



Motivation & Problem Presentation

- At the University of Bamberg a Research Information System (FIS) on the basis of the open-source software DSpace-CRIS has recently been introduced: <https://fis.uni-bamberg.de>
- To increase the visibility of the research results, we aim at providing the RDF-Triple through a full-fledged SPARQL-Endpoint (Linked Open Data, LOD).
- **A DSpace-Module for LOD already exists, but is currently limited to publications only. Entities like awards, researcher profiles and projects or their relations are currently not supported.** (Becker 2014)

Evaluation of Existing Approaches

A1: Direct Mapping (W3C Recommendation)

Conversion on the basis of existing relational database structures
 (-) not possible by structuring of metadata in DSpace

A2: R2RML parser (Konstantinou, Spanos, Houssos, Mitrou 2014)

Mapping of database structure on RDF-Triple through R2RML (W3C Recommendation)
 (-) detailed knowledge of database structure necessary
 (-) extensive Mapping (only for DSpace already 1800 lines)
 (-) only complete RDF-Dump possible

A3: D2RQ Framework (Latif, Borst, Tochermann 2014)

Retrieval of virtual graphs by mapping of SPARQL-Queries to database queries (SQL)
 (-) Permanent database access through Real-Time-Generation
 (-) Process is less efficient than R2RML (Konstantinou, Spanos, Mitrou 2013)

A4: DSpace-Module for LOD (Becker 2014)

(-) currently no support for CRIS entities

Conclusion: As a plugin it can be integrated in the workflow of repositories and, therefore, extending the current DSpace-Module (A4) is preferred. For example, when an article is published after peer review, LOD are provided immediately as well. This approach is performant, because Apache Jena Fuseki is used as a separate server and, thus, queries do not affect the resources of the repository.

List of references

Becker, P. 2014. "Weaving repository content in the Semantic Web", Semantic web in libraries. http://swib.org/swib14/slides/becke_swib14_10.pdf. Accessed 20.06.19

Konstantinou, N., Spanos, D. E., Houssos, N., Mitrou, N. 2014. "Exposing scholarly information as Linked Open Data: RDFizing DSpace contents", The Electronic Library (32:6), p. 834-851.

Konstantinou, N., Spanos, D. E., Mitrou, N. 2013 "Transient and Persistent RDF Views over Relational Databases in the Context of Digital Repositories", MTSR 2013, p. 342-354.

Latif, A., Borst, T., Tochermann, K. 2014, "Exposing Data From an Open Access Repository for Economics As Linked Data", D-Lib Magazine (20:9/10), <http://www.dlib.org/dlib/september14/latif09latif.html>. Accessed 20.06.19

Development of a DSpace-CRIS-Module for LOD

- DSpace-module for LOD serves as basis ("ACrisObject extends DSpaceObject")
- Integrating the new module into the CRIS-API to access their methods
- Adaption of current mappings, provision of RDF (Content Negotiation), and programming additional RDFListener for automatic procession of modifications on CRIS-entities
- Adaption of conversion process creates blank nodes containing textual and authority-values as attributes, e.g. full name and entity of a researcher
- New module can be used with DSpace-CRIS-Versions 5.9 and 5.10
 An update of the extended module (DSpace-CRIS-Module for LOD) for upcoming DSpace-Version (e.g. DSpace 7) is possible.

Presentation in Triple Store (Apache Jena Fuseki)

```
5 SELECT ?subject ?predicate ?object
6 WHERE {
7   ?subject ?predicate ?object
8 }
9 LIMIT 25
```

| | subject | predicate | object | |
|----|-------------------------|----------------|---------------------------------------------------------------------------------------------|--------------------------------|
| 1 | _:b0 | cris:name | "Illig, Steffen" | Blank nodes & authority values |
| 2 | _:b0 | cris:cris | fis:rp/rp01394 | |
| 3 | _:b1 | cris:name | "Laumer, Sven" | |
| 4 | _:b1 | cris:cris | fis:rp/rp01734 | |
| 5 | fis:resource/uniba/2791 | dc:language | "eng" | Item |
| 6 | fis:resource/uniba/2791 | dc:contributor | "Illig, Steffen" | |
| 7 | fis:resource/uniba/2791 | dc:creator | "Illig, Steffen" | |
| 15 | fis:resource/uniba/2791 | dct:title | "Why IS After All? : An Explorative Analysis of Professionals' Letters of Study Motivation" | |
| 16 | fis:resource/uniba/2791 | dc:contributor | _:b0 | |
| 17 | fis:resource/uniba/2791 | dc:contributor | _:b1 | |
| 20 | fis:resource/uniba/2791 | dct:isPartOf | fis:resource/uniba/2 | |
| 21 | fis:rp/rp00247 | dc:email | "christian.maier@uni-bamberg.de" | |
| 22 | fis:rp/rp00247 | dc:fullName | "Maier, Christian" | ResearcherPage |
| 24 | fis:rp/rp01394 | dc:fullName | "Illig, Steffen" | |
| 25 | fis:rp/rp01394 | dc:email | "steffen.illig@uni-bamberg.de" | |