



Spatial Data Infrastructures in *France*: State of play Autumn 2006

Country report on SDI elaborated in
the context of a study commissioned
by the EC (EUROSTAT) in the
framework of the INSPIRE initiative

(Under Framework Contract
REGIO/G4-2002-02-Lot 2)

December 2006



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Report meta-information

Title	Spatial Data Infrastructures in France: State of Play Autumn 2006
Creator	Jos Van Orshoven (SADL) & Peter Beusen (ICRI)
Date Issued	2002-12-03
Subject	INSPIRE State of Play
Publisher	K.U.Leuven (SADL + ICRI) + Margaret Hall consultant (HALL)
Description	This report is summarizing the review of SDI in France
Contributor	Jos Van Orshoven, Danny Vandenbroucke (SADL); Peter Beusen, Katleen Janssen (ICRI), François Salgé (CNIG), Jean-Michel Nataf, Marie Louise Zambon (IGN France)
Format	MS Word 97/2000
Audience	INSPIRE stakeholders
Identifier	Rcr06FRv73.doc
Language	EN
Coverage	Snapshot at 2006-12-31

Version number	Date	Modified by	Comments
1.0	2002-12-03	Jos Van Orshoven (SADL) & Peter Beusen (ICRI)	First version
2.0	2002-12-20	Jos Van Orshoven (SADL)	Completion & harmonization with 31 other country reports
3.0	2003-08-25	Jos Van Orshoven (SADL)	Addition of : <ul style="list-style-type: none"> - Report meta-information - Executive summary - Abbreviations/ Harmonisation with 31 other country reports
4.0	2004-06-24	Katleen Janssen (ICRI)	General review, correction and update of legal framework
5.0	2004-06-30	Jos Van Orshoven (SADL)	Integration of information provided by Mr. F. Salgé (CNIG) and Mr. Lagrange (IGN) and resulting from limited review of web sites. General review, correction and update Addition of table pointing to

			changes with regard to Version 3
6.0	2005-05-26	François Salgé	Proposed changes reviewed by the French liaison group on INSPIRE set-up by CNIG
6.1	2005-05-27, 2005-06-24	Jean-Michel Nataf	Proposed changes as reviewed by IGN-France
6.2	2005-07-03	Danny Vandembroucke	General review of the 2005 update, the proposed changes and consolidation
6.3	2005-08-04	Katleen Janssen (ICRI)	General review, corrections and update of legal framework
6.4	2005-09-23	Danny Vandembroucke	Final report based on some minor remarks EC
7.0	2006-12-22	Katleen Janssen (ICRI)	General review, corrections and update of legal framework
7.1	2006-12-28	Danny Vandembroucke	General review of the 2006 update, the proposed changes and consolidation
7.2	2007-02-05	Marie-Louise Zambon	Report updated due to the French Geo-Portal launch (components 3 and 4).
7.3	2007-02-12	Danny Vandembroucke	Final version and consolidation

Change matrix 2006 versus 2005

Paragraphs in which information is reported which deviates in a significant way from what was reported in the Spring 2005 version of this country report are listed in the below table. They are indicated in red.

Paragraph	Type of change
All	Restructure and reword to bring the report more in line with INSPIRE
Executive Summary	Modify to reflect changes since 2005
1.1	Modify to reflect the 2006 update
1.2	Modify to reflect the 2006 update
2.2	New section on coordination and organizational issues
2.3.3	Modify to reflect the 2006 update
2.3.6	Modify to reflect the 2006 update
2.3.7	Modify to reflect the 2006 update
2.4.3	Modify to reflect the 2006 update
2.5.2	New information
2.5.4	New information
2.6.1	Modify to reflect the 2006 update
2.6.2	Modify to reflect the 2006 update
2.6.4	Modify to reflect the 2006 update
2.6.5	Modify to reflect the 2006 update
2.6.6	Modify to reflect the 2006 update
2.6.7	Modify to reflect the 2006 update
2.6.8	Modify to reflect the 2006 update
2.6.9	Modify to reflect the 2006 update
3.2	Added references

Executive summary

In France, core and core thematic geographic data for public sector use are produced mainly at the national level by public to semi-public organizations: administrations (DGI-Cadastre, SHOM, INSEE ...), state agencies with administrative status (IGN, Météo-France, ...), state agencies with industrial and commercial status (BRGM, CNES, ...) and private sector companies (Spot-Image, , ...). Distribution of public sector information is generally based on the cost recovery principle. Aside from producing and distributing public sector information, the state agencies operate in the private (and international) market in a profit-oriented business, and compete with private data providers (Michelin, Foldex, ...) where applicable. The chartered surveyors in France (Géomètres Experts) are private sector professionals who are granted a general interest mission of delineating properties.

Due to the increasing decentralization of territorial policies and management, public users of GI are situated at sub-national (regional, departmental, “communauté urbaine” – urban communities, ...) levels rather than at national level even though environment, agriculture, defense, public work, interior, culture ministries remain very large users and undertake geo-referencing of geographical entities related to their field of responsibility. Thematic (environmental) data are collected with networks encompassing many local level actors. The national ministries act as coordinators in a top-down context but also provide general tools and procedures. The strategic importance of GI is now firmly recognized for the success of an ambitious e-government initiative, GI being itemized in the governmental action plan for e-government.

CNIG's (a consultative Council of 35 members placed next to the Ministry in charge of the Public works) mandate is among others to coordinate the data producers' activities with the needs of public users and with the general interest. Supported by the parliament (Lengagne report of 1999) and the related ministerial decision of 2001, CNIG promotes de facto the development of an organizational and technical SDI in France. It has to take into account the institutional and financial constraints according to which the data producers have to work. As a result progress towards an NSDI is slow. Currently there is no true NSDI in France.

A French Geo-Portal has been launched in 2006 (www.geoportail.fr): the DGME is in charge of the project and IGN and BRGM are responsible for the realization (View services for maps, orthophotos by IGN and Discovery services by BRGM). Other SDI stakeholders already develop their Geo-Portal (e.g. BRGM). Communication on INSPIRE is organized. Convened by CNIG a liaison group on INSPIRE is now operating to monitor progress in the co-decision process as well as in measures anticipating INSPIRE implementation.

IGN is the national mapping agency (1776 employees), also under supervision of the Ministry in charge of Public Works. IGN's RGE-project (large scale geographic reference data) can be considered as a major building block of the (future) NSDI. It aims at providing a nation-wide, high quality (metric resolution) integrated (from various sources: IGN, DGI, local governments such as communautés urbaines, ...) database of orthophotographs, cadastral parcel data, georeferenced addresses and topographic data.

IGN now has on a permanent basis a workforce dispatched on site in charge of collecting data for update of the databases and has been given the task to integrate information produced by public national bodies into the RGE.

Its use is growing as the available coverage for reference data is also growing; the objective is to complete the RGE for France and the DOM by the end of 2007. Costs of access to the RGE by users derive from the governmental decision to fund only 72% of the production costs, including updating, by subsidy and none of the distribution costs. At the local levels (régional, départemental, communautés urbaines), and in thematic areas an increased number of collaborative initiatives is set up to promote the availability and sharing of GI, to share costs and to develop GI-related services to the members and even third parties (mainly subcontractors). The relationship between those 'groupements' and the national data producers is a client-to-supplier relationship as well as in several cases a partnership relation that is established between IGN, as an integrator and local governments and data holders. Provision and use of datasets are based on negotiated bilateral agreements that may vary widely in scope and conditions, depending on the expressed needs and conditions of use and reuse.

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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
AFIGéo	French Association for GI
BRGM	Bureau des Recherches Géologiques et Minières / French geological survey
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
CT	Core Thematic Data
DBMS	Database Management System
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 »
GI	Geographical Information
GINIE	Geographic Information Network in Europe
GIS	Geographical Information System
GMES	Global Monitoring for Environment and Security
IFEN	Institut français pour l'Environnement / French Environment Institute
IGN	National Mapping Agency
IHO	International Hydrographique Organisation
INSEE	National Statistical Institute
INSPIRE	INfrastructure for SPatial InfoRmation in Europe
LGPL	Lesser General Public License
MEDD	Ministère de l'Ecologie et du Développement Durable
NSDI	National Spatial Data Infrastructures
NSHC	Regional Hydrographic Commission for the North Sea
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
SDI	Spatial Data Infrastructures
SHOM	Service hydrographique et océanographique de la marine / French Hydrographic Office
WEND	Worldwide Electronic Navigation chart Database
WFS	Web Feature Service
WMS	Web Mapping Service

1 GENERAL INFORMATION

1.1 Method

This report results from a partial review of SDI in France, and aims at reflecting the degree to which the SDI situation in France is similar to the ideas set out in the INSPIRE position papers¹ and in the more recent INSPIRE scoping documents.

The report is 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 has 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 into the present report by integrating comments from CNIG and IGN.

The 2005 version of the report has 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 has 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 describes the state of play as it is seen and understood by SADL. The report does not give an official point of view of the French authorities or INSPIRE stakeholders.

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 is not a full updated report. The report should be reviewed in 2007 by the other stakeholders to better reflect the ongoing changes.

1.2 Key players on the NSDI-scene in France

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 are being undertaken. The major areas of policy that are relevant to these initiatives are:

- Policies relating to the development of the Information Society. The French agency for development of electronic administration (**ADAE, now part of DGME – Directorate for State Modernization**) considers GI as being strategic. An action plan for the period 2004-2007 has been formulated which takes full account of the European dimension ;
- Policies related to decentralisation and
- Policies more closely linked to the development of an SDI further to the Lengagne Report of 1999 (which recommended the development and

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

maintenance of a national framework of reference at large scale (RGE) to include relevant topographic databases, the cadastre, administrative boundaries and postal addresses).

At the national level there are two umbrella organisations having the ambition to promote the development of (N)SDI:

- The Conseil National de l'Information Géographique (CNIG - National Council for Geographic Information) 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 interministerial council with representatives from all major government departments and GI-related agencies (www.cnig.fr). It convenes a liaison group on INSPIRE the role of which is currently to monitor INSPIRE progress, and contribute to the coordination of INSPIRE related actions of the French key players;
- 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>).

Due to its newly confirmed role as integrator of Geographical data owned by public authority for the constitution of the RGE, IGN will contribute to the NSDI in France. The Institut Géographique National (IGN) is the French national mapping agency for the land, SHOM being the French national mapping for sea areas. IGN 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). It is a key player in the provision of data.

The new 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. Due to this integrating role, the IGN is considered in this report to be an executive key player of the emerging national French SDI. **During summer 2005, IGN launched a Geoportal project ("Geoportail"). In April 2006, IGN and BRGM entered into a Geo-Portal partnership agreement. In June 2006, a Geo-Portal charter "Charte du Geoportail" was agreed by DGME, IGN and BRGM and the French Geo-Portal was officially inaugurated the 23th of June 2006.**

BRGM, has been promoting SDI concepts through InfoTerre (<http://infoterre.brgm.fr>) programme since 2001. InfoTerre provides access to data sources managed by BRGM through interoperability standards (OGC and ISO), with a free access to view most of the geo-scientific information available (including geological maps).

In addition to these national organisations, approximately one hundred *Comités départementaux de l'information géographique* (Departmental Committees for GI) were

established between 1994 and 2002 but only few of them are effectively active with regard to SDI issues, with several more also set up at the higher regional and lower local levels. Local SDI initiatives are indeed increasing and provide data services for cadastral information, orthophotographs and topographic data to local partners. Examples include 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.

The Ministry of Economy, Finance and Industry is responsible for the cadastre and national statistics (DGI). Nautical charts are under responsibility of the Ministry of Defence (SHOM).

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.

A significant coordinating role in matters of information policy is played directly by the government through the offices of the **General Directorate for State Modernization (DGME) of the French Economy, Finance, and Industry Ministry**. As a result of the governmental action plan for e-government (ADELE) a working party defined in 2004 three governmental GI services that should be created. As a result of work in 2005, a Geo-Portal is proposed as well as a governmental service for the integrated coastal management and another for the general public. Decisions are awaited for further developments. **In June 2006, a Geo-Portal was launched with View services (developed by IGN). In November 2006, Discovery services were accessible (developed by BRGM).**

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 plays a key role for providing images and data to be used for GI production.

Several French actors are involved in European or international projects having direct links with Inspire.

For example, BRGM is involved in the development of GI interoperability through its membership in the Open Geospatial Consortium, the representation of EuroGeosurveys (the association of European geological surveys) in INSPIRE expert group. BRGM also takes part to the ORCHESTRA integrated project (<http://www.eu-orchestra.org/>): the overall goal of ORCHESTRA is to design and implement an open service oriented software architecture that will improve the interoperability among actors involved in Multi-Risk Management.

IGN is in 2005 coordinator of the INSPIRE pilot project called "SDIGER", financed by EuroStat to test INSPIRE concepts on a concrete case derived from the Water Framework Directive in cooperation with MEDD, water basin agencies in France and Spain, and

Spanish academic and institutional partners. The goal is to develop a transboundary multilingual inter-administration distributed infrastructure on the Adour-Garonne and Ebro river basins. IGN also has been and is involved in several INSPIRE relevant projects financed by the UE: CLC2000, EuroSION and its follow up Messina, ETC-TE, etc.

CNES is involved in the GMES (Global Monitoring for Environment and Security) initiative promoting the use of GI at the European level through the establishment of a legal, financial, organisational and institutional framework to ensure the functioning and evolution of space and ground infrastructures to produce information in support of EU policies for Environment and Security.

2 Details of NSDI related concerns and of IGN-RGE as a possible nucleus for the French NSDI

2.1 General information on RGE

The initiative to have a large scale (metric resolution) base map (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 are 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 complimentary to the RGE but also considered of high priority:

- Nautical charts;
- Maritime data: it is interesting to note that the Interdepartmental Committee for the Sea (CIMER 2003 chaired by the Prime Minister) and the Interdepartmental Committee for the Development of the Territory (CIADT 2004) have both required from SHOM and IGN to constitute the base of the RGL (L for littoral) for an area covering schematically 10 km on both sides of the coastline
- Geological data;
- Socio-economical data (NSI).
- Agri-environmental data

2.2 Component 1: coordination and organizational issues

2.3 Component 2: Legal framework and funding

2.3.1 Legal framework

Working groups have translated the Lengagne report in a set of possible actions. A number of these were confirmed by a prime minister office decision in February 2001. The decision:

- extends the traditional mission of the IGN to include the integration of reference data from various sources,
- confirms the role IGN has to play in developing commercial value adding services and in allowing third parties to develop such services using IGN data at financial conditions which are similar to those applied internally at IGN,
- defines the RGE as the most precise nation-wide 'référentiel' to be developed for 2007,
- defines the need to cooperate with DGI for establishing the parcel component of RGE,
- confirms the role of IGN in research and education and in European GI-policy development,
- confirms the role of IGN in the modernisation of the public services,
- reinforces the role of the Steering Committee (Conseil d'Administration) and hence the independence of IGN,
- reinforces the role of CNIG (consultative body to the Ministry of Public Works and representing the public sector users of GI) as the coordinator of users' needs and producers' capabilities,
- states that the establishment of the RGE is the priority goal for IGN for the next few years.

Based on this decision, IGN has signed (September 2003) with the government a contract with concrete objectives for the period 2003-2006: database establishment, quality requirements, ... This contract is based on an economic model in which IGN must recover part of its funding from the users (28% in the case of the RGE). This only confirms the role of IGN to produce and integrate the RGE that will provide the reference data needed for a national spatial data infrastructure. It is not to be interpreted as a mandate to develop an SDI as such, but rather the needed reference data infrastructure as an SDI is not limited to the production of reference data. IGN also has since 22 November 2004 confirmation of its integrating role, and is called upon to contribute at national and international level to the organization and standardization of geographical information.

2.3.2 Public-private partnerships (PPP's)

A number of PPPs have been established throughout the years. The DGI, for example, launched in 1990 a Digital Cadastral Plan project to vectorise its paper-based holdings through a series of partnerships with local authorities and utilities. A framework contract with the national interested parties was signed in 1994 under CNIG auspices. Another example is IGN and SHOM, which confer the distribution of their information to various private companies, whilst strictly monitoring both information and product quality.

Commercial firms are thus involved as creators of value-added products, but also as primary producers of GI (e.g. private surveyors for cadastre).

The Mandelkern report (see below) – which is referred to by several SDI stakeholders, while being of less importance to others² - recommends that public administrations that hold non-essential data and for whom data dissemination is mission-critical, should commercialise their data through PPPs.

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 for the charging of data access.

In 1999 the Mandelkern report made the case for a policy of active dissemination of PSI by recommending that (1) *essential data*, defined as those necessary to all French citizens and residents to exercise their rights (e.g. legislative, statistical and some geographical data), should be accessible free of charge. It also recommended that (2) all agencies working for the public sector, i.e. including the utilities and private companies when working on a contract paid by the public sector, have the obligation of disseminating *essential data*, and that (3) each organisation must submit to the government and to an independent panel a list of the *essential data* it holds already in digital format, and a digitisation plan for that held in analogue format. As far as *non-essential data* is concerned, the report envisages a two-tier structure, one for agencies like IGN, SHOM, BRGM and Météo-France for which data dissemination is mission-critical, and another for the rest of the public administration. The former will be allowed to commercialise data directly, while the latter will have to do so through PPPs. In any case, the report recommends that pricing should encourage usage.

In France, GI is recognised as an important element of PSI. The Mandelkern report and the Lengagne report (see below) had the intention of significantly increasing the

² During on the implementation of the PSI Directive in France, part of the discussions made reference to this report.

dissemination of PSI and GI. The content, role and impact of the Mandelkern report initiated a lot of controversial comments and discussions in France. Nevertheless it can not be denied that it played a role in preparing the PSI implementation and the consequences for the GI sector.

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>).

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 a 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 yourself. 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 Licencing 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.

The French national mapping agency IGN is a member of the EuroGeographics association (a paneuropean association of the national mapping and cadastre agencies), which has been focusing on the increasing need to harmonise both technical specifications, and licensing terms under which users can access different national datasets. Development, distribution and value added reseller agreements for the EuroGlobalMap and EuroRegionalMap have for example been finalized in 2004-2005. Work is under way within its “legal and commercial” expert group to pursue the goal of license harmonization.

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, ...

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>).

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 (see 2.2.12): 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.

The core activities including updating to develop the *Référentiel Géographique à grande Echelle* (RGE) are partially (72%, governmental decision) funded by the government. Distribution is not subsidized at all. As a consequence, users have to bear significant cost to access to the RGE.

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.

Partial public funding applies to the IGN, which approximately has a 40 % independent budget (budget of IGN is 123 M€ from which 51 M€ from sales for 2005). The income is therefore divided into subsidies and sales revenues.

Although the INSEE has a policy of data dissemination at the cost of reproduction, some commercial datasets (e.g. the SIRENE database) are charged differently.

Barter funding –whereby the local government and the utilities fund some areas- occurs for example with the vectorisation of cadastral maps.

Pricing

Official French policy dictates that each public authority must recover its marginal costs. The INSEE, for example, has by and large a policy of data dissemination at the cost of reproduction, although some commercial datasets are charged differently. Free access on the Internet to statistical data is a main element of INSEE data policy.

According to French law, access to the cadastre is provided free for citizens at the point of consultation (e.g. city hall) and is charged 10€ for a copy either paper or digital but not for commercial purposes.

But these pricing policies are said to have had damaging effects on the affordability of spatial data in France. The IGN, for example, had a pricing policy that is perceived by some to increase commercial revenues at the expense of increasing the use, coverage and range of products.³ The government therefore commissioned a review of its operations in April 1999. The outcome was the “Lengagne report”, which recommends refocusing the operations giving priority to the completion and maintenance of national coverage for key datasets. Moreover, it recommends “that public subsidies be clearly targeted for the completion of these tasks, while fees charged are dedicated to updates and maintenance

³ In this context of price criticism, it is worth mentioning that on pricing of European products like EuroGlobalMap (1/1000k) or EuroRegionalMap (1/250k) IGN, is practicing comparatively cheap prices. For ERM, France costs 0,03 € per km², versus 0,04 for Germany, 0,11 for Denmark, 0,15 for Belgium and Luxemburg, 0,2 for Ireland and 0,24 for Northern Ireland. Same for EGM where France is cheaper than Germany of UK, in spite of its larger size, and hardly more expensive than Sweden, Finland and Northern Ireland, of much smaller area

of the database. This approach, together with a charging mechanism based on the volume of the requests and the copyright royalties, would reduce the unit cost to consumers and increase the use among final users and value-added resellers”.

While the Lengagne report focuses on the IGN, a more wide-ranging cross-sectoral review of data policies in the information society was published in 1999. This “Mandelkern report” argues that while the nature of digital information –by making the marginal cost of reproduction virtually zero- points to a policy of cost-free access to information, there are significant financial and commercialization costs for public sector agencies to keep abreast of technology and maintain quality of service once they move on-line. This suggests that some form of charging may be necessary, and different scenarios are explored, including the use of partnerships, advertising or end-user fees. In any case, the report recommends that pricing should encourage use, and be based on volume to reduce charges and commercial opportunities for the private sector. This report undoubtedly influenced the way of thinking on these topics.

The French Government established in November 2004 a new decree which provides the new general interest mission to IGN and the principles for pricing and charging which should encourage data use on the one hand and promote transparency and non discrimination of customers on the other hand, while ensuring that over their life time, the products garner no higher income than the cost of their production and update. **IGN sets its prices annually and distributes its catalogue at the beginning of each year (see . The prices are discussed within commercial management. For instance, regarding the large scale reference database, there were three different methods for determining the price: for end users, the price depended on the square miles that were covered; for internal use purposes the price was determined by the costs that IGN incurred; and for the commercial use, prices depended on the quantity of data, the software functionalities and the commercial sales.**

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)

The Ordonnance of 6 June 2005 on re-use of PSI states that if charges are made for the re-use, a license has to be available, which holds the conditions for the re-us. These conditions can only put restrictions on the re-use for the purpose of the general interest, and in a proportionate way. Model licenses should be available.

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;
- GEOROUTE, road navigation, including addresses, data base. The address part is to be a first release, version 0, of the address component of the RGE.
- BD ORTHO, an orthoimage coverage of France, at 50cm ground pixel size, consistent with BD Topo, this too has been turned into an RGE component. The first edition covers the entire territory and the second edition is under process with new Orthophotos covering 1/5 of the territory each year.
- BD-TOPO: metric resolution, equivalent scale of 1:10.000. BD Topo is kept up-to-date by map sheet. BD Topo has been turned into a component of the RGE, and is covering 60% of the territory by end 2004

2.4.2 Data by resolution or scale range for the INSPIRE themes

The datasets available are not yet organized per theme of the INSPIRE annexes.

Components	Type	Inspir e priori ty	Organisat. acting	European	National	Regional	Local	Other : indicate scale	Comments
Geographical location									
Geodetic reference system	REF	H	IGN SHOM	compatibl e	X X				
Equipment géodésique			IGN OGE Urban communit ies		X X		X		OGE just launched its TERRIA project which aims at providing a differential GPS service over France
Geographical names	REF	H	IGN DGI SHOM		X X X				
Place names (toponymie)			IGN DGI SHOM		X X X				
Geographical grid	CT	H							
Administrative units									
Official administrative units	REF	H	INSEE		X				
Administrative boundaries			IGN SHOM		X X				
Blocks and census districts	REF	M	INSEE- IGN		X				
Properties, buildings and addresses									
Properties	REF	L	DGI		X				
Cadastre			DGI		X				
Buildings	REF	L	DGI IGN		X				
Buildings & other facilities			DGI IGN Ministries		X X				

Components	Type	Inspir e priori ty	Organisat. acting	European	National	Regional	Local	Other : indicate scale	Comments
Addresses	REF	H	INSEE, DGI- DGCP, laPoste, IGN Local governme nts SDIS		X		X X		Services départementaux incendie et secours
Road addresses			INSEE, DGI- DGCP, laPoste, IGN METATT Conseils généraux		X X X X X		X		Ministry of public work
Elevation									
Elevation	REF	H	IGN		X				
Relief (orographie)			IGN		X				
Altimetry			IGN		X				
Bathymetry	REF	H	SHOM		X				
Coastline	REF	H	IGN- SHOM		X				
Hydrography									
Hydrography, river, lake....	REF	H	MEDD			Reference d to BD- Carto			
Water									

Components	Type	Inspir e priori ty	Organisat. acting	European	National	Regional	Local	Other : indicate scale	Comments
Land surface									
Ortho-images	REF	H	IGN		X				
Aerial photos			IGN IFN		X				
satellite images	CT	M	CNES SPOT Image	X					
Natural resource									
Water catchments	CT	H	MEDD			Reference d to BD- Carto			
Groundwater bodies	CT	H	MEDD			Reference d to BD- carto			
Soil	CT	H	INRA		X				
Geology	CT	H	BRGM		X				
Climatic regions/data	CT	L							
Bio-ecological regions	CT	M	MAAPAR						Ministry of agriculture
Vegetation	CT	L	IGN IFN		X				
Land Cover	CT	H	IGN		X				
CLC Land Cover			IFEN		X				
Transport									

Components	Type	Inspir e priori ty	Organisat. acting	European	National	Regional	Local	Other : indicate scale	Comments
Transport networks	REF	H	IGN METTAT CG		X X			X	See RIU Conseil généraux (départements)
Road lines			IGN METTAT CG		X			X	
Railroads			IGN RFF		X				
Transport facilities	REF	L	IGN		X				
Facilities		M							
Location of facilities	CT	M							
Location of utilities	CT	M							
Communication lines									
Energy lines			IGN-EDF		X				
Land use regulation									
Protected areas	CT	H	MCC METATT						Ministry of culture and communication
Land regulation/Land use plans	CT	H							
Natural risk zones	CT	L	MEDD						
Demography									
Demographic attribute data	CT	H	INSEE						

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 (Decree 200-1276 dated 29 December 2000)

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

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.

IGN coordinates 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.

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 toponymu 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 BDAdresse et BDAdmin (all in all, all geographical name information is in the future BDUUni, normally out in 2006).

2.4.9 Character sets

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

2.5 Component 4: Metadata

2.5.1 Availability of metadata

IGN produces metadata for all its datasets but the detailed metadata remains internal to IGN. Other data producers undoubtedly also produce metadata. The observation 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 is now changing as many actors act locally to gather information on geographical dataset availability.

Metadata is part of the IHO S57 for electronic charts.

2.5.2 Metadata catalogues availability + standard

A metadata catalogue covering important geodatasets of IGN, BRGM, ... has been available at the CNIG web site for many years but as it was not easy to maintain CNIG changed its strategy: it stimulated data producers to document their assets and in order to facilitate cataloging CERTU was asked to develop a software for cataloging geographical data (REPORTS) that is largely in use at both national and local governmental levels (see below).

An inter ministerial working group co-ordinated by CNIG and ADAE (now DGME) has established a recommendation related to GI Metadata based on ISO 19115 and ISO/DTS 19139 and covering discovery, cataloguing and exploitation of metadata.

BRGM has been appointed to establish the French GeoCatalogue in relationship with the French Geo-Portal. As a related action, a group chaired by DGME 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.

A catalogue for coastal zone GI is available (BOSCO).

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).

A tool REPORTS 2003 is available free of charge on the CERTU web site (www.certu.fr) to encourage administrations (local and national) to document their GI holdings. The Geosource initiative is expected to be the follow-up solution to REPORTS.

The inter-ministerial working group (CNIG-ADAE) recommends the use of ISO/DTS 19139 in terms of XML implementation of ISO 19115.

2.6 Component 5: Network Services

2.6.1 On-line access service for metadata: discovery services

For IGN, Metadata access uses CS-W2 as service and a profile of ISO19115 implemented in ISO 19139. This will cover all reference data and core thematic data (on-going work).

IGN data is documented on the GDDD service operated by EuroGeographics and, in a limited way, on its own website at the address http://www.ign.fr/affiche_rubrique.asp?rbr_id=753&lng_id=FR . This GDDD metadata on reference data for France is however somewhat outdated. EuroGeographics has a new, ISO 19115 compliant, metadata service called EuroMapFinder operational since May 2005. IGN plans to get plugged to EMF service through their protocol (remote metadata service). Within the Geoportail project, IGN has opened a CSW-2 service for the GeoCatalogue (BRGM). This service allows browsing of OGCCORE and ISO19115/19119 profiles. It only grants access to the GeoCatalogue. Multi-lingual metadata are served only for the pan-european products like EuroRegionalMap and EuroGlobalMap.

Some metadata services exist at local level (e.g. Provence-Alpes-Côte d'Azur). ADAE is considering adding a GI resources part in its public digital resources project called ENTALIA (that will be based on Dublin core).

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.

BRGM provides ISO19115 compliant metadata for its thematic datasets.

2.6.2 On-line access service for data: download services

Such services are not available at the national level for reference data.

IGN intends to provide such a service by the end of 2007. The intended use is WMS for all reference datasets, but with an authentication and authorisation service; WFS for all vector datasets with the same rules for getting access to. The Geoportail gives access to the general public through a non standard interface, it is foreseen to open during the course of 2006 a WMS-C service without the authentication and authorisation service.

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.

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.

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

IGN has it internally at this stage. A link might be provided on the IGN's web, but it is foreseen for the next three years.

2.6.4 OpenSource software and access services

IGN developpers have contributed to Open source projects: geotools, geoserver, mapbuilder.

The Geoportail project is and will be mainly based on open source components such as PostgreSQL and the spatial engine postGIS (present), GeoServer for the OGC services (future), GeoNetwork for the CSW service (future). These components might be interchanged by other opensource componets during the course of the developments.

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 a open source contribution of the COGIT laboratory at the IGN (Institut Géographique National), 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)

Limited initiatives are being taken, e.g. <http://www.sigale.nordpasdecalais.fr/>.

BRGM provides access to core geoscientific data through InfoTerre (<http://infoterre.brgm.fr>).

IGN intends to provide such a service by the end of 2007. The intended use is WMS for all reference datasets, but with an authentication and authorisation service; WFS for all vector datasets with the same rules for getting access to. The Geoportail gives access to the general public through a non standard interface, it is foreseen to open during the course of 2006 a WMS-C service without the authentication and authorisation service.

2.6.6 Availability of catalogue services to regulate access

No information has been found.

See Primar Stavanger website

2.6.7 Availability of catalogue services that perform payment operations

Customers may purchase on line IGN maps and aerial photographs. This is progressively extended to digital products, for example: www.parisvudavion.com.

In late 2006 early 2007, the Geoportail has opened an e-commerce boutique for extracting/receiving images.

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

No information has been found.

It is foreseen in the Geoportail services architecture by the end of 2007.

2.6.9 SDI user applications

No information has been found.

It is foreseen in the Geoportail services architecture by the end of 2007.

2.6.10 Availability of geo-processing services

The EDIGéo library contains freely accessible software for coordinate transformations.

A geodetic Windows application (CIRCEE) is freely downloadable from the IGN's web site.

2.7 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 2 years ago 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.

2.8 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 (MEDD). 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 MEDD 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).

A metadata catalogue will be operational soon for the theme 'Water'. The initiative is with the Direction de l'Eau of the Ministry of Ecology and Sustainable Development.

Other important nation-wide thematic environmental geodatasets include:

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

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	<a href="http://www.enviro
nnement.gov
uv.fr/">www.enviro nnement.gov uv.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/

Publications:	
	GINIE: Geographic Information Network in Europe. <u>Spatial data infrastructures: Country Reports FINAL D 5.3.2(b)</u> . September 2002
	Country visit on SDI in France. Compiled by K.U.Leuven (SADL + ICRI) and Hall consultant in the scope of Activity 2 of the State-of-Play study of NSDI in Europe. August 2003.