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 sharealike.” [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
- Government
- Personal
Implications by sector

Business

Government

Personal

Academic
Business
Personal
Government
WHERE DOES MY MONEY GO?
Showing you where your taxes get spent

Expenditure on Total
- 18bn - 20bn (£)
- 20bn - 27bn
- 27bn - 32bn
- 32bn - 43bn
- 43bn - 47bn
- 47bn - 96bn

Source: http://wheredoesmymoneygo.org/
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: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" />
</rdf:Description>
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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