SENG 471
Software Requirements Engineering

Modelling Enterprises

Example - Credit card application

A Client applies for a credit card. The Customer Service Department (CSD) receives the application and requests a credit check from the Credit Bureau (CB) for the Client, which processes the request.

The CSD receives the Client's credit rating from the CB. If the Client's credit rating is unacceptable, it sends the Client a rejection letter. If the credit rating is acceptable, it sends the credit card to the Client. Upon receipt, the Client calls the CSD to activate the card, and the card is activated.

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Business Processes & Analysis

- What are business processes?

- Why model business processes?
  - how to do things
  - candidates for **automation, improvement,** or **reengineering**

- Analysis:
  - examine the current process
  - identify what needs to change
  - develop a concept for a new system

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Comparing Analyses

	Business Process Automation	Business Process Improvement	Business Process Reengineering
Potential business value	Low-moderate	Moderate	High
Project cost	Low	Low-moderate	High
Breadth of analysis	Narrow	Narrow-moderate	Very broad
Risk	Low-moderate	Low-moderate	Very high

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Modelling Business Processes

- Business processes involve:
  - Multiple actors (people, business units,…)
  - Concurrent activities
  - Explicit synchronization points
  - End-to-end flow of activities

- Choice of modelling languages:
  - Business Process Modelling Notation (BPMN)
  - One type of UML diagrams ???

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Legend

BP Diagrams (BPMN)   Activity Diagrams (UML)

Activity   Activity

Event   Initial state

                                     Final state

                                     Fork/join

Gateway   Decision
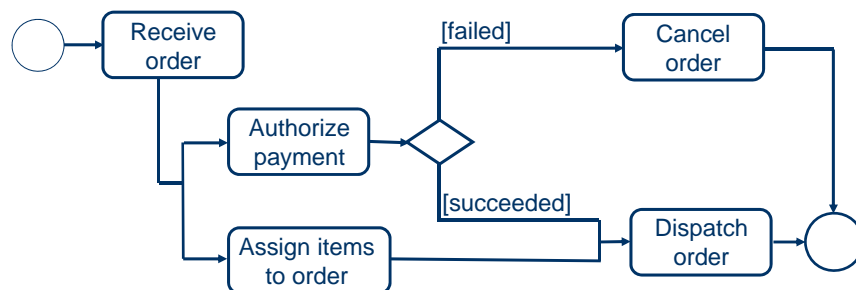
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Example 1 - Credit card activation
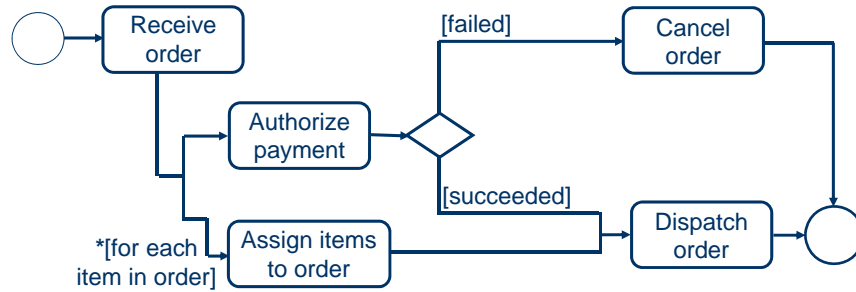
- The customer receives the card, and then activates the card.

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Example 2 - Order system
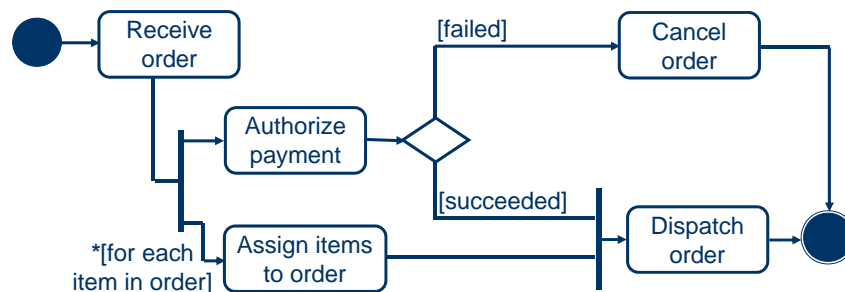
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Example 3 - Order system (loop)

Receive order

Authorize payment

[failed]

Cancel order

[succeeded]

*[for each item in order]

Assign items to order

Dispatch order

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Ex. 3 – UML Activity Diagram*

Receive order

Authorize payment

[failed]

Cancel order

[succeeded]

*[for each item in order]
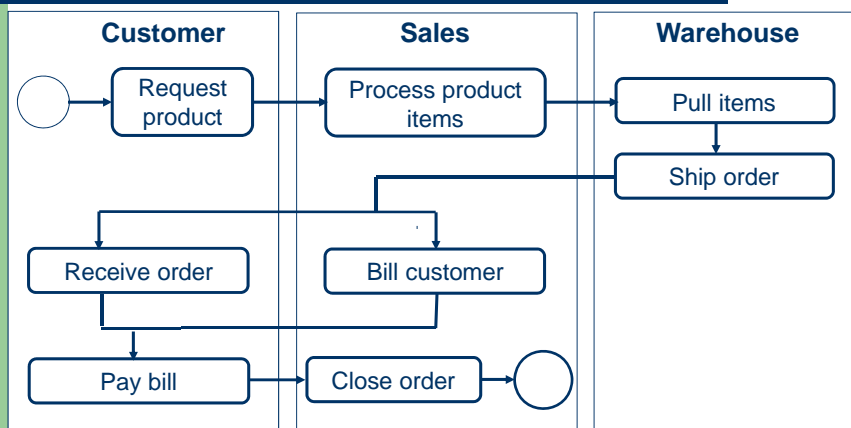
Assign items to order

Dispatch order

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Diagrams - Guidelines

- The diagram have initial event and final event.
- Diagrams are read from top-left to bottom-right
  - initial event → top-left
  - final event → bottom-right
- Each activity have at least one transition into it and at least one transition out of it.
- The diagram is decidable
  - transitions out of a decision point → mutually exclusive conditions
  - the set of conditions → complete
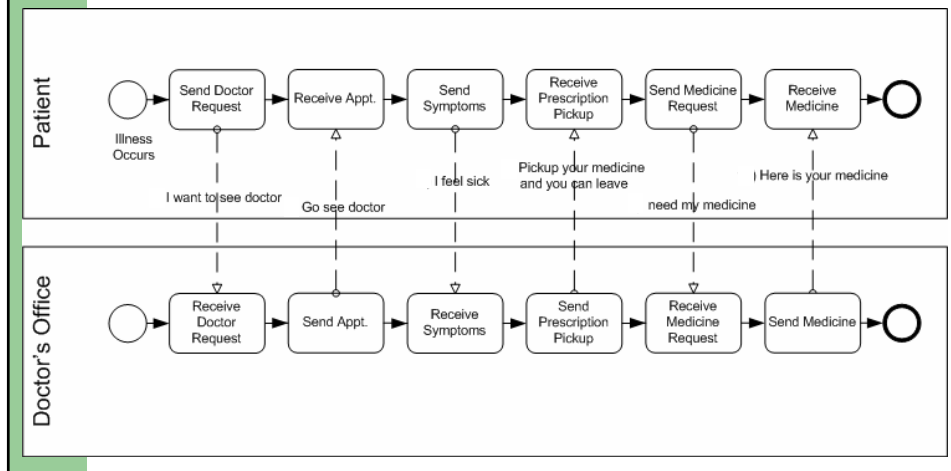- Each fork has a corresponding join.

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Example 4 - Sale (Pools)

Customer	Sales	Warehouse
Request product	Process product items	Pull items
		Ship order
Receive order	Bill customer	
Pay bill	Close order	

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Example 5 - B2B (with Pools)

Exercise - Credit card application

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Recap

- Modelling enterprises (business processes)
  - What are business processes?
  - Business process analysis and techniques
  - Modelling business processes using BPMN diagrams (UML activity diagrams)

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