A FRAMEWORK SEMANTIC BUSINESS PROCESS MANAGEMENT IN E-GOVERNMENT

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OVERVIEW

- Who Are We?
- Introduction
- Semantic Problems for E-Government in Switzerland
- Semantic Business Process Management in E-Government
- Conclusion and Future Research
Who Are We?

- **70 members of staff**
  - 20 Professors
  - 15 Research scientists
  - 27 Research assistants
  - 8 Administrative collaborators and interns
- **240 projects**
  - 2012
- **CHF 7.243 millions**
  - Turnover in 2012

Turnover in 2012:
- **90%** Consulting services
- **10%** Ra&D
Our Core Competencies

- eEnergy
- eGov
- eHealth
- ERP
- eServices

- BPM
- Cloud Computing
- Data Intelligence
- Ergonomy, Usability
- Intelligent Agents
- Internet of Things
- Medical Information Processing
- Semantic Web
- Software Engineering
Introduction

• New challenges in today’s government issues

• → Business Process Management

• → + Semantic Web Technologies
Motivation

• Switzerland: a special case

> Small, But…

- Very diversified (26 cantons and 2,551 communes)
- Higher level of freedom to make decisions independently
- Four national languages (German, French, Italian, Romansh)
- International organizations and foreigners

However, little is known about the possible integrations of semantic web technologies in business process management in e-Government
Research Question

How could semantic web technology improve business processes management in an e-Government context in Switzerland?
Semantic Problems

1. the way information is presented and accessed

2. the inconsistencies of semantic information among different agencies

3. poor Change Management in e-government business processes

4. poor Process Management
E-Government in CH

• In early 2007, the Swiss Federal Council adopted a national e-Government strategy.
  – “Framework Agreement”; “eCH white paper”

• Centers of expertise for e-Government in Switzerland
  – E.g., eCH, BUAS, etc.

• Official web portal, “national gateway”: www.ch.ch
  – Five languages: DE, FR, IT, RO and EN
  – However, not widely used by the public
E-Government in CH – cont.

- Now Switzerland adopts the uniform standard **business process modeling notation (BPMN)** version 2.0

- What is **BPMN**?

- From Business Process Management (BPM) to Semantic Business Process Management (SBPM)
An Example: Application of Building Permit

Data Layer

- Descriptions
- Regulations
- Domains
- Organizations

Regulations: 7-page file
An Example: Application of Building Permit

Process Layer

Communes

Receive the application of building permit

control documents

return documents

incomplete application

building permit application stopped

complete application

prepare the application for public inquiry

show to the public

handle opposition

30 days without opposition

opposition(s)

opposition rejected

opposition accepted

Refuse the application

application accepted

application rejected
An Example: Application of Building Permit

- Most important layer
  - Simplify complex information of laws and regulations into common practical terms
  - Map the knowledge between domain field and data field
  - Serve as a common source

Future work: create process ontologies
An Example: Application of Building Permit

**Presentation Layer**

<table>
<thead>
<tr>
<th>Commune</th>
<th>Requérant</th>
<th>Propriétaire(s) de la parcelle</th>
<th>Auteur des plans</th>
<th>Localisation du projet</th>
<th>Objet de la demande</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 seule adresse</td>
<td>Nom</td>
<td></td>
<td>Localité</td>
<td>Genre de réalisation</td>
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<tr>
<td></td>
<td>Nom</td>
<td>Filiation</td>
<td></td>
<td>Lieu dit</td>
<td>Nouvelle construction / installation</td>
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<tr>
<td></td>
<td>Prénom</td>
<td>Filiation</td>
<td></td>
<td></td>
<td>Transformation</td>
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<tr>
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<td>Rue</td>
<td>Localité</td>
<td></td>
<td></td>
<td>Reconstruction ou bâti. de remplacement</td>
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<tr>
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<td>Tél.</td>
<td>Fax</td>
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<td></td>
<td>Rénovation</td>
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<td>Démolition</td>
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<td></td>
<td>Citerne</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Route et accès privés</td>
</tr>
</tbody>
</table>

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OK
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Conclusion and Future Research

- Identified four possible semantic problems in the e-Government in Switzerland

- Presented a framework that integrates semantic web technology in BPMN in e-Government

- Future work required on the BPMN in e-Government by creating new process ontologies in the semantic layer