

# **UK Location Programme**

## **Conceptual Design**

UK Location Information Infrastructure  
Roadmap

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### **UK Location Information Infrastructure Roadmap**

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## DOCUMENT CONTROL

### Change Summary

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1-3	08/02/2010	Tim Manning	Minor changes to timeline diagram and Executive Summary.

### References

Ref.	Title/Version/Publication Date/Author
1	Communities and Local Government, "Place Matters: The Location Strategy for United Kingdom", November 2008 <a href="http://www.communities.gov.uk/publications/communities/placematters">http://www.communities.gov.uk/publications/communities/placematters</a>
2	Official Journal of the European Union, Directive 2007/2/EC of the European Parliament and of the Council, "Establishing an Infrastructure for Spatial Information in the European Community (INSPIRE)", March 2007 <a href="http://inspire.jrc.ec.europa.eu/">http://inspire.jrc.ec.europa.eu/</a>
3	Power of Information Report and Task Force Report <a href="http://www.cabinetoffice.gov.uk/reports/power_of_information.aspx">http://www.cabinetoffice.gov.uk/reports/power_of_information.aspx</a>
4	UK Location Programme "UKLII Conceptual Model" (latest published version) <a href="http://www.defra.co.uk/location">http://www.defra.co.uk/location</a>
5	UK Location Programme, "UKLII Blueprint" (latest published version) <a href="http://www.defra.co.uk/location">http://www.defra.co.uk/location</a>
6	UK Location Programme, UKLII Blueprint Supplement (latest published version) <a href="http://www.defra.co.uk/location">http://www.defra.co.uk/location</a>
7	UKLP Risk and Issue Register (latest version)

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# 1 EXECUTIVE SUMMARY

- 1 The UK Location Information Infrastructure (UKLII) Roadmap sets out the approach that will be adopted to the implementation of the UKLII conceptual design [5], in terms of how it will be developed, by whom and by when; and its population with published data and subsequent exploitation.
- 2 The UKLII is realised through a number of core and supporting business services. These will provide the operational capability for the coordinated publishing of location information, to the INSPIRE specifications, such that it can be easily discovered, evaluated, accessed, combined and used within business applications, by public sector organisations, commercially and by citizens.
- 3 Alongside the creation of the business services is the need to stimulate business change to ensure that the UKLII is fully exploited. This change needs to occur in three distinct areas:
  - pan-government, the way the public sector works together in the sharing and re-use of location information;
  - within individual data provider organisations, in relation to the publishing of location information for sharing and re-use; *and*
  - the exploitation of location information, the recognition and understanding of how location information can benefit a broad range of application areas, e.g. public sector policy making, the public sector services, open government and the wider information economy.
- 4 The successful development of the physical infrastructure and its population and exploitation can only occur through close collaboration between the various strategic partners, including the Devolved Administrations, data providers and exploiters. This is emphasised throughout the Roadmap. The rest of this Executive Summary sets out the key elements of the implementation approach.

## 1.1 External Environment

- 5 The implementation of the UKLII is subject to a number of external conditions, which have influenced the chosen approach to implementation. These include:
  - the availability of funding given the prevailing economic climate and the need to reduce public expenditure;
  - the implementation of the INSPIRE Directive across Member States and the need to adapt to changes that may emerge as part of its physical realisation;
  - broader changes surrounding the re-use of public sector information, e.g. the Cabinet Office's 'Making Public Data Public' initiative and;
  - the incorporating of existing UK location information data sharing and re-use initiatives, many of which are sector-based; *and*
  - other EC wide initiatives, specifically the establishment of a Shared Environmental Information System (SEIS) and the European contribution to GEOSS (Earth Observation Programme) in the form of GMES.

## 1.2 Adopted Approach to Implementation

- 6 The adopted approach to implementation has a number of key elements. These are:
- an incremental approach to delivery, reflecting likely funding constraints and the need to adapt the final shape of the infrastructure to the evolving external environment, e.g. integration with 'Making Public Data Public';
  - the use of end user pilots to deliver value at an early stage, to stimulate engagement and demand, secure resources and assist in the development of the physical infrastructure;
  - the use of early adopters to ensure the utilisation of the infrastructure at an early stage, through the publishing and use of key datasets;
  - an open approach to data publishing, encouraging public sector organisations to publish their location information into the UKLII, irrespective of theme, whilst ensuring that INSPIRE theme requirements are met;
  - the use of community expertise to design and develop the various business services associated with the UKLII; *and*
  - the use of collaborative processes and techniques, reflecting the need for strong collaboration across government and beyond.

## 1.3 Centrally Provisioned Deliverables

- 7 Associated with each of the business services are a set of centrally provisioned deliverables (products), which need to be designed, built and deployed into the operational environment. These in turn are made up of a number of discrete sub-products. These products will be sourced from a number of providers.
- 8 A number of products take the form of operational and technical guidance for use by data providers and users. These will be developed in collaboration with Stakeholders, principally through the Location Information Interoperability Board - the policy and standards advisory board to the Location Council.
- 9 Others will be developed by strategic partners, specifically the Office for Public Sector Information (OPSI) for licensing and Rights Management and Academia for professional development (exploitation model) related products.
- 10 A further set, chiefly those concerned with the physical IT infrastructure, will be developed in partnership with a technical partner, commercially sourced from either the public or private sector.
- 11 A final set is associated with the creation and operation of the UKLII Coordination Unit. These will be delivered directly by the programme itself.

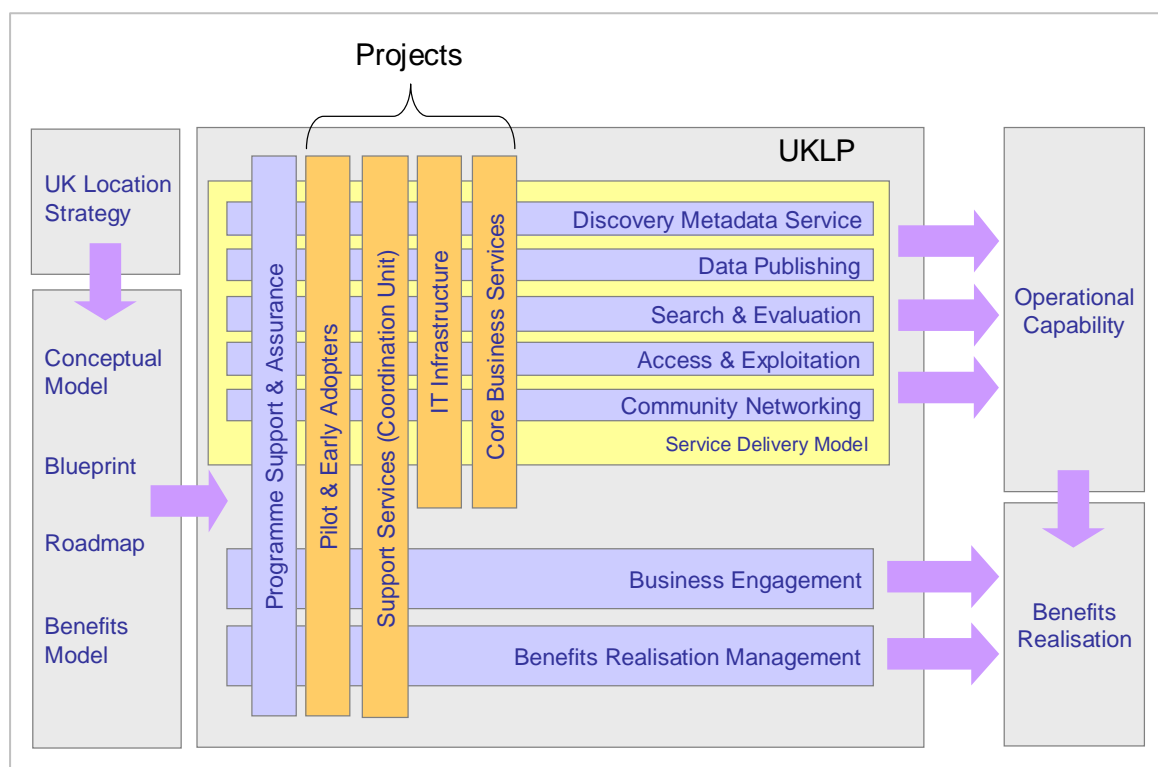


## 1.4 Management and Coordination

- 12 The development of the programmes deliverables and their early exploitation will require strong management and coordination. The adopted approach includes two main elements:
- the establishment of an overall management and coordination framework. This will incorporate the strategic role of the Location Council, with day-to-day programme management and coordination being achieved through the creation of a “Delivery Group”. This will oversee project management and assurance activities, partnership coordination, business engagement and transition into ‘Business as Usual’; and
  - the development of a Benefits Realisation Plan and the adoption of a benefits realisation management process throughout the life of the programme and into Business as Usual. A key aspect of the plan will be harnessing the use of end user application pilots and early adopters to derive value early and drive future growth; and the utilisation of the Location User Group to guide subsequent enhancements and exploitation.

### 1.4.1 Project Structure

- 13 The adopted approach and set of programme deliverables translates into a set of development projects - Figure 1.



**Figure 1: UKLP Project Structure**

## 1.5 Delivery Timeline

15 The resulting timeline for the creation of the UKLI is shown in Figure 2. This shows the main activities of the programme and key dependencies. This timeline reflects the following key drivers:

- INSPIRE Roadmap dates, as detailed at: <http://inspire.jrc.ec.europa.eu/index.cfm/pageid/44>. The most critical are the publishing dates for Implementing Rules<sup>1</sup> and by which dates the EC will be expecting to receive a service from the UK, e.g. in terms of Discovery Metadata and published services for Annex I, II and III themes.
- lead times for commissioning deliverables;
- likely lead times for deliverables, given the collaborative approach required and the need to secure broad stakeholder agreement;
- funding; *and*
- the goals of the UK Location Strategy.

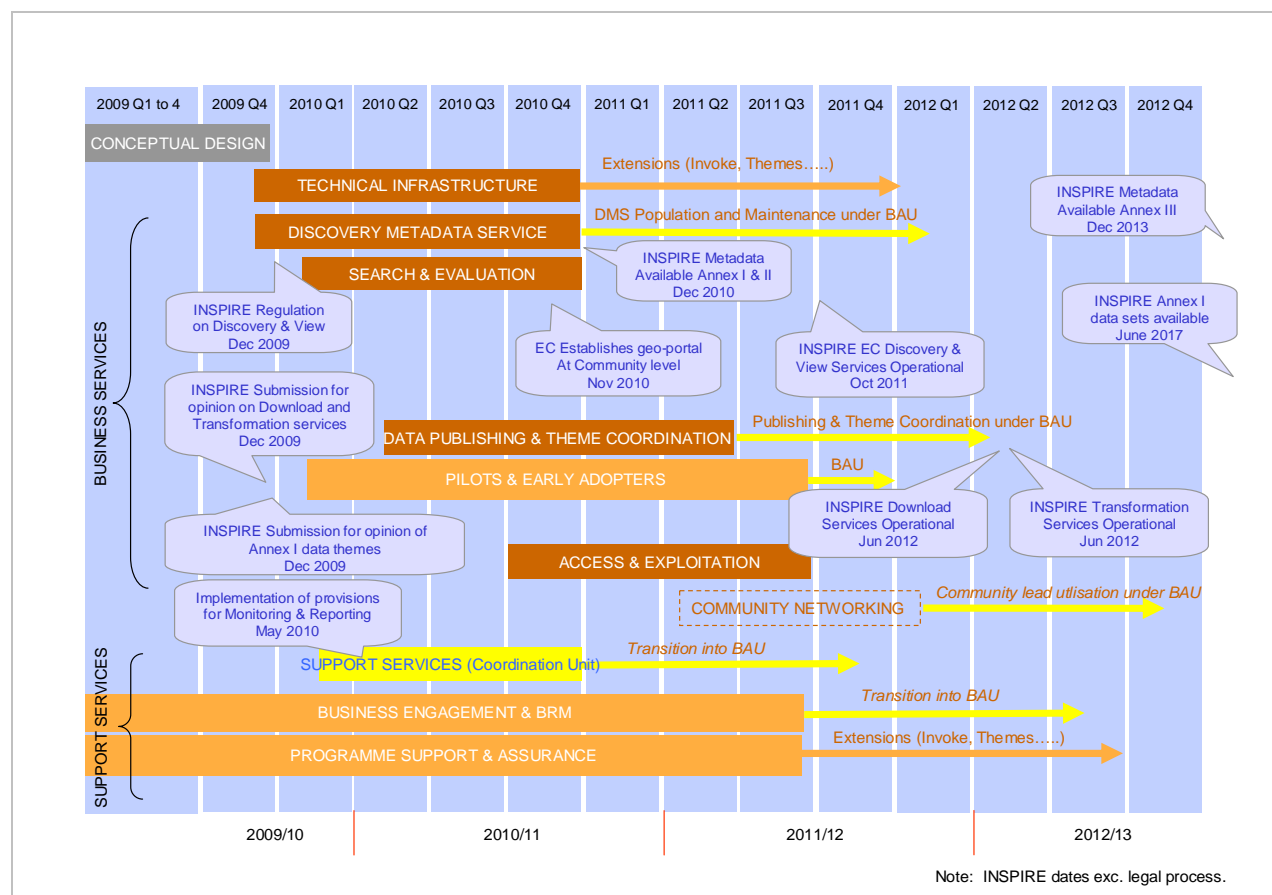


Figure 2: Delivery Timeline

<sup>1</sup> Note that when the INSPIRE Committee agrees an Implementing Rule it generally takes 10-12 months to complete the translation and legal processes before publication in the European Journal and it becomes an active Regulation.

## 1.6 Outcome Realisation

- 17 Against this delivery timeline is the realisation of a set of operational capabilities, or outcomes, i.e. things that the customers of the UKLII will be able to do as the UKLII services are introduced. These are summarised in Table 1 for the principal customer groups identified in the UKLII Business Model [5]. A full version of the table is provided in the main body of the Roadmap.

Customer Group	2010	2011	2012	2013
<b>DATA PROVIDERS AND THEIR PUBLISHING AGENTS</b>				
Public Bodies	<p>We will fully understand our mandatory requirements under the UK INSPIRE legislation.</p> <p>We will know how to publish our data and services into the UKLII.</p> <p>We will be able to publish discovery metadata for the data we wish to publish.</p> <p>We will know which INSPIRE Annex I and II Themes we fall under and our mandatory obligations.</p> <p>Where applicable, we will start being involved in early discussions for INSPIRE theme coordination.</p> <p>For any new datasets that we establish that come under an INSPIRE Theme, we will work with the UK Location Council to ensure that these comply with the INSPIRE data specifications.</p> <p>We will be able to apply harmonised and simplified licensing to our published datasets.</p>	<p>We will have established the operational capability to publish data and services into the UKLII, either directly or through a publishing agent.</p> <p>We will have published View Services for those datasets for which we have published discovery metadata.</p> <p>We will start exploiting the UKLII by obtaining feedback on published datasets to improve their quality.</p> <p>We will be engaged in data specification harmonisation activities, for applicable INSPIRE themes.</p>	<p>We will be publishing Download and Transformation services for those datasets for which we have published discovery metadata.</p> <p>We will be publishing registry data alongside our published datasets, for use by others and on drawing on the registry for our own use (convergence of feature definitions, symbology etc).</p> <p>We will know which INSPIRE Annex III themes we fall under and our mandatory obligations.</p>	<p>We will have published Invoke services for those datasets for which we have published discovery metadata.</p> <p>We will have published discovery metadata for the Annex III theme datasets that we own.</p> <p>Increasingly, our own internal information management services are based on the UKLII standards and INSPIRE, i.e. corporate data architecture, data exchange mechanisms and data management processes, leading to increasing interoperability across are business units and strategic partners.</p>

Customer Group	2010	2011	2012	2013
Private Sector	<p>We will know how to publish our data and services into the UKLII.</p> <p>We will be able to identify opportunities for publishing added-value data into the UKLII.</p> <p>We will be able to publish discovery metadata for the data and services we wish to publish.</p> <p>We will be able to apply harmonised and simplified licensing to our published datasets.</p>	<p>We will have established the operational capability to publish data and services into the UKLII.</p> <p>We will have published View Services for those datasets for which we have published discovery metadata.</p> <p>We will start exploiting the UKLII by obtaining feedback on published datasets to improve their quality.</p>	<p>We will have published Download and Transformation services for those datasets for which we have published discovery metadata.</p> <p>We will be publishing registry data alongside our published datasets, for use by others and will be drawing on the registry for our own use (convergence of feature definitions, symbology etc).</p>	<p>We will have published Invoke services for those datasets for which we have published discovery metadata.</p>
<b>DATA USERS</b>				
Devolved administrations, national government departments, Thematic Sectors.	<p>We will have sufficient information to plan the integration of our own location information publishing and exploitation initiatives with the UKLII, to maximise its exploitation within our own community of interest.</p>	<p>We are able to subscribe to the UKLII Metadata Catalogue for use within our own information portal services.</p> <p>We are able to start exploiting datasets that have been published into the UKLII, within our own community of interest (View Services only).</p>	<p>We are able to extend our exploitation of the datasets that have been published into the UKLII (Download and Transformation services) within our own community of interest.</p>	<p>We are able to maximise our exploitation of the datasets that have been published into the UKLII (Invoke services) within our own community of interest.</p>
Public Sector Service Delivery Bodies UK Local Government. NGOs/Third Sector	<p>We can start planning our future Information Strategy, based on the greater availability of data from external organisations – what it means for us.</p>	<p>We are able to discover data published into the UKLII through a number of information portals and evaluate it for use within our own business activities.</p> <p>We are able to use published data in simple business applications, i.e. in the form of map images.</p> <p>We are able to subscribe to the</p>	<p>We are able to Download datasets for use within business applications.</p> <p>The number of available datasets is increasing, as is their technical and business interoperability, extending our ability to incorporate these datasets into our own business activities.</p>	<p>We are able to obtain direct raw data exchange services from data providers, enabling us to fully incorporate external data sources into our own base data architecture, reducing our own data collection needs; and creating new business opportunities.</p>

Customer Group	2010	2011	2012	2013
		UKLII Metadata Catalogue for use within our own information portal services.		
Private Sector	We will be able to explore how we might exploit the availability of public sector location information as part of the development of new commercial applications.	We will be able to discuss commercial opportunities with public sector data suppliers, based on their plans to publish data into the UKLII.		New commercial applications start appearing based on data published into the UKLII.
Citizen (Digitally Engaged).	I can see what the future might look like and I can start thinking about how I might use publicly available location information for the things that I want to do, building on the data I can already access.	I can start discovering datasets and evaluating them for use. I can obtain map images for use in my applications. I can start building citizen-centric services based on data published into the UKLII; and associated web services.	I can download location information for use in more advanced applications. I can develop an increasingly diverse range of applications as more data is published into the UKLII.	

**Table 1: UKLII Timeline - Customer Group Outcomes**

- 18 This table highlights that whereas 2009 was a planning year for the UK Location Programme, 2010 will very much be a planning year for organisations, with benefit realisation commencing in 2011 and growing thereafter as more data and services come on line.
- 19 Also, it is expected that there will be a number of indirect outcomes, the principal ones being:
- organisations will increasingly adopt INSPIRE standards for all their location data, irrespective of whether it is intended for publication into the UKLII, i.e. INSPIRE will also be adopted as the publishing framework for data that is not intended for open access, e.g. protectively marked location information;
  - the adoption of open standards, the use of open source and the module-based approach to the IT infrastructure will make a major contribution to the delivery of UK government IT strategy;
  - the lead taken in relation to location data will have a positive impact across public sector information management as a whole, leading to the greater adoption of technical and business interoperability standards and data that is not just published, but in a form that can be easily evaluated, combined and consistently used. This will make a major contribution to wider government initiatives such as “Making Public Data Public” and “Smarter Government”.

## 2 INTRODUCTION

### 2.1 Background

- 20 In November 2008 the UK Government published “Place matters: the Location Strategy for the United Kingdom” [1]. This was produced by the Geographic Information (GI) Panel, formed in 2005, to give high level advice to Communities and Local Government Ministers on geographic information issues of national importance to the United Kingdom. The members of the panel represented key interest groups in government, the private sector and the wider geographic information industry across the UK.
- 21 The UK Location Strategy (UKLS) addresses the lack of any overarching framework for the management of geographic information across the UK. Its objective is to maximise the value of location information to the public, government, UK business and industry, by providing a common framework that ensures ease of access and re-use.
- 22 The UK Government has also recognised the value of information through various reports culminating the Power of Information Report and Task Force. This has more recently led onto the Making Public Data Public developments – which is well aligned with the UK Location Programme.
- 23 In developing the strategy it was recognised that it also needed to take account of, and incorporate, the implementation of the EU INSPIRE Directive [2] in the UK.
- 24 As part of publishing the Strategy, the UK Government appointed the Department of Food and Rural Affairs (Defra) as the lead department. In preparing for implementation, Defra took a number of initial steps, including the setting up of the Location Council as recommended by the Strategy (replacing the GI Panel) and instigating an initial conceptual design phase, of which this document is a primary output.

### 2.2 Purpose and Scope

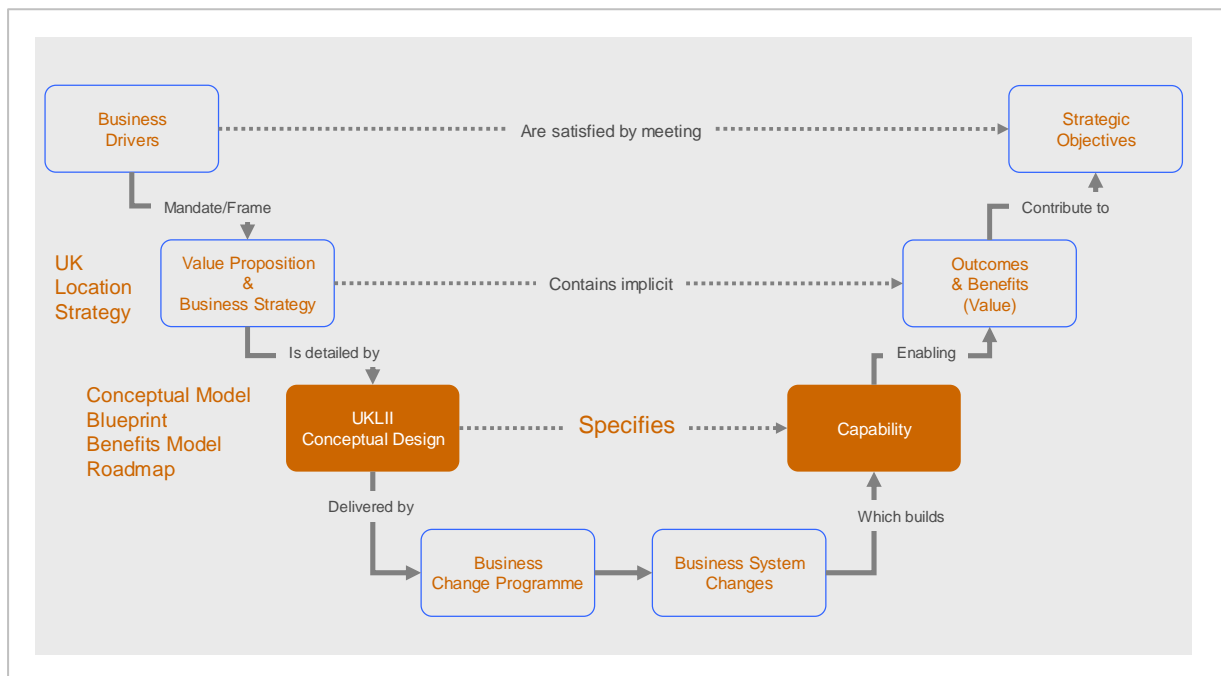
- 25 The purpose of the UKLII Roadmap is to set out the implementation approach to be adopted in the delivery of the UK location information infrastructure (UKLII). This will be used to drive the development of the overall UK Location Programme Plan and lower level project plans.
- 26 In defining the roadmap for the implementation of the UKLII, it considers a range of influences, options and constraints that have a bearing on how the infrastructure will be created and operated. Its starting point is the conceptual design of the UKLII, as set out in the UKLII Blueprint [5].
- 27 Against this backdrop, the Roadmap defines the primary deliverables to be produced and their means of production, and the approach to be adopted towards the management of change. It provides a pictorial representation of the timeline, highlighting the key events and time scales, both internal and external to the programme, and sets out the associated key dependencies, risks and issues.
- 28 This version of the Roadmap focuses on the delivery of the base infrastructure. Against this there are a number of proposed future extensions (ref. sec. 5.1). These fall outside the scope of this document.

### 2.3 Target Audience

- 29 The Roadmap is aimed at two primary audiences: those planning and guiding the implementation of the UK Location Information Infrastructure; and those with an interest in understanding the approach being adopted, e.g. in relation to the actions that need to be planned and executed within their own organisation and/or sector; or those who will act as ‘champions’.
- 30 The document assumes that the reader has read the UK Location Strategy [1] and UKLII Blueprint [5].

## 2.4 Roadmap Development

- 31 The development of the Roadmap is based on the application of Managing Successful Programmes (MSP)<sup>2</sup>. This places the change programme and Roadmap within an overall delivery lifecycle, shown in Figure 3.



**Figure 3: UKLP Programme Delivery Lifecycle Framework**

- 33 The MSP lifecycle links the business drivers, strategy and design (UK Location Strategy and Blueprint), to the formulation of the change programme to deliver the required business change and capability, which in turn provides the means to deliver the desired strategic outcomes and benefits.
- 34 The development of the UKLII Roadmap has been based on an analysis of the changes required across a number of 'domains of change', against a backdrop of the prevailing present state conditions and constraints relating to business processes and systems, people (organisation, attitudes and behaviours), data, technology and affordability.
- 35 The Roadmap has been developed through a series of meetings and workshops; and in parallel with discussions surrounding the development of the programme plan and funding; the use of 'value demonstrators' and pilots; and the early establishment of the UKLII governance arrangements, specifically the Location Council, Delivery Group, Location User Group and Location Information Interoperability Board (LIIB).

<sup>2</sup> [www.ogc.gov.uk/guidance\\_managing\\_successful\\_projects.asp](http://www.ogc.gov.uk/guidance_managing_successful_projects.asp)

## 2.5 Design and Implementation Principles

36 The design and implementation of the UK Location Information Infrastructure (UKLII) is driven by a number of design principles. These are:

- that we adopt a federated, collaborative approach, involving the public, third, academic and private Sectors, reflecting the wide stakeholder and customer base for the infrastructure;
- minimum market intervention, to achieve the desired effect on the sharing and re-use of location information;
- built on open standards and open source software (where appropriate);
- as far as possible, build on what already exists or is planned;
- harness the market to provide re-usable products and services;
- establish the basics and achieve benefits early;
- adopt an incremental, agile approach towards implementation, seeking to evolve the infrastructure as the environment evolves; *and*
- supportive and complementary to developments by the devolved administrations

37 It is also important that we design the UKLII such that it grows and prospers through its own momentum; and that it is user-centric, i.e. focused on maximising the exploitation of location information through data sharing and re-use. This requires that we:

- create an 'architecture of participation' – leveraging the skills and energy of both data providers, solution providers and users to maximise the utilisation of location information;
- seed with as much open data as possible;
- view data users as important contributors, e.g.:
  - by making it easy for them to contribute, e.g. to the collective evaluation of datasets and metadata through commenting, rating, tagging and reviews; *and*
  - by ensuring that we provide the right facilities for viewing data across the various access points, e.g. by making it easy to combine data layers and create a view; enabling users to: save favourite views; to embed views in a webpage or blog; to rate and comment on views; and allowing others to start with an existing view and re-mix.



## 2.6 UKLII Blueprint

- 38 The UK Location Strategy (UKLS) sets out a number of strategic goals and associated actions.
- 39 The fulfilment of these actions has driven the conceptual design of the UKLII, as documented in the UKLII Blueprint [5].
- 40 The UKLII Blueprint sets out the conceptual design of the UK Location Information Infrastructure. This design is intended to provide a common framework of standards, policies, ways of working, products and services that will enable the strategic objectives of the UK Location Strategy [1] to be fulfilled.
- 41 The Blueprint defines this framework through the specification of a Conceptual Model, Business Model and Business Operating Model.
- 42 The Conceptual Model is a 'rich picture' representation of the design and a summary of the key characteristics of the UKLII.
- 43 The Business Model sets out what value will be created, who the customers of the infrastructure will be and what infrastructure will be required to deliver this value, in terms of products and services; capabilities and strategic partnerships. It also sets out how the infrastructure will be funded and where the costs will reside.
- 44 The Business Operating Model defines the infrastructure in terms of a number of architectural design perspectives, or domains. These cover the business process, organisation, distribution, learning and skills, data sharing and IT system architectures that need to be built and operated.
- 45 The principal components that result from the Blueprint are:
- a publishing infrastructure, centered around the creation of a UK Geoportal, providing central services for the publishing of location information:
    - discovery metadata publishing and distribution;
    - master data registry services for recording and using common definitions for features and other data elements;
    - a resource centre for the publishing of supporting business and technical resources and tools, including learning and educational resources;
    - community networking services to facilitate data re-use and quality improvement (both data and associated services); and
    - a search and evaluation capability, across a range of information portals, including the UK Geoportal.
  - supporting products in the form of policies, standards and guidance and training packages relating to publishing, interoperability and data sharing (e.g. rights management, security and charging);
  - data theme coordination – the creation of core reference geographies and INSPIRE themes (dataset harmonisation);
  - business engagement, to stimulate demand, both to publish information into the UKLII and for its use;
  - assurance services, specifically with respect to INSPIRE compliance;
  - performance monitoring and reporting; *and*

- overall coordination and facilitation.

- 46 These components translate into a number of deliverables to be developed by the UK Location Programme. These consist of both physical products and services; and a range of activities associated with the management of change.
- 47 It is important to note that the work that will be undertaken directly by the UK Location Programme only constitutes a small proportion of the work that needs to be done to establish the UKLII. The majority of work resides with the data providers publishing their data and services; and making these available on demand.

### 3 THE DEGREE OF CHALLENGE

- 48 Before considering the approach that will be adopted towards the implementation, it is important to first understand the scale of the change the programme is seeking to achieve and the challenge it faces. The approach needs to be suitably scaled such that it is capable of meeting this challenge, but in turn is not over-engineered.
- 49 The degree of challenge can be considered to exist in three distinct areas:
- pan-government, the way the public sector works together in the sharing and re-use of location information;
  - within individual data provider organisations, in relation to the publishing of location information for sharing and re-use; *and*
  - the exploitation of location information, the recognition and understanding of how location information can benefit a broad range of application areas, e.g. public sector policy formulation, the delivery of policy outcomes and benefits, open government, citizen and commercial exploitation and the wider information economy.

#### 3.1 Data Provider Organisations

- 50 The implementation of the UK Location Information Infrastructure requires significant change within data provider organisations, across a number of 'domains of change':
- **Policy** - the introduction and adoption of new policies relating to the publishing of the organisation's location information, and the reciprocal use of externally sourced data;
  - **Process** - the introduction of new processes associated with the publishing of location information and on-demand data sharing and re-use;
  - **Organisation** - associated with supporting the publishing and re-use of the organisation's location information, e.g. changes in existing roles and responsibilities associated with data management;
  - **Behavior** - changes in the way people view the organisation's data and data needs;
  - **Data** - technical changes to the data held by the organisation, either direct or indirect, to enable the data to be easily and effectively shared and re-used;
  - **Technology** - the introduction of new technology associated with the sharing and re-use of the organisation's location information.

#### 3.2 Working across Boundaries

- 51 The changes required within individual organisations cannot take place in isolation. They need to be made across devolved administrations and a wide range of organisations and sectors, working in close collaboration and synchronisation. Keeping everyone together will therefore represent a significant challenge.
- 52 The need for collaboration will also have a major bearing on time scales. Change involving multiple organisations takes longer than change that is restricted to a single organisation or group of organisations. This will manifest itself most around the production of the policies, standards and operational frameworks for the infrastructure, where achieving consensus will be a critical success factor.

## 4 EXTERNAL CONDITIONS

- 53 The UK Location Programme is subject to a number of prevailing external conditions<sup>3</sup> that have a bearing on implementation. The most significant are covered here, their likely impact and the nature of the response required from the programme.

### 4.1 Funding

- 54 The UK has no mechanism for the central funding of pan-government initiatives. Funding has to be obtained collectively, across public sector bodies. With the current economic climate, obtaining funding contributions from organisations during the period of the programme will be extremely difficult.
- 55 This will have most impact on those areas of the approach that would benefit from the use of 'seed funding', e.g. end user application pilots and the deployment of third party products and services. These will need to be funded entirely by the contributing organisations. This will represent a considerable risk to the programme.
- 56 The other areas likely to be impacted are the provision of central core technical infrastructure, i.e. those components associated with the UK Geoportal; and the provision of core and supplementary programme resource.
- 57 Prevailing funding constraints may also have a major impact on the ability of data publishing organisation to implement the changes that they will need to apply to their own internal processes and systems.

### 4.2 INSPIRE Implementation

- 58 There are a number of conditions associated with the EC INSPIRE Directive [2]. These relate to its transposition into UK law, the development of the INSPIRE Implementing Rules and cross EC implementation.

#### 4.2.1 UK Transposition

- 59 The EC INSPIRE Directive [2] has yet to be transposed into UK law. This is expected to be completed in December 2009. The conceptual design of the UKLII will have been completed ahead of transposition. Once transposed, it will be necessary to review this to ensure alignment against the final statute. There will also be the need to re-align the design in the light of any amendments to the regulations over the period of the change programme.

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<sup>3</sup> External activities or state that will have a bearing on the detailed design of the infrastructure or its delivery.

### 4.2.2 Implementing Rules

60 The EC INSPIRE Directive [2] has a number of associated Implementing Rules (IRs). These cover:

- Metadata;
- Data Specifications;
- Network Services;
- Data and Service Sharing; *and*
- Monitoring and Reporting.

61 Each Implementing Rule consists of a Regulation and Technical Guidance.<sup>4</sup> These are following a published development timetable: <http://inspire.jrc.ec.europa.eu/index.cfm/pageid/44>).

62 Most of the Implementing Rules will be in place by first quarter 2010, minimising any programme dependencies. The two outstanding areas will be the Invoke Network Service, and the data specifications for Annex II and III. These are not due until 2012, so will represent a major external dependency.

63 UK representation on the development of the Implementing Rules pre-dates the establishment of the programme. This has been largely successful so far, with significant UK representation and participation. While the EC manages this process, we will encourage further participation in the final stage of Annex II & III data specifications development.

### 4.2.3 Implementation Coordination

64 Implementation coordination across Member States and with relevant EC bodies will be key to deriving the full benefits from INSPIRE, both in terms of technical and business interoperability and ease of access. This is likely to lead to a number of interdependencies and require the establishment of an effective interface between the UKLP and EC coordination mechanisms<sup>5</sup> The EC are in the process of establishing MS coordination mechanisms for services and data specifications.

### 4.2.4 INSPIRE Timescales

65 The timescales for the implementation of the UK Location Information Infrastructure and its population with data will be heavily influenced by the obligations under the EC INSPIRE directive<sup>6</sup>. These will need to be reflected in the Roadmap timeline.

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<sup>4</sup> In draft form, the Regulation and Technical Guidance are combined within a single 'draft Implementing Rule' document. This is then split into the mandatory regulation and separate non-mandatory technical guidance.

<sup>5</sup> In June 2009 the EC established an "Initial Operational Capability Task Force (IOC TF)" for this purpose, although currently its scope is limited to Network Services.

<sup>6</sup> The current EC INSPIRE implementation milestones can be found at <http://inspire.jrc.ec.europa.eu/index.cfm/pageid/44>.

### 4.3 UK Public Sector Information Sharing and Re-use

- 66 The creation of the UK Location Information Infrastructure exists within a broader set of UK initiatives concerned with the sharing and re-use of public sector information. These have strong links with a number of key Government policy areas associated with operational efficiency, economic recovery and citizen engagement. Of particular significance are:
- the implementation of the Power of Information (POI) Taskforce recommendations under the “Public Data project”, led by the Cabinet Office<sup>7</sup>;
  - the work of the CTO Council on public sector information management and ontology; *and*
  - work being undertaken as part of the development of the Cross-Government Enterprise Architecture (xGEA).
- 67 The UKLP will need to work closely with those organisations involved in these related initiatives to ensure that the location information domain is adequately represented and that any inter-dependencies are identified and effectively managed.
- 68 The key touch points are likely to be:
- Information management standards, specifically relating to information classification, identification and linking;
  - Web service standards, relating to information structure and encoding;
  - data publishing by public sector bodies; *and*
  - the involvement of the commercial sector, specifically suppliers to public sector data providers.

### 4.4 Concerns over Privacy

- 69 The increasing use of location information to target services to citizens and to support Location Based Services, where the real-time location of people can be tracked, will raise issues of the privacy of location information with citizens. The UK Location Programme will liaise with the Information Commissioners across the UK over these privacy issues.

### 4.5 Existing UK Location Information Initiatives

- 70 There are a number of existing UK initiatives and services relating to the coordinated publishing, discovery, sharing and re-use of location information. These are broad ranging in terms of purpose and scope. Examples include existing public services such as MAGIC, the UK Environmental Observation Framework (UK-EOF), the Marine Environmental Data and Information Network (MEDIN) and the National Underground Asset Group (NUAG).
- 71 Many of these initiatives and services are likely to have an important role to play in the UKLII. Appendix B includes a summary of these initiatives and their likely role. This is not intended to be an exhaustive list, nor a full evaluation of each. This will need to form a specific strand of work under the UKLP.

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<sup>7</sup> <http://www.number10.gov.uk/Page20595>;

- 72 In addition, each of the devolved administrations have published their Geographic Information strategies and are currently implementing their strategies. Northern Ireland is the most advanced. The UK Location Programme must be sensitive to these developments and collaborate closely to ensure that they directly support the aims of developing a UK Location Infrastructure.

#### **4.6 Shared Environmental Information System (SEIS)**

- 73 This is a collaborative initiative of the European Commission and the European Environmental Agency (EEA) to establish with Member States an integrated and shared EU-wide environmental information system.<sup>8</sup>
- 74 Proposals are currently vague, but there would appear to be considerable overlap with this initiative and that of INSPIRE, with INSPIRE likely to deliver much of the required web-based system infrastructure. Also, as in other areas, this initiative emphasises the need to be able to discover and combine/overlap different data types, e.g. through the use of compatible standards for both digitally mapped, image and sensory data.
- 75 Although as yet no direct dependencies exist between the UKLP/INSPIRE and SEIS, the programme will need to maintain a watching brief through appropriate representation.

#### **4.7 GEOSS & European Earth Observation Programme (GMES)**

- 76 Managing natural resources and biodiversity, adapting to sea level rise, monitoring the chemical composition of our atmosphere: all depend on accurate information delivered in time to make a difference. The GMES<sup>9</sup> programme is working towards delivering data over a range of issues including climate change and security. land, sea and atmosphere – each Earth component is observed through GMES. The aim of GMES is to deliver information which corresponds to user needs. The processing and dissemination of this information is carried out within the "GMES service component". GMES is the European contribution to GEOSS and is moving from a research oriented base towards an operational environment.
- 77 Although as yet no direct dependencies exist between the UKLP/INSPIRE and GMES, the programme will maintain a watching brief through appropriate representation.

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<sup>8</sup> <http://ec.europa.eu/environment/seis/>

<sup>9</sup> <http://www.gmes.info/>

## 5 GENERAL APPROACH

- 78 This section outlines the general approach that will be adopted towards implementation and any specific techniques that will be deployed. More specific areas are covered under subsequent sections of the document.

### 5.1 Incremental Delivery

- 79 The design of the UKLII, as set out in the UKLII Blueprint [5], is positioned to deliver an infrastructure that will provide optimum value to its target customer groups. But for certain aspects of the design, specifically around rights management and security authentication and authorisation, an evolutionary approach needs to be adopted, reflecting current levels of business and technical maturity. Also, funding constraints dictate that there needs to be flexibility in the rate of implementation, with a prioritisation of critical elements, such as those required for INSPIRE, over others.
- 80 Given this, an incremental approach to delivery will be adopted. This will be achieved through the creation of a base capability. This will then be extended over time, with each extension being supported by an individual business case and further secured funding. This will provide the necessary agility and flexibility towards the development of the infrastructure, as well as reflecting the prevailing funding constraints.
- 81 The phased incremental delivery of the UKLII is set out in Table 2. This is designed to provide the base capability for data providers to publish data and services in a coordinated way, that enables this data to be discovered, viewed and used in a way that is fully compliant with INSPIRE.
- 82 From this base capability, there are a number of extensions against the UKLII Blueprint, that will increase the utility of the infrastructure:
- a. **Advanced Search and Evaluation**, provides data users with an enhanced ability to view datasets in combination and perform analysis to assess suitability for use<sup>10</sup>;
  - b. **Exploitation**, provides additional facilitates that encourage the sharing and re-use of location information and its continuous quality improvement<sup>11</sup>; *and*
  - c. **Identity Management**, provides a shared service, via the Government Gateway for single sign-on, user authentication and authorisation. In the absence of this extension, user authentication and authorisation will be the responsibility of individual data publishers;
  - d. **Digital Rights Management**, provides a shared service for digital rights management of published datasets. In the absence of this extension, the provision of any DRM capability will be the responsibility of individual data publishers.
- 83 The rest of this Roadmap relates to the base implementation only.

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<sup>10</sup> Subject to the chosen technology, this option may be largely absorbed into the base implementation, i.e. the facilities that this extension will deliver are already provided by the chosen package-based solution.

<sup>11</sup> Some of this capability may be delivered independently of the programme, e.g. information portals providing access to UKLII published data may choose to provide associated features ahead of anything prescribed within the UKLII design, or offered by the UK Geoportal.



- 84 The base technical infrastructure will be developed as far as possible to support both the base implementation and all extensions, i.e. it will be future proofed wherever possible such that it can accommodate new capabilities without the need for significant rework.

		UKLII Base Implementation	Medium Term		Long Term	
	<b>Purpose</b>	INSPIRE Compliant data and services publishing	A) Advanced Search & Evaluation	B) Exploitation	C) Identity Management	D) Digital Rights Management
	<b>Scope</b>	<i>Member State EC INSPIRE obligations</i>	<i>UK Geoportal Enhanced Data User functionality</i>	<i>UK Geoportal W2.0 type functionality</i>	<i>UKLII Shared Service for Identity Management</i>	<i>UKLII Shared Service for Right Management</i>
	<b>Degree of Complexity</b>	HIGH	MEDIUM	LOW	HIGH	VERY HIGH
UKLS COVERAGE	<b>Metadata Access</b>	INSPIRE Compliant Discovery Metadata Service UK Geoportal basic Search & Evaluation Service – simple search, thumbnail view or basic single data set viewer. Other points of access, inc. EC Geoportal	Advanced Search and Evaluation Service: Combined Viewing, Data Analysis, Image Export, extended gazetteer services.	Community W2.0 type functionality to facilitate data usage and improvement.		
	<b>Core Reference Geographies</b>	Theme Coordination Operational Framework; INSPIRE Theme Coordination; Registry Services				
	<b>Data Exchange</b>	Data and Service Publishing Operational Framework, compliant with INSPIRE Implementing Rules; minimum set of on-line Resources		Provision of additional tools and resources.		
	<b>Education &amp; Practice</b>	On-line Training and Education Packages Learning and Skills Exploitation Model		Extensions to base Exploitation Model		
	<b>Governance</b>	Location Council and associated governance bodies; EC INSPIRE Monitoring and Reporting				
	<b>Security &amp; Licensing</b>	OPSI defined and administered framework UKLII Licensing Model Security applied through individual data provider publishing services			Government Gateway Security Authentication and Authorisation	Management of licences across multiple datasets and usage.

Table 2: UKLII Incremental Delivery

## 5.2 An Open Approach to Data Publishing

- 85 An important measure of the success of the UK Location Information Infrastructure will be the breadth and depth of published data. An open approach will be adopted towards the publishing of location information, the only constraint being that it must be fully compliant with the INSPIRE Implementing Rules.
- 86 Effort within the change programme will be focused on the INSPIRE themes to ensure that the UK data publishing obligations for INSPIRE are met. This will initially focus on the publishing of metadata (for INSPIRE Annex I and II), followed by the INSPIRE network services and finally theme coordination and compliance against the INSPIRE data specifications (initial for Annex I).
- 87 The UKLII will support the publishing of all forms of geo-spatial data, including geometric, imagery, sensory and photographic. The only constraint is that all published data must be geo-coded against one of the INSPIRE specified coordinate reference systems.

## 5.3 Use of End User Application Pilots

- 88 It is important that the UKLII is developed within the context to which it will be applied, rather than in isolation. It is also critical that the programme demonstrates end user value very early on, to stimulate engagement and demand, secure resources and achieve an early return on the investments being made.
- 89 To achieve this, the UK Location Programme will incorporate a series of end user application pilots.
- 90 These pilots will be identified and sponsored by stakeholder organisations and will be targeted to deliver one or more of the following benefits to the programme:
- to elicit buy-in and engagement by politicians and senior management to the aims and objectives of the programme, by demonstrating future capability and potential in a way that senior decision makers can best understand and appreciate;
  - to secure resources for the programme through demonstrable mutual benefit; that is inclusive and co-operative across all stakeholders;
  - to assist in the development of the infrastructure and its population with published data and services; *and*
  - to develop best practice, that can then be replicated elsewhere.
- 91 A key requirement of the pilots is that they demonstrate the innovative use of location information, i.e. that they bring together data from disparate sources, rather than are examples of the use of location information within a single organisation.

- 92 The expectation is that the pilots will act as a platform for the subsequent development of fully operational solutions.

### 5.3.1 Approach

- 93 Candidate pilots will be identified and evaluated for use within the UK Location Programme. Their primary driver will be the delivery of end user value and they will remain owned by the sponsoring organisations.
- 94 The various infrastructure delivery projects within the programme will identify in what way they will be able to utilise a given pilot within their development work. As a minimum, this will be as a pilot implementation of the project's deliverables, but the pilot may also be used at an earlier stage of the development lifecycle, e.g. to assist in design and build; and to act as a persistent test bed environment.
- 95 Pilots will be developed at two levels:

- initial storyboard illustration; *and*
- full pilot and establishment of persistent testbed for delivering end user value and as a test environment for the UKLII.

- 96 Only a small number of storyboard illustrations will be taken forward as full pilots by the programme at any point in time. This will be driven by many factors, including the availability of resources, data and strength of the business case.
- 97 Where a pilot is not taken forward under the programme, sponsoring organisations will still be encouraged to take them forward outside the delivery programme, i.e. as early adopters of the infrastructure.

### 5.3.2 Evaluation Criteria

- 98 Candidate pilots will be identified and assessed against a set of evaluation criteria. This criteria will include:
- addresses a documented business problem (a ‘use case’) that reflects a real world challenge and is of current political interest;
  - will require data from at least three separate organisations;
  - will illustrate economic benefit and one of the following primary business goals:
    - transformational government – more for less, better service and innovation; *or*
    - open government and digital engagement.
  - the sector has a mature governance structure and top level management / political support for the initiative;
  - resources and funding requirements have been committed by the sponsoring organisations;
  - will use the technical infrastructure as defined in the UKLII Blueprint, or will migrate to it;
  - will use/prove where possible the INSPIRE data specifications and network services regulations (draft and approved);
  - it will be possible to gain benefit by combining information services from the pilot with those from other pilots, with little or no additional cost; *and*
  - the pilot generates lessons learned that can be applied widely within the pilot’s sector and beyond.
- 99 It is likely that the focus of the chosen pilots will change over time, moving from the achievement of early buy-in and the demonstration of value, through to a greater focus on the proving of the infrastructure and finally to drive user capacity and content.

## 5.4 Early Adopters

- 100 Delivering benefits early is a critical part of the programme’s implementation strategy. Pilots are a useful mechanism for achieving this, but a broader effort needs to be made to ensure that the infrastructure is populated at an early stage with key datasets, i.e. those that are likely to underpin re-use, and that this data is used for the development of end user applications.
- 101 To ensure the early publication and use of location information, the change programme will engage with: key data providers to establish a set of ‘early adopters’ - a critical group of organisations that agree to publish their data into the infrastructure at any early point following the creation of core components; and major data end user organisations and commercial enterprises, to ensure early utilisation of this published data
- 102 Important criteria for early adopter data provider organisations will be:

- they are the holder of key location information, e.g. relating to INSPIRE Annex I and core geographic reference data, and known demand; *and*
- have a significant level of existing capability for the publishing of location information for data sharing and re-use. This is likely to be demonstrated by the fact that the organisation already publishes data through web services.

103 Early Adopter organisations will also be used to inform the detailed design of the infrastructure and as a means for testing its initial deployment (both functional, integration and User Acceptance Testing).

## 5.5 Use of Community Expertise

104 The UK Location Information Infrastructure cannot be developed in isolation from the communities who will utilise it, specifically the data providers and application developers. Their engagement is vital to ensure that it is fit for purpose and has buy-in. Also, in many cases, within these communities exist the very people who have the required knowledge and skills. These are not necessarily available elsewhere.

105 Therefore, as far as possible the development of the UKLII will use expertise drawn from the stakeholder community. This approach will be primarily implemented through:

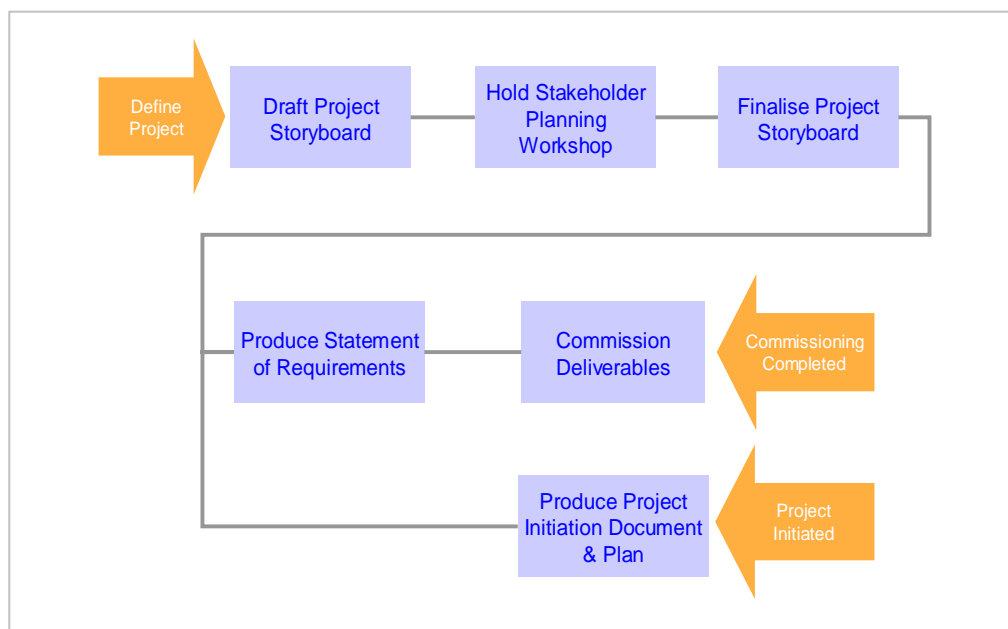
- strategic partners, including the devolved administrations (ref. sec. 9.3);
- the Location Interoperability Board and its associated working groups (ref. sec 9.2);
- the Location User Group (ref. sec 9.4)
- the use of pilots and early adopters (ref. Sec. 5.2 and 5.4); *and*
- the creation of other ad-hoc working groups, e.g. to address marketing, communication and exploitation related deliverables and activities.

106 Although not the primary driver, this will also have the added benefit of minimising costs.

## 5.6 Use of Collaborative Processes

107 The success of the programme will be largely dependent on the degree of collaboration that is achieved across stakeholder organisations – the degree that stakeholders feel engaged and consulted.

108 As part of fostering this collaborative environment, each phase of work on the programme that requires significant stakeholder engagement will be initiated through a collaborative process (Figure 4).



**Figure 4: UKLP Project Initiation Process**

- 109 The programme will define the overall purpose and scope of the project. Against this, a 'project storyboard' will be developed with key stakeholders. This will then be used to produce the formal Project Initiation Document (PID) and a Statement of Requirements (SoR).
- 110 The SoR will detail the requirements for each of the deliverables of the project and will be derived from the High Level Requirements Matrix set out in the UKLII Blueprint Supplement [6].
- 111 The SoR will then drive the commissioning process. Deliverables will be commissioned from a number of sources as set out in sec. 8.1 and the use of the SoR will differ depending on the commissioning route:
- in the case of a public sector body, it will form part of a memorandum of understanding;
  - in the case of the LIIB, it will form part the working group terms of reference; *and*
  - in the case of a procurement, it will form part of the Invitation to Tender (ITT).
- 112 The project initiation process will be facilitated through a stakeholder workshop and quality review cycle.

## 5.7 Use of a Common Descriptive Framework

- 113 The UKLII is intended to be a persistent environment. The method for documenting its design and operation will need to be equally persistent and in a form that a broad range of stakeholders can relate to and apply to their specific context, i.e. area of business and in-house documentation approaches.
- 114 Much of the detailed design of the UKLII will be documented within end deliverables, the greater part in the form of 'operational frameworks'. These will be produced within an agreed descriptive framework.
- 115 The primary descriptive framework will be as established in the Conceptual Design Blueprint [5] – the Business Model and Business Operating Model templates. Below this, detailed technical design will draw on the structured and descriptive forms used in the underlying INSPIRE Implementing Rules and Standards, e.g. UML, and on appropriate open architectural standards such as TOGAF (The Open Group Architectural Framework) and RM-ODP (the ISO Reference Model for Open Distributed Processing - ISO/IEC 10746-4). Detailed guidance will be published on this descriptive framework to ensure consistency across the various suppliers.
- 116 For non-technical design domain, such as the Learning & Skills Architecture, an appropriate descriptive framework will be adopted by the programme, drawing on good practice.
- 117 Any third party suppliers will be required to conform to the specified architectural and descriptive frameworks.

## 5.8 Development Methodologies

- 118 The overarching development methodology for the programme will be incremental delivery, in line with the design and implementation principles set out in sec. 2.5. Beyond this, specific approaches will be specified under each project, appropriate to the nature of the project and its deliverables.

## 6 BUSINESS ENGAGEMENT

- 119 This section sets out the programme's approach to the management of business change.<sup>12</sup>
- 120 The development of the UK Location Information Infrastructure and its extensive and long term exploitation will require significant and extended engagement with its stakeholders. For the purposes of the programme, these are classified into three broad groups:
- strategic partners, sponsor and supplier organisations – those organisations that will help design and build the infrastructure and provide associated common services, or have a major influence on its success<sup>13</sup>;
  - customers or users – the publisher's of location information and the users of this information for a specific application<sup>14</sup>; and
  - external stakeholders - organisations or individuals outside the boundaries of the programme, but who's activities may have a bearing on the programme (+ or -), e.g. event organisers, training companies and suppliers.
- 121 This engagement will need to communicate key messages, create a distributed network of 'champions', support the changes that need to take place within individual organisations and help to shape the evolving nature of the infrastructure and associated services.
- 122 To ensure this effective engagement, there are a number of inter-related activities that will be planned and managed through the creation of a Business Engagement Strategy and Plan:
- Intervention Strategy – i.e. our overall approach towards the intervention across the various implicated communities; and how we will understand and achieve the behavioral changes required;
  - Stakeholder Engagement – this will define how we will identify and engage with our key stakeholders, and manage this engagement across the various areas of activity on the programme;
  - Customer Insight – this will provide market and customer analysis to ensure that we fully understand the nature of demand, both existing and emergent;
  - Communications; *and*
  - Leadership.
- 123 Lower level strategies and plans will be produced as required.
- 124 There will be a strong supporting relationship between the Business Engagement Strategy and Plan; and the Business Realisation Management (BRM) approach set out in sec. 10. As with BRM, Business Engagement will extend into 'Business As Usual' and be supported by the services and functions to be established as part of the UKLII Coordination Unit.

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<sup>12</sup> "The term Business Engagement" is used in preference to the more common term "Business Change Management" to reflect the federated nature of the Location Programme and its more limited scope to influence and direct change within any given organisation.

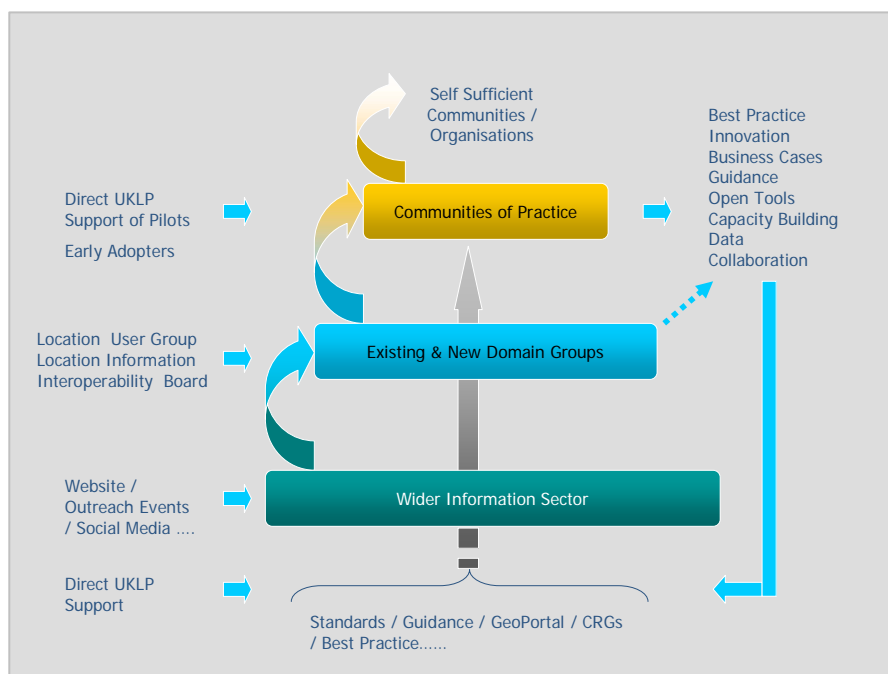
<sup>13</sup> Principally members of the Location Council, Interoperability Board and Strategic Partners.

<sup>14</sup> The primary customer groups are defined in the UKLII Blueprint.



## 6.1 Intervention Strategy

125 The Intervention Strategy is illustrated in Figure 5. This is based on a layered approach to community engagement, where we establish points of interaction at a number of levels and through a number of complementary mechanisms.



126

**Figure 5: UKLP Intervention Model**

127 The key element of the approach is a focus on 'communities of practice' - 'groups of people who share an interest in a topic, who continually interact, and who accumulate and disseminate knowledge. In the context of the UKLP, this is a group of users who share common concerns or problems; and who might have common requirements for the UKLII.

128 These communities of practice will be identified through the establishment of the Pilot Programme (ref. Sec. 5.2) and engagement with early adopters (ref. Sec. 5.4).

129 Through the pilots the objective will be to move these communities to a point of self sufficiency, i.e. the community is able to develop the exploitation of the infrastructure without further intervention from the programme. In turn, these will be the source of best practice, guidance and new resources, to allow capability to then be extended to other communities. The use of early adopters for the publishing of key datasets will be used to underpin this process.

130 Below this, will be a broader range of interaction and engagement, across a wider range of domain groups, through the establishment and operation of the Location User Group and Interoperability Board.

131 These two layers will be underpinned by background public relations, external communication and marketing activities and products.

132 Finally, this will link back and support the primary intervention itself - the establishment of the UK Location Information infrastructure, in the form of publishing policies and standards, catalogues, registries and resources.

- 133 In developing this approach, the programme has examined practices elsewhere, specifically in Canada and the Netherlands (see Appendix C). In taking this approach forward, it will continue to draw on identified good practice by maintaining a dialogue with a number of benchmark national Spatial Data Infrastructures.

## 6.2 Stakeholder Engagement

- 134 As part of the Business Engagement Strategy and Plan, a Stakeholder Engagement Plan will be produced<sup>15</sup>, identifying all key stakeholders and their role and degree of accountability and engagement.
- 135 In terms of decisions around engagement, many of these have already been made, e.g. through the creation of the Location Council, Location Information Interoperability Board, Location User Group and the identification of the programme's strategic partners (ref. sec. 9.3).
- 136 The purpose of stakeholder engagement planning will be to take a horizontal view across the programme and its various stakeholder engagement activities and ensure overall integrity of the approach.
- 137 The Stakeholder Engagement Plan will be maintained throughout the life of the programme.

## 6.3 Customer Insight

- 138 The UK Location Information Infrastructure will be serving a broad range of stakeholders and customers. Its success will be largely determined by whether it meets the needs of its customers in terms of providing the products and services required for them to publish and use location information. This will require insight into these needs (customer and market research), both prior to the establishment of the infrastructure and during its operational life.
- 139 As part of Business Engagement, a customer Insight function will be established. This will work closely with the customer insight functions of key stakeholder partners, to coordinate and pool customer and market intelligence.

## 6.4 Communications

- 140 As part of the Business Engagement Strategy and Plan, a communications strategy and plan will be developed and maintained throughout the life of the programme. This will set out the approach to be adopted in support of the intervention strategy outlined in sec. 6.1.
- 141 The strategy will take account of the fact that, although technical in nature, certain elements of the infrastructure will need to be communicated in a form that can be easily understood by non-technical audiences, e.g. decision makers and end users. For decision makers, these will be largely related to the business case for publishing data into the infrastructure and questions concerning the business 'how', e.g. the use of shared services. For end users, it will be largely around outcomes and benefits specific to a given community of users.

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<sup>15</sup> This will build on the initial stakeholder analysis carried out as part of the conceptual design and the early engagement activities by the programme.

## 6.5 Leadership

- 142 The UK Location Strategy acknowledged the importance of leadership in delivering its strategic goals. This leadership needs to seed new ideas, processes, behaviours and changes within the target communities, associated with the establishing of the UK Location Information Infrastructure and its exploitation.
- 143 A leadership programme will be established by the Location Council, to identify and support a network of champions across the stakeholder community.

## 7 COMPONENT SOURCING

- 144 This section sets out the programme's approach to the sourcing of the various components of the UKLII.
- 145 Infrastructure components will be sourced from a number of providers. In the case of the core deliverables, these will be sourced from either:
- an individual stakeholder public sector organisation or group of organizations (e.g. as part of a pilot) free of charge;
  - the Location Information Interoperability Board (standards and guidance only);
  - Core Programme Team (CPT); *or*
  - commercially, from the private or public sector.
- 146 The source of each deliverable is set out in sec. 8.1.
- 147 A procurement strategy will be developed for those components that need to be commercial sourced.
- 148 The intention is that the infrastructure is also supported by other, non-core infrastructure components, supplied independently by third parties, e.g. metadata tools and added value services such as data transformation. Sourcing and commissioning will be restricted to encouraging the coordinated development of these products and services.
- 149 In addition to the sourcing of individual components, will be the need to source a significant element of system integration testing. This will be led by an architectural team (part of the CPT), working closely with a group of system integration organisations, including other Member States and the EC.

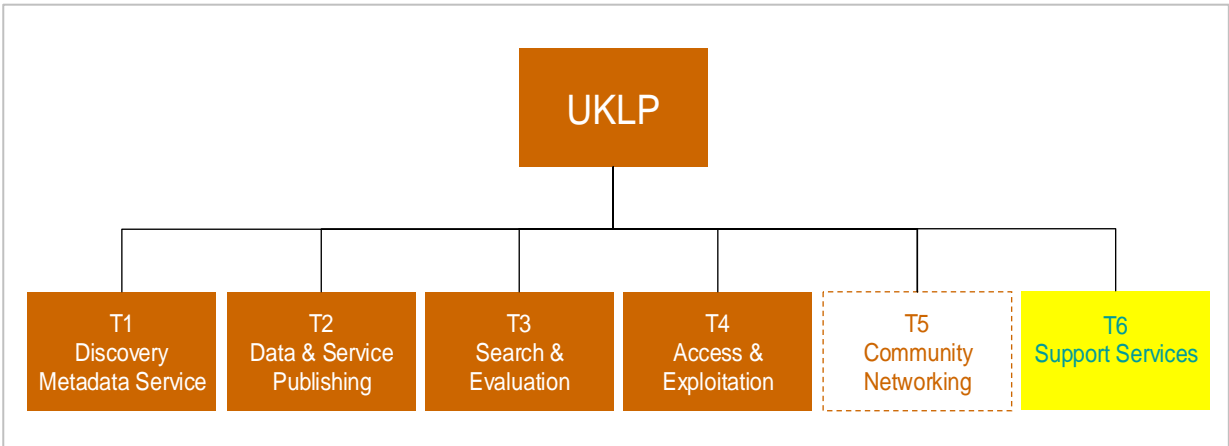
### 7.1.1 Use of Open Source

- 150 In line with government policy and to maintain the 'open' nature of the infrastructure, a strong preference will be shown towards open source-based solutions and services.
- 151 Open source will be the preferred option for all UK Geoportal related infrastructure, including the Discovery Metadata Service (DMS) and Search and Evaluation solutions.

## 8 TECHNICAL DELIVERABLES

This section sets out the primary technical deliverables of the programme and how they will be sourced.

The UKLII Blueprint [5] defines the design of the UKLII through a number of architectural design domains, or perspectives. These have been transposed into a number of discrete technical deliverables (products or services), that need to be designed, built, tested and deployed by the UK Location Programme. Figure 6 presents this transposition as a Level 1 Product Breakdown Structure (PBS)<sup>16</sup>. This relates to the base implementation and extensions ‘A’ and ‘B’ described in sec. 5.1.



**Figure 6: UKLII Product Breakdown Structure (Level 1)**

The PBS consists of six primary product groups:

**T1 - Discovery Metadata Service (DMS)**, this provides the capability for data publishers to publish their discovery metadata for the data and services that they wish to publish under the UKLII;

**T2 - Data and Service Publishing**, this provides the capability for data providers to publish their data and associated services – View, Download and Invoke and transform, and Theme coordination;

**T3 - Search and Evaluation**, this provides the capability for potential users of location information to discover and view location information through a point of access;

**T4 - Access and Exploitation**, this provides the capability for potential users of location information to download datasets and invoke data feed services via an information portal, or directly through the supplier’s service site; and exploit it within a given business application;

**T5 - Community Network**, this provides the capability within the UK Geoportal to facilitate and encourage data sharing and re-use through the provision of W2.0 type functionality. This lies outside the scope of this Roadmap; *and*

**T6 - Support Services**, encompassing Business Engagement and; Performance Monitoring and Reporting (PMR); Assurance and Governance.

<sup>16</sup> Note that the term “Product” here is used in the PRINCE 2 sense. It is a discrete item to be produced. This may be a physical product, service or a piece of work that results in a specific outcome. Associated with each ‘product’ is a set of tasks, or Work Breakdown Structure (WBS) required to produce and deploy it into the live environment.

- 155 T1 to T5 represent incremental deployment of the UKLII, i.e. they are not discrete product groups.
- 156 Each primary product group consists of a number of sub-products. The definition of these will be refined as part of detailed design and build; but their initial definitions are given in Table 3, Table 3: in the form of an outline Product Description.

Product No.	Title	Product Description
<b>T1 - DISCOVERY METADATA SERVICE</b>		
T1.1	UK Geoportal DMS Platform	To provide a central platform for the hosting of UKLII on-line and machine readable services and resources associated with the Discovery Metadata Service (DMS), including all web services.
T1.2	DMS Policies and Standards	The set of policies and standards relating to the creation, maintenance and distribution of UKLII Discovery Metadata.
T1.3	DMS Operational Framework	The common operational framework that defines the processes for creating, publishing and maintaining discovery metadata.
T1.4	Metadata Publishing Toolset	Set of software tools and other resources for the creation, publishing and maintenance of discovery metadata by data providers or their publishing agents.
T1.5	DMS Technical Guidance	Technical guidance on the creation, publishing and maintenance of discovery metadata.
T1.6	DMS Training and Education Module	An on-line training module that supports the professional development of staff associated with the publishing of discovery metadata under the UKLII.
T1.7	DMS Coordination	The coordination of the publishing of Metadata across the data provider community, inc. assistance, advice and assurance activities. Establishment of UKLII Coordination Unit.
T1.8	Discovery Metadata Service (DMS)	Operational DMS service. Enables data about datasets and services to be published directly or indirectly, and maintained by data providers, under the UKLII; and distributed to third parties.
T1.9	GI Gateway Migration	The migration of the GI Gateway metadata catalogue (subject to an initial evaluation phase).
T1.10	INSPIRE Compliant DMS Service	The activities associated with monitoring and assessing INSPIRE compliance of the UKLII Discovery Metadata Service.
<b>T2 - DATA AND SERVICE PUBLISHING</b>		
T2.1	UK Geoportal Data Publishing Platform	Central platform for the hosting of UKLII on-line services and resources associated with the publishing of location information datasets and services as part of the UKLII.
T2.2	Data Publishing Policies and Standards	UKLII policies and standards for data publishing and the technical and business interoperability of published data and services.
T2.3	Data Publishing Operational Framework	The common operational framework that defines the processes for publishing data and associated services; and the means for achieving business and technical interoperability.
T2.4	Standard Licensing Model	A standard Licensing Model that can be optionally applied by data providers as part of publishing their data into the UKLII; and the means for data providers to publish their own licensing models.
T2.5	Data Publishing Resources	A range of technical and business resources and tools associated with the publishing of location information as part of the UKLII.

Product No.	Title	Product Description
T2.6	Data Publishing Training and Education Module	An on-line training module that supports the professional development of staff associated with the publishing of location information as part of the UKLII.
T2.7	Data Publishing Coordination	The coordination of the publishing of data and associated services by data providers. An extension to the UKLII Coordination established under product T1.
T2.8	Data Theme Coordination Operational Framework	The common operational framework that defines the processes for creating the Core Reference Geographies and INSPIRE Themes.
T2.9	Theme Coordination Registry Services	Those additional Registry components associated with the publishing of coordinated themes and core geographic references.
T2.10	Data Theme Coordination	The coordinated publishing of Core Reference Geographies and INSPIRE Themes.
<b>T3 – SEARCH AND EVALUATION</b>		
T3.1	UKLII Third Party Information Portal Services	The coordination of the initial set of Information Portals that will use the UKLII Discovery Metadata Service (catalogue distribution), including the EC, UK and Devolved Administration Geoportals. The implementation of a business-to-business operational service to enable other information portals to utilise the service on request.
T3.2	UK Geoportal Search	The ability for customers to search and discover published location information and associated services via the UK Geoportal.
T3.3	UK Geoportal Evaluation	The ability for customers to view datasets as an image and evaluate the data's suitability for a given application.
T3.4	UK Geoportal Gazetteer Services	The ability for users of the UK Geoportal to search the DMS Catalogue by place or post code.
<b>T4 – ACCESS AND EXPLOITATION</b>		
T4.1	UK Geoportal Download Services	Routing of published download services (redirection).
T4.2	UK Geoportal Invoke Services	Routing of published Invoke services (redirection).
T4.3	Access and Exploitation Training and Education Module	An on-line training module that supports the use of published data and services by data users.
T4.4	UK Geoportal Data User Resources	On-line resources that assist data users in fully exploiting the application of published location information within end user applications.
T4.5	Exploitation Model	Learning and education model for embedding the application of location information into life long learning and professional development programmes.
<b>T5 – COMMUNITY NETWORKING (subject to separate business case)</b>		
T5.1	UK Geoportal W2.0 Services	Set of on-line UK Geoportal services that encourage the interaction of data providers and users to facilitate data sharing and reuse; and improve the quality of published data.
T5.2	UK Geoportal Personalisation	Provides the capability for UK Geoportal users to personalise their access to the UK Geoportal, to maximise their utilisation of the facilities provided.
<b>T6 – SUPPORT SERVICES (BAU)</b>		
T6.1	Coordination Unit Operating Model	Defines the detailed operating Model for the UKLII Coordination Unit – processes, people and support services.

Product No.	Title	Product Description
T6.2	Business Engagement	Creation of Business Engagement function within UKLII Coordination Unit. Marketing, communications and customer insight.
T6.3	Performance Monitoring & Reporting (PMR)	Creation of PMR function within UKLII Coordination Unit. Capability monitoring and reporting against key performance indicators and capability maturity model. Compiling UKLII management reports for Location Council and EC.
T6.4	Assurance Services	Creation of Assurance function within UKLII Coordination Unit. Ensuring compliance of published data and services to INSPIRE and UKLII policies and standards.
T6.5	Governance	Creation of Governance function within UKLII Coordination Unit. Administration of governing bodies, inc. Location Council, Interoperability Board and User Group.

**Table 3: UKLII Outline Level 2 Product Descriptions**

## 8.1 Product Sourcing

- 157 As set out in sec. 7, the UKLII programme deliverables will be sourced from an appropriate party, through a commissioning process. The proposed primary sourcing<sup>17</sup> for each of the programme deliverables is defined in Table 4:

Product No.	Title	Sourcing
<b>T1 - DISCOVERY MEADATA SERVICE</b>		
T1.1	UK Geoportal DMS Platform	Commercial supplier.
T1.2	DMS Policies and Standards	LIIB Metadata Working Group. Hosted on UK Geoportal.
T1.3	DMS Operational Framework	Core Programme Team and LIIB Metadata Working Group. Hosted on UK Geoportal.
T1.4	Metadata Publishing Toolset	Core tools - commercial supplier. Third party tools – Independently.
T1.5	DMS Technical Guidance	Core Programme Team and LIIB Metadata Working Group. Hosted on UK Geoportal.
T1.6	DMS Training and Education Module	Commercial supplier. Based on existing T&E Package. Hosted on UK Geoportal.
T1.7	DMS Coordination	UKLII Core Programme Team. Transition into UKLII Coordination Unit.

<sup>17</sup> Sub-products may be sourced separately, but overall delivery will rest with the prime supplier.



Product No.	Title	Sourcing
T1.8	Discovery Metadata Service (DMS)	Product of T1.1 to T1.7.
T1.9	GI Gateway Migration	Same as selected for T1.1.
T1.10	INSPIRE Compliant DMS Service	UKLII Core Programme Team. Transition into UKLII Coordination Unit.
<b>T2 - DATA AND SERVICE PUBLISHING</b>		
T2.1	UK Geoportal Data Publishing Platform	Same as selected for T1.1.
T2.2	Interoperability Policies and Standards	LIIB Data and Services Working Group. Hosted on UK Geoportal.
T2.3	Data Publishing Operational Framework	Core Programme Team and LIIB Data and Services Working Group. Hosted on UK Geoportal.
T2.4	Standard Licensing Model	Core Programme Team and LIIB Data and Services Working Group. Hosted on UK Geoportal.
T2.5	Data Publishing Resources	Various.
T2.6	Data Publishing Training and Education Module	Commercial supplier. As selected for T1.6. Based on existing T&E Package. Hosted on UK Geoportal.
T2.7	Data Publishing Coordination	UKLII Core Programme Team. Transition into UKLII Coordination Unit.
T2.8	Data Theme Coordination Operational Framework	Core Programme Team and LIIB Data Theme Coordination Working Group. Hosted on UK Geoportal.
T2.9	Theme Coordination Registry Services	Same as selected for T1.1.
T2.10	Theme Coordination	Core Programme Team and LIIB Data Theme Coordination Working Group/s – by data theme. Transitions to UKLII Coordination Unit.
<b>T3 – SEARCH AND EVALUATION</b>		
T3.1	UKLII Third Party Information Portal Service Coordination	UKLII core programme team.
T3.2	UK Geoportal Search	Same as selected for T1.1.
T3.3	UK Geoportal Evaluation	Same as selected for T1.1.
T3.4	UK Geoportal Gazetteer Services	Same as selected for T1.1.
<b>T4 – ACCESS AND EXPLOITATION</b>		
T4.1	UK Geoportal Download Services (redirection)	Same as selected for T1.1.
T4.2	UK Geoportal Invoke Services (redirection)	Same as selected for T1.1.

Product No.	Title	Sourcing
T4.3	Access and Exploitation Training and Education Module	Commercial supplier. As selected for T1.6. Based on existing T&E Package. Hosted on UK Geoportal.
T4.4	UK Geoportal Data User Resources	Third party developers. Hosted on UK Geoportal.
T4.5	Exploitation Model	Core programme team, in conjunction with strategic partners, inc. the Knowledge Council and the National School of Government.
<b>T5 – COMMUNITY NETWORK (requires separate Business Case)</b>		
T5.1	UK Geoportal W2.0 Services	Same as selected for T1.1.
T5.2	UK Geoportal Personalisation	Same as selected for T1.1.
<b>T6 – SUPPORT SERVICES</b>		
T6.1	Coordination Unit Operating Model	Core Programme Team.
T6.2	Business Engagement	UKLII Core Programme Team. Transition into UKLII Coordination Unit.
T6.3	Performance Monitoring & Reporting (PMR)	UKLII Core Programme Team, Transition into UKLII Coordination Unit.
T6.4	Assurance Services	UKLII Core Programme Team. Transition into UKLII Coordination Unit.
T6.5	Governance	UKLII Core Programme Team. Transition into UKLII Coordination Unit.

**Table 4: Product Sourcing**

## 9 ORGANISATION

158 This section sets out the approach that will be adopted to the organisation of the programme, building on the organisation architecture and overall UKLII governance arrangements defined in the Blueprint [5].

159 Implementation of the UKLII requires two areas of activity:

- a. the detailed design, build and deployment of the infrastructure components identified in sec. 8;  
*and*
- b. a range of supporting actions and activities by the Location Council and its members, to facilitate (a) and progress the publishing of location information into the delivered infrastructure.

160 The organisation architecture set out in the UKLII Blueprint [5] provides for the management of the implementation and initial operational of the UKLII, through a Delivery Group and Business Change Programme.

### 9.1 Delivery Group and Core Programme Team

161 The Delivery Group will consist of a Core Programme Team and those strategic partners responsible for the delivery of specific programme deliverables. It will be responsible for providing co-ordination to the programme, and business and technical design direction and guidance for the various projects.

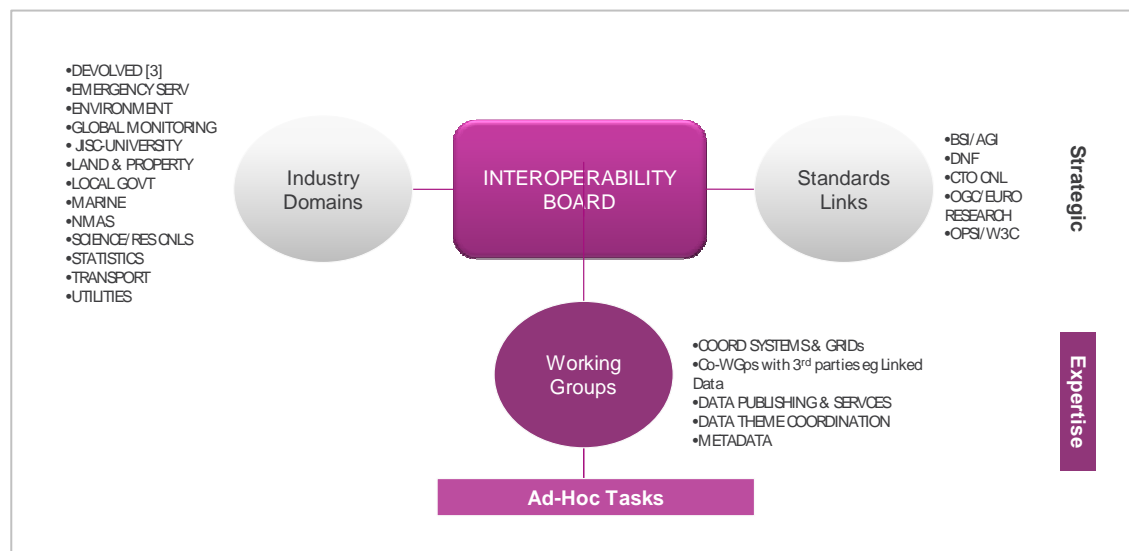
162 In order to fulfil this function, the Core Programme Team will require the following skills and competences:

- programme management within a collaborative environment, with an emphasis on the ability coordinate a matrix of contributing and inter-related activities, i.e. those related to end deliverables, demonstrators and pilots, and strategic partner contributions;
- stakeholder engagement, marketing, communications and knowledge sharing;
- project management within a collaborative environment;
- business architecture design and implementation, with an emphasis on collaborative environments and open business architectures;
- technical architecture design and implementation, with an emphasis on web services architecture and geo-spatial data architecture;
- information architecture design and implementation, within a distributed environment; *and*
- the management of change and benefits realisation within a federated environment, with a particular emphasis on pan-government collaborations.

163 More specific skills, such as business, data and technical analysis, will be provided by contributing organisations and through the UKLII Location Information Interoperability Board (LIIB) working groups.

## 9.2 UK Location Information Interoperability Board (LIIB)

164 The UK Location Information Interoperability Board (LIIB) will be responsible for the business and technical interoperability of the UKLII, including the definition of policies and standards, the production of operational frameworks and associated business processes and resources. Its structure is shown in Figure 7.



**Figure 7: Location Information Interoperability Board (LIIB) Structure**

166 Membership of the LIIB will be drawn from across government – incorporating domain and strategic representatives. Its members will need to be active and progressive in their contribution.

167 The LIIB will be responsible for the production of a number of planned deliverables (sec. 8.1). These deliverables will be produced through a series of working groups:

- Metadata Working Group;
- Data Publishing and Network Services Working Group;
- Data Theme,
- CGR Coordination Working Group;
- Business Interoperability Working Group.
- Co-working with the Public Sector Information Domain (CTO Council group) on common issues.
- Other groups required to resolve issues quickly and effectively

168 The working groups will work with, and be supported by the Core Programme Team; including the provision of additional resources as required. Product ownership will rest with a member of the Core Programme Team.

169 LIIB members will also engage in a range of ad-hoc tasks and activities, to ensure engagement with national and international developments concerning information management, location data and related standards; and the spreading of knowledge and understanding about data interoperability and the publishing of data for re-use.

### 9.3 Strategic Partners

- 170 The UKLII Business Model [5] sets out an initial list of strategic partners and their role as part of the Business Model for the UKLII. Strategic partners are organisations who will make a major contribution to the development of the common infrastructure components of the UKLII, either directly or indirectly. The full list of strategic partners is reproduced in Table 5, alongside a description of the primary method of engagement that will be adopted by the programme<sup>18</sup>.

Strategic Partner Organisation	Role	Method of Engagement
Devolved Administrations	To lead on the implementation of the UKLII at a national and regional level; and to develop resources in support of their national priorities and activities concerning the use of location information.	Represented on Location Council and Location Interoperability Board. National organisations represented on User Group. Programme representation through Delivery Group and LIIB working groups.
Office of Public Sector Information (OPSI)	To define and administer the overarching operational framework for the reuse of public sector information, including schemes and licensing models; and conditions relating to charging.  To ensure that the UK Location programme is aligned to wider policy aims on the reuse of public sector information.	Represented on Location Council and Location Interoperability Board. Programme representation through Delivery Group and LIIB working groups.
European Commission	Ongoing development of specifications, models, and implementation and operation of the European Spatial Data Infrastructure in line with Member States.	Through EC Initial Operational Capability (IOC) Taskforce, Drafting Team and Technical Working Groups.
Open Geographic Consortium (OGC) and the International Standards Organisation (ISO)	To development and publish standards relating to the design and operation of spatial data infrastructures.	Represented on the LIIB
Digital National Framework (DNF)	To continue to lead on industry wide efforts to improve the interoperability of location information through definitive referencing, i.e. the creation and use of common 'master data' in the form of feature dictionaries, catalogues and registries; and cross referencing between different datasets (both business data and spatial objects and collections of objects). To provide the foundation mechanisms for the related services provided through the UKSDI.	Represented on the LIIB
Local Government: <ul style="list-style-type: none"> <li>Local Government Association (LGA)</li> <li>Convention of Scottish Local Authorities (COSLA)</li> </ul>	To lead on the publishing of local government location information; including the promotion of local, regional and functional partnerships to publish and exploit location-based information; and the production of resources specifically related to the local government implementation of	Represented on Location Council, Location User Group and Location Interoperability Board. Programme representation through Delivery Group and LIIB working groups.

<sup>18</sup> It should be noted that all of these interfaces will need to transition across to the Coordination Unit at an appropriate point in the programme.

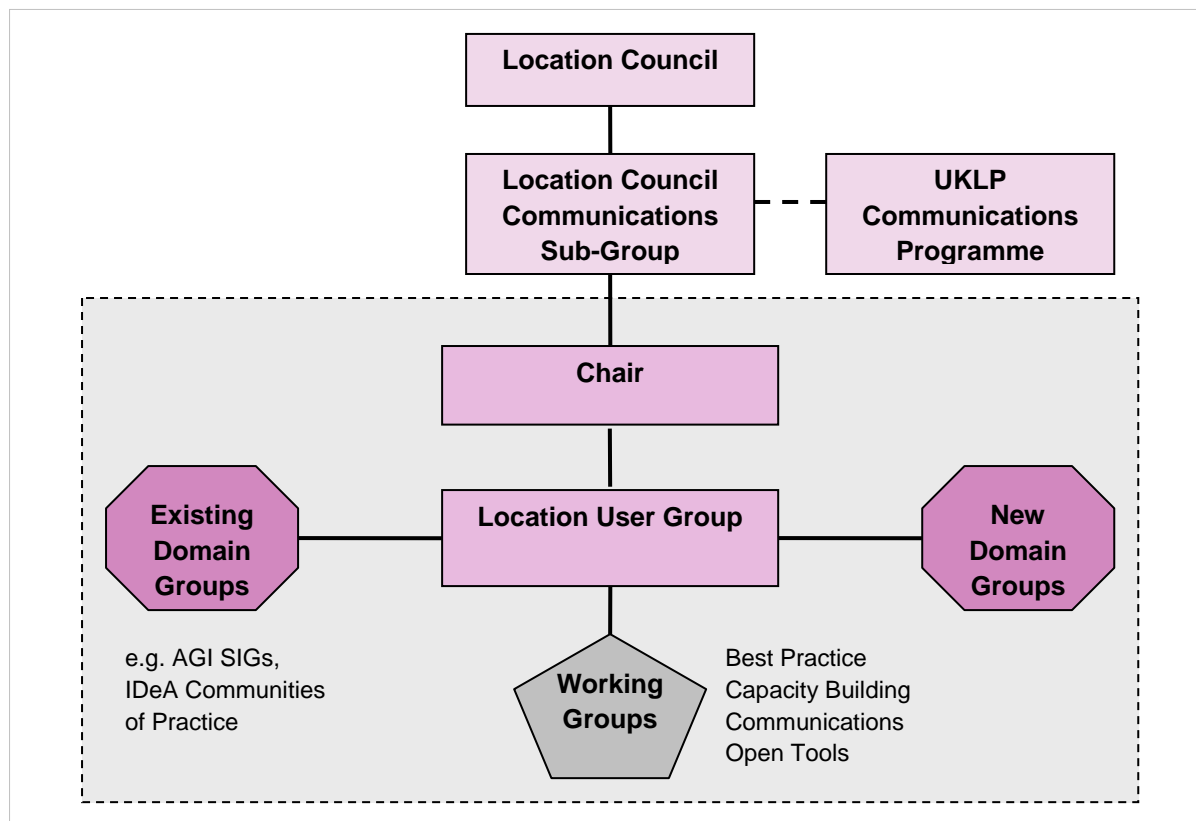
Strategic Partner Organisation	Role	Method of Engagement
<ul style="list-style-type: none"> <li>Northern Ireland Local Government Association (NILGA)</li> <li>Welsh Local Government Association (WLGA)</li> </ul>	the UK Location Strategy and INSPIRE Directive.	
Sector-based Community-SDI initiatives, inc. National Underground Asset Group (NUAG), Marine Environmental Data and Information Network (MEDIN) and the Defra Network.	To coordinate the involvement and participation of group members in the establishment and operation of the UKSDI; including the promotion of local, regional and functional partnerships to publish and exploit location-based information in their sector; and the production of sector specific resources related to the implementation of the UK Location Strategy and INSPIRE Directive.	Represented on Location Council Location User Group and Location Interoperability Board. Programme representation through Delivery Group and LIIB working groups.
Cabinet Office	To ensure that the UK Location Programme is aligned to the wider policy aims and activities relating to public sector information across government, e.g. public sector operational efficiency, open government and economic policies.	Represented on Location Council.
CIO and CTO Councils	To ensure that the UK Location Programme is aligned to the wider policy aims and activities relating to information management across government, e.g. cross government reference frameworks such as eGovernment Interoperability Framework (eGIF) and xGEA.	Represented on Location Interoperability Board. Programme representation through Delivery Group and LIIB working groups.
Office of Government Commerce (OGC)	Through the OGC Gateway Review and IT portfolio management processes, to ensure that the investments being made by public bodies are aligned to the UK Location Strategy, e.g. that all investments in geographic information systems are based on open standards, and that duplication and plans for accessibility and reuse have been fully taken into account.	
Knowledge Council; Skills Framework for the Information Age (SFIA) User Council; National Policing Improvement Agency (NPIA), IDeA and others	To work with the Location Council to establish a “capability building programme to embed location information awareness and analytical skills as a business ‘tool’ across the public sector” [1].	
Association for Geographic Information (AGI)	To assist in communication and stakeholder engagement. Also sponsors Geographic Information standards via BSI and IST/36	Represented on Location Council and Location Interoperability Board. Programme representation through Delivery Group and LIIB working groups.

**Table 5: Strategic Partners**

- 171 A memorandum of understanding will be established for each strategic partnership; and a relationship owner identified within the Core Programme Team.
- 172 The main mechanism for coordinating the work of the strategic partners will be the Delivery Group (ref. sec. 9.1).

## 9.4 Location User Group

- 173 The Location User Group is an advisory body, reporting to the UK Location Council (UKLC), ensuring that the implementation of the UK Location Strategy and the INSPIRE Directive are driven by user<sup>19</sup> needs and priorities and the benefits are gained by a wide range of stakeholders across the UK. Its structure is illustrated in Figure 8.



**Figure 8: Organisational Structure of the Location User Group**

- 174 Membership will be limited to around 25 organisations and will be drawn from across the location information sector (land, sea and air domains) and will include representatives from the public, private, academic and 3rd sectors. Wherever possible, membership will be composed of representatives of 'peak' organisations from different communities / domains that have a large outreach capability across the UK rather than individual appointments.
- 175 The key objectives of the Location User Group are:
- 176 to widely disseminate knowledge and understanding about the objectives and benefits of the UK Location Strategy and the INSPIRE directive across the Location Information sector;
- 177 to promote, share and encourage the adoption of best practice, open tools and capacity building initiatives across the location sector;
- 178 to create / link to communities of practice to support sharing of experiences;

<sup>19</sup> User is defined as user of the UK Location Information Infrastructure.

- 179 to encourage collaboration, partnerships and shared services in the delivery of location information services, where appropriate;
- 180 to support the Location Information Interoperability Board, where appropriate, to co-ordinate and support technical and business change through effective technical guidelines;
- 181 to assist in ensuring that location information is an integral part of the wider UK information landscape;
- 182 to support capacity building programmes across the sector; and
- 183 to continually monitor and provide feedback, through the Location Council's communications sub-group, on the effectiveness of the activities of the Location Council and the associated UK Location Programme and to ensure that the Location Council is continually driven by user needs and priorities.
- 184 The Location User Group will interface to existing end user forums in a variety of domains involved in location information, e.g. the AGI Special Interest Groups (SIGs) and the Marine Environmental Data and Information Network (MEDIN). In some cases, new domain groups will be formed.
- 185 Working Groups will be established by the Location User Group to execute any specific tasks that need to be performed. These will cover wider business issues, e.g. pan-government co-operation, as the Location Information Interoperability Board will focus on technical and business interoperability issues.

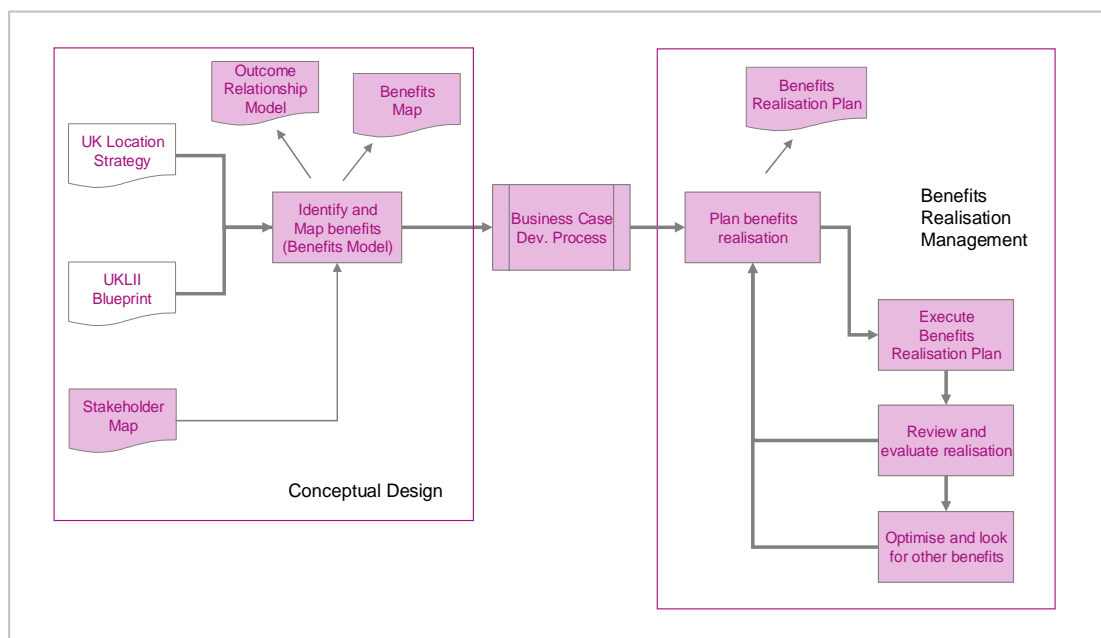
## 9.5 Programme Assurance

- 186 Independent assurance for the activities of the Location Council will be provided by a minimum of two non-executive members. These non-executives will report directly to the Chair of the Location Council.
- 187 Quality assurance of the UK Location Programme will be provided under the PRINCE2 methodology.



## 10 BENEFITS REALISATION MANAGEMENT

- 188 This section outlines the programme's approach towards Benefits Realisation Management (BRM).
- 189 The programme will apply an adapted version of the MSP Benefits Realisation Process. This is shown in Figure 9.



190

**Figure 9: Benefits Realisation Process**

- 191 The UKLII Benefits Model will be defined as part of Conceptual Design. This will translate the operational capabilities to be delivered as set out in the Blueprint [5], into outcomes and benefits across the various stakeholder/customer groups; and tie these back to the UK Location Strategy goals and objectives [1].
- 192 The Benefits Model will help inform and shape the Business Case, which in turn will drive the development of a Benefits Realisation Plan. This will plan the delivery of short and longer terms benefits, taking into account the delivery timescales for the programme and likely rate of exploitation, i.e. the rate of which data is published and used. It will also factor in any longer term capability trends such as simplification of licensing and data theme coordination; and those related to the effects of 're-enforcing feedback' and the achievement of critical mass.
- 193 The execution of the Benefits Realisation Plan will involve:
- establishing benefit measures;
  - State-of-readiness assessment (data providers and users);
  - business engagement activities, including stakeholder engagement, communications and marketing;
  - establishing a benefit tracking and reporting regime/mechanism (as part of the overall performance monitoring and reporting process); *and*
  - monitoring the progress of any related dependencies, e.g. the pilot programme.
- 194 Benefits realisation will be subject to ongoing review and evaluation. BRM will transition into Business As Usual, as an ongoing activity of the Coordination Unit at an appropriate point during programme delivery.

# 11 MANAGEMENT AND COORDINATION

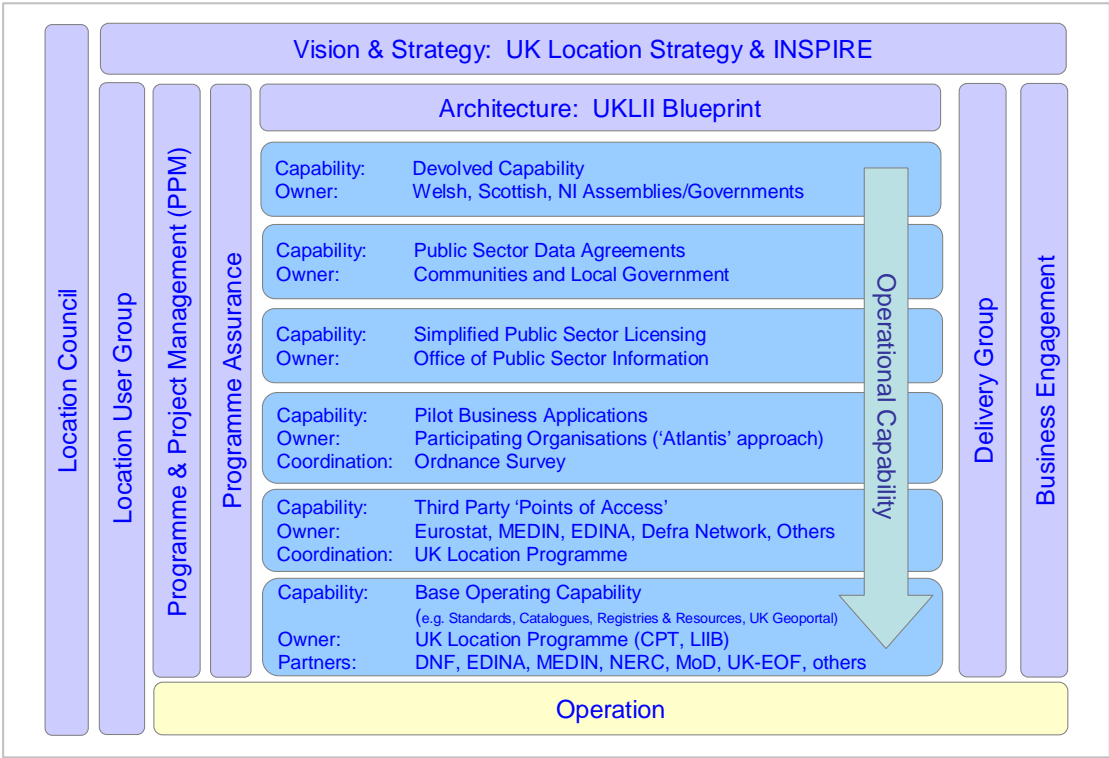
Having set-out the overall approach to the implementation of the UKLII, this section defines how the various aspects will be managed and coordinated during the life of the programme.

The federal nature of the change programme will require a robust yet flexible management and coordination framework. This needs to manage and coordinate the:

- work of the Core Programme Team (CPT), the Location Information Interoperability Board (LIIB) and its various working groups, and the collaborative interface with our strategic partners (through the Delivery Board);
- collaborative relationship between the programme and the Location User Group;
- relationship with the Location Council, as overall owner of the programme; *and*
- transition into Business As Usual and day-to-day operations.

This will take the form of a collaborative framework, illustrated in Figure 10.. This links the deliver of the vision and strategy as set on in [1], to the design Blueprint [5] and the delivery of operational capability through the various strategic partners and supplier organisations.

These are flanked by the cross-cutting aspects of the programme - the established governance arrangements – Location Council, Location User Group, PPM, Programme Assurance and Delivery Group, and Business Engagement.



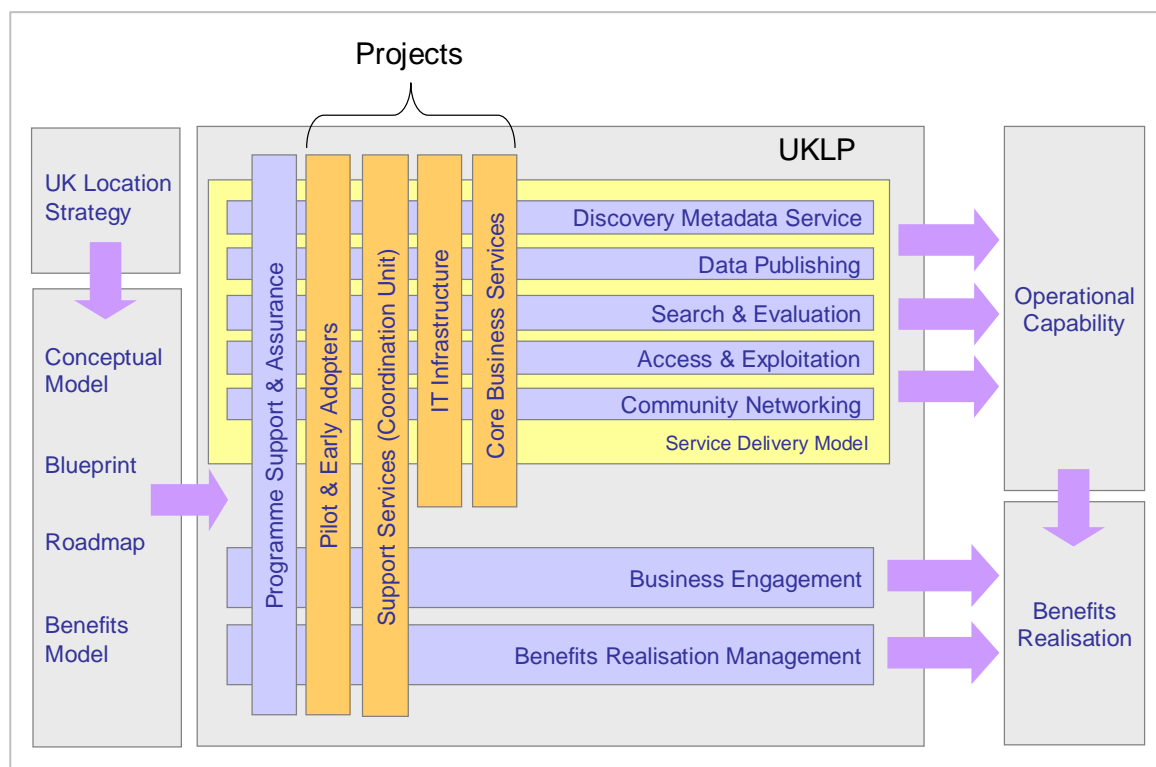
**Figure 10: UKLP Management & Development Coordination Framework**

The programme controls associated with this framework will be set out in the programme plan.

201 The overall methodology for management and coordination will be Managing Successful Programmes (MSP) and PRINCE 2 (for project management).

## 11.1 Project Structure

202 The programme will be delivered through a number of projects. The intended project structure, and its relationship to the delivery of operational capability and benefits realisation, is shown in Figure 11:



203

**Figure 11: UKLP Project Structure**

204 The project structure will consist of four projects:

- **Core Business Services**, this will deliver the UKLII Service Delivery Model [5] core business services and associated products (T1 to T5), excluding the UK Geoportal platform and associated IT components;
- **IT Infrastructure**, this will deliver the UK Geoportal platform and associated core infrastructure IT components;
- **Support Services**, this will establish the UKLII Coordination Unit and associated support services and products (T6); and
- **Pilots and Early Adopter**, this will manage and coordinate the programme's interface with the Pilots and early adopters.

- 205 These four projects will be supported by a further strand of work - Programme Support and Assurance. This will deliver all the management and coordination services associated with the programme - PPM, Programme Assurance Business Engagement (stakeholder Engagement and Communications) and Benefits Realisation Management; based around the framework set out at the start of this section.

## 12 UKLII TIMELINE

206 This section outlines the timeline for the development of the UKLII.

207 The key factors driving the timeline for the programme are:

- INSPIRE Roadmap dates, as detailed at: <http://inspire.jrc.ec.europa.eu/index.cfm/pageid/44>. The most critical are the publishing dates for Implementing Rules and by which dates the EC will be expecting to receive a service from the UK, e.g. in terms of Discovery Metadata and published services for Annex I, II and III themes.
- lead times for commissioning deliverables;
- likely lead times for deliverables, given the collaborative approach required and the need to secure broad stakeholder agreement;
- funding; *and*
- goals of the UK Location Strategy [1]

208 A visual representation of the timeline for the development of the UKLII is shown in Figure 12. This reflects the project structure set out in sec. 11.1 and shows these in relation to the INSPIRE Roadmap.

209 This shows the establishment of the core technical infrastructure within a 12 month window, which is then extended incrementally as new functional requirements are agreed/become known, specifically INSPIRE Invoke services.

210 Alongside the development of the core technical infrastructure, the Discovery Metadata and Search and Evaluation services will be established, such that by the end 2010 a basic capability exists to discover and view data through a minimum set of access points, including the UK Geoportal. This capability will be utilised through the pilot and early adopter programme.

211 In parallel with the introduction of this initial service, work on the full Data Publishing and Access and Exploitation services will commence.

212 Supporting the delivery of the core business services, will be the establishment of the Coordination Unit and supporting services, to enable the deployed business services to be transitioned into Business As Usual following post-deployment proving.

213 Finally, underpinning the development and deployment of the core and supporting business services will be Business Engagement and Benefits Realisation Management, Pilot and Early Adopter coordination and Programme and Project Support.

214 Against this timeline, it is anticipated that the bulk of the programme will be delivered by end 2011.

215 Note, this is only intended to provide an initial view of the likely timescales for delivery. The final timeline will be determined by the programme plan.

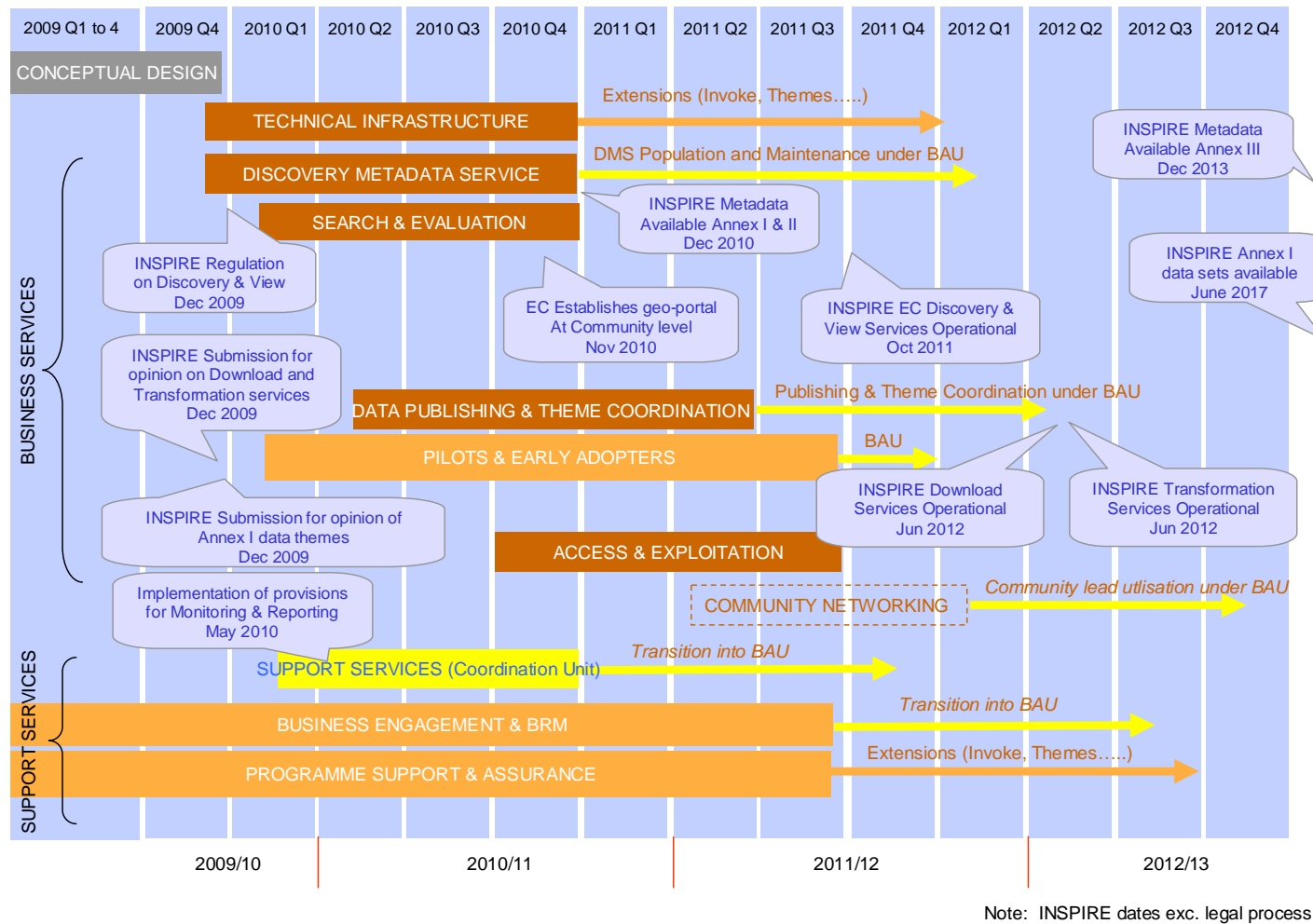


Figure 12: UKLP Roadmap

## 12.1 Outcome Realisation

- 217 Against this delivery timeline is the realisation of a set of operational capabilities, or outcomes, i.e. things that the customers of the UKLII will be able to do as the UKLII services are introduced. These are set out in Table 6, for each of the customer groups identified in the UKLII Business Model [5].

Customer Group	2010	2011	2012	2013
<b>DATA PROVIDERS AND THEIR AGENTS</b>				
Public Bodies	<p>We will fully understand our mandatory requirements under the UK INSPIRE regulations.</p> <p>We will know how to publish our data and services into the UKLII.</p> <p>We will be able to publish discovery metadata for the data we wish to publish.</p> <p>We will know which INSPIRE Annex I and II Themes we fall under and our mandatory obligations.</p> <p>Where applicable, we will start being involved in early discussions for INSPIRE theme coordination.</p> <p>For any new datasets that we establish that come under an INSPIRE Theme, we will work with the UK Location Council to ensure that these comply with the INSPIRE data specifications.</p> <p>We will be able to apply harmonised and simplified licensing to our published datasets.</p>	<p>We will have established the operational capability to publish data and services into the UKLII, either directly or through a publishing agent.</p> <p>We will have published View Services for those datasets for which we have published discovery metadata.</p> <p>We will start exploiting the UKLII by obtaining feedback on published datasets to improve their quality.</p> <p>We will be engaged in data specification harmonisation activities, for applicable INSPIRE themes.</p>	<p>We will be publishing Download and Transformation services for those datasets for which we have published discovery metadata.</p> <p>We will be publishing registry data alongside our published datasets, for use by others and on drawing on the registry for our own use (convergence of feature definitions, symbology etc).</p> <p>We will know which INSPIRE Annex III themes we fall under and our mandatory obligations.</p>	<p>We will have published Invoke services for those datasets for which we have published discovery metadata.</p> <p>We will have published discovery metadata for the Annex III theme datasets that we own.</p> <p>Increasingly, our own internal information management services are based on the UKLII standards and INSPIRE, i.e. corporate data architecture, data exchange mechanisms and data management processes, leading to increasing interoperability across are business units and strategic partners.</p>

Customer Group	2010	2011	2012	2013
Academic and Research Organisations NGOs/Third Sector	<p>We will know how to publish our data and services into the UKLII.</p> <p>We will be able to publish discovery metadata for the data and services we wish to publish.</p> <p>We will be able to apply harmonised and simplified licensing to our published datasets.</p>	<p>We will have established the operational capability to publish data and services into the UKLII, either directly or through a publishing agent.</p> <p>We will have published View Services for those datasets for which we have published discovery metadata.</p> <p>We will start exploiting the UKLII by obtaining feedback on published datasets to improve their quality.</p>	<p>We will have published Download and Transformation services for those datasets for which we have published discovery metadata.</p> <p>We will be publishing registry data alongside our published datasets, for use by others and will be drawing on the registry for our own use (convergence of feature definitions, symbology etc).</p>	<p>We will have published Invoke services for those datasets for which we have published discovery metadata.</p> <p>Increasingly, our own internal information management services are based on the UKLII standards and INSPIRE, i.e. corporate data architecture, data exchange mechanisms and data management processes, leading to increasing interoperability across are business units and strategic partners.</p>
Private Sector	<p>We will know how to publish our data and services into the UKLII.</p> <p>We will be able to identify opportunities for publishing added-value data into the UKLII.</p> <p>We will be able to publish discovery metadata for the data and services we wish to publish.</p> <p>We will be able to apply harmonised and simplified licensing to our published datasets.</p>	<p>We will have established the operational capability to publish data and services into the UKLII.</p> <p>We will have published View Services for those datasets for which we have published discovery metadata.</p> <p>We will start exploiting the UKLII by obtaining feedback on published datasets to improve their quality.</p>	<p>We will have published Download and Transformation services for those datasets for which we have published discovery metadata.</p> <p>We will be publishing registry data alongside our published datasets, for use by others and will be drawing on the registry for our own use (convergence of feature definitions, symbology etc).</p>	<p>We will have published Invoke services for those datasets for which we have published discovery metadata.</p>



Customer Group	2010	2011	2012	2013
<b>ADDED VALUE SERVICE PROVIDERS</b>				
Public Sector service providers (government funded)	We can start planning how the services that we provide to our communities can be offered as added value services to users of the UKLII.	We can start making available our services to users of the UKLII.  We can start developing new added value services based on the UKLII and INSPIRE.		
Commercial Sector	We can start planning the development of added value services, based on the creation of the UKLII and INSPIRE.	We can start introducing added value services into the UKLII and other INSPIRE compliant geo-spatial data infrastructures.	We can continue to introduce new added value services, extending innovation and the capabilities available through the UKLII and other INSPIRE compliant geo-spatial data infrastructures.	
<b>DATA USERS</b>				
EU Bodies	We will be receiving an annual report on the UK Implementation of INSPIRE, that complies with the INSPIRE Monitoring and Reporting Implementing Rule.  We will be able to obtain an INSPIRE compliant Discovery Metadata Service from the UK, for use within EU information portals, including the EC Geoportal.	We will be able to obtain INSPIRE compliant View services for UK published INSPIRE Annex I & II datasets.	We will be able to obtain INSPIRE compliant Download and Transformation Services for UK published INSPIRE Annex I & II datasets.	We will be able to obtain INSPIRE compliant Invoke services for UK published INSPIRE Annex I & II Theme datasets.  We will be able to obtain INSPIRE compliant discovery metadata for INSPIRE Annex III Themes.

Customer Group	2010	2011	2012	2013
Devolved administrations, national government departments, Thematic Sectors.	We will have sufficient information to plan the integration of our own location information publishing and exploitation initiatives with the UKLII, to maximise its exploitation within our own community of interest.	We are able to subscribe to the UKLII Metadata Catalogue for use within our own information portal services.  We are able to start exploiting datasets that have been published into the UKLII, within our own community of interest (View Services only).	We are able to extend our exploitation of the datasets that have been published into the UKLII (Download and Transformation services) within our own community of interest.	We are able to maximise our exploitation of the datasets that have been published into the UKLII (Invoke services) within our own community of interest.
Public Sector Service Delivery Bodies  UK Local Government.  NGOs/Third Sector	We can start planning our future Information Strategy, based on the greater availability of data from external organisations – what it means for us.	We are able to discover data published into the UKLII through a number of information portals and evaluate it for use within our own business activities.  We are able to use published data in simple business applications, i.e. in the form of map images.  We are able to subscribe to the UKLII Metadata Catalogue for use within our own information portal services.	We are able to Download datasets for use within business applications.  The number of available datasets is increasing, as is their technical and business interoperability, extending our ability to incorporate these datasets into our own business activities.	We are able to obtain direct raw data exchange services from data providers, enabling us to fully incorporate external data sources into our own base data architecture, reducing our own data collection needs; and creating new business opportunities.
Academic and Research Organisations	We will have sufficient information to plan the integration of our own location information publishing and exploitation initiatives with the UKLII, to maximise its exploitation of within our own community of interest.	We are able to subscribe to the UKLII Metadata Catalogue for use within our own information portal services.  We are able to start exploiting datasets that have been published into the UKLII, within our own community of interest (View Services only).	We are able to extend our exploitation of datasets that have been published into the UKLII (Download and Transformation services) within our own community of interest.	We are able to maximise our exploitation of datasets that have been published into the UKLII (Invoke services) within our own community of interest.

Customer Group	2010	2011	2012	2013
Private Sector	We will be able to explore how we might exploit the availability of public sector location information as part of the development of new commercial applications.	We will be able to discuss commercial opportunities with public sector data suppliers, based on their plans to publish data into the UKLII.		New commercial applications start appearing based on data published into the UKLII.
Citizen (Digitally Engaged).	I can see what the future might look like and I can start thinking about how I might use publicly available location information for the things that I want to do, building on the data I can already access.	I can start discovering datasets and evaluating them for use. I can obtain map images for use in my applications.  I can start building citizen-centric services based on data published into the UKLII; and associated web services.	I can download location information for use in more advanced applications.  I can develop an increasingly diverse range of applications as more data is published into the UKLII.	
<b>IT SERVICES</b>				
Enterprise IT Architects and Developers	I understand the technical architecture of the UKLII and the requirements for publishing data and using data that has been published by others.  I am able to support my organisation in understanding how we might fully exploit the UKLII and comply with any mandatory requirements.	As part of our information architecture, I am supporting the development of geo-web services for the exchange of geo-data across organisational boundaries, including for publication into the UKLII.  I am able to engage with a growing community about the data published through the UKLII, helping me fully exploit its re-use.	The availability of a wide range of data, increasingly harmonised to a common data standard, is changing the way we think about data and its provision – moving away from centrally created and/or hosted data, to a distributed approach, towards the use of information services.	Our Information Architecture is web services based. We are increasingly moving away from large databases, towards integrating data as we need it, for a given application.
Commercial IT Architects and Developers	I understand the technical architecture of the UKLII and the requirements for publishing data and using data that has been published by others.		I am supporting the development of commercial services and applications using the UKLII.  I am able to engage with a growing community about the data published	

Customer Group	2010	2011	2012	2013
	I am able to support my organisation in understanding how we might fully exploit the UKLII by providing related or derived products and services.		through the UKLII, helping me to fully exploit its re-use.	

**Table 6: UKLII Timeline - Customer Outcomes**

- 218 This table highlights that whereas 2009 was a planning year for the UK Location Programme, 2010 will very much be a planning year for organisations, with benefit realisation commencing in 2011 and growing thereafter as more data and services come on line.
- 219 Also, it is expected that there will be a number of indirect outcomes, the principal ones being:
- organisations will increasingly adopt INSPIRE standards for all their location data, irrespective of whether it is intended for publication into the UKLII, i.e. INSPIRE will also be adopted as the publishing framework for data that is not intended for open access, e.g. protectively marked location information;
  - the adoption of open standards, the use of open source and the module-based approach to the IT infrastructure will make a major contribution to the delivery of UK government IT strategy;
  - INSPIRE will become the basis for other international data harmonisation initiatives and those within other national and international communities, greatly benefiting those organisations that operate within an international arena; *and*
  - the lead taken in relation to location data will have a positive impact across public sector information management as a whole, leading to the greater adoption of technical and business interoperability standards and data that is not just published, but in a form that can be easily evaluated, combined and consistently used.

## 13 RISKS & ISSUES

- 220 The risks and issues associated with this Roadmap, their resolution, mitigation and/or contingency measures have been captured on the UKLP Risk and Issue Register [7].

## APPENDIX A: EXISTING UK LOCATION INFORMATION INITIATIVES

Initiative/Service	Summary Description	Likely Role within UKLII
DNF	Provides guidelines, technical Papers, registers and tools for developing feature catalogues. Provides information on what constitutes core reference geographies and how interoperability can be improved through the use of definitive referencing via master data layers/core reference geographies. <a href="http://www.dnf.org/Pages/home/default.asp">http://www.dnf.org/Pages/home/default.asp</a>	DNF is currently determining its role going forward, within the context of the establishment of the UK Location Programme and development of the UKLII. It is likely to remain a focal point for feature catalogue development and interoperability.
GI Gateway	Existing national service for the publishing of location information (discovery and view). Maintained by AGI. <a href="http://www.gigateway.org.uk/">http://www.gigateway.org.uk/</a>	Existing catalogue may be migrated across to the new Discovery Metadata Service, subject to a decision by the Location Interoperability Board.
Defra SPIRE and MAGIC Services	SPIRE is primarily a data repository for geospatial environmental information. It offers a range of search, view and download services for the Defra Network and other authorised users.  MAGIC is a public facing web site. It offers similar search, view and download facilities to SPIRE, but with its own data management processes and data storage. <a href="http://www.magic.gov.uk/">http://www.magic.gov.uk/</a>  Defra are in the process of evolving these two existing systems to create a single Defra Network Spatial Data Infrastructure (DNSDI).	Publishing Agent for environmental location information, providing data hosting, discovery metadata publishing, data and transformation services.  Environmental information portal service.
UK Environmental Observation Framework (UK-EOF)	Initiative to coordinate the <u>collection</u> and publishing of environmental observation data. Strong links to GEOSS, GMES and SEIS.	Coordination of Environmental Observation data and service standards.  Environmental Observation information portal service, Environmental research community based.
Marine Environmental Data and Information Network (MEDIN).	A collaborative initiative within the marine information sector (public and private) to make it easier to source and access marine data.  Establishing a number of marine data centres, a marine data portal, marine data standards and delivery mechanisms to international data centres.  <a href="http://www.oceannet.org">http://www.oceannet.org</a>	Coordination of marine data and service standards.  Network of data centres likely to act as Publishing Agents for marine location information.  Community-based Marine information portal.
National Underground Assets Group (NUAG)	Collaborative initiative, involving the public and private sector, to improve information management and data sharing on underground and associated above ground assets.	The coordination of underground and associated above ground related location information data and data sharing standards; and publishing.
EDINA/Go-Geo	EDINA provide distributed geospatial information services for the education and research sector, in collaboration with JISC and others.  The principle platform is Go-Geo. This provides a	Coordination of academic location information publishing.  Academic and education community information portal –

Initiative/Service	Summary Description	Likely Role within UKLII
	<p>discovery service against a number of existing Metadata Catalogues, including the GI-Gateway (for which EDINA provide hosting services) and NERC.</p> <p>They also maintain the UK Academic Geospatial Metadata community profile of ISO 19115 and provide an on-line metadata creation tool.</p> <p>They have done extensive work on Gazetteers (inc. pan-European) and have undertaken INSPIRE compliance and interoperability testing as part of the EU project ESDIN.</p> <p><a href="http://www.gogeo.ac.uk/cgi-bin/index.cgi">http://www.gogeo.ac.uk/cgi-bin/index.cgi</a></p>	Go-Geo.
IGGI	<p>The Intra-Governmental Group on Geographic Information (IGGI) is a cross-departmental group, working with partners in the geographic information (GI) industry to coordinate and promote the effective use of GI in central government.</p> <p>It manages a portfolio of datasets under a cross-government purchasing agreement – the Pan-Government Agreement (PGA).</p> <p>The key aims of the agreement are to meet the government's requirements for core geographic information, facilitate data sharing and deliver value for money. Procurement of the agreement is through the Department for Communities and Local Government (DCLG) on behalf of all PGA members.</p> <p><a href="http://www.iggi.gov.uk/">http://www.iggi.gov.uk/</a></p>	
Devolved Administration GI Strategies	<p>Each of the devolved administrations are implementing their Geographic Information Strategies. These can be found at:</p> <p><a href="http://www.scotland.gov.uk/Publications/2005/08/31114408/44098">http://www.scotland.gov.uk/Publications/2005/08/31114408/44098</a></p> <p><a href="http://www.gistrategyni.gov.uk/gi_for_ni_strategy_09-19_web.pdf">http://www.gistrategyni.gov.uk/gi_for_ni_strategy_09-19_web.pdf</a></p> <p><a href="http://www.agi.org.uk/SITE/UPLOAD/DOCUMENT/Reports/GIS_strategy_for_wales_english.pdf">http://www.agi.org.uk/SITE/UPLOAD/DOCUMENT/Reports/GIS_strategy_for_wales_english.pdf</a></p>	The devolved administrations' initiatives will create federated elements of the UKLII. They will also provide best practise and have the opportunities to be involved in pilot projects and other forms of collaboration.

## APPENDIX B: MANAGEMENT OF CHANGE – BEST PRACTICE ASSESSMENT

222 As part of exploring our approach to the management of change and how we best interact and support the communities that the UKLII is designed to serve, existing practices elsewhere were examined. These focused on two national SDI initiatives:

- Geoconnections in Canada (<http://www.geoconnections.org/en/index.html>); and
- Geonovum in the Netherlands (<http://www.geonovum.nl/>).

### **Canada – Geoconnections:**

- GeoConnections is working to ensure that decision-makers in key areas benefit from the Canadian Geospatial Data Infrastructure (CGDI), a one-stop searchable portal for a wealth of location-based information;
- In 1999, Canada's GeoConnections Program was allocated C\$60 million in federal funding over six years to implement the CGDI through seven major projects;
- In 2005, the program was extended for 5 years and a further C\$60 million in federal funding obtained;
- Just focuses on four 'Communities of Practice' (Public Security, Public Health, Environment & Sustainable Development, Aboriginal Communities);
- Co-funding of projects that encourage key decision-making audiences in the four 'Communities of Practice' [catalyst approach];
- Natural Resources Canada devote ample time and energy to establishing and nurturing partnerships, in a National partnership program, because they anchor the success of the Canadian Geospatial Data Infrastructure as an online resource to support decision making;
- GeoConnections is governed by a management board, operated by a secretariat, and guided by numerous advisory committees, four of which represent the interests of GeoConnections' key audiences.

### **Netherlands - Geonovum:**

- Geonovum is the NSDI executive committee in the Netherlands found in 2007.
- Since 2008, spent €475,000
- Support data providers
- Co-ordination & capacity building
- Software improvements
- Communications
- From Sept 2009
- From creation to exploitation of NSDI
- SDI Shared Services Organisation (5 partners)
- Funding for a period of 4 years



- Intervention Approach:
  - Stakeholder Consultation Group;
  - Partnership to deliver NSDI Shared Service Organisation;
  - Funding support of partnership projects to expand innovation of location information;
  - Not focused application areas;
  - 4 year funding not sufficient to create sustainable business solutions.