whenever possible. Many IT people enjoy using the latest and greatest technology, but business needs, not technology trends, must take priority.

4. Follow good project management processes. As described in this chapter and others, there are well-defined processes for managing project scope and others aspects of projects.

Suggestions for Improving User Input

- Develop a good project selection process and insist that sponsors are from the user organization
- Have users on the project team in important roles
- Have regular meetings with defined agendas, and have users sign off on key deliverables presented at meetings
- Deliver something to users and sponsors on a regular basis
- Don’t promise to deliver when you know you can’t
- Co-locate users with developers (sometimes very helpful to aid in communication)

Suggestions for Reducing Incomplete and Changing Requirements

- Develop and follow a requirements management process
- Use techniques such as prototyping, use case modeling, and JAD to get more user involvement
- **Put requirements in writing and keep them current**
- Create a requirements management database for documenting and controlling requirements

Suggestions for Reducing Incomplete and Changing Requirements (continued)

- Provide adequate testing and conduct testing throughout the project life cycle
- Review changes from a systems perspective
- Emphasize completion dates to help focus on what's most important
- Allocate resources specifically for handling change requests

Chapter Summary

- Project scope management includes the processes required to ensure that the project addresses all the work required, and only the work required, to complete the project successfully

- Main processes include:
  - Collect requirements
  - Define scope
  - Create WBS
  - Verify scope
  - Control scope