Business Process Modeling for Three Voices – Applying BPMN, CMMN, DMN in a real-world project

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About me

I’m a speaker, writer, coach, teacher, business analyst, CBPP, ...
## Standards for Enterprise Models

<table>
<thead>
<tr>
<th>Business Scope</th>
<th>Business Concepts</th>
<th>System Logic</th>
<th>Technology Physics</th>
<th>Component Assemblies</th>
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</table>

- **Business Concepts**: BPDM, BPMM, VDM, SBVR, CMMN
- **System Logic**: BPMN
- **Technology Physics**: ERD, SysML, UML, OCL, PRR, ODM
- **Component Assemblies**: BMM, DMN

How we look on BPMN today ...

• BPMN as the “universal” process language
• Discussion about a “better BPMN”
• Discussion often dominated by Gurus

The problem is not the notation. The problem is how we apply the notation.
Real world project

- Financial organization offering funding for charity organizations and projects
- Different types of programs for different target groups
- As-Is modeling done
- Project Goals:
  - Define To-Be Processes
  - Consistent handling of applications over all programs
  - More flexibility in defining and implementing new funding programs
  - Reducing risk
As-Is Process Model

- Business Process for handling an application
- Total of 48 such models, cause there are 48 application forms for different programs
As-Is Process Model
As-Is Process Model
The New Process Model

- One process model for all application types
The New Process Model

• Where is the Business Logic?
Decision Logic and Decision Context

[Diagram showing decision logic and decision context with nodes such as Commercial Register, Check Completeness of Address Information, Check Correctness of Account Information, Check Financial Plan, Check Cost Structure, Check Financing.]
Decision Logic for the Process

• Describe the content of each decision
  – What is the question to be answered? What are the possible answers?
  – How is the decision made? Use Decision Tables or other useful description metaphors.

• Provide additional information for each decision
  – Frequency and value of the decision
  – Option for Automation

• Describe the logic for each decision
  – Business Rules, Decision Tables, other metaphors
## Decision Tables

<table>
<thead>
<tr>
<th>Conditions</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Customer Status</strong></td>
<td><strong>Status</strong></td>
</tr>
<tr>
<td></td>
<td>of <strong>Customers</strong></td>
</tr>
<tr>
<td></td>
<td>Maintenance <strong>Contract</strong></td>
</tr>
<tr>
<td><strong>Coverage of</strong></td>
<td><strong>Maintenance Contract</strong></td>
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<tr>
<td><strong>Accepted of</strong></td>
<td><strong>Service Request</strong></td>
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<tr>
<td><strong>SR</strong></td>
<td><strong>Is accepted</strong></td>
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<td><strong>{Gold, Platin}</strong></td>
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<td><strong>Active</strong></td>
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</tr>
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</table>
Current Challenge: „Cases“

• Modeling special cases as insolvency of a charity organization became very difficult using BPMN.

• What is the problem?
  – Each „Case“ is different
  – Depending on the situation a subset from a set of possible activities is selected and executed
  – No fixed flow (or no flow at all), the flow is defined at runtime
Case Model - First Sketch
Case Management Model and Notation

• Very rich Semantic

• Describes Activities and Control of the Case

• Planning Table: Described through DMN

• Some processes don‘t have a predefined flow, but not everything is a case.
Make it happen: Build Your Project

Architecture Method Team
Some Modeling Principles

Model ≠ Model Output

A model is more than a picture.

Separate independent concepts.
Separate stable from instable.

A model has a purpose.

From speculation to specification: The first model is not the final model.
Architecture, Method, Process

Adopted from Ivar Jacobson „Object-Oriented Software Engineering“
Define the Architecture

- Business Scope
- Business Concepts
  - Structural View
- Business Concepts
  - Management View
- Business Concepts
  - Operator View
Business Scope

• Content:
  – Process Map / Capability Map
  – Company Vision

• Relationships:
  – Anchor for Structural View

• Use:
  – Scoping the project
  – Setting project context
  – Navigation

• Output:
  – Process Map as Navigation Tool for the Intranet
  – Process Map in Reports
Structural View

• Content:
  – Structural Map of the End-to-End Process
  – Goals
  – Glossary

• Relationships:
  – Anchor for Management View

• Use:
  – Structure the Process
  – Navigation

• Output:
  – Process Description for the Intranet
  – Process Handbook as Report
Management View

• Content:
  – Process Model
  – Glossary, Fact Model
  – Goals, Objectives, KPI

• Relationships:
  – ...

• Use:
  – Definition of Standard Process
  – Process Management (Measure, QA)

• Output
  – Process Description for the Intranet
  – Process Handbook
  – QA Handbook
  – Dashboard

• Different Views
  – Management
  – QA
  – Operator
Operator View

• Content:
  – Detailed Process Model
  – Glossary, Fact Model
  – Decisions

• Relationships:
  – ...

• Use:
  – Process Specification
  – Work Guidelines

• Output
  – Detailed Process Description for the Intranet
  – Process Handbook
  – Worksheets, SOP
  – Implementation Req.

• Different Views
  – Operator
  – System Designer
  – QA
Operator View

• Relationships:

Business Process

Business Case

Business Activity

Business Concepts

Business Decision

organized in

uses

refers
Build the Team

• Original Project Team:
  – Project Manager
  – 6 SMEs with minor experience in process modeling
  – 1 Internal Advisor with limited experience in standards, methods and architecture

• New Project Team
  – Project Manager
  – Method Team (Architect, Methodologist)
  – SMEs/Business Analysts
  – Editor for Output Creation
What to teach?

• Minimal Notation Knowledge
  – BPMN
  – DMN, RuleSpeak
  – Styleguide and templates to support the analysts

• Intense training for workshops
  – How to ask questions?
  – How to structure process and decisions?
  – How to protocol and to transform into a model?

• Tool-Knowledge
  – Structure the project
  – Document model elements
  – Create traceability
BPMN 2.0 for Business Analysts

"The OTHER Poster"

Content and Symbols Used

Participants and Roles / Pools and Lanes

Business Events

<table>
<thead>
<tr>
<th>Event Type</th>
<th>&quot;Communications&quot;</th>
<th>&quot;Events&quot;</th>
<th>End Events</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message</td>
<td></td>
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<tr>
<td>Timer</td>
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<td>Error</td>
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<td>concatenated</td>
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</tbody>
</table>

Activities / Sub-Process and Task

Describe Process Flow / Sequence Flow

Describe Process Scenarios / Gateways

Informations and Objects / Data Objects

Communication within Business Processes / Message Flow

A Short Explanation

Participants and Roles - Pool and Lane
- A participant is an independent actor in an end-to-end process. This can be an individual organization (e.g. the brewery "Golden Bottles") or a general process participant like a "Customer", "Warehouse, View", etc.
- Roles are differentiated within a process participant. A role describes the responsibility for a set of activities. Examples are "Managing Editor", "Container-Operator", etc. They are performed in individuals or organizational units.

Business Events
- Business Events control a business process. Business Events are used to synchronize business processes. Business Events represent a cause (Start Event, Catching Intermediate Event) or a result (End Event, Throwing Intermediate Event) of the business process.
- Start Events or Catching Intermediate Events: they represent why the process was started or continued. Examples are "Order received", "Waiting Period starts", "Inventories fall below certain level".
- End Events or Throwing Intermediate Events: show results or states of the process. Examples are "Order dispatched", "Custom procedure finished", "Bad delivery identified".
- Events synchronize business processes. Catches Events "cause" Throwing Events generated by other processes.

Business Activities - Sub-Process and Task
- Activities represent work performed within a Business Process. An Activity transforms an Input into an Object.
- A Sub-Process: an activity which is decomposed into other activities. Tasks are shown with the Sub-Process symbol.
- An Activity is described using attributes:
  - Type of Activity: can be Processed, Executed, Triggered, etc.
  - When can the Activity be started (Start Quantity)?
  - For each Activity the following information should be recorded:
    - Input: Which objects or Information are needed for the activity
    - Output: Which objects and Information are generated by this activity
    - Guidelines: Which business policies and business rules guide the execution of the activity?
    - Breaks: Which tools and methods are needed for the execution of the activity?

Flow of Activities - Sequence Flow
- The Sequence Flow shows the logical order of activities within the process. The execution can be executed, if the preceding activities are finished.
- The Sequence Flow does NOT describe a Control Flow.

Process Scenarios - Gateways
- Gateways are used to describe scenarios within a business process model.
  - An alternative scenario is represented using the Exclusive Gateway.
  - An optional scenario is represented using the Include Gateway.
  - Paralel scenarios are represented using the Parallel Gateway.
- Gateways should be used symmetrically. An opening gateway should have a corresponding closing gateway in the branch.
- Gateways should not be used to model Business logic.

Information and Objects - Data Objects
- Business Processes use, generate or change Information or objects. BPMN-based models use the data object to represent these.

Communication in a Business Process - Message Flow
- The exchange of Information or objects between process participants are described with Message Flows.

General Process Patterns - Examples

Follow Up:
- Start description: An event or an object is requested from another participant. A due date is set.
- The process continues its normal flow if the information is received in time.
- The case is completed if the requested information or object is not received before the due date.

Monitoring with Escalation
- Start description: An activity needs to be completed within a defined timeframe.
- The process continues its normal flow if the activity is finished in the timeframe.
- If the activity is not finished within the timeframe the case will be escalated.
- The escalation can happen after-defined time or in parallel.

Business Process and other Models

Process Models are connected to other business models.
- Process Models are used to describe processes within an organization.
- Process Models use the Business Vocabulary.
- Processes reference organizational charts, org charts, and organizational rules.
- Requirements define the flow of the process and the details of the activities.
- Business Models are detailed with other views.
- ECM-Views describe the responsibilities for business activities.
- Lorenz diagrams depict the communication between processes at the level of process participants.
Insights and experiences

A single model type is not enough.
Always have the result in mind!
First decide which **content** you want to show to your target audience! Then ask about which notation and elements to use.

An enterprise architecture is needed.
Connect models and model elements.
Insights and experiences

A method is needed. Build on best practices.

Teaching/Coaching has to be part of your project.
From speculation to specification: The first model is not the final model.

Start early to create output from your models and test it with your stakeholders!
Thank You!

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