Bournemouth University

Lightweight Process Modelling for Virtual Enterprise Process Collaboration

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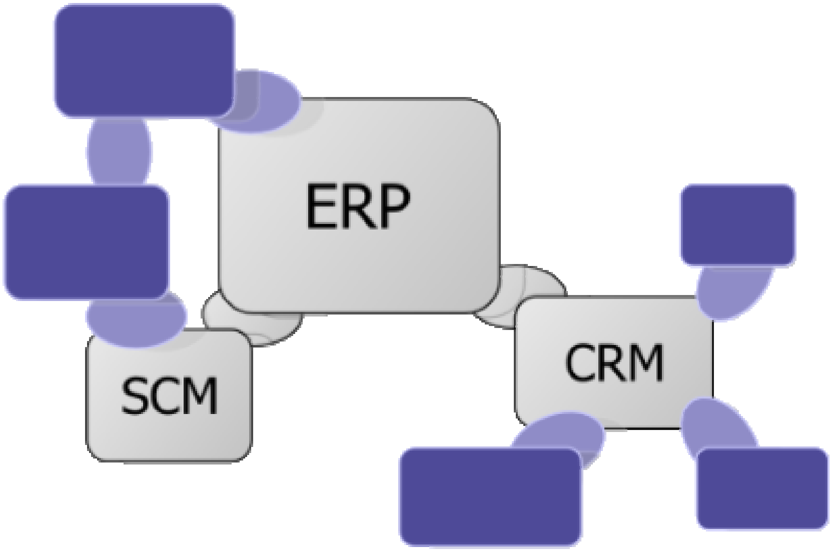
Enterprise Information Systems



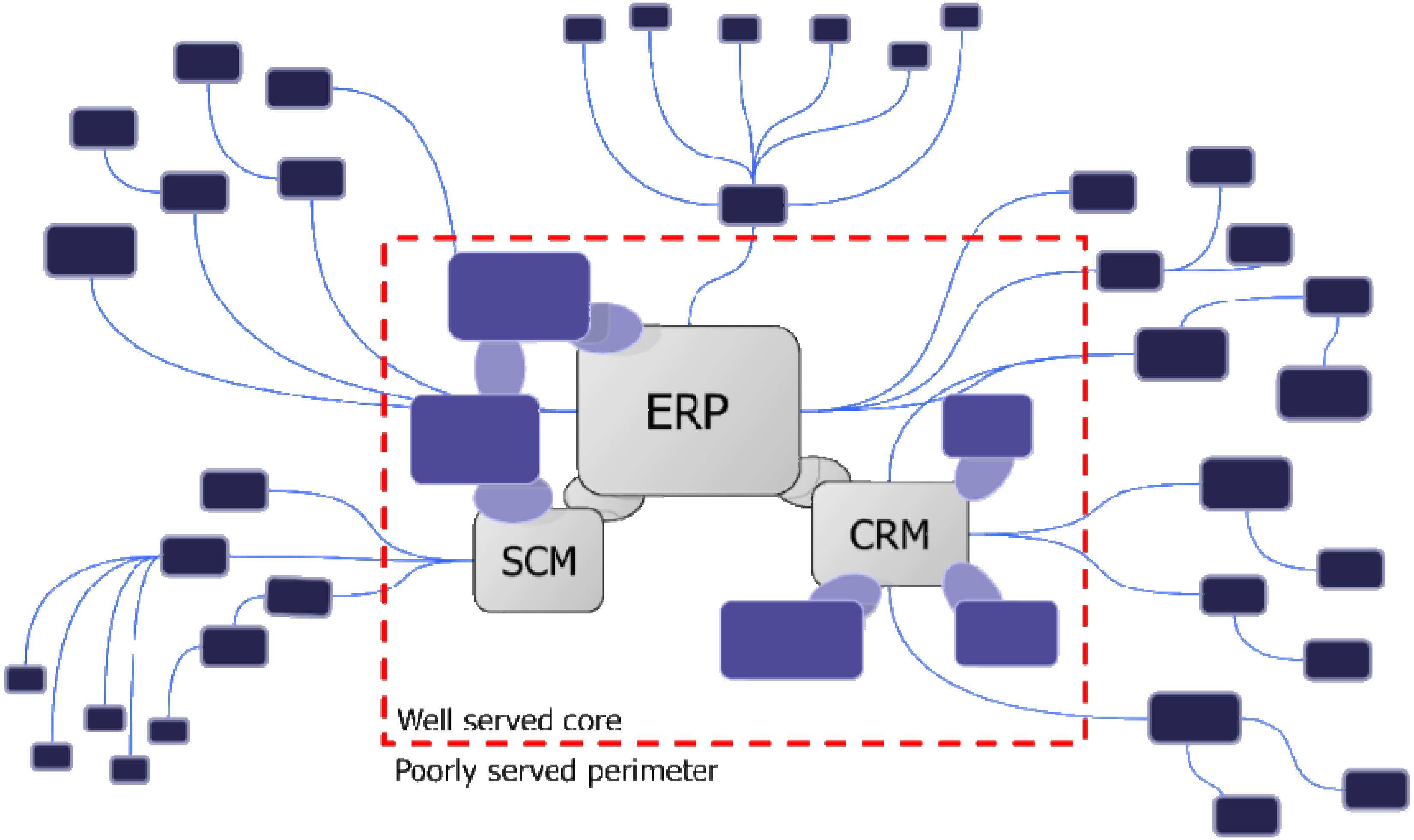
Characteristics of the traditional enterprise systems

- Closed
- Centralized control
- Mission critical

Requirements of Lightweight Business Process Modeling

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



Process-oriented Mashup

- Supported process-oriented applications

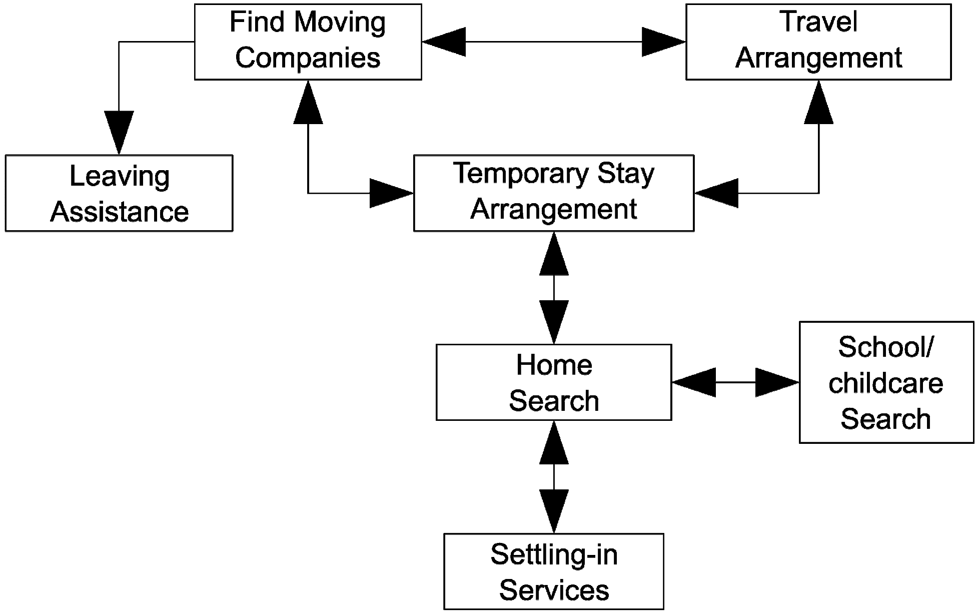
  within which not only data is processed in a certain way, but also the control of the data or activities and state information, i.e. when, where and how to processes data or trigger activates by whom.

- 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

Motivating Example



Virtual Enterprise: International Moving Services

Challenges of Lightweight Process Modelling

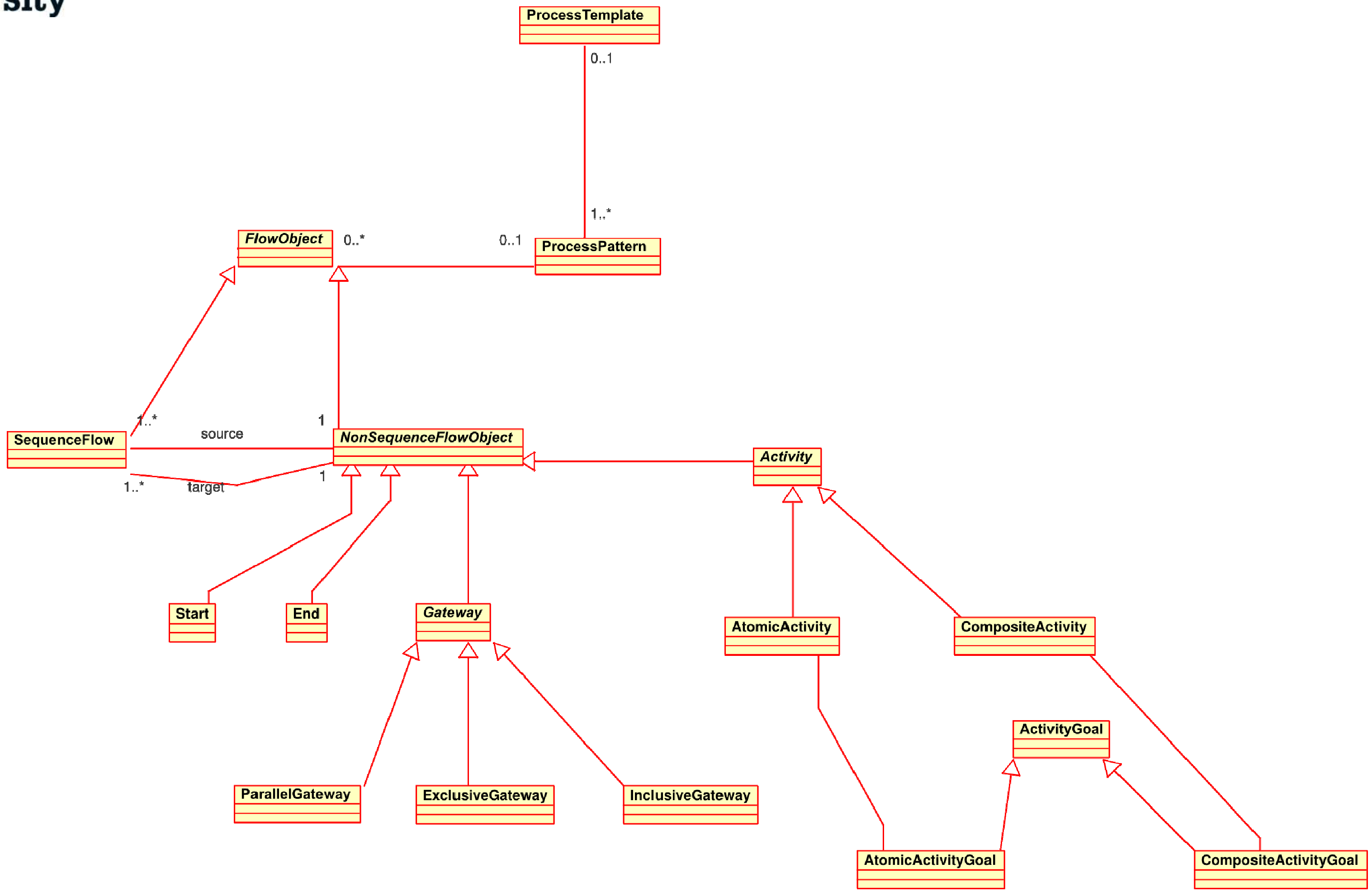
- **Easy to use**
  - Easy for **non-IT-savvy end users**
  - **Minimizing designs from scratch**
  - Highly **reusable process templates** and models
  - Providing **advanced guidance** during the process design phase

    Support non IT-savvy end users
- **Executable** process modelling language
  - **Expressive** power
  - Precise, disambiguation

Lightweight Process Modelling

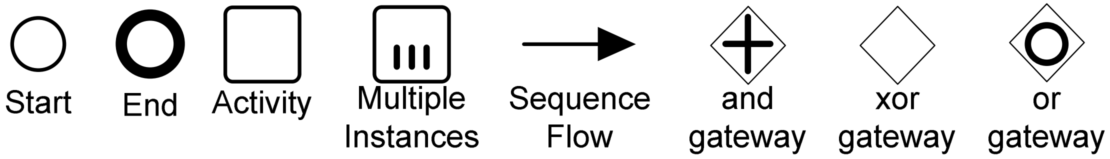
- **Context-aware principle**
  - Adapting the **best fitting** process **modelling artefacts** during selection
  - Effective management and **parameterization** of process artefacts
  - **Unifying names** of equal activities/tasks in different process models
- **Reuse principle**
  - **Using** process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



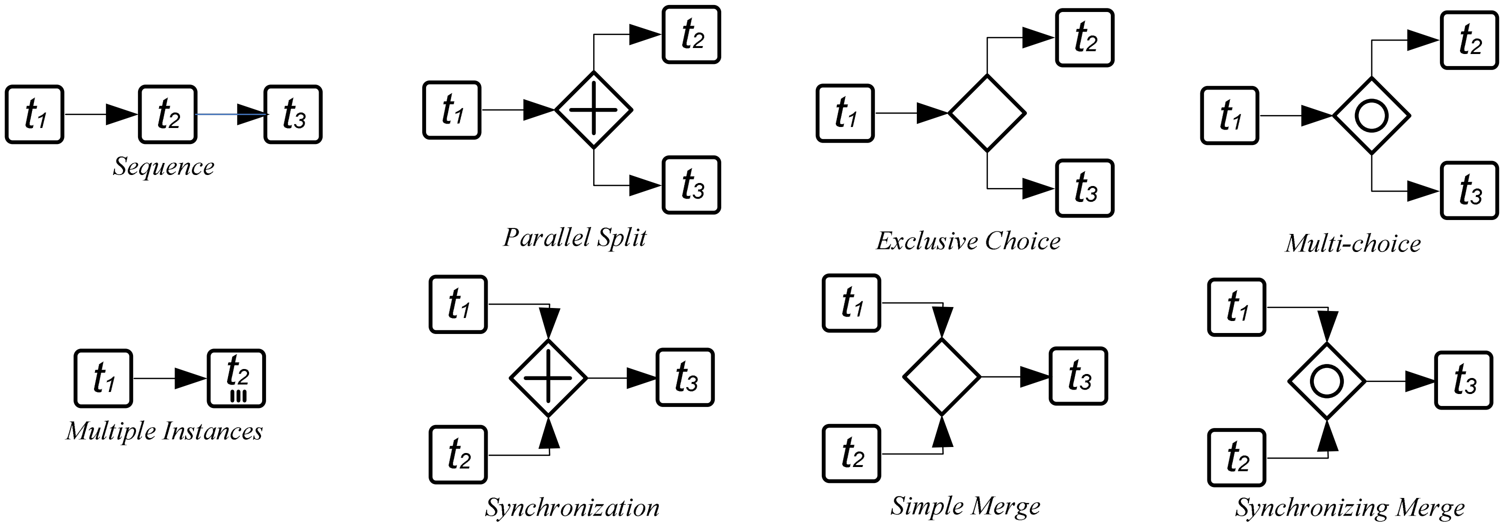
Control Flow

Adopted Symbols from BPMN



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

Basic Process Patterns



Sequence

Parallel Split

Exclusive Choice

Multi-choice

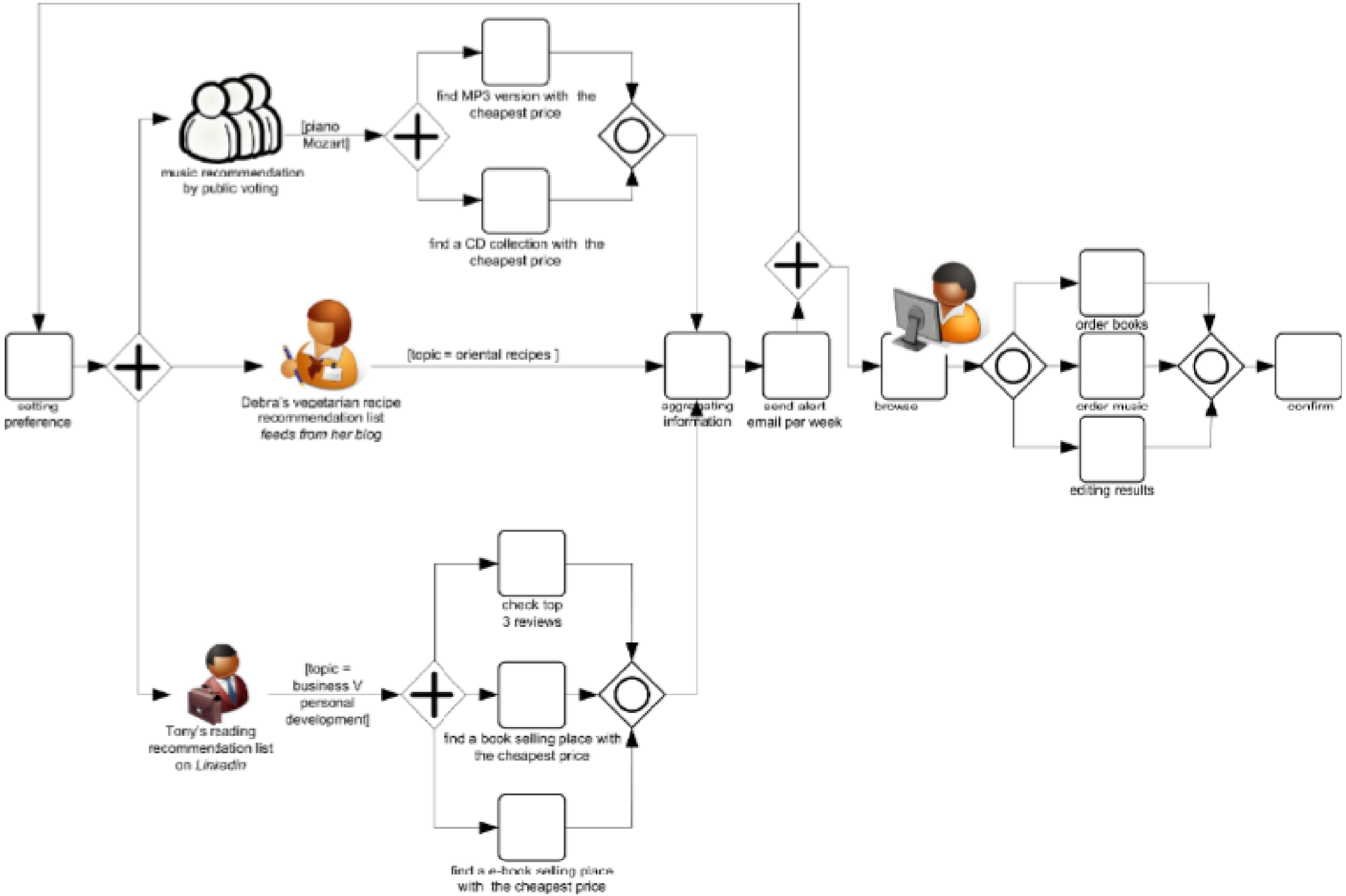
Multiple Instances

Synchronization

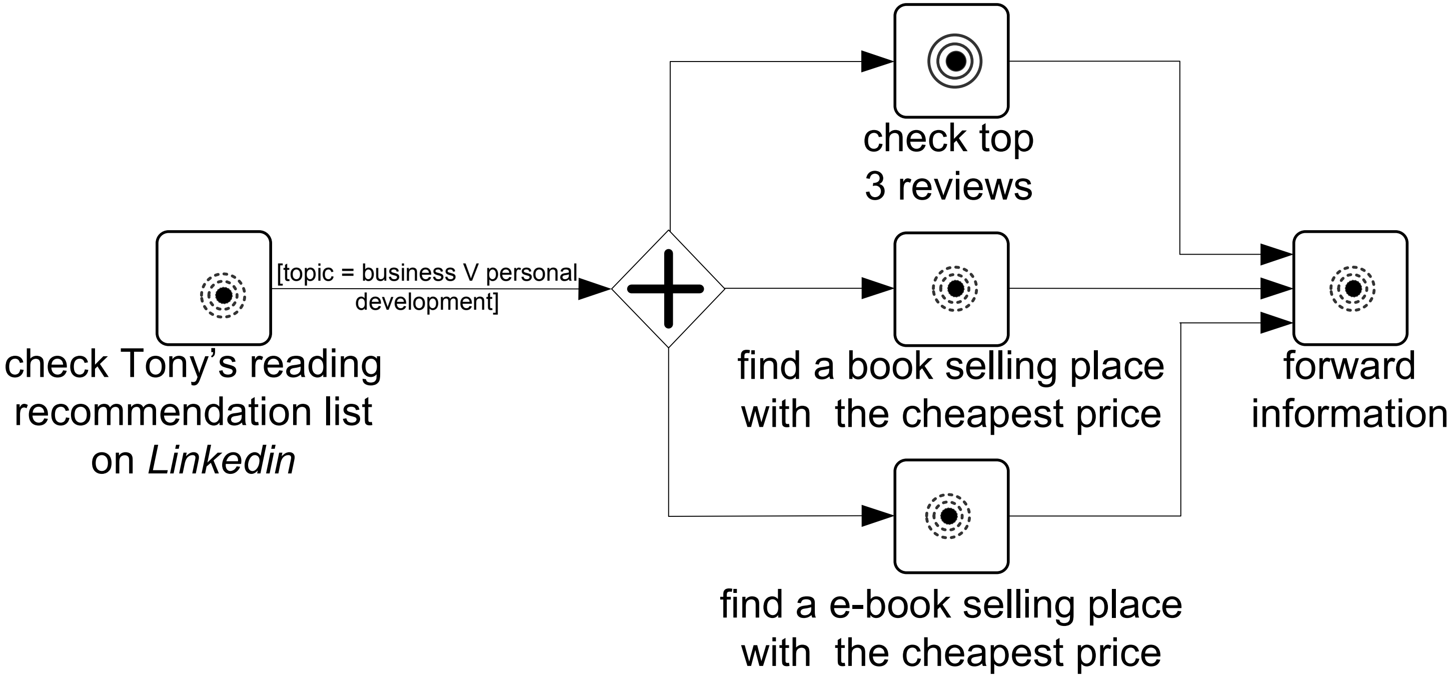
Simple Merge

Synchronizing Merge

Modelling example

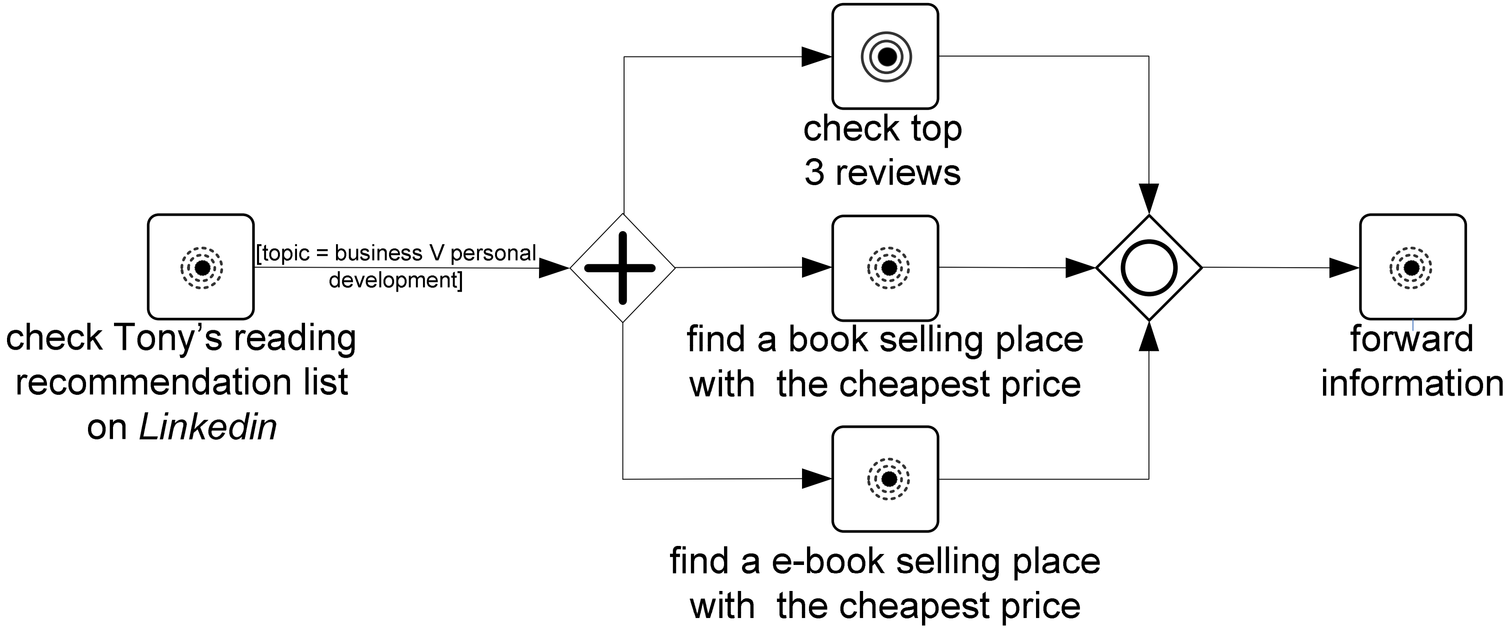

setting preference
music recommendation by public voting
[piano Mozart]
find MP3 version with the cheapest price
find a CD collection with the cheapest price
Debra's vegetarian recipe recommendation list *feeds from her blog*
[topic = oriental recipes]
aggregating information
send alert email per week
browse
order books
order music
editing results
confirm
Tony's reading recommendation list on *Linkedin*
[topic = business V personal development]
check top 3 reviews
find a book selling place with the cheapest price
find a e-book selling place with the cheapest price

Never wait, execute every time



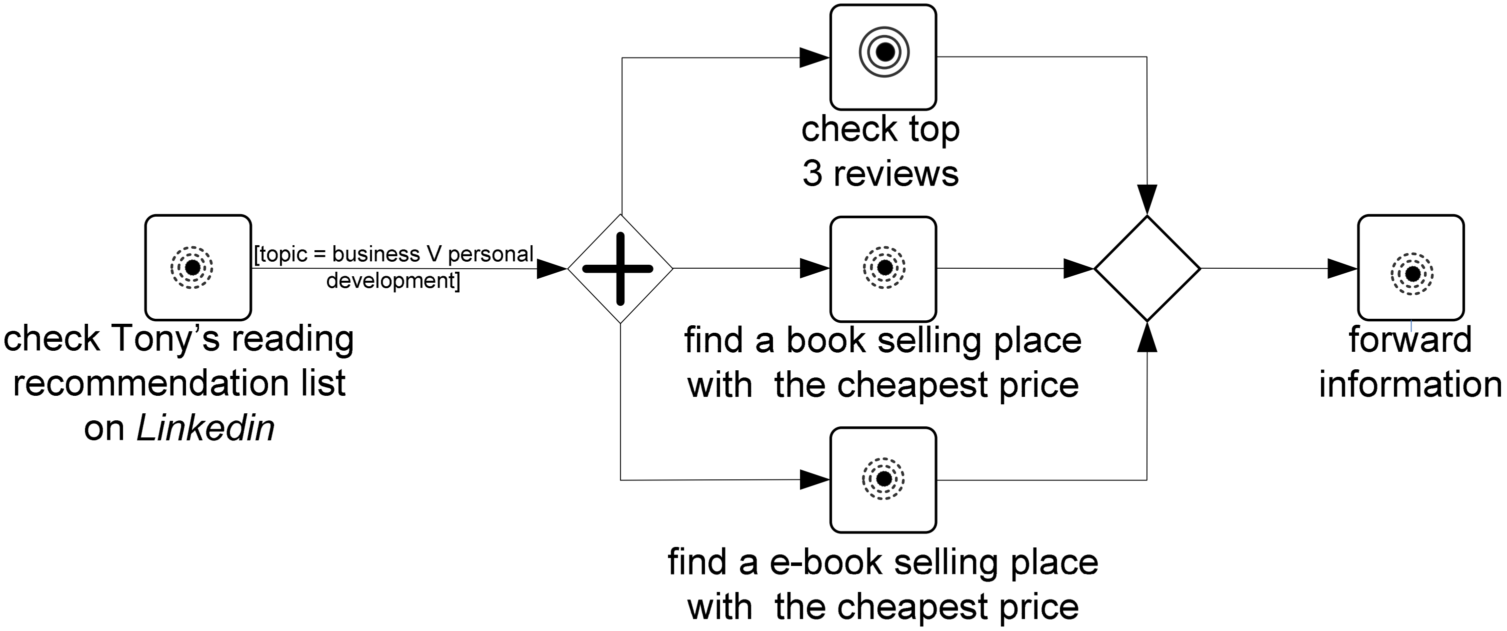
(a) Never wait, execute every time

Wait for all of finish



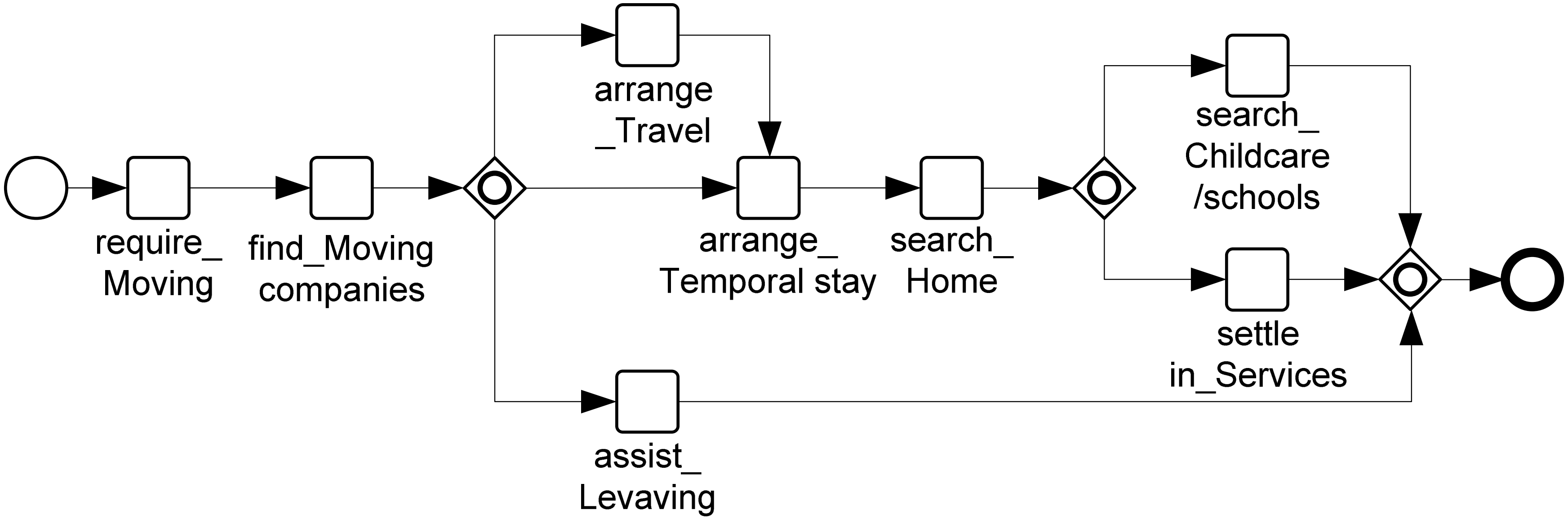
(b) Wait for all of finish

Wait for the first to finish and ignore the others


check Tony's reading recommendation list on *Linkedin*
[topic = business V personal development]
check top 3 reviews
find a book selling place with the cheapest price
find a e-book selling place with the cheapest price
forward information

(c) Wait for the first to finish and ignore the others

Lightweight Process Model for the Virtual Enterprise



Virtual Enterprise: International Moving Services

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Some Data Operators in Data-oriented Mashups

IBM Mashup Tools				
	Data Visibility	Data Interaction	Data Transfer	Data Routing
Transform			X	
Sort			X	
Group			X	
Merge			X	
Union			X	
Augment			X	
Filter				X
Data Refresh		X		

Data Flow

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