FG-4.6: Metadata Management Service

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Outline

- StellarIS
- RDF and Linked Data
- FG-4.6 Deliverables

Motivation

- AstroGrid-D
  - Handle different resource descriptions
  - Uniform interface for metadata storage and querying
  - Integration with VO-Management
- High-Availability
  - Must be able to handle the “wartungstag”

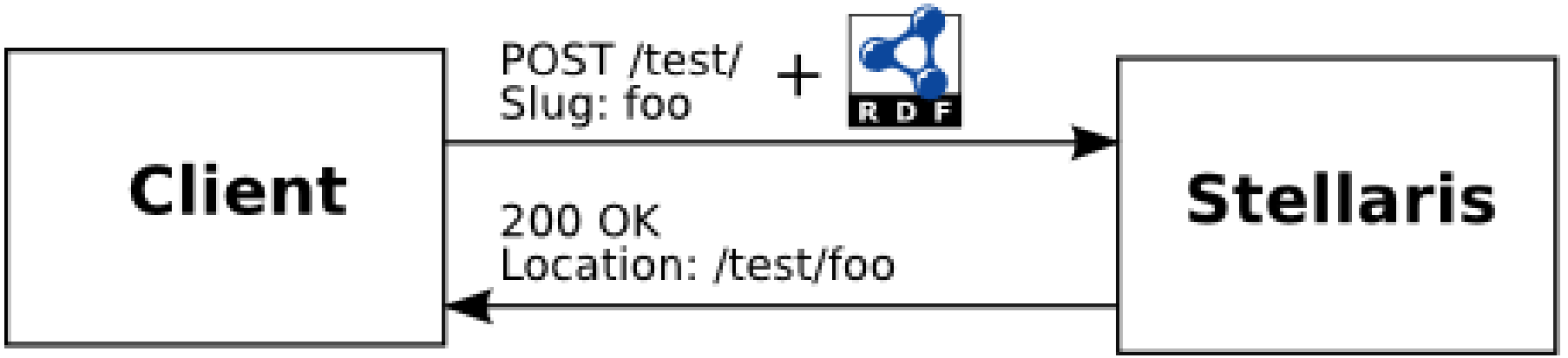
Service design

- Data representation with **RDF**
- Queries using **SPARQL**
- RDF data organized as collections and graphs
- **HTTP/REST** interface for graph and user management
- User authentication with **X.509**

Security Model

- Groups, a list of users defined by a string
- Coarse-grained **ACLs** defined over collections
- Read or write-access, write implies read
- **Public group** which includes all un-authorized users
- Currently not enforced on queries

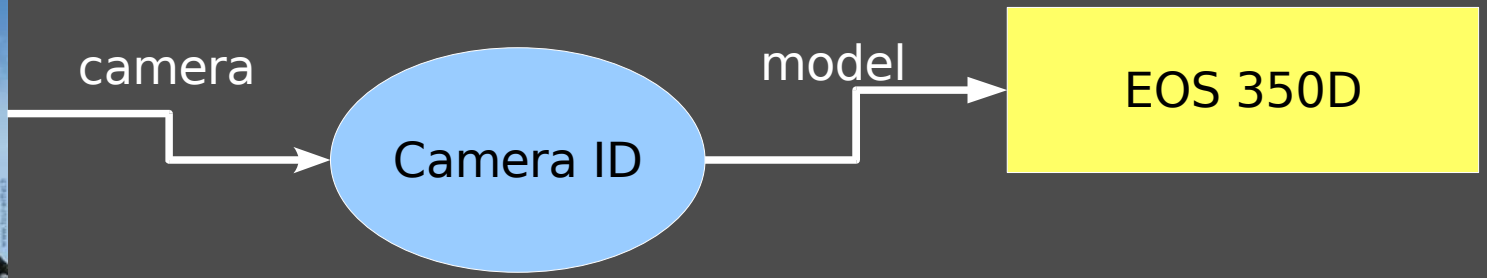
Create Graph



Update Graph

The RDF data model

- Framework to describe resources
- (subject, predicate, object)-triple
- Sets of triples are combined into a directed graph
- Graph instances are named with a URI



SPARQL

- Based on graph pattern-matching
- Ex: {?a <name> ?c}
  - ?a, ?c are unbound
  - <name> is bound
- Ex: {?a <name> ?c .
  ?a <email> ?d}
- Remote graphs are queried by specifying their URI using FROM
- Only data extraction, no modification

Example

Photographer

"Alice"

Creation date

Phone number

2003.06.05

555-444

"What is the name and phone number of the photographer who took the picture of the Eiffel tower?"

Input graph

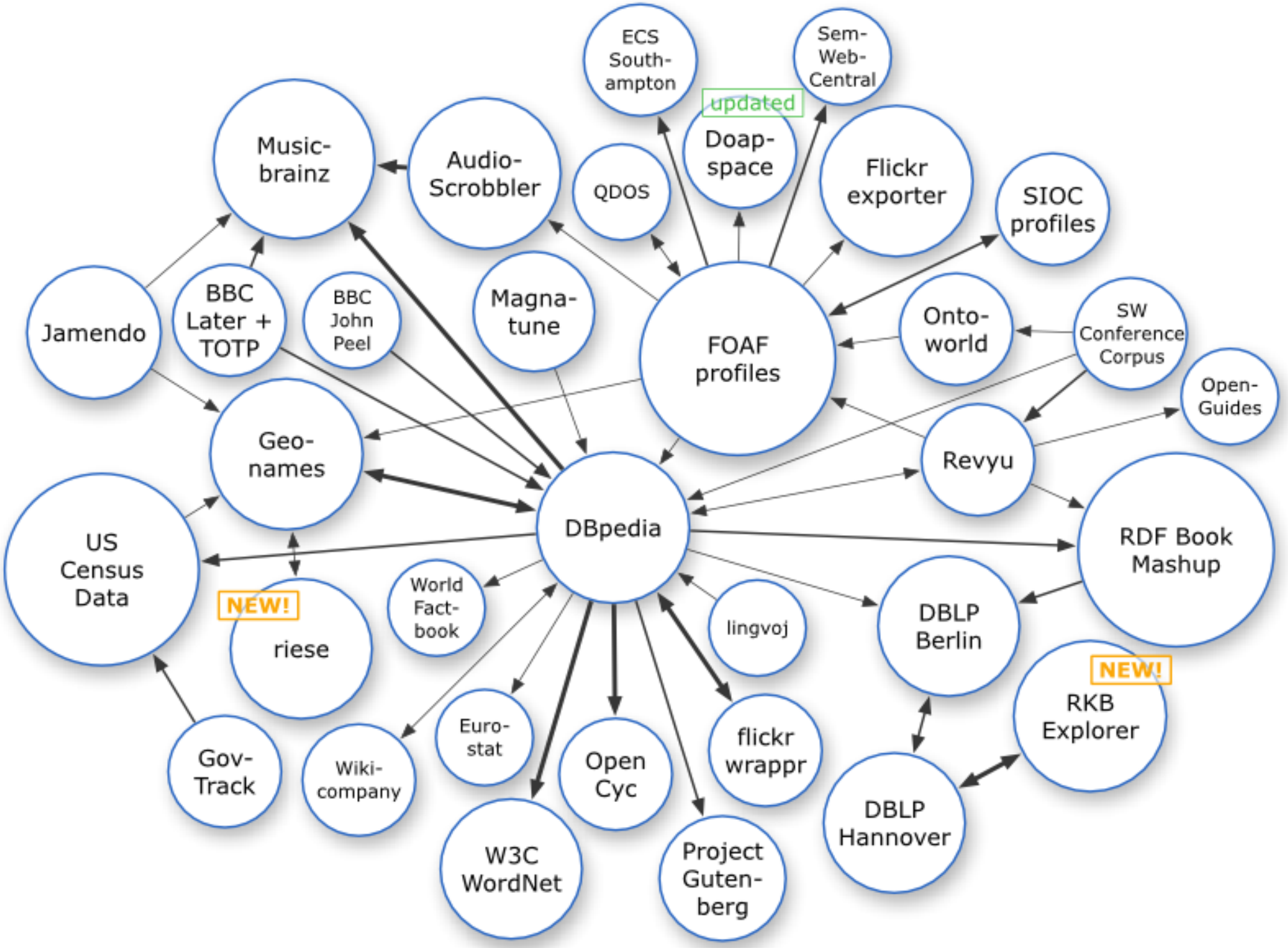
```
SELECT ?phone_number ?name WHERE
{"Picture of Eiffel tower" "Photographer" ?name .
 ?name "Phone number" ?phone_number . }
```

Number	Name
555-444	Alice

Output results

Linking RDF data

- “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.” - TBL


ECS South-ampton
Sem-Web-Central
updated
Doap-space
Music-brainz
Audio-Scrobbler
QDOS
Flickr exporter
SIOC profiles
Jamendo
BBC Later + TOTP
BBC John Peel
Magna-tune
FOAF profiles
Onto-world
SW Conference Corpus
Open-Guides
Geo-names
Revyu
US Census Data
DBpedia
RDF Book Mashup
NEW!
riese
World Fact-book
lingvoj
DBLP Berlin
NEW!
RKB Explorer
Gov-Track
Wiki-company
Euro-stat
Open Cyc
flickr wrappr
DBLP Hannover
W3C WordNet
Project Guten-berg

StellarIS/RDF Usage

- Statistics gathering for grid jobs and telescope observations
- Robotic Telescope broker
- MDS replacement by translating XML to RDF (GLUE->RDF)
- Cactus test suites
- GridMap and GridTimeline

Deliverables

- M18 – First implementation
  - Feature: High-availability (WAN-replication)
  - Documentation and support
- M36 – Bug-fixing and extensions
  - Documentation and support

Links

- Install: easy_install stellaris[.client]
- Web: http://stellaris.zib.de/
- Trac: http://stellaris.zib.de/trac/
- Mailing-list: http://groups.google.com/group/stellaris-users