Lecture 12: Modelling Enterprises

- Modeling business processes
  - Why business processes?
  - Modelling concurrency and synchronization in business activities
  - UML Activity Diagrams
- Modelling organisational intent
  - i* modelling language
  - Modelling agents and the strategic dependencies between them
  - Explaining these dependencies in terms of agents' goals

Business Processes

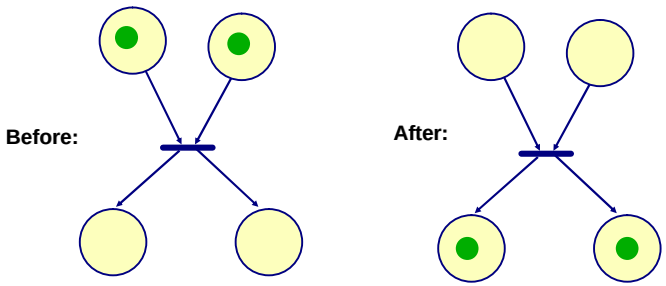
- Business Process Automation
  - Leave existing business processes as they are
    - Look for opportunities to automate parts of the process
  - Can make an organisation more efficient; has least impact on the business
- Business Process Improvement
  - Make moderate changes to the way the organisation operates
  - E.g. improve efficiency and/or effectiveness of existing process
    - Techniques: Duration analysis; activity-based costing; benchmarking
- Business Process Reengineering
  - Fundamental change to the way the organisation operates
  - Techniques:
    - Outcome analysis - focus on the real outcome from the customer's perspective
    - Technology analysis - look for opportunities to expoit new technology
    - Activity elimination - consider each activity in turn as a candidate for elimination

Modelling Business Processes

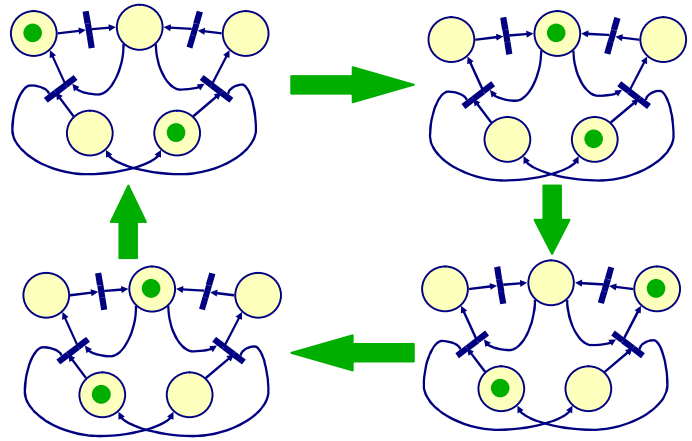
- Business processes involve:
  - Multiple actors (people, business units,...)
  - Concurrent activities
  - Explicit synchronization points
    - E.g. some task cannot start until several other concurrent tasks are complete
  - End-to-end flow of activities
- Choice of modelling language:
  - UML Activity diagrams
    - ...based on flowcharts and petri nets
    - Not really object oriented (poor fit with the rest of UML)
  - Business Process Modelling Notation (BPMN)
    - New (emerging) standard, loosely based on pi calculus

Refresher: Petri Nets

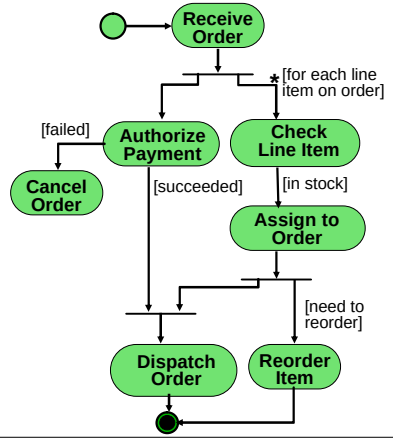
- Petri net syntax:
  - Places and transitions
  - Tokens (possibly coloured)



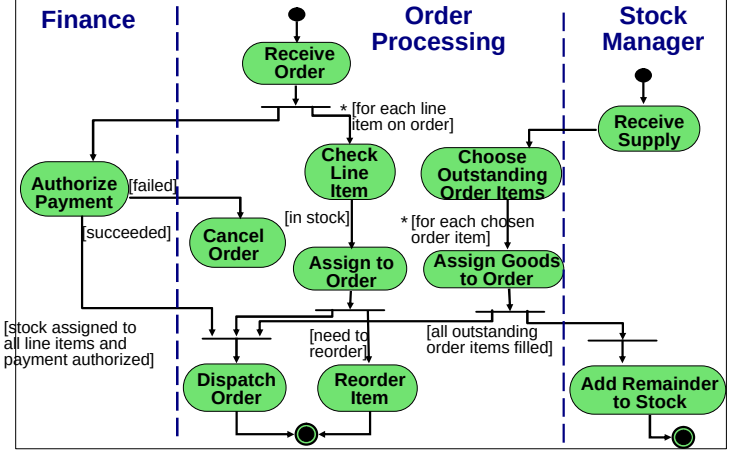
Example



Example Activity Diagram



Activity Diagram with Swimlanes



*i**

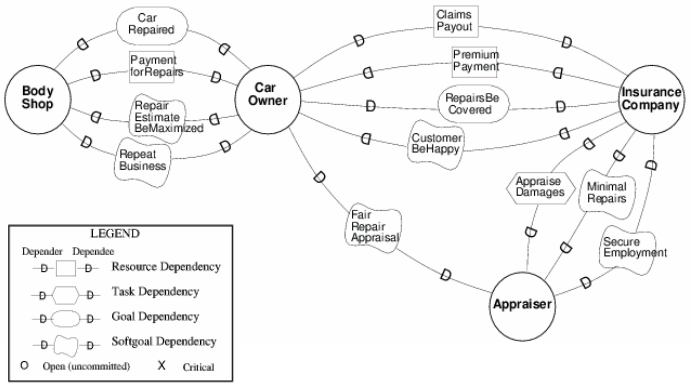
Background

- Developed in the early 90's
  - provides a structure for asking 'why' questions in RE
  - models the organisational context for information systems
  - based on the notion of an "intentional actor"
- Two parts to the model
  - Strategic dependency model - models relationships between the actors
  - Strategic rationale model - models concerns and interests of the actors

Approach

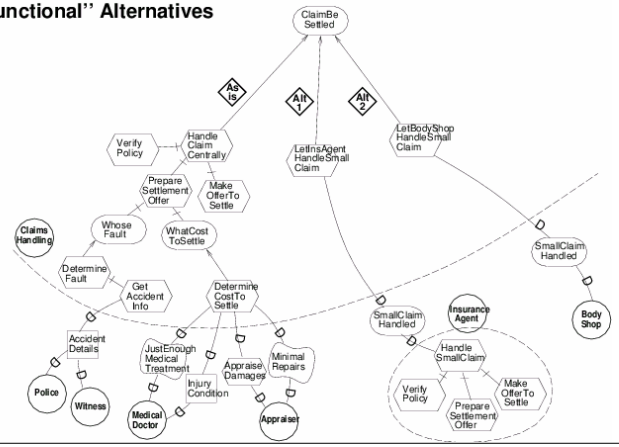
- SD model shows dependencies between actors:
  - goal/softgoal dependency - an actor depends on another actor to attain a goal
  - resource dependency - an actor needs a resource from another actor
  - task dependency - an actor needs another actor to carry out a task
- SR model shows interactions between goals within each actor
  - Shows task decompositions
  - Shows means-ends links between tasks and goals

E.g. Strategic Dependency Model



E.g. Strategic Rationale Model

"Functional" Alternatives



Summary

- **Need to understand business processes**
  - Existing business process
    - to understand the problem
  - Potential changes to the business process
    - To investigate alternative solutions
- **Need to understand organisational interdependencies**
  - How people depend on one another to achieve their goals
  - How goals relate to tasks

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