



# 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 exploit 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:

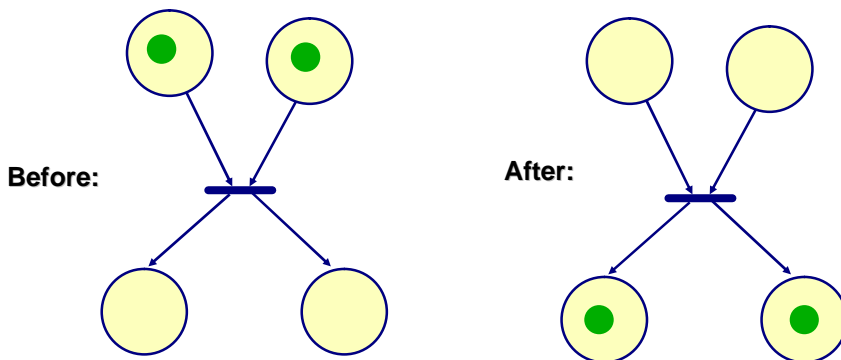
- ↳ UML Activity diagrams
  - > ...based on flowcharts and petri nets
  - > Not really object oriented (poor fit with the rest of UML)
- ↳ Business Process Modelling Notation (BPMN)
  - > New (emerging) standard, loosely based on pi calculus



# Refresher: Petri Nets

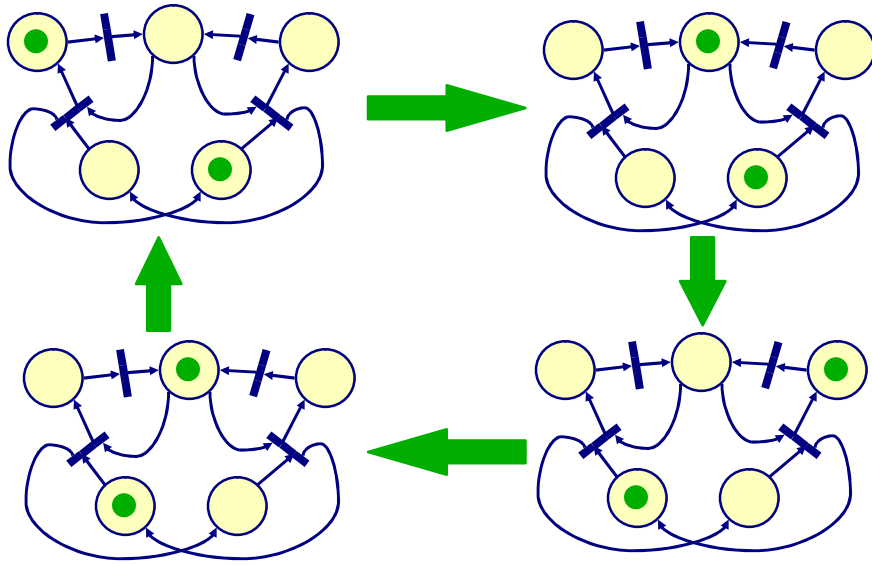
## Petri net syntax:

- ↳ Places and transitions
- ↳ Tokens (possibly coloured)

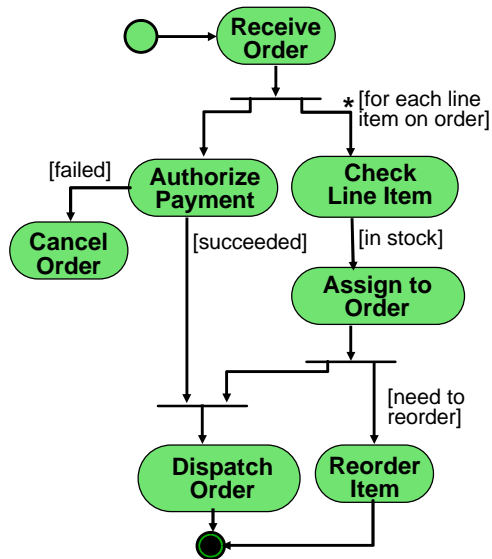




### Example

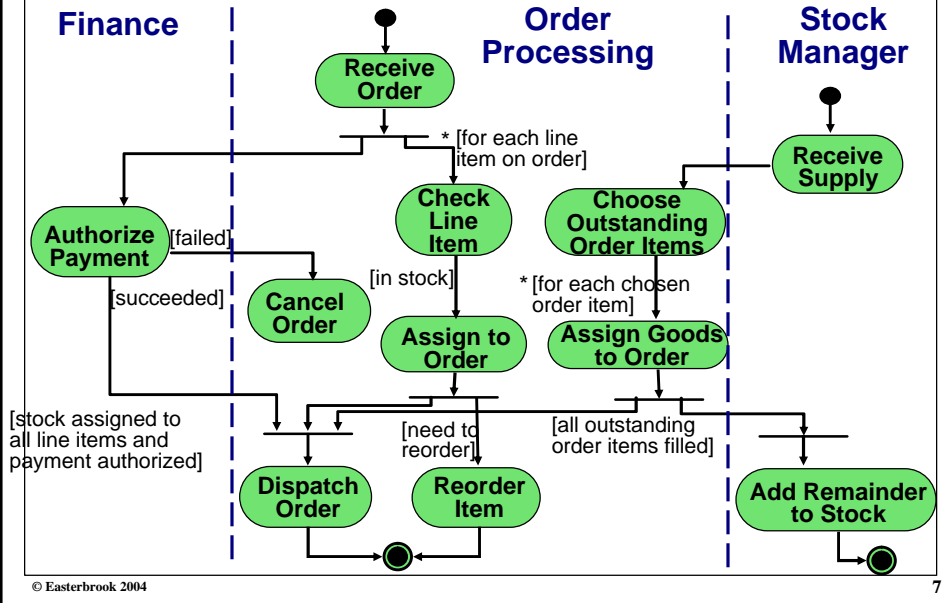


### Example Activity Diagram





# Activity Diagram with Swimlanes



# i\*

## Background

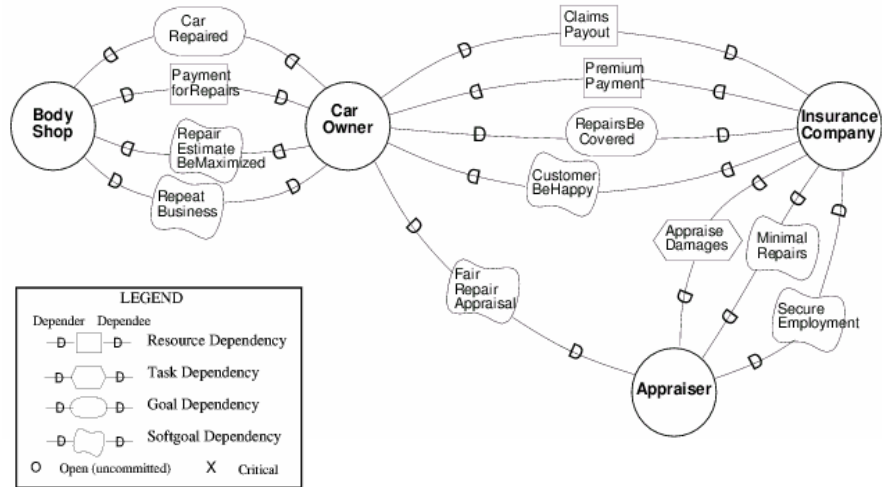
- ↳ Developed in the early 90's
  - provides a structure for asking 'why' questions in RE
  - models the organisational context for information systems
  - based on the notion of an "intentional actor"
- ↳ Two parts to the model
  - Strategic dependency model - models relationships between the actors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

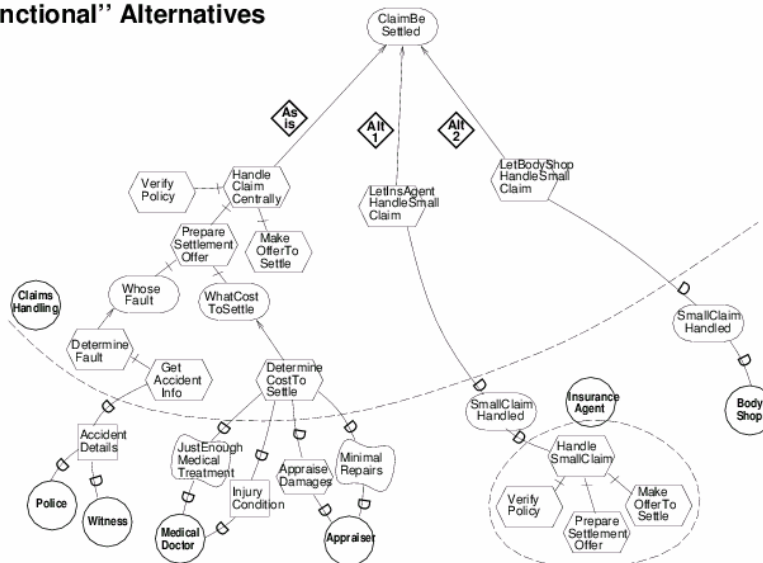


This diagram ©2001, Eric Yu



# E.g. Strategic Rationale Model

"Functional" Alternatives



This diagram ©2001, Eric Yu



## 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