COURSE TECHNOLOGY
CENGAGE Learning

Concepts in Enterprise Resource Planning

Fourth Edition

Chapter Seven

Process Modeling, Process Improvement, and ERP Implementation

Objectives

After completing this chapter, you will be able to:

- Use basic flowcharting techniques to map a business process
- Develop an event process chain (EPC) diagram of a basic business process
- Evaluate the value added by each step in a business process

Objectives (cont'd.)

- Develop process improvement suggestions
- Discuss the key issues in managing an ERP implementation project
- Describe some of the key tools used in managing an ERP implementation project

Introduction

- Tools that can be used to describe business processes
  - Flowcharts, event process chains
  - Not specific to ERP
  - Can help managers identify process elements that can be improved
- Role of process-modeling tools in ERP implementation projects

Process Modeling

- Business processes can be quite complex
- **Process model**: any abstract representation of a process
- Process-modeling tools provide a way to describe a business process so that all participants can understand the process

Process Modeling (cont'd.)

- Advantages of process models
  - Graphical representations are usually easier to understand than written descriptions
  - Provide a good starting point for analyzing a process
    - Participants can design and implement improvements
  - Document the business process
    - Easier to train employees to support the business process

Flowcharting Process Models

- **Flowchart**
  - Any graphical representation of the movement or flow of concrete or abstract items
  - Clear, graphical representation of a process from beginning to end
  - Uses a standardized set of symbols
- **Process mapping**
  - Often used interchangeably with flowcharting
  - Specifically refers to activities occurring within an *existing* business process

Flowcharting Process Models (cont'd.)

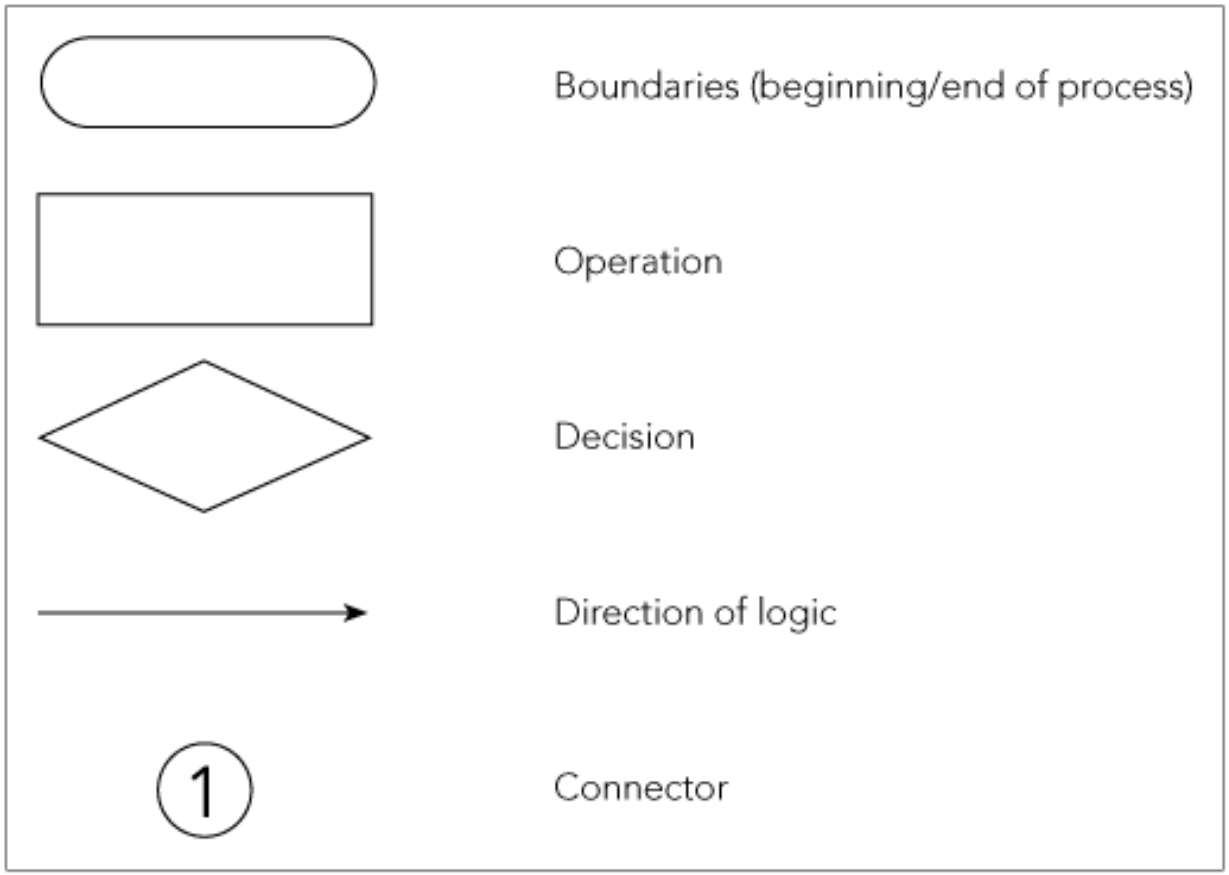
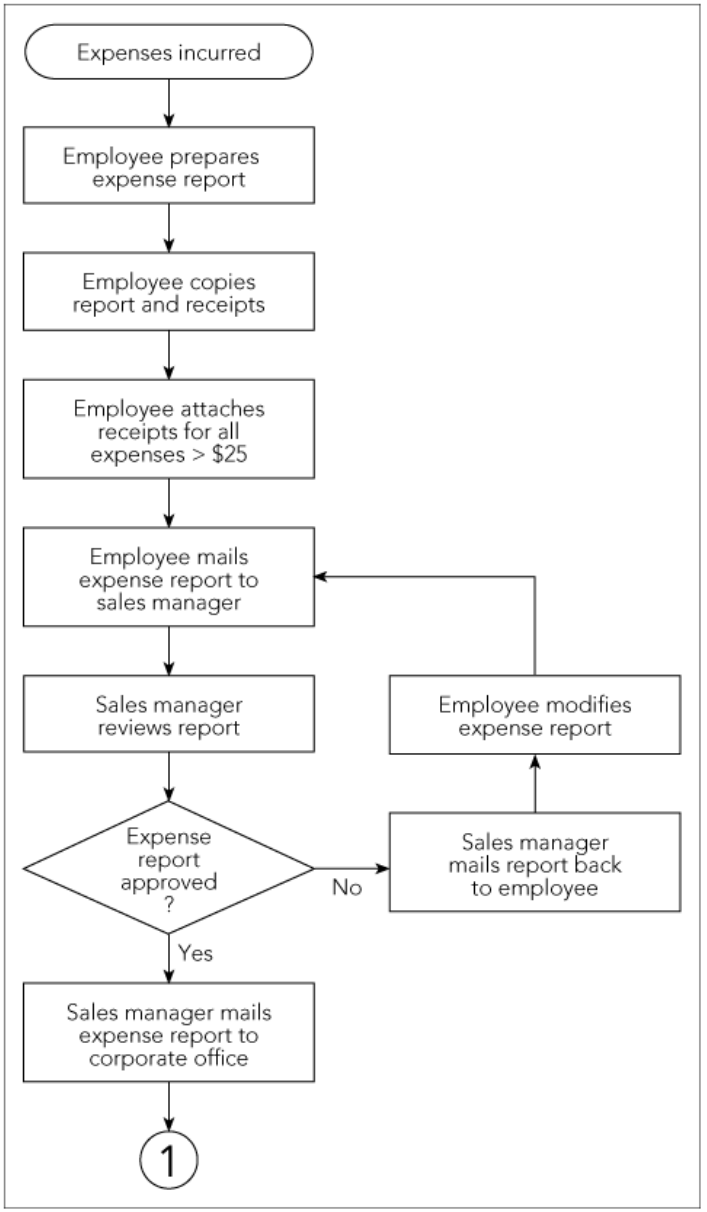


Figure 7-1 Basic flowcharting symbols

Fitter Snacker Expense Report Process

- Maria, Fitter Snacker salesperson
  - Completes a paper expense report after travel
  - Makes a copy for her records
  - Attaches receipts for any expenses over $25
  - Mails it to her zone manager at the branch office
- Kevin, zone manager
  - Reviews expense report
  - Approves report or mails it back to Maria asking for explanation, verification, or modification
  - After approval, mails it to corporate office

Figure 7-2 Partial process map for Fitter Snacker expense-reporting process



Fitter Snacker Expense Report Process (cont'd.)

- Process at corporate office
  - Accounts payable (A/P) clerk
- **Process boundaries** define:
  - Which activities are to be included in the process
  - Which activities are considered part of environment—external to process
- All processes should have only one beginning point and one ending point
- Decision diamond asks a question that can be answered with "yes" or "no"

Extensions of Process Mapping

- **Hierarchical modeling**: ability to flexibly describe a business process in greater or less detail, depending on the task at hand
- Modeling software that supports hierarchical modeling
  - Provides user the flexibility to move easily from higher-level, less detailed views to the lower-level, more detailed views

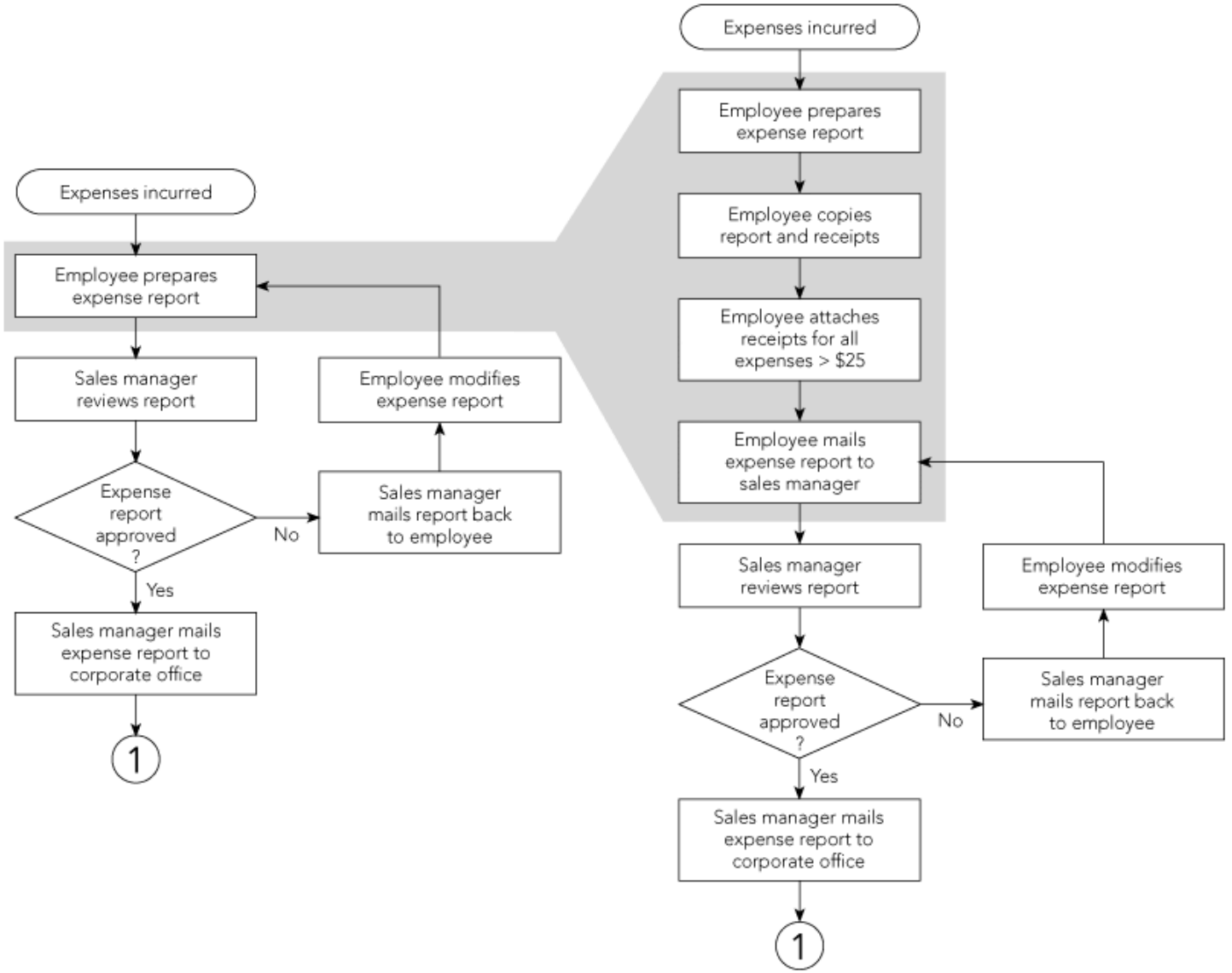


Figure 7-3 Hierarchical modeling of Fitter's expense-reporting process

Extensions of Process Mapping (cont'd.)

- **Deployment flowcharting**
  - **Swimlane flowchart**
  - Depicts team members across the top
  - Each step is aligned vertically under the appropriate employee or team
  - Clearly identifies each person's tasks in the process

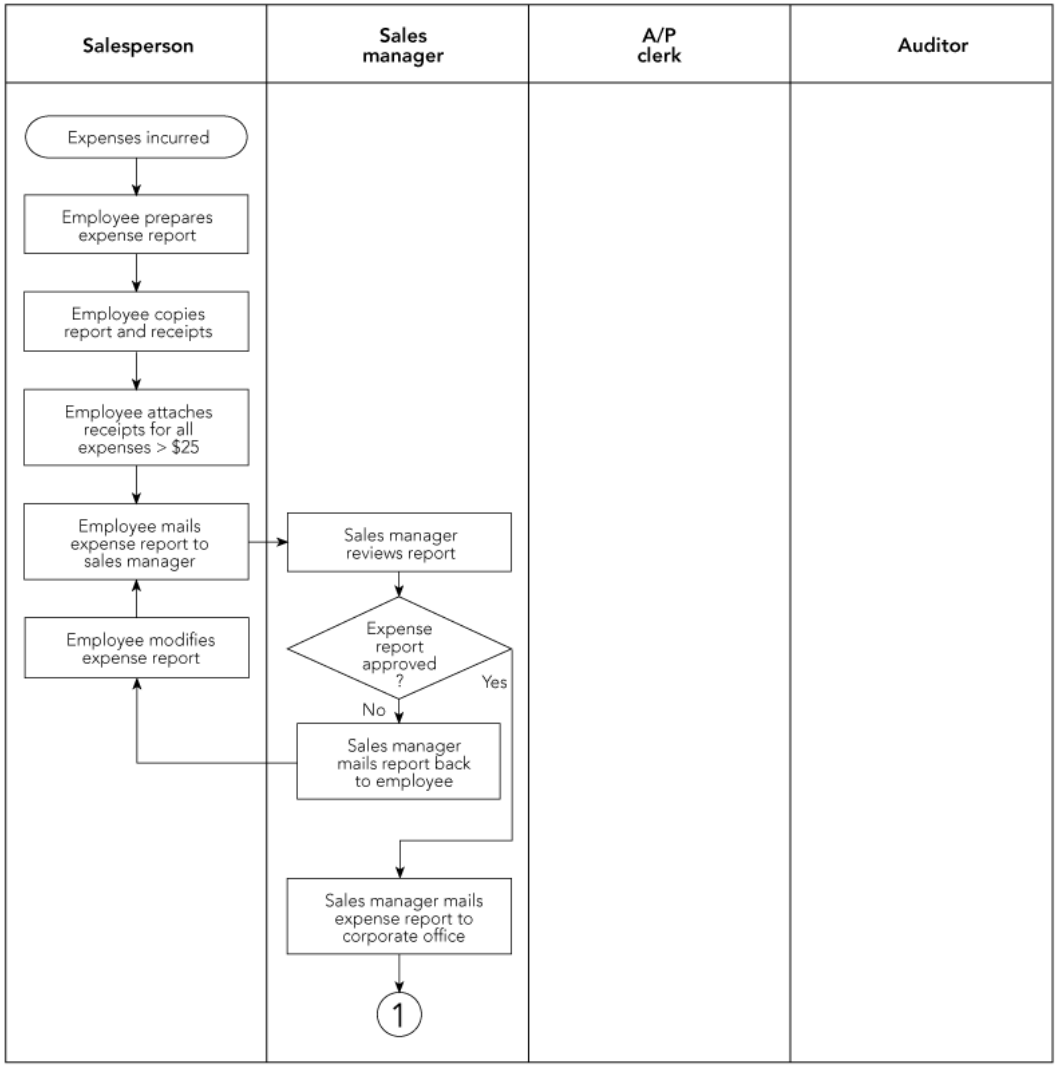


Figure 7-4 Deployment, or swimlane, flowcharting of the Fitter's expense report process

Event Process Chain (EPC) Diagrams

- **Event process chain (EPC)** format
  - Uses only two symbols to represent a business process
  - Matches the logic and structure of SAP's ERP software design
  - Two structures: events and functions
    - Events: a state or status in the process
    - Functions: part of the process where change occurs

Event Process Chain (EPC) Diagrams (cont'd.)

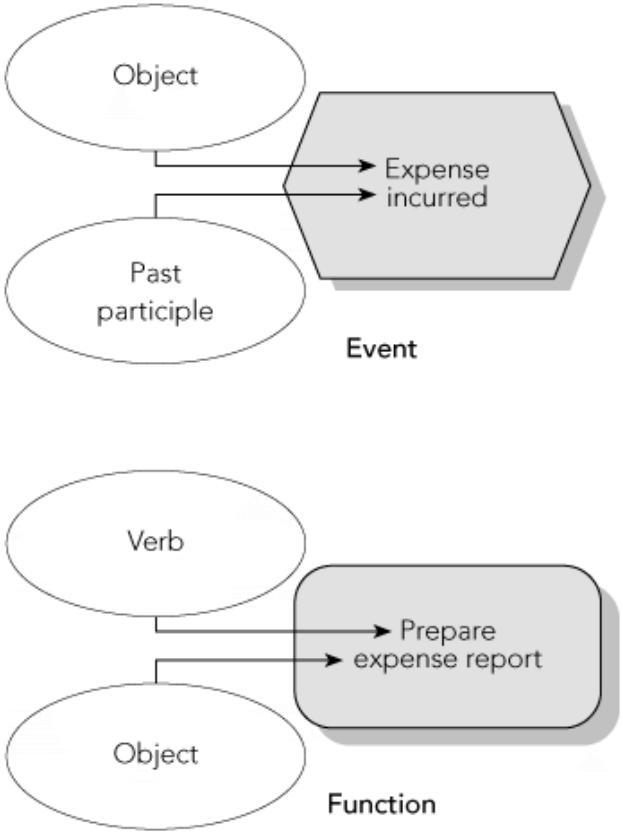


Figure 7-5 EPC components

Event Process Chain (EPC) Diagrams (cont'd.)

- EPC software
  - Enforces an event-function-event structure
  - Standardized naming convention for functions and events
- Three types of branching connectors
  - AND
  - OR
  - Exclusive OR (XOR)
- Basic EPC diagram can be augmented with additional information

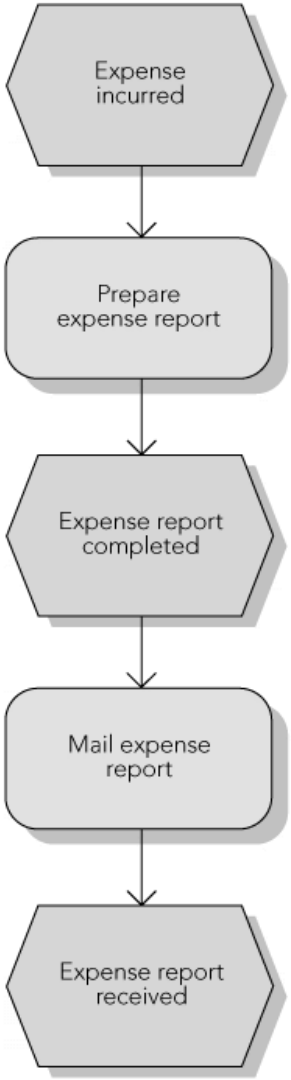


Figure 7-6 Basic EPC layout

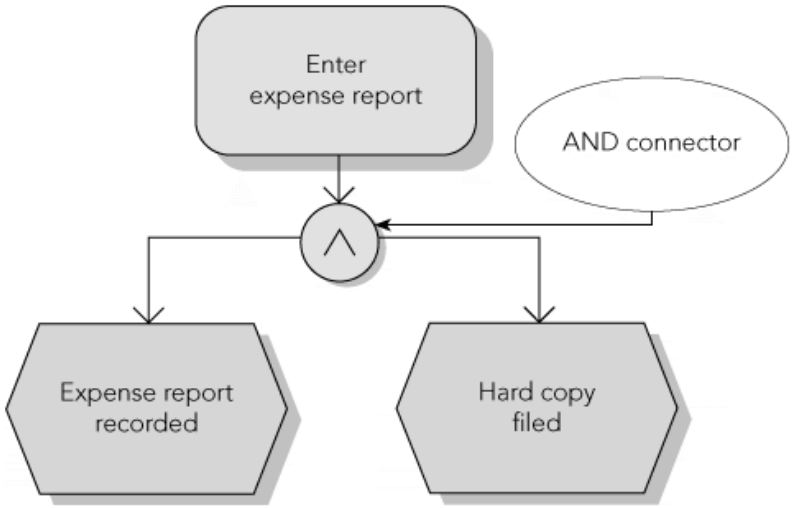


Figure 7-7 AND connector

Event Process Chain (EPC) Diagrams (cont'd.)

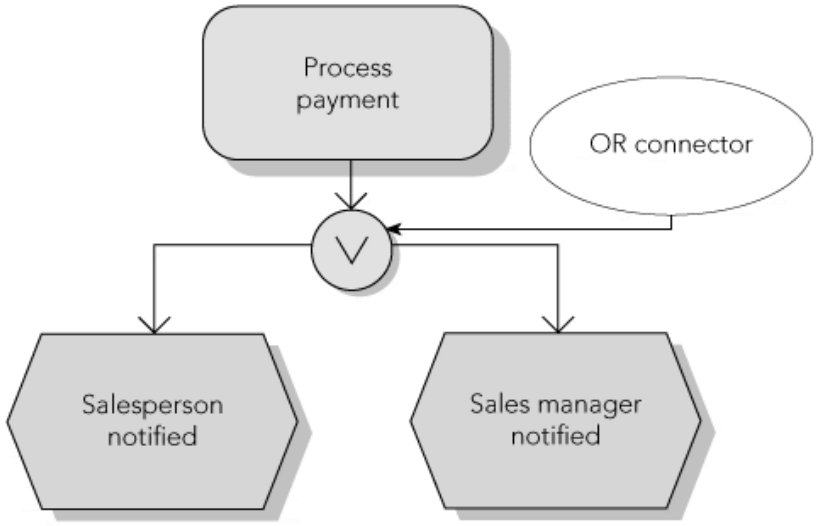


Figure 7-8 OR connector

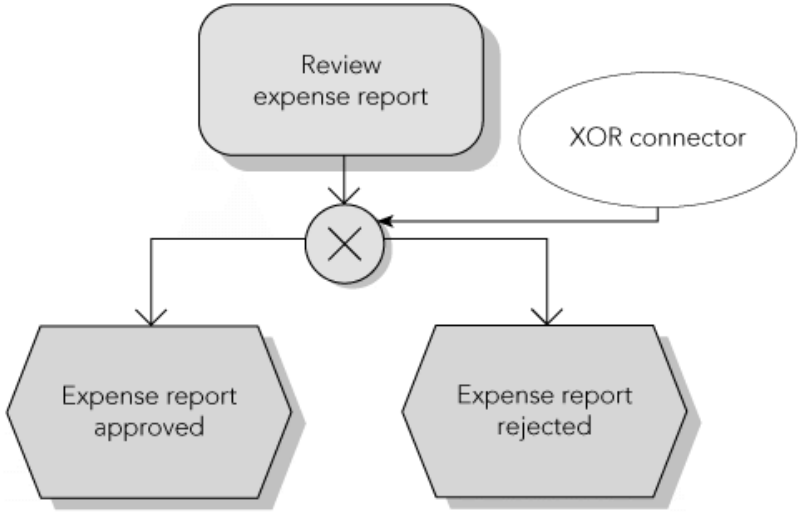


Figure 7-9 XOR connector

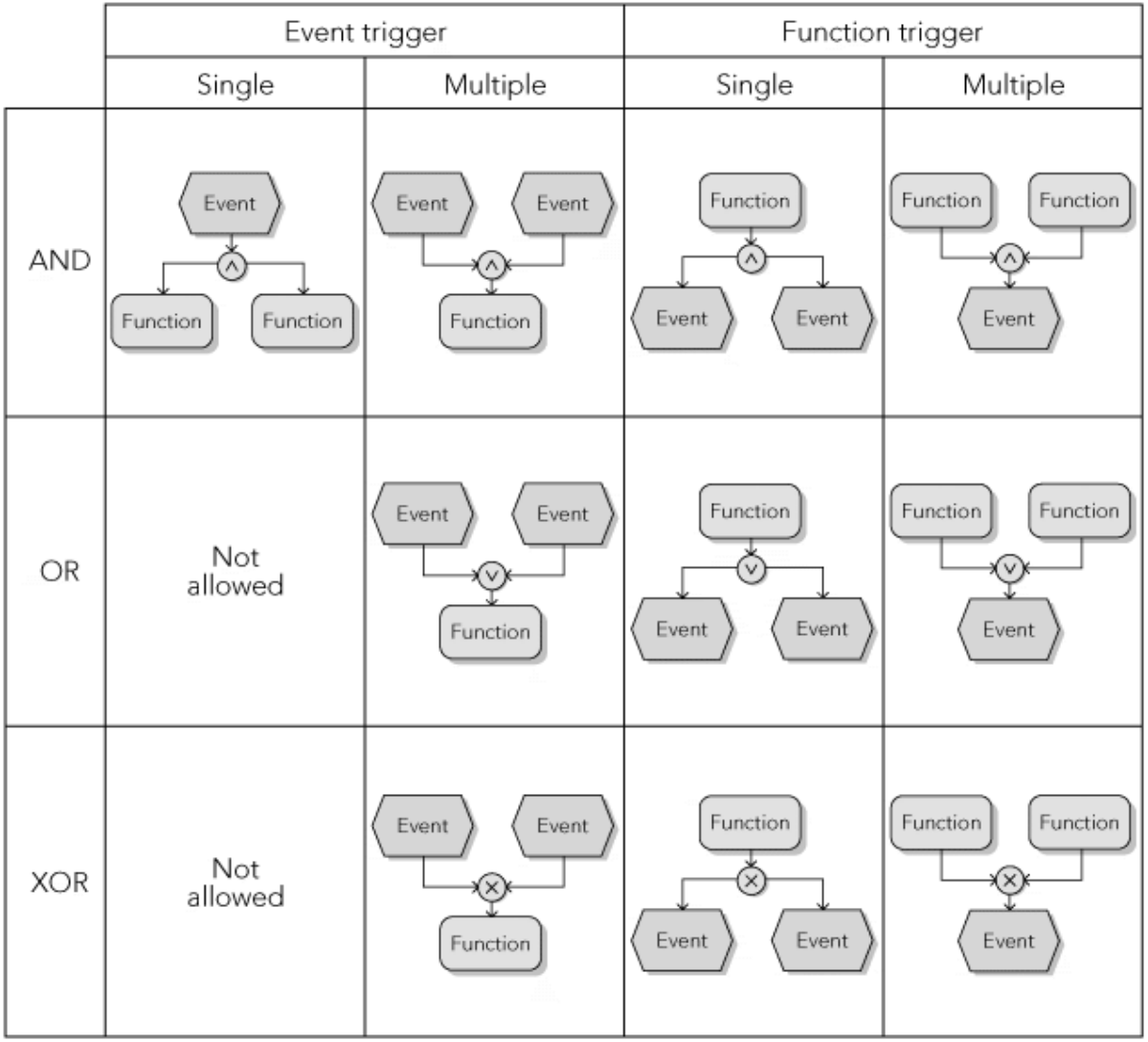


Figure 7-11 Possible connector and triggering combinations

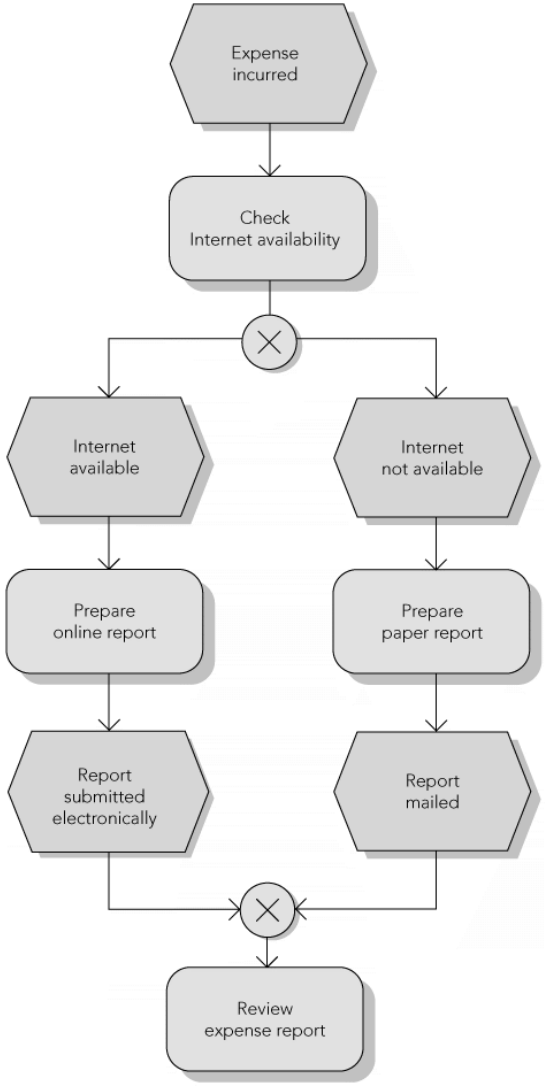


Figure 7-12 Splitting and consolidating paths

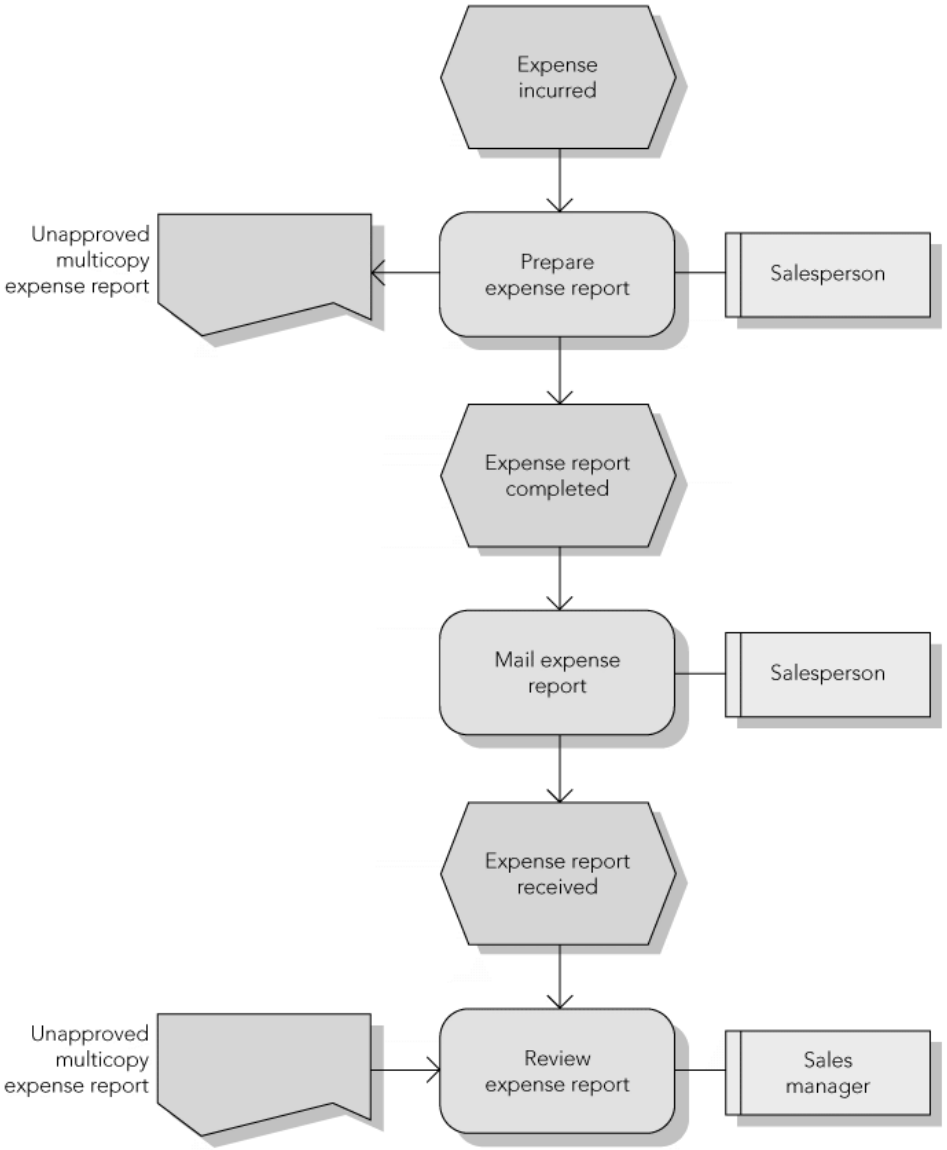


Figure 7-13 EPC diagram with organizational and data elements

Process Improvement

- **Value analysis**
  - Each activity in the process is analyzed for the value it adds to the product or service
  - **Value added** is determined from the perspective of customer
  - *Real value*: value for which the customer is willing to pay
  - *Business value*: value that helps the company run its business
  - *No value*: an activity that should be eliminated

Evaluating Process Improvement

- Disrupting the current process to make changes can be costly and time consuming
- **Dynamic process modeling** takes a basic process flowchart and puts it into motion
  - Uses computer simulation techniques to facilitate the evaluation of proposed process changes
- Computer simulation
  - Uses repeated generation of random variables that interact with a logical model of the process
  - Predict performance of the actual system

ERP Workflow Tools

- **Workflow** tools
  - Software programs that automate the execution of business processes and address all aspects of a process, including:
    - Process flow (logical steps in the business process)
    - People involved (the organization)
    - Effects (the process information)
- ERP software provides a workflow management system
  - Supports and speeds up business processes

ERP Workflow Tools (cont'd.)

- **Workflow tasks**: links that can include basic information, notes, documents, and direct links to business transactions
- SAP system can:
  - Monitor workflow tasks
  - Automatically take various actions if the tasks are not completed on time

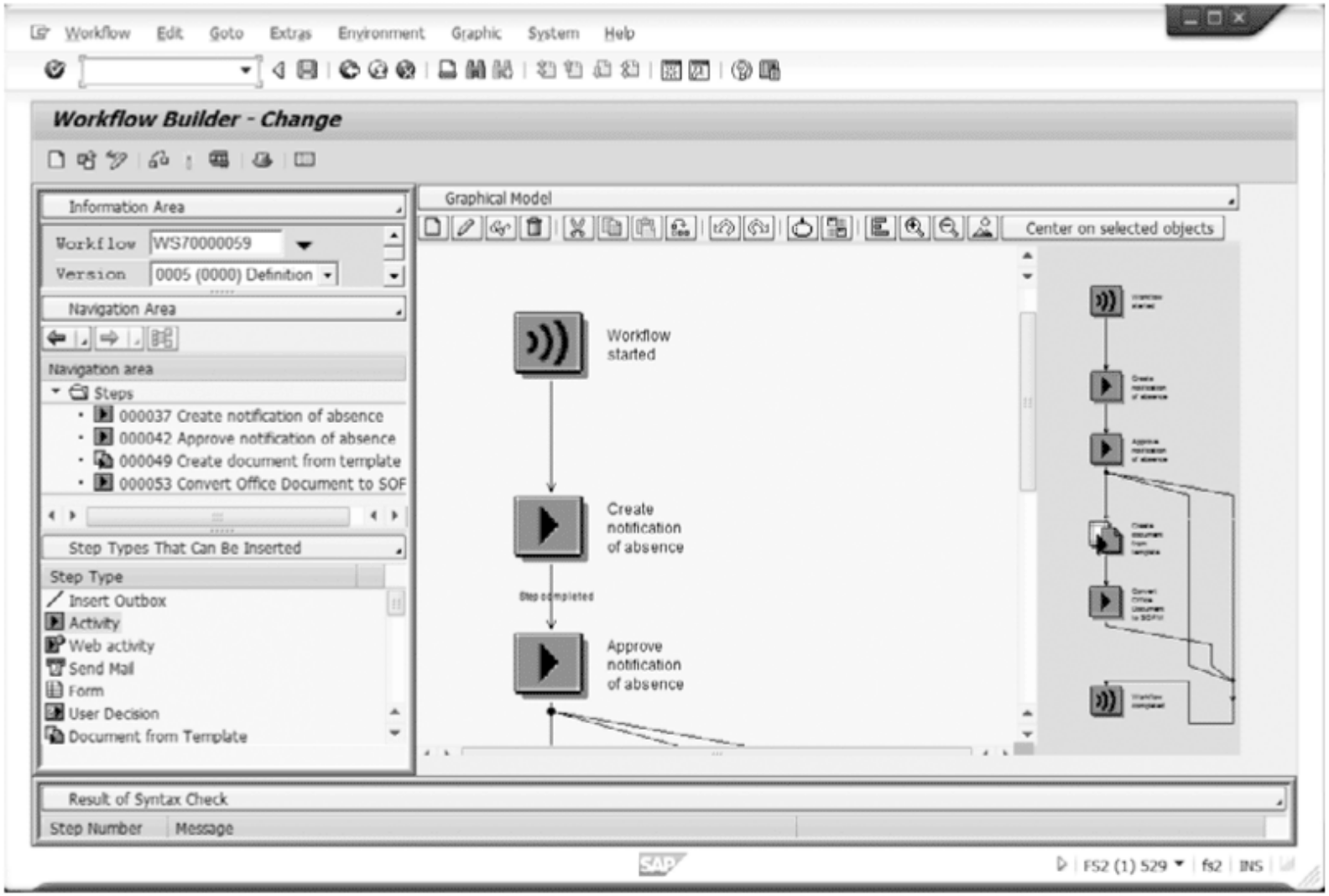


Figure 7-14 SAP ERP Workflow Builder screen

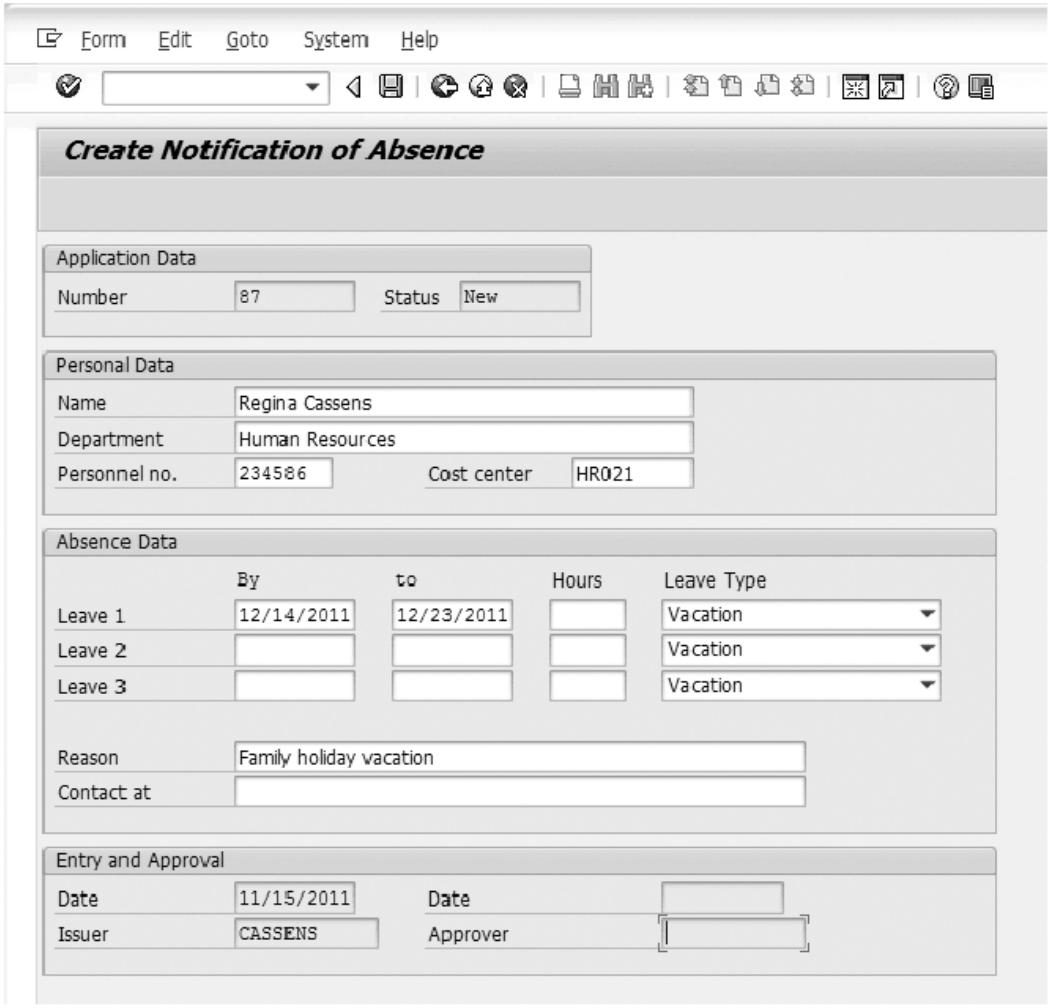


Figure 7-15 Create notification of absence screen

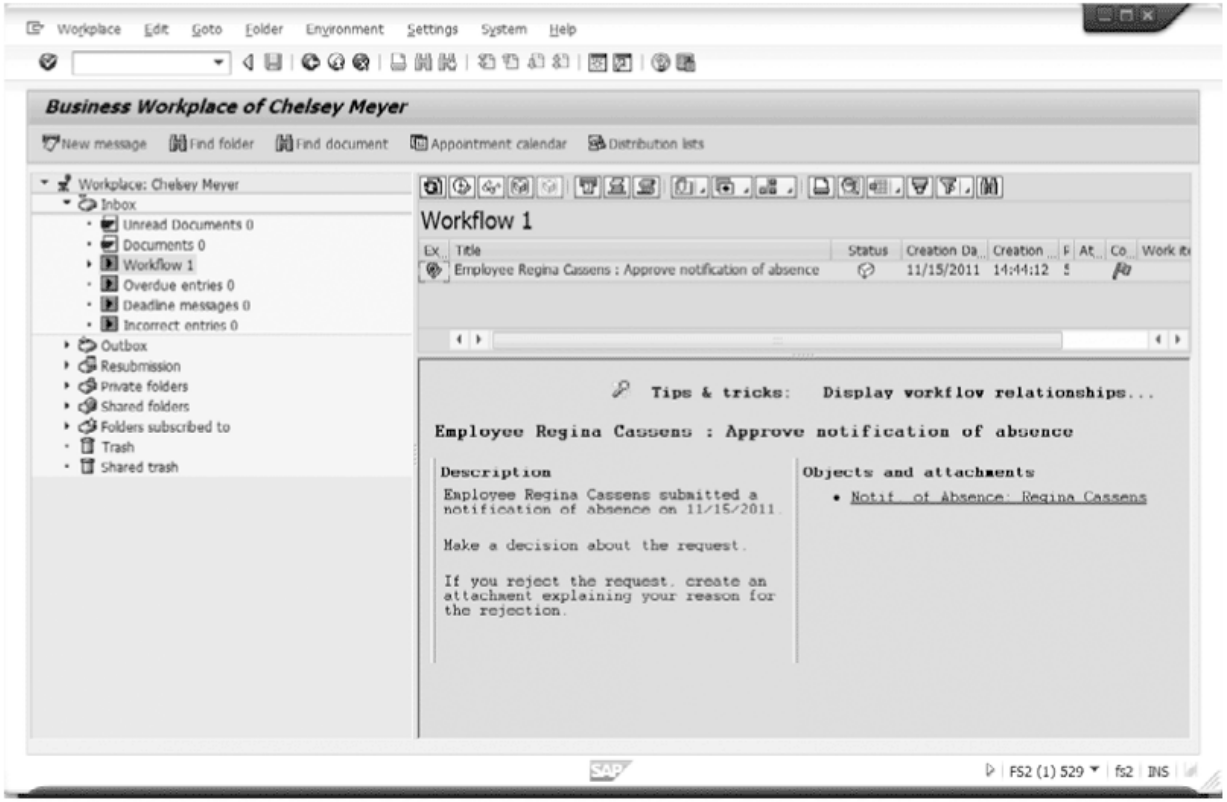


Figure 7-16 Manager's Business Workplace with workflow task

ERP Workflow Tools (cont'd.)

- Workflow provides a number of useful features
  - Employees can track progress of workflow tasks
  - System can be programmed to send reminders to employee(s) responsible for a task
  - For sporadic processes, workflow tools are a powerful way to improve process efficiency and effectiveness

Implementing ERP Systems

- Late 1990s: many firms rushed to implement ERP systems to avoid the Y2K problem
- Since 2000: pace of implementations has slowed considerably
  - Most Fortune 500 firms have implemented an ERP system
  - Current growth is in the small to midsized business market
- Implementation of ERP is an ongoing process

ERP System Costs and Benefits

- ERP implementation is expensive
  - Usually ranging between $10 million and $500 million, depending on company size
- Costs of ERP implementation
  - Software licensing fees
  - Consulting fees
  - Project team member time
  - Employee training
  - Productivity losses

ERP System Costs and Benefits (cont'd.)

- Companies must identify a significant financial benefit that will be generated by ERP system
- Only way companies can save money with ERP systems is by using them to support more efficient and effective business processes
- Companies must manage transfer of data from old computer systems to new ERP system

Implementation and Change Management

- Key challenge is not in managing technology, but in managing people
- ERP system changes how people work
  - To be effective, change may have to be dramatic
  - Business processes that are more effective require fewer people
  - Some employees may be eliminated from their current jobs

Implementation and Change Management (cont'd.)

- **Organizational change management (OCM)**: managing the human behavior aspects of organizational change
- People do not mind change, they mind *being* changed
- If ERP implementation is a project that is being forced on employees, they will resist it
- When employees have contributed to a process change, they have a sense of ownership and will likely support the change

Implementation Tools

- Many tools are available to help manage implementation projects
  - Example: process mapping
- SAP provides Solution Manager tool
  - Helps companies manage implementation of SAP ERP

Implementation Tools (cont'd.)

- In Solution Manager, ERP implementation project is presented in a five-phase Implementation Roadmap:
  - Project Preparation (15 to 20 days)
  - Business Blueprint (25 to 40 days)
  - Realization (55 to 80 days)
  - Final Preparation (35 to 55 days)
  - Go Live and Support (20 to 24 days)

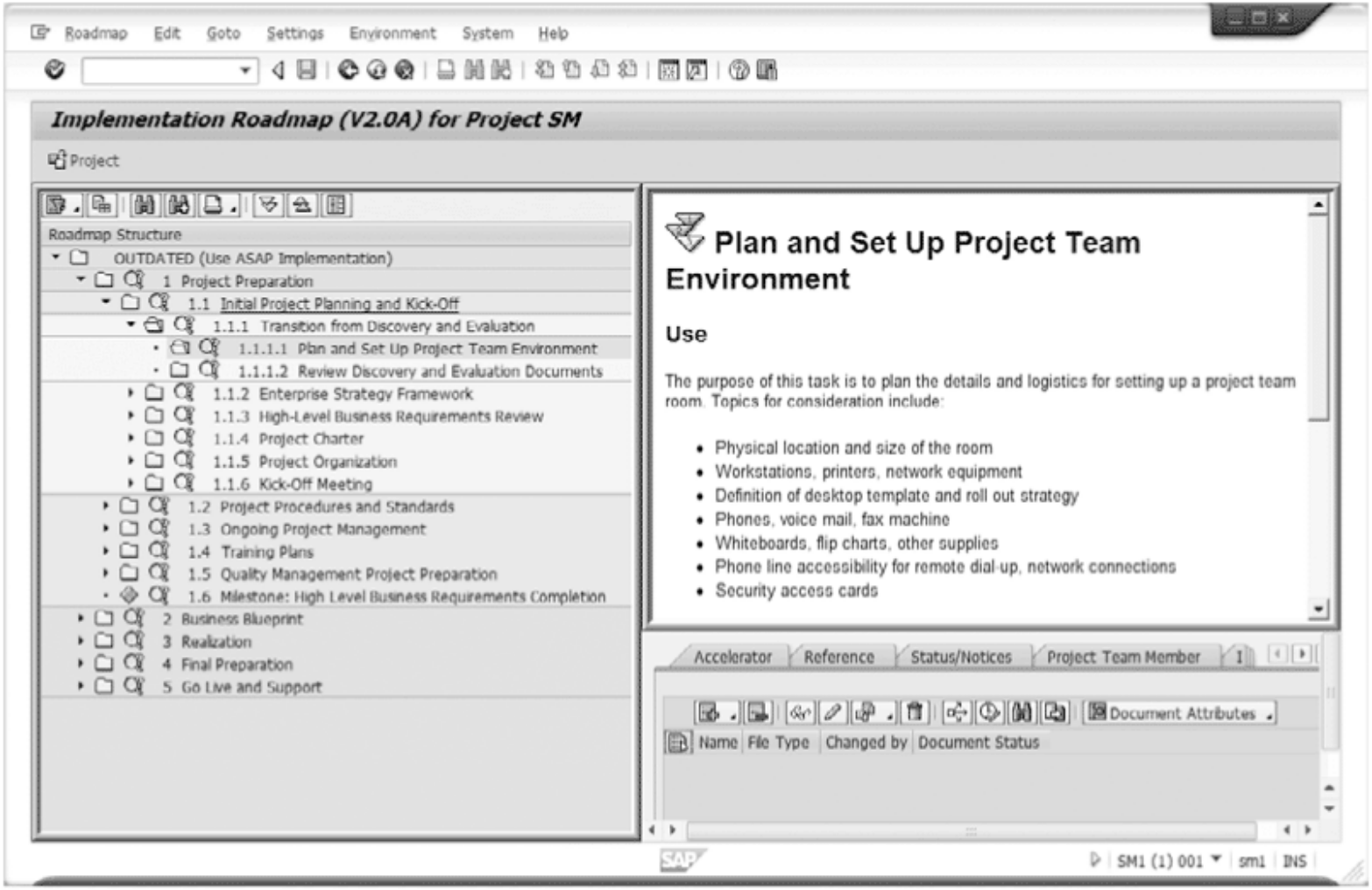


Figure 7-17 Implementation Roadmap in Solution Manager

Implementation Tools (cont'd.)

- Project Preparation
  - Organizing technical team
  - Defining system landscape
  - Selecting hardware and database vendors
  - Defining project's scope
    - Scope creep
- Business Blueprint
  - Produces detailed documentation of business process requirements of the company

Implementation Tools (cont'd.)

- Realization
  - Project team members work with consultants to configure the ERP software in development system
- Final Preparation
  - Testing the system throughput for critical business processes
  - Setting up help desk for end-users
  - Setting up operation of the Production (PROD) system and transferring data from legacy systems
  - Conducting end-user training
  - Setting Go Live date

Implementation Tools (cont'd.)

- Go Live and Support
  - Company begins using new ERP system
  - Monitoring of system is critical so that changes can be made quickly if performance of the system is not satisfactory
  - Important to set a date at which the project will be complete

System Landscape Concept

- SAP recommends a system landscape for implementation
  - Three completely separate SAP systems:
    - **Development (DEV)**
    - **Quality Assurance (QAS)**
    - **Production (PROD)**
  - **Transport directory**: special data file location on DEV server

System Landscape Concept (cont'd.)

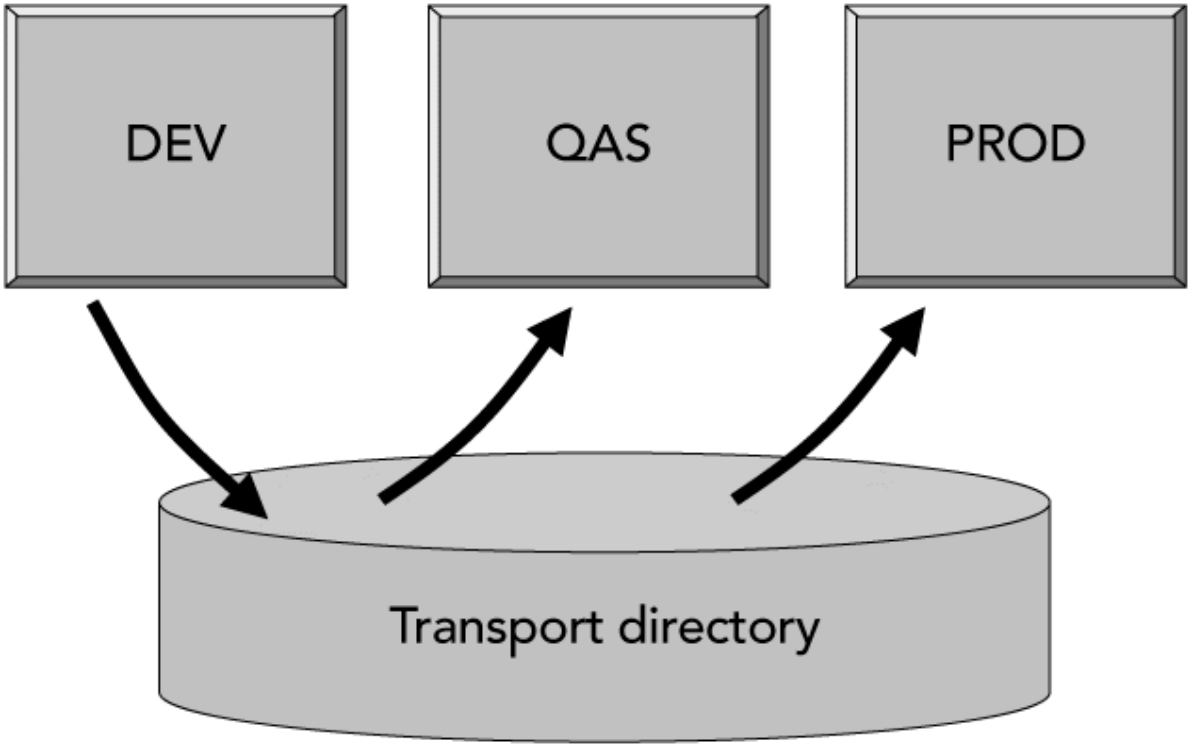


Figure 7-18 System landscape for SAP ERP implementation

System Landscape Concept (cont'd.)

- Development (DEV) system used to develop configuration settings and special enhancements using ABAP code
- Changes recorded in transport directory
- Changes imported into QAS system
- QAS system: changes are tested
- All settings, programs, and changes that pass testing are transported to PROD system
- PROD system: used by company to run its business processes

Summary

- Business processes
  - ERP systems are designed to provide the information, analysis tools, and communication abilities to support efficient and effective business processes
  - Process modeling: fundamental tool in understanding and analyzing business processes

Summary (cont'd.)

- Process mapping: process-modeling tool that uses graphical symbols to document business processes
  - Other methodologies: hierarchical modeling, deployment flowcharting, event process chain diagramming, value analysis, and business process improvement
  - SAP's Solution Manager: set of tools and information that can be used to guide an implementation project
    - Included in SAP ERP to help manage the implementation of ERP software

Summary (cont'd.)

- SAP's system landscape was introduced to show how changes to ERP system during implementation (and beyond) are managed
- Most challenges to ERP implementation involve managing personnel and their reactions to the change, rather than managing technical issues