Enterprise Informatization

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Lecture 1

Business process modeling with UML application
Tool kinds recall

- MRP - *Manufacturing Resource Planning* [inside production enterprise]
- ERP - *Enterprise Resource Planning* [inside enterprise or on the border of enterprises]
- SCM - *Supply Chain Management* [connection between enterprise and suppliers]
Tool kinds recall (2)

- CRM - *Customer Relationship Management* or eCRM 
  - operative (=ERP?)
  - analytical (like OLAP cubes, *OnLine Analytical Processing* – multidimensional multicriteria optimization)
  - contact may consist of for example:
    - PRM - *Partner Relationship Management*
    - CIC - *Client Interaction Center*
Why business processes modeling?\(^{(1)}\)

1. Necessary for recognition of enterprise functioning [\textit{as-is}]
2. Necessary for specification of future enterprise functioning, after changes introduction [\textit{to-be}]
3. Necessary for existing business process supporting tools under the assumption of keeping these tools and changing the process
Why business processes modeling? \(^{(2)}\)

4. Necessary in case of application of a new such tool in order to fit its configurable functionality correctly to the needs as well as for correct old data conversion

5. Necessary for correct new tool development as a source of system functional requirements

6. … a lot of other possible situations and any their combination
What are ways of business modeling?

1. Implemented tool-driven approach possible under the assumption that the tool has long implementation history – usually filling up the tables containing detailed questions addressed to particular functional fields of the enterprise.


3. Application of modeling based on OMG (Object Management Group) standards.
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Pictures taken from:

Full documentation contained in the IBM/Rational Unified Process product – unavailable publicly.

Succeeding business model elements will be enriched by samples.

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Business goal

Determines the strategic goal of an enterprise as well as particular sub-goals being elements of the strategic one. Realization of each goal should be supported by at least one business process. At the same time each business process should be addressed to support at least one realization of a business process. Otherwise something is wrong in the whole business model. Usually business goals are on different levels of generality and they are dependent one to another, but circular dependencies should not be present in the model.
Business goals inter-relationships

There are always only dependency relationships showing goals hierarchy starting from the highest strategic goal of the enterprise.
Business use-case model

This model is used for separation of everything that is outside of the enterprise and interacts with it from the enterprise itself. This is one of sources triggering business processes. The use-case model describes on very general level what (but not how) the particular enterprise is doing.
Business actor

Represents everything outside the enterprise and can interact with it. It could be external human roles or cooperating companies/institutions as well as external software systems. This is the model element which can determine a good place for application of a software tool supporting business process.
**Business use-case**

Determines what the modeled enterprise does in reaction to the external stimuli generated by business actors (like customer’s order) or represented by external business events (like financial or tax regulations change, catastrophe).
Business use-case model elements inter-relationships

Should take into account not only actor-UseCase and UseCase-UseCase relationships but also UseCase-BusinessGoal relationship.
Business analysis model

Used for specification of not what but how the enterprise reacts to interactions coming from outside world. Is focused on business processes existing inside the enterprise.
Business process modeling with UML

Business entity

This model element is strictly connected to the business domain of the enterprise. Is used for expressing static notions connected directly to critical company data persistence.
Business event

In case of business process analysis it represents events inside the modeled enterprise. These events could represent inter-process communication, communication between workers or could be used for synchronization of processes.

However in case of business use-case model it could also represent important but difficult to foresee internal events that oblige enterprise to a reaction. This kind of business event can trigger business processes, but do not belong to analysis model.
Business rule

Defines the rules applied in enterprise business processes. It could reflect for example a decision process. Business rules can very dynamically change during enterprise everyday activity, as usually they constitute an answer of the enterprise to continuous market changes. They should be identified in order to grasp the most frequently changing element of internal enterprise activities. In case of implementation of flexible enterprise applications business rules can be used for parameterization of such systems – compare to business rules engines.
Business system

It contains business model elements that are strongly connected one to another and weakly connected to other elements (compare to weak-coupling & strong-cohesion criterion applied to object oriented software quality). This model element is dedicated to enterprise business model functional decomposition. In consequence it is easier to develop more modular software system being the enterprise application.
Business use-case realization

Defines **how** an enterprise realizes what is defined in appropriate business use-case. Such business use-case realization constitutes the set of all similar scenarios (business processes) that are accomplished (realized) by a modeled enterprise.
Business use-case and business use-case realization relationships

Typically it is assumed that each business use-case realization maps 1:1 to business use-case.
Business worker

It represents a role played by an enterprise worker regarding business process. Each business worker can play several such roles. Each role can be played by several workers as well. A role does not have to be permanently fixed to a person (cover, promotion, fight against bore,…). Business worker can trigger business processes inside the enterprise (for example internal inspection processes). This is also a good candidate for business process automation via implementation of enterprise application.
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**Business use-case realization – activity diagram**

The diagrams used here are focused on enterprise dynamics and gathering business scenarios. They are a source of inferring business domain model.
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Part of business analysis model – *Domain Model*

This is static and focuses on notions from business domain.
Decomposition of a complex business model into business systems

It simplifies modeling research. The system boarders should be located where the dependencies between them are the weakest. The decomposition is the source of enterprise application modularity. These subsystems can be mapped to modules. The modularity makes implementation and selling such systems easier.
## Business vs system model elements

<table>
<thead>
<tr>
<th>Model element</th>
<th>Business model</th>
<th>System model</th>
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<tbody>
<tr>
<td>Actors</td>
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<td>Use cases</td>
<td>+</td>
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<td>Business events</td>
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<td>Business workers</td>
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<td>Activity diagrams</td>
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<td>Entities</td>
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UML vs. BPMN

The advantages of application of UML profile for business modeling:

– Model completeness
– Model cohesion
– Ease of common understanding by IT and business specialists
– Ease of transformation of business model into system model by IT specialists due to the similarities shown in last table

Disadvantages of UML profile application for business modeling:

– Lack of business model engines ready for execution of such models (transformation to BPMN2 models required)

Alternative approach (being in fact a complement) is established by OMG (Object Management Group) BPMN2 (Business Process Modeling Notation) standard which is intended to be presented during the next lecture.
The end