CSIT214/CSCI814/HCSC814
IT Project Management

Project scope management

Acknowledgement: Lecture slides are adapted from *Software Project Management by Bob Hughes and Mike Cotterell, 5th edition, McGraw-Hill, 2009, and Information Technology Project Management by Kathy Schwalbe, 8th edition (or later), Cengage Learning,*

Project management framework (review)

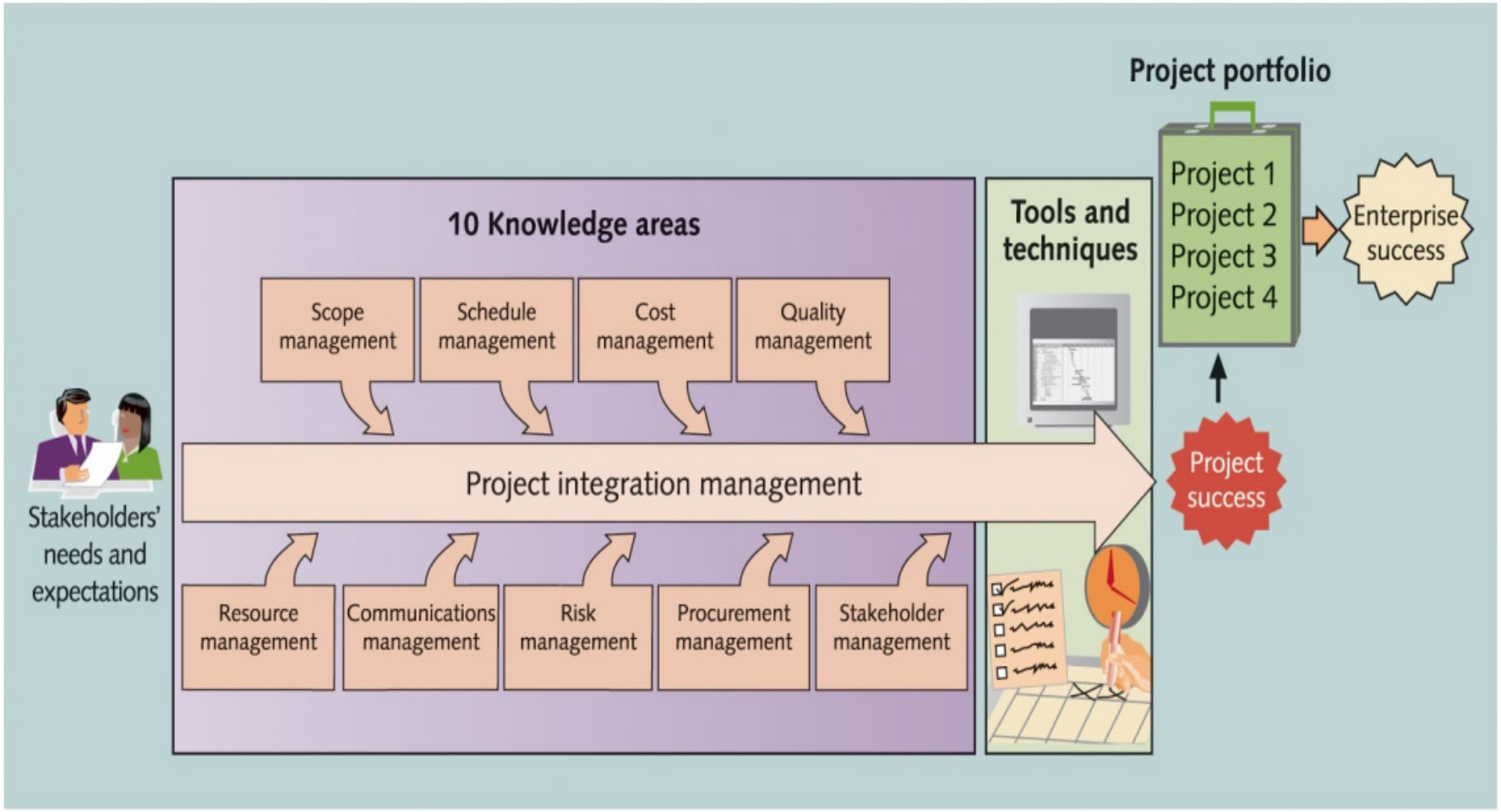


FIGURE 1-2 Project management framework

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
  - Ensures that the project team and stakeholders have the same understanding of:
    - what products the project will produce and
    - what processes the project team will use to produce them

Project Scope Management Processes (1 of 2)

- Main processes
  - **Planning scope management**: determining how the project's scope and requirements will be managed
  - **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
  - **Validating scope**: formalizing acceptance of the project deliverables
  - **Controlling scope**: controlling changes to project scope throughout the life of the project

Project Scope Management Processes

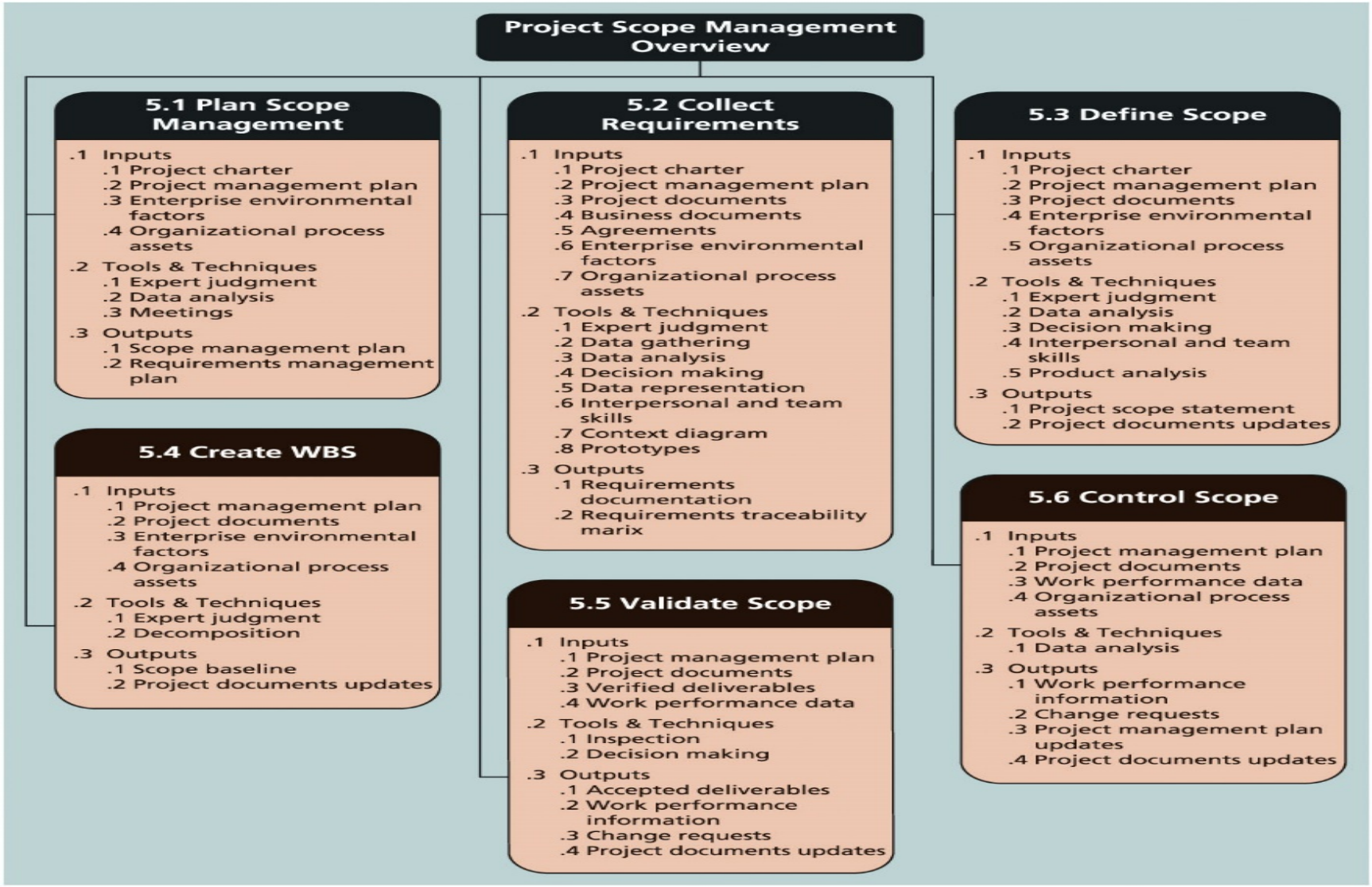


FIGURE 5-1 Project scope management overview

Planning Scope Management (1 of 2)

- The project team uses **expert judgment**, **data analysis**, and **meetings** to develop two important outputs
  - Scope management plan (subsidiary part of the project management plan)
  - Requirements management plan

- Scope management plan contents:
  - Prepare a detailed **project scope statement**
  - Create a Work-breakdown Structure (WBS)
  - Maintain and approve the WBS
  - Obtain formal acceptance of the completed project deliverables
  - Control requests for changes to the project scope

Planning Scope Management (2 of 2)

- Requirements Management Plan
  - The *PMBOK® Guide, Sixth Edition*, describes a requirement as "***a condition or capability that is necessary to be present in a product, service, or result to satisfy a business need***"

- The requirements management plan documents how project requirements will be analyzed, documented, and managed
  - How to plan, track, and report requirements activities
  - How to perform **configuration management** activities
  - How to prioritize requirements
  - How to use product metrics
  - How to trace and capture attributes of requirements

Collecting Requirements

- Several ways to collect requirements
  - Interviewing stakeholders
  - Holding focus groups and facilitated workshops
  - Using group creativity and decision-making techniques
  - Utilizing questionnaires and surveys
  - Conducting observation studies
  - Generating ideas by comparing specific project practices or product characteristics (i.e., benchmarking)

Defining Scope

- Important elements of a project scope statement
  - Product scope description
  - Product user acceptance criteria
  - Detailed information on **all project deliverables**
- It is also helpful to document other scope-related information
  - Project boundaries, constraints, and assumptions
  - Supporting document references (e.g., product specifications)
- As time progresses, the scope of a project should become more clear and specific

Sample excerpts of scope statement

Project Title: Project Management Intranet Site Project

Date: May 18 **Prepared by:** Erica Bell, Project Manager, erica_bell@jwdconsulting.com

Project Summary and Justification: Joe Fleming, CEO of JWD Consulting, requested this project to assist the company in meeting its strategic goals. The new intranet site will increase visibility of the company's expertise to current and potential clients. It will also help reduce internal costs and improve profitability by providing standard tools, techniques, templates, and project management knowledge to all internal consultants. The budget for the project is $140,000. An additional $40,000 per year will be required for operational expenses after the project is completed. Estimated benefits are $200,000 each year. It is important to focus on the system paying for itself within one year of its completion.

Product Characteristics and Requirements:

1. Templates and tools: The intranet site will allow authorized users to download files they can use to create project management documents and to help them use project management tools. These files will be in Microsoft Word, Excel, Access, Project, or in HTML or PDF format, as appropriate.

2. User submissions: Users will be encouraged to e-mail files with sample templates and tools to the Webmaster. The Webmaster will forward the files to the appropriate person for review and then post

8. Search feature: The intranet site must include a search feature for users to search by topic and key words.

Summary of Project Deliverables

Project management–related deliverables: Business case, project charter, team charter, scope statement, WBS, schedule, cost baseline, progress reports, final project presentation, final project report, lessons-learned report, and any other documents required to manage the project.

Product-related deliverables:

1. Survey: Survey current consultants and clients to help determine desired content and features for the intranet site.

2. Files for templates: The intranet site will include templates for at least 20 documents when the system is first implemented, and it will have the

12. Test plan: The test plan will document how the intranet site will be tested, who will do the testing, and how bugs will be reported.

Project Success Criteria: Our goal is to complete this project within six months for no more than $140,000. The project sponsor, Joe Fleming, has emphasized the importance of the project paying for itself within one year after the site is complete. To meet this financial goal, the intranet site must have strong user inputs. We must also develop a method for capturing the benefits while the intranet site is being developed and tested, and after it is rolled out. If the project takes a little longer to complete or costs a little more than planned, the firm will still view it as a success if it has a good payback and helps promote the firm's image as an excellent consulting organization.

Flashback quiz

- A is a document that formally recognizes the existence of a project and provides direction on the project's objectives and management.
  - project charter
  - contract
  - business case
  - project management plan
- Which of the following items is not normally included in a project charter?
  - The name of the project manager
  - Budget information
  - Stakeholder signatures
  - A Gantt chart

Creating the Work Breakdown Structure (1 of 9)

- Work Breakdown Structure (WBS) is a deliverable-oriented grouping of the work involved in a project that **defines the total scope of the project**
  - Foundation document that provides the basis for planning and managing project schedules, costs, resources, and changes
- Decomposition is the main tool or technique for creating a WBS
  - Subdividing project deliverables into smaller pieces
  - A **work package** is a task at the lowest level of the WBS

Creating the Work Breakdown Structure (2 of 9)

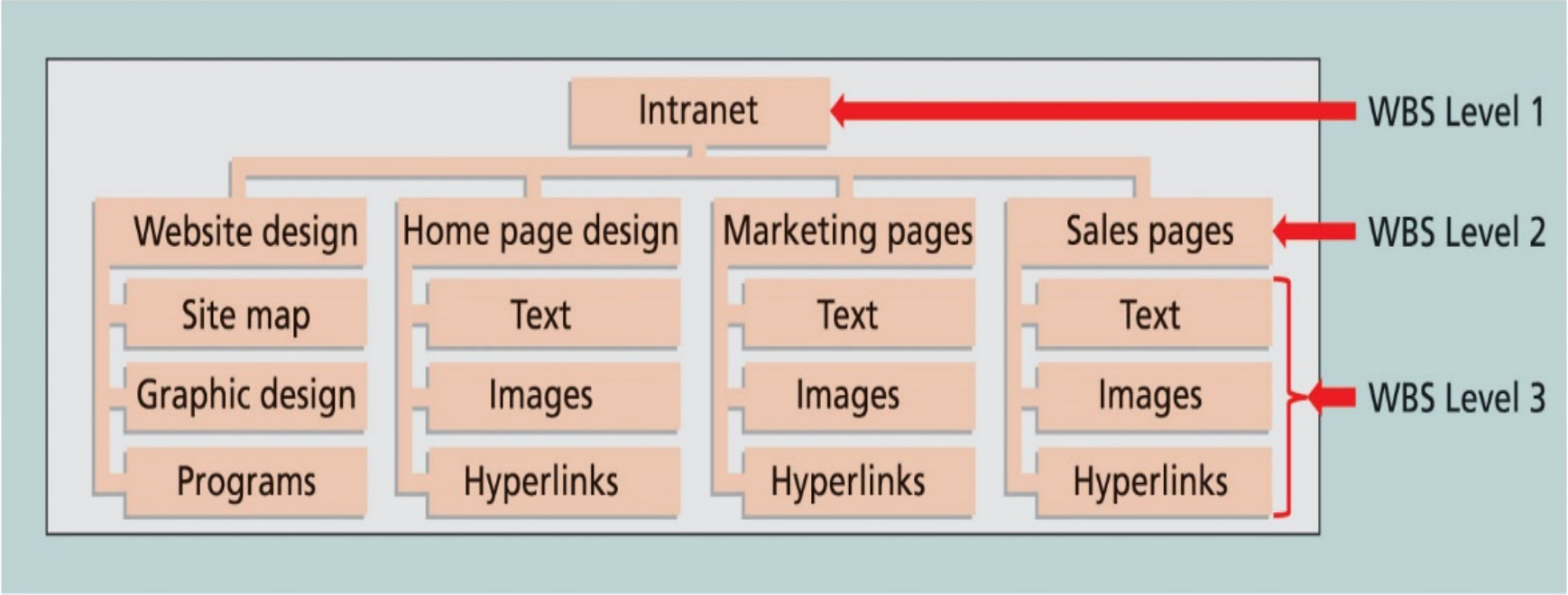


FIGURE 5-3 Sample intranet WBS organized by product

Creating the Work Breakdown Structure (3 of 9)

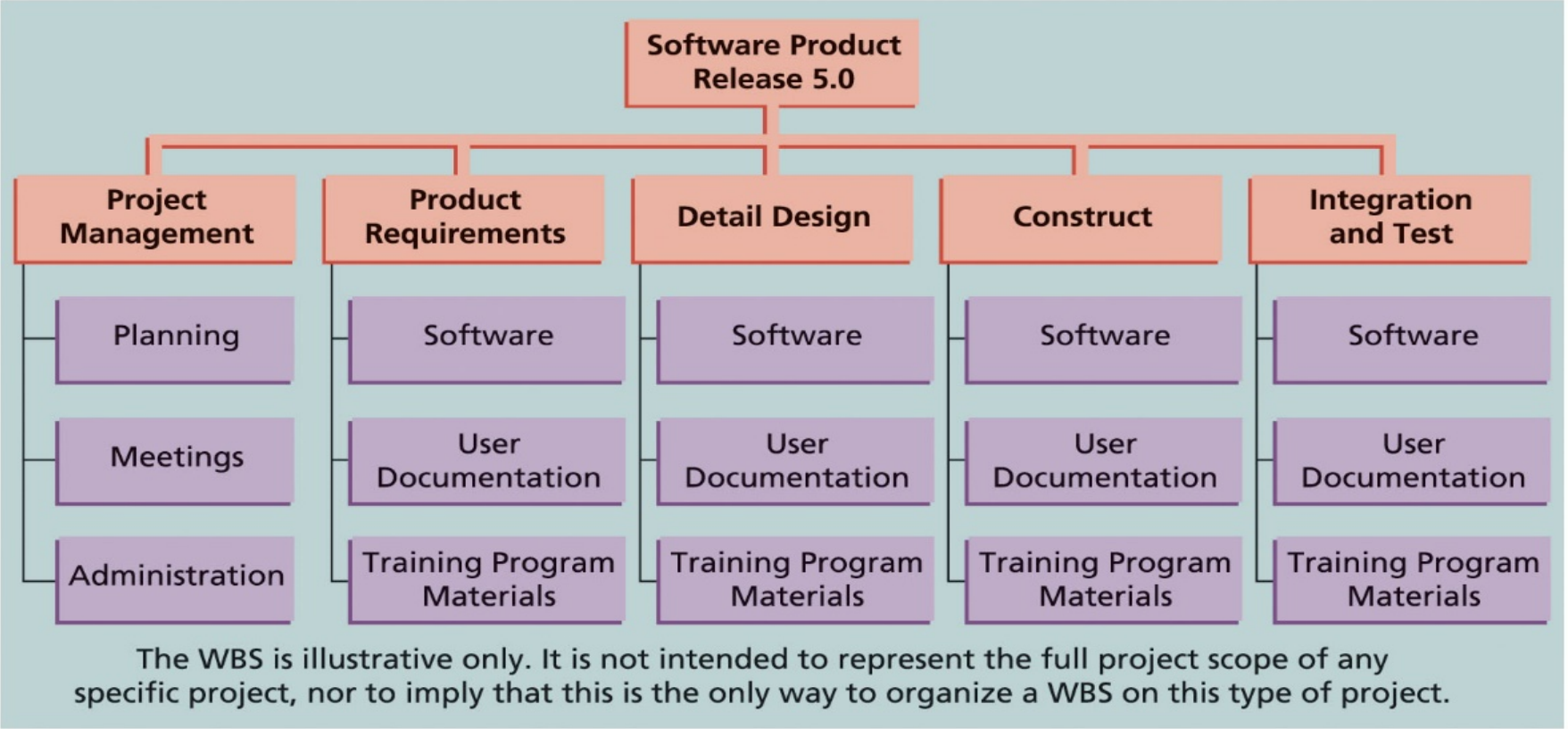


FIGURE 5-4 Sample intranet WBS organized by phase in chart and tabular form

Creating the Work Breakdown Structure (4 of 9)

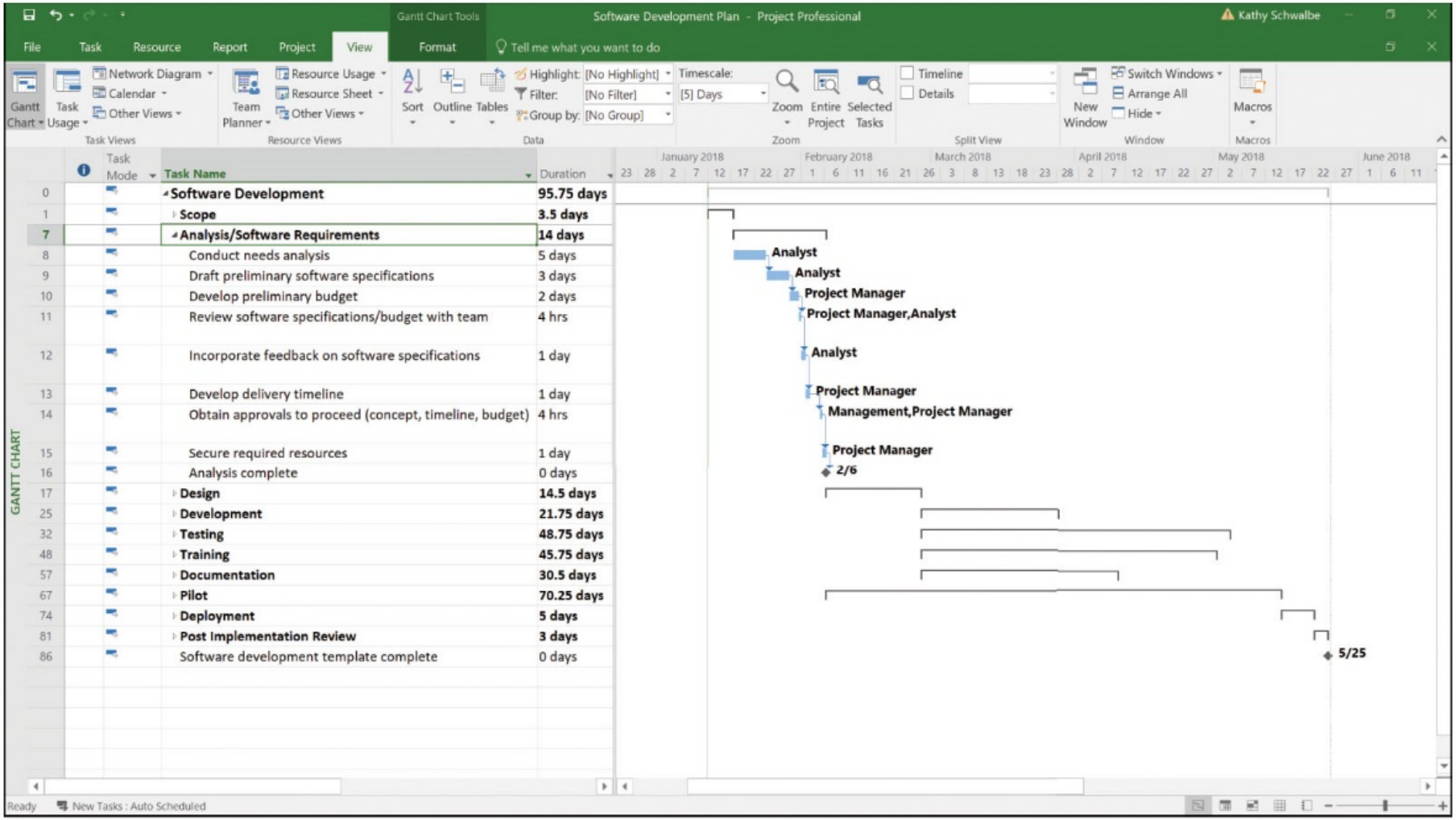


FIGURE 5-5 Software development project template from Microsoft Project 2016

Creating the Work Breakdown Structure (5 of 9)

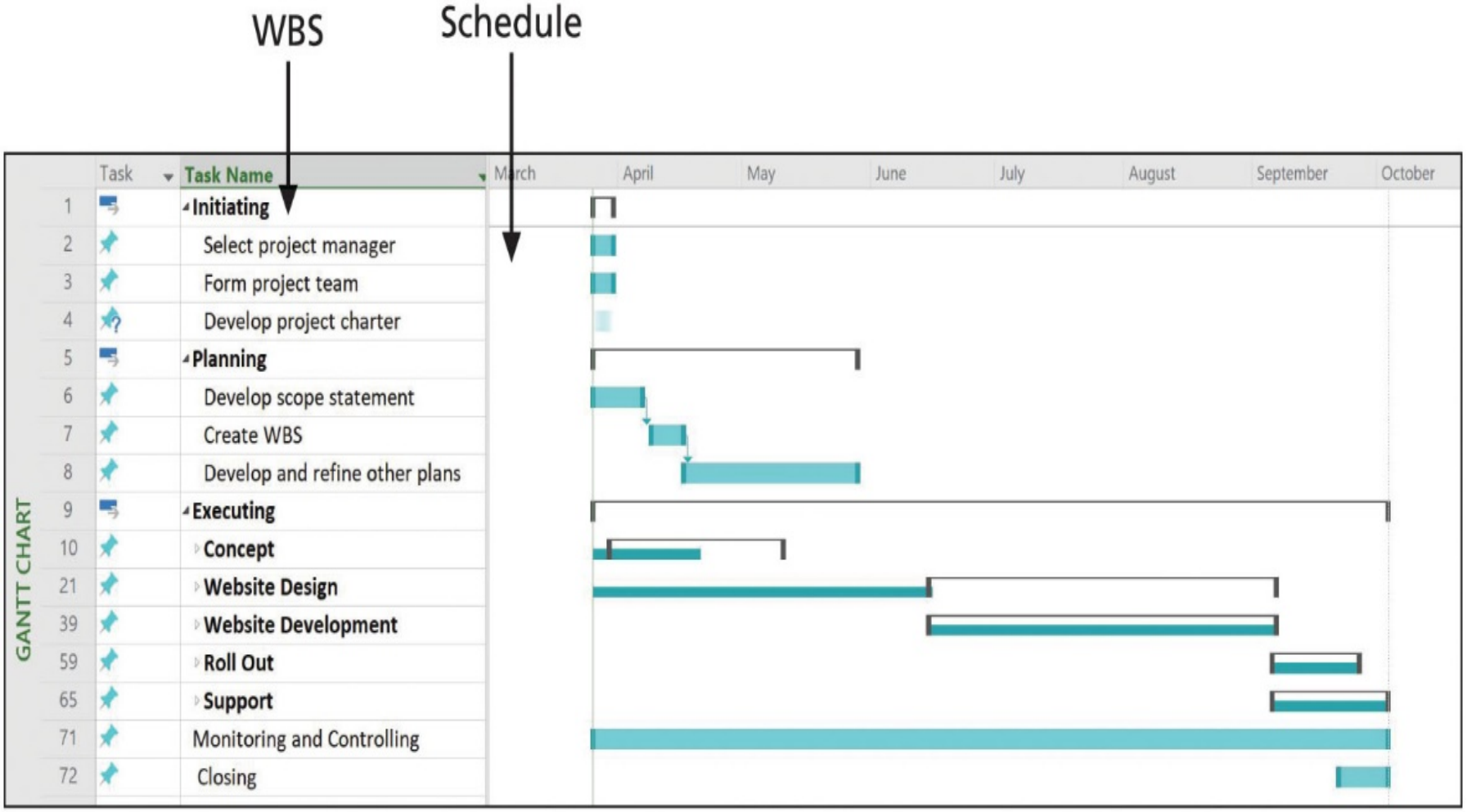


FIGURE 5-6 Website project Gantt chart organized by project management process groups

Creating the Work Breakdown Structure (4 of 9)

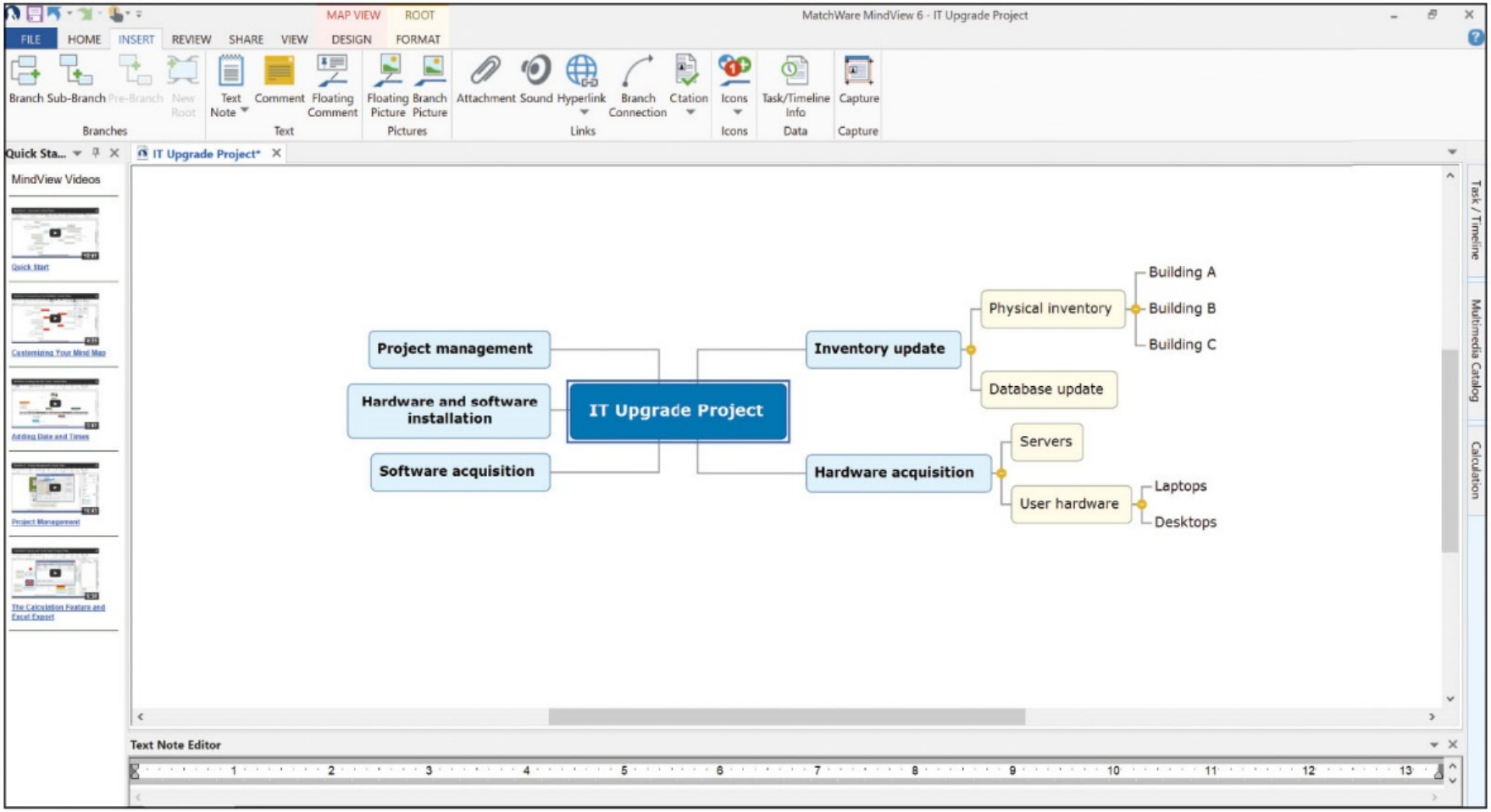
1.0 Software Product Release 5.0		
	1.1 Project Management	
		1.1.1 Planning
		1.1.2 Meetings
		1.1.3 Administration
	1.2 Product Requirements	
		1.2.1 Software
		1.2.2 User Documentation
		1.2.3 Training Program Materials
	1.3 Detail Design	
		1.3.1 Software
		1.3.2 User Documentation
		1.3.2 User Documentation
	1.4 Construct	
		1.4.1 Software
		1.4.2 User Documentation
		1.4.3 Training Program Materials
	1.5 Integration and Test	
		1.5.1 Software
		1.5.2 User Documentation
		1.5.3 Training Program Materials

Tabular form of WBS

Creating the Work Breakdown Structure (7 of 9)

- Approaches to developing work breakdown structures
  - **Using guidelines**: some organizations, like the U.S. Department of Defense (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
  - **Mind mapping**: uses branches radiating out from a core idea to structure thoughts and ideas

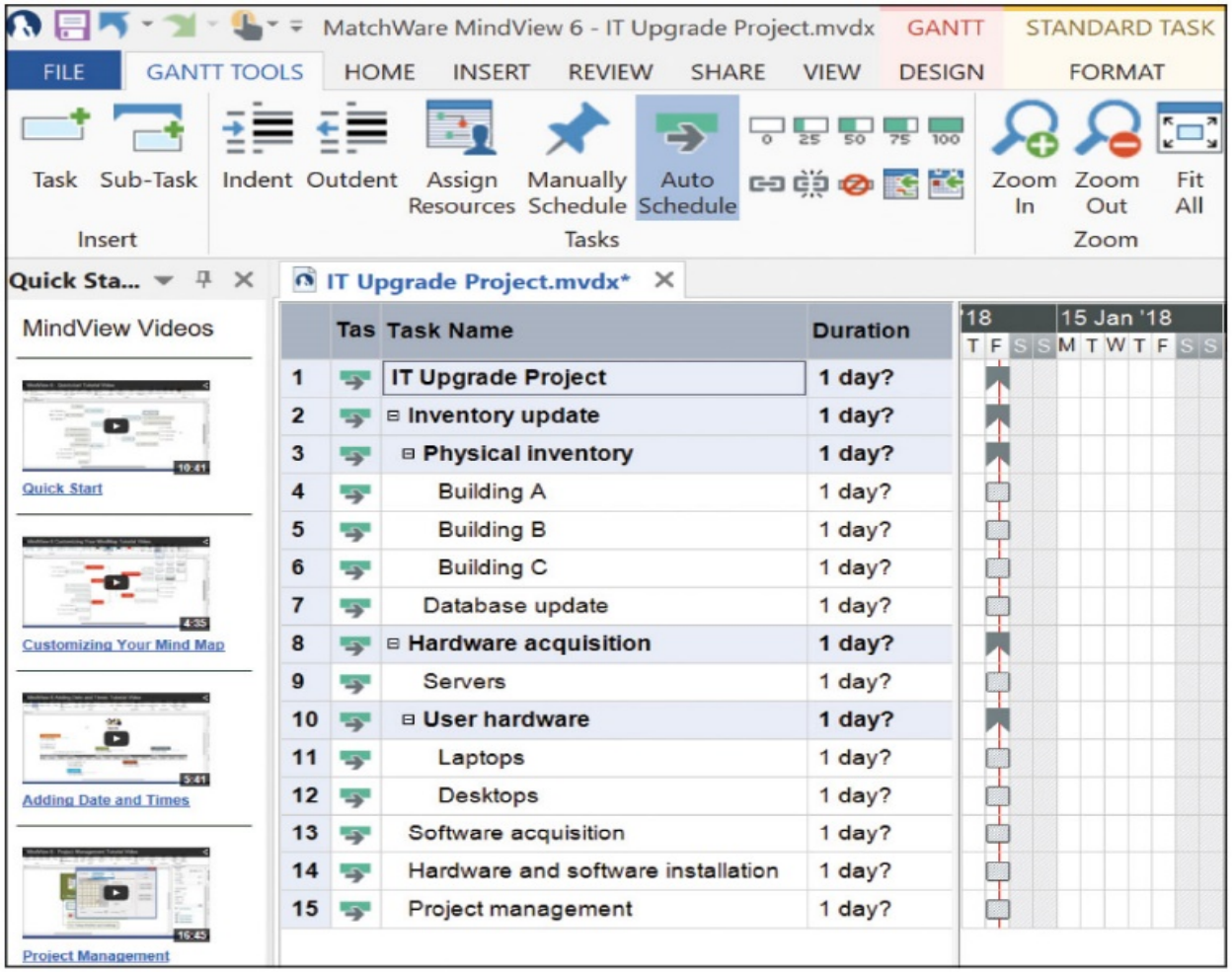
Creating the Work Breakdown Structure (8 of 9)



Source: MatchWare MindView 6.0

FIGURE 5-7 Sample mind-mapping technique for creating a WBS

Creating the Work Breakdown Structure (9 of 9)



Source: MatchWare MindView 6.0

FIGURE 5-8 Gantt chart with WBS generated from a mind map

Flashback quiz

- Which of the following processes is not part of project integration management?
  - Developing the project business case
  - Developing the project charter
  - Developing the project management plan
  - Closing the project or phase
- A new government law requires an organization to report data in a new way. Which of the following categories would include a new information system project to provide this data?
  - Problem
  - Opportunity
  - Directive
  - Regulation

The WBS Dictionary (1 of 3)

- Many WBS tasks are vague
  - WBS dictionary is a document that describes detailed information about each WBS item
    - Format of the WBS dictionary can vary based on project needs

The WBS Dictionary (2 of 3)

WBS Dictionary Entry March 20
Project Title: Information Technology (IT) Upgrade Project
WBS Item Number: 2.2
WBS Item Name: Database Update
Description: The IT department maintains an online database of hardware and software on the corporate intranet. We need to make sure that we know exactly what hardware and software employees are currently using and if they have any unique needs before we decide what to order for the upgrade. This task will involve reviewing information from the current database, producing reports that list each department's employees and location, and updating the data after performing the physical inventory and receiving inputs from department managers. Our project sponsor will send a notice to all department managers to communicate the importance of this project and this particular task. In addition to general hardware and software upgrades, the project sponsors will ask the department managers to provide information for any unique requirements they might have that could affect the upgrades. This task also includes updating the inventory data for network hardware and software. After updating the inventory database, we will send an e-mail to each department manager to verify the information and make changes online as needed. Department managers will be responsible for ensuring that their people are available and cooperative during the physical inventory. Completing this task is dependent on WBS Item Number 2.1, Physical Inventory, and must precede WBS Item Number 3.0, Hardware and Software Acquisition.

The WBS Dictionary (3 of 3)

- Advice for creating a WBS and WBS dictionary
  - Unit of work should appear at **only one place** in the WBS
  - Work content of a WBS item is the **sum** of the WBS items below it
  - WBS item is the responsibility of **only one individual**, even though many people may be working on it
  - 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
  - Project team members should be involved in developing the WBS to ensure consistency and buy-in
  - Each WBS item must to ensure accurate understanding of the **documented in a WBS dictionary** scope of work included and not included
  - 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

Validating Scope

- It is difficult to create a good project scope statement and WBS for a project
  - Even more difficult, especially on IT projects, to verify the project scope and minimize scope changes
- Even when the project scope is fairly well defined, many IT projects suffer from **scope creep**
  - Tendency for project scope to keep getting bigger and bigger
- **Scope validation** involves formal **acceptance** of the completed project deliverables
  - Acceptance is often achieved by a customer inspection and then sign-off on key deliverables

Controlling Scope (1 of 3)

- Scope control involves controlling changes to the project scope
  - Keeping project goals and business strategy in mind
- Goals of scope control
  - 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

Controlling Scope (2 of 3)

- 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**
  - Conduct **regular meetings** with **defined agendas**
  - **Deliver** something to users and sponsors on a **regular basis**
  - Do not promise to deliver what the team cannot deliver in a particular time frame
  - Locate users with the developers

Controlling Scope (3 of 3)

- Suggestions for reducing incomplete and changing requirements
  - Develop and follow a requirements management process
  - Employ 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
  - Provide **adequate testing** and conduct it 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