Lightweight Process Modelling for Virtual Enterprise Process Collaboration

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Characteristics of the traditional enterprise systems

- Closed
- Centralized control
- Mission critical
An enterprise needs to be able to *quickly and cost-effectively change* how it does business and who it does business with (suppliers, business partners, customers), etc.
Enterprise information system landscape

Well served core
Poorly served perimeter

ERP

SCM

CRM
Supported process-oriented applications
within which not only data is processed in a certain way, but also the control
of the data or activities and state information, i.e. when, where and how to
processes data or trigger activates by whom.

Positioned next to enterprise workflow engine

Allow for support of “unsupportable processes” that are:

- Dynamic in nature

- Not common enough, too small for centralised implementation, benefits
too small

- Hard to explain to non-domain experts
Process-oriented Mashup New Relevance

- More XML content
- More services
- More feeds
- Cloud provides computing in the network (The Network is the computer - SUN)
- Cheap, network accessible computing gives ability to users:
  - salesforce.com
Challenges of Lightweight Process Modelling

• **Easy to use**
  - Easy for **non-IT-savvy end users**
  - Minimizing designs from scratch
  - Highly **reusable process templates** and models
  - Providing **advanced guidance** during the process design phase
    Support non IT-savvy end users

• **Executable** process modelling language
  - **Expressive** power
  - Precise, disambiguation
Lightweight Process Modelling

- **Context-aware principle**
  - Adapting the **best fitting** process **modelling artefacts** during selection
  - Effective management and **parameterization** of process artefacts
  - **Unifying names** of equal activities/tasks in different process models

- **Reuse principle**
  - **Using** process **patterns** to guarantee the soundness of process models
  - Provide domain-specific **process templates**

- **Flexibility principle**
  - Allow the use of **goals** acting as activities **at design time**
  - **Bind** process activities/tasks/goals to a particular service **at runtime**

- **Actively participation principle**
  - Provide annotations for recommendations, ranking, commenting of processes
Meta-model of the lightweight process modelling language
Control Flow

Adopted Symbols from BPMN

- Start
- End
- Activity
- Multiple Instances
- Sequence Flow
- and gateway
- xor gateway
- or gateway

Basic Process Patterns

- **Sequence**
  - $t_1 \rightarrow t_2 \rightarrow t_3$

- **Parallel Split**
  - $t_1 \rightarrow t_2 \rightarrow t_3$

- **Multiple Instances**
  - $t_1 \rightarrow t_2 \rightarrow t_3$

- **Synchronization**
  - $t_2 \rightarrow t_3$

- **Exclusive Choice**
  - $t_1 \rightarrow t_2 \rightarrow t_3$

- **Simple Merge**
  - $t_1 \rightarrow t_2 \rightarrow t_3$

- **Multi-choice**
  - $t_1 \rightarrow t_2 \rightarrow t_3$

- **Synchronizing Merge**
  - $t_2 \rightarrow t_3$
Modelling example
Never wait, execute every time

(a) Never wait, execute every time
(b) Wait for all of finish
(c) Wait for the first to finish and ignore the others
Lightweight Process Model for the Virtual Enterprise

Virtual Enterprise: International Moving Services
### IBM Mashup Tools

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<th>Data Interaction</th>
<th>Data Transfer</th>
<th>Data Routing</th>
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Supporting 13 data flow patterns

- 3 dataflow patterns for data visibility
- 5 patterns for data interaction
- 3 patterns for data transfer mechanisms
- 2 patterns for data-based routing.
Conclusions

- Lightweight business process modelling (LBPM) requirements
- Lightweight business process modelling principles
- Design of lightweight business process modelling languages
  - Control flow
  - Data flow
- Apply LBPM into virtual enterprise modelling