

Chapter 5: Project Scope Management



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Learning Objectives

- Understand the elements that make good project scope management important.
- Explain the scope planning process and describe the contents of a scope management plan.
- Describe the process for developing a project scope statement using the project charter and preliminary scope statement.
- Discuss the scope definition process and work involved in constructing a work breakdown structure using the analogy, top-down, bottom-up, and mind-mapping approaches.

Learning Objectives

- Explain the importance of scope verification and how it relates to scope definition and control.
- Understand the importance of scope control and approaches for preventing scope-related problems on information technology projects.
- Describe how software can assist in project scope management.

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.

Project Scope Management Processes

- **Scope planning:** Deciding how the scope will be defined, verified, and controlled.
- **Scope definition:** Reviewing the project charter and preliminary scope statement and adding more information as requirements are developed and change requests are approved.
- **Creating the WBS:** Subdividing the major project deliverables into smaller, more manageable components.
- **Scope verification:** Formalizing acceptance of the project scope.
- **Scope control:** Controlling changes to project scope.

Scope Planning and the Scope Management Plan

- The **scope management plan** is a document that includes descriptions of how the team will prepare the project scope statement, create the WBS, verify completion of the project deliverables, and control requests for changes to the project scope.
- Key inputs include the project charter, preliminary scope statement, and project management plan.

Table 5.1. Sample Project Charter

Project Title: Information Technology (IT) Upgrade Project

Project Start Date: March 4, 2007 **Projected Finish Date:** December 4, 2007

Project Manager: Kim Nguyen, 691-2784, *knguyen@course.com*

Project Objectives: Upgrade hardware and software for all employees (approximately 2,000) within nine months based on new corporate standards. See attached sheet describing the new standards. Upgrades may affect servers, as well as associated network hardware and software. Budgeted \$1,000,000 for hardware and software costs and \$500,000 for labor costs.

Approach:

- Update the information technology inventory database to determine upgrade needs
- Develop detailed cost estimate for project and report to CIO
- Issue a request for quote to obtain hardware and software
- Use internal staff as much as possible for planning, analysis, and installation

ROLES AND RESPONSIBILITIES:

<i>NAME</i>	<i>ROLE</i>	<i>RESPONSIBILITY</i>
Walter Schmidt	CEO	Project sponsor, monitor project
Mike Zwack	CIO	Monitor project, provide staff
Kim Nguyen	Project Manager	Plan and execute project
Jeff Johnson	Director of Information, Technology Operations	Mentor Kim
Nancy Reynolds	VP, Human Resources	Provide staff, issue memo to all employees about project
Steve McCann	Director of Purchasing	Assist in purchasing hardware and software

Table 5.1. Sample Project Charter (cont'd)

Sign-off: (Signatures of all the above stakeholders)

Walter Schmidt

Steve McCann

Mike Zwack

Nancy Reynolds

Kim Nguyen

Jeff Johnson

Comments: (Handwritten or typed comments from above stakeholders, if applicable)

"This project must be done within ten months at the absolute latest." Mike Zwack, CIO

*"We are assuming that adequate staff will be available and committed to supporting this project. Some work must be done after hours to avoid work disruptions, and overtime will be provided."
Jeff Johnson and Kim Nguyen, Information Technology department*

Scope Definition and the Project Scope Statement

- The important of project scope statement
 - Improve the accuracy of time, cost, and resource estimate
 - Define a baseline for performance measurement and project control
 - Aids in communicating clear work responsibilities
- Main tools and techniques
 - Analyzing products
 - Identifying alternative approached to doing the work
 - Understanding and analyzing stakeholder needs
 - Using expert judgment

Scope Definition and the Project Scope Statement

- The preliminary scope statement, project charter, organizational process assets, and approved change requests provide a basis for creating the project scope statement.
- As time progresses, the scope of a project should become clearer and more specific.

Scope Definition and the Project Scope Statement

- Project scope statements should include
 - A description of the project
 - Overall objectives and justification
 - Detailed description of all project deliverables
 - The characteristics and requirements of products and services

Scope Definition and the Project Scope Statement

- Project scope statement is helpful to document
 - Project success criteria
 - Project boundaries
 - Product acceptance criteria
 - Project constraints and assumptions
 - Project organization
 - Defined risks, schedule milestones
 - Cost estimation
 - Approve requirement
 - Configuration management requirement

Table 5-2. Further Defining Project Scope

Project Charter:

Upgrades may affect servers...

Preliminary Scope Statement:

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 Atch 6. The CEO must approve a detailed plan describing the servers and their location at least two weeks before installation.

Project Scope Statement, Version 1:

Servers: This project will require purchasing ten new servers to support Web, network, database, application, and printing functions. Two of each type of server will be purchased and dedicated to this project. 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 total scope of the project.
- A WBS is a foundation document that provides the basis for planning and managing project schedules, costs, resources, and changes.
- **Decomposition** is subdividing project deliverables into smaller pieces.
- **Work package** is a task at the lowest level of the WBS that the project manager is using to monitor and control the project

Figure 5-1. Sample Intranet WBS Organized by Product

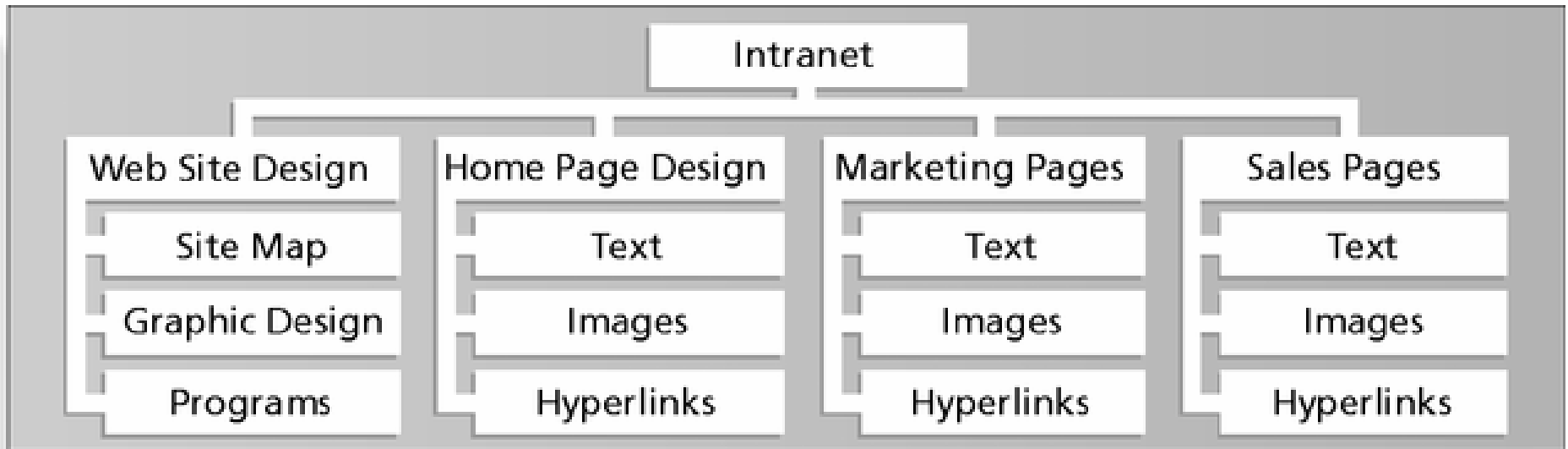
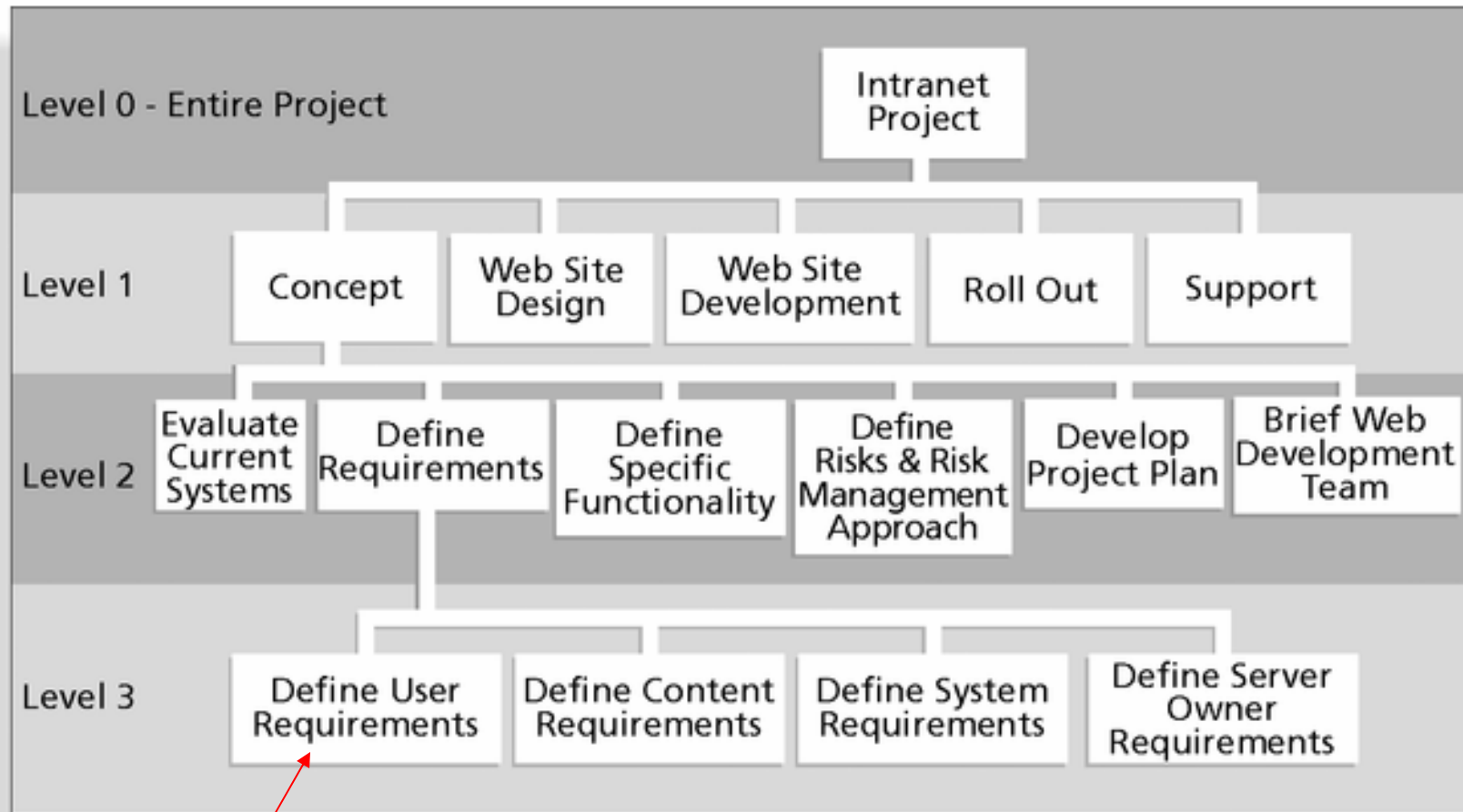


Figure 5-2. Sample Intranet WBS Organized by Phase



Work package

Table 5-3. Intranet WBS in Tabular Form

1.0 Concept

1.1 Evaluate current systems

1.2 Define requirements

1.2.1 Define user requirements

1.2.2 Define content requirements

1.2.3 Define system requirements

1.2.4 Define server owner requirements

1.3 Define specific functionality

1.4 Define risks and risk management approach

1.5 Develop project plan

1.6 Brief Web development team

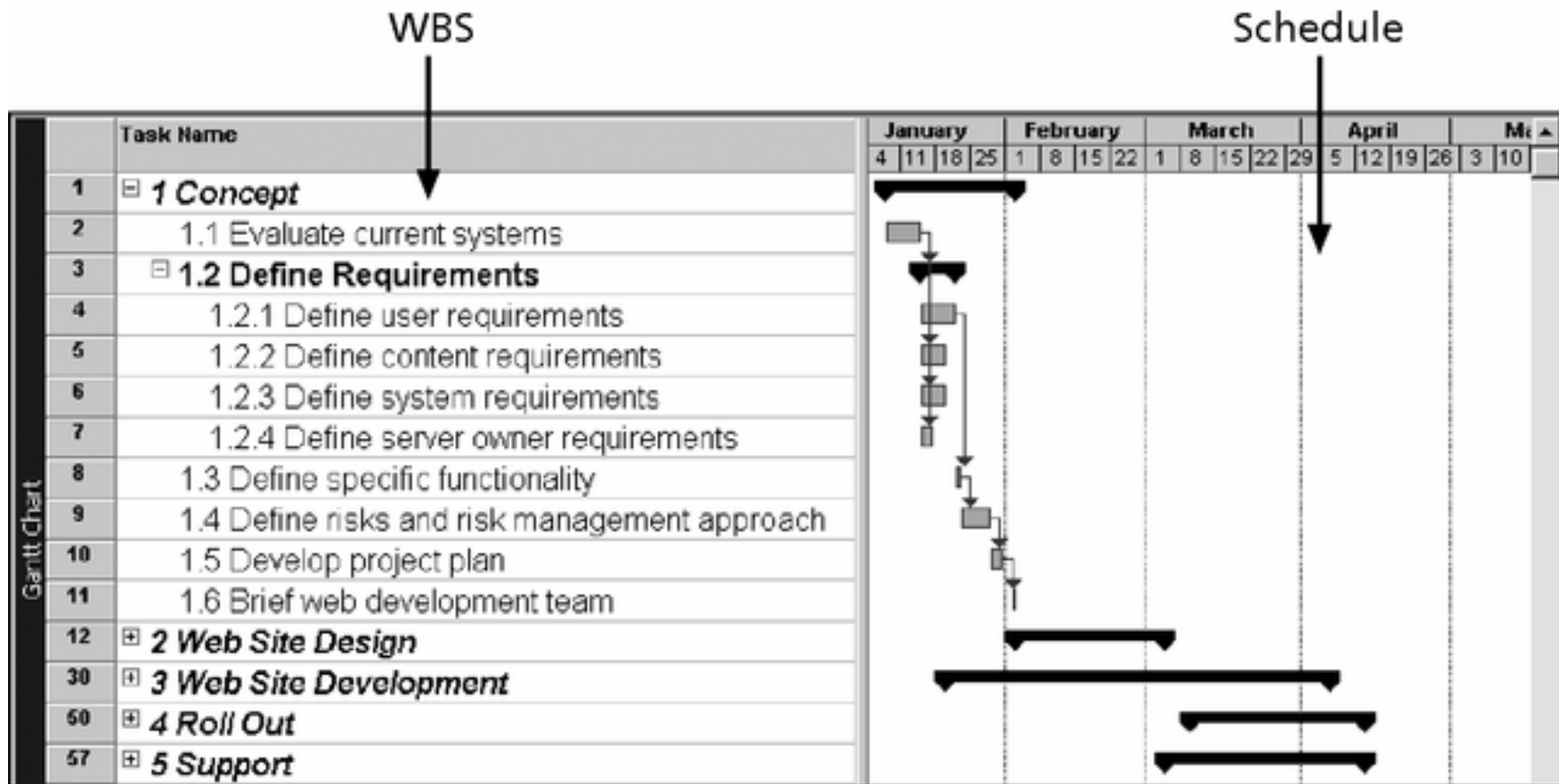
2.0 Web Site Design

3.0 Web Site Development

4.0 Roll Out

5.0 Support

Figure 5-3. Intranet WBS and Gantt Chart in Project 2000



[Project 2000](#)

Figure 5-4. Intranet Gantt Chart Organized by Project Management Process Groups

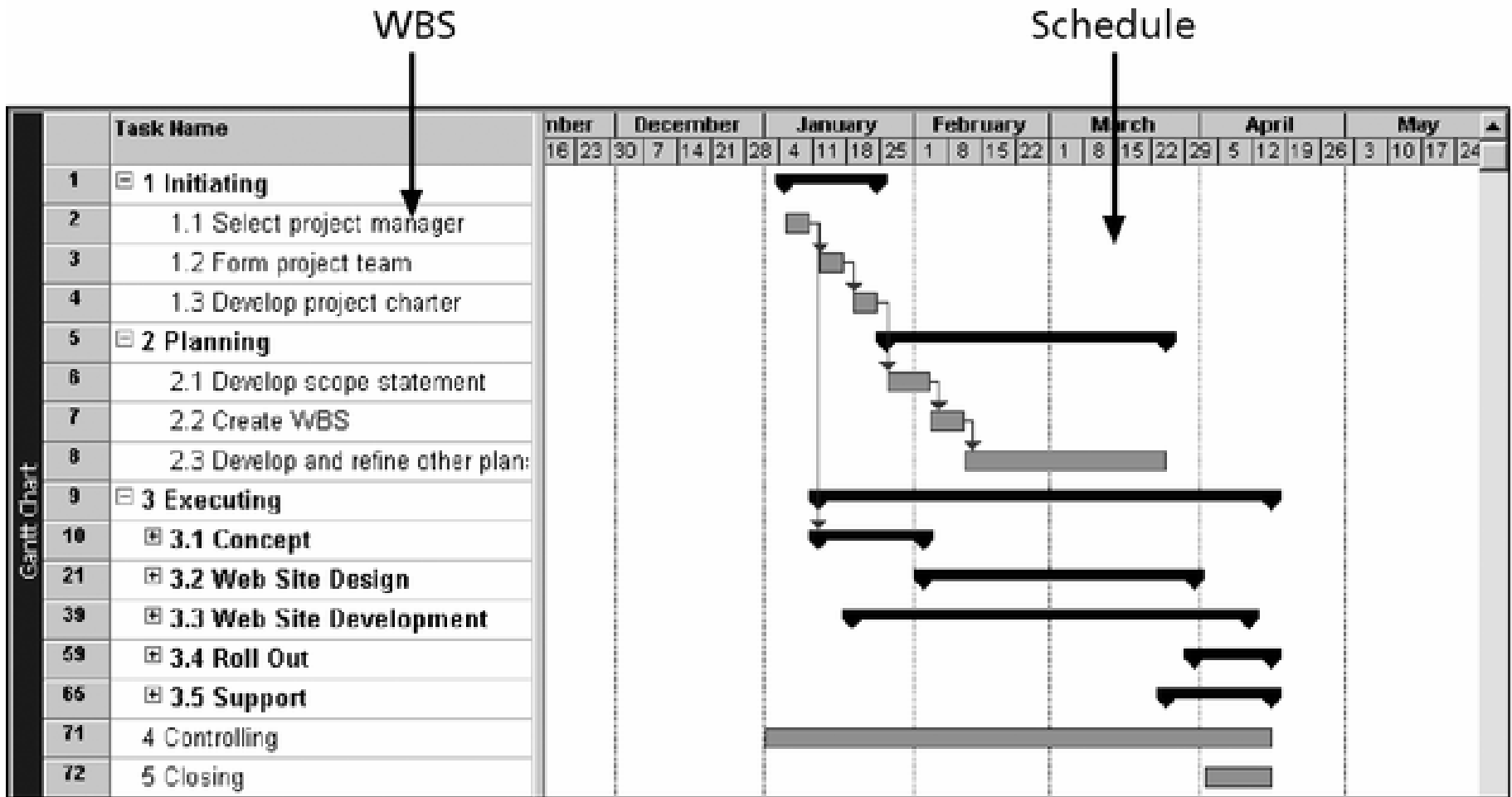


Table 5-4. Executing Tasks for JWD Consulting's WBS

3.0 Executing

3.1 Survey

3.2 User inputs

3.3 Intranet site content

3.3.1 Templates and Tools

3.3.2 Articles

3.3.3 Links

3.3.4 Ask the Expert

3.3.5 User requests feature

3.4 Intranet site design

3.5 Intranet site construction

3.6 Site testing

3.7 Site promotion

3.8 Site roll out

3.9 Project benefits measurement

Approaches to Developing WBSs

- **Guidelines:** Some organizations, such as the DOD, provide guidelines for preparing WBSs.
- **Analogy approach:** Review WBSs of similar projects and tailor to your project.
- **Top-down approach:** Start with the largest items of the project and break them down.
- **Bottom-up approach:** Start with the specific tasks and roll them up.
- **Mind-mapping approach:** Write tasks in a non-linear, branching format and then create the WBS structure.

Figure 5-5. Sample Mind-Mapping Approach

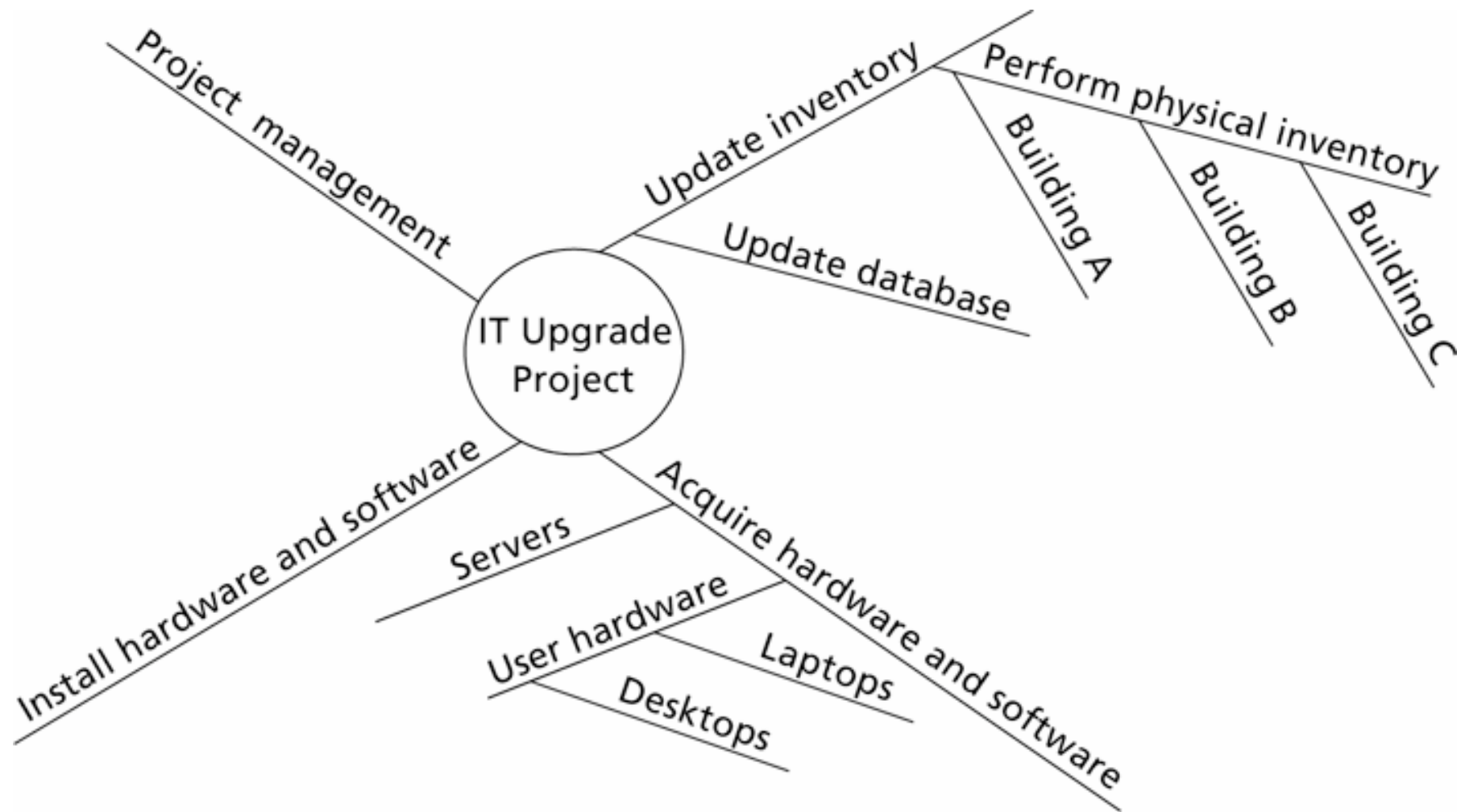
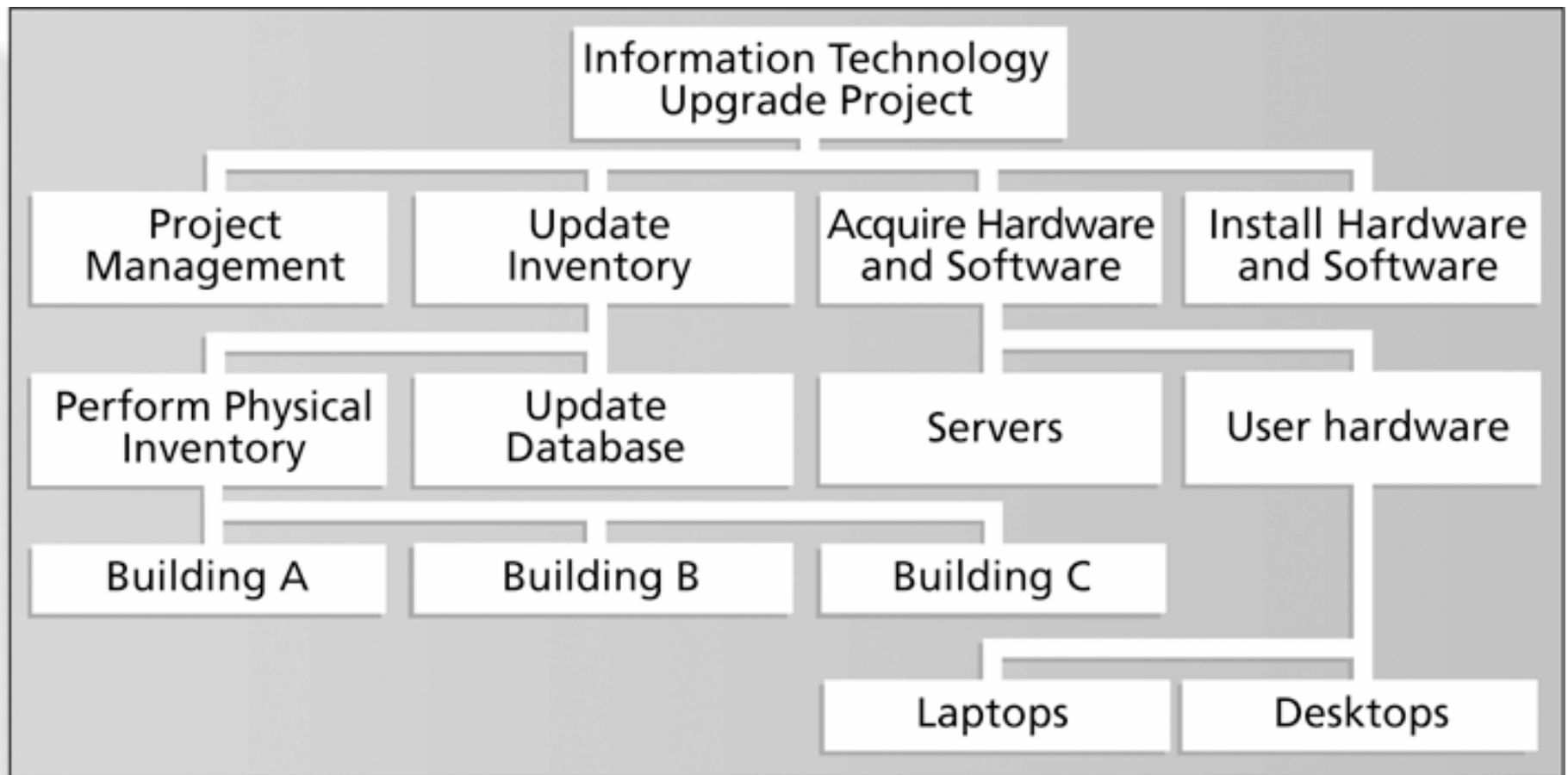


Figure 5-6. Resulting WBS in Chart Form



The WBS Dictionary and Scope Baseline

- Many WBS tasks are vague and must be explained in more detail so people know what to do and can estimate how long the work will take and what it will cost.
- A **WBS dictionary** is a document that describes detailed information about each WBS item.
- The approved project scope statement and its WBS and WBS dictionary form the **scope baseline**, which is used to measure performance in meeting project scope goals.

Advice for Creating a WBS and WBS Dictionary*

- A unit of work should appear in only one place in the WBS.
- The work content of a WBS item is the sum of the WBS items below it.
- A WBS item is the responsibility of only one individual, even though many people may be working on it.
- The WBS must be consistent with the way in which work is actually going to be performed; it should serve the project team first, and other purposes only if practical.

*Cleland, David I., *Project Management: Strategic Design and Implementation*, 2nd edition (New York: McGraw-Hill 1994).

Advice for Creating a WBS and WBS Dictionary (cont'd)*

- Project team members should be involved in developing the WBS to ensure consistency and buy-in.
- Each WBS item must be documented in a WBS dictionary to ensure accurate understanding of the scope of work that is included and not included in that item.
- The WBS must be a flexible tool to accommodate inevitable changes while properly maintaining control of the work content in the project according to the scope statement.

*Cleland, David I., *Project Management: Strategic Design and Implementation*, 2nd edition (New York: McGraw-Hill 1994).

Scope Verification

- Scope verification involves formal acceptance of the completed project scope by the stakeholder
- Careful procedures must be developed to ensure the customer is getting what they want and the project team has enough time and money to produce the desired products and services
- Scope creep is scope keep getting bigger and bigger

Scope Control

- **Scope control** involves controlling changes to the project scope.
- Goals of scope control are to:
 - Influence the factors that cause scope changes.
 - Ensure 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.

Suggestions for Improving User Input

- Develop a good project selection process and insist that sponsors are from the user organization.
- Place users on the project team in important roles.
- Hold 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.

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 (cont'd)

- Conduct adequate 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 and enhancements (as NWA did with ResNet).

Using Software to Assist in Project Scope Management

- Word-processing software helps create scope-related documents.
- Spreadsheets help perform financial calculations and weighed scoring models, and help develop charts and graphs.
- Communication software, such as e-mail and the Web, helps clarify and communicate scope information.
- Project management software helps create a WBS, the basis for tasks on a Gantt chart.
- Specialized software is available to assist in project scope management.