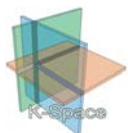
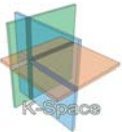


Building Linked Data For Both Humans and Machines

Wolfgang Halb, Yves Raimond and Michael Hausenblas
LDOW2008, 2008-04-22, Beijing, China



- **riese**
RDFizing and Interlinking the Eurostat data Set Effort
- LinkingOpenData
- Eurostat
- Architecture
- Schema & Data
- Querying
- Interlinking
- Demo
- Inside



RDFizing and Interlinking the Eurostat data Set Effort

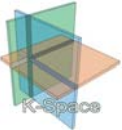
<http://riese.joanneum.at>

- Contributing to Linking Open Data project
- Offer Semantic Web version of Eurostat data
- ... for both humans and machines

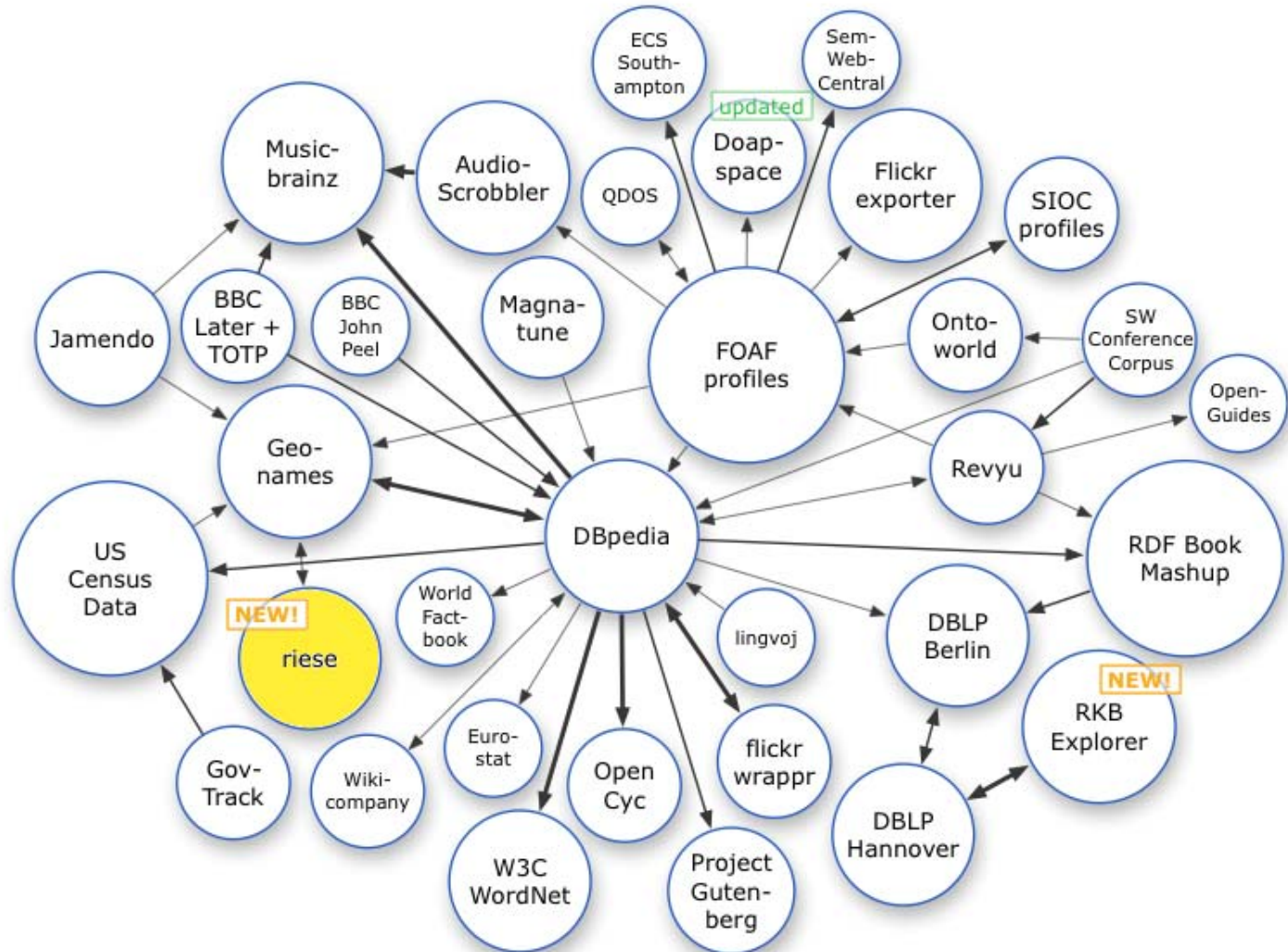
LinkingOpenData: Current State

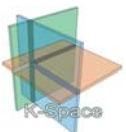


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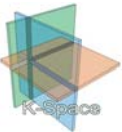


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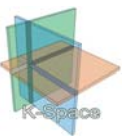
- Eurostat (<http://ec.europa.eu/eurostat>)
- publishes statistics in these themes:
 - General and regional statistics
 - Economy and finance
 - Population and social conditions
 - Industry, trade and services
 - Agriculture and fisheries
 - External trade
 - Transport
 - Environment and energy
 - Science and technology
- about the European Union in detail and additional statistics for some major non-European countries



- data dump provided as download (tables)
- updated twice a day
- additionally needed:
 - dictionary files to translate the data codes used
 - table of contents for structure
- Size of Eurostat data
 - 5 GB data dump in approx. 4,000 files
 - 350 million data values
 - 80,000 different data codes

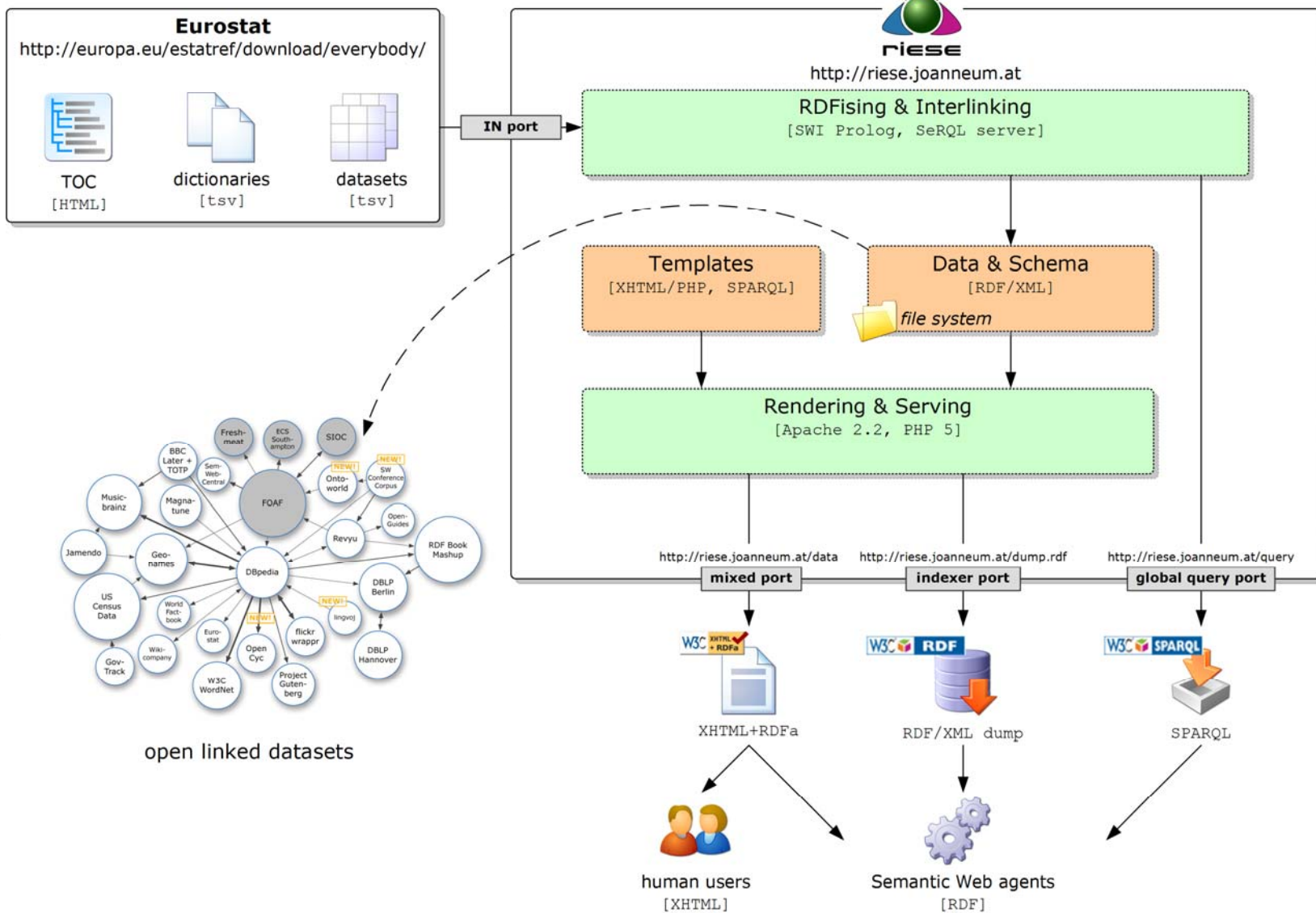


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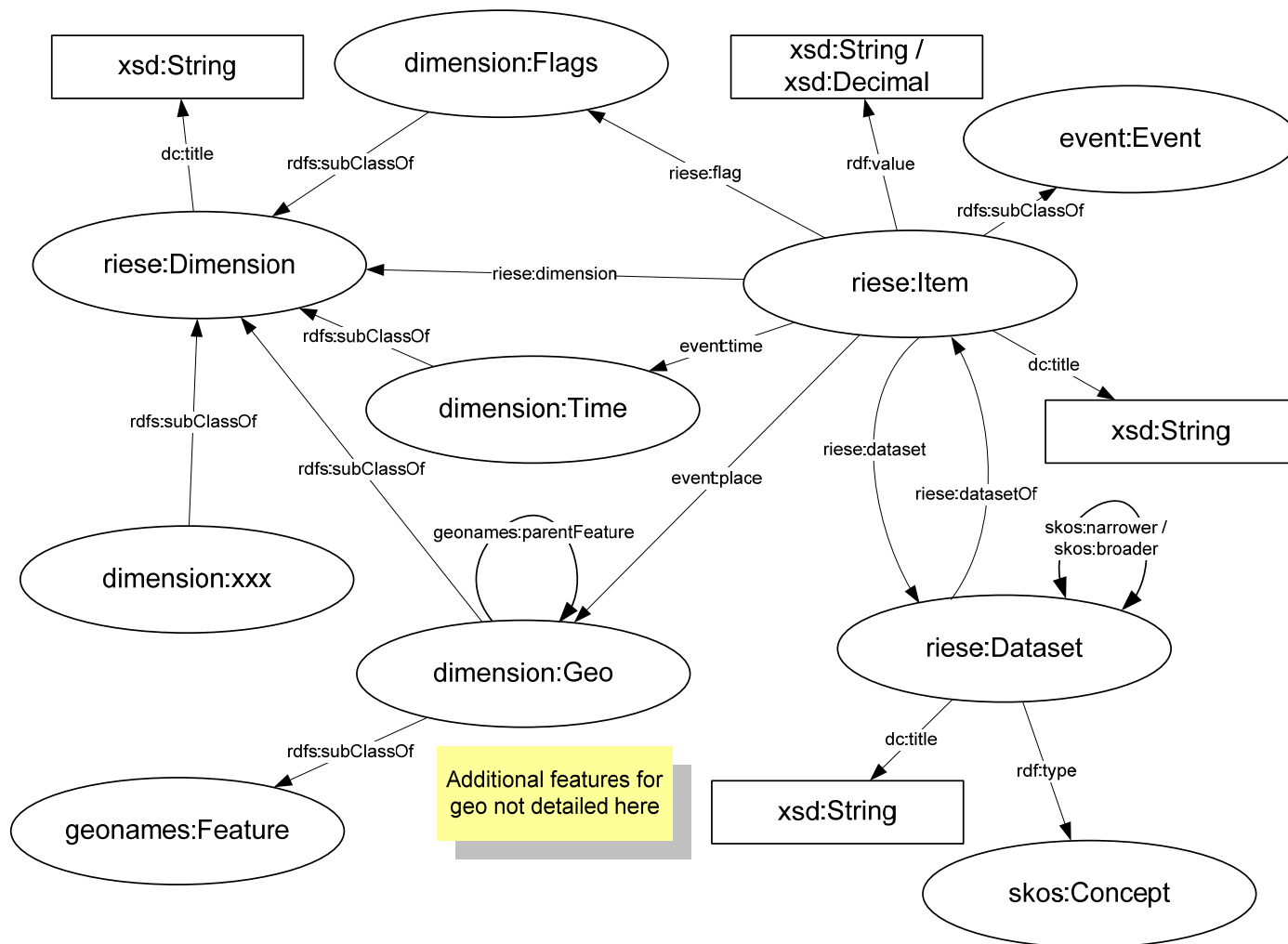
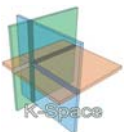


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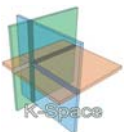
riese: architecture



riese: schema & data



riese: schema & data



- Survey Modelling Statistics in RDF, Lee Feigenbaum
 - “The riese approach seems the best combination of flexibility and usability.” [1]
- Generalised framework for statistics modelling to be released soon

- Example data:

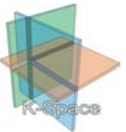
```
<riese:Dataset
  rdf:about="http://riese.joanneum.at/data/eb040"
  dc:title="Inflation rate"
  riese:data_end="2006"
  riese:data_start="1980"
  riese:last_update="08/01/2008"/>
```

riese: schema & data

```
<riese:Item dc:title="Inflation rate Austria 2006"  
  rdf:value="1.7"  
  <riese:dimension rdf:resource=  
    "http://riese.joanneum.at/dimension/geo/at"/>  
  <riese:dimension rdf:resource=  
    "http://riese.joanneum.at/dimension/time/2006"/>  
  <riese:dataset rdf:resource=  
    "http://riese.joanneum.at/data/eb040"/>  
</riese:Item>
```



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riese: schema & data

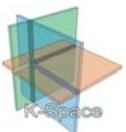
- XHTML + RDFa example:

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML+RDFa 1.0//EN"
    "http://www.w3.org/MarkUp/DTD/xhtml-rdfa-1.dtd">
<html xmlns="http://www.w3.org/1999/xhtml" xml:lang="en"
    xmlns:riese="http://riese.joanneum.at/schema/core#"
        ...
    >
<head>
...
</head>
<body about="http://riese.joanneum.at/data/economy/"
    instanceof="riese:Dataset">
<span class="toc-entry"><a
    href="http://riese.joanneum.at/data/bop/" rel="skos:narrower"
    class="dim">Balance of payments - International
    transactions</a></span>
Last update: <span property="dc:date" datatype="xsd:date">2008-01-
    09</span>
</body>
</html>
```

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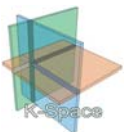
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riese: querying



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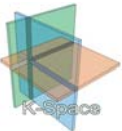


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```
1 SELECT *
2 WHERE
3 { ?item riese:dimension dim:geo_at.
4   ?item riese:dataset ?dataset.
5   ?dataset dc:title ?ds_title
6   FILTER regex(?ds_title, "food",i)}
```



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- Generic approach
 - Restrict source dataset to potential interlinking candidates
 - Look up identifying feature from source in target dataset
 - Restrict results by appropriate classifications or identifiers
 - Create the interlink

- User Contributed Interlinking

User Contributed Links

 **I know more ...**

... about the dataset

Economy and finance (<http://riese.joanneum.at/data/economy/>):

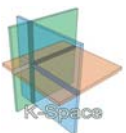
same as

links by others

#	relation	target	action
0	has topic	http://en.wikipedia.org/wiki/Economy	
1	see also	http://www.unece.org/Welcome.html	



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RDFizing and Interlinking the EuroStat Data Set Effort - riese: Market share of the largest generator in the electricity market - Mozilla Firefox

http://riese.joanneum.at/data/er031/

Explore the EuroStat data set!

home about ask

themes General ... Economy ... Population ... Industry ... Agriculture ... External trade Transport Environment ... Science ...

Related
I know more ...

No external links have been added to this dataset, yet. Use 'I know more' to add your own links ...

Parent(s): Economic Reform

Market share of the largest generator in the electricity market

<< 1 >> 50

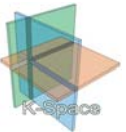
Country	1999	2000	2001	2002	2003	2004	2005
Austria	21.4	32.6	34.4	:	:	:	:
Belgium	92.3	91.1	92.6	93.4	92.0	87.7	85.0
Cyprus	99.7	99.6	99.6	99.8	100.0	100.0	100.0
Czech Republic	71.0	69.2	69.9	70.9	73.2	73.1	72.0
Germany (including ex-GDR from 1991)	28.1	34.0	29.0	28.0	32.0	28.4	:
Denmark	40.0	36.0	36.0	32.0	41.0	36.0	33.0
Estonia	93.0	91.0	90.0	91.0	93.0	93.0	92.0
Spain	51.8	42.4	43.8	41.2	39.1	36.0	35.0
Finland	26.0	23.3	23.0	24.0	27.0	26.0	23.0
France	93.8	90.2	90.0	90.0	89.5	90.2	89.1
Greece	98.0	97.0	98.0	100.0	100.0	97.0	97.0
Croatia	:	:	:	:	82.0	86.0	87.0
Hungary	38.9	41.3	39.5	39.7	32.3	35.4	38.7
Ireland	87.8	87.8	88.8	88.8	88.8	88.8	74.8

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Fertig



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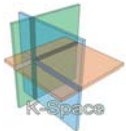
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- **Server:**
 - Apache 2.2
 - SWI-Prolog
 - p2r
 - PHP 5
 - RDF/XML documents in the file system
(to be replaced by p2r data-pump)

- **Client**
 - XHTML+RDFa
 - Javascript/Yahoo! User Interface Library [YUI]



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Let's discuss!