

Oopperasammon julkistustilaisuus, Musiikkitalo, Helsinki ja Zoom, 25.10.2023i

Oopperasampo

Ooppera- ja musiikkiteatteriesityksiä
Suomessa 1830-1960

Ohjelma

- 12:00–12:20 **Oopperasampo osana kansallista tietoinfrastruktuuria: idea ja sen toteutus**
Eero Hyvönen, professori, Aalto-yliopisto, johtaja, Helsingin yliopiston HELDIG-keskus
- 12:20–12:40 **Oopperasammon tietosisällöt ja niiden käyttö tutkimuksessa ja opetuksessa**
Anne Kauppala, professori, Taideyliopisto, Sibelius-Akatemia
- 12:40-13:00 **Oopperasampo-portaalin esittely**
Annastiina Ahola, DI, Semanttisen laskennan tutkimusryhmä (SeCo), tietotekniikan laitos, Aalto-yliopisto
- 13:00-13:20 **Oopperasammon datapalvelu ja Sampo-UI-työkalu sammon taontaan**
Heikki Rantala, väitöskirjatutkija, tietotekniikan laitos, Aalto-yliopisto
- 13:20-14:00 **Malja Oopperasammolle: verkostoitumistilaisuus aulassa**

Oopperasammon julkistustilaisuus, Musiikkitalo, Helsinki ja Zoom, 25.10.2023i

Oopperasampo osana kansallista tietoinfrastruktuuria: idea ja sen toteutus

Eero Hyvönen

Aalto University, Dept. of Computer Science, professor
University of Helsinki, Helsinki Centre for Digital Humanities (HELDIG), director

Semantic Computing Research Group (SeCo)

<http://seco.cs.aalto.fi/u/eahyvone/>



Sisältö

- 1. Video: Semantic Web and AI for Digital Humanities**
- 2. Miksi käytämme linkitettyä avointa data sammoissa?**
- 3. Sampo-malli, datapalvelut ja semanttiset portaalit**

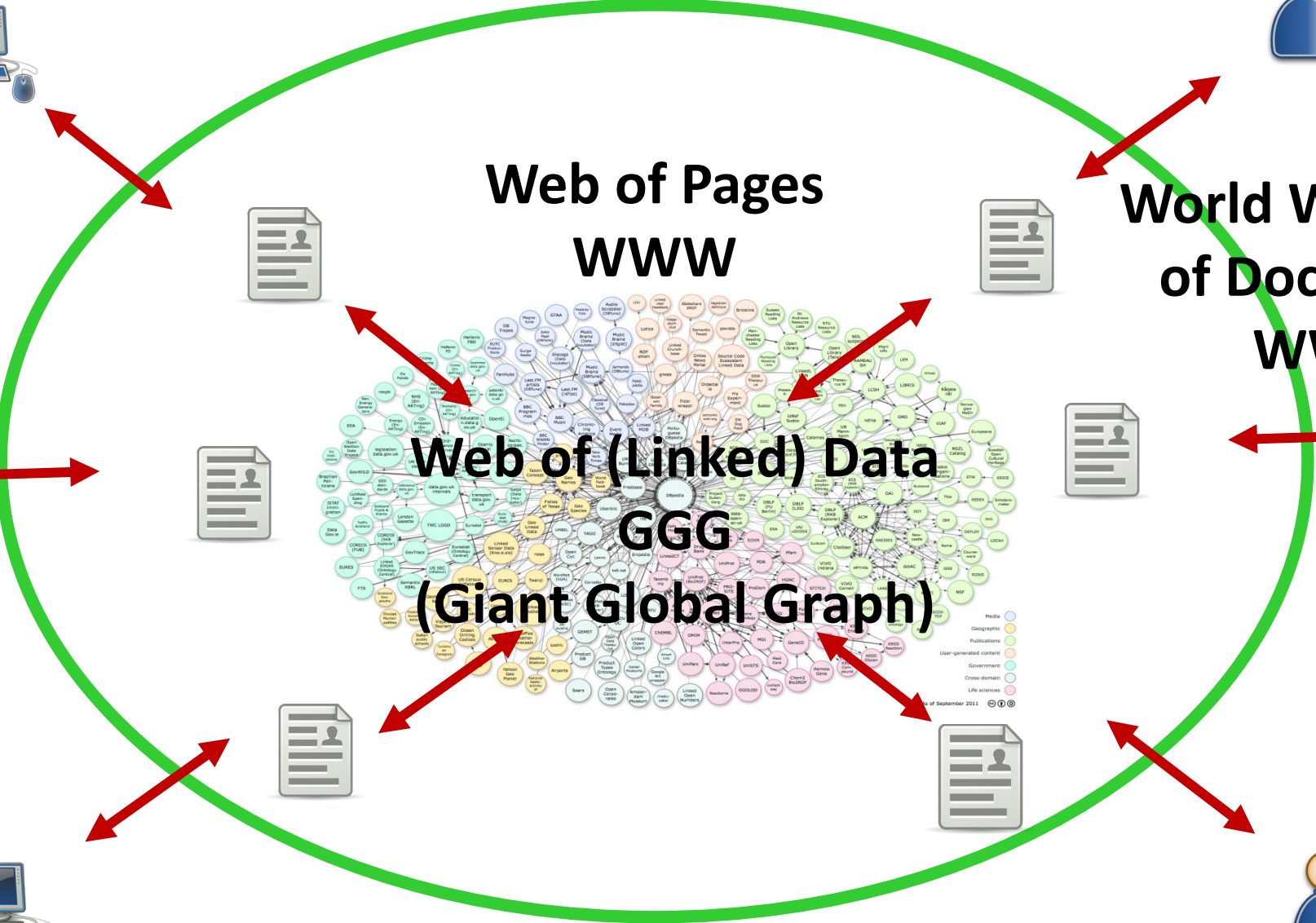
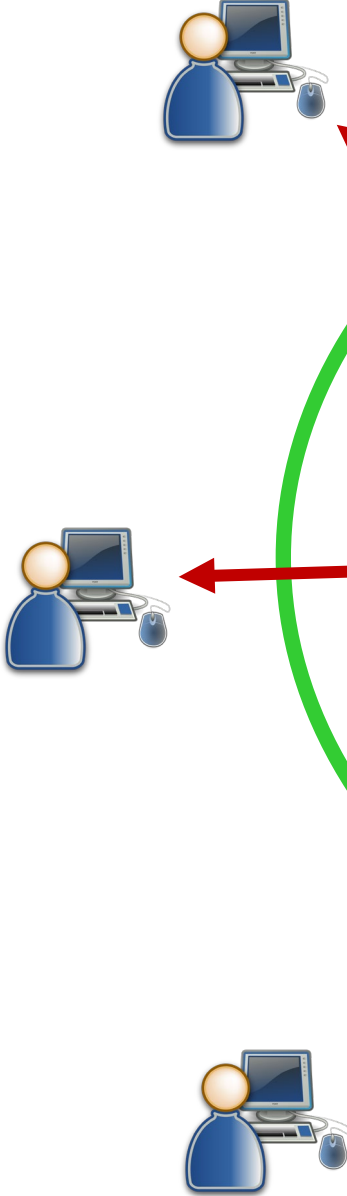
1. Video: Semantic Web and AI for Digital Humanities

<https://vimeo.com/470313703>

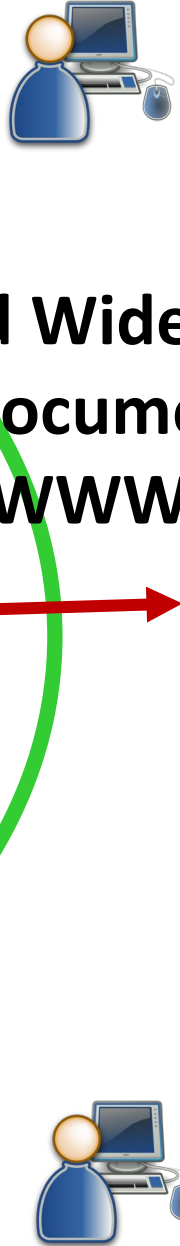
Tuottanut Suomen Akatemia

Semantic Web = GGG + WWW

Web for People



World Wide Web of Documents WWW



PREFIX scop: <http://ldf.fi/schema/operasampo/>
 PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>

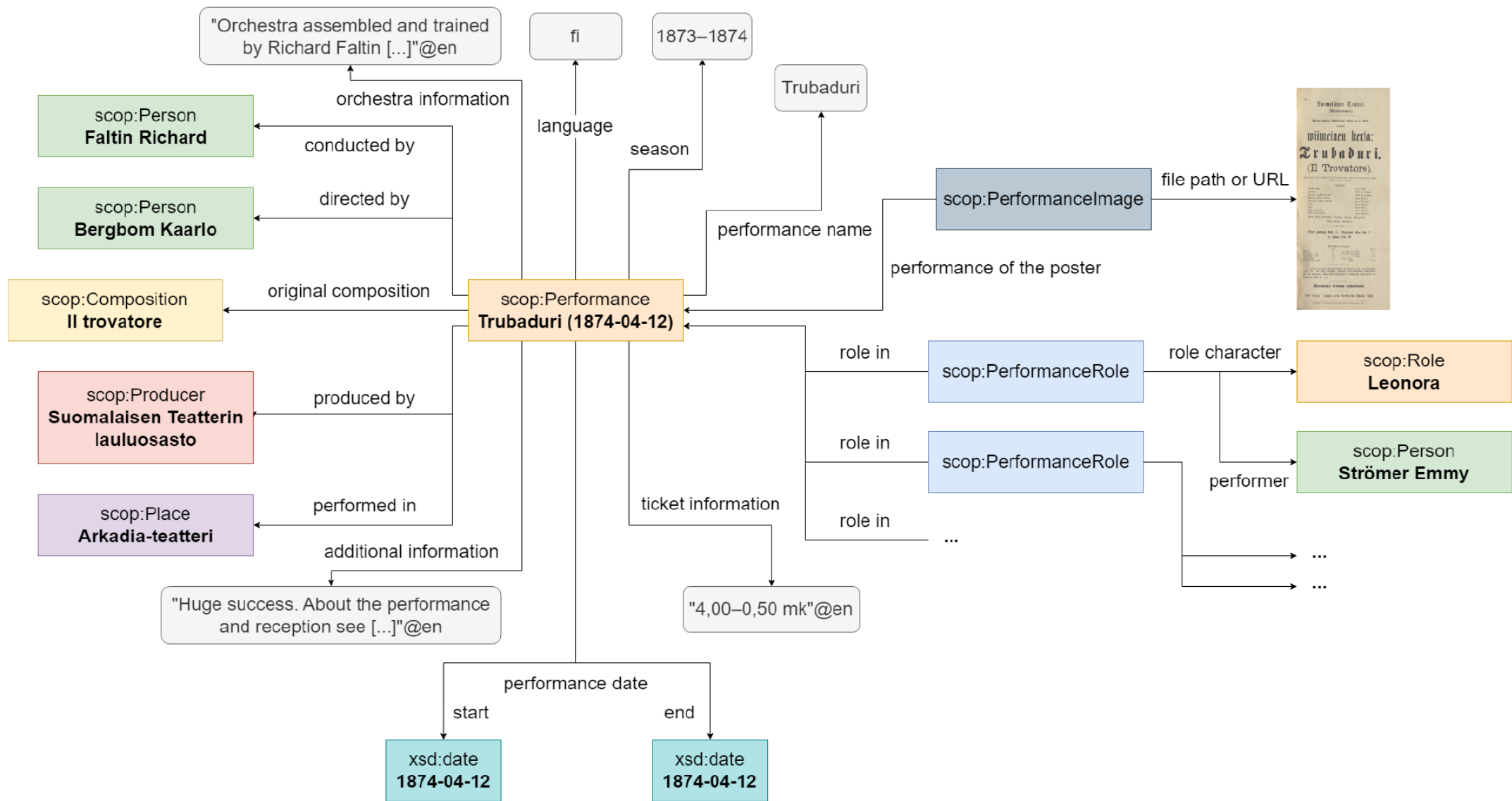
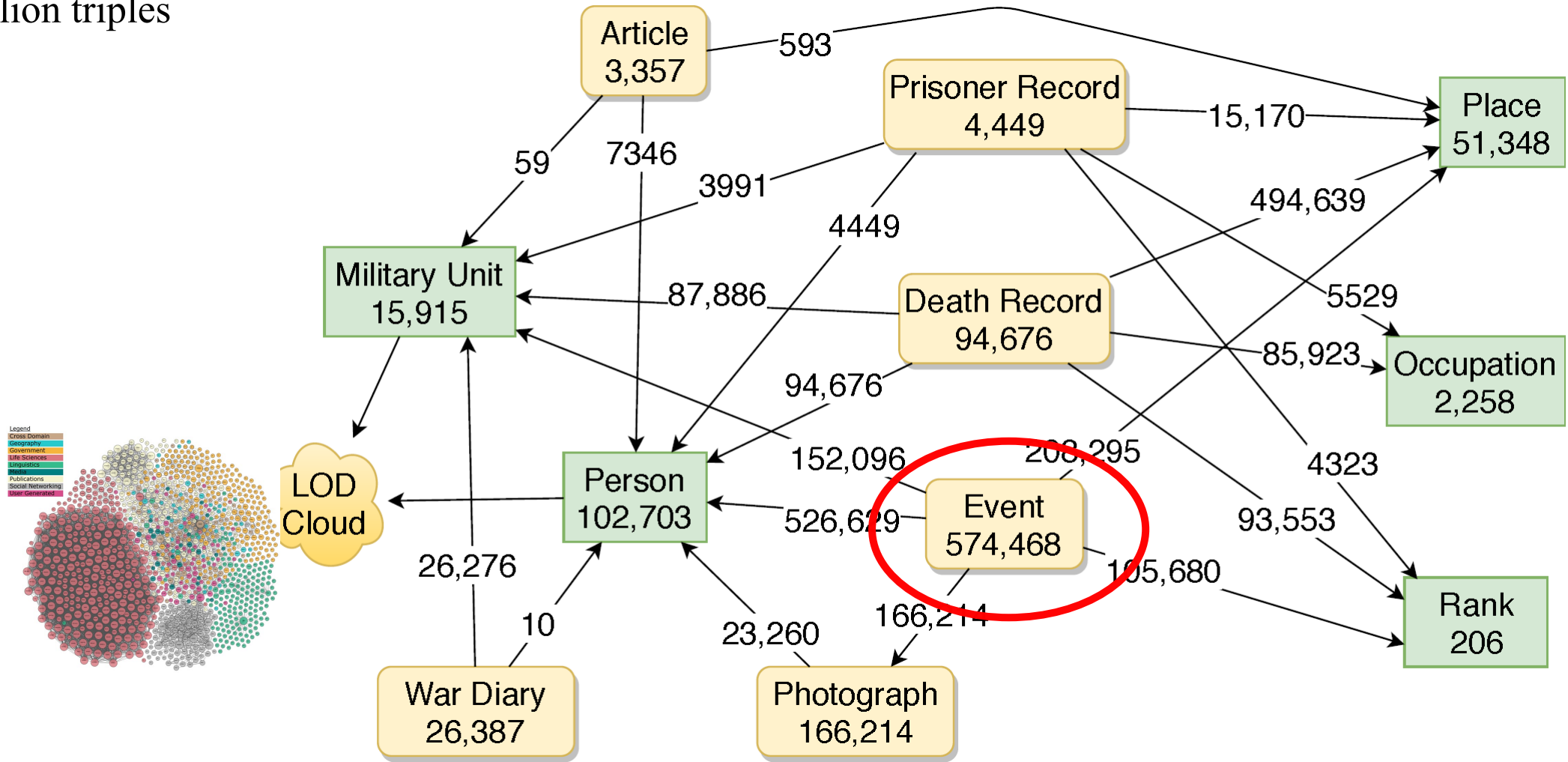


Figure 1: A chart illustrating the OPERASAMPO data model through an example.

WarSampo WW2 Infrastructure: Linked Open Data Cloud

14 million triples



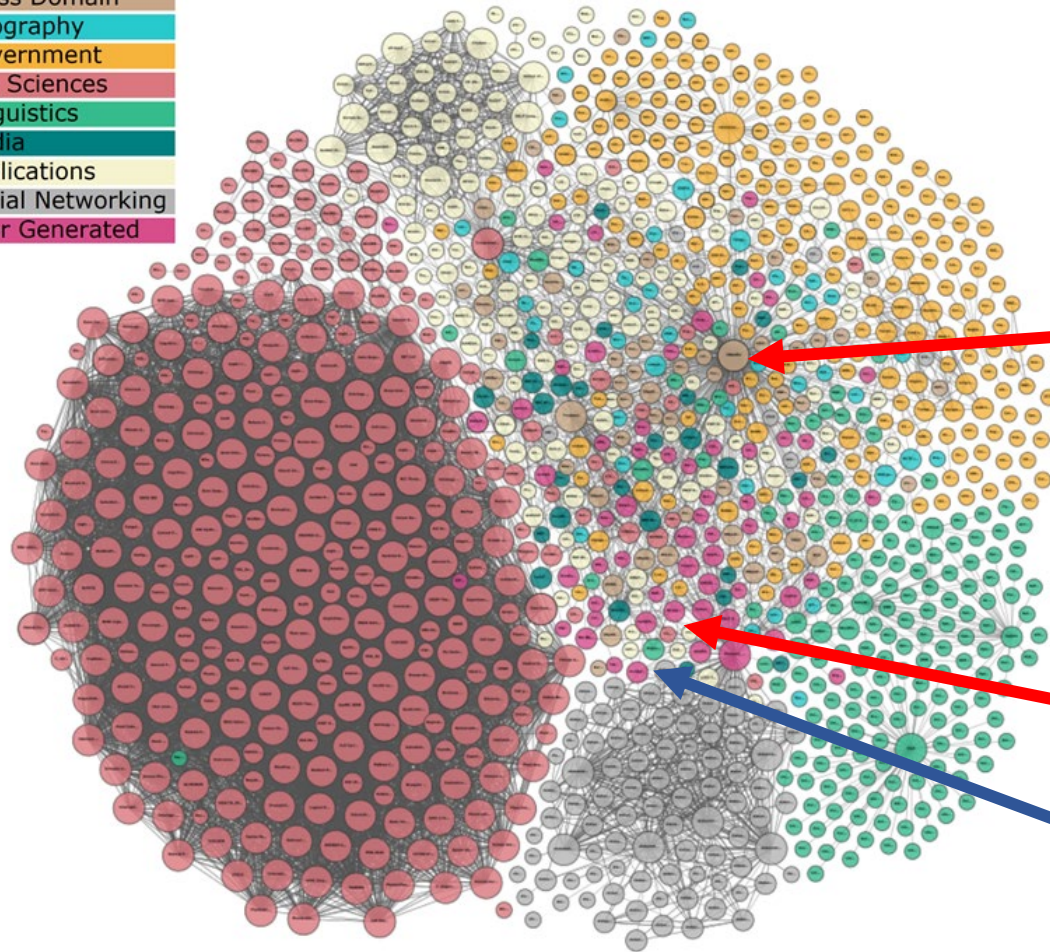
Mikko Koho, Esko Ikkala, Petri Leskinen, Minna Tamper, Jouni Tuominen and Eero Hyvönen:

[WarSampo Knowledge Graph: Finland in the Second World War as Linked Open Data](#). Semantic Web (12) 2, 2021. [pdf link](#)

Linked Open Data Cloud: Human Knowledge on the Semantic Web

Legend

Cross Domain
Geography
Government
Life Sciences
Linguistics
Media
Publications
Social Networking
User Generated



Wikipedias (DBpedia KG)

WarSampo KG

OperaSampo KG?

Sampo Series of LOD Services & Portals



A. Gallen-Kallela: Defense of Sampo, 1896, Turku Art Museum,

1. **MuseumFinland** – Finnish Museums on the Semantic Web (2004) [39 000 users]
2. **CultureSampo** – Finnish Culture on the Semantic Web (2008) [107 000 users]
3. **TravelSampo** - Mobile Contextualized Services of Cultural Tourism (2011)
4. **BookSampo** – Finnish Fiction Literature on the Semantic Web (2011) [1.6 million users in 2022]
5. **WW1LOD** – World War I Linked Open Data (2014)
6. **WarSampo** – Finnish World War 2 on the Semantic Web (2015-19) [1 100 000 users]
7. **Norssi Alumni on the Semantic Web** – Historical person registry using LOD (2017)
8. **U.S. Congress Prosopographer** – U.S. Congress Legislators 1789-2018
9. **BiographySampo** - Finnish Biographies on the Semantic Web (2018-20) [381 000 users]
10. **NameSampo** – Linked Data Workbench for Toponomastic Research (2019) [55 000 users]
11. **WarVictimSampo 1914-1922** – National War History [80 000 users]
12. **Mapping Manuscript Migrations (MMM)** – medieval manuscripts (2020) [9100 users]
13. **AcademySampo** – Finnish Academic People 1640 – 1899 (2021) [26 000 users]
14. **FindSampo** – Archaeological Finds on the Semantic Web (2021) [7 000 users]
15. **WarMemoirSampo** – Memoirs of Finnish WW2 veterans (2021) [3 800 users]
16. **LetterSampo** – Early Modern Letters on the Semantic Web (2022)
17. **LawSampo** – Finnish Legislation and Case Law on the Semantic Web (2023)
18. **ParliamentSampo** – Parliament of Finland on the Semantic Web (2023)
19. **BookSampo II** – Semantic Search, Browsing, and Data-analyses (2023)
20. **OperaSampo, ConfermentSampo, CoinSampo, PASampo, ArtSampo, ...** (2023-)

Sampo-UI

IN USE

Sampo = Mythical artifact of the Finnish Epic Kalevala that gives to its owner riches and good fortune. *A metaphore of amazing ancient technology.*

Links to all Sampos: <https://seco.cs.aalto.fi/applications/sampo/>

Oopperasampo

Ooppera- ja musiikkiesitykset Suomessa 1830-1960

Valitse näkymä etsiäksesi ja selataksesi aineistoja:

Esitykset

Näkymä, jossa voi hakea esityksiä.



Henkilöt

Näkymä, jossa voi hakea oopperaan liittyviä henkilöitä (säveltäjät, esiintyjät, jne.).



Sävellykset

Näkymä, jossa voi hakea sävellyksiä.



Roolihahmot

Näkymä, jossa voi hakea sävellyksien roolihahmoja.



Esityspaikat

Näkymä, jossa voi hakea esityspaikkoja.



Lähteet

Lista käytetyistä lähteistä.



Linkkejä

Linkkejä erinäisiin digitaalisiin aineistoihin



<https://oopperasampo.fi>

Portaalin kuvien [lisenssitiedot](#)

Mikä on Oopperasampo?

- Laajentaa sampojen semanttisen verkoston uudelle sovellusalueelle: Musiikin historia, ooppera- ja musiikkiteatteriesitykset
- Data-aineistona Sibelius-Akatemian Reprises tietokanta 1830-1960
 - Yli 9 000 eritystä, 3500 henkilöä, 6400 roolihahmoa, 650 sävellystä
 - Täydentää Kansallisoopperan ja -baletin esityksiä 1911- Encore.fi:ssä
 - Datan linkittyy muihin aineistoihin: Wikidata, Bigrafiasampo, ...
- Kaksi osaa: Linkitetyn avoimen datan palvelu + semanttinen portaali
- Datapalvelu: digitaalisten ihmitieteiden tutkimus + sovelluskehitys
- Portaali: Semanttinen haku, selailu + data-analyttiset työkalut
- Yhteistyöhanke Taideyliopiston Sibelius-Akatemian ja Aalto-yliopiston välillä
 - Mukana myös Helsingin yliopiston HELDIG-keskus





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TOOLS

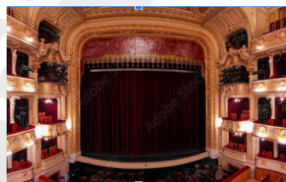
SOFTWARE

DOWNLOAD

Wikipedia: [Semantic](#)

[web suomeksi](#)

Google [this site](#)



Oopperasampo

Ooppera- ja musiikkiteatteriesitykset Suomessa 1830-1960



Reprises tietokannasta Oopperasampoon

Taideyliopiston Sibelius-Akatemian [Reprises-tietokanta](#) sisältää tietoa tuhansista Suomessa pidetystä ooppera- ja musiikkiteatteriesityksistä 1830-1960 sekä tuhansista niihin liittyvistä musiikkialan henkilöistä ja sävellyksistä. Oopperasampo-hanke on Aalto-yliopiston ja Taideyliopiston tutkimushanke, jossa Repris-tietokannasta luodaan linketyn avoimen datan palvelu ja semanttinen portaali Oopperasampo, jolla aineistoja voidaan haakea, selata ja analysoida digitaalisten ihmistieteiden keinoin. Datan muunnosten yhteydessä aineistoja rikastetaan muiden Sampo-järjestelmien ja tietolähteiden avulla ja päättelemällä. Datan ylläpitoon semanttisen webin RDF-muotossa kehitetään tekninen ratkaisu.

"Sampoja" verkossa

Semanttisen laskennan tutkimusryhmä (SeCo) on julkaissut verkossa useita digitaalisten ihmistieteiden "sampoja" tutkijoiden ja laajemman yleisön käytettäväksi. Sampo-sarjan datapalveluita ja semanttisia portaatteja on esitelty tarkemmin sivulla [Sampo Model and Series of Semantic Portals](#). Sampojen teknisenä perustana on semanttisen webin teknologioihin ja linkityn datan ideaan perustuva [Sampo-malli](#) ja [Sampo-UI](#) ohjelmointikehys käyttöliittymien toteuttamista varten.

Projekti alkoi 1.1.2023. Lisää tietoa hankkeesta julkaistaan myöhemmin tällä sivulla.

Projektiryhmä

Aallossa ja HELDIG-keskuksessa:

- [Eero Hyvönen](#) (vetäjä, Aalto ja HELDIG-keskus)
- Heikki Rantala (Aalto)
- Annastiina Ahola (Aalto)

Taideyliopiston Sibelius-Akatemiassa:

- Anne Kauppala (vetäjä)
- Outi Parkkila
- Anne Piirainen



Julkaisuja

2023

Eero Hyvönen, Annastiina Ahola, Heikki Rantala and Anne Kauppala: **OperaSampo – Opera and Music Theatre Performances in Finland 1830–1960 on the Semantic Web**. *Proceedings of the ISWC 2023 Posters, Demos and Industry Tracks* (Irina Fundulaki, Kouji Kozaki, Jose Manuel Gomez-Perez and Daniel Garijo (eds.)), CEUR Workshop Proceedings, September, 2023. In press. [bib pdf](#)

Annastiina Ahola, Eero Hyvönen, Heikki Rantala and Anne Kauppala: **Publishing and studying historical opera and music theatre performances on the Semantic Web: case OperaSampo 1830–1960**. August, 2023. Submitted for peer review. [bib pdf](#)

Kiitos yhteistyöstä!

Tutkimuksen kotisivu:

<https://seco.cs.aalto.fi/projects/oopperasampo/>

Ensimmäiset referoidut yhteiset kv. julkaisut Oopperasammosta:

Latest News

[FIN-CLARIAH Research Infrastructure](#)

A new national research infrastructure initiative FIN-CLARIAH for...

8.12.2021 8:12 by eaahvone

[WarMemoirSampo published on December 3, 2021](#)

A new "Sampo" application, "WarMemoirSampo"...

8.12.2021 8:04 by eaahvone

[Five new SeCo papers accepted for the ISWC 2021](#)

The 20th International Semantic Web Conference (ISWC 2021), the...

2.8.2021 6:53 by eaahvone

Latest Publications

Frida Ehrnsten, Eljas Oksanen, Heikki Rantala and Eero Hyvönen: [DigiNUMA ja Rahasampo – uusi digitaalinen palvelu rahalöydöistä kiinnostuneille](#)

Mehwish Alam, Victor de Boer, Enrico Daga, Marieke van Erp, Eero Hyvönen and Albert Meroño-Peñuela: [Editorial of Special Issue on Cultural Heritage and Semantic Web](#)

Heikki Rantala, Eero Hyvönen and Petri Leskinen: [Finding and explaining relations in a biographical knowledge graph based on life events: Case BiographySampo](#)

Heikki Rantala, Eero Hyvönen and Petri Leskinen: [Finding relations between entities in a knowledge graph: Case artists of the Getty Union List of Artist Names \(ULAN\)](#)

SeCo on Twitter

Tweets from [@secoresearch](#)

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Semantic Computing Resea... @secore... · Aug 8 [X](#)
[Parlamenttisampo.fi](#) tarjoaa työkalun kansanedustajien analysoimiseen. Alla Helsingin Sanomien artikkelit mm. ministerien ja kansanedustajien rasistisista puheista. [facebook.com/groups/1697627...](#)

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HELDIG - Helsinki Centre for Digital Humanities | Facebook

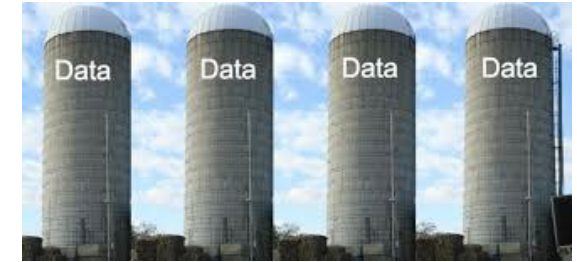
🗨️ ❤️ 2

Semantic Computing Resea... @secore... · Jul 27 [X](#)

2. Miksi käytämme linkitettyä avointa data sammoissa

Why Linked (Open) Data

- Enriching everybody's data collaboratively from separate silos
 - Everybody wins by collaboration!
- Creating Findable, Accessible, Interoperable, Re-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/>





“Learn how to see. Realize that everything connects to everything else.”

Leonardo da Vinci (1452-1519)

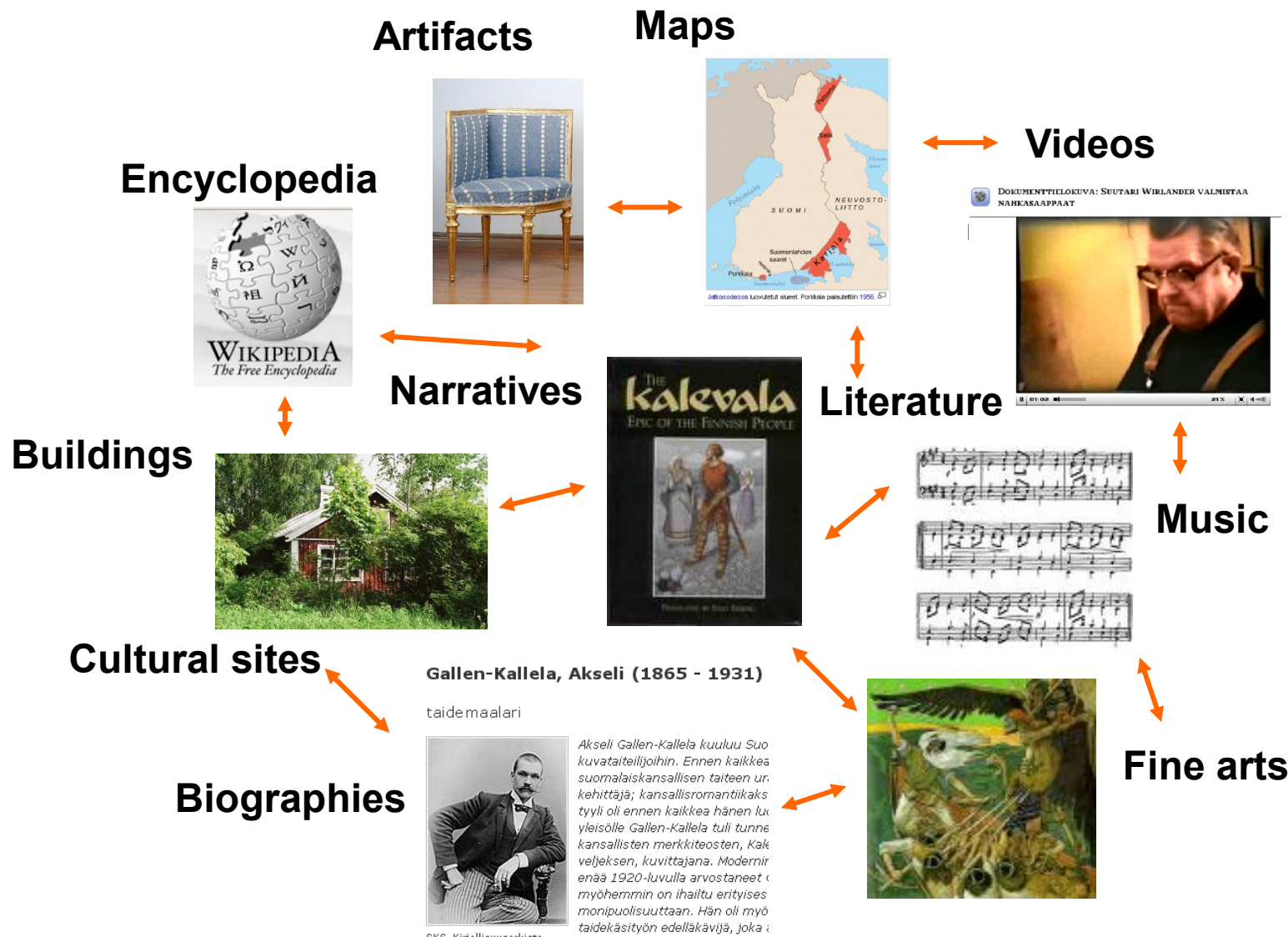
**We Have Created Sampos to prove
that Leonardo Da Vinci was right!**

3. Sampo-malli, datapalvelut ja semanttiset portaalit



Key Problem 1: CH Content is Semantically Complex and Linked

- **Heterogeneous contents**
 - text, speech, images, 3D, movies, animations,...
- **Incompatible data**
 - formats & models
- **Multi-lingual**
- **Semantically interlinked**





Key Problem 2: CH Content Production System

- **Distributed silos**
- **Independent actors**
- **Little collaboration**

Land survey



Archives



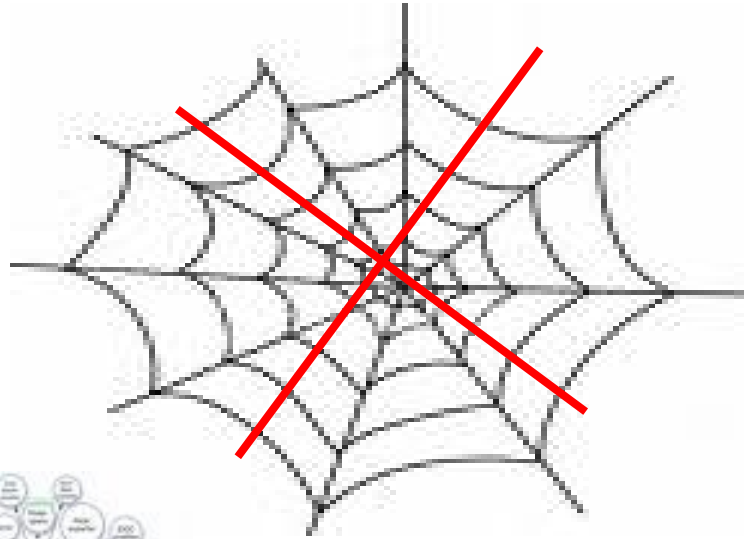
Linked Data



Citizens



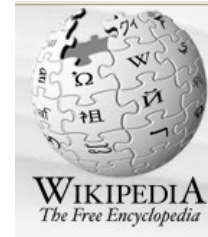
Museums



Libraries



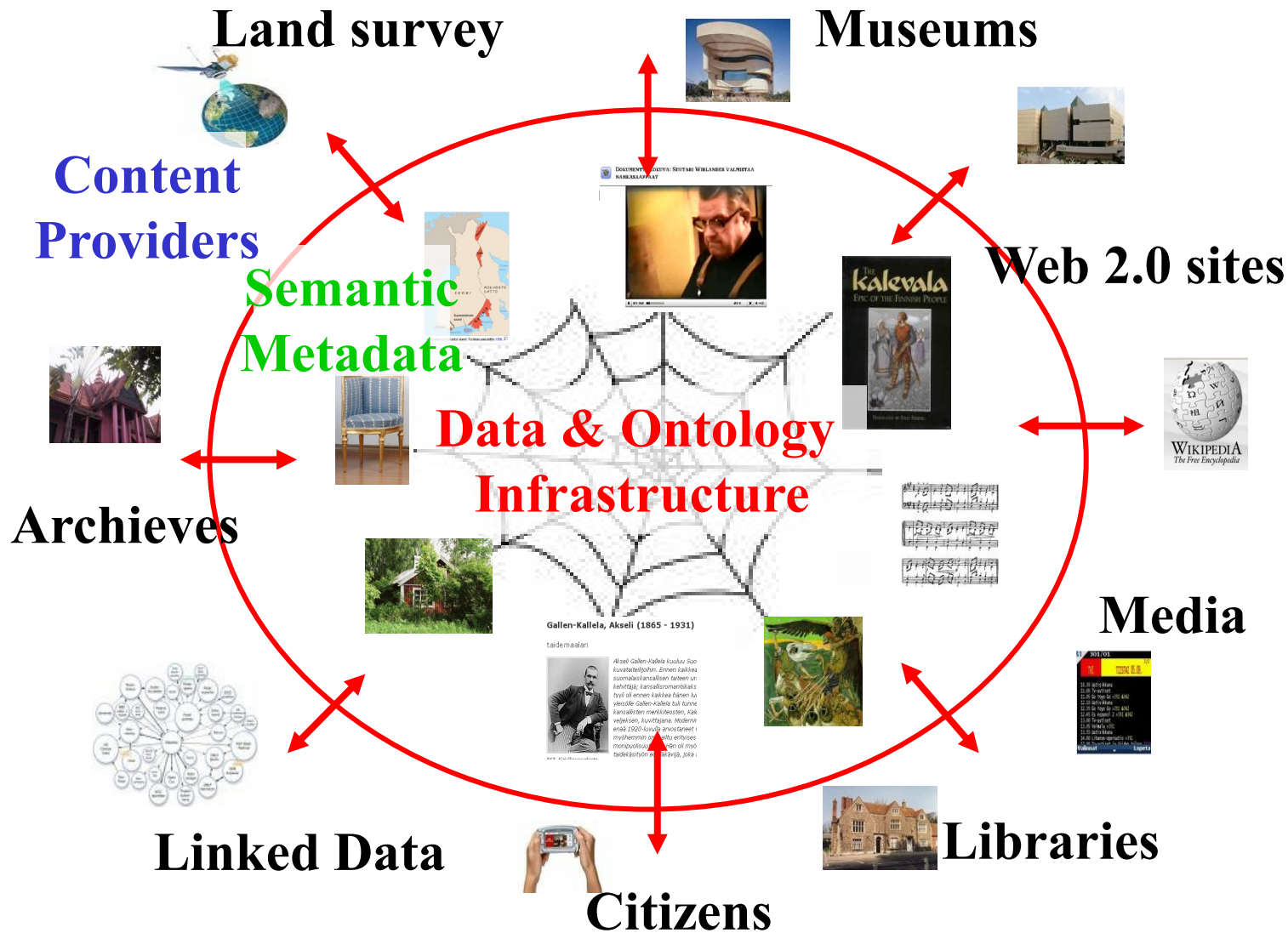
Web 2.0 sites



Media



Solution: New Collaborative Cultural Heritage Publishing Model “Sampo”

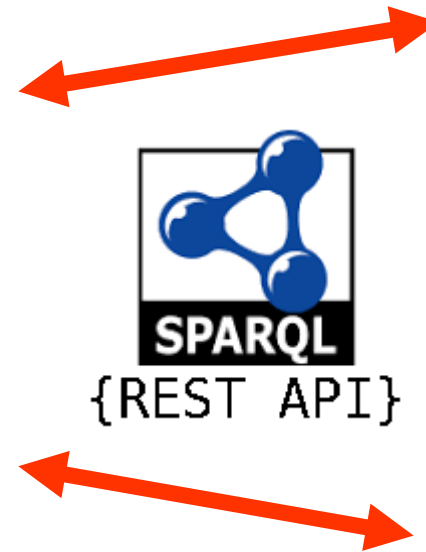
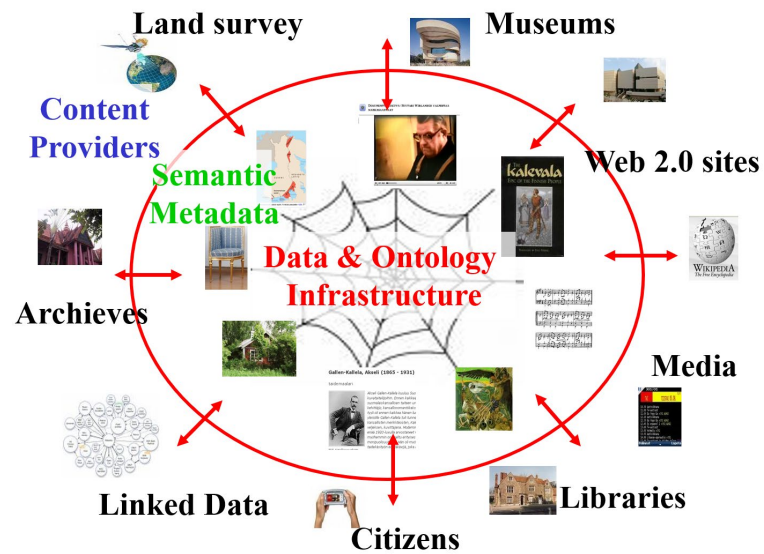


Findable
Accessible
Inteoperable
Re-usable data!

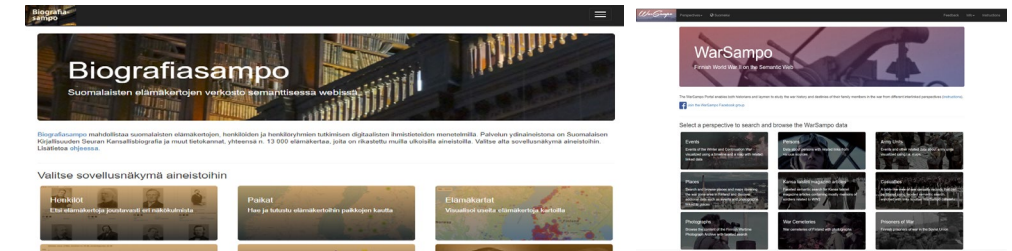
Using Sampo Model for Cultural Heritage Data by 1) human users and 2) machines



Sampo LOD Service



Sampo Portals & Applications



Digital Humanities Research Tools

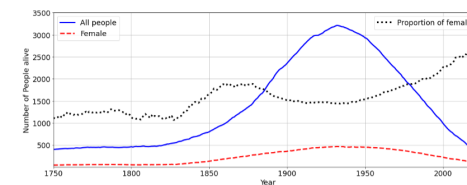


Fig. 3: Amount of people alive on timeline

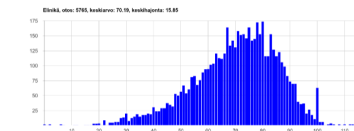


Fig. 4: Average lifespan of biographees



Linked Data Finland Service:
<https://ldf.fi>

Sampo Model Principles

Sampo Model Principles P1–P6



**Principles for creating
LOD services**

**Principles for creating
portal interfaces:
Sampo-UI**

P1	Support collaborative data creation and publishing
P2	Use a shared open ontology infrastructure
P3	Make clear distinction between the LOD service and the user interface (UI)
P4	Provide multiple perspectives to the same data
P5	Standardize portal usage by a simple filter-analyze two-step cycle
P6	Support data analysis and knowledge discovery in addition to data exploration

[Hyvönen, *Semantic Web*, 2023]
[Ikkala et al., *Semantic Web*, 2022]



Eero Hyvönen: [Digital Humanities on the Semantic Web: Sampo Model and Portal Series](#).
Semantic Web – Interoperability, Usability, Applicability, vol. 14, no. 4, pp. 729-744, 2023.

Why infrastructure?

“Intellectuals solve problems
- geniuses prevent them”

Albert Einstein



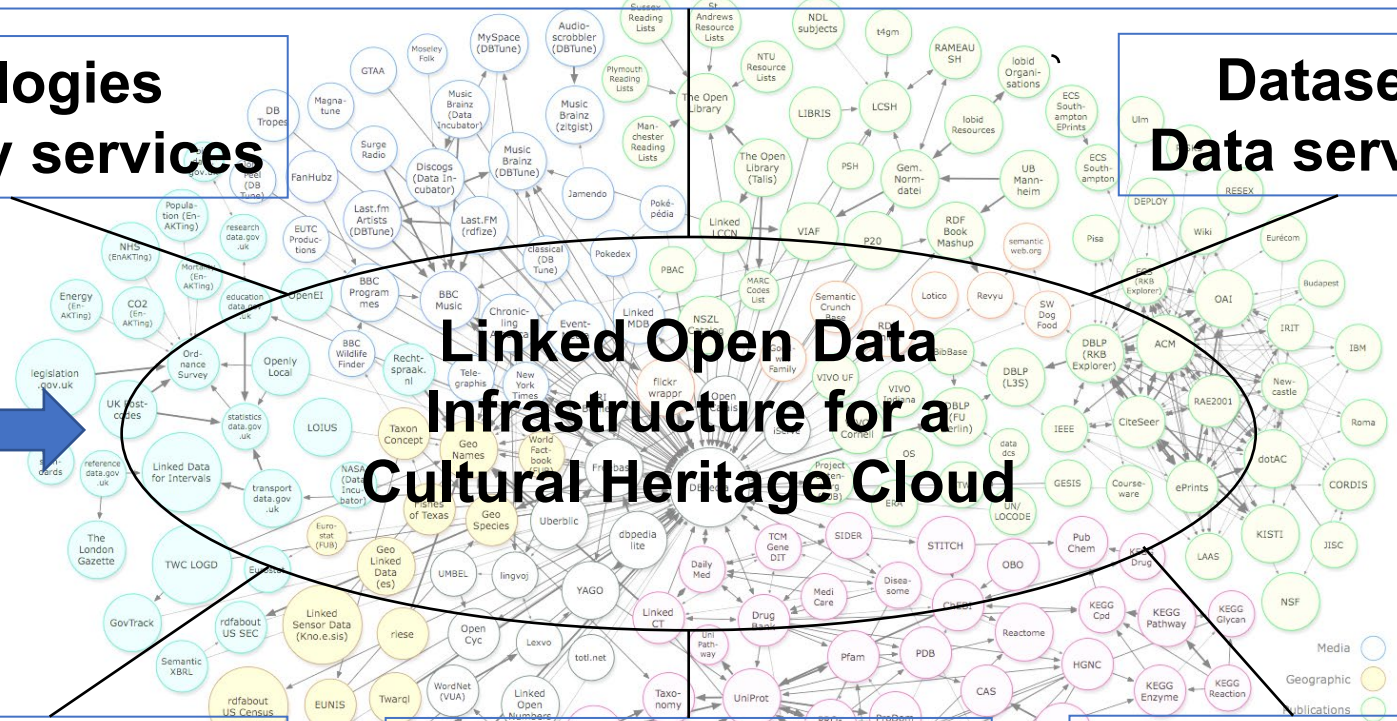
Elements of a Semantic Data Infrastructure for a Cultural Heritage Cloud

Applications
Sampos, Europeana, ARIADNEplus, TimeMachine...

Ontologies
Ontology services

Datasets
Data services

Human Infrastructure



Standards
Best practices
W3C, ...

Shared data models
DC, CIDOC-CRM, ...

Software tools
Sampo-UI, ...
As of September 2010

Sampo UI: Full Stack JavaScript framework for developing portals

- Key idea: Integrate faceted search and browsing seamlessly with data analyses
- Easy to use for developers: Create your first KG-based portal in a few hours!
 - Based on configuring existing templates and re-using existing UI components
 - Used in some 15 Sampos already since 2018 (used by external users, too)
- Easy to use for end-users: “Standard” UI model
- Available Open Source at Github:
 - <https://github.com/SemanticComputing/sampo-ui>
- More info and tutorial materials available at
 - <https://seco.cs.aalto.fi/tools/sampo-ui/>
- Papers about Sampo-UI
 - Esko Ikkala, Eero Hyvönen, Heikki Rantala and Mikko Koho: [Sampo-UI: A Full Stack JavaScript Framework for Developing Semantic Portal User Interfaces](#). Semantic Web – Interoperability, Usability, Applicability, vol. 13, no. 1, pp. 69-84, 2022.
 - Heikki Rantala, Annastiina Ahola, Esko Ikkala and Eero Hyvönen: [How to create easily a data analytic semantic portal on top of a SPARQL endpoint: introducing the configurable Sampo-UI framework](#). July, 2023. Submitted for evaluation.

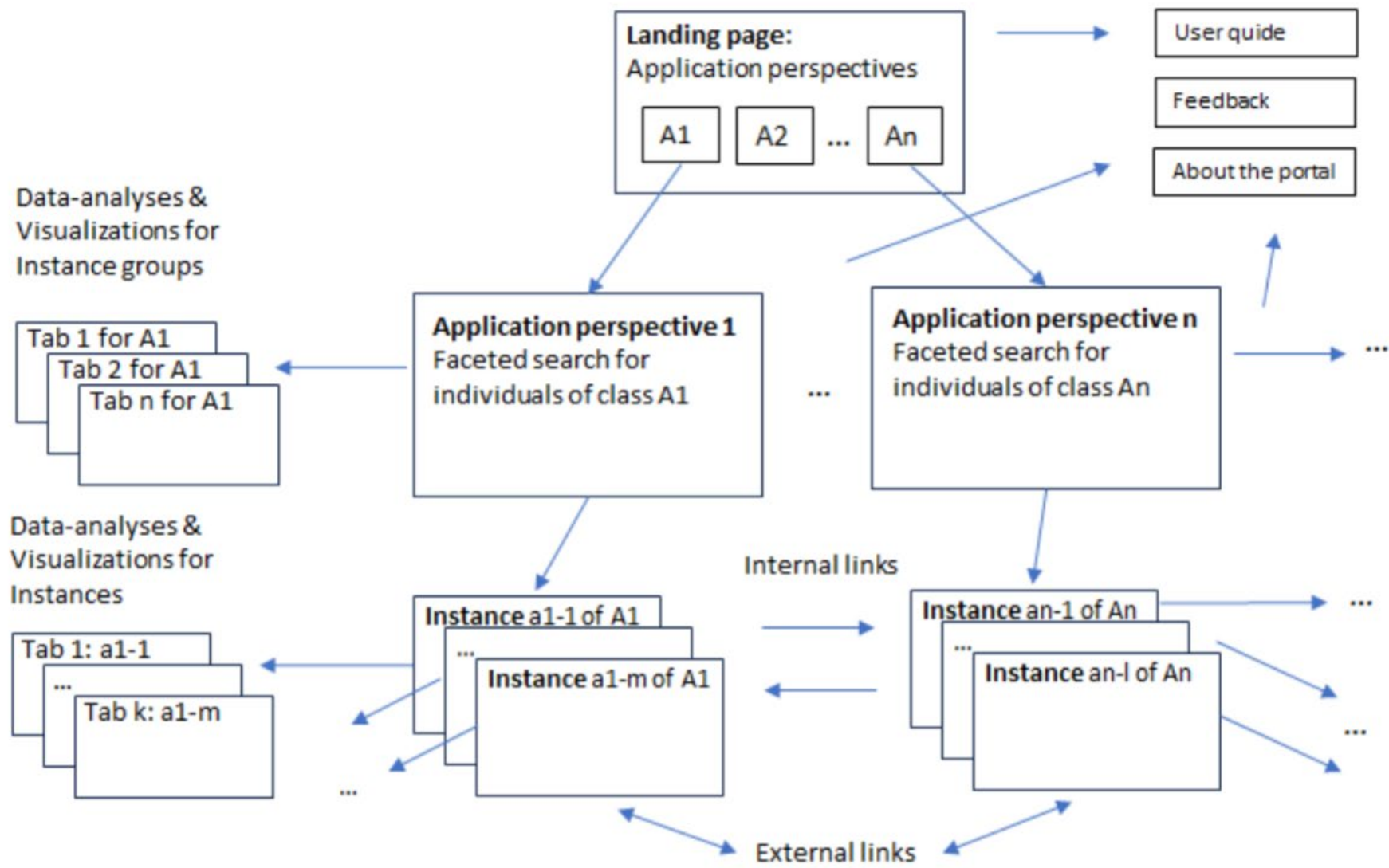


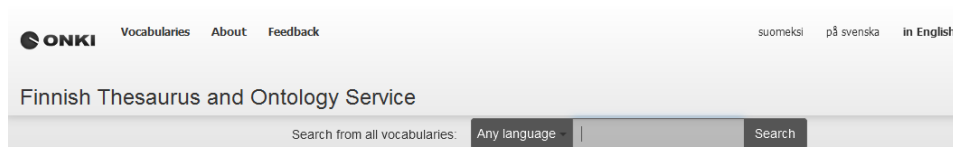
Figure 1: Navigational page structure of a portal based on Sampo-UI.

KOKO ontologies and ONKI.fi prototype service deployed January 2014 by the National Library as Finto

Permanent free national service funded by Finnish ministries

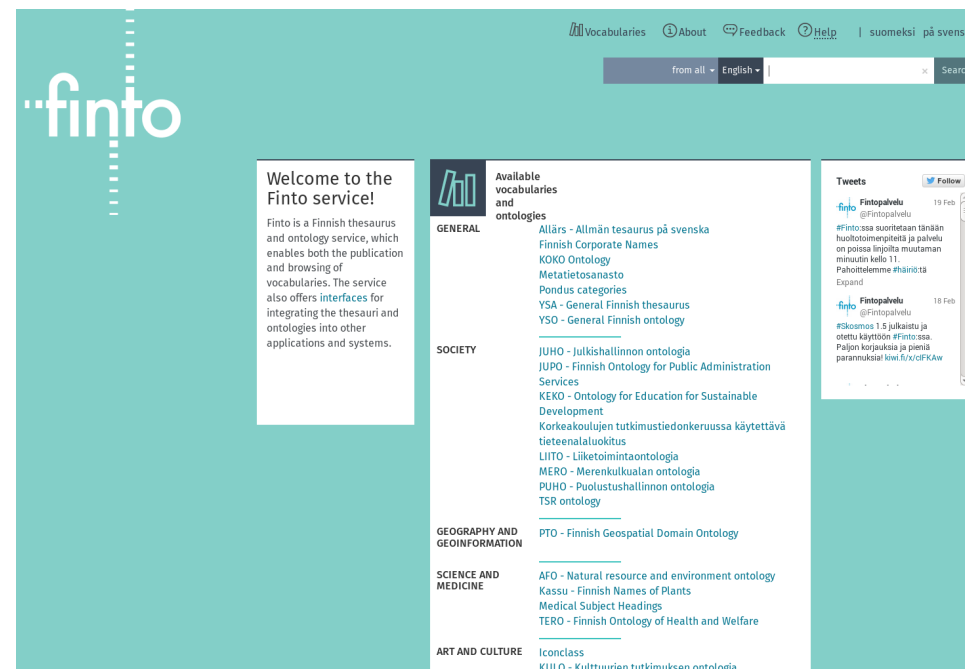
ONKI.fi Ontology Service Living Laboratory (2008-)
- For humans and machines

2019: 32 million **API calls**
2020: 2,1 million **page visits**
2020: 12% increase in use



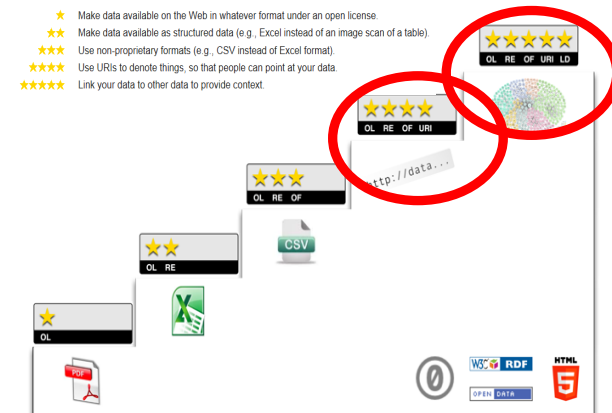
Available vocabularies and ontologies

- General**
 - General Finnish thesaurus
- concepts**
 - General Finnish upper ontology
 - KOKO Ontology
 - Allmän tesauros på svenska - Allärs
 - AFO Ontology
 - Ontology of Applied Arts - TAO
 - Ontology for Museum Domain
 - Library of Congress Subject Headings - LCSH
- Health**
 - Finnish Ontology of Health and Welfare
- Culture**
 - Kaunokki Ontology
 - The Finnish Ontology of Photography VALO
 - Kulttuurien tutkimuksen ontologia - KULO
 - Finnish Music Thesaurus - MUSA/CILLA
 - Kielitieteen ontologia - KTO
- Public Administration**
 - Kirjallisuudentutkimuksen ontologia - KITO
 - Puolustushallinnon ontologia - PUHO
 - Julkishallinnon ontologia - JUHO
 - Kunnat 2011
 - Julkisten palveluiden ontologia JUPO
 - Schools Online Thesaurus (ScOT)
- Business**
 - Merenkulkualan ontologia - MERO
- Science**
 - Kassu - Kasvien suomenkieliset nimet



Linked Data Finland <https://LDF.fi>: From “5-star” to “7-star” model

Goals: enhance **re-usability** and **data quality**



(Tim Berners-Lee)

<http://5stardata.info>

7-star Linked Data Service

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 and access them, as well as a better grasp of their quality and provenance. To this end, we extend the model with two additional stars:

- ★★★★★★ Provide your data with a schema and documentation so that people can *understand and re-use* your data easily.
- ★★★★★★ Validate your data and denote its provenance so that people can *trust the quality* of your data.

This added support should come with as little extra work as possible to the data publisher. Our hypothesis is that a lot of this can be done automatically, basing on the Linked Data core. A data publisher needs only to provide their data in the RDF format, and the LDF.fi portal will do the rest automatically. See the [overview paper](#) (in ESWC 2014 Proceedings, Springer-Verlag) for some more details about the underlying ideas.



Burj Al Arab

"Sampo Series" Demonstrates a Paradigm Shift: 4 Generations of Publishing Data for Humanities

1. Printed Texts
2. Online Systems for Searching and Exploring
3. Publishing Content as Linked Data with Tools for DH
4. Automatic Knowledge Discovery and Artificial Intelligence

More Information – Questions?

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



Semantic Computing Research Group (SeCo)

[Making computers and the web more intelligent and interoperable!](#)

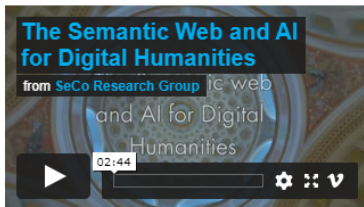
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Semantic Computing Research Group (SeCo) researches machine-processable semantics related to, e.g., the Semantic Web. We are located at the [Aalto University, School of Science, Department of Computer Science](#) and [HELDIG – Helsinki Centre for Digital Humanities](#), University of Helsinki, Faculty of Arts. Our group consists of researchers both from the Aalto University, School of Science, Department of Computer Science and [University of Helsinki, Department of Computer Science](#), and HELDIG.

Our research is [focused](#) on semantic technologies, such as the Semantic Web and intelligent web services. In addition to research and [publications](#), we also create prototype applications that demonstrate the new possibilities of semantic technologies, such as **semantic portals for end users**, **semantic infrastructural data and ontology services**, and **ontologies and tools** for creating semantic applications.



Application Domains

Our work is highly cross-disciplinary, including application domains, such as Digital Humanities, Health, Learning, Government, Commerce, Geography, and Biology.

Selected SeCo Applications and Demos for End Users



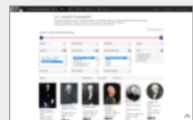
[Mapping Manuscript Migrations](#)
Online since 2020. [Try it!](#)



[WarVictimSampo 1914-1922](#)
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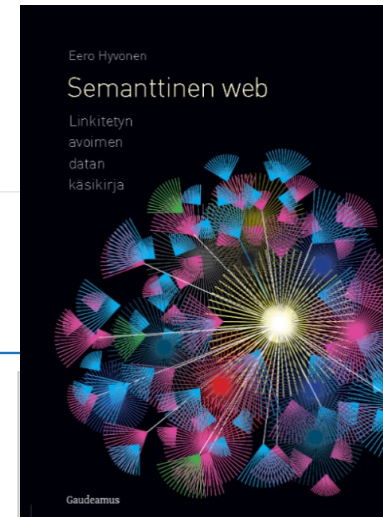
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500 publications about the infras and their applications:

<https://seco.cs.aalto.fi/publications/>

Videos:

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

Wikipedia: [Semantic web suomeksi](#)

Google this site

Eero Hyvonen: [Relevance Feedback Search Based on Automatic Annotation and Classification of Texts](#)

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