CHAPTER 4

Defining Scope, Quality, Responsibility, and Activity Sequence

Chapter Concepts

- Clearly defining the project objective
- Preparing a project scope document
- Understanding the importance of planning for quality
- Creating a work breakdown structure
- Assigning responsibility for work items
- Defining specific activities
- Creating a network diagram
- Utilizing a project management methodology called the *systems development life cycle for information systems development projects*

Learning Outcomes

- Establish a clear project objective
- Prepare a project scope document
- Discuss the importance and elements of a project quality plan
- Develop a work breakdown structure
- Prepare a responsibility assignment matrix
- Describe how to define specific activities
- Create a network diagram

Establish Project Objective

- Planning process is based on the project objective
  - Establishes what is to be accomplished
  - Often stated in the project charter or RFP
  - Is the tangible end product
- Project objective includes
  - Expected benefits
  - Primary project end product or deliverable
  - Date required to be completed
  - Budget
- Changes agreed upon by customer and contractor

List examples of project objectives.

Possible responses to Student Discussion

- List examples of project objectives

- To increase emergency room capacity by 20 percent and reduce average patient waiting time by 50 percent through a reconfiguration and process improvement project to be completed in 12 months and within a $400,000 budget.
- To reduce outstanding accounts payable by $20 million by implementing a new billing, collection, and receiving system by May 31 with a budget not to exceed $220,000.
- To raise $40,000 for hunger relief by organizing a community festival for the last weekend in September with a budget of $3,000.
- To double annual sales revenue by creating an online shopping and fulfillment capability by April 30 with a budget not to exceed $40,000.
- To expand market share by 3 percent by introducing a new portable food preparation appliance within 10 months with a budget of $2 million.
- To increase August sales revenue by 10 percent above that of last August by producing and distributing a back-to-school catalog by July 15 with a budget not to exceed $40,000.
- To meet new environmental regulatory requirements by installing a new filtration system within 15 months and a budget of $3.2 million.

Define Project Scope

Project Scope

- Defines what needs done
- Includes
  - Items contained in project charter, RFP, proposal
  - More detail
- Establishes common understanding of scope with stakeholders

Project Scope Document

- Usually contains
  - Customer requirements
  - Statement of Work
  - Deliverables
  - Acceptance Criteria
  - Work Breakdown Structure
- Establishes baseline
- Change control system to avoid scope creep

Why should scope creep be avoided?

Possible responses to Student Discussion

- Why should scope creep be avoided?
  - Informal changes to the project
  - No approvals for changes
  - Additional work that is not documented
  - May cause errors
  - May cause rework
  - Could make the project overtime and over budget

Plan for Quality

- Complete work according to specifications and standards
- Plan for assuring quality as project progresses
- Include
  - References for specifications and standards
  - Written procedures for quality tools and techniques
- Key aspects
  - Monitor as the project progresses
  - Do work right the first time rather than rework

What can be done to change this thinking

It is often said that some people think they never have enough time to do the work right the first time, but then must take the time later to redo it correctly—haste makes waste!

Possible responses to Student Discussion

- It is often said that some people think they never have enough time to do the work right the first time, but then must take the time later to redo it correctly—haste makes waste!

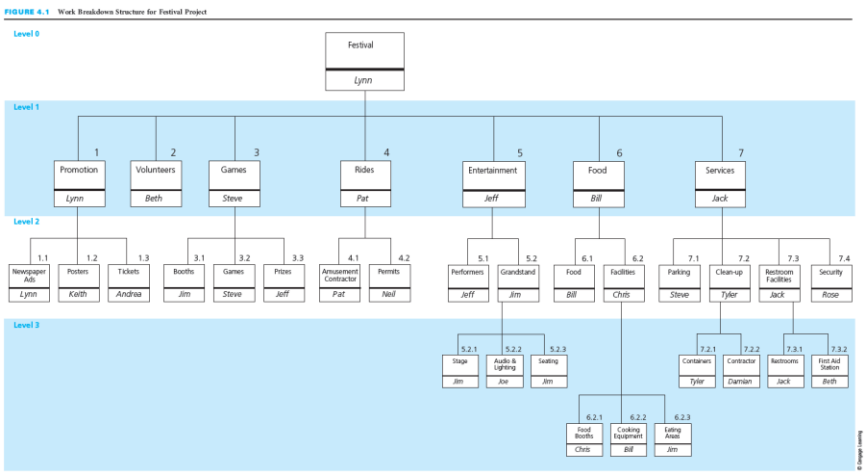
  What can be done to change this thinking?

- Clearly list quality standards
- Have monitors in place to see if the work is meeting quality standards
- Submit sample work to be sure work meets standards
- If it means a higher quality product, determine the effects and costs of a later delivery

Create Work Breakdown Structure

- Deliverable-oriented hierarchical decomposition
- Organize project work and deliverables
- Create logical groupings
- Subdivide into more manageable components
  - Deliverable is output of work package
  - Resource requirements and durations can be assigned
  - Accountability can be assigned
  - Project manager can monitor and control
- Graphic chart or indentured list

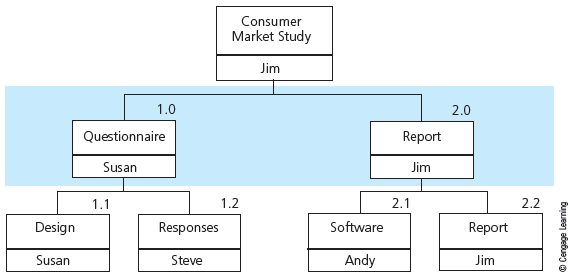
WBS with Breakdown to Different Levels



WBS

- Graphic Chart

FIGURE 4.2 Work Breakdown Structure for Consumer Market Study Project



- Indentured List

FIGURE 4.3 Work Breakdown Indentured List for Consumer Market Study Project

WBS #	DESCRIPTION	RESPONSIBLE	DELIVERABLES
	Consumer Market Study	Jim	
1.0	Questionnaire	Susan	
1.1	Design	Susan	Questionnaire approved
1.2	Responses	Steve	All completed responses received
2.0	Report	Jim	
2.1	Software	Andy	Application software working
2.2	Report	Jim	Final report

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Assign Responsibility

- Responsibility assignment matrix
  - Designate responsible individuals
    - P = Primary responsibility
    - S = Support responsibility
  - Associates responsibility
    - For each work item
    - For each individual
- Only one primary per work item

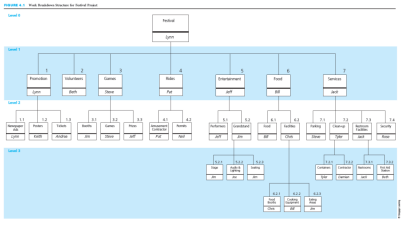


FIGURE 4.4 Responsibility Assignment Matrix for Festival Project

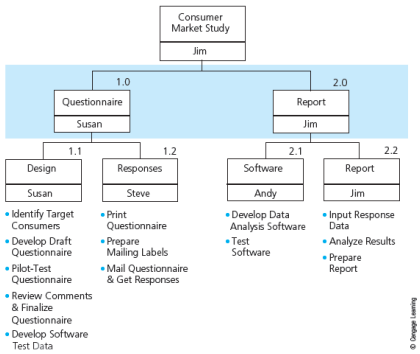
WBS Item	Work Item	Andrea	Beth	Bill	Chris	Damian	Jack	Jeff	Jim	Joe	Keith	Lynn	Neil	Pat	Rose	Steve	Tyler
	Festival		S	S			S	S				P		S		S	
1	**Promotion**	S									S	P					
1.1	Newspaper Ads											P					
1.2	Posters										P						
1.3	Tickets	P	S									S					
2	**Volunteers**		P						S						S		
3	**Games**							S	S							P	
3.1	Booths				S				P	S							
3.2	Games														S	P	
3.3	Prizes							P							S		
4	**Rides**											S	P				
4.1	Amusement Contractor												P				
4.2	Permits											P	S				
5	**Entertainment**							P	S	S							
5.1	Performers				S			P									
5.2	Grandstand								P	S							
5.2.1	Stage								P	S							
5.2.2	Audio & Lighting									P							
5.2.3	Seating				S				P								
6	**Food**		P	S													
6.1	Food		P												S		
6.2	Facilities		S	P					S								
6.2.1	Food Booths			P					S	S							
6.2.2	Cooking Equipment		P														
6.2.3	Eating Areas								P						S		
7	**Services**						P								S	S	S
7.1	Parking															P	
7.2	Clean-up						S										P
7.2.1	Containers																P
7.2.2	Contractor						P										
7.3	Restroom Facilities	S					P										
7.3.1	Restrooms						P										
7.3.2	First Aid Stations	P															
7.4	Security						S		S						P		

KEY: P = Primary responsibility; S = Support responsibility.

Define Activities

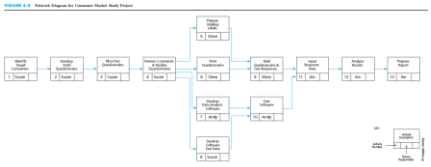
- Responsible resources define activities
  - Breakdown work packages to work items
  - Level needed to perform deliverable
  - May not be able to define all
- Comprehensive activity list
  - Not always require expenditure of effort
  - Could be wait time

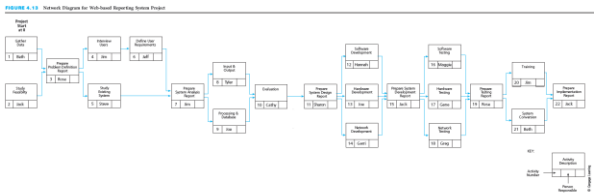
FIGURE 4.5 Work Breakdown Structure for Consumer Market Study Project



Sequence Activities

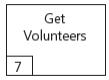
- Network diagram
  - Defines the sequence of activities and relationships
  - Tool for arranging order
- Common techniques
  - PERT
  - CPM
  - PDM

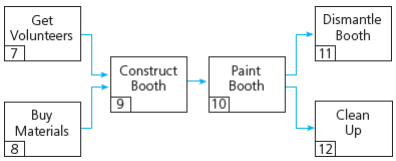




Network Principles

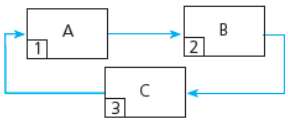
- Activities
  - Represented by a box
  - Consume time
  - Described by verb
- Relationships
  - Linked in serial sequence
  - Complete concurrently





Loops

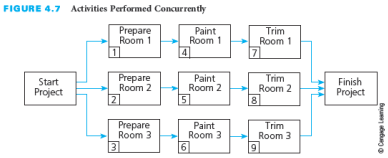
- Illogical relationship among activities
- Perpetually repeats itself
- Not acceptable



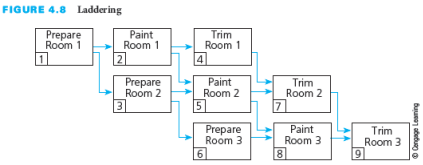
Laddering

- Set of repeating activities
- Serial sequence
  - One work
  - Two wait

- Can be performed at same time
- Would need triple resources



- Ladder activities
- Allow for shortest possible time for completion
- Best use of the three workers and experts



Create Network Diagram

Tips and Techniques

- Logical sequence of activities
- Show dependent relationships
- Elaborate as project progresses
- Use subnetworks for similar activity sequences and relationships

Development of Diagram

- Questions to answer
  - Finish before next start?
  - Done concurrently?
  - Cannot be started next?
- Guidelines for detail level
  - Define each work package
  - Draw summary level network then add detail
  - Detail to responsibility or deliverable change
  - Duration less than project progress review

Planning for Information Systems Development

Definition

- Computer-based system
  - Accepts data as input
  - Processes the data
  - Produces useful information
- Examples
  - Computerized order entry
  - E-commerce
  - Automatic teller machines
  - Billing, payroll, and inventory

Process

- Plan, execute, and control
- Systems Development Life Cycle
  - Problem definition
  - System analysis
  - System design
  - System development
  - System testing
  - System implementation

An IS Example: Internet Applications Development for ABC Office Designs

ABC Office Designs

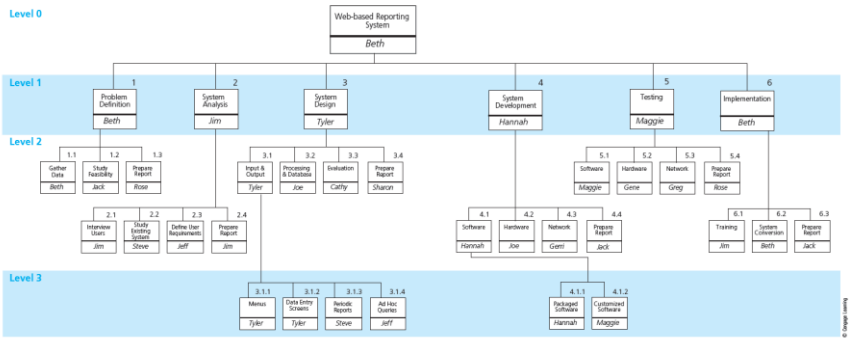
- Large number of sales representatives
- Sell office furniture to major corporations
- State assignments in four regions
- Management monitor state and regional sales
- Build Web-based IS system to track prices, inventory, and competition

Project

- Project manager identified
- WBS follows SDLC
- Responsibility assignment matrix completed
- List of tasks compiled and predecessors identified
- Network diagram created

IS Example: WBS follows SDLC

FIGURE 4.10 Work Breakdown Structure for Web-based Reporting System Project



IS Example: Responsibility Assignment Matrix

FIGURE 4.11 Responsibility Assignment Matrix for Web-based Reporting System Project

WBS Item	Work Item	Beth	Jim	Jack	Rose	Steve	Jeff	Tyler	Cathy	Sharon	Hannah	Joe	Gerri	Maggie	Gene	Greg
	Web-based Reporting System	P	S					S			S			S		
1	**Problem Definition**	P		S	S											
1.1	Gather Data	P	S										S			
1.2	Study Feasibility			P		S	S		S	S						
1.3	Prepare Report	S			P											
2	**System Analysis**		P			S	S									
2.1	Interview Users		P		S						S			S		
2.2	Study Existing System					P										
2.3	Define User Requirements						P									
2.4	Prepare Report		P													
3	**System Design**							P	S	S		S				
3.1	Input & Output					S	S	P								
3.1.1	Menus		S					P								
3.1.2	Data Entry Screens		S					P								
3.1.3	Periodic Reports					P	S						S			
3.1.4	Ad Hoc Queries					S	P						S			
3.2	Processing & Database											P			S	S
3.3	Evaluation	S	S	S					P							
3.4	Prepare Report									P	S					
4	**System Development**			S							P	S	S			
4.1	Software										P	S	S	S		
4.1.1	Packaged Software										P	S	S	S		
4.1.2	Customized Software											S	S	P		
4.2	Hardware							S				P				
4.3	Network												P			
4.4	Prepare Report			P												
5	**Testing**				S									P	S	S
5.1	Software					S	S							P		
5.2	Hardware											S	S		P	
5.3	Network								S		S					P
5.4	Prepare Report				P									S	S	S
6	**Implementation**	P	S	S												
6.1	Training		P								S		S			
6.2	System Conversion	P									S		S			
6.3	Prepare Report	S	S	P												

KEY: P = Primary responsibility; S = Support responsibility.

IS Example: Task List and Predecessors

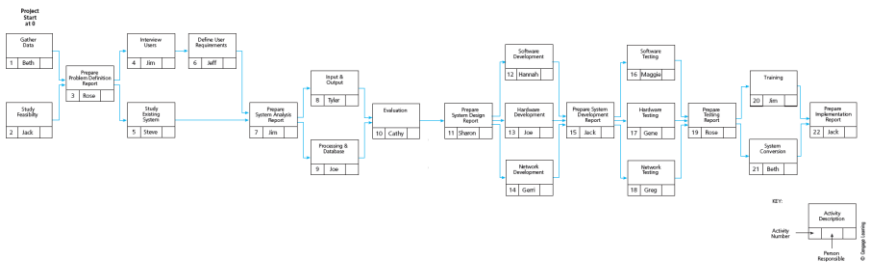
FIGURE 4.12 List of Activities and Immediate Predecessors

Web-based Reporting System Project

Activity	Immediate Predecessors
1. Gather Data	—
2. Study Feasibility	—
3. Prepare Problem Definition Report	1, 2
4. Interview Users	3
5. Study Existing System	3
6. Define User Requirements	4
7. Prepare System Analysis Report	5, 6
8. Input & Output	7
9. Processing & Database	7
10. Evaluation	8, 9
11. Prepare System Design Report	10
12. Software Development	11
13. Hardware Development	11
14. Network Development	11
15. Prepare System Development Report	12, 13, 14
16. Software Testing	15
17. Hardware Testing	15
18. Network Testing	15
19. Prepare Testing Report	16, 17, 18
20. Training	19
21. System Conversion	19
22. Prepare Implementation Report	20, 21

IS Example: Network Diagram

FIGURE 4.13 Network Diagram for Web-based Reporting System Project



Project Management Information Systems

- Wide variety of systems available
- Plan and control projects in interactive mode
- Plan and test different options
- Create reports, diagrams, and charts
- Interface with other software applications
- Appendix A has additional information

Critical Success Factors

- **Plan the work and then work the plan**. It is important to develop a plan before starting to perform the project. Taking the time to develop a well-thought-out plan is critical to the successful accomplishment of any project.
- **Participation builds commitment**. By participating in the planning of the work, individuals will become committed to accomplishing it according to the plan.
- The project must have a **clear objective** of what is to be accomplished. The objective should be defined in terms of end product or deliverable, schedule, and budget, and it must be agreed upon by the customer and the project team that will perform the project.
- The project scope document is valuable for establishing a **common understanding and agreement** among project stakeholders regarding the scope of the project.
- Having a quality plan at the outset of the project is extremely beneficial because it will help prevent incurring additional costs and schedule extensions due to rework caused by work and deliverables that fail to meet **quality requirements and customer expectations**.
- The key to quality control is to **monitor the quality** of the work early and regularly throughout the performance of the project, rather than waiting until all the work is completed before checking or inspecting for quality.
- The **network diagram** is also is a communication tool for the project team because it shows who is responsible for each activity and how each person's work fits into the overall project.

Summary

- The planning process is based on the project objective, which establishes what is to be accomplished.
- The project scope defines what needs to be done.
- The project scope document usually contains the customer requirements, statement of work, deliverables, acceptance criteria, and a work breakdown structure.
- The quality plan must include or reference the specifications, industry or government standards, and codes that must be used and met during the performance of the project work.
- The work breakdown structure establishes the framework for how the work will get done to produce the project deliverables.
- A responsibility assignment matrix defines who will be responsible for the work.
- Activities define more specifically how the work will get done.
- A network diagram defines the sequence of how and when the activities will be performed.
- Project planning is a critical activity in developing an information system (IS).
- A project management planning tool or methodology, called the systems development life cycle (SDLC), is often used to help plan, execute, and control IS development projects.
- Numerous project management information systems are available to help project managers plan, track, and control projects in a completely interactive way.