



Akatemiasammon linkitetyn avoimen datan palvelu

Jouni Tuominen

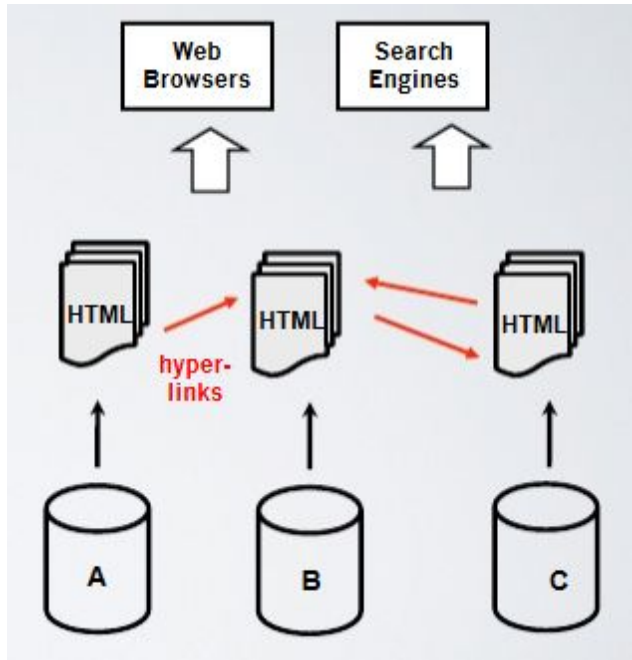
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jouni.tuominen@aalto.fi

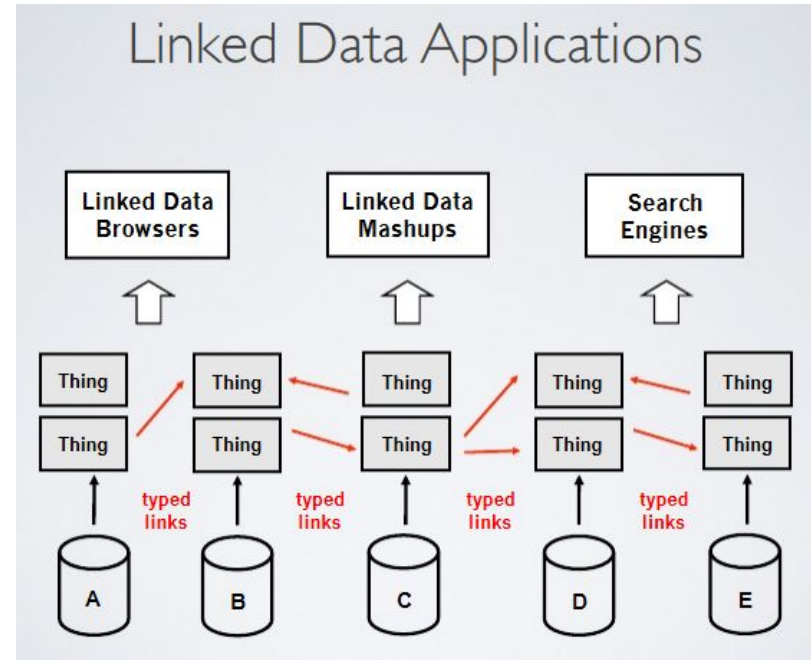
Webin dataekosysteemi

World Wide Web



(Anja Jentzsch, 2012)

Giant Global Graph

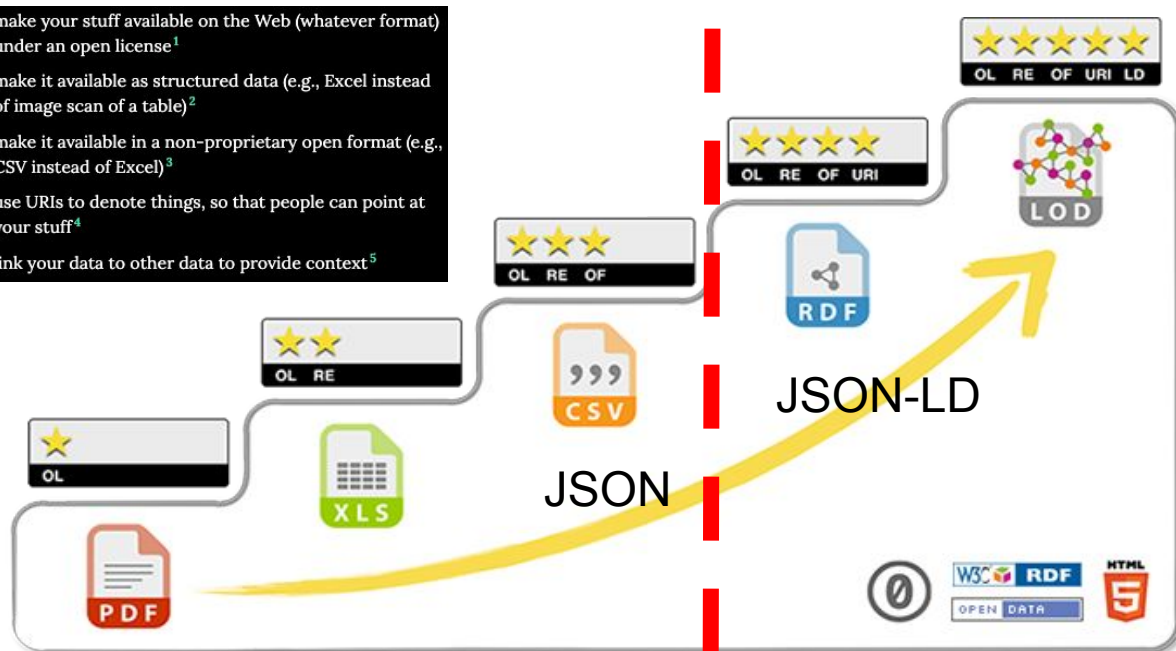


(Anja Jentzsch, 2012)

Miten julkaista dataa?

5 tähden linkitetyn datan malli

- ★ make your stuff available on the Web (whatever format) under an open license¹
- ★★ make it available as structured data (e.g., Excel instead of image scan of a table)²
- ★★★ make it available in a non-proprietary open format (e.g., CSV instead of Excel)³
- ★★★★ use URIs to denote things, so that people can point at your stuff⁴
- ★★★★★ link your data to other data to provide context⁵



“Traditional” Open Data

Linked Open Data

(Tim Berners-Lee)
<http://5stardata.info>

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



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Linked Data Finland

Living Laboratory Data Service for the Semantic Web

This site is the Living Laboratory of the [Linked Data Finland](#) research initiative, conducted by the [Semantic Computing Research Group](#) at [Aalto University](#) in collaboration with University of Helsinki and a large consortium of Finnish public organizations and companies.

Our goal is to make life easier for both publishers as well as consumers of structured data on the Web. We base our work on the [Linked Data](#) paradigm and stack of standards, which combines an expressive, semantic data model ([RDF](#)) with standardized access mechanisms ([SPARQL](#) and [live HTTP URIs](#)).

5-star Linked Data

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

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

“7 tähden” mallimme ja LDF.fi-datahotelli

Goals: enhance re-usability and data quality

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.



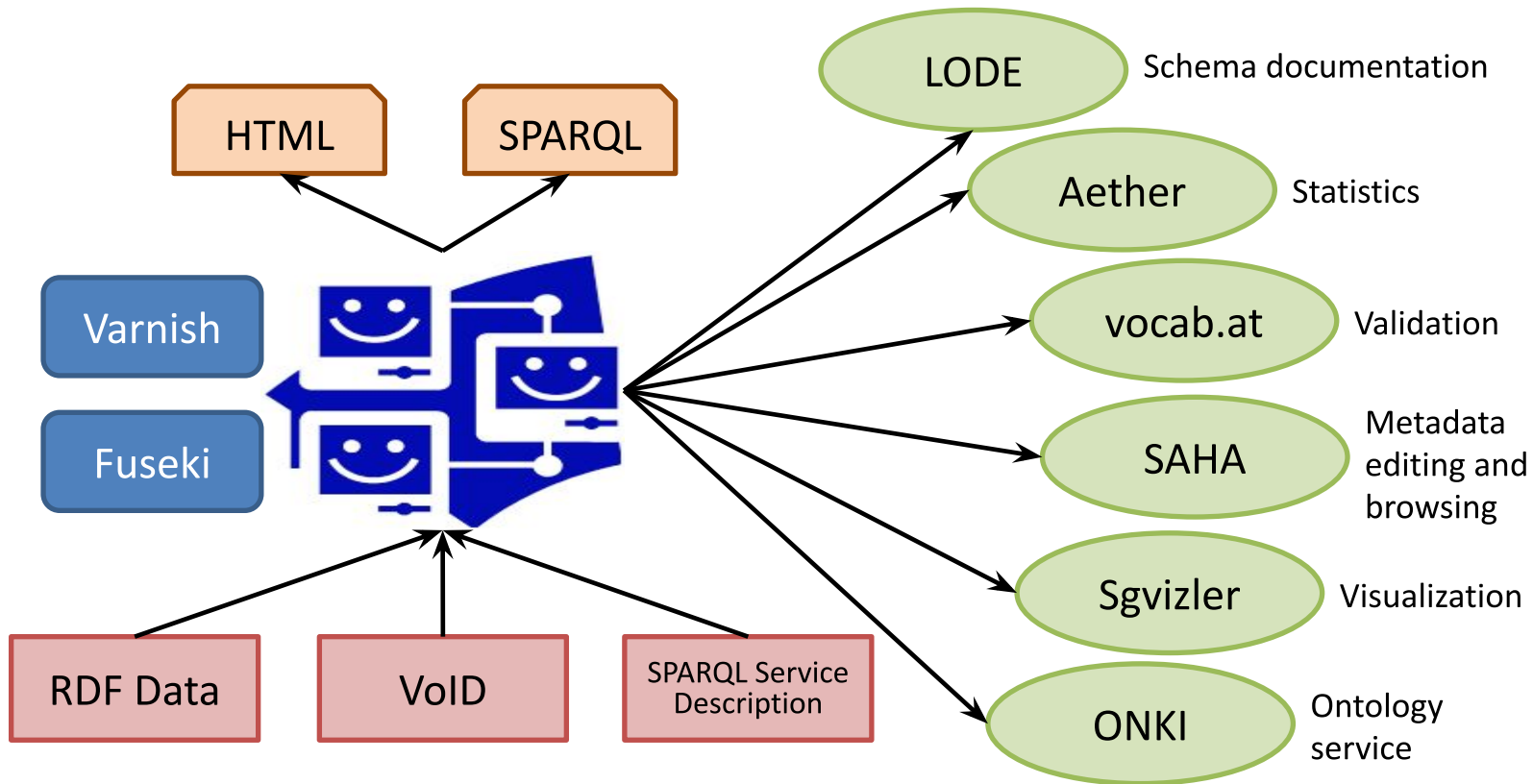
Validate your data and denote its provenance so that people can *trust the quality* of your data.

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

LDF.fi – yleinen linkitetyn datan julkaisualusta





AcademySampo Knowledge Graph includes linked data representing people, places, vocations, student nations, relations, timespans, and separated in different subgraphs. The data covers approx. 28 000 university students, almost 50 000 relatives, 10 000 vocational titles, and 9500 places. In addition to that smaller domain ontologies for representing e.g. student nations and family relations are included.

The two data sources are [Student register 1640–1852](#) and [Student register 1853–1899](#).

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

License

[CC BY 4.0](#)



Licensor: [Yrjö Kotivuori: Ylioppilasmatrikkeli 1640–1852. Verkkojulkaisu 2005.](#), [Veli-Matti Autio: Ylioppilasmatrikkeli 1853–1899. Verkkojulkaisu.](#), [Semanttisen laskennan tutkimusryhmä \(SeCo\)](#)

See possible graph-specific licenses below.

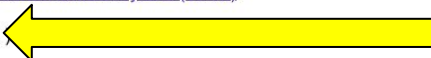
Detailed Dataset Contents

Actors in AcademySampo (URI: <http://ldf.fi/yoma/actors>)



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([Browse data](#) / [View in AcademySampo Online Portal](#) / [Download](#))



The people in the AcademySampo database. The data has approx. 28 000 student resources and almost 50 000 relatives.

Information included: name, alternative names, basic biographical information (e.g. gender, places and times of birth and death), links to lifetime events, relating vocations, categories, and other related people like relatives or teachers in the university.

Example resource URI: <http://ldf.fi/yoma/people/p13687>



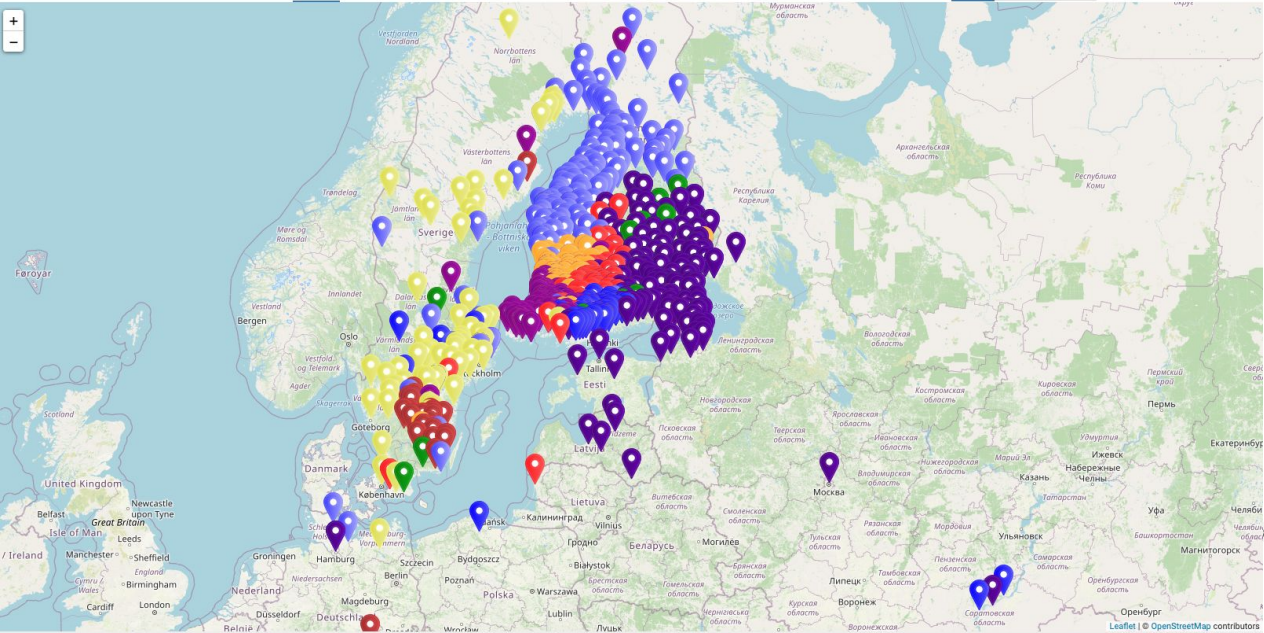
Aineiston lataus

SPARQL-kyselyeditori

```
https://ldf.fi/yoma/sparql
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
SELECT DISTINCT * WHERE {
  { SELECT DISTINCT ?place ?sn ?locationColor (COUNT(?id) AS ?no)
    WHERE {
      VALUES (?sn ?locationColor) {
        (snations:sn11 'rgb(64,64,255)') # Ostrobothnian
        (snations:sn20 'blue') # Uusimaa Country
        (snations:sn21 'indigo') # Wyburg/Karelian
        (snations:sn9 'yellow') # Western Finland
        (snations:sn5 'red') # Tavastian
        (snations:sn16 'green') # Savonian-Karelian
        (snations:sn2 'purple') # Boreal
        (snations:sn15 'orange') # Satakunta
        (snations:sn13 '#DD4') # Swedish
        (snations:sn17 'brown') # Småland, Sweden
      }
      ?id :has_event/:student_nation ?sn ;
      :has_birth [ schema:place ?place ;
        schema:date/gvp:estStart ?date ] .
    }
  }
}
```

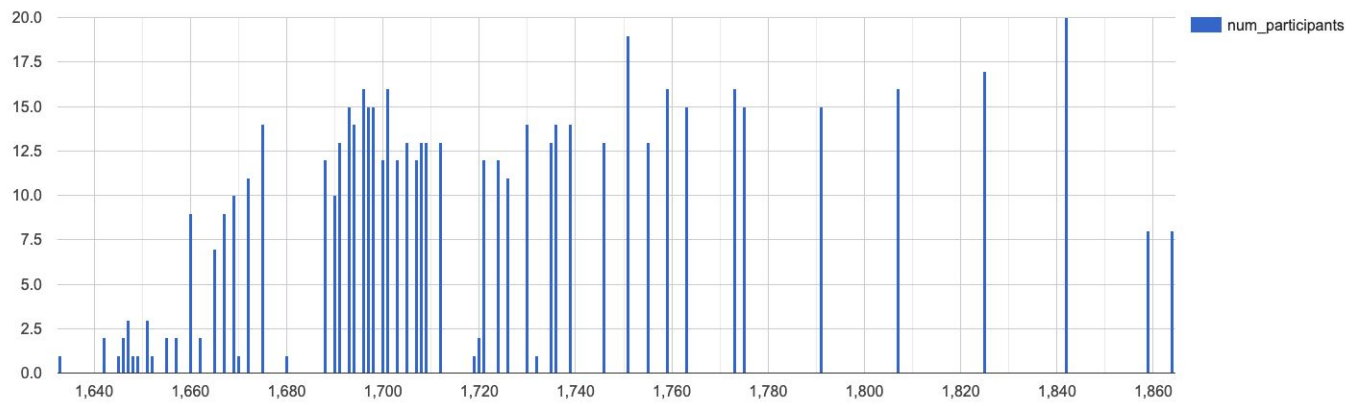
Table Response Gallery Chart Geo Geo-3D Geo events Pivot Timeline 966 results in 4.078 seconds Filter query results Page size: 50

	place	sn	locationColor	no	locationLabel	lat	long	location
1	<http://ldf.fi/yoma/places/m1484>	snations:sn13	#DD4	*1**xsd:integer	"Piikkiö"@fi	"60.426523126860914**xsd:decimal	"22.511788334523096**xsd:decimal	Point(22.511788334523096 60.426523126860914)
2	<http://ldf.fi/yoma/places/m2661886>	snations:sn13	#DD4	*1**xsd:integer	"Ruotsi"@fi	"60.12816100000001**xsd:decimal	"18.643501**xsd:decimal	Point(18.643501 60.12816100000001)
3	<http://ldf.fi/yoma/places/m2662828>	snations:sn13	#DD4	*1**xsd:integer	"Vingåker"@fi	"59.06667**xsd:decimal	"15.88333**xsd:decimal	Point(15.88333 59.06667)
4	<http://ldf.fi/yoma/places/m2663292>	snations:sn13	#DD4	*1**xsd:integer	"Vetlanda"@fi	"57.36862**xsd:decimal	"15.18468**xsd:decimal	Point(15.18468 57.36862)
5	<http://ldf.fi/yoma/places/m2676174>	snations:sn13	#DD4	*1**xsd:integer	"Södertälje"@fi	"59.18121**xsd:decimal	"17.62756**xsd:decimal	Point(17.62756 59.18121)



in 0.199 seconds

Configure



Linkitetyn datan selaus

SAHA3 | yoma - search

<http://ldf.fi/yoma/people/p22135>

Henkilö: Hultin, Tekla Johanna Virginia (1864-1943)

[edit]

arvo, ammatti tai toiminta	poliitikko , toimittaja
coordinate of embedding into a two-dimensional space	http://ldf.fi/yoma/coords/co22135
ensisijainen nimi	Hultin, Tekla Johanna Virginia (1864-1943)
ensisijainen nimi	Hultin, Tekla Johanna Virginia
kirjautuminen	9.6.1886
kuolinhetki	31.3.1943
kuolinmaakunta tai -lääni	Uusimaa
kuolinpaikka	Helsinki
kuolintapahtuma	Tekla Johanna Virginia Hultin kuoli
kuolinvaltio	Suomi
kuvatiedosto	http://commons.wikimedia.org/wiki/Special:FilePath/Tekla%20Hultin%2C%20Suomen%20historia.JPG
liitty tapahtumaan	Aluksi lehtinaisena (Päivälehti, Isänmaan Ystävä) , FK (hk) 1891, FM 1894, FL 1896, FT 1897 , Kansanedustaja (nuors./kok.) , Tilastollisen päätoimiston aktuaari 1901-29 , Yo Hgin alk.op. (yksit.) .
link to an external url or website	http://ldf.fi/nbf/p960 , http://www.kansallisbiografia.fi/kansallisbiografia/henkilo/3486 , http://www.wikidata.org/entity/Q4955054 , https://biografiasampo.fi/henkilo/p960 , https://commons.wikimedia.org/wiki/Category:Tekla_Hultin , https://fi.wikipedia.org/wiki/Tekla_Hultin , https://ylioppilasmatrikkeli.helsinki.fi/1853-1899/henkilo.php?id=22135
lähde	Ylioppilasmatrikkeli 1853–1899
matrikkeliteksti	Jaakkima 18.4.1864, vanht henkikirjoittaja Julius Hultin ja Edla Katrina Savander. Yo Hgin alk.op. (yksit.). FK (hk) 1891, FM 1894, FL 1896, FT 1897. Aluksi lehtinaisena (Päivälehti, Isänmaan Ystävä). Tilastollisen päätoimiston aktuaari 1901-29. Kansanedustaja (nuors./kok.). † Helsinki 31.3.1943.
perhesuhde	Isä: Hultin, Julius , Veli: Hultin, Oskar Felix Hjalmar , Äiti: Savander, Edla Katrina

Tietomallin dokumentaatio



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Other visualisation:

[Ontology source](#)

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Classes

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[actor appellation](#)^c

[back to ToC or Class To](#)

IRI: http://ldf.fi/schema/bioc/Actor_Appellation

has super-classes

[label](#)^c

has sub-classes

[family name](#)^c, [given name](#)^c, [label](#)^c

[baptism](#)^c

[back to ToC or Class To](#)

IRI: <http://ldf.fi/schema/yoma/Baptism>

has super-classes

[event](#)^c

Kokeile itse! <http://ldf.fi/dataset/yoma>

Avoimia SPARQL-oppimateriaaleja:

https://www.wikidata.org/wiki/Wikidata:SPARQL_tutorial

<https://programminghistorian.org/en/lessons/graph-databases-and-SPARQL>

WIKIDATA

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Random item
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Wikidata:SPARQL tutorial

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This page contains changes. Please contact a translation admin to mark them for translation.

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WDQS, the Wikidata Query Service ^o, is a powerful tool to provide insight into Wikidata's content. This guide will teach you how to use it.

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The Programming Historian

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Using SPARQL to access Linked Open Data

Matthew Lincoln ^o

This lesson explains why many cultural institutions are adopting graph databases, and how researchers can access these data through the query language called SPARQL.

Peer-reviewed • CC-BY 4.0 • Support PH

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Will Hanley

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DIFFICULTY Medium

This lesson has been translated into Spanish: [Usa de SPARQL para acceder a datos abiertos enlazados](#)

Lesson Goals

This lesson explains why many cultural institutions are adopting graph databases, and how researchers can access these data through the query language called SPARQL.