

Meeting the Obligations of the EU INSPIRE Directive

White Paper #1

Considerations for Public Sector Organisations



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Meeting the Obligations of INSPIRE

This white paper is the first in a series that outlines how you can deliver an infrastructure to meet key requirements for the INSPIRE agenda. Pitney Bowes Business Insight (PBBI) is focused on building innovative, and easy to use solutions that can help you not only meet these obligations but also to gain the most business benefit from doing so. This white paper focuses on the obligations, processes and requirements for INSPIRE and explains how these can be met in order to provide value to organisations and citizens.

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Introduction

“All Government organisations face continual challenges with discovering data, and then enabling efficient and appropriate access to that data. The high level goal of INSPIRE is enabling member states of the European Union to make better informed decisions, more insightful planning and more efficient resource deployments by a shared and collaborative approach to intelligence and key decision making. This goal will lead to improved operational excellence and lower overall costs.”

Pitney Bowes Business Insight's aim is to provide those organisations impacted by INSPIRE with the ability to:

- Meet the requirements of the EU's INSPIRE Directive as cost effectively and efficiently as possible
- Derive maximum benefit from investments in spatial data infrastructures and metadata
- Improve services to citizens
- Form closer partnerships with other organisations
- Support internal staff in their day-to-day roles

The impact of INSPIRE can be described in 4 key concepts. These four areas have implications in terms of the systems, processes and workflows around data management in an organisation.

- 1) **Metadata** - the publishing of metadata to aid discovery and determination of 'fit for use'. Metadata also determines the ownership and authority of data, and helps reduce duplication of effort.
- 2) **Service Infrastructure** - a range of Open Standard services to connect organisations and disparate systems together. The services fall into 5 main categories
 - a. Discovery - services to find and understand the data
 - b. View - services to visualise data in context
 - c. Download - services to download content
 - d. Transform - service to convert formats and frames of reference
 - e. Invoke - services to combine multiple steps into a single, re-usable process
- 3) **eCommerce** - the management of access for services other than discover and view may require appropriate controls, licenses and charging for use.
- 4) **Compliance** - the monitoring and reporting of compliance with the directives and throughput on services.

Scope

This paper will outline:

- The key steps to undertake for implementing INSPIRE
- Further developments that need consideration
- A discussion on spatial data and indirect data references

Audience and Assumptions

This paper assumes some familiarity with the requirements of INSPIRE, the directives and understanding of the key goals. The following roles can benefit from these topics:

- GIS Practitioners and Managers
- IT Managers and Data Custodians

Initial Steps to INSPIRE

Preparing for INSPIRE can be quite daunting, there are a range of requirements, standards and deadlines outlined. It is important to ensure resources are in place from the onset in order to ensure compliance is achieved as smoothly as possible. However, there are a number of steps to be taken to prepare for the initial phases of INSPIRE.

Step 1 – Undertake a Metadata Audit

Survey your data, determine the principle version, and assign a data steward, somebody who is responsible for the data, maintaining the metadata, and providing ownership within the business. If metadata exists, then verify it is current, where it resides and in what format or schema.

See the Appendix for a list of the metadata themes that fall under the INSPIRE mandate.

Step 2 – Metadata Capture

Complete an audit of spatial data based on International Standards Organisation (ISO) standards and legislation. Use this activity as an opportunity to clean and validate the source data, so you can define its quality criteria and fit for use and purpose. Where possible identify levels of data certification where the appropriate standards can be applied.

If this is your first effort at capturing metadata or if you have previously captured metadata using different schema's (i.e. different fields and/or a different structure) then you may find you will have a substantial initial metadata collection effort. In this case, automated metadata "harvesting" capabilities may be required.

Step 3 – Share Your Metadata Internally

Prior to sharing metadata externally or with partner organisations, it will help to make use of the metadata catalogue for internal business use. This allows validation of data and policy prior to exposing potentially sensitive information externally. This enables testing and verification before key decisions are made based on the data. Organisations can start to derive immediate benefit from the data while improving internal operations and awareness.

Step 4 – Start to Undertake a Data Quality Enhancement Process*

Once the metadata is published and a catalogue of data is available, now is the time to start developing a data quality strategy. In many cases, the value of data, and therefore the ROI and cleaning that data, can only be determined once a community of users are aware of its presence, and intrinsic value.

* Data, even if its level of quality does not meet agreed criteria, should still be audited and metadata captured for it. INSPIRE will require metrics on data maintenance, auditing will provide access to those key metrics. It may not be cost effective to clean the data at the time, but keeping a record of it, its data quality issues, and assigning a nominated custodian, means that the data can be accessed, and if required for a certain purpose, it may be appropriate to develop a business case to address the data quality issues. In some cases errors in data, are worth retaining as they can be useful in future data quality processes.

Step 5 – Share Your Metadata Externally

Consider your metadata to be public domain, be proud to be a custodian of data, and share this information with the public. This is the first stage to being able to share the actual data. You should, where possible, keep records of requests for data from the public so you can determine initial use requirements.

Note: It is important to start small, take each step in sequence, and then look to scale over time.

Continuing Your Investment in INSPIRE

Once metadata is captured and is being maintained as part of your ongoing business processes, ensuring the greatest value can be gained from your data is the next phase in INSPIRE. This is delivered by allowing other external consumers access to your data.

Step 6 – Prepare Your Data for Publication

Some data may be maintained in databases that also include personal information, or information that cannot be released in the public domain directly, for information assurance purposes, license limitations or copyright reasons. In this case, re-producible processes need putting into place, to remove associated information that restricts data distribution, and in some cases the data may need aggregating or generalising, in order to remove identifiable marks.

Step 7 – Determine the Licences Under Which Data Will Be Shared

There are many different licences available under which data can be shared. Considerations need to be made for the control, attribution and liability associated with the use of the data by 3rd parties. For example data published via <http://data.gov.uk/terms-and-conditions> is aligned with the Creative Commons license, but all warranty for data quality is relinquished. This may be an important consideration when working across agencies with regard to decisions related to government operations, therefore data may be published under different licences depending on who will consume and use the data.

Step 8 – Provide a Service for the Download of Data

Providing data download is a first step in making your data available to others. In many cases on <http://data.gov.uk/> for example, the data is available as a spreadsheet, it is possible to automate the access and consumption of such data formats, but the processes would still in most cases require the involvement of a person. There is also in some cases a significant delay in data acquisition with a dependency on the bandwidth between the data provider and consumer being sufficient for the data volume being accessed. Also in this context the data consumer becomes responsible for copying, storing and maintaining the data for future use. This can result in a proliferation of copies, of different vintages.

Step 9 – Provide a Direct Service to Data

However the real power comes in providing the data as a service, so applications can consume the data more directly and in real-time. For example, data feeds such as <http://backstage.bbc.co.uk/data/TravelFeeds> provide live data information in a format that is very easy to integrate and gain value from. INSPIRE lists a range of Open Geospatial Consortium (OGC) standard services, but consider using feeds and data services beyond just the standards, publishing update information via Really Simple Syndication (RSS) for example allows data consumers to subscribe to your updates and changes. In many cases the end user does not need to take on the overhead of maintaining the data.

Step 10 – Provide Reports on Your Compliancy

INSPIRE is a measurable programme, and in most countries compliance is a legal obligation. An important aspect of being able to demonstrate compliance is the ability to capture metrics on processes, metadata quality, data quality and service availability. Organisations who have an INSPIRE obligation, have to provide a service, with a rigorous service level agreement (SLA). Just like with the metadata and source data, the metrics will be made available to other organisations to drive continuous improvement initiatives. Having a method of measure will also enable the ongoing development of future business cases, as well as the optimisation of processes and services delivered.

INSPIRE is not just about meeting the obligations laid down in the directives, it is also about putting in place the processes and systems which will enable continuous development, and improvement of processes, data integration, data quality and value gained from connecting information together. This is a long term programme and will be a key initiative of delivering a shared information society where transparency of information and the innovation and value gained from that shared information can drive key benefits to society as a whole.

A Note on Spatial Data

The INSPIRE directive refers to spatial data throughout, and defines it as data with a direct or indirect reference to a specific location or geographical area. The phrase 'indirect reference' broadens the remit greatly, as this means any data that has a key or reference is applicable to the directive. Refer to the Directives Annex I – III for specific lists of target data sets.

For example, in the United Kingdom, the process of geo-coding, and attaching either Ordnance Survey TOID [4] keys or National Land and Property [5] UPRN keys is standard practise, to datasets such as citizen, asset and tax information, this results in these 'indirect' datasets being covered within the INSPIRE directive as well. Of note is reference to Annex III which includes many datasets captured and managed via PBBI's Confirm[®] Infrastructure Management Platform.

The directive indicates spatial data requires special handling as part of its lifecycle. Data, either spatial or otherwise is equally important in this process. All data should undergo appropriate data integration, master data management and data quality processes independent of type. This is critically important where a cross reference between spatial and non-spatial datasets is present.

Summary

A wide variety of government organisations will be either directly or indirectly impacted by INSPIRE. These organisations will need to organise systems and processes around the collection and sharing of metadata and of the spatial data itself. The initial steps towards meeting the requirements include undertaking a metadata audit as well as capturing, enriching and sharing the metadata. While this is going on it is necessary to consider the implications of publicising and sharing the data, including how it will be licensed by those who use it and how the data will be made available to end users. Both download and direct use services should be considered.

PBBI recommends organisations to look to INSPIRE not just as a set of obligations to be complied with but also as a catalyst for engendering the optimal use and sharing of data sets both internally and externally. This is not just about "ticking the box" for compliance, real benefits to the organisation will accrue. These include improved productivity from data users being able to more efficiently find and use the data they require. Time, effort and money can be saved by avoiding duplicate data collection efforts or duplicate data purchases in different parts of the organisation.

To learn more about INSPIRE metadata requirements, please read our second white paper in the series: [Metadata – The Key to Realising the Potential of Your Data](#).

Appendix: INSPIRE Metadata themes

The following are the major themes of data required by INSPIRE for metadata collection.

This information is taken from the document titled "Definition of Annex Themes and Scope".

http://inspire.jrc.ec.europa.eu/reports/ImplementingRules/DataSpecifications/D2.3_Definition_of_Annex_Themes_and_scope_v3.0.pdf

Annex I

Coordinate reference systems

Geographical grid systems

Geographical names

Administrative units

Addresses

Cadastral parcels

Transport networks

Hydrography

Protected sites

Annex II

Elevation

Land cover

Orthoimagery

Geology

Annex III

Statistical units

Buildings

Soil

Land use

Human health and safety

Utility and Government services

Environmental monitoring facilities

Production and industrial facilities

Agricultural and aquaculture facilities

Population distribution – demography

Area management/restriction/ regulation zones and reporting units

Natural risk zones

Atmospheric conditions

Meteorological geographical features

Oceanographic geological features

Sea regions

Bio-geographical regions

Habitats and biotopes

Species distribution

Energy resources

Mineral resources

References

[1] Directive 2007/2/EC, 25/4/2007

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2007:108:0001:0014:EN:PDF>

[2] eSDI-Net+, Community Network

<http://www.esdinetplus.eu/>

[3] Metadata Regulation No 1205/2008, 3/12/2008

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:326:0012:0030:EN:PDF>

[4] UK Ordnance Survey TOID

<http://www.ordnancesurvey.co.uk/oswebsite/freefun/geofacts/geo1201.html>

[5] UK National Land and Property Gazetteer

<http://www.nlpg.org.uk/nlpg/>

Resources

INSPIRE Main Web site

<http://inspire.jrc.ec.europa.eu/>

INSPIRE Conference 2009

http://inspire.jrc.ec.europa.eu/events/conferences/inspire_2009/index.cfm

Pitney Bowes Business Insight

<http://www.pbinsight.com>

MapInfo Stratus Blog

<http://stratus.pbbiblogs.com/>

About Pitney Bowes Business Insight

Pitney Bowes Business Insight, a division of Pitney Bowes Software Inc., a wholly owned subsidiary of Pitney Bowes Inc., helps organisations to acquire, serve and grow customer relationships. Our leading-edge solutions in the areas of Customer Intelligence, Customer Communications and Customer Care enhance our customers' operational systems and workflows, enabling them to manage their customer relationships more effectively. We offer unique and compelling capabilities, including location intelligence; GIS; predictive analytics; data quality, management and integration; and customer communications management. In combination, our solutions and capabilities deliver customer insights that create competitive advantages. Leading companies, government agencies and systems integrators rely on our global expertise and decades of leadership to improve their operational effectiveness and business results. Visit <http://www.pbinsight.co.uk> and <http://www.pb.com> for more information.

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