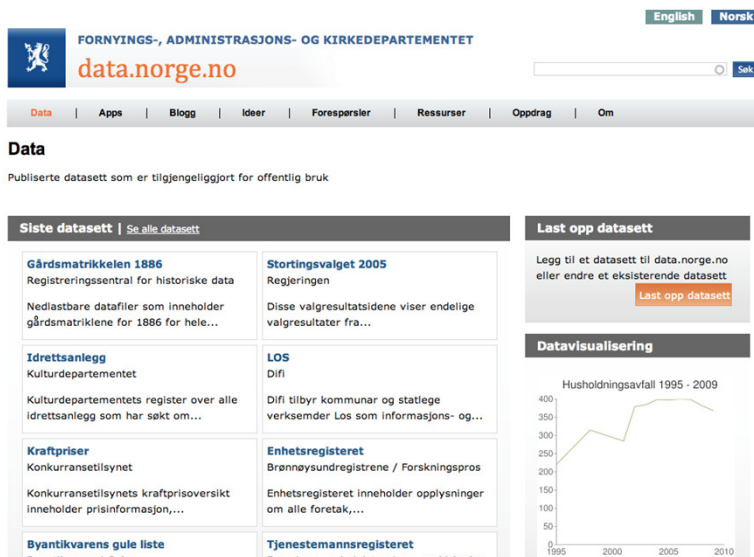


Linked Open Data in Norway

PlanetData NorthPole

Open Data



English Norsk

FORNYINGS-, ADMINISTRASJONS- OG KIRKEDEPARTEMENTET
data.norge.no

Data | Apps | Blogg | Ideer | Forespørsler | Ressurser | Oppdrag | Om

Data
Publiserte datasett som er tilgjengeliggjort for offentlig bruk

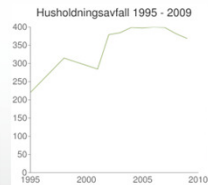
Siste datasett | Se alle datasett

Gårdsmatrikkel 1886 Registreringsentral for historiske data Nedlastbare datafiler som inneholder gårdsmatriklene for 1886 for hele...	Storingsvalget 2005 Regjeringen Disse valgresultatene viser endelige valgresultater fra...
Idrettsanlegg Kulturdepartementet Kulturdepartementets register over alle idrettsanlegg som har søkt om...	LOS Difi Difi tilbyr kommunar og statlege verksemder Los som informasjons- og...
Kraftpriser Konkurransetilsynet Konkurransetilsynets kraftprisoversikt inneholder prisinformasjon,...	Enhetsregisteret Brannøysundregistrene / Forskningspros Enhetsregisteret inneholder opplysninger om alle foretak,...
Byantikvarens gule liste Byantikvarens gule liste	Tjenestemannsregisteret Tjenestemannsregisteret

Last opp datasett
 Legg til et datasett til data.norge.no eller endre et eksisterende datasett
[Last opp datasett](#)

Datavisualisering

Husholdningsavfall 1995 - 2009



År	Avfall (ca. tonn)
1995	150
2000	300
2005	380
2009	350

Innlogging · Register

Hjem Søkk Legg til en datakilde Stikkord (tags) Grupper Om

Velkommen til

er et register over åpne data og åpent innhold. Ved bruk av programvaren CKAN gjør dette nettstedet det lett å finne, dele og gjenbruke åpne data og innhold, særlig på måter som er maskinlesbare og automatiserbare. Dette nettstedet er i ferd med å bytte navn til datakilder.no. Det erstatter det tidligere nettstedet med samme navn. Datakildene som var registrert på det gamle datakilder.no er inkludert her.

Totalt 212 datakilder

Q Search...

Søkefilter: datakilder med åpne lisenser datakilder med nedlastbare ressurser [Søk](#)

Recently changed packages

Redaksjonsundersøkelsen 2011 [csv, xls m.fl.](#) [OPEN DATA](#)

Data fra en undersøkelse gjennomført i februar 2011 blant norske redaksjoner. 138 redaksjoner deltok, og undersøkelsen er besvart på vegne av redaksjonen av ansvarlig redaktør eller en...

Skannede Kirkebøker [jpeg](#)

Data ikke åpne
 Digitalarkivets netjtjeneste for navigering i og fremvisning av skannede kirkebøker og borgerlige vigselbøker. De fleste bøkene er skannet fra mikrofilm, men nyere bøker er skannet fra...

PSI open data

open data ("gras root")

The road to Linked Open Data

- Semicolon II
- Sesam4
- IOHN
- Various personal and university initiatives
- PlanetData NorthPole


Sesam4 (2008-2011)

- Norwegian research council supported research project with Computas, Norwegian Computing Centre, Cyberwatcher, ESIS, Vestlandsforskning and more
- Tourism
- Company information



- ABOUT
- MEET US
- DEMONSTRATORS
- PARTNERS
- CONTACT

About Sesam4



SESAM4 is a Norwegian, national project with the overall goal to make semantic technology understandable and accessible for organisations and small/medium-sized enterprises.

This portal collects and disseminates all project results for you. Drilling down into the portal you will find technology primers, educational resources and software which helps you to get started.

A total of 6 demonstrators are available through these pages, ranging from business specific demonstrators in Tourism and Company Market Information to several SPARQL end-points providing specific data-sources for you to try out and query. The project also features an online "OpenBergen" tagger, which let's you upload, analyse and annotate Norwegian texts.

Through its focus on interoperability, common conceptual frameworks and standardised ways for modelling domains, semantic technology offers a competitive advantage to companies that understand how to integrate with these standards. Information on the Internet is, if at all, often published through proprietary interfaces that require a potential user to adapt to different web-services and content representations. Automation of applications against such information sources is a pain-staking and difficult process that is both error-prone and expensive due to the unstable, dynamic nature of such implementations. Standardisation of knowledge representation on the Internet has been a topic of research for many years. Many standards (eg. HTTP, URI, HTML, XML, SOAP) are widely adopted and have significantly contributed to the ways in which information has been exchanged on the web. With the current integration of Smart-phones and numerous devices showing good computing power, we find an increasing call for automation of many different,

Semicolon II (2011-2013)

- Norwegian research council supported research project with Norwegian Tax Administration, Brønnøysund Registry Center, Directorate of Health, Directorate of eGov and ICT, UiO, Sintef, DNV and more.
- Making public data available as Linked Open Data
- Contribute to creating ontologies



The screenshot shows the website for Semicolon II, titled "SAMHANDLING I OFFENTLIG SEKTOR". The page features a navigation menu on the left with items like "Førsteside (Home)", "Fakta", "Fagområder", "Arbeidspakkene", "Case-beskrivelser", "Metode", "Publikasjoner", "Omtale", "Partnerne", "Menneskene", "Kontaktinformasjon", "Lenker", and "In English". The main content area is titled "Kort om Semicolon II-prosjektet" and contains the following text:

Semicolon II er en videreføring av **Semicolon I-prosjektet**. Prosjektet fikk bevilgning fra Forskningsrådets VERDIKT-program i slutten av april 2010.

Vi utvider perspektivet fra Semicolon I, som omhandlet i det alt vesentlige organisatorisk og semantisk interoperabilitet i og med offentlig sektor, til også å omfatte rettslige problemstillinger, politiske føringer og samhandlingsplattformer som for eksempel sosiale nett. Arbeidet med kvantitative og kvalitative målinger av samhandling i offentlig sektor vil videreutvikles.

Semicolon II vil gi et vesentlig bidrag til å skape en effektiv og verdikende offentlig sektor ved bedret elektronisk samhandling på tvers av etater og forvaltningsnivåer hvor:

- ressursene flyttes fra administrasjon til tjenesteyting
- etater samarbeider om å løse oppgaver til nytte for innbyggere og næringsliv
- etatene samarbeider for å levere offentlig tjenester av høy kvalitet uten hinder av virksomhetsgrenser og med fullverdig IT-støtte

Internasjonalisering av Semicolon II vil gjøres gjennom flere tiltak, bl.a. ved å knytte prosjektet til **Semic.eu** (Semantic Interoperability Centre Europe).

On the right side, under the heading "AKTUELT", there are three news items:

- Semantic Days 2011** ar i Oslo i juni 2011. (Accompanied by a poster for Semantic Days 2011)
- Semicolons metode for samfunnsøkonomisk analyse av IKT samhandlingsprosjekt** (Accompanied by a document cover)
- Publisert: Semicolons m for samfunnsøkonomis analyse av IKT samhandlingsprosjekt, og tilknyttet Indikatorse** (Accompanied by a book cover titled "Challenges e-2010 Final Programme")

IOHN

- Norwegian research council supported research project with 23 companies
- G2 Integrated Operations



Integrated Operations in the High North - Joint Industry Project

Design, implement and demonstrate the digital platform for next generation Integrated Operations

For IOHN participants: a password-restricted internal Wiki-site is also available.

No password?: IOHN participants can follow these [instructions](#) to obtain a password. Please mention that you would like to have access to the IOHN Wiki-site.

Twenty-three companies from different parts in the value chain have joined forces to design, implement and demonstrate a reliable and robust ICT architecture to be used for petroleum exploration and production in remote settings, such as the Arctic. Open standards are used to ensure interoperability, to facilitate integration and to transfer data. Combined with advances in information sharing and knowledge management technologies, this readily improves the basis for collaborative decision making and thereby facilitates more effective work processes.

Table of Contents

1. Background
2. Overview of the project
3. Status of the project
4. More information
5. Some relevant links and articles

Background

Arctic region

The Arctic region holds vast amounts of extractive energy resources. Most of these resources are located offshore in environmentally very sensitive areas possibly beneath thick ice and/or in deep water. Weather and distance from existing infrastructure and centers of population add additional operational and logistic challenges.

Second generation Integrated Operations

In order to meet all these requirements and at the same time maintain profitable operations, development and operational concepts that include heavily instrumented facilities. These open on a lean local organization supported remotely from a combination of an asset organization external expert centers. This is what has been called the second generation of Integrated Op



Heavily instrumented fields
Autonomv



Company	Website
ABB	http://www.abb.com/
Abelia	http://www.abelia.no/
Baker Hughes Inc.	http://www.bakerhughes.com/
Cisco	http://www.cisco.com/
Computas	http://www.computas.com/
DNV	http://www.dnv.com/
ENI	http://www.eni.com/
Epsis	http://www.epsis.no/
FMC Technologies	http://www.fmctechnologies.com/
FSI	http://www.fsi.no/
IBM	http://www.ibm.com/
IO Center	http://www.ntnu.no/iocenter
IRIS	http://www.iris.no/
National Oilwell Varco	http://www.nov.com/
NTNU	http://www.ntnu.no/
OLF	http://www.olf.no/
POSC Caesar Association	http://www.posccaesar.org/
Ptil	http://www.ptil.no/
Siemens	http://www.siemens.com/
Statoil	http://www.statoil.com/
The Norwegian Defence	http://www.mil.no/
University of Oslo	http://www.uio.no/
University of Stavanger	http://www.uis.no/

Best Practice for lifting

<p>SESAM4 computas </p> <h2>Steps</h2> <ol style="list-style-type: none"> 1. Understand the principles 2. Understand your data 3. Choose URIs to represent your data 4. Setup your infrastructure 5. Link to other data sets 6. Describe and publish your data <p>Adopted from Tom Heath and others</p>	<p>SESAM4 computas </p> <h2>1. Principles</h2> <ol style="list-style-type: none"> 1. All kinds of conceptual things, they have names that start with HTTP. 2. I get important information back. I will get back some data in a standard format which is kind of useful data that somebody might like to know about that thing, about that event. 3. I get back that information it's not just got somebody's height and weight and when they were born, it's got relationships. And when it has relationships, whenever it expresses a relationship then the other thing that it's related to is given one of those names that starts with HTTP. <p>Three "extremely simple" rules (Tim Berners-Lee, 2006):</p>	<p>SESAM4 computas </p> <h2>2. Understand your data</h2> <ul style="list-style-type: none"> • What are the key things in your data? <ul style="list-style-type: none"> • Often the table names • What vocabularies can be used to describe these? <ul style="list-style-type: none"> • Reuse, don't reinvent • Mix liberally • Vocabularies already exists for much of what you have! <ul style="list-style-type: none"> • People - FOAF vocabulary • Geographical information - WGS vocabulary • Products - Good relations vocabulary • ... • Extend when you need to
<p>SESAM4 computas </p> <h2>3. Choose URIs for Things in Your Data</h2> <ul style="list-style-type: none"> • Use HTTP URIs • Keep out of other peoples' namespaces • Abstract away from implementation details • Choose a pattern: Common patterns <ul style="list-style-type: none"> • http://dbpedia.org/resource/New_York_City • http://dbpedia.org/data/New_York_City • http://dbpedia.org/page/New_York_City • http://www.com/people/tom • http://www.com/people/tom/about/rdf • http://www.com/people/tom/about/html • http://kmi.open.ac.uk/people/tom/ • http://kmi.open.ac.uk/people/tom/rdf • http://kmi.open.ac.uk/people/tom/html • http://mydomain.com/thing • http://mydomain.com/thing.rdf • http://mydomain.com/thing.html • Make collections <ul style="list-style-type: none"> • http://mydomain/people/david <p> -- Thing -- RDF data -- HTML page </p>	<p>SESAM4 computas </p> <h2>4. Set up your infrastructure</h2> <ul style="list-style-type: none"> • RESTful, 303 redirect • Content Negotiation • Test with cURL • SPARQL 	<p>SESAM4 computas </p> <h2>5. Link to Other Data Sets</h2> <ul style="list-style-type: none"> • Popular Generic Predicates for Linking <ul style="list-style-type: none"> • owl:sameAs • rdfs:seeAlso • foaf:homepage • foaf:topic • foaf:based_near • ...

The case for reference data

- Organizations (Brønnøysund Enhetsregisteret)
- Locations (Geonames, Kartverket Sentrale Stedsnavnsregister)
- People (Folkeregisteret)
- ...

Taking available open data and lifting them

artsobservasjoner¹
grasrotandelen²
matrikkel-1886²
stofflisten³
blaaskjell¹
idrettsanlegg⁴
matrikkel-koord²
surveillance³
oslo-byggesak¹
juridisknettviser⁵
mini-stedsnavnsregister⁴
tellus³
bygninger-oslo⁶
kommunekatalogen²
nfr-prosjektarkiv⁷
tjenestemannsregisteret⁴

eea⁶
ladestasjoner³
norad-bistand
turisme-ontologi
foursquare⁸
los
porsgrunn-mingate
turistforeningen
...

¹ HTML (scraping, xslt)

² Excel (semex)

³ XML (xslt)

⁴ CSV (perl)

⁵ key-value filer (perl)

⁶ RDF (sparql)

⁷ database (e.g. D2RQ)

⁸ API

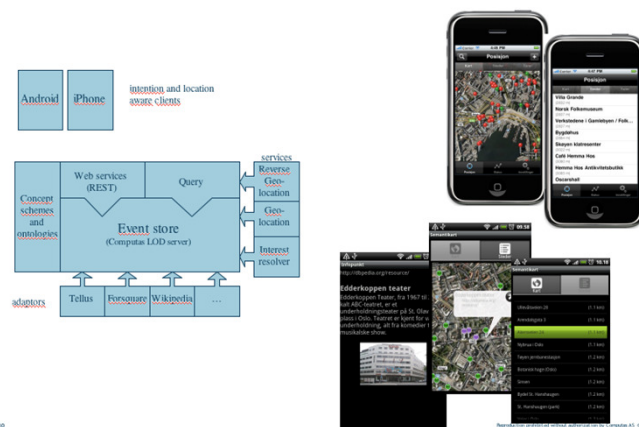
A lot of tools out there!

Current datasets (Graphs) on our SPARQL Endpoint

- <http://opendata.computas.no/dataset/people> - sample of people profiles
- http://opendata.computas.no/dataset/foursquare_topics - foursquare topics
- <http://opendata.computas.no/dataset/artsobservasjoner> - (from rovbase)
- http://opendata.computas.no/dataset/foursquare_venues - sample foursquare venues
- <http://opendata.computas.no/dataset/surveillance> - surveillance cameras (from open street map)
- http://opendata.computas.no/dataset/eea_rivers - pollution measurements in rivers (from European Environment Agency)
- http://opendata.computas.no/dataset/porsgrunn_mingate - sample «fix my street» cases (from Porsgrunn municipality)
- <http://opendata.computas.no/dataset/blaaskjell> - sample advises on mussels (from matportalen.no)
- <http://opendata.computas.no/dataset/bygninger> - sample of buildings in Oslo (from dbPedia)
- <http://opendata.computas.no/dataset/norad> - aid to foreign countries (from Norad)
- http://opendata.computas.no/dataset/nfr_prosjektarkiv - funded projects (from Norwegian Research Council)
- <http://opendata.computas.no/dataset/grasrotandelen> - organizations funded by the gras root fund (from Norsk Tipping)
- http://opendata.computas.no/dataset/difi_tjenestemannsregisteret - employee statistics in the government (from Difi)
- http://opendata.computas.no/dataset/tourism_1 - tourism ontology (from Sesam4 project)
- <http://opendata.computas.no/dataset/ladestasjoner> - charging stations (from ladestasjoner.no)
- <http://opendata.computas.no/dataset/tellus> - tourism data (from Sesam4 project)
- http://opendata.computas.no/dataset/difi_los - services provided by municipals (from Difi)

Current Proof-of-concepts

Tourism



Slide 10

An instance example

nfr.no

```
nfr:projectID_189277
  a      foaf:Project ;
  dct:title "Integrating activities for containment system
innovation in advanced sustainable aquaculture"^^xsd:string ;
  stuff:startDate "2008-02-26 00:00:00"^^xsd:string ;
  stuff:targetDate "2008-02-29 00:00:00"^^xsd:string ;
  project:funder
<http://en.wikipedia.org/wiki/The_Research_Council_of_Norway> ;
  nfr:name_responsible_org
      "SINTEF Fiskeri og havbruk AS"^^xsd:string ;
  nfr:orgnr_responsible_org brreg:980478270 .
```

Link to dbpedia

link to company register

```
enhet:980478270
  a      vocab:Enhet ;
  vocab:adresse
    [ a      vocab:Adresse ;
      vocab:adressesel "Brattørkaia 17 C" ;
      vocab:land "Norge" ;
      vocab:postnr "7010" ;
      vocab:poststed "TRONDHEIM"
    ] ;
  vocab:navn "SINTEF FISKERI OG HAVBRUK AS" ;
  vocab:orgnr "980478270" .
```

brreg.no

PlanetData



Planet Data
A European Network of Excellence on Large-Scale Data Management

Home About Research Data and Technology Training PlanetData Programs Join PlanetData

-The First #ESWC2011 Summer School is proudly sponsored by the @PlanetD: [facebook](#) [twitter](#)

About

The PlanetData project is built around three objectives that together ensure the creation of a durable community made up of academic and industrial partners. This community will be supported in conducting research in the large-scale data management area through the provision of data sets and access to...

[Read more ...](#)

Research

Petabytes of structured and unstructured data distributed in storage centers, billions of events coming from sensor networks, news feeds, the Blogosphere, or Twitter, hundreds of billions of RDF triples leveraged from different sources across the Internet, and comparable amounts of data produced by scientific...

[Read more ...](#)

Data and Technology

PlanetData will build a catalogue of Europe-wide, multi-hosted, empirically grounded, reference data sets in different modalities and from various vertical sectors complemented by provisioning

Training

The PlanetData impact activity will consist of training, researcher mentoring and mobility schemes, standardization, roadmapping and community building measures. Through training

Members

[Freie Universität Berlin](#)

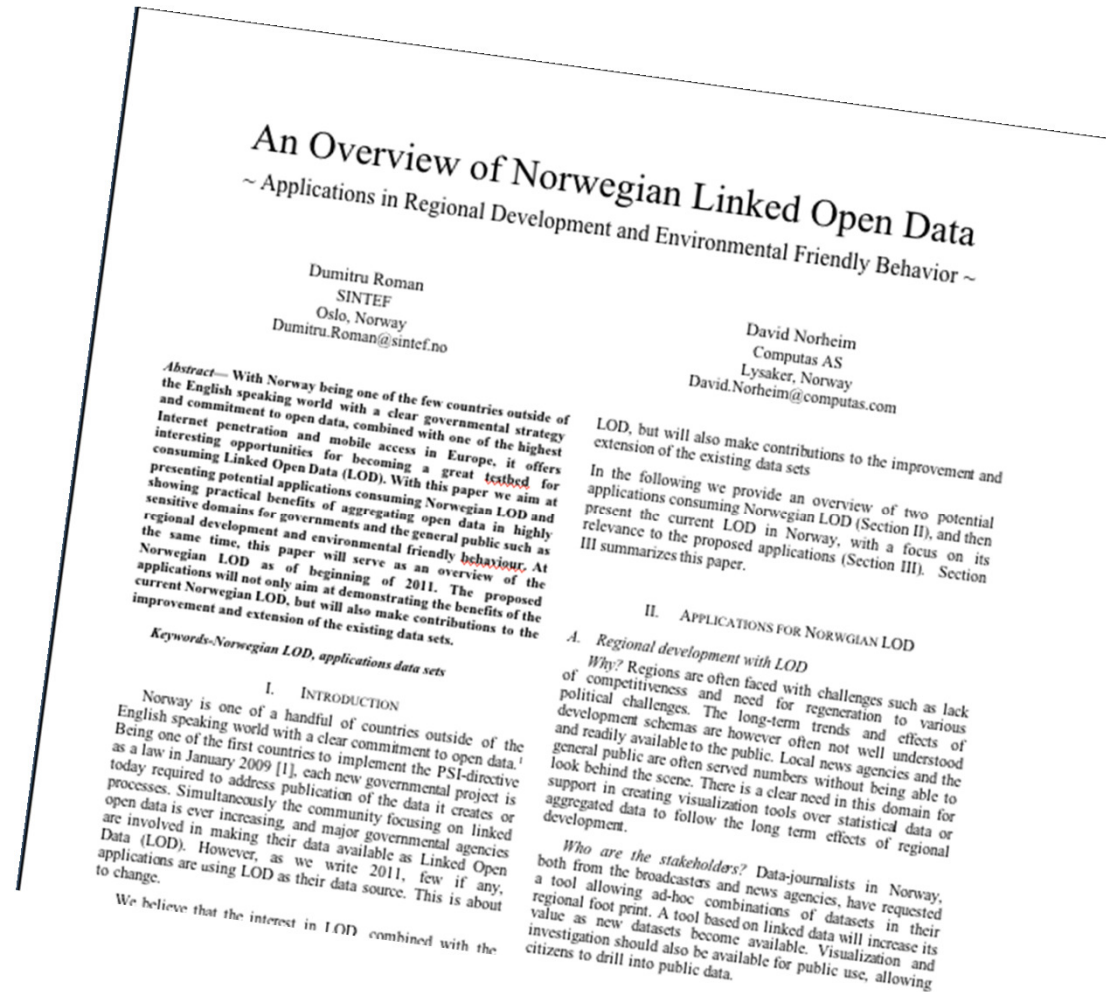
News

- The First #ESWC2011 Summer School is proudly sponsored by the @PlanetData_NoE
- Related PlanetData Activities in Large-scale Data Management
- PlanetData sponsors the Open Data Challenge

[More news ...](#)

PlanetData NorthPole (2011)

- Addition to the PlanetData NoE
- Show possibilities with Linked Open Data for
 - Regional development
 - Environmentally friendly behavior

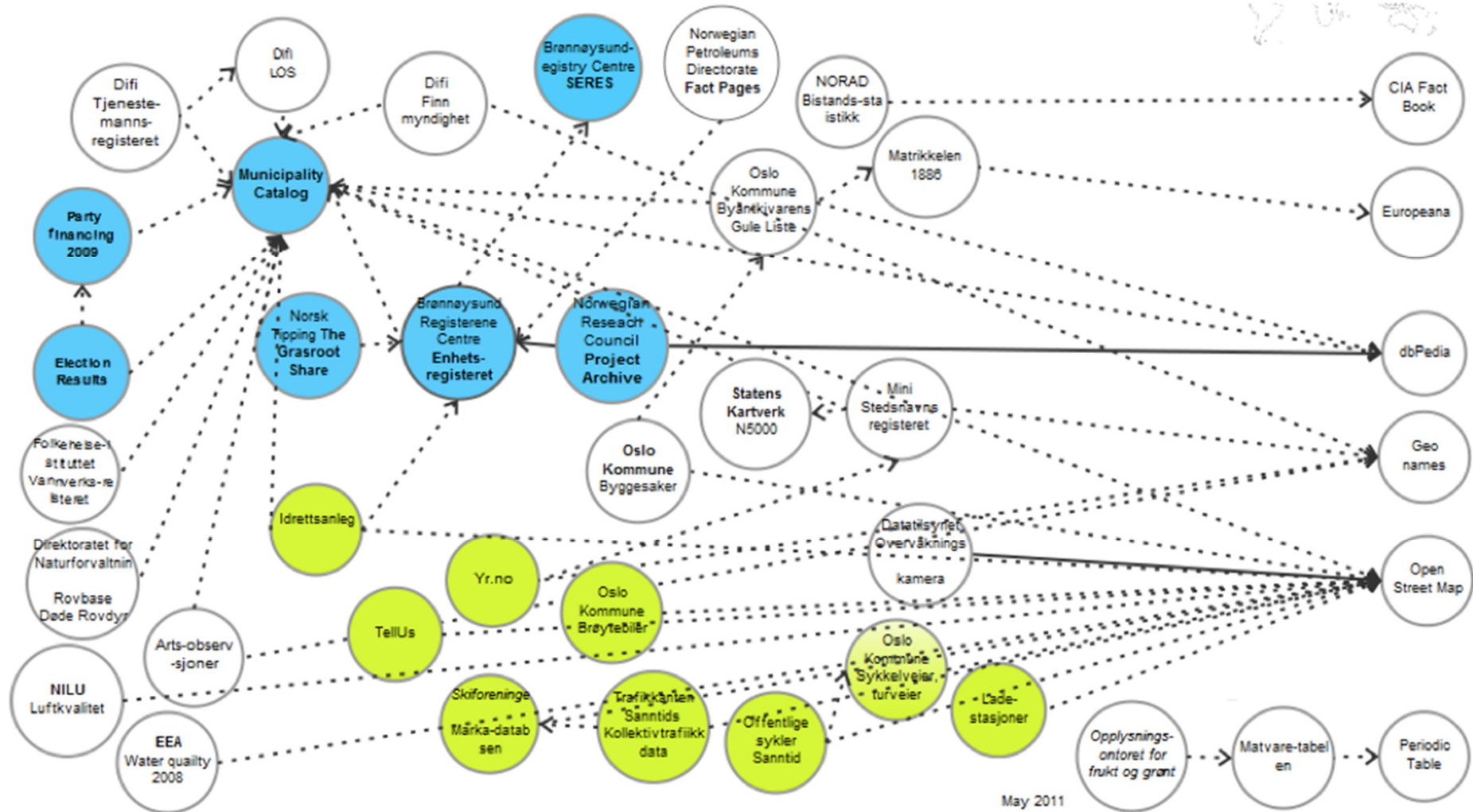


PlanetData NorthPole

The objectives of PlanetData-NorthPole are:

1. To **specify and implement two case studies** for demonstrating the use and benefits of LOD in *regional development* and *environmental friendly behaviour*, with a particular localization on Norway;
2. To **improve the existing Norwegian LOD and extend it** with new data sets to support the proposed case studies;
3. To **provide guidelines** for other countries in the use of LOD for regional development and environmental friendly behaviour applications.

Name	Owner	Format	Hosting	Estimated # of triples	Quality (stars)	Case study applicability
Enhetsregisteret	Brønnøysundregisterene	Restful RDF Web service	Brønnøysundregisterene	> 4.500.000	5	Case study #1
Kommunekatalogen	KS	XML	Univ of Oslo / Semicolon II	Ca 2.000	3	Case study #1
NFR prosjektarkiv	Norwegian Research Council	RDF	Computas/ Sesam4	Ca 200.000	5	Case study #1
Valgresultat 2005	Government	RDF	Computas/ Semicolon II	Ca 100.000	4	Case study #1
Partifinansiering 2009	Government	RDF	Computas/ Semicolon II	Ca 100.000	4	Case study #1
Grasrotandelen	Norsk Tipping	RDF	Computas/ Semicolon II	Ca 70.000	4	Case study #1
Trafikkanten sanntid	Oslo Kommune	XML, JSON	Oslo Kommune or Computas	Ca 50.000	3	Case study #2
Yr.no	Met. Inst.	XML	Univ of Oslo / Semicolon II	Ca 700.000.000	3	Case study #2
Markadatabasen sanntid	Skiforeningen	XML	Oslo Kommune or Computas	Ca 100.000	3	Case study #2
Offentlige sykler sanntid	ClearChannel	XML	Oslo Kommune or Computas	Ca 10.000	3	Case study #2
Sykkelveier, turveier	Oslo Kommune	XML	Oslo Kommune or Computas	Ca 10.000	3	Case study #2
Ladestasjoner (Sanntid)	Ladestasjoner.no	RDF	Computas/ Semicolon II	Ca 1.100	3	Case study #2
Brøytebiler Sanntid	Oslo Kommune	XML	Oslo Kommune or Computas	Ca 10.000	3	Case study #2
Tellus	Tellus	RDF	Computas/Sesam4	Ca 600.000	3	Case study #2
Idrettsanlegg	Ministry of Culture	RDF	Computas/Sesam4	Ca 1.000.000	3	Case study #2



Buiding applications - Regional development

Q: "Does regional development efforts really work long term?"

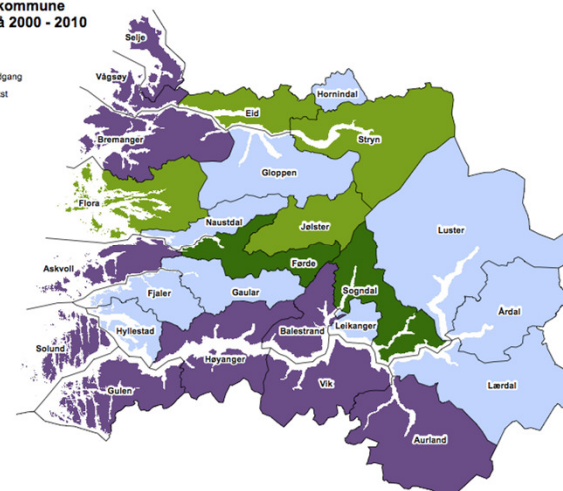
Idéa: Tools for journalists to visualize data set combinations from a municipality or county in real-time

We have access to

- Company information at Brønnøysund Registry Center (NACE codes)
- Research council funding
- Funding from gaming (to non-profit organizations)
- Catalog of municipalities
- Party financing

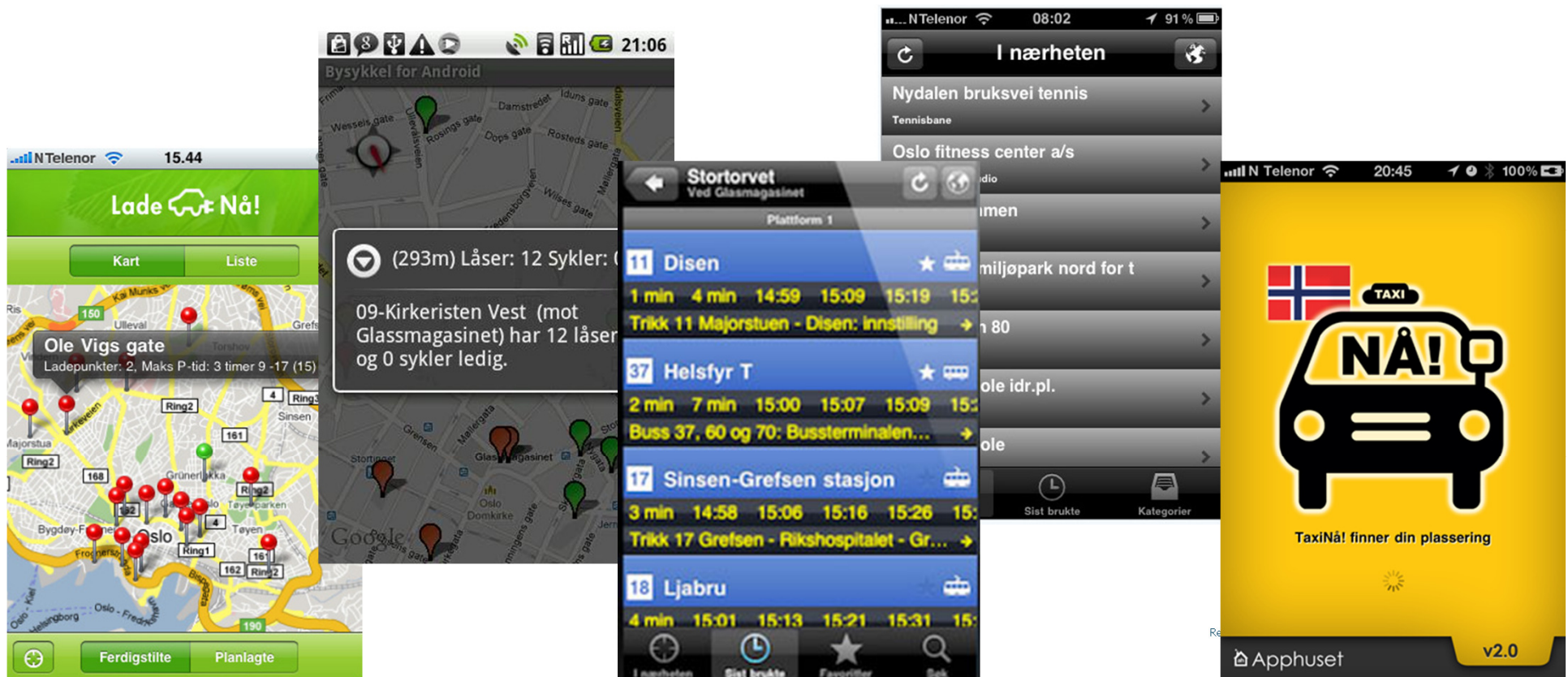


Folketalsutvikling pr kommune i Sogn og Fjordane frå 2000 - 2010



Building applications - environmental friendly behavior

Idéa: "I want to behave environmental friendly, but it's just TOO difficult!"



Challenges

- Do we have sufficient data?
 - Are they comparable and linkable?
 - Commitment from the stakeholders?
 - Visualization!
-
- Starts in **SEPTEMBER 2011**

Participate?

- When publishing portals, use RDFa