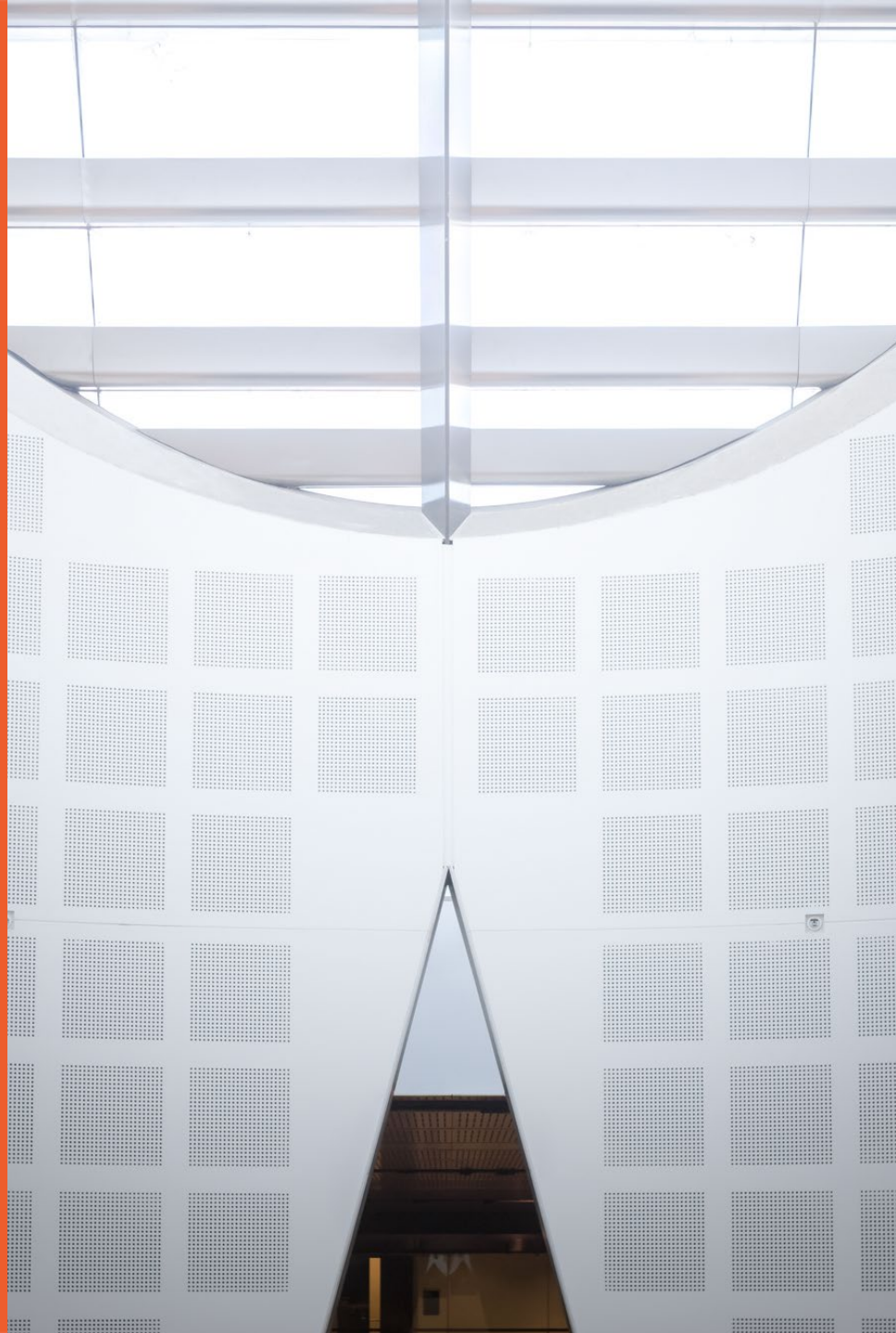
INFO6007
Project Management in IT

Lecture 2
Managing Project Scope

Semester 2, 2020
Dr Rabiul Hasan

THE UNIVERSITY OF SYDNEY

Source:
Schwalbe, K, Information Technology Project Management (9th Edition). Cengage Learning, 2018



Recapture From Lecture 1

It was an overview of PM in IT:

- Attributes of a Project
- Why Project or Project Management?
- IT Project Management

- IT Project Manager
- PMBOK Knowledge Areas
- Project Life Cycle
- PM Methodologies

Lecture 2:
Managing Project Scope

Where Are We Now ? -- Course map

Week	Topics/Activities
Week 1	Introduction to IT Project Management
	Other: Form Assignment Groups
Week 2	**Managing Project Scope**
Week 3	Managing Project Time
Week 4	Managing Project Cost
Week 5	Managing Project Quality
Week 6	Managing Project Resources
Week 7	Knowledge Test
Week 8	Project Leadership and Communication Management
Week 9	Managing Project Risk Assessment Due: Group Project
Week 10	Managing Project Procurement
Week 11	Presentation
Week 12	Course Review
Exam Period	Assessment Due: Final Exam

What Will We Do Today ?

- Lecture
  - Scope, Deliverable, Scope Management Plan
  - Investigating requirements
  - WBS
  - Validating and Controlling Scope
- Class activities
  - Critical Thinking / No Problem Solving Tonight
  - Tools to use: https://padlet.com
    https://answergarden.ch

- Student Survey: "About You"

- Assessment
  - Teams are finalised. Think of an IT project
  - Test: ?
  - Assignment: explore group assignment

Tutorial Updates: Tutorial 1 starts tonight, week 2

- Announcement (if any): ?

Tutorial Information

- Zoom links for tutorials provided on Canvas:

https://canvas.sydney.edu.au/courses/25973/pages/zoom-links-for-lecture-and-tutorial

- Tonight's tutorial will start at **8:15 pm and will continue till 9:15 pm**
- Teams will be finalized at the end of the lecture, before the tutorial
- Tutorial practice 1 is uploaded on Canvas, see week 2 module
- From week 4 onward, there will be no tutorial practices provided. Teams will work on their projects during the tutorials.

Tutor	Groups
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Communication and Contacts

- Feel free to use Eds for course related discussion (https://edstem.org/courses/4816/discussion/)

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Learning Objectives

- Understand project goal, objectives, deliverables, and scope
- Describe and understand the processes of project scope management

- Discuss methods of investigating and collecting requirements to meet stakeholder needs and expectations

- Discuss the process for creating a work breakdown structure
- Discuss and understand the importance and method of validating and controlling project scope

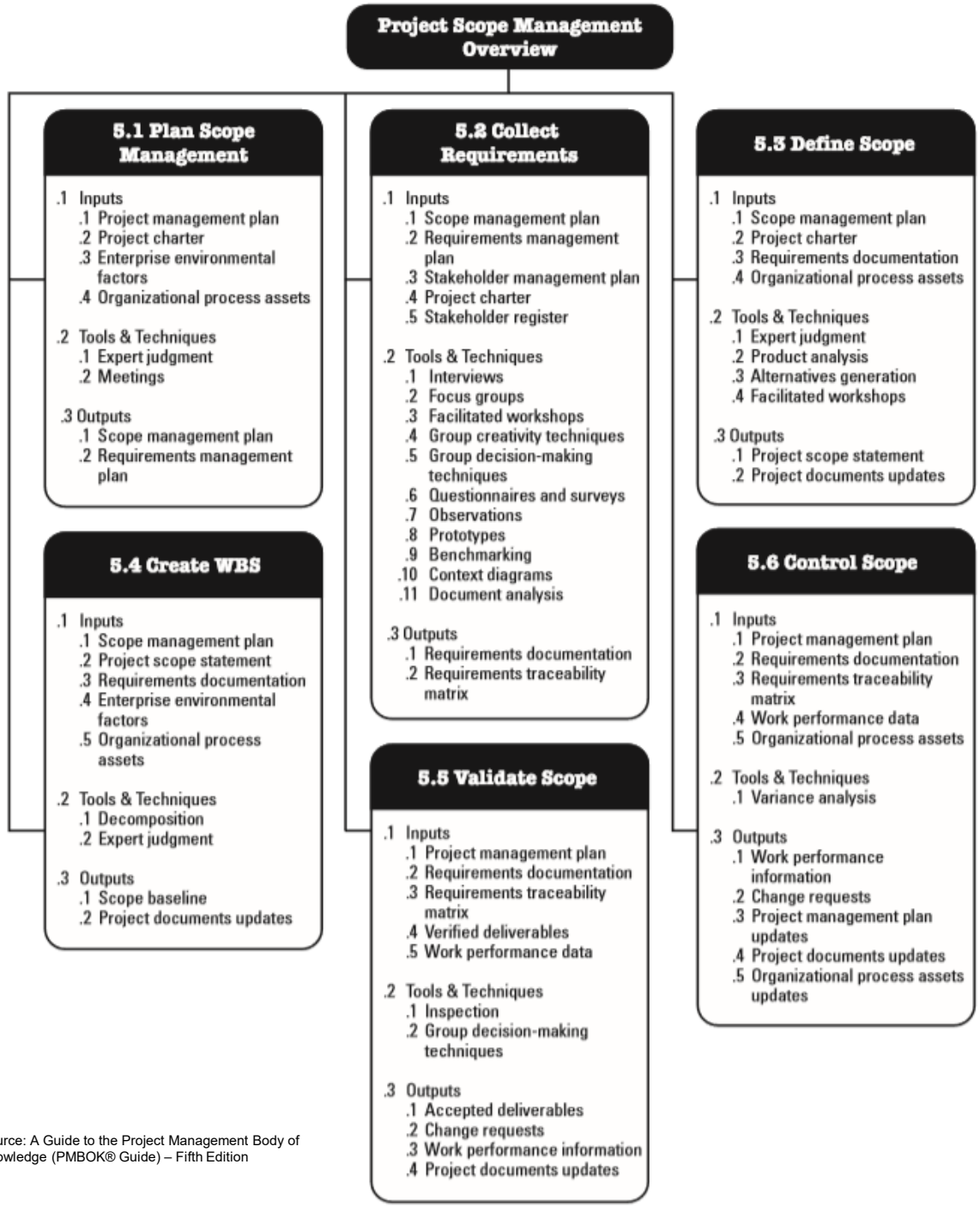
Project Goal, Objectives, Deliverable, and Scope

- **Project Goal:** Long-term
- **Objectives:** Short-term and practical

- A **deliverable** is a product produced as part of a project, such as hardware or software, planning documents, or meeting minutes

- **Scope** refers to all the work involved in creating the products of the project and the processes used to create them.

Project Scope Management Overview



Source: A Guide to the Project Management Body of Knowledge (PMBOK® Guide) – Fifth Edition

Project Scope Management Processes:
(1) Plan Scope Management

- Plan Scope Management is the process of creating a scope management plan that documents how the project scope will be defined, validated, and controlled

Source: A Guide to the Project Management Body of Knowledge (PMBOK® Guide) – Fifth Edition

Scope Management Plan Contents

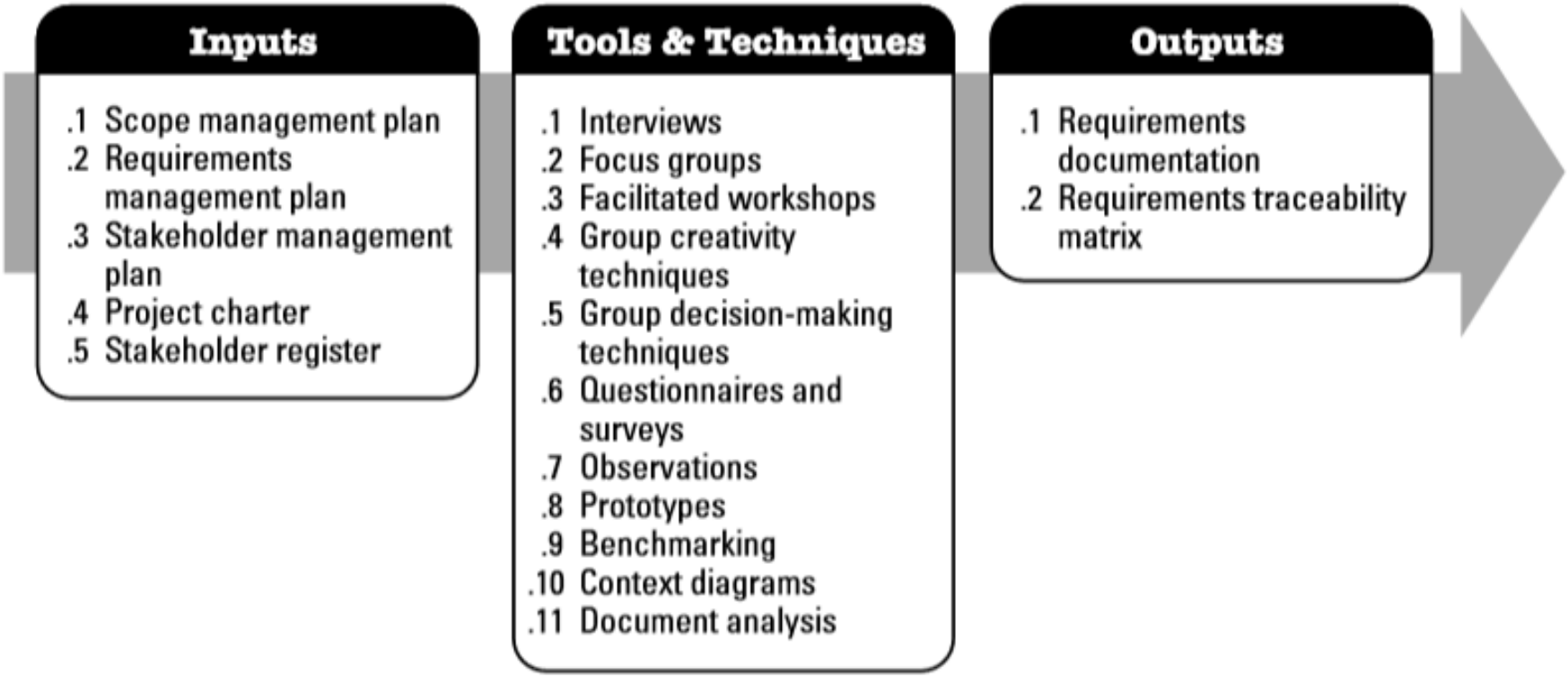
- How to prepare a detailed project scope statement
- How to create a WBS

- How to maintain and approve the WBS
- How to obtain formal acceptance of the completed project deliverables

- How to control requests for changes to the project scope

Project Scope Management Processes:
(2) Collect Requirements

- Collect Requirements is the process of determining, documenting, and managing stakeholder needs and requirements to meet project objectives.



Source: A Guide to the Project Management Body of Knowledge (PMBOK® Guide) – Fifth Edition

Requirements Management Plan

- The PMBOK describes requirements as "conditions or capabilities that must be met by the project or present in the product, service, or result to satisfy an agreement or other formally imposed specification"

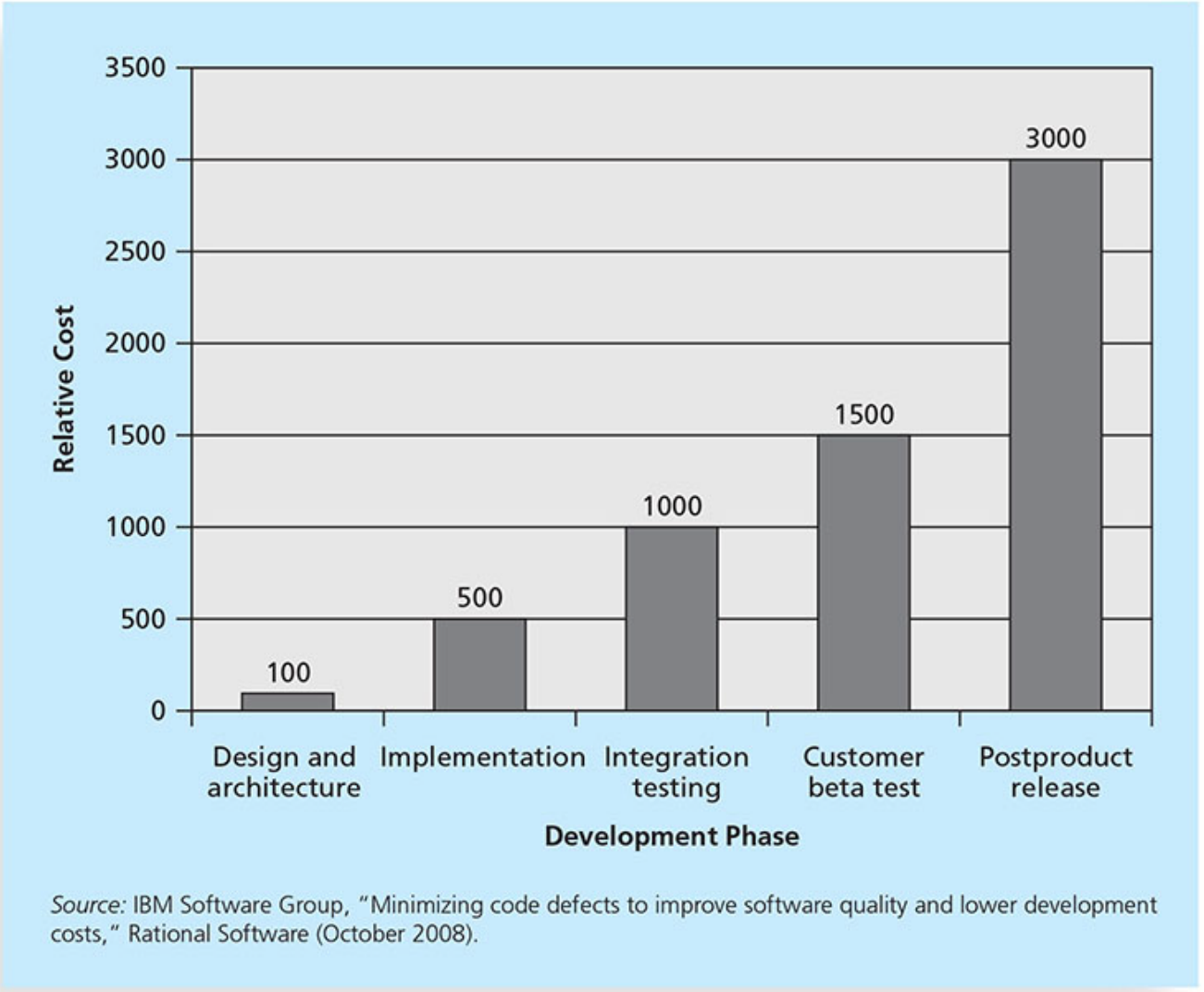
- The **requirements management plan** documents how project requirements will be analyzed, documented, and managed

Collect Requirements

- For some IT projects, it is helpful to divide requirements development into categories called elicitation, analysis, specification, and validation

- It is important to use an iterative approach to defining requirements since they are often unclear early in a project

Relative Cost to Correct a Software Requirement Defect



Source: IBM Software Group, "Minimizing code defects to improve software quality and lower development costs," Rational Software (October 2008).

Methods for Collecting Requirements

- Interviewing
- Focus groups and facilitated workshops
- Using group creativity and decision-making techniques

- Questionnaires/surveys
- Observation
- Prototyping

- Benchmarking, or generating ideas by comparing specific project practices or product characteristics to those of other projects or products inside or outside the performing organization, can also be used to collect requirements

Requirements Traceability Matrix

- 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
- Sample entry in an 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.

Project Scope Management Processes

(3) Define Scope

- Define Scope is the process of developing a **detailed description** of the project and product.

Source: A Guide to the Project Management Body of Knowledge (PMBOK® Guide) – Fifth Edition

Define Scope

Input: Project Charter

Output: Scope Statement

Project Charter

- Project purpose or justification
- Measurable project objectives and related success criteria
- High-level requirements
- High-level project description
- High-level risks
- Summary milestone schedule
- Summary budget
- Stakeholder list
- Project approval requirements (what constitutes success, who decides it, who signs off)
- Assigned project manager, responsibility, and authority level
- Name and authority of the sponsor or other person(s) authorizing the project charter

Project Scope Statement

- Project scope description (progressively elaborated)
- Acceptance criteria
- Project deliverables
- Project exclusions
- Project constraints
- Project assumptions

Source: A Guide to the Project Management Body of Knowledge (PMBOK® Guide) – Fifth Edition

Sample Project Charter (partial)

Project Title: Information Technology (IT) Upgrade Project

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

Key Schedule Milestones:

- Inventory update completed April 15
- Hardware and software acquired August 1
- Installation completed October 1
- Testing completed November 15

Budget Information: Budgeted $1,000,000 for hardware and software costs and $500,000 for labor costs.

Project Manager: Kim Nguyen, (310) 555–2784, 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.

Main Project Success Criteria: The hardware, software, and network upgrades must meet all written specifications, be thoroughly tested, and be completed in nine months. Employee work disruptions will be minimal.

Approach:

- Update the IT 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

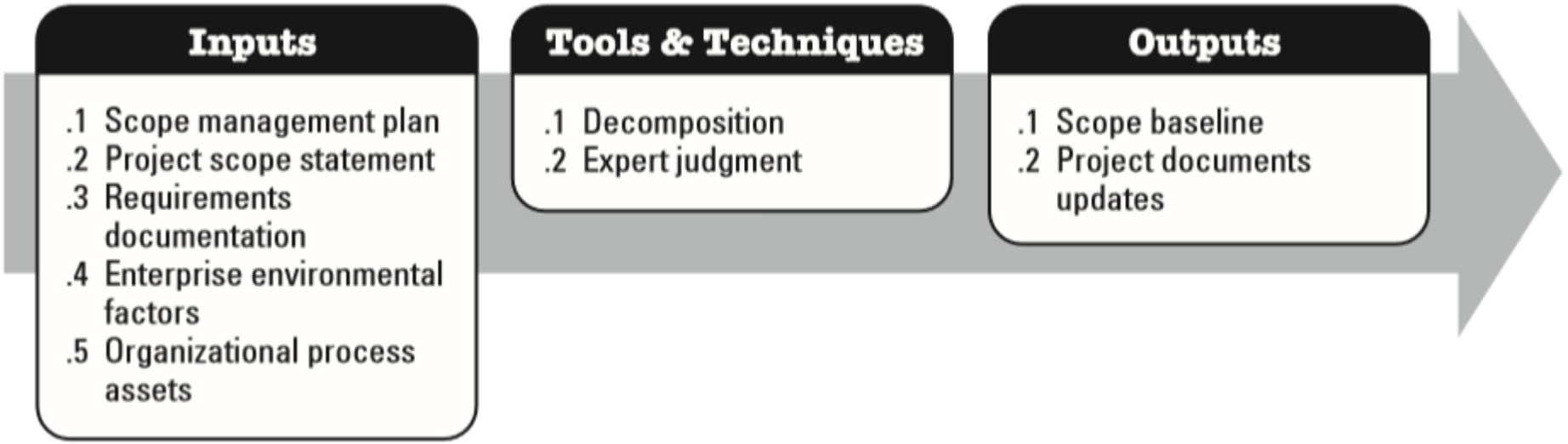
Scope Statement

- **Project scope statements** should include **at least** a product scope description, product user acceptance criteria, and detailed information on **all project deliverables.**

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

Project Scope Management Processes:
(4) Create WBS

- Create WBS is the process of subdividing project deliverables and project work into smaller, more manageable components.



Source: A Guide to the Project Management Body of Knowledge (PMBOK® Guide) – Fifth Edition

Creating the Work Breakdown Structure (WBS)

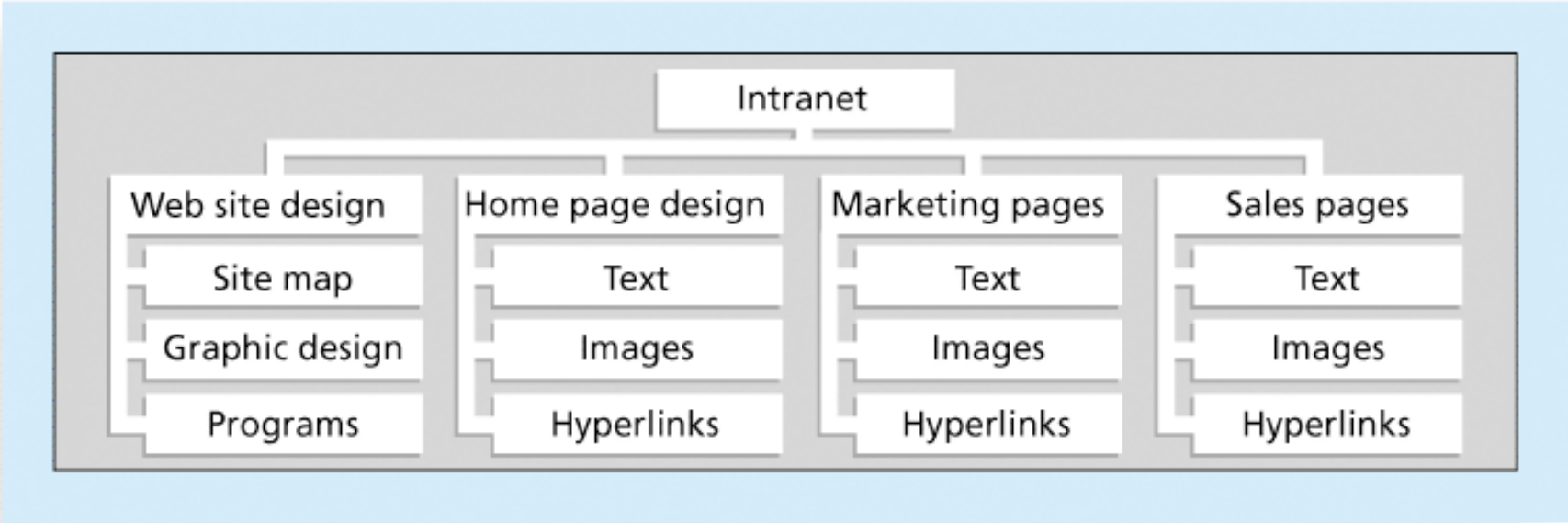
- A **WBS** is a deliverable-oriented grouping of the work involved in a project that defines the total scope of the project

- WBS is a foundation document that provides the basis for planning and managing project schedules, costs, resources, and changes

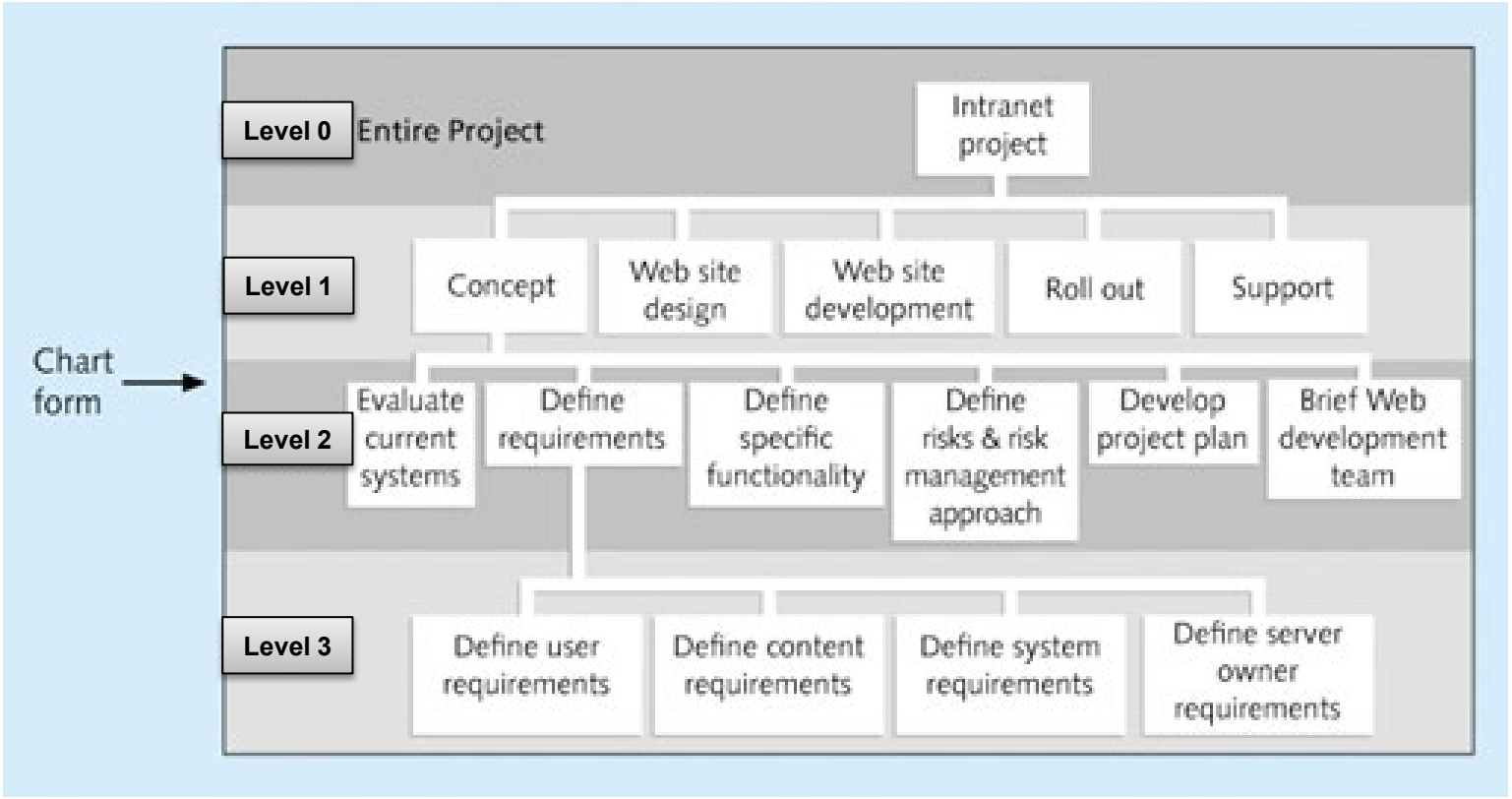
- **Decomposition** is subdividing project deliverables into smaller pieces
- A **work package** is a task at the lowest level of the WBS

- The **scope baseline** includes the approved project scope statement and its associated WBS and WBS dictionary

WBS Organized by Product



WBS Organized by Phase



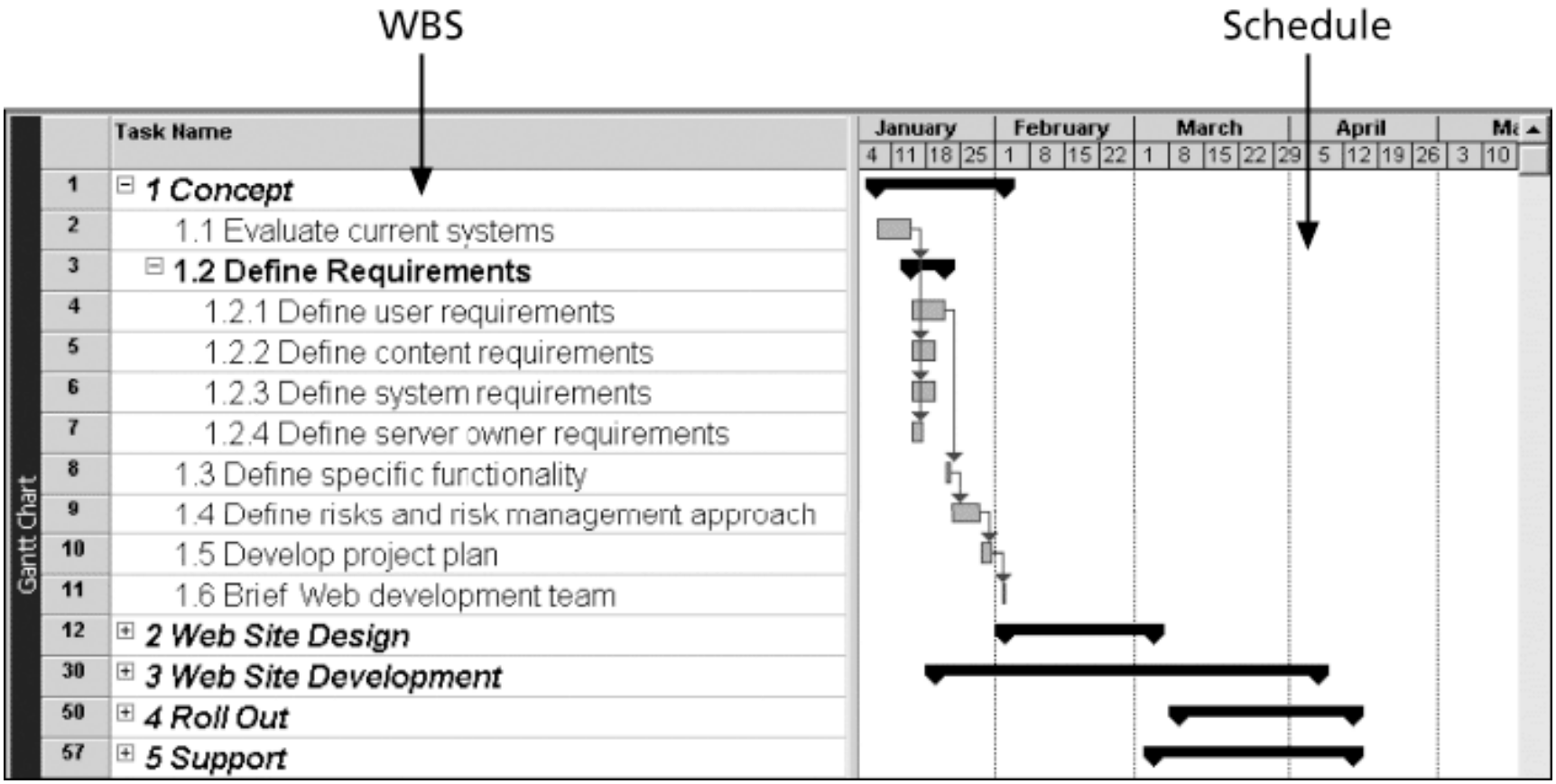
WBS Organized in Tabular Form

Tabular form with PMI numbering

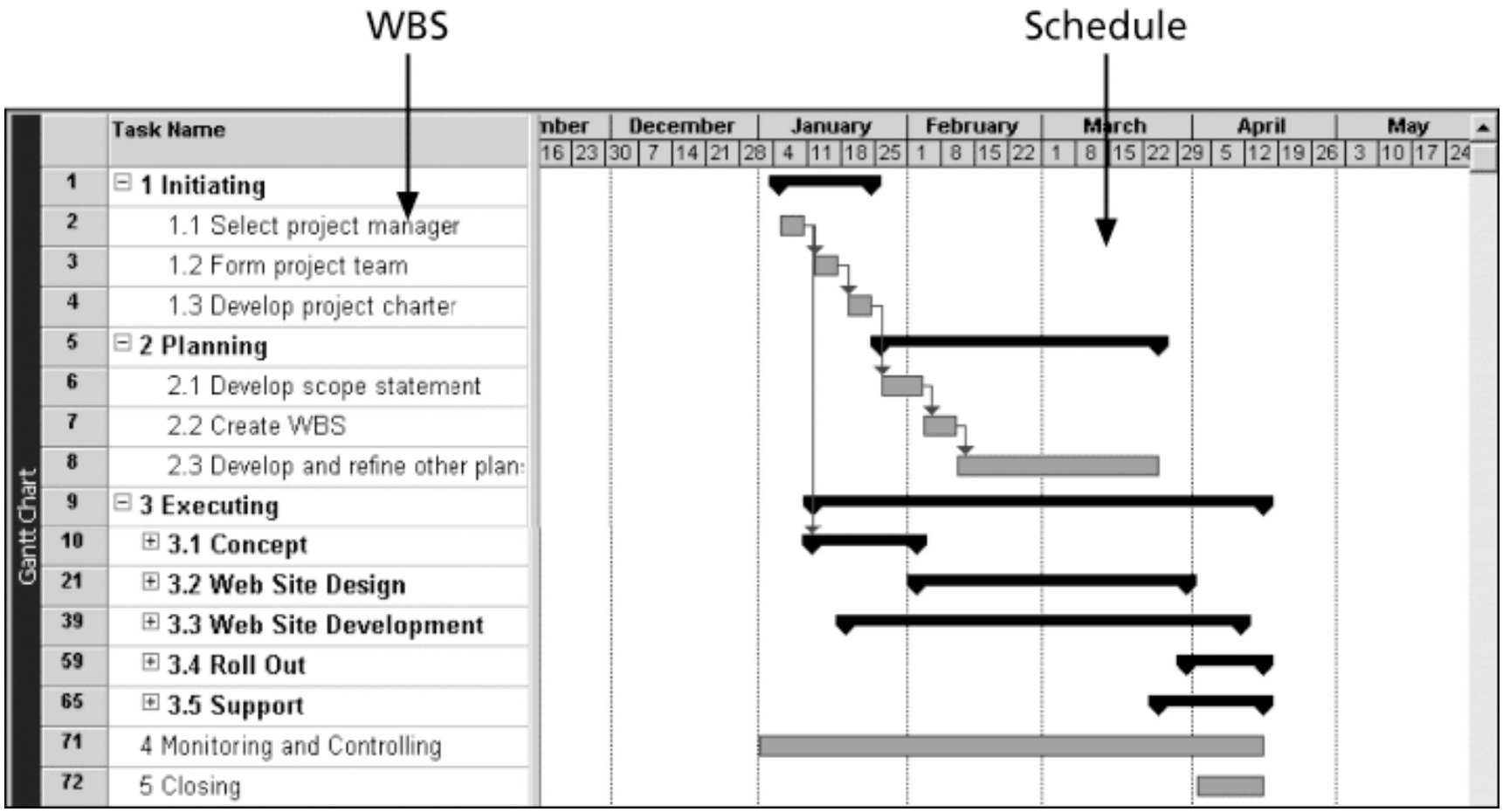
1.1 Concept
- 1.1.1 Evaluate current systems
- 1.1.2 Define requirements
  - 1.1.2.1 Define user requirements
  - 1.1.2.2 Define content requirements
  - 1.1.2.3 Define system requirements
  - 1.1.2.4 Define server owner requirements
- 1.1.3 Define specific functionality
- 1.1.4 Define risks and risk management approach
- 1.1.5 Develop project plan
- 1.1.6 Brief Web development team

1.2 Web site design
1.3 Web site development
1.4 Roll out
1.5 Support

Intranet WBS and Gantt Chart in Microsoft Project



Intranet Gantt Chart Organized by Project Management Process Groups



Detailed WBS for Executing Section (Process)

- 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

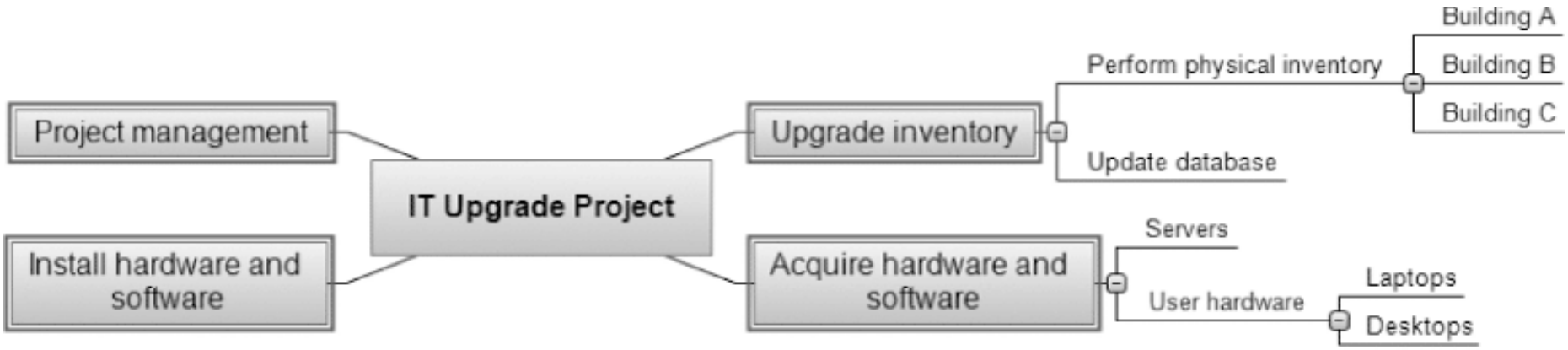
Approaches to Developing WBSs

- Using guidelines: Some organizations, like the Department of Defense (DOD), provide guidelines for preparing WBSs
- The **analogy approach**: Review WBSs of similar projects and tailor to your project

- The **top-down approach**: Start with the largest items of the project and break them down
- The **bottom-up approach**: Start with the specific tasks and roll them up

- Mind-mapping approach: **Mind mapping** is a technique that uses branches radiating out from a core idea to structure thoughts and ideas

Mind-Mapping Approach for Creating a WBS



Source: MatchWare's MindView 4 Business Edition

The WBS Dictionary

- Many WBS tasks are vague and must be explained more so people know what to do and can estimate how long it will take and what it will cost to do the work

- A **WBS dictionary** is a document that describes detailed information about each WBS item

WBS Dictionary

WBS Dictionary Entry March 20
Project Title: Information Technology (IT) Upgrade Project
WBS Item Number: 2.2
WBS Item Name: Update Database
Description: The IT department maintains an online database of hardware and software on the corporate intranet. However, 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, Perform Physical Inventory, and must precede WBS Item Number 3.0, Acquire Hardware and Software.

Things to Remember for Creating a WBS

- A unit of work should appear at 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

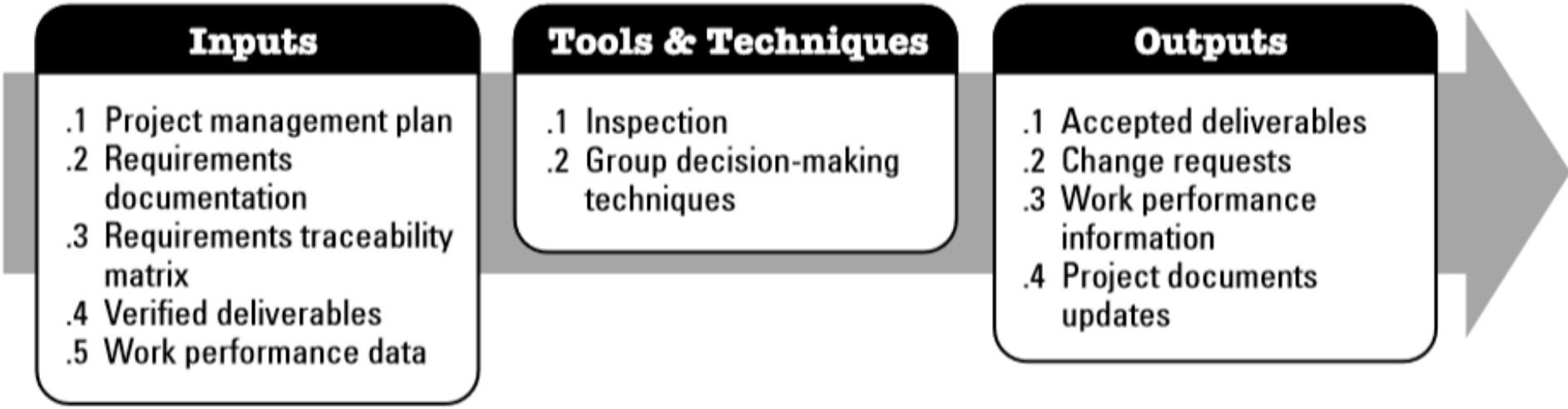
- The WBS must be consistent with the way in which work is actually going to be performed; it should serve the project team first, and other purposes only if practical

Things to Remember for Creating a WBS (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 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

Project Scope Management Processes:
(5) Validate Scope

- Validate Scope is the process of formalizing acceptance of the completed project deliverables.



Source: A Guide to the Project Management Body of Knowledge (PMBOK® Guide) – Fifth Edition

Validating Scope

- It is very 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 validation** involves formal acceptance of the **completed project deliverables**
- Acceptance is often achieved by a customer inspection and then sign-off on key deliverables

Scope Management Issues

- Many countries have had difficulties controlling the scope of large projects, especially those that involve advanced technologies and many different users

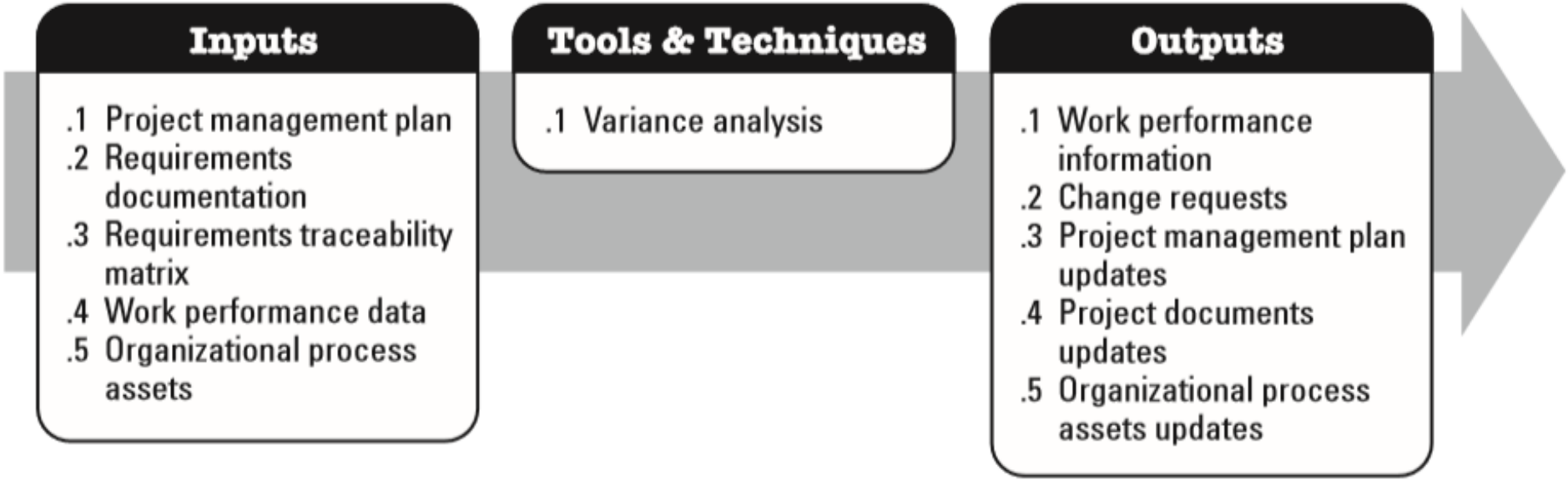
- For example, the **state government of Victoria, Australia,** has a Web site for its public transportation smart card at https://www.ptv.vic.gov.au/

- There were many problems in developing and implementing the smart card

- How about **Opal Card? Or any other projects?**
- Did you experience any issues on user requirements?

Project Scope Management Processes:
(6) Control Scope

- Control Scope is the process of monitoring the status of the project and product scope and managing changes to the scope baseline.



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Controlling Scope

- Scope control involves controlling changes to the project scope

- Goals of scope control are to
  - control the factors that cause scope changes
  - assure changes are processed according to procedures developed as part of integrated change control, and
  - manage changes when they occur

Class Exercise 1: IT Project for Town of Eden Bay

Please refer to assessment guide, page 4, the sample project background/case

- What are high level project goals and objectives ?
- What are deliverables and key requirements?
- Create 2-level WBS for the case given

Class Exercise 2: Scope in Complex IT Projects

"While an important source of complexity in IT projects is technology, the key source of complexity is the scope of the project set by management, the various social, economic and technical factors that then influence the success or failure in meeting the project objectives" *(Adapted from a case study of successful complex IT projects, BSC, 2006).*

- Identify possible reasons why key source of complexity in IT projects is scope?
  - **discuss with other students/friends/team members**

- As an IT project manager, how would you overcome and reduce complexity in scope?
  - **discuss with other students/friends/ team members**

Lecture Summary

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

- Scope Management processes include
  - **Plan** scope management
  - **Collect** requirements
  - **Define** scope
  - **Create** WBS
  - **Validate** scope
  - **Control** scope

Announcement (if any)

Q &A?

Thanks everyone !