

The background features a light gray gradient with several realistic water droplets of various sizes scattered in the corners. The droplets have highlights and shadows, giving them a three-dimensional appearance. The text is centered in the middle of the page.

PROJECT SCOPE MANAGEMENT

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- 5.1 COLLECT REQUIREMENTS
- 5.2 DEFINE SCOPE
- 5.3 CREATE WBS (WORK BREAKDOWN STRUCTURE)
- 5.4 VERIFY SCOPE
- 5.5 CONTROL SCOPE

PROJECT SCOPE VS. PRODUCT SCOPE

- PROJECT SCOPE

- THE WORK THAT HAS TO BE PERFORMED TO DELIVER THE PRODUCT OF THE PROJECT WITH THE SPECIFIED FEATURES AND FUNCTIONS.

- PRODUCT SCOPE

- FEATURES AND FUNCTIONS THE CHARACTERIZE THE PRODUCT OF THE PROJECT.
- A **DELIVERABLE** IS A PRODUCT PRODUCED AS PART OF A PROJECT, SUCH AS FACILITY, HARDWARE OR SOFTWARE, PLANNING DOCUMENTS...

PROJECT SCOPE

- SETS THE LOGICAL BOUNDARIES OF THE PROJECT
- DEFINES WHAT THE PROJECT IS AND WHAT IT IS NOT.
- CONCERNED WITH DEFINING AND CONTROLLING WHAT IS AND WHAT IS NOT INCLUDED IN THE PROJECTS
- PREVENTS EXTRA WORK OR GOLD PLATING
- **PROJECT SCOPE MANAGEMENT** INCLUDES THE PROCESSES INVOLVED IN DEFINING AND CONTROLLING WHAT IS OR IS NOT INCLUDED IN A PROJECT.

PROJECT SCOPE MANAGEMENT PROCESSES

- **COLLECT REQUIREMENTS:** THE PROCESS OF DEFINING AND DOCUMENTING STAKEHOLDER'S NEEDS TO MEET THE PROJECT OBJECTIVES.
- **SCOPE DEFINITION:** THE PROCESS OF DEVELOPING A DETAILED DESCRIPTION OF THE PROJECT AND PRODUCT
- **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.

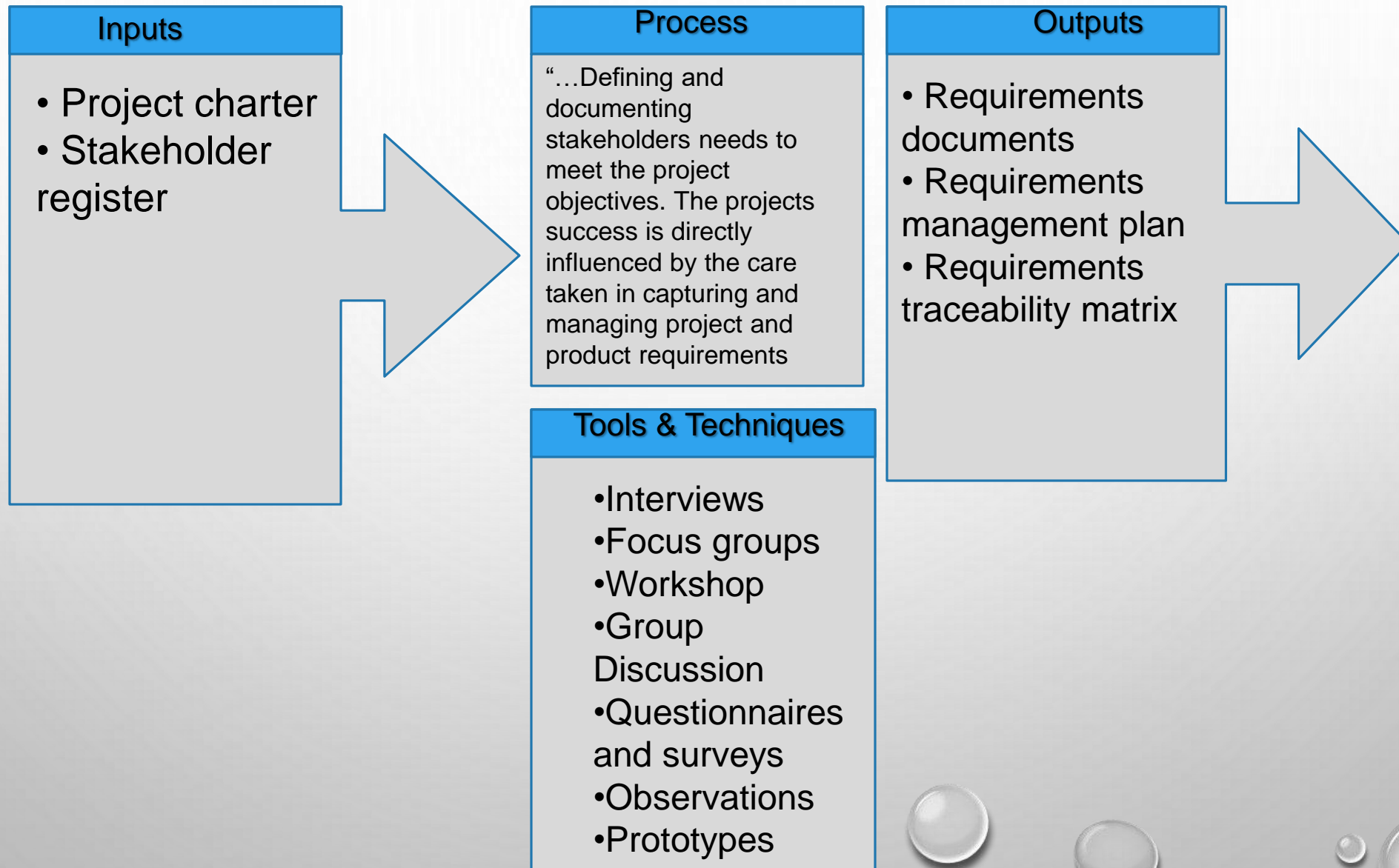
SCOPE PLANNING AND THE SCOPE MANAGEMENT PLAN

- 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.

MANAGING PROJECT SCOPE

- ACTIVITIES AND PROCESSES NEEDED TO ENSURE THAT ONLY REQUIRED WORK IS PERFORMED
- MANAGING CHANGES ON THE PROJECT SCOPE
- SCOPE MANAGEMENT NEEDS TO BE INTEGRATED WITH OTHER KNOWLEDGE AREAS TO ENSURE THE PROJECT WORK WILL RESULT IN DELIVERY OF THE SPECIFIED PRODUCT SCOPE.
- THE PROJECT MANAGER MUST BE IN CONTROL OF SCOPE.
- SCOPE CHANGES SHOULD BE HANDLED IN A STRUCTURED LOGICAL AND CONTROLLED MANNER.

5.1 COLLECT REQUIREMENTS



INPUT

- **CREATED IN PROJECT COMMUNICATIONS MANAGEMENT, IDENTIFY STAKEHOLDER PROCESS**
- **STAKEHOLDER IDENTIFICATION INFORMATION**
 - NAME, ORGANIZATION, POSITION, LOCATION, ROLE IN PROJECT, ETC.
- **ASSESSMENT INFORMATION**
 - IDENTIFIES STAKEHOLDERS TO PROVIDE REQUIREMENTS
 - POTENTIAL INFLUENCE IN THE PROJECT
- **STAKEHOLDERS CLASSIFICATION**
 - INTERNAL VS. EXTERNAL, SUPPORTIVE VS. RESISTANT, ETC

COLLECT REQUIREMENT ACTIVITIES

- BASED ON THE PROJECT CHARTER, ASSESS DETAILED PROJECT REQUIREMENTS, CONSTRAINTS, AND ASSUMPTIONS WITH STAKEHOLDERS.
- EXPLOIT LESSON LEARNED FROM PREVIOUS PROJECTS.
- UTILIZE REQUIREMENT-GATHERING TECHNIQUES (E.G. PLANNING SESSIONS, BRAIN STORMING, FOCUS GROUP) ESTABLISH THE PROJECT DELIVERABLES.

REQUIREMENT DOCUMENTATION

- BUSINESS NEED OPPORTUNITY
- BUSINESS AND PROJECT OBJECTIVE (TRACEABILITY)
- REQUIREMENTS
 - FUNCTIONAL (E.G. BUSINESS PROCESSES, PRODUCT INTERACTION)
 - NON- FUNCTIONAL REQUIREMENTS (E.G. SERVICE LEVEL, SAFETY COMPLIANCES)
 - QUALITY
- ACCEPTANCE CRITERIA
- TRAINING REQUIREMENTS
- SUPPORT REQUIREMENTS
- REQUIREMENTS ASSUMPTIONS AND CONSTRAINTS

TOOLS AND TECHNIQUES

- **INTERVIEW**
 - FORMAL & INFORMAL
 - SPONTANEOUS AND PREPARED QUESTIONS
 - 1:1 OR GROUP

- **FOCUS GROUP**
 - BRING TOGETHER PREQUALIFIED STAKEHOLDERS TO LEARN MORE ABOUT EXPECTATIONS OF PROPOSED DELIVERABLES
 - MODERATOR GUIDES THE GROUP THROUGH INTERACTIVE DISCUSSION.

TOOLS AND TECHNIQUES

- FACILITATED WORKSHOP
 - BRING TOGETHER PREQUALIFIED STAKEHOLDERS TO DEFINE PRODUCT REQUIREMENTS
 - GOOD APPROACH FOR GATHERING CROSS FUNCTIONAL REQUIREMENTS AND RECONCILING STAKEHOLDERS DIFFERENCES.
 - CAN BUILD TRUST AND RELATIONSHIPS.
 - ISSUES DISCOVERED AND RESOLVED MORE QUICKLY THAN INDIVIDUAL SESSIONS.

TOOLS AND TECHNIQUES

- **GROUP CREATIVITY TECHNIQUES**
 - BRAINSTORMING
 - DELPHI TECHNIQUE
 - IDEA/MIND MAPPING
 - AFFINITY DIAGRAM
- **GROUP DECISION MAKING TECHNIQUES**
 - UNANIMITY
 - MAJORITY
 - PLURALITY
 - DICTATORSHIP

DELPHI TECHNIQUES

- A FORM OF EXPERT JUDGMENT
- USED TO COLLECT OPINIONS ON TECHNICAL ISSUES, ESTIMATES, RISKS AND SCOPE OF WORK.
- A REQUEST FOR OPINION IS SENT TO EXPERTS, RESPONSES ARE COMPILED AND SENT BACK FOR FURTHER REVIEW
- HAS 3 RULES
 - EXPERT ARE NOT IN SAME ROOM
 - KEEP IDENTITIES ANONYMOUS
 - FOCUS ON BUILDING CONSENSUS

THIS IS A COMMON TOOL IN MANY PROCESS

TOOLS AND TECHNIQUES

- **QUESTIONNAIRES AND SURVEYS**

- ACCUMULATE INFORMATION FROM A WIDE NUMBER OF RESPONDENTS.
- USED WITH BROAD AUDIENCES, QUICK TURNAROUND AND STATISTICAL ANALYSIS.

- **OBSERVATIONS**

- VIEW INDIVIDUALS WORKING IN THEIR ENVIRONMENT
- HELPFUL IN UNDERSTANDING DETAILED PROCESSES.

- **PROTOTYPES**

- PROVIDE A WORKING MODEL OF THE EXPECTED PRODUCT TO OBTAIN EARLY FEEDBACK
- PROGRESSIVE ELABORATION APPROACH.

OUTPUT

- REQUIREMENTS DOCUMENTATION
 - DESCRIBES HOW INDIVIDUAL REQUIREMENT MEET THE BUSINESS NEED FOR THE PROJECT.
 - PROGRESSIVELY DETAILED AS MORE IS KNOWN
 - MUST BE MEASUREABLE, TESTABLE, TRACEABLE, COMPLETE, AND ACCEPTANCE TO STAKEHOLDERS.

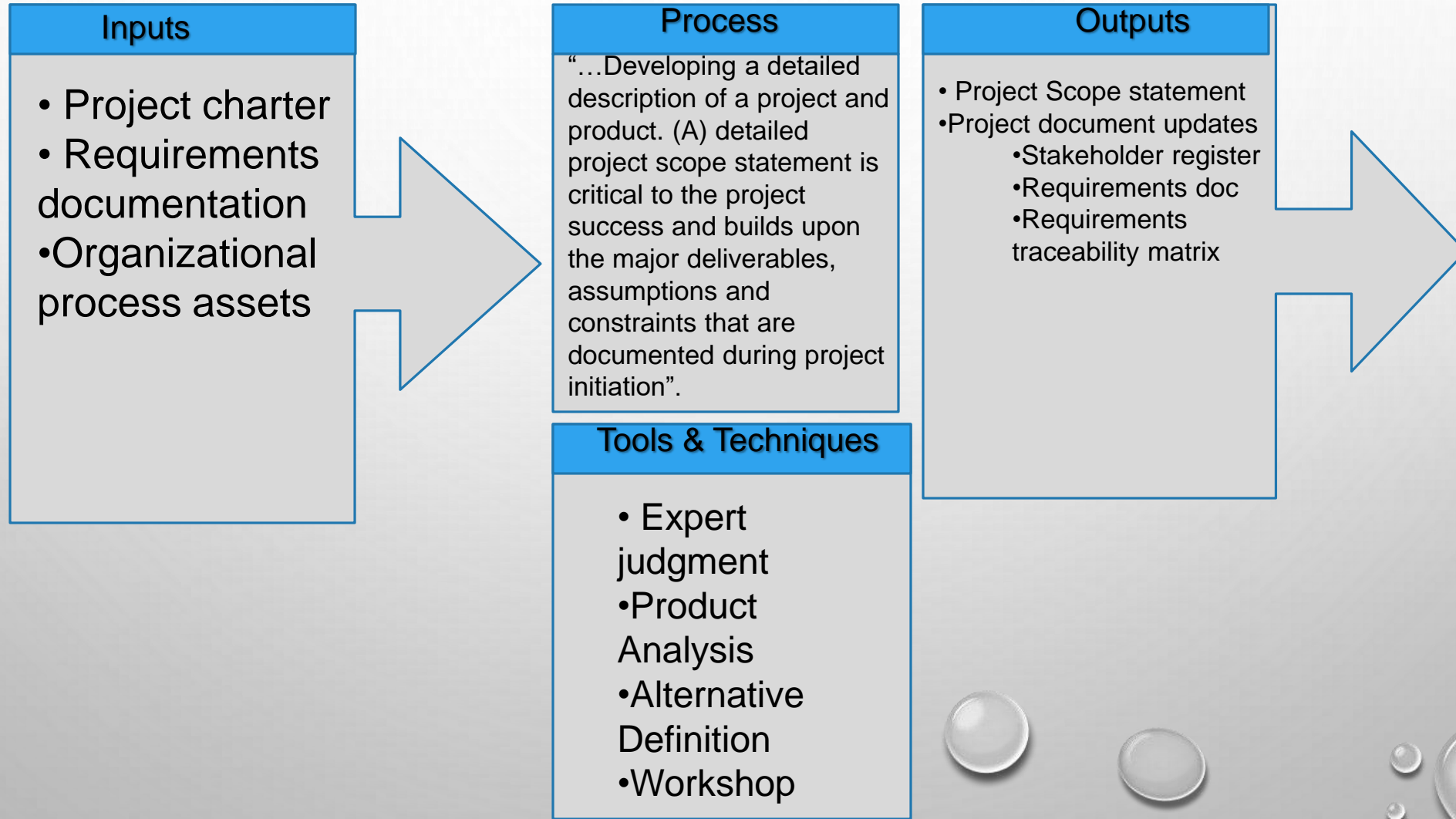
OUTPUTS

- REQUIREMENTS MANAGEMENT PLAN
 - DESCRIBES HOW REQUIREMENTS WILL BE ANALYZED. DOCUMENTED, AND MANAGED DURING THE PROJECT.
 - PHASE TO PHASE RELATIONSHIP FOR THE PROJECT INFLUENCES HOW REQUIREMENTS ARE MANAGED AND IS DOCUMENTED HERE
 - COMPONENTS
 - HOW THE PROJECT WILL TRACK AND REPORT REQUIREMENTS ACTIVITIES
 - PRIORITIZATION PROCESS
 - TRACEABILITY STRUCTURE

OUTPUT

- REQUIREMENTS TRACEABILITY MATRIX
 - TRACES REQUIREMENT THROUGHOUT THE PROJECT LIFE CYCLE
 - CONFIRMS THAT APPROVED REQUIREMENTS ARE DELIVERED AT THE END OF THE PROJECT
 - HELPS MANAGE CHANGES TO SCOPE
 - TRACE REQUIREMENTS TO
 - BUSINESS NEED AND OBJECTIVES
 - DESIGN, DEVELOPMENT, TEST CASES/ SCENARIOS

DEFINE SCOPE



DEFINING PROJECT SCOPE

- USE THE PROJECT CHARTER, DEFINE HIGH LEVEL SCOPE BASED ON BUSINESS AND COMPLIANCE REQUIREMENTS.
- ANALYZE ALL EXISTING INFORMATION, INCLUDING LESSONS LEARNED, TO DETERMINE REQUIREMENTS TO MEET CUSTOMERS EXPECTATIONS.
- VALIDATE EXISTING RISKS, ASSUMPTIONS, AND CONSTRAINTS FOR COMPLETENESS.
- ADD NEW RISK, ASSUMPTIONS, AND CONSTRAINTS THAT ARE IDENTIFIED.



OUTPUTS

PROJECT SCOPE STATEMENTS

- **PRODUCT SCOPE DESCRIPTION**

- CHARACTERISTICS OF THE PRODUCT, SERVICE OR RESULT OF THE PROJECT. THESE WILL BE DETAILED THROUGH PROGRESSIVE ELABORATION.

- **PROJECT BOUNDARIES AND EXCLUSIONS**

- WHAT IS INCLUDED IN THE PROJECT AND EXPLICITLY, WHAT IS EXCLUDED. ASSUMPTIONS ON THE SCOPE SHOULD BE AVOIDED.
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OUTPUT

PROJECT SCOPE STATEMENT (CONT)

- PROJECT DELIVERABLES
 - PRODUCT, SERVICE OR RESULT OF THE PROJECT (AND ITS COMPONENTS)
 - PROJECT MANAGEMENT DELIVERABLES (DOCUMENT)
- PRODUCT ACCEPTANCE CRITERIA
- PROJECT CONSTRAINTS
 - APPLICABLE RESTRICTION THAT LIMITS THE PROJECT OPTIONS
 - CONTRACTUAL TERMS ARE USUALLY CONSTRAINTS
- PROJECT ASSUMPTIONS
 - FACTORS THAT, FOR THAT PLANNING PURPOSES, ARE CONSIDERED TO BE TRUE, REAL OR CERTAIN.

PROJECT CHARTER VS. PROJECT SCOPE STATEMENT

Charter	Scope Statement
Project purpose or justification	Product scope description (Progressively elaborated)
Measurable project objective and related success criteria	Project deliverables
High level requirements	Product user acceptance criteria
High level project description, product characteristics	Project Boundaries
Summary milestone schedule	Project Constraints
Summary budget	Project assumption
Project approval requirements (what constitutes success, who decides it, who sign off)	
Assigned project manager, responsibility and authority level	
Name and responsibility of the person (s)	

TOOLS AND TECHNIQUES

- **PRODUCT ANALYSIS**

- TRANSLATING PROJECT OBJECTIVE IN TO TANGIBLE DELIVERABLES AND REQUIREMENTS

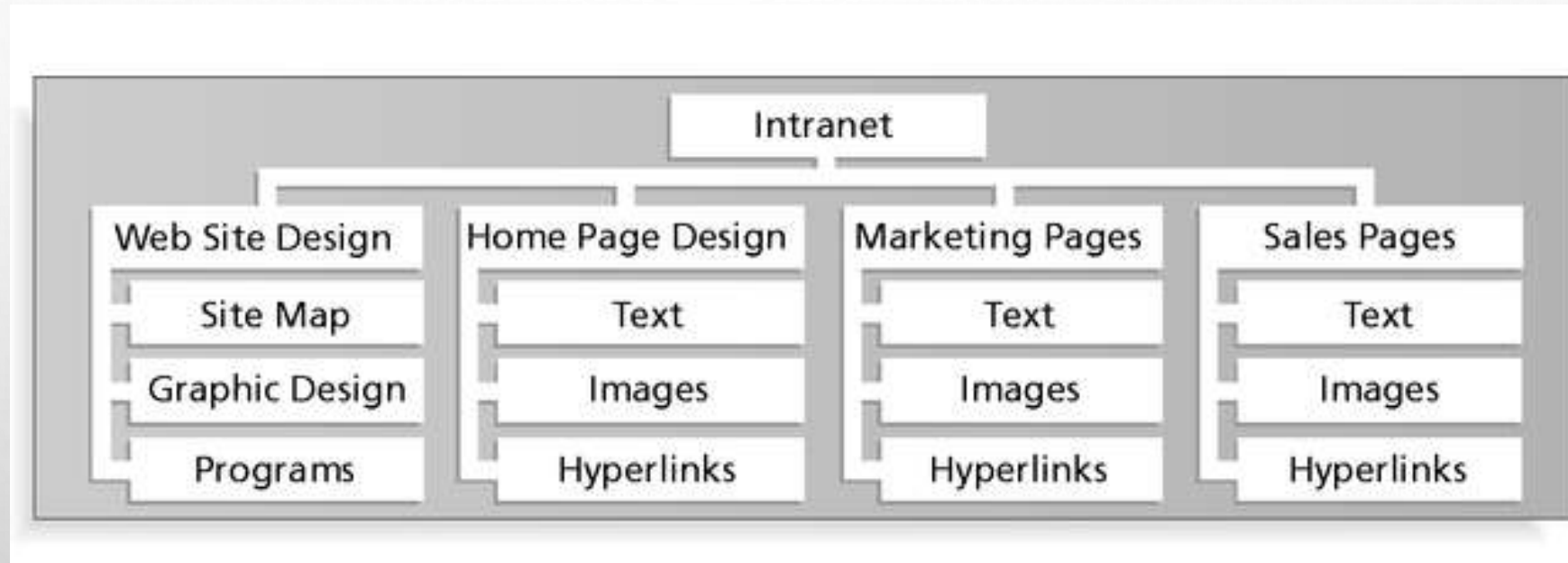
- **ALTERNATIVE IDENTIFICATION**

- GENERATING DIFFERENT APPROACH TO PERFORM WORK
- VARIOUS MANAGEMENT AND CREATIVE THINKING OF METHODS: BRAINSTORMING, LATERAL THINKING

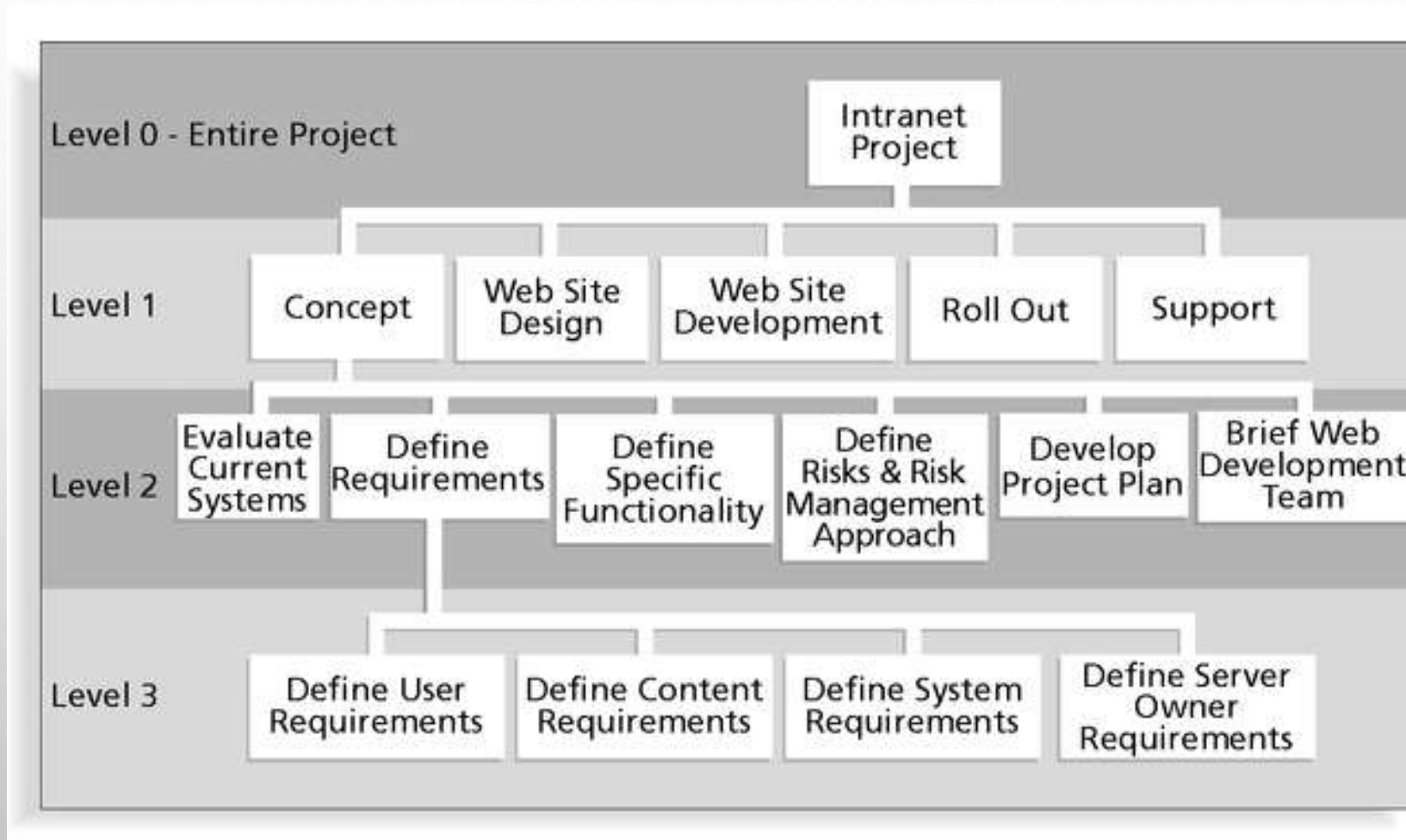
Creating the Work Breakdown Structure (WBS)

- 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

Partial WBS Organized by Product Areas



Partial WBS Organized by Project Phase



Partial 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

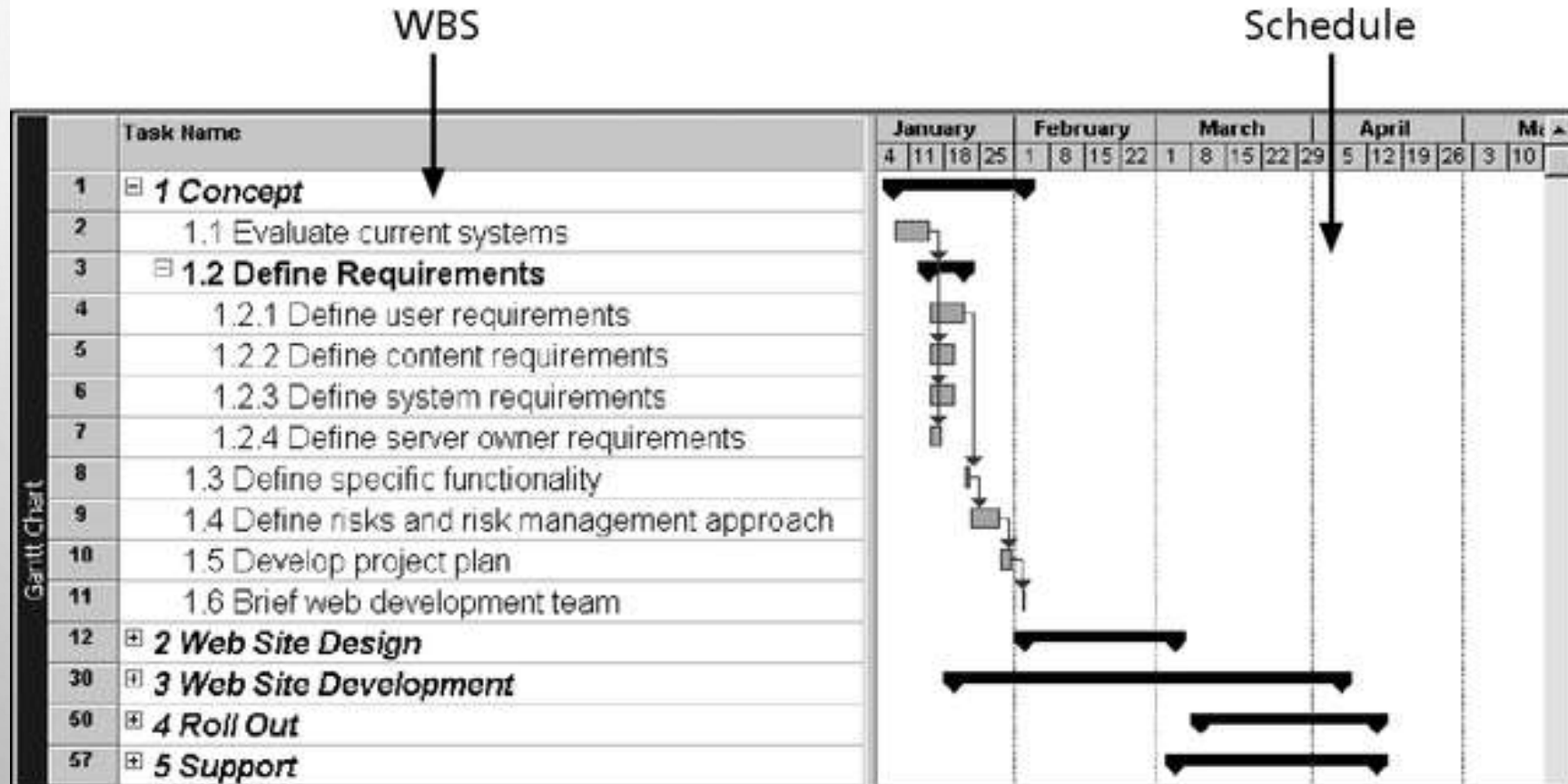
2.0 Web Site Design

3.0 Web Site Development

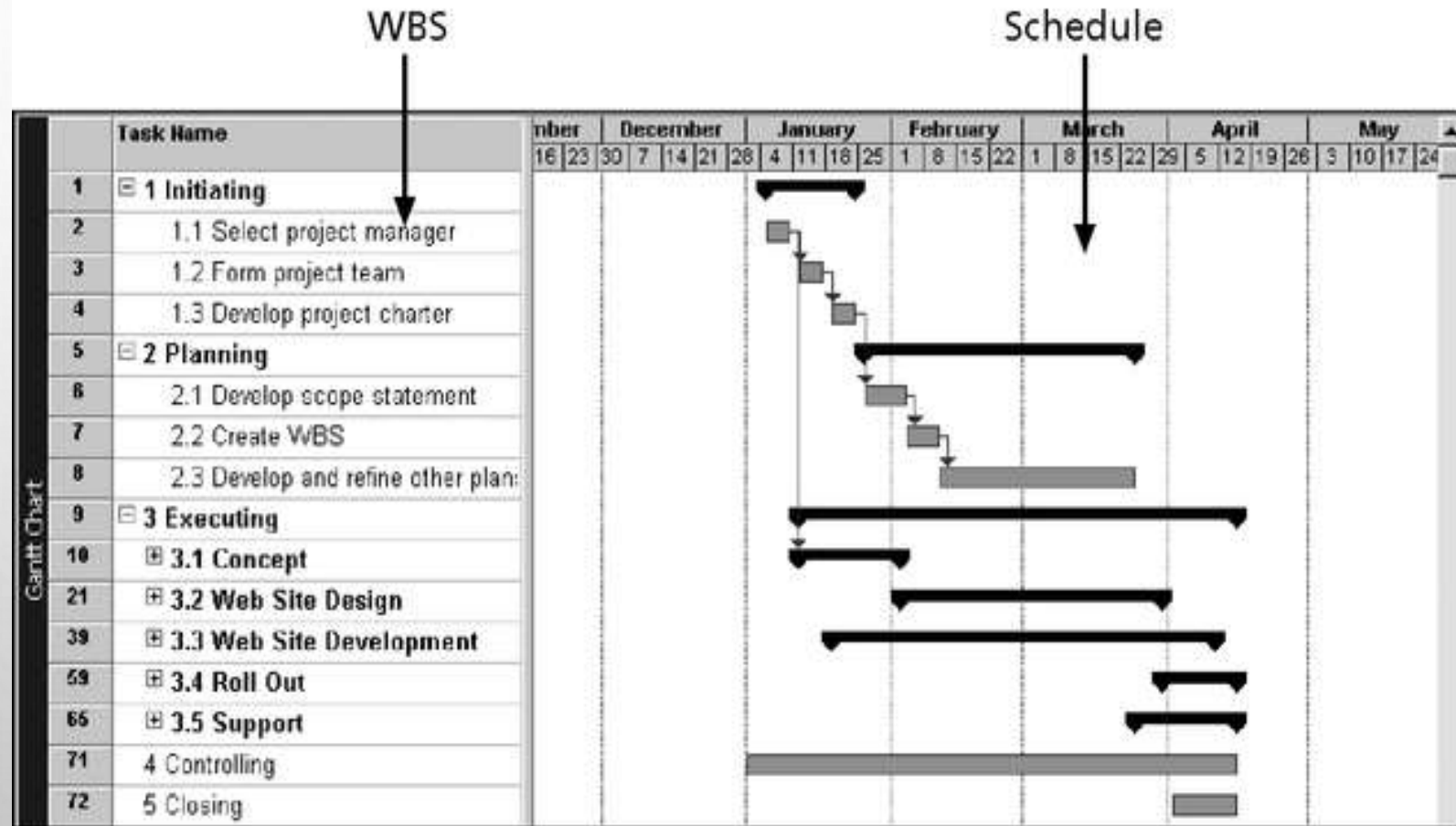
4.0 Roll Out

5.0 Support

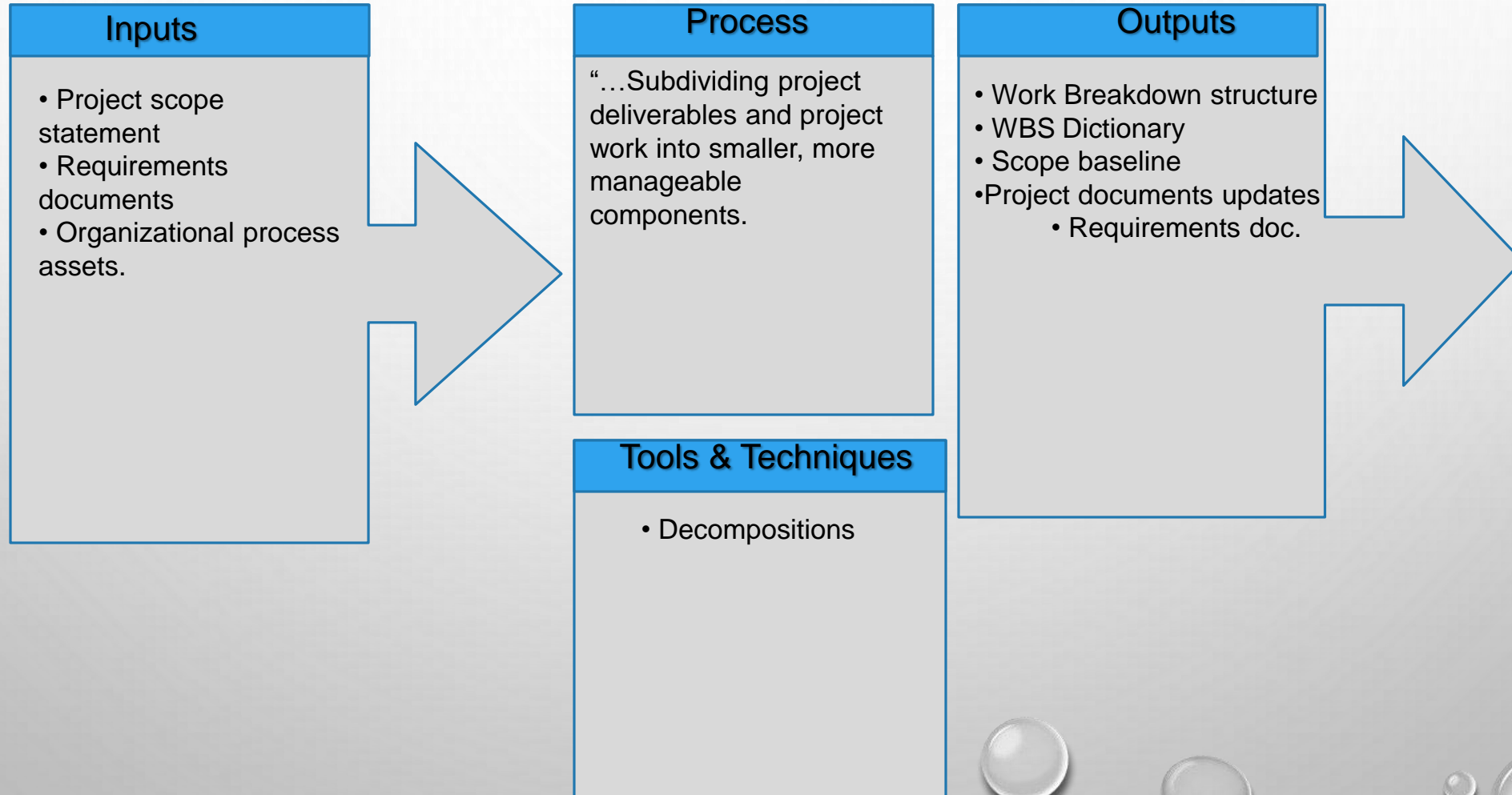
Intranet WBS and Gantt Chart in Microsoft Project



Intranet Gantt Chart Organized by Project Management Process Groups



Create WBS



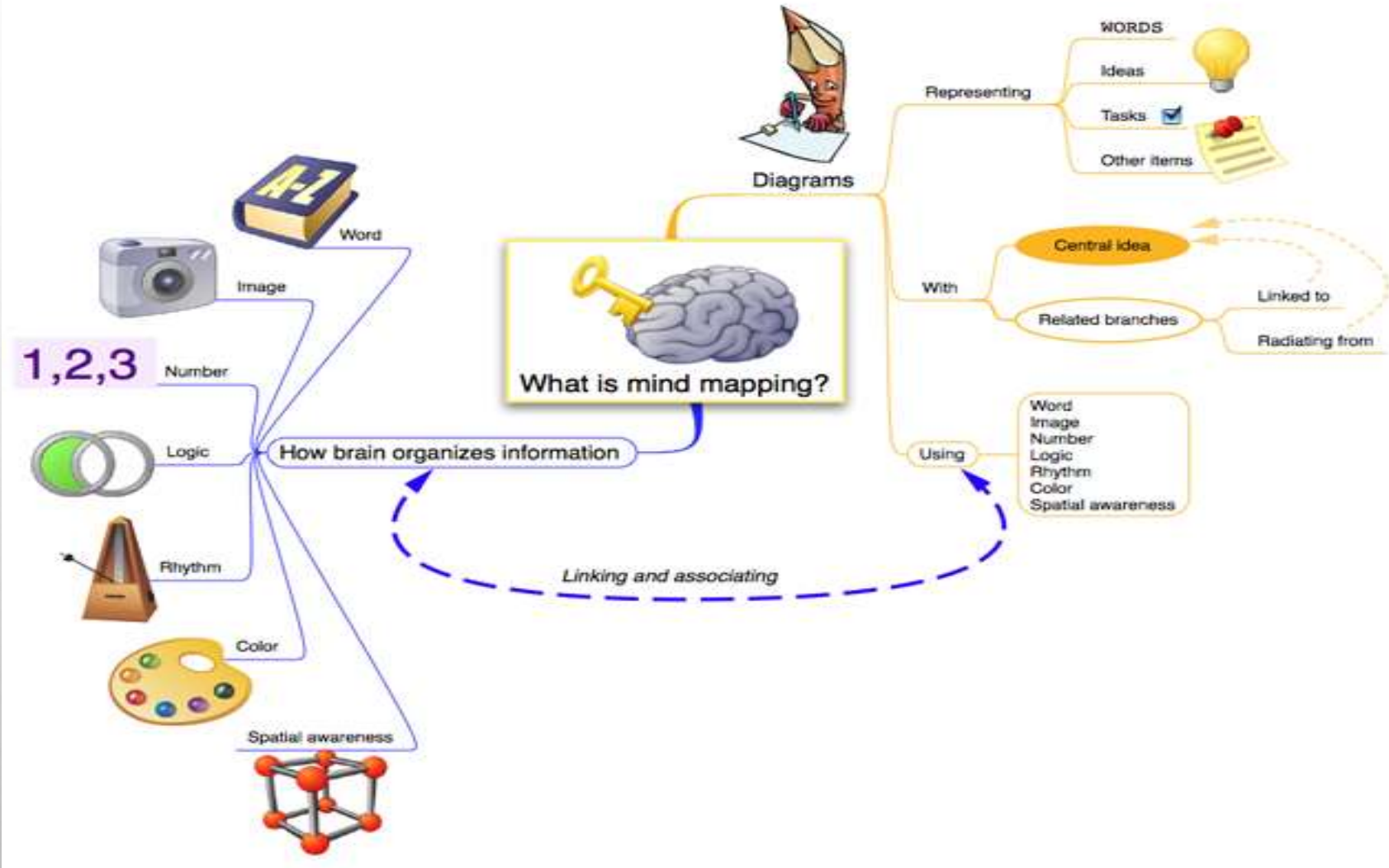
APPROACHES TO DEVELOP THE WBS

- **GUIDELINES:** SOME ORGANIZATIONS, SUCH AS THE DOD, PROVIDE GUIDELINES FOR PREPARING WBS.
- **ANALOGY APPROACH:** REVIEW WBS 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.

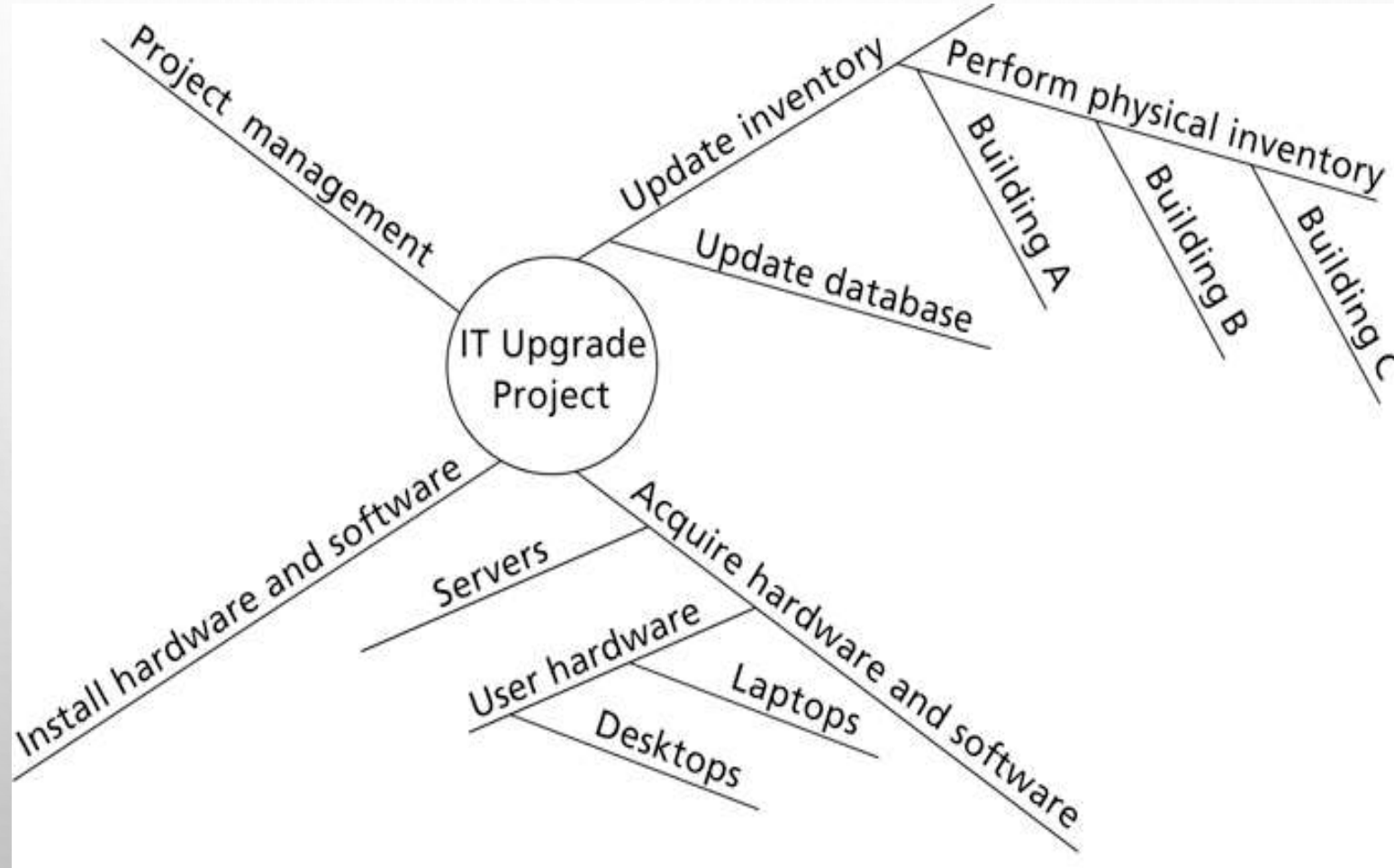
Mind Mapping

- Mind Mapping is a way of creating pictures that show ideas in the same way that they are represented in your brain.
- Your brain uses words, pictures, numbers, logic, rhythm, color and spatial awareness to build up unique pictures of information.
- The ideas are linked together in a way that makes it easy to understand and remember.
- <http://www.novamind.com/mind-mapping/>
- <http://www.youtube.com/watch?v=MlabrWv25qQ>

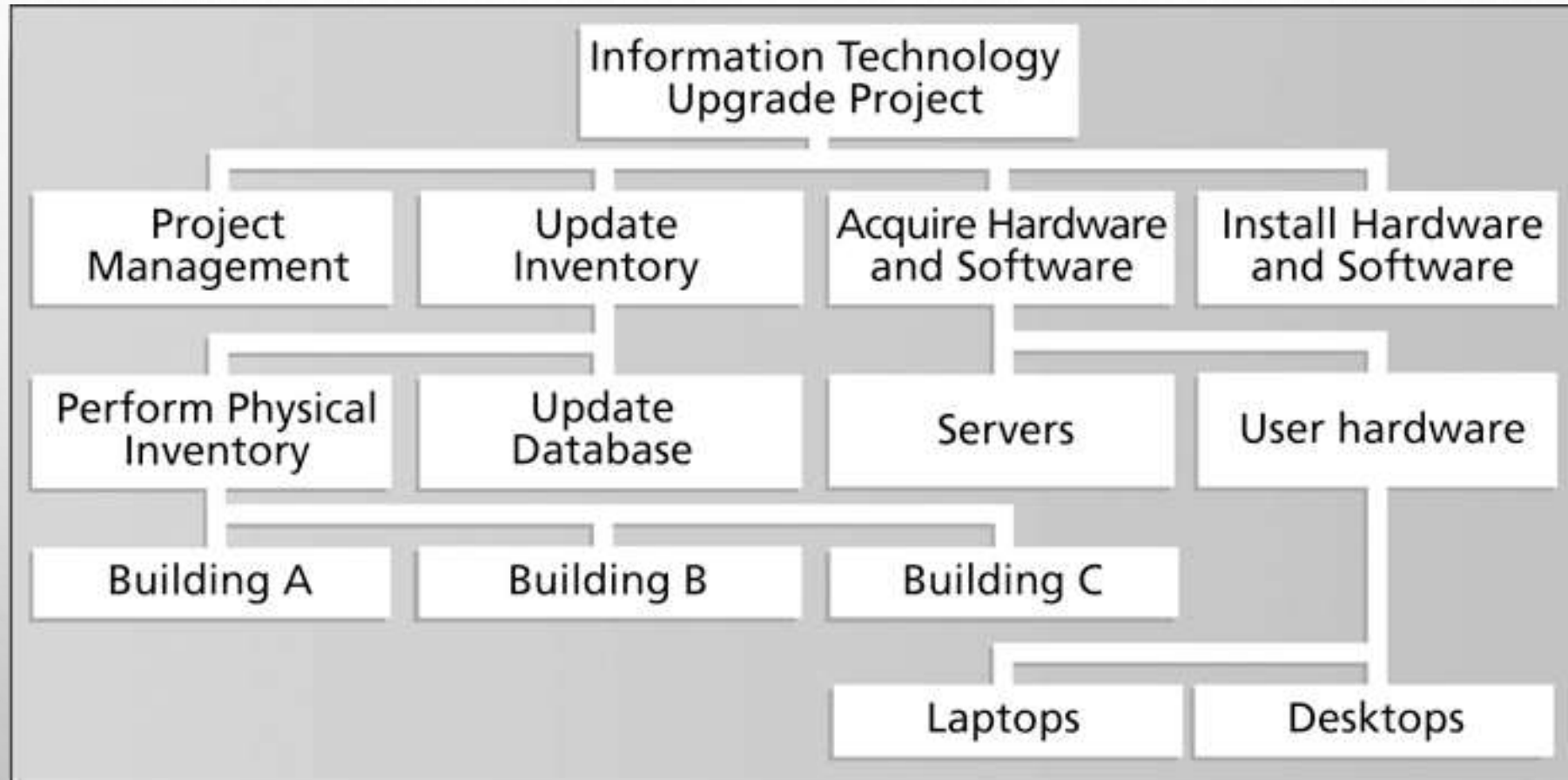
Mind Mapping



Sample Mind-Mapping Approach for Creating a WBS



Resulting WBS in Chart Form



Output

Work Breakdown Structure (WBS)

- Creating a hierarchical, deliverable-oriented decomposition of project work.
- Organizes and defines the total project scope
- What is not in the WBS will not be done
- The lowest level is called work package
 - Can be estimated
 - Scheduled
 - Monitored and Controlled
- Granularity (detail level) may vary with the size and complexity of the project.

OUTPUT SCOPE BASELINE

THE SCOPE BASELINE IS A COMPONENT OF THE PROJECT MANAGEMENT PLAN,
WHICH INCLUDES;

- APPROVED DETAILED PROJECT SCOPE STATEMENT
- ASSOCIATED WBS AND WBS DICTIONARY
- OTHER OUTPUT
 - UPDATES TO PROJECT DOCUMENTS

Verify Scope

- The process of obtaining formal acceptance of the completed project scope and associated deliverables.
- Includes
 - Reviewing deliverables and work products
 - Determining if the results conform to requirements
- Performed at the end of each phase
- Differs from quality control
 - Scope verification
 - Acceptance of deliverables (completeness)
 - Quality control
 - Meeting the quality requirements (correctness)

What Went Wrong?

- A project scope that is too broad and grandiose can cause severe problems
 - Scope creep and an overemphasis on technology for technology's sake resulted in the bankruptcy of a large pharmaceutical firm, Texas-based FoxMeyer Drug
 - In 2001, McDonald's fast-food chain initiated a project to create an intranet that would connect its headquarters with all of its restaurants to provide detailed operational information in real time; after spending \$170 million on consultants and initial implementation planning, McDonald's realized that the project was too much to handle and terminated it

Control Scope

- Is concerned with
 - Monitoring the status of the project and product scope
 - Controlling impact of the changes
 - Determining that a scope change has occurred
 - Managing changes when and if they occur
 - Avoiding uncontrolled scope changes (scope creep)

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