



Spatial Data Infrastructures in France: State of play Spring 2010



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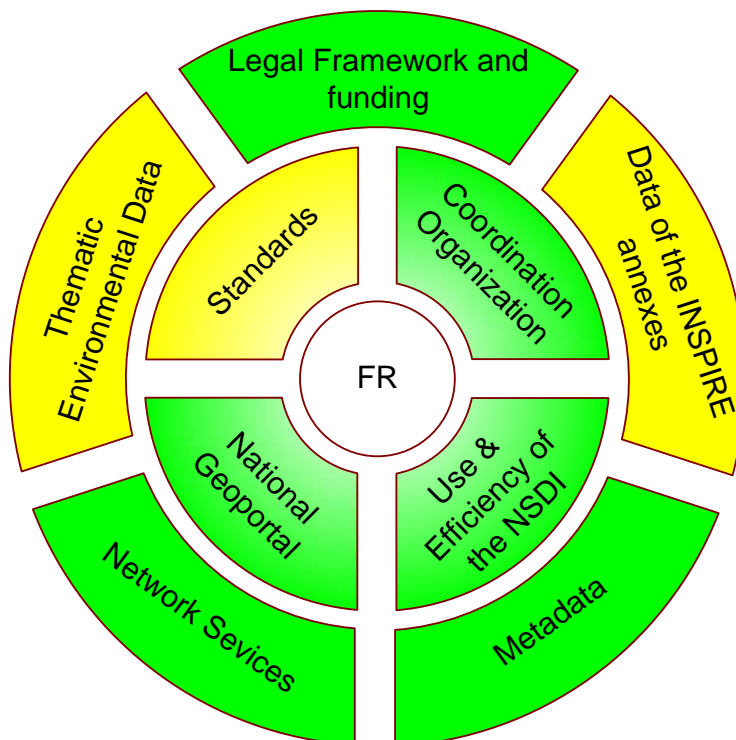
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Change matrix 2010 versus 2007

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 France, the production, maintenance, and coordination of geographic data is mostly in the hands of some core actors at the national level (IGN, BRGM, *Ministry of Environment, Energy, Sustainable Development and Sea (MEEDDM)*, CNIG, *Ministry of Food Agriculture and Fisheries (MAAP)*), and of the local authorities (regions, departments, communes). A large part of the geographic data that is produced is available against marginal costs or free of charge (e.g. local authorities, environmental agencies, BRGM), while for some data cost recovery is upheld (e.g. IGN). However, there is a general tendency towards more open availability of data.

The main challenges for the development of the NSDI lie in the subsidiary principles and the relationship between the national level and the sub-national authorities. In the past few years, the local authorities have increasingly been involved in the development of the NSDI. The dynamic that has been created by INSPIRE is seen as an opportunity to involve the sub national authorities in the NSDI, as they are important producers of spatial data. Initiatives are being taken to increase the cooperation between the national, regional and local authorities, such as partnerships between IGN and local authorities, regional initiatives, etc.

The main responsibility for organising and coordinating the NSDI lies with the Ministry of Environment, Energy and Sustainability and the CNIG. The CNIG has a mandate to coordinate the data producers' activities with the needs of public users and with the general interest. The activities of the CNIG are currently on hold, until the Decree is finalised that will assign the CNIG with the authority for coordinating the implementation of INSPIRE. The responsibilities for the legal transposition of INSPIRE lies with the *Ministry of Environment, Energy and Sustainable Development* and should be finalised by the end of 2010.

A French Geo-Portal was launched in 2006 (www.geoportail.fr): the Ministry of Environment, Energy and Sustainability is in charge of the project and IGN ((National Mapping and Cartographic Agency) and BRGM (National Geological Survey) are responsible for the implementation and operation (view services for maps, orthophotos and other data by IGN and Discovery services by BRGM). The portal provides access to view services for reference data, produced by IGN France (covering most of the themes of the Annexes I and II) but also by other producers. The geoportal gives on-line access to the public for a large number of data sets and the view service API allows other web sites and portals to embed geoportal visualization windows. The use of the API is free of charge for non-commercial use. Conditions of use are publicly available (http://www.ign.fr/partage/api/cgu/licAPI_CG.pdf). Other SDI stakeholders also have developed their own Geo-Portal (e.g. BRGM).

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Abbreviations and acronyms

ADAE	Administration pour le Développement de l'Administration Electronique / Administration for the development of e-administration No more existing– See DGME
ADELE	Agence pour le Developpement de l'Administration Electronique Agency for the Development of the Electronic Administration
ADF	Assemblée des Départements de France
AFIGéo	French Association for GI
AFNOR	Association française de Normalisation
ANDSIS	Association nationale des directeurs et directeurs-adjoints des services d'incendie et de secours
ANFR	Agence nationale des fréquences
API	Application Programming Interface
APIE	Agence du patrimoine immatériel de l'État
BD ORTHO	Base de données Raster
BD TOPO	Portail de l'Information Géographique
BRGM	Bureau des Recherches Géologiques et Minières / French geological survey
CADA	Commission d'accès aux documents administratifs
CAP	Common Agricultural Policy
CIADT	Interdepartmental Committee for the Development of the Territory
CIMER	Interdepartmental Committee for the Sea
CNES	French Space Agency
CNIG	National Council for Geographic Information
CNIL	Commission Nationale de l'Informatique et des Libertés / National commission on information technology and freedom
COGIT	Conception Objet et Généralisation de l'Information Topographique
CRIGE-PACA	Météo France (French Weather bureau), the Regional Centre for Geographic Information of the Provence - Côte d'Azur Region
CSTB	Scientific and Technical Building Centre
CSW	Catalogue Services for the Web
CT	Core Thematic Data
DBMS	Database Management System
DGFIP	Direction générale des finances publiques
DGI	National Tax Office
DGME	Direction Générale de la Modernisation de l'Etat / General Directorate for State Modernisation created in 2006, part of the French Economy, Finance, and Industry Ministry

DOM	Départements Outre-Mer / Overseas «départements»
DTM	Digital Terrain Model
FING	Fondation internet nouvelle generation
FOI	Freedom Of Information
GFII	Groupement français de l'industrie de l'information
GI	Geographical Information
GINIE	Geographic Information Network in Europe
GIS	Geographical Information System
GMES	Global Monitoring for Environment and Security
GML	Geography Markup Language
GPS	Global Positioning System
IFEN	Institut français pour l'Environnement / French Environment Institute
IFN	National Forestry Inventory
IGN	National Mapping Agency
IHO	International Hydrographique Organisation
INSEE	National Statistical Institute
INSPIRE	INfrastructure for SPatial InfoRmation in Europe
ISO	International Organization for Standardization
LGPL	Lesser General Public License
MAAP	Ministry of Food Supply, Agriculture and Fisheries
MEEDDM	Ministry of Ecology, Energy, Sustainable Development and the Seas
NGO	Non-Governmental Organization
NMA	National Mapping Association
NSDI	National Spatial Data Infrastructures
NSHC	Regional Hydrographic Commission for the North Sea
OGC	Open Geospatial Consortium
OGE	Order of Chartered Surveyors
ONEMA	Office national de l'eau et des milieux aquatiques
ONIC	National Inter-professional Grain Office
ONF	Office national des forêts
PPP	Public-Private Partnerships
PSI	Policy and legislation on access to public sector information
REF	Reference data
RDBMS	Relational database management system
RGE	Référentiel Géographique à grande Echelle / Large scale geographic reference data
RTE	Réseau de transport d'électricité
SDI	Spatial Data Infrastructures

SHOM	Service hydrographique et océanographique de la marine / French Hydrographic Office
SOeS	Service de l'Observation et des Statistiques
SITG	Information Service for the Geneva Territory
WCS	Web Coverage Service
WEND	Worldwide Electronic Navigation chart Database
WFS	Web Feature Service
WMS	Web Mapping Service

1 GENERAL INFORMATION

1.1 Method

This report is summarizing the review of SDI in France, and reflects 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 resulted in a partial review of SDI in France, and aimed at reflecting the degree to which the SDI situation in France was similar to the ideas set out in the INSPIRE position papers² and in the more recent INSPIRE scoping documents.

The report was based mainly on the analysis of web site material readily accessible and on documents presented on workshops and conferences. The GINIE final report has been taken into account.

The 2003 version of the report had further been completed by the integration and consolidation of comments received from representatives of the NSDI initiatives. Those comments were provided through interviews organized in the framework of Activity 2 of the State-of-Play project. The 2003 version was further updated by integrating comments from CNIG and IGN.

The 2005 version of the report had been updated taking account of views expressed by the French liaison group on INSPIRE and of the NGI France. Those views were not always identical, and therefore SADL had tried to integrate them and to indicate where appropriate those different views. Some of the proposed updates have been accepted, while others were rejected. The report described the state of play as it is seen and understood by SADL.

The update for 2006 was based on the information obtained through visits of geo-portals and websites, and information obtained from IGN. The 2006 version of the report was not a full updated report. In 2007, the French authorities - through IGN and the CNIG – have given input regarding data sets and services, as well as regarding data sharing practices and the organizational issues of INSPIRE. This material had been integrated in this version of the country report.

For the 2009 update the survey report answered by CNIG and IGN was used along with the information extracted from the national geoportal, the web and the various presentations from workshops and conferences. 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 INSPIRE position papers, final versions: RDM, ETC, DPLI, ASF, IST, IAS (latest version).

² INSPIRE position papers, final versions: RDM, ETC, DPLI, ASF, IST, IAS (latest version).

The report gives major attention to the development of the Géoportail, as it is one of the developments in the French NSDI that plays an important role as an example for other countries. Due to its structure and focus on the national SDI developments in France, it cannot fully reflect the important local and regional developments that have taken place in France over the past few years.

1.2 Key players on the NSDI-scene in France

The main actors on the SDI-scene in France are the *Institut Géographique National* (IGN), the *Bureau de Recherches Géologiques et Minières* (BRGM), the regional and local authorities, the *Ministry of Environment, Energy and Sustainable Development*; and the *Conseil National de l'Information Géographique* (CNIG)

- *IGN*: the National Geographic Institute is an independent public body next to the Ministry in charge of Public Works, with a wide range of competences: geodesy, data collection, treatment and integration, aerial photographs, databases production, commercialisation, research, higher education training.... IGN inter alia has the role of integrator for the *Référentiel Géographique à grande Echelle* (RGE), and is responsible for the Geo-portal, together with BRGM. It is a key player in the provision of data, providing the largest part of the data themes of Annex I of INSPIRE.

The decree defining IGN mission, adopted on 22 November 2004, provides a mechanism for the general interest databases and cartographies it produces and distributes, widens the representation of local authorities to the management board of IGN, and requires all state services and institution to supply IGN with data necessary for producing and maintaining the RGE.

- *BRGM*: together with IGN, BRGM is responsible for the French Geoportal. It was founded in 1959 as a public body with a commercial character, and reports to the Ministry of Higher Education and Research and the Ministry of Environment, Energy, Sustainable Development and the Sea. It operates on the international, European, national and regional level. BRGM has been promoting SDI concepts through the InfoTerre (<http://infoterre.brgm.fr>) programme since 2001. InfoTerre provides access to data sources managed by BRGM through interoperability standards (OGC and ISO), with free access to view most of the geo-scientific information available (including geological maps). In 2005, the Decree holding their mission was adapted to focus on the management and diffusion to the citizens of information on geology and the environment. BRGM has a long culture of structuring information and developing an infrastructure, continuously adopting new technologies. They currently hold 19 themes of the INSPIRE annexes.
- *Ministry of Environment, Energy and Sustainable Development*: this ministry is responsible for the supervision of IGN and Meteo France and is responsible for the transposition of INSPIRE. It also holds the Member State Contact Point for INSPIRE. It is the project supervisor of Géoportail, the operations being entrusted to IGN and BRGM. Previously, the DGME (Direction Générale de la Modernisation de l'Etat) also played a role in the NSDI, as

geographic data were a part of the *Révision Générale des Politiques Publiques* and the *Référentiel Général Interopérabilité*, but the responsibility for geographic data was completely transferred to the Ministry of Environment, Energy and Sustainable Development after 2007. The Ministry has used the transposition of the INSPIRE directive as an opportunity to increase the cooperation with the local authorities, in order to develop the NSDI as an initiative carried by all levels of public authorities.

- *Local authorities*: the regions, departments and communes are also very important data providers. They provide over half of the geographic information, on themes that are of direct interest to the citizens. Many local authorities are currently joining in informal cooperation initiatives for sharing geographic data and they are taking up a more active role in the NSDI in France. Regions, departments, agglomerations and large cities are involved in informal regional platforms, setting up structures for exchanging data within the platform and with the national level. These initiatives are also creating geoportals.

In 16 of the 22 regions, there are regional conferences promoting cooperation and data sharing. Approximately one hundred *Comités départementaux de l'information géographique* (Departmental Committees for GI) were established between 1994 and 2002, but they never performed any actual activities. Therefore, the text on the basis of which these Committees were installed was abolished in order to leave the possibility to the local authorities to create their own initiatives.

Local SDI initiatives include for instance the infrastructure established for the Urban Community of Greater Lyon or Nantes métropole, departmental initiatives such as those in Vendée and Haute Savoie and regional initiatives as for example Provence-Alpes-Côte d'Azur or Nord-Pas de Calais.

- *CNIG*: the CNIG was established by Decree of 26 July 1985. Its objective is to promote and develop the use of GI in France. It is the official policy advisor to the government placed next to the ministry in charge of Public Works on GI-matters and it coordinates the GI-related activities and policies of the public authorities. It is a consultative inter-ministerial council with representatives from all major government departments and GI-related agencies (www.cnig.gouv.fr). It convenes a liaison group on INSPIRE, the role of which is to monitor INSPIRE progress, and contribute to the coordination of INSPIRE related actions of the French key players. Currently, awaiting the new decree that will officially assign the coordination for INSPIRE to the CNIG in summer 2010, the activities of the CNIG are on hold. In the future, the CNIG will include more representatives from the local authorities, in order to reflect the reality of the NSDI landscape.

Next, to these main actors, many other actors are also involved in the development of SDI-initiatives. AFNOR, the national standardisation body, relaunched in 2009 a GI commission, which liaises with ISO TC 211 groups. The Ministry of Economy, Finance and Industry is responsible for the cadastre and national statistics (DGFIP). Many

ministries and related bodies are increasingly active in geo-referencing information related to their field of responsibilities. One can quote the ministries responsible for agriculture (connected to the CAP), for environment (e.g. water or risk), for public work (road, urbanism) for culture (French patrimony), for the interior (addresses, home security). They are important users of geographic information.

Other key players are the National Statistical Institute (INSEE), the National Tax Office (DGI), which is responsible for the cadastre, and SHOM in charge of the (digital) nautical charts. CNES (Centre National d'Etudes Spatiales) is the French Space Agency in charge of proposing to the French government its space policy and developing space programs at national, European and international levels. Among these programs Earth Observation for research and innovation, for sustainable development and for security and defence, play a key role for providing images and data to be used for GI production.

Next, the *Association Française pour l'Information Géographique* (AFIGÉO - French Association for GI) -established in 1987- is a forum to coordinate activities and to promote the development and use of GI among both public and private sector organisations (<http://www.afigeo.asso.fr>).

One of the main challenges the NSDI in France has to deal with is the relationship between the national level and the local authorities (regions, departments, communes). The organisation and coordination of the relationship between the different levels of government to open up the access to geographic data needs increasing communication and cooperation, with no barriers to data sharing, while maintaining attention for the autonomy of the different levels. In order to stimulate this communication, the participation of the local authorities in the CNIG will be increased.

2 Details of NSDI-Situation in France

2.1 General information

Currently there is no explicit overall governmental initiative to develop an NSDI in France even though the RGE development by IGN is a key building block and a Geo-Portal has been launched in 2006. Nevertheless a multitude of NSDI-like initiatives have been undertaken. The major areas of policy that are relevant to these initiatives are policies related to agriculture and land planning, policies related to decentralization; and policies more closely linked to the development of an SDI further to the Lengagne Report of 1999 (which recommended the development and maintenance of a national framework of reference at large scale (RGE) to include relevant topographic databases, the cadastre, administrative boundaries and postal addresses). INSPIRE is considered a good structure based on which to build the NSDI in France. INSPIRE clarifies the role of the different actors on the national and the sub-national level and enables a better division of tasks. In addition, INSPIRE is seen as a good means to increase the contribution of and participation in the NSDI of the regional and local authorities and to create cooperation and partnerships between the national and sub-national level.

The initiative to have a large scale (metric resolution) base vector (RGE) integrated by the IGN is the result of the “Lengagne report” published on 30 September 1999. This report was commissioned by the government to review its (and IGN’s) operations related to GI. The report recommends refocusing the IGN operations, giving priority to the completion and maintenance of national coverage for core datasets:

- Topographic databases (BD TOPO);
- Cadastre (BD PARCELLAIRE);
- Administrative boundaries;
- Postal addresses (BD ADRESSE);
- Orthophotographs (BD ORTHO).

These objects were to be included in the RGE at an equivalent scale level of 1:10.000 (metric accuracy). Since the data are partly produced by other parties (DGI, local governments, ...) than IGN, the elaboration of the integrated RGE can be considered as a major SDI-like initiative.

The following geodatasets are complementary to the RGE but also considered of high priority: nautical charts; maritime data; geological data; socio-economical data (NSI); agri-environmental data.

IGN cooperates with 13 national partners to maintain the RGE and improve its coverage, such as the *Agence nationale des fréquences* (ANFR); the *Office national des forêts* (ONF); the *Office national interprofessionnel des céréales* (ONIC);); the *Service de l'Observation et des Statistiques* (SOeS); the *Institut français de l'environnement* (IFEN); the *Réseau de transport d'électricité* (RTE); the *Direction générale des finances*

publiques (DGFIP); the *Assemblée des Départements de France* (ADF); the *Association nationale des directeurs et directeurs-adjoints des services d'incendie et de secours* (ANDSIS); the *Inventaire forestier national* (IFN); *la Poste*; the *ministère de la jeunesse et des sports*; the *Office National de l'Eau et des Milieux Aquatiques* (ONEMA); the *Ordre des géomètres experts* (OGE); the *Service Hydrographique et Océanographique de la Marine* (SHOM). Next, co operations have also been set up with local entities, nature parks, departmental fire and emergency services, etc. Since 2007, IGN has concluded more than 100 partnerships to share data.

(see <http://www.ign.fr/institut/22/activites/rge%C2%AE-et-production.htm>)

The national geoportal

The French national geoportal (www.geoportail.fr) was officially inaugurated in June 2006. It comprises two portals, the visualisation portal www.geoportail.fr maintained and operated by IGN, and the catalogue portal (ISO 19115 compliant) www.geocatalogue.fr, maintained and operated by BRGM, under the supervision of the Ministry of Environment, Energy and Sustainable Development, and supported by a panel of experts from the Geological and Mining Research Bureau (BRGM), the Navy's Hydrographic and Oceanographic Department (SHOM), Météo France (French Weather bureau), the Regional Centre for Geographic Information of the Provence - Côte d'Azur Region (CRIGE-PACA), the Ministry of Defence, the Ministry of National Education, the Order of Chartered Surveyors (OGE), the National Forestry Inventory (IFN), the National Inter-professional Grain Office (ONIC), the Scientific and Technical Building Centre (CSTB) and the Information Service for the Geneva Territory (SITG).

IGN is responsible for the development and administration of Géoportail, in particular for the data visualisation, while the BRGM is responsible for the Géocatalogue, which lists the various sources of public geographic information. BRGM provides ISO19115 compliant metadata for its thematic datasets.

The objective of is to facilitate access to GI for public administrations and the citizens. Although photographs, maps and databases of IGN are the main data components, the viewing portal is regularly updated by many other producers of geographic data. It is developed in accordance with Open Geospatial Consortium (OGC) standards, and can be used by public administrations, private citizens and businesses.

In 2009, the Géoportail's API (Application Programming Interface) was made available, so that the maps and aerial photographs can be imported as a background into other websites (<https://api.ign.fr/geoportail/>). Currently, IGN is holding a consultation on the 3rd version of the Géoportail, which should be ready by 2012.

Last but not least, an issue that has received extensive attention is the cross border services collaboration. French and Spanish NMAs are collaborating and setting up seamless cross border services trying to fulfil the INSPIRE Implementing Rules, while

taking into account their specific data policies and economic models (Rodriguez et al., 2009).

2.2 Component 1: coordination and organizational issues

Under the Decree on the role and the composition of the National Council for Geographic information (consolidated in 1999), the CNIG is responsible for advising and making proposals to the competent minister on the development of GI and on the improvement of the necessary technology, taking into account the needs of the public and private users (see <http://www.legifrance.gouv.fr/texteconsolide/PKH7E.htm>).

The coordinating role of CNIG was confirmed by a decision from the Prime Minister's office in 2001, which also confirmed the role of IGN as an integrator of reference data from various sources and its role in research and education; European GI-policy; and the modernization of the public services. The CNIG will be responsible for the coordination of INSPIRE, supported by IGN and BRGM. The main stakeholders are the public agencies, the members of OGC France, the Afigéo Association, the private sector and NGOs. Within the CNIG, an INSPIRE working has worked on informing the stakeholders on the opportunities and obligations of INSPIRE.

Other coordination activities mainly include facilitation, activation, raising awareness and the mobilisation of thematic groups. The affect of this is believed to be shown by the large number of comments from French public bodies on the data specifications consultation. The idea is to maintain the multiplicity of existing initiatives, rather than impose new obligations, and to streamline these existing practices. After an evaluation of these practices in a few years, it can be determined where the gaps are and these gaps can be filled.

However, currently the official activities of the CNIG are on hold until the new Decree determining their role in the coordination of INSPIRE will be finalised. The Decree should be ready by the summer of 2010. Currently, coordination is considered important, but in practice it has not been set up between the institutions at the national level or between the national level and the local authorities.

At IGN, the project INSPIRE@IGN (see inspire.ign.fr) has been created as a pilot for the activities linked to the directive. Part of this pilot is the development of an action plan in order to align the products and services of IGN with the demands of the directive and the implementing rules (see <http://www.ign.fr/institut/documentArticle.do?idDoc=5653965&indexRoot=3&indexChild=1>)

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 operability. Moreover, the sub-national level plays an important role. There is clear coordination but several important

stakeholders play a pre-dominant role. On one hand CNIG is playing the formal role while at the operational level (and heavily involved in INSPIRE development), IGN and BRGM play a key role led by the Ministry of Environment. At the same time it is not clear how the data users are involved in the CNIG (or in other ways). AFIGEO plays an important role to involve the sub-national stakeholders, with many sub-national SDIs in place. There is no evidence of the involvement of users to the SDI, or only indirectly since user needs are taken into account.

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 operability (4)
- The officially recognised or de facto coordinating body of the SDI is a NDP, i.e. a NMA or a comparable organisation (Not so clear)
- The officially recognised or de facto coordinating body for the SDI is an organisation controlled by data users (Not so clear)
- 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 (Not so clear)
- Only public sector actors are participating in the SDI

2.3 Component 2: Legal framework and funding

2.3.1 Legal framework

The main legal instruments specifically relating to GI include:

- Decree no. 2004-1246 of 22 November 2004 on the National Geographic Institute, consolidated in May 2005;
- Decision of 16 March 2005 stating the list of geographic data sets and cartography that has to be maintained by IGN as part of its public task;
- Decision of 19 April on the development and maintenance of the RGE;
- Decree on the role and the composition of the CNIG, consolidated on 30 September 1999.

After the Ministry of Public Works had created a first draft for the transposition of the INSPIRE directive in 2007, the responsibility for the transposition was shifted to the Ministry of Environment, Energy, Sustainable Development and the Sea. During 2008 and 2009, a draft proposal was developed, but at the end of 2009, it was decided to transpose the directive by an Ordonnance. The law that allows this was submitted to the Senate in December 2009 (see <http://www.ign.fr/institut/documentArticle.do?idDoc=5653965&indexRoot=3&indexChild=1>). With this law, the Parliament agrees with legislation that is still to come, so that it

does not have to debate about the law when it is presented. This law is currently in the Chamber, but the Parliament has a backlog, so there is some delay.

A text of the transposition law is ready, with a minimal transposition of the directive. Executive measures are necessary in order to fully transpose the directive. These will be ready by the end of the year (see <http://inspire.ign.fr/index.php/actualites-inspire>).

IGN performs its tasks on the basis of a contract with the government. This contract sets the objectives for a certain period, generally a couple of years. A new agreement was made in 2008 between IGN and the Ministry of Food Supply, Agriculture and Fisheries (MAAP) and the Ministry of Ecology, Energy, Sustainable Development and the Seas (MEEDDM). In addition, the white paper on defence and national security published on July 31, 2008 planned a closer cooperation with the Ministry of Defence (see IGN, 2008 Activity report). Since 2010, an agreement on targets and performance between IGN and the government specifies the objectives for the period 2010-2013.

2.3.2 Public-private partnerships (PPPs)

There is no true PPP in France. For instance, geometric experts having tasks relating to the cadastre are considered to have a public mission, so they cannot be considered as private partners in relationship to the state.

The private sector is involved in the creation of value-added products, but rather as a client of the public sector data providers than as a partner. Currently, the private sector does not play a big role in the NSDI in France, but there are signs that its role will grow in the future.

2.3.3 Policy and legislation on access to and re-use of public sector information (PSI)

Law no. 78-753 of 17 July 1978 ('Loi portant diverses mesures d'amélioration des relations entre l'administration et le public et diverses dispositions d'ordre administratif, social et fiscal') regulates the freedom of access to administrative documents. This "CADA" law has been amended several times throughout the years. The law applies to central government, local government and the administrations of public undertakings. Requests may be refused on a limited number of grounds, such as state security, privacy and commercial secrets. Documents received may not be reproduced or redistributed for commercial purposes. Jurisprudence of this law allows the charging for data access.

Directive 2003/98 on re-use of PSI was transposed by Ordonnance n° 2005-650 relative à la liberté d'accès aux documents administratifs et à la réutilisation des informations publiques of 6 June 2005 and by the Décret 2005-1755 relatif à la liberté d'accès aux documents administratifs et à la réutilisation des informations publiques, pris pour l'application de la loi n° 78-753 du 17 juillet 1978. The former contains a general right of re-use of all the information in the documents held by the administrations mentioned in the law of 1978. Directive 2003/4 was transposed into French law by the Law of 26

October 2005 (LOI no 2005-1319 du 26 octobre 2005 portant diverses dispositions d'adaptation au droit communautaire dans le domaine de l'environnement, <http://www.legifrance.gouv.fr/WAspad/UnTexteDeJorf?numjo=DEVX0500055L>).

The Agence du Patrimoine Immatériel d'Etat was established in 2007, under the Ministry of Economy and the Ministry of Budget, with among others the responsibility to help economic operators to access PSI for re-use and to create awareness with the public bodies with regard to the possibilities for re-use. For this, it has created model licences; it supports public bodies in developing their registers of information and has proposed to create a portal for access to all re-usable public sector information. APIE works closely with the Commission d'accès aux documents administratifs ([CADA](#)), and maintains contacts with the Groupement Français de l'Industrie de l'Information (GFII) and the Fondation Internet Nouvelle Génération (FING) (see https://www.apiefrance.com/sections/acces_thematique/reutilisation-des-informations-publiques/la_reutilisation_des/).

2.3.4 Legal protection of GI by intellectual property rights

The Intellectual Property Code of 1957 (revised several times throughout the years) includes a section on copyright. It provides a list of examples of works that may be protected which is similar to that of the Berne Convention. French courts have repeatedly decided works of GI to be subject to copyright.

Database Directive 96/9/EC was implemented into law on 1 July 1998 by integrating the new rules into various sections of the French Intellectual Property Code. The 2001 directive on copyright in the information society is transposed by the Law on the digital economy.

No copyright exists in laws, decrees, court decisions, legal texts and so on. Maps belong to the same category as books, music and other artistic creation activities results. They therefore benefit of IPR protection under French law.

Copyright is regulated by a system of licences. A licence for internal use exists, and several tariffs are in force depending on the amount of use to which the information is put. Government bodies also grant licences to private companies for the commercialisation of their data.

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

French privacy legislation can be found in Law no. 78-17 of 6 January 1978 (*Loi relative à l'informatique, aux fichiers et aux libertés*). Most notably this legislation provides for a priori declaration of all databases containing nominative data, and a right of access and correction for information concerning oneself. This law is more protective of private life than many other European equivalent legislations. The *Commission Nationale de l'Informatique et des Libertés* (CNIL - National Commission for Information Technology

and Individual Liberties) is the regulatory body set up to enforce and report on application of French Privacy law (www.cnil.fr).

On 11 January 2000 the European Commission decided to take France to court for failure to notify all the measures necessary to implement Directive 95/46/EC on the protection of personal data. Article 5 of Law no. 2000-321 of 12 April 2000 already amended Law no. 78-17. However, Directive 95/46/EC is now fully transposed into French law. On 30 January 2002 the French National Assembly therefore adopted a draft implementation law (*projet de loi*) regarding the processing of personal data, modifying Law no. 78-17. This law has been definitively adopted by an Assemblée National vote on the 29th of April 2004.

The law of 22 June 2004 concerning the digital economy has transposed both the 1995 directive on the processing of personal data and the 2002 directive on privacy and electronic communications into French law.

2.3.6 Licensing framework

The Ordonnance of 6 June 2005 on re-use of PSI states that if charges are made for the re-use, a licence has to be available, which holds the conditions for the re-use. These conditions can only put restrictions on the re-use for the purpose of the general interest, and in a proportionate way. Model licences should be available. Such model licences are provided by APIE, which makes available some model licences for the re-use of PSI on its website, for a one-off delivery and for continuous delivery of information.

IGN provides general conditions for the use of its products and services on its website (www.ign.fr) as well as a set of licences: standard licence, server licence, electronic representation, graphical representation, commercial exploitation, integration, etc. Specific terms are foreseen for the educational sector and the research sector. Parcel data and address data are only available for the public sector.

On the geoportal www.geoportail.fr, one can also buy IGN data online. Payment can be done by bank transfer or by credit card. Price lists and terms of use are available on the website (<https://boutiquepro.ign.fr/index.php?event=DisplayInfosProduits>). Over 8000 contracts have been concluded via the Geoportal.

Such general conditions are also provided by SHOM. These conditions have been set up in strong cooperation within the IHO Regional Hydrographic Commission for the North Sea (NSHC). Furthermore this NSHC has also established a principle of custodianship, by which a country A portraying on its charts the data owned by an other country B can authorize the re-use of the data of the country B (provided the corresponding fees are yearly paid to country B).

Another maritime example can be found in the Regional Electronic Navigation Chart established under the auspices of the IHO WEND commission: for instance Primar Stavanger, operated by the Norwegian Hydrographic Service, distributes (including

weekly up-dating) the ENC of several countries, amongst which France. The conditions for the distributors are the same for all the countries participating in Primar Stavanger.

2.3.7 Funding model and pricing policy

Funding

France has a combined model that encompasses grants and cost recovery.

Examples of pure public funding (often with public tendering) are the rasterisation of cadastral maps, electronic nautical charts (except for physical production and for distribution), geodesy, aerial survey, research, and the GIS of local governments. The cadastre is thus 100% funded and the national statistics has a 100% itemised budget. Nautical charts also have a 100% itemised budget.

The core activities including updating to develop the *Référentiel Géographique à grande Echelle* (RGE) are partially funded by the government. Distribution is not subsidized at all. As a consequence, users have to bear significant cost to access to the RGE.

Partial public funding applies to all activities of IGN, which has to recover approximately half of its funding through the sale of data and services. In 2008, the 151.1 M€ income was composed of 41% state funding and 59% sales and other activities. Of the sales, 65% was to professionals, and 35% to the general public (see www.eurosdri.net/meetings/114/presentations/h-4.pdf).

BRGM does not obtain any funding from central government, so it has to provide for its own funding. It does so by allowing free of charge access to the data, but charging for added-value services, advice and consultancy. Services are offered to the public (national and local) and the private sector, and to the public. For instance, geo-reports are made for the citizens, on the situation of a particular piece of land.

Pricing

Official French policy dictates that each public authority must recover its marginal costs. Most of the local authorities and the public bodies disseminating environmental data, provide free access to their data. For instance, free access on the Internet to statistical data is a main element of the INSEE data policy.

According to French law, access to the cadastre is provided free for citizens on-line and at the point of consultation (e.g. city hall) and is charged 9.5 € for a copy either paper or digital but not for commercial purposes.

For the IGN, the charging and pricing principles are established by the Decree of 22 November 2004. IGN's pricing policy should encourage data use and promote transparency and non-discrimination, while ensure that the producers gather no higher income than the cost of their production and update. IGN is gradually moving in the

direction of lower prices, and the availability of data free of charge or against marginal costs. For instance, since March 2010, IGN data are available free of charge for research and education purposes. They can be downloaded freely from the website, or delivered on a carrier, for which a marginal cost is charged.

IGN prices are approved by the Management Board annually and its catalogue is distributed at the beginning of each year. For instance, regarding the large scale reference database, over the lifetime of a component, what is paid by the government plus what is paid by users is equal to the production maintenance and dissemination costs. However, in December 2005, government auditors reviewed the pricing policy of IGN's large scale reference database, and they found that the pricing policy entailed that the information was under-used. They recommended that the commercial activities would be separated from the "public good" functions, and that public data should be priced lower (see tinyurl.com/r6ajp). This report was implemented through pricing formalisation and price decrease, e.g. the price of BD Ortho (national coverage) was divided by 2.5 between 2006 and 2010. Moreover the accountancy was improved to clearly separate public service activities from commercial activities.

The model licences of IGN and the details of the price calculation can be found at http://www.ign.fr/rubrique.asp?rbr_id=1582&lng_id=FR. A difference is made in the conditions of use for internal use and commercial exploitation. A standard licence is also available for downloading and using (including for commercial purposes) environmental data from the Ministry of Ecology and Sustainable Development (Ministère de l'Écologie, du Développement et de l'Aménagement durables - <http://www.developpement-durable.gouv.fr/index.php3>).

BRGM has a strong culture of making data available to the citizens free of charge. After an internal study on the business model performed in the late 90s, BRGM decided to disseminate information freely via the Infoterre portal, with the emphasis on openness, re-use and interoperability. This was also due to the conviction that the transaction costs for charging for access were too high. Paper maps and digital harmonised datasets are still sold against marginal cost, but the digital data that is available via the web services, is completely free of charge.

2.3.8 Conclusions of Component 2

At the time the survey was conducted, the INSPIRE legislation was transposed – a final text is available but is not published yet. There does not exist a strategic document and there is no true PPP in France as well as specific funding for INSPIRE. There is a pricing framework, but only for individual organisations (e.g. IGN). The private sector is involved in the creation of value-added products, but rather as a client of the public sector data providers than as a partner. Currently, the private sector does not play a big role in the NSDI in France, but there are signs that its role will grow in the future. No copyright exists in laws, decrees, court decisions, and legal texts. Copyright is regulated by a system of licences. The Ordonnance of 6 June 2005 on re-use of PSI states that if charges are made for the re-use, a licence has to be available, which holds the conditions for the

re-use. Such model licences are provided by APIE. Partial public funding applies to all activities of the IGN, which has to recover approximately half of its funding through the sale of data and services. BRGM does not obtain any funding.

Based on these conclusions we score the indicators as follows:

- There is a legal instrument or framework determining the SDI-strategy or – development (Partially)
- 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 (Not so clear)
- There is a freedom of information (FOI) act which contains specific FOI legislation for the GI-sector (In preparation)
- 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 (In preparation)
- There are simplified and standardised licences for personal use (In preparation)
- The long-term financial security of the SDI-initiative is secured (No)
- 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

Besides the integrative work for RGE, IGN is producing widely used ‘référentiels’:

- BD CARTO (1:50.000 – 1:100.000) first version available since the early 1990ies;
- SCAN25 (scanned version of topographic map 1:25.000), SCAN100, SCAN250, SCAN1000;

France has currently not yet assigned responsibilities for the data sets that would fall under the data themes in the annexes to the INSPIRE directive. This is also due to the complicated relationship between the national level and the local authorities. In addition, most of the public authorities accept their responsibilities with regard to the data sets they hold, so the need is not felt at the national level to enforce INSPIRE compliance for a pre-determined list of data sets. The main concerns relate to the costs of harmonisation.

2.4.2 Data by resolution or scale range for the INSPIRE themes

Regarding the three INSPIRE annexes addressing the 34 spatial data themes France is providing discovery and view services for most of them while a number of them can be also downloaded. All metadata are based on ISO and the main providers are IGN, BRGM, Ministry of Environment and local authorities. The datasets are provided in a variety of scales and resolution according to their usage. Tests have been done for the adaptation of the data to the data specifications for Annex I of the directive, and this did not cause many problems. 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

Spatial referencing is done by co-ordinates. IGN France has made online access available for the catalogue of Spatial Reference Systems to the general public in late 2006. This catalogue is an implementation of ISO/GML standards.

The national referencing system = RGF93 (defined in Decree 200-1276 dated 29 December 2000) is mandatory since March 2009 (Decree n° 2006-272 dated 3 March 2006) in continental France. It is compatible with ETRS89.

Geodetic Datum = EUREF.

For the reference of the elevations, IGN69 (mainland), IGN78C (Corsica), and the reference of the depths is established by SHOM. (see Decree 200-1276 dated 29 December 2000).

Overseas areas:

RGR92 (Réunion), REUN89 (height)

RGFG95 (Guyanne), GUYA77 (height)

GUAD48 (Guadeloupe - St Anne), GUAD88, GUAD88LS, GUAD88MG, GUAD92LD (height)

GUADFM49 (Guadeloupe - Fort Marégot), GUAD88SB, GUAD88SM (height)

MART38 (Martinique - Fort Desaix), MART55, MART87 (height) MAYO50 (Mayotte), MAYO50 (height) ...

It is worth noting that for the next Geoportail release the overseas spatial reference systems will be the new GPS surveyed ones only (RGR92, RGFG95, RRAF91, MAYO04, STPM06):

RRAF91 covers the French Antilla

MAYO04 covers Mayotte island

STPM06 covers Saint Pierre et Miquelon island.

2.4.4 Quality of the data

No information has been found nor provided. Some elements are now available on CNIG Website.

SHOM comply with the S44 standard of IHO for their surveys and with the relevant publications of the IHO (M3, M4, S57, ...) for the cartographic quality. This includes an internationally agreed qualification for the surveyors and the marine cartographers set by FIG, IHO and ICA.

2.4.5 Interoperability

Interoperability is one of the main concerns of the main actors in the development of the French NSDI.

Since the RGE is developed from data coming from various sources, geometric and semantic interoperability is an important point of attention. Typical examples involve data from cadastre, and data from local authorities that are to be integrated in the RGE. On the other hand, the ADAE with the help of CNIG has developed a common interoperability framework that includes a GI section. IHO has developed a full set of principles for the electronic navigation charts aiming at providing the necessary interoperability for the seafarers of these ENC produced by different States (in particular

the WEND (Worldwide Electronic Navigation chart Database) or the IHO S52 publication). SHOM complies with these internationally agreed principles.

Some Ministries (MEDD) and agencies (BRGM, IFN,...) have already implemented some interoperability protocols (mainly OGC/ISO WMS and WFS) on their servers. BRGM's Infoterre portal has been completely based on OGC standards, with a view to full interoperability.

IGN has coordinated the INSPIRE pilot project called SDIGER (2005-2006), aiming at interoperability for metadata, data access and distributed systems architecture in the frame of the development of a trans-boundary inter-administration multilingual infrastructure for the Water Framework Directive on the Adour-Garonne and Ebro river basins. Next, BRGM is part of the OneGeology consortium, aiming at interoperability between the datasets held by the Geological Surveys in the world, and the OneGeology-Europe project, which acts as a pilot for the INSPIRE data specifications.

Currently the French forum for OGC (created in 2008 by BRGM and IGN) is committed in promoting interoperability among French data providers. The OGC specifications involve, CSW, WCS, WFS, and WMS (<http://www.forumogcfrance.org/spip.php?rubrique24>). The forum also organises a yearly workshop, the Day of the French geospatial interoperability where different organisations present their progress towards interoperability status (<http://www.forumogcfrance.org/spip.php?rubrique42>). The French OGC Forum is used as an intermediate between the issues of the different members, data and service providers on the one hand and OGC international on the other hand. BRGM and IGN take an active role in the forum, without holding the control over it. In addition, the Ministry of Environment, Energy and Sustainability have started a Commission for Standardisation, addressing semantic and technical interoperability.

2.4.6 Language and culture

French

For the ENC, English is mandatory (IMO requirement) and a second layer is populated in French language.

2.4.7 Data Content

For ENC see the chart content specification included in the S57 IHO publication.

2.4.8 Geographical names

SHOM complies with national rules (transliteration, National Toponymy Committee, TAAF toponymy commission...) but also with IHO publication (S23, M4, ..) and with IOC/IHO GECO SCUFN (sub committee on the underwater features names).

IGN is producing BDNyme a data base containing all geo-names present in 1/25k maps, as well as BDAadresse et BDAdmin.

2.4.9 Character sets

In general French character set is used in France (Latin 9).

2.4.10 Conclusions of Component 3

Already from the previous FR'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. Regarding quality control there are some elements available on CNIG website but no standard procedures exist. Interoperability is one of the main concerns of the main actors in the development of the French NSDI. BRGM's Infoterre portal has been completely based on OGC standards, with a view to full interoperability. French is the operational language while more websites provide now information documents in 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 (Partially)
- Concern for interoperability goes beyond conversion between different data formats
- The national language is the operational language of the SDI
- English is used as secondary language (Partially)

2.5 Component 4: Metadata

2.5.1 Availability of metadata

IGN produces metadata for all its datasets but the most detailed metadata remains internal to IGN. Other data producers undoubtedly also produce metadata. Earlier observations that metadata culture was weak in France pertains especially to the fact that metadata are not systematically catalogued and advertised to be used as a key for discovery, exploration and/or exploitation of GI. This has changed with the launch of the national geoportal, and the existence of the Géocatalogue.

Metadata is part of the IHO S57 for electronic charts.

2.5.2 Metadata catalogues availability + standard

BRGM has been appointed to establish the French GeoCatalogue in relationship with the French Geo-Portal and is currently available on the geoportal (<http://www.rencontres-sig-la-lettre.fr/wp-content/uploads/2010/05/INSPIRE-Lagarde.pdf>). As a related action, a group chaired by the Ministry of Environment is establishing a freeware cataloguing solution, called geosource based on the geonetwork initiative of FAO. Geosource is proposed as a solution for the establishment of catalogues of GI resources for use by the organizations not having the ability to develop their own cataloguing system. This is an application that is freely available for the local authorities, with which they can maintain their metadata and which can be directly linked with the Geocatalogue.

Moreover, a catalogue for coastal zone GI is available (BOSCO).

BRGM is currently testing, together with JRC, the catalogue link to the INSPIRE portal, in the framework of the INSPIRE task force.

2.5.3 Dublin core metadata standards for GI-discovery

In the frame of an inter-ministerial working group (CNIG-ADAE), a discovery view of ISO 19115 complying with the Dublin Core is elaborated.

2.5.4 Metadata implementation

There seems to be no high level authority responsible for the implementation of metadata across data producing organizations (except for the maritime world where IHO commissions play an important role between the countries). However, the inter-ministerial working group (CNIG-ADAE) recommends the use of ISO/DTS 19139 in terms of XML implementation of ISO 19115.

A tool REPORTS 2003 was available free of charge on the CERTU web site (www.certu.fr) to encourage administrations (local and national) to document their GI holdings. Currently this has been replaced by the Geocatalogue of the geoportal.

2.5.5 Conclusions of Component 4

Metadata are produced for a significant fraction of geodatasets of the themes of the INSPIRE annexes. BRGM has been appointed to establish the French GeoCatalogue in relationship with the French Geo-Portal. At the same time other catalogues exist. There seems to be no high level authority responsible for the implementation of metadata across data producing organizations

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 (No)

2.6 Component 5: Network Services

2.6.1 On-line access service for metadata: discovery services

The Geocatalogue created by BRGM as part of the Geoportal provides discovery services for all data that are included in the geoportal. Next, discovery services are also available for the Infoterre portal of BRGM.

At the sub-national level, the regions, departments and communes are also starting to cooperate in the creation of geoportals to exchange geographic data. These portals are linked to the Géoportail. A number of municipalities have also launched projects to share data via web services, for example the Carmen project (<http://carmen.ecologie.gouv.fr/spip.php?article78>) for the protection of nature and biodiversity. At the regional level, CRIGE PACA is a notable example (<http://www.crige-paca.org>) where thematic data, maps and aerial images among others can be viewed and downloaded for free. At the local level, the regional organizations adapt their tools to implement the INSPIRE regulations (e.g. GéoBretagne <http://geobretagne.fr>), while updating their metadata services (e.g. Provence-Alpes-Côte d'Azur).

Primar Stavanger can be seen as a direct portal for the HOs members of this RENC and for the distributors acting on behalf of the end users (<http://www.primar.no/>).

IGN and CNIG have provided an extensive list of network services (44) with a description of their characteristics. They are provided by 12 SDI stakeholders, also at the regional/local level.

2.6.2 On-line access service for data: download services

With the launch of the geoportal, a consolidated service is available. Via the Geoportal services (http://www.geoportail.fr/en_UK/services/services.do?channelid=5063401) users can have access and download data from a number of services concerning leisure, education, professional use and public information. On the BRGM website, also non-geo-referenced data can be downloaded, such as 20.000 reports from BRGM.

At the regional level, the Conseil Regional Nord-Pas de Calais provides such a service on the Internet. CRIGE PACA has an Extranet-service (accessible by the members of the CRIGE only). Some departmental local governments are implementing such services as well. Another example is the GeoBretagne (<http://geobretagne.fr>) where users (after registration) can create simple interactive queries, edit data and maps.

A geodetic data service is available on IGN website. The OGE (chartered surveyors) are creating a new GPS service (TERRIA) compatible with IGN permanent geodetic network (based on an MOU, IGN provides corrected for TERRIA stations).

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

The French Geoportal provides a direct access to the French metadata catalogue. The catalogue itself allows retrieval and eventually links back to the view service of the Geoportal. Metadata eventually point at their download service counterparts. The Geoportal gives access through the service menu to various services including the download service (e-boutique) for reference datasets. A special mechanism has been set for linking service metadata and datasets or series metadata.

2.6.4 OpenSource software and access services

The national geoportal is developed according to OGC standards. The geoportal's API (licensed under free BSD) is a wrapper on top of OpenLayers API from the OGC. The GI on the portal is available in the most common formats and domain standards (kml, WMS, WFS). The Geoportal API delivers more than 40 million tiles per month with an average of 7000 visitors per day. The infrastructure is based on a hosting centre comprised of 70 servers and 12 firewalls, involves 3Gbps bandwidth and has a fast cache NAS (10k I/O per s) of 50Tb, a "slow" cache NAS of 50Tb and a storage of 100Tb. BRGM has also created components for web services that can be used by other public and private data and service providers.

IGN developers have contributed to Open Source projects: proj4, proj4js, gdal, geoserver, openscales and mapbuilder (patch for CRS registers). It is a general policy that IGN developed software packages made available as Open Source contributions under the CECILL licensing framework. The COGIT research laboratory at IGN has launched in June 2005 its "Geoxygene" platform (<http://oxygene-project.sourceforge.net/>). GeOxygene aims at providing an open framework compliant with OGC/ISO specifications for the development and deployment of geographic (GIS) applications. It is an Open source contribution of the COGIT laboratory at the IGN, the French National Mapping Agency. It is released under the terms of the LGPL (GNU Lesser General Public License) license.

GeOxygene is based on Java and Open Source technologies and provides users with an extensible object data model (geographic features, geometry, topology and metadata) compliant with OGC specifications and ISO standards in the geographic information domain. The support of the Java interfaces developed by the Open Source GeoAPI project is planned in a near future.

Data are stored in a relational DBMS (RDBMS) to ensure a rapid and reliable access to the system but users do not have to worry about any SQL statements: they model their applications in UML and code in Java. Mapping between object and relational environments is performed with Open Source software. At present, OJB is supported and the mapping files for the storage of geographic information in Oracle or PostGIS are provided to users.

2.6.5 Availability of viewing service(s)

The French geoportal through the Geoportail API gives access to various on-line services such as cached WMS, WMS. OpenLS (for geographical names and addresses searches); (see <http://api.ign.fr/geoportail/api/doc/webmaster/layers.html>). For performance reasons, preference is given to cached WMS. More services are to be provided such as WFS or WCS. C Viewers (client applications) make use of the API (either the JavaScript API or the Flex) to access datasets. Developers can also directly use the low-level API to get access to the datasets (for instance for the mobile devices or GIS). Access to all services is controlled by a light GeoRM implementation based on the use of an API key to be given when querying services (See <http://api.ign.fr/geoportail/api/doc/developpeur/geodrm.html>). The API not only gives access to reference datasets but also to any remote service supported by OpenLayers stack.). The Geoportal enables to co-view any external WMS fluxes.

Moreover, BRGM provides access to core geoscientific data through InfoTerre (<http://infoterre.brgm.fr>). (e.g. geological maps of 1 / 1 000 000 to 1 / 50 000, records of natural hazards and industrial data on groundwater). InfoTerre™ uses only international interoperability standards published by the Open Geospatial Consortium (OGC) and it is consistent with future technical requirements of EU Directive INSPIRE. A new version is released approximately every 18 months.

Next to these portals, there are also other thematic or regional portals that are being developed, such as the portal on environmental information, which had to be developed under the Loi Grenelle, or the regional portal at <http://www.sigale.nordpasdecals.fr/>.

A number of municipalities have also launched projects to share data via web services, for example the Carmen project (<http://carmen.ecologie.gouv.fr/spip.php?article78>) for the protection of nature and biodiversity. At the regional level, CRIGE PACA is a notable example (<http://www.crige-paca.org>) where thematic data, maps and aerial images among others can be viewed and downloaded for free. At the local level, the regional organizations adapt their tools to implement the INSPIRE regulations (e.g. GéoBretagne <http://geobretagne.fr>), while update their metadata services (e.g. Provence-Alpes-Côte d'Azur).

A Spanish and French cross-border cooperation between the two NMCA's (Spanish IGN-E and French IGN-F) published web services from each partner on the Geoportal of the other.

2.6.6 Availability of catalogue services to regulate access

IGN's metadata can be harvested from the geocatalogue service through the use of its CSW entry point (See <http://wxs.ign.fr/geoportail/csw/isoap/catalogue?SERVICE=CSW&REQUEST=GetCapabilities&>). The geoportal itself has a metadata cache from viewing datasets coming from

the geocatalogue; this cache is daily updated for IGN's metadata and is emptied for other metadata also on daily basis.

2.6.7 Availability of catalogue services that perform payment operations

Customers may purchase on line IGN maps and aerial photographs, cadastral parcels and vector datasets. In late 2006 early 2007, the Geoportail has opened an e-commerce boutique for extracting/receiving images.

With the “map à la carte”, custom-made map service, offered since June 2007, IGN internet users may order customized maps: they can personalise the boundaries of the map, the scale, the cover, the title and add on additional information.

A specific area (<http://www.professionnels.ign.fr>) is reserved for professionals to subscribe to services reserved for them: downloads of technical documents, orders and downloads of digital “image” data like the BD ORTHO® or SCAN products, and soon downloads of “vector” databases. The section reserved for the public-at-large was designed for individuals, who are aficionados of land-based or airborne activities and would like to purchase maps, photographs or the Evadeo GPS navigator developed by IGN (<http://professionnels.ign.fr/index.do>).

From the Geoportal services users have a download selection for either free or pay data such as:

IGN data

- BD ALTI®: a data repository for information on relief in France, BD ALTI® is a comprehensive range of DTMs (Digital Terrain Models) describing the shape and relief of a site at various different scales (from 1: 50 000 to 1: 1 000 000).
- BD PARCELLAIRE®: the Large Scale Land Registry parcel makeup of the data repository (RGE®).
- BD ORTHO®: The Large Scale orthophotographic makeup of the Data repository (RGE®).
- SCANS: The IGN SCANS are geo-referenced digital images instantly usable to locate users information, identify operations and overlay the user data.

Geographical Directory of communes

IGN file containing the geographical positioning of each commune's administrative centre (town hall), as well as relevant administrative information.

Geodesy

IGN Online download of geodesic and levelling data sheets as contained in the IGN database.

GEOFLA® Départements

IGN file of vectorised data mapping the borders of all departments in metropolitan France and those of overseas departments together with administrative information useful for geo-marketing, statistical and thematic cartography applications.

(http://www.geoportail.fr/en_UK/services/visu2D.do?ter=metropole)

2.6.8 Availability of catalogue services to extract and send data to a user application

Dataset metadata eventually contain a link to the download service, while service metadata contain links to the dataset's metadata they serve. It is then up to the user application to retrieve this information.

2.6.9 SDI user applications

Spatial Data Infrastructure user applications are directly linked to the geoportal's API.

2.6.10 Availability of geo-processing services

The EDIGéo library contains freely accessible software for coordinate transformations. Other transformation systems are on hold until more information is available with regard to the implementing rules from the European Commission.

A geodetic Windows application (CIRCEE) is freely downloadable from the IGN's web site. Moreover, the geoportal's 3D viewer became since December 2008 compatible with multiple platforms (Windows, Macintosh, and Linux).

Search engines based on OpenLS have been release on the 15th of March 2010 through the geoportal's API.

2.6.11 Conclusions of Component 5

The Geocatalogue created by BRGM as part of the Geoportal provides discovery services for all data that are included in the geoportal. With the launch of the geoportal, a consolidated service is available. Via the Geoportal services users can have access and download data from a number of services. The French geoportal through the Geoportail API gives access to various view on-line services such as cached WMS, WMS.

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 clear)
- There are middleware services allowing data services to be invoked (No)

2.7 Component 6: Thematic environmental data

The major players with respect to the production and management of thematic environmental data are the Directions Régionales du Ministère de l'Ecologie et du Développement Durable (MEEDDM). IFEN (Institut français pour l'ENvironnement) is a major user of these data in the sense that it provides national government services with concatenated and validated data and analyses based on primary thematic environmental data. BRGM is mandated by the MEEDDM to manage large thematic databases and make them available on the web.

Thematic environmental data produced by these organizations mostly use IGN's reference data. For the delineation of river basins, the creation of the hydrography and geo-hydrology dataset, BD-Carto was used to set up the BD CARTHAGE data base, which is jointly maintained by the water agencies (environment related attributes) and by the IGN (topographic part).

Other important nation-wide thematic environmental geodatasets include:

- Natura 2000;
- Atlas of floodable zones;
- Water (rivers, discharges, piezometrics);
- Industrial risks (BRGM)

BRGM developed the portal to the earth sciences with 10 thematic areas such as: mapping and geoinformation; mineral resources; geothermy; geological storage of CO₂; development planning and natural risks; digital information systems; water; contaminated land and waste management; post-mining and environmental metrology. It also developed the portal on environmental information for the Ministry of Environment, on the basis of the Loi Grenelle.

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

2.8 Standards

EDIGéO has been adopted as the national standard in 1994. It is an exchange standard derived from DIGEST.

National actors (BRGM, IGN, SPOT Image, SHOM,...) have all ongoing standardisation activities related to the ISO/TC 211 and OGC standards through their respective domain multi-national organisations (Eurogeographics, IHO, ...), but local actors have also investigated the use of OGC standards. The GI part of the Common Interoperability Framework established in 2005 needs to be updated in order to reflect this evolution which can be seen as a consequence of the INSPIRE initiative and more generally of the growing interest of the European GI organisation in the emerging standards. The OGC forum has been set up to address the use of standards and interoperability.

An important initiative on coordination and cooperation with regard to standards, is the Ministry of Environment, Energy and Sustainable Development working together with the Ministry of Culture, and reaching out to other ministries and local authorities to set up a Commission for Standardisation, applying INSPIRE models and developing new ones if necessary. This Commission was set up within AFNOR (French standardisation body).

2.8.1 Conclusions of Component 7

An important initiative on coordination and cooperation with regard to standards, is the Ministry of Environment, Energy and Sustainable Development working together with the Ministry of Culture, and reaching out to other ministries and local authorities to set up a Commission for Standardisation, applying INSPIRE models and developing new ones if necessary.

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 the SDI

An issue that has received extensive attention is the cross border services collaboration. French and Spanish NMAs are collaborating in the perspective of setting up seamless cross border services trying to fulfil the INSPIRE Implementing Rules taking into account their specific data policies and economic models. The following actions have been undertaken in the past, present and future:

- Participation in the SDIGER Project, an INSPIRE Pilot Project developed by a consortium (IGN-F, IGN-FI, UNIZAR, CNIG-E, CHE);

- Interchange of experiences, ideas and all kind of technical information about web services and INSPIRE implementation challenges;
- Translation of both geoportals to the other party's mother language;
- Implementation of the mechanisms needed to plug the Spanish WMS-C services in the French geoportal viewer;
- Implementation of the mechanisms needed to access the French WMS-C in the Spanish geoportal using an Application Programming Interface (API) specific solution;
- Cooperation to support the French initiative to develop an Open Source software for accessing datasets, OGC compliant, for European NMAs.

The first attempt has been to display Spanish maps coming for WMS and WMS-C service using IGNF API. These datasets were overlaid with IGNF maps and orthophotos. IGNE developed a prototype to display IGNE and IGNF datasets superimposed in the IGNE viewer by using the IGNF API. Also, this prototype enabled to include the access to Spanish WMS (WMS maps, scanned maps, orthophotos, and cadastre) and Spanish WMS-C (WMS-C maps, scanned maps, and orthophotos) and IGNF stack of maps (from 1:25,000 scale to 1:10,000,000 scale maps), ortho-imagery (from 50cm/pixel ortho-photographies to European wide imagery).

On the other hand, IGNF developed a prototype displaying Spanish data in the IGNF Geoportal viewer. IGNF added the access to *idée*-base (stack of WMS maps) and PNOA (stack of scanned maps and orthophotos) overlaid with French layers. These prototypes only address the cross-access of partners' datasets, not the full compliance with INSPIRE View Service Implementing Rules (Rodriguez et al., 2009).

3 Annexes

3.1 List of SDI addresses / contacts for France

Table: SDI contact list			
	Web address	Organisational mailing address	Over-all contact person: tel./fax/e-mail
National			
IGN	www.ign.fr	Institut Géographique National 136 bis rue de Grenelle 75007 Paris France T +33/0 1 43 98 82 70 F +33/0 1 43 8400 00	Mr. J.-M. Nataf Directeur pour les Activités Internationales et Européennes
CNIG	www.cnig.fr	136bis Rue de Grenelle, 75700 Paris 07SP	Mr. F. Salgé
SHOM	www.shom.fr	3 av O Gréard 75007 Paris	Mr. M Le Gouic
Ministère de l'Ecologie et du Développement Durable	www.enviroment.gov.fr/	20 Avenue Ségur, 75302 Paris Cedex 07	Mr. C. Ecobichon
BRGM	www.brgm.fr	3, avenue Claude Guillemin, 45060 Orléans Cedex 2	Mr. F. Robida
CNES	www.cnes.fr	2 place Maurice Quentin 75039 Paris Cedex 01	Mr. Alain Baudoin

3.2 List of references for France

Table: list of references used to compile the Country Report	
Web sites:	
French Geo-Portal	www.geoportail.fr
IGN	www.ign.fr
CNIG	www.cnig.gouv.fr
BRGM	www.brgm.fr
	http://www.sigale.nordpasdecals.fr/
	http://www.bosco.tm.fr/
	http://www.cdig-var.org/
	http://www.crige-paca.org/
	http://www.rgd74.fr/
	http://www.iaat.org/
	http://www.certu.fr
	http://www.prim.net/
	http://www.rnde.tm.fr/
	http://geomatique.georezo.net/annu.php3
	http://www.ohi.shom.fr
DGME	http://www.modernisation.gouv.fr/
AFIGEO	http://www.afegeo.asso.fr/
	http://georezo.net/blog/inspire/
	http://adullact.net/softwaremap/trove_list.php?form_cat=623
	http://www.rencontres-sig-la-lettre.fr/wp-content/uploads/2010/05/INSPIRE-Lagarde.pdf
	http://www.primar.no/
	http://www.forumogcfrance.org/spip.php?rubrique24
	http://www.forumogcfrance.org/spip.php?rubrique42

Publications:	
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	F., Salgé, E., Ladurelle-Tikry, L., Fourcin, B., Dewynter, 2009. Review of sub-National SDIs in France. An outcome of the eSDI-Net+ project. GSDI 11, 15-19 June2009 Rotterdam.
	IGN, 2008 Activity report.
	M., Gavoret, 2008. GeoBretagne. Advanced Regional SDI workshops, ISPRA, 19-20 May 2008.
	R.M., Peralto, 2008. GRISI Project. Advanced Regional SDI workshops, ISPRA, 19-20 May 2008.
	A., Rodríguez, D., Richard, F., Chirie, S., Mas, 2009. IGN Spain and IGN France Collaboration to Set Up Cross-border INSPIRE Compliant Services, GSDI 11, 15-19 June2009 Rotterdam.
	D.,Richard, 2009. IGN France Geoportal API: When Opensource Software Helps Online Access for Citizens and Third Parties Developments GSDI 11, 15-19 June2009 Rotterdam.
	M., Leobet, 2009. Implementing INSPIRE in Real Life: The French Case. GSDI 11, 15-19 June 2009 Rotterdam.
	A. Rodríguez ¹ , S. Mas ¹ , D. Richard, F. Chirié. IGN Spain and IGN France collaboration to set up cross border INSPIRE compliant services. GSDI 11, 15-19 June2009 Rotterdam.