

kadaster



Some Background First

Kadaster, PDOK, Linked Data

Erwin Folmer (Kadaster & University of Twente)

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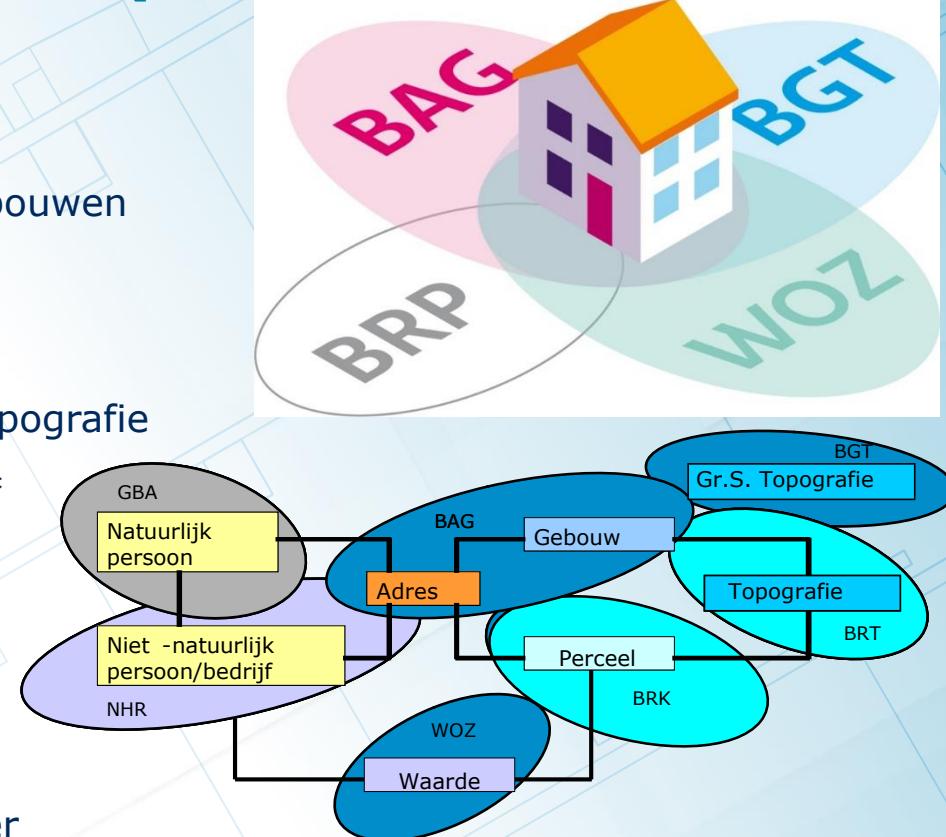
HET KADASTER BEHEERT VEEL (BASIS)REGISTRATIES

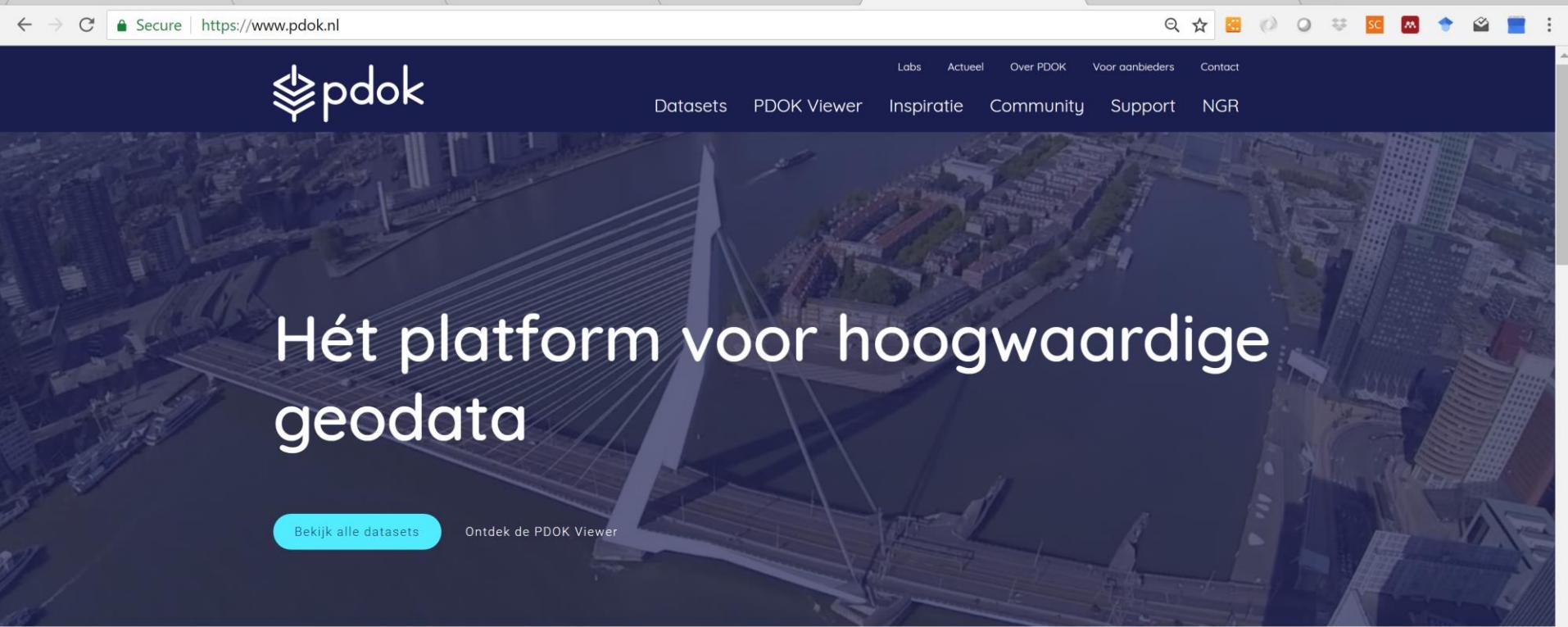
- **BRK** Basisregistratie Kadaster
- **BRT** Basisregistratie Topografie
- **BAG - LV** Basisregistratie Adressen en Gebouwen
- **RO - LV** Ruimtelijke ordening*
- **WOZ - LV** Waardering Onroerende Zaken
- **BGT - LV** Basisregistratie Grootschalige Topografie
- **WKPB - LV** Publiekrechtelijke beperkingen*
- **LV - Energielabels***
- **KLIC*** Kables en Leidingen

LV = Landelijke voorziening

* = Geen wettelijke basisregistratie

En we **koppelen** met BRP, RNI, Handelsregister





The header features a dark blue navigation bar with the PDOK logo on the left. To the right are links for 'Labs', 'Actueel', 'Over PDOK', 'Voor aanbieders', 'Contact', 'Datasets', 'PDOK Viewer', 'Inspiratie', 'Community', 'Support', and 'NGR'. Below the header is a large banner with a blurred aerial photograph of a bridge over a river in a city. Overlaid on the banner is the text 'Hét platform voor hoogwaardige geodata' in white. At the bottom of the banner are two buttons: 'Bekijk alle datasets' in a teal oval and 'Ontdek de PDOK Viewer'.

Hét platform voor hoogwaardige geodata

Bekijk alle datasets Ontdek de PDOK Viewer

Bij PDOK vind je open datasets van de overheid met actuele geo-informatie. Deze datasets zijn benaderbaar via geo webservices, RESTful API's en beschikbaar als downloads en linked data. Daarnaast vind je hier inspirerende cases over de mogelijkheden van deze geo datasets. Meer info over

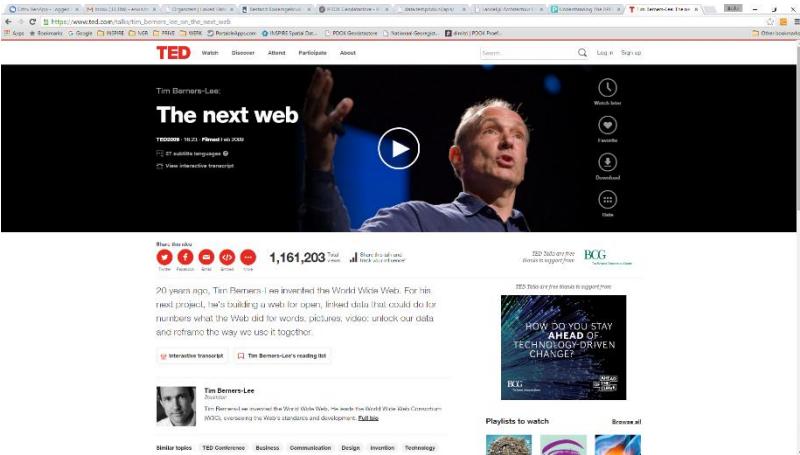
137
Kwalitatieve datasets

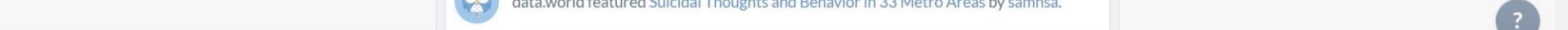
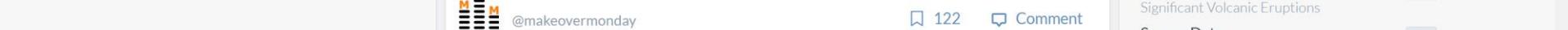
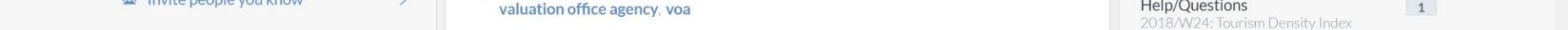
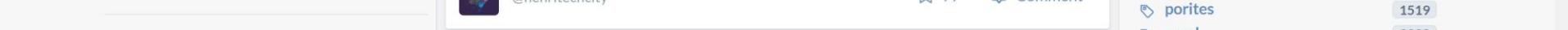
14.382
Actieve gebruikers

23.000.000
Data calls per dag

What Else...Linked Data

Linked Data: A way of publishing data (reusable, web standards, semantics, related to open and big data). Data is stored as triples (RDF standard) and can be (federated) queried with SPARQL.





A screenshot of a web browser showing multiple tabs open, including 'Lin', 'Da', 'Un', 'Co', 'Na', 'UT. Ho', 'Fin', 'ED', '20', 'Ne', 'Dic', 'UT. Re', 'Wi', and 'Lin'. The main content area shows the meta.data.world website. At the top left is a large 'M' logo, followed by an owl icon and social media links for Twitter and Facebook. To the right are 'Sign in' and 'Get started' buttons. Below this is a navigation bar with 'HOME', 'ABOUT', 'DATA BLOG', and a search icon.



Bryon Jacob [Follow](#)
Oct 19, 2017 · 9 min read

Linked data on data.world

At data.world, we strongly believe that the (near) future of data is linked—that in order to maximize data's potential in enabling humans and computers to solve the world's biggest problems, we need to connect data according to the principles of Linked Data.

data.world is built on the idea that the best way to connect data is to connect the people who work with data.

By giving data workers a place to collaborate using familiar file formats and



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282



By giving data workers a place to collaborate using familiar file formats and their preferred tool chains, we help them add context to their data and capture the knowledge about both the data's meaning and how it relates to other sources—the essential components of the Semantic Web.

data.world is powered by the open standards for the Semantic Web, RDF and SPARQL.

data.world natively supports datasets in the Resource Description Framework (RDF) format and we build an RDF model for any structured data that comes into the system in a structured format (CSV, JSON, etc). By building this RDF model, the data is instantly queryable via SPARQL, the RDF query language and protocol, and each element is assigned a Uniform Resource Identifier (URI), so any two datasets can be queried jointly or merged for analysis.

Because the majority of data we process is tabular—and vastly more people



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Search site content... 

EUROPEAN DATA PORTAL

European Data Portal

What we do ▾ Data ▾ Providing Data ▾ Using Data ▾ Resources ▾

Search Datasets

Enter keywords...  SPARQL Search



Browse Datasets by Categories

 Agriculture, Fisheries, Forestry & Foods	 Energy	 Regions & Cities
 Transport	 Economy & Finance	 International Issues
 Government & Public Sector	 Justice, Legal System & Public Safety	 Environment

Latest News

 Discover the PSI monitor
11/06/2018

 Launch of the Open Data Charter Measurement Guide
08/06/2018

 The Italian National Institute for Nuclear Physics (INFN) supports Open Science
07/06/2018

<https://www.europeandataportal.eu/en/using-data/benefits-of-open-data>

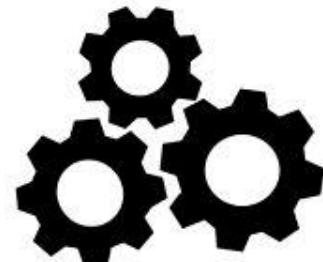
Findable



Accessible



Interoperable



Reusable



Pac X Lin X C 'Ne X C Da X Un X Co X Na X UT. Ho X Th X ED X 20 X Ne X Dic X UT. Re X Wi X Lin X Erwin - 12d

Secure | <https://www.dtls.nl/fair-data/fair-principles-explained/>

I1: (meta)data use a formal, accessible, shared and broadly applicable language for knowledge representation

What does this mean?

Humans should be able to exchange and interpret each other's data (so preferably do not use dead languages). But this also applies to computers, meaning that data that should be readable for machines without the need for specialized or ad hoc algorithms, translators, or mappings. Interoperability typically means that each computer system has at least knowledge of the other system's formats in which data is exchanged. For this to happen and to ensure automatic findability and interoperability of datasets, it is critical to use (1) commonly used controlled vocabularies, ontologies, thesauri (having of course, resolvable globally unique and persistent identifiers, see F1) and (2) a good data model (a well-defined framework to describe and structure (meta)data).

Examples

- The RDF extensible knowledge representation model is a way to describe and structure datasets. You can refer to the Dublin Core Schema as an example.
- OWL
- DAML+OIL
- JSON LD
- See example data models for [Predicted gene-disease associations from text mining](#) and [Tissue gene expression](#).
- See data models from EBI in the 'documentation' links on this page <http://www.ebi.ac.uk/rdf/>

Links to Resources

- https://en.wikipedia.org/wiki/Programming_language

I2: (meta)data use vocabularies that follow the FAIR principles



Home » News » G20 endorse the FAIR principles

G20 endorse the FAIR principles

Posted on 13 September 2016

The European Commission has sent out a **press release** which states that the G20 '*support appropriate efforts to promote open science and facilitate appropriate access to publicly funded research results on findable, accessible, interoperable and reusable (FAIR) principles.*'

The G20 leaders met in Hangzhou (China) on 4-5 September 2016. As the premier forum for international economic cooperation, the G20 agreed to forge a comprehensive and integrated narrative for strong, sustainable, balanced and inclusive growth, and thereby adopt a package of policies and actions – the **Hangzhou Consensus**.

The press release about the Hangzhou Consensus states: "To achieve innovation-driven growth and the creation of innovative ecosystems, we support dialogue and cooperation on innovation, which covers a wide range of domains with science and technology innovation at its core. We deliver the G20 2016 Innovation Action Plan. We commit to pursue pro-innovation strategies and policies, support investment in science, technology and innovation (STI), and support skills training for STI – including support for the entry of more women into these fields – and mobility of STI human resources. We support effort to promote voluntary knowledge diffusion and technology transfer on mutually agreed terms and conditions. Consistent with this approach, we support appropriate efforts to promote open science and facilitate appropriate access to publicly funded research results on findable, accessible, interoperable and reusable (FAIR) principles. In furtherance of the above, we emphasize the importance of open trade and investment regimes to facilitate innovation through intellectual property rights (IPR) protection, and improving public

So...

We have loads of data....

We serve them for years onwards in geospatial formats to the GIS community....

But its not enough...

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Kadaster Data Platform

The development of the Spatial Data Platform of the Future

Erwin Folmer (Kadaster & University of Twente)

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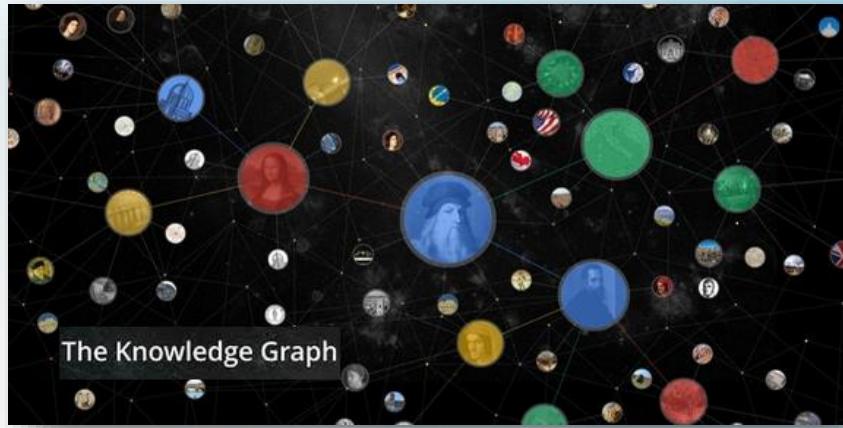
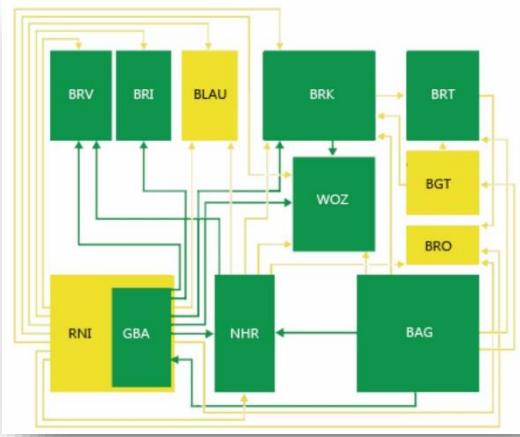


Not only intrinsic quality

- The leaflet (metadata) is essential
- Semantics
- Provenance



From data silo's to connected information

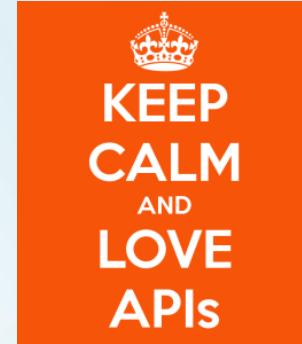


closed



open

Developers friendly



A screenshot of the SimplyDiscus forum homepage. It features a header with the site name and a navigation menu with links like Forum, What's New?, Blogs, Picture Gallery, Premium Memberships, FAQ, Calendar, Forum Actions, Quick Links, and Logout. Below the header, there are several forum sections and user profiles. A sidebar on the right contains links for the Chicago Discus forum, Australian Black Worms, and a general forum information section.



Burgers verwachten bij

Wat hebben hol.com, Facebook, TomTom, Pokémon Go, Netflix en Marktplaats met elkaar gemeen? Hun informatie is te benaderen en te ontsluiten via API's. Het eenvoudig uitwisselen van informatie is voor deze bedrijven belangrijk om gebruikers snel te bedienen en gegevenswisselingen efficiënt te laten verlopen. Daarvoor moeten verschillende applicaties goed met elkaar kunnen communiceren en koude de API om de hoon kijken. Een Application Programming Interface (API) is een combinatie van het 'tijdske' koppevlak in een applicatie en de technische bestanden en documentatie die uitleggen hoe dat koppevlak communiceert met andere applicaties.

Het succes van deze twee trends is mede te danken aan de kerevoorzieningen van API's, namelijk eenvoud, bruikbaarheid en schaalbaarheid. Deze eigenschappen maken het voor een platform goed mogelijk om data en diensten beschikbaar te stellen. Hierdoor ontstaan nieuwe producten, worden gebruikers op verschillende manieren bereikt en is data te ontsluiten via verschillende kanalen.

In de praktijk redeneert de overheid voor systemen die interacteren met burger en bedrijf regelmatig alleen van-

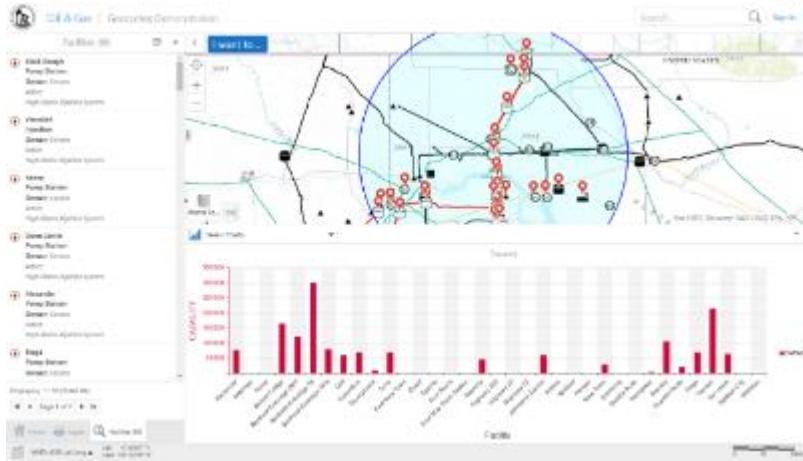
Moderne overheid vraagt om moderne API's

Voor de overheid is het gebruik van API's voor berichtverwisseling niet nieuw. Zo werden bijvoorbeeld al API's ingezet voor openbaar opzetten om achterliggende systemen te

uit de lang gevestigde overheidstandaarden. Langdurige

Self Service GIS

no tools, no code



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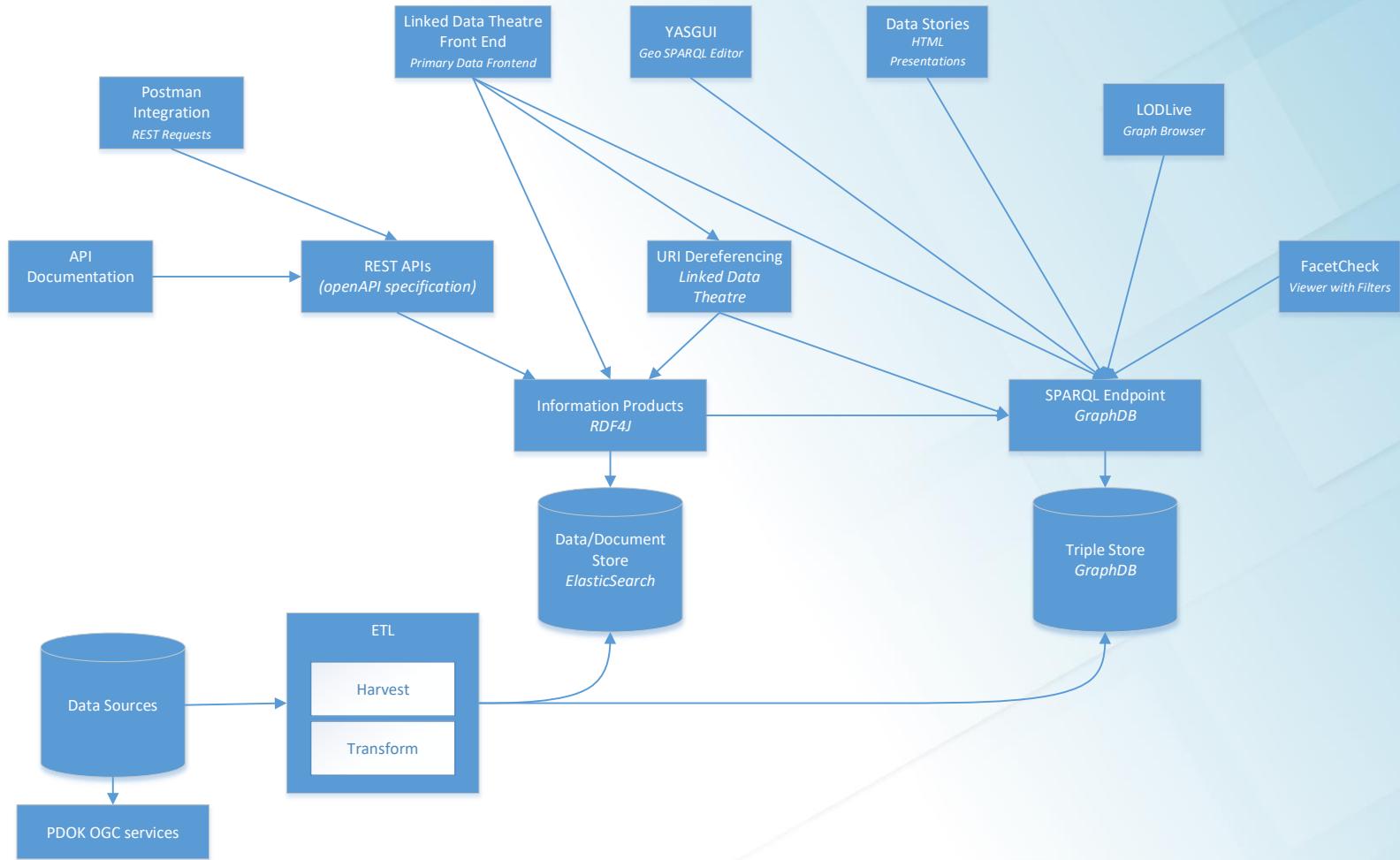


Kadaster Data Platform

The development of the Spatial Data Platform of the Future

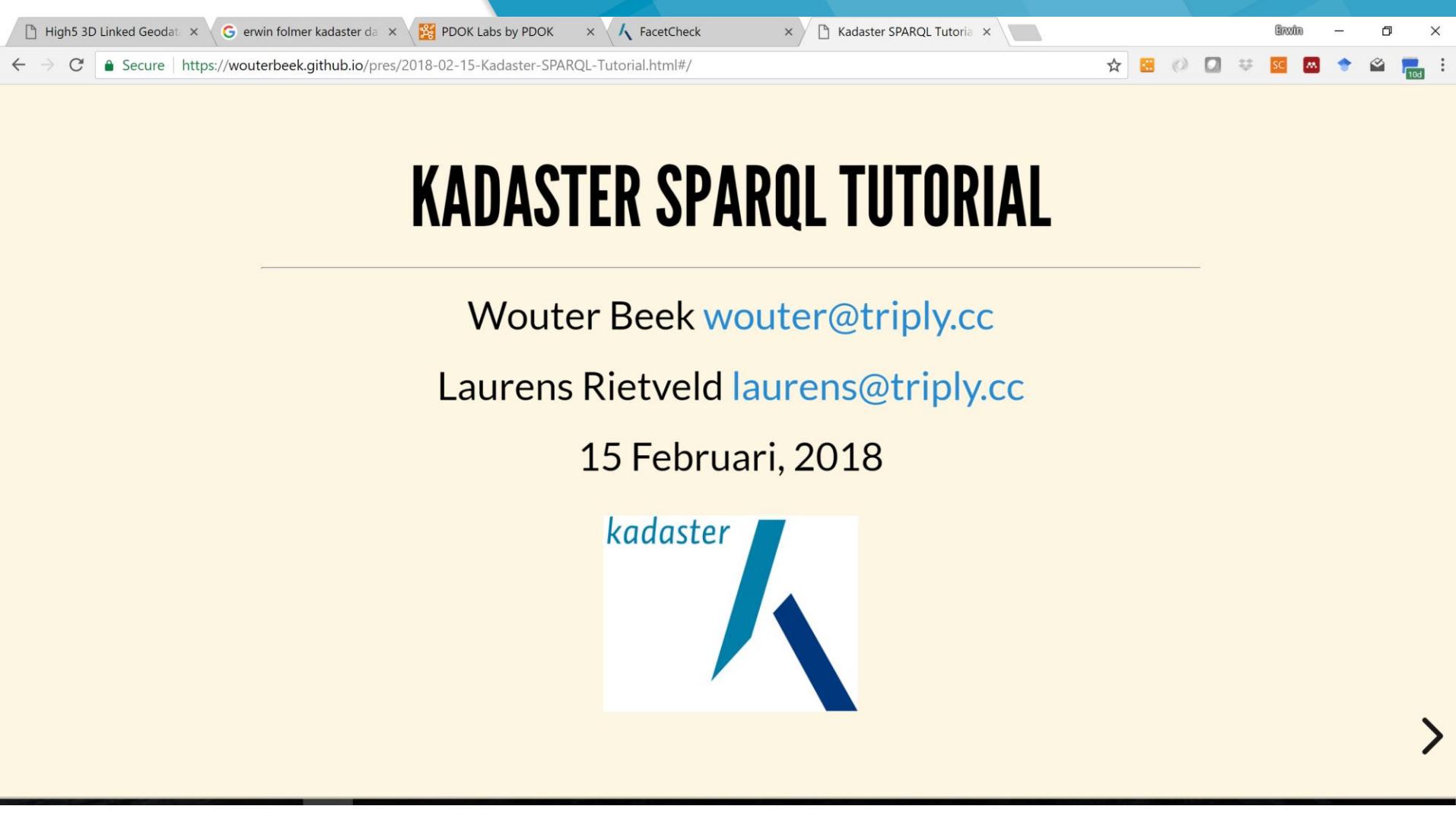
Erwin Folmer
Erwin.folmer@kadaster.nl

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Live

- Pray for Internet Connection...



KADASTER SPARQL TUTORIAL

Wouter Beek wouter@triply.cc

Laurens Rietveld laurens@triply.cc

15 Februari, 2018



give me every **verblijfsobject onderwijsfunctie**
whose **status** is **VerblijfsobjectInGebruik**

and whose **hoofdadres** has a **bijbehorende openbare ruimte** that has a **bijbehorende woonplaats**

Sparklis suggestions to refine your query

The current focus is **the bijbehorende woonplaats** (click on different parts of the query to change it)

matches all

- that has a **relation** to ...
- that has a **relation** from ...
- a **feature**
- that is the **bijbehorende woonplaats** of ...
- that is **defined by** ...
- that has a **geometry**
- that has an **identificatiecode**
- that has an **in dataset**

▼ ► 16 concepts

matches all

anything

1070 (108+)
3234 (21+)
3386 (19+)
3235 (6+)
3241 (6+)
2829 (5+)
3244 (5+)
3245 (5+)

▼ ► 27+ entities

matches all

- and ...
- and
- optionally
- not
- according to which there is ...
- according to ...,
- the highest-to-lowest
- the lowest-to-highest
- ...

23 modifiers

Results of your query

SPARKLIS QUERIES

All the addresses in Enschede - <http://bit.ly/2KTp8Ew>

Your home on the map (use geo button in YasGUI view of sparklis) -
<http://bit.ly/2GPhHMa>

And with areas - <http://bit.ly/2KQJ4Yy>

Definition →

Narrower →

Pref Label →

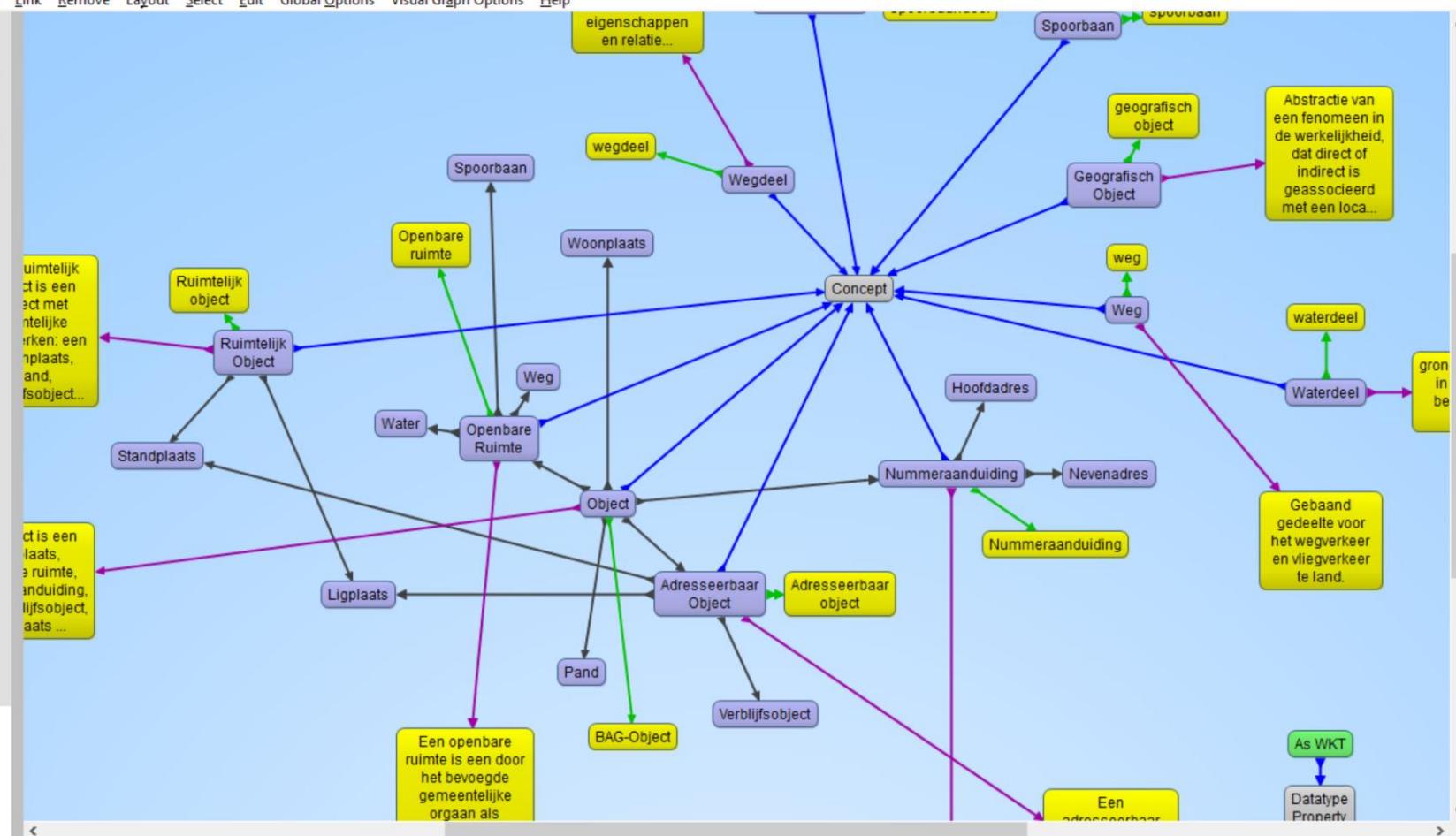
Type →

Concept

Datatype Property

Literal

No Type



Secure | https://facetcheck.triply.cc

PROVINCIE

KRIMPGEBIED

- ✕
- ✓

STEDELIJKHEID

- matig stedelijk
- niet stedelijk
- sterk stedelijk
- weinig stedelijk
- zeer sterk stedelijk

AFSTAND TOT CAFÉ (KM)

0.4 6.2

AFSTAND TOT ATTRACTIE (KM)

1.6 46.5

BEDRIJVEN

Appingedam

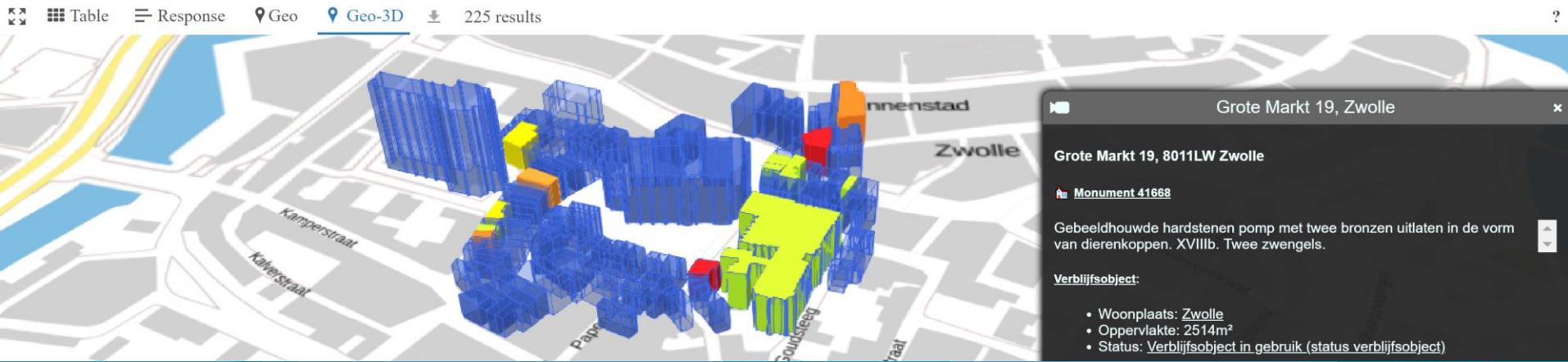
Ten Boer

Bedum

Delfzijl

Secure | https://3d.triply.cc

```
name +  
91 bind ('?binding ?meeting), concat( str(?energielabel_informatie), str(?openbareRuinNaam), str(?energielabel), str(?bedrijf), str(?opname), str(?opnameadres), str(?opnameadres), str(?opnameadres)  
92 <li>Registratiedatum: ' ,str(?registratiedatum), '</li><ul><li>', ') as ?energielabelString2  
93 # HTML label: KvK  
94 bind (if(bound(?bedrijf),concat('<h5> KVK informatie:</h5><ul><li>',str(?naam),'</li><li>',str(?legal),'</li><li>SBI: ',str(?sbi),'</li><li>Werknemers: ',str(?werknemers),'</li>  
95 </ul>'), '') as ?bedrijfString)  
96 # HTML label  
97 bind (concat('<h4>',?energielabelString1,str(?openbareRuinNaam),' ',str(?huisnummer),', ',str(?postcode),', ',str(?woonplaatsNaam),'</h4>',?energielabelString2,?bedrijfString,  
98 monumentString2,'<h5><a href=""',str(?verblijfsobject),'>Verblijfsobject</a>:</h5><ul><li>Woonplaats: <a href=""',str(?woonplaats),'>',str(?woonplaatsNaam),'</a></li><li>Oppervlakte:  
99 ',str(?oppervlakte),'m2</li><li>Status: <a href=""',str(?verblijfsobjectStatus),'>',str(?verblijfsobjectStatusLabel),'</a></li><ul><li>Pand</li>:</ul><li>Bouwjaar: ',str(?bouwjaar),'</li><li>Status: <a href=""',str(?pandStatus),'>',str(?pandStatusLabel),'</a></li></ul>') as ?wktLabel)  
100 # tekst label  
101 bind (concat(str(?openbareRuinNaam),' ',str(?huisnummer),', ',str(?woonplaatsNaam)) as ?wktName)  
group by ?wkt ?wktColor ?wktHeight ?wktName ?wktZ  
limit 250
```



Secure | <https://linkurious.us>

Apps Bookmarks INSPIRE NGR WERK GRID Demo - Google Research backlog PDKO/data.labs.pdko PDOK Labs by PDOK Workbook: Enschede Other bookmarks

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Menu Find Edit data

1 SELECTED NODES

SolarCity COMPANY INVESTOR

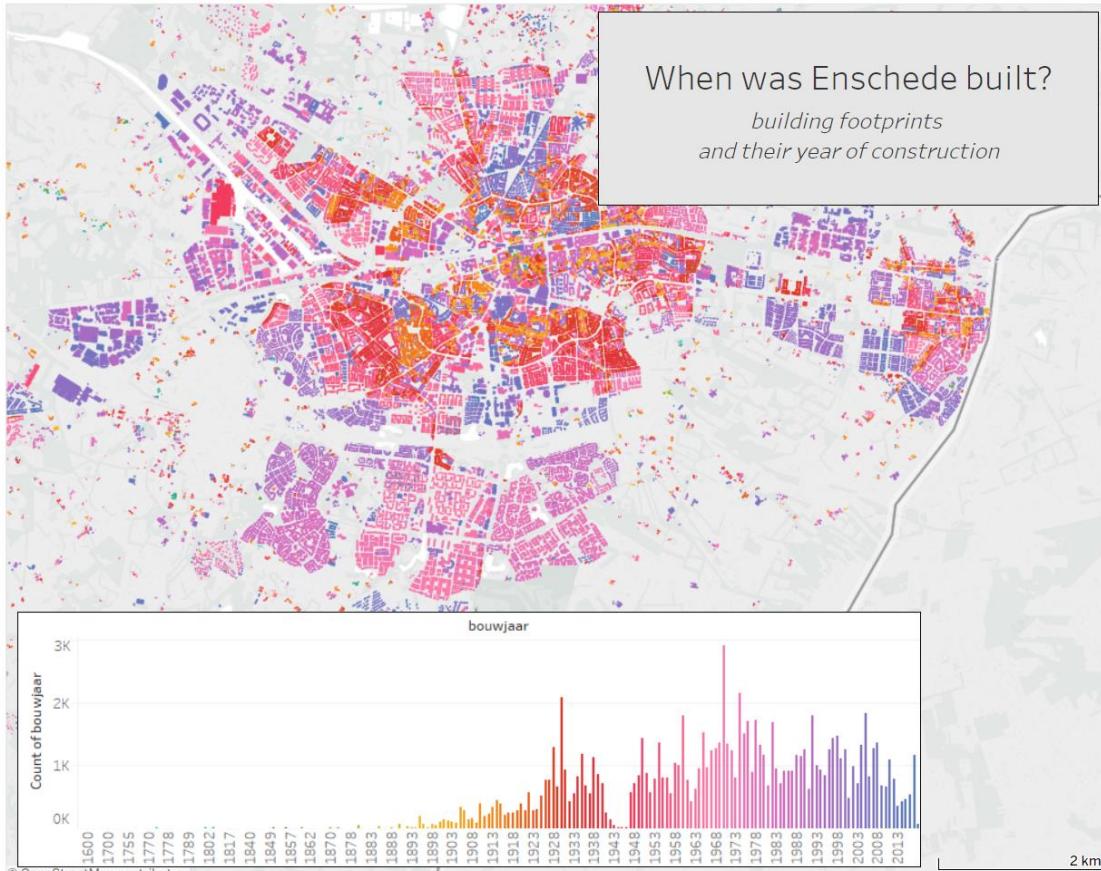
PROPERTIES

Find a property...

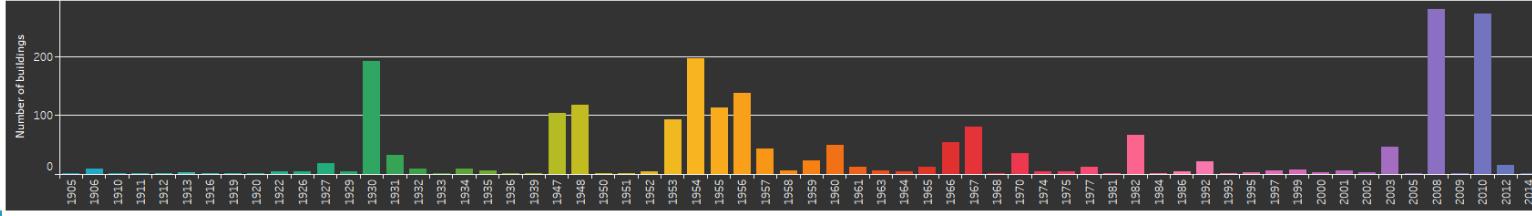
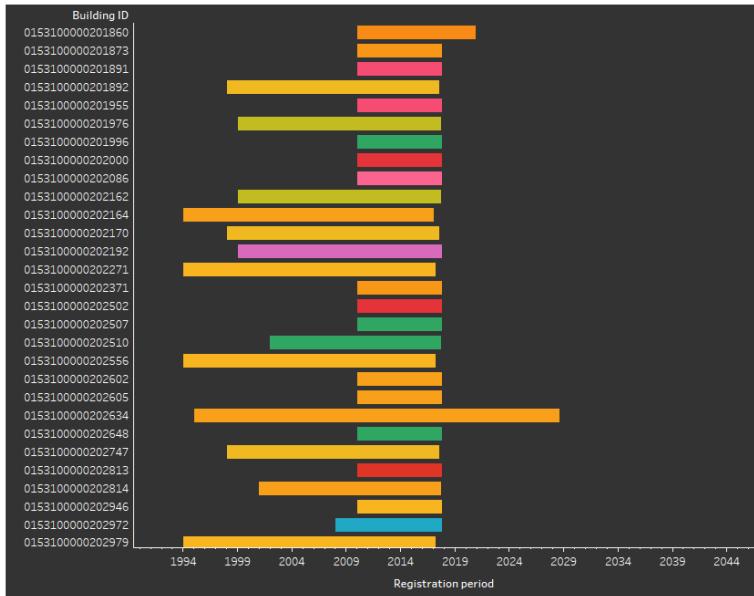
country USA
founded_at 01/01/2006
founded_quart 2006-Q1
founded_year 2006
funding_round 13
homepage_url <http://www.solarcity.com>

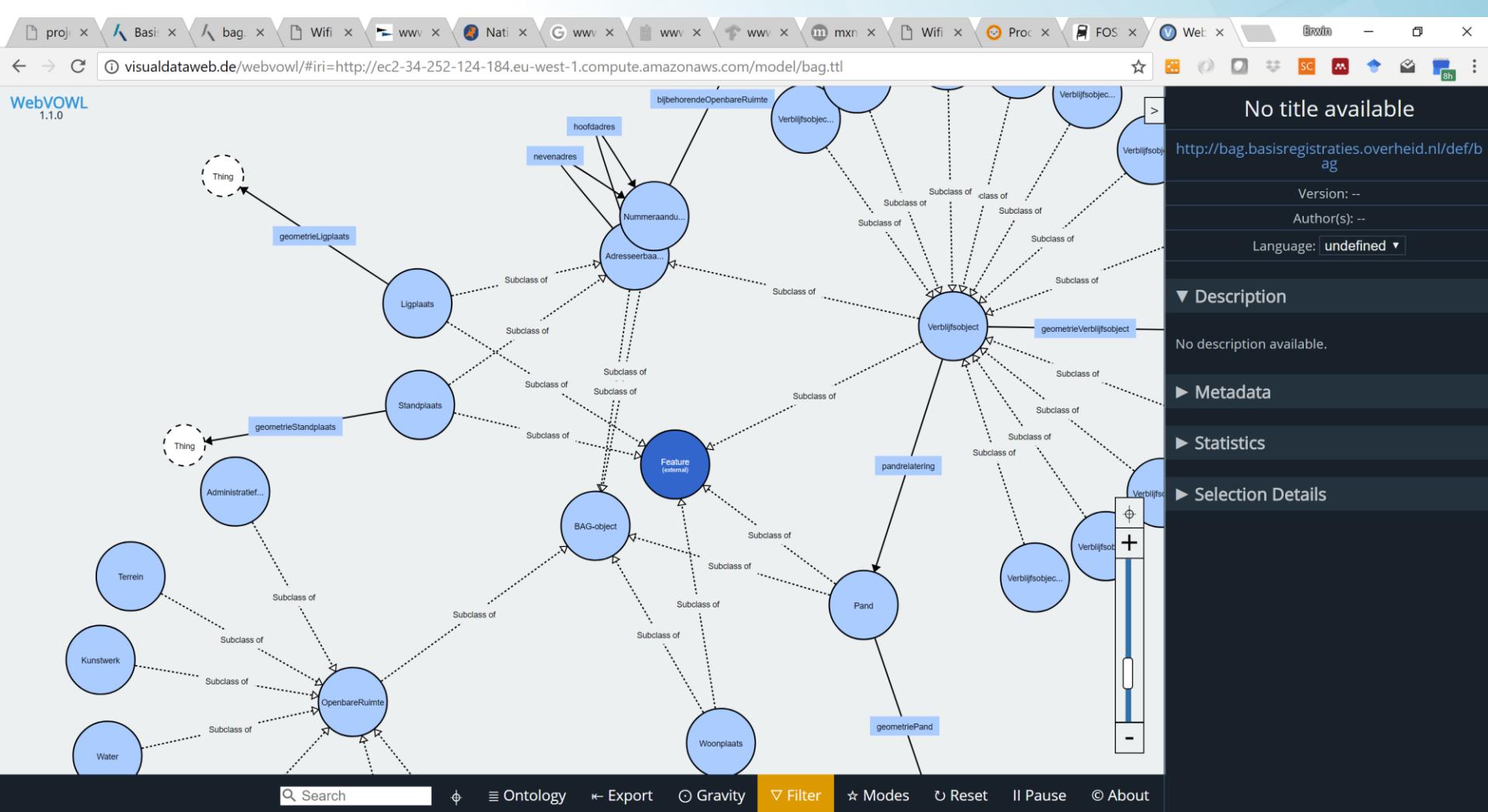
7 EDGES / 26 IN DATABASE

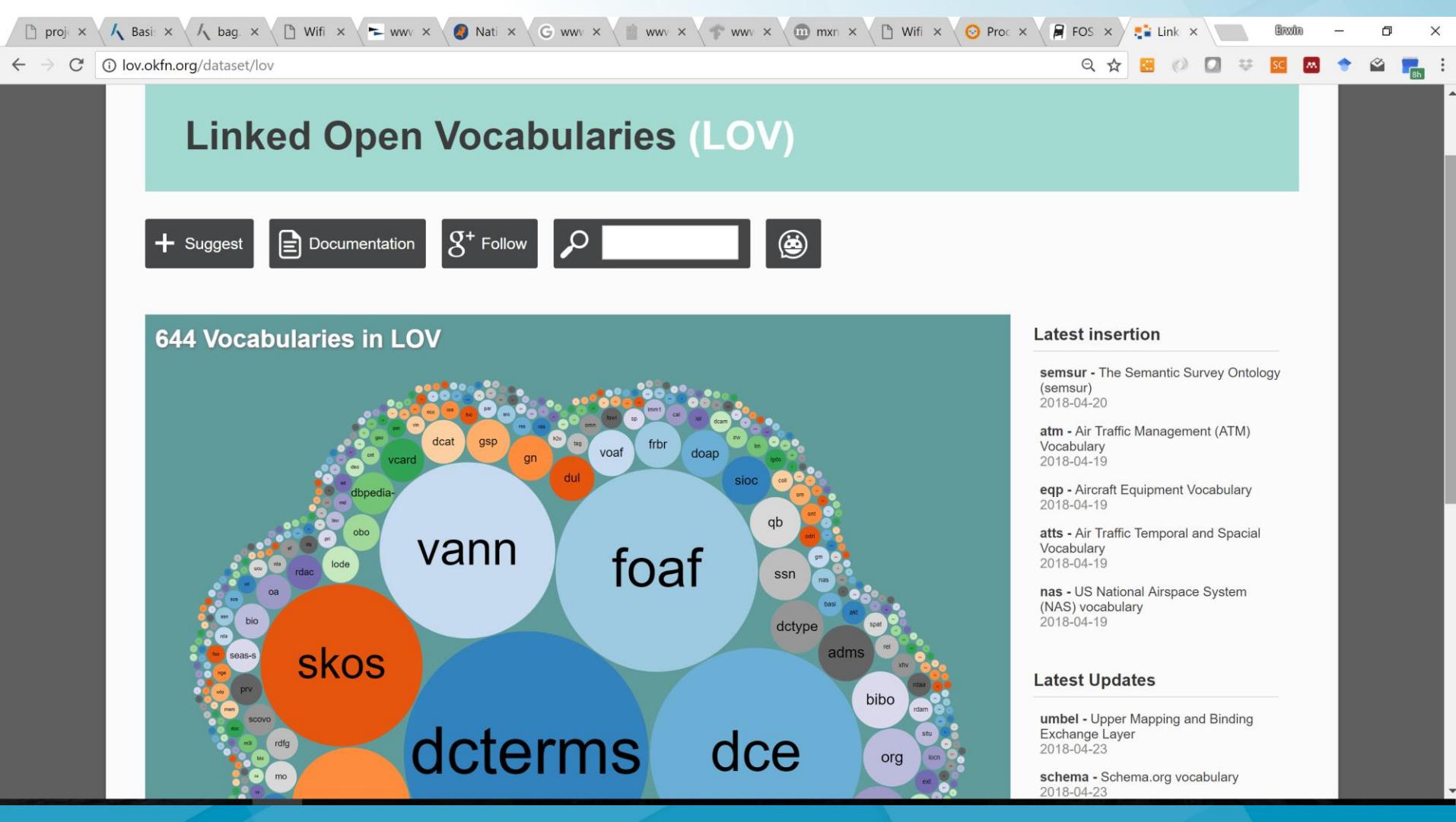
LINKURIOUS



Web Data Connector







project x Basis x bag.b x Wifi E x www. x PDOK x G www. x www. x www. x mxne x Wifi E x Proce x FOSS x Erwin -      

Secure | <https://data.labs.pdok.nl/apps/zoeken>

Home SPARQL Datasets Data stories Demonstrators (apps) [View in English]

PDOK Labs
BETA

[Bekijk op GitHub](#)

Bekijk onze datasets en services op data.pdok.nl

Laatste wijzigingen:

Stories/Gemeentes
Stories/krimp
Apps/zoeken
Apps
Stories/Hack-a-LOD
Stories/Kwaliteit
BGTBAG2
Stories/KwaliteitBGTBA
Stories/huisnummer
Stories/informatie-kwaliteit
Stories/kkg
Stories/kvk

Zoek naar dataset op begrip

Geef een begrip op om een bijbehorende dataset te vinden

geef een term op om te zoeken

Vertrouwde data

term	dataset
brt:Plaats	http://brt.basisregistraties.overheid.nl
bag:Ligplaats	http://bag.basisregistraties.overheid.nl
bag:Woonplaats	http://bag.basisregistraties.overheid.nl
bag:Standplaats	http://bag.basisregistraties.overheid.nl
brt:Stortplaats	http://brt.basisregistraties.overheid.nl
brt:Begraafplaats	http://brt.basisregistraties.overheid.nl
brt:Parkeerplaats	http://brt.basisregistraties.overheid.nl
bag:naamWoonplaats	http://bag.basisregistraties.overheid.nl
brt:Plaatsnaambord	http://brt.basisregistraties.overheid.nl
brt:ParkeerplaatsPR	http://brt.basisregistraties.overheid.nl
brt:isBAGwoonplaats	http://brt.basisregistraties.overheid.nl

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Kadaster Data Platform Conclusions

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Pro X Da X PD X YA X Ba X Ify X Lin X Te X Mc X Ba X Ba X Ba X Ba X Th X

www.independent.co.uk/life-style/gadgets-and-tech/features/the-man-whos-making-google-maps-smarter-9544478.html

Apps Bookmarks Google INSPIRE NGR WERK INSPIRE Spatial Data GRID Demo - Google 3D Rotterdam BAG Rotterdam 3D VR der Other bookmarks

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THE MAN WHO'S MAKING GOOGLE MAPS SMARTER

kadaster



The Web is the Future

Kadaster Data Platform

The development of the Spatial
Data Platform of the Future

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kadaster

https://public.tableau.com/views/Twekkelerveld/TwekkelerveldDashboard?:embed=y&:embed_code_version=3&:loadOrderID=1&:display_count=yes&publish=yes

https://public.tableau.com/views/Enschede_0/EnschedeDashboard?:embed=y&:embed_code_version=3&:loadOrderID=0&:display_count=yes