SCOPE MANAGEMENT

1

LECTURE 3

DR ZAHEERA BINTI ZAINAL ABIDIN

LEARNING OBJECTIVES

- Explain the meaning of scope and describe the contents of a project scope management

- Discuss methods for collecting and documenting requirements in order to meet stakeholder needs and expectations

- Discuss the process for creating a work breakdown structure using the analogy, top-down, bottom-up, and mind-mapping approaches

- Perform project management tasks to provide for data security in the organization.
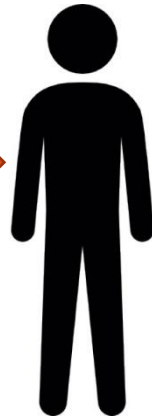
SCOPE MANAGEMENT

INPUTS

Project Charter 💬

Organizational Diagram
(i.e.: chart, architecture, topology, process, assets and product)

**Project Direction / Roadmap
Complaints / Comments
Cyber activities reported in network environment**

TOOLS/TECHNIQUES

Project Manager

Calls on **past project experience**

Wisdom- Problem solving on scope of the work

Interpersonal and Communication skills
(for Negotiating/Educating Clients)

Scope management templates
(Scope of Statement (SOS), Scope of Work (SOW), Work Breakdown Structure (WBS) and Project Mind Map on deliverables

OUTPUTS

- **Scope of work with baseline**
- **Network Security Risk Assessment Matrix**
- **Network Security Compliance**
- **Network Security Governance**

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4 DEFINITION OF SCOPE

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DEFINITION – 1

- The scope means the **scope of work** in the organization.

- Project scope is the work is created and must be done in order to **deliver a product / security service based on its scope** (required functions and features).

- Project scope is the common understanding among stakeholders about **"what goes into a project, produce the output factors of success."** A project's scope is made up of the functionalities or specifications outlined in the requirements.

DEFINITION – 2

- Scope refers to a **project's boundaries**: it determines what work will be completed during the security project life-cycle.

- A successful project scope statement should be concise and clear. Anyone reading the statement should have a good idea of what the project consists of (and what will not be part of the project). This statement will give a view of the project. It is also important to be specific in a project scope statement.

PROJECT LEVELS

- From the scope perspective, the project is divided into sub project 1 and 2, for instance. Then, the sub project 1 is segmented into phases, tasks and sub tasks.

- The goal is to make a big project into a smaller tasks that can be implemented by the respective talent and dedicated machine to assist the Project Manager to secure the information in the organization from the cyber attacks and threats.

Project

Sub Project 1

Phases

Tasks

Sub Tasks (optional)

Sub Project 2

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.
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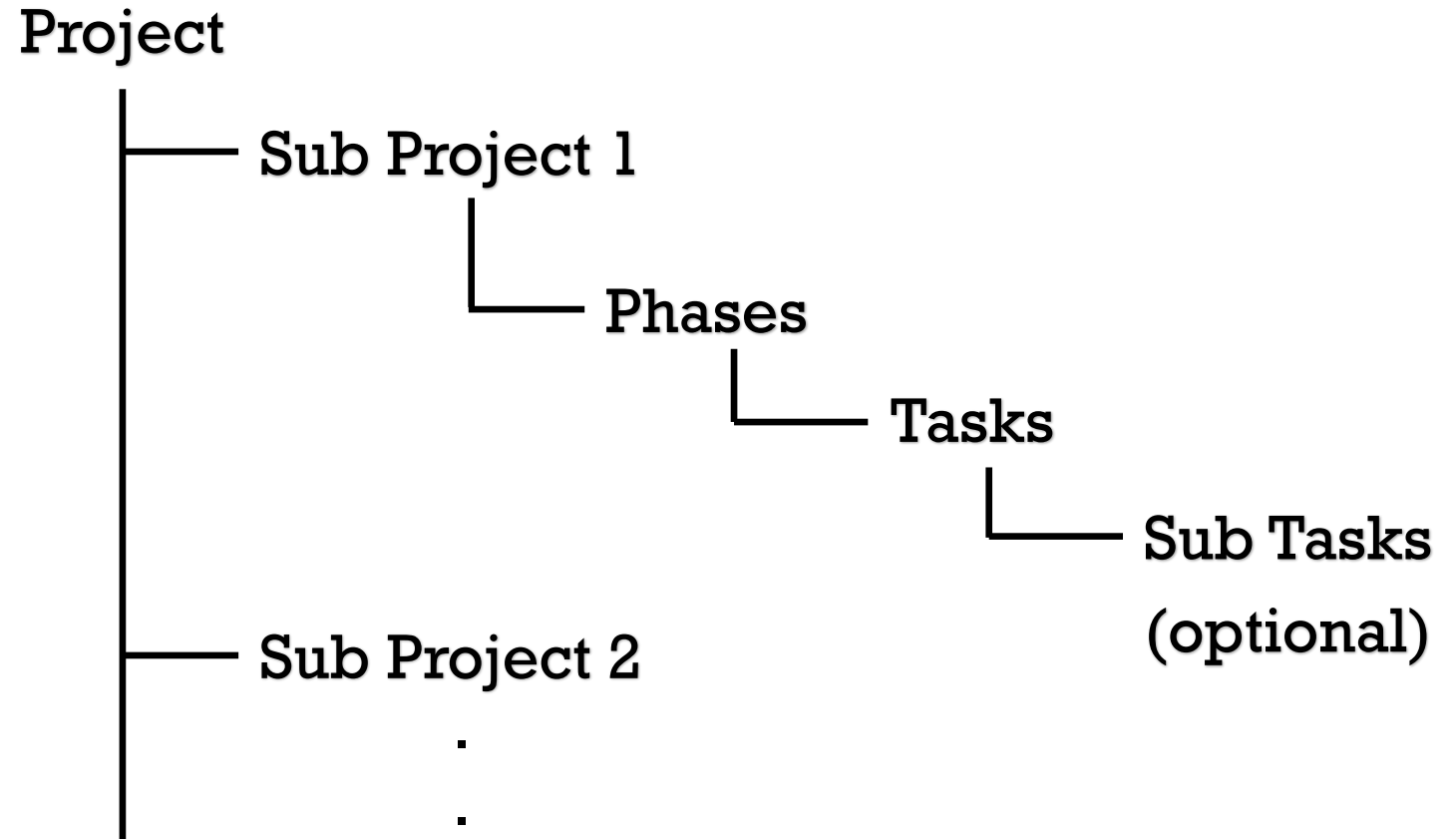
EXAMPLE OF PROJECT SCOPE LEVELS

- Project 1: Network Security Project Management

- Sub Project 1: Network Security Monitoring

- Phase : Network Based Mitigation

- Task : Intrusion Detection System (IDS) to monitor incident logs

- Function: Packet Sniffing and Protocol Analyzer

- Problem: Malicious logs from anomalies packet shows unauthorised access to user's system.

- Solution:
  1. Integrate firewall with IDS
  2. Proxy the IDS

Once the scope problem has been identified, and the potential solutions are carried out, then, the next stage is to **perform project scope management**, which producing the work or job specification.

The WBS is created to organize the work with talent, duration, cost, resources, potential attacks and risk mitigation for securing information in the organization.

10 PROJECT SCOPE MANAGEMENT

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WHAT IS PROJECT SCOPE MANAGEMENT?

- In the project scope, the deliverables need to be achieved according to due dates by the project members.

- A **deliverable** is a tangible or intangible good or service produced as **an outcome of a project** that is intended to be **delivered to a customer**. A deliverable could be a **report**, a document, a **software product**, **portable hardware**, a **server upgrade** or any other building block of an overall project.

- Project scope management includes processes involved in security life-cycle, which defines and controls what is or is not to be included in a project.

DELIVERABLES

Project Objectives

- Define the project scope & objectives
- Define project timeframe and milestones
- Define project deliverables
- Define project organization/ stakeholders
- Identify project budget
- Identify key risks, issues and interdependencies
- Define project monitoring system/ KPIs
- Conduct internal analysis to define gaps

Project Deliverables

- Project Charter covering:
  - Project objectives
  - Project scope
  - Project milestones and deliverables
  - Project organization / stakeholders
  - Budget approvals and resource allocation
  - Success factors, constraints, expected expenditure
  - Confirmed project manager assignment
  - Formal Steering Committee approval

PROJECTS IDENTIFICATION AND SELECTION

- Project Manager needs to decide either to proceed in completing the project or just surrender at the early stage.

- Each project consumes time, money and talents thus Project Manager could not put the resources at risks. Therefore he or she needs to think wisely in making a decision.

- Methods has been laid out in order to assist the Project Manager to decide either to do or not to do the project that has been awarded to him or her.

METHODS FOR PROJECTS IDENTIFICATION AND SELECTION

A. Focus on larger needs in the organization
B. Classify projects according to category
C. Perform the Net Present Value (NPV)
D. Weighted score model

(A): FOCUS ON ORGANIZATION NEEDS

- The project success is the ultimate goal in an organization.

- 3 methods on selecting projects based on broad organizational needs:
  - Need – there is an urgency to do the project. Example: Project of sewing the PPE for front-liners due to pandemic.
  - Funding – example: UNESCO Grant for community development project, which available grant for the project.
  - Will or Determination – Example: The project is supported by the government body for completion.

(B): PROJECT CATEGORY

- The selection of projects is based on category which projects may response to :
  - a problem – the current issue or latest trend on matter to be solved
  - an opportunity – the project gives a new experience to the project manager or collaboration between parties
 - directives – the project aligned with the roadmap

(C): NET PRESENT VALUE (NPV) ANALYSIS

- To forecast the money invested by the shareholders, could the project generates more money in future that you have invested or vice versa.

- The use of NPV as a tool to decide either to accept or reject a proposed investment in the project management.

- Three possibilities of net present value are :
  - Positive NPV
  - Zero NPV
  - Negative NPV

(D): WEIGHTED SCORE MODEL (WSM)

- WSM is a tool and technique to help a manager to decide in project development.

- WSM is a prioritization framework designed to help you to decide how to prioritize features and other initiatives on your product roadmap. With this framework, initiatives are scored according to a set of common criteria on a cost-versus-benefits basis and then ranked by their final scores.

- Create a weighted scoring model to determine which project to select. Assume the criteria are cost, strategic value, risk, and financials. After you select either Project (1, 2 or 3), explain why you did not select the other two projects. Weights of 15%, 40%, 20%, 25% respectively. Project 1 values are 60, 65, 75, 50; Project values are 90, 50, 60, 70; Project 3 values are 90, 80, 70, 60. Use this template to create your weighted scoring model.

Criteria	Weight	Project 1	Project 2	Project 3	Project 4
Cost	50%	70	90	80	50
Engagement	5%	15	10	0	80
Time	25%	90	90	70	50
Sustainability	10%	20	20	50	10
Technical Ability	10%	15	89	100	90
F	0%	0	0	0	0
G	0%	0	0	0	0
Weighted Project Scores	100%	61.75	78.9	72.5	51.5
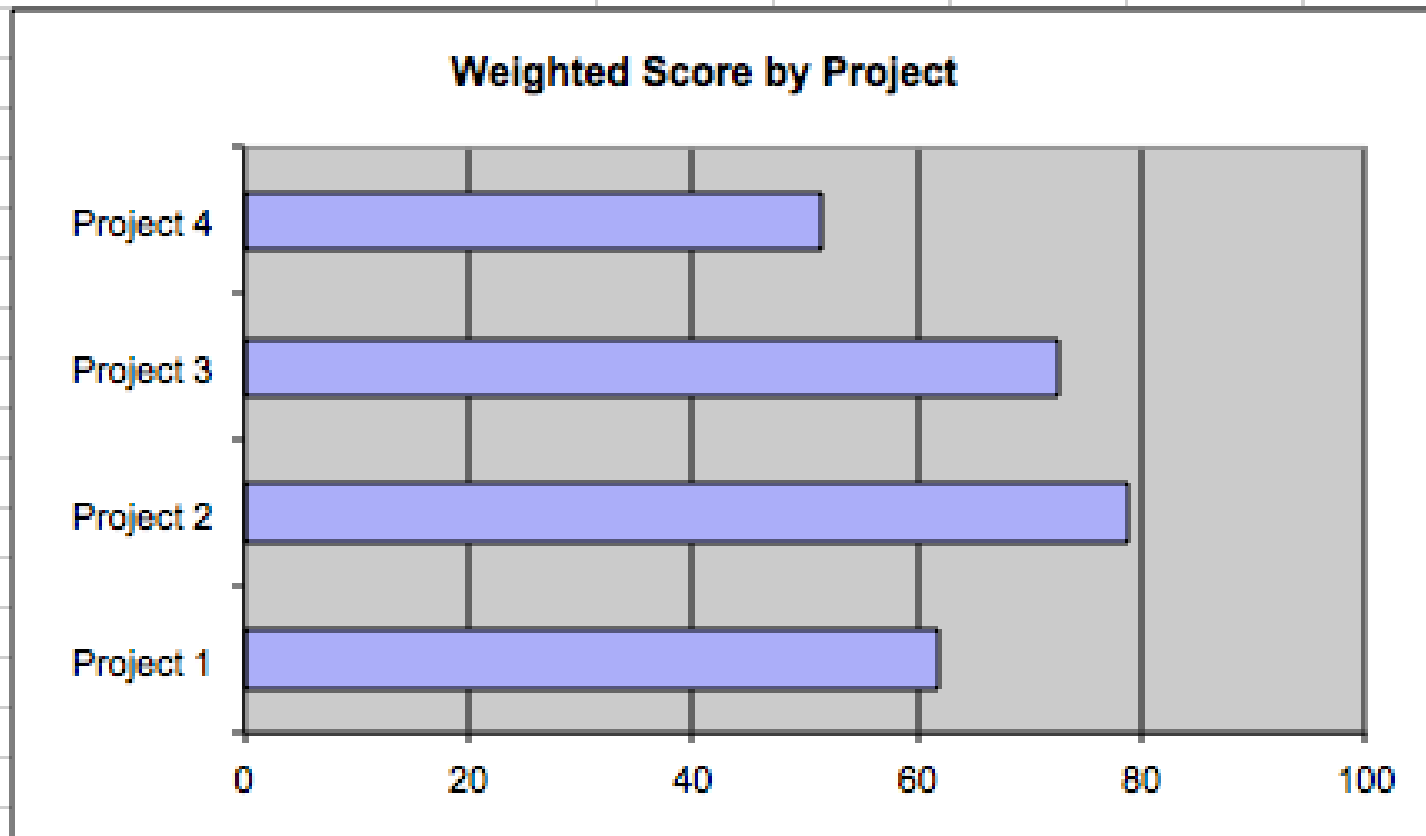
In WSM, a simple percentage calculation is used in Excel to measure which project is the most likely to be in first to be implemented.

Weighted Score by Project

SCOPE PLANNING PROCESS

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SCOPE PLANNING PROCESS

Planning
Process: **Collect requirements**
Outputs: Requirements documentation, requirements management plan,
requirements traceability matrix
Process: **Define scope**
Outputs: Project scope statement, project document updates
Process: **Create WBS**
Outputs: WBS, WBS dictionary, scope baseline, project document update

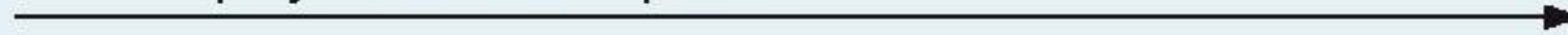**Monitoring and Controlling**
Process: **Verify scope**
Outputs: Accepted deliverables, change requests, project document updates
Process: **Control Scope**
Outputs: Work performance measurements, organizational process assets
updates, change requests, project management plan updates,
project document updates

Project Start   **Project Finish**

SCOPE PLANNING PROCESS

- **Collecting requirements**: defining and documenting the features and functions of the products or services produced during the project as well as the processes used for creating them.

- **Defining scope**: reviewing the project charter, requirements documents, and organizational charts, complaints from customer and risk assessment matrix.

- **Creating the Business Plan:** The creation of business folio and plans for profitability and sustainability of the product or service in the market.

- **Creating the WBS**: subdividing the major project deliverables into smaller, more manageable components

- **Verifying scope**: formalizing acceptance from the high level management about the project deliverables

- **Controlling scope**: controlling changes to project scope throughout the life-cycle of the network security project

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COLLECTING REQUIREMENTS

- A **requirement** is "a condition or capability that must be met or possessed by a system, product, service, result, or component to satisfy a contract, standard, specification, or other formal document" (PMBOK® Guide, 2008)

- 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

METHODS FOR COLLECTING REQUIREMENTS

- Interviewing

- Focus groups and facilitated workshops

- Using group creativity and decision-making techniques

- Questionnaires and surveys

- Observation

- Prototyping

- Software tools

DOCUMENTING REQUIREMENTS

- Requirements 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

- 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

SAMPLE REQUIREMENTS TRACEABILITY MATRIX

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.

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DEFINING SCOPE

- Key inputs for preparing the project scope statement include the project charter, requirements documentation, and organizational process assets such as policies and procedures related to scope statements as well as project files and lessons learned from previous, similar projects.

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

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.

CREATE BUSINESS PLAN

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BUSINESS PLAN

- Create the business folio for the corporate organization.

- Document on the profit makings and losses.

- Shows the sales performance, business model and financial statements.

- Benchmark with other method in terms of cost, performance and characteristics.

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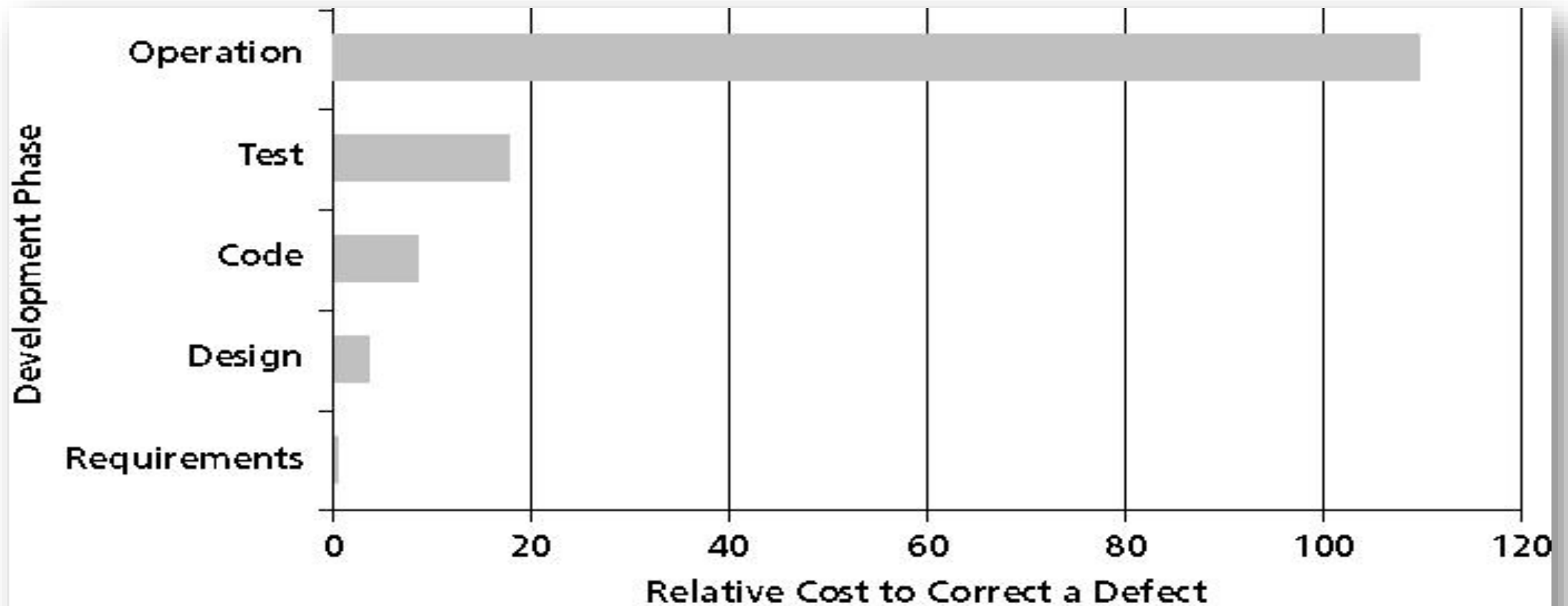
Source: Robert B. Grady, "An Economic Release Decision Model: Insights into Software Project Management." Proceedings of the Applications of Software Measurement Conference (Orange Park, FL: Software Quality Engineering, 1999), pp.227–239.

HOW TO CREATE THE WORK BREAKDOWN STRUCTURE (WBS)

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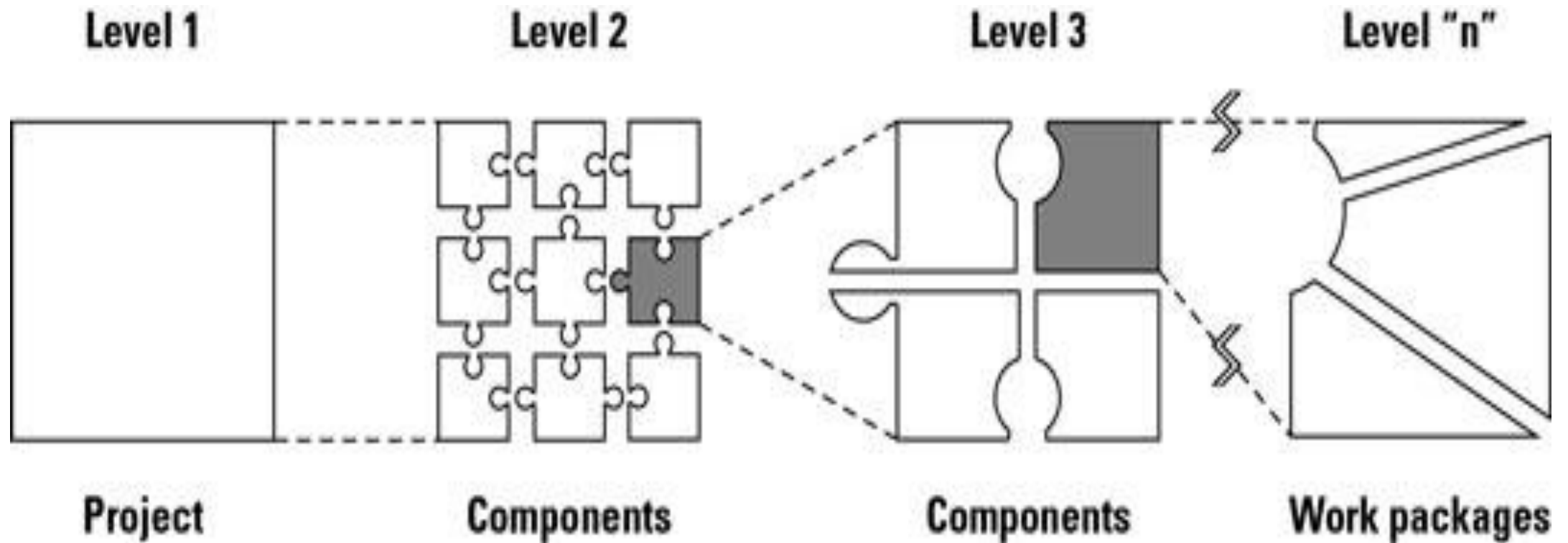
IDEA OF WORK BREAKDOWN STRUCTURE

HOW TO DEVELOP WBS? – 1

- To get started, you'd develop a WBS for this project as follows:

- **Determine the major deliverables or products to be produced.**

- Ask yourself, "What major intermediate or final products or deliverables must be produced to achieve the project's objectives?"

- You may identify the following items:
  - Training program needs statement
  - Training program design
  - Participant notebooks
  - Trained instructor
  - Program testing
  - Training program presentation

- **Divide each of these major deliverables into its component deliverables in the same manner.**

- Choose any one of these deliverables to begin with. Suppose you choose*Training program needs statement.*

HOW TO DEVELOP WBS? – 2

- Ask, "What intermediate deliverables must I have so I can create the needs statement?"

- You may determine that you require the following:
  - Interviews of potential participants
  - A review of materials discussing the needs for the program
  - A report summarizing the needs this program will address

- **Divide each of these work pieces into its component parts.**

- Suppose you choose to start with *Interviews of potential participants*.

- Ask, "What deliverables must I have to complete these interviews?"

- You may decide that you have to produce the following deliverables:
  - Selected interviewees
  - Interview questionnaire
  - Interview schedule
  - Completed interviews
  - Report of interview findings

EXAMPLE OF WBS FROM SCOPE – INTEGRATION FIREWALL WITH IDS

EXAMPLE OF WBS

1.0 FPR PROJECT

1.1 Fuel Processing Facility

1.2 Liquid Effluent Treatment & Disposal

1.1.1 Conceptual Design
- 1.1.1.1 Conceptual Design
- 1.1.1.2 Criteria Development & Conceptual Design Reviews

1.1.2 Design
- 1.1.2.1 Definitive Design
- 1.1.2.2 CADD Consultant
- 1.1.2.3 Engineering Support During Construction

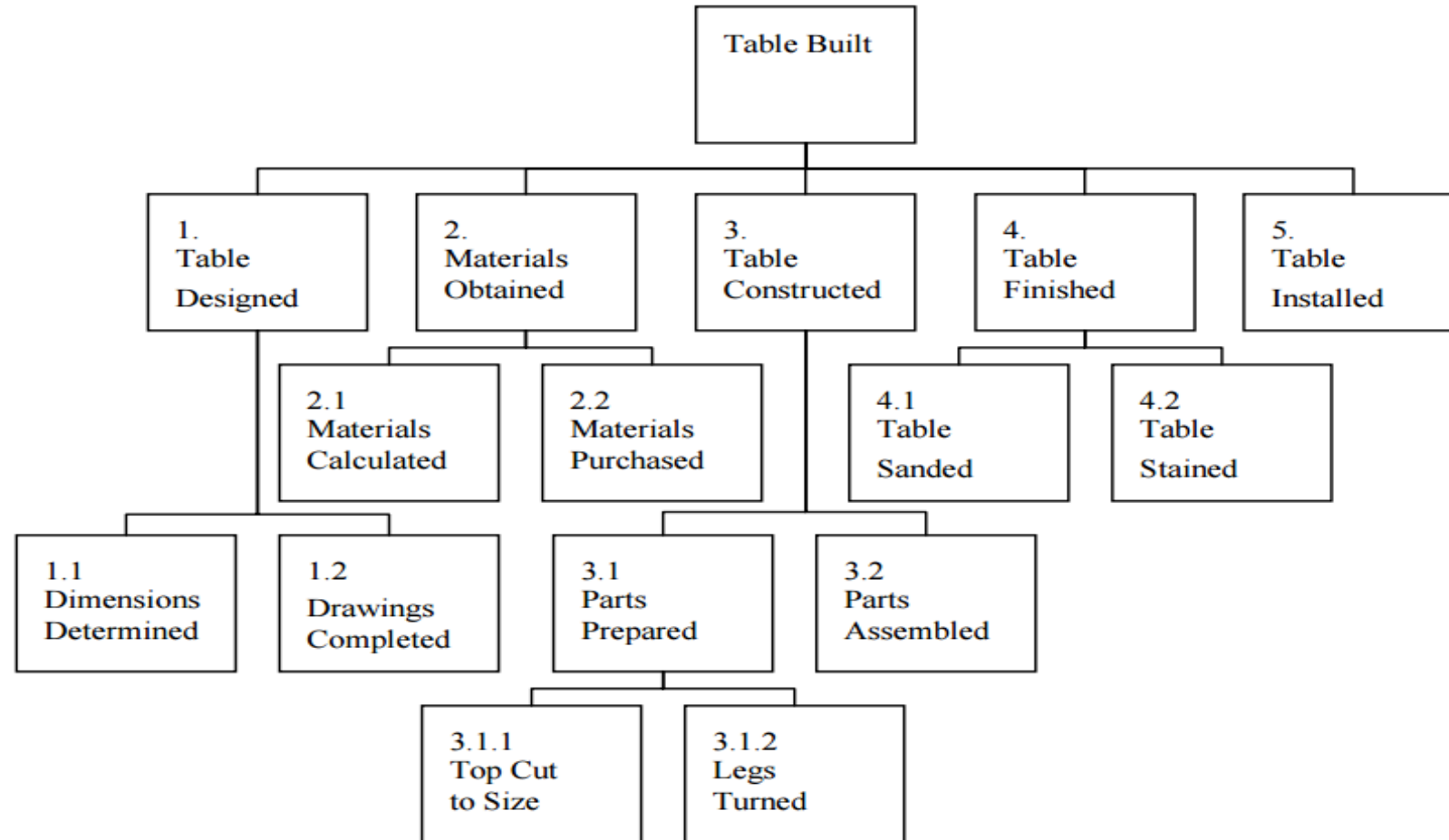**1.1.3 Government Furnished Equipment**
- 1.1.3.1 Construction Preparation
- 1.1.3.2 Building
- 1.1.3.3 Process & Service Systems & Equipment
- 1.1.3.4 Quality Assurance

1.1.4 Construction
- 1.1.4.1 Construction Preparation
- 1.1.4.2 Building
- 1.1.4.3 Process & Service Systems & Equipment
- 1.1.4.4 Construction Inspection
- 1.1.4.5 Construction Management
- 1.1.4.6 Construction Services
- 1.1.4.7 Constructability Reviews

1.1.5 Project Administration
- 1.1.5.1 Project Control
- 1.1.5.2 Records Management
- 1.1.5.3 Support Services
- 1.1.5.4 Engineering
- 1.1.5.5 Independent Construction Cost Estimate

1.1.6 Systems Development
- 1.1.6.1 Process Development
- 1.1.6.2 Design Support
- 1.1.6.3 Plant Liaison
- 1.1.6.4 Computer/Control System Development

1.1.7 Startup
- 1.1.7.1 SO Test Preparation
- 1.1.7.2 SO Test Performance
- 1.1.7.3 Manuals
- 1.1.7.4 Integrated Testing
- 1.1.7.5 Cold Run
- 1.1.7.6 SO Test Resources
- 1.1.7.7 Deleted
- 1.1.7.8 Preventative Maintenance

1.1.8 Safety/Environmental
- 1.1.8.1 Environmental Assessment
- 1.1.8.2 PSD Document
- 1.1.8.3 Safety Analysis Report
- 1.1.8.4 Probabilistic Risk Assessment
- 1.1.8.5 Document Coordination
- 1.1.8.6 RAM Study
- 1.1.8.7 Hazardous Waste

1.2.1 Construction

1.2.2 Government Furnished Material

1.2.3 Construction Inspection

1.2.4 Project Administration

1.2.5 Design

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EXAMPLE OF WBS

A GOOD WBS

- A good Scope Statement includes the following information:

- **Justification:** A brief statement regarding the business need your project addresses. (A more detailed discussion of the justification for the project appears in the project charter.)

- **Product scope description:** The characteristics of the products, services, and/or results your project will produce.

- **Acceptance criteria:** The conditions that must be met before project deliverables are accepted.

- **Deliverables:** The products, services, and/or results your project will produce (also referred to as *objectives*).

- **Project Exclusions:** Statements about what the project will not accomplish or produce.

- **Constraints:** Restrictions that limit what you can achieve, how and when you can achieve it, and how much achieving it can cost.

- **Assumptions:** Statements about how you will address uncertain information as you conceive, plan, and perform your project.

# 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

SAMPLE INTRANET WBS ORGANIZED BY PRODUCT
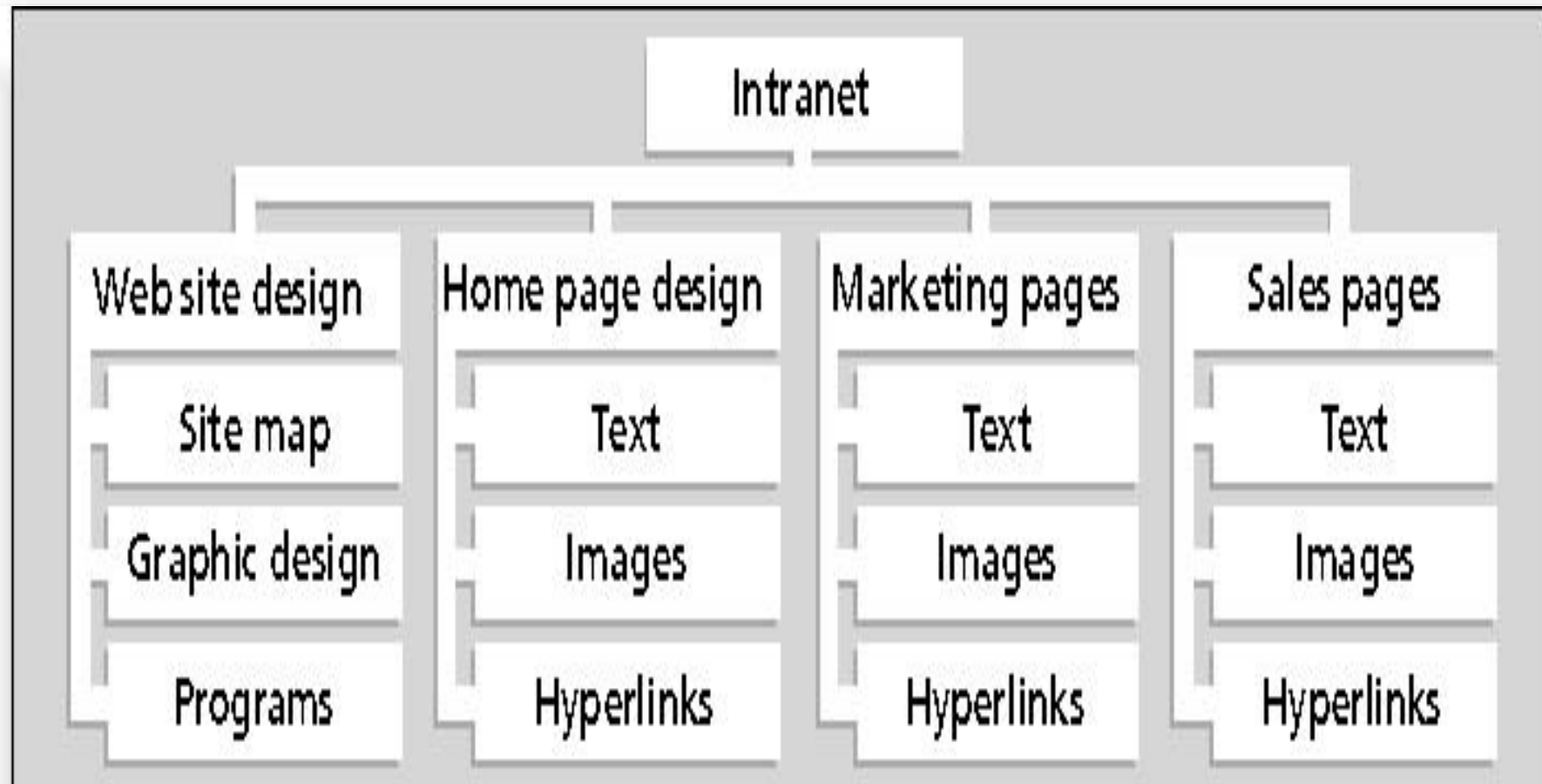
SAMPLE INTRANET WBS ORGANIZED BY PHASE
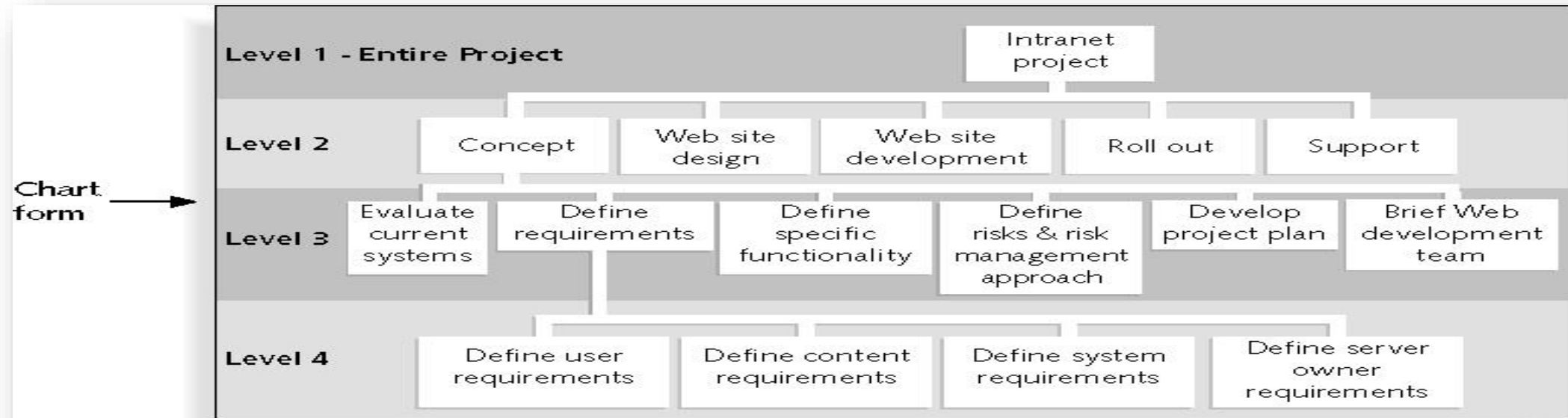
Tabular form with Microsoft Project numbering

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

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
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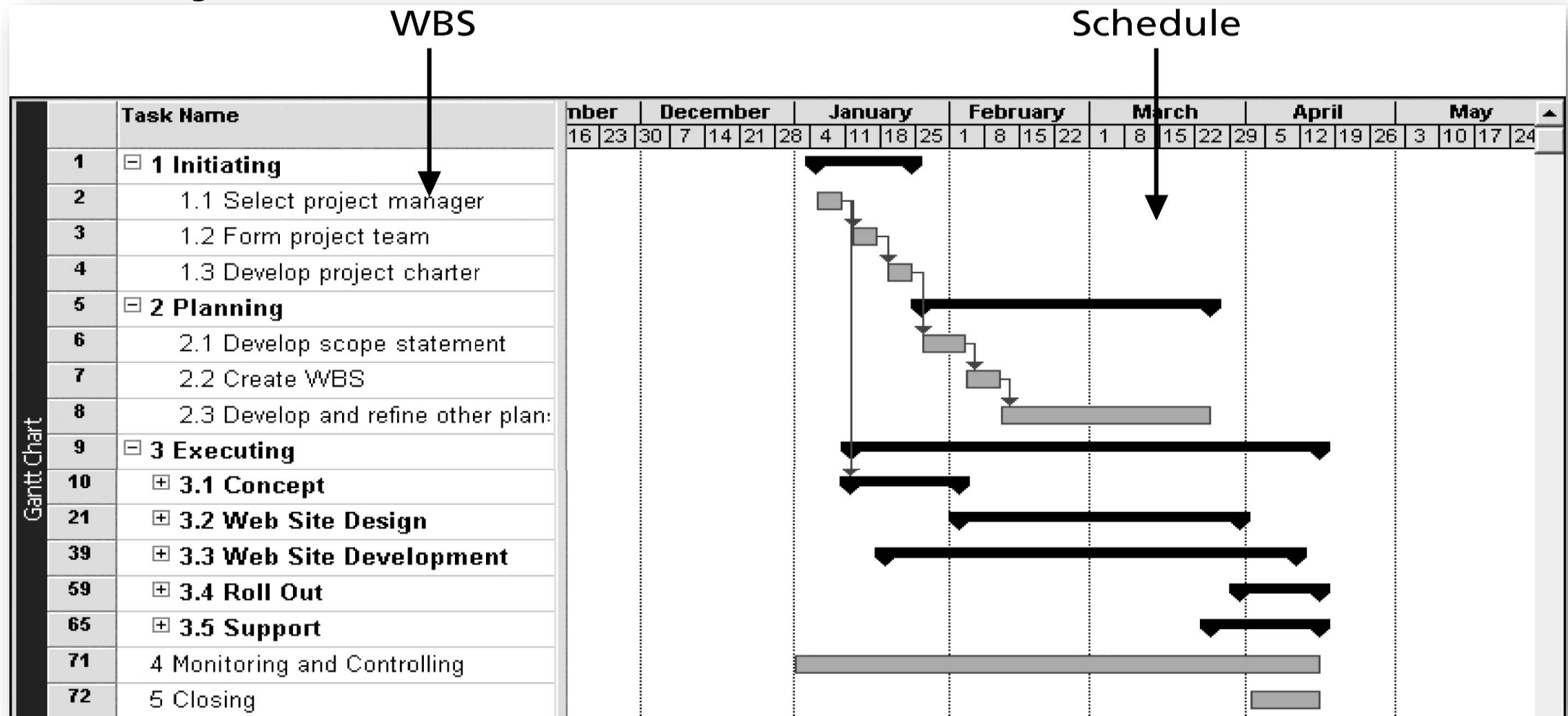
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PERFORM THE WBS INTO THE PM TOOL SOFTWARE SUCH AS PROJECTLIBRE / OPEN WORKBENCH

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INTRANET WBS AND GANTT CHART
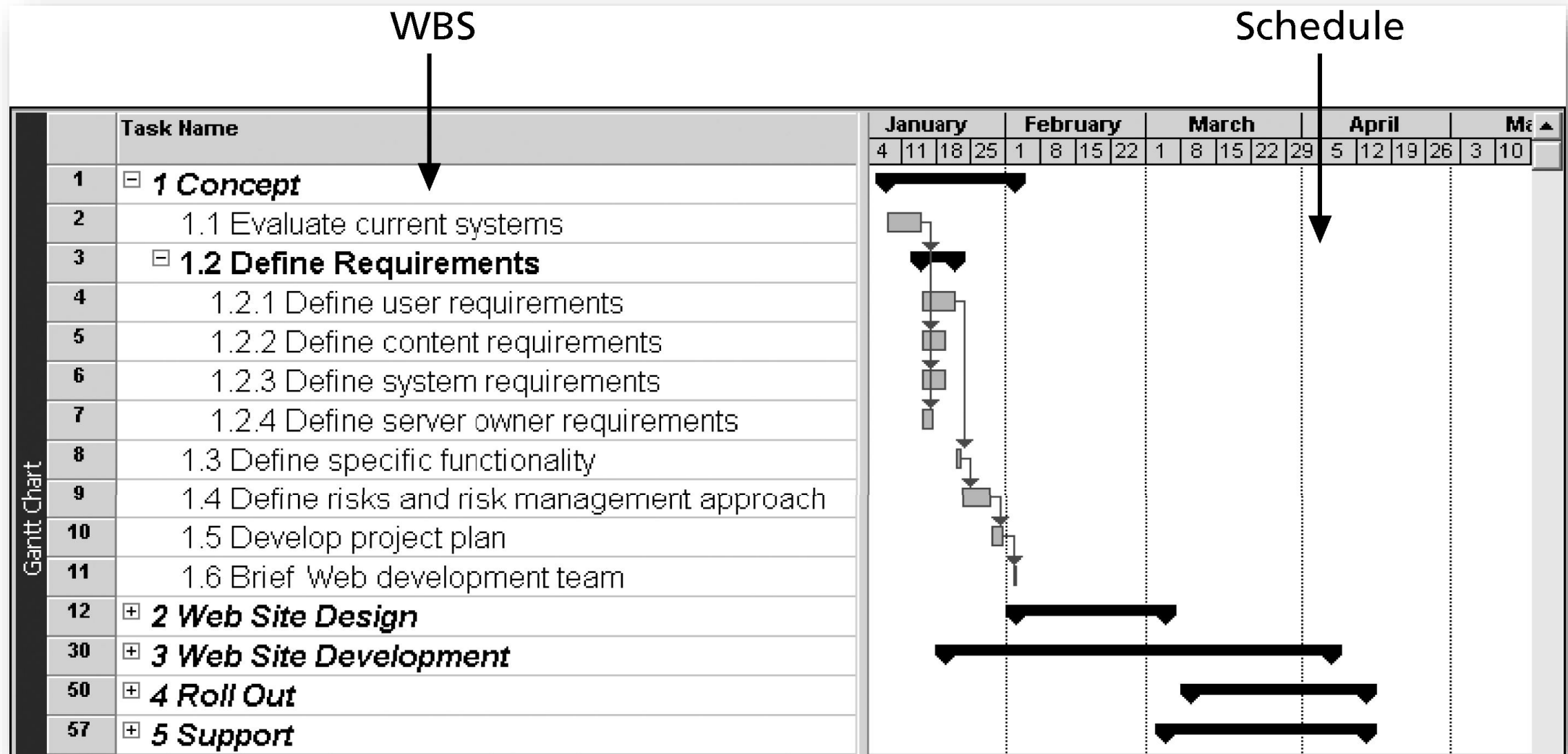
INTRANET GANTT CHART ORGANIZED BY PROJECT MANAGEMENT PROCESS GROUPS

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

- Using guidelines: some organizations, like the 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

SAMPLE MIND-MAPPING APPROACH FOR CREATING A WBS
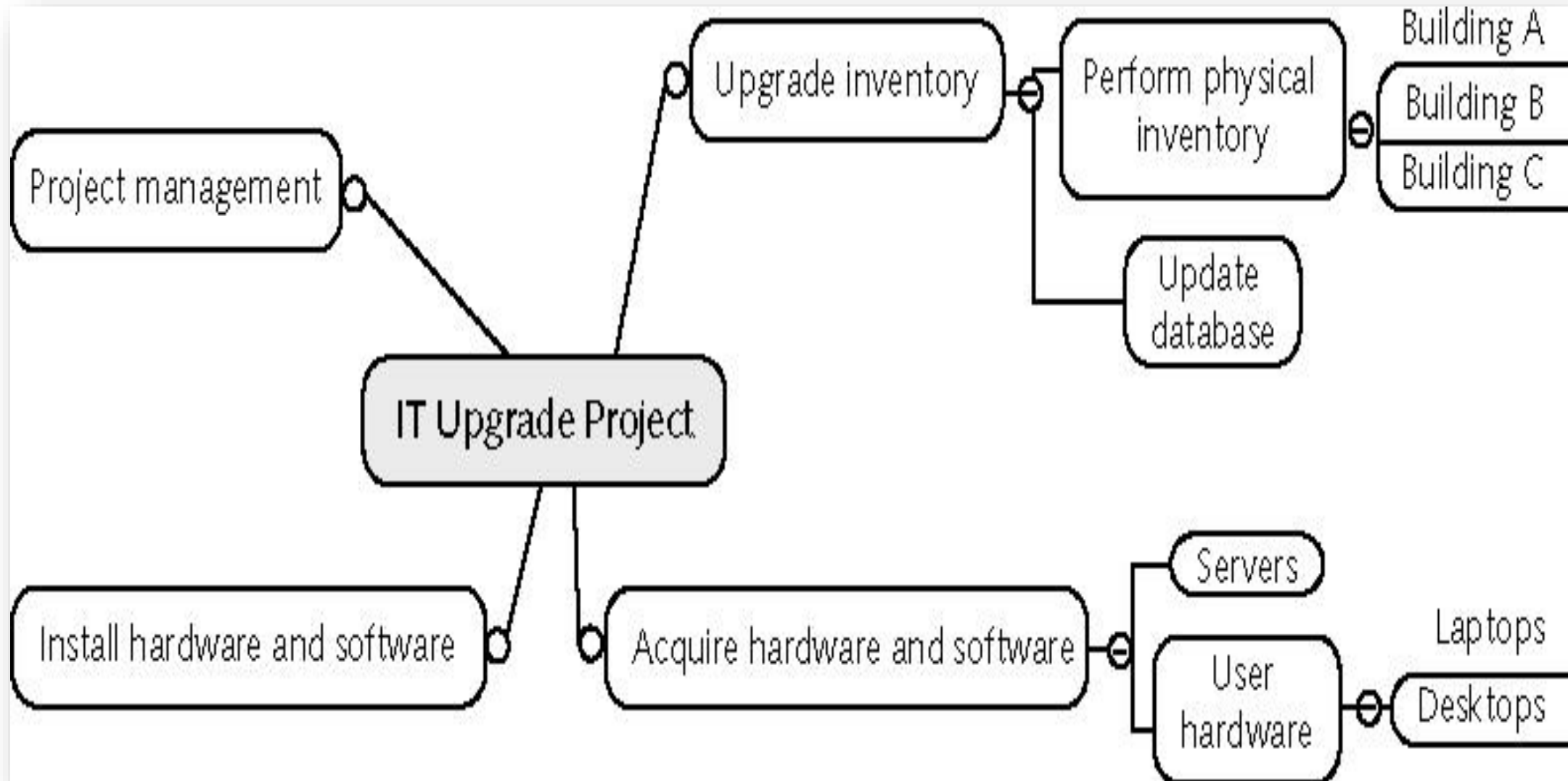
THE WBS DICTIONARY AND SCOPE BASELINE

- 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.

- 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 at only one place in the WBS.

- The work content of a WBS item is the sum of the WBS items.

- 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.

ADVICE FOR CREATING A WBS AND WBS DICTIONARY (CONTINUED)

- 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
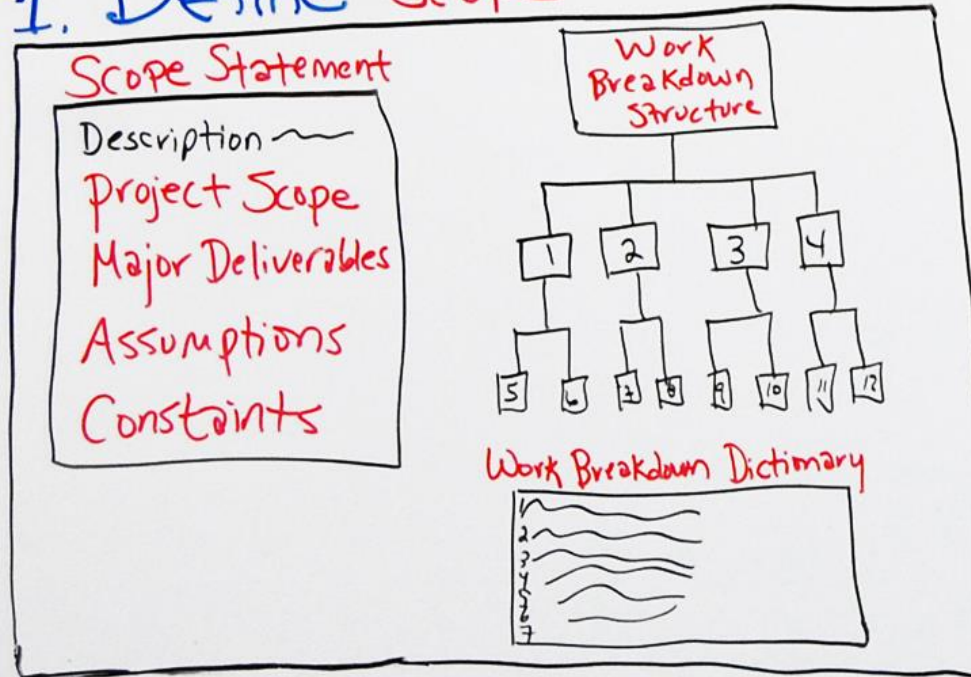
VERIFY SCOPE USING WBS

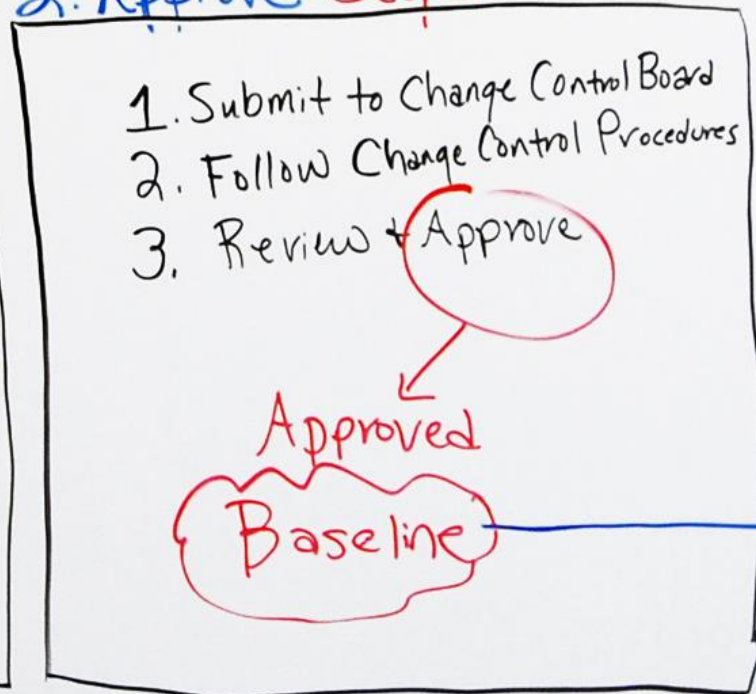**54**

Veri

HOW TO Baseline Your Project SCOPE

Project
Baseline

Project Manager
"You"

"Key"
to
successful
Project

Project
Successful
Result

To Do

Stakeholder
"Happy"

1. Define Scope

Scope Statement

- Description
- Project Scope
- Major Deliverables
- Assumptions
- Constraints

Work Breakdown Structure

| 1 | 2 | 3 | 4 |

| 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |

Work Breakdown Dictionary

1.
2.
3.
4.
5.
6.
7.

2. Approve Scope

1. Submit to Change Control Board
2. Follow Change Control Procedures
3. Review + Approve

Approved Baseline

Monitor & Track Progress Along the Way

VERIFYING 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 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

CONTROL SCOPE AND MONITORING PROCESS

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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 completed. Break large projects down into a series of smaller ones.

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

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/enhancements like NWA did with ResNet

USING SOFTWARE TO ASSIST IN PROJECT SCOPE MANAGEMENT

- Word-processing software helps create several scope-related documents

- Spreadsheets help to perform financial calculations and weighted scoring models and to develop charts and graphs

- Communication software like e-mail and the Web help clarify and communicate scope information

- Project management open source software helps in creating a WBS, the basis for tasks on a Gantt chart, such as ProjectLibre and open workbench.

- Specialized software is available to assist in project scope management.

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THEN END
Q & A