Object-Oriented Software Engineering

Business Engineering

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Business Engineering Overview

- Requirements for market success are changing
- Survive in a increasingly competitive market
- Business engineering = business reengineering + business improvements
- Using of the business modeling
- Information systems are part of the solution
- Development of business and supporting IS converge
- Migration from legacy system must be taken into account
Business Engineering Process

Business Development

- Envisioning
- Reversing the Existing Business
- Engineering the New Business
- Installing the New Business

Reengineering Directive

The Reengineered Corporation
Continuous Improvement

Reengineering

yes

Radical $\Delta$?

Improvements

no

Reengineering 1

Reengineering 2

...
Conventional SW Development

Business Domain

Software Domain

Adaptive SW Development

Business Domain

Software Domain
Divergent Models

Convergent Model

Business Perspective

Software Perspective
Envisioning

- Model of the Existing Business
  - Strategy
  - Understanding of the Existing Business
  - Customer Demands
  - Benchmarking

Reengineering Directive

Objective Specification
Reverse Business Engineering

Model of the Existing Business

Build a Use Case Model

Build an Object Model
Forward Business Engineering

- Objective Specification
- Build a Use Case Model
- Build an Ideal Model
- Build a Real Model
- Verify the New Business
- Develop IS
- The Reengineered Business
RUP: Business Modeling

Goals:

- Understand the structure and dynamics of the organization
- Ensure that customers, end users, and developers have a common understanding of the organization
- Derive requirements on systems to support the organization
Business Use Case Model

→ a model that describes the processes of a business and their interactions (i.e. within business services) with external parties like customers and partner

- Business Actor
  → a role played in relation to the business by someone or something in the business environment

- Business Use Case
  → a sequence of actions performed in a business that produces a result of observable value to an individual actor of the business

- Use Case Relationships
  • Actor generalization, include, extend and use case generalization
  * as in “normal” use case model

- Business Use Case Package
  * as in “normal” use case model
Business Object Model

→ an object model describing the realization of business use cases. It serves as an abstraction of how business workers and business entities need to be related and how they need to collaborate in order to perform the business

- Business Use Case Realization
  → describes how a particular business use case is realized within the business object model, in terms of collaborating objects

- Business Entity
  → a "thing" handled or used by business workers

- Business Worker
  → a role or set of roles in the business, interacting with other workers and manipulates business entities

- Organization Unit
  → encloses business workers, business entities, and other organization units that, according to some criterion, belong together

- Relations
  • Association, aggregation, generalization, ...
Business Object Model (cont.)

- Activity Diagram
  - illustrates the workflow of a business use case

- Sequence diagram
  - depicts the details of the interaction among business workers, business actors, and how business entities are accessed, during the performance of a business use case

- Collaboration Diagram
  - Team-Collaboration Diagram
    - shows which business workers must interact, and which business entities must be accessed to perform the workflow of a business use case; messages, and message sequence numbers are excluded
  - Work-Collaboration Diagram
    - semantically identical to a sequence diagram but focuses on the objects, while the latter focuses on the interactions

- State Diagram
  - illustrates which states a business worker or a business entity can have
<table>
<thead>
<tr>
<th>Business Model</th>
<th>System Model</th>
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<tbody>
<tr>
<td>Business use case</td>
<td>Subsystem (package)</td>
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<tr>
<td>&quot;Cluster&quot; of business entities</td>
<td>Subsystem</td>
</tr>
<tr>
<td>Business worker's responsibility (operation) supported by system</td>
<td>Use case(s)</td>
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<tr>
<td>Business worker supported by system</td>
<td>Actor</td>
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<tr>
<td>Business actor supported by system</td>
<td>Actor</td>
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<td>Business entity</td>
<td>Entity class</td>
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<tr>
<td>Business entity attributes</td>
<td>Entity class</td>
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<tr>
<td>Relationships between business entities</td>
<td>Relationships between entity classes</td>
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Business Modeling Workflow
Business Modeling Artifacts

- Business Process Analyst
  - responsible for
  - Supplementary Business Specification
  - Business Use-Case Model
  - Glossary
  - Business Object Model

- Business Designer
  - responsible for
  - Business Use Case
  - Business Use-Case Realization
  - Business Worker
  - Business Entity
  - Organization Unit

- Business Reviewer