Structured methods for developing profiles

Me4MAP: A method for the development of metadata application profiles

Mariana Curado Malta
Framework of development

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Supervisor: Ana Alice Baptista
What?

Method (de Almeida & Pinto, 1995):

- a selection of techniques
- the control of their usage
- the integration of the obtained partial results
Why?

- to give MAP developers a common ground on which to work
- structure
- development quality
Perspective and intentions

• a software engineer perspective;

• no universal solution;

• intention: to establish a starting point for the study and design of methods for the development of MAPs.
Me4MAP
Me4MAP defines the path to follow ...

- which activities to develop
- when these activities may take place
- how they are interconnected
- which artifacts they produce
... and the ideal work-team

- Project Manager
- System Analyst
- Semantic Developer
- Technical Editor
- Application Domain Expert
- Final User
On big MAP projects

- Core team: persons with technical skills, i.e. System Analyst and Semantic Developer

- Extended team: all
Singapore Framework

Me4MAP has the Singapore Framework as a starting point
Singapore Framework

- Functional Requirements (S1)
- Domain Model (S2)
- Description Set Profile (S3)
- Syntax Guidelines (S4) *(optional)*
- Usage Guidelines (S5) *(optional)*
All activities

DC-2017: Structured methods for developing profiles
A1: Development of the Glossary
A2: Development of the MAP Documentation

- A1: Development of the Glossary
- A2: Development of the MAP Documentation
- A3: Environmental Scan

S1: Developing the Functional Requirements
- Functional Requirements

S2: Developing the Domain Model
- Domain Model

S3: Developing the Description Set
- S3.1: Vocabulary Alignment
- S3.2: Constraints Matrix
- S3.3: Constraints Matrix Test
- S3.4: DSP Encoding
- Description Set Profile

S4: Developing the Syntax Guidelines
- Syntax Guidelines

S5: Developing the Usage Guidelines
- Usage Guidelines

A4: Validation in Production

Mandatory deliverable (Singapore)
Optional deliverable (Singapore)
* Composite activity
Developing the Functional Requirements

DC-2017: Structured methods for developing profiles
Developing the Functional Requirements

- S1.1 - Vision
- S1.2 - Work-Plan
- S1.3 - Application Domain
- S1.4 - High-Level Requirements

S1.5 - Use-Case Model

- Functional Requirements

- Mandatory deliverable (Singapore)

* Composite activity
S1 - Developing the Functional Requirements

- S1.1 - Vision
- S1.2 - Work-Plan
- S1.3 - Application Domain
- S1.4 - High-Level Requirements
- S1.5 - Use-Case Model
  - Functional Requirements

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DC-2017: Structured methods for developing profiles
Developing the Functional Requirements

- S1 - Vision
  - S1.2 - Work-Plan
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DC-2017: Structured methods for developing profiles
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Mandatory deliverable (Singapore)

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Mandatory deliverable (Singapore)

* Composite activity
Developing the Functional Requirements

Mandatory deliverable (Singapore)

* Composite activity
S1.5: Use Case Model

S1.5.1 - General Use-Cases

S1.5.2 - Detailed Use-Cases
S1.5: Use Case Model

S1.5.1 - General Use-Cases

S1.5.2 - Detailed Use-Cases
S1.5: Use Case Model

S1.5.1 - General Use-Cases

S1.5.2 - Detailed Use-Cases
Developing the Functional Requirements

1. Vision
2. Work-Plan
3. Application Domain
4. High-Level Requirements
5. Use-Case Model

- Mandatory deliverable (Singapore)
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DC-2017: Structured methods for developing profiles
All activities

DC-2017: Structured methods for developing profiles
Developing the Domain Model

DC-2017: Structured methods for developing profiles

Mandatory deliverable (Singapore)
Optional deliverable (Singapore)
* Composite activity
Developing the Domain Model

- S2.1 - Domain Model
- S2.2 - Domain Model Test Criteria
- S2.3 - Domain Model Test

Mandatory deliverable (Singapore)
Developing the Domain Model

S2.1 - Domain Model

S2.2 - Domain Model Test Criteria

S2.3 - Domain Model Test

Mandatory deliverable (Singapore)
Developing the Domain Model

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Developing the Domain Model

S2.1 - Domain Model

S2.2 - Domain Model Test Criteria

S2.3 - Domain Model Test

Mandatory deliverable (Singapore)
All activities
Environmental Scan

DC-2017: Structured methods for developing profiles
All activities

- A1 - Development of the Glossary
- A2 - Development of the MAP Documentation
- A3 - Environmental Scan
- A4 - Validation in Production
- S1 - Developing the Functional Requirements
- S2 - Developing the Domain Model
- S3 - Developing the Description Set
  - S3.1 - Vocabulary Alignment
  - S3.2 - Constraints Matrix
  - S3.3 - Constraints Matrix Test
  - S3.4 - DSP Encoding
- S4 - Developing the Syntax Guidelines
- S5 - Developing the Usage Guidelines

Mandatory deliverable (Singapore)
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DC-2017: Structured methods for developing profiles
Developing the Description Set

- **A1 - Development of the Glossary**
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Developing the Description Set

- S3.1 - Vocabulary Alignment
- S3.2 - Constraints Matrix
- S3.3 - Constraints Matrix Test*
- S3.4 - DSP Encoding

Description Set Profile

- Mandatory deliverable (Singapore)
- * Composite activity
Developing the Description Set

- S3.1 - Vocabulary Alignment
- S3.2 - Constraints Matrix
- S3.3 - Constraints Matrix Test
- S3.4 - DSP Encoding

Description Set Profile

Mandatory deliverable (Singapore)

* Composite activity
### Excerpt of a Vocabulary Alignment

<table>
<thead>
<tr>
<th>Entity</th>
<th>DM Attribute</th>
<th>Metadata Schema</th>
<th>Metadata Property Name</th>
<th>Schema Property Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initiative</td>
<td>Name</td>
<td>dcterms</td>
<td>title</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Description</td>
<td>dcterms</td>
<td>description</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Email address</td>
<td>Vcard</td>
<td>hasEmail</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Foaf</td>
<td>mbox</td>
<td></td>
</tr>
<tr>
<td></td>
<td>URL</td>
<td>Foaf</td>
<td>Homepage</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Vcard</td>
<td>hasURL</td>
<td></td>
</tr>
<tr>
<td>Network</td>
<td>Name</td>
<td>dcterms</td>
<td>title</td>
<td></td>
</tr>
<tr>
<td></td>
<td>isPartOf</td>
<td>dcterms</td>
<td>isPartOf</td>
<td></td>
</tr>
<tr>
<td>Product-or-service</td>
<td>Category</td>
<td>Good relations</td>
<td>category</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Unit</td>
<td>Good relations</td>
<td>hasUnitOfMeasurement</td>
<td></td>
</tr>
</tbody>
</table>
Developing the Description Set

S3.1 - Vocabulary Alignment

S3.2 - Constraints Matrix

S3.3 - Constraints Matrix Test*

S3.4 - DSP Encoding

Description Set Profile

- Mandatory deliverable (Singapore)
- Composite activity
Constraints Matrix Template

**Constraints Matrix: name of the Application Profile**

<table>
<thead>
<tr>
<th>Identification of Namespaces used</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Title</strong></td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>as many rows as needed....</td>
</tr>
</tbody>
</table>

**Definition of Description Template** *(as many Description Sets as needed)*

<table>
<thead>
<tr>
<th>Description Template:</th>
<th>name of the class</th>
<th>Term:</th>
<th>name of term</th>
<th>Usage:</th>
<th>description of the class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Label</td>
<td>Property</td>
<td>Range</td>
<td>Value String</td>
<td>SES IRI</td>
<td>Value IRI</td>
</tr>
<tr>
<td>as many rows as needed....</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Definition of Description Template** *(as many Description Sets as needed)*

<table>
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<tr>
<td>as many rows as needed....</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Developing the Description Set

- S3.1 - Vocabulary Alignment
- S3.2 - Constraints Matrix
- S3.3 - Constraints Matrix Test*
- S3.4 - DSP Encoding

Description Set Profile

- Mandatory deliverable (Singapore)
- * Composite activity
S3.3: Constraints Matrix Test

S3.3.1 - Constraints Matrix Checking

S3.3.2 - Questionnaire Development

S3.3.3 - Questionnaire Administration

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S3.3: Constraints Matrix Test

S3.3.1 - Constraints Matrix Checking

S3.3.2 - Questionnaire Development

S3.3.3 - Questionnaire Administration
### Resource A

<table>
<thead>
<tr>
<th>Label</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Instance of Class</strong></td>
<td>Class X</td>
</tr>
<tr>
<td>Property A1</td>
<td></td>
</tr>
<tr>
<td>Property A2</td>
<td></td>
</tr>
<tr>
<td>as many rows as needed</td>
<td></td>
</tr>
</tbody>
</table>

### Resource B

<table>
<thead>
<tr>
<th>Label</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Instance of Class</strong></td>
<td>Class Y</td>
</tr>
<tr>
<td>Property B1</td>
<td></td>
</tr>
<tr>
<td>Property B2</td>
<td></td>
</tr>
<tr>
<td>as many rows as needed</td>
<td></td>
</tr>
</tbody>
</table>

### Resource n

<table>
<thead>
<tr>
<th>Label</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Instance of Class</strong></td>
<td>Class Z</td>
</tr>
<tr>
<td>Property n1</td>
<td></td>
</tr>
<tr>
<td>Property n2</td>
<td></td>
</tr>
<tr>
<td>as many rows as needed</td>
<td></td>
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</tbody>
</table>
S3.3: Constraints Matrix Test

S3.3.1 - Constraints Matrix Checking

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S3.3.3 - Questionnaire Administration
S3.3: Constraints Matrix Test

S3.3.1 - Constraints Matrix Checking

S3.3.2 - Questionnaire Development

S3.3.3 - Questionnaire Administration
S3: Developing the Description Set

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Description Set Profile

■ Mandatory deliverable (Singapore)
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S4: Developing the Syntax Guideline
S5: Developing the Usage Guidelines

DC-2017: Structured methods for developing profiles
Validation in Production
All activities

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References


Curado Malta, M. and Baptista, A.A. (n.d.).
Me4MAP: a method for the development of metadata application profiles.
Submitted to journal, waiting for peer-review.

DCMI Webinar: May 2017
Recording: https://www.youtube.com/watch?v=Ff73npqlx7A
Thank you

Mariana Curado Malta
mariana@iscap.ipp.pt

http://maltas.org