

# Why libraries should embrace Linked Data

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# Why LIBRIS likes Linked Data

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# LIBRIS

- Swedish National Union Catalog
- 170 libraries
- 6 million bib records
- 20 million holdings
- 250k authority records
- National bibliography

# LIBRIS

- Library directory
- Library infrastructure ("metadata switch")
- Online public access (for humans) since 1997
- Marc21 since 2001
- Linked Data since 2008

# What is Linked Data?

*From [http://en.wikipedia.org/wiki/Linked\\_Data](http://en.wikipedia.org/wiki/Linked_Data):*

Linked Data is a term used to describe a method of exposing, sharing, and connecting data on the Web via dereferenceable URIs.

# Four principles of Linked Data (TBL 2006)

- Use URIs as names for things
- Use HTTP URIs so that people can look up those names.
- When someone looks up a URI, provide useful information.
- Include links to other URIs, so that they can discover more things.

# Why use Linked Data for your library catalog?

# New LIBRIS, dec 2007

LIBRIS 

LIBRIS SÖKTJÄNSTER | HJÄLP | IN ENGLISH | ANPASSA | RENSA HISTORIK

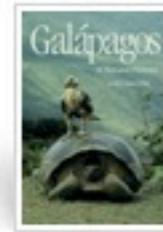
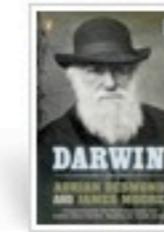
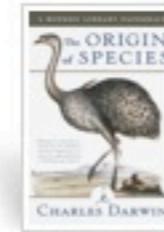
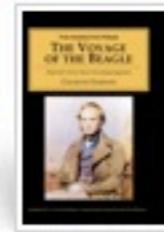
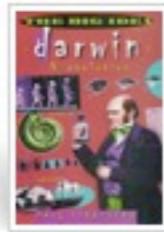
Start Utökad sökning Bläddra ämnesvis Index A-Ö Boolesk Deldatabaser Sökhistorik

Sök ?

 **Utforska**  
Här finns böcker, avhandlingar, tidskrifter, noter, e-böcker m.m.  
[Vi guidar dig in i LIBRIS](#)

 **Anpassa**  
Ett LIBRIS efter dina behov – favoritbibliotek, kontrast ...  
[Kontrast](#) | [Vyer](#) | [Mina bibliotek](#)

 **Vad är LIBRIS?**  
De svenska universitets- och forskningsbibliotekens söktjänst  
[Läs mer om LIBRIS](#) | [Tyck till!](#)



Charles Darwins 200-årsjubileum

Ny kartfunktion Charles Darwin 200 år LIBRIS snabbguide Nya svenska böcker

Design a thing by considering it in its next largest context—a chair in a room, a room in a house, a house in an environment, environment in a city plan.

*- Eiel Saarinen*

This means...

A library catalog must  
be designed by  
considering its context  
of the Web.

The question is not  
“What is a catalog?”  
but “What can a  
catalog become?”

# What is the Web?

- An infrastructure for moving bits
- An environment for communication, information dissemination, etc...
- The Web is social
- The Web is a network
- The Web is made of links
- Open system, anyone can join / link

# Catalogs in Web context

- Need to be open (Get your data out!)
- Need to be linkable
- Needs to provide links
- Must be part of the network
- Can not be an end in itself
- Allow for hackability

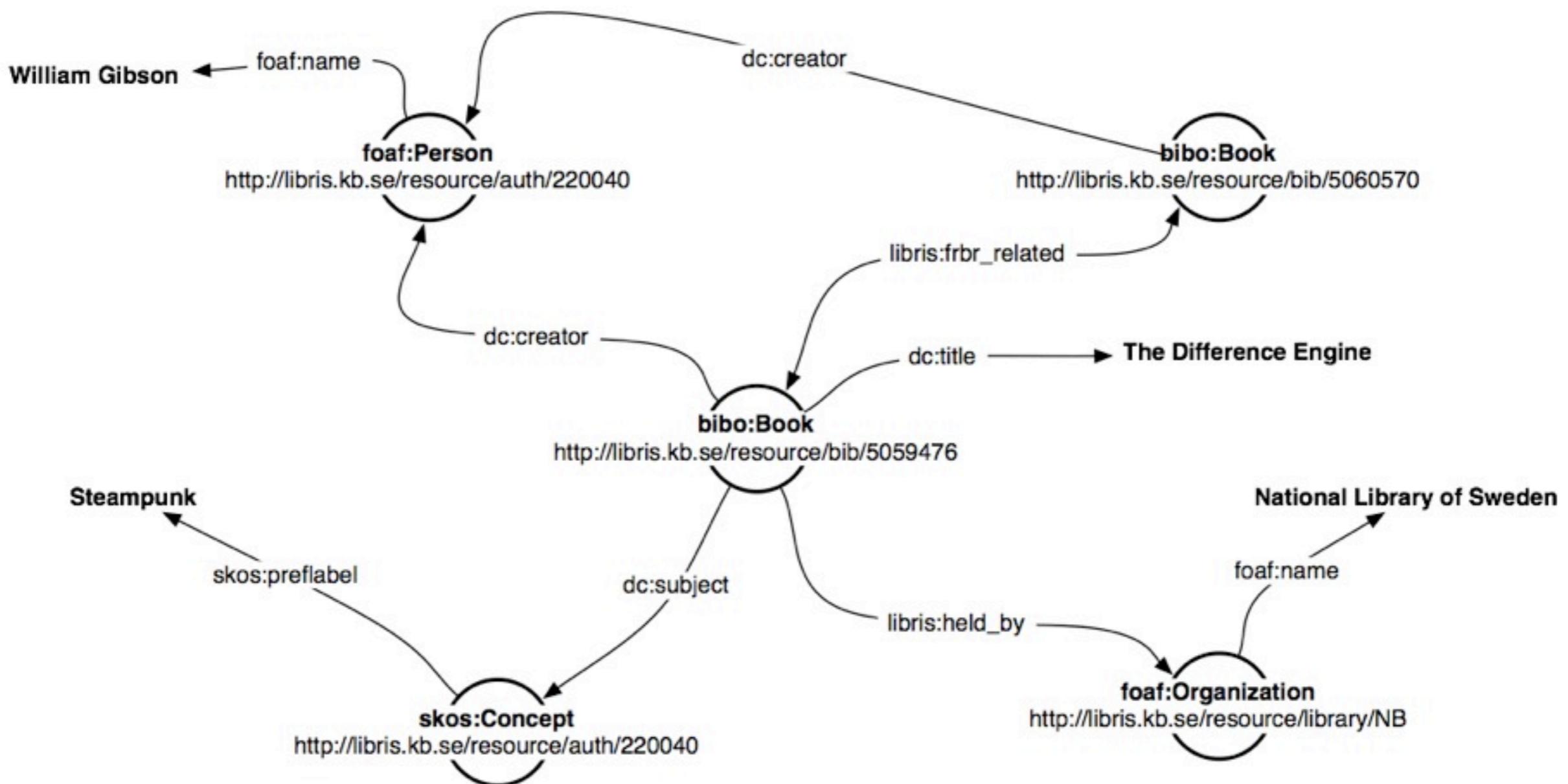
# Why APIs suck

- Context specific / differ from each other
- Too much control in the hands of the producer (too dependant of the producers world view)
- Not hackable enough
- Not really weaved into the Web
- Despite this, we have built some APIs...

Linked Open Data turns the Web into an API.

- *Corey A. Harper*

# So what does it look like?



# How do I find it?

- HTTP URI for every resource, ex:  
<http://libris.kb.se/resource/bib/5059476>  
<http://libris.kb.se/resource/auth/220040>  
<http://libris.kb.se/resource/library/S>

# HTTP content negotiation

- HTTP 303 See other
- text/html -> <http://libris.kb.se/bib/5059456>
- text/rdf+n3 -> [http://libris.kb.se/data/bib/  
5059456](http://libris.kb.se/data/bib/5059456)

# text/html-view

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Start Utökad sökning Bläddra ämnesvis Index A-Ö Boolesk Deldatabaser Sökhistorik

onr:5059476  ?

Sökning: onr:5059476 > The difference engi...

1 av 1 ▲ Föregående post | Nästa post ▶ Till träfflistan

Översikt Detaljer 

**The difference engine / William Gibson & Bruce Sterling**

Gibson, William, 1948– (författare)  
Sterling, Bruce, 1954– (författare)  
ISBN 0-575-04762-3  
London : Gollancz, 1990  
Engelska 383 s.  
 Bok

► Sammanfattning ► Ämnesord

SPARA SKAPA REFERENS MEJLA ▶ Länka till posten

Hitta Andra utgåvor

Låna | Fjärrlåna/beställ  

Titeln finns på 2 bibliotek.  Visa karta • Expandera lista

▼ Hitta liknande

Fler titlar av   
• Gibson, William, 194 ...  
• Sterling, Bruce, 195 ...  
Fler titlar om   
• Steampunk

▼ Sök utanför LIBRIS

Sök vidare i:   
• Google  
• Google Book Search  
• Google Scholar  
• Scirus  
• LibraryThing  
• OAIster

Wikipedia om författaren:   
• William Gibson

tisdag, 2009 februari 24

# text/html-view

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Start Utökad sökning Bläddra ämnesvis Index A-Ö Boolesk Deldatabaser Sökhistorik

onr:5059476  ?

```
<script type="text/javascript" src="js/showrecord.js"></script>
<script type="text/javascript" src="js/wiki.js"></script>
<!--<script type="text/javascript" src="js/authorityExpander.js"></script>-->
<script type="text/javascript" src="js/showMore.js"></script>
<script type="text/javascript" src="js/cb.js"></script>
<script type="text/javascript" src="js/se/googleBooks.js"></script>
<!--libris.kb.se-->
<script src="http://maps.google.com/maps?file=api&v=2&key=ABQIAAAA7fEQxiyuYckwtSpHsnjFsRTevPMz12FSxh_JAlnkvHbFivH9
</script>
<script type="text/javascript" src="js/se/getitMap.js"></script>
<script type="text/javascript" src="js/se/plotMap.js"></script>
<link rel="alternate" type="text/rdf+n3" title="RDF Representation" href="http://libris.kb.se/data/bib/5059476?format=text
<link rel="alternate" type="application/rdf+xml" title="RDF Representation" href="http://libris.kb.se/data/bib/5059476?for
<link rel="icon" href="/images/favicon.ico" type="image/x-icon" >
<link rel="shortcut icon" href="/images/favicon.ico" type="image/x-icon" >

<!--[if lt IE 8]>
<style type="text/css" media="screen, projection">
@import "null?\\";\\";
@import url(css/kb_ie2.css);
<!--[endif]-->
```

► Sammanfattning ► Ämnesord

SPARA SKAPA REFERENS MEJLA ► Länka till posten

Hitta Andra utgåvor

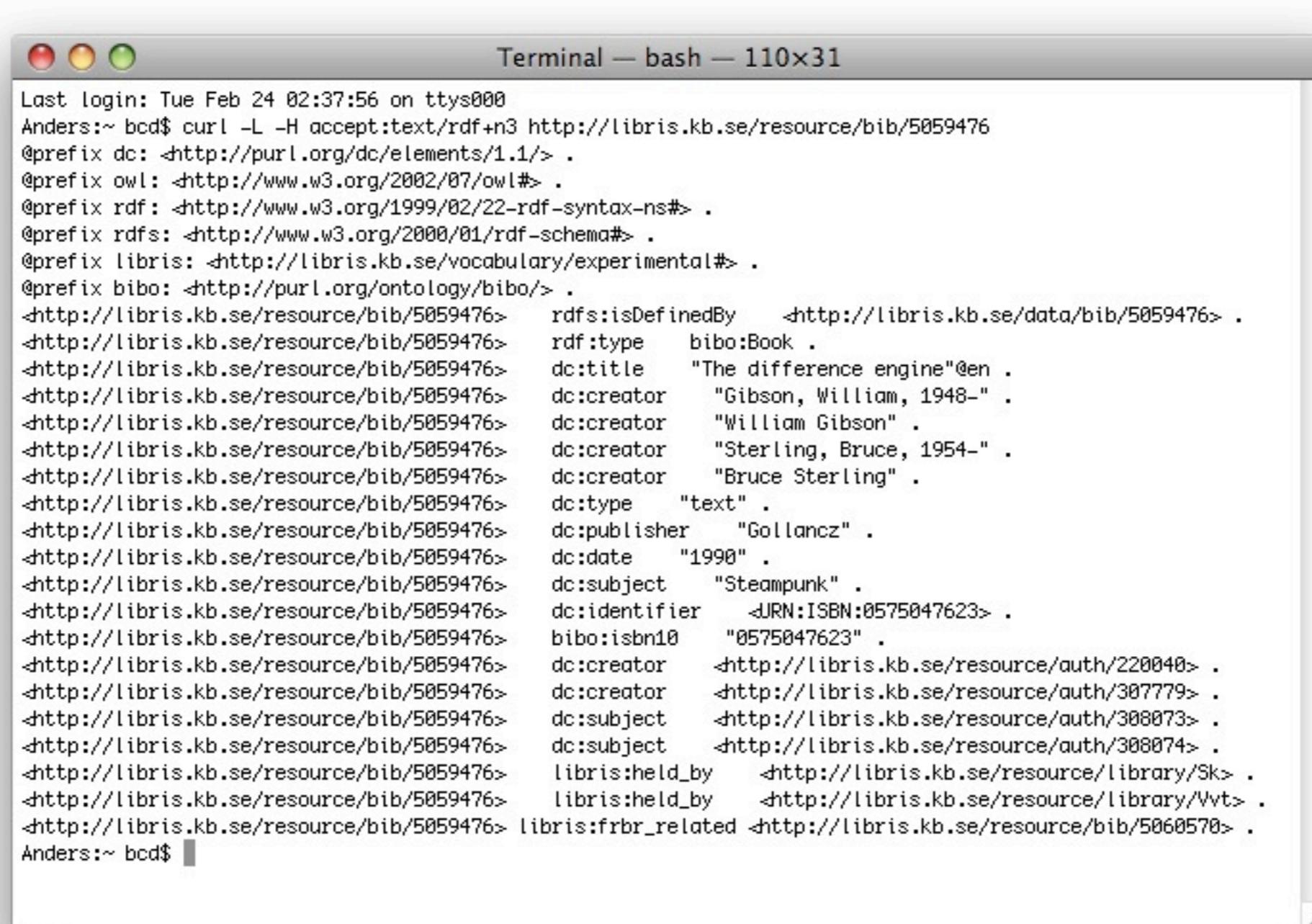
Låna | Fjärrlåna/beställ

Titeln finns på 2 bibliotek.  Visa karta • Expandera lista

• Google  
• Google Book Search  
• Google Scholar  
• Scirus  
• LibraryThing  
• OAIster

Wikipedia om författaren:  
• William Gibson

# text/rdf+n3



A screenshot of a Mac OS X terminal window titled "Terminal — bash — 110x31". The window contains the following text:

```
Last login: Tue Feb 24 02:37:56 on ttys000
Anders:~ bcd$ curl -L -H accept:text/rdf+n3 http://libris.kb.se/resource/bib/5059476
@prefix dc: <http://purl.org/dc/elements/1.1/> .
@prefix owl: <http://www.w3.org/2002/07/owl#> .
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .
@prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#> .
@prefix libris: <http://libris.kb.se/vocabulary/experimental#> .
@prefix bibo: <http://purl.org/ontology/bibo/> .
<http://libris.kb.se/resource/bib/5059476> rdfs:isDefinedBy <http://libris.kb.se/data/bib/5059476> .
<http://libris.kb.se/resource/bib/5059476> rdf:type bibo:Book .
<http://libris.kb.se/resource/bib/5059476> dc:title "The difference engine"@en .
<http://libris.kb.se/resource/bib/5059476> dc:creator "Gibson, William, 1948-"
<http://libris.kb.se/resource/bib/5059476> dc:creator "William Gibson" .
<http://libris.kb.se/resource/bib/5059476> dc:creator "Sterling, Bruce, 1954-"
<http://libris.kb.se/resource/bib/5059476> dc:creator "Bruce Sterling" .
<http://libris.kb.se/resource/bib/5059476> dc:type "text" .
<http://libris.kb.se/resource/bib/5059476> dc:publisher "Gollancz" .
<http://libris.kb.se/resource/bib/5059476> dc:date "1990" .
<http://libris.kb.se/resource/bib/5059476> dc:subject "Steampunk" .
<http://libris.kb.se/resource/bib/5059476> dc:identifier <URN:ISBN:0575047623> .
<http://libris.kb.se/resource/bib/5059476> bibo:isbn10 "0575047623" .
<http://libris.kb.se/resource/bib/5059476> dc:creator <http://libris.kb.se/resource/auth/220040> .
<http://libris.kb.se/resource/bib/5059476> dc:creator <http://libris.kb.se/resource/auth/307779> .
<http://libris.kb.se/resource/bib/5059476> dc:subject <http://libris.kb.se/resource/auth/308073> .
<http://libris.kb.se/resource/bib/5059476> dc:subject <http://libris.kb.se/resource/auth/308074> .
<http://libris.kb.se/resource/bib/5059476> libris:held_by <http://libris.kb.se/resource/library/Sk> .
<http://libris.kb.se/resource/bib/5059476> libris:held_by <http://libris.kb.se/resource/library/Vvt> .
<http://libris.kb.se/resource/bib/5059476> libris:frbr_related <http://libris.kb.se/resource/bib/5060570> .
Anders:~ bcd$
```

# text/rdf+n3 again

```
Last login: Tue Feb 24 02:50:30 on ttys000
Anders:~ bcd$ curl -L -H accept:text/rdf+n3 http://libris.kb.se/resource/auth/220040
@prefix owl: <http://www.w3.org/2002/07/owl#> .
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .
@prefix foaf: <http://xmlns.com/foaf/0.1/> .
@prefix dc: <http://purl.org/dc/elements/1.1/> .
@prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#> .
@prefix dbpedia: <http://dbpedia.org/property/> .
@prefix skos: <http://www.w3.org/2004/02/skos/core#> .
@prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#> .
@prefix libris: <http://libris.kb.se/vocabulary/experimental#> .
<http://libris.kb.se/resource/auth/220040> rdfs:isDefinedBy <http://libris.kb.se/data/auth/220040> .
<http://libris.kb.se/resource/auth/220040> owl:sameAs <http://dbpedia.org/data/William_Gibson> .
<http://libris.kb.se/resource/auth/220040> rdf:type <http://xmlns.com/foaf/0.1/Person> .
<http://libris.kb.se/resource/auth/220040> foaf:name "Gibson, William, 1948-" .
<http://libris.kb.se/resource/auth/220040> libris:key "Gibson, William, 1948-" .
<http://libris.kb.se/resource/auth/220040> foaf:name "William Gibson" .
<http://libris.kb.se/resource/auth/220040> dbpedia:birthYear "1948" .
<http://libris.kb.se/resource/auth/220040> rdf:seeAlso <http://en.wikipedia.org/wiki/William_Gibson> .
<http://libris.kb.se/resource/bib/2716178> dc:creator <http://libris.kb.se/resource/auth/220040> .
<http://libris.kb.se/resource/bib/2793076> dc:creator <http://libris.kb.se/resource/auth/220040> .
<http://libris.kb.se/resource/bib/4465470> dc:creator <http://libris.kb.se/resource/auth/220040> .
<http://libris.kb.se/resource/bib/4574314> dc:creator <http://libris.kb.se/resource/auth/220040> .
<http://libris.kb.se/resource/bib/4897748> dc:creator <http://libris.kb.se/resource/auth/220040> .
<http://libris.kb.se/resource/bib/4898022> dc:creator <http://libris.kb.se/resource/auth/220040> .
<http://libris.kb.se/resource/bib/4938525> dc:creator <http://libris.kb.se/resource/auth/220040> .
<http://libris.kb.se/resource/bib/4938556> dc:creator <http://libris.kb.se/resource/auth/220040> .
<http://libris.kb.se/resource/bib/4938572> dc:creator <http://libris.kb.se/resource/auth/220040> .
<http://libris.kb.se/resource/bib/4989449> dc:subject <http://libris.kb.se/resource/auth/220040> .
<http://libris.kb.se/resource/bib/5044419> dc:creator <http://libris.kb.se/resource/auth/220040> .
<http://libris.kb.se/resource/bib/5045207> dc:creator <http://libris.kb.se/resource/auth/220040> .
```

# Strategies

- Data first
- Represent ILS state
- Use existing vocabularies if possible (DC, SKOS, FOAF, Bibliontology, Geo)
- Make up vocabularies if needed
- Learn by doing

# Read

- "Making a Library Catalog Part of the Semantic Web", Martin Malmsten 2008  
<http://libris.kb.se/resource/bib/11306748>
- "LIBRIS - Linked Library Data", Anders Söderbäck and Martin Malmsten 2008, in Nodalities #5, [www.talis.com/nodalities](http://www.talis.com/nodalities)

# Coming up next...

- Dbpedia links
- Open Source project for turning ILS:s into linked data (e-mail [martin.malmsten@kb.se](mailto:martin.malmsten@kb.se))
- Hope for network effects

# Contact

- <http://blog.libris.kb.se/semweb>
- [anders.soderback@kb.se](mailto:anders.soderback@kb.se)  
[martin.malmsten@kb.se](mailto:martin.malmsten@kb.se)