

Process Modeling and Process Improvement

Process Modeling

- Business processes are complex, and require people with various skills and abilities to work in a cooperative fashion
- Processes will not be efficient and effective unless:
 - They are clearly defined
 - Individuals are adequately trained in their roles
 - Individuals understand how their roles fit in the overall process
- Process Modeling tools like flowcharting or process mapping provide a way to describe business processes so that everyone involved in the process can understand the process

Flowcharting process models

- Flowcharts are the simplest process models
- Originated with computer programmers and mathematicians
- A flowchart is a clear, graphical representation of a process from beginning to end
- Flowcharts have been applied to business processes since the 1960s
- Process mapping is flowcharting applied specifically to an *existing* business process
- A range of symbols can be used, but only 5 graphical elements are needed to map a process

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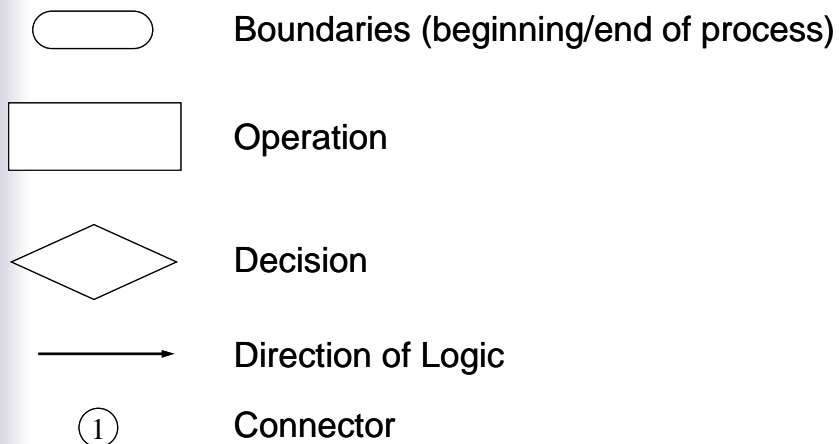


Figure 7.1 Basic flowcharting symbols

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Fitter Snacker Expense Report Process

- Defining the process boundaries is important to make the process mapping task manageable and to make sure the efforts are properly focused
- For the Fitter Snacker expense report process under consideration, the process begins after all expenses are incurred and ends when the employee receives a refund
- The process does not include:
 - Cash advances or corporate credit card considerations
 - Reservation process
 - Preferred airlines or hotels
 - Rental car policies (type, insurance, fuel)

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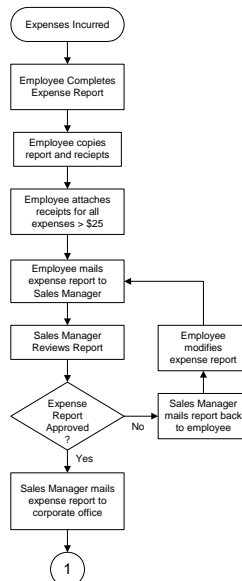


Figure 7.2 Partial process map for Fitter Snacker expense reporting process

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Extensions of Process Mapping

- Hierarchical Modeling is a process of describing processes in greater or lesser detail
 - With complicated processes, it is frequently desirable to start with a general description of the process, then define different steps in more detail
- Deployment flowcharting or swimlane flowcharts are useful in clearly displaying the people or organizations responsible for tasks in the process

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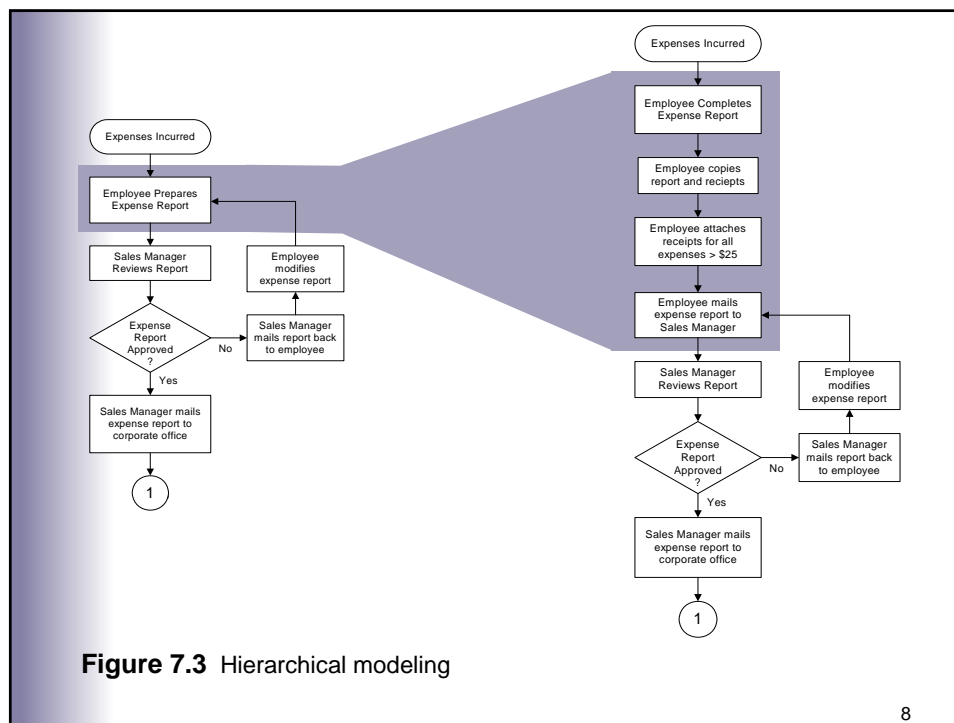


Figure 7.3 Hierarchical modeling

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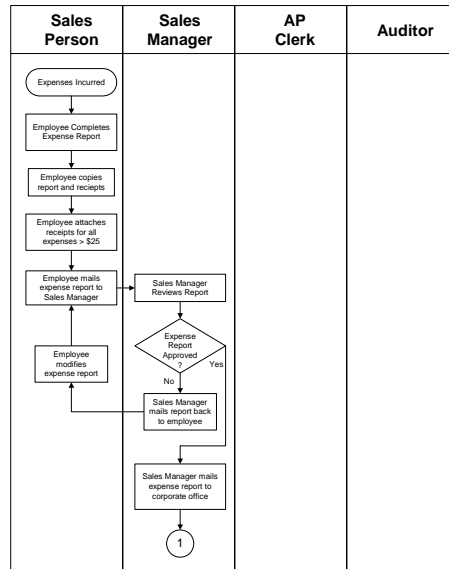


Figure 7.4 Deployment or swimlane flowcharting

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Event Process Chain (EPC) Diagrams

- The EPC format uses only two symbols
 - Events
 - Functions
- SAP has developed EPC representations for many of the business processes its software supports

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Event Process Chain (EPC) Diagrams

- Events represent a state or status in the process
 - Events are named using Object→Past Participle

Object	Past Participle
Expense	Incurred
Expense report	Approved
Hard copy	Filed

- Functions represent where change occurs in the process
 - Functions are named using Verb→Object

Verb	Object
Prepare	Expense report
Review	Expense report
Mail	Refund check

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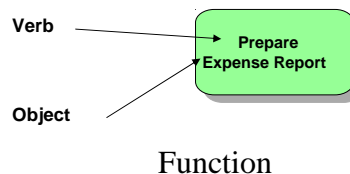
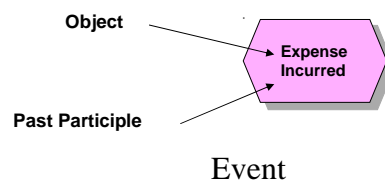


Figure 7.5 EPC components

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Event Process Chain (EPC) Diagrams

- EPC Diagrams follow an event-function-event structure
 - EPC Diagrams must begin and end with events
- Branching is done with three types of connectors:
 - AND
 - OR
 - XOR (exclusive OR)

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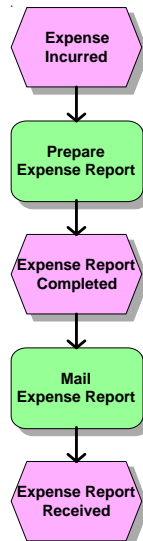


Figure 7.6 Basic EPC layout

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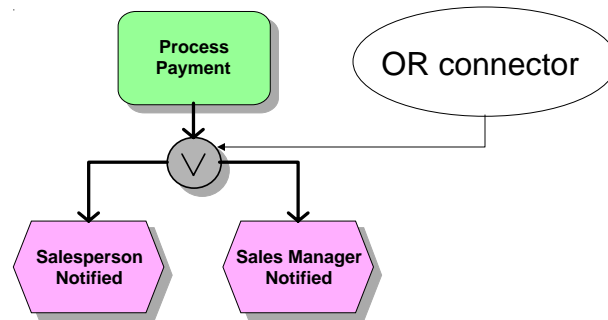


Figure 7.7 OR connector

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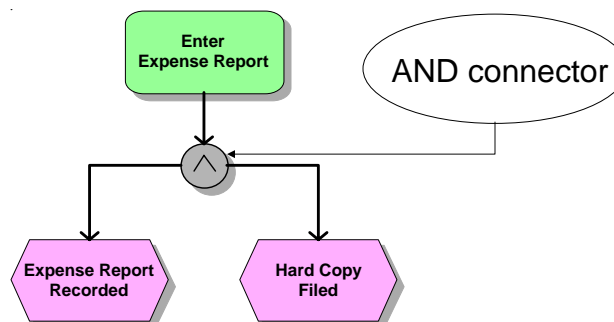
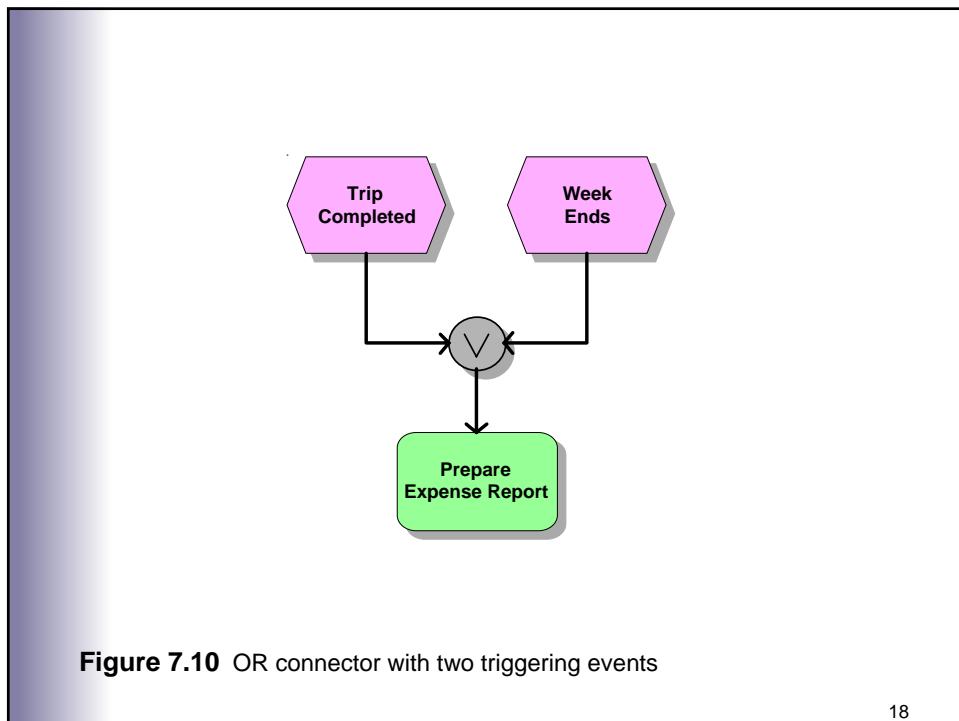
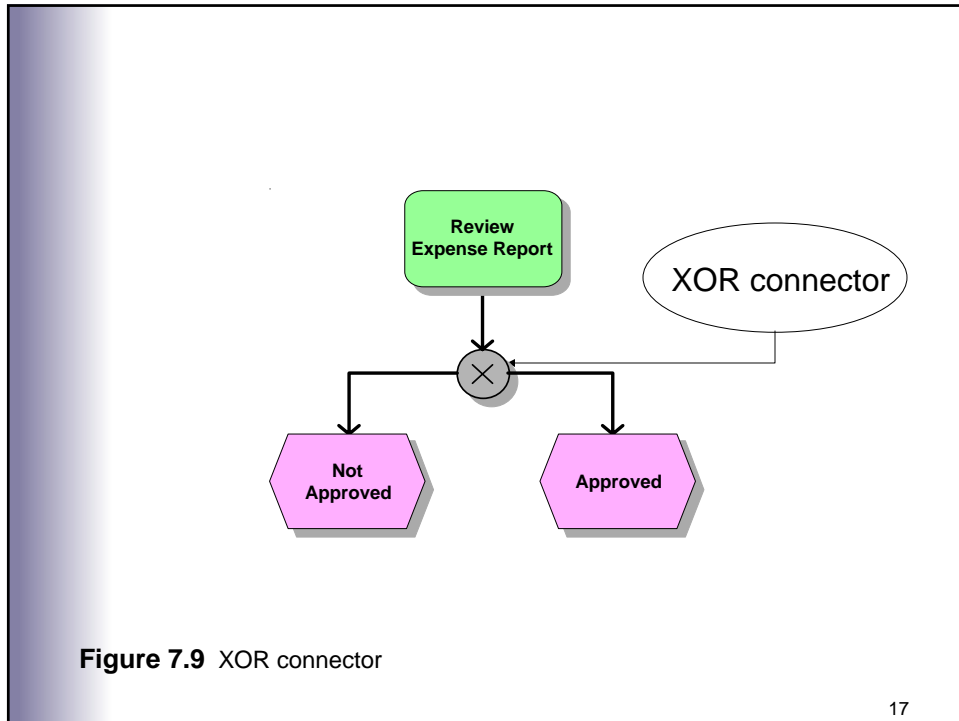


Figure 7.8 AND connector

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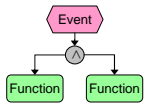
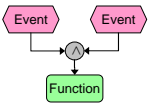
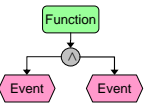
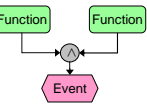
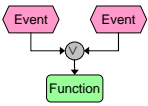
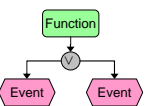
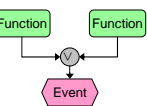
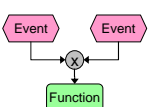
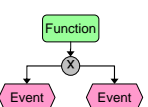
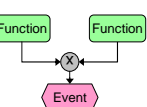
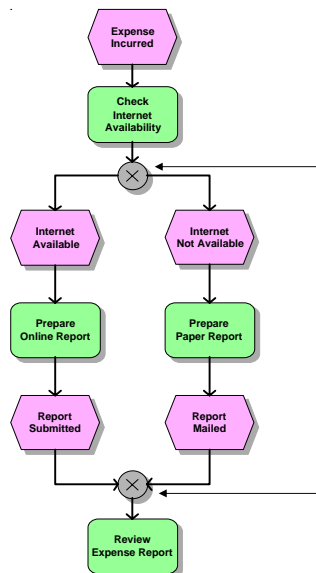
	Event Trigger		Function Trigger	
	Single	Multiple	Single	Multiple
AND				
OR	Not Allowed			
XOR	Not Allowed			

Figure 7.11 Possible connector and triggering combinations

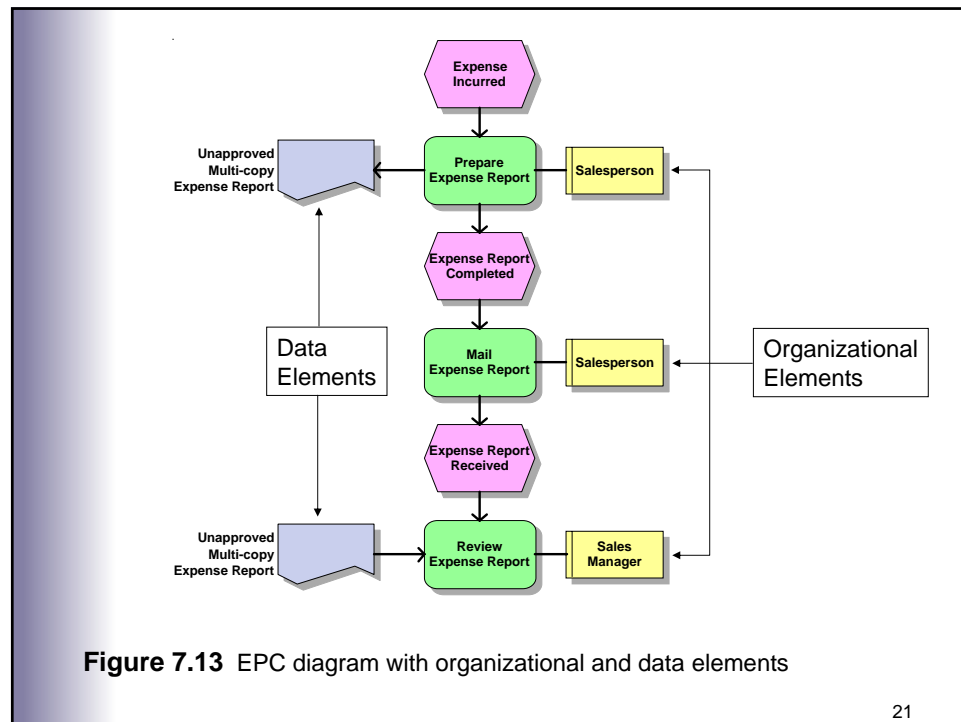
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Must use same connector to split and consolidate a path

Figure 7.12 Splitting and consolidating process paths

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Process Improvement

- Process mapping tools describe processes in a universally understood format
- Task of completing a process map requires a team of key personnel and frequently uncovers process improvement opportunities
- Value Analysis is a technique that evaluates the value added by each activity in the process
- Activities can added:
 - Real value: something the customer will pay for
 - Business value: helps the company run its business
 - No value: an activity that should be eliminated

Process Improvement

- The Fitter Snacker expense report process does not provide real value, because customers would not pay for this activity if given a choice
- The process does provide business value, as employees should be compensated fairly for their expenses and fraud should be avoided
 - Costs for this process should be minimized
- Activities should be evaluated by cost and elapsed time

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Questions to Identify Areas for Improvement*

- Are there unnecessary checks and balances?
- Does the activity inspect or approve someone else's work?
- Does it require more than one signature?
- Are multiple copies required?
- Are copies stored for no apparent reason?
- Are copies sent to people who do not need the information?
- Is there unnecessary written correspondence?

*H. James Harrington, *Business Process Improvement*

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Questions to Identify Areas for Improvement*

- Are there people or agencies involved that impede the effectiveness and efficiency of the process?
- Do existing organizational procedures regularly impede the efficient, effective and timely performance of duties?
- Is someone approving something they already approved (for example, approving capital expenditures that were approved as part of a budget)?
- Is the same information being collected at more than one time or location? Are duplicate databases being maintained?

*H. James Harrington, *Business Process Improvement*

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Concepts to Improve Business Processes*

- Perform activities in parallel, for example, approvals
- Change the sequence of activities
- Reduce interruptions
- Avoid duplication or fragmentation of tasks
- Avoid complex flows and bottlenecks
- Combine similar activities
- Reduce the amount of handling
- Eliminate unused data
- Eliminate copies

*H. James Harrington, *Business Process Improvement*

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Evaluating Process Improvement

- Implementing process changes can be:
 - Challenging
 - Costly
 - Time consuming
 - Risky

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ERP Workflow Tools

- The effectiveness of business processes that are performed sporadically can be poor, not because of negligence, but through lack of practice
 - Especially true if process crosses functional boundaries
- Example: New customer
 - Sales can gather basic customer data, but Accounts Receivable must determine credit limit
- Workflow tools are software programs that automate the execution of business processes
- Workflow tools help coordinate complex processes and allow for the tracking of the status of a process

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SAP R/3 Workflow

- The SAP R/3 Workflow tool integrates organizational data to determine who should perform a transaction
- The Workflow tool uses SAP's internal e-mail system to route transactions to the appropriate person using workflow tasks
- Workflow tasks can include:
 - Basic information
 - Notes
 - Documents
 - Decision options
 - Links to transactions

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SAP R/3 Workflow

- Workflow tasks can be monitored by the SAP system
- If tasks are not completed on time, the workflow system can:
 - Change the task's priority
 - Send an e-mail reminder to the person responsible
 - Send an e-mail to other parties
- The Workflow Builder is used to define the process behind the workflow:
 - Process steps
 - Individuals involved

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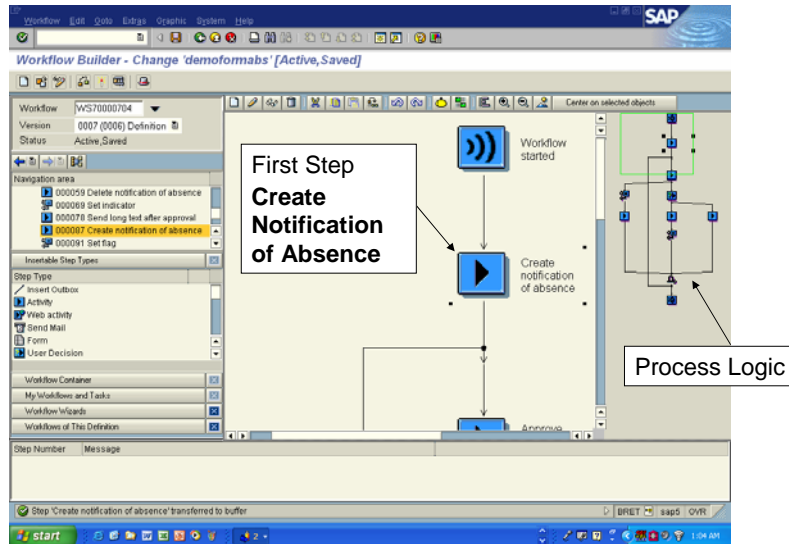


Figure 7.14 SAP R/3 Workflow Builder screen

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The screenshot shows the 'Create Notification of Absence' form. It is divided into several sections:

- Application Data:** Number 86, Status New.
- Personal Data:** Name JAIME ZORBO, Department, Personnel no., Cost center.
- Absence Data:**

	By	to	Hours	Leave Type
Leave 1	12/22/2004	01/03/2005		Vacation
Leave 2				Vacation
Leave 3				Vacation

Reason: Family Vacation

Contact at:
- Entry and Approval:**

Date: 12/15/2004, Date: , Issuer: ZORBO, Approver:

Figure 7.15 Absence request screen

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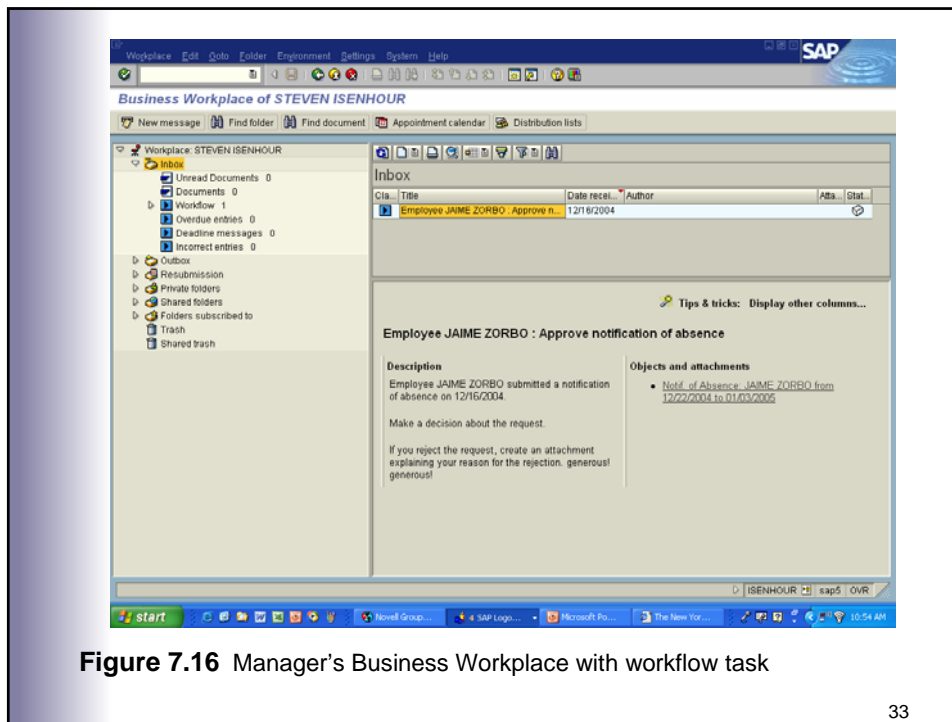


Figure 7.16 Manager's Business Workplace with workflow task