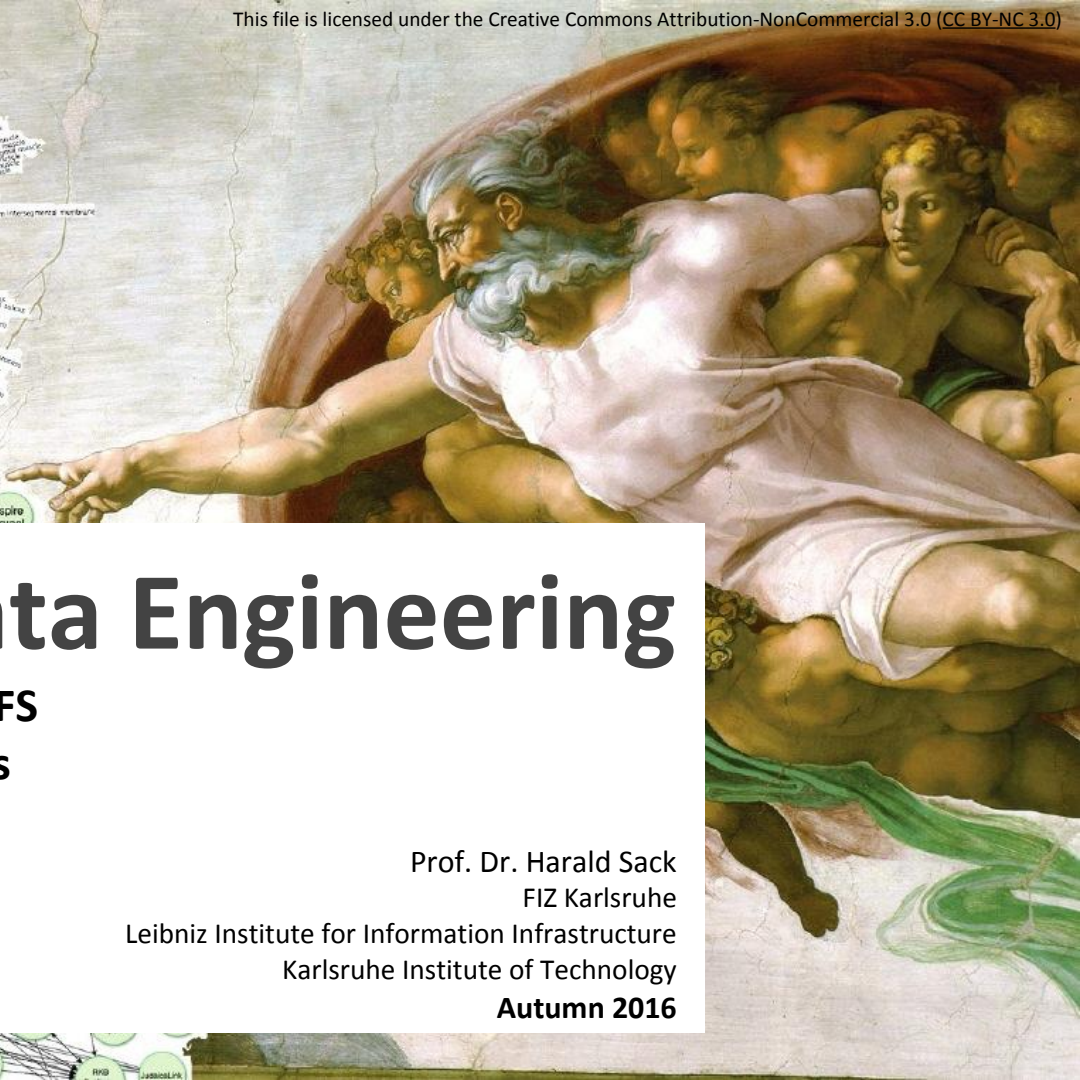




Lecture 2: RDF and RDFS

2.3 RDF Datastructures



FIZ Karlsruhe

A network diagram showing connections between various datasets and sources. The nodes are arranged horizontally and include: Delmudat FU-Berlin, Organic EduNet, Bio2RDF Dataset, RKB Explorer Roma, TWC IEEE/IS, British Museum Collection, RKB, and JaxxData. Lines of varying thickness connect the nodes, representing the strength or type of relationship between them.

Leibniz Institute for Information Infrastructure
Karlsruhe Institute of Technology
Autumn 2016

The Semantic Web Technology Stack (not a piece of cake...)

Most apps use only a subset of the stack

Querying allows fine-grained data access

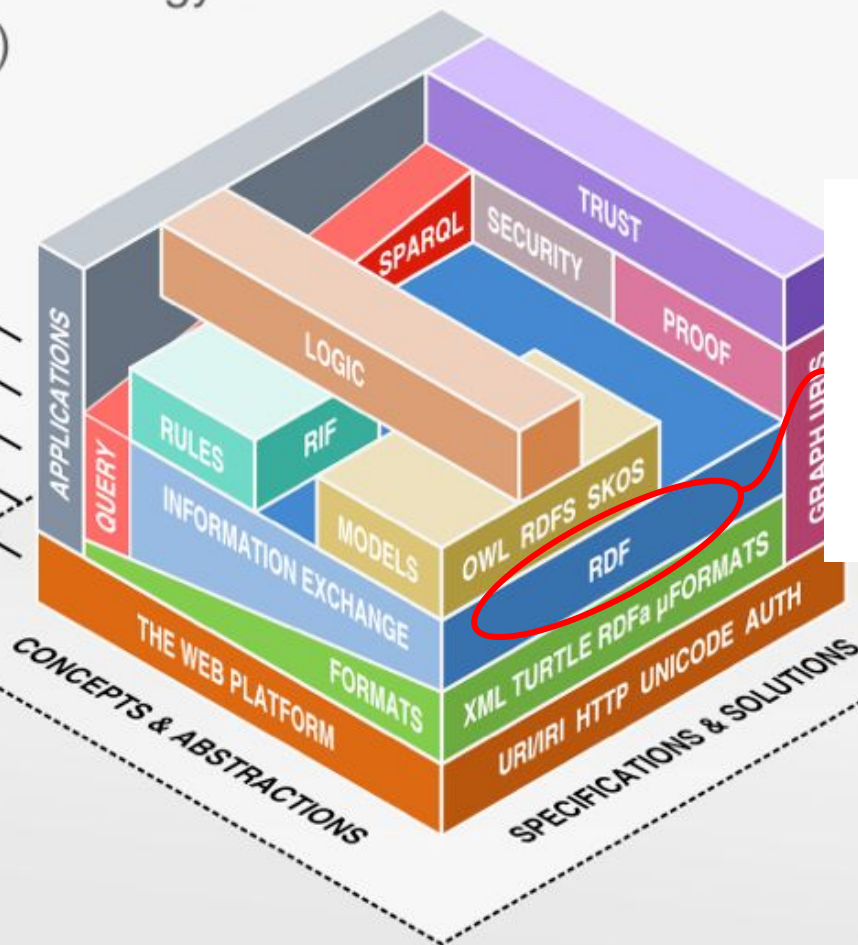
Standardized information exchange is key

Formats are necessary, but not too important

The Semantic Web is based on the Web

Linked Data uses a small selection of technologies

LINKED DATA



Resource
Description
Framework
(RDF)



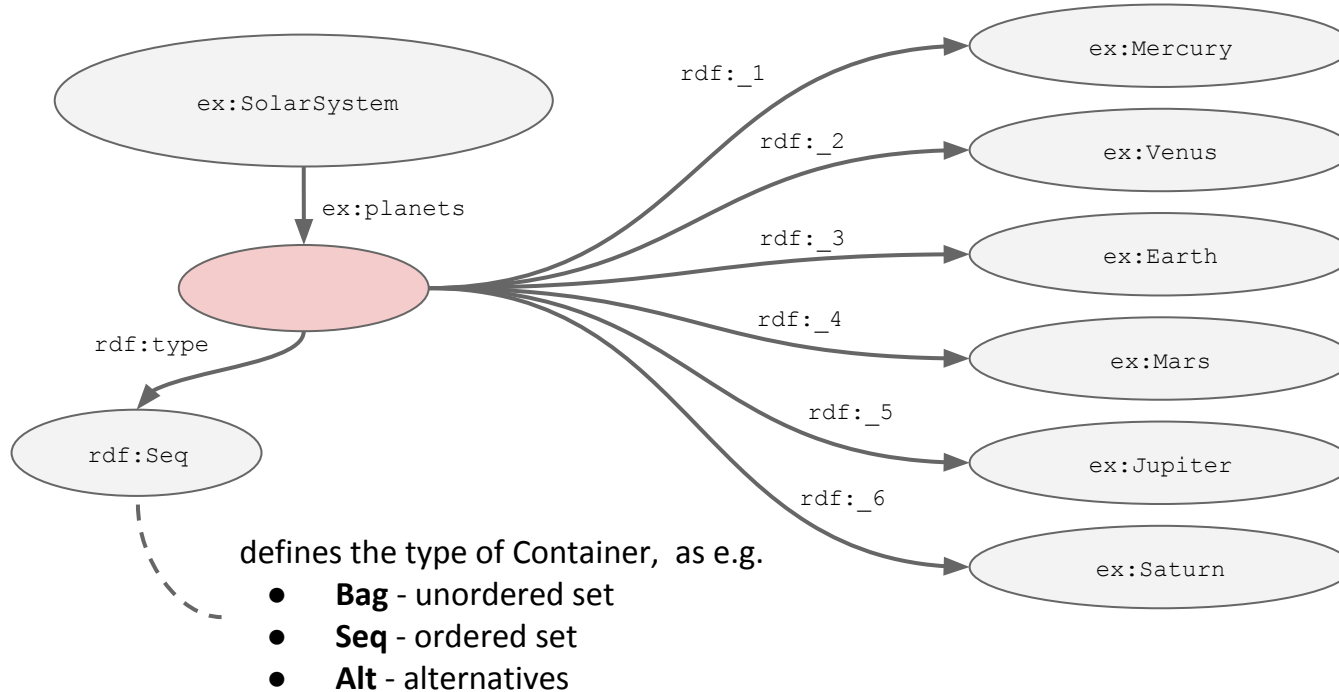
RDF Lists

- General Data structure to enumerate any resources or literals
- Only shortcuts without additional semantic expressivity (syntactic sugar)
- Distinguish between
 - **Container**
open list, i.e. extension (new entries) possible
 - **Collections**
closed list, i.e. no extension possible



RDF Container

Open List





RDF Container

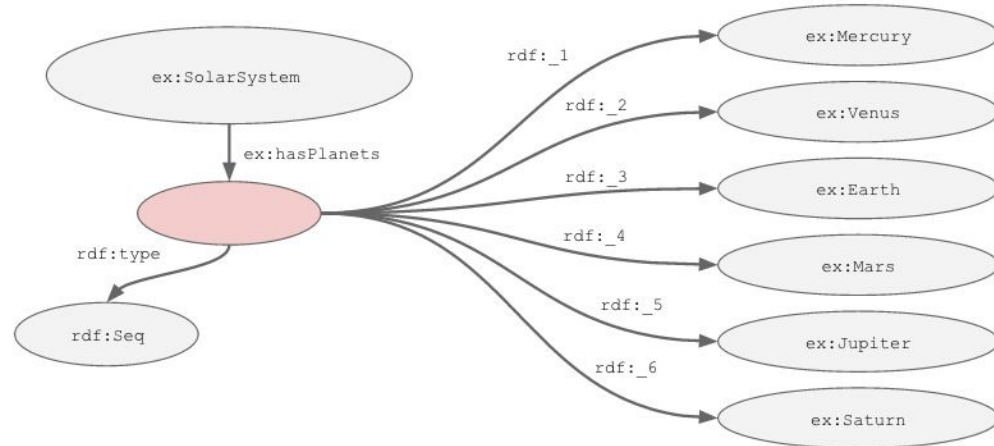
Open List

```
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .  
@prefix ex: <http://example.org/test#> .
```

```
ex:SolarSystem ex:planets [
```

```
  a rdf:Seq ;  
  rdf:_1 ex:Mercury ;  
  rdf:_2 ex:Venus ;  
  rdf:_3 ex:Earth ;  
  rdf:_4 ex:Mars ;  
  rdf:_5 ex:Jupiter ;  
  rdf:_6 ex:Saturn  
]
```

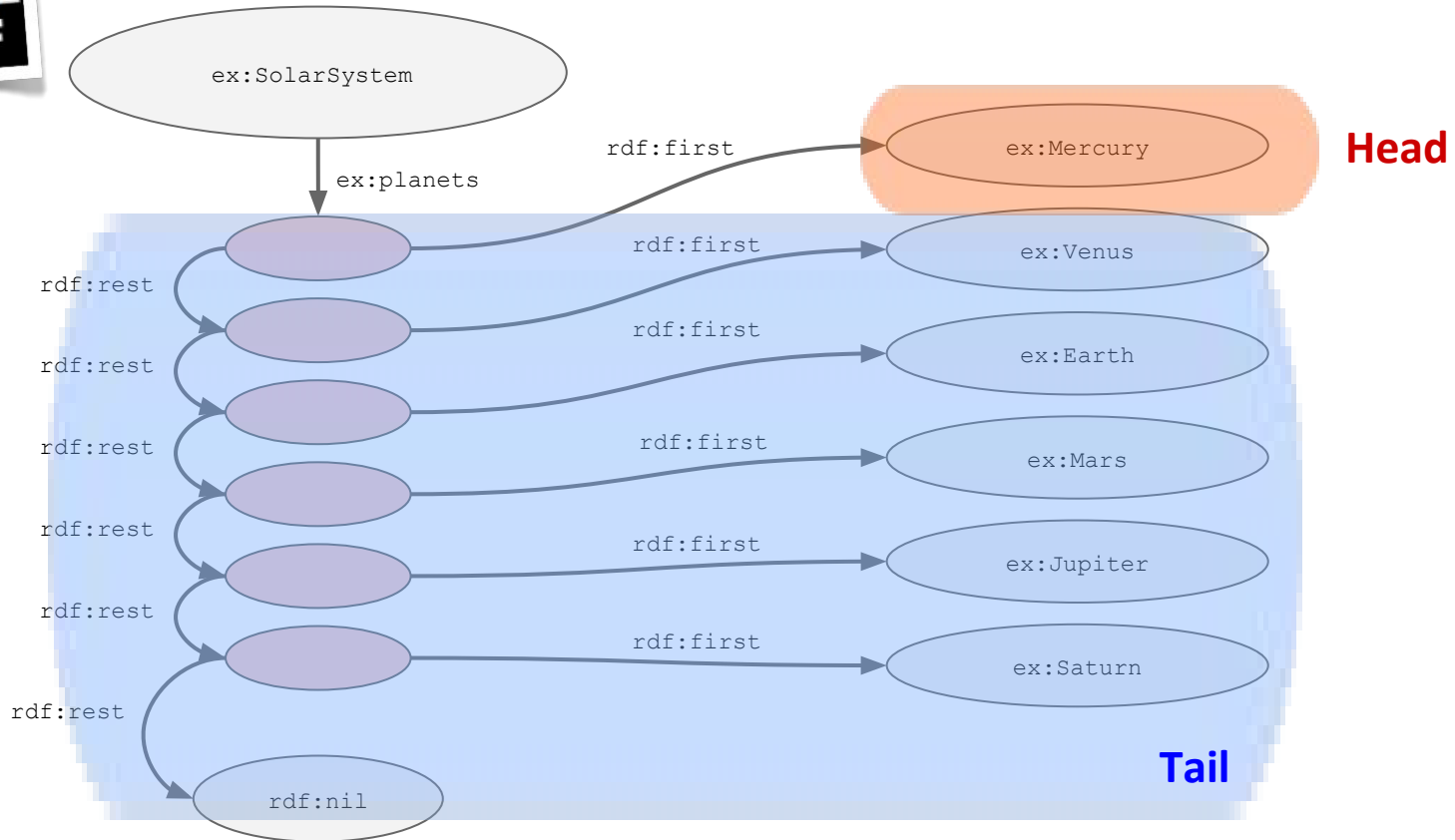
= **rdf:type** rdf:Seq





RDF Collection

Closed List



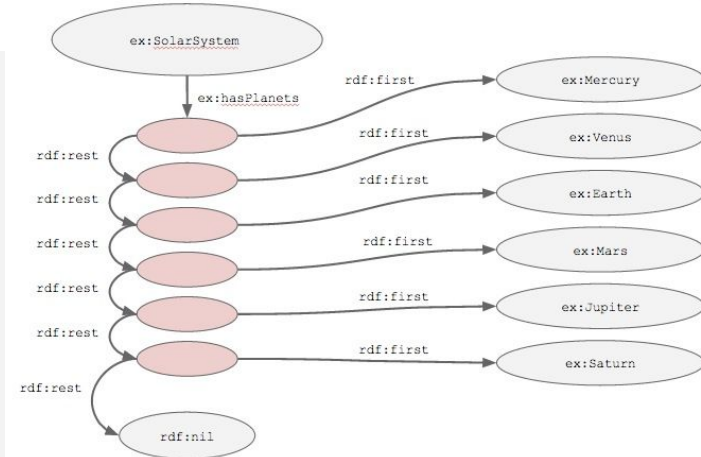


RDF Collection

Closed List

```
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .  
@prefix ex: <http://example.org/test#> .
```

```
ex:SolarSystem ex:planets [  
  rdf:first ex:Mercury ; rdf:rest [  
    rdf:first ex:Venus ; rdf:rest [  
      rdf:first ex:Earth ; rdf:rest [  
        rdf:first ex:Mars ; rdf:rest [  
          rdf:first ex:Jupiter ; rdf:rest [  
            rdf:first ex:Saturn ;  
            rdf:rest rdf:nil  
          ]  
        ]  
      ]  
    ]  
  ]  
]
```



```
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .  
@prefix ex: <http://example.org/test#> .  
  
ex:SolarSystem ex:planets (  
  ex:Mercury ex:Venus ex:Earth ex:Mars ex:Jupiter ex:Saturn  
) .
```



“My dear Watson,
...I suppose that it was
the gardener who has
killed the butler!”

Next: 04 - RDF Reification

OpenHPI - Linked Data Engineering - Lecture 2: RDF and RDFS