



Spatial Data Infrastructures in *the* United Kingdom: State of play 2010



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Change matrix 2010 versus 2007

A concise graph is added to indicate changes of the various paragraphs compared to the previous report. Two colours are used: Green and Yellow indicating major and minimum changes respectively compared with the 2007 State of Play. This graph does not reflect the country situation. It merely represents our findings/changes per section from our preparation of the desktop analysis.



Executive summary

In the April 2006 Transformational Government Implementation Plan, Ministers asked the Geographic Information Panel to create a UK Geographic information Strategy. The aim of the strategy was to maximise exploitation and benefit to the public, government and UK industry from geographic information and to provide a framework to assist European, national, regional and local initiatives. As a result the UK Location initiative was created.

UK Location is a pan-government initiative to improve the sharing and re-use of the public sector geo-information. Established following the publication of the UK Location Strategy, it incorporates the implementation of the strategy and the EC INSPIRE. Coordination is through the Location Council. The Department of Environment, Food and Rural Affairs (DEFRA) will be working alongside the Scottish Government, Northern Ireland Government and Welsh Assembly Government acting as the leading organization.

The UK Location Strategy will be delivered through a multi-year programme of work – the UK Location Programme. This is intended to deliver a significant change in the management of location information – one that introduces a new, innovative, and joined up service for government, business and citizens – not only from within the UK but also across the European Union.

Furthermore, UK has set an implementation strategy by the UK Location program setting a roadmap on how the INSPIRE will be implemented in the UK. The central funding for implementation amounts to £10million over 5 years (2009-14) and it comes from the National Government. Business as usual thereafter for central co-ordination is estimated at £1million per annum. Data providers must provide funding for their own work in complying with the INSPIRE regulations and joining up with the UK Location Infrastructure (SDI).

The Ordnance Surveys of Great Britain and Northern Ireland and Association for Geographic Information are generally being considered to have a central role in the elaboration and execution of this policy. At the same time each of the devolved administrations (N. Ireland, Scotland, and Wales) is implementing their Geographic Information Strategies.

Ordnance Survey (Great Britain) is the national mapping agency of England Scotland and Wales. It provides the underpinning reference framework and infrastructure. In July 2004, a new framework document setting out the role and responsibilities of Ordnance Survey has been presented to Parliament by the Office of the Deputy Prime Minister. It endorses the business model under which Ordnance Survey operates, and sets out financial arrangements for the agency.

In 2006 the new Land and Property Services agency (LPS) was created. This brought together under one roof Ordnance Survey of Northern Ireland, Land Registers Northern Ireland, the Valuation and Lands Agency and the Rate Collection Agency, on the

assumption that an integrated set of land and property services would promote economic development. The Agency became part of Northern Ireland's Department of Finance & Personnel (DFP). A new Geographic Information Strategy for the period from 2009 to 2019 was published in 2009 after approval by the Minister for Finance and Personnel and endorsement by the Ministerial Executive (cabinet).

The Association for Geographic Information (AGI) which brings together over 1.000 members from public and private sectors, data producers and users, holds a neutral position as it represents the GI-community as a whole (public + private). AGI is currently hosting the web-based metadata service GI-gateway and has recently launched MetaGenie, the UK metadata creation tool. At the same time AGI hold a position in the UK Location Council.

The environmental sector is playing an important role with initiatives to implement components of the SDI, especially for the environmental part of it. DEFRA, apart from leading the UK Location Council is also developing and/or involved in several initiatives to build those components in order to make environmental data more accessible: SPIRE, WIYBY and MAGIC are the most important examples.

The service based architecture is further evolving with services focusing on discovery and viewing, some of them being free, while others are paying services.

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Abbreviations and acronyms

AGI	Association for Geographic Information
AHL	Admiralty Holdings Ltd
BGS	British Geological Survey
BS	British Standard
BSI	British Standards Institute
CEN	European Committee for Standardization
CLG	Communities and Local Government
CSV	Comma Separated Values
CT	Core Thematic Data
DCLG	Department for Communities and Local Government
DEFRA	Department of Environment, Food and Rural Affairs
DFP	Department of Finance & Personnel
DNF	Digital National Framework
DTM	Digital Terrain Model or
DWG	Data Working Group
eGIF	e-Government Interoperability Framework
EOF	Environmental Observation Forum
ESUs	Elementary Street Units
FIR	Further Investigation Required
FOISA	Freedom of Information (Scotland) Act
GEMINI	Geo-spatial Metadata Interoperability Initiative
GI	Geographical Information
GINIE	Geographic Information Network in Europe
GIS	Geographical Information System
GIS-MO	Getting Information Simply – Mapping Online
GMIS	Geographical Management Information Solutions
GML	Geography Markup Language
GPS	Global Positioning System
HMSO	Her Majesty's Stationary Office
IFTS	Information Fair Trader Scheme
IGGI	Intra-Governmental Group on GI
INSPIRE	INfrastructure for SPatial InfoRmation in Europe
ISO	International Organization for Standardization
LPS	Land and Property Services agency
MDIP	Marine Data and Information Partnership
MOLAND	Monitoring Land Cover / Use Dynamics
NAG	National Address Gazetteer

NDPB	non-departmental public bodies
NGDF	National Geospatial Data Framework
NGO	Non-Governmental Organizations
NHS	National Health Service
NICS	Northern Ireland Civil Service
NIGIS	Northern Ireland Geographic Information System
NIMA	Northern Ireland Mapping Agreement
NIMSA	National Interest Mapping Services Agreement
NLIS	National Land Information Service
NLPG	National Land & Property Gazetteer
NPIA	National Policing Improvement Authority
NREIS	Networks for Rural and Environmental Information for Scotland NSAI National Spatial Address Infrastructure
NSDI	National Spatial Data Infrastructures
NSG	National Street Gazetteer
NTD	National Topographic Database
NUAG	National Underground Assets Group
ODPM	Office of the Deputy Prime Minister
OPSI	Office of Public Sector Information
OS	Ordnance Survey
OSGB	Ordnance Survey of Great Britain
OSMA	One Scotland Mapping Agreement
OSNI	Ordnance Survey of Northern Ireland
PGA	Pan Government Agreement
PSI	Policy and legislation on access to public sector information
PPP	Public-private partnerships
REF	Reference data
RIA	Regulatory Impact
SDIC	Spatial Data Interest Community
SDI	Spatial Data Infrastructures
SNS	Scottish Neighbourhood Statistic)
SPIRE	Spatial Information Repository
SSL	SeaZone Solutions Ltd
TOID	TOpographic IDentifier
UKHO	UK Hydrographic Office
UKSGB	United Kingdom Standard Geographic Base
UPRN	Unique Property Reference Number
VLA	Valuation & Lands Agency

VORF Vertical Offshore Reference Framework

1 GENERAL INFORMATION

1.1 Method

This report is summarizing the review of SDI in the United Kingdom, and aims at reflecting the degree to which the SDI-situation is similar to the ideas set out in the INSPIRE position papers¹ and the more recent INSPIRE scoping documents.

The 2002 report was based on the analysis of various documents, project references and web sites readily accessible (See Section 3.2 for the full list of consulted references). Basic information was found in the recent GINIE-reports.

The 2005 report has been completed by integration and consolidation of comments received from representatives of the Ordnance Surveys (GB in 2003 and NI in 2004 – both updated in 2005) and through interviews organized in the framework of Activity 2 of the State-of-Play project in May-June 2003. The update of 2006 was based on input received from Mr. Neil Sutherland (Ordnance Survey), Mr. Russel Connelly (OSNI) and Mr. Cameron Easton (Scottish Executive). Presentation during the EC GI&GIS workshop gave additional information which was used for that update. In 2007 new information was gathered regarding the legal and pricing/funding issues through various channels. No information was received from UK authorities regarding data sharing practices (survey) and the data sets/services (templates).

For the 2009 SoP the questionnaire answered by the UKLP was used, along with numerous documents found in the UK Location website together with information found in conferences and on the web. At the same time obsolete information from the previous versions was removed, while a conclusion paragraph regarding the status of each indicator was added for each component.

1.2 The GI- and NSDI-scene in the UK

1.2.1 Overview

The UK has a unique political and administrative structure. It is made up of the three nations England, Scotland and Wales, and the province of Northern Ireland. Scotland has for some issues a specific legal system, reflected e.g. in the land registry which is different from the HM Land Registry in England and Wales. Decentralisation is clearly in progress which impacts on governance, regulations and information and data provision.

The traditional producers of reference and core thematic spatial data in the UK are:

- Ordnance Survey Great Britain (OSGB), the national mapping agency of England, Scotland and Wales, providing the underpinning reference

¹ INSPIRE position papers, final versions: RDM, ETC, DPLI, ASF, IST, IAS (latest version).

framework and infrastructure for Great Britain.
(<http://www.ordnancesurvey.co.uk>) ;

- Land and Property Services (LPS) (which merged Ordnance Survey of Northern Ireland, Land Registers Northern Ireland, the Valuation and Lands Agency and the Rate Collection Agency), is responsible for the mapping, the underpinning reference framework and infrastructure for Northern Ireland. (<http://www.lpsni.gov.uk/index/gi.htm>) ;
- Royal Mail, the producer and maintainer of the postal address file.

It can be stated that reference and core thematic data are now largely in place for the UK.

During 2006, the Geographic Information Panel developed a geographic information strategy for the United Kingdom. In discussions with senior officials across Government during the development of the Strategy it became evident that it was more appropriate to describe it as a [Location Strategy](#). The Strategy was submitted to Ministers in October 2007 (<http://www.gipanel.org.uk/gipanel/>).

DEFRA has now created the [UK Location Programme website](#), where information can be found about the implementation of both the UK Government's Location Strategy and the EU INSPIRE Directive. UK Location is a UK pan-government initiative to improve the sharing and re-use of public sector location information.

With respect to the establishment of such a policy, the key players are:

- The Intra-Governmental Group on GI (IGGI), representing central government departments;
- The Improvement and Development Agency for Local Government (<http://www.idea.gov.uk>) and
- The Association for Geographic Information (AGI) (<http://www.agi.org.uk>) which brings together over 1.000 members from public and private sectors, data producers and users. Following the devolution or decentralisation, national groups were set up in Scotland (AGIS), Wales and Northern Ireland. AGI is a member of the [UK Location Council](#), an [INSPIRE](#) Spatial Data Interest Community (SDIC) and administers the British Standard's Committee for Geographic Information ([IST36](#)).

Other players have a pertinent role in the Spatial Data Policy and SDI-related context. Namely:

- The Cabinet Office, through its direct-government Unit (<http://www.direct.gov.uk/en/index.htm>) in respect of e-government policies, and through the Office of Public Sector Information (OPSI: <http://www.opsi.gov.uk>) for regulating the management of Crown copyright. The Office of Public Sector Information (OPSI) was formed in early 2005,

incorporating Her Majesty's Stationery Office, reflecting its role in the UK's implementation of the EU Directive on the re-use of public sector information;

- The Communities and Local Government, which are responsible for both local governments, regional development; planning and several new key initiatives (such as attacking the ills of social exclusion). <http://www.communities.gov.uk/newsroom/about/> ;
- In Scotland the Scottish Executive fulfils much the same role as the ODPM in England. <http://www.scotland.gov.uk> ;
- In Wales the National Assembly fulfils much the same role as the ODPM in England. <http://www.wales.gov.uk> ;

Each of the devolved administrations is implementing their Geographic Information Strategies. These can be found at:

<http://www.scotland.gov.uk/Publications/2005/08/31114408/44098>

http://www.gistrategyni.gov.uk/gi_for_ni_strategy_09-19_web.pdf

http://www.agi.org.uk/SITE/UPLOAD/DOCUMENT/Reports/GIS_strategy_for_wales

1.2.2 Ordnance Survey

In the last few years, Ordnance Survey has taken the lead to promote a joined up approach to geographic information through several initiatives.

Ordnance Survey is a non-ministerial government department and an Executive Agency responsible to the Secretary of State for Communities and Local Government (CLG). It operates as a Trading Fund under the Government Trading Funds Act 1973 and The Ordnance Survey Trading Fund Order 1999. Ordnance Survey launched its enhanced web-mapping portal, OS OpenSpace®, and provides a key component of the national georeferencing infrastructure through the delivery of a single consistent base of OS MasterMap®. OS MasterMap is a seamless geographic database, compatible with accepted web standards and ordered through a web interface. Naturally, Ordnance Survey-actively participates in the UK Location Council.

1.2.3 Land & Property Services (LPS)

On 1st April 2007, Land & Property Services (LPS) was established as an executive Agency within the Department of Finance and Personnel for Northern Ireland. The Agency has been established initially from the merger of the former Rate Collection Agency and the Valuation and Lands Agency. This was followed by the addition of Land Registers of Northern Ireland and Ordnance Survey of Northern Ireland on 1 April 2008.

LPS initiated a review of the 2003 Strategy, on the basis that many elements of it had been completed, and that the INSPIRE Directive and UK Location Strategy had been finalised. This resulted on a new Geographic Information Strategy for the period from 2009 to 2019 (Masser 2010). This strategy builds upon the previous GI Strategy governance structure and aligns it with the UK Location Strategy governance structure. The new GI Strategy aims to further develop an infrastructure to ensure effective use of locational information in Northern Ireland. The aim is that by 2019 Northern Ireland has become a spatially enabled society in which government is using GI as a decision making tool, businesses are using GI to increase efficiency, and the public are actively using GI—all on a daily basis (from Northern Ireland Geographic Information Strategy 2009–2019 “Effectively using information on location”).

A key component of the strategy is the development of GeoHub NI® which provides a platform for discovering and sharing spatial data (www.geohubni.gov.uk). Geohub enables access to geographic information from every public servant in order to facilitate policy development and evaluation, administration, and service delivery online.

The GI Strategy work in Northern Ireland is funded by the Northern Ireland Mapping Agreement (NIMA) which came into force in 2006. Under the terms of this corporate supply agreement all Northern Ireland public servants can use geographic information produced by Land & Property Services free at the point of use. Therefore funding as a major constraint to the use of spatial data is removed (Masser 2010).

Moreover, OSNI's own full product range is available via a map-enabled e-commerce website at <https://maps.osni.gov.uk/>. OSNI's surveying technology is based on both [photogrammetry](#) and ground survey using total station electronic [theodolites](#) in combination with pen (tablet) computers, so that the data is updated directly into the digital format. The photogrammetry (using flight-derived stereoimagery at high resolution) is also used to maintain height models of the [topography](#) (Digital Terrain Model or DTM). [Computer software](#) permits the draping of [aerial photography](#) and/or mapping over such models for the purposes of fly-through or drive-through 3D visualisations. OSNI's [Geodesy](#) section maintains the positional reference system to millimetre precision and OSNI's ground stations allow high accuracy use of the [GPS](#) system.

LPS via OSNI also maintains the UK's only common address database, Pointer, which cross matches and validates the address data from the [Royal Mail](#), [Valuation and Lands Agency](#), OSNI and local authorities, and georeferences each address, as well as giving it a unique identifier. This allows spatial interrogation by customers of the >800,000 addresses in NI using computerised [Geographic Information Systems](#) (GIS) combined with [digital mapping](#) and the customer's own data.

1.2.4 The Scottish initiative: One Scotland, One Geography

One Scotland - One Geography was launched at the Annual Convention of the Highlands and Islands on the 7th November 2005. This Strategy has been produced in a wider UK, European and global context. The Freedom of Information (Scotland) Act (FOISA) and

the Public Service Reform agenda encouraged more efficient use, and proactive release, of information.

The One Scotland Mapping Agreement (OSMA) is a unique agreement between Scottish Government and Ordnance Survey covering Central and Local Government bodies and continues to grow with the inclusion of a growing number of NHS bodies. Significant progress has been made with the linkages between One Scotland Gazetteer and e-Planning, that has been facilitated by the Strategy. The Strategy has also provided the framework necessary to bring Geospatial Information within Scottish Government's Efficiency and Transformational Government policy area, which in turn has provided a focus for future cost savings.

The One Scotland - One Geography Strategy was reviewed in September 2009 and the progress in achieving individual goals throughout various projects can be summarised as follows:

1. Provide strategic vision and leadership to ensure an inclusive, co-ordinated and pragmatic approach to information about Scotland's geographic base.
2. Ensure access to the most up-to-date and accurate Geographic information about Scotland that can be delivered with best use of resources.
3. Develop and promote the means whereby geographic information can be shared, within the practical limits of best value so as to give a high quality and knowledge "return" from each set of data.
4. Promote the benefits of geographic information across the public, private, community and voluntary sectors in Scotland, taking account of national and international activities and ensuring that Scotland's successes are celebrated and communicated to an international audience.
5. Promote the appropriate technical and professional standards for efficient and effective use of geographic information in Scotland.

<http://www.scotland.gov.uk/Topics/Government/PublicServiceReform/efficientgovernment/OneScotland/Implementation>).

1.2.5 The Association for Geographic Information (AGI)

The Mission of the AGI is to maximise the use of geographic information (GI) for the benefit of the citizen, good governance and commerce. This aim is achieved through a wide range of activities such as [lobbying](#), meetings, seminars, a dynamic website and a number of publications. At the same time AGI has secured a seat on the UK Location Council, Moreover, AGI administers the British Standard's Committee for Geographic Information ([IST36](#)) while manages and runs the national geographic metadata service (gigateway (<http://www.gigateway.org.uk/>)). Gigateway is a web service aimed at increasing awareness of and access to geographic information in the UK and is funded by

the UK Government through the UK Location Programme. Gigateway will be replaced by a new service, under the [UK Location Programme](#) in 2010/11.

The service has 3 components:

- Data Locator - a search engine for geographical information
- Data Directory – a directory of data provider organisations
- Area Search – a lookup service for the different administrative and statistical geographies covering the country

1.2.6 Other SDI-related initiatives

- Maps on Tap led by ODPM. A common technical infrastructure and one-stop shop for access to governmental geographic information through a user-friendly map base;
- MAGIC. This DEFRA-led project provides a one-stop shop for rural and countryside information, bringing together definitive rural designation boundaries and information about rural land-based schemes into one place. Over 60 datasets are organized into 7 frameworks from the Environmental Agency, the Forestry Commission, the Ordnance Survey, English Nature, English Heritage and the Countryside Agency. It incorporates the Coastal and Marine Resources Atlas and is linked with the National Biodiversity Network. Some of the datasets are downloadable for example: agricultural land classification, nuclear power stations, national parks and trails, marine pollution control zones, etc.
- Marine Data and Information Partnership (MDIP) delivers a marine spatial data infrastructure;
- Vertical Offshore Reference Framework (VORF) is a UKHO project to create a seamless sea level surface for the UK continental shelf;
- The Integrated Coastal Hydrography project provides a metadata discovery portal to identify hydrographic surveys undertaken on the UK continental shelf.
- WIYBY is a public information service based on environmental data gathered as part of a statutory task. The aim is to find easily information about the local environment.
- Seazone provides access to hydrographic and other marine and coastal data in digital form for direct use in Geographical Information Systems. Data products are supplied to international standards and come complete with metadata. SeaZone delivers Hydrospatial harmonised with Ordnance Survey

land mapping (Mastermap Topography Layer) for the Thames Estuary to UK Government under SeaZone's Coastal Mapping Improvement Programme.

- The Digital National Framework enables and promotes the integration and sharing of location-based information from multiple sources. It supports the objectives of the UK Location Strategy and the rollout of the UK Location Programme.

2 Details of the NSDI-situation in the UK

2.1 General Information

In the April 2006 Transformational Government Implementation Plan, Ministers asked the Geographic Information Panel to create a UK Geographic information Strategy. The aim of the strategy was to maximise exploitation and benefit to the public, government and UK industry from geographic information and to provide a framework to assist European, national, regional and local initiatives.

The current operational framework for the production of UK spatial datasets involves a highly diverse set of „actors“ - Public Authorities (national, devolved, regional and local government organisations), private and third sector organisations and research and academia.

Responsibility for the production of spatial datasets is either:

- **Centralised** - a single organisation is responsible for the production of the dataset.
- **Federated** - the production of the dataset involves a consortium of organisations that produce data for specific geographic areas, to an agreed specification. These datasets are then collated and integrated by a single lead organisation to produce a single consistent dataset.
- **Distributed** - multiple organisations are given the permit to produce data for a specific geographic area, resulting in a series of datasets. There is usually little governance or coordination from a lead organisation; no integration of these distributed datasets into a single, consistent dataset; and no commonly agreed harmonised data specification or production method.

Examples of each of these approaches are given in Table 1.

Dataset	Producer
CENTRALISED	
OS MasterMap Topography Layer	Ordnance Survey
Land Cover Map 2007	Centre for Ecology and Hydrology (CEH)

NextMap® Britain	Intermap Technologies
Digital Geological Map of Great Britain (DiGMapGB)	British Geological Survey
FEDERATED	
National Land and Property Gazetteer (NLPG)	Local authorities in England and Wales.
25 cm Aerial Photography (RGB)	Next Perspectives (Infoterra Ltd, Bluesky International Ltd and Getmapping plc.)
National Air Quality Archive	AEA Technology (on behalf DEFRA)
Special Protection Areas	Joint Nature Conservancy Council (JNCC), Natural England, Countryside Council for Wales (CCW), Scottish Natural Heritage (SNH), Northern Ireland Environment Agency
UK Butterfly Monitoring Scheme (UKBMS)	CEH, Butterfly Conservation (BC), JNCC
DISTRIBUTED	
Conservation Areas.	Local Authorities

Table 1: Responsibility for Dataset Production

Spatial datasets are produced to varying update schedules. Either Regular, Ad hoc or Never.. (UK Location Programme Infrastructure blueprint, 2009)

2.2 Component 1: Coordination and organizational issues

The UK Location Programme / UK Location Council is appointed as the coordination body for the INSPIRE implementation in UK. Detailed information about its composition can be found at: <http://www.DEFRA.gov.uk/location/uklc-report-08-09.pdf>

The Programme is led by the **UK Location Council**, a cross-government group consisting of senior representatives from local, devolved and central government organisations.

Responsibility for delivery will be divided between the UK Location Council and two operational bodies:

- An **Interoperability Board**, which will focus on designing the infrastructure and agreeing the standards. Members include representatives of major data owners across the public sector as well as the utilities and related standards bodies

- A **Co-ordination Unit**, which will help individual data owners comply with INSPIRE and understand the UK Location Information Infrastructure. It will also be responsible for creating and maintaining the UK Geoportal.

(<http://location.DEFRA.gov.uk/wp-content/uploads/2010/02/UKLII-Guide.pdf>)

DEFRA will be working alongside the Scottish Government, Northern Ireland Government and Welsh Assembly Government acting as the leading organization. The following organisations are most active and are represented on the Location Council, the top level decision making body for the implementation of INSPIRE in the UK:

- Registers of Scotland
- Local Government Association
- DEFRA
- Ministry of Defence
- Welsh Assembly Government
- Communities and Local Government
- Office of National Statistics
- Environment Agency
- Ordnance Survey
- Land and Property Services, Northern Ireland
- Office of Public Sector Information
- Land Registry
- British Geological Survey
- Department for Transport

The geographic information sector organizations are the most active/influential in the preparation of INSPIRE implementation. The proposed governance structure for both the UK Location Strategy and INSPIRE implementation is presented in figure 1

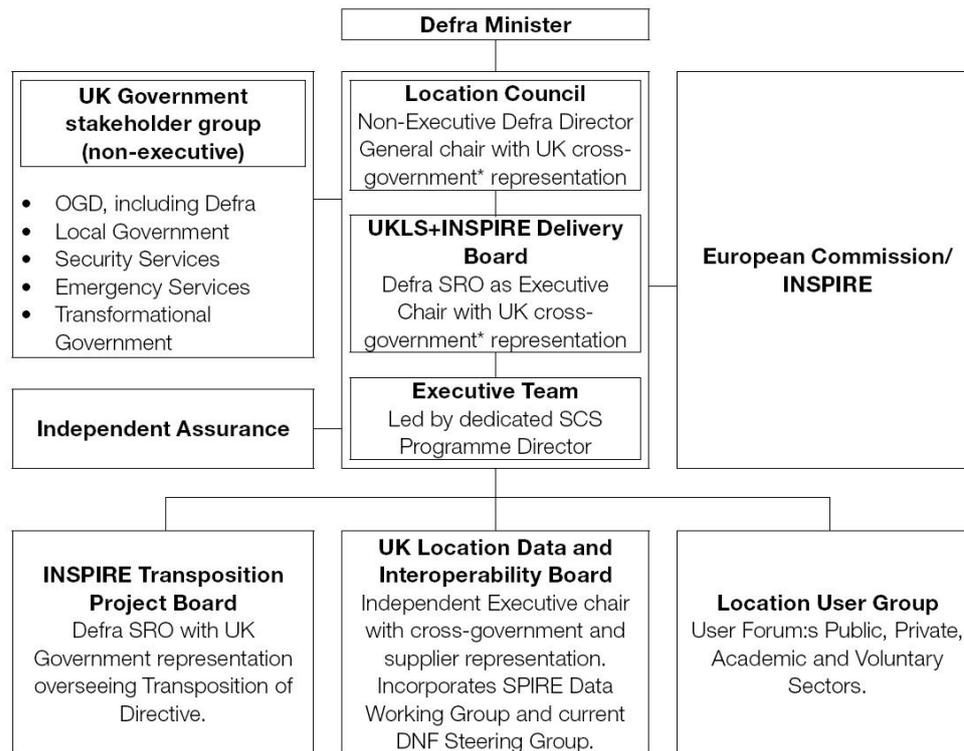


Figure 1: Governance structure for UK Location Strategy and INSPIRE implementation

2.2.1 Conclusions of Component 1

The approach and territorial coverage of the SDI is truly national and a number of the SDI components have reached a significant level of operationality. The initiative goes beyond one single organisation. In addition, the regional development like Scotland and Northern-Ireland remains important. DEFRA is the official recognised coordinating body of the SDI and although is not controlled by users there is major involvement by them. DEFRA is leading the Location Council along with the regional governments. Also AGI is still playing an important role, e.g. it holds a position in the Location Council. Mainly public sector producers are participating in the SDI while there is a very small involvement of non-public sector actors.

Based on these conclusions we score the indicators as follows:

- The approach and territorial coverage of the SDI is truly national
- One or more components of the SDI have reached a significant level of operationality (5)
- The officially recognised or de facto coordinating body of the SDI is a NDP, i.e. a NMA or a comparable organisation (No)

- The officially recognised or de facto coordinating body for the SDI is an organisation controlled by data users (No)
- An organisation of the type ‘national GI-association’ is involved in the coordination of the SDI
- Producers and users of spatial data are participating in the SDI
- Only public sector actors are participating in the SDI (Partially)

2.3 Component 2: Legal framework and funding

2.3.1 Legal framework

Before the development of the UK Location Strategy, no encompassing policy on the coordination of the provision and dissemination of GI existed at the level of central government. A legal framework for the NSDI in the UK was not developed. This document suggested the creation of the Location Council (see above), which should develop the Implementation Plan for the UK Location Strategy and manage this strategy, next to the implementation of INSPIRE. It should also advise the responsible Minister and set standards, policies and implementation requirements for geographic information. The Location Council was set up by DEFRA and has subsumed the role of the Geographic Information Panel and started working in December 2008.

As a part of the Location Strategy, the INSPIRE directive was transposed by the INSPIRE regulations in December 2009. The final text has been published at http://www.opsi.gov.uk/si/si2009/uksi_20093157_en_1. The development of the legal text was preceded by a consultation on the policy principles on which the regulations were based. The consultation showed the need for a further assessment of the costs and benefits, and a need for communication and guidance (see Explanatory Memorandum to the INSPIRE Regulations 2009).

Sub-national legislation also exists for Scotland

(See http://www.opsi.gov.uk/legislation/scotland/ssi2009/ssi_20090440_en_1)

2.3.2 Public-private partnerships (PPP's)

An important ‘flagship’ project with respect to public-private partnership in the GI-sector is lead by the National Land Information Service (<http://www.nlis.org.uk>). This project is providing a service through which it is now possible to search for property details online. The National Land and Property Gazetteer can also be considered as a form of PPP. This is the national address list that has to be updated by the local authorities in England and Wales. The NLPG is a partnership between Local Government Information House, the Improvement and Development Agency, Intelligent Addressing and Local Government Association.

General statements about PPP related to GI have not been found.

2.3.3 Policy and legislation on access to public sector information (PSI)

The UK Parliament broadly signalled its position with regard to the accessibility of public sector information by passing a Freedom of Information Act in 2000, which came into full force in January 2005. The Act has received considerable criticism from many politicians across the political spectrum and NGOs as being insufficient and weaker than the existing code of practice. In June 2002, the Scottish Parliament approved a Freedom of Information bill that is regarded as stronger than the English Freedom of Information Act. It also will not go into effect until 2005. Free access by the citizen to information on the environment has however been specified since 1992 by a Statutory Instrument, which was replaced by new Regulations in January 2005.

The Re-use of Public Sector Information Regulations 2005 (Statutory Instrument 2005 No. 1515), transposing Directive 2003/98 on the re-use of PSI came into force on 1 July 2005. The regulations do not impose a general obligation on the public sector bodies to make their documents available for re-use. A public sector body may permit re-use, and if it decides to do so, it has to comply with the regulations.

The Office of Public Sector Information (OPSI), which has a regulatory function for PSI holders, and is currently attached to the Cabinet Office, has merged with The National Archives with effect from October 2006. The merger created a stronger centre for information management in the public sector, enabling a more responsive approach to the challenges of new technology. The combined organisation will be known as The National Archives, which will continue to operate as a government department and as an executive agency of the Secretary of State for Constitutional Affairs (<http://www.opsi.gov.uk>).

A number of studies have been done in the UK to show the value of availability of public sector data under non-restrictive conditions and at a charge of marginal costs or lower (e.g. the Office of Fair Trading's report on Commercial Use of Public Information, the Power of Information Report, the Cambridge Report on Models of Public Sector Information Provision via Trading Funds). These studies paved the way for initiatives of the Office of Public Sector Information and other public bodies to start opening up data. In June 2009, Prime Minister Gordon Brown enlisted Sir Tim Berners-Lee to help move the British public sector towards opening up its data (Cabinet Office 2009). Following this initiative, the data.gov.uk website was launched in January 2010, with currently over 3,000 datasets that are available for re-use, free of charge and without use restrictions.

2.3.4 Legal protection of GI by intellectual property rights

Part I on copyright of the Copyright, Designs and Patents Act 1988 extends to England and Wales, Scotland and Northern Ireland. It came into force on 1 August 1989. Chapter X of Part I of this Act has some special provisions on Crown and Parliamentary

copyright. This 1988 Act provided a major updating of copyright law but the process has continued since then with a number of amendments.

EU Directive 96/9/EC of 11 March 1996 on the legal protection of databases was implemented by the Copyright and Rights in Databases Regulation 1997, coming into force on 1 January 1998. The Copyright (Computer Programs) Regulations 1992 came into force on 1st January 1993. Both Regulations made amendments to the above Copyright, Designs and Patents Act 1988. The amendments to the Copyright Act that transposed the 2001 directive on copyright in the information society into English law came into force on October 31st, 2003.

In the UK, government geo-information is strongly protected by far reaching Crown copyright. No other country has a system quite like it. Crown copyright is defined in the above Act as a work made by Her Majesty or by an officer or servant of the Crown in the course of his duties. It covers a wide range of material, including legislation, government codes of practice, Ordnance Survey mapping, government reports, official press releases, government forms and many public records.

There are however public sector copyright owners other than the Crown, such as local authorities and non-departmental public bodies (NDPB). These are thus not subject to Crown copyright control. The UK system of Crown copyright does however apply to Ordnance Survey (<http://www.ordnancesurvey.co.uk>), which holds a strong market position as far as geographic products is concerned. It is responsible for mapping at all the scales. The Ordnance Survey therefore exercises a virtual monopoly in the provision of mapping through the enforcement of Crown copyright.

The controller of Crown Copyright is OPSI (<http://www.opsi.gov.uk>), which has recently acquired a new role as gatekeeper and regulator of access to Crown copyright information. In its role of regulator, OPSI is inter alia responsible for establishing the regulatory framework for Crown copyright information and for assisting public sector bodies that want to adopt similar regulatory frameworks. Although OPSI is nominally the body responsible for the administration of Crown copyright and the granting of licences, in certain cases, such as Ordnance Survey, this authority has been delegated to the department or agency concerned.

2.3.5 Restricted access to GI further to the legal protection of privacy

The Parliament approved the Data Protection Act in July 1998, which came into force on 1 March 2000. This Act updates the 1984 Data Protection Act in accordance with the requirements of the EU Directive 95/46/EC. The 1998 Act covers records held by government agencies and private entities. It provides for limitations on the use of personal information, access to and correction of records and requires that entities that maintain records, register with the Information Commissioner (<http://www.informationcommissioner.gov.uk>). The Office of the Information Commissioner is an independent agency that maintains the register and enforces the Act.

Directive 2002/58 on privacy and electronic communications has been transposed into English law.

2.3.6 Licensing framework

Public sector information regulated by Crown Copyright is licensed by OPSI, but for many geographic datasets, the data providers have their own licensing policy, e.g. Ordnance Survey, British Geological Survey, Environment Agency, and Met Office. However, OPSI works with these agencies (and with local authorities and other public bodies) to harmonise licensing policies, by giving advice, providing guidelines and by managing the Information Fair Trader Scheme.

The Information Fair Trader Scheme (IFTS) ensures that re-users of public sector information can be confident that they will be treated reasonably and fairly by public sector information providers. All Crown bodies that have a licensing delegation from the Controller of OPSI (such as Ordnance Survey) must join the Scheme, but it is open to public sector organisations to join voluntarily. Public bodies that are accredited under the scheme include Ordnance Survey, Ordnance Survey of Northern Ireland, British Geological Survey, Registers of Scotland and the UK Hydrographic Office.

With regard to Crown Copyright or Parliamentary Copyright material, the National Archives provide a click-use licence, which can be applied for on-line by registering on the website (see <http://www.nationalarchives.gov.uk/information-management/our-services/click-use.htm>). With an increasing amount of data being available free of charge, separate value-added licences were abolished.

In June 2009, Prime Minister Gordon Brown enlisted Sir Tim Berners-Lee to help move the British public sector towards opening up its data (Cabinet Office 2009). Following this initiative, the data.gov.uk website was launched in January 2010, with currently over 3,000 datasets that are available for re-use, free of charge and without use restrictions. The only conditions involve attribution. The licensing terms for the data sets are interoperable with any Creative Commons Attribution 3.0 Licence.

At the end of 2009, a consultation was held about the business model of Ordnance Survey, and the possibility for Ordnance Survey to follow the trend of making more information freely available. Earlier, Ordnance Survey had already been working with OPSI to simplify its licensing models. In March 2010, Ordnance Survey decided to make some of its datasets openly available, using the same licence as the data.gov.uk website. See <http://www.communities.gov.uk/news/corporate/1529556>).

Next to its regular licensing policies, Ordnance Survey also has a number of Collective Licensing Agreements, for instance with the National Health Service, and with central bodies under the Pan-Government Agreements. Since April 2009, Ordnance Survey and Landmark have launched a new version of the Pan-Government Agreement for 4 years, providing national bodies with access to a broader set of data at an affordable price (see <http://www.ordnancesurvey.co.uk/oswebsite/business/sectors/health/NHSagreement/NHS>

http://www.agi.org.uk/POOLED/articles/bf_newsart/view.asp?Q=bf_newsart_309178).

2.3.7 Funding model for SDI and pricing policy

The UK has no mechanism for the central funding of pan-government initiatives. Funding has to be obtained collectively, across public sector bodies. 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. With regard to the implementation of the UK Location Strategy, prevailing funding constraints may also have a major impact on the ability of data publishing organisations to implement the changes that they will need to apply to their own internal processes and systems (UK Location Programme Conceptual Design).

A number of the large providers of geographic data in the UK have the status of a Trading Fund, requiring them to gain a return on investment on their activities and make a profit. Therefore, many of these organisations have a tradition of cost recovery. For instance, since April 1999, the Ordnance Survey (GB) operates as a Trading Fund (the user pays funding model) and has as such greater responsibility for its own finances and planning, extra freedom to develop new initiatives. Under the 2004 framework document, the financial management of Ordnance Survey is underpinned by 3 principles:

- The Trading Fund model is one of breaking even one year with another after allowing for operating costs, investment needs, loan repayments and agreed levels of dividend’;
- In the event that Ordnance Survey is more profitable than forecasted after investing in national interest and customer driven improvements, surpluses in excess of those needed to sustain future development can be avoided by lowering prices;
- Revenue shortfalls will be compensated, where possible, by an appropriate combination of increased productivity, efficiency savings, reduced costs, lower dividends and curtailing loss-making, on-core activities.

In 2008-2009, the total turnover was £ 116.5 million, and the trading surplus amounted to £16.3 million.

The consultation on the business model of the OS at the end of 2009 showed that OS would need to rethink some of its working principles. Now that OS is making a considerable part of its datasets available free of charge, the Government has committed itself to provide ongoing funding to support this (see <http://www.ordnancesurvey.co.uk/oswebsite/media/news/2010/April/OpenData.html>)...

Pricing

According to the 2005 Re-use of PSI Regulations, a public sector body may charge for allowing re-use. The total income from any charge cannot exceed the sum of the cost of collection, production, reproduction and dissemination of documents and a reasonable return on investment. Where a public sector body charges for re-use, so far as is reasonably practicable, it has to establish standard charges. Where a standard charge for re-use has not been established, the public sector body shall specify in writing the factors that will be taken into account in calculating the charge if requested to do so by an applicant.

The GI sector has developed within a robust commercial framework, with central government also adopting a policy of cost recovery for some of its data resources. Funding thus falls upon the users, which ensures that the products are customer driven and that the data is maintained. The UK government directs its agencies to recover costs through charges and other income-generating activities, for instance, under the 2004 Framework document, Ordnance Survey prices are determined by a number of factors:

- Value to customers;
- Information content relative to other Ordnance Survey products;
- Effect of competitive forces and existing pricing structures in the marketplace;
- Investment funding required to continue to meet customer requirements and
- The need for the Trading Fund to achieve its long-term financial and investment targets and generate a return on its assets.

Influenced by a number of reports finding that a marginal cost regime would be more beneficial towards general welfare and would hold more benefits to society as a whole (the Office of Fair Trading's report on Commercial Use of Public Information, the Cambridge report 'Models of public sector information provision via trading funds'), a change in charging regime has been imminent for a number of years.

Under the initiative set up by Gordon Brown and sir Tim-Berners Lee in 2009, increasingly datasets held by the public sector will be made available free of charge. On 1 April 2010, Ordnance Survey launched OS Open Data, an online portal providing free and unrestricted access to a large range of its datasets (See <http://www.ordnancesurvey.co.uk/oswebsite/media/news/2010/April/OpenData.html>).

The available datasets include:

- OS Street View;
- 1: 50 000 Gazetteer;
- 1: 250 000 Colour Raster
- OS Locator

- Boundary-Line
- Code-Point Open
- Meridian 2
- Strategi
- MiniScale
- Land-Form PANORAMA
- OS VectorMap District.

2.3.8 Conclusions of Component 2

With the development of INSPIRE there is now a final text transposed, as well as a strategy called the Location Strategy. The NLIS and NLPG can be considered as true PPP mechanisms while a number of studies paved the way for initiatives to start opening their data such as the (OS) data.gov.uk initiative which made over 3000 datasets available for re-use, free of charge and without use restrictions. At the same time GI can specifically be protected by copyright via the existing controller of Crown Copyright (OPSI). It should be mentioned that is rather unclear if Privacy laws are being taken into account by the holders of GI. Similarly some initiatives have been undertaken regarding data licensing such as the OS decision to make some of their data freely available while operating a number of collective licensing agreements (e.g. with the National Health Service). At the moment there is not a long-term financial security of the SDI-initiative but it rather runs for the next 5 years. Specifically There is a budget foreseen for implementation of the UKLII, with investments of 10.0 million £ over 5 years, with 1.0 million £ for coordination. Moreover, According to the 2005 Re-use of PSI Regulations, a public sector body may charge for allowing re-use however this situation is changing with the latest initiative mention above.

Based on these conclusions we score the indicators as follows:

- There is a legal instrument or framework determining the SDI-strategy or – development
- There are true PPP's or other co-financing mechanisms between public and private sector bodies with respect to the development and operation of the SDI-related projects
- There is a freedom of information (FOI) act which contains specific FOI legislation for the GI-sector
- GI can specifically be protected by copyright

- Privacy laws are actively being taken into account by the holders of GI (in Preparation)
- There is a framework or policy for sharing GI between public institutions (Partially)
- There are simplified and standardised licences for personal use
- The long-term financial security of the SDI-initiative is secured (Partially)
- There is a pricing framework for trading, using and/or commercialising GI (In preparation)

2.4 Component 3: Data for themes of the INSPIRE annexes

2.4.1 Scale and resolution: European, National, Regional, Local, Other

The scale levels supported by the various data producers in the UK cover the:

- large scale (1:1.250, 1:2.500),
- mid- scale (1:10.000, 1:25.000),
- small scale (1:50.000 and smaller).

A detailed description of the available mapping products exists in Ordnance Survey website (<http://www.ordnancesurvey.co.uk/oswebsite/products/>), the OSNI map shop (<https://maps.osni.gov.uk/>) as well as in the Scottish SDI initiative (<http://www.scotland.gov.uk/Publications/2010/05/06161701/5>)

2.4.2 Data by resolution or scale range for the INSPIRE themes

Regarding the three INSPIRE annexes addressing the 34 spatial data themes, UK is providing discovery and view services for most of them while a number of them can be also downloaded. The main providers are Ordnance Survey (GB and NI). OS provides their data via its webpage (<http://www.ordnancesurvey.co.uk/oswebsite/products/>) and its OS Open data application (<http://www.ordnancesurvey.co.uk/oswebsite/opendata/index.html>), while OSNI information is available in the GeoHub NI website (http://www.geohubni.gov.uk/index/geohubni_datasets.htm).

At the same time geodatasets with maritime features (coastal zone and offshore) are produced by the UK Hydrographic Office. Land and Property data come: from Her Majesty's Land Registry, Registers of Scotland and the Land Registers of Northern

Ireland. Socio-economic data come from the Office of National Statistics, and the Scottish statistical service (General Register Office for Scotland). Geological databases come from the British Geological Survey. In addition there are several important data resources available from the private sector, for example historical maps, imagery, and geodemographic classifications, and from local government.

The latter is taking an increasingly active role, particularly in relation to the maintenance of street names and addresses of the National Street Gazetteer (<http://www.thensg.org.uk/iansg/link.htm?nwid=82>).

A complete list will be presented in the updated report including the information provided by the country in 2010.

2.4.3 Geodetic reference systems and projections

Great Britain: The Transverse Mercator Projection is used by the Ordnance Survey to provide a clearly defined spatial reference system in Great Britain for any place or entity whatever the map scale.

Local horizontal and vertical coordinate system definitions and transformations to/from ETRS89 (OSTN02 and OSGM02 respectively) are available from www.gps.gov.uk. Previous to OSTN02, the horizontal mapping coordinate system of Great Britain (OSGB36) was still defined by the National Grid positions of the old triangulation points. Since 2002, OSTN02 has defined OSGB36 National Grid in conjunction with the ETRS89 positions of the National GPS Network stations.

All maps of Northern Ireland published since 1955 are based on a Transverse Mercator (Gauss Conformal) projection designed to cover the whole of Ireland and known as the Irish Grid. The projection parameters are:

- **True Origin** Lat 53 30' North, Long 8 00' West of Greenwich;
- **False Origin** 200 000 metres West and 250 000 metres South of true origin;
- **Scale Factor on central meridian** 1.000 035
Approximate scale factor at Eastern and Western extremities: 1.000 525;
- **Unit of Length** International metre.

The Northern Ireland primary triangulation station co-ordinates may be obtained from Ordnance Survey of Northern Ireland based on the following Datums ;

Ireland (
1975)	Geographical co-ordinates
OSGB (SN)	
70	Geographical co-ordinates
OSGB (SN)	Geographical and Cartesian co-
80	ordinates

ED50	Geographical co-ordinates
ED87	Geographical and Cartesian co-ordinates
WGS84	Geographical and Cartesian co-ordinates

2.4.4 Quality of the data

Information on the update frequency is available for the different data products via <http://www.ordnancesurvey.co.uk/oswebsite/products/index.html>

2.4.5 Interoperability

The dominating GIS-software is ESRI and MapInfo

Formats provided by the Ordnance Surveys: GML, NTF, DXF, ASCII, DWG, MAP INFO, TIFF.

2.4.6 Language and culture

Metadata, documents are provided in English. In addition Ordnance Survey has adopted a Welsh Language Scheme that enshrines the principle of treating the English and Welsh languages equally when conducting business in Wales. Contact in Welsh is welcomed and many documents, including a version of the corporate web site, are available in Welsh.

2.4.7 Data Content

No information has been found.

2.4.8 Geographical names

Geographical names within Great Britain are generally managed in English. In Wales and parts of Scotland, names are collected bilingually when they are so defined by those responsible for naming. A Gazetteer with around 250,000 entries of all names appearing on the Landranger map series (1:50,000 scale) is available.

Gazetteer of Place names: An ASCII list of 330 main cities, towns and villages of Northern Ireland appearing on the 1:250.000 map is available. Irish Grid references, to a precision of 100 metres are incorporated.

The national street Gazetteer operates in three levels:

The level 1 specification consists of streets described by their name, classification or general description and provided with a unique street reference number. In addition each

street is given a spatial location through a national grid reference to its start and end points along with the names of the locality, town and administrative area.

The level 2 specification consists of street references with Elementary Street Units (ESUs) and their attributes.

The level 3 specification consists of the level 1 and level 2 attributes but has additional attributes and shaping vertices relating to the geometry of the street as defined by its ESUs.

The NSG is structured according to BS7666 part 1. The NSG dataset comprises a set of local street gazetteers in compressed Comma Separated Values (CSV) format - one file for each local Highway Authority area, Government Operational Region or country as requested. (<http://www.thensg.org.uk/iansg/link.htm?nwid=82>).

2.4.9 Character sets

Unknown.

2.4.10 Conclusions of Component 3

Already from the previous UK's SoP report Geodatasets existed which provide a basis for contributing to the coverage of pan-Europe for the INSPIRE-selected data themes and components while the geodetic reference system and projection systems are standardised, documented and interconvertible. At the moment there have not been found a documented data quality control procedure applied at the level of the SDI. UK's concern for interoperability is mainly focused on data exchange formats such as GML, NTF, DXF etc. Moreover, the national language used is naturally English

Based on these conclusions we score the indicators as follows:

- Geodatasets exist which provide a basis for contributing to the coverage of pan-Europe for the INSPIRE-selected data themes and components
- The geodetic reference system and projection systems are standardised, documented and interconvertible
- There is a documented data quality control procedure applied at the level of the SDI (Not Known)
- Concern for interoperability goes beyond conversion between different data formats (Partially)
- The national language is the operational language of the SDI

- English is used as secondary language

2.5 Component 4: Metadata

2.5.1 Availability

Metadata are produced by most data producing organizations. A significant part of geodatasets has metadata of some form.

2.5.2 Metadata catalogues availability + standard

Metadata are catalogued by the three Ordnance Surveys, by AGI and others.

A document has been produced in 2009 describing Metadata guidelines for Geospatial Datasets in the UK with the use of UK Gemini2. Available at: <http://location.DEFRA.gov.uk/wp-content/uploads/2010/03/MetadataGuidelines2.pdf>.

UK GEMINI specifies a core set of metadata elements for use in a geospatial discovery metadata service. The first version GEMINI, (v1.0) was published in 2004 and is used in the GIGateway metadata service. GEMINI2 is a revised version, meeting the requirements of the INSPIRE metadata Implementing Rules, and conforming to the international metadata standard for geographic information, [ISO 19115](#).

GEMINI 2 will be used as the basis for the new UK geospatial discovery metadata service to be introduced in 2010/11, under the [UK Location Programme](#)

The metadata elements are as follows:

Element number Element name

1. Title
2. Alternative title
3. Dataset language
4. Abstract
5. Topic category
6. Keyword
7. Temporal extent
8. Dataset reference date
9. Lineage
10. West bounding longitude

11. East bounding longitude
12. North bounding latitude
13. South bounding latitude
14. Extent
15. Vertical extent information
16. Spatial reference system
17. Spatial resolution
18. Resource locator
19. Data format
20. Responsible organisation
21. Frequency of update
22. Limitations on public access
23. Use constraints
24. Additional information source
25. Metadata date
26. Metadata language
27. Metadata point of contact
28. Unique resource identifier
29. Spatial data service type
30. Coupled resource
31. Resource type
32. Originating controlled vocabulary
33. Conformity
34. Specification

2.5.3 Dublin core metadata standards for GI-discovery

Use is made of the Dublin core for documenting data but it is not clear to what extent this also applies to GI.

2.5.4 Metadata implementation

MetaGenie is GIgateway's specially developed metadata creation software. This innovative and freely available tool enables users to easily create geographic metadata compliant with the *UK GEMINI specification*. The tool comes with a comprehensive User Guide and useful 'Help' windows.

MetaGenie allows users to create metadata in two different ways:

- by entering data directly into the tool to create individual metadata records;
- by automatically saving and exporting metadata records from a users-own database, even if a database structure for these records is not present.

Download and use of MetaGenie is free of charge. All it is asked in return is the users/ organisations to make available their geospatial metadata records in the national interest, by publishing them on GIgateway's Data Locator.

At the same time, an online version of MetaGenie, based on the original desktop version, is available. This web based tool, is ideal for those organisations wishing to make available a smaller number of metadata records directly via the GIgateway catalogue. It too creates standards compliant metadata, but is intended as a publishing tool only and so will not attach to a database (Users have to register online to use the mechanism).

Regarding Northern Ireland Metadata these are available through the GeoHub. Every dataset hosted on GeoHub NI has, as a minimum, metadata conforming to Version 2.0 of the Gemini metadata standard.

There will also be a supporting page on this website to provide more information about the data.

Each page will expand on the metadata by:

- Identifying if access to the dataset is restricted or global.
- Including additional information on the dataset, how it was collected, why it was collected and how it is used.
- Describing the attributes used in the dataset.
- Identifying the geometry type used in the dataset.
- Providing a link to the dataset application page, if required.

- Providing links to other datasets and websites.

(http://www.geohubni.gov.uk/index/geohubni_datasets.htm)

2.5.5 Conclusions of Component 4

Metadata are produced for a significant fraction of geodatasets of the themes of the INSPIRE annexes as confirmed by the MR results (more than 75% of the data sets of annex I and II have metadata. This is only 40% for the data from annex III).

There are more than one standardised metadata catalogues available covering more than one data producing agency, such as SPIRE from DEFRA which is primarily a data repository for geospatial environmental information while it offers a range of search, view and download services for the DEFRA Network and other authorised users. Similarly, 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. Moreover, there is an initiative by UK location programme, the GEMINI 2 that will be used as the basis for the new UK geospatial discovery metadata service to be introduced in 2010/11

Based on these conclusions we score the indicators as follows:

- Metadata are produced for a significant fraction of geodatasets of the themes of the INSPIRE annexes
- One or more standardised metadata catalogues are available covering more than one data producing agency
- There is a coordinating authority for metadata implementation at the level of the SDI (Partially)

2.6 Component 5: Network Services

2.6.1 On-line access service for metadata: discovery services

The existing discovery service for UK location information is the Gigateway, <http://www.gigateway.org.uk>, managed by the Association for Geographic Information (AGI). The maintenance of this service is being funded by the UK Location Programme and it will remain in place until the new discovery service is introduced in 2010. The gigateway uses the old ISO 19115/19139 UK national profile GEMINI while the UK Location Information Infrastructure will use the new UK INSPIRE national profile [GEMINI 2](#). Guidance on migrating to this new profile will be published in mid 2010.

The <http://www.gigateway.org.uk/> is linked with the British Geological Survey (BGS) where an A to Z list of all 267 BGS datasets on metadata is available (<http://www.bgs.ac.uk/discoverymetadata/list.html>).

Furthermore, the government has taken a major step toward a new approach to licensing the re-use of public sector information, with a new licence available on the www.data.gov.uk website. This website, launched on 21 January 2010, provides a single access point to over 2,500 central government datasets that have been made available for free re-use. Working with teams from Creative Commons, a straightforward set of terms and conditions was put together, for the [data.gov.uk](http://www.data.gov.uk) website which means that the data available on the site can be re-used both commercially and non-commercially. These terms and conditions are aligned with the Creative Commons approach to licensing, which allows the creator of information to communicate simply and clearly which rights they reserve, and which they waive for the benefit of people wishing to re-use that information. The existing Click-Use Licences, opened-up public sector information to everyone, and allowed re-users to develop information products based on that information. See: <http://www.opsi.gov.uk/>

Other network services include:

- SPIRE is primarily a data repository for geospatial environmental information. It offers a range of search, view and downloads 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. (<http://www.magic.gov.uk/>).
- DEFRA is in the process of evolving these two existing systems to create a single DEFRA Network Spatial Data Infrastructure (DNSDI).
- EDINA/Go-Geo. EDINA provides 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 discovery service against a number of existing Metadata, Catalogues, including the GI-Gateway (for which EDINA provide hosting services) and NERC.

2.6.2 On-line access service data: download services

Some examples are:

- Maps on Tap led by ODPM
- The Spatial Information Recovery (SPIRE) programme led by DEFRA.
- MAGIC.

2.6.3 Inter-linkages of on-line access services for metadata and data

Not applicable.

2.6.4 OpenSource software for access services

No information has been found.

2.6.5 Availability of viewing services

No information has been found.

2.6.6 Other services (free and paying)

Ordnance Survey operates a network of more than 90 continuously operating GPS receivers known as OS Net. It is working with partner organisations to utilise the GPS data from this network to develop and provide a basket of real-time and post-process GPS correction services, with a choice of accuracy levels available to customers in a wide variety of markets. The web site provides links to free services as well as those provided commercially by partners.

<http://www.ordnancesurvey.co.uk/oswebsite/gps/index.html>.

OSNI's e-Commerce site (<https://maps.osni.gov.uk/>) provides access to OSNI digital and paper data online.

2.6.7 SDI user applications

A key on-line data access service is the National Land Information Service (<http://www.nlis.org.uk>) through which it is now possible to search for property details online. NLIS provides electronic access to all the official sources of land and property information, across the whole of England and Wales, via a number of competing channels. NLIS users can access electronic information from a range of data providers including, 410 Local Authorities, national parks, Land Registry, the Coal Authority, the Environment Agency and water companies. Since it went live in early 2001, NLIS has processed over 18 million searches in support of the home-buying public.

By 2005 England and Wales and Scotland separately established services to support all property transfer transactions, including all the legal and financial, transactions electronically, this is known as e-conveyancing.

- Maps on Tap led by ODPM. A common technical infrastructure and one-stop shop for access to governmental geographic information through a user-friendly map base;

- The Spatial Information Repository (SPIRE) programme led by DEFRA. This aims to join up the use of geographic information across the DEFRA family, and will involve the creation of a spatial data infrastructure within DEFRA;
- MAGIC. This DEFRA-led project provides a one-stop shop for rural and countryside information, bringing together definitive rural designation boundaries and information about rural land-based schemes into one place. It is currently being extended to include Great Britain and marine datasets;
- “What’s in your backyard?” from the Environment Agency. This provides mapped information on the state of the environment at any postcode.

2.6.8 Availability of geo-processing services

The National GPS Network (<http://www.ordnancesurvey.co.uk/oswebsite/gps/>) is a web-based service that provides an essential resource for the Global Positioning System (GPS) user in Great Britain. It is intended for GPS-equipped surveyors (land, hydrographic and engineering surveyors), recreational users and for geographical information systems (GIS) developers who work with Ordnance Survey mapping. The national GPS network offers commercial and free services.

Two of the free services are:

- [OS Net RINEX data server](#) : OS Net comprises over 100 continuously operating GNSS reference stations spread over the whole of Great Britain.
- [Coordinate transformer](#) This facility allows users to precisely transform between ETRS89, GPS derived, coordinates and Ordnance Survey National Grid coordinates and heights above mean sea level (Ordnance Datum Newlyn for mainland Britain).

2.6.9 Conclusions of Component 5

There are more than one discovery services making possible to search for data and services through metadata (e.g. Gigateway, BGS). Currently the Gigateway managed by AGI will remain the current discovery service and will be replaced by a new discovery service according to INSPIRE in 2010. The same is true for view and download services such as EDINA, SPIRE, MAGIC. No information was found regarding middleware services allowing data services to be invoked.

Based on these conclusions we score the indicators as follows:

- There are one or more discovery services making it possible to search for data and services through metadata

- There are one or more view services available for to visualise data from the themes of the INSPIRE annexes
- There are one ore more on-line download services enabling (parts of) copies of datasets
- There are one or more transformation services enabling spatial datasets to be transformed to achieve interoperability (Not Known)
- There are one or more middleware services allowing data services to be invoked (Not Known)

2.7 Component 6: Thematic environmental data

Environmental data are provided mainly by the Environment Agency and by the Scottish Environmental Protection Agency. Thematic environmental data is a component in the UK modernising government agenda and hence is subject of a national data policy. Within the non formalised UK NSDI it is not clear however which position thematic environmental data have in the described NSDI-scene of the UK.

2.7.1 Conclusions of Component 6

Based on the information provided on the previous paragraph we score the indicator as follows:

- Thematic environmental data are covered by the described SDI-initiative or there is an independent thematic environmental SDI (Partially)

2.8 Standards

SDI-players in the UK adhere quite firmly to ISO/TC 211 and CEN/TC287 and other standards. The use of TOID and the Unique Property Reference Number (UPRN) illustrate the importance given to standardization at the data level.

The British Standards Institute (BSI) has developed many standards of relevance to GI with the support of the user community represented by the AGI. In particular BS7666 is the national standard for street addresses. OS MasterMap is based on a set of standards for national georeferencing called the Digital National Framework (DNF). The DNF (www.dnf.org) brings together all the essential components that make up the essentials of an SDI, reusing existing standards where that is possible. Some of the development has been in collaboration with Ordnance Survey of Northern Ireland and Ordnance Survey Ireland as part of a joint programme to harmonise standards across the three organisations for the benefit of pan-national customers 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. GML standards have been adopted by some organisations (OS) and the metadata standard ISO 19115, at least at the discovery level,

through UK GEMINI.

The Geographic Information Strategy for Northern Ireland has adopted several British standards and promotes their use for both data collection and exchange. Examples of this are BS7567 “Electronic transfer of geographic information (NTF)”, the UK Standard Geographic Base, and BS7666 “Spatial datasets for geographic referencing”. Participation in related committees and sub-committees ensures that developments in CEN and ISO standards are monitored.

The UK Location Programme with its UKLII Blueprint describes in detail the different types of standards as well as the existing collaborative initiatives.

- The e-Government Interoperability Framework (eGIF) provides the standards framework to improve the interoperability of government IT systems
- The DEFRA GI Strategy and SPIRE Programme Data Working Group (DWG) is the corporate shared spatial information services. Common SPIRE Data Standard (extension of UK GEMINI standard etc).
- The National Underground Assets Group (NUAG) is responding to the need to better coordinate and record underground infrastructure – with potential for very significant cost savings
- Atlantis is adopting the DNF principles where each organisation adjusts its own data to better „fit“ with others in the initiative so that users can increasingly use the data “out of the box
- The UK Environmental Observation Forum (UK EOF) is developing standards and services for environmental monitoring data.
- The National Policing Improvement Authority (NPIA) is developing information standards for police service information systems in England, Wales and Northern Ireland.

2.8.1 Conclusions of Component 7

Developments of international standards are followed closely and applied. Specific standardisation initiatives occur as well. E.g. Common SPIRE Data Standard (extension of UK GEMINI standard)

Based on these conclusions we score the indicator as follows:

- The SDI-initiative is devoting significant attention to standardisation issues

2.9 Use and efficiency of SDI

The positive outcomes of the cost-recovery and even profit oriented policy on GI and SDI in UK have been the creation of detailed and advanced national geographic databases, with funding by users ensuring that the products are customer driven and that the data is maintained. However, there has also been criticism that such commercially-lead policy is hampering informed governance and the further development of value-added services in the private sector.

Under the e-government initiatives, a clear tendency towards more coordination is present, i.e. the evolution in the direction of a more centrally managed SDI, in which the Ordnance Surveys of Great Britain and LPS of Northern Ireland play a key role.

Two examples are:

The national infrastructure for addresses and streets across the whole of local government in England and Wales. The two major national data-sets behind this infrastructure are the National Land and Property Gazetteer (NLPG) and the National Street Gazetteer (NSG). Based on ISO 19112 and the British Standard (BS) a common specification was designed for both the national and the local implementations. The dataset and processing software also uses other standards such as xml, the UK Metadata standard which is currently being updated for INSPIRE and a set of national standard Data Entry Conventions (de Groot et al., 2009).

Dudley Metropolitan Borough Council's GISMO's SDI provides an internet/intranet based GIS which serves geographic information to different business uses. Access to geographic information is provided through 'Getting Information Simply – Mapping Online', or GIS-MO, an intranet-enabled version of the council's geographical information system (GIS). The SDI is managed by Geographical Management Information Solutions (GMIS) unit – part of Dudley's ICT services. (Schmid and Kemp, 2009).

3 Annexes

3.1 SDI addresses & contacts for the United Kingdom

Table: SDI contact list			
	Web address	Organisational mailing address	Over-all contact person: tel./fax/e-mail
AGI - Association for Geographic Information	http://www.agi.org.uk	5 St Helen's Place, Bishopsgate, LONDON, EC3A 6AU, UK	Tel.: +44 (0) 20 7036 0430 Fax + 44 (0) 20 7036 030 Email : info@agi.org.uk Director and CEO : Chris Holcroft Email: Chris.Holcroft@agi.org.uk Tel: +44 (0) 20 7036 0437 Fax: +44 (0) 20 7036 0301 Email: info@gigateway.org.uk
Ordnance Survey Great Britain	http://www.ordnancesurvey.co.uk/	Customer Contact Centre Ordnance Survey Romsey Road Southampton SO16 4GU	Tel. 0845 408 1895. for all business enquiries; Callers from outside Britain should dial +442380792912 Fax : +44 (0) 23 8079 2615. Email:customerservices@ordsvy.gov.uk
Land and Property Services	http://www.lpsni.gov.uk/index.htm	Land & Property Services 1st Floor, Lincoln Building 27-45 Great Victoria Street MALONE LOWER Belfast BT2 7SL	T: +44 028 90251515 F: +44 028 90251659 Email: LPSBallymena.CIC@dfpni.gov.uk Chief Survey Officer and Director of Operations: Iain Greenway T: +44 (0)28 9025 5702. Email:

		Northern Ireland	Iain.Greenway@lpsni.gov.uk mailto:
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3.2 List of references for United Kingdom

References used to compile the Country Report	
Web sites:	http://www.privacyinternational.org/survey/phr2002/phr2002-part3.pdf http://www.shef.ac.uk/~scgisa/spoleto/craglia.pdf http://forum.europa.eu.int/Members/irc/jrc/eesdi/library?l=/document_repository/spatial_infrastructure&vm=detailed&sb=Title http://www.lmu.jrc.it/ginie/doc/SDI_final_en.pdf http://www.ec-gis.org/reports/policies.pdf http://www.opsi.gov.uk http://www.ordnancesurvey.co.uk http://forum.europa.eu.int/Members/irc/jrc/eesdi/library?l=/working_groups/policy_legal_aspects/reference_documents&vm=detailed&sb=Title http://forum.europa.eu.int/Members/irc/jrc/eesdi/library?l=/working_groups/standards_architecture&vm=detailed&sb=Title http://www.iggi.gov.uk/achievements_deliverables/wwoinfo.htm http://www.ordsvy.gov.uk http://codazzi4.igac.gov.co/gsd5/documentos/Uta_Wehn_paper.pdf http://www.gisdevelopment.net/policy/gii/gii0004.htm http://forum.europa.eu.int/Members/irc/jrc/eesdi/library?l=/document_repository/spatial_infrastructure&vm=detailed&sb=Title http://forum.europa.eu.int/Members/irc/jrc/eesdi/library?l=/comments_orientation/ireland&vm=detailed&sb=Title http://www.agi.org.uk/ http://www.ngdf.org.uk/ http://www.cabinet-office.gov.uk/innovation/2002/privacy/report/annex-d.htm http://www.osmaps.org/

	<p>http://www.gps.gov.uk/</p> <p>http://www.gigateway.org.uk/metadata/pdf/gemini_position_paper_final_v2.pdf</p> <p>http://www.agi.org.uk/members/reports/pdf/inspire/agiupdate160204_final.pdf</p> <p>http://www.gigateway.org.uk/metadata/pdf/GEMINI_Metadata_Standard_1_Apr_04.pdf</p> <p>http://www.ordnancesurvey.co.uk/oswebsite/media/news/2004/july/frameworkdocument.html</p> <p>http://www.ordnancesurvey.co.uk/oswebsite/aboutus/reports/frameworkdocument2004.pdf</p> <p>http://www.publications.parliament.uk/pa/cm/cmhansrd.htm Ordnance Survey (Corporate Plan 2004–07 and Business Plan 2004–05): http://www.publications.parliament.uk/pa/cm200304/cmhansrd/cm040721/wmstext/40721m03.htm#40721m03.html_sbhd7</p> <p>IDEA 2008): Dudley’s got a GIS-MO: project case study. Case http://www.idea.gov.uk/idk/core/page.do?pageId=8428184</p> <p>http://location.DEFRA.gov.uk/wp-content/uploads/2010/03/MetadataGuidelines2.pdf</p>
Publications :	<p>GINIE: Geographic Information Network in Europe. Spatial data infrastructures: Country Reports FINAL D 5.3.2(b). September 2002.</p> <p>Cameron Easton. One Scotland, One Geography: a Spatial Data Infrastructure for Scotland, Defining the Framework, pp.25, 2006.</p>
	UK Location Programme Conceptual Design, 65pages
	UK Location Programme Blueprint 2009 108 pages
	K., de Groot, Z., Britt, and S., Brandwood. Achieving a national infrastructure for addresses and streets across government in England and Wales using standards and sound information management principles. The development of the National Land and Property Gazetteer (NLPG) and the National Street Gazetteer (NSG). GSDI 11, 2009.
	G., Schmid and A., Kemp. Implementation of SDIs in the public and private sector: A comparison of opportunities and challenges. GSDI 11, 2009 (Available at:

	http://www.idea.gov.uk/idk/core/page.do?pageId=8428184
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