Modelling «Base Bibliotek» as Linked Data

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This presentation is based on an abstract and a project carried out by:

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Base Bibliotek

Library Services from the National Library of Norway

Directory of Norwegian Libraries and their ILL Associates Abroad (BIBLIOTEK)

You may search for words containing diacritical marks and accents by using the basic letter. E.g., use a for searches on Å, Å, Æ, and ø. Use c for ç, n for ñ and ñ, and ss for German ß.

You may also click on the letters å, ë, æ, ø, and ò to have them pasted into the search fields.

Masking and Boolean operators may be used. Use ? and # for left-, middle and right truncation.

Word search:
Name of library:
Place name:

Countries:
- Denmark
- Finland
- Faroe Islands

Library type:
- Libraries in Archives
- Colleges
- County libraries

[AND / OR between the fields]

Submit Reset

http://www.nb.no/baser/bibliotek/english.html
## Base Bibliotek

<table>
<thead>
<tr>
<th><strong>Name:</strong></th>
<th>Bibliotek</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Title:</strong></td>
<td>Directory of Norwegian libraries and their ILL associates abroad (&quot;Bibliotek&quot;)</td>
</tr>
<tr>
<td><strong>Type:</strong></td>
<td>Directory</td>
</tr>
<tr>
<td><strong>Subjects:</strong></td>
<td>All Norwegian public, research and special libraries, university, polytechnic and folk high school libraries, some libraries of elementary and secondary schools. Also libraries that participate in the Nordic union catalogue of serials (NOSP) and other foreign libraries lending in Norway or using the National Library services</td>
</tr>
<tr>
<td><strong>Extension:</strong></td>
<td>For Norwegian libraries: Name of institution (including former name), postal address, street address, telephone number, fax number, e-mail address, web-address (URL), library code (including former code), opening hours, subject fields, special collections, special bibliographies and documentation services. Information on libraries outside Norway is less extensive</td>
</tr>
<tr>
<td><strong>Special search facilities:</strong></td>
<td>Library code, name of institution (also foreign name form), address, telephone number, e-mail address, web site, subject field (in Norwegian only), library system, subject field, county and municipality name</td>
</tr>
<tr>
<td><strong>Updating:</strong></td>
<td>Daily</td>
</tr>
<tr>
<td><strong>No of records Jan 1st:</strong></td>
<td>4,955</td>
</tr>
<tr>
<td><strong>Printed products:</strong></td>
<td>Basis of &quot;Norsk samkatalog : adresseliste for samarbeidende bibliotek ...&quot; [&quot;Norwegian union catalogue : a directory to participating libraries ...&quot;] and &quot;NOSP 19XX : adresseliste til norskse bibliotek = Directory to Nordic libraries&quot;</td>
</tr>
<tr>
<td><strong>CD-ROM:</strong></td>
<td>Library addresses for ordering are included in &quot;Nordisk samkatalog for periodika (CDNOSP) = Nordic union catalogue of serials&quot; (last edition: 2000, no. 1) and &quot;Norsk samkatalog for bøker 1983- (CDSAM) = Norwegian union catalogue of books 1983.&quot; (last edition: 2000, nr 2)</td>
</tr>
<tr>
<td><strong>Database system:</strong></td>
<td>TRIP</td>
</tr>
<tr>
<td><strong>Availability:</strong></td>
<td>Open to the general public</td>
</tr>
<tr>
<td><strong>Web address:</strong></td>
<td><a href="http://www.nb.no/baser/bibliotek/english.html">http://www.nb.no/baser/bibliotek/english.html</a></td>
</tr>
</tbody>
</table>
## Nordic ILL Facts

<table>
<thead>
<tr>
<th>BIBLIOTEK: R=426</th>
<th>Avansert søk</th>
<th>Norsk søk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corrections and Additions</td>
<td>ILL guidelines</td>
<td>Other databases</td>
</tr>
<tr>
<td>New library entry</td>
<td>Order Archive</td>
<td>New Search</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NOSP library code:</th>
<th>No UBIT/TEK</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIBSYS Library ID:</td>
<td>Tek</td>
</tr>
<tr>
<td>OCLC library code:</td>
<td>N5T</td>
</tr>
<tr>
<td>ISIL-number for Norway:</td>
<td>NO-1160101</td>
</tr>
<tr>
<td>Lending Unit code:</td>
<td>tek</td>
</tr>
<tr>
<td>Closed for ILL until:</td>
<td></td>
</tr>
<tr>
<td>Type of library:</td>
<td>University Library</td>
</tr>
<tr>
<td>Owner code:</td>
<td>TEK</td>
</tr>
<tr>
<td>Subject sphere:</td>
<td>Technology</td>
</tr>
</tbody>
</table>

### Name of Library:

- Teknisk hovedbibliotek

### P.O. Box address, and address for mail to be picked up in Post office:

- Hågskoleringen 1, Glåshaugen
- NO-7034 TRONDHEIM - Norway

### Phone Numbers:

- Main number: 0047.73 59 51 00
- For information / reference: 0047.73 59 51 00
- For Interlending Unit: 0047.73 59 51 00
- Telex number: 0047.73 59 51 55 (prioritert)

### E-mail address - general:

- tekhb@ub.ntnu.no
- fjernian@ub.ntnu.no

### Links - to the Library's:

- Catalogue(s):
- User account:
- Presentation of the library:

- Homepage and presentation picture
- Mats of loans and self-served renewals and reservations
- The Library houses the largest collection of technical literature in Norway, as well as comprehensive collections within other subject areas.
- Special Collections, archives etc.:
- Library's catalogue system:

- Patents and standards
- BIBSYS

### ILL / Document Delivery Policy:

- Interlibrary loans for home lending to libraries/institutions in the whole world.
- Photocopy delivery directly to end-user in the whole world. Article copies

[More information](http://nabo.nb.no/trip?_t=0&_b=BIBLIOTEK&_s=E&_r=426)
Base Bibliotek

<record rid="426" tstamp="2009-05-05 08:24:19">
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<bibkode>UBIT/TEK</bibkode>
<bibltype>UNB</bibltype>
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<gaby>63.419495379</gaby>
<katsyst>BIBSYS</katsyst>
<startaar>1912</startaar>
<kommnr>1601</kommnr>
$url_bilde>http://www.ntnu.no/infoavdelingen/pressesenter/bildebase/NTNUbygninger/Hovedbygningen_fra_oest_a.jpg</url_bilde>
<inst>Universitetsbiblioteket i Trondheim
Teknisk hovedbibliotek</inst>
<inst_eng>NTNU Library.Main Library for Technology</inst_eng>
...

(Selection of elements from XML-document)
Base Bibliotek -> Linked data

Linked Data

The Semantic Web isn't just about putting data on the web. It is about making links, so that when you have some of it, you can find other, related data.

Like the web of hyperlinks, the web of data is constructed with documents on the web. But relationships exist between documents as well as in external relationships. So data links between objects or concepts. But for names, or for data, the constraints apply to make the web simple.

1. Use URLs as names for things.
2. Use HTTP URLs so that people can look up those names.
3. When someone looks up a name, provide useful information, using the standards described in the previous points.
4. Include links to other URLs, so that they can discover more things.

Simple. In fact, though, a surprising amount of data isn't linked in 2006, because of problems. Details of implementation, and factors affecting choices about how you present the data.
Modelling

1. Data analysis and preparation
   - traditional usage, functional requirements, datatypes etc.
   - identifying potential URIs
   - identified existing vocabularies
   - (identified potential external links/URIs)
2. RDFization
3. Ontology development
4. XSLT stylesheet/transformation
5. Triple store
6. SPARQL testing
7. Remodeling
Analysis and preparation

Selection of data for experimental dataset
identifiers, 2 x names, 2 x addresses, geodata, e-mails, homepage, type of ils,
type of library, z39.50-targets, (n)ill specifications etc.

Geo-data in UTM format transformed to lat/long

<gabx>270592</gabx>  <geo:lat>10.401926051</geo:lat>
<gaby>7040568</gaby>  <geo:long>63.419495379</geo:long>
URIs assigned to «things» in the dataset; libraries, library types, integrated library systems, postal codes, country codes

• HTTP URIs
• Hierarchical structure
• Derived from existing non-URI identifiers
• Simple naming pattern

Based on:

Linked Data Patterns
Leigh Dodds Ian Davis

A pattern catalogue for modelling, publishing, and consuming Linked Data

http://patterns.dataincubator.org/book/
URIs

Example:

<http://bb.biblab.no/lib/1160101> a foaf:Organization ;
#Derived from <bibnr>1160101</bibnr>

bb:ils <http://bb.biblab.no/ils/BIBSYS> ;

v:adr [ a v:home ;
  v:Street "Høgskoleringen 1, Gløshaugen" ;

Challenge:
Algorithmic derivation \( \rightarrow \) «Garbage in, garbage out»
Vocabularies

@prefix foaf: <http://xmlns.com/foaf/0.1/#>
@prefix v: <http://www.w3.org/2006/vcard/ns#>
@prefix geo: <http://www.w3.org/2003/01/geo/wgs84_pos#>
@prefix bb: <http://basebibliotek.no/bb/1.0/#>
@prefix skos: <http://www.w3.org/2004/02/skos/core#>
RDFization

v:adr [ a v:home ;
   v:Street "Høgskoleringen 1, Gløshaugen" ;

<http://bb.biblab.no/postal-code/7034> v:postal-code "7034" ;
V:Locality "Trondheim" .

Normalization of RDF? 3NF?
Norwegian names and visitation addresses to libraries in Oslo using the integrated library system «Bibliofil»

Virtuoso SPARQL query form:

```
prefix foaf: <http://xmlns.com/foaf/0.1/#>
prefix bb: <http://basebibliotek.no/bb/1.0/#>
prefix v: <http://www.w3.org/2006/vcard/ns#>

SELECT ?name ?street ?pcode ?place WHERE
{?bibliotek a foaf:Organization ;
  foaf:name ?name ;
  v:adr ?address ;
  FILTER ( lang(?name) = "no" )
  ?address a v:home ;
  v:Street ?street ;
  v:postal-code ?code .
  ?code v:postal-code ?pcode ;
  v:Locality ?place .
  FILTER regex( ?place, "oslo", "i" )}
ORDER BY ?name
```
<table>
<thead>
<tr>
<th>name</th>
<th>street</th>
<th>pcode</th>
<th>place</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deichmanske bibliotek Hovedbiblioteket</td>
<td>Arne Garborgs plass 4</td>
<td>0179</td>
<td>OSLO</td>
</tr>
<tr>
<td>Deichmanske bibliotek Det fierspråklige bibliotek</td>
<td>Arne Garborgs plass 4</td>
<td>0179</td>
<td>OSLO</td>
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<tr>
<td>Deichmanske bibliotek Bjørke filial</td>
<td>Trondheimsveien 275</td>
<td>0589</td>
<td>OSLO</td>
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<tr>
<td>Deichmanske bibliotek Gamle Oslo filial</td>
<td>Hagegata 32</td>
<td>0653</td>
<td>OSLO</td>
</tr>
<tr>
<td>Deichmanske bibliotek Oppsal filial</td>
<td>Vetlandsveien 99-101</td>
<td>0685</td>
<td>OSLO</td>
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<tr>
<td>Deichmanske bibliotek Romsås avdeling</td>
<td>Romsås Senter 1</td>
<td>0970</td>
<td>OSLO</td>
</tr>
<tr>
<td>Deichmanske bibliotek Røa filial</td>
<td>Austliveien 4</td>
<td>0751</td>
<td>OSLO</td>
</tr>
<tr>
<td>Deichmanske bibliotek Stovner filial</td>
<td>Stovner senter 24B</td>
<td>0985</td>
<td>OSLO</td>
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<tr>
<td>Deichmanske bibliotek Torshov/Sandaker filial</td>
<td>Sandakerveien 59</td>
<td>0477</td>
<td>OSLO</td>
</tr>
<tr>
<td>Deichmanske bibliotek Avdeling Rikshospitalet Pasientbibliotek</td>
<td>Sognsvannsvn 20</td>
<td>0372</td>
<td>OSLO</td>
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<tr>
<td>Deichmanske bibliotek Barne- og ungdomsavdelingen</td>
<td>Arne Garborgs plass 4</td>
<td>0179</td>
<td>OSLO</td>
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<td>Deichmanske bibliotek Majorstuen filial</td>
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<td>0363</td>
<td>OSLO</td>
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<td>Deichmanske bibliotek Bøler filial</td>
<td>Bølerlia 3C</td>
<td>0691</td>
<td>OSLO</td>
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<td>Deichmanske bibliotek Furuset filial</td>
<td>Trygve Lics plass 1</td>
<td>1051</td>
<td>OSLO</td>
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<td>Deichmanske bibliotek Grùnerløkka filial</td>
<td>Schous plass 10</td>
<td>0552</td>
<td>OSLO</td>
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<tr>
<td>Deichmanske bibliotek Smestad barnefilial</td>
<td>Konventveien 27</td>
<td>0377</td>
<td>OSLO</td>
</tr>
<tr>
<td>Deichmanske bibliotek Holmlia filial</td>
<td>Holmlia Sentervei 16</td>
<td>1255</td>
<td>OSLO</td>
</tr>
<tr>
<td>Deichmanske bibliotek Lambertsater filial</td>
<td>Cecilie Thoresens vei 12</td>
<td>1153</td>
<td>OSLO</td>
</tr>
<tr>
<td>Deichmanske bibliotek Nordtvet filial</td>
<td>Nordtvetveien 28</td>
<td>0952</td>
<td>OSLO</td>
</tr>
<tr>
<td>Deichmanske bibliotek Bjørnholt bibliotek</td>
<td>Slimeveien 15-17</td>
<td>1275</td>
<td>OSLO</td>
</tr>
<tr>
<td>Norsk lyd- og blindeskriftbibliotek Studenttjenesten</td>
<td>Observatoriegata 1 B</td>
<td>0254</td>
<td>OSLO</td>
</tr>
<tr>
<td>Norsk lyd- og blindeskriftbibliotek NLB Oslo - Hovedutlånet</td>
<td>Observatoriegata 1 B</td>
<td>0254</td>
<td>OSLO</td>
</tr>
<tr>
<td>Norsk riksskringkasting Biblioteket</td>
<td>Bjørnstjerne Bjørnsons plass 1</td>
<td>0340</td>
<td>OSLO</td>
</tr>
</tbody>
</table>
Where are the killer apps?

Søk i Base Bibliotek vha Linked Data

Kartsøk

Navn / biblioteknummer

Klikk på kart for å finne de fem nærmeste bibliotek.

1. Universitetsbiblioteket i Trondheim Teknisk hovedbibliotek
2. Norsk Riksskringkasting Arkiv & Research Biblioteket - Tyholttarkivet
3. Trondheim folkebibliotek
4. Universitetsbiblioteket i Trondheim Biblioteket for maritim teknikk
5. Sør-Trøndelag fylkesbibliotek

By David Massey: http://bibin.hio.no/~davm(bb/bb2.html

+ bb:z_target!
External links and «Open data» vs. «Linked data»

To do:
<http://bb.biblab.no/libtype/UNB> a bb:Libtype ;
    skos:prefLabel "UNB" ;
    skos:altLabel "Universitetsbibliotek" ;

<http://bb.biblab.no/lib/1160101> a foaf:Organization ;
    foaf:based_near <http://sws.geonames.org/3133880/> ;
    v:adr [a home ;
    v:Street "Høgskoleringen 1, Gløshaugen" ;
The four rules/expectations of behavior

1. Use URIs as names for things
   - To do!

2. Use HTTP URIs so that people can look up those names
   - To do!

3. When someone looks up a URI, provide useful information, using the standards (RDF, SPARQL)
   - To do!

4. Include links to other URIs, so that they can discover more things
   - To do!

Tim Berners Lee: http://www.w3.org/DesignIssues/LinkedData.html
Thank you!

kim.talleras@jbi.hio.no