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Media Technology

Semantic E-Government Portals - A Case Study

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Contents

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- 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

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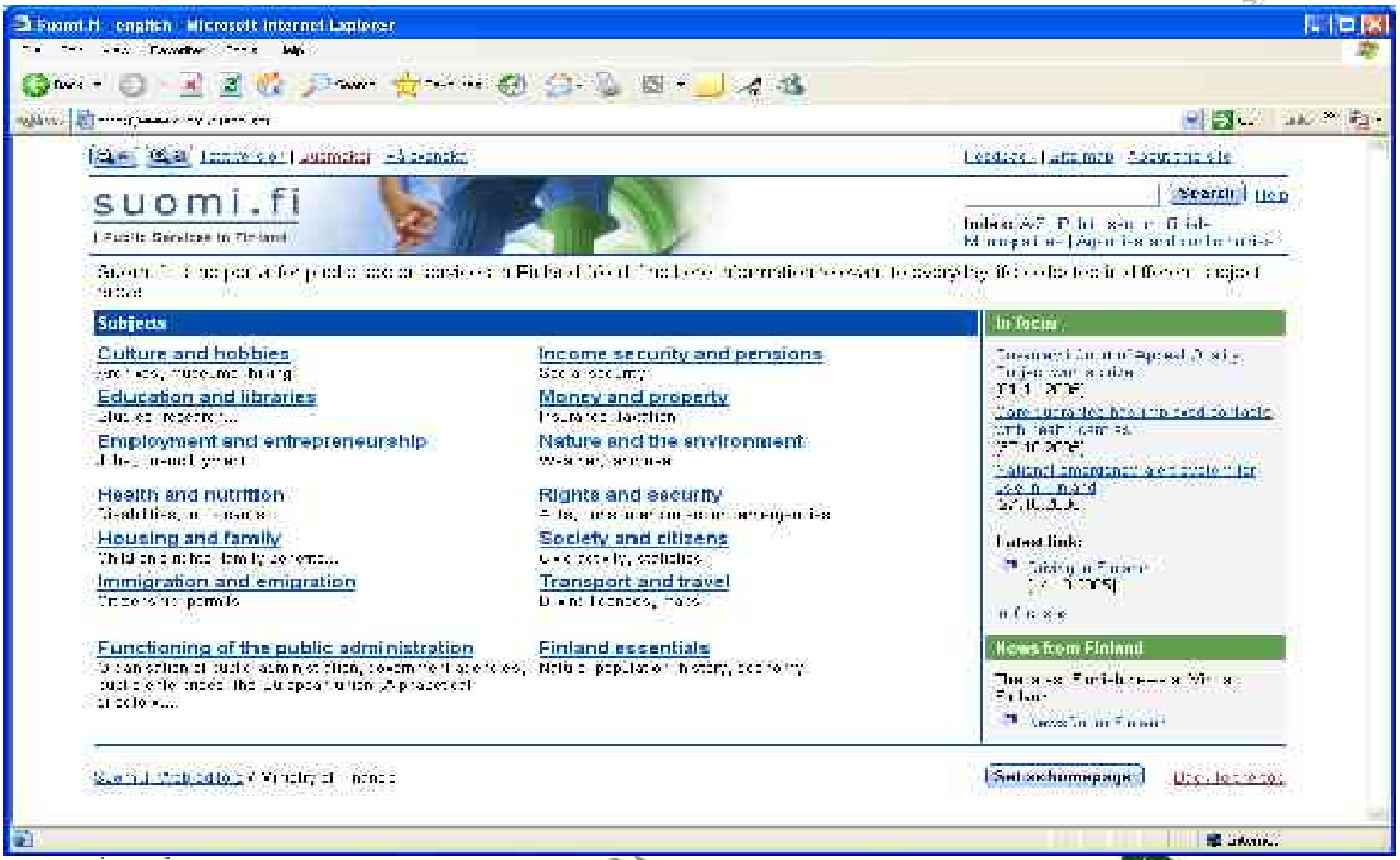
Problem: providing governmental information and services to citizens

- 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

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- **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

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Multifacet search based on ontologies

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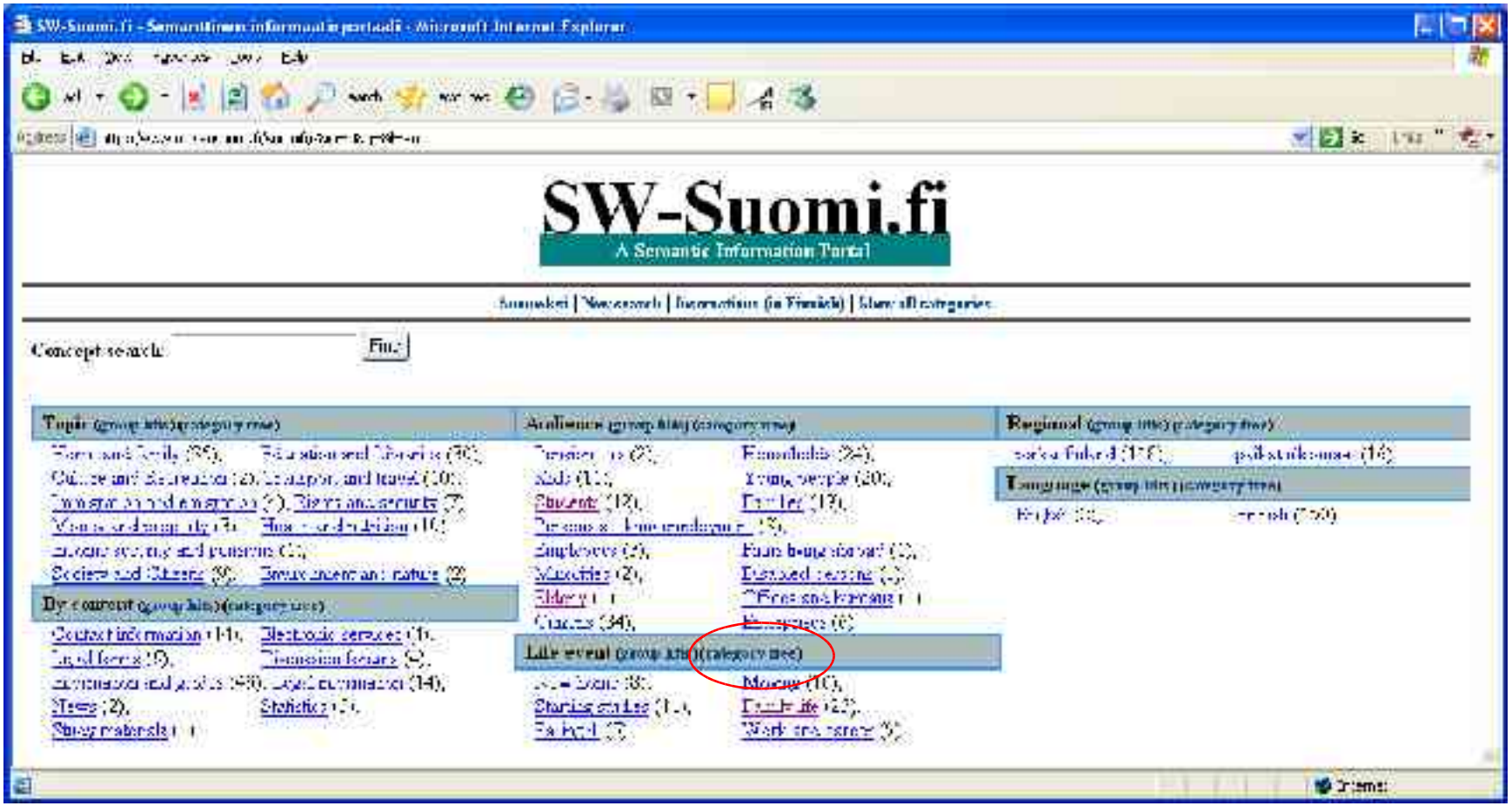
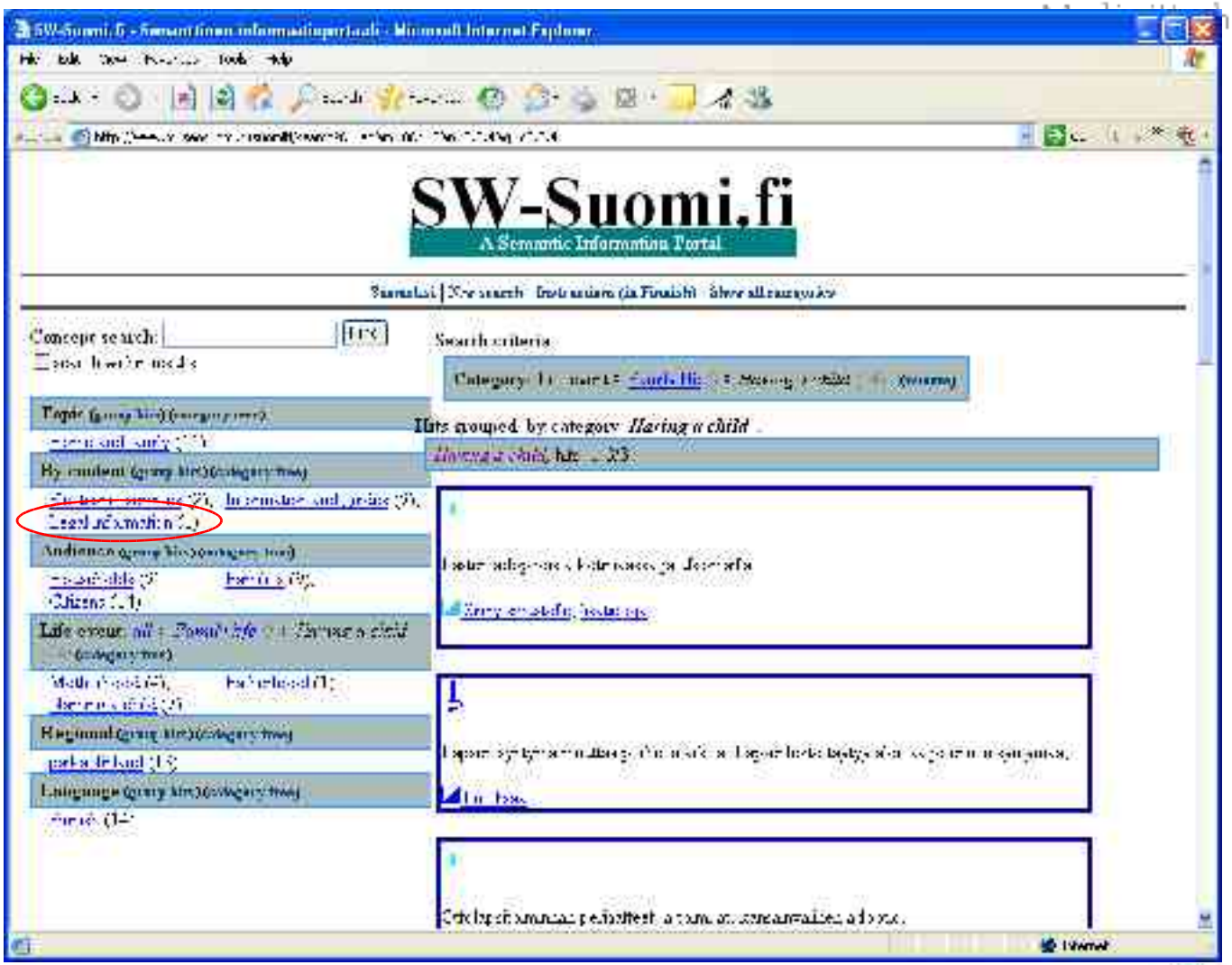
- Basic idea of multifacet search:
  - the content can projected along different views for different user groups
  - Search specified along these views
- Ontologies created for new views
  - Topic (= the original view)
  - Content
  - Audience
  - Life event
  - Region
  - Language

Example: multifacet search

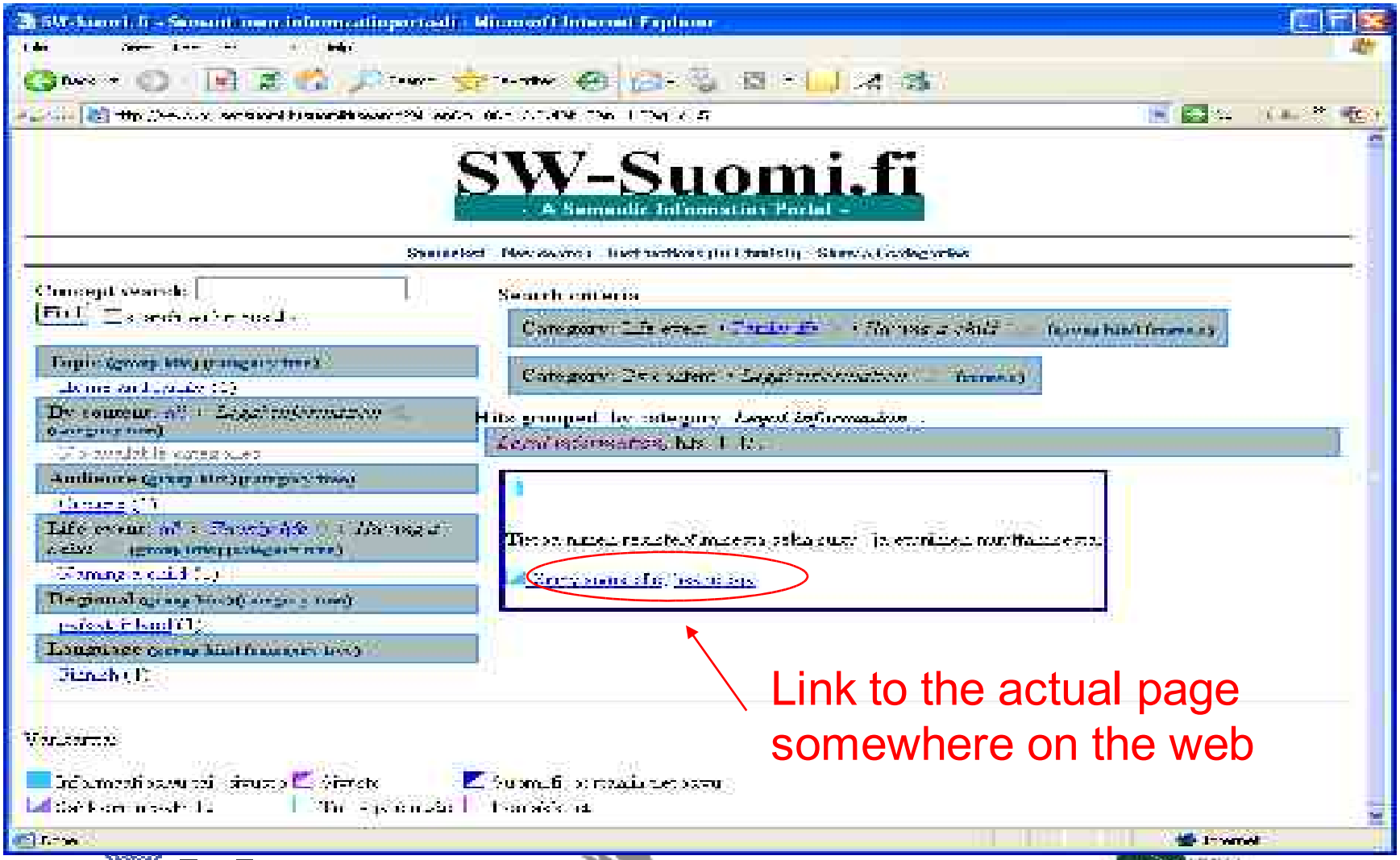


Example of a new view: life event

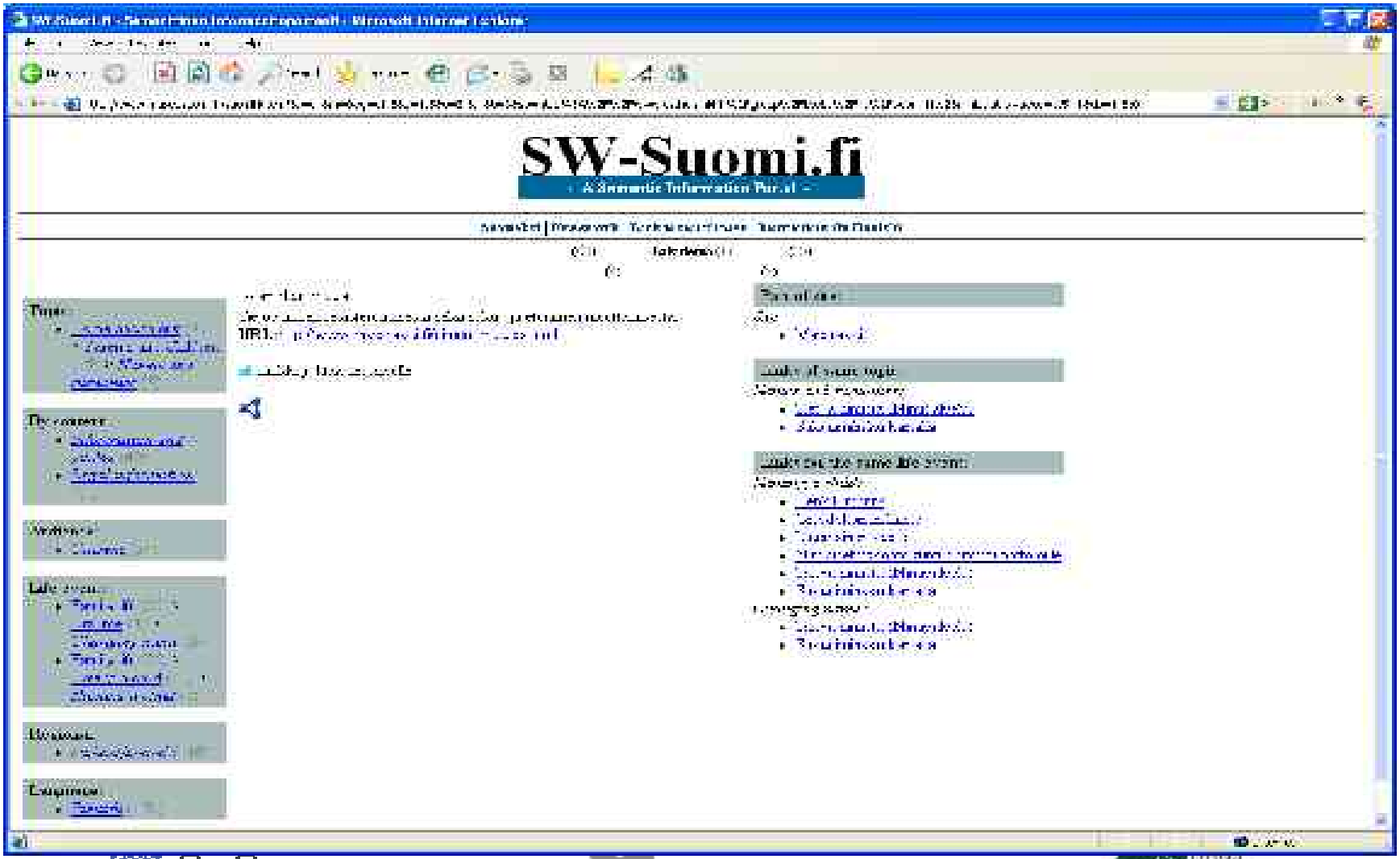
Single facet selection done: Having a child



Multiple facet selection done: Having a child & Legal information



Link of interest found:
Having a child & Legal information



Basic idea of semantic content aggregation

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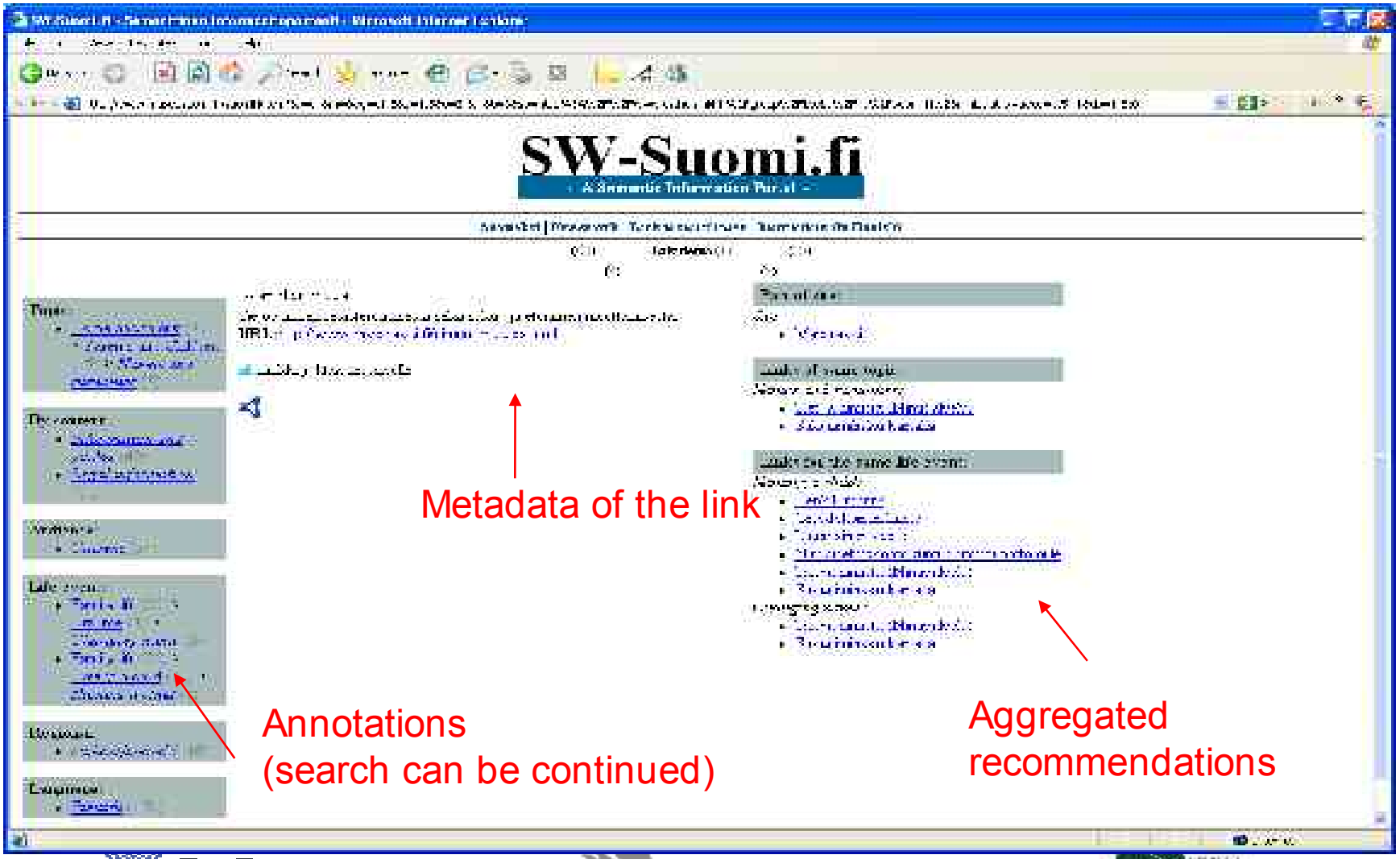
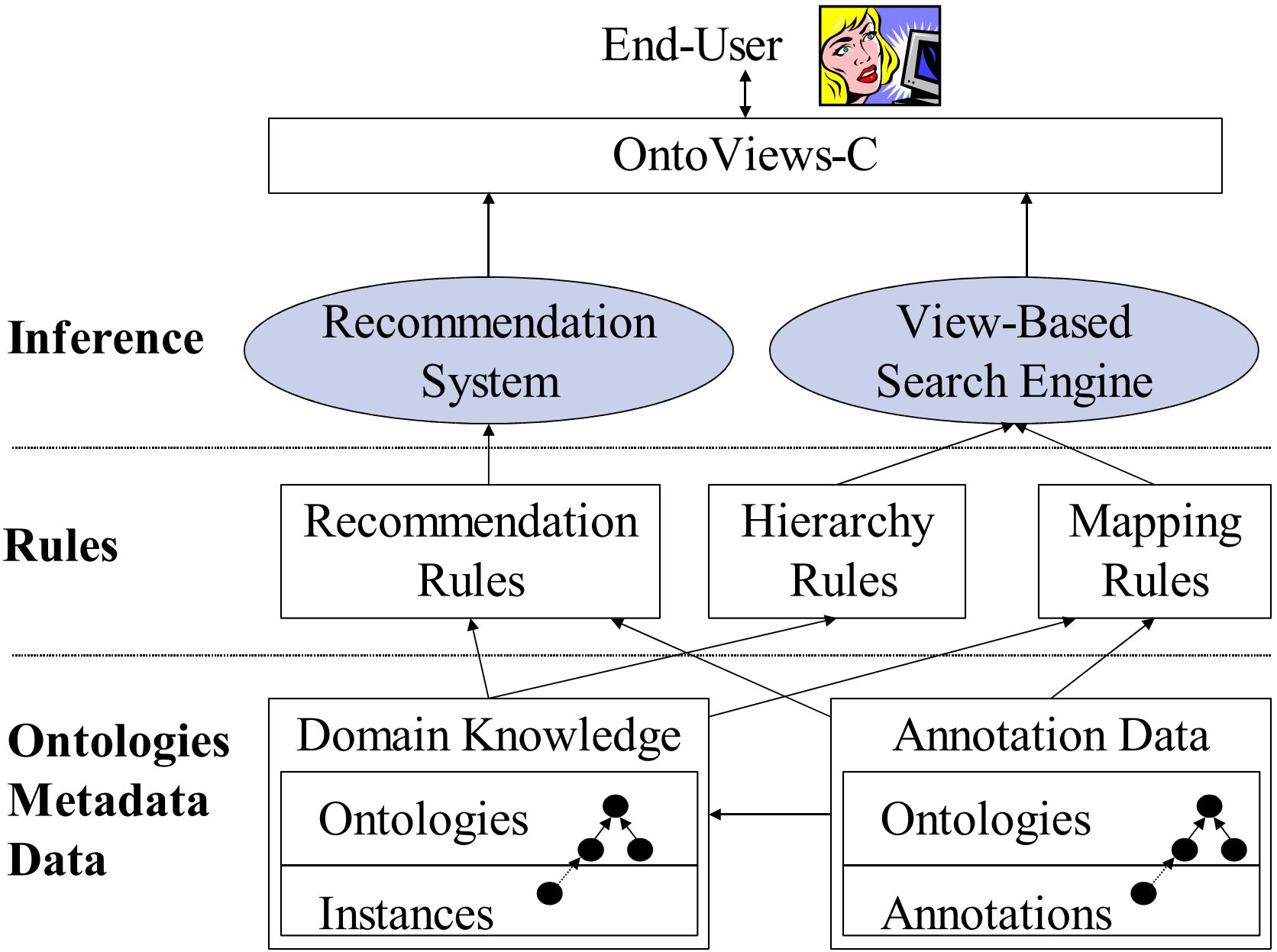
- Create a knowledge base KB
  - Create a set of ontologies O
  - Annotate content items metadata using O
- Parse KB into a logic program (SWI-Prolog)
- Create rules for linking related content items
  - Find links
  - Organize links into groups
    - » e.g. ”Links for the same life event”
  - Explain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

Example: semantic recommendations of a link




End-User
OntoViews-C
Inference
Recommendation System
View-Based Search Engine
Rules
Recommendation Rules
Hierarchy Rules
Mapping Rules
Ontologies
Metadata
Data
Domain Knowledge
Ontologies
Instances
Annotation Data
Ontologies
Annotations

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

The User

– http: text/XHTML

OntoViews-C

-Layout
-User Interaction Logic
-Cocoon, Java, XML, XSLT

– java: text/RDF

– http: text/RDF

-Multi-Facet Search
-Keyword Search
-Java

Ontogator

Categories

Ontodella

-Category Projection Rules
-Semantic Linking Rules
-SWI-Prolog

– file: text/RDF

Data

-Data in RDF Format

Summary

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- eGovermental 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

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