Strabon + NPD FactPages = ❤️?

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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
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 licencee=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=mj9rhnbuffntm6ig_