Aggregation of Reference Process Building Blocks to Improve Modelling in Public Administration

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Agenda

Introduction

Why is process modelling not widely diffused in P.A., yet?

Aggregation of RPBB

What does aggregation mean?
What are RPBB?

Applicability in P.A.

Is aggregation an eligible approach to model service processes in P.A.?

Outlook

What are potential issues to be focused by further research?
Introduction

(1) Model (2) Measure (3) Analyse

Process modelling with standardised Building Blocks
Receive Check Create Send
Application Approval

Measurement of characteristics and inefficiencies

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process Steps</td>
<td>71</td>
</tr>
<tr>
<td>Organisational Interfaces</td>
<td>6</td>
</tr>
<tr>
<td>Media Breaks</td>
<td>10</td>
</tr>
<tr>
<td>...</td>
<td>...</td>
</tr>
</tbody>
</table>
Introduction

(1) Model | (2) Measure | (3) Analyse

Analysis of potential ICT support

Search Service
Identity Manag.
eSig-natur
ePay-ment
...

Introduction

Has process modelling already been done in your administration or are you planning to do this?

Source: Deliverable 1.1; EU Project PICTURE; www.picture.eu.org

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Slide 5
Introduction

What are the reasons for abandoning process modelling?

<table>
<thead>
<tr>
<th>Reason</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>No money</td>
<td>35.3%</td>
</tr>
<tr>
<td>No personnel</td>
<td>34.1%</td>
</tr>
<tr>
<td>No know-how</td>
<td>35.7%</td>
</tr>
<tr>
<td>No usage</td>
<td>11.6%</td>
</tr>
<tr>
<td>No demand</td>
<td>16.7%</td>
</tr>
<tr>
<td>No adequate software/modelling tool</td>
<td>41.1%</td>
</tr>
</tbody>
</table>

| Source: Deliverable 1.1; EU Project PICTURE; www.picture-eu.org |
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Aggregation of RPBB
Concept of Reference Modelling (RM)

- What is a “Reference Model”?
  - General applicability and recommendatory nature → ?!
  - Adaptive re-use of models or model components → OK
  - Focus on Reference Process Models

- Why do we assume that the idea of reference models (esp. the aggregation mechanism) can improve the quality of process documentation in Public Administrations (P.A.)?
  - Predefinition of models or model components can
    - … simplify the modelling process (application period),
    - … reduce the room for individual interpretation and
    - … enable the design of consistent models.
Aggregation of RPBB
Concept of Reference Modelling (RM)

- Cycles of Reference Modelling:
  - Development/Design/Construction
  - Application (re-use in practice) → adaptation necessary

- Adaptation of reference models needs mechanisms, such as Configuration, Analogy-based Construction, Specialisation, Instantiation and Aggregation

* EU Project „PICTURE“ (www.picture-eu.org)
Aggregation of RPBB Concepts to Adapt RM - Analogy-based Construction

Create a Document

Duration = 10 min
Medium = Paper-Based
Type = Order
…
Aggregation of RPBB Concepts to Adapt RM - Specialisation

Order consumables
- Order paper by e-mail
- Order toner by e-mail
- Order toner by online-form
- ...

Specialisation

Aggregation of RPBB Concepts to Adapt RM - Aggregation

Building Licence

Registration — Examination — Approval

Check — Create — Register
Responsibility — File — data

Aggregation
Aggregation of RPBB
Example Process Model (Part) Based on RPBB


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Applicability in P.A.
Perspectives of Evaluation


Semantic Quality
Domain

Model

Modelling Language

Pragmatic Quality

Audience Interpretation

Syntactic Quality

Applicability in P.A.
Characteristics of Public Service Delivery

§ → Regulation of services
§ → Regulation of service production
§ → Regulation of decision criteria

- Limited flexibility
- Avoids revolutionary approaches of change
  → Evolutionary concepts (CPI) are needed
Applicability in P.A. 
Characteristics of Public Service Delivery

- Homogeneity of Services
- Heterogeneity of Service Production

Recurrence of similar Activities (=RPBB)
Applicability in P.A.
Efforts & Benefits of Reference Modelling

<table>
<thead>
<tr>
<th>Time/Period</th>
<th>Grade of Innovation of RM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction</td>
<td>Knowledge development about problem solutions</td>
</tr>
<tr>
<td>Application (re-use)</td>
<td>Transfer of knowledge</td>
</tr>
<tr>
<td>Benefit</td>
<td>Feedback</td>
</tr>
</tbody>
</table>

Applicability in P.A.
Characteristics of Public Service Delivery

- Distributed “Production”
- Dependencies
- Decentralised Responsibilities
- Fragmented Processes
Advantages of RPBB Aggregation in P.A.

<table>
<thead>
<tr>
<th>Advantages of RPBB Aggregation in P.A.</th>
<th>Syntactic</th>
<th>Semantic</th>
<th>Pragmatic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flexible modeling (creation of individual/suboptimal models/CPI) and adequately support of characteristics of service in P.A. (branches, etc.)</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Re-usability of generic (domain-independent) RPBB</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Common terminology</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Comparability of processes</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Distributed process modeling at comparable levels of detail and abstraction as well as the joining of resulting parts of process models</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Notation-independent specification</td>
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<td>X</td>
<td></td>
</tr>
<tr>
<td>Rules can limit combinations of RPBB depending on the context</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Improvement and automation of plausibility/consistency checks</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Automated analysis of weaknesses</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Re-use of resulting models for other purposes (e.g. transformation for workflow management, SOA, etc.)</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

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Outlook
Combination of Aggregation, Specialisation and Instantiation

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>Channel</td>
<td>Mail</td>
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<tr>
<td>Duration (minutes)</td>
<td>2</td>
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<tr>
<td>Transport time (days)</td>
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</tr>
<tr>
<td>Responsibility</td>
<td>Concerned Unit A</td>
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<tr>
<td>Supporting ICT</td>
<td>None</td>
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<tr>
<td>Addressee</td>
<td>Internal</td>
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</table>

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>Medium</td>
<td>Paper-based</td>
</tr>
<tr>
<td>Number of pages</td>
<td>2</td>
</tr>
<tr>
<td>Need for signature</td>
<td>No</td>
</tr>
<tr>
<td>Supporting ICT</td>
<td>None</td>
</tr>
</tbody>
</table>
...                | ...              |


Outlook
Combination of Aggregation, Analogies and Configuration

Entire Model (Macro View)

Aggregation

Model Fragments (Meso View)

Configuration

Model Elements (Micro View)
Thank you for your attention!

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Backup Concepts to Adapt RM - Process Compass

Aggregated Uses

Application Process

Generalisation

Notification of Relocation

Child Benefits Application

Building Permission

Specialisation

Create an Approval

Check for Completeness

Receive an Application Form

Decomposed Subactivities

Backup
Differentiation of Activity and Processed Object

Receive an Application

Activity (RPBB) ➔ Receive ➔ Application ➔ Processed Object (PO)

Backup
Meta Model of RPBB

ICT Functionality Group

Responsibility (Organisation) performs 1..m

Activity (RPBB) uses 1..m

Processed Object

Attribute

ICT Functionality Group supports 0..m

processes 0..m

has 1..m

has 1..m

has 1