



Experiences with organizational linked data in Norway and Sweden

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Agenda

- The Semicolon project and Swedish counterpart
- National authoritative organizational registers at Brønnøysund Register Centre
- Organizational ontologies and data
- Demo



Number of inhabitants

Norway 5 million

Sweden 9 million

25	Kentucky	KY	4,380,415	39	Virginia	VA	8,185,867
26	Louisiana	LA	4,601,893	40	New Jersey	NJ	8,864,590
27	South Carolina	SC	4,723,723	41	North Carolina	NC	9,752,073
28	Alabama	AL	4,822,023	42	Michigan	MI	9,883,360
29	Colorado	CO	5,187,582	43	Georgia	GA	9,919,945
30	Minnesota	MN	5,379,139				

Norway and Sweden 14 million

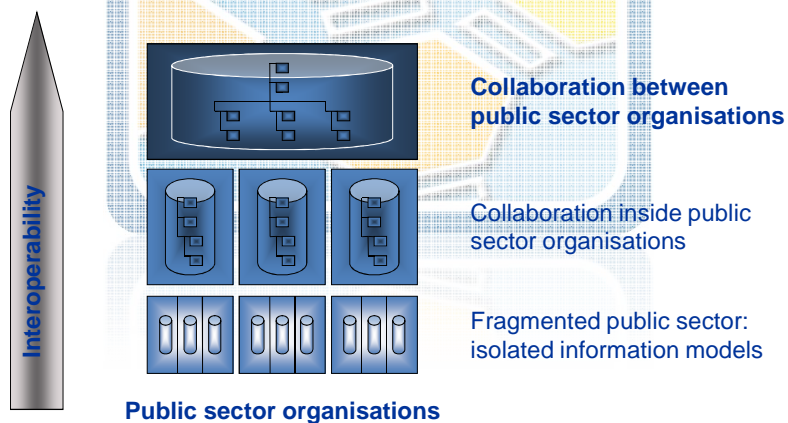
45	Pennsylvania	PA	12,763,536
46	Illinois	IL	12,875,255
47	Florida	FL	19,317,568
48	New York	NY	19,570,261

Semicolon

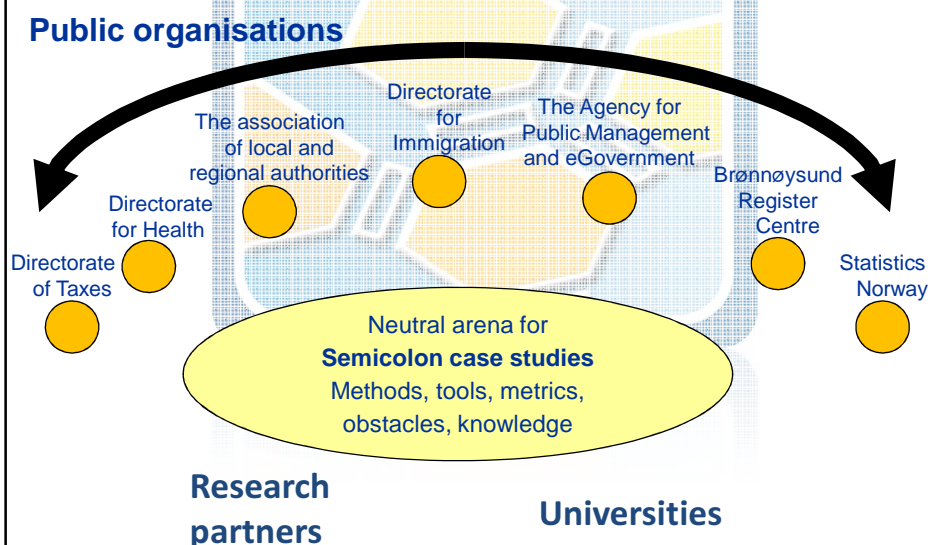
Large innovation project: Collaboration in Public Sector

Topics: politics, law, organisation, semantics, technology

Supported by the Norwegian Research Council (2007 -2013)



Semicolon, participants



Main goal of Semicolon

- Develop and test ICT-based **methods, tools and metrics** to increase collaboration and hereby obtain a more effective and efficient public sector and better and relevant services to businesses and citizens.
- Establish a set of useful recommendations for public sector as an aid to increase interoperability
 - To be maintained by *The Agency for Public Management and eGovernment (DIFI)* and the *Council of Public Sector Standards*

Characteristics of Public Sector

- Public Sector is an information factory
- Information is a critical resource
- Expectations from citizens and businesses are increasing
- Digitalization
- Digital communication as the preferred channel



The project “Open business information”

Show opportunities with open data within an agency or between agencies

Offer practical knowledge and a prototype for the continuous work on simplification reporting requirements

Standardization within Swedish public sector.

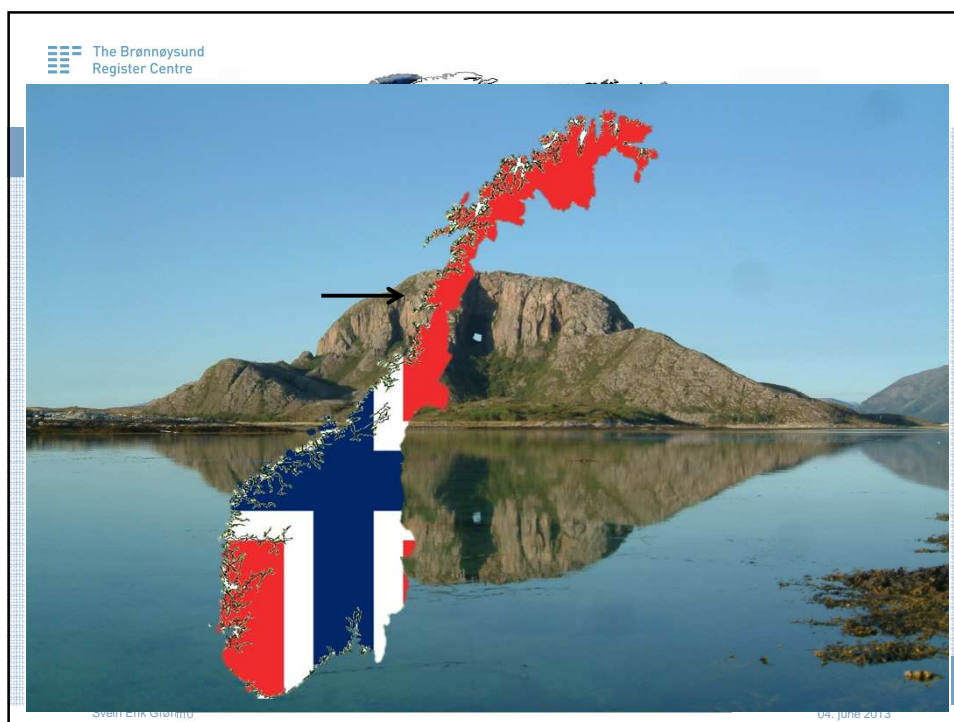
- Tax administration (coordinator)
- Swedish Companies Registration Office
- Semicolon



- Supported by Swedish Innova's program for open innovation

USA - Open Data Policy

- Information is a valuable national resource and a strategic asset to the Federal Government, its partners, and the public
- Managing government information as an asset will
 - increase operational efficiencies
 - reduce costs
 - improve services
 - support mission needs
 - safeguard personal information
 - increase public access to valuable government information



The Brønnøysund Register Centre

National authoritative registers of the Brønnøysund Register Centre

1980 - 1987	1988 - 1999	2000 - 2010
<ul style="list-style-type: none"> • Mortgaged Movable property • Marriage settlements • Company accounts • National fee collecting 	<ul style="list-style-type: none"> • Business enterprises • Non-discharged bankrupts • Debt settlements • Bankruptcies • Legal entities • EMAS • Reporting Obligations of Enterprises • Register of Hunters 	<ul style="list-style-type: none"> • Marketing Exclusion Register • Political Parties • Altinn • Complementary Practitioners • Aquaculture Register • The Register of Voluntary Organisations

Svein Erik Grønmo 04. June 2013

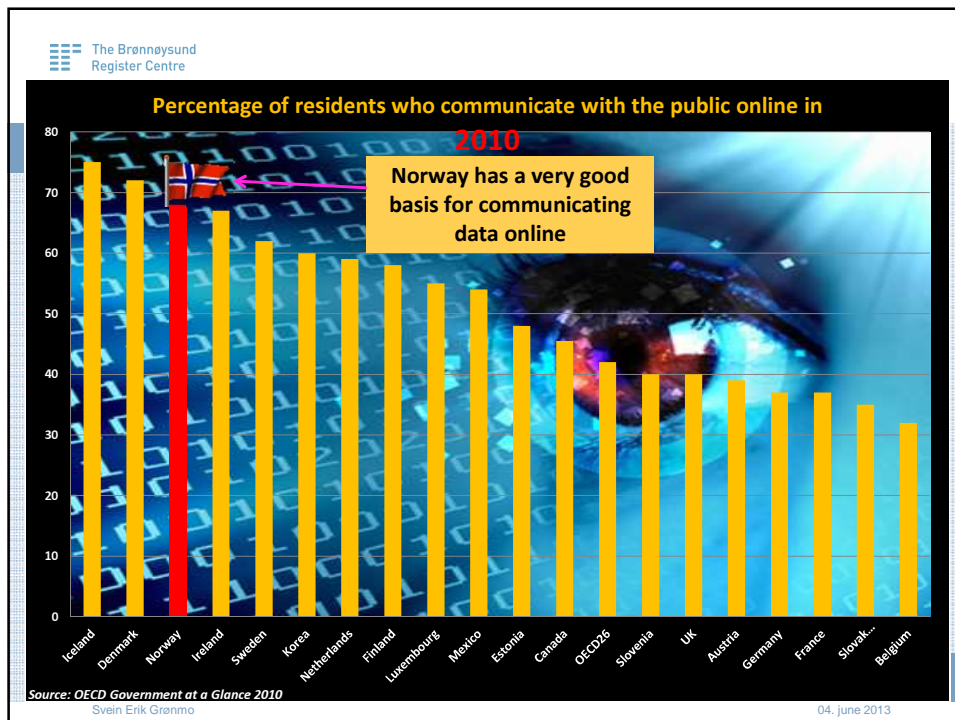
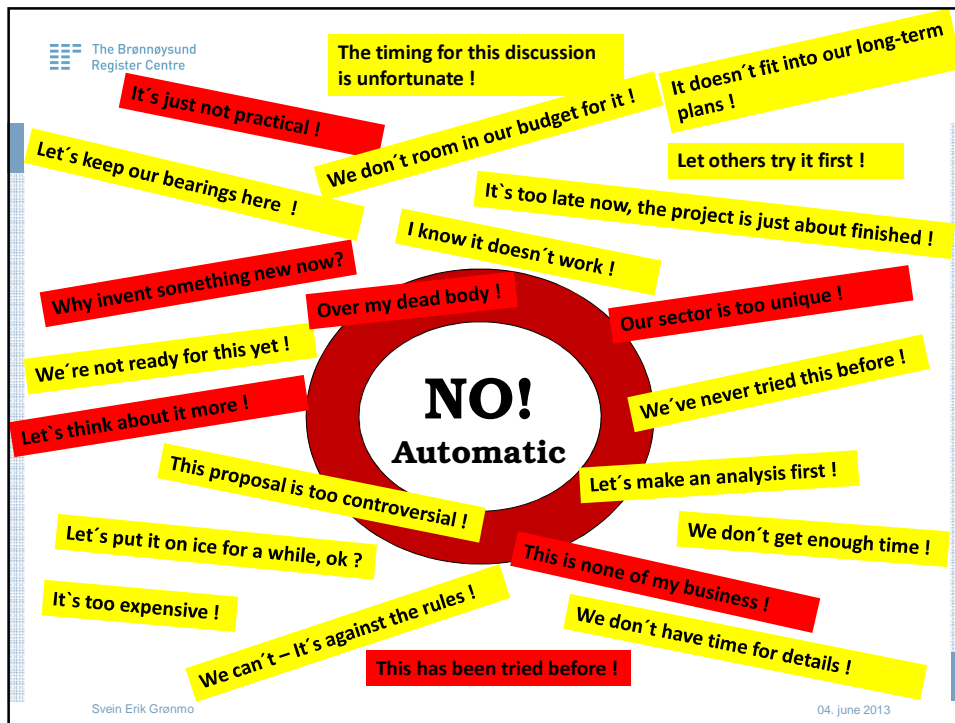
Semicolon-project Activities by Brønnøysund Register Centre

- Workshops with managers and lawyers at The Brønnøysund Register Centre
 - Discussions - Skepticism – Objections
- Brønnøysund Register Centre provided data for use in the Semicolon project
 - **The Central Coordinating Register for Legal Entities**
 - About 970 000 legal entities in Norway
 - **Register of Accounts**
 - About 250 000 accounts per year
 - About 3.5 million accounts at present
- Cooperation with the Swedish Companies Registration Office, called “Bolagsverket”
 - Exchange of experience

OBSTACLES

Three main groups:

- ❖ Technical and financial obstacles
- ❖ Legal provisions
- ❖ Cultural barriers



What's new ?

- Availability



Svein Erik Grønmo

04. June 2013



Svein Erik Grønmo

04. June 2013

What's new ?

- Availability
- Metadata

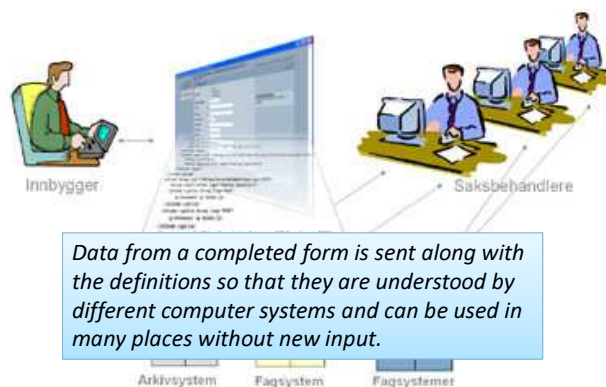


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SERES

Semantics Register for online interaction



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04. june 2013

What's new ?

- Availability
- Metadata
- Visibility



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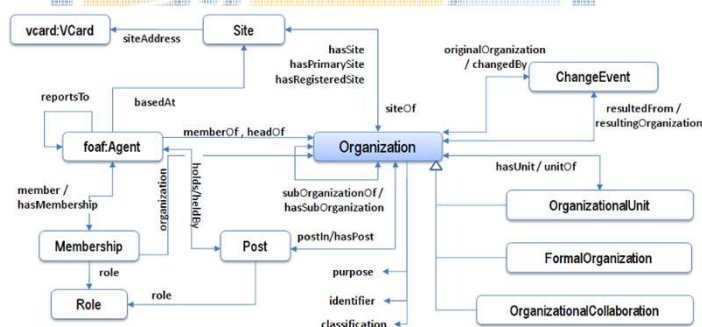
04. june 2013

What is an Organization?

“Represents a collection of people organized together into a community or other social, commercial or political structure. The group has some common purpose or reason for existence which goes beyond the set of people belonging to it and can act as an Agent. Organizations are often decomposable into hierarchical structures.”

subClassOf: [foaf:Agent](#)

From W3C – “An organization ontology”



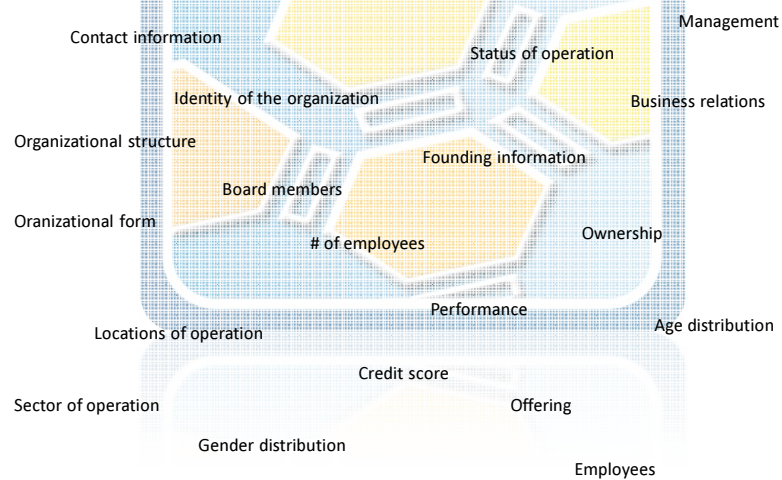
One ontology to rule them all?

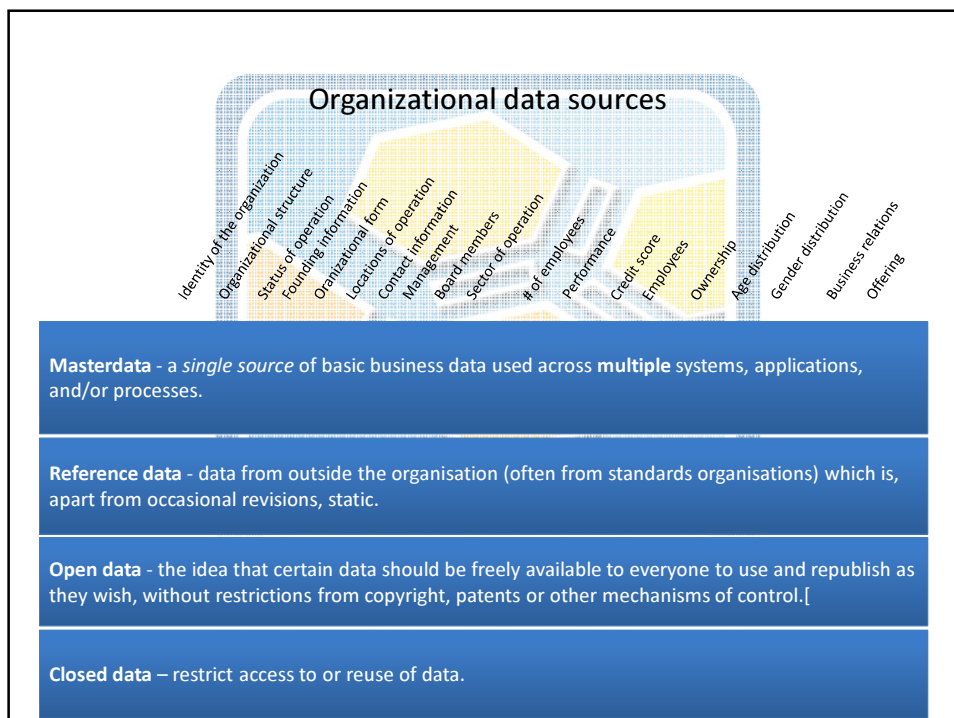
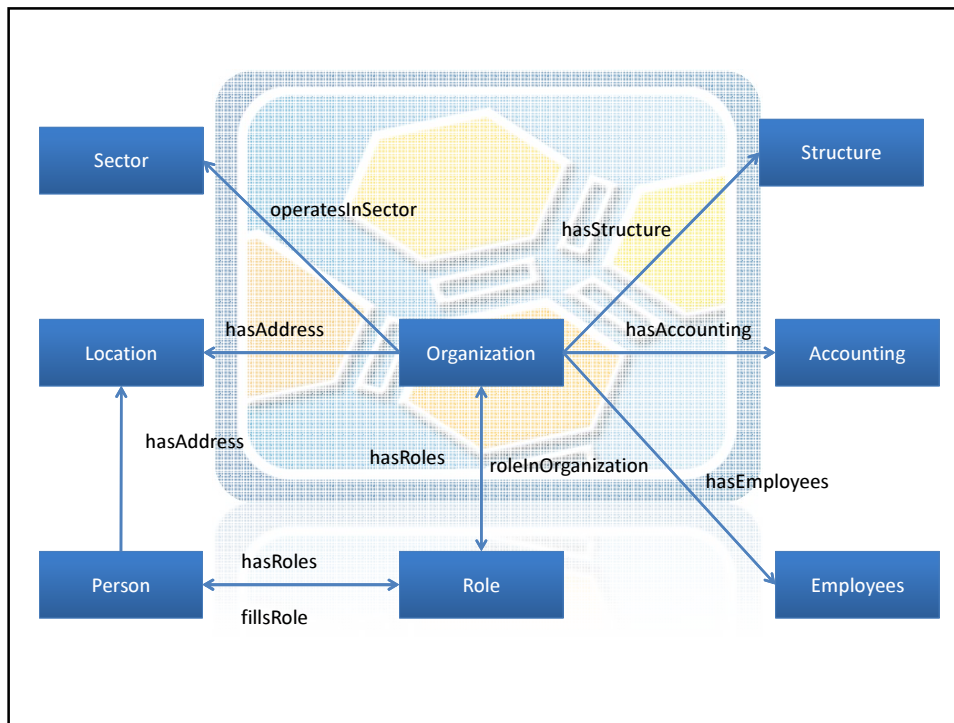
- FOAF
- W3C – an organizational ontology
- Norwegian Company register (national model)
- Enterprise models
 - Norwegian Labor and Welfare Administration (internal model)
 - Norwegian TAX administration
 - ...

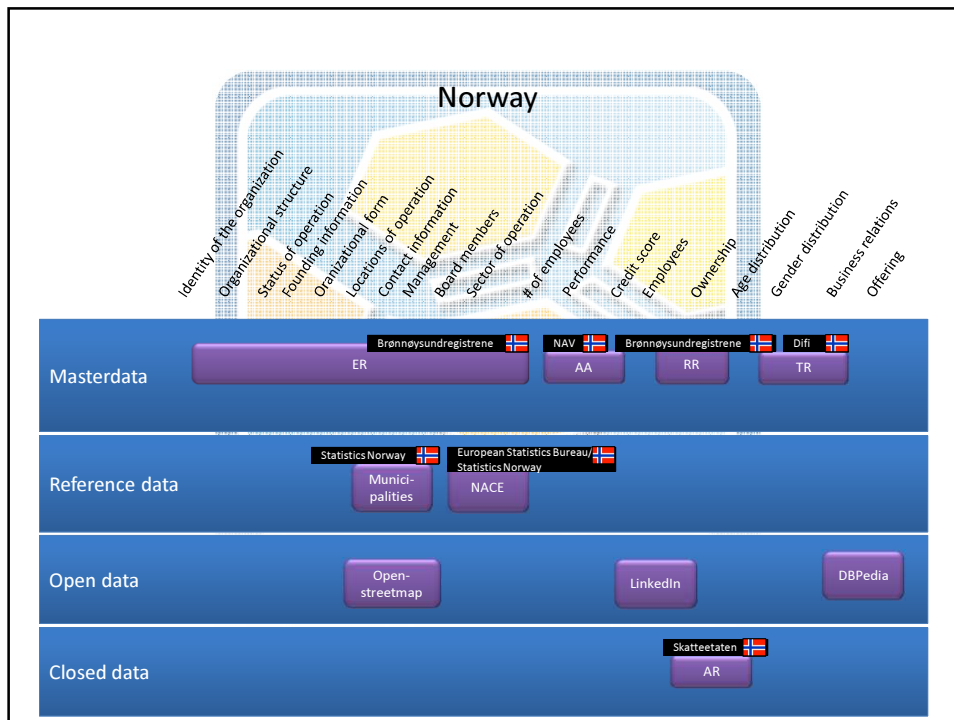


[1] <http://www.epimorphics.com/web/wiki/organization-ontology-survey>

What is organizational data?





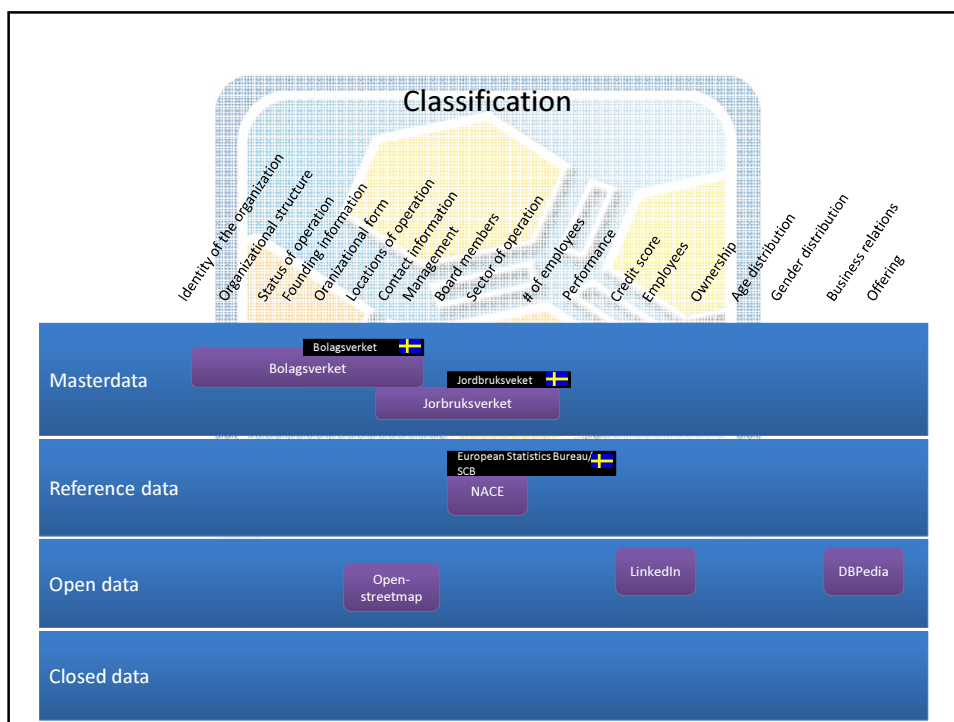


The project “Semicolon”

Publish national high-quality organizational data from accounting registry and national organizational registry

- Brønnøysund Registry Center
- Tax Administration
- Directorate of Health
- Directorate of ICT and renewal
- Municipalities (Statistics Norway)
- Universitetet i Oslo
- Universitetet i Agder
- Universitetet i Lindkjøping
- Sintef
- Karde
- Computas
- Norstella
- Det Norske Veritas
- Supported by Norwegian Research council

The map shows Norway and its neighboring countries: Iceland (Iceland), Sverige (Sweden), Suomi (Finland), Danmark (Denmark), and United Kingdom. The Norwegian Sea is also labeled. The map is credited to 2013 Google.



The project “Öppna upp företagsdata”

Show opportunities with open data within an agency or between agencies

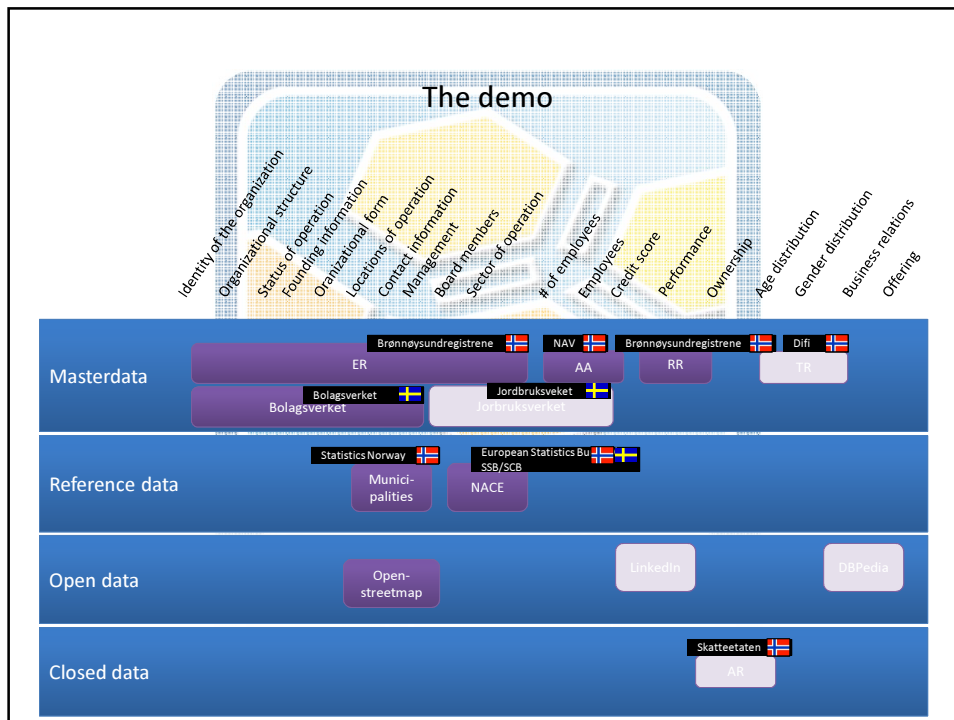
- Tax administration
- Bolagsverket (Company register)

Offer practical knowledge and a prototype for the continuous work on simplification reporting requirements

Standardization within Swedish public sector.



- Supported by Swedish Innova:s program for open innovation



Questions that can be asked

- “How many consultancy companies exist in Norway above 20 and below 500 employees?”
- “Where do I find these companies?”
- “What was their last year result?”

Tax Administration

- Combining closed data with open data to create analytical services internally in one Administration
- Tax Administration combines it's own closed Registry of Shareholders with open linked data from Company register and Accounting register

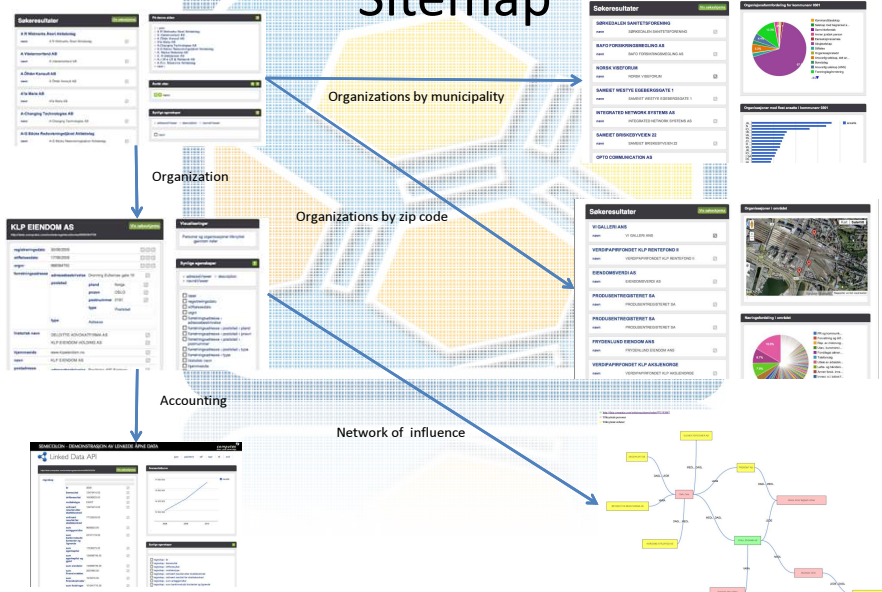
DEMO - PUBLISHING DATA

Approach and tool use

- Data transferred to triplestores from various sources
- SPARQL endpoint
 - various used : Oracle, Jena, Virtuoso
- Elda
 - Linked data API
- Sgvizler
 - Developed by University of Oslo – Martin G. Skjæveland
 - using Google Chart Tools
- Network visualization by Magnus Stuhr

About 50 mill triples

Sitemap



All organisations

Søkeresultater
Vis søkeskjema

A R Widmarks Åkeri Aktiebolag
 navn A R Widmarks Åkeri Aktiebolag

A Västermorland AB
 navn A Västermorland AB

A Öhlén Konsult AB
 navn A Öhlén Konsult AB

A'la Maria AB
 navn A'la Maria AB

A-Changing Technologies AB
 navn A-Changing Technologies AB

A-G Bäcks Redovisningstjänst Aktiebolag
 navn A-G Bäcks Redovisningstjänst Aktiebolag

På denne siden

> > prev
 > A R Widmarks Åkeri Aktiebolag
 > A Västermorland AB
 > A Öhlén Konsult AB
 > A'la Maria AB
 > A-Changing Technologies AB
 > A-G Bäcks Redovisningstjänst Aktiebolag
 > A. Bäcks Motorslip AB
 > A. N. Måttjärster AB
 > A.J. W:s Lift & Rörteknik AB
 > A.R.U. Bilservice Aktiebolag
 > next >

Sortér etter

✕ ✕ navn

Synlige egenskaper

> adresseViewer > description > navneViewer
 ✕ navn

Individual organization



KLP Kontorsfastigheter AB
Vis søkeskjema

http://data.computas.com/bolagsverket/bolag/556716-5211

registreringsdato 11/04/2008
forretningsadresse

adressebeskrivelse Pb 400 Sentrum
poststed

pland Sverige
pnavn 0130 OSLO
postnummer
type Poststed

type Adresse

adressebeskrivelse Pb 400 Sentrum
poststed

pland Sverige
pnavn 0130 OSLO
postnummer
type Poststed

type Adresse

navn KLP Kontorsfastigheter AB
note Bolaget ska bedrive fastighetsförvaltning samt därmed förenlig verksamhet.
orgnr 556716-5211

Visualiseringer

Personer og organisasjoner tilknyttet gjennom roller

Synlige egenskaper

 > adresseViewer > description
 > navneViewer
 ✕ label
 ✕ registreringsdato
 ✕ forretningsadresse > adressebeskrivelse
 ✕ forretningsadresse > type
 ✕ navn
 ✕ note
 ✕ orgnr
 ✕ rolle
 ✕ rolle
 ✕ type
 ✕ kommune
 ✕ orgform
 ✕ regnskap

Individual organization

**STAVANGER KOMMUNE
OPPVEKST OG LEVEKÅR**
<http://data.computas.com/enhetaregistrare/enhetaregistrare/874766852>

Vis søkeskjema

Visualiseringer
 Personer og organisasjoner tilknyttet gjennom roller

Map

Synlige egenskaper
 > adresseViewer > description
 > navneViewer
 label

registreringsdato 01/09/1996
stiftelsesdato 01/02/1969
orgnr 874766852
ant ansatte på dato 8594
 gyldig fra dato 16/01/2012
 ant ansatte 8594
 type AntAnsattePåDato

epost postmottak.oppvkst@stavanger.kommune.no
forretningsadresse

adressebeskrivelse Ny Olavskleiv 6
poststed

pland Norge
pnavn STAVANGER
postnummer 4008
type Poststed

type Adresse

historisk navn STAVANGER KOMMUNE KOMMUNALAVD
localized true
navn STAVANGER KOMMUNE OPPVEKST OG LEVEKÅR

Organizations in a municipality

Søkeresultater

Statoll Forsikring a.s.
navn Statoll Forsikring a.s.

DOMKIRKENS SYKEHJEM
navn DOMKIRKENS SYKEHJEM

ADVOKATFIRMAET LEGAL ANS
navn ADVOKATFIRMAET LEGAL ANS

KLINIKK STAVANGER AS
navn KLINIKK STAVANGER AS

TESTA AS
navn TESTA AS

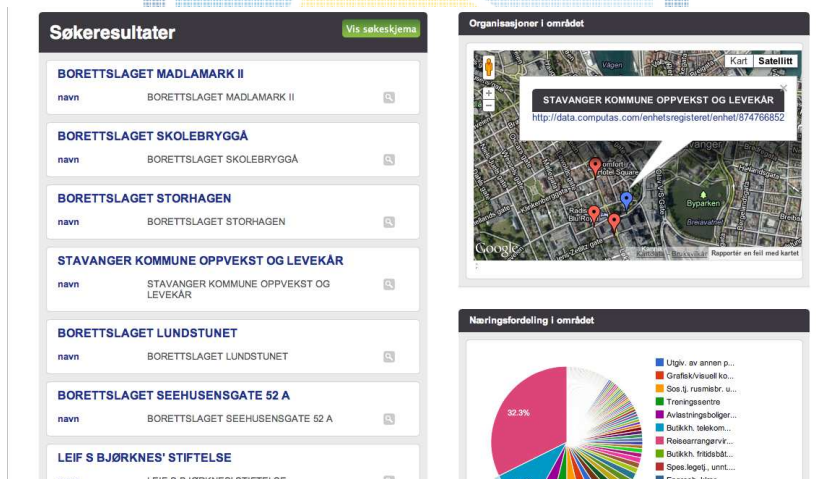
SPONSORVEKST AS
navn SPONSORVEKST AS

PRO-LONG SMØREMIDLER AS
navn PRO-LONG SMØREMIDLER AS

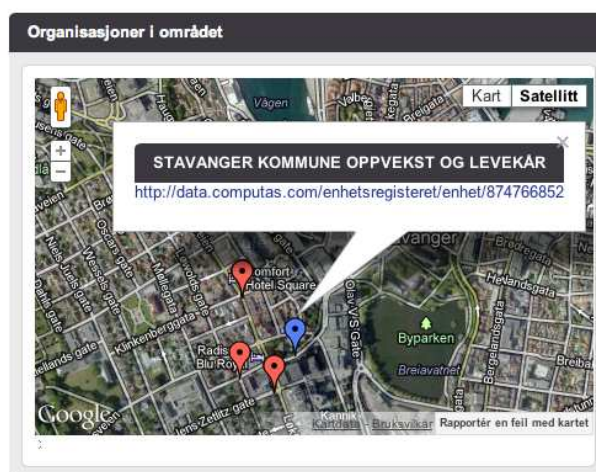
Organisasjonsfordeling for kommunen 1103

Organisasjoner med flest ansatte i kommunen 1103

Organizations at a specific zip code

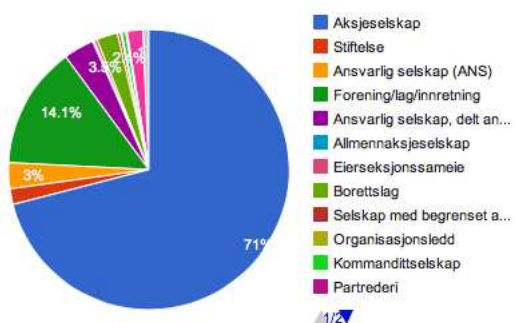


Organizations in the area



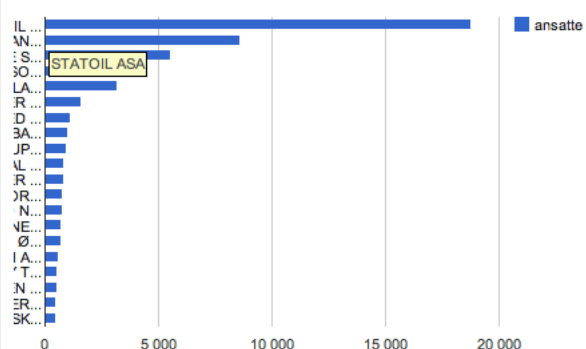
Organization form for municipality "Stavanger"

Organisjonsformfordeling for kommuner 1103



of employees in the municipality "Stavanger"

Organisasjoner med flest ansatte i kommuner 1103



Employment by sector in “Stavanger”



Adding a visualization

```

<section class="sort">
  <h1>Syssetning fordelt på næring på postnr <xsl:value-of select="$POSTNR"/>
  </h1>
  <div class="info">
    <ul>
      <li id="piechart2">
        <div id="sgvizl_query2" data-sgvizler-endpoint="http://data.computas.com:8890/sparql" style="width:454px; height:290px;"
        data-sgvizler-loglevel="4" data-sgvizler-chart="gPieChart">
          <xsl:attribute name="data-sgvizler-query">
            SELECT DISTINCT ?beskrivelse (SUM(?ant) AS ?ansatte)
            WHERE {
              ?org a org:Enhet;
              org:nacecode ?nace ;
              org:antAnsattPåDato ?antAns ;
              org:forretningsadresse ?adr .
              ?adr lok:poststed ?poststed .
              ?poststed lok:postnummer "<xsl:value-of select="$POSTNR"/>" .
              ?antAns org:antAnsatt ?ant .
              ?nace &lit;http://data.computas.com/informasjonsmodell/nace/tittel_kort> ?beskrivelse.
            } GROUP BY ?beskrivelse
            ORDER BY DESC(?ansatte)
          </xsl:attribute>
        </div>
      </li>
    </ul>
  </section>

```

Individual organization

STATOIL ASA

<http://data.computas.com/enhetsregistre/enhet/923609016>

Vis søkeskjema

registreringsdato 28/04/1988

stiftelsesdato 18/09/1972

orgnr 923609016

ant ansatte på dato 18765

gyldig fra dato 16/01/2012

ant ansatte 18765

type AntAnsatterPåDato

forretningsadresse

adressebeskrivelse Forusbeen 50

poststed

pland Norge

pnavn STAVANGER

postnummer 4033

type Poststed

type Adresse

adressebeskrivelse Forusbeen 50

poststed

pland Norge

pnavn STAVANGER

postnummer 4033

type Poststed

Visualiseringer

Personer og organisasjoner tilknyttet gjennom roller

Synlige egenskaper

adresseViewer > description

navneViewer

- label
- registreringsdato
- stiftelsesdato
- orgnr
- ant ansatte på dato > gyldig fra dato
- ant ansatte på dato > ant ansatte
- ant ansatte på dato > label
- ant ansatte på dato > type
- forretningsadresse > adressebeskrivelse
- forretningsadresse > type
- historisk navn
- hjemmeside
- navn
- postadresse > adressebeskrivelse
- postadresse > type
- regnskap > år
- regnskap > årsresultat
- regnskap > driftsresultat
- regnskap > mottakstype
- regnskap > ordinært resultat etter skattekostnad

Statoil's results

STATOIL ASA

<http://data.computas.com/enhetsregistre/enhet/923609016>

Vis søkeskjema

regnskap

år	2008
årsresultat	40637000000.00
driftsresultat	153256000000.00
mottakstype	MR
ordinært resultat etter skattekostnad	40637000000.00
ordinært resultat før skattekostnad	119946000000.00
sum anleggsmidler	468269000000.00
sum bankinnskudd kontanter og lignende	6272000000.00
sum egenkapital	182466000000.00
sum egenkapital og gjeld	544267000000.00
sum eiendeler	544267000000.00
sum finansielle anleggsmidler	326847000000.00
sum finansinntekter	10450000000.00
sum	437600000000.00

Årsresultatkurve

resultat

År	Resultat (NOK)
2008	40 637 000 000
2009	30 000 000 000
2010	38 000 000 000

Synlige egenskaper

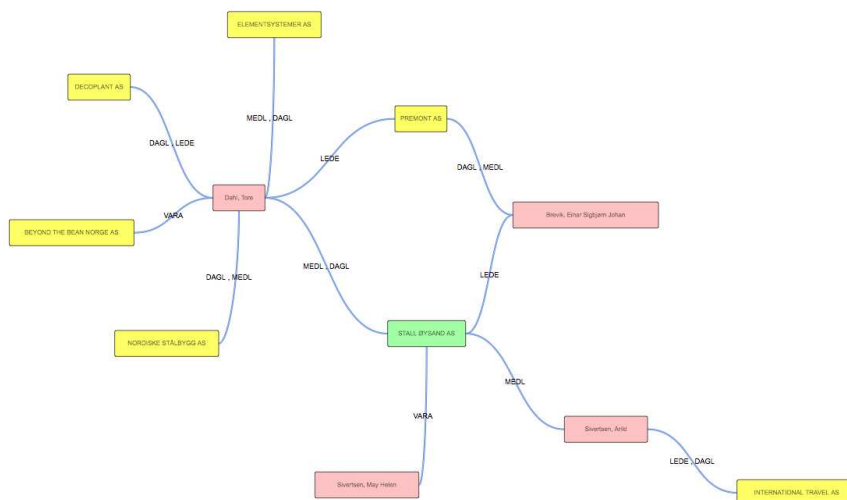
- regnskap > år
- regnskap > årsresultat
- regnskap > driftsresultat
- regnskap > mottakstype
- regnskap > ordinært resultat etter skattekostnad
- regnskap > ordinært resultat før skattekostnad
- regnskap > sum anleggsmidler
- regnskap > sum bankinnskudd kontanter og lignende

Roles in a company

<http://data.computas.com/enhetsregisteret/enhet/971193867>

Tilknyttede personer

Tilknyttede enheter



<http://data.computas.com>

SEMICOLON - DEMONSTRASJON AV LENKEDE ÅPNE DATA

computas
share your knowledge



Linked Data Server - den riktige måten å publisere data

Enhetsregisteret som Linked Open Data

Brønneysundregistrene

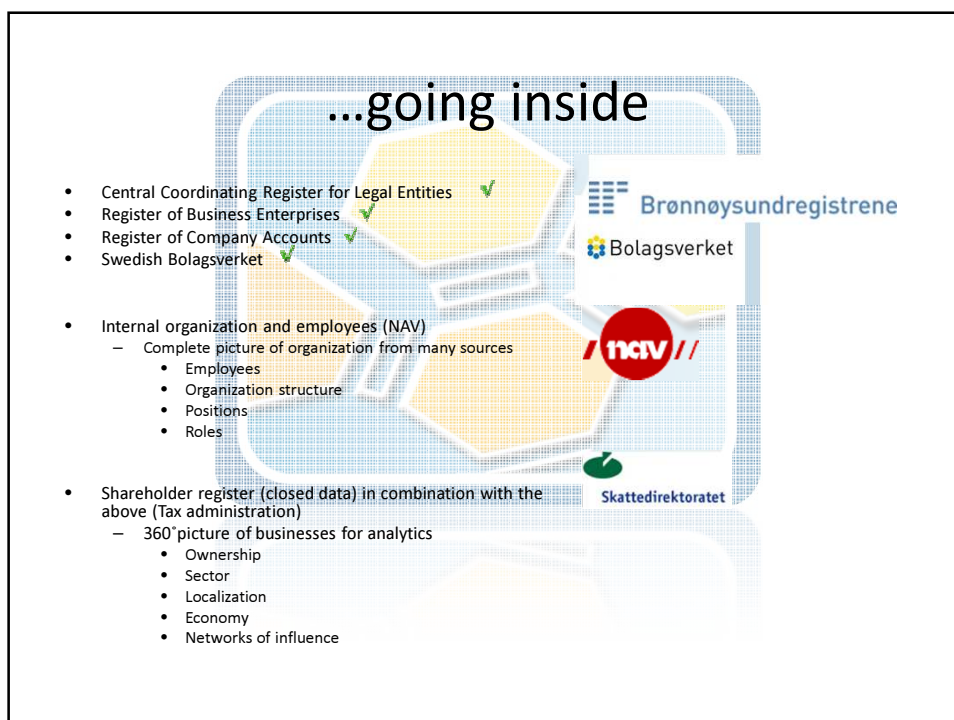
Datasettet er en kopi av Enhetsregisteret tilgjengeliggjort av Brønneysundregistrene. Kopien er fra 2012. Dataene er bearbeidet av Semicolon til skjema utviklet i SERES.

Alle enheter	enhetsregisteret/enhet
Enkelt enhet	enhetsregisteret/enhet/<orgnr>
En enhets regnskapsdata (fra Regnskapsregisteret)	enhetsregisteret/enhet/<orgnr>/regnskap
En enhets regnskap for et gitt år (fra Regnskapsregisteret)	enhetsregisteret/enhet/<orgnr>/regnskap/<år>
Enheter i en kommune	enhetsregisteret/enhet/kommune/<kommune>
Enheter på postnummer	enhetsregisteret/enhet/postnr/<postnr>
Enheter på næringskode (naoe)	enhetsregisteret/enhet/nacekode/<nacekode>
Rolle i bestemt enhet	enhetsregisteret/enhet/<orgnr>/rolle/<rollekode>
Person	enhetsregisteret/person/<personid>
Alle personer	enhetsregisteret/person

Om serveren og datasettene

Serveren tilgjengeliggjør datasett i RDF som lenkede data. Datasett er transformert til RDF. FREST-tjenestene er illustrert under, og vises her med lenker til eksempler. Ønsker du mer informasjon ta kontakt med

david.noheim@computas.com
jens.kilde.mjelva@computas.com



Thank you for your attention!

