Linked Data Lab

IFS getTogether
May 8, 2017

Elmar Kiesling
elmar.kiesling@tuwien.ac.at

Institute of Software Technology and Interactive Systems
Information and Software Engineering Group
Vienna University of Technology
Favoritenstraße 9-11/177,
1040 Vienna, Austria
Phone: +43 (1) 58801 – 18801
Current Team and Former Members

Fajar J. Ekaputra
Peb Ruswono Aryan
Niina Novak
Elmar Kiesling
Ba-Lam Do
Tuan-Dat Trinh
Peter Wetz
Amin Anjomshoaa
Main research areas

- **(Linked) Data Integration**
  - Semantic Mashups
  - OBDI, OBDA, ...

- **RDF Stream Processing**
  - Benchmarking of RSP engines
  - Sensor streams
  - Log stream processing

- **Enterprise Linked Data**
  - Enterprise Linked Data Architectures
  - Technology gaps and scalability issues
  - Linked Data value chains
  - Barriers and drivers of Linked Data adoption

- co-founded Vienna ODI Node
- Open Data meetups
- Government Open Data (city of Vienna, ...)
- ..

Application Domains

- **Statistical Linked Data Exploration**

- **Environmental informatics**
  (e.g., semantic sensor networks)

- **Open Science:**
  - Linked Data Infrastructures for trans-disciplinary research
  - Data management, provenance, reproducibility of Linked Data processing workflows, ..
  - Metadata: Joint project with Springer to publish programme committee information as LOD
  - Ongoing scientometric project to map thematic developments in the SW research literature

- **Security and privacy**
  - Anonymity in sensitive RDF Streams
  - Stream reasoning on security event logs
(Linked Data in a Nutshell)
From 10,000 foot…

- Best practices for publishing and connecting structured data on the Web
- Goal: Create a global data space
... and through the microscope

- Graph-based data model
- Subject-predicate-object triples
- Use of URIs as globally unique identifiers

```
:alice

http://xmlns.com/foaf/0.1/knows

:bob
```
1. Use URIs to identify things
2. Use HTTP URIs so that people can look up those names
3. When someone looks up a URI, provide useful information, using the standards (RDF..)
4. Include links to other URIs so that they can discover more things
Key ideas

Web of data
- Linking
- Open
- Global
- Networked
- Decentralized

Graph-based data model
- Flexible
- Bottom-up
- Emergent
- Agile

Explicit Semantics
- Machine-readable
- Interoperable
- Discoverable
- Inference
Linked Widgets Platform
LWP Main Contributors

- Amin Anjomshoaa
- Tuan-Dat Trinh: PhD project, main developer

Contributors:
- Peter Wetz: e.g., RDF stream processing mashups
- Ba-Lam Do: e.g., statistical data widgets
- Peb R. Aryan: e.g., RML widget, mashup-based QA
Linked Widgets

- Reusable building blocks
  - Input/output: RDF (JSON-LD)
  - Extensive semantic description

- Goal: build applications without
  - coding (APIs, SPARQL queries,..)
  - downloading data dumps
  - use of complex toolchains
  - ...
Motivating Example

Public Parks

Public swimming pools

Air quality measurements

Images

(lat, long, name, etc.)

(lat, long, name, etc.)

(lat, long, CO, NO₂, etc.)

(lat, long, URI)

FACULTY OF INFORMATICS
Linked Widgets