Making Linked Data Work
Introduction

John Domingue
President
“Semantic Web Researchers should build a Semantic Web application” Famous SW Researcher

MOTIVATION
Data

Looking for something specific, or just want to know more about how Government spends your money? You'll find over 6900 datasets to help you get answers.

Browse by publisher
- Cabinet Office (43)
- Department for Business, Innovation and Skills (162)
- Department for Communities and Local Government (782)
- Department for Environment, Food and Rural Affairs (418)
- Department for Transport (151)
- Department of Health (1005)
- UK Statistics Authority (716)

Browse by nation
- England
- Northern Ireland
- Scotland
- Wales

Popular tags
- health (1,165)
- care (823)
- transparency (803)
- communities (659)
- child (603)
- health-and-social-care (608)
- children (571)
- local-government (568)

Developers

You can also access this catalogue via the API or download it as a CSV/JSON dump.
Guidelines for data

Michael Hausenblas's introductions:
- 3 minutes about Linked Data
- 6 minutes about the Semantic Web

Yves Raimond and Michael Smethurst's, BBC, A skim-read introduction to linked data

Tom Heath, Open University, technical tutorial on how to publish Linked Data

Using Linked Data

Jeni Tennison's excellent practitioner's blog
Semantic Web Development Tools
The Tolls wiki (link to introduction to SPARQL)

SPARQL tutorials
- SPARQL By Example
- SPARQL Tutorial
- Data Extraction & Exploration with SPARQL & the Talis platform

History of project
- Power of Information Taskforce report
- Sir Tim Berners-Lee and Professor Nigel Shadbolt - scope of the appointment
- Design note from Sir Tim Berners-Lee on how to put government data online
- PM letter to Cabinet
- Creation of the Transparency Board & Publication of Public Data principles
Create Apps

This Apps will be submitted for moderation and will not be accessible to other users until it has been approved.

Please submit examples of Internet-based applications that make use of publicly-available government data sources.

Name: *

Tags:

A comma-separated list of terms describing this content. Example: funny, bungee jumping, "Company, Inc.".

Description:

Show summary in full view

Path:

Disable rich-text
Typical Application
SUPPORTING APPLICATIONS OVER LINKED DATA: THE CURRENT APPROACH
THEN A MIRACLE OCCURS.
"I think you should be more explicit here in step two."
Representative Architecture diagram

The Crawling Pattern

Application Layer
- Application Code

Data Access, Integration and Storage Layer
- Web Data Access Module
- Vocabulary Mapping Module
- Identity Resolution Module
- Quality Evaluation Module
- Integrated Web Data

Web of Linked Data

Publication Layer
- LD Wrapper
- Database A
- HTTP
- RDF/XML
- LD Wrapper
- Database B
- HTTP
- RDFa
- Legacy App C
- HTTP
• **Making Linked Data Work I**
  - Services Over Linked Data (Carlos Pedrinaci and Maria Maleshkova)
  - Linked Data Principles for Services and Streams (Andreas Harth)

• **Making Linked Data Work II**
  - Towards a Dynamic Web (Rudiger Klein)
APPLICATIONS BECOME FIRST CLASS CITIZENS
Communities win the day

• Wikipedia
  – 3,670,091 articles, and 24,319,249 pages in total
  – 14,824,773 registered users
  – 1,792 administrators

• Facebook
  – Developers from more than 190 countries
  – 20 million Facebook applications installations per day

• iPhone Apps
  – 350,000+
  – 10 billion downloads
Typical Process model

Select Data

‘Clean Up’ Data

(Re)-Write/configure application

Submit Application

Review and validate

Publish

Usage
HOW CAN SEMANTICS HELP?
Application Development Issues (1/2)

• SDKs underpinned by datasets, ontologies and domain services
• What are the affordances of the combined datasets?
  – Peroni, D’Aquino and Motta – key classes, question generation
  – Virtual (meta) machine
• Support for collaborative development
  – Within the same community
Underuse of the rest of SW stack
  - RIF, OWL

Common front ends
  - Graphs, spreadsheets, maps, portals
  - Existing work on this
Descriptions of Submitted Apps

- Dataset used
- How the application is constructed
  - Relationship to other Apps
- What does it do? [capability]
- Who submitted it
- Domain (used for discovery)
- Location (used for discovery)
- Source
- Deployed on

Relevant schemas
- Dublin Core (who submitted)
- MSM/WSMO Lite/MicroWSMO (application description)
- Good relations/USDL (what does it do)
Review and validate

- Quality of Service
  - WSMO, DAML, FIPA
- Usability metrics?
- Software quality?
- Automation?

Relevant schemas
- Revyu.com
• Application centric resource
• Combines human and machine based statements
• Comments, reviews, deployment, invocation and even monitoring data
• Human and machine readable formats
• Supports development (documentation, debugging)
• Discovery
  – Via human network
• Complemented by a dataset blog
Summary

- Documents
- Video
- Social
- (Linked) Data
- Applications
THANKS
Deployment

Service Annotation

Discovery

Process Editor

Process Modeling

Analysis & Monitoring

Invocation

Process Execution

Service Lifecycle