

Strabon + NPD FactPages = ♥?

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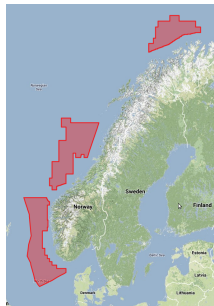
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# Outline

# Norwegian Petroleum Directorate (NPD) FactPages

- ▶ The NPD has a national responsibility for data from the Norwegian continental shelf (NCS).
- ▶ The FactPages contain data about petroleum activities on the NCS.
- ▶ Data is collected from companies that operate on the NCS.
- ▶ Important functions:
  - ▶ forms the basis for the authorities' planning of future activity and their judgement of existing activity,
  - ▶ makes companies share information,
  - ▶ provides information to the general public.
- ▶ Acts as a national reference data library for information about the NCS.
- ▶ Open licensed data.
- ▶ <http://factpages.npd.no/>



# Relevant NPD data

- ▶ Geographical data in WKT, e.g.,
  - ▶ MULTIPOLYGONS: fields, licences, seismic surveys
  - ▶ POINTS: wells (well head)
  - ▶ LINESTRINGs: pipelines
  - ▶ MULTILINESTRINGs: seismic surveys
- ▶ Temporal data, historical data from 1970s–today:
  - ▶ Date for start/end of drilling/survey/licence/...
  - ▶ Production data (volumes of petroleum) per month/year

# Outline

# NPD FactPages as Semantic Web Data

- ▶ Public showcase for Optique.
- ▶ Converted to Semantic Web Data. Available as
  - ▶ CSV (original data source)
  - ▶ MySQL database (schema, data, load script)
  - ▶ RDF (file dump, SPARQL endpoint, LOD frontend)
  - ▶ OWL ontologies
- ▶ <http://sws.ifi.uio.no/project/npd-v2/>

# Questions from Statoil

- ▶ Querying *geospatial* information.
- ▶ Displaying the output on the map
- ▶ Some examples of queries:
  - ? Plot all licences (multipolygon) on map,
    - ▶ colour operator=Statoil or licensee=Statoil differently,
    - ▶ for each licence give a pie chart (on map) showing owner shares.
  - ? Plot all wellbores (points).
  - ? Plot wellbores contained in a given multipolygon.

# Outline



# Strabon: A semantic DBMS for geospatial and temporal data

Key Strabon features:

- ▶ Storing geospatial information following **OGC standards** (GML, WKT)
- ▶ Querying geospatial information using
  - ▶ stSPARQL or GeoSPARQL queries
  - ▶ a wide set of spatial functions
- ▶ Displaying geometries and auxiliary information on the **map**
- ▶ Supports **valid time**

**DEMO**

## The valid time dimension

Retrieve the name of the **current** operator Company for all licenses in the dataset

```
SELECT ?licenceURI ?name
WHERE
{
  ?operatorURI npdv:operatorForLicence ?licenceURI ;
              npdv:licenceOperatorCompany ?company;
              npdv:name ?name ;
              npdv:dateOperatorValidFrom ?date .
  { SELECT ?licenceURI (max(?d) AS ?maxOperatorDate)
    WHERE {
      ?operator a npdv:ProductionLicenceOperator;
      npdv:dateOperatorValidFrom ?d ;
      npdv:operatorForLicence ?licenceURI
    }
  }
GROUP BY ?licenceURI
}
FILTER (?date = ?maxOperatorDate)
}
```

## Using the "t" of stRDF and stSPARQL

Using the valid time dimension of stSPARQL, the query can be written as follows:

```
SELECT ?licenceURI ?name
WHERE
{
  ?operatorURI npdv:operatorForLicence ?licenceURI ;
  npdv:licenceOperatorCompany ?company ?t;
  npdv:name ?name .
  FILTER (strdf:during(NOW, ?t))
}
```

# Challenges for Strabon

Possible extensions:

- ▶ Support for 3D geometries
- ▶ Visualization of statistical data using diagrams (e.g., show the shares of companies in license areas)

# Getting started with NPD FactPages

Thank you!!!

- ▶ <http://sws.ifi.uio.no/project/npd-v2/>
- ▶ <http://sws.ifi.uio.no/project/npd-v2/event/20130610/>  
contains some queries and resources relevant for questions.
- ▶ NPD Strabon demo: <http://test.strabon.di.uoa.gr/>
- ▶ NPD Sextant demo: [http://test.strabon.di.uoa.gr/sextant/?map=mj9rhnbufntm6ig\\_](http://test.strabon.di.uoa.gr/sextant/?map=mj9rhnbufntm6ig_)