Semantic E-Government Portals
- A Case Study

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Contents

- Problem:
  - How should a general governmental portal provide information and services to citizens?
- Current situation and limitations:
  - Citizen’s eGovernment portal Suomi.fi
- How could the Semantic Web approach help?
  - Case study: Semantic Suomi.fi
Problem: providing governmental information and services to citizens

- Basic difficulties
  - Organizational heterogeneity
    » Information and services are provided by different governmental bodies in different locations
    » The user does not necessarily know the organizational structure and who is providing what info/service
  - Interoperability
    » How to represent heterogeneously produced metadata in an interoperable way?
  - Information accumulation
    » Citizen’s needs cannot always be satisfied by one organization
    » Accumulation of heterogeneous multiorganizational information and services is needed
Current Suomi.fi portal

- Citizen’s eGovermental portal in Finland
- Link collection of subject areas
  - “Culture and hobbies”
  - “Education and libraries”
  ...
  - Links annotated by
    » Short textual descriptions
    » Set of keywords
  - Edited thematic information pages
- Single-facet approach
  - Yahoo!-like taxonomies of topics and web pages
  - dmoz.org
- Maintained by Ministry of Finance
Suomi.fi home page
Semantic Suomi.fi

• Problems addressed
  – Finding relevant services more easily
    » **Solution:** generalize from single to multifacet search
      • Like in MuseumFinland based on ontologies
      • Flamenco, HiBrowse, …
  – Aggregating content from different organizations
    » **Solution:** Automatic link recommendation system
      • Aggregates thematic information together
  – Testing OntoViews-tool
    » Tool for building semantic portals
    » How well can it be adapted to different domains and applications
Multifacet search based on ontologies

- Basic idea of multifacet search:
  - the content can be projected along different views for different user groups
  - Search specified along these views

- Ontologies created for new views
  - Topic (= the original view)
  - Content
  - Audience
  - Life event
  - Region
  - Language
**Example: multifacet search**

![Multifacet search interface](image-url)

The image shows a search interface with multiple facets for filtering results. The facets are categorized into different groups such as topics, audiences, and regions. The interface allows users to select specific facet values to refine their search results. This type of search is particularly useful in semantic information retrieval, where the system can understand the user's intent and provide more relevant results based on the selected facets.
Example of a new view: life event
Single facet selection done: 
Having a child
Multiple facet selection done:
Having a child & Legal information

Link to the actual page somewhere on the web
Link of interest found: Having a child & Legal information
Basic idea of semantic content aggregation

- Create a knowledge base KB
  - Create a set of ontologies O
  - Annotate content items metadata using O
- Parse KB into a logic program (SWI-Prolog)
- Create rules for linking related content items
  - Find links
  - Organize links into groups
    » e.g. ”Links for the same life event”
  - Explain links by labels
    » e.g. ”Starting studies”
Example: semantic recommendations of a link

Annotations (search can be continued)

Metadata of the link

Aggregated recommendations
The Architecture of OntoViews

- Comprised of three main components:
  - Ontodella, a Prolog-based logic server
  - Ontogator, a java-based multi-facet search engine
  - OntoViews-C, the main Apache Cocoon-based interaction and control component
Summary

- eGovernmental portals can be improved using SW techniques
  - Semantic interoperability
  - Semantic searching
  - Aggregating content (semantic browsing)
- Application demonstration of ontology-based multifacet search & browsing
- A limitation: only part of Suomi.fi content included in the demo
  - A demonstration is available:
    » http://www.museosuomi.fi/suomifi
  - Larger applications of using OntoViews
    » MuseumFinland: http://www.museosuomi.fi
    » Orava portal: http://www.museosuomi.fi/orava