Lecture 12: Modelling Enterprises

→ Modeling business processes
  % Why business processes?
  % Modelling concurrency and synchronization in business activities
  % UML Activity Diagrams

→ Modelling organisational intent
  % * 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)

Before:

After:
**Example Activity Diagram**

- Receive Order
- Reorder Item
- Dispatch Order
- Check Line Item
- Assign to Order
- Authorize Payment
- Cancel Order
- Reorder Item
- Add Remainer to Stock

**Activity Diagram with Swimlanes**

- Finance
  - Receive Order
  - Authorize Payment
  - Cancel Order
- Order Processing
  - Check Line Item
  - Choose Outstanding Order Items
  - Assign Goods to Order
- Stock Manager
  - Receive Supply
  - Add Remainer to Stock
  - Dispatch Order
  - Reorder Item

**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
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