

SampoSampo osana kansallista FIN-CLARIAH/DARIAH-FI-tietoinfrastruktuuria: linkitetty avoin data, datapalvelut ja rajapintojen käyttö

**SampoSammon julkistustilaisuus
9.1.2026**

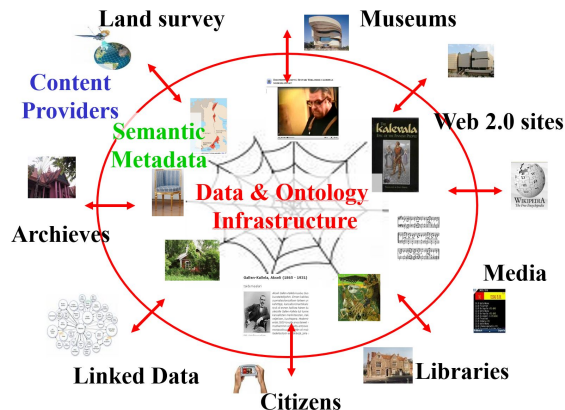
Jouni Tuominen, Helsingin yliopisto & Aalto-yliopisto

Sampo Model for 1) Human Users and 2) Machines



LINKED DATA SERVICE

Findable, Accessible, Interoperable, Re-usable
FAIR data!



Linked Data Finland
Living Laboratory Data Service for the Semantic Web

<https://ldf.fi>

APPLICATIONS & TOOLS

Use Cases

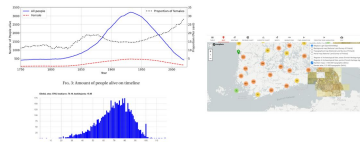
Sampo Portals & Applications



Samos:

<https://seco.cs.aalto.fi/applications/sampo/>

Digital Humanities Research



Tools

Sampo-UI, etc.

Google Colab, Jupyter,
YASGUI, etc.



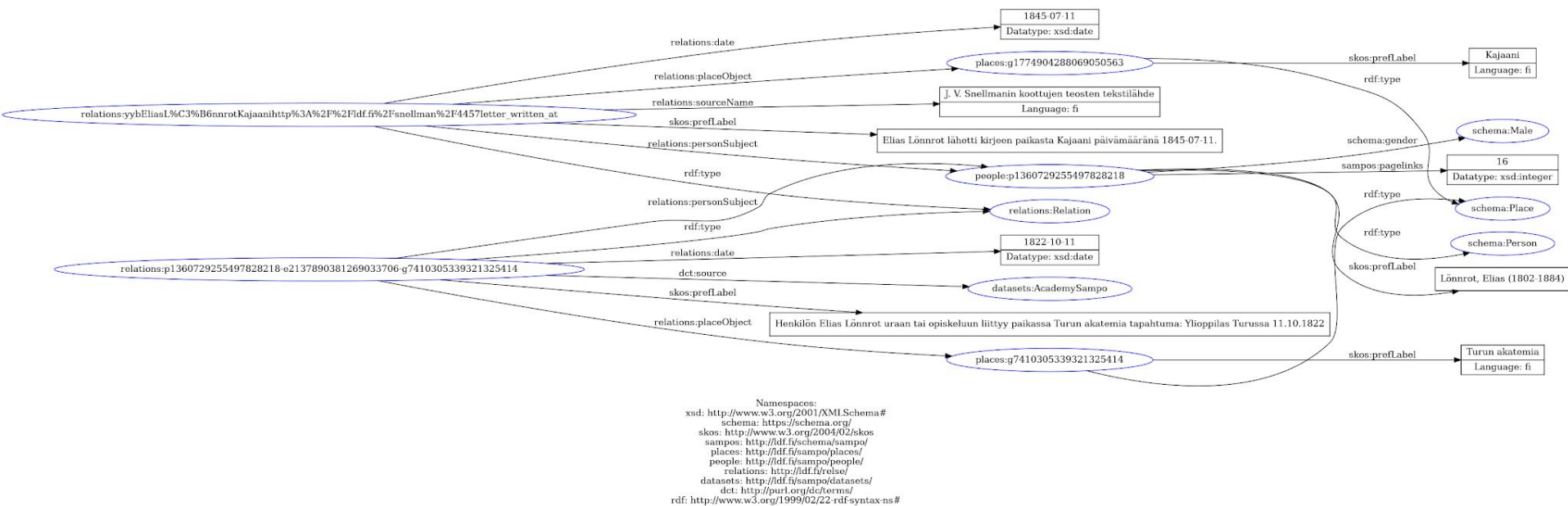
References

Eero Hyvönen: How to Create a National Cross-domain Ontology and Linked Data Infrastructure and Use It on the Semantic Web. *Semantic Web*, 2024. DOI: 10.3233/SW-243468.

Eero Hyvönen: Digital Humanities on the Semantic Web: Sampo Model and Portal Series. *Semantic Web*, vol. 14, no. 4, pp. 729-744, 2023.

Esko Ikkala, Eero Hyvönen, Heikki Rantala and Mikko Koho: Sampo-UI: A Full Stack JavaScript Framework for Developing Semantic Portal User Interfaces. *Semantic Web*, vol. 13, no. 1, 69-84, 2022.

Graph-based data model (RDF) (try!)



Linked Data Finland Living Lab <http://ldf.fi>



[Home](#)
[Project](#)
[Datasets](#)
[Search Data](#)
[Schemas](#)
[Services](#)
[Policies](#)
[Documentation](#)
[Validation](#)
[Linked Data Science](#)
[Applications](#)
[Your Data?](#)
[Linked Data School](#)

Linked Data Finland

Living Laboratory Data Service for the Semantic Web

This site is the Living Laboratory of the [FIN-CLARIAH](#) research infrastructure initiative, conducted by the [Semantic Computing Research Group](#) at [Aalto University](#) in collaboration with University of Helsinki and a large consortium of other Finnish universities and organizations.

Our goal is to make life easier for both Linked Data publishers and consumers on the Web. We base our work on the Linked Data principles and stack of standards founded on the semantic data model [RDF](#), standardized query language [SPARQL](#), and [live HTTP URIs](#) for identifiers.

5-star Linked Data

The baseline of our work is the [5-star Linked Data model](#), proposed by Tim Berners-Lee.

- ★ Make data available on the Web in whatever format.
- ★★ Make data available as structured data (e.g., Excel instead of an image scan of a table).
- ★★★ Use non-proprietary formats (e.g., CSV instead of Excel format).
- ★★★★ Use URIs to denote things, so that people can point at your data.
- ★★★★★ Link your data to other data to provide context.

8-star Linked Data

However, in our opinion, providing 5-star Linked Data is just the beginning. To actually make use of the datasets, consumers need more support in getting to know the underlying data models used, how well the data actually conforms to the models, as well as trustworthiness of the data. To these ends, we extend the model with three additional stars to encourage data publishers to make their data more re-usable:

- ★★★★★ Describe explicitly and publish the schemas used in the dataset (unless the schemas are already available elsewhere).
- ★★★★★ Explain the quality of the dataset against the schemas used in it, so that the user can tell whether the data quality matches her needs.
- ★★★★★ Give explanations when the data is factually correct with respect to the real world and when possibly not.

Eero Hyvönen and Jouni Tuominen: 8-star Linked Open Data Model: Extending the 5-star Model for Better Reuse, Quality, and Trust of Data. *Posters, Demos, Workshops, and Tutorials of the 20th International Conference on Semantic Systems (SEMANTICS 2024)*, vol. 3759, CEUR Workshop Proceedings, September, 2024. <https://ceur-ws.org/Vol-3759/paper4.pdf>

Metadata of nearly 100,000 historical figures, over 50,000 organizations, and 27,000 places



[Home](#)
[Project](#)
[Datasets](#)
[Search Data](#)
[Schemas](#)
[Services](#)
[Policies](#)
[Documentation](#)
[Validation](#)
[Linked Data Science](#)
[Applications](#)
[Your Data?](#)
[Linked Data School](#)

SampoSampo - Connecting Everything to Everything Else

Linked Data Finland



SampoSampo dataset links numerous Sampo systems and external data services to each other. It is similar to the international online service [VIAF: The Virtual International Authority File](#), which links together authority databases and other registers of national libraries in different countries. However, SampoSampo has been adapted to fit into the national FIN-CLARIAH/DARIAH-FI research infrastructure.

The dataset contains information on nearly 100,000 historical figures, over 50,000 organizations, and 27,000 places.

To test and demonstrate its usefulness, this Knowledge Graph is in use in the semantic portal [SampoSampo](#), explained in more detail on the [project page](#).

The Knowledge Graph is published on [Zenodo](#) with a version history, and it can be downloaded as RDF and CSV files.

Data Download

The data can be downloaded at <https://zenodo.org/record/18188936/files/samposampo-data-v1.0.0.zip>.

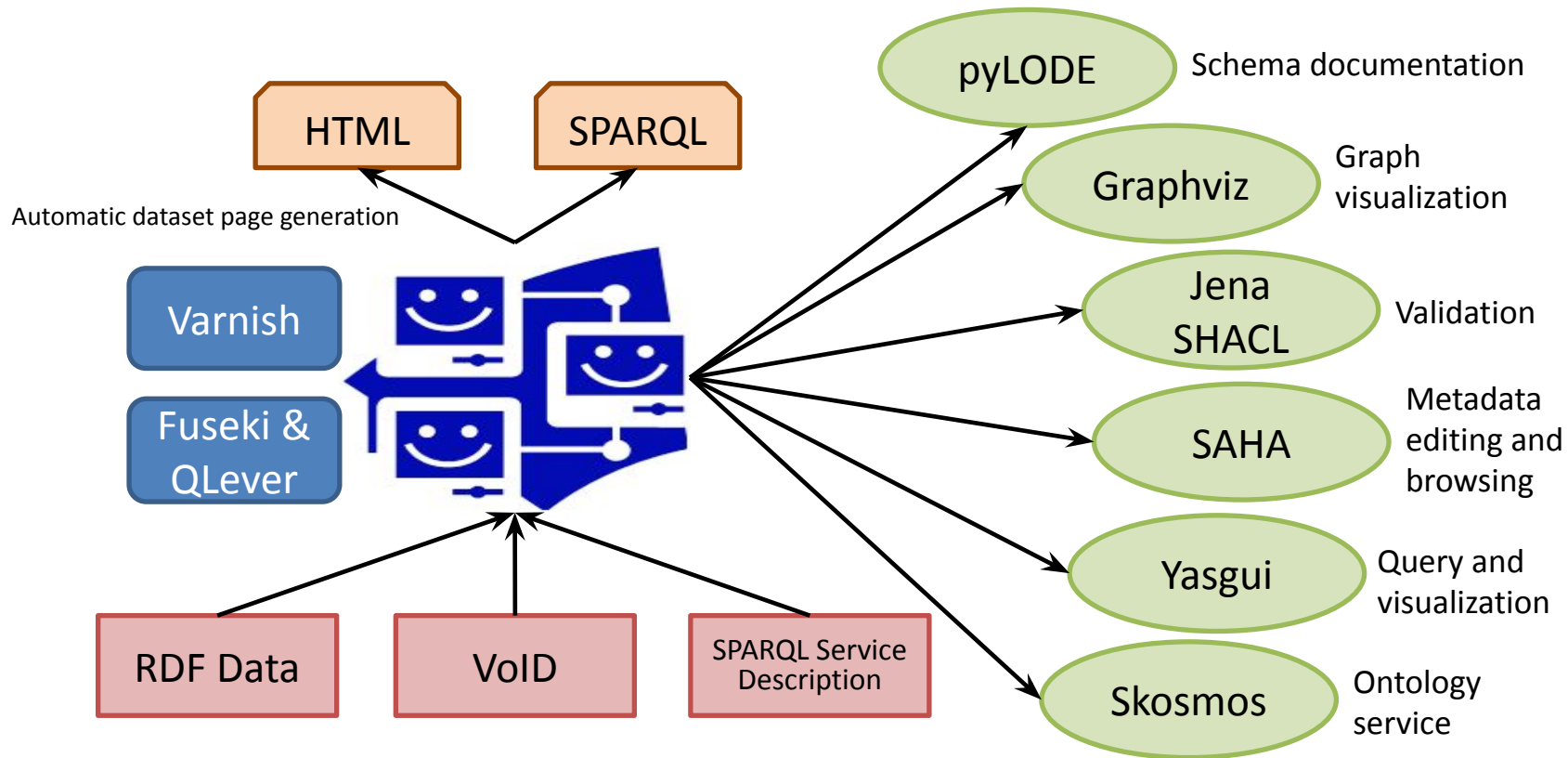
License

[CC BY 4.0](#)



Licensors: <http://seco.cs.aalto.fi>

LDF.fi – generic Linked Data publication platform

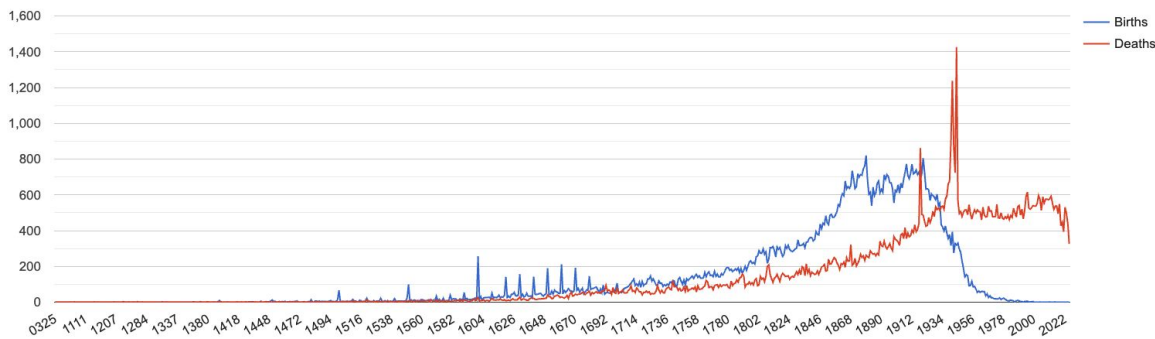


LDF.fi: SPARQL endpoints for querying data for analysis, visualization, mash-up apps (CSV, JSON, XML) (try!)

```
http://ldf.fi/sampo/sparql

1 PREFIX foaf: <http://xmlns.com/foaf/0.1/>
2 PREFIX sch: <https://schema.org/>
3 PREFIX time: <http://www.w3.org/2006/time#>
4 PREFIX sampo: <http://ldf.fi/schema/sampo/>
5
6 SELECT ?category (count(DISTINCT ?born) AS ?Births) (count(DISTINCT ?deceased) AS ?Deaths)
7 WHERE {
8   { SELECT DISTINCT ?person_id (SAMPLE(?_proxy) AS ?proxy) WHERE {
9     ?person_id a sch:Person .
10    ?_proxy foaf:focus ?person_id ; sampo:birth_time/time:hasBeginning [] .
11   } GROUP BY ?person_id }
12   FILTER (BOUND(?proxy))
13   {
14     ?proxy sampo:birth_time/time:hasBeginning ?time .
```

Table Response Gallery Chart Geo Geo-3D Geo events Markup Network Pivot Timeline 730 results in 0.324 seconds Configure



LDF.fi: Download data graphs (Turtle, JSON-LD, RDF/XML, ...) via SPARQL HTTP Graph Store Protocol (try!)

```
labels:l1008569389958773314
  rdf:type          xl:Label;
  skos:prefLabel    "Zilliacus, Henrik Vilhelm Johan";
  schema:familyName "Zilliacus";
  schema:givenName  "Henrik Vilhelm Johan" .
```

```
labels:l1008748179798471596
  rdf:type          xl:Label;
  skos:prefLabel    "Sirelius, Klemens Johan Gabriel";
  schema:familyName "Sirelius";
  schema:givenName  "Klemens Johan Gabriel" .
```

```
labels:l1030176626956441905
  rdf:type          xl:Label;
  skos:prefLabel    "Rein, Gabriel";
  schema:familyName "Rein";
  schema:givenName  "Gabriel" .
```

```
labels:l1055033166923055367
  rdf:type          xl:Label;
  skos:prefLabel    "Kankari, Kaarle August";
  schema:familyName "Kankari";
  schema:givenName  "Kaarle August" .
```

```
labels:l1064509646189052930
  rdf:type          xl:Label;
  skos:prefLabel    "Saelan, Anders Olivier";
  schema:familyName "Saelan";
  schema:givenName  "Anders Olivier" .
```

```
labels:l1081974486497580153
  rdf:type          xl:Label;
  skos:prefLabel    "Gustafsson, Fridolf Vladimir";
  schema:familyName "Gustafsson";
  schema:givenName  "Fridolf Vladimir" .
```

```
labels:l1102218795425051189
  rdf:type          xl:Label;
  skos:prefLabel    "Björnberg, Karl Anton";
  schema:familyName "Björnberg";
  schema:givenName  "Karl Anton" .
```



SampoSampo

"Connecting Everything to Everything Else"

Select a perspective to search and browse the knowledge graph:

People

Historical Finnish people



Organizations

Organizations, companies, schools, groups etc.



Places

Buildings, cities, counties, municipalities, etc.



Person-place relations

Search relation between persons and places



Data sources

Overview of data sources



Select example searches, visualizations, and linked information

INSTANCE PAGE OF MIKAEL AGRICOLA

PLACES RELATED TO C.G.E. MANNERHEIM

LIFETIMES OF WARSAMPO PEOPLE

PERFORMANCE VENUES IN OPERASAMPO

LIFELINES OF FEMALE ARTISTS IN ART SAMPO

PEOPLE RELATED TO SYMBOLISM BY THEIR WIKIPEDIA PAGES

PEOPLE RELATED TO THE HITCHHIKER'S GUIDE TO THE GALAXY BY THEIR WIKIPEDIA PAGES

Images used under license from Shutterstock.com

SampoSampo data dump (static files)

- **Zenodo**

- Linked Data format: RDF files
- Other formats: CSV files
- Versioning, digital object identifier (DOI)

Published January 9, 2026 | Version 1.0.0

[Dataset](#) [Open](#)

SampoSampo Knowledge Graph

Leskinen, Petri¹ Tuominen, Jouni^{1,2} Hyödynen, Eero Antero^{3,4} Rantala, Heikki⁵ Ahola, Annastina¹ [Show affiliations](#)

SampoSampo: Connecting Everything to Everything Else

Leonardo da Vinci (1452-1519) has said: *"Learn how to see. Realize that everything connects to everything else"*. This wisdom is very true regarding Cultural Heritage (CH) data due to its rich linkedness, and regarding Linked Open Data (LOD), where enriching data by linking is the great underlying promise. SampoSampo - the Mother of other SampoS and beyond aims to address the challenge set by Leonardo da Vinci by interlinking data about historical Finnish people, organizations, places, and events from a variety of other Sampo systems including

1. AcademySampo,
2. BiographySampo,
3. BookSampo,
4. Vanhat Naiset Sampo,
5. LetterSampo Finland (1809-1917),
6. ArtSampo,
7. WarSampo,
8. ParliamentSampo, and
9. OperaSampo,

and various other data sources:

1. Wikidata,
2. KANTO authority files,
3. YSO Places,
4. ISNI,
5. Wikipedia,
6. Geneanet and Geni genealogy services,
7. WikiTree,
8. ULAN registry provided by Getty Research, and
9. HISTO - Finnish history ontology.

In the SampoSampo project the Sampo series of mutually related CH LOD services and semantic portals based on the so-called Sampo model are considered. The Sampo model itself is used to establish an entity alignment LOD service on top of which a meta-level Sampo, SampoSampo, is created, based on different Sampo systems and related datasets and KGs. For searching entities globally, faceted semantic search on aligned entities is used, and for searching and discovering new connections between entities, faceted search is applied to knowledge-based relational search on explainable connections between entities, a step toward the "Web of Wisdom".

The SampoSampo is part of the national FIN-CLARIAH research infrastructure in Finland, and was published in 2026.

0 VIEWS 1 DOWNLOADS [Show more details](#)

Versions

Version 1.0.0	Jan 9, 2026
10.5281/zenodo.18188936	

Cite all versions? You can cite all versions by using the DOI 10.5281/zenodo.18188936. This DOI represents all versions, and will always resolve to the latest one. [Read more.](#)

External resources

Indexed in

OpenAIRE

Keywords and subjects

[Semantic Web](#) [Linked Data](#)

Details

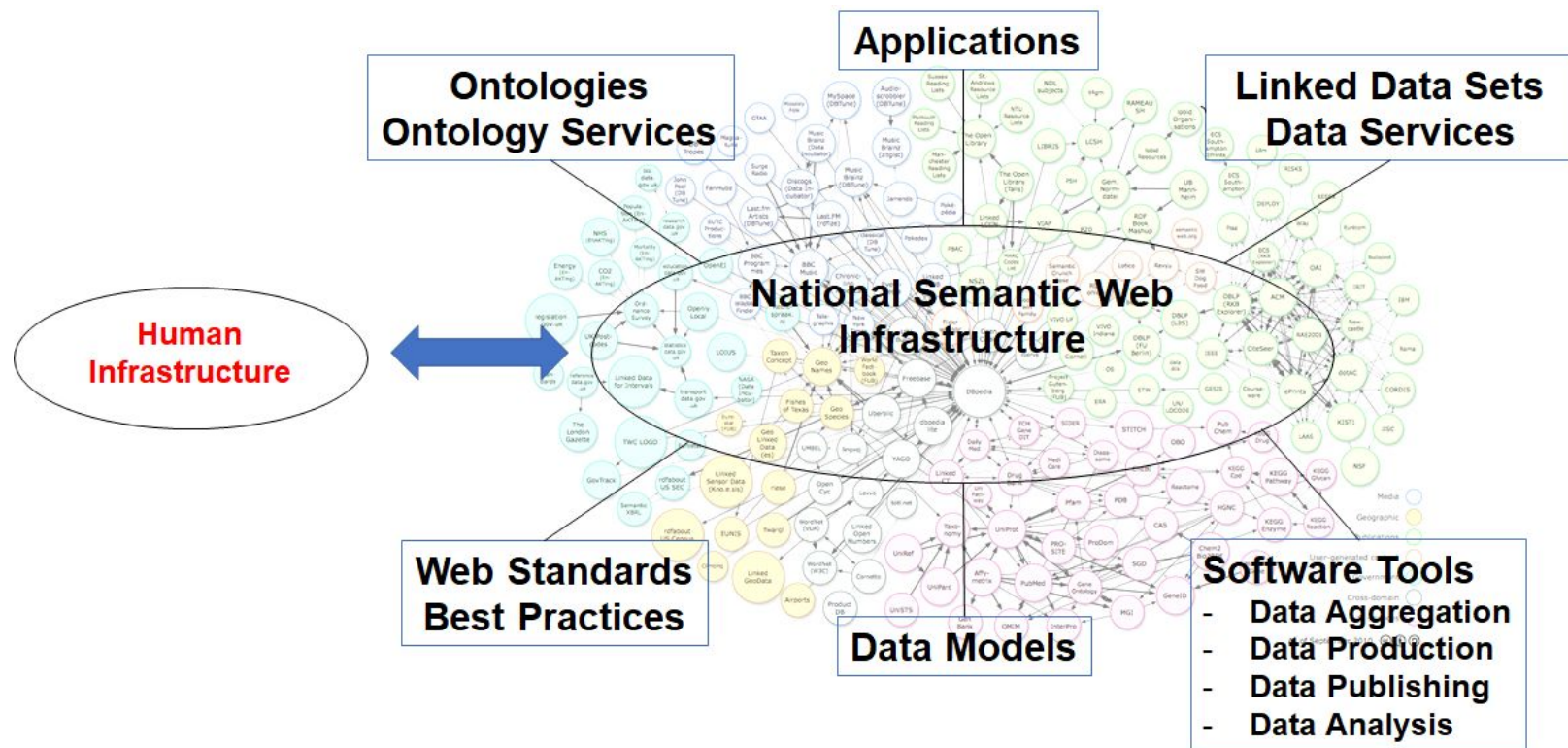
DOI

[DOI 10.5281/zenodo.18188936](#)

Resource type

Dataset

Linked Data infrastructure



Sampo infrastructure

- **All software components are run as Docker containers**
 - Portable services, can be run on a local machine/server
- **Triple stores (Fuseki, QLever) run on virtual machines**
- **Web applications (Varnish for routing + cache, www.ldf.fi, portals) run on OpenShift container cloud**
- **Part of the FIN-CLARIAH/DARIAH-FI research infrastructure program**
- **Technical infrastructure provided by CSC – IT Center for Science (by Ministry of Education and Culture)**

Kiitos!



Aalto University
School of Science



UNIVERSITY OF HELSINKI



SeCo

HELDIG

Helsinki Centre for Digital Humanities

HELSINKI INSTITUTE FOR
SOCIAL SCIENCES
AND HUMANITIES