
IT/Software Project Management Core Functions

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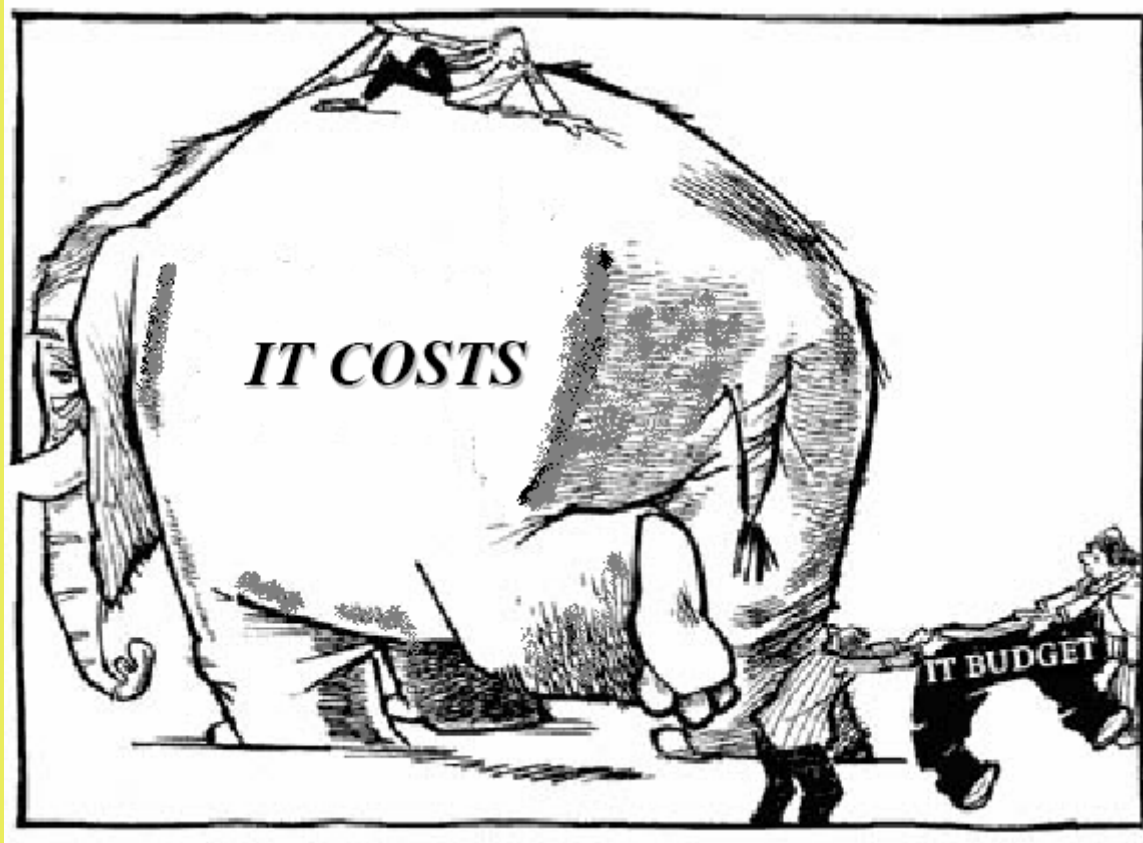
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- The following references were mostly used in the preparation of the course; the order reflects the intensity of usage:
 - ✚ IT Project Management, Kathy Schwalbe, Course Technology, 2004.
 - ✚ Ghazy Assassa, Software Engineering Course notes, 2007.
 - ✚ Ian Sommerville: Software Engineering, 7th edition, Addison-Wesley, 2005.
 - ✚ PMBOK Guide, 2004.
 - ✚ Roger Pressman: Software Engineering, McGraw-Hill, 2005.
- ✚ Some information were taken from the following sites:
 - The Institute of Electrical and Electronics Engineers (IEEE)
 - The International Organisation for Standardisation (ISO)
 - The Software Engineering Institute (SEI) at Carnegie Mellon University.

Project Scope Management

Principle Ref:

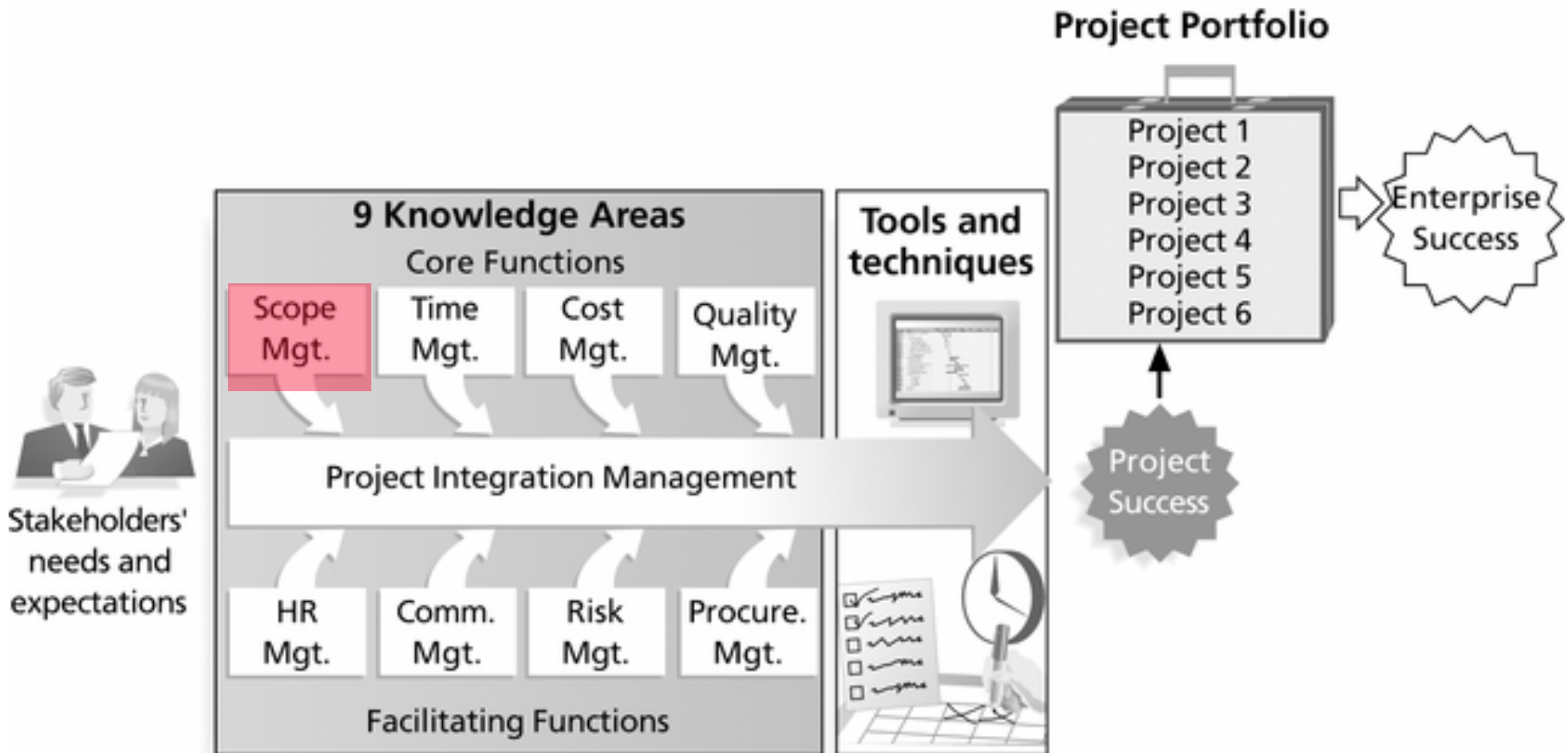
Kathy Schwalbe: Information Technology Project Management,
Fourth Edition, Thomson Course Technology



Objectives

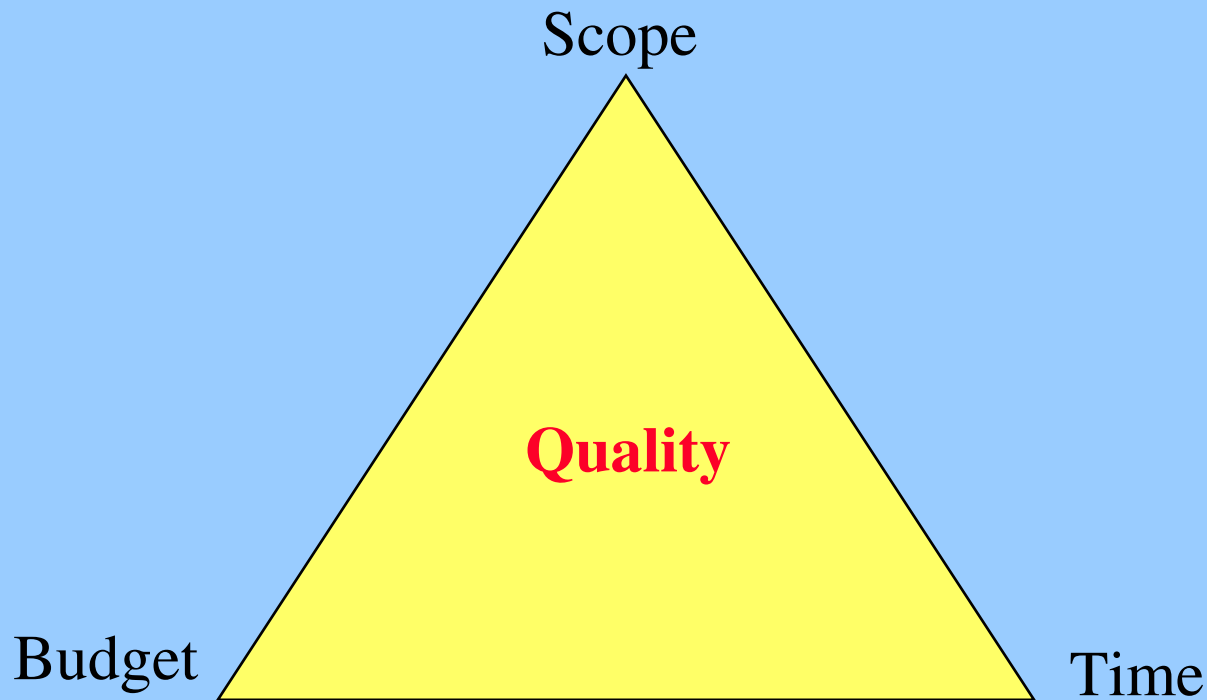
- To introduce Project Scope Management
- To describe the process for developing a project scope statement using the project charter and preliminary scope statement.
- To discuss the scope definition process and work breakdown structure

Project Management Framework



IT Project Management, Kathy Schwalbe, Course Technology, 2004.

Quality & The Triple constraint



Project scope management

- 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:
 - ✚ Scope planning
 - ✚ Scope definition
 - ✚ WBS creation
 - ✚ Scope verification
 - ✚ Scope control

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,
 - ✚ 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.

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

Sample Project Charter (cont'd)

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

Walter Schmitt

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, CEO

*"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

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

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.

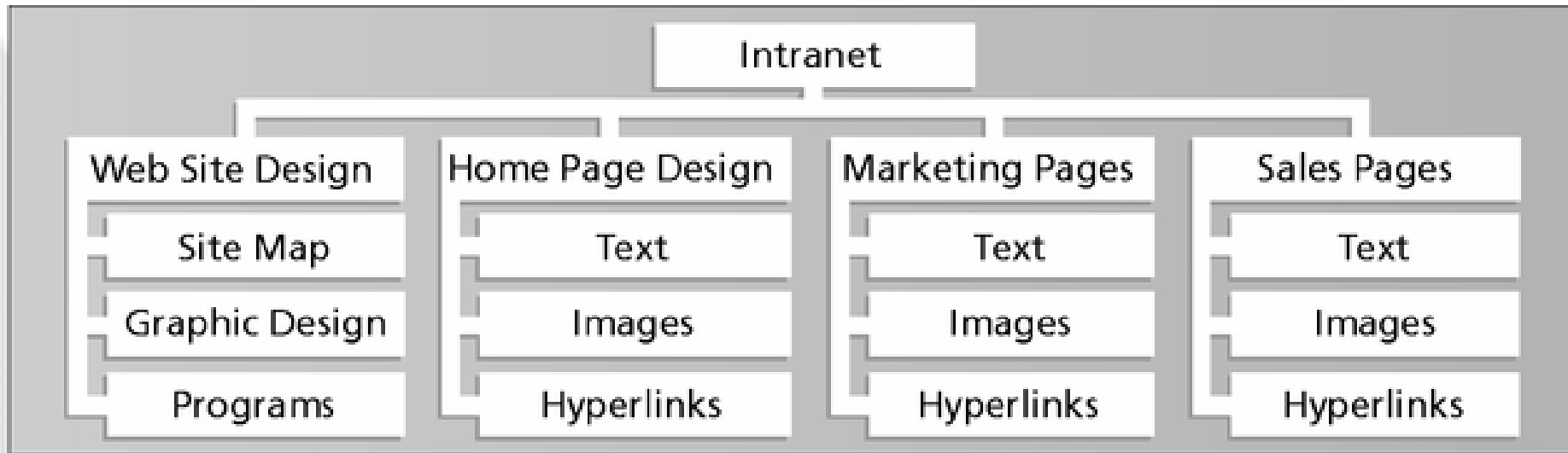
Project Scope Statement, Version 1:

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)

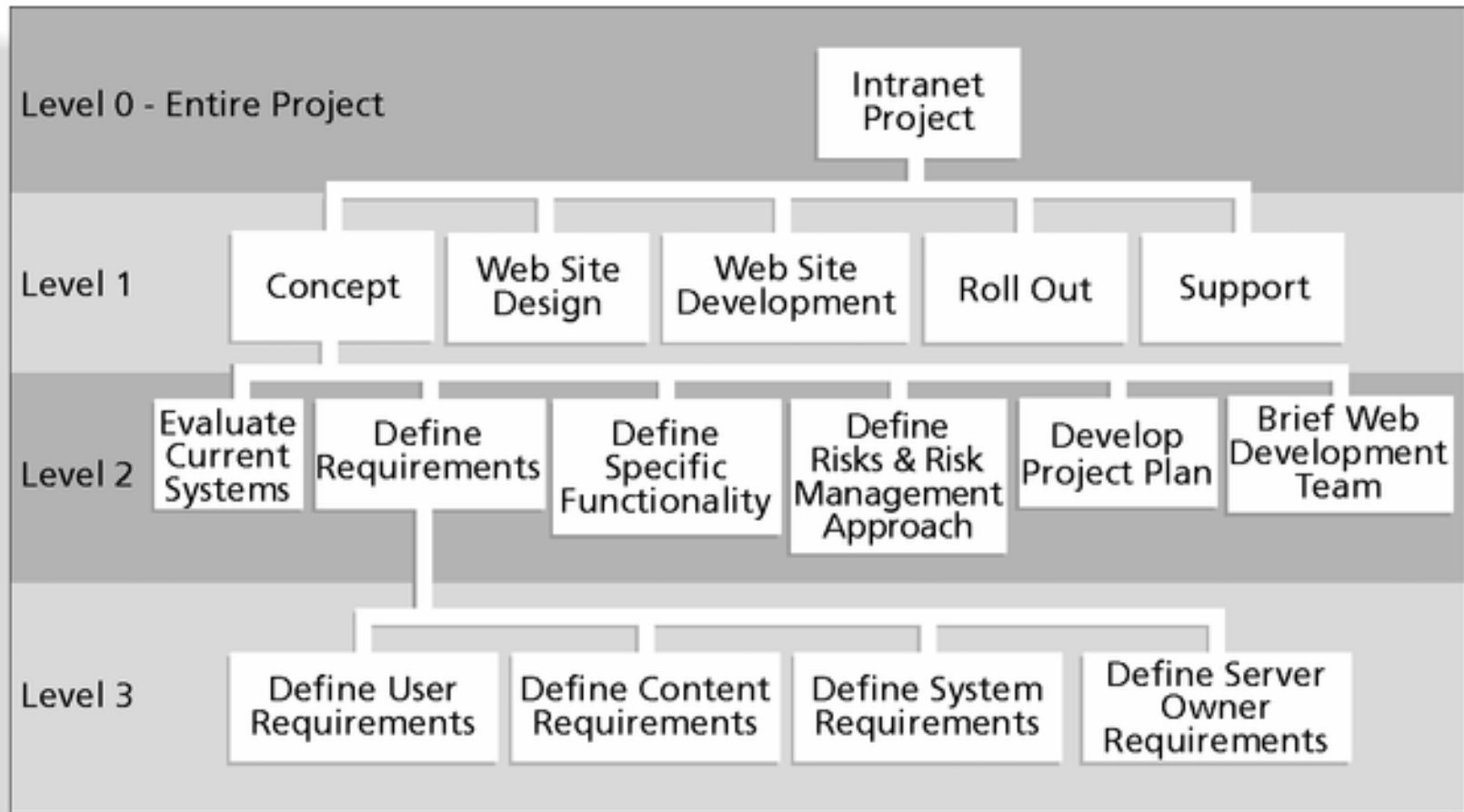
- A **WBS** is a deliverable-oriented grouping of the work involved in a project that **defines the total scope of the project**.
- A WBS is a foundation document that provides the basis for planning and managing project schedules, costs, resources, and changes.
- **Decomposition** is subdividing project deliverables into smaller pieces.

Sample Intranet WBS Organized by Product



Sample Intranet WBS

Organized by Phase



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

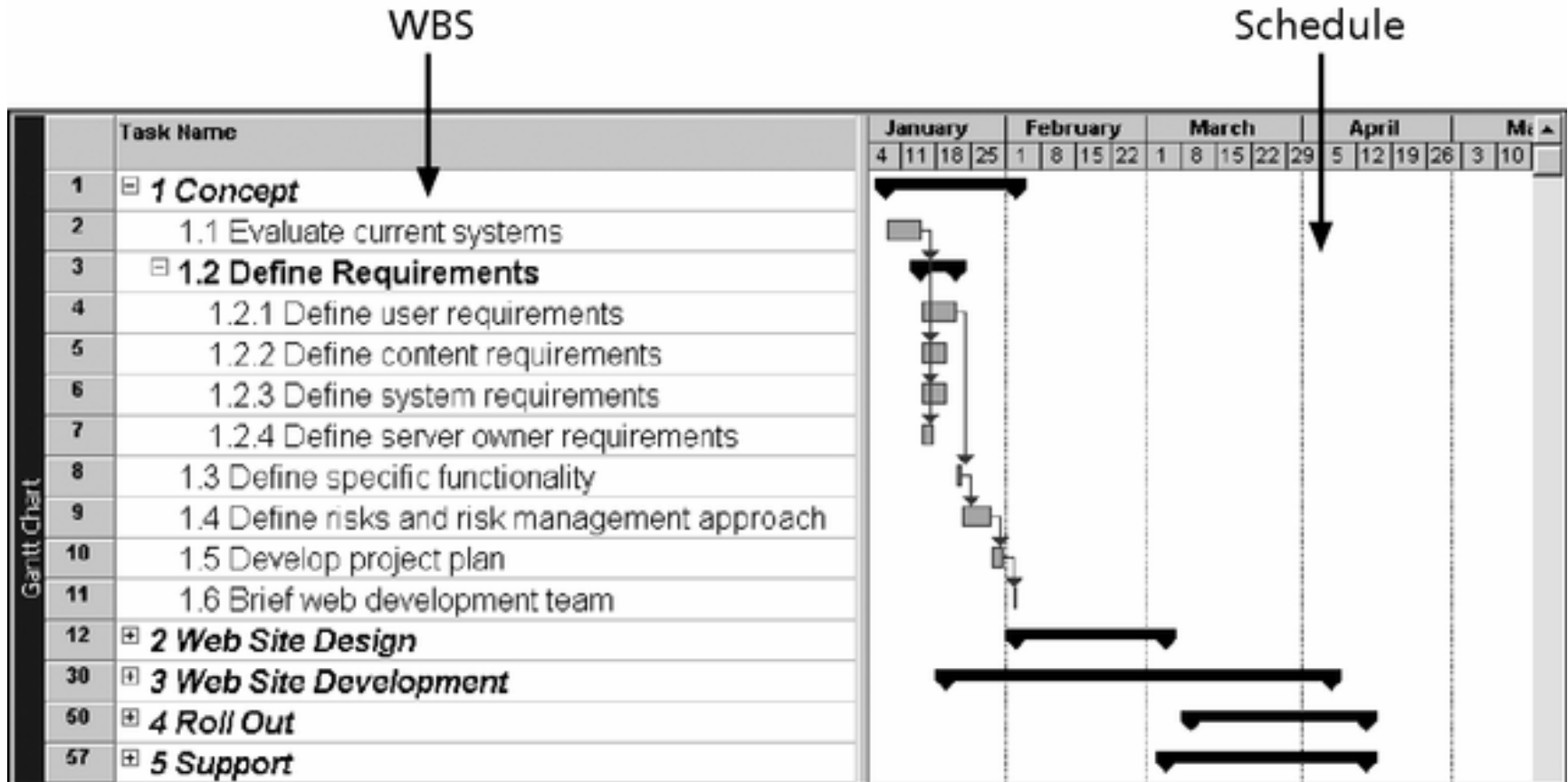
2.0 Web Site Design

3.0 Web Site Development

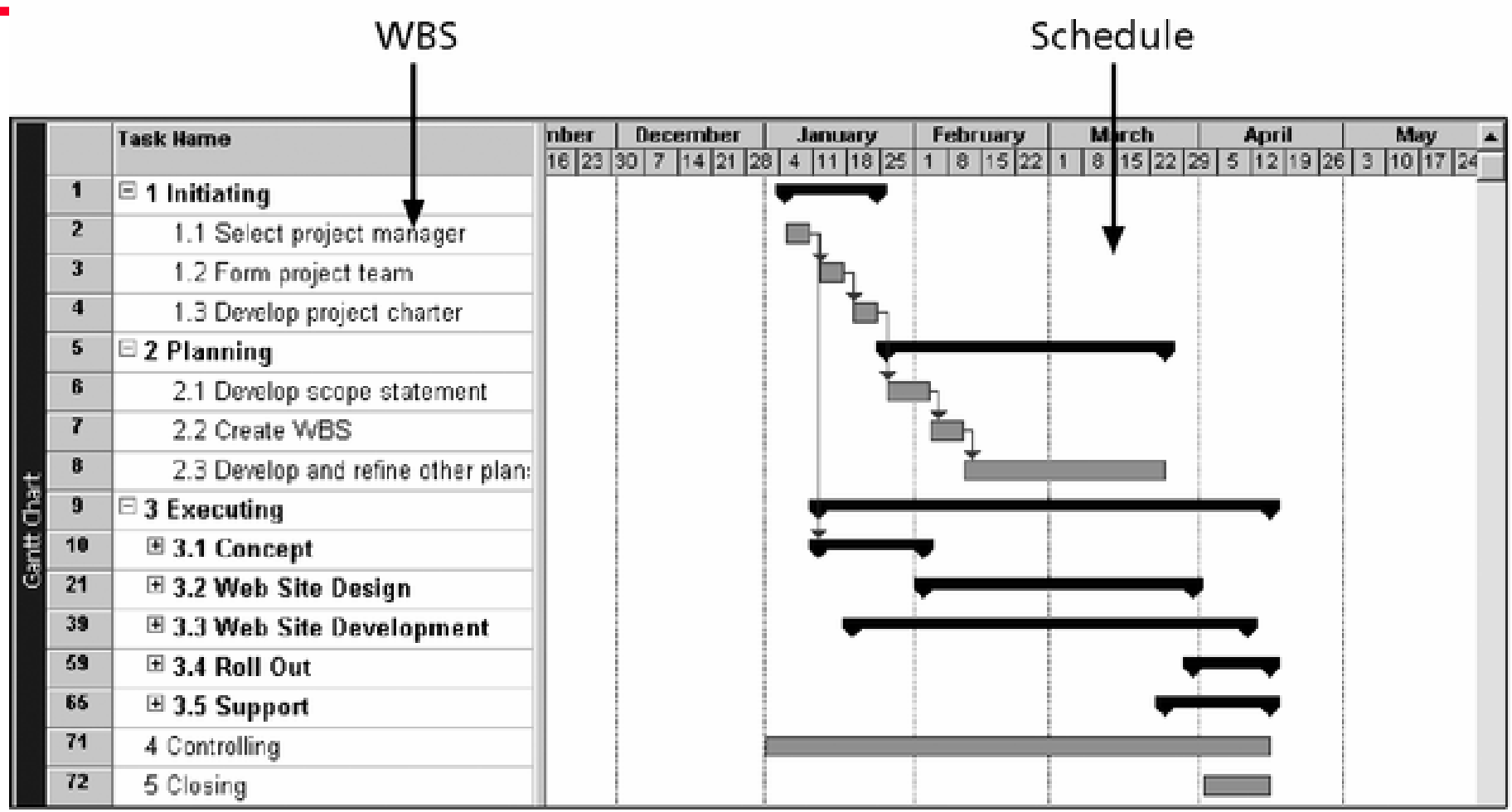
4.0 Roll Out

5.0 Support

Intranet WBS and Gantt Chart in Project 2000



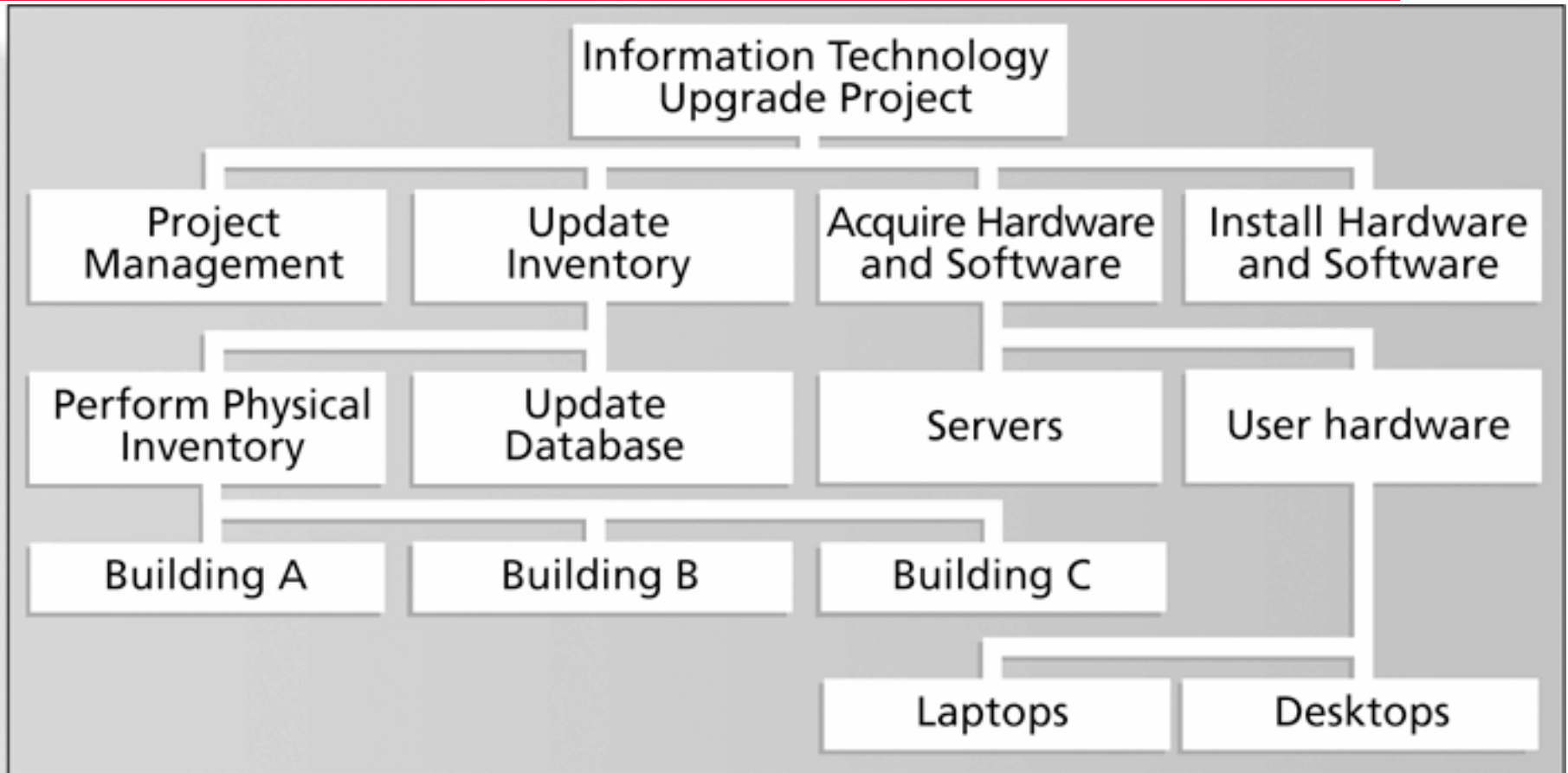
Intranet Gantt Chart Organized by Project Management Process Groups



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.

Resulting WBS in Chart Form



The WBS Dictionary and Scope Baseline

- **WBS dictionary:**

- ✚ describes detailed information about each WBS item.

- **Scope baseline:**

- ✚ The approved project scope statement and its WBS and WBS dictionary form the **scope baseline**,

- ✚ 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

- It is difficult to create a good scope statement and WBS for a project.
- It is even more difficult to verify project scope and minimize scope changes.

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

- 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 to get more **user involvement** such as:
 - ✚ prototyping,
 - ✚ use case modeling,
 - ✚ and JAD.
- 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.

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.