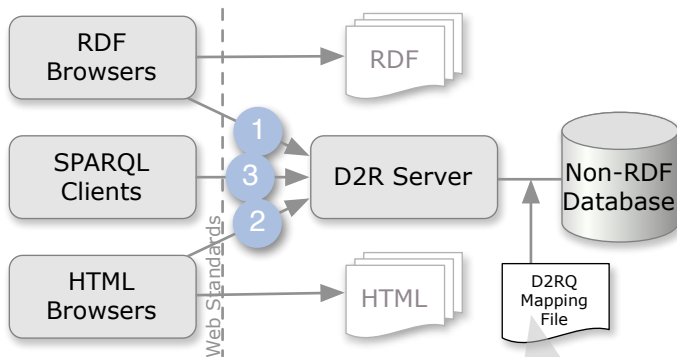




D2R Server: Publishing Relational Databases on the Web

D2R Server enables **RDF and HTML browsers** to navigate the content of **non-RDF relational databases** and allows applications to query a database over the Web using the **SPARQL** query language.

Database content is mapped to RDF by a **declarative mapping** which specifies how resources are identified and how property values are generated from database content. By **rewriting requests to SQL**, D2R Server can run on top of large live databases without having to replicate content into a native RDF store. The generated representations are **richly interlinked on RDF and XHTML level**. This allows browsers and crawlers to navigate to related resources.



Public D2R Servers

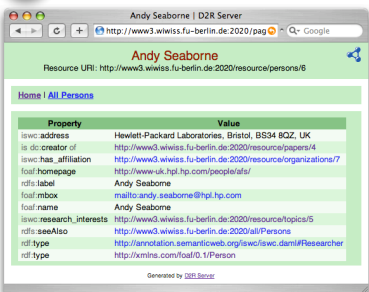
- DBLP Bibliography Server**
- 800.000 articles, 400.000 authors
- <http://www4.wiwiss.fu-berlin.de/dblp/>
- Roller Weblog Server**
- AtomOWL demo; run by Sun Microsystems
- <http://roller.blogdns.net:2020/>
- Information Systems Group @ FU Berlin**
- People, projects and publications
- <http://www4.wiwiss.fu-berlin.de/is-group/>

1 RDF Representations

The mapping assigns URIs to objects in the database. HTTP Requests on these URIs are answered with an RDF or HTML description of the object, based on HTTP content negotiation.

By dereferencing URIs of other resources mentioned in the description, RDF browsers and crawlers can navigate the Web of data.

2 HTML Representations



D2RQ Mapping File

Describes how to translate between application-specific database schemas and RDFS schemas or OWL ontologies.

Part of a database schema and a corresponding mapping in N3:

Movies	Movies2genres	Genres
ID	movieID	ID
title	genreID	name
year		
published		

```

map:movies a d2rq:ClassMap;
d2rq:uriPattern "movies/@@Movies.ID@";
d2rq:class imdb:Movie;
d2rq:condition "Movies.status='published'";
.
map:title a d2rq:PropertyBridge;
d2rq:belongsToClassMap map:movies;
d2rq:property imdb:title;
d2rq:column "Movies.title";
.
map:genre a d2rq:PropertyBridge;
d2rq:belongsToClassMap map:movies;
d2rq:property imdb:genre;
d2rq:column "Movies.title";
.
map:genres a d2rq:ClassMap;
d2rq:uriPattern
"http://genres/@@Genres.genre@";
d2rq:class imdb:Genre;

```

3 SPARQL Queries

Queries and results are transmitted using the SPARQL protocol. The server breaks queries into simpler parts and rewrites them on-the-fly to SQL for processing in the database.

```

SELECT ?title WHERE {
  ?movie :title ?title ;
  :year "1977" ;
  :genre ?genre .
  ?genre rdfs:label "Sci-Fi" . }

```

```

SELECT DISTINCT movies.title
FROM movies, movies2genres, genres
WHERE movies.year=1977
AND genres.ID=movies2genres.genreID
AND movies.ID=movies2genres.movieID
AND genres.genre='Sci-Fi';

```

