

Presentation Topic 11: Open and linked data

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What is Linked Open Data?

Introduction

- Linked and Open Data -Two related concepts that are increasingly important in our data centric society.
- Our aim of this presentation is to explain what Open data and Linked Data are, and examine their implementations.
- Also, we will examine arguments for and against open data, and put our own argument forward for it.

Definitions (Open Data)

- *“Open data is data that can be freely used, reused and redistributed by anyone - subject only, at most, to the requirement to attribute and share alike.” [1]*
- Open data is not a specific implementation or method of accessing data – instead, it is an idea of exactly how it should be used and redistributed.

Definitions (Linked Data)

- *"The Semantic Web isn't just about putting data on the web. It is about making links, so that a person or machine can explore the web of data. With linked data, when you have some of it, you can find other, related, data. "[2]*
- Linked Data is a specific implementation of data, which aims to make it more useful by making it easier for a user to quickly access more relevant data.

Background

- Open Data - A general movement towards greater and easier data access, important for academic study and scientific research (Mertonian science)
- Linked Data - Term coined by Tim Berners Lee to describe a hypothetical next step for the WWW, currently various examples of implementation using the RDF and URI specifications laid out by the World Wide Web Consortium
- Both concepts are closely linked; linked data technology can be used to access newly open data with greater ease

Implications

Implications by sector

Business



Implications by sector

Business

Personal



Implications by sector

Business

Personal



Government

Implications by sector

Business

Personal

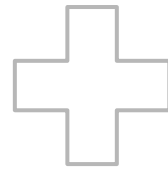


Government

Academic

Business

£16 Billion



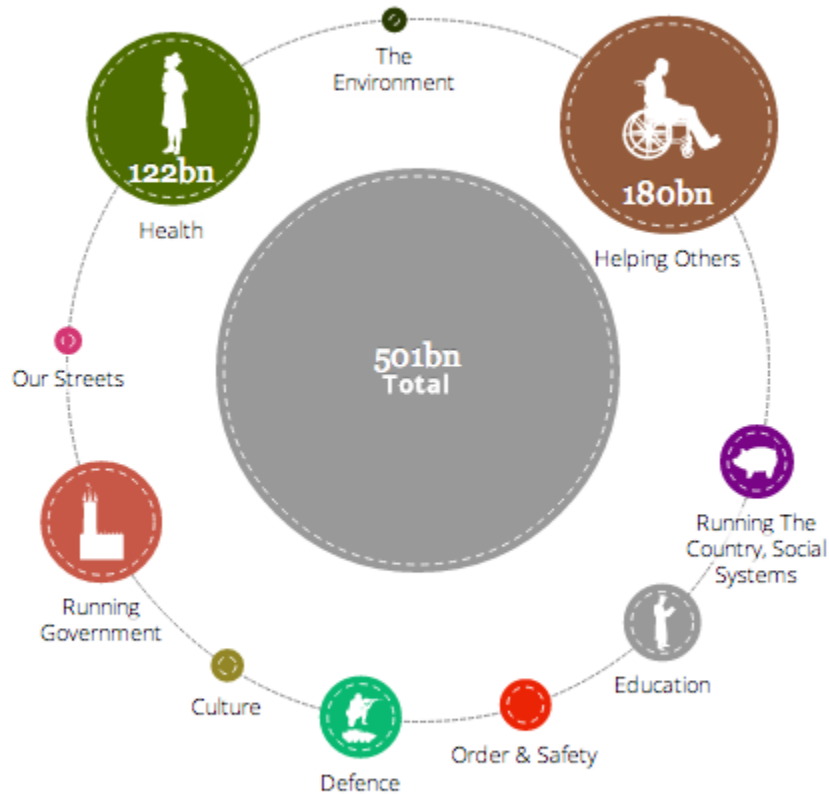
UK Economy

Personal

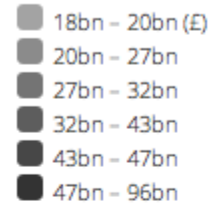
Government

WHERE DOES MY MONEY GO?

Showing you where your taxes get spent



Expenditure on Total



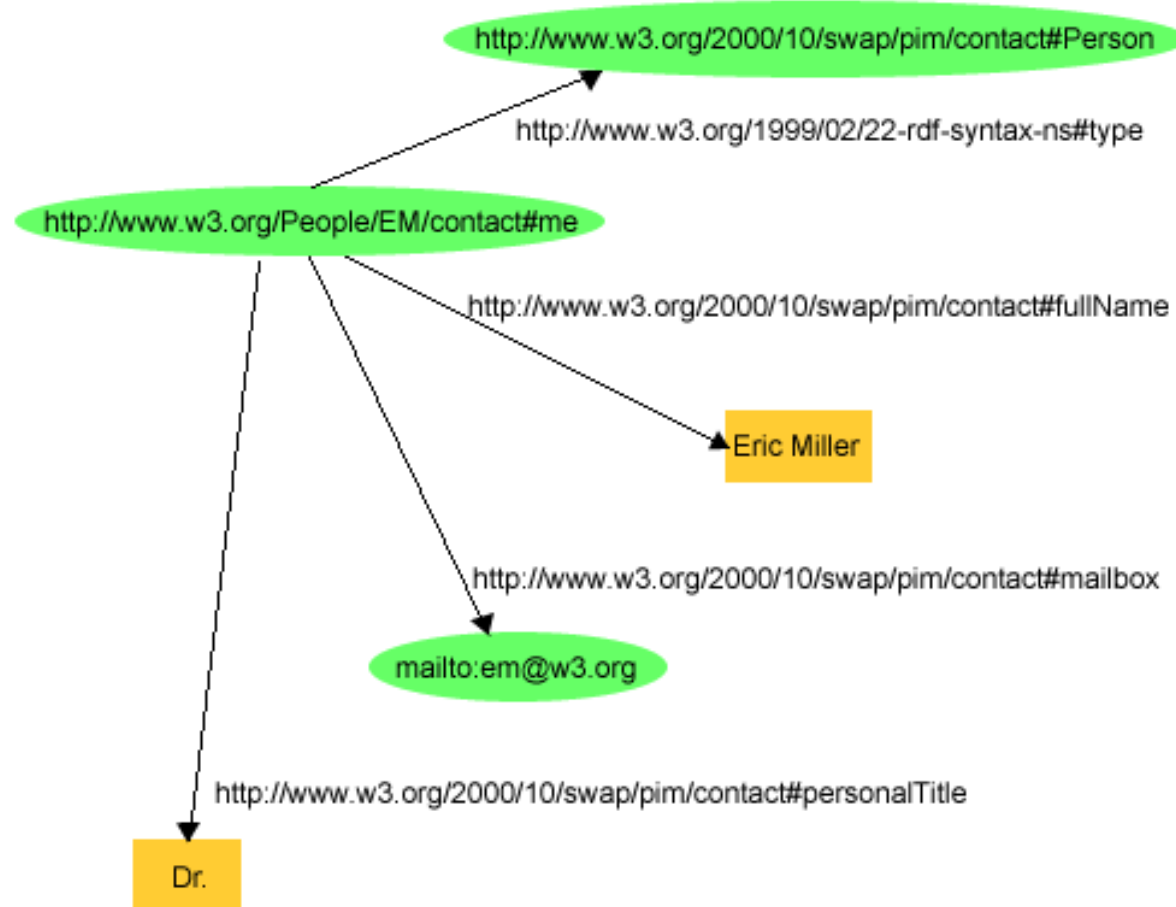
Academic

Implementation

The technical side of linked data

- Presenting data in a *machine-parsable form*, but also maintain links between *data sets*.
- Generally represented by triples in the format:
<source object> <relationship> <target object>
- Rules of these representations depend on implementation.

Data as a graph!



RDF

- Uses XML as major format - good for machine interaction.
- N-Triples/Turtle/N3 for human readability.
- Designed to represent data such as:

"Crafting a rich and personal blending learning environment: an institutional case study from a STEM perspective" has author Su White'

RDF/N-Triples

<<http://eprints.soton.ac.uk/id/eprint/346929>>

<<http://www.loc.gov/loc/terms/relators/AUT>>

<<http://eprints.soton.ac.uk/id/person/ext-44780>> .

RDF/XML

```
<rdf:Description rdf:about="http://eprints.  
soton.ac.uk/id/eprint/346929">
```

```
<nsx:AUT xmlns:nsx='http://www.loc.gov/loc.  
terms/relators/' rdf:resource="&epid;  
person/ext-44780" />
```


SPARQL

- **SPARQL Protocol and RDF Query Language**
- Query language for RDF data
- Federated Query support
 - Send the same query to more SPARQL endpoints
 - Process and gather all the results
- Implementations: Jena, 4store, OpenAnzo, AllegroGraph, Seasme etc.

Problems & Solutions

Conclusions

- Open data can help make businesses more efficient and profitable, and academic work more insightful. Linked data can help make an open data society possible.
- Use of standardised formats such as RDF can make implementing linked data on a large scale easy.

References

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