

Modeling Workflows

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Workflow management

- WFM = Administrative Logistics
- Getting
 - the right information (documents)
 - at the right time
 - to the right person
- Emphasis
 - on structure of work processes (workflows)
 - not on contents of work processes (AIS!)

Workflow management aspects

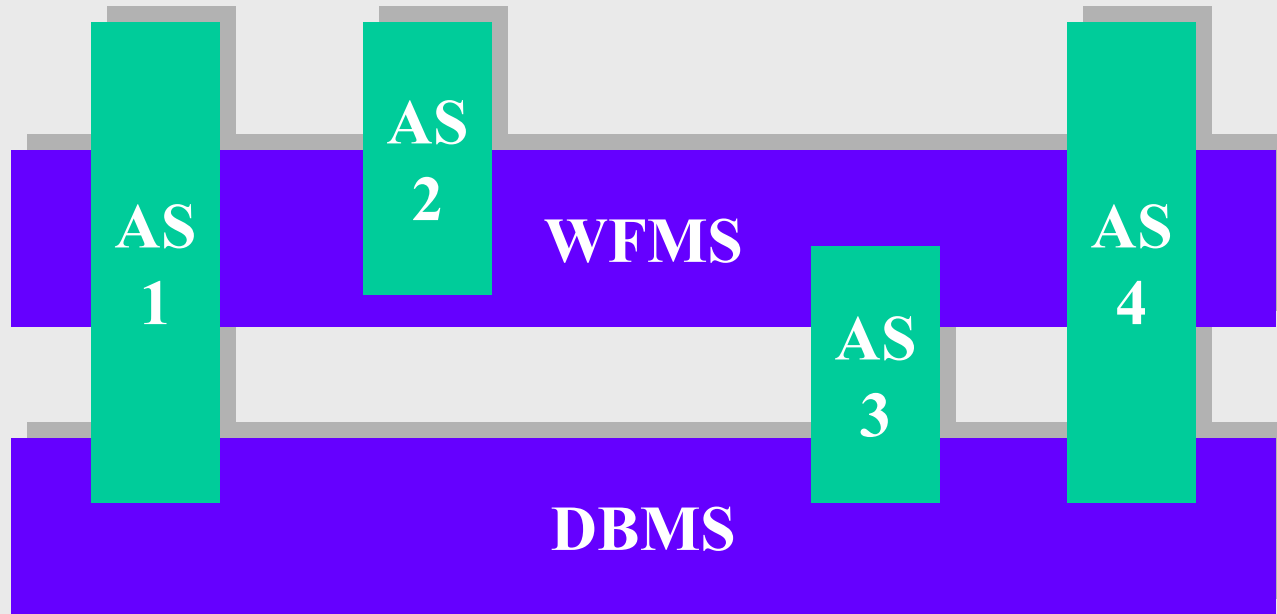
- Routing of information/documents
- Allocation of tasks to actors
- Scheduling of tasks in time
- Scheduling of scarce resources
- Monitoring flow of work
- Handling exceptional situations
- Providing management information

Overview

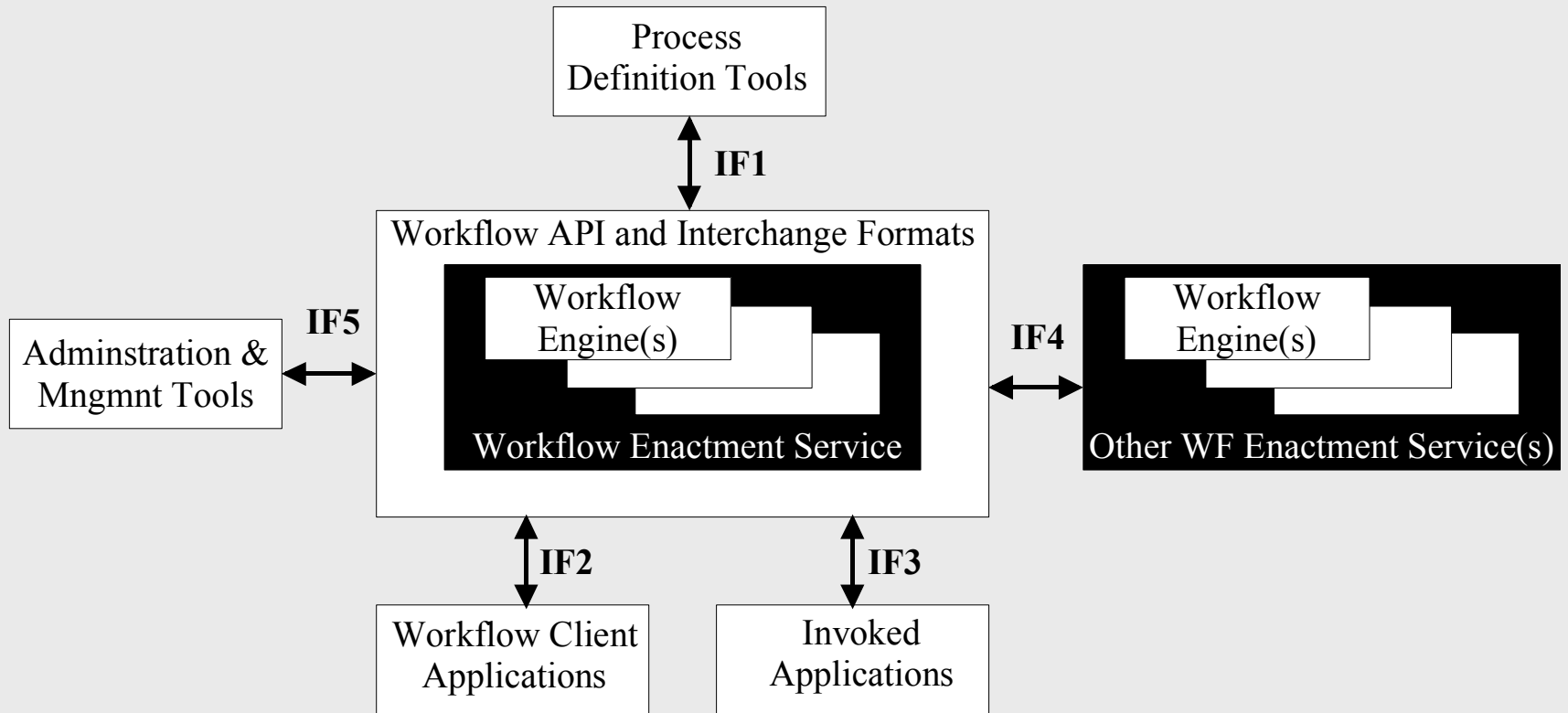
- Workflow management systems
 - what is the system context?
- Workflow concepts
 - what are we talking about?
- Workflow process modeling
 - how do we model this?
- Advanced workflow aspects
 - how do we deal with complex aspects?
- Conclusions

Workflow Management Systems

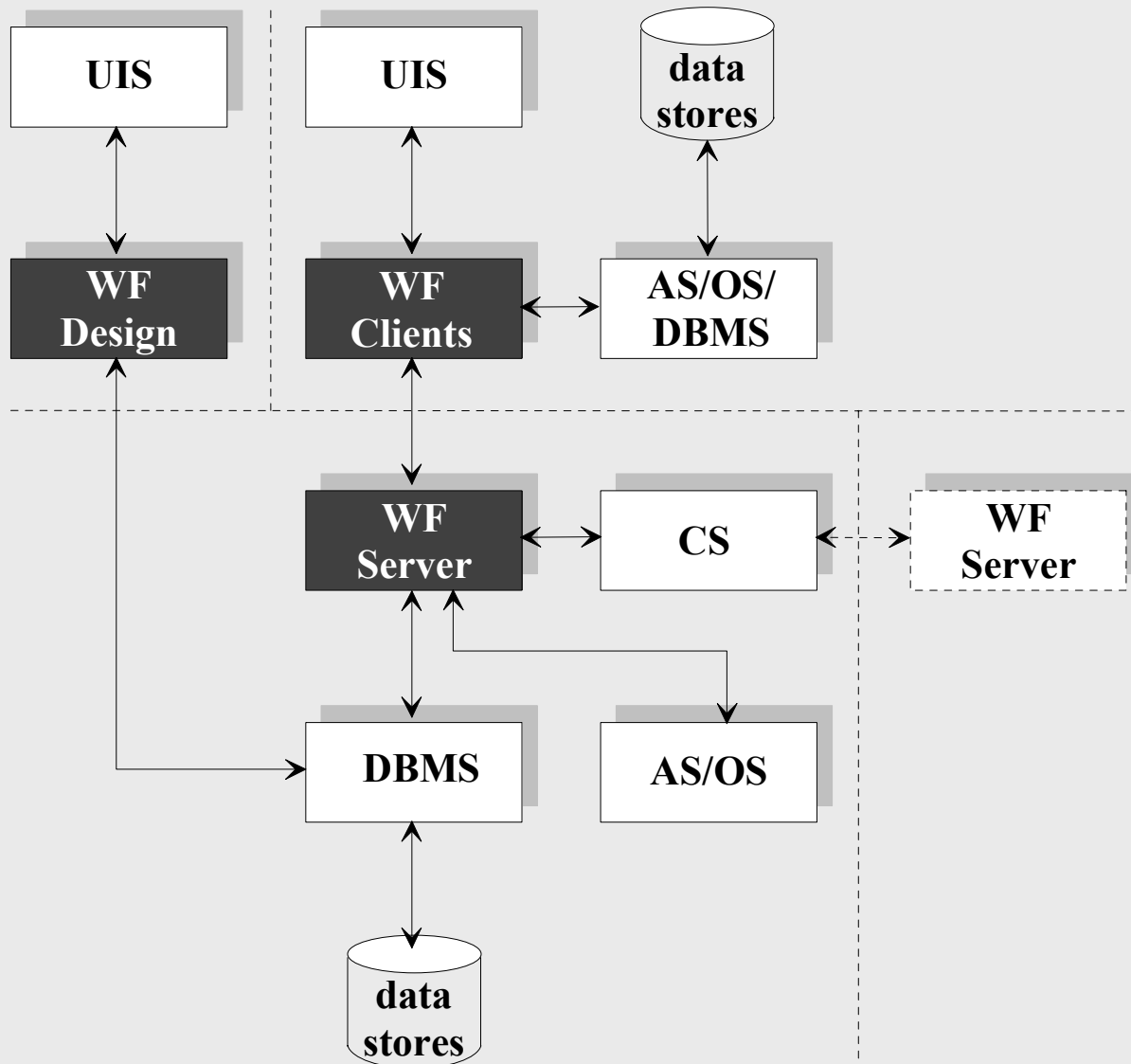
WFMS as Infrastructure



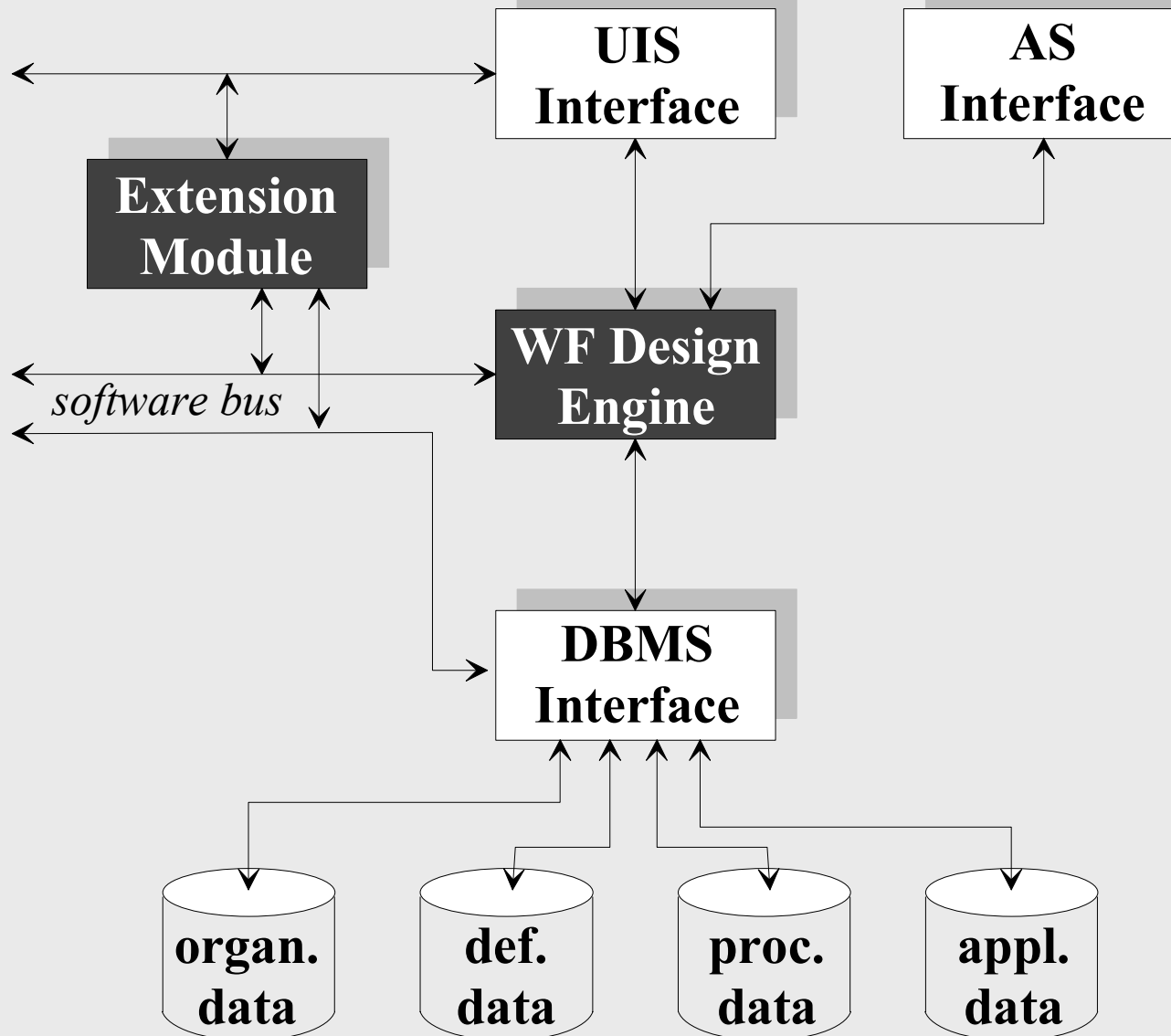
WfMC WFMS architecture



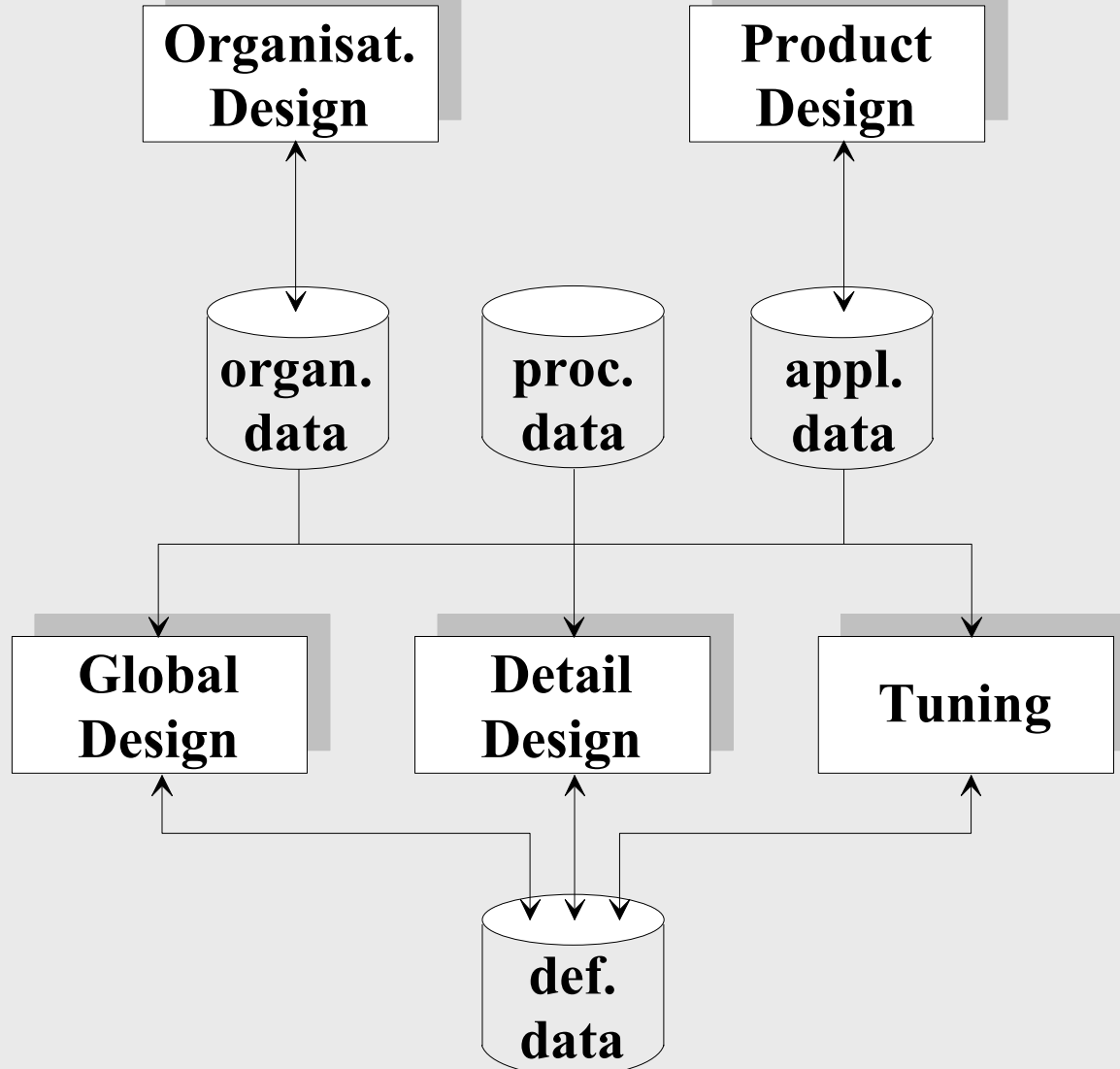
Mercurius WFMS architecture



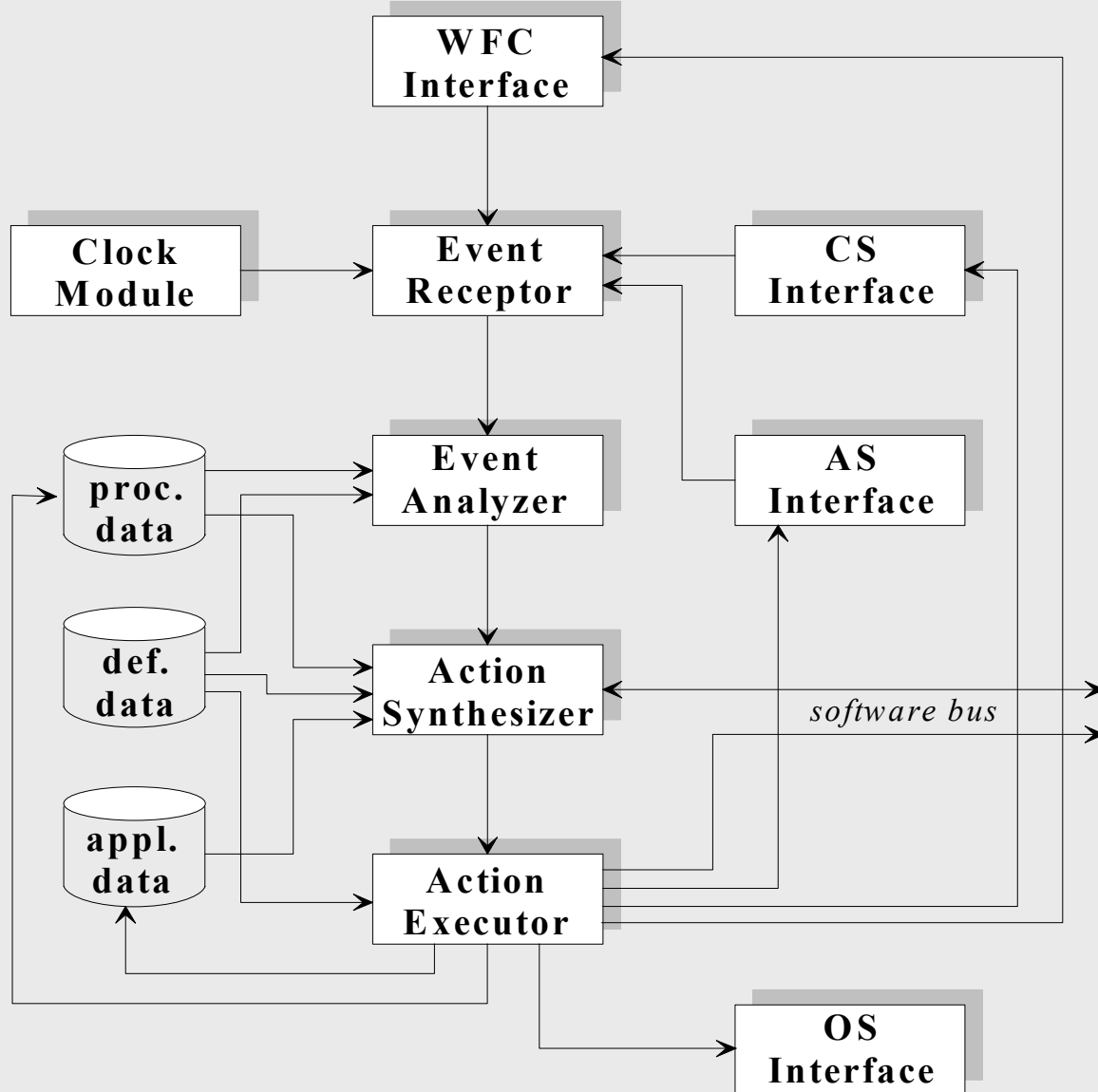
Mercurius design module architecture



Mercurius design engine architecture



Mercurius enactment engine architecture



Workflow Client

FORO: Desktop - Netscape

File Edit View Go Communicator Help

get tasks complete reject return start case

- Admission front desk patient (1997/11/13 11:42:49)
- Admission front desk document (1997/11/13 11:42:40)
 - Details
 - Priority: 1
 - Start Time: 1997/11/13 11:42:40
 - Description: This is the Admissions front desk document ST
 - Name Process: Test2
 - Note
 - Information about the patient
 - Check list for reviewing Front Desk Docs
- Archive documentation (1997/11/13 11:42:29)**
- Entre pre-FIQ (1997/11/13 11:29:19)
- Entre pre-FIQ (1997/11/13 11:21:36)
 - Details
 - Priority: 1
 - Start Time: 1997/11/13 11:21:36
 - Description: Complete patient details with the dates for admission
 - Name Process: Test2

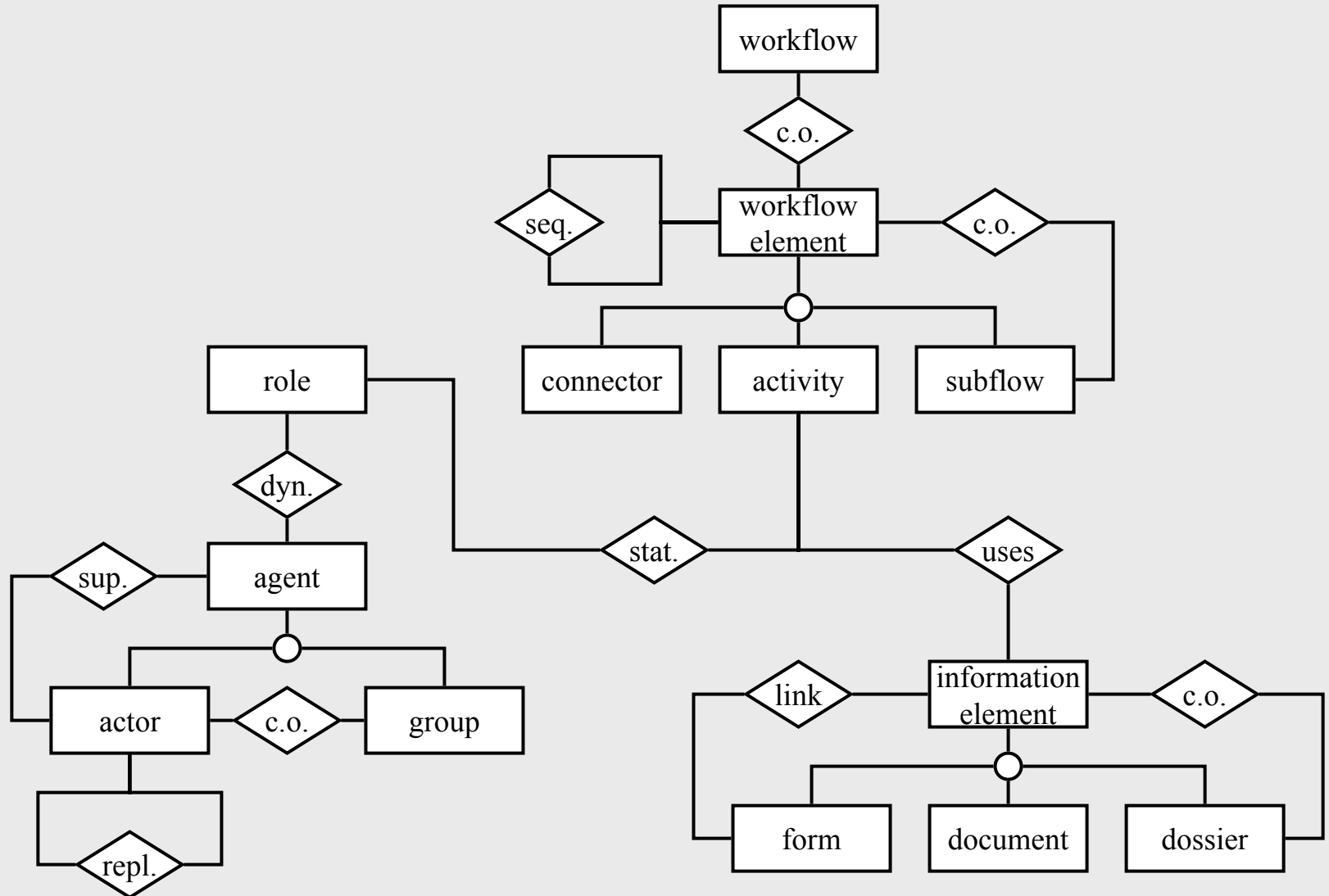
Time	Name	Priority	State
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My tasks Our tasks

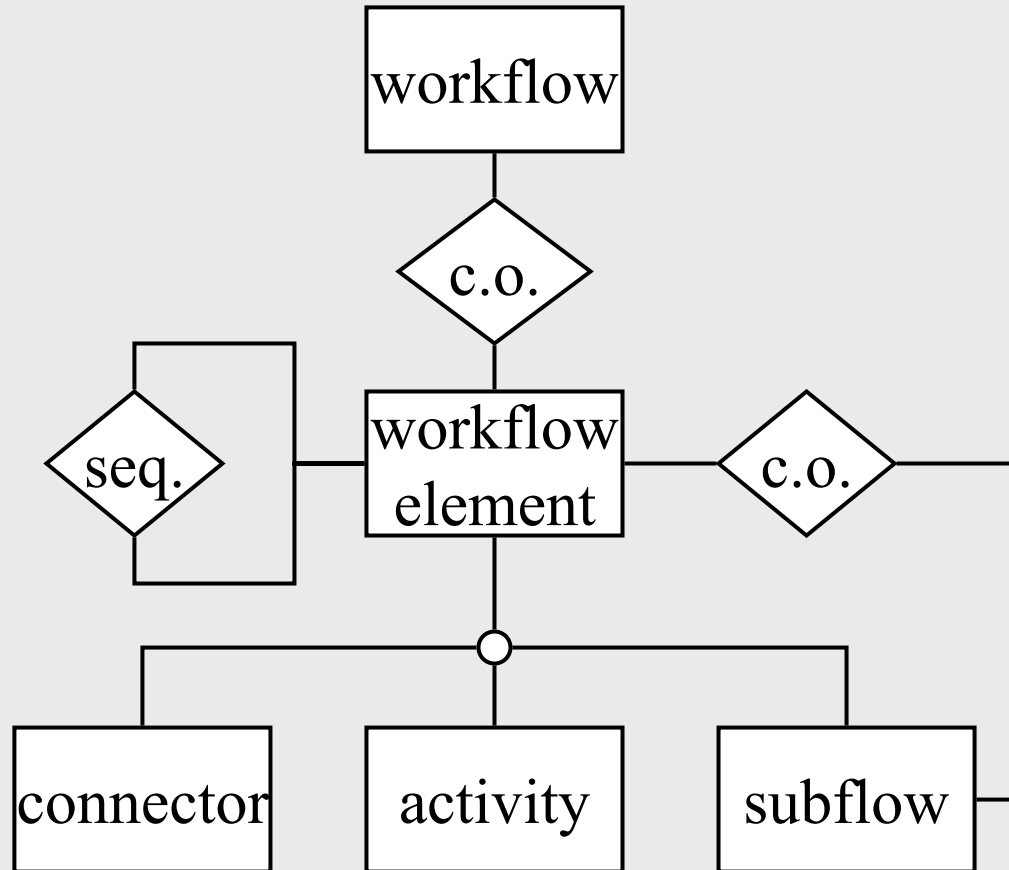


Workflow Concepts

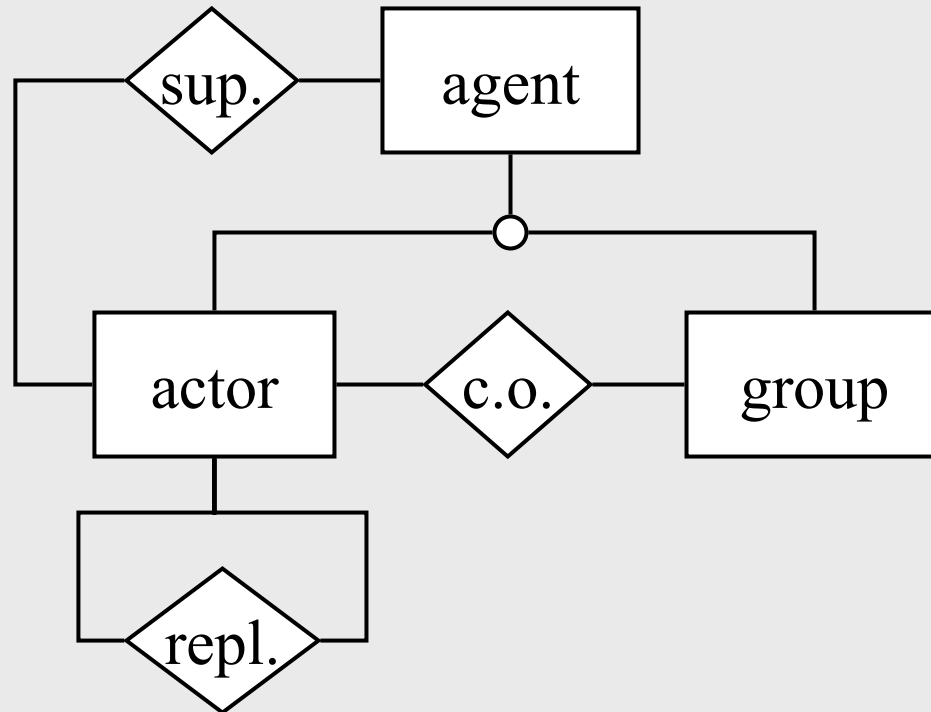
Workflow concepts



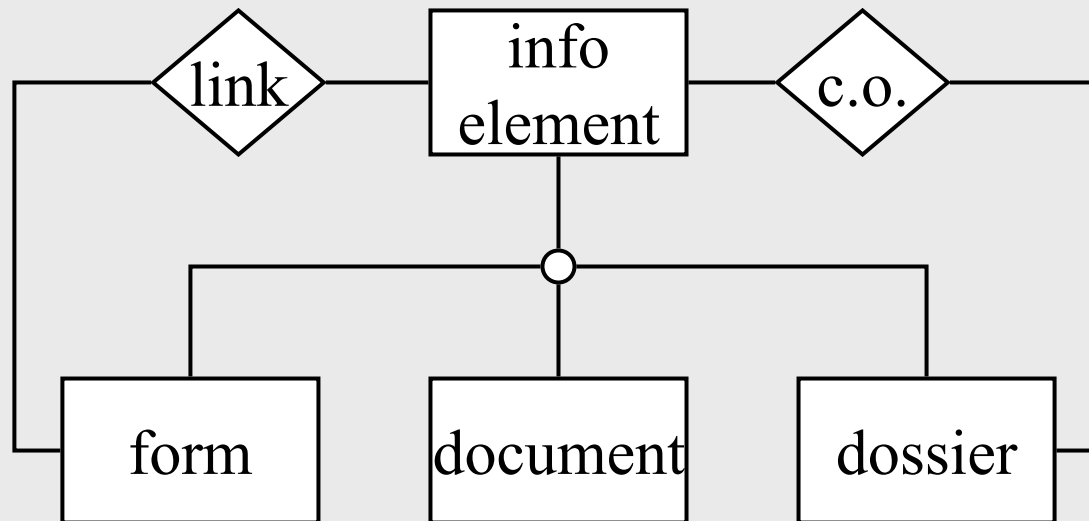
Workflow process concepts



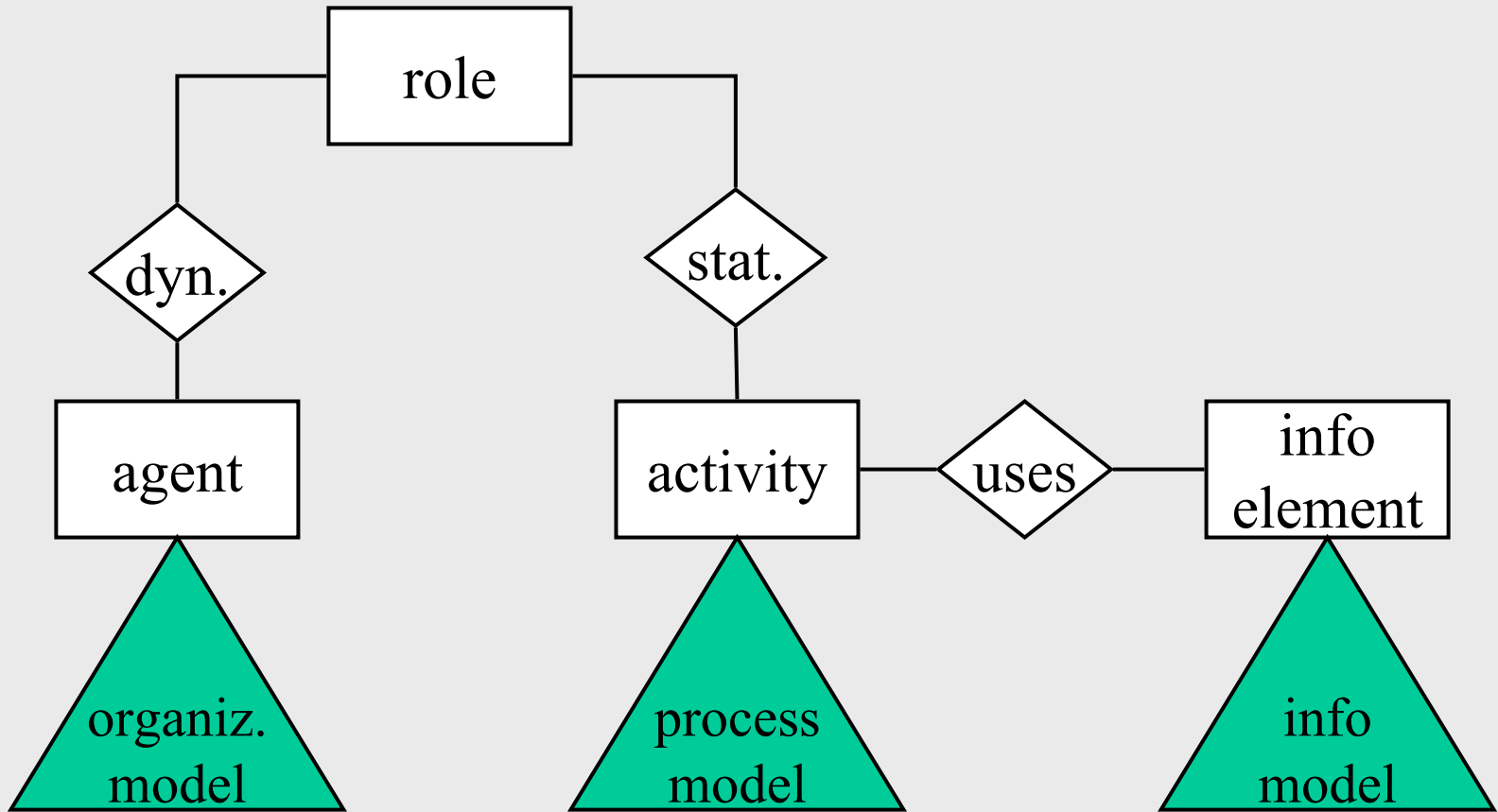
Workflow organization concepts



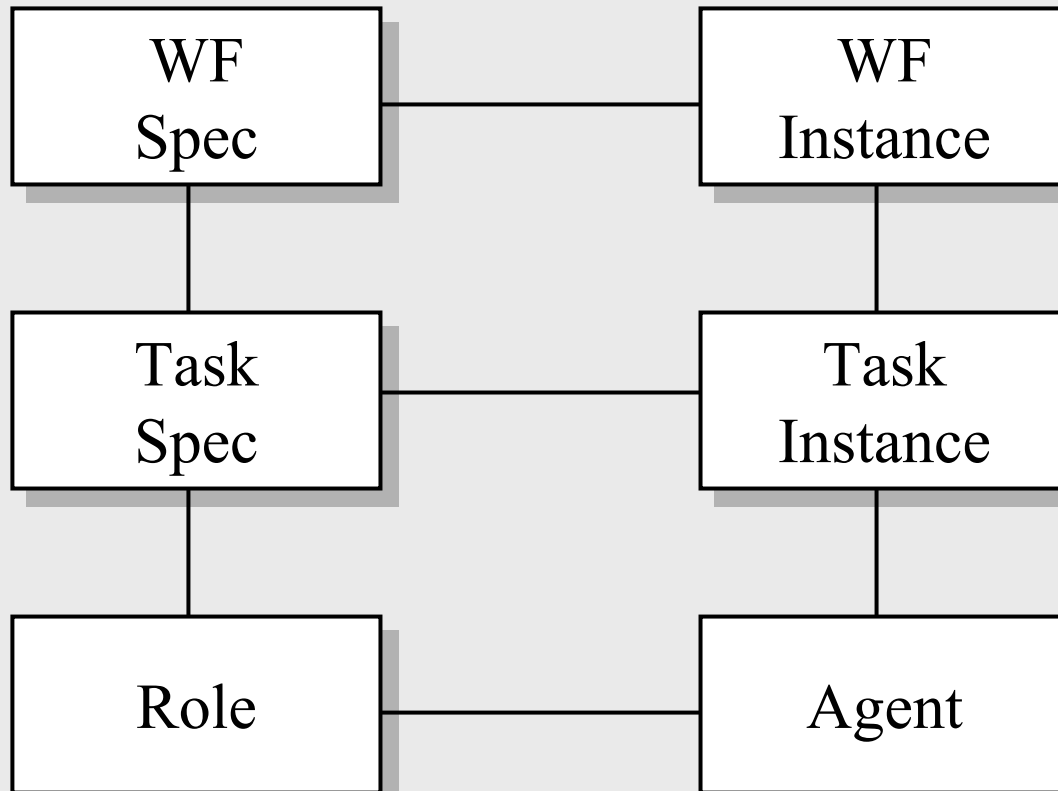
Workflow information concepts



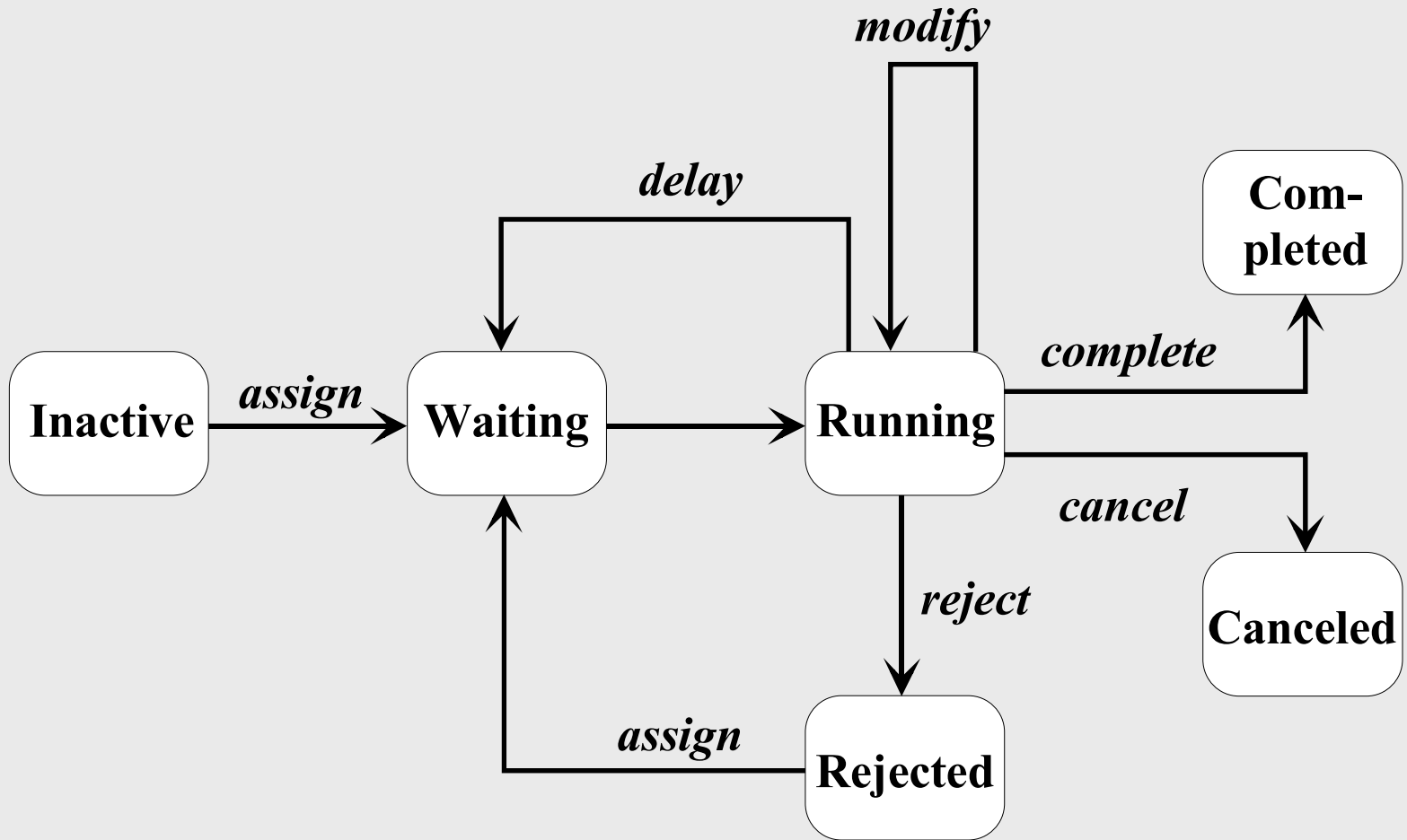
Workflow concepts (summarized)



Specification vs instantiation

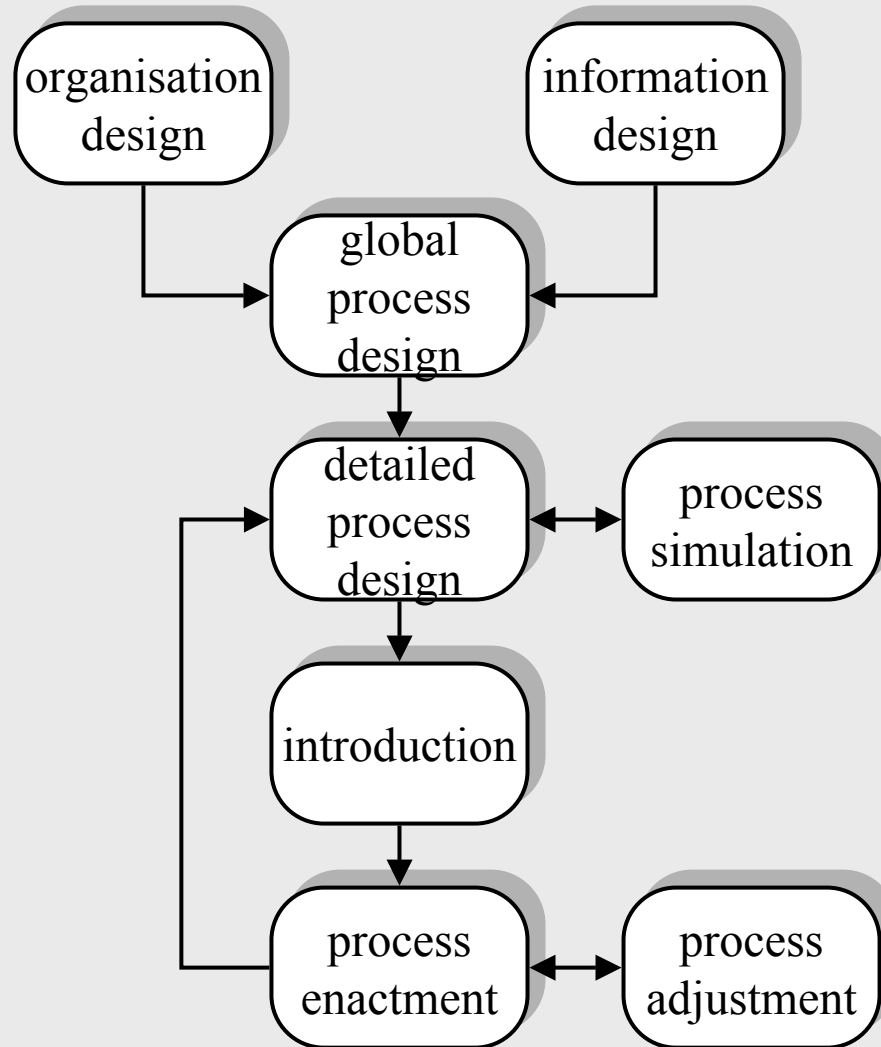


Workflow life cycle

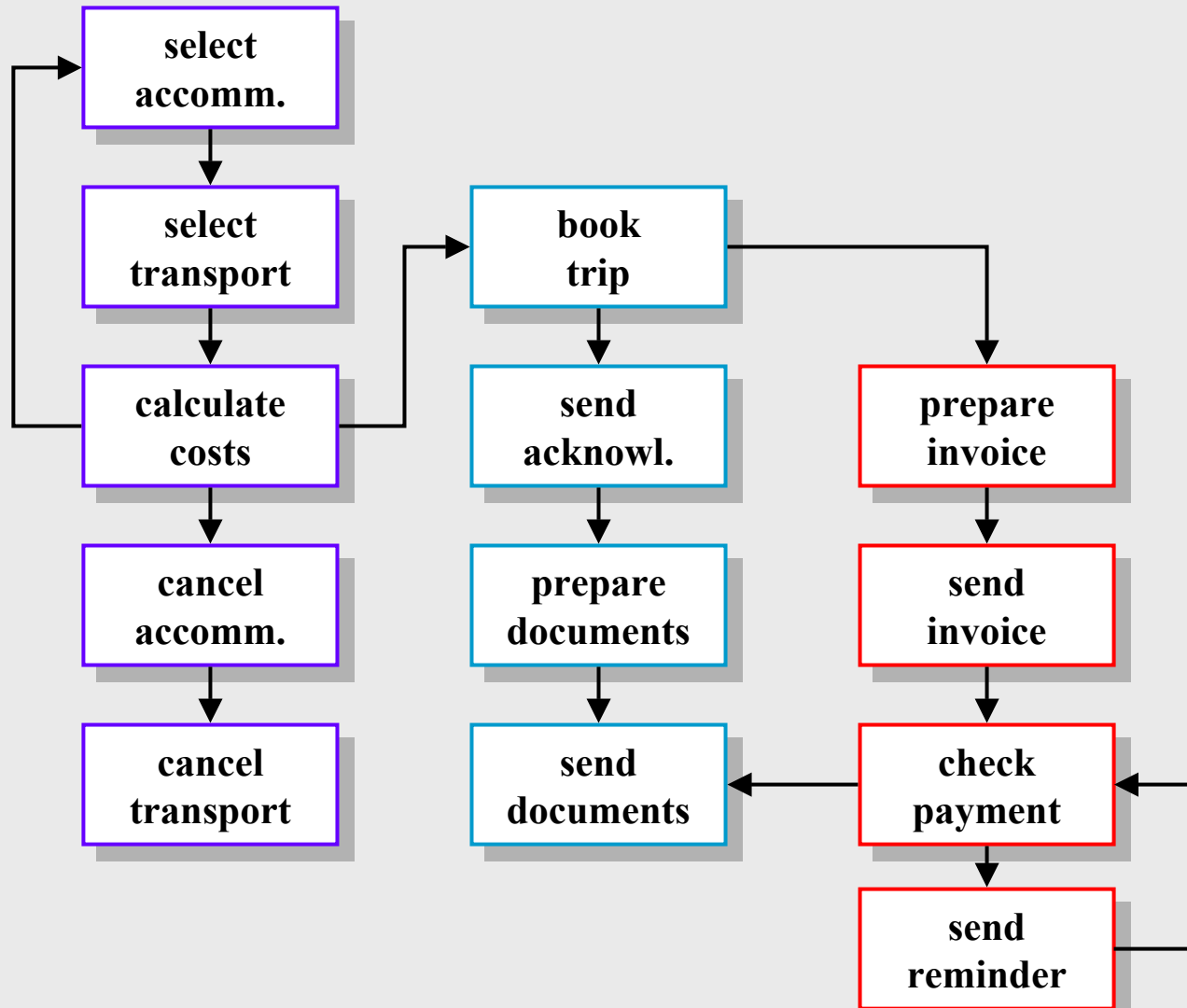


Workflow Process Modelling

Workflow design approach



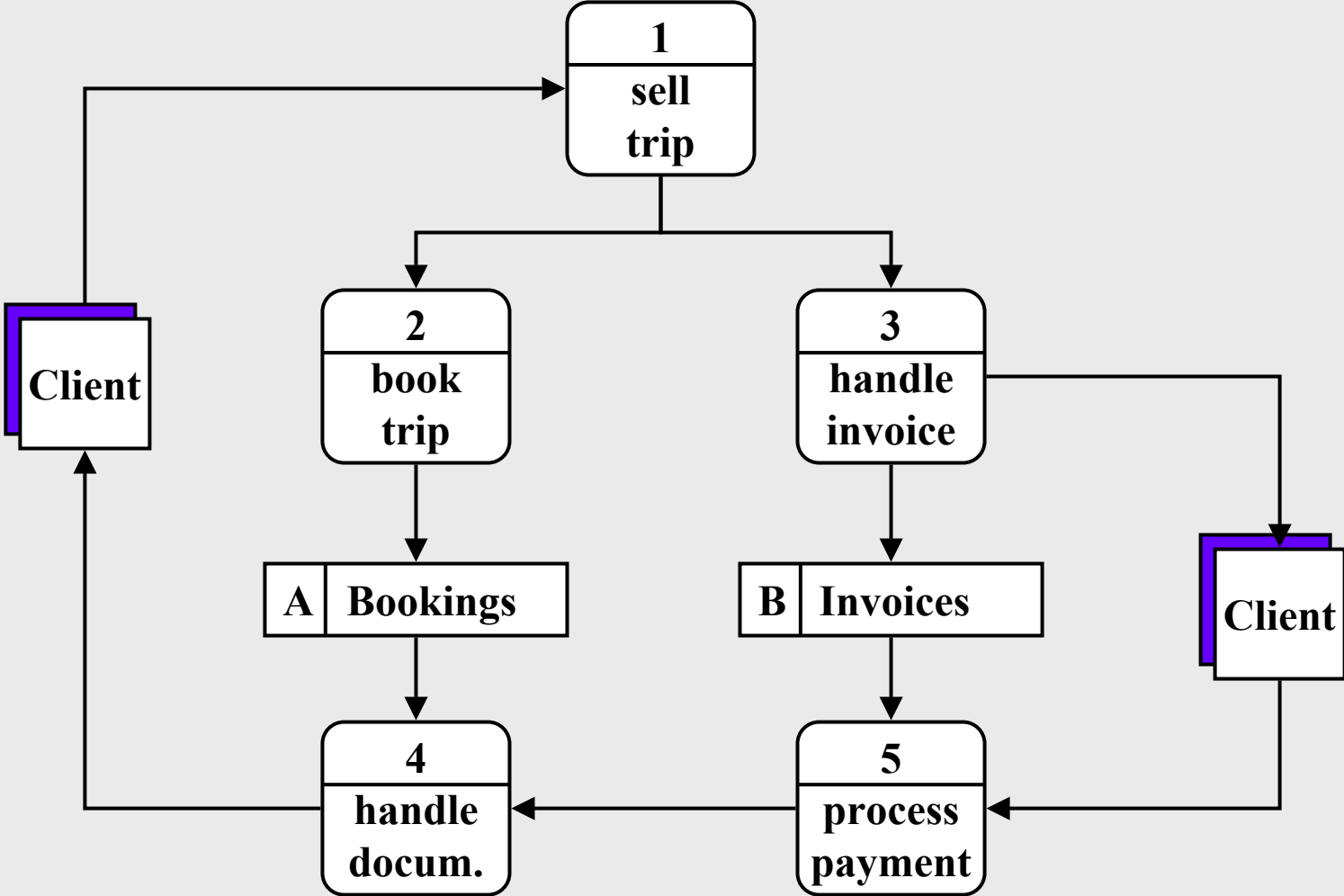
GTI process



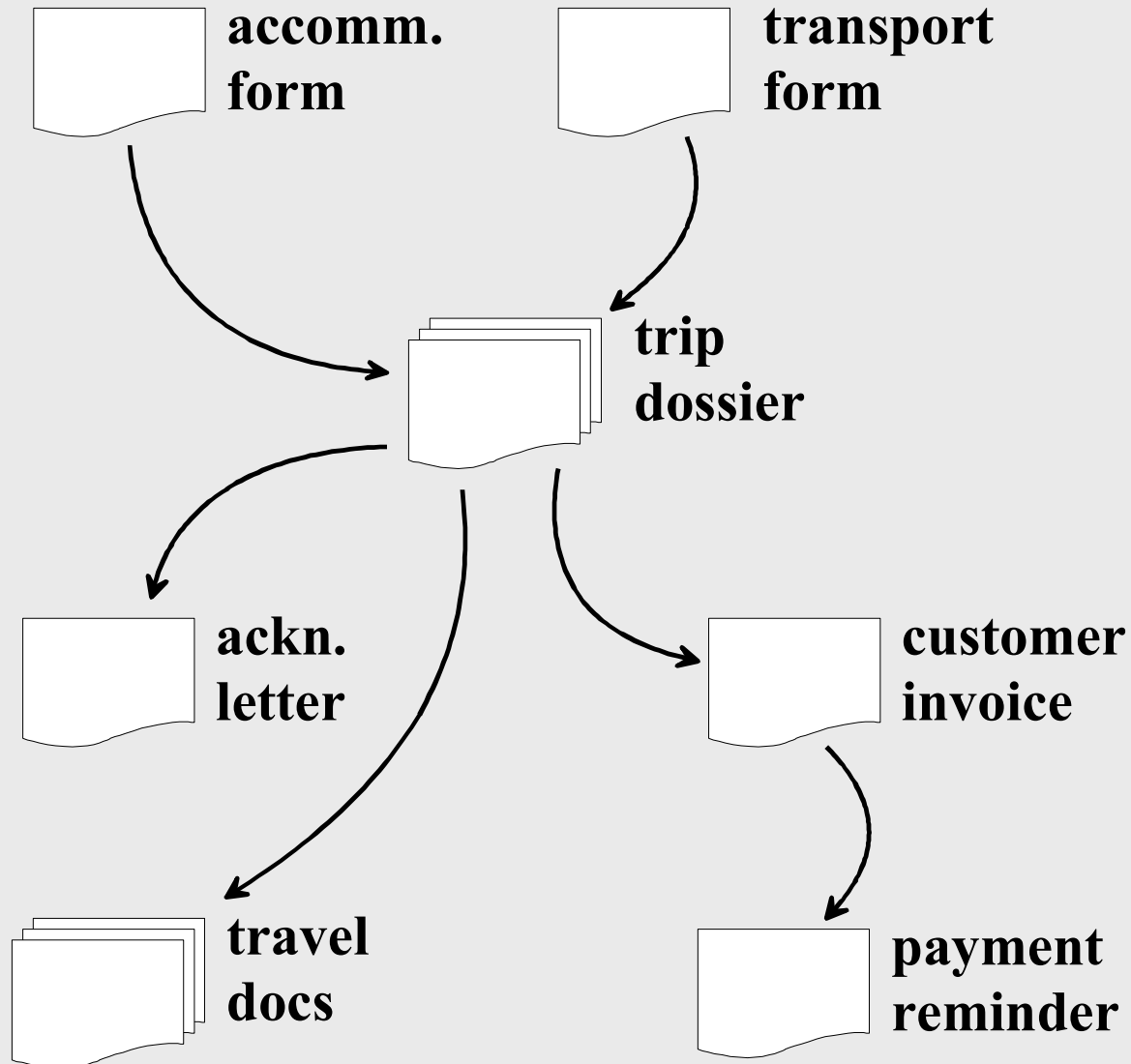
Process specification techniques

- data flow based?
- activity order based?
- document based?
- communication based?

GTI process in DFD



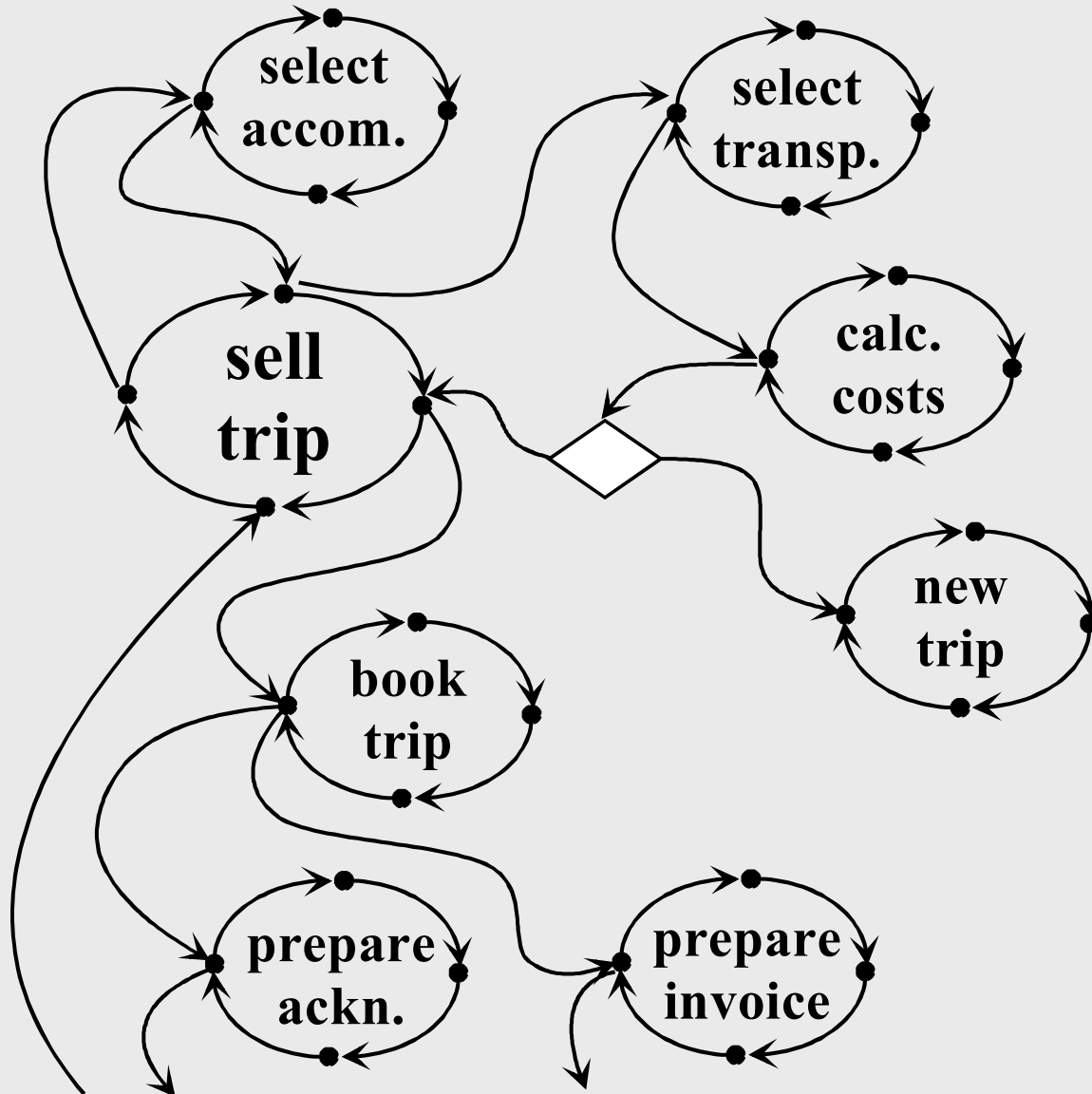
GTI process in document chart



Speech act process models

- all processes are based on speech acts
- all elementary processes are communication loops between 'consumer' and 'producer'
- with 4 fases:
 - preparation
 - negociation
 - execution
 - acceptance
- elementary loops are connected

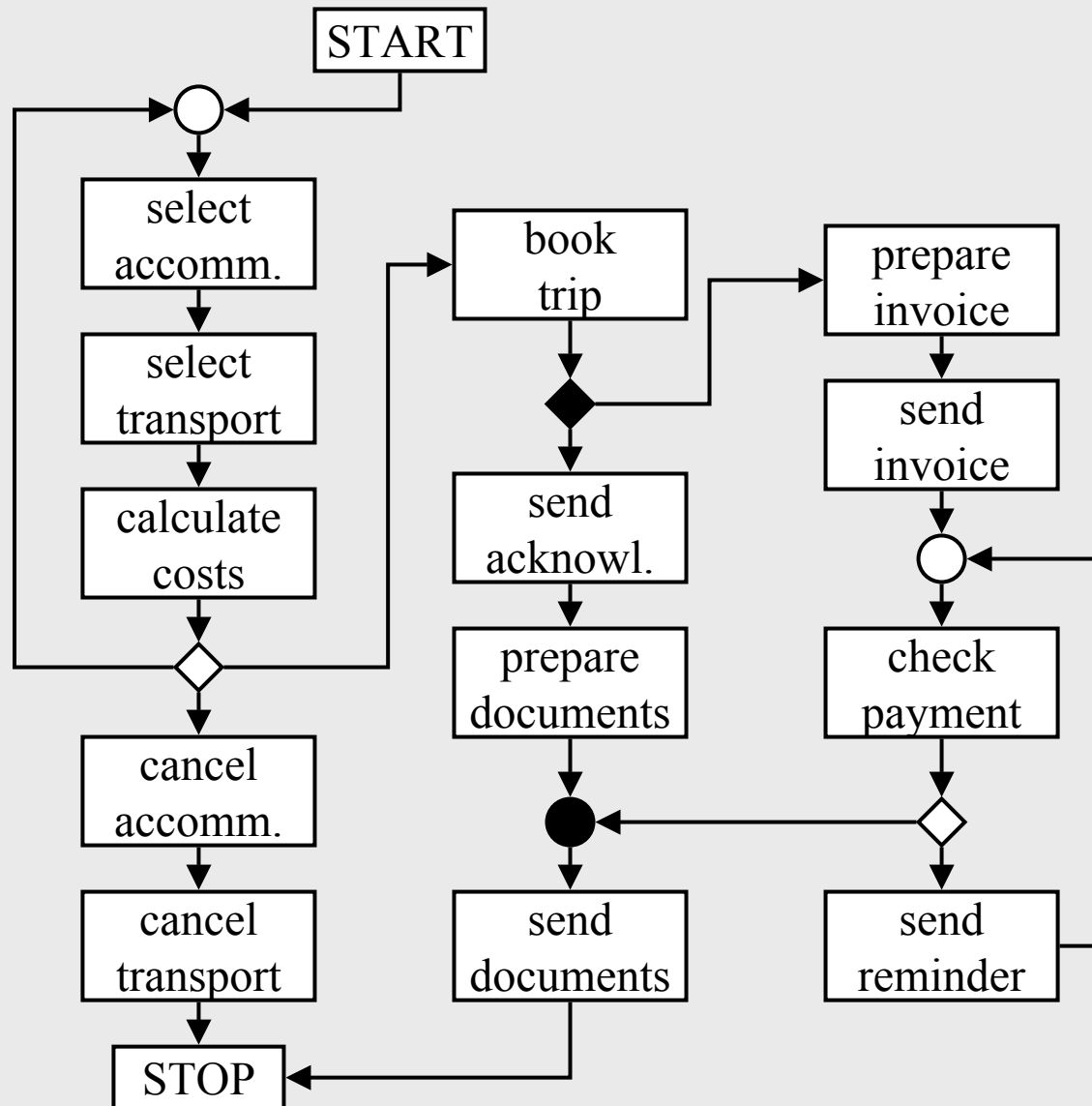
GTI process in BPM



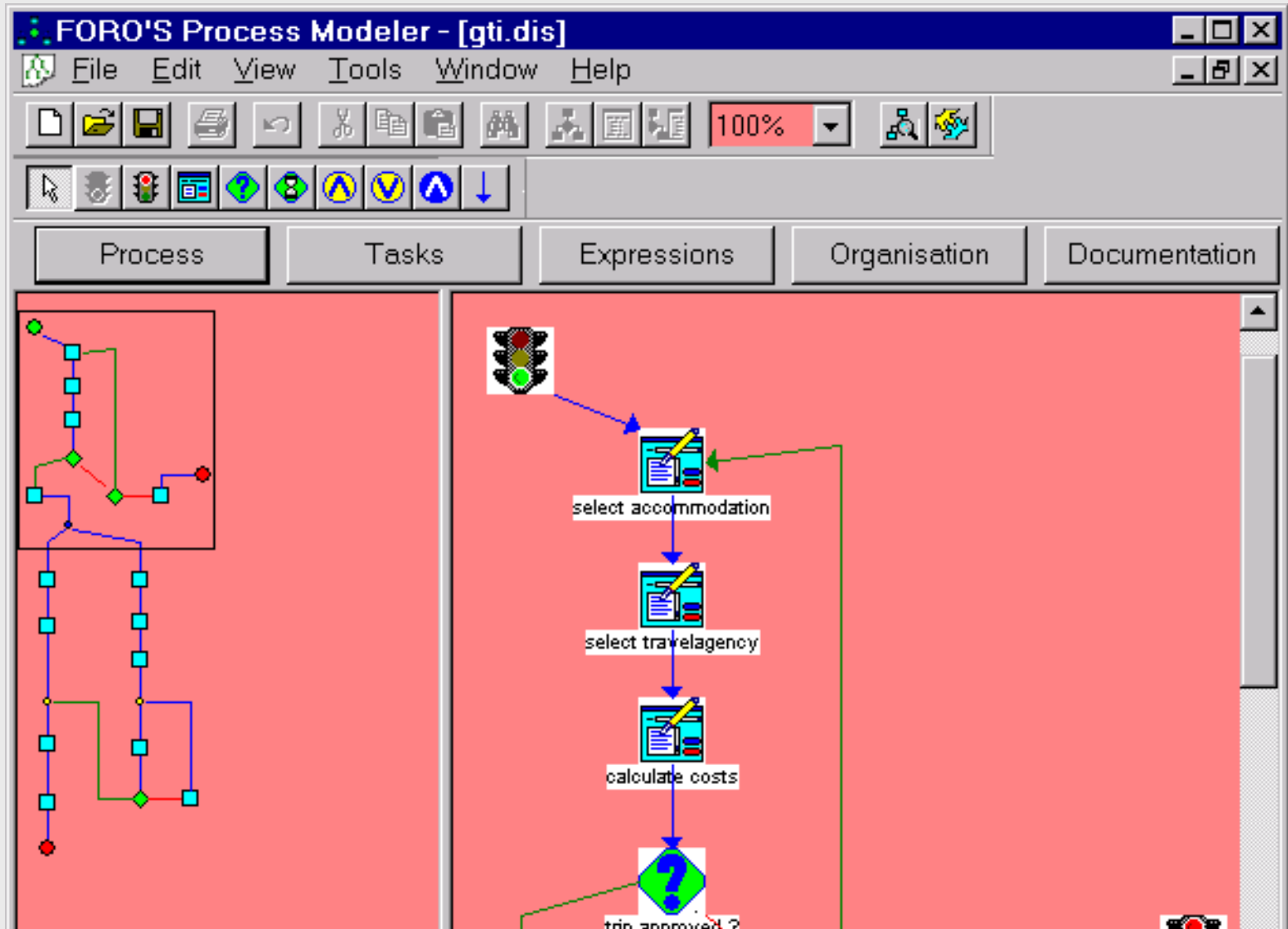
The perfect choice

- Choice depends on
 - nature of workflow
 - level of detail
 - intended audience
- Combination of techniques for
 - different abstraction levels
 - different aspects
- Consistency with WFS environment
 - ‘independent’ modeling tools
 - WFMS-specific tools and details

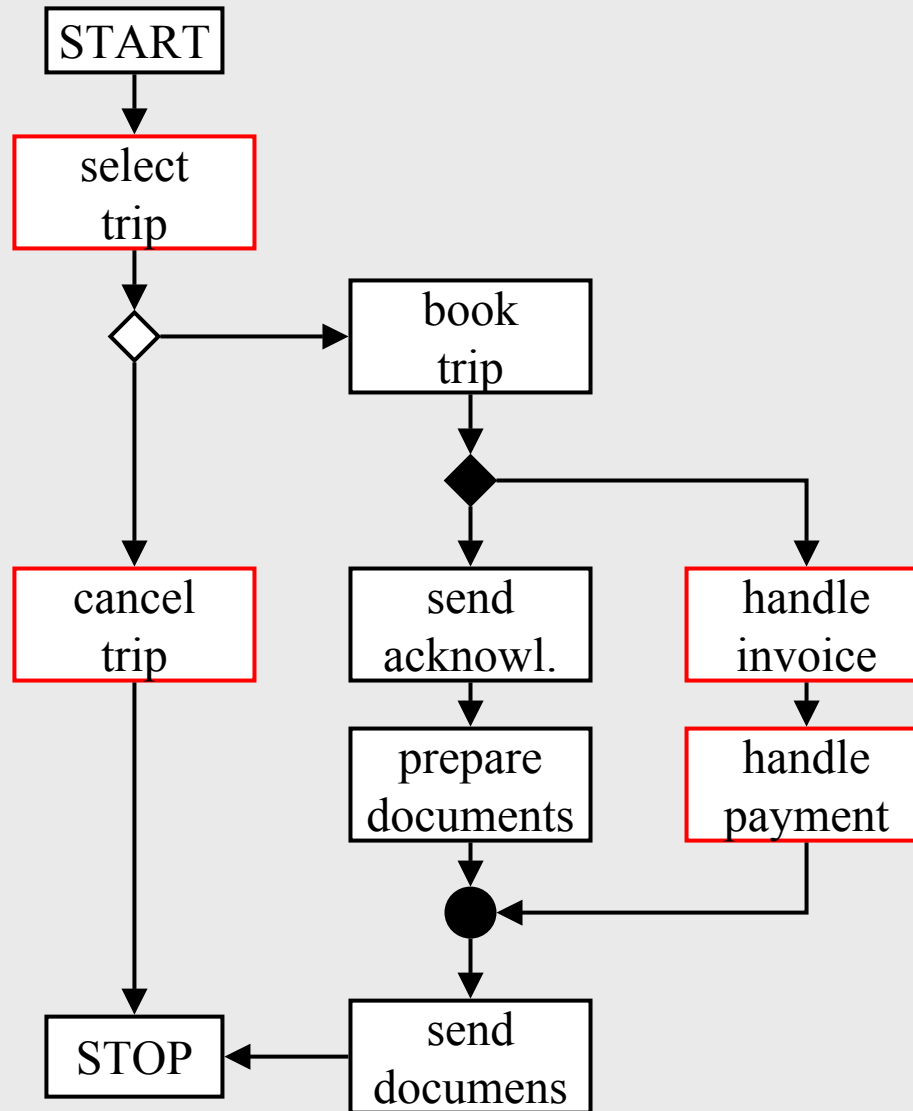
GTI process in WFPD



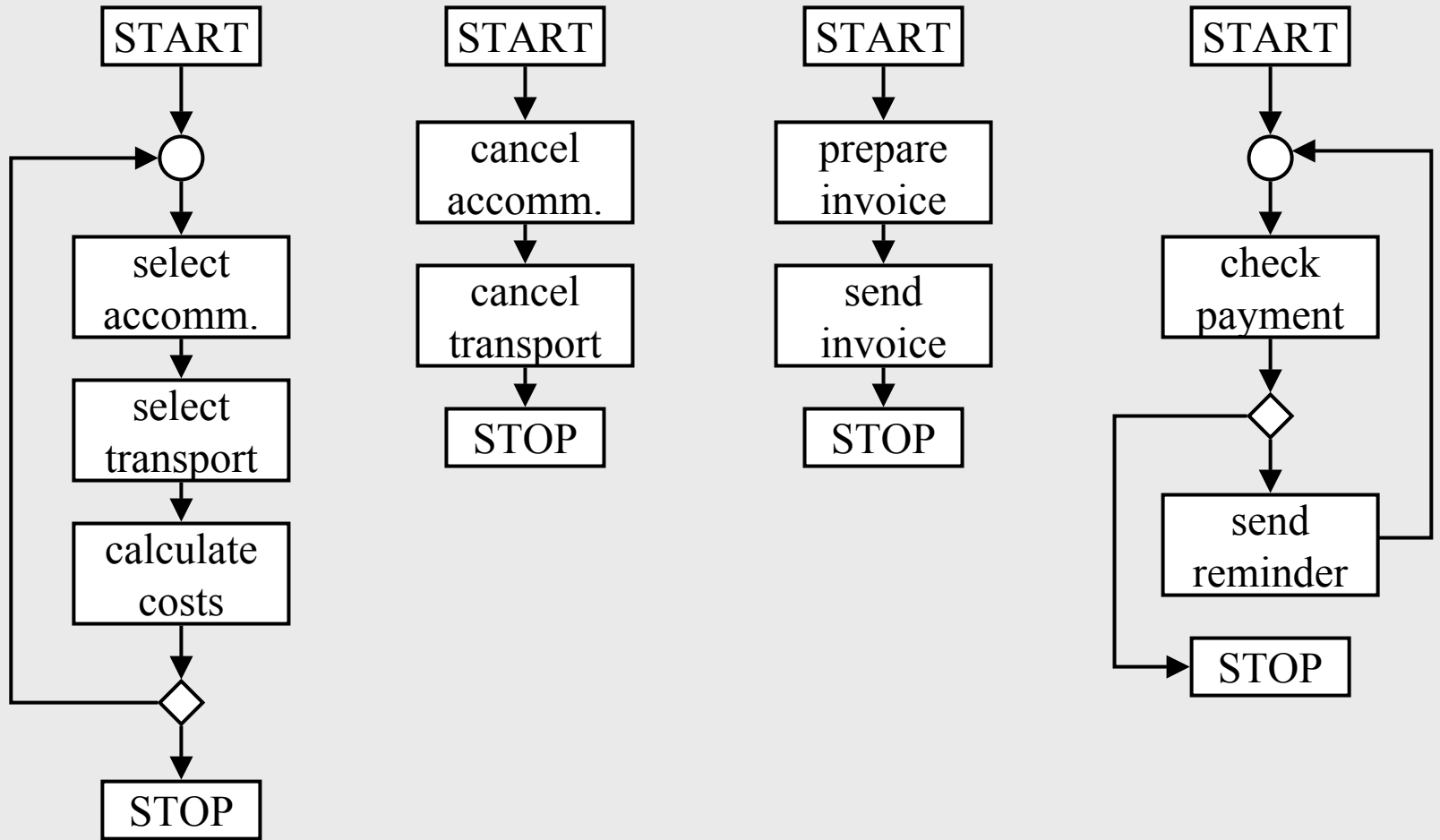
Workflow designer



GTI proces level 1

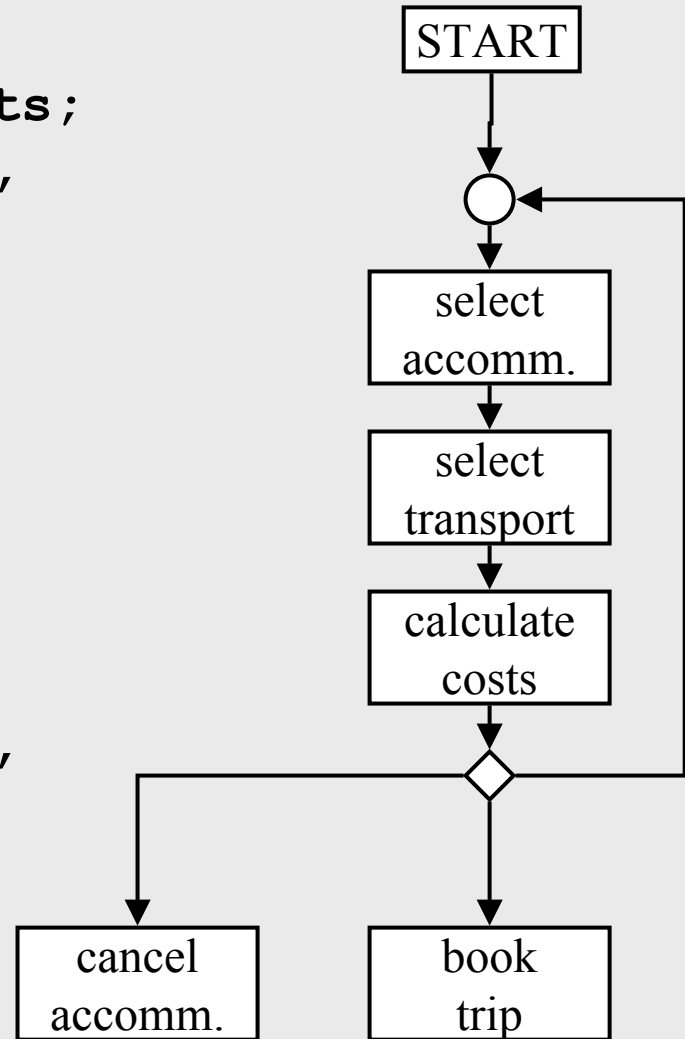


GTI proces level 2



WF process specification language

```
OR-JOIN  StartJoin,  
         START, CalculateCosts;  
SEQUENCE SelectAccommodation,  
         SelectTransport;  
SEQUENCE SelectTransport,  
         CalculateCosts;  
SEQUENCE CalculateCosts,  
         BookSplit;  
OR-SPLIT BookSplit  
CASE CustomerDecision  
change : StartJoin,  
cancel  : CancelAccommodation,  
book    : BookTrip;
```



WF activity specification language

ACTIVITY SendAcknowledgment

DESCRIPTION

"Preparation of booking acknowledgment letter for customer in MS-Word, printing and sending it."

INPUT = TripBookForm

OUTPUT = TripBookAckLetter

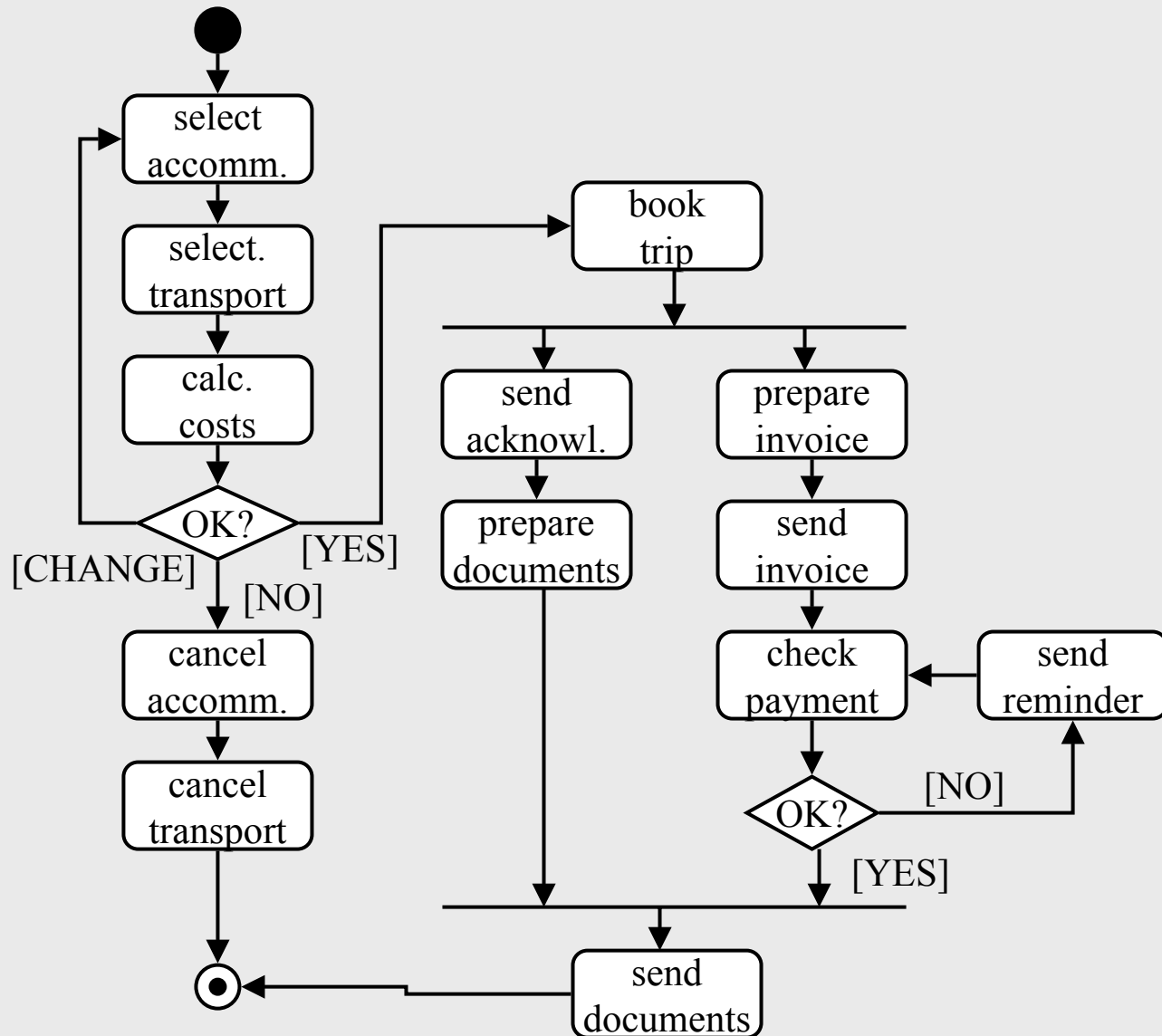
APPLICATION = MS-Word

ROLE = General

AVGTIME = 5

MAXTIME = 15

GTI process (UML activity diagram)

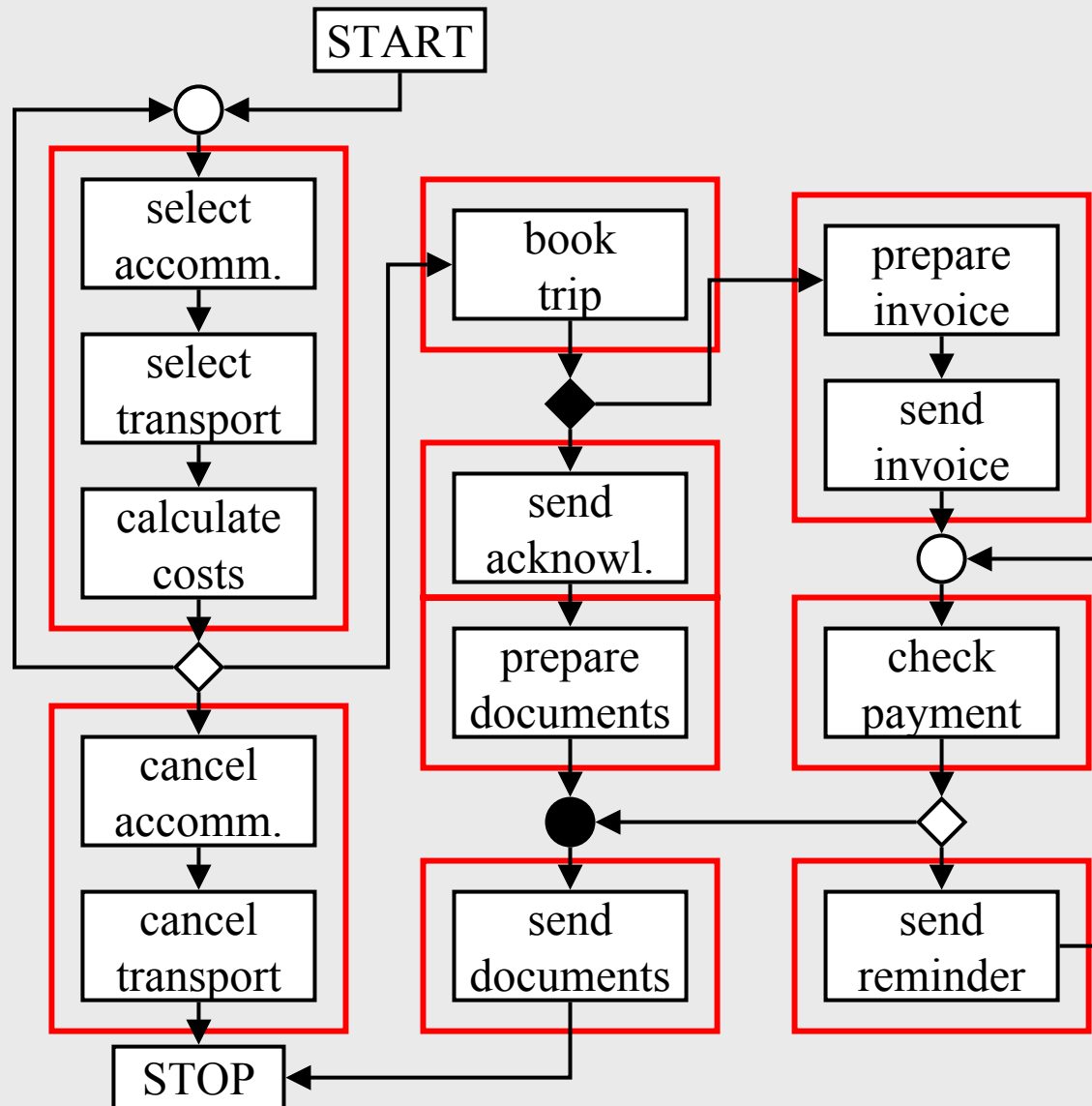


Advanced Workflow Aspects

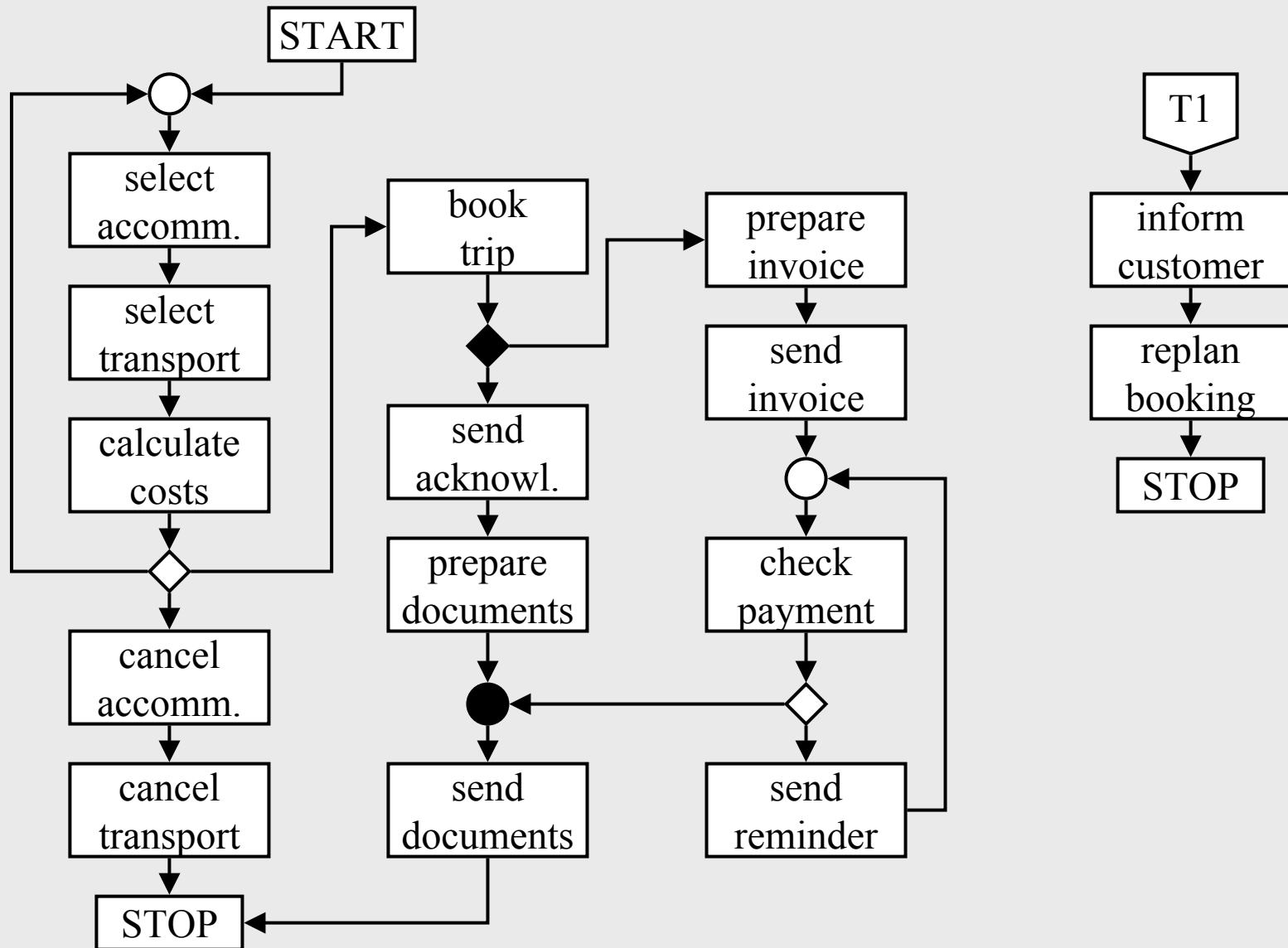
Advanced workflow modeling aspects

- Transactional workflows
- Exceptions in workflows
- Explicit data flow in workflows
- Cross-organizational workflows

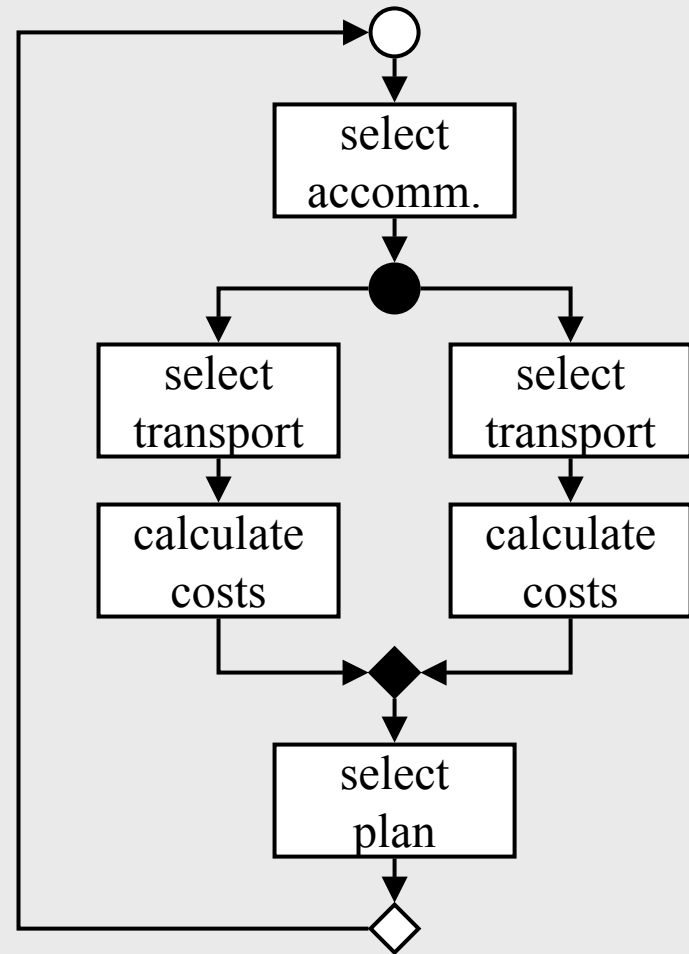
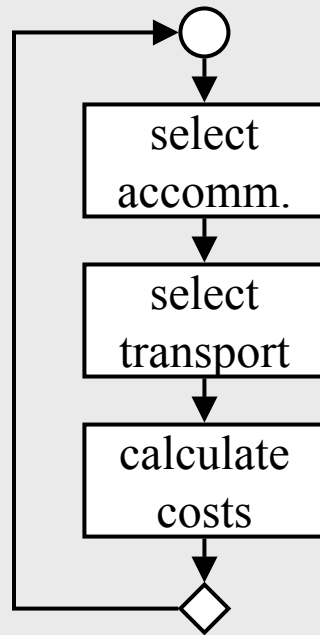
Transactional workflows



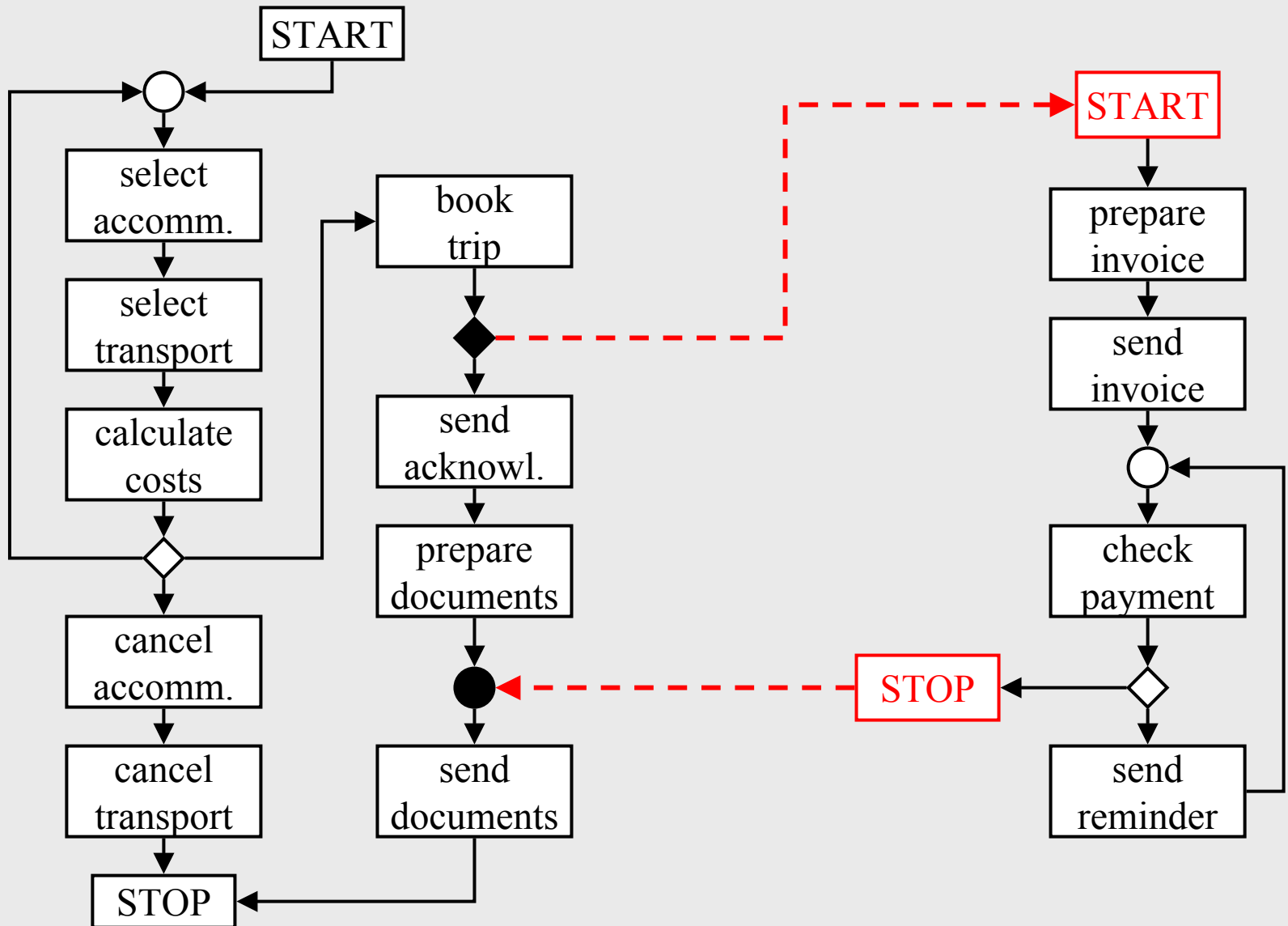
Exceptions in workflows



Explicit data flow in workflows



Cross-organizational workflows



Conclusions

Workflow modeling

- Many approaches to workflow modeling
- Practice often based on petri net variants
- Integration (and consistency) of organization, information, and process model
- Multi-level and/or multi-aspect modeling required for complex applications
- Advanced functionality required for complex applications, but not yet adopted by practice

Workflow applicability

■ Processes

- Highly structured
- Moderately complex
- Information-intensive
- Frequently repeating

■ Organization

- Mid-sized to large
- Highly structured (machine bureaucracy)
- Open to (IT) innovations