

5) ELISA ERRIQUEZ & JENNI WARDELL

Leveraging Linked Data to connect content and products across the BBC

1. About the Case Organization

The British Broadcasting Corporation (BBC) is the UK's public-service broadcaster. It is the world's oldest national broadcasting organisation and the largest broadcaster in the world by number of employees, with over 20,000 staff in total, of which 16,672 are in public sector broadcasting.

Jenni and I are part of the Nexus A&C team (previously known as Linked Data Platform), which is part of the BBC Platform, BBC Digital business unit; responsible for all digital media services. It was created to help the BBC solve some of the immense challenges as the pace of digital change increased.

2. About the Challenge

In 2010, just before the Football World Cup, the sport team realized that Sport journalists spent a lot of time managing content within the CMS, creating indexes, deciding whether to remove a certain article, deciding where in the page the article should appear. From a journalist's point of view, it was more important to create content than deciding the layout of the page. Therefore it was decided that a new approach was needed to free the journalists, and a tagging or semantic annotation approach was the way forward.

3. What We Did

Initially, the approach was trialed for a microsite, hosting the content about the 2010 Football World Cup, an approach now evolved and used by many of the major web sites at the BBC (BBC News, BBC Sport, BBC News App, K&L, etc).

The microsite used methodologies such as Domain Driven Design and technologies such as RDF and OWL. A special team called DSP (Dynamic Semantic Publishing) was created to achieve this result.

The strategy adopted allowed the evolution from a relational content model and static publishing framework towards a fully dynamic semantic publishing (DSP) architecture. The DSP architectural approach underpinned the re-launched BBC Sports site and the BBC's Olympics 2012 online content.

DSP used linked data technology to automate the aggregation, publishing and re-purposing of interrelated content objects according to an ontological domain-modelled information architecture, providing a greatly improved user experience and high levels of user engagement.

The DSP architecture curates and publishes HTML and RDF aggregations based on embedded Linked Data identifiers, ontologies and associated inferences.

4. Challenges and Lessons Learned

BBC News, BBC Sport and a large number of other web sites across the BBC are authored and published using an in-house bespoke content management/production system ("CPS") with an associated static publishing delivery chain.

The BBC World Cup 2010 site featured a 700-plus team, group and player pages, which were powered by the high-performance DSP architecture.

Previously, BBC Sport would never have considered creating this number of indexes in the CPS, as each index would need an editor to keep it up to date with the latest stories, even where automation rules had been set up. To put this scale of task into perspective, the World Cup site had more index pages than the rest of the BBC Sport site in its entirety.

Obviously we encountered numerous challenges during the development of the Linked Data Approach. The main ones were discovering the power of inference (too powerful?) and the use of external data. A balanced understanding of inference through the use of weak and strong semantics has been the key to resolving these issues. However, some problems still remain and we are still looking into innovative solutions. The key to the success of the project has been the initial use of a small domain, as a prototype to prove the validity and value of the approach.

5. Impact and Benefits

This approach enabled the BBC to support greater breadth and scale, which was previously impossible using a static CMS and associated static publishing chain. The DSP system has now evolved into a set of RESTful APIs and a Triple Store storing more than 37 million triples, managed by our Nexus A&C team. The Linked Data is managed through these APIs and various tools to allow the user to create new “Tags” and to link content.

The most noticeable thing about this work is the scale of the approach of Linked Data at the BBC. Main stakeholders include BBC News, BBC Sport and BBC Worldwide.

The adoption of Linked Data has freed time for journalists, has made opening data possible, enabled quick implementation of large sites, such as the London Olympics.

6. Next Steps

The next step the BBC is currently taking is developing the project called myBBC.myBBC is an innovation programme that will deliver the tools, services and capabilities the BBC needs to make the best use of data to deliver more personalised experiences for its audiences. The two key sections of the project are called Profile and Personalisation.

Profile will provide a destination that joins up all of an audience member’s BBC experiences and data and will enable a truly cross-platform, cross-product experience. It will put the audience in control of their data and personalisation, allow them to discover new products and let them share their experiences with other audience members.

The Personalisation proposition allows the BBC to gain a deeper understanding of its audience by offering product teams a set of services that enable audiences to tailor their BBC experience.

The myBBC team and the Linked Data team (Nexus A&C) are going to be working closely with each other to use linked data technologies to their full potential to deliver a product that will allow the audiences to find and consume content in the way that they specify across all BBC products and services, “placing the BBC back in the audiences’ hands.”

6) MAISH NICHANI

Design methodology for a context aware mobile search based application, using diverse data sources

1. About the Case Organization

The organisation is a government agency that carries out regular household surveys.

2. About the Challenge

Our client carries out household surveys. They recruit freelancers to do the job. They wanted to help them better optimise the time taken and success rate of the surveys.

A key challenge was to plan the sequence of the houses to visit. It turns out that the default list given to the surveyors was not optimised. The sequence of houses to visit depends on many contextual factors such as distance to a bus stop, rain and age of the residents, which governs when they are usually at home.

The challenge: how might we build a mobile app to help the surveyors better optimise their household visits route for a day?

3. What We Did

We first went on a field study with the surveyors. We followed them on their daily visits and noted down their strategies for the challenges they encountered. Eg some of them used color codes to highlight household preferences to do the survey online, by phone or by a visit.

We made a list of the factors that affected the visit route. There were many. Location, distance, climate, bus and taxi routes and even the age of the residents. We got data from different sources:

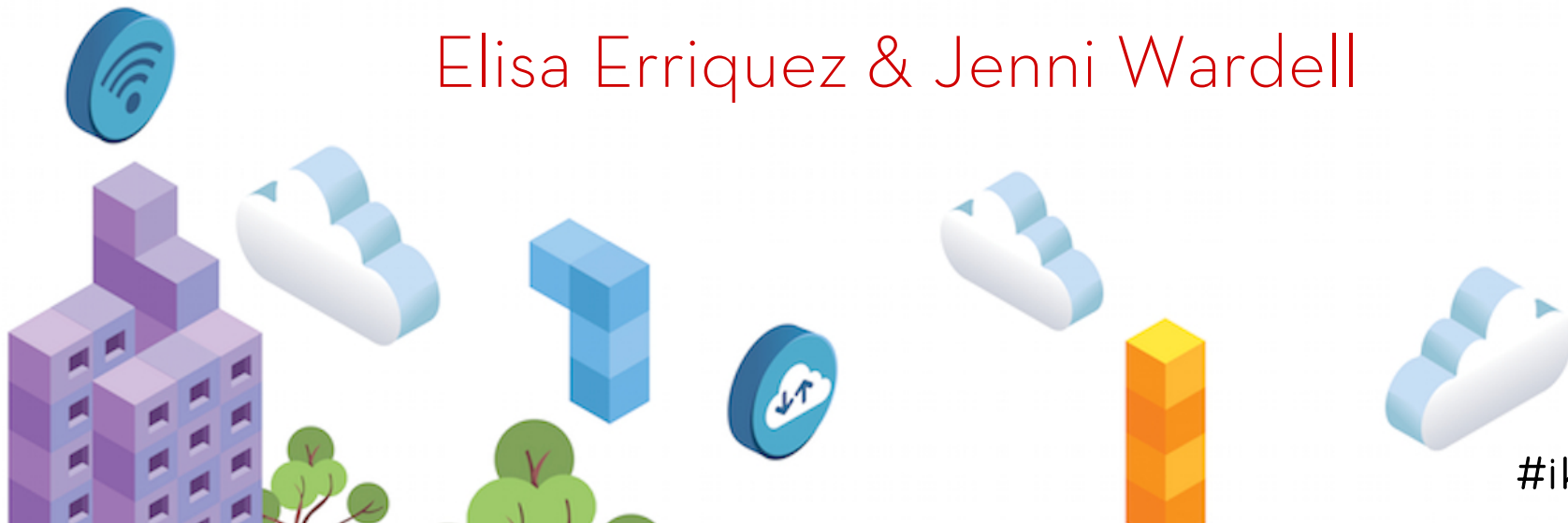
- Location - Google
- Distance - Google
- Directions - Google



INNOVATIONS
IN KNOWLEDGE
ORGANISATION

Linked Data at the BBC

Elisa Erriquez & Jenni Wardell



#ikosg2015

LATEST: [Woman seriously injured in sledding accident in Glasgow at the weekend dies in hospital](#)



MPs urge action on milk price cuts



MPs want more to be done to protect dairy farmers from falls in milk prices - including new powers to fine supermarkets over pricing disputes.

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[Dairy farmers' payments delayed](#)

[Farm to sell 'raw' milk direct](#)

▶ [The view from one dairy farm](#)



Japan PM Abe in 'IS hostages' vow

Japanese Prime Minister Shinzo Abe condemns an apparent threat by the Islamic State group to kill two Japanese hostages unless a ransom is paid.

▶ [Abe: Threat 'unforgivable'](#)

[Viewpoint: IS hostages](#)

[The rise of IS - and how to beat it](#)

[Deadly month of jihadist attacks](#)

[How is Islamic State funded?](#)



Tributes to Corrie's Anne Kirkbride

The cast of Coronation Street lead tributes to actress Anne Kirkbride, who played Dorothea Barlow

Democracy Day

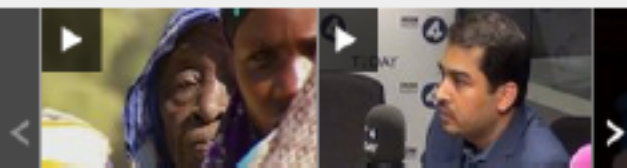
13:21: Narrow interpretation of Islam Islam scholar Prof Tariq Ramadan: The narrow interpretation of Islam has to be challenged, it's an interpretation outside the accepted diversity. The problem is interpretation of the scriptural sources, verses taken out of context.

13:18: Concern is rising violence Egyptian Tahrir Square activist Heba Raouf Izzat: The concern is rising violence. I don't see a solution coming from politicians, states that have exercised violence against their own people.

13:17: Democracy in Afghanistan Shukria Barakzai - a Kabul MP - tells the BBC's Afghanistan programme: "Britain is the mother of democracy. In

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20 January 2015 Last updated at 13:17

Savers getting raw deal, says FCA



Millions of savers are getting a raw deal, particularly from the big High Street banks, the Financial Conduct Authority (FCA) concludes. Will mortgage and savings rates drop? Beating the FTSE's 15-year decline



Scottish Power to cut gas prices

Scottish Power becomes the third major gas supplier to announce a price cut, with the news it is to reduce prices by 4.8% from 20 February. British Gas to cut gas prices by 5% E.ON to cut gas prices by 3.5% Oil price falls: Will consumers benefit? Falling oil prices: Winners and losers



EU votes to lift Indian mango ban

A ban on mangoes imported from India by the EU is to be lifted after a European Commission vote, but other foodstuffs remain banned.

Mango talks for Cameroon and India PM

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BP to learn oil spill fine fate



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Vehicle pile-up closes part of M6

Three people are hurt in an accident involving 15 vehicles which closes part of the M6 near Cannock, Staffordshire, and causes long delays for motorists.

Cannock

M6 motorway



Scottish Power to cut gas prices

Scottish Power becomes the third major gas supplier to announce a price cut, with the news it is to reduce prices by 4.8% from 20 February.

Personal finance

Scottish Power

Energy



The 'difficulty' in gaining FOI requests

A Freedom of Information request sent to the Cabinet Office left questions unanswered, says Chris Cook

Cabinet Office

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Scottish Power to cut gas prices by 4.8%

4 days ago | [Business](#)

Scottish Power has become the third major gas supplier to announce a price cut, with the news it is to reduce prices by 4.8% from 20 February.

Customers on the standard tariff will make an average saving of £33 on their annual gas bills as a result.

Earlier this week, the UK's largest supplier, British Gas, announced it was to cut prices



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Scottish Power to cut gas prices

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3 August 2012 Last updated at 11:23

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Jessica Ennis 'inspires' next generation of athletes

South Yorkshire heptathlete and Olympic gold medal hopeful Jessica Ennis is inspiring a new generation of athletes, her former PE teacher has said.

Miss Ennis, from Sheffield, has begun her two-day bid for heptathlon gold at the Olympic Stadium in London.

Chris Eccles, who taught Miss Ennis at King Ecgbert School, said every pupil knew about the athlete's achievements.

"They are inspired by her because they can see someone from their own town being so successful," he said.

"They see people like Jess as great role models."

'Immense pressure'

Mr Eccles said he was sure that Miss Ennis was taking the Olympic challenge "in her stride".

"I'd imagine that underneath, like any performer, she's got butterflies and nerves, but you use them when you get on the starting blocks," said Mr Eccles.



Heptathlete Jessica Ennis still competes for the City of Sheffield Athletic Club

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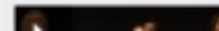
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Freddie's choice

[The Jew who was offered a job with the Gestapo](#)



Hugh and I

DATASETS

- **Wikidata & Dbpedia** – Wikipedia based general data sets
- **MusicBrainz** – Music artists and groups
- **GeoNames** – Geographical data
- **Statistics.gov.uk** – Parliamentary constituencies and other political entities

THINGS BETA[Home](#) [Search](#) [About](#)

Welcome

BBC Things provides a single reference for a growing collection of the things that matter to the BBC and our audiences.

It uses [Semantic Web](#) technologies that allow open access to our data and is built on top of our [Linked Data Platform](#). The types of data we maintain about things can be found in our [Ontologies](#).

On BBC Things, we publish the data we use to build new experiences for our audiences, and we link to more complete, authoritative or canonical open data sources wherever possible.

See [the blogpost](#) for more information.

Find a thing

Stuck for ideas? Why not try one of these suggestions?

- [Council](#)
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Jessica Ennis

<http://www.bbc.co.uk/things/fa7a9d60-c265-11e0-962b-0800200c9a66#id>

Jessica Ennis (Olympic athlete (Athletics)) is a person.

Properties

disambiguationHint

Olympic athlete (Athletics)

label

ENNIS Jessica-athletics-gbr-1986-01-28

Jessica Ennis

Jessica Ennis

preferredLabel

Jessica Ennis

primaryTopicOf

http://en.wikipedia.org/wiki/Jessica_Ennis

http://twitter.com/#!/J_Ennis

<http://www.bbc.co.uk/sport/olympics/2012/athletes/fa7a9d60-c265-11e0-962b-0800200c9a66>

<http://www.facebook.com/JessicaEnnisOfficial>

sameAs

http://dbpedia.org/resource/Jessica_Ennis

<http://rdf.freebase.com/ns/m.0b7nrg>

<http://www.wikidata.org/entity/Q6091>

Dulwich & West Norwood

<http://www.bbc.co.uk/things/cd40a604-8d83-4501-95e5-7690beb3132d#id>

Dulwich & West Norwood (Constituency of the UK Parliament) is a place.

Properties

skos:altLabel

Dulwich and West Norwood

disambiguationHint

Constituency of the UK Parliament

label

Dulwich & West Norwood

preferredLabel

Dulwich & West Norwood

shortLabel

Dulwich

sameAs

<http://data.parliament.uk/resources/146913>

[http://dbpedia.org/resource/Dulwich_and_West_Norwood_\(UK_Parliament_constituency\)](http://dbpedia.org/resource/Dulwich_and_West_Norwood_(UK_Parliament_constituency))

<http://statistics.data.gov.uk/id/statistical-geography/E14000673>

<http://www.wikidata.org/entity/Q3335993>

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- <http://www.bbc.co.uk/2012/>
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