



# Applications of Semantic Web

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# Learning Objective



- Get an idea of where and when Semantic Web technologies can be applied

# Contents



- Application areas of Linked Data
- Case studies: Sampo portals for Digital Humanities



# Application Areas

# Benefits of Linked (Open) Data?



- Enriching everybody's data collaboratively from separate silos
  - Everybody wins by collaboration!
- Creating **F**indable, **A**ccessible, **I**nteroperable, **R**e-usable data
  - The value of data increases!
- Creating more intelligent applications for the public, curators, and researchers
  - The machine “understands” linked data!



**FAIR**



<https://www.go-fair.org/fair-principles/>





## Semantic Web Case Studies and Use Cases

Case studies include descriptions of systems that have been deployed within an organization, and are now being used within a production environment. Use cases include examples where an organization has built a prototype system, but it is not currently being used by business functions.

The list is updated regularly, as new entries are submitted to W3C. There is also an [RSS1.0 feed](#) that you can use to keep track of new submissions. Please, consult the separate [submission page](#) if you are interested in submitting a new use case or case study to be added to this list.

48 entry

sorted by: [entry-type](#) and [labels](#); then by... •  grouped as sorted

### Case study (35)

- [A Digital Music Archive \(DMA\) for the Norwegian National Broadcaster \(NRK\) using Semantic Web techniques](#) (Case study), by Robert Engels and Jon Roar Tønnesen, ESIS and NRK, Norway  
*Activity area:* broadcasting  
*Application area of SW technologies:* improved search, content discovery, and data integration  
*SW technologies used:* RDF(S), OWL, SPARQL, and in-house vocabularies  
*SW technology benefits:* improved search, identify new relationships, and share and re-use data
- [A Linked Open Data Resource List Management Tool for Undergraduate Students](#) (Case study), by Chris Clarke, Talis Information Limited and University of Plymouth, United Kingdom  
*Activity area:* education, learning technology, and publishing  
*Application area of SW technologies:* content discovery, content management, data integration, and semantic annotation  
*SW technologies used:* RDF, RDFa, SPARQL, RDF(S), SKOS, public datasets, and public vocabularies  
*SW technology benefits:* explicit content relationships, personalization, reduced time to market, and share and re-use data
- [A Semantic Web Content Repository for Clinical Research](#) (Case study), by Chimezie Ogbuji, Eugene Blackstone, and Chris Pierce, Cleveland Clinic, United States  
*Activity area:* health care and public institution  
*Application area of SW technologies:* data integration  
*SW technologies used:* RDF(S), OWL, GRDDL, Rules, Rules (N3), and public vocabularies  
*SW technology benefits:* automation, incremental modeling, and improved search
- [An Intelligent Search Engine for Online Services for Public Administrations](#) (Case study), by Jesús Fernández Ruíz, Municipality of Zaragoza, Spain  
*Activity area:* public institution and eGovernment  
*Application area of SW technologies:* portal and improved search  
*SW technologies used:* RDF(S) and in-house vocabularies  
*SW technology benefits:* explicit content relationships, identify new relationships, and improved search

Search facets:

#### Activity area

- 1 application lifecycle management
- 1 arts
- 3 automotive
- 2 broadcasting
- 1 cultural heritage
- 2 education

#### Application area of SW technologies

- 13 content discovery
- 6 content management
- 3 customization
- 32 data integration
- 4 domain modeling
- 23 improved search
- 1 lifecycle management

#### SW technologies used

- 7 Rules
- 1 Rules (F-logic)
- 4 Rules (N3)
- 1 SeRQL
- 5 SKOS
- 19 SPARQL
- 1 WSMO

## ACTIVITY AREAS

application lifecycle management  
arts  
automotive  
broadcasting  
cultural heritage  
education  
eGovernment  
energy  
eTourism  
financial  
geographic information system  
health care  
IT industry  
learning technology  
legal  
library  
life sciences  
museum  
oil & gas  
public institution  
publishing  
search  
semantic desktop  
service management  
telecommunications  
utilities  
Web accessibility

## APPLICATION AREAS

content discovery  
content management  
customization  
data integration  
domain modeling  
improved search  
lifecycle management  
modeling  
natural language interface  
portal  
provenance tracking  
repair and diagnostic help  
schema mapping  
semantic annotation  
service integration  
simulation and testing  
social networks  
text mining



# Applications May be Targeted Globally or Locally

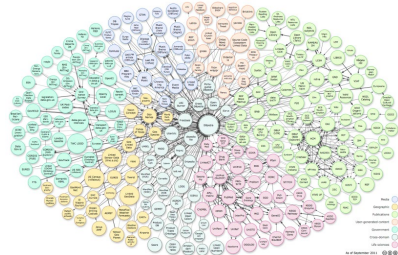
Logic-based semantics is domain-agnostic!

The approach is designed to cover all contents of WWW

But linked data is typically applied locally within a company or community



## Global Knowledge Graphs



## Local Applications in Companies and within Communities



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#### Case study (35)

1. A Digital Audio Archive (DRA) for the Netherlands National Broadcaster (NRI) using Semantic Web techniques  
Case study, by Robert Eggen and Jan Raaijmakers, ESI and NRI, Norway  
Activity area: broadcasting  
Application area of SW technologies: improved search, content discovery, and data integration  
SW technologies used: RDF(S), OWL, SPARQL, and in-house vocabularies  
SW technology benefits: improved search, identify new relationships, and share and re-use data
2. A Linked Open Data Resource List Management Tool for Undergraduate Students (Case study), by Chris Clarke, Taro Information Limited and University of Plymouth, United Kingdom  
Activity area: education, learning technology, and publishing  
Application area of SW technologies: content management, data integration, and semantic annotation  
SW technologies used: RDF, RFA, SPARQL, RDF(S), SIOC, public datasets, and public vocabularies  
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- 1 content discovery
- 1 content management
- 2 customization
- 1 data integration
- 1 domain modeling
- 1 improved search
- 1 lifecycle management

SW technologies used:

- 7 Rules
- 1 Rules (F logic)
- 4 Rules (R3)
- 1 SaaS
- 1 SIOC
- 1 SPARQL
- 1 W3MO







# Case Study: Sampo Series of Semantic Portals for Digital Humanities

# See Videos about Selected Sampo Portals



**Case: WarSampo - Finnish WW2 on the Semantic Web**

**<https://vimeo.com/212249404>**

**Case: BiographySampo – AI Reading Biographies for the Semantic Web**

**<https://vimeo.com/328419960>**

**Case: LetterSampo - Reassembling the Republic of Letters**

**<https://vimeo.com/461293952>**

**Case: AcademySampo: Academic People in Finland 1640-1899**

**<https://vimeo.com/462993654>**

# Summary



## **Semantic Web technologies can be Applied Different Domains**

- Logic-based semantics is domain-agnostic!
- The approach is designed to cover all contents of WWW

**Applications can have global or local scope**

**Digital Humanities is one area that benefits from Linked Data**