Ch3 Management of Workflows

1. Resource Management Concepts
2. Resource Management in More Detail
3. Improving Workflows

3.1 Resource Management Concepts

- The resource
  - The basic characteristic of a resource is that it is able to carry out particular tasks.
  - Assumption: each resource may be working on no more than one activity at any given time.
- Resource classification
  - In general, a resource is permitted to carry out a limited number of tasks. A task usually can be performed only by a limited number of resources. it is impracticable to indicate which resources are able to carry out each task.
  - A resource class is a group of resources. A resource may belong to more than one class.

3.1 Resource Management Concepts

- 2 forms of Resource classification
  - based upon functional properties—Role
    - ensure that the resource carrying out the task is sufficiently qualified (and authorized)
  - based upon position within the organization--organizational unit
    - ensure that a task is carried out at the right place in the organization.

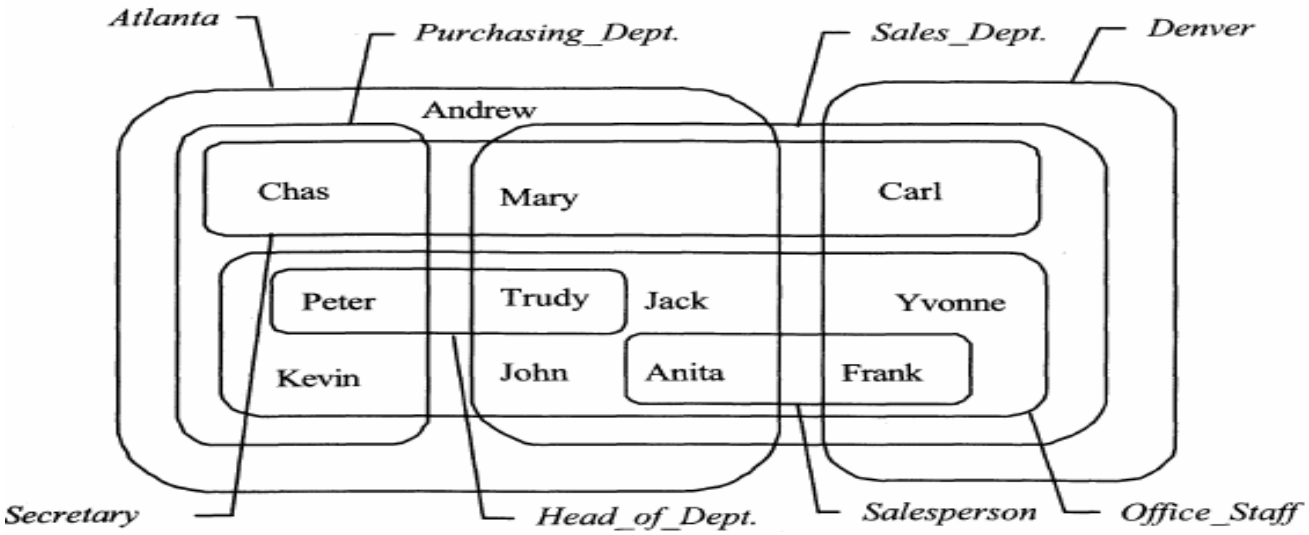


Figure 3.1
Resource classification

3.1 Resource Management Concepts

- Allocating activities to resources
  - allocation principle: In most cases, the allocation specifies both a role and an organizational unit.
  - separation of function: one member of staff is not allowed to perform two successive tasks on the same case.
  - case manager: a number of successive tasks are carried out by, or under the authority of, a single employee.
  - One of workflow engine's core tasks is to allocate work items to resources.

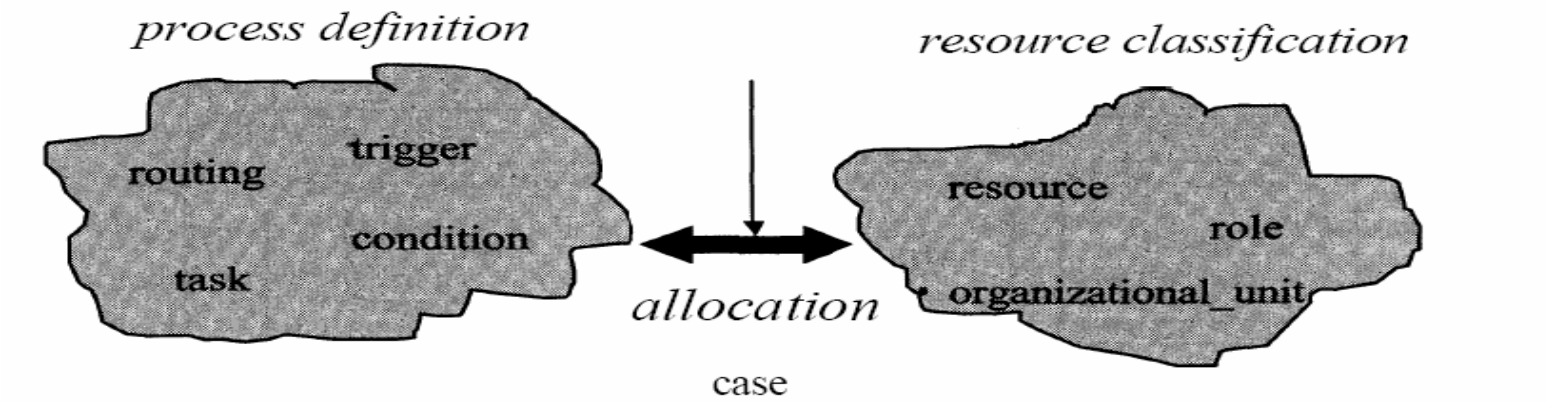


Figure 3.2
Allocation principles link the process definition with the resource classification

3.2 Resource Management in More Detail

- the static aspects of resource management

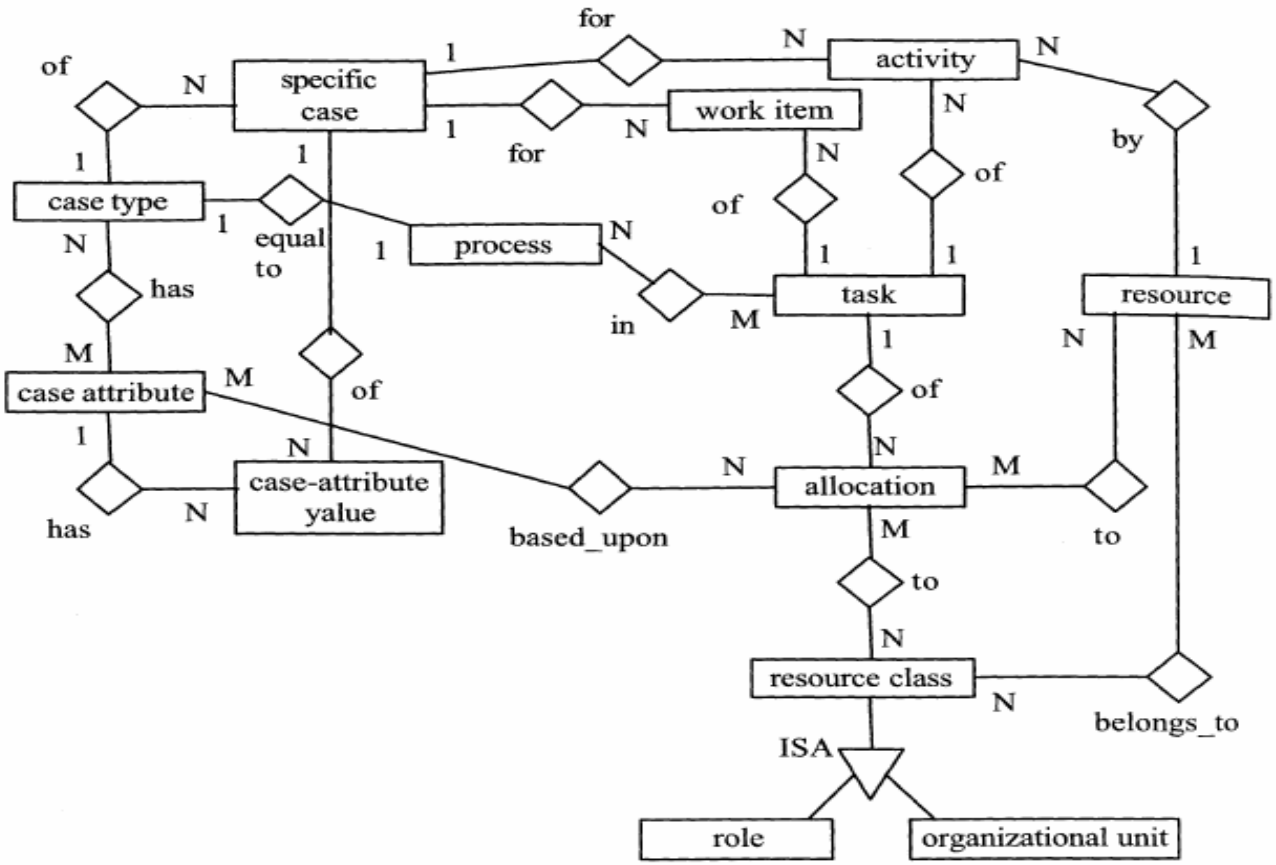


Figure 3.3
Using an ER diagram, we can illustrate the links between various entities

3.2 Resource Management in More Detail

- the dynamic aspects of resource management

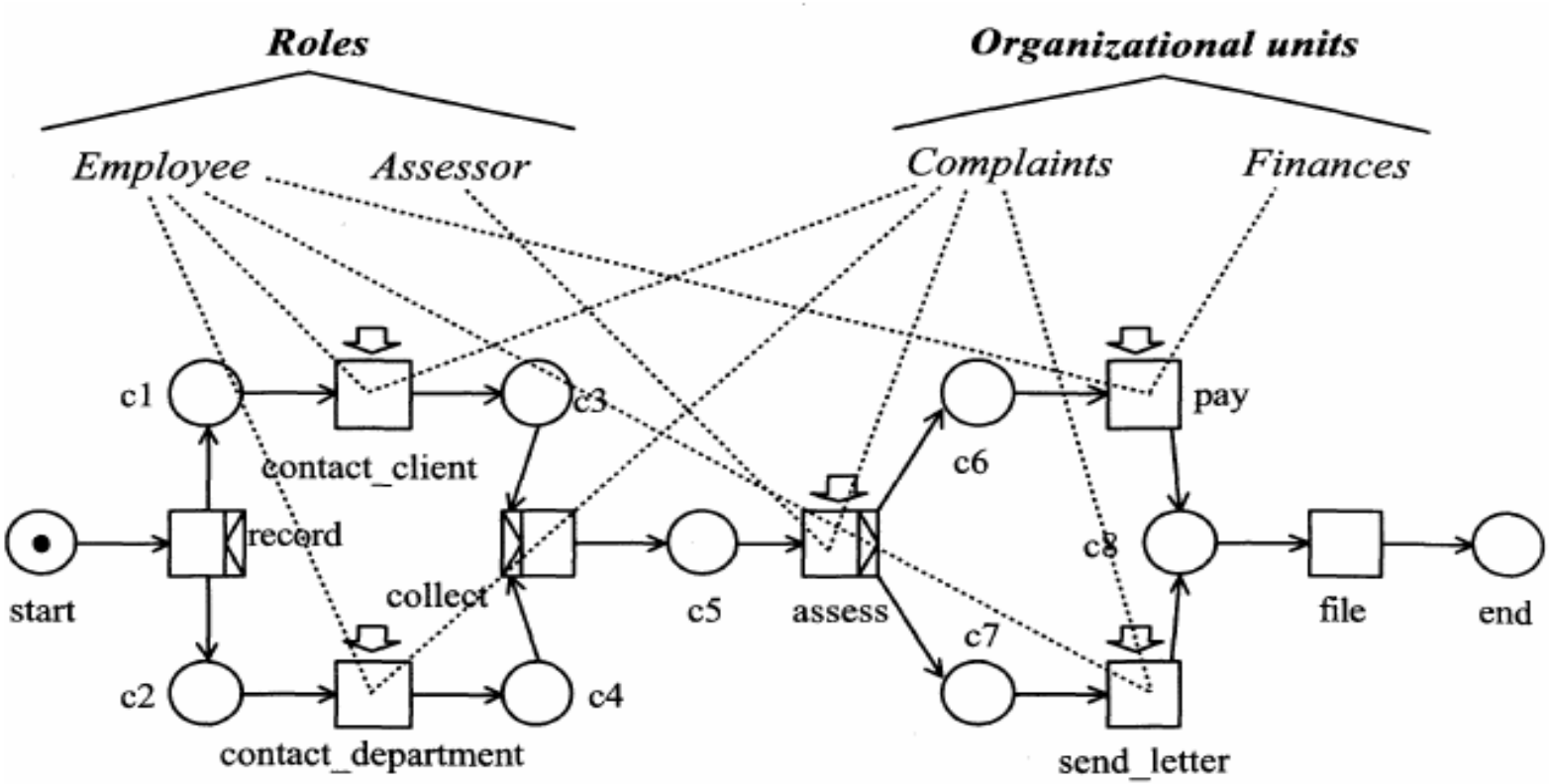


Figure 3.4
The process "handle complaint" and the resource classes involved in it

3.2 Resource Management in More Detail

Resource class	Resources
Employee	John
	Jim
	Liz
	Jack
	Mandy
	Carl
Assessor	Mandy
	Carl
Complaints	John
	Jim
	Mandy
	Carl
Finances	Liz
	Jack

Task	Role	Organizational unit
record		
contact_client	Employee	Complaints
contact_dept.	Employee	Complaints
collect assess	Assessor	Complaints
pay	Employee	Finances
send_letter	Employee	Complaints
file		

Figure 3.5
A summary of the composition of each resource class and those required for each case

3.2 Resource Management in More Detail

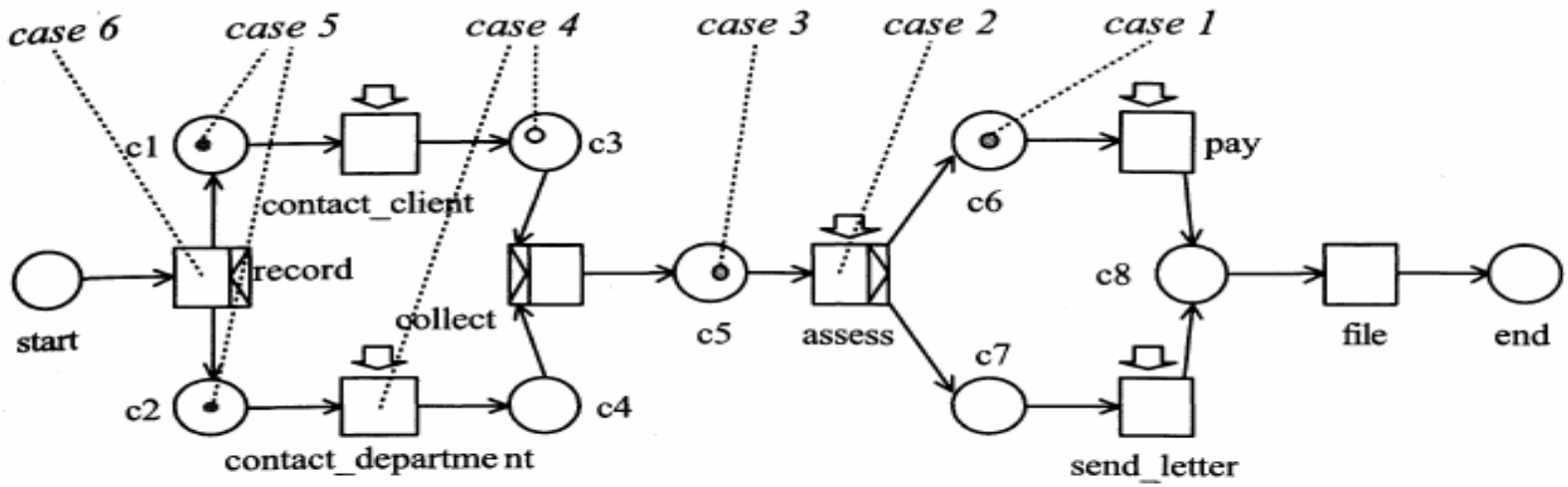


Figure 3.6
In the state illustrated, there are six complaints in progress

Work items

Case	Task
Case 1	pay
Case 3	assess
Case5	contact_client
Case5	contact_dept.

Activities

Case	Task	Resource
Case 2	assess	Mandy
Case 4	contact_dept.	Jim
Case6	record	-

Figure 3.7
The work items and activities for the state illustrated in figure 3.6

3.2 Resource Management in More Detail

- The objective of a workflow system is to complete work items as quickly as possible.
- In order to transform work items into activities, two decisions always need to be made:
  - In what order are the work items transformed into activities?
  - By which resource are the activities carried out?
- The order can be important when selecting a resource. Conversely the choice of a resource can affect the order in which work items are transformed into activities.

3.2 Resource Management in More Detail

- Some common queueing disciplines of routing a case through several resources: FIFO, LIFO, SPT, SRPT, EDD. Note that the information required by each queueing discipline can vary widely.
- If a work item could be carried out by more than one resource, then the following considerations come into play:
  - Let a resource practice its specialty.
  - As far as possible, let a resource do similar tasks in succession.
  - Strive for the greatest possible flexibility for the near future.

3.2 Resource Management in More Detail

- There are 3 ways to allocate work items to resources:
  - push-driven: The workflow engine matches work items and resources, and "pushes" work items onto resources.
  - pull-driven:The resources themselves match work items and resources. the resources "pull out" work items and all "eat" from the same basket of work items.
  - mixture of push-driven and pull-driven

3.3 Improving Workflows

- Improvements influence performance criteria such as completion times, utilization of capacity, level of service, and flexibility.
- Bottlenecks in the workflow
  - Some typical symptoms
    - Number of cases in progress (too) large.
    - Completion time (too) long compared with actual processing time.
    - Level of service (too) low.
  - performance indicators
    - External performance indicators (case-oriented)
    - Internal performance indicators (resource-oriented)

3.3 Improving Workflows

- It is in many cases possible to improve the external performance of a workflow without allocating additional resources. Such an improvement can be achieved by restructuring the workflow or using a better allocation strategy.

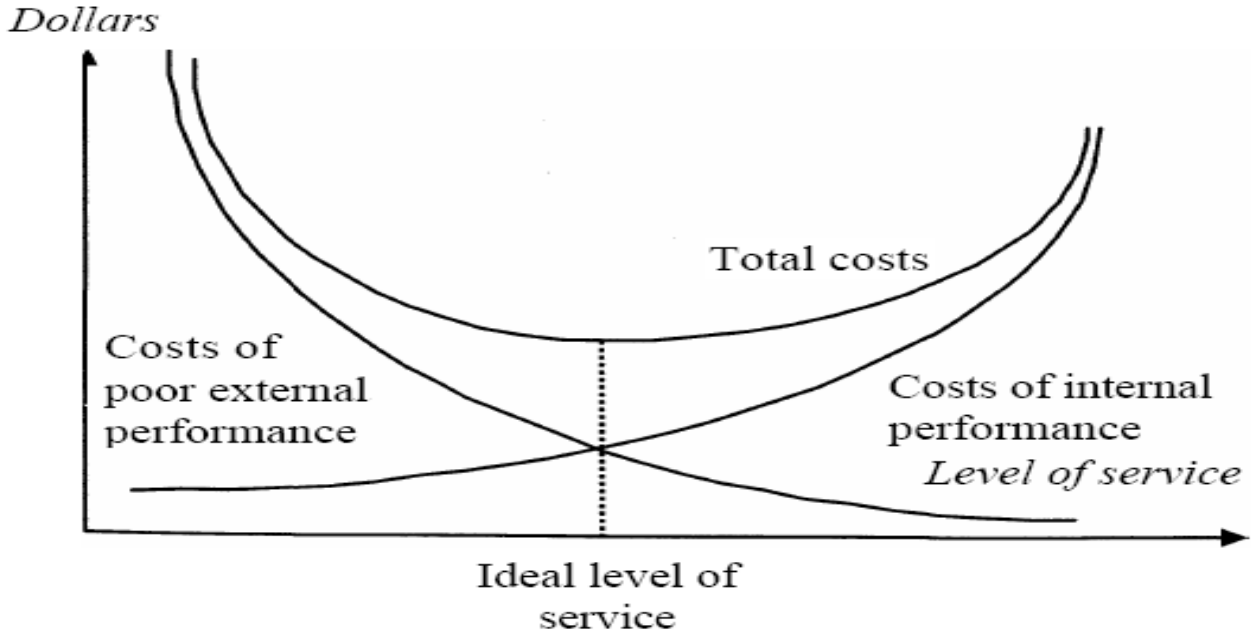
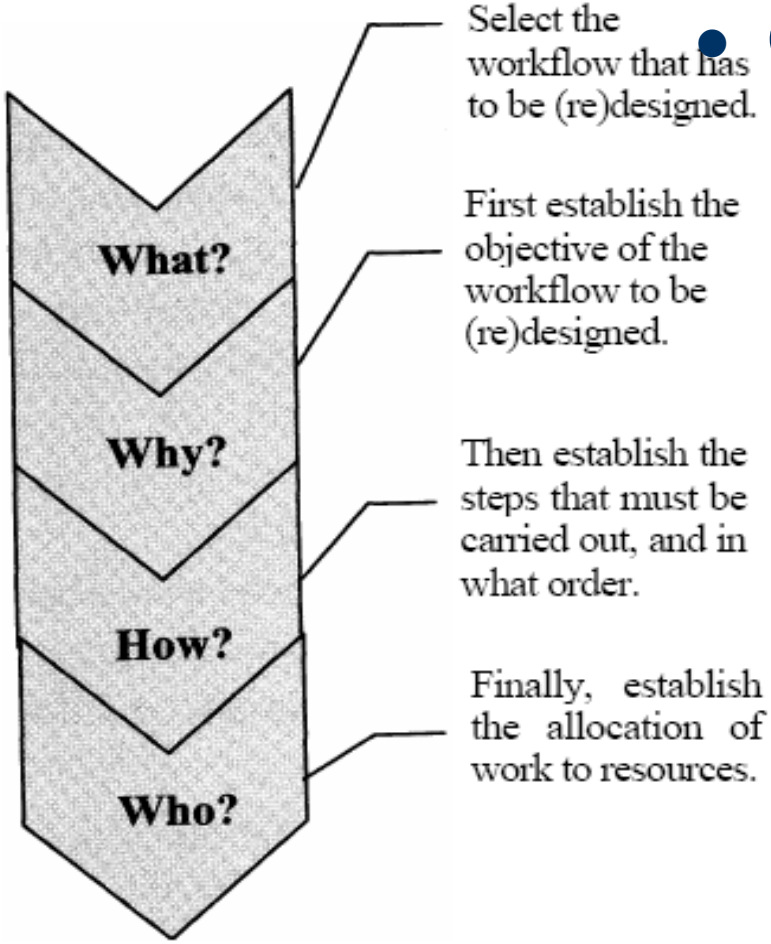


Figure 3.8
Weighing external performance versus internal effort

3.3 Improving Workflows

- Business Process Re-engineering(BPR)
  - BPR's objective is to bring about entirely new business processes which enable drastic improvements to costs, quality, and service.
  - WFMS is an "essential enabler" for BPR efforts.
  - BPR is characterized by four key words: fundamental, radical, dramatic, and process.
  - One of the great dangers threatening the successful introduction of a workflow system lies in simply computerizing existing(manual) practices.
  - One common error when introducing a workflow system is the unnecessary sequencing of tasks.
  - computerization of the document and the use of a workflow system enable parallel routing in many cases.

3.3 Improving Workflows



- Guidelines for (re)designing workflows
  - First establish the objective of the process.
  - Ignore the existence of resources when defining a process.
    - four phases in the (re)design of a workflow.
  - As far as possible, make one person responsible for the processing of a case (case manager).
  - Check the need for each task.
  - Consider the scope of tasks.
  - Strive for the simplest possible process.
  - Carefully weigh a generic process versus several versions of the same process.

Figure 3.9
The four phases through which the (re)design of a workflow passes

3.3 Improving Workflows

- Guidelines for (re)designing workflows
  - Carefully weigh specialization versus generalization.
  - As far possible, try to achieve parallel processing of tasks.
  - Investigate the new opportunities opened up by recent developments in networking and (distributed) databases.
  - Treat geographically scattered resources as if they are centralized.
  - Allow a resource to practice its specialty.
  - As far as possible, allow a resource to perform similar tasks in succession.
  - Try to achieve as much flexibility as possible for the near future.
  - Allow a resource to work as much as possible on the same case.