



Sponsored by the UK Location Programme LIIB &  
the Digital National Framework Expert Gp:  
**Getting Stared with Linked Data & Location**  
- Workshop Summary v1.00 -

## DOCUMENT CONTROL

### Change Summary

Version	Date	Author/Editor	Change Summary
V1.00b	05 Oct 2010	K Murray	Initial draft from source material & draft conclusions/recs
V1.00c	07 Oct 2010	K Murray	Incl initial review from presenters & sent to LIIB-6
V1.00	20 Oct 2020	K Murray	Final comments and priorities added.

### References

Ref.	Title/Version/Publication Date/Author
[1]	<p>1a) Designing URI sets for Location  <a href="http://location.defra.gov.uk/2010/07/designing-uri-sets-for-location-open-for-comment/">http://location.defra.gov.uk/2010/07/designing-uri-sets-for-location-open-for-comment/</a></p> <p>1b) Designing URI sets for the Public Sector  <a href="http://location.defra.gov.uk/2010/07/designing-uri-sets-for-location-open-for-comment/">http://location.defra.gov.uk/2010/07/designing-uri-sets-for-location-open-for-comment/</a></p>
[2]	<p>INSPIRE Data Specification Regulation (draft – adoption expected late 2010)  <a href="http://inspire.jrc.ec.europa.eu/index.cfm/pageid/2">http://inspire.jrc.ec.europa.eu/index.cfm/pageid/2</a></p>
[3]	<p>INSPIRE D2.5 Generic Conceptual Model v3.xx  <a href="http://inspire.jrc.ec.europa.eu/index.cfm/pageid/2">http://inspire.jrc.ec.europa.eu/index.cfm/pageid/2</a></p>
[4]	<p>INSPIRE D2.7 Encoding Guidelines v 3.xx  <a href="http://inspire.jrc.ec.europa.eu/index.cfm/pageid/2">http://inspire.jrc.ec.europa.eu/index.cfm/pageid/2</a></p>
[5]	<p>Getting started with Linked Data and Location: Workshop Agenda  <a href="http://location.defra.gov.uk/2010/09/reminder-registration-closes-soon-for-linked-data-workshop/">http://location.defra.gov.uk/2010/09/reminder-registration-closes-soon-for-linked-data-workshop/</a></p>
[6]	<p><b>Workshop presentations:</b>  For download at <a href="http://www.dnf.org/guides/documents/C9/">http://www.dnf.org/guides/documents/C9/</a></p> <p><b>BBC:</b>  Narrative and presentations <a href="http://blockslabpillar.com/2010/09/18/how-the-emergence-of-the-semantic-web-changes-the-way-we-think-about-information-architecture/">http://blockslabpillar.com/2010/09/18/how-the-emergence-of-the-semantic-web-changes-the-way-we-think-about-information-architecture/</a></p> <p><b>Klima –og Forurensningsdirektoratet – SEIS:</b>  High resolution pdf document at: <a href="http://no.ckan.net/package/seis">http://no.ckan.net/package/seis</a> . Here you will find also other SEIS-related links and documents.</p>
[7]	<p>UK Location Programme website  <a href="http://location.defra.gov.uk/">http://location.defra.gov.uk/</a></p>
[8]	SEI S Reportnet

	<a href="http://www.eionet.europa.eu/events/NRC_IS_2009/Plans%20for%20SEIS%20and%20Reportnet%202010.pdf">http://www.eionet.europa.eu/events/NRC_IS_2009/Plans%20for%20SEIS%20and%20Reportnet%202010.pdf</a>
[9]	<p>Blogs &amp; recent developments</p> <p>Blogs:</p> <p><a href="http://www.jenitennison.com/blog/node/140">http://www.jenitennison.com/blog/node/140</a></p> <p><a href="http://blogs.ukoln.ac.uk/locah/2010/09/22/creating-linked-data-more-reflections-from-the-coal-face/">http://blogs.ukoln.ac.uk/locah/2010/09/22/creating-linked-data-more-reflections-from-the-coal-face/</a></p> <p>Local Government:</p> <p><a href="http://www.legs.gov.uk/getdoc/9de7304d-76e7-46dc-ac2f-11131138a96b/Publishing-LinkedData_For_LocalGovernment_Rev5.aspx">http://www.legs.gov.uk/getdoc/9de7304d-76e7-46dc-ac2f-11131138a96b/Publishing-LinkedData_For_LocalGovernment_Rev5.aspx</a></p> <p>German National Library:</p> <p><a href="http://bit.ly/dziPMg">http://bit.ly/dziPMg</a></p>

## CONTENTS

<b>1</b>	<b>PURPOSE OF THE WORKSHOP .....</b>	<b>5</b>
1.1	The Workshop.....	5
1.1.1	<i>The Purpose</i> .....	5
1.1.2	<i>The sponsors</i> .....	5
1.1.3	<i>The participants</i> .....	5
1.2	This Summary.....	5
<b>2</b>	<b>THE PRESENTATIONS.....</b>	<b>6</b>
2.1	Introduction .....	6
2.2	Moment of Opportunity.....	6
2.3	The National Archive.....	6
2.4	Example: Bathing Water .....	7
2.5	Example: Administrative Areas .....	8
2.6	Example: Transport Data [NaPTAN] .....	8
2.7	Example: Climate & Tool developments .....	9
2.8	Example: European developments – SEIS .....	9
2.9	Example: Enriching digital content at the BBC .....	10
2.10	URI Design Document .....	10
<b>3</b>	<b>BREAKOUT DISCUSSION.....</b>	<b>11</b>
3.1	Form of the breakouts .....	11
3.2	Observations.....	11
3.2.1	<i>Communication</i> .....	11
3.2.2	<i>Technical</i> .....	11
3.2.3	<i>Support</i> .....	12
3.2.4	<i>Leadership</i> .....	12
3.3	Recommendations .....	12
3.3.1	<i>Communication</i> .....	12
3.3.2	<i>Technical</i> .....	12
3.3.3	<i>Support</i> .....	12
3.3.4	<i>Leadership</i> .....	12
3.4	Concerns.....	13
3.4.1	<i>Communication</i> .....	13
3.4.2	<i>Technical</i> .....	13
3.4.3	<i>Support</i> .....	13
3.4.4	<i>Leadership</i> .....	13
<b>4</b>	<b>CONCLUSIONS.....</b>	<b>14</b>
4.1	General .....	14
4.2	Linked Data .....	14
4.3	Getting Started.....	14
4.4	INSPIRE.....	14
4.5	Gaps .....	15
4.6	Leadership .....	15
<b>5</b>	<b>RECOMMENDATIONS .....</b>	<b>16</b>
5.1	Introduction .....	16
5.2	Communications .....	16
5.3	Support .....	16
5.4	Technical Infrastructure.....	16
5.5	Leadership .....	16
5.6	Priorities for Next Steps .....	17
5.6.1	<i>Workshop: Linked Data Basics</i> .....	17
5.6.2	<i>UML to RDF translation</i> .....	17
5.6.3	<i>Organisational Pilots – Kick Off workshops</i> .....	17
5.6.4	<i>Capacity Building: Skills, Tools and APIs</i> .....	17
5.6.5	<i>Communications</i> .....	17

# 1 PURPOSE OF THE WORKSHOP

## 1.1 The Workshop

### 1.1.1 The Purpose

- 1 The purpose of the workshop, held on 15 September, was to
  - Promote understanding – what linked data is and how it can support data sharing and address UK Location Strategy objectives
  - Share knowledge – learn about current initiatives, achievements to date and lessons learnt
  - Build confidence – gain benefits through simple steps while promoting reuse of data
  - Inform – steps involved in designing, publishing and exploiting linked data
  - Identify issues – recognizing that the support infrastructure is still immature – determine the priorities in the near future and how we should address these

### 1.1.2 The sponsors

- 2 The workshop was organised by the Digital National Framework [DNF] Expert Group and the UK Location Programme's [UKLP] Information Interoperability Board [LIIB] and was hosted by Ordnance Survey at Southampton. This was the last public event to held in Maybush (prior to move to the new office later in the year).

### 1.1.3 The participants

- 3 Around sixty participants attended the event. This included a mix of linked data experts and many people new to the topic. Individuals came from a variety of backgrounds in the public and private sectors as well as systems suppliers and academia.

## 1.2 This Summary

- 4 This summary has been prepared to provide a record of the event, for those who were unable to attend, as reference for those who did and in particular a status record and a pointer to priorities going forward. The summary and associated presentations will be found on both the DNF website and the UK Location Programme website.

## 2 THE PRESENTATIONS

### 2.1 Introduction

- 5 The first session provided an opportunity to highlight the current developments and initiatives that are converging around data sharing. The inability to easily share data easily and reliably means that business objectives are not fully secured in spite of the large quantity of good quality data available in the UK. The UK Location Strategy recognises the widespread use of spatial information but at the same time highlights the difficulties in data sharing which limits the potential to fully exploit the benefits of location based data for a wider number of users.
- 6 The presentations outlined these data challenges and illustrated how linked data is a significant step forward in joining data across organisations, in solving business objectives and in saving money.
- 7 The second session “under the hood” allowed the audience to find out more about the topic from the speakers in the first session (TNA, Bathing Water, Admin Areas, NaPTAN, Tools) and Paul Davidson (CTO Council) outlined the development process which has created the URI design papers published by the Cabinet Office.
- 8 **Carsten Ronsdorf** (Ordnance Survey) as host chaired the day and introduced the speakers.

### 2.2 Moment of Opportunity

- 9 While it might not be obvious that a long term European Directive is an enabling mechanism for linked data – that is just the case for location data. **Keith Murray** (UK LP & INSPIRE teams) illustrated how the INSPIRE Directive, which mandates requirements through Regulations and supports these through guidelines (effectively open standards) requires all member states to adopt a set of harmonised specifications for 34 data themes.
- 10 A key requirement is that each spatial object (geographic feature) eg building, address, road link will require a unique object identifier that is traceable. The encoding guidelines [Ref 4] recommend Member States to adopt an http form of identifier to fulfil this requirement.
- 11 The Generic Conceptual Model for INSPIRE [Ref 3] also supports “Object Referencing” which is a recognition of the need to connect “business data” with “location data” (and equally form location objects from aggregations of location objects). Reuse is a primary principle of INSPIRE and this is employed in the more complex INSPIRE data specifications.
- 12 For example in the Transport Network theme collections of road links can define the “M27” feature, or a feature such as a speed limit can be linked to the road geometry (also combining linear referencing) – in each case without the need to duplicate the highway geometry.
- 13 This provides a potential starting point for several organisations (Highways Agency, DfT, Local Authorities DG-TREN etc) to maintain their own information about the same highway and make it available for others to also use - using linked data as the mechanism to publish and share that data.

### 2.3 The National Archive

- 14 **John Sheridan** of The National Archive has been involved in the development of data.gov.uk and the move to open up access to public sector information. He likened the current maturity of the web with the early

days of engineering where components were hand crafted to fit together until standards were adopted (eg thread definitions for nuts and bolts) to allow organisational and then universal adoption and the ability to connect any nut and bolt using that standard no matter their origin.

- 15 He outlined the wider picture that is now emerging around a roadmap going forward, the framework for standards and the more recent Gridworks development as a support tool.

## 2.4 Example: Bathing Water

- 16 **Alex Coley** of the Environment Agency outlined a bathing water pilot from the Environment Agency that is testing a linked data approach.

- 17 Bathing water samples ie water quality data, is recorded on a weekly basis in the summer season. These taken from the same location each time under defined guidelines.

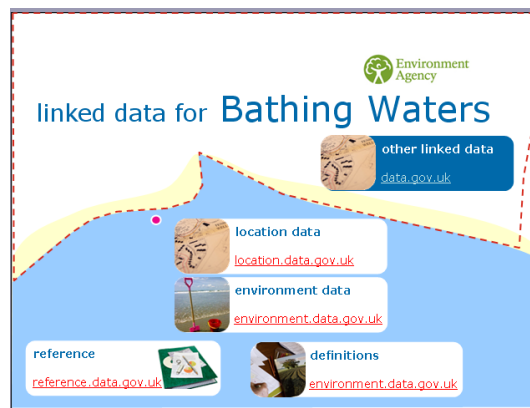


Figure 1: Different data sources used in the Bathing Water pilot

- 18 In the pilot (supported by Epimorphics and 1Spatial) the 500+ monitoring points for specific bathing water beaches) are published as location objects using the URI form:

[http://location.data.gov.uk/so/ef/SamplePoint/{namespace\\_under\\_discussion}/{bwid}](http://location.data.gov.uk/so/ef/SamplePoint/{namespace_under_discussion}/{bwid})

- 19 Each water quality record (observation) is also published using a URI of the form described in

<http://environment.data.gov.uk/data/bathing-water-quality/in-year/sample/date/{date}/time/{time}/point/{bwmpid}>

- 20 The aim is also to adopt an INSPIRE-like[1] model for the location component. The observations are then linked as well as fulfilling an internal obligation to report this information (for the Bathing Water Directive), putting the raw data up as a URI also offers third parties the ability to build their own applications from the same data.

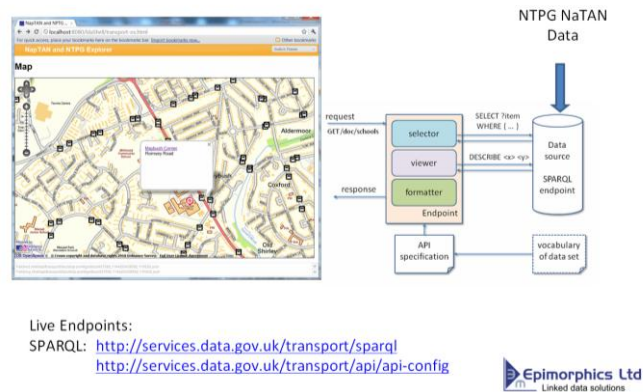
## 2.5 Example: Administrative Areas

- 21 An early example of location data as linked data was that prepared by Ordnance Survey Research. **John Goodwin** (Ordnance Survey) provided an overview of how this data was developed. The linked data can be seen at <http://data.ordnancesurvey.co.uk/>
- 22 The first linked data published was based on Boundary Line and provided information about the administrative and voting areas of Great Britain. The data describes the type of area, it's name and topological relationship between other areas. So for example, one could use the data to find counties and unitary authorities next to Hampshire, or to find all of the wards in Hampshire.
- 23 Follow the release of the administrative areas linked data was a simple gazetteer based on the 50k Gazetteer. This provides a list of named places and settlements.
- 24 Next to be publish is linked data based on CodePoint Open. This will create a URI for each postcode, with linked from the postcode to the ward, district, unitary authority and county the postcode resides in.
- 25 Since the launch of OS OpenData more work has been invested in this approach to publishing Ordnance Survey data.

## 2.6 Example: Transport Data [NaPTAN]

- 26 In March 2010 the Department for Transport published the national transport network access points dataset on [data.gov.uk](http://data.gov.uk) as part of the open data initiative. It was published as a CSV and XML file as a fast way of making it accessible. Jeni Tennison (The Stationery Office) has been processing that data since and it is now emerging on [data.gov.uk](http://data.gov.uk). It is also piloting the URI structure.

### Web Application/UI



**Figure 2: NaPTAN served through a view API directly from data.gov.uk**

- 27 Stuart Williams (Epimorphics but representing data.gov.uk) outlined the work undertaken to date. He was able to show four modes of access to linked data:
- link-following with a browser;
  - query via SPARQL;
  - linked data; and an

- application user interface that made use of the API.

28 As part of this he was able to demonstrate a live link to a page on data.gov.uk for each bus stop eg “Maybush Corner” as an example close to the venue.

29 He also showed a simple but very effective scenario of NaPTAN data streaming from data.gov.uk into a map browser. In this case it was Open Space - where panning the map brought up bus stop data live from the source: an open browser and open data.

## 2.7 Example: Climate & Tool developments

30 **Andrew Woolf** (Rutherford Appleton Laboratory) has also been engaged in the INSPIRE work teams since 2005 and specialises in climate data. He reported on programmes that his unit at the STFC e-Science Centre has been undertaking towards linked data models.

31 Recent funding awards will now permit further testing with a key driver in climate research now being transparency & openness in the raw data used by climate scientists – hence there is an opportunity to publish observations in an open and accessible form using linked data.

32 Andrew offered several observations regarding current and future developments before handing over to his colleague **Robert Boczek**.

33 Robert has been working in the STFC e-Science Centre for the last 3-4 months and is due to return to Krakow shortly. He has developed a tool to take Unified Modelling Language [UML] data and generate Resource Description Framework graphs. During the “under the hood” session he demonstrated the workflow to take Ordnance Survey Open Data (Strategi) and combine UML model with the INSPIRE UML model and translate this to an RDF form. From this he exhibited Strategi as RDF data in an INSPIRE form.

## 2.8 Example: European developments – SEIS

34 In the final presentation of the morning **Rengifo Ortega** (Klima –og Forurensningsdirektoratet > Climate & Pollution Agency) presented from Oslo (via Skype<sup>1</sup>). He described the Shared Environmental Information System [SEIS] which the European Environment Agency [EEA] has been developing as a way of collecting and assembling environmental data and observations.

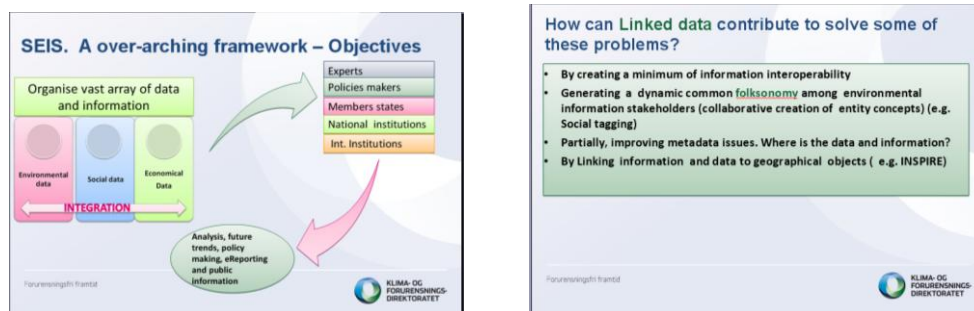


Figure 3: Potential capability of Linked Data in support of SEIS

<sup>1</sup> Skype link > the two way audio & visual with slideshare worked surprisingly well!!!

35 He described the wide ranging nature of SEIS and the challenges it faces to harness and convert data sources into information for many purposes (policy making, decision making, operational...). The main issues are listed below and it has been recognised that linked data may be able assist with several of these:

- Interoperability issues (physical, semantic and organisational)
- Fragmented eEnvironment services
- Quality of data
- Lack of metadata
- Information for decision-making still found in unstructured data formats
- Lack of ontologies to describe world entities

36 The EEA had produced a position paper for ReportNet which advocates the adoption of linked data [Ref 8] and this is currently on the table for discussion.

## 2.9 Example: Enriching digital content at the BBC

37 **Silver Oliver** of the BBC outlined the way the BBC have sought to improve the content of their website and started using linked data some time ago in a modest way as a consumer of data. The content of the wildlife pages is populated by material from several sources (eg wikipedia, WWF etc) – by using linked data these feeds become more manageable and maintainable. As a pilot the work was considered a success and the content has now grown.

38 More recently a similar approach was used for the World Cup 2010 in South Africa. It is possible to use data linkages in a dynamic way where the web page content is dynamically assembled and maintained. However it was also found that some content was not available – eg the location of the stadium. The necessary entries were added to the GeoNames initiative ([www.geonames.org](http://www.geonames.org)) as linked data and reused from there.

39 On the question of a business case for linked data Silver stated that this is currently being considered but all the work to date has been around discovering cost effective solutions to content challenges and taking these one step at a time.

## 2.10 URI Design Document

40 During the lunch time session Paul Davidson (CTO Council/LEGSB/Sedgemoor DC) outlined the development of the generic URI design paper [Ref 1b] , reviewed and published in 2009. From this a small family of domain guides might emerge of which the Location URI guide is the first [Ref 1a]. The location document reconciles INSPIRE and UK approaches. It is out for public review until 8 October.

## 3 BREAKOUT DISCUSSION

### 3.1 Form of the breakouts

- 41 The audience was broken into four groups for the breakout with the aim of returning observations, recommendations and concerns on what they had heard in the morning and over lunch. One of the four groups was dedicated to the DNF Expert Group which had a dedicated discussion around the commonality of the Linked Data approach, the DNF approach and the implications of this. The findings of each group were reported back before the final plenary by Silver Oliver.
- 42 The summary below is taken directly from the discussion and pulls in the relevant and common findings from the breakout sessions.
- 43 The feedback is grouped under Technical, Communication, Support & Leadership topic headings.

### 3.2 Observations

#### 3.2.1 Communication

- 44 Examples are very helpful and need to see more published.
- 45 There is a need for easily digestible information about linked data, how it works, what the advantages are and how it compares with other approaches
- 46 A glossary is required to help people get up to speed with the terminology and fill the knowledge gap.
- 47 Linked data allows us to integrate “all kinds of data” across organisations using the web – not just location.
- 48 Value add applications may be slow to emerge until there is sufficient critical mass that can be relied on.
- 49 Linked data offers a significant opportunity – for the private sector in new applications and public sector in reduced duplication and 2<sup>nd</sup> order cost savings.

#### 3.2.2 Technical

- 50 Are triple stores performant at large scale?
- 51 How are open and non-open data sources managed in a linked data environment?
- 52 How does one convert an existing approach to RDF?
- 53 How does data discovery work with linked data?
- 54 How do we describe quality and provenance in linked data?
- 55 How do we move onto the repeatable, sustainable, embeddable levels of operation?
- 56 Applications could become “task orientated” at the user level rather than “dataset orientated” at the developer level.

### 3.2.3 Support

57 Regarding tools - suppliers to the public sector will react to demand at the appropriate time.

### 3.2.4 Leadership

58 Does linked data change the way we deal with data (because it's "always on"?) - use it when you need it.

59 There does not appear to be an overall roadmap for the publication of linked data in the public sector.

60 Will spending cuts hinder or promote adoption?

61 DNF model and Linked Data could be closer than some think.

62 The scene is moving fast – need to engage sooner rather than later.

## 3.3 Recommendations

### 3.3.1 Communication

63 Establish a register of linked data examples.

64 Data.gov.uk needs to improve its communication with the larger community (public, private & third sectors)

65 Need to consider from the end user application perspective – hiding any complexity, provide tools to search, aggregate, connect > task oriented.

66 Articulate the business case/business drivers – benefits of adoption & risks

### 3.3.2 Technical

67 We need to be clear about objects and unique identifiers (URI) – ie meaningful things users have information about and would recognise & other things

68 Agree patterns for time series, subsets, change/lifecycle management/versioning

### 3.3.3 Support

69 There is need for a "linked data primer"

70 Need to see an end to end process to convert existing data and transform it to linked data and demonstrate the advantage in this form.

71 DNF should adopt the Linked Data framework for future work.

### 3.3.4 Leadership

72 We need to minimise duplication of datasets – public sector needs to coordinate common themes, need to link to the authoritative/more reliable source wherever possible.

73 Show the INSPIRE and Linked Data relationship to help people save time and help understand what they need to do.

74 Needs to be high profile leadership for linked data in the public sector.

## 3.4 Concerns

### 3.4.1 Communication

- 75 Open data/open source can be positive in opening up new applications and in transparency – but can have negative impacts on current applications and commercial developments – at least in the short term.

### 3.4.2 Technical

- 76 Are INSPIRE ontologies and linked data ontologies the same?
- 77 Is linked data scaleable (two workshop attendees considered the answer to be yes).

### 3.4.3 Support

- 78 Lack of tools currently
- 79 Skills – capacity limitations currently
- 80 Conceptual jump that users/developers need to overcome.
- 81 People would like to champion but are not yet equipped/confident to do this.
- 82 Linked data looks like a steep learning curve.

### 3.4.4 Leadership

- 83 Business driver – how does one justify a development using linked data?
- 84 Is the UK approach the only approach?
- 85 Need confidence that linked data is there for the “long haul” and will endure.

## 4 CONCLUSIONS

### 4.1 General

86 There are a lot of positives to take away from the workshop, a number of recurring observations, some fear of the unknown and a plea for some hand holding. The conclusions below aim to select the key messages emerging from the event and over the recommendations that can be drawn from the day.

### 4.2 Linked Data

87 Generally most people could see the potential of linked data, the opportunities it could open up and how it can offer a step change in data sharing across boundaries.

88 Linked data is the leading vehicle to underpin the publish once – reuse many times principle,

89 Linked data offers a universal approach to integrating all kinds of data (location and otherwise) and across organisations using a common approach.

90 Contrary to popular opinion mandating a specific approach does not make it happen – business benefits (cost savings) and advantage over legacy approaches (capability to do new things/better service) are powerful drivers.

### 4.3 Getting Started

91 The successful developments have started off as modest, low key/low cost toe-in-the-water pilots.

92 Successful pilots are typified by the “can do” approach and an element of determination to prove what is possible.

93 Organisations with no experience in linked data will need help to get started, even the technical staff will need some orientation to boot strap development – this is key to capacity building.

94 Applications to exploit online data (in linked form) are essential to realise the benefits (though the underlying technology will be hidden) eg [legislation.data.gov.uk](http://legislation.data.gov.uk)

95 Take up is dependent on communications, experts will operate at their own level, but there is a need to reach managers and others as well.

96 While the workshop successfully fired imaginations – there is a clear need to provide basic first steps and primer resources.

### 4.4 INSPIRE

97 INSPIRE and UK Location Strategy are predicated on business benefits, while a metadata service may help (UK has had such a service for at least 20 years) the real benefits lie in tackling the problems articulated in the UK Location Strategy (duplication, too few linkages across data, across organisations etc). INSPIRE alone

will NOT deliver these benefits, INSPIRE exploited through linked data<sup>2</sup> has very significant potential to address these issues.

- 98 Data providers complying with INSPIRE (and therefore using the URI model Ref 1) will have little or no additional burden in publishing linked data.
- 99 Application developers (INSPIRE and other data) will be able to take their “always on” data and build cross organisational applications.
- 100 INSPIRE will support online data access with a set of information resources and in time spatial data services – many of these can be adapted to support linked data.

## 4.5 Gaps

- 101 There is a perception that linked data is a big challenge – yet all the pilots today have been built using very modest resources.
- 102 There are too few tools that make it easy to create some linked data by a novice.
- 103 There are too few API's that could be used to exploit location data visually – while retaining the capability to maintain and build further linkages.

## 4.6 Leadership

- 104 A lot of people are looking to others to do something before they start, yet the successes so far have been accomplished by those who have started modestly with a “lets try it” approach and have built up from there.
- 105 While there are some generic benefits – only the data provider and application consumers will be able to analyse what they do today and how they can switch to linked data to fulfil their objectives more effectively (eg save money by publish once and reuse), deliver better or more innovative services or provide a better data feed to their application builders.

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<sup>2</sup> See also UKLP Blueprint & theme coordination.

## 5 RECOMMENDATIONS

### 5.1 Introduction

- 106 The recommendations below have been derived from the workshop and discussion since the event. From these discussions the priorities for the next six months (to April 2011) are outlined in the “Priorities for Next Steps” section below.

### 5.2 Communications

- 107 Document high level ie universal benefits of linked data over alternative approaches.
- 108 Make it clear that INSPIRE coupled with linked data is the primary vehicle to address the UK Location Strategy issues and achieve the business benefits side of the UK Business Case for INSPIRE

### 5.3 Support

- 109 Establish an open self help reference point (network community) on the web to share information about “linked data and location resources”.
- 110 Use the reference point to provide case studies, expertise contact points, reusable infrastructure, support material (primers, glossary).
- 111 Hold a workshop in early 2011 dedicated to “first steps in linked data and location”.

### 5.4 Technical Infrastructure

- 112 Publicise existing tools better
- 113 Promote tool development and their reuse for specific processes that ease the adoption of linked data (eg UML to RDF graph translation, multiple outputs: GML, RDF etc [see STFC presentation])
- 114 Promote tool development around APIs to make translation of existing data in to INSPIRE/Linked Data form more easily attainable especially for the general practitioner.
- 115 Promote tool development that provides graphic visualisation while interfacing with linked data (aka John Goodwin admin areas demonstrator) and go beyond this to move the management of linked data to the task level and away from dataset level.
- 116 Address outstanding issues around lifecycle management and versioning.

### 5.5 Leadership

- 117 Follow the lead of those that have started out on this journey – if you can see the potential – just do it!
- 118 Don’t wait for others to create the business case for you – only you know your operating environment and the advantages you could gain through a publish once and use many interface.

## 5.6 Priorities for Next Steps

- 119 Acknowledging the limited resources at our disposal and limited capability the following priorities are proposed for the next six months – ie to April 2011.

### 5.6.1 Workshop: Linked Data Basics

- 120 There is a need for advocates to gain a better grounding how linked data works and what they need to do to a) publish it and b) consume it. It is proposed that a days workshop should be held in early 2011 to cover this (repeatable if required)

### 5.6.2 UML to RDF translation

- 121 Given that the public sector will be adopting more consistent data models via INSPIRE the need to translate the INSPIRE UML models to RDF is important to avoid divergence and duplication. This work has started at STFC and the tool could be put into the public domain, There is an urgent need to review the assumptions in the RDF translation before the software is used more routinely. This should be resolve before Christmas 2010.

### 5.6.3 Organisational Pilots – Kick Off workshops

- 122 Several organisations are considering small pilots to test feasibility, capability and benefits. Rather than work in isolation we should encourage knowledge sharing so that these advocates can learn from those who have been through that process. Organise as and when required.

### 5.6.4 Capacity Building: Skills, Tools and APIs

- 123 An impediment to scaling up capability is both knowledge bandwidth and the lack of black box tools (ie the task process vs the dataset management process mentioned by Stuart Williams. This requires more thought but opportunities should be sought to widen the take up and ease the preparation and consumption of linked data. This is also wider than then location domain of course and several aspects should be furthered via data.gov.uk and the wider public sector information domain activities.

### 5.6.5 Communications

- 124 The current testbed and upcoming offer excellent examples of how the future information domain might work and operate. We should communicate these developments more widely and in a non-technical way as case-studies and exemplars. All channels should be used to promote best practice and indicate how the approach can help address the information policy priorities recently established or offer cost savings over traditional methodologies.

## ANNEX A: PARTICIPATING ORGANISATIONS

The following organisations participated:

0: registered but were unable to attend \*Speaker

1Spatial	2
Atkins Ltd	1
BBC*	1
British Geological Survey	1
British Transport Police	1
Centre for Ecology & Hydrology	1
Cambridgeshire Co Co	1
Climate & Pollution Agency, Oslo*	1
ConsultingWhere	2
Defra	1
Dept Business Innovation & Skills	1
Dept for Transport	1
Digital National Framework/Netrius	1
English Heritage	1
ESRI	1
Dotted Eyes Ltd	2
Dudley MBC	1
Environment Agency*	1
Epimorphics*	2
Informed Solutions	1
Infotech	1
Innogistic	1
Intelligent Addressing	0
John Pepper Consulting	1
Land Registry	2
LEGSB/CTO Council*	1
Local Government Association	0
London Borough of Enfield	0
London Borough of Wandsworth	0
Met Geo Info	1
Met Police	1
Oceanwise	0
Office for National Statistics	2
Ordnance Survey*	5
Royal Commission for Historic and Ancient Monuments	1
RSWGeomatics	1
Science & Technology Facilities Council*	3
Snowflake	1
Star Apic	0
The National Archive*	1
UK Location Programme*	1
University of Leicester	0
University College London	1
UK Environmental Observation Framework	1

Valuation Office	1

## ANNEX B: WORKSHOP FEEDBACK

What did participants say about the workshop? See a selection on the feedback below:

Central Government	<i>Good to meet people and experts interested in the same developments, so I valued the event. So, it's a 'thank you' for doing it. If it wasn't for this event and Terra Future, our developments/thinking would be half of where we are now.</i>
Central Government	<i>I would have liked a lot more depth for 'beginners' and on the 'how to' aspects ie a focus on actually being able to deliver something, rather than being told about the benefits of linked data</i>
Central Government	<i>There should have been a session built round Gridworks, rather than the quick mention that was made.</i>
Central Government	<i>I don't think the break-out session worked particularly well for me generally - a lot of techie chatter and it was hard to hear/see everything.</i>
Consultant	<i>There is a chicken and egg situation where provision of Linked Data cannot be justified by any formal business plan because there are no costed benefits available; full benefits will not appear until there is sufficient Linked Data available.</i>
Consultant	<i>It clearly has the potential to 'fuel' many applications - many of which we cannot yet imagine. Personally I think that it needs (and I am talking about use of spatial data here) some professional heavyweight applications to use it in preference to other methodologies.</i>
Consultant	<i>If Linked Data can be mandated as part of INSPIRE compliance with conversion tools provided then lets get on with that!</i>
Consultant	<i>I found the breakout sessions much more useful than the formal presentations - partly because I had heard some of the latter before.</i>
Consultant	<i>I thought the event went well and was well organised (as ever). Seemed to me there was a lot of positive feedback.</i>
Consultant	<i>My only criticism of the content was that it tended to assume that all had some elementary knowledge of Linked Data – a short basic introduction by someone like John Godwin might have helped. Also, as usual, too many unexplained acronyms.</i>
Emergency Services	<i>Thank you for sorting out my joining instructions for the Linked Data workshop yesterday, very useful and interesting</i>
Systems Supplier	<i>Well done yesterday. Fantastic, thought provoking and good to hear from the Beeb and John Sheridan in particular,</i>
Systems Supplier	<i>Lets hope we can build enough momentum from here, such that our domain joins the mainstream activity, re-inforces it and make it even more vibrant.</i>