

Kulttuurihistoriallinen ontologiainfrastruktuuri: henkilöt, paikat, tapahtumat

Biografiasammon julkistustilaisuus, 27.9.2018

Eero Hyvönen

Prof., Director

Aalto University and University of Helsinki
HELDIG – Helsinki Centre for Digital Humanities

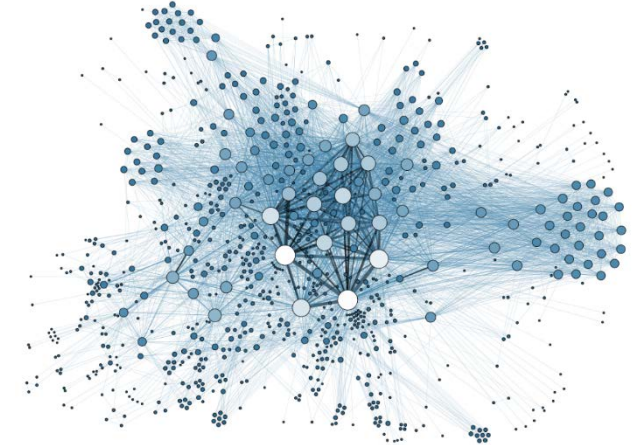
<http://heldig.fi>

Semantic Computing Research Group (SeCo)

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

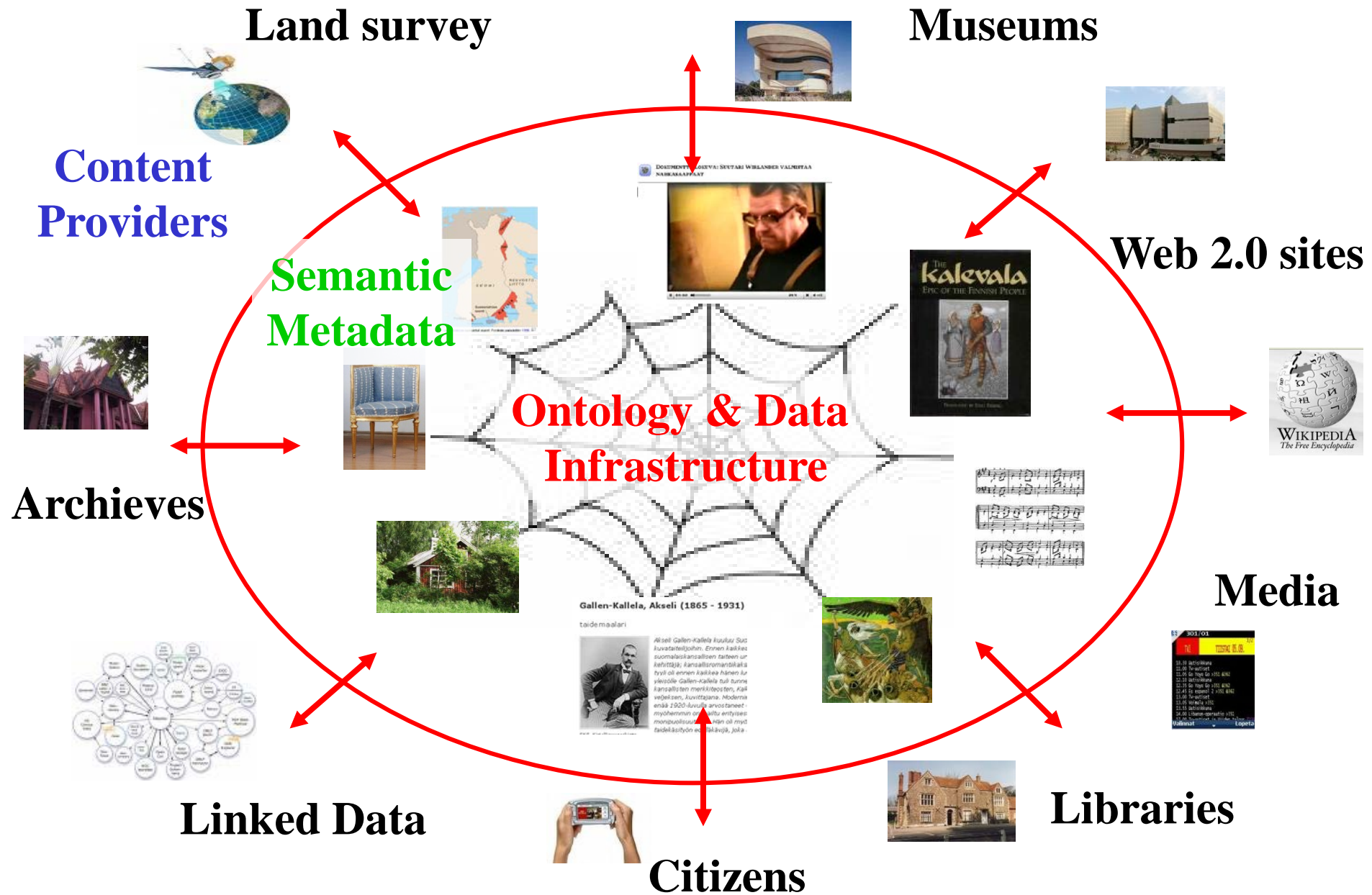
Contents

- What is an Ontology Infrastructure?
- Most Essential Ontologies in BiographySampo
 - Historical Persons
 - Historical Places
 - Historical Events
- Linked Open Data Infrastructure for Digital Humanities
 - LODI4DH Initiative



What is an Ontology Intrastructure?

"Sampo" Model



Interoperability!

Key Components of a Semantic Web Intrastructure

1. Domain Ontologies

2. Metadata Models

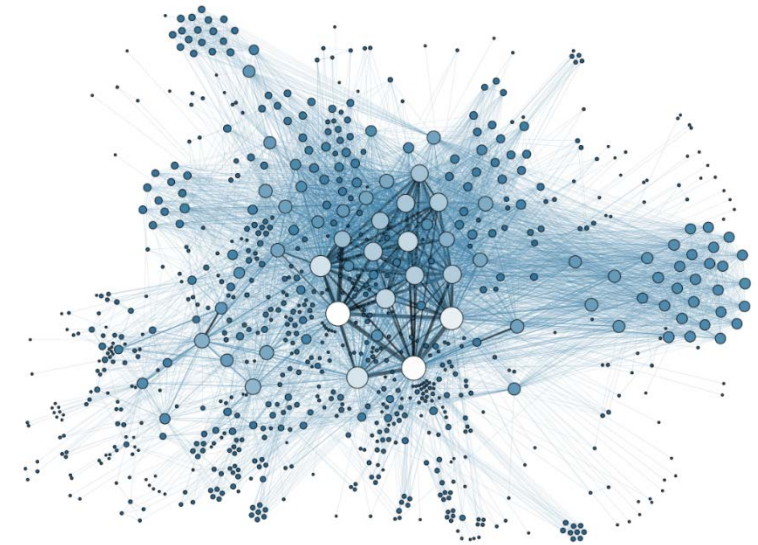
RDF

3. Datasets

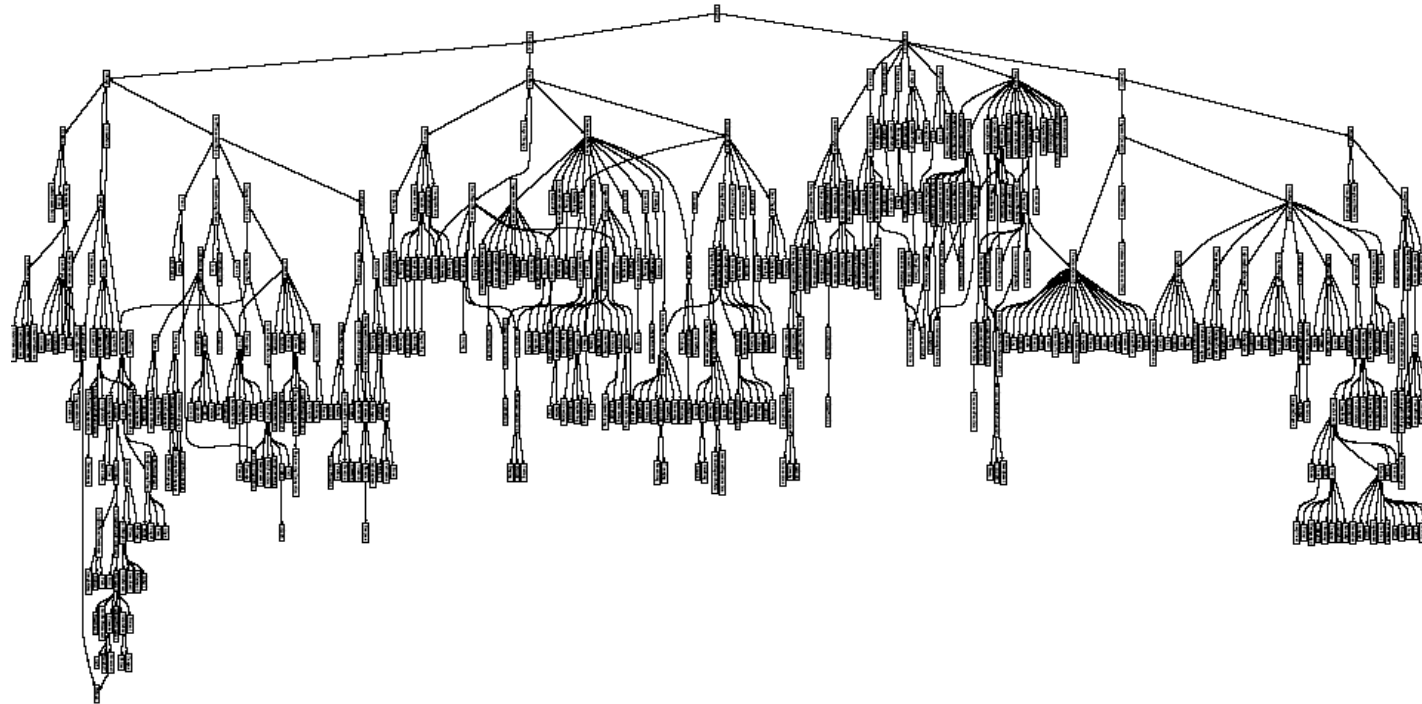


Most Essential Domain Ontologies

Persons
Places
Events



A Domain Ontology



Ontology of Historical Persons

Resolving Identities



URI: http://dbpedia.org/resource/Pyotr_Ilyich_Tchaikovsky



Pjotr Tšaikovski (fi)
Пётр Ильич Чайковский (ru)
Pyotr Ilyich Tchaikovsky (en)
Pjotr Tjajkovskij (sv)
Pjotr Tsjajkovskij (no)
Pjotr Iljitsch Tschaikowski (de)
Piotr Ilitch Tchaïkovski (fr)
Piotr Ilich Chaikovski (es)
Pëtr Il'ič Čajkovskij (it)
Pjotr Iljitsj Tsjaikovski (nl)
Piotr Ilitch Tchaikovsky (pt)
Piotr Czajkowski (pl)
Piotr Ilici Ceaikovski (ro)
Pjotr Iljics Csajkovszkij (hu)

Example: Union List of Artist Names (ULAN) (Getty Foundation)



Union List of Artist Names® Online Search Results

[New Search](#)

[Previous Page](#)

[Help](#)

Find Name: **Gallen-Kallela**

Role:

Nationality:

2 results

[View Selected Records](#)

[Select All Records](#)

[Clear All](#)


[First](#)


[Previous](#)

[Next](#)

[Last](#)


Page: **1**

Click the  icon to view the hierarchy.
Check boxes to view multiple records at once.

-  **Gallen-Kallela, Akseli**
(Finnish painter and graphic artist, 1865-1931) [500015305] (Persons, Artists)
Akseli Gallen-Kallela
Akseli Gallèn-Kallela
Akseli Valdemar Gallen-Kallela
Gallèn-Kallela, Akseli
Gallén-Kallela, Akseli Valdemar
Gallen-Kallela, Akseli Valdemar
Gallén-Kallela, Axel
-  **Gallen-Kallela Museum**
(Finnish repository, Espoo, contemporary) [500300155] (Corporate Bodies)

ID: 500015305

Page Link: <http://vocab.getty.edu/page/ulan/500015305>

 **Gallen-Kallela, Akseli** (Finnish painter and graphic artist, 1865-1931)

Note: Finnish architect, painter, and graphic artist, Helsinki and Paris.

,

Names:

Gallen-Kallela, Akseli ([preferred](#),[V](#),[index](#),[LCO](#))

Akseli Gallen-Kallela ([V](#),[display](#))

Gallén, Axel ([V](#)) ... until 1904

Gallén-Kallela, Akseli Valdemar ([V](#))

Kallela, Akseli Gallén- ([V](#))

Gallén-Kallela, Axel ([V](#))

Gallen-Kallela, Akseli Valdemar ([V](#))

Gallén, Aksel' ([V](#))

Gallèn-Kallela, Akseli ([V](#))

Akseli Valdemar Gallen-Kallela ([V](#))

Akseli Gallèn-Kallela ([V](#))

Kallela, Akseli ([V](#))

Nationalities:

Finnish ([preferred](#))

Swedish

Scandinavian

Roles:

artist ([preferred](#))

painter

printmaker

architect

graphic artist

designer

Gender: male

Birth and Death Places:

Born: [Pori \(Satakunta, Finland\)](#) (inhabited place)

Died: [Stockholm \(Stockholm county, Sweden\)](#) (inhabited place)

Related People or Corporate Bodies:

- member of [Die Brücke](#)
 (German artists' group, active 1905-1913) [500356735]
- student of [Becker, Adolf von](#)
 (Finnish painter, 1831-1909) [500088182]
- teacher of [Simberg, Hugo](#) 1895-1897
 (Finnish painter and printmaker, 1873-1917) [500010149]

List/Hierarchical Position:

-  [Persons, Artists](#)
-  [Gallen-Kallela, Akseli \(I\)](#)

Biographies:

- (Finnish painter and graphic artist, 1865-1931) [[VP Preferred](#)]
- (Finnish architect and graphic artist, 1865-1931) [[AVERY](#)]
- (Finnish painter, printmaker, 1865-1931) [[BHA](#)]
- (Swedish artist, 1865-1931) [[WCP](#)]
- (Finnish artist, 1865-1931) [[WL-Courtauld](#)]
- (Finnish architect, 1865-1931) [[AVERY](#)]
- (Finnish architect) [[AVERY](#)]
- (Finnish painter, 1865-1931) [[Grove Art](#)]
- (Finnish artist, 1865-1931) [[MoMA](#)]

Additional Names:**Sources and Contributors:**

- Akseli Gallen-Kallela [[MoMA Preferred, VP](#)]
 [Artists, Museum of Modern Art \(MoMA\) New York \(2000-\)](#)
 [Getty Vocabulary Program rules](#)
- Akseli Gallèn-Kallela [[AVERY, VP](#)]
 [Getty Vocabulary Program rules](#)
- Akseli Valdemar Gallen-Kallela [[VP, WL-Courtauld](#)]
 [Getty Vocabulary Program rules](#)
- Gallén, Aksel' [[VP](#)]
 [Library of Congress Authorities online \(2002-\) accessed 9 March 2005](#)
- Gallén, Axel [[VP](#)]
 [Grove Art artist database \(1989-\)](#)
 [Grove Art Online \(2003-2008\) accessed 9 March 2005](#)
- Gallèn-Kallela, Akseli [[AVERY Preferred, VP](#)]
 [Avery Authority files \(1963-\)](#)
 [Avery Index to Architectural Periodicals \(1963-\)](#)
 [Grove Art Online \(2003-2008\) accessed 9 March 2005](#)
- Gallen-Kallela, Akseli [[Grove Art Preferred, MoMA, VP Preferred](#)]
 [Artists, Museum of Modern Art \(MoMA\) New York \(2000-\)](#)
 [Grove Art artist database \(1989-\)](#)

..... Grove Art Online (2003-2008) accessed 9 March 2005
 Gallen-Kallela, Akseli [Grove Art Preferred, MoMA, VP Preferred]
 Artists, Museum of Modern Art (MoMA) New York (2000-)
 Grove Art artist database (1989-)
 Grove Art Online (2003-2008) accessed 9 March 2005
 Library of Congress Authorities online (2002-) n 79127990 accessed 9 March 2005
 Gallén-Kallela, Akseli Valdemar [BHA Preferred, VP]
 BHA, Authority file (1973-)
 Gallen-Kallela, Akseli Valdemar [Grove Art, WCP Preferred, WL-Courtauld Preferred]
 Database for the Witt Checklist of Painters c. 1200-1976 (1978-)
 Grove Art artist database (1989-)
 Witt Library, Authority files
 Gallén-Kallela, Axel [VP]
 Library of Congress Authorities online (2002-) accessed 9 March 2005
 Kallela, Akseli [AVERY]
 Avery Authority files (1963-)
 Kallela, Akseli Gallén- [VP]
 Library of Congress Authorities online (2002-) accessed 9 March 2005



Subject: [AVERY, BHA, Gallery Systems, Grove Art, MoMA, VP, WCP, WL-Courtauld]
 Avery Index to Architectural Periodicals (1963-)
 Bénézit, Dictionnaire des Peintres (1976)
 BHA, Authority file (1973-)
 Database for the Witt Checklist of Painters c. 1200-1976 (1978-)
 Gallery Systems (2000-) LOC ID: n79127990
 Getty Vocabulary Program rules
 Grove Art artist database (1989-)
 Grove Art Online (2003-2008) accessed 9 March 2005
 Library of Congress Authorities database (n.d.) LOC ID: n79127990
 Library of Congress Authorities online (2002-) n 79127990 accessed 9 March 2005; accessed 9
 March 2005
 Macmillan
 Macmillan Encyclopedia of Architects (1982)
 Thieme-Becker, Allgemeines Lexikon der Künstler (1980-1986)
 Witt Library, Authority files



Note:


English..... [AVERY]
 Macmillan


Mapping Different Ontologies: VIAF


Gallén-Kállala, Akseli (1865-1931).                


Akseli Gallen-Kallela  

Gallen-Kallela, Akseli  

Gallen-Kallela, Akseli (Finnish painter and graphic artist, 1865-1931) 

Gallen-Kallela, A. 1865-1931 Akseli 

Галлен-Каллела, А. 1865-1931 Аксели 

Галлен-Каллела, Аксели, 1865-1931. 

VIAF ID: 5047015 (Personal)

Permalink: <http://viaf.org/viaf/5047015>

<http://viaf.org>

VIAF: Akseli Gallen-Kallela

Preferred Forms

-  100 0 _ [ta Akseli Gallen-Kallela](#)
-  100 0 _ [ta Akseli Gallen-Kallela](#)
-  200 _ 1 [ta Gallen-Kallela tb A. ff 1865-1931 tg Akseli](#)
-  200 _ | [ta Gallen-Kallela tb Akseli ff 1865-1931](#)
-  100 1 _ [ta Gallen-Kallela, Akseli](#)
-  B 100 1 _ [ta Gallen-Kallela, Akseli](#)
-  100 1 _ [ta Gallen-Kallela, Akseli td \(1865-1931\)](#)
-  100 1 _ [ta Gallen-Kallela, Akseli td 1865-1931](#)
-   100 1 _ [ta Gallen-Kallela, Akseli td 1865-1931](#)
-   100 1 _ [ta Gallen-Kallela, Akseli tg Finnish painter and graphic artist, 1865-1931](#)
-  100 1 _ [ta Gallen-Kallela, Akseli, td 1865-1931](#)
-  100 1 _ [ta Gallen-Kallela, Akseli, td 1865-1931](#)
-  100 1 _ [ta Gallen-Kallela, Akseli, td 1865-1931](#)
-  100 1 _ [ta Gallen-Kallela, Akseli, td 1865-1931](#)
-  100 1 _ [ta Gallen-Kallela, Akseli, td 1865-1931](#)
-  100 1 _ [ta Gallen-Kallela, Akseli, td 1865-1931](#)
-  100 1 _ [ta Gallen-Kallela, Akseli, td 1865-1931](#)



Suomalaisten historiallisten henkilöiden ontologia?

- Tarvittaisiin meilläkin!
- Biografiasammossa on yksi perusta jolle rakentaa
- Kirjastojen ja museoiden auktoriteettitietokannat
- Yhteentoimivuus esim. ULAN, VIAF ym.

Ontology of Historical Places and Maps

Example: Thesaurus of Geographical Names (TGN) (Getty Foundation)



[New Search](#)

[Previous Page](#)

[Help](#)

Find Name: **amsterdam**

[Vernacular Display](#) | [English Display](#)

Place Type:

Nation:


36 results













[View Selected Records](#)

[Select All Records](#)

[Clear All](#)

« First ← Previous Next → Last »
Page: 1 2

Click the  icon to view the hierarchy.
Check boxes to view multiple records at once.

1.  **Amsterdam** (inhabited place)
(World, Africa, South Africa, Mpumalanga) [1092823]
2.  **Amsterdam** (inhabited place)
(World, Europe, Netherlands, North Holland) [7006952]
3.  **Amsterdam** (inhabited place)
(World, North and Central America, United States, California, Merced county) [2132508]
4.  **Amsterdam** (inhabited place)
(World, North and Central America, United States, Georgia, Decatur county) [2021936]
5.  **Amsterdam** (inhabited place)
(World, North and Central America, United States, Missouri, Bates county) [2057879]
6.  **Amsterdam** (inhabited place)
(World, North and Central America, United States, Montana, Gallatin county) [2061000]
7.  **Amsterdam** (inhabited place)
(World, North and Central America, United States, New Jersey, Hunterdon county) [2132509]
8.  **Amsterdam** (inhabited place)
(World, North and Central America, United States, New York state, Montgomery county)
[2067814]
9.  **Amsterdam** (deserted settlement)
(World, North and Central America, United States, Ohio, Auglaize county) [2132510]
10.  **Amsterdam** (inhabited place)
(World, North and Central America, United States, Ohio, Jefferson county) [2078229]
11.  **Amsterdam** (inhabited place)
(World, North and Central America, United States, Ohio, Licking county) [2078230]
12.  **Amsterdam** (deserted settlement)
(World, North and Central America, United States, Ohio, Ross county) [2132511]
New Amsterdam

13.  **Amsterdam** (inhabited place)
(World, North and Central America, United States, Pennsylvania, Mercer county) [2086007]
14.  **Amsterdam** (inhabited place)
(World, North and Central America, United States, Virginia, Botetourt county) [2110325]
15.  **Amsterdam Amstelstation** (railroad station)
(World, Europe, Netherlands, North Holland) [7259863]
16.  **Amsterdam Bay** (bay)
(World, North and Central America, United States, Washington, Pierce county) [2132512]
17.  **Amsterdam Centraal Station** (railroad station)
(World, Europe, Netherlands, North Holland) [7259862]
18.  **Amsterdam, Île** (island)
(World, Europe, France, French Southern and Antarctic Lands) [1006266]
Amsterdam Island
Île Amsterdam
19.  **Amsterdam Muiderpoort** (railroad station)
(World, Europe, Netherlands, North Holland) [7259861]
20.  **Amsterdam Park** (park)
(World, Oceania, Australia, Northern Territory) [7816496]
21.  **Amsterdam Rijn Kanaal** (canal)
(World, Europe, Netherlands) [1135819]
Amsterdam-Rijnkanaal
22.  **Amsterdam-Rijnkanaal** (canal)
(World, Europe, Netherlands, Gelderland) [7259860]
Amsterdam-Bovenrijn Kanaal
Amsterdam-Rhine River Canal
Der Amsterdam-Rheinkanal
23.  **Buffalo** (inhabited place)
(World, North and Central America, United States, New York state, Erie county) [7013463]
New Amsterdam
24.  **Double Run** (stream)
(World, North and Central America, United States, Delaware, Kent county) [2293495]
Amsterdam Branch
25.  **Fort Amsterdam** (fort)
(World, North and Central America, Bonaire, Sint Eustatius and Saba, Sint Eustatius, Sint Eustatius) [7256574]
Amsterdam, Fort

ID: 7006952

Page Link: <http://vocab.getty.edu/page/tgn/7006952>

Record Type: administrative

Amsterdam (inhabited place)

Coordinates:

Lat: 52 21 00 N *degrees minutes* Lat: 52.3500 *decimal degrees*

Long: 004 55 00 E *degrees minutes* Long: 4.9167 *decimal degrees*

Note: Located on over 90 islands in the IJ arm of the IJsselmeer. Early inhabitants built dikes on both sides of the Amstel River to prevent flooding, and a dam was built between the dikes in 1270. Chartered in 1306. Became affluent in the 15th century due to trade with Baltic seaports, and was the financial center of the world by 17th century. United Dutch East India Company was founded in 1602, followed by the West India Company in 1621. Capital of the Batavian Republic under Napoleon, later of the kingdom of Holland, and became part of the French Empire in 1810. Under German occupation from 1940-1945. Center of the world's diamond trade.

Names:

Amsterdam (**preferred**, C, V, English-P, U, N)
(Dutch-P, U, N)

Amsteadamum (H, O)

Amstel-dam (H, V) documented in 13th cen., meaning "dam on the Amstel [river]"

Amsteldam (H, V)

Amstelledamme (H, V) earliest form of the name, 13th cen.


Amstelodamum (H, O)


Amstelredamense oppidum (H, O)

Amstelredamum (H, O)

Amsterodamum (H, O)

Hierarchical Position:

 World (facet)

 Europe (continent) (P)

 Netherlands (nation) (P)

 North Holland (province) (P)

 Amsterdam (inhabited place) (P)

Place Types:

inhabited place (**preferred**, C) there possibly was a Roman settlement in the area; modern town probably originated as a fishing village in 13th century

city (C)

national capital (C)

capital (C) nominal capital of The Netherlands, though government is located in s'-Gravenhage

port (C)

Related geographic places:

capital of **Netherlands** (nation)

..... (World, Europe) [7016845]

Sources and Contributors:

Amsteadamum..... [VP]
..... [Orbis Latinus \(1971\) 18](#)

Amstel-dam..... [VP]
..... [Encyclopaedia Britannica \(1988\) I, 357](#)

Amsteldam..... [VP]
..... [Knopf Guides, Amsterdam \(1993\) 28](#)

Amstelledamme..... [VP]
..... [Knopf Guides, Amsterdam \(1993\) 28](#)

Amstelodamum..... [VP]
..... [Orbis Latinus \(1971\) 18](#)

Amstelredamense oppidum..... [VP]
..... [Orbis Latinus \(1971\) 18](#)

Amstelredamum..... [VP]
..... [Orbis Latinus \(1971\) 18](#)

Amsterdam..... [BHA, GRLPSC, VP Preferred]
..... [Canby, Historic Places \(1984\) 1:30](#)
..... [Columbia Lippincott Gazetteer \(1961\)](#)
..... [Encyclopaedia Britannica \(1988\) 1:357-358](#)
..... [NGA/NIMA database \(2003-\)](#)
..... [Times Atlas of the World \(1992\) 12](#)
..... [Webster's Geographical Dictionary \(1984\)](#)

Amsterodamum..... [VP]
..... [Orbis Latinus \(1971\) 18](#)

Subject: [BHA, GRLPSC, VP]
..... [Canby, Historic Places \(1984\) I, 30; 1:30](#)
..... [Columbia Lippincott Gazetteer \(1961\)](#)
..... [Encyclopaedia Britannica \(1988\) I, 357; I, 357-358; 1:357-358](#)
..... [Knopf Guides, Amsterdam \(1993\) 28](#)
..... [NGA/NIMA database \(2003-\) -2140479](#)
..... [Orbis Latinus \(1971\) 18](#)
..... [Phaidon Art Guide: Holland \(1987\) 18](#)
..... [Times Atlas of the World \(1992\) 12](#)
..... [Webster's Geographical Dictionary \(1984\)](#)
..... [Webster's Geographical Dictionary \(1988\) 46](#)

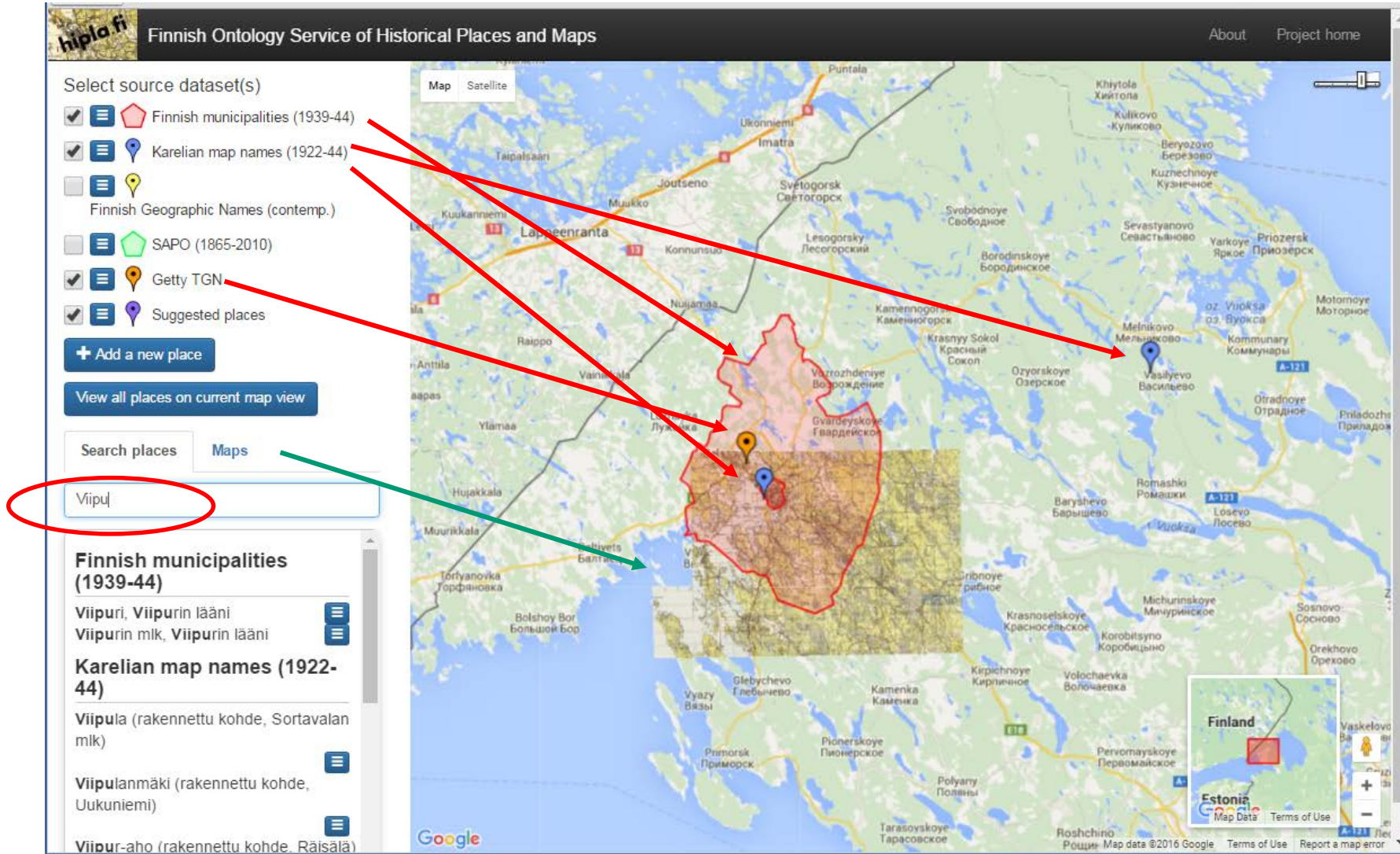
Note:

English..... [VP]

Suomen historiallisten paikkojen ontologia?

- Tarvittaisiin meilläkin!
- Nykypaikat tunnetaan hyvin
 - Maanmittauslaitos PNR, YSO-paikat ym.
- Tieto historiallista paikoista hajallaan
 - Kirjastot, museot, arkisto
 - KOTUS Nimiarkisto ja Nimisampo
 - Finnish Ontology Service of Historial Places and Maps
 - <http://hipla.fi>
- Yhteentoimivuus esim. TGN, VIAF ym.

Hipla.fi: Searching for Place "Viipu..."



The screenshot shows the Hipla.fi web application interface. The top navigation bar includes the logo and the text "Finnish Ontology Service of Historical Places and Maps", along with links for "About" and "Project home".

On the left side, there is a "Select source dataset(s)" section with several checked options: "Finnish municipalities (1939-44)", "Karelian map names (1922-44)", "Getty TGN", and "Suggested places". There are also buttons for "Add a new place" and "View all places on current map view".

Below this is a search bar with the text "Search places" and "Maps" tabs. The search input field contains the text "Viipu", which is circled in red. Below the search bar, a list of search results is displayed under the heading "Finnish municipalities (1939-44)". The results include:

- Viipuri, Viipurin lääni (with a menu icon)
- Viipurin mlk, Viipurin lääni (with a menu icon)
- Viipula (rakennettu kohde, Sortavalan mlk)
- Viipulanmäki (rakennettu kohde, Uukuniemi) (with a menu icon)
- Viipur-aho (rakennettu kohde, Räisälä)

The main area of the interface is a map showing the region around Viipuri. A red outline highlights the area of the former Viipuri municipality. Several red arrows point from the search results to specific locations on the map: one points to the "Viipuri" area, another to "Viipulanmäki", and others to "Viipula" and "Viipur-aho". A green arrow points from the "Maps" tab to the map area. The map includes various place names in Finnish and Russian, and a small inset map of Finland in the bottom right corner.

Ontology of Historical Events

”Semantic glue” of everything

Some Works of SeCo Group

- WW1 history ontology
- Finnish WW2 history in WarSampo
- Finnish History Ontology HISTO
 - Based on the Agricola Network timeline
 - Work continues ...
- BiographySampo events

Example of an Event on HISTO Ontology

SAHA3 | [historia](#) - search

<http://agricola.utu.fi/rdf/phe863>

historiallinen tapahtuma: YYA-sopimus raukesi

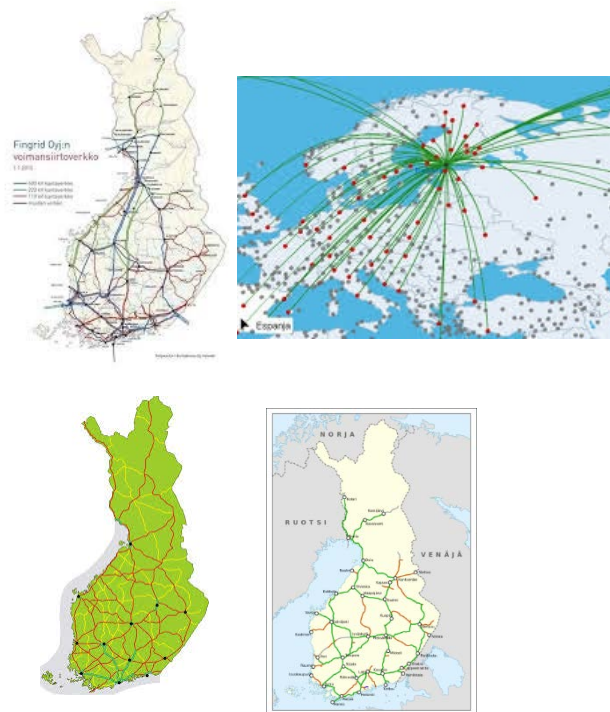
[\[edit\]](#)

nimi	(fi) YYA-sopimus raukesi
tapahtumatyyppi	kahdenkeskiset kansainväliset sopimukset
kuuluu teemaan	poliittinen historia
kuka	Aho, Esko , Burbulis, Gennadi Eduardovitš (1945-) , Suomi (1917-) , Venäjä (1990-)
toiminta	allekirjoittaminen , irtisanominen , poliittinen päätöksenteko
tulos	Suomen tasavallan ja Venäjän federaation välinen sopimus suhteiden perusteista 63/1992
tapahtuma-aika	1992-01-20
tapahtumapaikka	Helsinki(1966-2008)
asiasana	diplomatia , kansainväliset sopimukset , kansainväliset suhteet , ulkopolitiikka , YYA-sopimus
liittyy	YYA-sopimus solmittiin Neuvostoliiton kanssa , YYA-sopimusta jatkettiin kahdellakymmenellä vuodella
liittyvä web-sivu	(fi) http://www.finlex.fi/fi/sopimukset/sopsteksti/1992/19920063
syy	Neuvostoliitto lakkautetaan
tyyppi	historiallinen tapahtuma

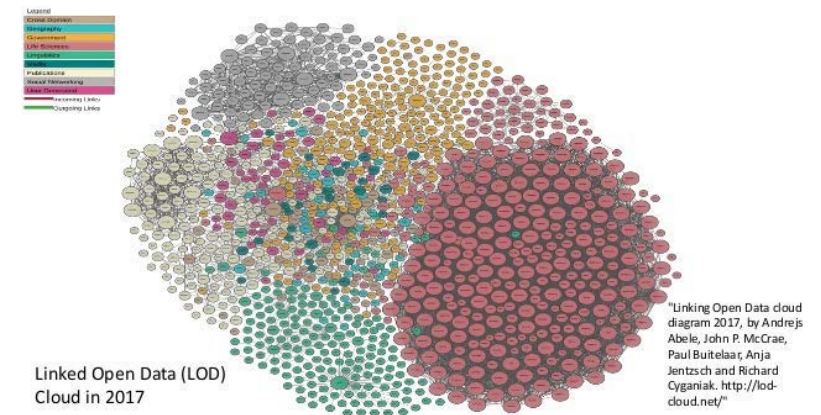
Tarttis tehrä jotakin?

Linked Open Data Infrastructure for Digital Humanities

Traditional Infras:
(rail)roads, electricity, ...



Semantic Content Infra:
Ontologies, metadata, data



FinnONTO 2003-2012
Linked Data Finland etc. 2012-
LODI4DH 2018-

Linked Open Data Infrastructure for DH
Ehdotus Suomen Akatemian kansalliselle tiekartalle

LODI4DH

<https://seco.cs.aalto.fi/projects/lodi4dh/>



Conclusions: Linked Data and Sampo Model Makes a Difference

- **End-user's perspective**
 - Global view to heterogeneous, distributed contents
 - Automatic content aggregation
 - Semantic search
 - Semantic browsing and recommendations
 - Other intelligent services (knowledge discovery, personalization, visualization, ...)
- **Content publisher's perspective**
 - Distributed content creation
 - Enriching each other's contents semantically
 - Automated link maintenance
 - Shared content publication channel
 - Reusing aggregated content in other applications

But the Lunch is not Free

- More collaboration is need -> complicates work
- Integration of semantic portals with legacy systems
- Manual annotations are costly and may not scale up
- Automatic annotation and linking lowers data quality

