Lecture 6, Part 1: Modelling Enterprises
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Business Processes

• What are business processes?
  • a flow of work from one person/business unit to the next until the task is complete

• Why model business processes?
  • understand how things are currently done
  • look for candidates for automation
  • consider changes to the business process
  • consider reengineering the business process

Business Process Analysis

• Analysis helps:
  • stakeholders examine the current processes
  • identify what needs to change
  • develop a concept for a new system

• Techniques:
  • Business process
  • automation
  • improvement
  • reengineering

Comparing Analysis Techniques

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<tbody>
<tr>
<td>Potential business value</td>
<td>Low-moderate</td>
<td>Moderate</td>
<td>High</td>
</tr>
<tr>
<td>Project cost</td>
<td>Low</td>
<td>Low-moderate</td>
<td>High</td>
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<tr>
<td>Breadth of analysis</td>
<td>Narrow</td>
<td>Narrow-moderate</td>
<td>Very broad</td>
</tr>
<tr>
<td>Risk</td>
<td>Low-moderate</td>
<td>Low-moderate</td>
<td>Very high</td>
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Business Process Techniques

• Business Process Automation
  • Do not modify the existing business processes
  • Look for opportunities to automate parts of the process
  • Can make an organization more efficient; has the least impact on the business

• Business Process Improvement
  • Make moderate changes to the way the organization operates. E.g. improve the efficiency or effectiveness of an existing process.

• Business Process Reengineering
  • Fundamental changes to the way the organization operates.

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
  • Business Process Modelling Notation (BPMN)
    • New (emerging) standard, loosely based on pi calculus
UML Activity Diagrams: Legend

- Activity
- Initial State
- Final State
- Fork/Join
- Decision

Example 1: Credit Card Activation

The customer receives the card, and then activates the card.

![Credit Card Activation Diagram](image)

Example 2: Order System

- Receive Order
- Authorize Payment
- Assign Items to Order
- Cancel Order
- Dispatch Order

Example 3: Order System (with loop)

- Receive Order
- Authorize Payment
- Assign Item to Order
- Cancel Order

A few style guidelines

- The diagram should have start and end state(s).
- Diagrams are read from top-left to bottom-right – put the initial and final states in those locations
- Each activity should have at least one transition into it and at least one transition out of it.
- The diagram should be decidable – transitions out of a decision points should have mutually exclusive guards – the set of guards should be complete
- Each fork should have a corresponding join.

Swimlanes

- Swimlanes can be used to group activities based on the actor (person, business unit, etc) who performs them.
- If an activity diagram is partitioned into swimlanes, than each activity must appear in exactly one swimlane.
- Transitions may cross swimlanes.

[Ref: Amb03]
Example 3: Diagram with Swimlanes

Exercise: Credit Card Application

A Client applies for a credit card. The Customer Service Department receives the application and requests a credit check from the Credit Bureau for the Client, which processes the request. The Customer Service Department receives the Client’s credit rating from the Credit Bureau. 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 Customer Service Department to activate the card, and the card is activated.

References

