**United Nations Committee of Experts on
Global Geospatial Information Management**

Compendium of good practices
for national institutional arrangements

Framework Application - Good Practices

The proposed overarching framework of NIA instruments comprised thirteen instruments that were intended to support structural or managerial institutional arrangements. To better understand how these instruments can be used effectively to support geospatial information management in practice, examples of good practices of these instruments were prepared.

The notion of a 'good' practice is highly subjective: it is a consequence of any number of variables including political stability, resource commitment, effective governance and management structures, application of guiding principles for geospatial information management[1], etc. The reported practice represents an example of a 'good' practice because it demonstrates outputs or outcomes that facilitate geospatial information management in that country. This contextual assessment implies that what might be a good practice for one country may not necessarily be transferable to another country.

The instruments of the overarching framework for NIAs were applied to Member States with geographical representations of the UN-GGIM's five regions (UN-GGIM Africa, UN-GGIM Americas, UN-GGIM Arab States UN-GGIM Asia-Pacific, UN-GGIM Europe) to present good practices for each NIA-instrument and to derive principles and guidelines from these practice presentations.

A minimum of three good practices for each type of NIA-instrument were collected. The collection criteria were the following: 1) Relevance of the practice example clearly showcasing the meaning of the application of the NIA-instrument; 2) Availability of information from reliable sources (e.g. policy documents, official websites, documents stored in the UN-GGIM Knowledge Base, etc.); 3) Currency – practices older than 10 years were considered to be outdated except those that very clearly showcase the meaning of the instrument; and 4) Geographical representation of all the good practices as per the UN-GGIM's five regions.

In total, 61 key examples of good practices of NIA-instruments have been identified and described of which twenty are from the UN-GGIM region Europe, sixteen from Asia-Pacific, seventeen from Americas, five from the Africa, and three from Arab States.

The descriptions were based on a standardized template. This template was designed so that those who have an interest in good practices of NIA-instruments would find the content accessible and easily understood. The template contained the following topics: Title, Country, Type of NIA-instrument, Aim, NIA-instrument description, Background, Use, Good practice motivation, a visualization illustrating the NIA-instrument practice, and Reference. These topics together introduce a good practice of a specific NIA-instrument in one of the Member States. Section 1 shows the standardized template with simple guidelines.

The table below presents an overview of all described key examples of good practices for each NIA-instrument followed by country and title of the good NIA-instrument practice. Section 2 presents the descriptions of all the collected key examples of good practices for each NIA-instrument

Overview of all described key examples of good practices for each NIA instrument

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[1] UN-GGIM Secretariat – Statistics Division (2015). The Statement of Shared Guiding Principles for Geospatial Information Management.

NIA-Instrument	Country	Title
S1. Establishment of coordination Functions/ entities	Mexico	Coordination of the National Information System Statistical and Geographic
	New Zealand	A Clear Geospatial Governance Framework
	Panama	Coordinating structure of the National Spatial Data Infrastructure of Panama
	Spain	SIGPAC Coordination Board
S2. Reshuffling division of competences	Belgium	Reshuffling of agencies in the Belgian region of Flanders
	Czech Republic	Governmental role clarification and the development of an SDI Coordination Structure
	Portugal	Reshuffling division of competences in the Portuguese Spatial Data Infrastructure within the broader governmental reform context
S3. Establishment of a legal framework	Mexico	Legal Framework of the National Information System for Statistics and Geography
	The Netherlands	Integrated legal framework concerning planning and the environment
	Russia	Law on geodesy, cartography and spatial data
S4. Market Regulations	Denmark	Open Standard Licensing
	Rwanda	Rwanda Open Data Policy
S4. Regulated markets + S5. System for info. exchange and sharing	United Kingdom	Open data platform data.gov.uk
S5. Systems for info. exchange and sharing	Canada	Federal Geospatial Platform
	Ecuador	Spatial data infrastructure facilitating emergency response in case of earthquakes
	France	National geoportal of the French administration
	Indonesia	Coordinating Data Sharing Through Indonesia's National Geospatial Information Networks
	Kenya	National land information management system
	Mexico	Digital Map of Mexico
	Morocco	Development of governmental geoportals
	New Zealand	LINZ Data Service
	Republic of Korea	Integrated Approach Towards Data Sharing through NIIS
	Rwanda	SpIDeRR: Spatial Information and Data Portal for Disaster Risk Reduction
	Singapore	Sharing Data, Delivering Services and Building Communities in GeoPlatforms
	Spain	Cadastral Electronic Site (SEC)
S6. Entities for collective decision-making	Fiji	Fiji Geospatial Information Council
	Singapore	Joint decision-making committee with multiple Government agencies to drive geospatial development
	Slovenia	Slovenian coordination mechanism for infrastructure for spatial information

NIA-Instrument	Country	Title
S7. Partnerships	Australia	Building National Datasets Through Intergovernmental Partnerships in PSMA Australia Limited
	Canada	Canadian Ocean Mapping Research and Educational Network (COMREN)
	Japan	GSI Maps Partner Network
	Mexico	National and international arrangement signed by INEGI
	Spain	Public Agreements of the Spanish National Plan for Land Observation (PNOT)
	Sweden	Data sharing model – The Swedish Geodata Cooperation Agreement
Combined S1.-S2.-S3.	Ghana	Land administration project and subsequent reforms of the National Institutional Arrangements
M1. Strategic Planning	Australia	The Consultative Approach of Australia's 2026 Spatial Industry Transformation and Growth Agenda
	Brazil	Action Plan for the Implementation of INDE
	Denmark	Good Basic Data Everyone – A driver for growth and efficiency
	Former Yugoslav Republic of Macedonia	Strategy for National Spatial Data Infrastructure of the Former Yugoslav Republic of Macedonia
	Mexico	Programs of the National System of Statistical and Geographic Information (SNIEG or System)
	Namibia	Namibia National Spatial Data Infrastructure (NSDI): Strategy and Action plan 2015-2020
	Singapore	The Comprehensive Scope of the Singapore Geospatial Master Plan
	United Kingdom	Place matters: the Location Strategy for the United Kingdom
M2. Financial Management: Input-oriented	Bahrein	Government Investment in Bahrein Spatial Data Infrastructure
	China	Financial investments in Chinese geospatial information Management
	India	NSDI Financial Strategy and Funding Models
	Mexico	Cadastral Modernization Program
M3. Financial Management: Performance-oriented	Germany	Automated performance procedure for German SDI Monitoring
	United Arab Emirates	Geomaturity Assessment of Abu Dhabi Spatial Data Infrastructure
	USA	Geospatial Maturity Assessment
M4. Financial Management: Joined up working and cooperation	Australia/New Zealand	Australia and New Zealand Cooperative Research Centre for Spatial Information
	The Netherlands	Geonovum
	Norway	Digital Norway (NSDI) shared financing of basis geodata
M5. Interorganizational	Canada	Federal Committee on Geomatics and Earth Observations (FCGEO) and Canadian Committee on

NIA-Instrument	Country	Title
culture and knowledge management		Geomatics (CCOG) – Public Sector Geomatics Cooperation in Canada
	Canada	The Canadian Geomatics Community Roundtable and GeoAlliance Canada
	Japan	Enhanced cooperation among relevant stakeholders of geospatial information applications and services at local level
	Poland	Training cycle on INSPIRE Directive implementation
	USA	The COGO Report
M6. Capacity Building	Brazil	Capacity Building in the National Spatial Data Infrastructure of Brazil (INDE)
	Chile	Regional training workshops for managing the National System on Territorial Information (SNIT)
	Singapore	Strengthening geospatial information capacity and the use of Geospatial Information, Science & Technology

Section 1: Template for NIA-instrument practice description

This template is designed for describing good practices of the NIA-instruments. Each NIA-instrument is explained in the Annex of this template

Classification of NIA-instruments into structural and managerial instruments

Structural	Managerial
- S1. Establishment of coordinating functions or entities - S2. Reshuffling division of competences - S3. Establishment of a legal framework - S4. Regulated markets - S5. Systems for information exchange and sharing - S6. Entities for collective decision-making - S7. Partnerships	- M1. Strategic planning - M2. Financial management: input-oriented - M3. Financial management: performance-oriented - M4. Financial management: joined up working and cooperation - M5. Inter-organizational culture and knowledge management - M6. Capacity building

Title:

[*Short title briefly presenting the good practice*]

Country

[*Name Country*]

Type NIA-instrument

[*choose the name of one of the 12 listed NIA-instruments*]

Aim

[*Statement presenting the objective for implementing the NIA-instrument*]

NIA-instrument description

[*Short text block describing the NIA-instrument practice*]

Background

[*Short text block providing background information explaining the context behind NIA-instrument practice*]
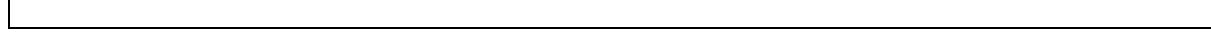
Use

[*Description of the usage of NIA-instrument in practice*]

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Good practice motivation

[*Short block describing why this is a good practice of the NIA-instrument*]

[*Add a relevant figure, image, photo, graph, or table illustrating the NIA-instrument practice*]

Reference

[Provision of *relevant publication(s), website addresses*]

Section 2: Descriptions of good practices for each NIA-instrument

Coordination of the National Information System Statistical and Geographic

Country

Mexico

Type NIA-instrument

S1. Establishment of coordinating functions or entities

Aim

Establish the participation, organization, scope and responsibilities of the actors involved in the generation, acquisition, integration, process, distribution and conservation of information and statistics and geography, which supports the national development.

NIA-instrument description

The National Information System Statistical and Geographic is defined as the set of State Entities organized through Subsystems, coordinated by INEGI and articulated by the National Information Network, in order to produce and disseminate Information of National Interest.

The System is composed by the National Advisory, the National Information Subsystems and INEGI Council as the coordinating agency. The latter directed by a Governing Board (consisting of a President and four Vice-Presidents).

The National Information Subsystems (currently: Demographic and Social, Economic, Geographic and Environment, as well as, government, public security and justice administration) aim to produce, integrate and disseminate information according to their theme(s). The Subsystems have several Specialized Technical Committees (CTE) coordinated by an Executive Committee Subsystem. The CTE act as collegiate bodies of participation and consulting created by agreement of the Governing Board of the INEGI to support the National Information Subsystem to which they are attached; in these participate the so-called "Units of the State", which are administrative areas that have the power to develop and Statistical and Geographic Activities or operate with administrative records to obtain information of National Interest:
  a) The agencies of the Federal Government, including those of the Republic Presidency and the Attorney General's Office;
  b) The legislative and judicial branches of the Federation;
  c) The states and municipalities;
  d) The autonomous constitutional bodies, and
  e) The federal administrative court.

Such Units of State participate -in the scope of its powers- in the System through the National Advisory Council, Executive Committees and CTE in the definition, development and promotion of implementation of technical standards, indicators, and information of national interest methodologies used to generate the information, taking into account national and international standards and best practices in the field.

Likewise, at state level, creating committees of Statistics and Geographical Information as bodies that allow for greater coordination among agencies generators and users of information at different levels of government, academia and the private initiative, promotes in order to have quality information, relevant, accurate and timely systemically.

Background

The National Information System Statistical and Geographic is endorsed by Article 26, subsection B of the Political Constitution of the United Mexican States.

Use

The participation in the System of the Units of the State, identified as such in the country, is given through the organs of competence and consultation defined by the Law, such as National Advisory Council, Executive Committees and CTE.

Good practice motivation

| The definition and implementation of the system's participation and consultation bodies are considered good practice in relation to NIA, since they establish the cooperation links that contribute to inter-institutional coordination and the implementation of policies, plans and strategies for The performance of the statistical and geographical activities of the country. |
| --- |
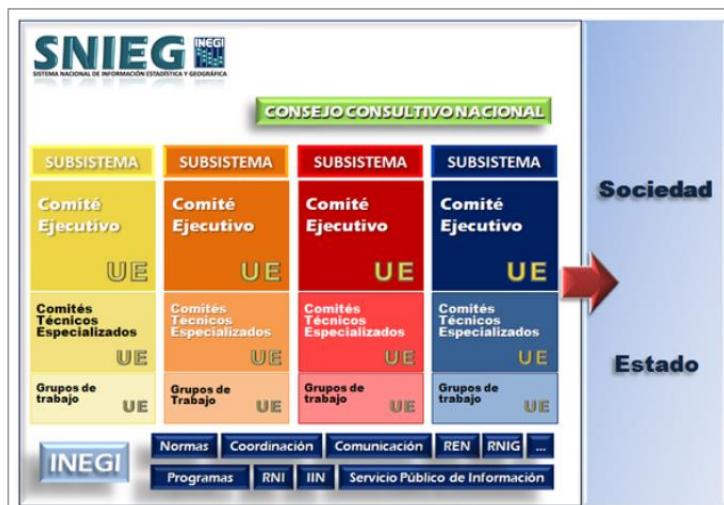
Figure**:** National Information System Statistical and Geographic

Official website of the National Statistical and Geographic Information System (SNIEG):
http://www.snieg.mx

Reference

Official website of the National Statistical and Geographic Information System (SNIEG):
http://www.snieg.mx

Rating according to their level of application (1..10), a value of 10 means that it has a strong level of application.

1	2	3	4	5	6	7	8	9	10	X

Less application ………………………………………….…… Strong application

A Clear Geospatial Governance Framework

Country

New Zealand

Type NIA-instrument

S1. Establishment of coordinating functions or entities

Aim

Clear leadership and governance is prioritized as a prerequisite to maximizing the benefits of geospatial information resources across multiple levels of government.

NIA-instrument description

NZ's Geospatial Strategy set out the need and proposed governance structure for New Zealand in 2007 (see Figure 1 below). Since then, this has been implemented with the creation of the Geospatial Executives Group to (GEG) oversee the implementation of the Geospatial Strategy. The GEG consists of chief executives or direct reports of key public agencies, as well as representatives from local and central governments and Crown entities to ensure that the wider geospatial interests of government are addressed. This is operationalized by other sub-groups and organizations and has high-level support from the NZ Cabinet.

Background

The 2007 NZ Geospatial Strategy set out the need to establish an appropriate governance structure (i.e. coordinating mechanism) that would facilitate the optimization of benefits from whole-of-government geospatial resources.
 	
The governance structure proposed to drive the implementation of the Strategy includes:
    a. A Joint Ministerial Group, consisting of the Ministers for Land Information and Information Technology, responsible for approving Strategy-related geospatial policy. The Minister for Information Technology is included given the links between the Geospatial Strategy, the Digital Strategy and E-government Strategy.
    b. A Geospatial Executives Group (GEG), chaired initially by the Chief Executive of LINZ, consists of chief executives or direct reports of key public agencies. The GEG includes representatives from local and central governments and Crown entities to ensure that the wider geospatial interests of government are addressed. The GEG's collective accountability is for the implementation of the Strategy. It also collectively:
        • leads policy and strategy development and provides inter-agency governance
        • makes decisions to achieve the geospatial vision, without compromising the accountabilities or outputs of individual agencies. Each member of the GEG is responsible for executing the Group's collective decisions by incorporating them into their agency's work programs
        • considers and coordinates all new budget initiative proposals that affect the delivery of the geospatial work program reports annually to the Ministerial Group on progress towards achieving the Strategy's goals
        • provides leadership and direction for the Geospatial Advisory Committee, Geospatial Office and any ad hoc agency working sub-groups and sub-committees.
    c. A Geospatial Advisory Committee (GAC), chaired initially by LINZ, is made up of geospatial technical and policy experts from key agencies. Their role is to advise the GEG and facilitate the interagency implementation of the decisions of the GEG and Ministers. The Committee will include Crown research institute and university representatives and representatives

from an industry forum which will be established to obtain a wider input from the New Zealand geospatial industry.

In 2010, further Cabinet decisions providing high-level emphasis on the need for clear leadership and governance structures.

Use

The New Zealand Geospatial Strategy is governed and implemented by:
- The Geospatial Executives Group (GEG) sets or amends the strategic direction of the cross-government Geospatial Strategy, monitors its progress, and identifies options for advancing the Strategy; and
- The Geospatial Senior Officials Group (GSOG) actively drives the adoption of the Geospatial Strategy work programme and oversees progress. Under the GSOG, a number of functional committees are working on more detailed actions related to the work programme of the Geospatial Strategy.
- NZ Geospatial Office (part of LINZ) is the coordinating body for implementing the NZ Geospatial Strategy.

There is clear Ministerial-level support for good governance structures. For example, in 2010, the Cabinet Economic Growth and Infrastructure Committee agreed that the Ministerial Committee on Government ICT (comprising the Minister of Finance, Minister of State Services, Minister for Communications and Information Technology and Minister of Internal Affairs) be responsible for approving strategy-related geospatial policy. In addition, to accelerate the capture of economic benefits from location information, the NZ Cabinet directed heads of State sector agencies to comply with the SDI framework, which includes the requirement that all State sector agencies who intend to tender for, or purchase new location-based information or services to consult with the NZ Geospatial Office to ensure consistency with evolving spatial data infrastructure requirements in New Zealand.

Good practice motivation

Implementing this NIA-instrument provides clear and tangible leadership of geospatial information governance – which NZ believes is directly linked to benefits optimization. Their previous experience in fragmented implementation across numerous agencies underlies this.

What this demonstrates is that endorsement at the highest level of government cultivates the requisite legitimacy (an important fundamental element in acquiring support and acceptance of public policies, and therefore procuring the necessary resources): in this instance, legitimacy was associated with the importance of geospatial information to national interests and the national economy. Indeed, not many countries in the world actually have a ministerial position dedicated to land information and NZ is fairly unique in this regard. Consequently, it also cultivates legitimacy in coordinating geospatial management.

The establishment of a governance structure from strategic oversight to operationalizing branches constitutes good practice in implementing strategic leadership. For NZ, this achieved the aim of providing a focusing mechanism for change, providing definition and scope around the issue and relevant actions required across multiple stakeholders. In addition, clear and visible leadership can also play a role in sustaining and/or fostering more legitimacy around change. Regulatory measures such as Cabinet decisions can also be seen to exert coercive pressure to induce change.

In NZ, there is also a clear "problem owner", or in this case problem "host" might be more appropriate. The NZ Geospatial Office is the coordinating body for implementing the Geospatial Strategy and provides a constant focal point to engage with all sectors of the industry and ensures that strategic decisions are enforced multilaterally to achieve the aim of coordination across whole-of-government.
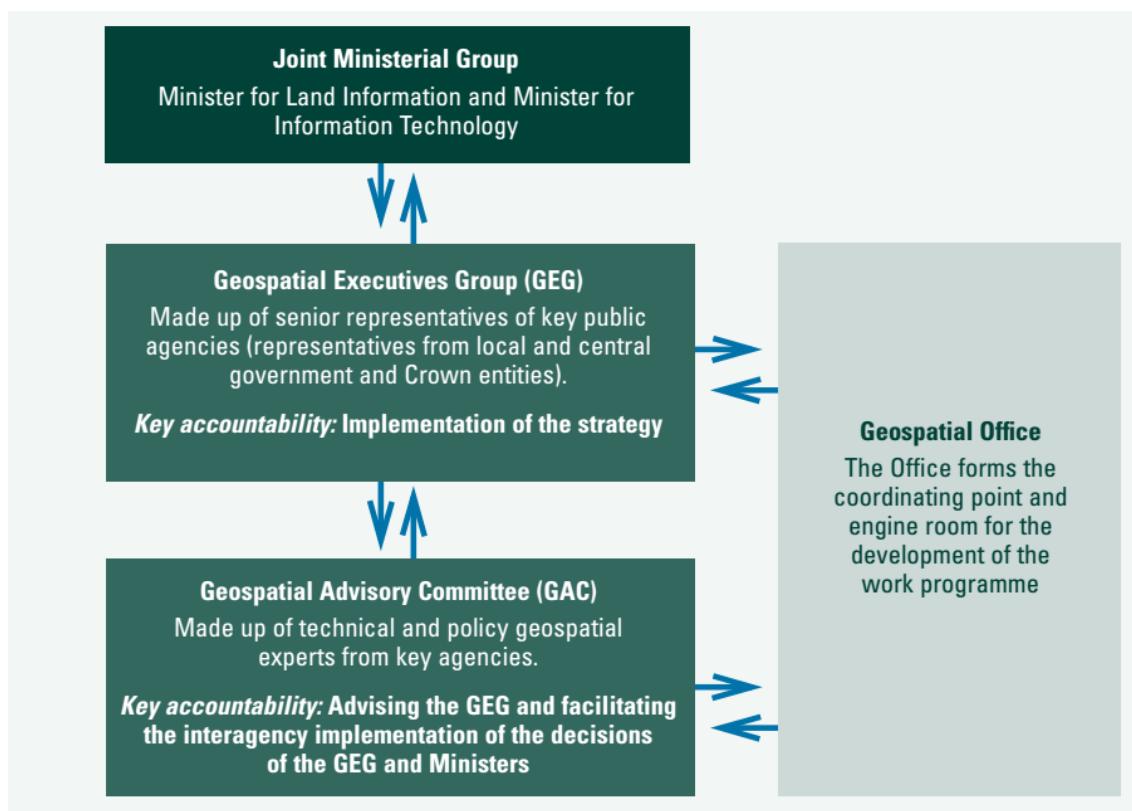
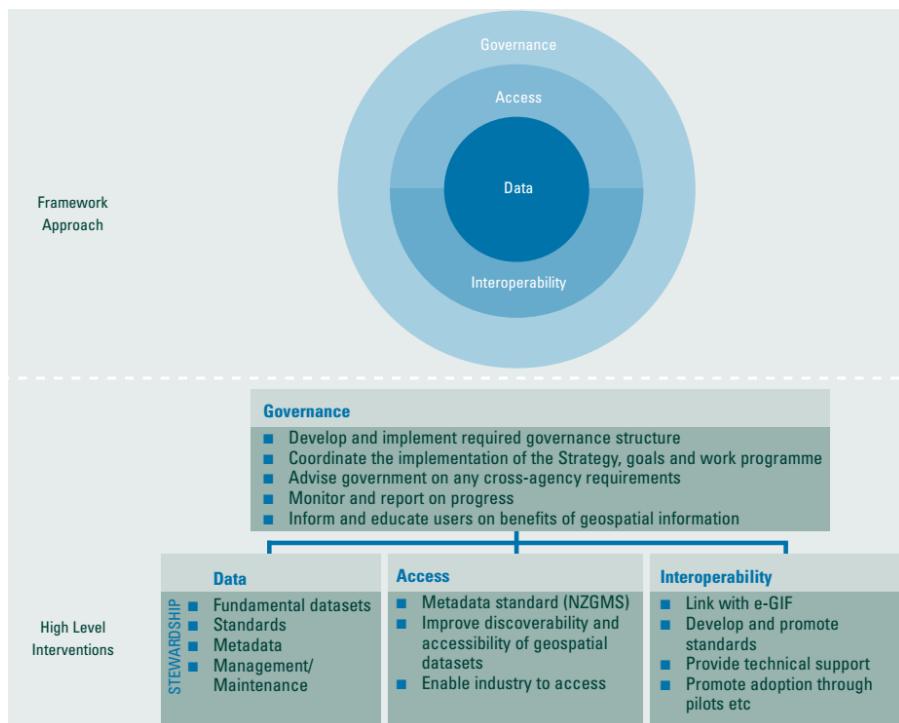Figure 1. NZ geospatial governance structure (LINZ, 2007: 23).

Figure 2. Role of governance in delivering strategic goals around data, access and interoperability (LINZ, 2007: 28).

Reference

Land Information New Zealand (2007). A New Zealand Geospatial Strategy: A Coordinated Approach to Location Information, Jan 2007. Available at: http://www.linz.govt.nz/about-linz/our-location-strategy/geospatial-strategy-for-spatial-data-infrastructure/new-zealand-geospatial-strategy

Office of the Minister for Land Information (2010). Cabinet paper: Capturing economic benefits from location-based information. Available at: http://www.linz.govt.nz/system/files_force/media/file-attachments/cabinet-paper-capturing-benefits-of-location-based-information.pdf?download=1

Coordinating structure of the National Spatial Data Infrastructure of Panama

Country

Panama

Type NIA-instrument

S1. Establishment of coordinating functions or entities

Aim

to foster a national geospatial data management policy covering production, use, access and exchange of geospatial data, to ensure interoperability between the different institutions that are member of the Interinstitutional Technical Committee, and to promote relevant policies, standards, and to strengthen organizations and human and technological capacities.

NIA-instrument description

The coordination of Panama's NSDI (IPDE - Infraestructura Panameña de Datos Espaciales) is led by the National Council on Lands, where its strategic function is concentrated. The main managerial tasks are in the hands of National Geographic Institute "Tommy Guardia" being part of the National Authority on Land Administration. The operational tasks are mainly done by the Inter-institutional Technical Committee, which operates on five distinct areas: 1) Legal framework and policies; 2) Geospatial information; 3) Standards; 4 Technology; and 5) institutional capacity building. Each area has its own working group and sub-groups.

Background

On November 1, 2012, the National Land Council, through Resolution No. 008, authorized the President of the Council to present the Executive Decree as a legal framework for approval. After 15 years of preparation, the IPDE was finally created, under Executive Decree No. 51 of February 14, 2013. The coordination of IPDE is constituted by National Council on lands, the National Land Administration Authority, National Geographic Institute "Tommy Guardia" and the Interinstitutional Technical Committee. The National Council on Lands coordinates relevant actions on an executive level, promotes nationally the awareness and application of IPDE and sets up as well as monitors work plans in order to guarantee the effective use of the IPDE. National Authority on Land Administration (ANATI) is the only competent entity in Panama to regulate and ensure the alignment and enforcement of policies, laws and regulations regarding land and other real property, regardless of whether they are privately owned or owned by state, national or municipal in addition to indigenous or collective lands. National Authority on Land Administration also recommends the adoption of national policies relating to these matters or goods. As a consultative, deliberative and technical unit, the National Geographic Institute "Tommy Guardia" is responsible for providing the basic geophysical and geographic information required for research, planning and execution of the various development projects in the Republic of Panama in accordance with the provisions presented in the Law. Interinstitutional Technical Committee manages and executes work plans to ensure the effective use of IPDE and promote its national implementation. The committee is composed of representatives of key organizations. The Committee is divided into five distinct areas: 1) Legal framework and policies; 2) Geospatial information; 3) Standards; 4 Technology; and 5) institutional capacity building. Area Legal framework and Policies focuses on the establishment of

interinstitutional agreements and legal frameworks to facilitate access and use of geospatial Information. Area Geospatial Information is about the orderly and standardized production of geospatial information in addition to managing a products catalogue. The standards area focuses on the creation and establishment of rules, procedures, guides and instructions relevant for geographic information management, the implementation and application of a national metadata profile, and the provision of advice to key organizations. Area Technology is about the establishment of the necessary protocols to ensure interoperability so as to facilitate the exchange, access and use of geospatial information, being achieved by the development of platforms and portals for the publishing geospatial information. The final area focuses on strengthening of the capacity of key organizations as well as inter-institutional relationships. Each area has its own working group and sub-groups.

Use

The coordination structure is well respected in the Republic of Panama resulting in a strong management of geospatial information.

Good practice motivation

This practice clearly refers to the creation of influencing lines of control with the establishment of new functions or entities (e.g. coordination body) with clearly allocated roles, or responsibility tasks in the Republic of Panama.

Figure: Organizational structure of Panama's SDI

Reference

Working Group on trends in National Institutional Arrangements – UN-GGIM (2015). Cuestionario sobre la Estructura de las Organizaciones de Gestión Geoespacial (in Spanish).

Working Group on trends in National Institutional Arrangements – UN-GGIM (2016). Annexes to the Report on Trends in National Institutional Arrangements in Geospatial Information Management.

SIGPAC Coordination Board

Country

Spain

Type NIA-instrument

S1. Establishment of coordinating functions or entities

Aim

Coordination of all work related to the operation and maintenance of the SIGPAC - Geographic Information System for Agricultural Parcels (Spanish Land Parcel Information System), exchange of information and incorporation of the technological innovations that are required for the better functioning of this system.

NIA-instrument description

This coordination body is attached to the Spanish organization responsible for SIGPAC (FEGA) through its President. It is chaired by the General Sub-directorate of Direct Aids of this institution. This coordination body consists of representatives of all the Autonomous Communities, the General Directorate of Cadastre of the Ministry of Finance and Public Administration, the General Directorate of the National Geographic Institute of the Ministry of Development, and the Ministry of Agriculture, Fishing, Food and Environment. The mission of this coordination body is to coordinate the maintenance of SIGPAC as well as the study and execution of the new requirements that must be incorporated into it.

Background

This body has its origin in the need to coordinate the creation and maintenance of the Geographic Information System for Agricultural Parcels (SigPAC), which began operating in 2005 in Spain.
The Geographic Information System for agricultural parcels (SIGPAC) allows geographically identifying parcels declared by farmers and herders in any aid program related to the area cultivated or used by livestock.
Initially conceived with the aim of making it easier for farmers to submit applications, with graphic support, as well as to facilitate administrative and field controls, SIGPAC has become a very useful tool in fields other than agriculture (geology, Infrastructure, urban planning ...). The reason why it has become a tool in other fields is due to its concepts and development, that it makes continuous and permanent use of the most advanced technologies in automated geographic information.
Council Regulation (EC) No 1593/2000 of 17 July 2000 amending Regulation (EEC) No 3508/92 aim is to establish an integrated administration and control system for certain EU aid programs, oblige to create a Digital Graphic System of Identification of Agricultural Plots, use computerized techniques for geographic information management, and to provide recommendations on the use of aerial or space ortho-imagery.
The regulation also provides that by 1 January 2005 each EU Member State must have a graphical database of all digitized crop plots with an accuracy equivalent to at least 1: 10,000 mapping.
In order to comply with the regulatory mandate, a Geographic Information System (GIS) for Agricultural parcels (SIGPAC) has been developed in Spain, which allows the geographic identification of parcels declared by farmers in any area-related aid scheme.
The system includes a mosaic of digital ortho-photos coming from the National Plan for Land Observation , that cover the entire national territory, on which, initially, overlapping land parcel

maps of rural cadastre, so that for each concrete reference, the system automatically provides the image on screen. The plot referenced, also allowing printing on paper.

Use

Since the regulation of the geographical information system of agricultural parcels in Royal Decree 1077/2014, of 19 December, this body meets every 3 -4 months to coordinate all work related to the exploitation and maintenance of SIGPAC.

Good practice motivation

This body consisting of members of different central and regional government and institutions, has regular meetings to coordinate the work, avoid duplications of information, and take into account the needs of all the relevant users. One of its main functions is the technical coordination of management and control actions and calendars for the subsidies paid by the Paying Agencies on behalf of the agricultural funds, in order to promote their homogenous application in all Autonomous Regions. To achieve this, SigPAC developments and planning is a key objective of this body. Coordination with the National Plan for Land Observation is also key, considering the orthophoto coverages needed in each region.
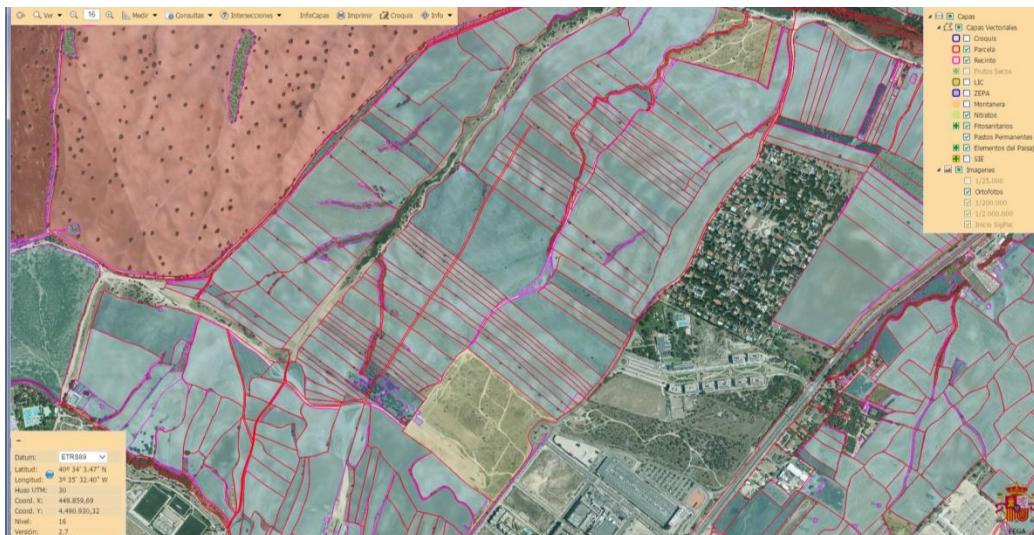

Figure: SICPAC polygons over PNOA orthophoto

Reference
https://www.fega.es/
https://www.boe.es/buscar/act.php?id=BOE-A-2014-13258&p=20150425&tn=1

Reshuffling of agencies in the Belgian region of Flanders

Country

Belgium

Type NIA-instrument

S2. Reshuffling division of competences

Aim

This NIA instrument is related to the reshuffling of competences within the Flemish government to develop a coherent and administration wide information policy, enveloping geospatial and e-government information.

NIA-instrument description

The Flemish government - a region of the Belgian federation - restructured the competences of the administration regarding e-government and (geo-)information policies in 2015 and 2016. It centralized the Agency for Geospatial Information (AGIV), the Flemish Information Channel, the e-government policy cell CORVE, the policy formulation team for geospatial information, the information policy team and parts of the archiving policy into Information Flanders, an autonomous agency within the Flemish administration. Policy concerning geospatial information is fully integrated within general information.

Background

Central to the coalition agreement of the Flemish government in 2014, a policy to integrate e-government and geographic information policies was adopted. The Flemish government adopted a two forked approach, first integrating all non-geospatial entities into the department Information Flanders and second dissolving AGIV into the former to create a new agency, i.e. Information Flanders.

Use

Concerning geospatial information, Agency Information Flanders is responsible for the development of Flemish Spatial Data Infrastructure. The Agency also provides supports to Flemish public authorities, manages core geospatial data bases, a geoportal (geopunt.be), a geospatial information exchange platform (GIPOD) and several GIS web services. The Agency is part of the Belgian INSPIRE Coordination Committee for the Flemish Region.

Good practice motivation

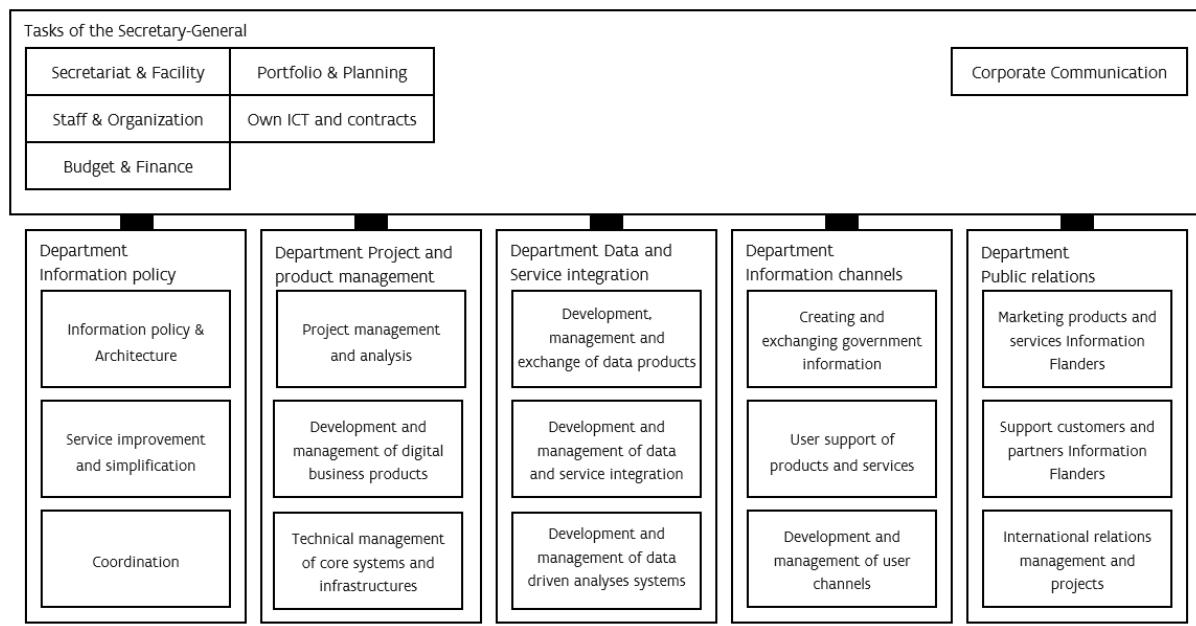| |
|---|
| The reshuffling allows to integrate spatial data information into the larger e-government framework that involves the exchange of digital (geo-)information, authentic sources, interoperability, service integration and user focused services. Moreover, it generates savings in management and investments and simplifies coordination. |

Tasks of the Secretary-General			
Secretariat & Facility	Portfolio & Planning		Corporate Communication
Staff & Organization	Own ICT and contracts		
Budget & Finance			

Department Information policy	Department Project and product management	Department Data and Service integration	Department Information channels	Department Public relations
Information policy & Architecture	Project management and analysis	Development, management and exchange of data products	Creating and exchanging government information	Marketing products and services Information Flanders
Service improvement and simplification	Development and management of digital business products	Development and management of data and service integration	User support of products and services	Support customers and partners Information Flanders
Coordination	Technical management of core systems and infrastructures	Development and management of data driven analyses systems	Development and management of user channels	International relations management and projects

Figure: Organogram of the Agency Information Flanders

Reference

https://overheid.vlaanderen.be/informatie-vlaanderen *(in Dutch)*

Governmental role clarification and the development of an SDI Coordination Structure

Country

Czech Republic

Type NIA-instrument

S2. Reshuffling division of competences

Aim

The 2009 transposition of the supranational EU INSPIRE Directive has led to a clarification and reshuffling of labour division between the key actors involved in the coordination of spatial data. This has, in return, led to the 2012 Law on the Register of territorial identification, addresses and real estates and the creation current GeoInfoStrategy of the Czech Government.

NIA-instrument description

Before the INSPIRE Directive not much action was taken place in the development of a national geospatial coordination infrastructure. The INSPIRE Directive however forced the Government of the Czech Republic to work on the development of a coordination committee, and as such to develop a clear task division between key actors. This "KOVIN " Committee (the Committee is also known as "INCOCO"), founded in 2010 (after the transposition of the Law, which was led by the Ministry of Environment), is responsible for the implementation of the INSPIRE Directive, and brings various leading actors in the geospatial field together. The key actors in this Coordination Committee are the Ministry of Environment, the Czech Environmental Information Agency, the Ministry of Interior and the Czech Office for Surveying, Mapping and Cadaster. The leading actors, which have a mandate to lead and steer the Committee are the Ministry of Environment – as chairman –, and especially the Czech Environmental Information Agency – as secretary. The Committee is responsible for the following task: - monitor the preparation of INSPIRE implementation   - assess progress in achieving the global objective of INSPIRE implementation   - analyse the results of INSPIRE implementation   - approve the INSPIRE implementation strategies, amend the implementation strategy and identify priorities for implementation   - consider and approve monitoring reports on the implementation of INSPIRE infrastructure before they are dispatched to the European Commission   - approve annual reports on the status of the INSPIRE infrastructure for the Czech Government   - approve its plan of activities and the agenda of its meetings draft the presentations to be delivered by the Minister for the Environment within the Czech Government concerning INSPIRE-related adjustments and changes reflected in the national geoinformation policy   As such, the Committee can be seen as a new structure, that is responsible for the implementation of the INSPIRE Directive and that clarifies the role of the different actors working on geospatial data – an overview of the task of the key actors can be found in the section 'Background'. As a result of this intensified and clarified cooperation, the Ministry of Environment and the Czech Office for Surveying, Mapping and Cadastre created together, in 2012, the national law on Base Registers.

Background

Before the INSPIRE Directive was transposed to the national legal system of the Czech Republic there was only limited attention for the geospatial data and the usability of this data. Nevertheless, the public authorities, professional associations and the private sector agreed on the creation of a National Geo-information Infrastructure, whereby the Ministry of Informatics had the leading role in the implementation of this Infrastructure. The plan was, together with the Ministry, however abolished in 2006. Afterwards not much action was undertaken in the field of geospatial data, until the Government was forced to implement the EU INSPIRE Directive.

The INSPIRE Directive has not only lead to the creation of a Coordination Committee, but also to the development of a clear task division between the different key actors:
- **Ministry of the Environment** is responsible for the INSPIRE implementation. The Ministry coordinates the infrastructure via the Coordination Committee.
- In agreement with **Ministry of Environment, the Czech Environmental Information Agency** is in charge of National INSPIRE Geoportal, communication with data providers, communication with the European Commission and the various national contact points of the INSPIRE Directive, and the various Technical Working Groups establishment under the Coordination Committee.
- **Czech Office for Surveying Mapping and Cadastre** is responsible for maintenance, provision and international harmonisation of data as regards surveying and mapping and integrating up-to-date reference data on location into Czech e-Government via the Base Register of Territorial Identification, Addresses and Real Estates (RTIARE).
- **Ministry of Interior** ensures that the connection is made between the implementation of the INSPIRE Directive and the overall e-government developments. Furthermore, it has prepared and now is coordinating the GeoInfoStrategy (see paragraph below).

Currently the Czech Government is setting-up a truly national spatial data infrastructure, via the "Strategy for the Development of the Infrastructure for Spatial Information in the Czech Republic to 2020" (also known as the "GeoInfoStrategy" – approved in 2014). The leading actor is the Ministry of Interior, as the government aims to make a clear connection to e-government actions which are led by this Ministry. Also the Ministry of Environment, the Czech Office for Surveying, Mapping and Cadastre and a number of other Ministries participate the development and implementation of this Strategy. The INSPIRE implementation falls under this GeoInfoStrategy.

Use

The INSPIRE Coordination Committee consists of the following 21 members – all public sector organisations:	
Person	*Role*
Representative of the Ministry of the Environment	KOVIN Chairman
Representative of the Ministry of the Interior	KOVIN Vice-Chairman
Representative of the Czech Office for Surveying, Mapping and Cadastre	KOVIN Vice-Chairman
Representative of Czech Environmental Information Agency	KOVIN Secretary
Representative of the Czech Statistical Office	KOVIN Member
Representative of the Ministry of Transport	KOVIN Member
Representative of the Ministry for Regional Development	KOVIN Member
Representative of the Ministry of Defence	KOVIN Member
Representative of the Ministry of Industry and Trade	KOVIN Member
Representative of the Ministry of Health	KOVIN Member
Representative of the Ministry of Finance	KOVIN Member
Representative of the Ministry of Agriculture	KOVIN Member

Representative of the Ministry of Labour and Social Affairs	KOVIN Member
Representative of the Ministry of Education, Youth and Sports	KOVIN Member
Representative of the Association of Regions of the Czech Republic	KOVIN Member
Representative of the Union of Towns and Municipalities of the Czech Republic	KOVIN Member
Representative of the Czech Mining Authority	KOVIN Member
Representative of the State Office for Nuclear Safety	KOVIN Member
Representative of the Energy Regulatory Office	KOVIN Member
Representative of the Czech Telecommunication Office	KOVIN Member
Representative of the Czech Association for Geoinformation	KOVIN Member

> The INSPIRE Committee functions via so-called "Technical Working Groups" (TWG). Those groups deal with the practical issues and problems of implementation, and can be established according to the needs of the overall INSPIRE Committee. Examples of those groups are the "Metadata" TWG, the "Licensing & Legislation" TWG and the "Monitoring and Reporting" TWG. As those groups are expert groups, they can rely on the support of experts, both from the public and private sector – whereby the private sector seems to be eager to be involved in those groups.

Good practice motivation

> - Previously existing organizations, with only limited activities, where reinforced via the necessity imposed on the Czech Government by the INSPIRE Directive. A supranational legal tool ensured that the Government had to clarify the role of various competing actors, whereby cooperation and intensified coordination emerged via the creation of the INSPIRE Coordination Committee.
> - The intensified coordination and role clarification between various public sector actors in the geospatial area and the clarification of the task divisions has led to the emergence of a new momentum for the development of a national spatial data infrastructure.
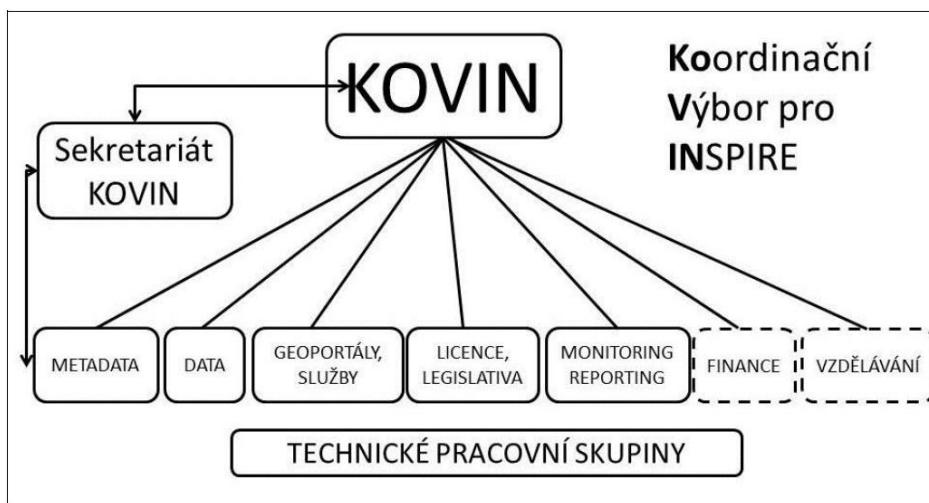
Figure: Structure of the INSPIRE Coordination Committee

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Reshuffling division of competences in the Portuguese Spatial Data Infrastructure within the broader governmental reform context

Country

Portugal

Type NIA-instrument

S2. Reshuffling division of competences

Aim

Reshuffling of competences under influence of the INSPIRE Directive implementation in 2009 and the broader Administrative Reform Program of 2012 aiming to optimize the Spatial Data Infrastructure for the development of Portuguese public policies.

NIA-instrument description

The Portuguese Spatial Data Infrastructure, the so-called SNIG, was the first developed in Europe – in 1990 – , and also one of the first SDI available on the internet. Over the last 25 years a number of reforms have taken place, whereby the last two reforms led to a significant change in the SDI organizational structure and the accompanying division of competences between the different public sector actors involved in the SDI. The first was the necessity to implement the INSPIRE Directive in 2007. The Portuguese Geographic Institute (ICP), which had until 2009 been responsible for the SNIG, was also made responsible for the implementation of the INSPIRE Directive. However, as the coordination included also a very important – besides the Operational Coordination – Strategic Coordination element, the Portuguese Government decided to create also a strategic coordination group. This CO-SNIG (see overview of the Member in 'Background') gives guidance to the ICP. The ICP on its turn created an internal INSPIRE Working Group and presides the CO-SNIG.

However, due to the financial crisis, which affected the Portuguese economy and public administration in a strong way, the Government felt the necessity to restructure the overall administration under the "Central Administration Streamlining & Improvement Plan" in 2012. Furthermore, the Government realized that the SNIG was incapable to meet the needs related to the public policies for developing Portugal in the future. This reshuffling of competences has led to the disappearance of ICP: The organization was merged with the Directorate-General for Spatial Planning and Urban Development to create the new Directorate-General for Spatial Planning (DGT). Also, the competences of the new organization were strengthened: Before the reform the ICP was only dealing with Operation Coordination, now the new organization is working on the border between Operational and Strategic Cooperation.

Additionally also the CO-SNIG was affected, were it had in the beginning a composition of 12 members, it was, as a result of the reorganization, reduced to 9 members and the working methods were made more time-efficient and better aligned to the INSPIRE Directive. The new Directorate-General for Spatial Planning inherited all the competences of the ICP.

Background

The National System for Geographic Information (SNIG) is the national spatial data infrastructure (SDI). Its purpose is to allow geographic information on the national territory to be searched, viewed and used, through various access points. It was set up 20 years ago through Decree-Law No 53/90 of 13 February 1990. At the time, it was regarded as a highly innovative project. Given the recent advances made in this area, driven mainly by the Open Geospatial Consortium (OGC) and the International Organization for Standardization (ISO), and more recently by the INSPIRE Directive and the , it has since then substantially altered. The transposition of the INSPIRE Directive through

Decree-Law No 180/2009 of 7 August 2009 has led to the former Decree-Law on the SNIG being revised, which led among others to the creation of the CO-SNIG.

In 2012 the Portuguese Public Administration was reorganized under the Central Administration Streamlining and Improvement Plan, which brought about several changes to the organizational structure supporting the implementation of the INSPIRE Directive. These changes took place in 2012. As a result of this reorganization of the public administration, the INSPIRE National Contact Point (INSPIRE NCP) in Portugal, which had been the Portuguese Geographic Institute (IGP), fell under the responsibility of a new institution, the Directorate-General for Spatial Planning (DGT) which resulted from the merger of the IGP with the Directorate-General for Spatial Planning and Urban Development (DGOTDU).

The public authorities represented on the CO-SNIG were, until 2012:
- the Portuguese Geographic Institute, presiding;
- the Portuguese Environment Agency;
- the National Association of Portuguese Municipalities;
- the National Forestry Authority;
- the National Civil Protection Authority;
- the Directorate-General for Spatial Planning and Urban Development;
- the Institute for Conservation of Nature and Biodiversity;
- the Geographic Institute of the Army;
- the Hydrographic Institute;
- the Institute for Water;
- the National Institute of Statistics;
- the National Energy and Geology Laboratory.

As a result of the most recent reforms however the CO-SNIG membership decreased from 12 to 9 public authorities – the following organizations are member:
- the Directorate-General for Spatial Planning, presiding;
- the Portuguese Environment Agency;
- the National Association of Portuguese Municipalities;
- the National Civil Protection Authority;
- the Institute for the Conservation of Nature and Forests;
- the Geographic Institute of the Army;
- the Hydrographic Institute;
- the National Institute of Statistics;
- the National Energy and Geology Laboratory.

Use

A number of actions have been taken since the 2009 and 2012 reforms: The SNIG Geoportal was upgraded by the Directorate-General for Spatial Planning via the inclusion of new search functionalities, a configuration and publication of INSPIRE services, new visualization tools etc. Furthermore, on the bases in-depth analysis of the SNIG, a vision and strategy was consolidated for the SNIG development – the so-called "SNIG 2020".

Good practice motivation

> The Portuguese Spatial Data Infrastructure is an good example of how mature SDIs can be modified over the years, both under influence of a thematic supranational approach – such as the INSPIRE Directive –, and a horizontal reform approach taken by the Portuguese Government.

Effect of the "Central Administration Streamlining & Improvement Plan"

- Organizational structure for the INSPIRE Directive implementation (until 15 May 2012):
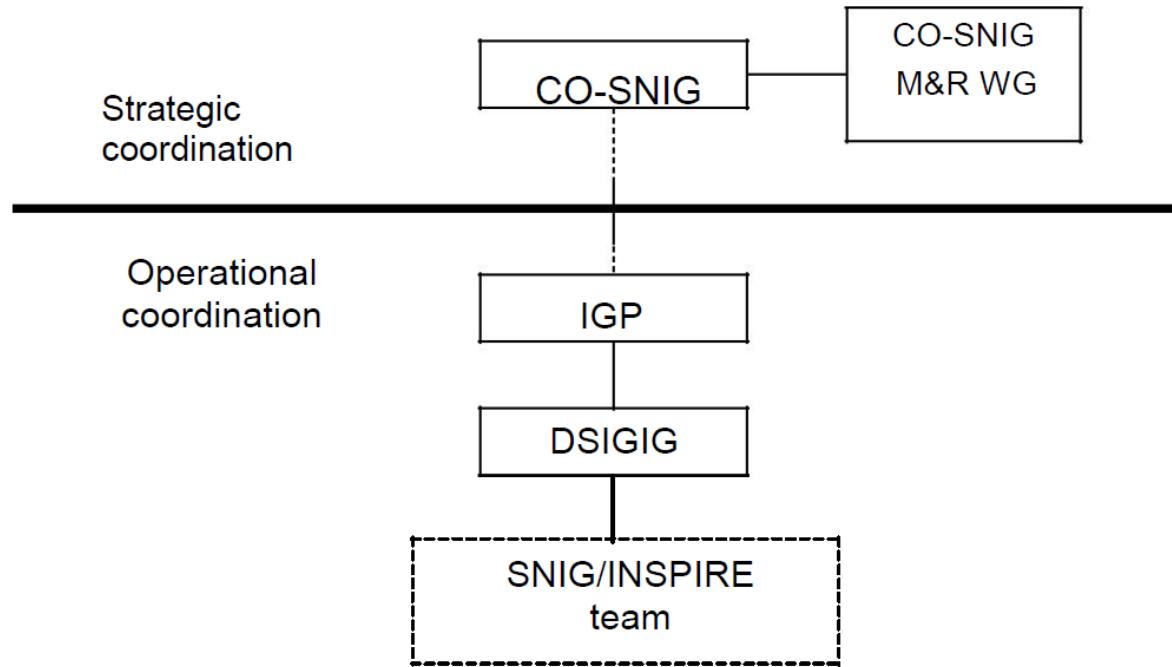
- Organizational structure for the INSPIRE Directive implementation (since 16 May 2012):
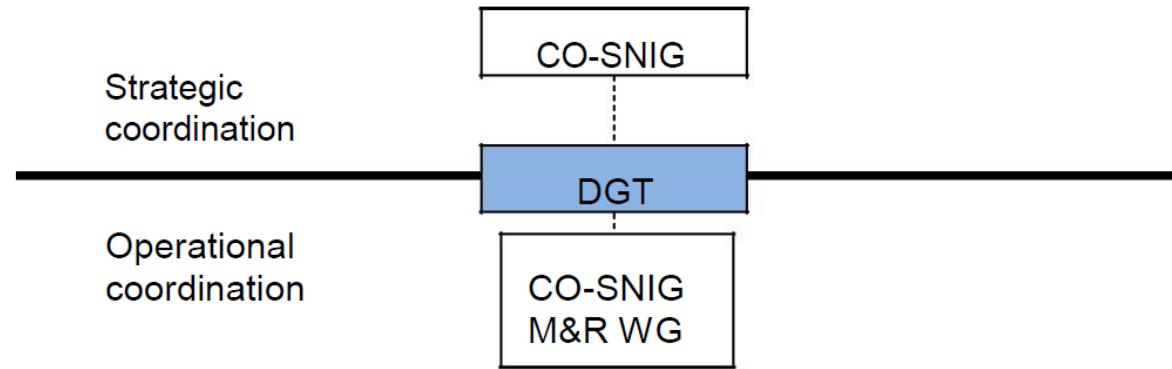
* CO-SNIG M&R WG: The Monitoring & Reporting Working Group reports on the implementation of the INSPIRE Directive. Before the 2012 reform program, the Working Group functioned on the same level as the CO-SNIG, the 2012 reform program made the DGT responsible for the Working Group.

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Legal Framework of the National Information System for Statistics and Geography

Country

Mexico

Type NIA-instrument

S3. Establishment of a legal framework

Aim

Establish the legal basis by which the actions of all participants of the National Information System for Statistics and Geography is regulated, as well as the conduct and development of the Statistical and Geographical Activities of the country.

NIA-instrument description

In accordance with the reform Articles 26 and 73 of the Constitution of the United Mexican States, published in the Official Journal of the Federation (DOF) on April 7, 2006, the Mexican State must have a National Information System for Statistics and Geography (SNIEG). For the Federation, the State Entities, the Municipalities and the territorial demarcations of the Mexico City, the data contained in the System will be of compulsory use in the terms established by Law.

The responsibility for regulating and coordinating the System is in charge of an organization with technical and management autonomy, legal personality and its own assets (INEGI).

In order to formalize the above provisions, the Law of National Information System for Statistics and Geography was published in the Official Gazette 16 April 2008, which is of public order, of social interest and of general observance throughout the Republic. It aims to regulate:
- I.   The National Information System for Statistics and Geography (SNIEG);
- II.   The rights and obligations of informants System;
- III. The organization and functioning of the National Institute of Statistics and Geography (INEGI), and
- IV.   The administrative offenses and administrative means of defense against the acts and resolutions of the Institute.

Background

The Law on the National Information System Statistical and Geographic is based on the reform of Articles 26 and 73 of the Political Constitution of the United Mexican States.

Use

The application of the Law of the National Information System Statistical and Geographic is obligatory for all the Units of the State.

Good practice motivation

The definition and implementation of the Legal Framework is considered a good practice related to NIA, since it allows establishing legal provisions for the proper functioning of the SNIEG, as well as the functions and attributions of the National Institute of Statistical and Geographic Information (INEGI) as a hierarchical entity within the public sector and responsible for the coordination of this System.

Figure**:** Legal Framework of the National Information System for Statistics and Geography **-** Image designed by INEGI

Reference

Official website of H. Congress of the Union:
http://www.diputados.gob.mx/LeyesBiblio/ref/cpeum.htm

Official website of the National Statistical and Geographic Information System (SNIEG):
http://www.snieg.mx

Rating according to their level of application (1..10), a value of 10 means that it has a strong level of application.

1	2	3	4	5	6	7	8	9	10	X

Less application …………………………………………… Strong application

Integrated legal framework concerning planning and the environment

Country

The Netherlands (NL)

Type NIA-instrument

S3. Establishment of a legal framework

Aim

To simplify and update a large of body of law in order to achieve more effective and efficient policy making in the area of planning and the environment.

NIA-instrument description

The law of 23 March 2016 establishes a legal framework that integrates a large part of body of law concerning (inter alia) spatial planning, the environment, construction, infrastructure, water management, soil management, cultural heritage and nature. The new legislation is aligned with the EU INSPIRE directive. Specifically, it creates a system to digitally manage geospatial information, streamlining processes, implementing standards and stimulating integrated information exchange.

Background

The legislation that is now being integrated has evolved separately in the past and it became very complex to fully adopt the relevant legislation. Because the past regulations were often simultaneously implemented, the associated processes became very cumbersome, stalling important projects and impeding progress in areas such as renewable energy.

Use

The new legislation specifically endeavors to stimulate (large) projects in the area of sustainable development, such as renewable energy projects. Furthermore, it decentralizes power to local authorities, while providing unified and interoperable national standards and procedures. Additionally, the new law allows participation of citizens, organizations and businesses.

Good practice motivation

A consolidated legal framework implements the principles of sustainable development, both in general as well as specifically in the area of spatial planning. It reduces the administrative burden, improves the quality of proactive spatial and environmental planning, integrates and simplifies processes and fosters collaborative decision-making, which enables more effective, efficient and faster policy making. Concerning the management of geospatial data, it achieves interoperability, sets up single points of contact and a central information-architecture and stimulates the reuse and integration of data in the areas of water, soil, area, sound, etc..

Figure: Integrated legal framework concerning the simplification of planning and the environment regulations

Reference

http://www.omgevingswet.nl/ (Dutch)

https://zoek.officielebekendmakingen.nl/stb-2016-156.html (Dutch)

Law on geodesy, cartography and spatial data

Country

Russia

Type NIA-instrument

S3. Establishment of a legal framework

Aim

Regulate relations arising as a result of carrying out geodetic and cartographic activities

NIA-instrument description

Federal Law on Geodesy, Cartography and Spatial Data an on Amendments to Certain Legislative Acts of the Russian Federation (No, 431-FZ of December 30, 2015). This comprehensive federal law defines subjects of geodetic and cartographic activities, the coordinate systems, the national system of elevations and the national gravimetric system, the national geodetic network, the national levelling network, the gravimetric network, special geodetic networks, and regulates pertaining to geodetic and cartographic works, including with the aim of ensuring Russia's national defense.

The Law document is described in 32 articles that are grouped in five chapters: 1) General Provisions; 2) Providing for the Performance of Geodesic Activity in the Russian Federation; 3) State Funds of Spatial Data; 4) Informational Provision for the Fulfillment of Geodesic and of Cartographic Works; 5) State Regulation of Geodesic and Cartographic Activity.

Background

This Federal law was passed by the State Duma on December 22, 2015 - and approved by the Federation Council on December 25, 2015. Vladimir Putin signed Federal Law on December 30, 2015. The Law entered into force on January 1, 2017, except for one item of Article 28. The Law regulates relations arising at the performance of geodesic and of cartographic activity including the search for, collection, storage, processing, presentation and distribution of spatial data including with the use of the informational systems. Relations arising at the performance of geodesic and of cartographic activity are regulated by this Federal Law, by the other federal laws and by the other normative legal acts of the Russian Federation adopted in conformity with them.

Since 2008 the Federal Service for State Registration, Cadastre and Cartography (Rosreestr,) has been the federal executive authority of the Russian Federation which executes the activities concerning provision of public services and management of state property in the sphere of geodesy and cartography as well as geographic objects' naming. In addition, land and real estate registers are also under the supervision of this authority. As of 2013, in accordance with the Decree No. 220-r, several state institutions were consolidated to become the Federal State Budgetary Institution "Federal Scientific and Research Centre of Geodesy, Cartography and Spatial Data Infrastructure" (FSBI "Centre of Geodesy, Cartography and SDI") whose tasks include keeping and managing the cartographic and geodetic fund, research and development, and work on the national standardization of geographical names of the Russian Federation.

Use

The Law entered into force on January 1, 2017, and so applicable since then. To ensure geodetics and cartographic activities, provisions will be made for the creation of corresponding federal and regional portals and databases in Russia.

Good practice motivation

This Russian Federal Law is a good example of the practice of NIA-instrument S3. Establishment of a legal framework as it directly refers to the construction and adoption of a regulatory framework(s) for geospatial information management and the associated legal conditions. This comprehensive Law consists of a broad set of rules and regulations, aiming to organize issues related to management of geospatial information.

Federal Service for State Registration, Cadastre and Cartography (Rosreestr)

Reference

Federal Law No. 431-FZ of December 30, 2015 on Geodesy, Cartography and Spatial Data and the introduction of Amendments into certain legislative acts of the Russian Federation.
http://ggim.un.org/knowledgebase/KnowledgebaseArticle51560.aspx

http://en.kremlin.ru/events/president/news/51126

http://www.rosreestr.ru

http://gsdiassociation.org/index.php?id=275:russia-president-signs-law-on-geodesy,-cartography-and-spatial-data

Open Standard Licensing

Country

Denmark

Type NIA-instrument

S4. Regulated markets

Aim

Allowing the re-use of geospatial data of the public sector without the need to develop and update custom licenses

NIA-instrument description

Creative Commons licenses allow providers of public sector (geospatial) data to publish their data without the need to develop and update custom licenses.

Background

The European Commission recommends the use of open standard licenses for publishing public sector, e.g. Creative Commons licenses. Further recommendations of the Commission include that the open standard license should: Provide a reference to the conditions under which re-use is allowed should appear prominently at the point of display of, or accompanying, the information; Define the temporal and geographical scope of the rights covered by the licensing agreement.; Define the types of rights granted and the range of reuse allowed; Grant a worldwide (to the extent allowed under national law), perpetual, royalty-free, irrevocable (to the extent allowed under national law) and non-exclusive rights to use the information covered by the license; Explicitly set out the rights not covered by the license; Define the types of right granted (copyright, database right, and related rights) broadly; and Use the broadest possible wording to refer to what can be done with the data covered by the license (terms, such as, use, reuse, share can be further described by an indicative list of examples).

The European Commission recommends for open government data the use of the Creative Commons Zero (CC0) declaration or, if CC0 appears not feasible or possible, a Creative Common CC-BY 4.0 license. CC0 allows one to waive all copyrights and related or neighboring rights in one's work, such as moral rights (to the extent that these can be waived), publicity or privacy rights, rights protecting against unfair competition, and database rights and rights protecting the extraction, dissemination and reuse of data. When applying CC-BY 4.0 others are allowed to share (copy and redistribute) the material in any medium or format and/or adapt (remix, transform, and build upon the material) for any purpose, even commercially - but only if they give appropriate credit, provide a link to the license, and indicate if changes were made.

The Danish open standard license differs from CC-BY 4.0. In Denmark, users must register first. The attribution is very specific (name of Agency + name of dataset + retrieval date + data retrieved from Licensor or through a data service). If the data are made available to third parties, the original attribution license terms must be available to these third parties, e.g. by using a link. In addition, there is an explicit clause that the Authority does not guarantee the continued availability of the data and that the Authority may at any time modify the right to use the data and under what circumstances. This last clause means that the Danish Open License for the data is revocable at any time.

The main differences between the Danish license and CC-BY 4.0 are the specific attribution requirement and revocable data license. As far as specific attribution is concerned, CC licenses have a flexible attribution requirement. The proper method for giving credit will depend on the medium,

means, and context in which a licensee is redistributing licensed material. The user may satisfy the attribution requirement if a link is provided to a place where the attribution information may be found. As far as revocable licenses are concerned, CC-BY licenses for data are irrevocable by definition. However, with every updated version of the data, a new license could be reapplied. The old license would still apply to all data obtained under the older license terms.

Use

The Danish open Standard license set the conditions of using open public geographic data. The users must register before access. They have the right to copy, distribute and publish, adapt and combine with other material, and exploit commercially and non-commercially. Attribution is required, a link to the license needs to be provided as well as note on whether the data retrieved from the Licensor or through a data service.

Good practice motivation

This good practice refers to the creation of regulated markets in order to create stimuli that induce appropriate behavior by public organizations.
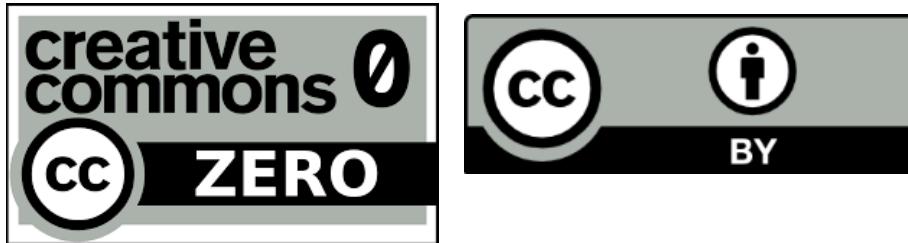
Reference

European Commission (2014). Guidelines on recommended standard licences, datasets and charging for the reuse of documents (2014/C 240/01). Brussels, Official Journal of the European Union. 57: 10

Welle Donker, F. (2016). From access to re-use: a user's perspective on public sector information availability. PhD-thesis of Delft University of Technology.

Rwanda Open Data Policy

Country

Rwanda

Type NIA-instrument

S4. Market Regulations

Aim

In 2016, The Ministry of Youth and ICT prepared a draft version of the national open data policy. By implementing these policies in the next years, the governments aims to achieve a sustainable Open Data initiative that addresses both the supply and the reuse of Open Data, as well as other aspects such as skills development and innovation financing linked to Open Data.

NIA-instrument description

The policy addresses the following aspects;

1. Leadership for Open Data
    The Government of Rwanda is committed to be a leader in Open Data. The Prime Minister's Office (PMO) will be responsible for keeping all government agencies accountable for its implementation. The PMO will ensure that Open Data plans turn into actions.
2. Legal and Regulatory framework
    The Open Data Policy will help to ensure that agencies follow consistent rules on data release, privacy safeguards, use of an "open" license and technical standards. By definition, Open Data must not include the release of personal data that can identify individuals. The Government will take appropriate steps—which may include a combination of laws, policies and safeguards—to ensure that personal, identifying data is not released as part of its Open Data initiative.
3. Data from Government
    The Government of Rwanda recognizes that creating value from Open Data requires actual data from government. Thus, the government will issue a directive to all its departments to publicly avail all for-public-consumption data online and without charge.
    The Government will ensure that Open Data is easy to find on one Open Data portal that catalogues all data opened by government. This data will be in machine-readable formats (formats directly usable by computers and software).
4. Demand for Data
    The government understands that releasing machine-readable data is not enough. Demand for data and engagement with user communities are vital. The readiness of user communities and "infomediaries"—evidenced by their demand for data—are critical. Government will work to demonstrate the value for data-driven applications and promote reuse among developers.
5. Data User Communities
    The Government is committed to widening the community of users of Open Data. Infomediaries such as journalists will be empowered and trained on Open Data through the Media High Council. The Ministry of Youth and ICT will facilitate organization of co-creation events like hackathons to promote app development which will reuse government-held data. The Government will intensify efforts aimed at putting in place the requisite infrastructure for an app economy in Rwanda.

6. Institutional preparedness

Open Data requires a whole-of-government effort that will involve every ministry and agency. The Prime Minister's Office will be responsible for coordinating implementation of Rwanda's Open Data initiative. The PMO possesses the requisite technical and project management capabilities as well as political weight necessary for implementation of an Open Data initiative.

7. Financing of Open Data
The Government will mobilize funding to cover training of officials on Open Data, fund the establishment of an Open Data portal and invest in reuse of its data (with co-creation events and applications development).

8. Technology and Skills Infrastructure
The Government will provide the requisite infrastructure of technology and skills to enable the supply and reuse of Open Data. This will include among others, sufficient internet access and a supply of technical skills within and outside government to help enable and sustain an Open Data initiative.

Background

Rwanda's commitment to transforming from an agrarian society and economy to one that is based on information and knowledge is enshrined in its Vision 2020.

Information and Communication Technologies particularly Open Data, has got enormous potential to spur innovation and creativity, increase the proliferation of high skilled jobs, contribute to economic growth, and create a more accountable, efficient, responsive, and effective government.

Easy access to data allows individuals and organizations to develop new insights and innovations that can improve the lives of others and help to improve the flow of information. While Government of Rwanda agencies collect and share a wide range of data, they do not always curate and share these data in ways that are easily discoverable, useable, or understandable by the public. This is a missed opportunity.

Rwandans are demanding to have access to information and services electronically, when and how they want. Increasingly, this is true of Government of Rwanda data as well. Innovative Rwandans the can use open data to generate insights, ideas, and services to create a better world for all.

Use

This implementation plan is prepared for the next two years and a half (starting from 2016). It is meant to provide for the preparatory activities that will pave the way for roll out of a national Open Data initiative.

Good practice motivation

Rwanda has already showed a strong performance in supporting transparency and technologies through efforts of the past years. This was also visible through the Global Open data Index 2015. This index showed that Rwanda has the most available open government data of Africa.

Furthermore, this open data policy is also a component of the 'Smart Rwanda 2020 Master Plan' in which the government has committed to "openness and transparency, as well as recognizing the enormous potential that lies in data use for business and decision making".

Reference

Ministry of Youth and ICT (2016). Policies under development stage. Accessible at: http://www.myict.gov.rw/ict/policies-and-regulations/policies/policies-under-development-stage/[accessed 1st May 2017].

The New Times (2015). Rwanda has most available govt open data in Africa – report. Accessible at: http://www.newtimes.co.rw/section/article/2015-12-10/195150/[accessed 1st May 2017].

Open data platform data.gov.uk

Country

United Kingdom

Type NIA-instrument

S4. Regulated markets + S5. System for information exchange and sharing

Aim

The open data platform data.gov.uk aims to foster innovative services by providing government data

NIA-instrument description

The NIA-instrument is a public data catalogue, accessible at data.gov.uk. It offers raw (geospatial) data gathered and produced by UK governments to support transparency and innovation. Data.gov.uk is a platform where data publishers can make their data available to different types of users, while users can search for and get access to the data they need. Data publishers need an appropriately privileged account on data.gov.uk to allow them to register their metadata resources. Metadata must pass an automated validation process before it can be published on the platform. Data users do not need an account to allow them to use the search and preview tools.

Background

Data.gov.uk is an outcome of the Government's work on Transparency and Data and led by the Data team in the Cabinet Office and supported by sir Tim Berners-Lee. In the UK the development of the Spatial Data Infrastructure is part of a wider agenda which includes making public data more open and more easily available, making government more transparent, and allowing citizens digitally to access all government services by default. The creation of a single online access point for public data, data.gov.uk, was one of the first pillars of the Making Public Data Public program. Also geospatial data sets are made available through data.gov.uk and form a considerable portion of all government data available on this platform.

Use

Users can employ the raw data to create applications or provide analysis to consumers. As of May 2017, the platform provides information on 35,956 data objects from 1,124 public entities from all levels and sectors of government. Each data object is viewed on average 25,644 times (from 0 to 147,014 times), visited 119.72 times (from 0 to 75,372 times) and downloaded on average 67.37 times (from 0 to 95,674). In total the data has been viewed 8,308,342 times, viewed 4,232,903 times and downloaded 2,408,256 times.

Good practice motivation

Open data help foster economic growth through innovative services developed by businesses. The Open data platform contributes to a level-playing field for businesses as well as opening up government data, among which geospatial data is central. The NIA-instrument is also committed to the linked-data web vision, which allows the data to be identified by reference and to be linked with other data through the use of URI's. This approach allows innovation, because it anticipates future generations of the World Wide Web. Moreover, this UK policy facilitates the exchange of geospatial data.

Data.gov.uk is a single access point to all government data in the UK, including geospatial and non-geospatial data. The platform provides different types of search tools allowing users to search and find the data they need. Specific data request could also be posted by users looking for a particular data set. The platform also provides an overview of and access to many different apps developed on top of government data. Operational guidance documents are made available to help producers in publishing metadata and setting up view and downloaders services and to help users in searching for data in the catalogue or through a map based services. In addition, several tools are available to allow and stimulate producers and users to interact with each other and with other stakeholders. The library section of the platform provides a complete and easy-to-use entry point to all relevant documents. Also several statistics on the performance of the infrastructure are made available, including usage statistics, publisher statistics and an evaluation of the openness of the data according to Tim Berners Lees' Five Stars of Openness.

Reference

https://data.gov.uk/

https://www.gov.uk/government/publications/uk-open-government-national-action-plan-2016-18

Federal Geospatial Platform

Country

Canada

Type NIA-instrument

S5. Systems for information exchange and sharing

Aim

To enable the Canadian government's most relevant information to be managed spatially, analyzed, and displayed in a visual context to enhance decision-making support of government priorities

NIA-instrument description

The Federal Geospatial Platform (FGP) is a collaborative online environment consisting of authoritative geospatial data, services, and applications, built on a shared infrastructure. The Platform aims to make geospatial information available in a coherent way to the public, academic institutions, the private sector and others to conduct research or produce value-added products and applications.

Background

The Federal Geospatial Platform (FGP) is an initiative of Canada's Federal Committee on Geomatics and Earth Observations (FCGEO), a committee of senior executives from 21 departments and agencies that are producers and/or consumers of geospatial data, or have an interest in activities, requirements and infrastructure related to geomatics. The FCGEO community recognized an opportunity for federal departments and agencies to manage geospatial information assets in a more efficient and coordinated way by using a common "platform" of technical infrastructure, policies, standards and governance.

Use

The Federal Geospatial Platform has two faces: an internal site that can be found at gcgeo.gc.ca (internal government network), and a public site entitled "Open Maps" (http://open.canada.ca/en/open-maps) on the Open Government Portal. (See the Figure below.)

Good practice motivation

The FGP initiative was motivated as a means to—through improved collaboration and standards -- better share valuable geospatial datasets between federal government departments and take a more innovative approach to managing national geospatial data assets more effectively. It supports **C**anada's Action Plan on Open Government by providing access to comprehensive collections of accurate and authoritative geospatial information, including socioeconomic and environmental data.

Reference

This information has been taken from the site http://www.nrcan.gc.ca/earth-sciences/geomatics/canadas-spatial-data-infrastructure/geospatial-communities/federal, where a fuller description of the Federal Geospatial Platform may be found.

For more information on the Federal Geospatial Platform initiative, please contact the FGP Project Team at FGP-PGF@NRCan-RNCan.gc.ca

Spatial data infrastructure facilitating emergency response in case of earthquakes

Country

Ecuador

Type NIA-instrument

S5. Systems for information exchange and sharing

Aim

Making geospatial information available through the Spatial Data Infrastructure managed by Military Geographic Institute of Ecuador (IGM) in order to be used by government entities, as primary input for mitigation and response in case of natural disasters - in particular to earthquakes such as the Ecuador Earthquake occurred on April 16, 2016.

NIA-instrument description

Ecuador has a regulation of open data, e-government, and national geo-information policies. In reference to the earthquake of magnitude 7.8, happened 16 of April of 2016, the Military Geographic Institute (MGI) of Ecuador, was prepared for the need of having timely geographic information that reflects the reality of such disaster. In this way, the IGM immediately generated geographic information that allows the mitigation and response of competent authorities to this event. IGM-Ecuador developed solutions based on Spatial Data Infrastructure (SDI). To facilitate access, use, download and analysis of information, the following set of tools were generated: Geographic Viewer Earthquake, Web map services (WMS), and a virtual 'space' (platform) intended for downloading geographic information relevant for prompt responses (including base mapping develops, ortho-photographs, digital terrain models) and relevant geospatial studies (e.g. destroyed buildings and proposed temporary shelters, etc.). This set of tools was very relevant due to the capacity for integrating information, which facilitate different government agencies when to mitigate to the disaster and they could contribute with data according to their competences. The SDI of the IGM became the main integrated source of geo-information for the processes of mitigation of the event. The National Secretariat for Planning and Development of Ecuador (SENPLADES) promoted the use of this platform through various communication channels. This promotion indicated that any institution generating relevant geographic information had to upload their databases to this platform with the objective of becoming the Official Geoinformation Repository.

Background

The first 72 hours were fundamental; The IGM-Ecuador created the "Earthquake Plan" through which actions were established with the main objective to provide geo-information to the Armed Forces and other government agencies. First IGM generated updated maps of affected areas by taking aerial photography. In addition, this plan involved the mobilization of IGM professionals, specialists in geospatial information, to the most critical points in the earthquake zone. Two Geographic Information Centers were installed in the cities of Manta and Pedernales as support to all the organizations. A data repository was also available through an FTP to receive and send updated information to the organizational centers. All the geographic information was structured by theme and released with the condition to have a better response perspective and analysis. The information was constantly updated as the products were generated.

Due to the information demand, the IGM created a new component with the objective of improving the spatial data infrastructure usability and providing the user with a specific, unique and official access platform to earthquake data. The IGM created the platform for the Geographic Database, where information was stored in such as: roads, basic services, oil infrastructure, educational infrastructure, health infrastructure, etc. A viewer was developed for the information related specifically to the earthquake and Web Map Services (WMS) were enabled so that key information could also be transferred and used over the internet. In addition, an exclusive 'space' for downloading geographic information related to the earthquake was developed. This allowed the user to access the information that was uploaded daily in a quick and uncomplicated way.

The geographic information repository has currently more than 700 geographic products related to the earthquake, in the most common formats. Dynamic access to data caught the attention of several state entities which resulted to more than 50 meetings of coordination and cooperation. Technical meetings were also held at the international level with delegates from World Organizations such as UN - Habitat, who came to Ecuador to provide their contingents during the emergency.

Finally, the National Secretariat for Planning and Development SENPLADES appointed the IGM as the only Official Public Institution authorized to publish and access information regarding the earthquake.

Use

Main results and products obtained during the disaster by using the IGM Spatial Data Infrastructure were the following:

- More than 700 products were downloaded on the website related to information for earthquake emergency service, including pre and post event ortho-photos, basic mapping, early response mapping, geo-referenced photo-mosaics, etc.
- More than 600 layers of information were published through WMS, WFS, WMTS and / or TMS services providnf direct and interoperable access from multiple information sources.
- During the 3-month state of emergency, the lGM Geoportal, registered an increase of more than 71% of users, which is approximately more than 10,000 new users.
- Spain, Colombia, Peru, the United States, Mexico, Chile, Argentina and Bolivia were the countries with the most new users (38%) who accessed geographic information.
- At the time of the emergency, the use of mobile devices with access to the Geoportal increased by 195%.
- The IGM Geoportal supported an average of 20 simultaneous connections per second of information download during peak hours - mainly in the first month of emergency.
- 35,000 data were downloaded during the months of emergency, exceeding the annual average of the entire Geoportal.
- The IGM geoportal was daily uploaded information. In this way IGM Geoportal had more information than other places of consultation such as UNITAR
- The Government implemented the system of "unique registry of victims" to obtain credit for the reconstruction with the geoportal of the IGM as the validation source.
- OpenStreetMap in Ecuador, Humanitarian OpenStreetMap Team (HOT) and several volunteers created projects to update maps in the most affected places.

Good practice motivation

These applications are readily available tools for catastrophic events such as the Earthquake of April 16, 2016. The applications have the following characteristics:
1. Relevance: necessary and useful information was generated for the country.

2. Opportunity: information and disposal in the Spatial Data Infrastructure was generated in 1 day and was improved throughout the emergency incorporating new relevant functionalities.
3. Quality: use of specifications and standards required in a Spatial Data Infrastructure.
4. Advertising and accessibility: using an SDI guarantees the standards of interoperability of geographic information
5. The authorities of IGM arranged by agreement the immediate release of all the data generated for the Earthquake so that they became public domain data and free accessible.
6. Transparency: released information reflects the work of what happened on the ground.
7. Interoperability: Enabling web mapping services with all the information generated by the IGM for Earthquake emergency services.

The application of the public policy of "Open Data in Ecuador" allowed IGM to upload all the information generated to address the immediate emergency, thus saving the State approximately 12.5 million dollars in record time.

Indirectly, the information generated by IGM provided a social benefit by providing the data necessary for the affected populations to access the different mitigation programs, such as housing, reconstruction, insurance, among others.

Figure 1: IGM-Ecuador Geoportal

Figure 2: Earthquake Downloads

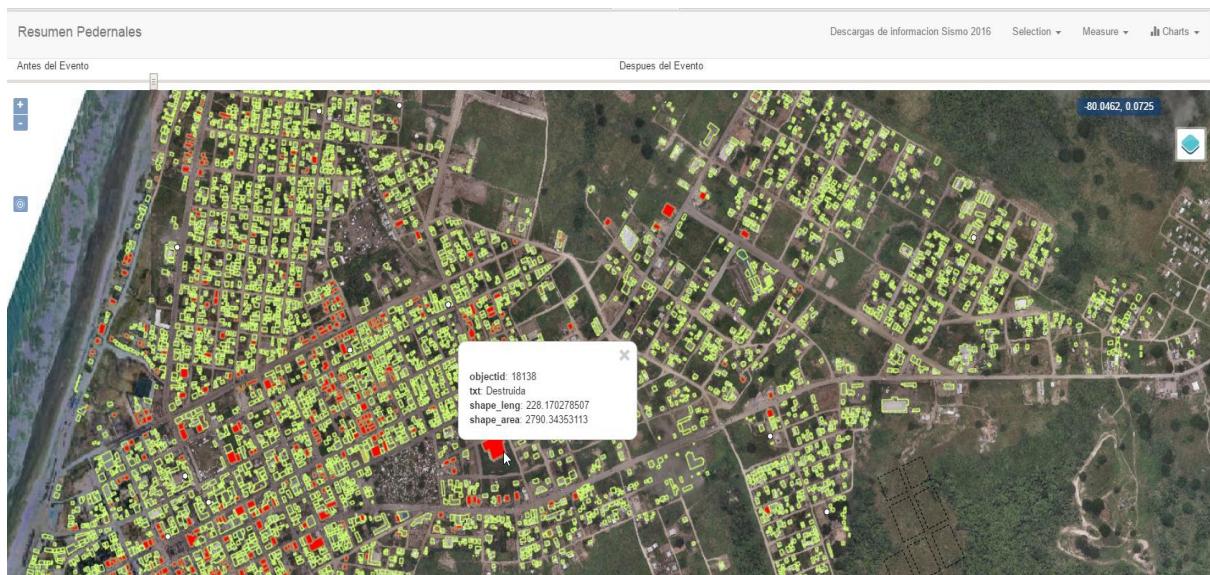Figure 3: Earthquake Visualizer with destroyed buildings
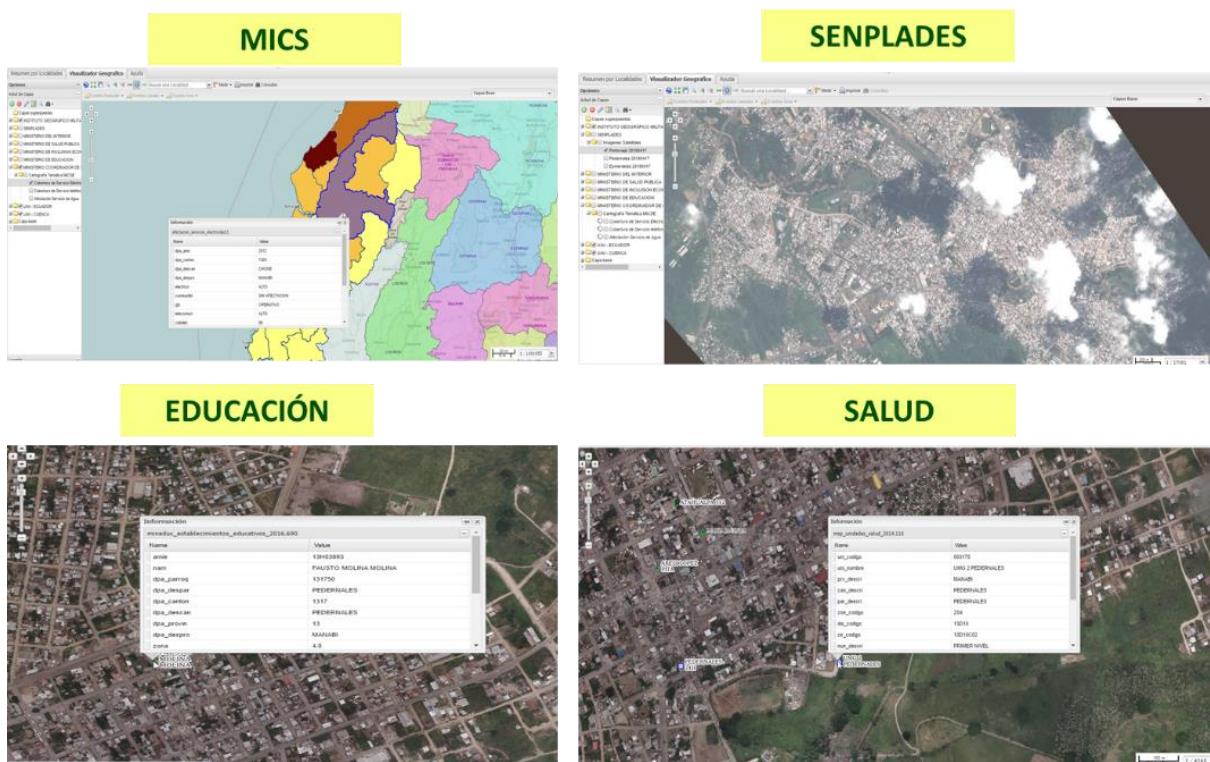
Figure 4: Earthquake Visualizer with destroyed buildings
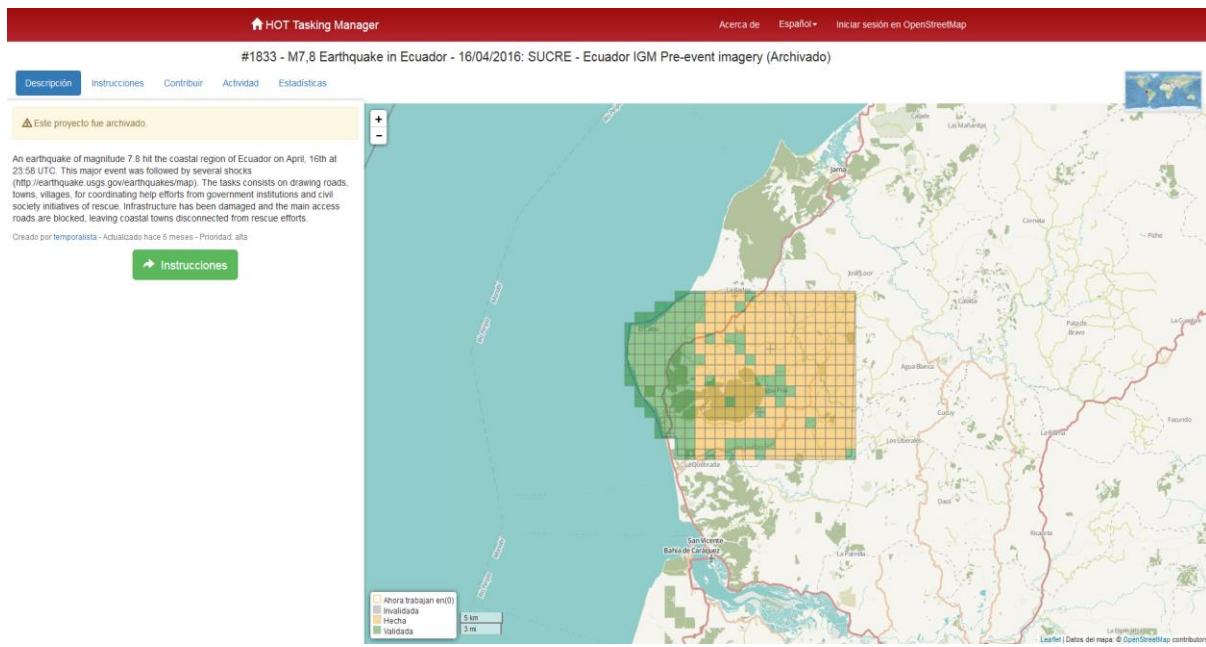

Figure 5: Other information

Figure 6: TMS IGM Orthophotos TMS Service for OpenStreetMap

Reference

IGM-Ecuador Geoportal: www.geoportaligm.gob.ec
Earthquake Visualizer: http://www.geoportaligm.gob.ec/visor_terremoto/
Earthquake Downloads: http://www.geoportaligm.gob.ec/portal/index.php/sismo-2016/
News: www.nosolosig.com/noticias/626-el-igm-del-ecuador-centraliza-en-una-web-toda-su-informacion-geografica-de-las-zonas-afectadas
Videos: https://youtu.be/aEENfjbaRYs

National geoportal of the French administration

Country

France

Type NIA-instrument

S5. Systems for information exchange and sharing

Aim

The national geoportal of the French administration has a clearly described aim: "It is a platform for sharing information that function according to the requirements of the European INSPIRE Directive, the geoportal encourages the sharing of public geospatial data, as well as the sharing and exchanging of geospatial environmental data." As such, the platform ensures that public geospatial data is publicly available and stimulates the exchange and re-use of geospatial data.

NIA-instrument description

In 2005 the 'Institut national géographique et forestière' (IGN – National Geographic Institute) started, in collaboration with the 'Bureau de recherches géologiques et minières' (BRGM), with the creation of a national geoportal for collecting and sharing geospatial data with citizens, businesses and other administrations. The 'Ministère de l'Environnement, de l'Énergie et de la Mer (previously known as: 'Ministère de l'Environnement, l'Énergie et le Développement durable')' and the responsible Minister are the direct representatives of this project towards the French Government. The geoportal was already launched in 2006, a year before the INSPIRE Directive was agreed upon on the European level (2007). Rather than being a result of the INSPIRE Directive, the development of the geoportal can be considered as the result of both an internal French reorientation towards the sharing of geospatial data, whereby the development of the geoportal has proven to be a key building block of a National Spatial Data Infrastructure, and the demand of the EU Council of Ministers and the European Parliament to re-use public sector information via the PSI Directive.

The geoportal allows users to search, view, download and acquire geospatial information from a number of different thematic fields, whereby the focus lies on the French national level. All the available data is in line with the Open Geospatial Consortium Standards. The geoportal brings together the information of various national administrative organizations, and allows for the extensive re-use of information. Information of various thematic groups is included: agriculture, culture & heritage, sustainable development & energy, economy & work, education & research, international & Europe, health & social policies, community & recreation and territories & transport. Besides the information that is includes in this national geoportal, also other thematic geoportals are developed under stimulus of the national geoportal and the overall digitalization strategy of the French Government. An example is the 'Géoportail de l'Urbanisme'. This portal, agreed upon by law in 2013, and online available since 2015 aims to bring together, by 2020, all the information on land planning. This tool will allow citizens and businesses to consult the necessary land planning information and to contact the administration in a digital way.

Background

The national geoportal fits within a broader context and is part of the 'Infrastructure nationale d'information géographique'. Besides the geoportal, also two other key elements are part of the national infrastructure: the first is the 'Géocatalogue'. This website is the key national access point for metadata published by the French national authorities. Secondly, there is also the broader network of platforms that includes geospatial data of the French territories, of other Ministries or even other topics. An example of this is the 'Géoportail de l'Urbanisme' described above.

Another important background element to mention is the fact that the national geoportal fits within a broader strategy of the French Government to digitalize its services. Therefore, a platform was created, the 'État plateforme', that envisions to modernize and digitalize the broader administrative structures of the national administration. The platform is led by the Prime Minister and the 'Sécretariat Général pour la Modernisation de l'Action publique'. This is an important element as it underlines that a clear connection is made between digitalization on one hand and the importance of geospatial data for the overall digitalization of the administration.

The national geoportal also has a strong connection to the 'API Carto' of the IGN. This building block can be integrated in online e-services developed by the public administration. This tool brings together different geospatial datasets of different administrative organizations. In this way, the public service making use of the 'API Carto' building block can use geospatial data in an simplified way: Geospatial data that is already known by the administration, does not have to be collected again. In that way a higher user-friendliness is created. This building block is making use of the same geospatial data as the geoportal, but can be integrated in other e-services developed by other administrations.

Furthermore, the development of this national geoportal has led to the creation of geoportals by other administrative levels, such as the French Regions, Departments and local Communes. Those levels can develop their geoportals according to their own needs.

Use

Every month the national geoportal has more than 750,000 visitors. This high number of visitors is stimulated by the fact that the platform is available via different devices (tablet, pc, mobile phone etc.). Furthermore, the tool is available for both Android and iOS devices. As such, it can be said that the user and its experience take a central position in the development and maintenance of the geoportal. On the geoportal various types of data can be consulted and downloaded in a user-friendly way whereby the search engine and an overview of the different datasets is available on each page of the geoportal: This also improves the usability of the tool. Furthermore, licenses are available for the re-use of data for different of users. Finally, the part of the data on the geoportal is not only available in 2D but also in 3D.

Good practice motivation

There are various reasons why this national geoportal is a good practice:
- First of all, the geoportal is a coordinated effort between the IGN and the BRGM, with clear support of the French Government, that fits within a broader framework to make geospatial data more available to other users than the administrations.
- Secondly, the fact that this national geoportal has a link to the digitalization of the French national administration shows that geospatial data is an essential element of digitalization that can bring a high added-value to other services – also the API Carto is a sign of this collaboration between administrations that want to digitalize, and thereby include a geospatial component in their e-service, and the IGN.
- Furthermore, the national geoportal has stimulated the creation of metadata for geospatial data by various administration.
- The geoportal has proven to be a key building block in the development of the National Spatial Data Infrastructure in France.

Figure: Website of French national geoportal:

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Coordinating Data Sharing Through Indonesia's National Geospatial Information Networks

Country

Indonesia

Type NIA-instrument

S5. Systems for information exchange and sharing

Aim

To establish a national infrastructure for sharing reliable, uniform geospatial data for planning and service delivery.

NIA-instrument description

Created by Presidential Regulation in 2014, the National Geospatial Information Network supports geospatial data sharing through nationwide policy, technical, and human resource initiatives. These initiatives establish the infrastructure for coordination and data production based on a common set of standards.

Background

Indonesia lacked quality integrated geospatial data for nationwide development and decision-making. Its complex geography made access to such data even more critical. Hence, it set up the National Geospatial Information Networks to facilitate the sharing of uniform geospatial information across government bodies at various levels.

Use

The National Geospatial Information Networks consists of a network of nodes spanning 57 ministries, 34 provinces, and 514 regencies/cities. It is led by the Badan Informasi Geospasial (BIG), Indonesia's national mapping agency, which coordinates data sharing and processing across production units at the local government level. A national geoportal acts as a central clearinghouse for data exchange. On top of that, the Network implements common standards for data collection and processing. This supports the production of national base and thematic maps for various applications in disaster management, land use planning, agriculture and natural resource management. Partnerships between the BIG and local universities for training and capacity building also support the Network. Overall, the Network supports Indonesia's One Map policy, which aims to create a single geo-reference model and geodatabase, and apply the same national geo-standards and do consequently geo-synchronization.

Good practice motivation

This good practice demonstrates strong political commitment to overcoming coordination challenges in geospatial data sharing, especially given the vast scale and complex geography of the country.
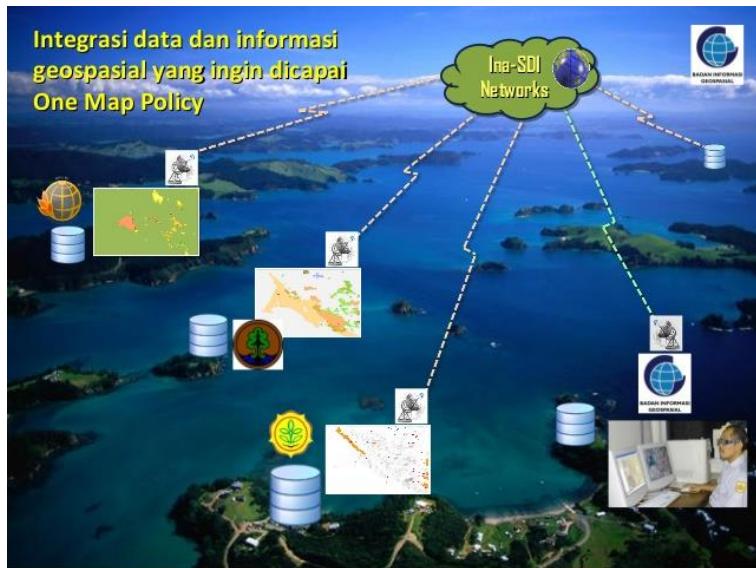
Figure: Data integration in One Map Policy

Reference

http://www.opengovasia.com/articles/7215-exclusive---interview-with-dr--ing-khafid---national-geospatial-information-network-being-set-up-in-indonesia-as-part-of-one-map-policy;
https://www.eiseverywhere.com/file_uploads/bcbd1c27b223e6aa52f6527d2a29dca4_SamadhiDrTNarita2A-SpatialSmartCities.pdf

National land information management system

Country

Kenya

Type NIA-instrument

S5. Systems for information exchange and sharing

Aim

The Overall Objective of developing the National Land Information Management System (NLIMS) was to establish a strong Land management and administration system that facilitates efficient and effective service delivery aligned with the provisions of the Kenya Constitution- 2010, Vision 2030 and the National Land Policy. Further specific objectives include the following;   - Establish the NLIMS institutional framework   - Develop and implement an integrated GIS-based NLIMS   - Safeguard and digitize existing land paper records in registries Country-wide.   - Establish a modern geodetic reference framework-KENREF   - Develop and implement an online platform to facilitate access to land information   - Undertake capacity building activities to sustain NLIMS.   - Develop a monitoring and evaluation system for NLIMS.

Background

| The processes of administering and managing Kenyan land over the last over 100 years have mainly relied on a paper-based manual system. The numerous records generated by the four technical departments have since posed a great challenge, and unbearable to effectively refer to records and retrieve them timely while serving citizens, institutions and other key stakeholders. As a result therefore, the entire process has become inefficient, time consuming, unreliable, restrictive, occasioned repetitiveness, unaccountable and costly, undermining efficiency and effectiveness in service delivery. In order to address these daunting challenges owing to the legacy Paper-Base Systems dating back into the 1900s, the Ministry embarked on the effort to computerize its functions. The National Land information system (NLIMS) was conceived in the year 2008 as the only solution to the foregoing challenges. |
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Use

The NLIMS was constituted in 2014 and it is thus, still a nascent organization with an important mandate. So far, existing land paper records are mainly converted and improved into digital records. The electronic records are used in day to day transactions, both for governmental, public and private actors (see figure 1).

Good practice motivation

- The Ministry has embarked on safeguarding and digitization of land paper records at the Ministry Headquarters, Thika, Mombasa, Kitale and Nakuru land registries. Other achievements include: capturing of all land rent data in order to develop an integrated Land Rent Information System (in review-phase), modernizing the national Geodetic Framework by constructing zero order passive Kenya Reference Frame (KENREF) pillars/stations. The Ministry also modernized the computer server room at the headquarters by up-scaling digital access systems and improving a cooling system and operationalized the Electronic Records Management System (ERMS) to manage the digitized land records.

- Land Registration maps and Land Ownership Data are in a single integrated GIS based Land Database to provide clients and customers with timely, high quality and needs-oriented land information products and services.
- Land data are now easily made available by highlighting a feature to display all information stored about it. The amount of information (spatial and related non-spatial) that can be stored in a Geographical Information System(GIS)/ Land Information Management System (LIMS) Database is almost limitless.
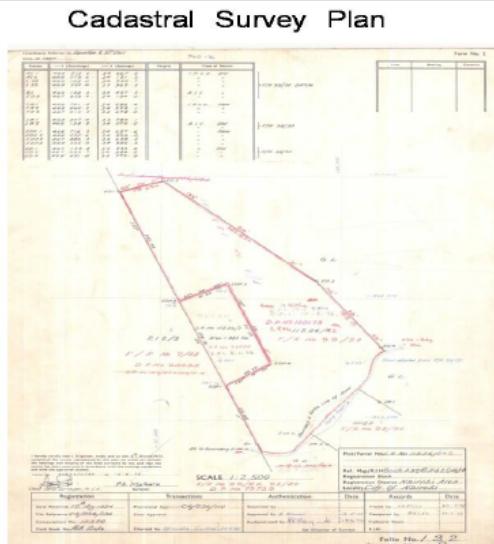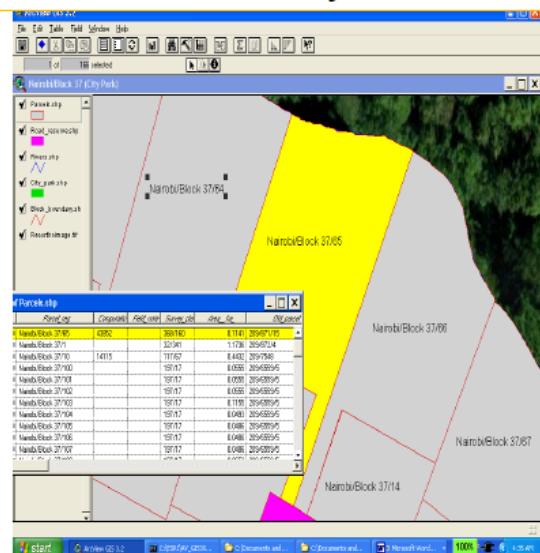
Figure: Creation of the National Land Information Management System (Murage Mundia, 2013).

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Digital Map of Mexico

Country

Mexico

Type NIA-instrument

S5. Systems for information exchange and sharing

Aim

To provide a mechanism for displaying and analyzing geographical information and statistical georeferenced information as a geoportal component for the Spatial Data Infrastructure of Mexico.

NIA-instrument description

The Digital Map of Mexico is a Geographic Information System developed in its origins to display and analyze, via web, the vast collection of geographic information produced by INEGI; and has evolved to show not only the geographical information but also the georeferenced statistical information. It allows the consultation of Topography, Geodesy, Natural Resources, National Geostatistical Framework, National Road Network, Directory of Economic Establishments, Economic Census 2014, Census of Population and Housing 2010, among others. Currently the Digital Map of Mexico integrates not only INEGI information but also the ones of other institutes such as the National Inventory of Renewable Energies from the Secretariat of Energy or the Functional Regionalization of Mexico from the Secretariat of Agrarian, Territorial and Urban Development.

Background

| |
|---|
| The Digital Map of Mexico is a Geographic Information System developed by INEGI in the early 2000s to cover the need to give to the citizens, and the government, a tool that allows, easily, the query of official geographic information. It allows the user to query more than 200 layers of geo-referenced geographic information and statistics, with no greater requirement than an Internet connection and a Web navigator.

 Originally it was developed using software with proprietary licensing, however this seriously limited the potential of the project due to the limitations of this type of licensing (restrictions on installation, redistribution, modification, etc.); so by the end of 2009 and begins of 2010 a strategic decision was taken to replace the software used up to that time in the project with software with open source licensing combined with own development.

 The decision had a better result than expected, since in addition to having superior functionalities to the previous versions, it also allowed to collaborate with other institutions by implementing in its own servers solutions for publish georeferenced information, based on the software of the Digital Map of Mexico without requiring for it the acquisition of expensive proprietary software licenses.

 The growth of the project has been remarkable since it is based on an architecture supported on services with international specifications for the interoperability of geospatial data (Open Geospatial Consortium standards), allowing it to interact with other software and services that apply those standards, which makes the Digital Map of Mexico an increasingly important component of the country's Spatial Data Infrastructure. |

Use

The Digital Map of Mexico is accessible from the INEGI Internet site. It is the main gateway for users, that come from all sectors, including federal and local governments, private initiative, academy and citizens in general, to explore the official geospatial information that the Institute and other public entities provides to the society. It has tools for navigation, searching, displaying and consulting the attributes of the geospatial information that it contains.

Good practice motivation

The Digital Map of Mexico provides an easily way to consult official geographical and statistical data for all the sectors of the Mexican society. In addition, it also provides access to its underlying mechanisms of interoperability based on international standards of the Open Geospatial Consortium so others institutions can take advantage of the INEGI Base Map in their own information solutions. It currently has an average of 100,000 user visits per month.
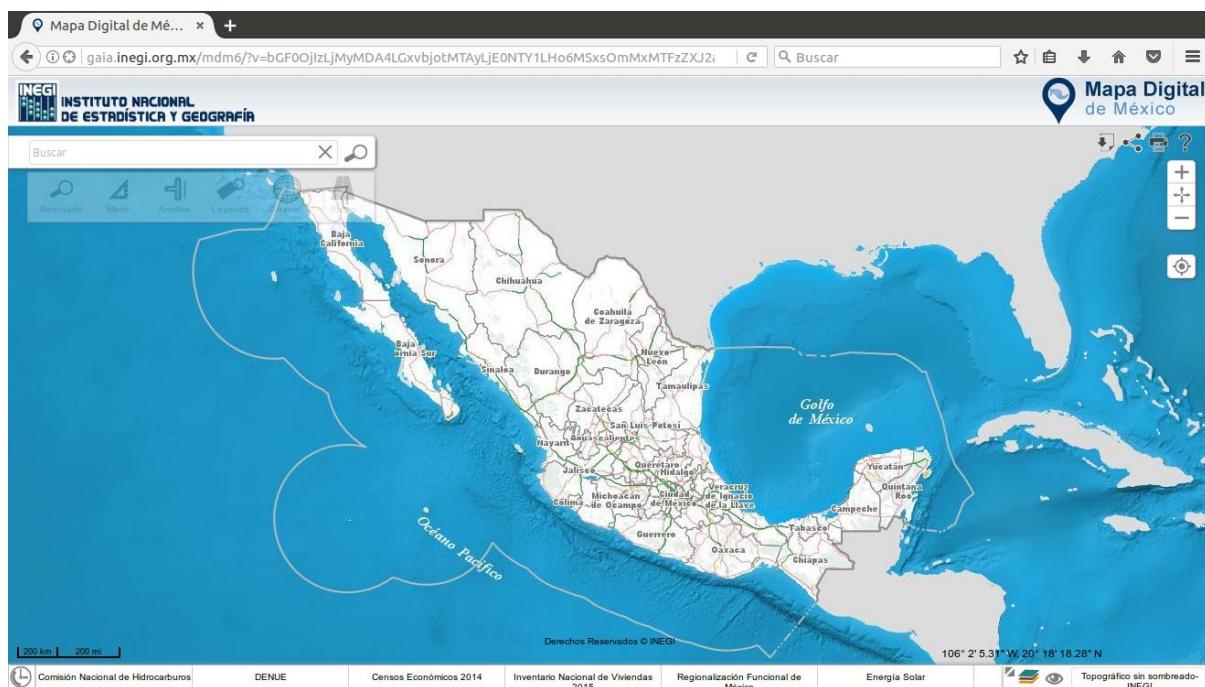
Screenshot 1: Main screen of the Digital Map of Mexico
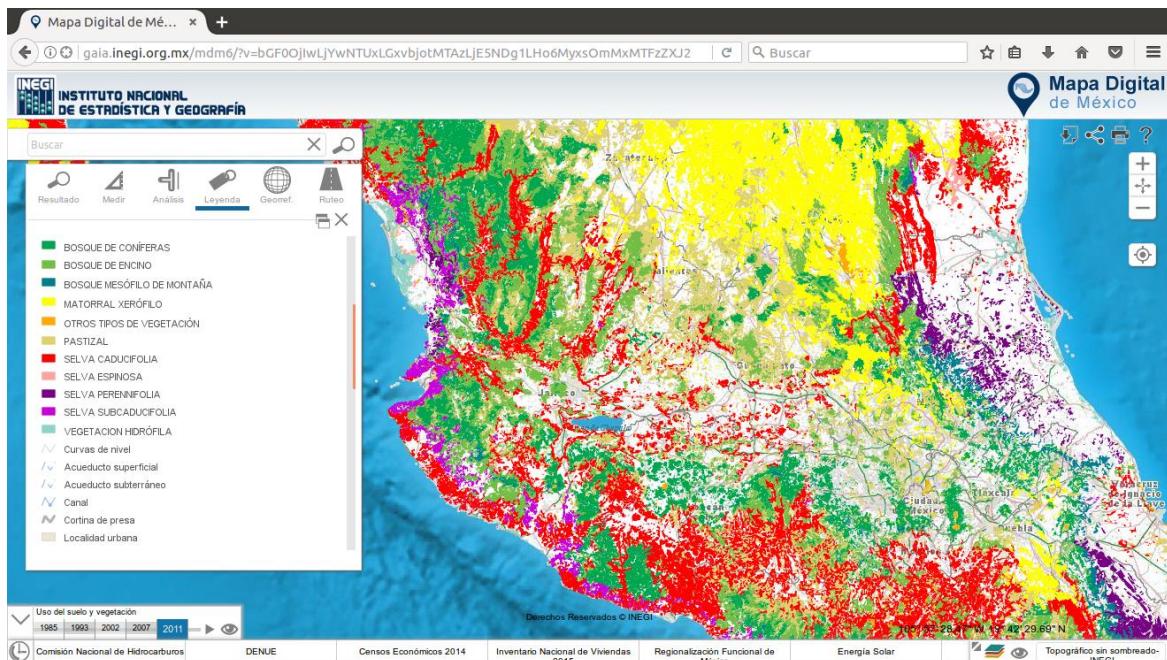
Screenshot 2: Use of soil and vegetation in the Digital Map of Mexico
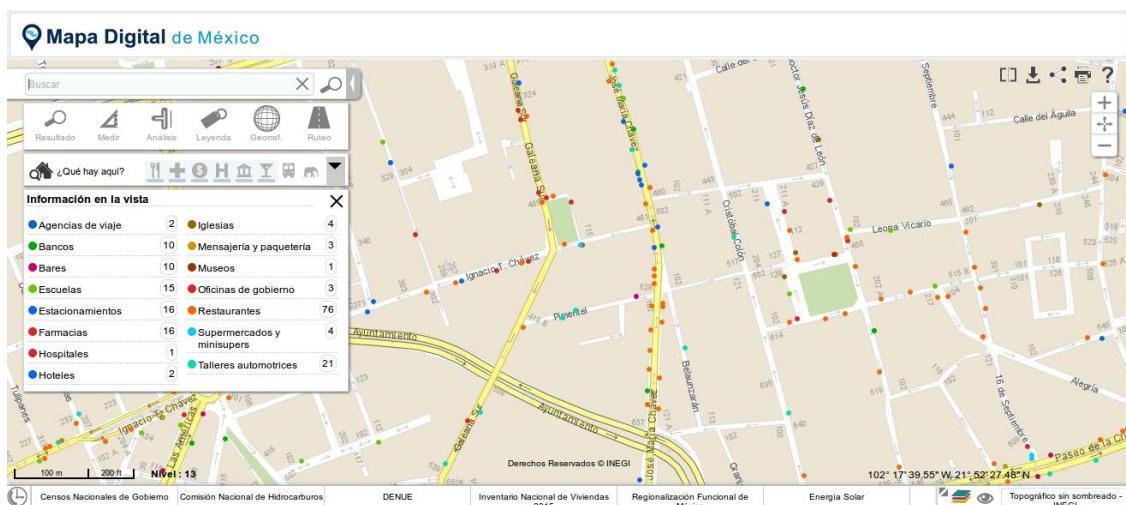
Screenshot 3: Directory of Economic Establishments in the Digital Map of Mexico

All the screenshots were taken in the Digital Map of Mexico at http://gaia.inegi.org.mx

Reference
Digital Map of Mexico website: http://gaia.inegi.org.mx
Digital Map of Mexico documentation website:
http://www.inegi.org.mx/geo/contenidos/mapadigital/

Rating according to their level of application (1..10), a value of 10 means that it has a strong level of application.

1	2	3	4	5	6	7	8	X 9	10	

Less application ……………………………………………. Strong application

Development of governmental geoportals

Country

Morocco

Type NIA-instrument

S5. Systems for information exchange and sharing

Aim

The Moroccan Government intends to digitalize the administration as it allows for a higher accessibility and flexibility of the administration. The creation of geoportals fits within this strategy: they bring the administration closer to the citizens and allow citizens to receive more personalized information on the basis of their specific location. Therefore a geoportal that includes information on the location of various governmental services for citizens and businesses was created. In addition, platforms are established relocating users to geoportals with more specific information of other Ministries and Agencies.

An example of such a specific geoportal is the one developed by the Ministry of Agriculture and Maritime Fisheries: "The aim of this project is the integration of the existing geographical information systems, in order to improve the capitalization and the coherence of all existing information, to improve the performance monitoring of projects and to improve the quality and organization of information sharing, the technical data analysis, the mapping and the spatial data analysis" (Planetek Italia, 2017). With this agricultural and fisheries geoportal, the Moroccan Government aims to develop more specific tools for sharing governmental data, as this might stimulate economic growth.

NIA-instrument description

Government-wide geoportal: In 2016 the Moroccan Government launched the geoportal "Géoportail Service-Public". It offers geospatial data on the location of 14,000 governmental services that might have relevance for businesses or citizens. The portal is accessible by the single access point of the Moroccan Administration: Service-Public.ma. This website brings together all the information that the Moroccan administration offers towards citizens and business. By creating this government-wide geoportal, the Moroccan Government creates a strategic overview of the various activities that are undertaken by the administration.

Agricultural and fisheries geoportal: Besides this general geoportal, there are also other geoportals with more specific information on various topics. The geoportal of the Ministry of Agriculture and Maritime Fisheries is an example of this. This geoportal brings agricultural and fisheries information together, and allows for sharing this data with citizens or businesses. In this way, the Moroccan Government and the USA Government – which supports the project – hope to stimulate economic growth.

Background

Government-wide geoportal: The geoportal is a cooperation project of various Ministries and Department of the Administrations, led by the Ministry of Administrative Reform and Public Functioning and was executed with the political support of former Prime Minister Benkirane and the Minister in charge of Administrative Modernization Moubdii.

Agricultural and fisheries geoportal: The geoportal of the Ministry of Agriculture and Maritime Fisheries was created as part of a collaboration project, the "Millenium Challenge Corporation", between the Moroccan Government and the USA Government in 2007. It was the Directorate of Strategy and Statistics (DSS) of the Moroccan Ministry of Agriculture and Marine Fisheries that realized the Geographic Information System in cooperation with Planetek Italia. The geoportal

focuses especially on sharing datasets that existed already within the Ministry and other governmental partners that possess relevant data.

Both an intranet and extranet application have been developed for users: The Decision Support System (DSS) of the Moroccan Ministry of Agriculture, and the Direction of Monitoring & Evaluation of the Moroccan Agency of Partnership for Progress, and citizens and businesses.

Use

To ensure the accessibility of the general geoportal that was created by the Ministry of Administrative Reform and Public Functioning, the administration did create both a website tool and a specific app that is available for both Android and IOS devices. This increased the user-friendliness, and as such the original aim of bringing the administration closer to the citizen. Users can easily find all necessary information of 14,000 governmental services, such as the exact location, an address, a website, an email address, a telephone number etc. Furthermore, links to different and more specific geoportals are easily accessible.

On the geoportal of the Ministry for Agriculture and Fisheries a user can access various types of data via different layers. It is also possible to do manual research, to print data, to access the metadata, and the consult statistics of the Ministry on agricultural and fisheries products.

Good practice motivation

The creation of those geoportals, both from the perspective of a governmental digitalization that allows citizens to be better informed and the motivation of creating economic growth via public data, can be seen as a good practice of how to deal with geospatial information. With the support of the highest political level, the USA Government and the private sector, the administration cooperated on developing a specific geoportal for agriculture and fisheries.

Furthermore, by setting-up those kind of geoportals, the Moroccan administration allows users to find and make use of governmental data at the moment that users want to make use of the information and data. In that way the governmental logic is turned-around as the focus is partially switched from a provider-centric perspective – i.e. the administration, the state – towards a user-centric perspective – i.e. the citizens or businesses. As such, the launch of geoportals, i.e. the creation of systems for information sharing, can be seen as a necessary element of modernization for governments and administrations.

Finally, the creation of a governmental portal such as the one created by the Ministry for Agriculture and Maritime Fisheries, on which datasets of the administration are made publicly available for free can be placed in a wider context in which government and administrations, on a global scale, are opening up their datasets in order to stimulate transparency, accessibility and economic growth.

Government-wide Geoportal

Agricultural and fisheries geoportal
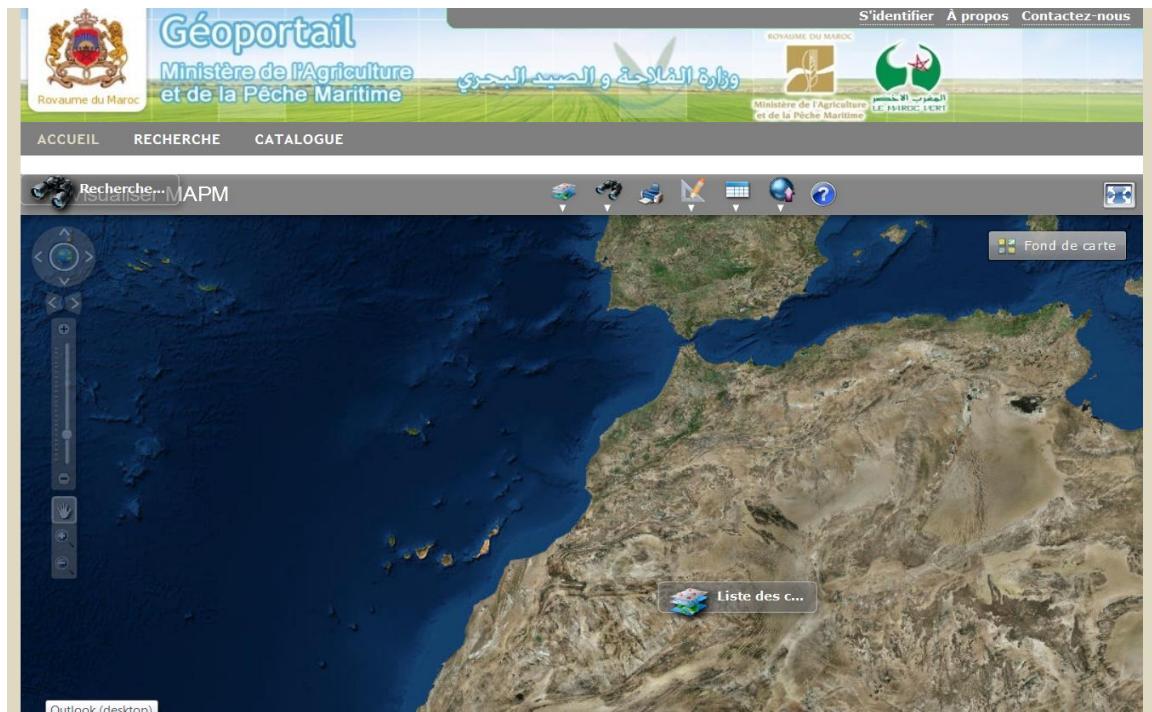
References

Geoportal Ministry of Agriculture and Maritime Fisheries:
http://geoportail.agriculture.gov.ma/geoportal/catalog/main/home.page

Geoportal Public Services of Morocco: http://map.service-public.ma/mfpma/geo/front/
Launch of the general geoportal: http://www.maroc.ma/fr/actualites/lancement-officiel-du-geoportail-de-localisation-des-services-publics-visant-le

LINZ Data Service

Country

New Zealand

Type NIA-instrument

S5. Systems for information exchange and sharing

Aim

LINZ Data Service (LDS) provides free online access to NZ's most up-to-date land and seabed data (http://www.linz.govt.nz/data/linz-data-service)

NIA-instrument description

NZ's LDS provides users with free to use (CC 3.0 NZ licence) geospatial data as well as web feature services to support customization and visualization of LINZ data without additional software. It also provides users with web services to enable users to automate the integration of LDS data with their own web, mobile and GIS applications.

Background

In June 2011, Land Information New Zealand (LINZ) launched the LINZ Data Service (LDS), a web-based tool which allows users to map and download LINZ data. LDS licences most of its data under a Creative Commons Attribution 3.0 New Zealand licence, which in turn is governed by the New Zealand Government Open Access and Licensing (NZGOAL) framework.

Use

Data freely available through the LDS includes New Zealand's topographic, hydrographic, cadastral, title, electoral, crown pastoral land, place names, geodetic datasets and aerial imagery datasets. Access is via: web interface, allowing up to 3GB of data downloads in various projections and formats; API; and OGC web services (WMS, WFS, CSW, WMTS). LDS also provides offline delivery of data over 3GB but this incurs a fee. In addition to the data itself, LDS provides comprehensive information to support data access and use, including self-help reference materials and an online discussion forum.

During the period 2015/16, LDS had almost 30,000 registered users, 74,000 downloads and released 185 updated maps (LINZ, 2016b). It currently has more than 1800 datasets on NZ's land and sea (LINZ, 2016a). The data contributes to helping decision-makers find long-term solutions to some of NZ's most challenging issues, e.g. boosting economic performance, managing urban growth and improving resiliency to climate change.

LDS is growing as an online channel for data distribution and uptake.

Good practice motivation

The LDS is a multiple award winning service. It has been recognized for its success in opening access to government spatial data and facilitating reuse to achieve social and economic benefits such as unlocking the value of information by reducing barriers for reuse. This lies in the use of the Creative Commons licensing framework. To date , LINZ is the source of nearly 50% of the datasets available on NZ's government open data website (public data.govt.nz) (LINZ 2016a).

The established platform and services associated with LDS also provides the basis for other information infrastructure initiatives such as establishing data publishing services for other government agencies. This is perceived to be a way of delivering economies of scale across

government and for users, a reduction in transaction costs. For LINZ, creating a business model that can be adapted also means additional resources that can be reinvested into publishing more LINZ data (LINZ, 2016a).
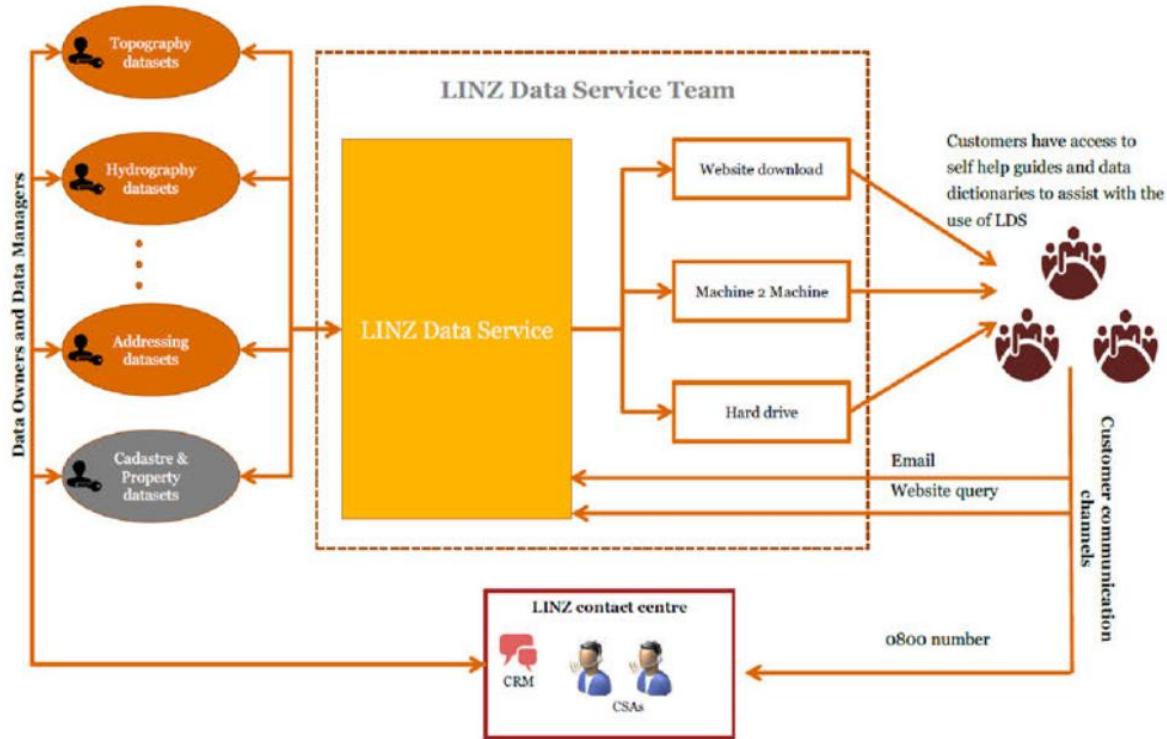
Figure: Relationship between LDS and stakeholders (LINZ, 2016a: 11).

Reference

Land Information New Zealand (2016a). LINZ Four-Year Plan, 2-16-2020. Available at: http://www.linz.govt.nz/system/files_force/media/doc/linz_four-year-plan_2016.pdf?download=1

Land Information New Zealand (2016b). Briefing to the Incoming Minister for Land Information. Available at: http://www.linz.govt.nz/system/files_force/media/doc/linz_briefing-to-the-incoming-minister_20170214_sm.pdf?download=1

Integrated Approach Towards Data Sharing through NIIS

Country

Republic of Korea

Type NIA-instrument

S5. Systems for information exchange and Sharing

Aim

To enhance data sharing at both central and local government levess

NIA-instrument description

Korea's National Integrated Information System (NIIS) integrates geospatial, administrative, policy and statistical data from the central and local governments. It promotes data sharing across wide-ranging thematic applications throughout the government, and effectively combines e-government with NSDI. Using Open APIs and geoweb standards (e.g. WFS, WMS), the NIIS allows the private sector to mash-up and create value-added services for users.

Background

This practice arose from the need for a process-based approach, in which the management of geospatial assets are focused on delivery of services and solutions for the sharing and reuse of resources. This initiative came after the success of USA's Geospatial Platform that leverages portfolio management for efficiency and wise investments.

Use

The NIIS achieves seamless connection among geospatial and textual fundamental databases nationwide. This supports various thematic applications, such as National Land Information, Coastal Management Information, Korean Tidal Flat Information, National Environmental and Ecological Information, Agricultural Information, Forestry, and Cultural Heritage. Using open API and geoweb platform technologies (WMS, WFS, etc.), data users are able to mash-up and create services and applications.

Good practice motivation

The NIIS demonstrates efficient organization and integration of information flows nationwide. It presents a central system for promoting data interoperability among sectors and sharing of information. This reduces duplication of efforts in accessing updated, authoritative information, and facilitates collective decision-making.
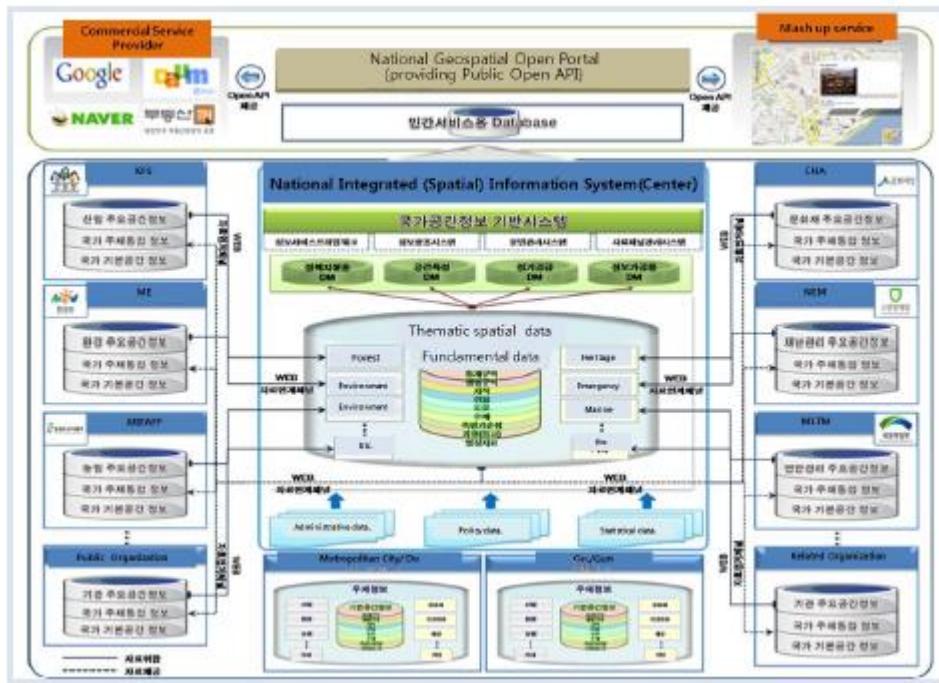
Figure: Architecture of National Integrates Information System and the link with the National Geospatial Open Portal

Reference

Eun Hyung Kim. (2010). National Spatial Data Infrastructure: The Case of the Republic of Korea. https://www.infodev.org/infodev-files/resource/InfodevDocuments_1110.pdf

SpIDeRR: Spatial Information and Data Portal for Disaster Risk Reduction

Country

Rwanda

Type NIA-instrument

S5. Systems for information exchange and sharing

Aim

The Spatial Information and Data portal for Disaster Risk Reduction (SpIDeRR) is a one-stop data platform for Disaster Risk Reduction (DDR) in Rwanda. The Regional Centre for Mapping of Resources for Development (RCMRD) and SERVIR-Eastern & Southern Africa partnered with the Rwanda Ministry of Disaster Management and Refugee Affairs (MIDIMAR) and other national stakeholders developed and established SpIDeRR to enhance the capacity of the ministry and other stakeholders in their disaster management activities (during the different DDR phases: preparedness, response, mitigation and recovery).

NIA-instrument description

This portal is intended to give MIDIMAR and other allied agencies a platform where they can share data including documents that are relevant for each of the different phases of DRR. Besides these, the general public can also access data available in SpIDeRR and visualize maps and statistics available through the portal.

Background

Rwanda's disaster profile is dominated by heavy rains, floods, landslides, droughts, fire, earthquakes, diseases and epidemics that disrupt people's lives and livelihoods, destroy the infrastructure and interrupt economic activities and retard development.
The vulnerability of Rwanda is largely due to its topographic and demographic characteristics. This is further exacerbated by impacts of climate change such as the increasing variability in rainfall frequencies and intensity causing climatic hazards such as droughts, floods, extreme temperatures and prolonged dry spells. More erratic climate conditions and extreme weather events such as droughts and floods will become more frequent and intense in the country, thereby increasing disaster risks.
Socio-economic, cultural and physical vulnerabilities further aggravate disaster risks. Despite record-high economic growth recorded by Rwanda over the past decade, there still remains a high poverty incidence. The Third Integrated Household Living Conditions Survey report prepared by MINECOFIN and the National Institute of Statistics Rwanda (NISR) revealed that still about 45 per cent of the country's 10.7 million people remain under the poverty line.
This poverty rate especially in rural areas embodies the country's socio-economic vulnerability, which contributes to disaster risks when challenged by occurrence of natural hazards at an increasing frequency and intensity.
Poverty encapsulates the very core of socio-economic vulnerability of the Rwandan population with detrimental effects on the population's disaster resilience. It relegates the poorest of the poor to subsistence livelihoods, poor housing conditions, settlements built in hazard-prone areas such as steep slopes or along riverbanks and valleys, and oftentimes cause people's lack of access to social services and inadequate financial capacity to meet day-to-day living needs, and not to mention the lack of capacity to cope when disaster strikes.

Cultural factors also worsen the already grim scenarios for the most vulnerable, like for instance; families refuse to relocate to safer areas because they hold strong cultural or traditional bond with their abode or communities where they belonged, lived and cherished all their lives (MIDIMAR SURVEY, 2011).

In order to get a better overview of, cope with and fight against the disasters, the SpIDeRR is developed and launched in 2015.

Use

Geospatial data are accessible to generate maps which can be shared publicly or restricted to specific users only. Once registered, people can log into the SpIDeRR portal and use its functionality. The portal also gives users access to free and open source tools to assist them in data analysis (GIS) and mapping (GeoCLIM and GeoWRSI, SAGA, QGIS).

Good practice motivation

Since the launch of the portal up to now, the available data consists of 15 layers (shapefiles), 7 maps and 42 users are registered. The portal seems very user friendly by providing tutorials
Including step-by-step instructions in workshop format that help users to accomplish a set of tasks.
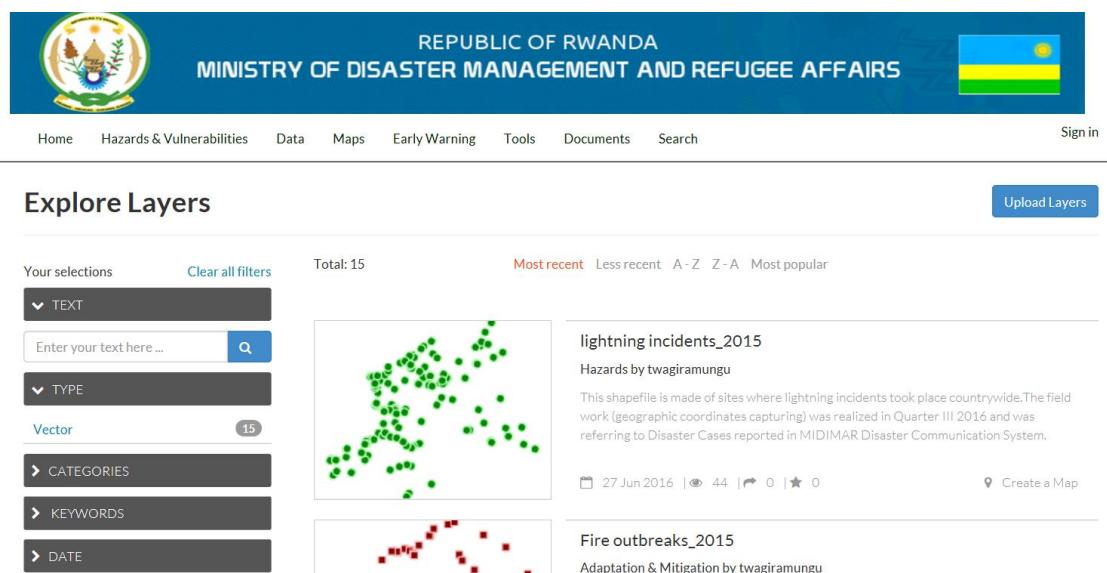
Figure: layout of the SpIDeRR portal (layers) (MIDIMAR, 2017)

Reference

- MIDIMAR (2011). Rwanda-SpIDeRR. Accessible at http://41.74.166.109/ [accessed 1st May 2017].
- MIDIMAR (2017). Disaster risks and vulnerability in Rwanda. Accessible at http://41.74.166.109/hazards [accessed 1st May 2017].
- RCMRD (2015). Rwanda Launches a Spatial Information and Data Portal for Disaster Risk Reduction in Rwanda with Support from RCMRD/SERVIR Eastern and Southern Africa. Accessible at http://www.rcmrd.org/rwanda-launches-a-spatial-information-and-data-portal-for-disaster-risk-reduction-in-rwanda-with-support-from-rcmrdservir-eastern-and-southern-africa/ [accessed 1st May 2017].

Sharing Data, Delivering Services and Building Communities in GeoPlatforms

Country

Singapore

Type NIA-instrument

S5. Systems for information exchange and Sharing

Aim

To create value beyond data exchange, by engaging users to deliver services and build communities using the geoplatforms.

NIA-instrument description

Singapore government uses the GeoSpace and OneMap platforms for data sharing among public authorities and with the public respectively. These platforms hosts services and geo-communities to engage users and align information needs.

Background

This practice arose from the need for having user-friendly platforms that encouraged the sharing and use of geospatial information by government officers and the public. In addition to creating one-stop data sharing platforms, Singapore's NSDI designed GeoSpace and OneMap to cater to specific information needs and applications of users.

Use

GeoSpace hosts GeoCommunities, which are virtual communities of agencies with common geospatial information needs. These GeoCommunities support collaboration in data sharing and analyses. Examples of these GeoCommunities refer to climate change, management of slope hazards, and coordinating Unmanned Aerial Vehicles systems flights and sharing aerial images. This allows public agencies in similar domains to leverage GeoSpace as a central platform for building analytical models and solving problems.
OneMap engages citizens and businesses in decision-making by offering specialized services to them. These include the 'School Query', 'Population Query', and 'Land Query' functions, which allow users to query schools, demographic and land ownership parameters by location respectively. Specifically, the 'School Query' function is customized to local needs, as it allows parents to search for potential schools for their children within a specific radius from their homes, as part of the local school registration process. OneMap also offers APIs for citizens and developers to discover data for daily decision-making and create value-added products. Another feature is the One Historical Map, which is hosted within the OneMap platform. It allows citizens to discover the heritage of places by comparing maps across different years. Users can even geotag old photographs and share them with the public through the One Historical Map, thus creating a national repository of memories collectively.

Good practice motivation

The platforms' offering of services and geo-communities aligns with information needs in an efficient way. Beyond dissemination of data, the platforms provide communication channels in order to generate mutual understanding of goals and transfer necessary data between relevant data suppliers and users. This facilitates strategic geospatial information exchange and management, not just among government agencies but also between the government and the general public.

Whole-of-Government Geo-Platforms Enabling Data Sharing

GeoSpace
Launched in 2011

107 data layers from 10 agencies → 1000 data layers from 40 agencies

Geo-Data Geo-Analytics Geo-Communities Geo-Requests

OneMap
Launched in 2010

24 data layers from 40 agencies → 91 data layers from 88 agencies

Citizens Business Academia NGO

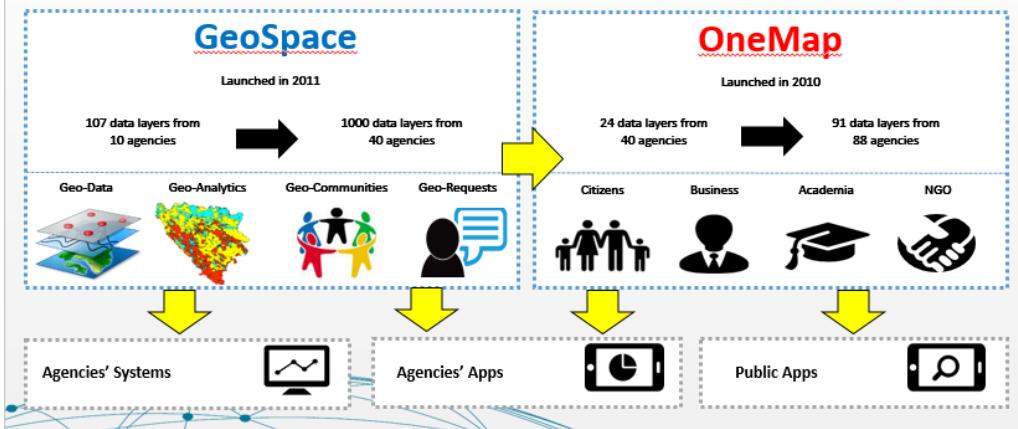Agencies' Systems

Agencies' Apps

Public Apps

Figure: Architecture of Central Platforms Sharing Data, Delivering Services and Building Communities within the government and with the general public.

References

UN-GGIM Singapore Country Report. 2012.

www.ggim.un.org/2nd%20session/country%20reportss/Country_Report_Singapore.pdf

www.onemap.sg

www.hm.onemap.sg

Cadastral Electronic Site (SEC)

Country

Spain

Type NIA-instrument

S5. Systems for information exchange and sharing

Aim

Website of the Directorate General of Land Registry (Spanish Cadastre), providing basically three kind of services: - Request and certification of cadastral data, including geospatial information. - Massive exchange of information. - INSPIRE services dealing with cadastral cartography

NIA-instrument description

The Directorate General Cadastre provides a series of web services that enables querying cadastral information (both protected and unprotected data) and its updating. • Consultation services of unprotected cadastral data • Consulting services of proprietary data (WCF) • Update Services dealing with legal cadastral data (ownership) (ASMX) • INSPIRE services dealing with cadastral cartography

Background

The Spanish Cadastre is an administrative register with a fiscal origin, created as a data bank to be accessed both by public administrations (national, regional, local) and citizens. As an inventory of real estate, it contains physical information (surfaces, location, use, shape, boundaries, cartographic representation, crops and forest use, type and quality of constructions, etc.), legal information (identification of holders or owners: name, national identification number, address, etc.) and economic information (cadastral values of land and buildings, valuation criteria). This cadastral bank includes detailed information of more than 32 million urban properties, more than 40 million rural properties and more than 27 million cadastral owners. The Cadastral Electronic Site (SEC) started up in May 2003 with the main goal of providing other Administrations with information which, up to that moment, citizens were requested to present in the suitable office after collecting it themselves from the cadastral office. At the moment, SEC provides the following services: • Request for cadastral information, both alphanumeric and graphic (maps). This service allows to look up the physical and economic features of properties as well as their owner. The data can be obtained from the location (address) of a building, from its cadastral reference or code, or from a list of the properties owned by a person. • Massive request service. Instead of making individual queries, it is possible to send a file in a predefined format with necessary data and this service replies with all the requested information in a file. • Certificate of the cadastral data (official document with the data obtained from a previous request). This document is obtained immediately and at no cost. The validity of this document is based on a code of 16 characters printed in the document itself, which, once

typed in one of the options of the application, allows to recover the document as it was originally issued.

- Exchange of information: It allows to exchange files, with a predefined format, between Cadastre and the different Administrations as well as with other collaborating organizations, with different purposes: coordination of the contents of data bases, updating of Cadastral information, legal effects, taxation, etc. Including

It is important to emphasize that all these services are provided at no cost, and have a universal nature. Nevertheless, as both the European Union and Spanish laws consider part of the cadastral data as protected data, access to these protected data of real estate is legally accessible only by certain institutions and administrations and, of course, by the owners of each particular property. For that reason, involved administrations are obliged to use X509 digital certificates in order to authenticate the users. Owners of a particular property can access protected data of their own properties by authenticating themselves with a valid official digital certificate. The Cadastral Electronic Site is also fully adapted to the 2003//98/EC Directive, on the re-use of public sector information and the Directive establishing an infrastructure for spatial information in the Community (INSPIRE).

Use

SEC provides three kind of services:
  1) Services of request and certification of cadastral data. They allow locating a specific property in three different ways:
     - Typing province, municipality, street name and number in case of urban buildings; province, municipality, polygon and parcel in the case of rural properties.
     - Selecting it in the cadastral cartography.
     - Typing the holder's National Identification Number (NIF), and selecting a property from the list of properties owned by that person.
  Once located or selected the property, the information provided by the program is as follows: Previously registered users, as owners of a particular property (legally authorized, with a personalized access), can obtain thorough information of this property: physical characteristics, cartography, bordering properties (ownership) and economic data (cadastral values). This information can be certified by obtaining a code of 16 characters which guarantees this document is valid, since at any time the original document issued by the SEC can be recovered just by typing this code in the SEC form. Free access users (not authenticated), can obtain all the cadastral information except economic values and ownership of the property.

  2) Massive exchange of information Services. Cadastre exchanges a huge amount of information with collaborating agents in order to coordinate the contents of their respective data bases. These SEC services allow the exchange of data files between collaborating agents and the Cadastre via Internet. The users have the following options:
     - To send files to other users, via Internet, generating warnings to the receiver. - To obtain immediate information about the syntactic validity of data of the sent files, giving the possibility, in case of errors, to provoke a reverse gear in the process of information shipment.
     - To download received files sent by other users, being able to recognize the sender previously, type of file and dates of shipment.
     - To view statistics about sent and received files.

  3) INSPIRE services cadastral cartography: Cadastral parcels, Addresses, and Buildings

Main user categories of SEC are:

- Citizens
- Private companies
- Public Administrations from central, regional and local governments.
- Property Register officers
- Notaries
- Courthouses

Regarding the types of queries and web petition, between and 2014, the number of web visits and queries (to give an idea of the main demanded services):
- Web visits : 427.787.542
- Queries to protected data (registered users with access right to data): 219.130.793
- Emission of certificates: 58.593.425
- Queries to unprotected data: 976.476.834
- Map queries and views: 1.532.446.148

Good practice motivation

SEC is designed to achieve to the following functionalities :
- It provides the different Public Administrations with information for the tributary management of different taxes based on the real estate property.
- It provides security to the real estate sale procedure. It is compulsory to include the cadastral code of the properties in deeds and registry inscriptions, in order to complement the legal information of the registry of the property, with physical and economic data of the cadastre.
- It is a data bank at the service of citizens and Public Administrations, that use cadastral information for management of their policies of territorial planning (such as town planning or infrastructures), for the control of public aids and subsidies (such as scholarships, social aids, Common Agriculture Policy, etc.), or for planning services of utility companies (networks of telephony, gas, electricity, cable, etc.).
- Finally, cadastre is usually requested to provide evidence in court.

When gathering all this information in an accessible Internet service, SEC always takes into account security and data protecting policies based on the following conditions:
- It enables to issue cadastral information avoiding inconveniences of citizens going to the Cadastre offices to obtain the needed data. In addition, this information is obtained at no cost.
- It enables to fulfill legal obligations of the citizens, eliminating unnecessary proceedings and streamlining procedures.
- It eliminates most routine and tedious work in the departments of public attention of the cadastre offices.
- It reinforces the exchange of information with administrations and institutions collaborating with Cadastre, including INSPIRE Services.
- It reinforces and improves the opinion of the citizens on Public Administration.
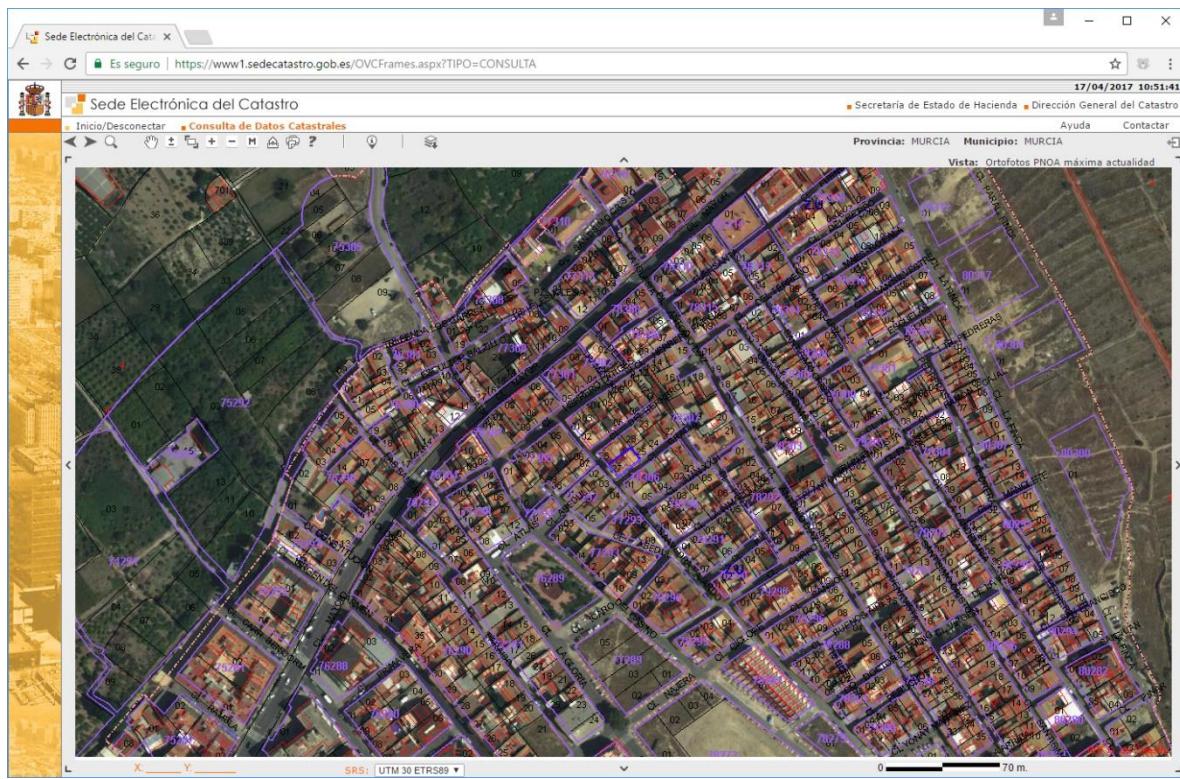- It promotes the electronic administration, the e-government.

Figure: capture of the Website of the Directorate General of Land Registry (Spanish Cadastre)

Reference

http://www.catastro.meh.es/

Fiji Geospatial Information Council

Country

Fiji

Type NIA-instrument

S6. Entities for collective decision-making

Aim

To ensure a coordinated approach to the development of the national spatial data infrastructure – in particular to land information management issues

NIA-instrument description

Coordination body with decision making power consisting of senior representatives of key stakeholders. This body deals with the development and coordination of all relevant issues and projects; e.g. funding and resourcing of all approved projects; formulation of policies on data generation in the agencies related to data standards, and the dissemination and usage of geospatial information including pricing, privacy, security and access conditions; training and education; liaison with private secto and the user community; ensuring relevant projects are well managed; management and governance of the Geospatial Information support centre; community about the progress and delivered products; and the execution of the NSDI-strategy.   The Council is led by chaired by the permanent secretary of the Ministry of Land & Mineral Resources. Other members of the Council are the permanent secretaries of the Ministries of Housing & Urban Development, Finance & Economic Planning, iTaukei Affairs, and Provincial Development, the general manager of iTaukei Land Trust Board, the representative of the Public Service Commission, and the solicitor general.

Background

Since 1991, there was the Fiji Land Information Council (FLIC) made of relevant heads of government ministries and departments directly involved with land information. Based on a new Fiji Land Information System Strategy the FLIC is renamed the Fiji Geospatial Information Council and the associated and the Fiji Land Information Centre as the Fiji Geospatial Information Centre. New in the governance structure is the inclusion of 2 or 3 geospatial experts to be members of the technical Advisory Group assigned with the task of advising the Council as well as the Centre on quality control, standardization and specifications, and on technology updates and directions. The Council is not confined to government ministries only but to also include Heads or Representatives of entities in the Private Sectors directly or indirectly involved in GIS and RS technology.

Use

The established Council promotes and allows the sharing of key datasets for decision making under 5 areas; Strengthening of the existing government structures; Improvement of the fundamental geospatial data; Enabling access to fundamental geospatial data; Enabling interoperability of fundamental geospatial data; and Strengthening the human technical capacity of the industry.

Good practice motivation

This good practice of structural NIA-instrument 'Entities for collective decision-making' refers to an entity that can make binding decisions affecting multiple actors. The Council consists of senior officials of different organizations belonging to the policy domain of geospatial information management in order to collectively set out strategy and control the implementation of it.
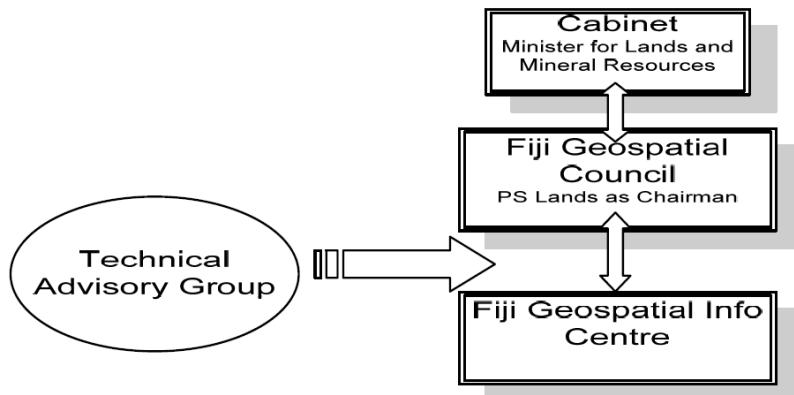

Figure: Fiji Governance structure for geospatial information management

Reference

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Samuela Kanainaliwa – EO Emergency planning & coordination unit / National Disaster Management Office (2014). Overview "Background of GIS in Fiji". Regional Group Meeting (EGM) on georeferenced information system for disaster risk management and sustaining the Community Of Practice (COP). http://www.unescap.org/sites/default/files/Country%20presentation%20Fiji%20EGM%20BKK%20april%202014.pdf [last accessed: 7 May 2017]

Joint decision-making committee with multiple Government agencies to drive geospatial development

Country

Singapore

Type NIA-instrument

S6. Entities for Collective decision-making

Aim

To enhance the availability of data and geospatial adoption among multiple sectors in government

NIA-instrument description

One geospatial and one technology public agency, namely the Singapore Land Authority (SLA) and the Government Technology Agency (GovTech) are both co-chairs of the Singapore Geospatial Collaborative Environment (SG-SPACE) driving the Singapore's NSDI. SG-SPACE adopts a collaborative whole-of-government approach to make available geospatial information and drives adoption of geospatial information and technology in order to support decision making, public security, cost effective businesses, and foster location awareness among citizens. Its joint-working committee with decision-making power comprises partner agencies in the technology, statistical, economic, social, healthcare, transportation, urban planning and hardware, security, environmental and energy sectors.

Background

| |
|---|
| SG-SPACE requires strong coordination across sectors. Therefore, a robust institutional structure was considered to be crucial for the success of SG-SPACE. A specific networked structure with diverse representations was adopted to facilitate relevant partnerships and implementation. In order to achieve this it was needed to create an institutional structure consisting of multi-agency committees and sub-working groups allowing agencies from different administrative levels and sectors to meet for making collective decisions. |

Use

The SG-SPACE Working Committee drives geospatial initiatives in data policies, technological platforms and capacity building across sectors in Singapore. In addition, it also drives various strategic and technical committees in the NSDI's institutional framework. SG-SPACE Working Committee member agencies have also strengthened their engagement with geospatial information and technology to support relevant business processes and service delivery. An example is the OneService app, developed by the Municipal Service Office (MSO), which enables citizens to report and geotag municipal issues conveniently from anywhere. As an example of inter-agency collaboration, SLA and GovTech combined their respective expertise in data policy, coordination and technology to obtain the support of various municipal service agencies in the realization of the app. Another example is Virtual Singapore, a national 3D platform in which SLA and GovTech contributed to the establishment of data sharing and governance structures, data modelling, and standards development.

Good practice motivation

The partnership between lead geospatial and technology agencies in Singapore's NSDI is strategic to the adoption of geospatial technology for planning, operations and service delivery. In particular, the complementary leadership enhances the digital capabilities of agencies for using geospatial applications, and enables geospatial innovation and collaboration in various fields. This facilitates geospatial adoption in non-traditional fields, such as municipal services, and social and healthcare services. In addition, collaboration with multiple sectors in government is crucial in unlocking the rich and diverse geospatial data that reside with them.

SG-SPACE Governance Structure
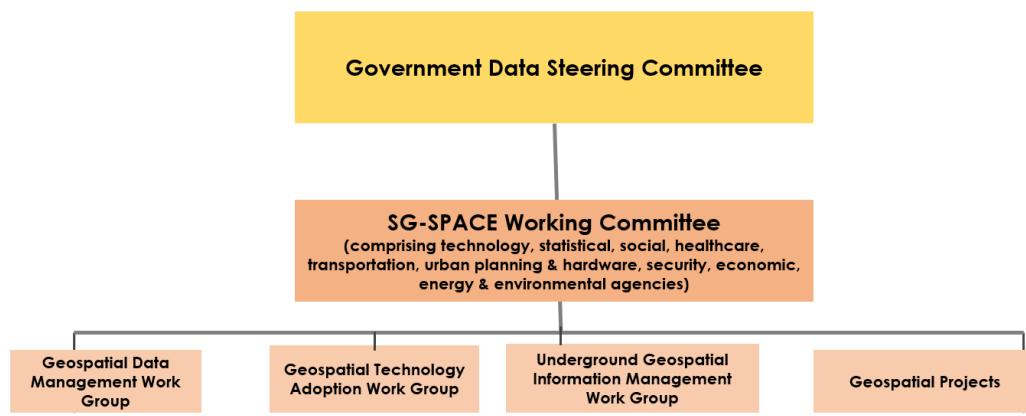
Figure: Partnerships with agencies in multiple domains to drive wider geospatial adoption – under a joint committee co-led by the geospatial and technology agencies.

Reference

UN-GGIM Singapore Country Report. 2012.
www.ggim.un.org/2nd%20session/country%20reportss/Country_Report_Singapore.pdf

Slovenian coordination mechanism for infrastructure for spatial information

Country

Slovenia

Type NIA-instrument

S6. Collective decision making

Aim

In Slovenia structural NIA-instrument refers to the construction and adoption of a national legal framework for Slovenian spatial data infrastructure and transposition of INSPIRE directive into national legislation. INSPIRE project group and National contact point was established in Slovenia to manage and maintain the list of spatial datasets, manage the detailed descriptions of the spatial data themes, manage the spatial information geoportal, manage and maintain the metadata information system, provide the interoperability of the spatial datasets and the services related thereto, prepare the proposals of operational programmes of the Government under Article 20 of the ISI Act, execute the implementing rules of the INSPIRE Directive in the Republic of Slovenia, prepare and supplement the strategy of the infrastructure for spatial information, prepare the programme of activities and measures to meet the requirements for establishing the infrastructure for spatial information and prepare reports on providing the infrastructure for spatial information for the European Commission

NIA-instrument description

In 2003 the Ministry of the Environment and Spatial Planning has on the behalf of the Republic of Slovenia appointed a Slovenian intersectional **INSPIRE project group**, which is responsible to provide cooperation of all managers of spatial datasets and services, and the users thereof. The last changes to the composition of the INSPIRE project group happened in 2013, at which point the responsible administrative body for the land survey was the Ministry for Infrastructure and Spatial Planning. The group is a strategic body authorised to steer the measures for sharing spatial datasets and services related to spatial data and to implement the INSPIRE Directive in practice. It provides guidance and assistance to individual public authorities in the preparation of legal acts for the regulation and management of spatial datasets as well as their use. The Infrastructure for Spatial Information Act (Official Gazette of RS, No. 8/2010 and 84/2015, hereinafter, the ISI Act), which transposed into the Slovenian legal order the Directive 2007/2/EC of the European Parliament and of the Council of 14 March 2007 establishing an Infrastructure for Spatial Information in the European Community (OJ L 108, 24.4.2007, p. 1), along with the Corrigendum to Directive 2007/2/EC of the European Parliament and of the Council of 14 March 2007 establishing an Infrastructure for Spatial Information in the European Community (OJ L 365, 19.12.2014, p. 165) - the INSPIRE Directive, determines a national contact point for contacting the European Commission regarding the INSPIRE Directive and for efficient implementation of the infrastructure for spatial information**.** In Article 18 the ISI Act specifies that the tasks of the national contact point shall be implemented by the ministry responsible for land survey, which in this case means the

Ministry of the Environment and Spatial Planning and the Surveying and Mapping Authority of the Republic of Slovenia as its affiliated body.

Background

In addition to the Ministry of the Environment and Spatial Planning, the coordination group consists of the following authorities:

- Ministry of Defence – Administration of the Republic of Slovenia for Civil Protection and Disaster Relief
- Ministry of Infrastructure – Slovenian Infrastructure Agency
- Ministry of Agriculture, Forestry and Food
- Ministry of the Environment and Spatial Planning
- Ministry of the Environment and Spatial Planning – Surveying and Mapping Authority of the Republic of Slovenia
- Ministry of the Environment and Spatial Planning – Slovenian Environment Agency
- Statistical Office of the Republic of Slovenia
- Ministry of Culture
- Ministry of Public Administration
- Ministry of the Interior
- Geological Survey of Slovenia
- Slovenia Forest Service,
- Fisheries Research Institute of Slovenia,
- Ministry of Health,
- Institute of the Republic of Slovenia for Nature Conservation,
- Ministry of Economic Development and Technology

If necessary, representatives from other public authorities and local government are included into the group, when the subject dealt with relates to their field of work. Administrative support for the work of the INSPIRE project group is provided by the national contact point.

Use

The INSPIRE project group performs the tasks of a strategic body authorised to steer the measures for sharing spatial datasets and services related to spatial data and implementing the INSPIRE Directive in practice. The INSPIRE project group offers guidance and assistance to individual public authorities managing spatial data and services, so that such data and services comply with the provisions of the ISI Act and the INSPIRE Directive. It steers their work related to the preparation of legal acts in the field of regulating and managing spatial datasets and their use. To address different areas in more detail the INSPIRE project group sets up individual working groups.

Good practice motivation

These rules and regulations are developed specifically for a particular subject of establishing Slovenian spatial data infrastructure, but in practise those coordination mechanisms offer a platform where all stakeholders could improve their cooperation and collaboration between each other. With avoiding of overleaping and duplication of efforts and activities regarding re-use and interoperability of spatial datasets and services. This coordination mechanisms are used also for harmonisation of other cross sectorial activities related with spatial data for example: exchanges of (digital) geoinformation, (open) data, standards or content, such as freedom of information, intellectual property rights or the protection of personal data.
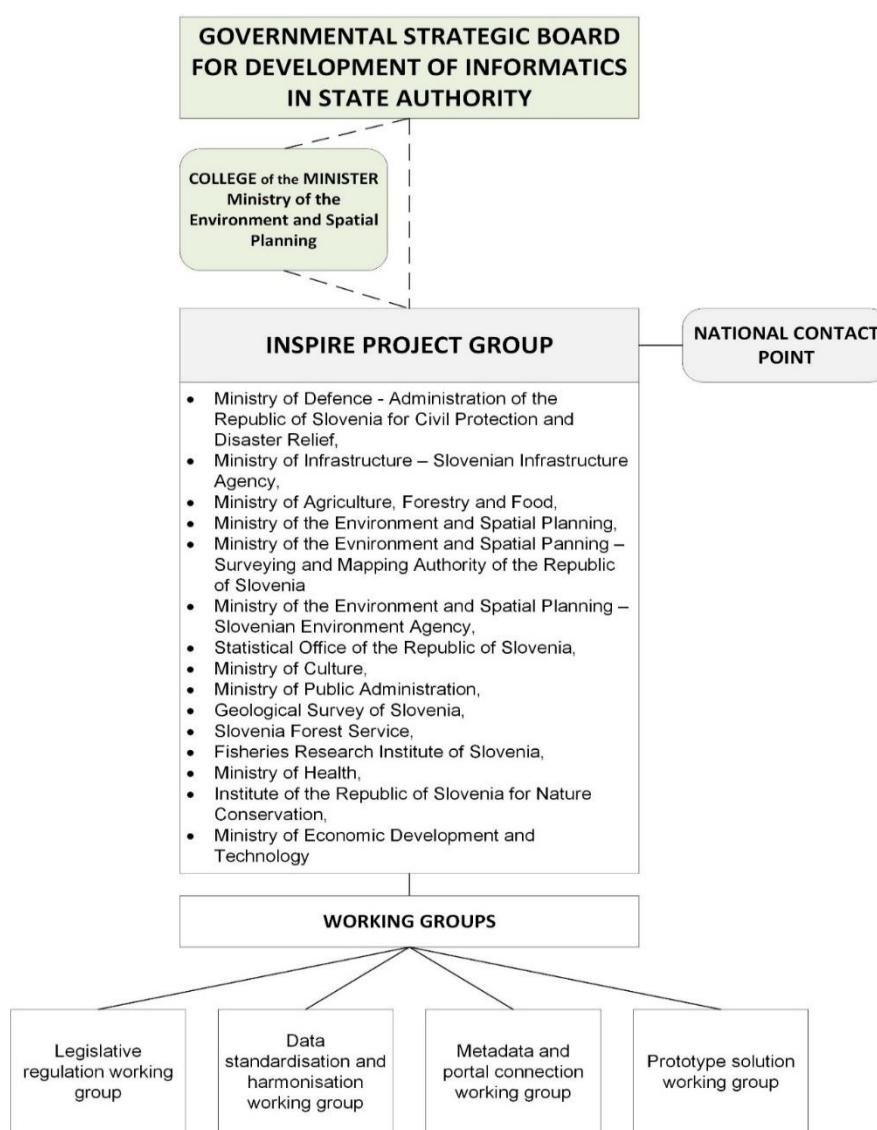
Organisation chart

Reference
www.geoportal.gov.si

Building National Datasets Through Intergovernmental Partnerships in PSMA Australia Limited

Country

Australia

Type NIA-instrument

S7. Partnerships

Aim

To develop authoritative national geospatial assets for supporting business solutions and government services

NIA-instrument description

PSMA Australia Limited (PSMA) creates and distributes national spatial datasets by partnering with data custodians from various jurisdictions. It is an unlisted public company that consists of all Australian public sector mapping agencies across the federal, state and territory levels. Through the partnerships, PSMA facilitates wide-ranging access by businesses and government agencies to quality spatial data.

Background

Australian governments had a shared desire to develop and make national datasets available for economic growth and development. Collaboration and governance across various entities in the supply chain were recognized to be important for achieving this.

Use

PSMA manages a supply chain of geospatial information by integrating and distributing national datasets among producers and users. It collects and standardizes geospatial information from its network partners, and puts it through a quality assurance process, before it is used in mobile devices and Internet of Things applications. Through strong governance arrangements across various jurisdictions, PSMA coordinates its relationship network and achieves a sustainable self-funding model. This consists of data custodians and suppliers across federal, state and territory agencies, such as Geoscience Australia, the Australian Electoral Commission and Australian Bureau of Statistics. On top of that, it promotes the industry to develop spatial products and services through license arrangements with value-adding resellers. Examples of PSMA's data products are GeoScape, which provides detailed information about the built environment for every address, and the Geocoded National Address File (G-NAF), which contains comprehensive records of Australia's physical addresses.

Good practice motivation

PSMA's strong governance environment harnesses partnerships to achieve a self-sustaining network of data producers and users. Its unique status as an intergovernmental public company binds it to the interests of the Australian government and public, but also gives it relative autonomy for promoting the industry at the same time.
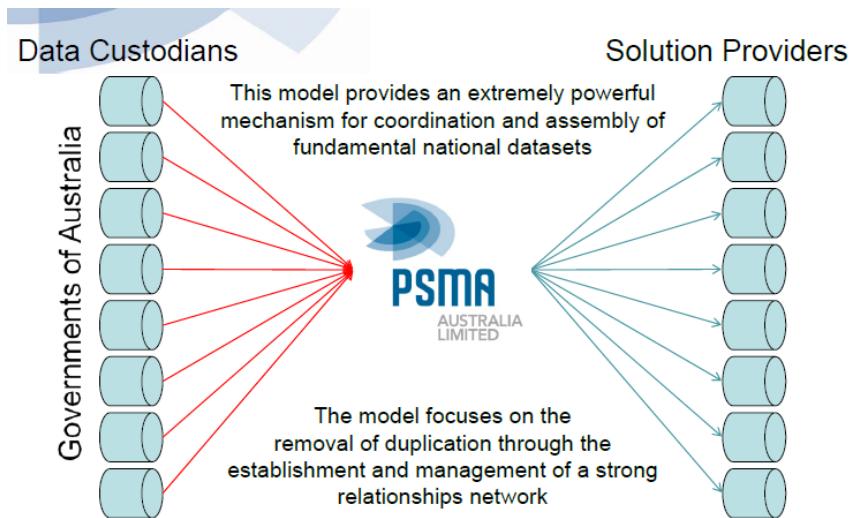
Figure: How PSAM Australia add value

Reference www.psma.com.au
www.eurogeographics.org/sites/default/files/Dan_Paull_Plenary.pdf

Canadian Ocean Mapping Research and Educational Network (COMREN)

Country

Canada

Type NIA-instrument

S7. Partnerships M5. Inter-organizational culture and knowledge management

Aim

COMREN is a network of units within Canadian universities and community colleges designed to provide a collaborative environment for: (1) Enhancing research activities; (2) sharing educational curriculum; and (3) addressing key research questions of interest to the hydrographic and ocean science community.

NIA-instrument description

Spearheaded and supported by the Canadian Hydrographic Service, the purpose of the COMREN is to work with CHS and Natural Resources Canada to develop research activities, achieve technology transfer to Industry, develop and run educational programs, in liaison with government agencies, to increase Canada's capacity in research and education in Ocean Mapping. This includes opportunities for High Qualified Personnel (HQP) to develop their capacity in, and specialized knowledge of, ocean mapping. There are eight primary educational institutions that are signatory to the MOU to create COMREN: 1-   Memorial University of Newfoundland –Marine Institute, St. John' NL - Co-Chair 2-   Nova Scotia Community College – Halifax NS 3-   University of New Brunswick, Fredericton NB 4-   CIDCO, Rimouski, Québec – Chair 5-   Laval University, Québec 6-   University of Ottawa, Ottawa ON 7-   York University, Toronto ON 8-   British Columbia Institute of Technology, Vancouver BC As mentioned, in line with recent Government of Canada announcements related to the Oceans Protection Plan, CHS anticipates more collaboration with academia in the future and COMREN represents a good vehicle for this.

Background

See other entries here.

Use

COMREN provides a more formal means for partner institutiuons to collaborate on oceans-related training and research initiatives of common interest and importance. With recent Government of Canada announcements related to the Oceans Protection Plan, it is anticipated there will be more collaboration between the Canadian Hydrograpic Service and academia in the future. COMREN represents a good vehicle to support such collaboaration.

Good practice motivation

Each COMREN member brings unique educational opportunities and research themes to the network that will complement and enhance the programs of the individual members. Indeed, the strength of the whole of the network outweighs the sum of the individual parts.

Reference

Presentation on COMREN at the 2017 US HYDRO Conference
http://ushydro2017.thsoa.org/wp-content/uploads/2017/04/LR-7-6-PaulBrett-COMREN_US_HYDRO_2017-1.pdf

GSI Maps Partner Network

Country

Japan

Type NIA-instrument

S7: Partnerships

Aim

Geospatial Information Authority of Japan (GSI) makes Fundamental Geospatial Data freely online downloadable and provides various types of geospatial information that are aligned with Fundamental Geospatial Data as "GSI Tiles*. Aiming at building capacity for geospatial information utilization, GSI Maps Partner Network seeks to facilitate open innovation in cooperation with outside engineers. * GSI Tiles are a set of small map data of the same number of rows and columns with different map scales that correspond to the zooming levels of the GSI web map interface, which is compatible to most of the currently available web map services. GSI provides most of its maps via web in this tile format including topographic maps, aerial photographs, land classification, and disaster information.

NIA-instrument description

In 2014, GSI established a partner network consisting of engineers from private companies and NPOs capable of developing web map services and applications using GSI Tiles, holding meetings twice a year for information sharing and opinions exchange. In these meetings, the latest development and progress on GSI Maps are presented by GSI and the partner engineers, and demonstrations and hands-on practices are provided by the partners.

Background

The Survey Act (Article 27) requires GSI to publish and provide its geospatial data to the public. Also, the Basic Act on the Advancement of Utilizing Geospatial Information, namely the Japan's NSDI Act, (Article 3, paragraph (6)), requires that measures should be taken to create an environment for enabling varied services using these data. In line with these articles, GSI has developed open-source web map software for its own web map services, and adopts a tile-based standard data specification, so that GSI maintains an environment where the users will benefit from the widely available, standard-based software applications.

Use

As of May 2017, 98 application developers (those who are capable of developing applications using GSI Tiles under contracts,) and 67 tool providers (those who develop package tools using GSI Tiles) are registered. Partners list and all materials of meetings (held twice a year since 2014) are available online. The partner network has facilitated the development of geospatial information applications and services in various areas such as Construction Information Management, disaster management, meteorology and GIS applications for local municipalities.

Good practice motivation

GSI has been successful in involving relevant stakeholders as partners through open innovation in making many web map APIs with "GSI Tiles."

Reference

(in Japanese)
National and international arrangement signed by INEGI

Country

Mexico

Type NIA-instrument

S7. Partnerships

Aim

Establish the terms and conditions to be subject to the parties to exchange knowledge on geographic and statistical information.

NIA-instrument description

The signing of national and international agreements establishes terms and conditions, bases of support and collaboration, commitments, operational, technical, administrative and methodological bases with the purpose of integrating, organizing and putting into operation joint projects on research, management, distribution , Exchange and presentation of geographic and environmental information.
The agreements are established with the State Units, educational institutions, non-governmental organizations, among others, as well as with international agencies to monitor and follow up actions to take into account national and international standards and best practices in terms of geographic information.
Initially, the process of subscribing to the agreement involves the interaction between the parties for the establishment of commitments, responsibilities and signature. Subsequently, these commitments must be met and follow-up will be monitored until completion.

Background

The Law of the National System of Statistical and Geographic Information (LSNIEG - acronym in Spanish) in Article 64 states that the National Institute of Statistics and Geography (INEGI - acronym in Spanish) must provide the support requested:
I. The Federal Executive and the Senate of the Republic in the matter of international treaties, agreements or arrangement, when rights and obligations regarding Information are established, as well as those that deal with limits of the national territory, and
II. The Federal Executive in case information is required to prevent and, if necessary, to attend emergencies or catastrophes caused by natural disasters.
In addition, the INEGI must make the public knowledge, through the Internet, the agreements of information exchange that celebrates with other organisms or agencies national or foreign.

Use

The agreements that INEGI intends to celebrate for the achievement of its objectives may be: the formalization of a special project or activities in collaboration with another institution in pursuit of its objectives. To name a few: Exchanges of Information; Capacity building; and Special projects such as: internships, Practices, Social Service and Practical Schools.

Good practice motivation

The establishment of international agreements has allowed INEGI to maintain relations with the main cartographic organisms of the world, such as: NGI of Spain and France, USGS and NGA of USA, NASG of China, among others.

Through national agreements, a close relationship has been achieved with educational institutions, autonomous agencies and federal and state government agencies making it possible to finance some activities such as the Virtual Office of Economic Information (OVIE - acronym in Spanish).

The agreements have allowed the exchange of experiences and information and products for the benefit of both institutions.

Figure 1: Economic Information Virtual Office, Mexico City

Figure 2: National Commission on Natural Protected Areas (CONANP for its acronym in spanish)

Reference

In compliance with Article 90 of the Law of National System of Statistical and Geographic Information, the National Institute of Statistics and Geography (INEGI) announces the Agreements and other legal instruments related to the exchange of information with other International or National organizations. http://www.inegi.org.mx/inegi/contenidos/instrumentosjuridicos/default.aspx

Rating according to their level of application (1..10), a value of 10 means that it has a strong level of application.

1	2	3	4	5	6	7	8	9	10	X

Less application …………………………………………… Strong application

Public Agreements of the Spanish National Plan for Land Observation (PNOT)

Country

Spain

Type NIA-instrument

S7. Partnerships

Aim

To establish public agreements for cooperation and facilitate the co-financing of the Spanish National Plan for Land Observation (PNOT)

NIA-instrument description

PNOT has established several government to government partnerships (G2G) with two different levels of administrative governmental organizations being: 1) agreements between National Geographic Institute (NGI)/National Center for Geographic Information (CNIG) and other ministries, and 2) agreements between NGI/ CNIG and the Regional Governments.   1) Since 2012, IGN/CNIG has developed a G2G partnership with the Spanish Agricultural Grant Fund (Fondo Español de Garantía Agraria - FEGA), an Autonomous Organisation under the Ministry of Agriculture, Food and Environment, through the General Secretariat of Agriculture and Food, with the objective to establish a PNOT aerial image coverage of Spain (with full coverage of the Spanish territory every 3 years), to contribute to the execution of Remote Sensing Plan. In addition IGN/CNIG has developed G2G partnerships with FEGA, Spanish Cadastre and the General Directorate of Water of the Ministry of Agriculture, Food and Environment, in order to produce the National Plan of Aerial Orthophotography (PNOA), to produce coverages of orthophotos, LiDAR and DEMs for the territory of Spain   2) While in the past IGN/CNIG developed specific public agreements with the Regions to co-finance and coproduce PNOT, since 2010 IGN/CNIG has developed a G2G partnership with the Regional Governments within the "Sistema Cartográfico Nacional", the legal framework in Spain on infrastructure and services of geographical information, which includes cofunding and cooperative structures of PNOT. These G2G includes the three projects of PNOT (PNOA, PNT and the National Information System of Land Cover&Use - SIOSE)

Background

Spain is a country with a decentralized government system, where three types of governments co-exist: a general state administration, 17 autonomous regions and 2 autonomous cities, and local governments. All these public entities participate in the data capture and generation of Geospatial Reference Information (GRI).   As authoritative body on geospatial information at national level, the NGI has the public responsibility for providing useful datasets, services and knowledge to the Spanish users. Therefore, NGI is the national steering public institution that, by means policies arrangements with rest of public administrations, plans, coordinates and manages nationally, the official geospatial information in fields on Cartography, SDI, Astronomy, Geodesy and Geophysics.   In order to proceed with this leadership role, the NGI defined a set of institutional strategic principles aligned with INSPIRE Directive, United Nations perspective and future users' needs, to generate Geospatial Reference Information (GRI) in 2014. GRI is defined as the basic geospatial information able to organize any subsequent actions over the land. GRI means the skeleton infrastructure to locate or map geospatial information. GRI brings and fulfils the principles assumed in international initiatives:

- GRI is organized and produced following essential themes considered in INSPIRE Directive annex I and Spanish law LISIGE.
- Adopt new data models for ensuring interoperability and new production systems of that type of information demands, and the processes and updating time of GRI to the current users' needs.
- Identification and prioritization of users' communities: national public administration, remaining Spanish public administration, European programs and institution, Global requirements, academic and business sectors and rest of stakeholders.

Since 2004, GRI themes orthoimagery, elevations, land cover and land use were included in the Plan Nacional de Observation del Territorio (PNOT), the GRI initiative of land observation, in which the central administration (through several ministries) and all the autonomous regions participate. It is thus a cooperative program that pools technical, logistical and economic efforts through adequate mechanisms of inter-administrative coordination led by NGI and CNIG. PNOT projects are based on user's requirements and with a long-term shared financing scheme, allowing the maintenance of cooperation strategies in all areas, enabling the increase of added value products and innovation in geographic information.

This approach forms a solid bottom-up national model of producing and managing geospatial information that converges with international top-down approach at the European level, fitting perfectly with current initiatives like the development of INSPIRE Directive or Copernicus.

In the first phase, the objective of PNOT was to obtain aerial image coverage and digital elevation models for multidisciplinary applications, with economically optimized resolution and updating periods, as well as to develop applications in which these images are going to be used. This coverage is organized into various levels of spatial resolution and time frequencies, which are materialized into specific sub-plans described in the following points:
- PNOA Image: National Plan for Aerial Orthophotography (PNOA), which provides periodic coverage (each 3 years) of the entire national territory via very high resolution aerial orthophotography: PNOA25/50 (25/50 cm) and PNOA10 (10 cm).
- PNOA Lidar and DEMs: PNOA also provides periodic coverage of digital elevation models for entire national territory based in different resolution values (25m, 5m and 2m). These DEMs have been obtained from LIDAR datasets with a resolution of 0.5p/m2 among others derived altimetric products such as land classification, contour lines, etc.
- National Remote Sensing Plan (PNT), which provides periodic coverage (annual, monthly and weekly) of the entire national territory via medium and low resolution satellite images (2.5 to 100 m).

PNOA and PNT image coverages are used for production of reference and thematic geographic information in a wide range of scales, from local to national level, by all the cartographic data providers in Spain.

In the second phase of PNOT, Information System on Land Cover in Spain (SIOSE) was produced, based on a common object-oriented data model for land cover and land use information. This data model is the reference for land cover information production at 1:25,000 scale and higher. Semantic and geometric generalization of high resolution Land Cover data produced by SIOSE project is an example of a bottom-up approaching for land cover by cooperative production between IGN/CNIG and Regional administrations.

G2G PNOT partners
The key G2G partners of PNOT are:
- FEGA'S chief mission is to ensure that the Common Agricultural Policy (CAP) subsidies are strictly applied in order to achieve the objectives of the policy, efficiently reaching the beneficiaries who have met the requirements established for their concession, within the

timescales laid out in the regulatory legislation, while promoting homogenous application of CAP subsidies over the whole state territory.
- General Directorate of Water of the Ministry of Agriculture, Food and Environment is in charge of the reporting obligations related with the Water Framework and Flood Directives in Spain.
- The Spanish Cadastre is the administrative land registry with a fiscal origin. It contains physical information (surfaces, location, use, shape, boundaries, cartographic representation, crops and forest use, type and quality of constructions, etc.), legal information (identification of holders or owners: name, national identification number, address, etc.) and economic information (cadastral values of land and buildings, valuation criteria).
- Regional Governments, being aware of decentralized public structure in Spain, have a wide range of tasks for which PNOT information is needed.

Use

These G2Gs partnerships are established in within a period of 2 to 4 years between NGI / CNIG and the Regions, and 2 to 3 years between NGI/CNIG and other ministries of the central administration, allowing an adequate planning of the different administrative actions and public contracts associated with them. In addition these partnerships include terms of reference about the rights and licenses of ownership and use of the data, aiming at an open / free use policy of PNOT products.

Good practice motivation

Maintenance of a sustainable structure of co-financing, coproduction and sharing (in terms of property rights) of the different ortho-imagery, LiDAR, elevation and land cover &use coverages of PNOT.
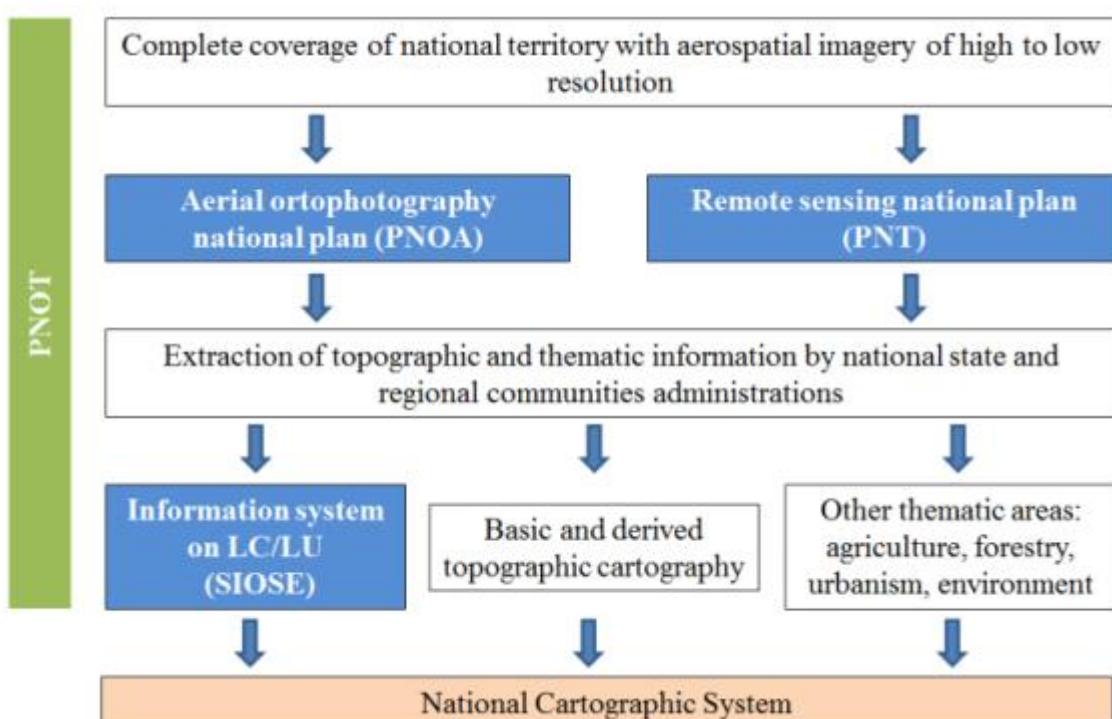
Figure: Orthoimagery from PNOA

Reference

http://www.ign.es/web/ign/portal/obs-area-observacion-territorio

https://www.youtube.com/watch?v=B5OAG5kUzo4

Data sharing model – The Swedish Geodata Cooperation Agreement

Country

Sweden

Type NIA-instrument

S7 – Partnership

Aim

Public authorities and municipalities need to have smooth access to relevant spatial data sets and services during the execution of their public tasks.

NIA-instrument description

Lantmäteriet administers a partnership model for data sharing and co-operation, including harmonised conditions for licensing of data. The agreement has been in force from 1 January 2011. Organizations with public tasks can sign one user agreement, pay a yearly fee and get access to data/services from five data producers. Available geodata are presented and described in the common Product Catalogue and descriptions of data (metadata) are available in the National Geodata portal.

Background

Access can be hindered if it depends on individual ad hoc negotiations between public authorities every time access is required. According to the EU directive INSPIRE member states should take the

necessary measures to prevent such practical obstacles to data sharing for example by use of prior agreements between public authorities.

Use

This data sharing model gives public authorities and municipalities easy access to data of five key data producers; 1) Lantmäteriet (the Swedish mapping, cadastre and land registration authority), 2) SCB – Statistics Sweden, 3) SGU – The Geological Survey of Sweden, 4) SMHI – Swedish Meteorological and Hydrological Institute, and 5) Sjöfartsverket – The Swedish Maritime Administration

Good practice motivation

Since 1 January 2011, 250 municipalities and 39 public authorities have signed a user agreement. The number of user agreements shows that the data sharing model is a success.
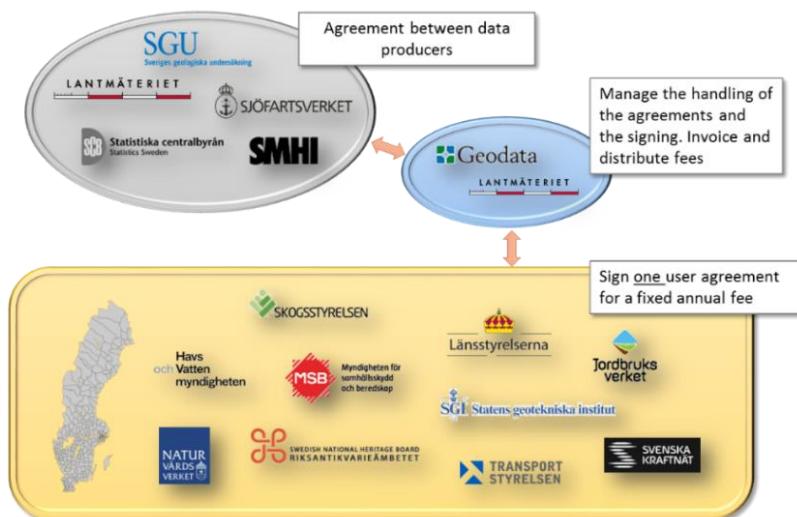

Figure: Data sharing model

Reference
www.geodata.se

Land administration project and subsequent reforms of the National Institutional Arrangements

Country

Ghana

Type NIA-instrument

S1. Establishment of coordinating functions or entities
S2. Reshuffling of division of competencies
S3. Legal Framework

Aim

S1. Establishment of coordinating functions or entities: In light of the Land Administration reforms, the Government of Ghana has created an official structure, the Land Administration Project, that aims to ensure 1) the acceptance of the land administration reforms by broad panel of stakeholders – this happens via the National Project Steering Committee – and 2) the day-to-day management of the land administration reforms – this is the role of the National Project Steering Unit.

S2. Reshuffling of division of competencies: The partners of the Land Administration Project noticed that it was necessary to increase the speed of the land registration procedure as it was taking more than 36 months to register land. Therefore a merging of separate agencies with different competencies within the land registration process was proposed, with the aim to reduce the land registration period from 36 months to 3 months. This would lead to more efficiency and a higher orientation towards citizens and businesses.

S3. Legal framework: The aim of creating a single legal framework is to contribute to the set-up a well-functioning National Land Administration that can rely on updated and reliable legal framework. As described by the Government of Ghana, "the objective of the Bill is to revise and consolidate the laws on land, with the view to harmonizing those laws to ensure sustainable land administration and management, effective land tenure and efficient surveying and mapping regimes and to provide for related matters."

NIA-instrument description

S1. Establishment of coordinating functions or entities: Creation of the National Project Steering Committee and National Project Steering Unit in light of the Land Administration Project
S2. Reshuffling division of competencies: Creation of the Lands Commission within the Ministry of Lands and Natural Resources
S3. Legal framework: Drafting and voting of the Lands Act 2016

Background

In 1999 the Government of Ghana agreed on the necessity to reform the Land Administration, this has led to the 'National Land Policy Document'. The implementation of the Policy started with the Land Administration Programme of 2001 and the launch of the Land Administration Project (LAP) in 2003. The LAP has a number of long-term goals, such as improving security of tenure, simplifying the process of land titling, and fostering prudent land management practices. Although the reform project had an original duration of only 15 years, it is estimated that the project will take 25 years in total. Currently the LAP is in its second phase.

The following specific goals have been set under the LAP 2:
- Consolidation and strengthening of the land administration and management systems

- Ensure an efficient and transparent service delivery, through reviews and enactment of appropriate land administration laws and regulations,
- Increase the capacity for Land Sector Agencies, Land Owners and relevant NGOs,
- Streamline business procedures within the Land Agencies

In order to achieve those goals a number of specific actions have been taken by the actors involved in the land administration process of Ghana that can be considered as 'National Institutional Arrangements'.

S1. Establishment of coordinating functions or entities: The day-to-day National Project Steering Unit is chaired by the Ministry of Lands and Natural Resources, as this Ministry includes both the Land Commission and the Office of Administration of Stool Lands. Besides those two partners, also the Town and Country Planning Department – which is part of the Ministry of Environment, Science and Technology – is partner of the land administration project and the day-to-day management unit. Finally also the Accra Metropolitan Assembly and the Judicial Service of the Government of Ghana are member of the day-to-day management unit.

Furthermore, the Government of Ghana ensures that various stakeholders are included via the National Project Steering Committee. This Committee, chaired by the Ministry of Lands and Natural Resources, includes the above mentioned partners, as well as representatives of the Parliament, the other Ministries, and civil society organizations.

S2. Reshuffling division of competencies: In 2008 the Government of Ghana has created a new structure within the Ministry of Lands and Natural Resources, on the basis of a proposal put forward by the Land Administration Project. Six agencies that had, until then all a different task in the land registration process were merged into one organization, the "New Lands Commission" (now: Lands Commission) within the Ministry of Lands and Natural Resources.

S3. Legal framework: One of the main problems for the land administration in Ghana in the legal framework: There are too many laws, but also overlaps and gaps in the laws. There are inconsistencies with the Constitution and duplications in different laws. Currently, the legal framework exist out of the State Lands Act (Act 125 – 1962), the Administration of Lands Acts (Act 123 – 1962), the Land Registration Act (Act 122 – 1962), the 1986 Land Title Registration Act, the Administrator of Stool Lands Act (Act 481 1998) and the Lands Commission Act of 2008 (Act 767). Furthermore, the 1992 Constitution increased the complexity as well as the fact that part of the land administration exists on the basis of customary practices. Therefore the Government of Ghana as well as the Parliament of Ghana decided to reform the legal framework.

Use

S1. Establishment of coordinating functions or entities: The day-to-day management Unit includes the various key actors of the land administration project and is led by the Ministry of Lands and Natural Resources. It gives steering and guidance to the different key actors and provides a platform for constant interaction and negotiation. The Ministry of Lands and Natural Resources chairs the platform and takes, also because of its general functions with the Lands Commission and the Office of Administration of Stool Lands, a leading position in the land administration of Ghana.

S2. Reshuffling division of competencies: The coordination issues that existed before the creation of the new structure has led to the creation of a new Commission, the Lands Commission, within the Ministry of Lands and Natural Resources. Although this Commission still has a number of subdivisions which do not always coordinate sufficiently, it has led to a time decrease of the land registration process as the competencies for the land registration process are now merged into one Commission. Furthermore, it has also clarified and strengthened the leading position

of the Ministry of Lands and Natural Resources, and especially the Lands Commission, in the field of land administration.

S3. Legal framework: Currently the updated and consolidated Act, the Lands Act 2016, has been agreed upon by the Parliament and is waiting for the presidential assent. Once this step has been taken the Ministry of Lands and Natural Resources, in cooperation with the Land Administration Steering Committee, the Land Administration Steering Unit and the involved Land Administration Project, will start with the implementation of the new Act.

Good practice motivation

S1. Establishment of coordinating functions or entities: One of the main problems of the land administrations in Ghana was the lack of coordination between the different actors involved in the land administration process. Furthermore, successful reforms are characterized by clear coordination. The Government of Ghana therefore decided to establish not only a project structure in which the different partners come together, but also to create a day-to-day management unit that involves the key partners and a broader committee with representatives of different organizations (both governmental and non-governmental actors).

S2. Reshuffling division of competencies: The creation of the new structure and the accompanying effect of the reshuffling of competencies is a good practice because it increased the effectiveness and efficiency of the administration. Furthermore, it helped to define and strenghten the leading position of the Ministry of Lands and Natural Resources, and it is an example of how the Land Administration Project and the National Project Steering Committee, can have a positive influence on the reshufflings of competencies within the Ghana Administration.

S3. Legal framework: The establishment of an overarching and all-encompassing legal framework in a context that has, for decades, been characterized by an overall lack of a clear legal framework due to the various Acts and legal frames that existed, is a step forward. Furthermore, the fact that the creation of a single legal framework fits within a broader and long-term strategy for land administration reform is a reinforcing factor. As the Government of Ghana notes, it is expected that the Bill will contribute to "sustainable land administration and management, effective land tenure and efficient surveying and mapping regimes".
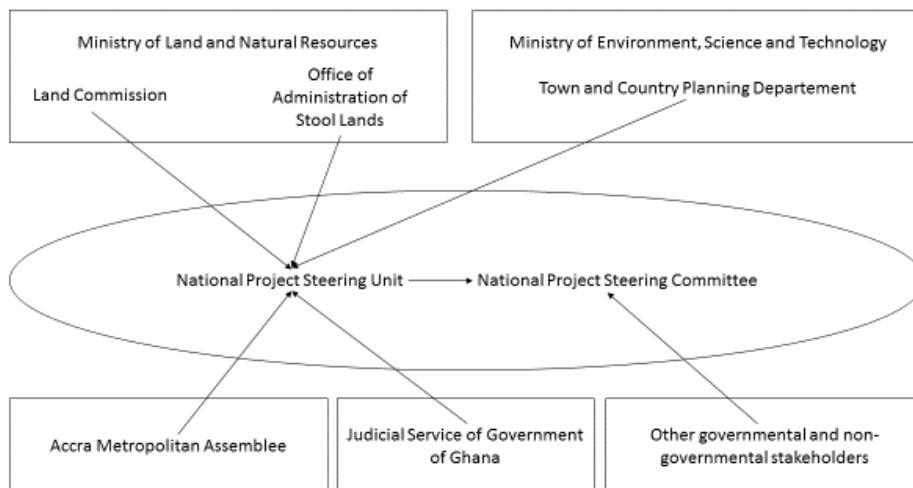

Figure: Structure of the National Project Steering Unit and the National Project Steering Committee with the different actors involved

Figure: Ghana Land Administration Project

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Websites

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http://www.mlnr.gov.gh/index.php/about-us/structure

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The Consultative Approach of Australia's 2026 Spatial Industry Transformation and Growth Agenda

Country

Australia

Type NIA-instrument

M1. Strategic Planning

Aim

To improve Australia's growth and transformation in the geospatial sector over 10 years (2016-26)

NIA-instrument description

Australia's 2026 Spatial Industry Transformation and Growth Agenda is the roadmap for enhancing growth and transformation in the geospatial sector over the 10 years 2016 - 2026. It targets infrastructure-related industries, innovation sectors, as well as training, education and R&D. An extensive nationwide consultation forms the basis of this roadmap.

Background

The spatial sector is recognized to be a key industry growth sector that will transform the Australian economy. The 2026 Agenda was initiated to develop a roadmap to coordinate spatial activities, accelerate the growth of location-based markets, increase awareness and improve (human) skills.

Use

Over 6 months in 2016, various modes of consultation were used to gather views from different stakeholders. In-sector and out-of-sector consultation were conducted in the initial phase. Specifically for the former, 40 industry leaders and experts came together to draft vision statements, key needs, and action plan. These ideas were then validated at leadership forums after public consultation. Some strategic initiatives include:
1) Development of a nation-wide framework and roadmap which sets out major public spatial data infrastructure developments and supporting analytical capabilities;
2) Expansion of location technologies and services to new sectors;
3) Development of a strategic framework to coordinate management of education, training and capacity building

Good practice motivation

The heavy bottom-up approach outlines strong communication and alignment of goals across different governance levels, which supports a well-informed strategic planning process.
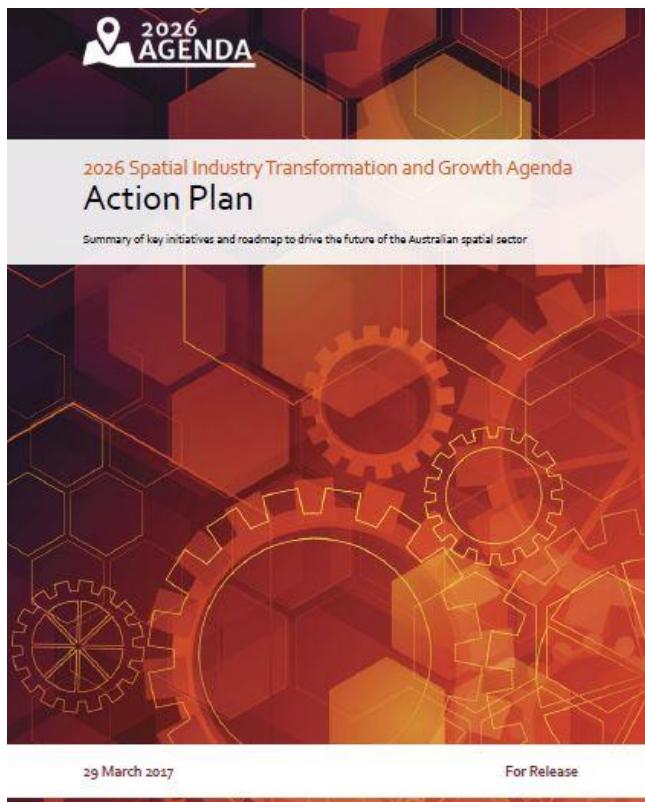
Figure: Front Page Strategy Plan 2026 Spatial Industry Transformation and Growth Agenda

Reference

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Action Plan for the Implementation of INDE

Country

Brazil

Type NIA-instrument

M1. Strategic Planning

Aim

Guidance for implementing the National Spatial Data Infrastructure (NSDI) of Brazil (2010-2020). Implementation of NSDI is complex and long-term with a number of inherent risks, which might be mitigated in a planned way. Therefore, the Action Plan had to flexible enough to incorporate the changes that inevitably will occur throughout the implementation. Moreover, the Action Plan should allow to be adapted during its execution, resulting into the publication of periodic reviews.

NIA-instrument description

Establishment of document 'Action Plan for the implementation of the National Spatial Data Infrastructure'. The chapters of this document were designed to address the dimensions of the implementation of a Spatial Data Infrastructure, namely the Organizational dimension, the Technical dimension and the Human dimension. The first chapter deals with general concepts and guidelines for the NSDI implementation, Chapters 2 to 7 address essential organizational, technical and human matters. The consolidation takes place in Chapter 8, which corresponds to the Action Plan of the NSDI itself, which also is referred as Action Plan.

Background

The National Spatial Data Infrastructure - NSDI was legally established by the Presidential Decree No. 6666 of November 27th, 2008 (annex I). In addition to formulating definitions, pointing out responsibilities and establishing guidelines, the decree stipulated a deadline of 180 days for the National Commission of Cartography (CONCAR) to prepare an action plan for the NSDI implementation and submit it to the Ministry of Planning, Budget and Management. In the section VIII of its Article 6, the Decree introduced a minimum list of items to be addressed in the referred plan. In its plenary meeting on December 19th, 2008, the CONCAR voted for the creation of a Specialized Committee which would be responsible for the elaboration of the action plan for the NSDI's implementation. This committee, named CINDE (Planning Committee for the NSDI) was formed between January and March of 2009 and brought together 110 members representing 26 organizations in Brazil, of which 22 related to the federal government, three state secretariats and one university. The organizational way of CINDE's work, by Working Groups (WGs), reflected the way the document was designed, in chapters. Each eight (8) chapters foreseen for the Plan, as the proposal approved by the CONCAR on December 19th, 2008, was a work subject of a WG. Each WG had one or two leaders. All WGs worked under the central coordination of the CINDE.

Use

The Action Plan is intensively used (and monitored by various key stakeholders of the Brazilian SDI such as Ministry of Planning, Budget and Management – National Commission of Cartography (CONCAR), and Brazilian Institute of Geography and Statistics (IBGE).

Good practice motivation

The 10 Year NSDI Action Plan (2010-2020) strengthened the competencies and capacities for implementing the National Spatial Data Infrastructure. The Action Plan was based on a stagger of goals according to priorities and objectives well-defined to be achieved over implementation cycles (Cycle I – December 2010; Cycle II – 2011 to 2014; Cycle III – 2015 to 2020.
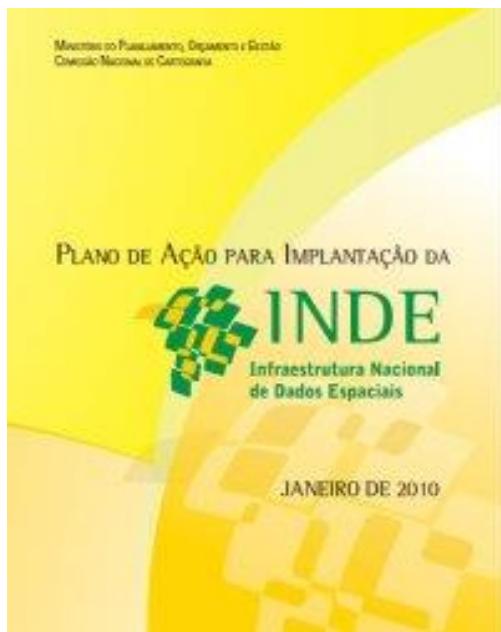

Figure: Front page of the Action Plan for the implementation of the National Spatial Data Infrastructure in Portuguese.

Reference

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Good Basic Data Everyone – A driver for growth and efficiency

Country

Denmark

Type NIA-instrument

M1. Strategic Planning

Aim

The Basic Data program is part of the e-government strategy 2011-2015 aiming to provide the needed easy and free access of data that Danish public authorities register.

NIA-instrument description

Good basic data for everyone is part of the common public-sector digitization strategy for 2011 to 2015 (e-government strategy 2011-2015), adopted by the national government, Local Government Denmark and Danish regions. The vision is that basic data is to be the high-quality common foundation for public sector administration; efficiently updated at one place, and used by everyone – including the private sector. Open basic data will benefit public-sector efficiency as well as innovation and value creation by Danish society in general. With basic data as a new digital raw material, commercial products can be developed, and public information and services can be improved, providing for greater insight and stronger e-participation.

The way to open and easy-to-access high quality basic data involves five parallel processes:

1) In order to ensure the re-use of data and to prevent double registration and shadow registers, map data, cadastral maps, Central Business Register data, and company data will be financed by the government and released to the public and the private sectors, as is already the case with address and real property data. By releasing this basic data, public authorities and private businesses alike will be able to use it freely, for commercial as well as for non-commercial purposes, provided, of course, such use is lawful.
2) In order to enhance the quality of data**,** the registers of map data, real property data, address data, as well as business registers, will be expanded to include other necessary data. As a result, a number of existing registers will become redundant and therefore can be phased out.
3) In order to make it possible to link data, efforts will be made to ensure that all data conforms to the same technical requirements.
4) In order to improve the distribution of common public-sector data, a common infrastructure is to be established providing for stable and efficient distribution of data; a data distributor.
5) In order to ensure efficient, effective and coordinated development and use of basic data, a cross-institutional basic-data committee is to be established

Background

Public authorities in Denmark register various core information about individuals, businesses, real properties, buildings, addresses, and more. This information, called basic data, is re-used throughout the public sector. Re-use of high-quality data is an essential basis for public authorities to perform their tasks properly and efficiently across units, administrations and sectors.

Basic data is an important contribution to modernizing the public sector. The public and businesses are provided a better and more efficient service, when data that has already been recorded is shared across institutions and is included directly in case processing. Furthermore, employees in the public sector will be less burdened by repetitive and routine tasks, and this, in turn, will release more resources for increased welfare in e.g. the healthcare and education sectors.

However, open and homogenous re-use of basic data also has great value for the private sector, partly because businesses use this data in their internal processes and, partly, because the information contained in public-sector data can be exploited for entirely new products and solutions, in particular digital ones. In short, basic data freely available to the private sector is a potential driver for innovation, growth and job creation.

Denmark has come a long way in its basic data efforts compared with many other countries. However, there is still some way to go before the authorities and businesses alike can harvest the full potential of good common basic data.

There are problems with gaps and redundancy in the data sets used across public administration in Denmark. There is also a lack of clarity about who can use the data and for what purposes. Moreover, both public authorities and private businesses still have to pay for access to certain data.

The general result is, firstly, that many prefer to obtain the information themselves and to keep their own shadow registers. This means that resources are unnecessarily spent on maintaining the same data in several places, and individuals and businesses are burdened unnecessarily by having to repeatedly supply the same information. Secondly, in addition to the financial obstacles, technical and legal obstacles also stand in the way of authorities and businesses capitalizing on obvious opportunities to replace their manual and paper-based work procedures with automated and digital ones. Thirdly, red tape and the price of data may prevent both entrepreneurs and established businesses from testing the commercial opportunities associated with exploiting public-sector basic data in new and creative ways.

Use

As a general rule, all basic data is to be made freely available to all public authorities, private businesses and individuals. This makes basic data a common digital resource, which can be exploited freely for commercial as well as non-commercial purposes. This means that basic data can be used for all purposes, ranging from hobby-related projects to fully commercial products and services.

By releasing basic data, the public sector wants to remove the barriers to using public-sector basic data without demanding a share of revenues etc. Basic data should be fully exploited to improve efficiency, and create growth and new and innovative digital services.

However, some basic data cannot be made accessible to everyone. This includes sensitive personal data, e.g. data from the Civil Registration System.

Even if basic data is made accessible for everyone, the public authorities will still have to spend resources on producing, maintaining and ensuring the quality of the data. This work will still have to be financed to ensure the continued availability of quality basic data. Therefore the government and Local Government Denmark have agreed to redistribute the costs of basic data, so that public authorities contribute to basic data via their allocation or block grant.

Free access to good basic data for everyone is good business; for the public sector and for society in general. Once the initiatives have been fully implemented in 2020, revenues for society are expected to be approximately DKK 800 million ($115 million) annually.

Good practice motivation

Implementing this NIA-instrument strategic planning will provide the public, businesses and the authorities alike with a number of tangible benefits.

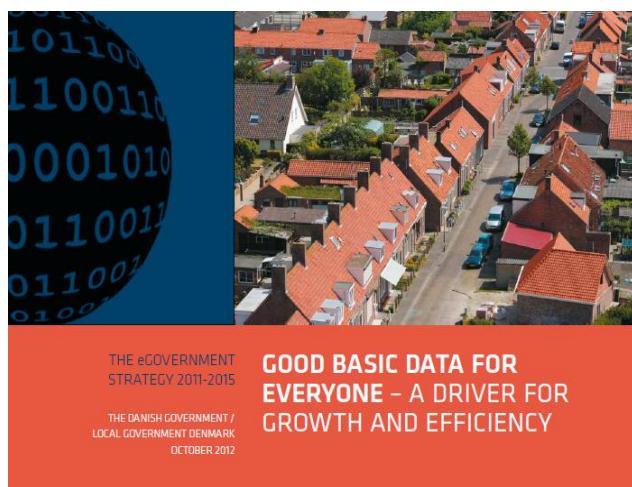Public – Smoother interaction with public authorities
- Better public services in the form of speedier case processing and fewer errors in individual cases
- Less reporting to public authorities, for example to correct errors
- Less need for re-entering data in online self-service solutions, when forms are filled in automatically with relevant and fully up-to-date basic data.

Businesses – less red tape, more growth
- Less red tape – less reporting and registration
- Faster digitisation, fewer errors and more efficient and effective procedures
- Cheaper procurement of public-sector data
- Improved foundation for collaboration with the public sector due to the existence of common data
- Improved as well as new opportunities to develop new data-based services and products.

Public authorities – More efficient and effective administration
- Efficient and effective maintenance of basic data and fewer redundant registers
- Operational savings on own IT systems and update of data locally
- Cheaper development of IT systems, when basic data is accessible from a single source
- Fewer manual workflows, fewer errors and shorter case-processing times
- Improved control e.g. of payments, so that social welfare fraud can be reduced.

THE eGOVERNMENT STRATEGY 2011-2015

THE DANISH GOVERNMENT / LOCAL GOVERNMENT DENMARK OCTOBER 2012

GOOD BASIC DATA FOR EVERYONE – A DRIVER FOR GROWTH AND EFFICIENCY

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Strategy for National Spatial Data Infrastructure of the Former Yugoslav Republic of Macedonia

Country

The Former Yugoslav Republic of Macedonia

Type NIA-instrument

M1. Strategic Planning

Aim

The main objective is to define a strategy for National Spatial Data Infrastructure (NSDI) of the Former Yugoslav Republic of Macedonia (FYROM) established with the support of key stakeholders of the NSDI community. The objectives of the NSDI Strategy were to transform the way spatial data is shared within the country so it may underpin national social and economic development to the benefit of all. An incremental and sustainable implementation path is needed so stakeholders move from the state of disparate GIS systems to an integrated and harmonized infrastructure for sharing geospatial data.

NIA-instrument description

The comprehensive NSDI Strategy defines the strategic direction, rationale, legal framework, interoperability framework, outreach and implementation roadmap for the NSDI of the Former Yugoslav Republic of Macedonia. The strategy was based on 7 work streams: 1) Define Strategic Mission and Vision; 2) Build Business Case; 3) Define Governance Structures (Institutional Framework); 4) Legal Framework; 5) Interoperability Infrastructure; 6) Outreach and Capacity Building; and 7) NSDI Implementation Roadmap. The Strategy was published in 2012.

Background

The Former Yugoslav Republic of Macedonia (FYROM) is undergoing enormous political, cultural and social transformation. As part of this ongoing transformation of the country, there was increasing recognition of the importance of geospatial information underpinning decision-making for policies, spatial planning, implementation and analysis purposes at a national and local level. FYROM has candidate status to become a member of the European Union. The Government of FYROM has placed a high priority on the integration with the European Union through the adoption of European Directives including the INSPIRE Directive (No. 2007/2/EDC). The Government of FYROM recognized the importance of developing a National Spatial Data Infrastructure in 2010, and in compliance with the Law on Real Estate Cadastre (2008) assigned the responsibility to Agency for Real Estate Cadastre for its coordination and establishment.

Use

The Strategy document was well achieved and directly adopted by the national parliament as well as the NSDI Law was adopted. Stakeholders from different sectors actively contributed to implementation of the Strategy. A follow-up NSDI Strategy was published in 2017.

Good practice motivation

The Strategy formed the backbone for the implementation of the NSDI in FYROM with resulting NSDI Law as the legal base for sharing geospatial data across the country. Morover, the NSDI Strategy forms the example of a good NSDI Strategy for the Western Balkan region.

NSDI Strategy with the work streams (2012)
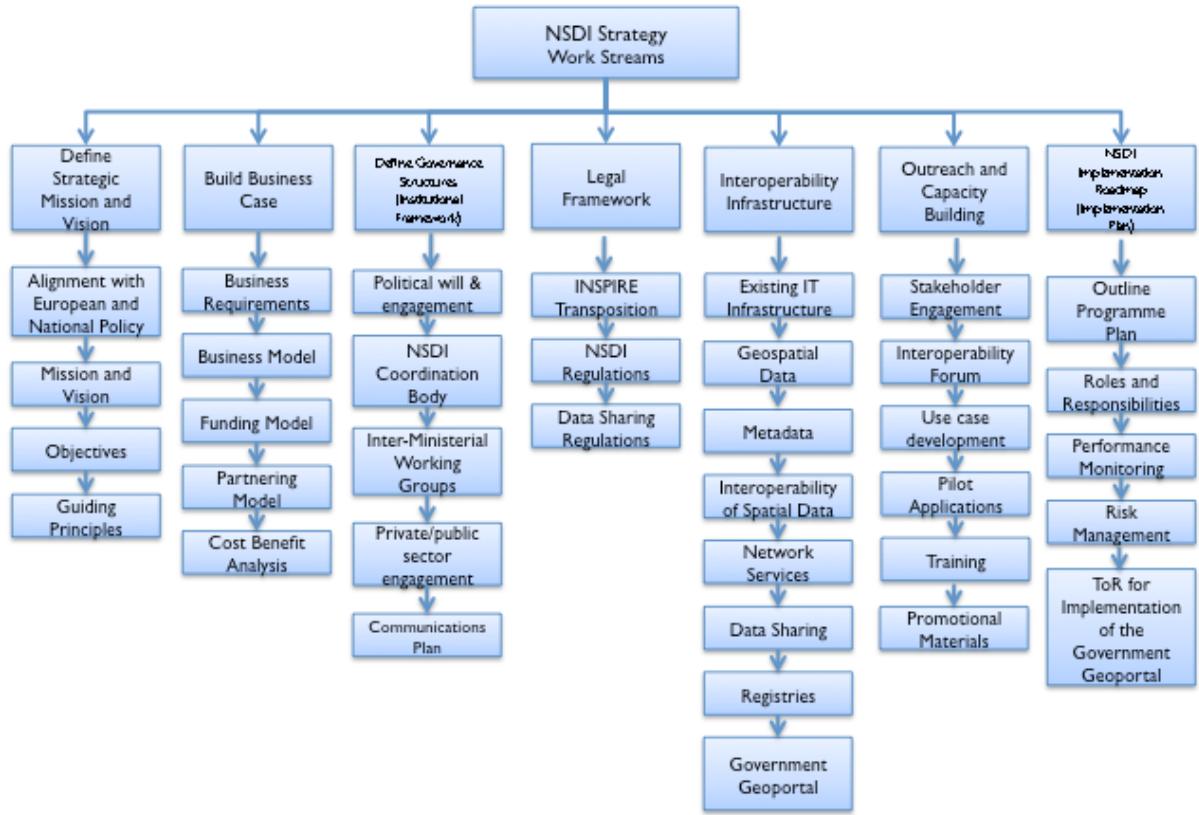
Reference
Agency for Real Estate Cadastre (2012). NSDI Strategy for the Republic of Macedonia. 59 pgs.

Programs of the National System of Statistical and Geographic Information (SNIEG or System)

Country

México

Type NIA-instrument

M1. Strategic Planning

Aim

The National Institute of Statistics and Geography (INEGI), as an organism with technical and managerial autonomy, legal personality and its own patrimony, is responsible for regulating and coordinating the National Statistical and Geographical Information System, as well as the statistical and geographic activities that lead to The units of the State with the purpose of obtaining Information of National Interest. In this sense, in accordance with article 9 of the Law on the National Statistical and Geographic Information System, the management and regulation of the activities necessary for the planning, programming, production and dissemination of the Information of National Interest, will be carried out through the following instruments: I. The Strategic Program of the National Statistical and Geographic Information System (Strategic Program); II. The National Statistics and Geography Program (National Program), and III. The Annual Program of Statistics and Geography (PAEG).

NIA-instrument description

The Strategic Program presents, as established in article 10 of the System Law, will constitute the guiding instrument for the integration and coordination of the National Statistical and Geographic Information System. In this way, the Strategic Program assumes the guidelines and actions set forth in the Mission and foreseen in the Vision of the System: The Mission of the System states that it must "provisionally provide society with Information of National Interest through coordination among the members of the System and the widespread adoption of national and international standards.". Vision 2034, for its part, states that "The National System of Statistical and Geographic Information has a solid national and international prestige and provides universal access to quality, timely and relevant information." The National Program is one of the three programmatic instruments that the Law of the National System of Statistical and Geographic Information has established in Article 9, to order and regulate the necessary activities with which it is supplied to society and to the State. The National Program of Statistics and Geography has as peculiar characteristic to serve as a link between the Strategic Program of the National System of Statistical and Geographic Information, with projection of at least 24 years, and the Annual Programs of Statistics and Geography that correspond to the period of its validity The PAEG is the operational tool of the National Statistical and Geographic Information System (SNIEG) and is made up of the specific Activities (Ae) to be carried out by the State Units attached to the Specialized Technical Committees / Executive Committees of the National Subsystems of Information, as well as INEGI itself as a Central System Coordinating Unit (INEGI-UCC), during the year 2017, in order to contribute to the achievement of the National Program of Statistics and Geography (PNEG) 2013-2018, as well as To the attention of the information needs that derive from the National Development Plan in force

Background

The National Institute of Statistics and Geography (INEGI), as a public body with technical and management autonomy, legal personality and its own assets, is responsible for regulating and coordinating the National Statistical and Geographic Information System, as well as the activities Statistical and geographical data that are carried out by the State Units in order to obtain Information of National Interest.

The purpose of the System is to provide society and the State with quality, relevant, timely and timely information to assist national development.

It is a macro-system that stimulates a wide knowledge on variables and processes of change, and aims to support social, political, technical-scientific, cultural, economic and ethical decisions in Mexico and in the world. It works in front of these two environments, the national and the international, maintaining relations with both, through direct information products and services or through the active participation of its members who design and execute policies of enormous social importance

Use

The design, development and dissemination of the Strategic Program, with a 24-year perspective, is part of the efforts of the Mexican State to consolidate and at the same time to build favorable conditions that allow the generation of quality, pertinent, truthful and timely information, Which guides the planning and implementation of public policies in accordance with the demands of reality. Its user-centered approach confirms that the benefit of the recipients and national development are the raison d'être of the System and the inspiration of this document.

The main purpose of the National Statistics and Geography Program is to regulate and regulate the production of information aimed at a better knowledge of the territory and of the economic, social, environmental, government, public safety and justice impartiality of the country.

Within the ordering and alignment of the programs of the System, the Annual Program of Statistics and Geography represents the operational instrument of the SNIEG and includes specific activities to be developed by the State Units and the INEGI-UCC during the year in question

Good practice motivation

It is good practice because the different programmatic instruments order and regulate the activities necessary for the planning, programming, production and dissemination of the Information of National Interest. In addition to providing society and the State with relevant, timely and relevant information to assist national development

Figure: Programs of the National System of Statistical and Geographic Information

Official website of the National Statistical and Geographic Information System (SNIEG): http://www.snieg.mx

Reference

Rating according to their level of application (1..10), a value of 10 means that it has a strong level of application.

| 1 | | 2 | | 3 | | 4 | | 5 | | 6 | | 7 | | 8 | | 9 | X | 10 | |

Less application …………………………………………………… Strong application

Namibia National Spatial Data Infrastructure (NSDI): Strategy and Action plan 2015-2020

Country

Namibia

Type NIA-instrument

M1. Strategic planning

Aim

The strategy and action plan 2015-2020 aims to coordinate, facilitate and support the implementation of an information infrastructure that ensures efficient production, use, maintenance and dissemination of relevant, quality and accurate spatial information that is fit-for-purpose, particularly in providing evidence-based decision making at all levels of society.

NIA-instrument description

This 5-year Strategic Plan (2015-2020) sets out the first and most critical phase of a longer term implementation strategy to achieve the ultimate goals of a national SDI in the future. During the 5-years covered by this Strategy and associated Action Plan the most critical groundwork will be laid for all that is to follow, including:
- inventorying and documenting existing datasets available in different government agencies
- building capacity in government institutions responsible for maintenance and management of fundamental datasets
- creating the many standards that are needed if all stakeholders (data producers and users) are to receive the most benefit from implementing the NSDI
- setting the many policies to be followed by all stakeholders for efficient operation of the NSDI, including data access, sharing, use and re-use policy; and pricing and licensing policies,
- developing and implementing a comprehensive Communication Plan for raising awareness, informing all stakeholders of progress in the NSDI, and providing practical support in NSDI delivery
- ensuring wide spread access to and use of quality fundamental datasets and services
- mediating over national spatial data collection projects in order to ensure compliance and avoidance of duplication and wasteful of government resources

Background

Namibia has taken a giant stride in recognizing spatial data information as an important national infrastructure in order to improve evidence-based development planning and socioeconomic intervention. On 06 March 2015, the Government of Namibia approved a National Spatial Data Infrastructure Policy (NSDI) to guide the acquisition, maintenance and dissemination of spatial data in Namibia. Aligning this policy, a strategic action plan was developed.

Use

The five year strategic plan is set in place since the end of 2015 and will be evaluated in 2018.

Good practice motivation

In Namibia, there is high political willingness from government to establish the NSDI. There is also high-level commitment from government agencies earmarked to participate in this infrastructure. The citizens have been made aware of the importance and usefulness of location data and the benefits of the NSDI for access to such data and applications. Due to the high levels of public

engagement, there are equally high expectations from politicians, decision-makers and the citizens for the NSA to deliver on the NSDI. Consumption of spatial data has increased since the start of the NSDI programme (Mudabeti and Longhorn, 2016). .

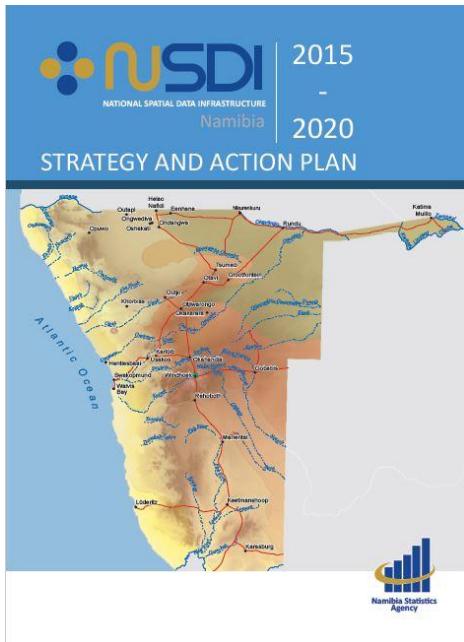Figure: Front page Strategy and Action Plan 2015-2020

Reference

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The Comprehensive Scope of the Singapore Geospatial Master Plan

Country

Singapore

Type NIA-instrument

M1. Strategic Planning

Aim

To drive Singapore's geospatial development over the next 5 years

NIA-instrument description

The Singapore Geospatial Master Plan aims to chart geospatial development in Singapore from 2017 to 2021. It articulates the vision and strategies for geospatial development across various sectors (to be released publicly in end of 2017) and identifies projects and initiatives in order to realize them. These vision, strategies and initiatives stem from SG-SPACE's previous goal to build a spatially-enabled nation by establishing a mechanism for making interoperable, authoritative geospatial information available for the public, private and people sectors.

Background

Emerging trends in global geospatial information management have brought both new opportunities and challenges for geospatial development in Singapore. Efforts to develop a new master plan is needed to provide fresh direction for fulfilling these opportunities and addressing these challenges.

Use

The Master Plan is a multi-stakeholder effort from numerous data producers and users from the public as well as private sectors and representatives of different sector communities. A concerted stakeholder consultation process occurred over 4 months in 2016 to identify common goals, challenges and opportunities across the sectors. This took the form of a visioning exercise, which articulated broad outcomes and strategies, and roundtable discussions providing more in-depth information about specific topics. Targeted initiatives were then drafted to address gaps and promote partnerships. These include a Geospatial Centre of Excellence to aggregate geospatial expertise while providing a centralized expert service to government agencies; and other initiatives focused on capacity building and industry development.

Good practice motivation

The Master Plan demonstrates a comprehensive, coordinated approach toward nationwide strategic planning. Its broad scope and strong stakeholder engagement reflect strong needs for having commonly shared strategy crossing multiple application domains and sectors. The strategy will strengthen the implementation and monitoring of geospatial initiatives.

The approach is also confirms that government alone cannot drive all geospatial activities. There is a strong need to bring together numerous stakeholders from public sector, academia, industry and society to effectively enhance the geospatial development making use of jointly-developed strategic plan.

Singapore Geospatial Master Plan
Charting the future of GIST
A collaborative effort involving:

Industry
Innovation, Capital & Scale

Government
Authoritative Data, Trusted Party & Policy Maker

Academia
Education, Skills Training & R&D

Public
VGI, Innovation & Adoption
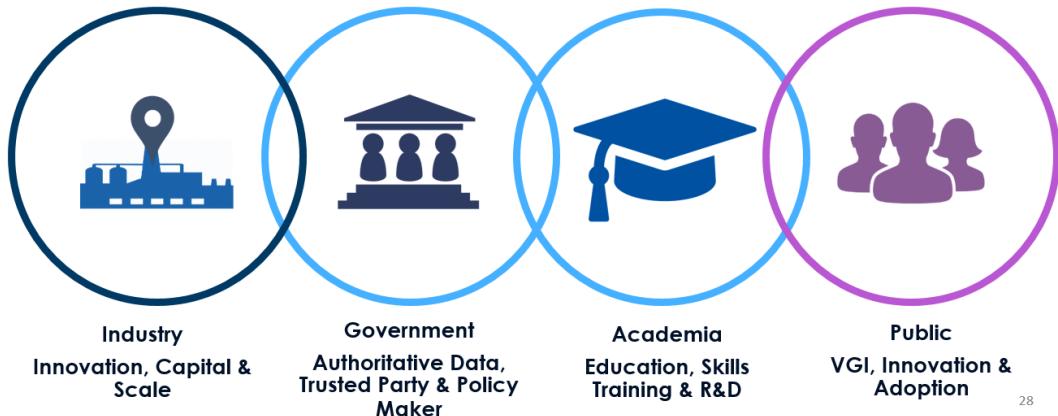
28

Figure: Tapping the strengths of numerous stakeholders to develop, implement and maximize the success of strategic plans.

Reference

Master Plan To be publicly released at the end of 2017

Place matters: the Location Strategy for the United Kingdom

Country

United Kingdom

Type NIA-instrument

M1. Strategic Planning

Aim

To maximize the value to the public, government, UK business and industry of geographic information and to provide a consistent framework to assist national, regional and local initiatives, and service delivery for the benefit of all UK people.

NIA-instrument description

The Location Strategy for the United Kingdom is a thoughtful, authoritative and important document and its recommendations are closely aligned to the delivery of government policy in many geospatially related areas. UK Government acknowledged with this document that a better understanding of location is an important factor in moving forward the transformational government agenda. The document is constructed around 5 strategic actions that together form the coherent framework for implementation: 1) Data discovery; 2) Common location reference data; 3) Establishment of an infrastructure for sharing location-related information; 4) Skills and knowledge; and 5) Governance and leadership. In addition, there is also a section included relating to the costs and benefits of implementing the strategy.

Background

In the April 2006 Transformational Government Implementation Plan, the Cabinet asked the Geographic Information Panel to create a UK Geographic information Strategy. The Location Strategy was adopted in 2008, and had the objective of maximizing the sharing of geographic information and increase the benefit for the public, government and the private sector. It was intended to provide a framework to assist European, national, regional and local initiatives. The UK Location Strategy would be implemented through the UK Location Program. During this program, a UK spatial data infrastructure would be developed, referred to as the UK Location Information Infrastructure (UKLII). This Location Program intended to deliver a range of business services for data holders to publish location information and web services, in compliance with the INSPIRE Directive. These services would be accessible through a portal hosted at data.gov.uk, while access via other entry points.

Use

Key areas where the Location Strategy is of benefit are in policy and operational areas of the public and private sector where shared and integrated place-based information is valuable for decision making. These include planning for communities, environment, health. Education, security, constructions, transport, crime prevention, insurance, retail, energy, climate change, agriculture, heritage, sport, employment and statistics

Good practice motivation

This example clearly illustrates the applicability of existing and implementing strategy plans with political support in the context of geospatial information management as a good means of NIA-instrument M1. Strategic Planning in which activities of public organizations are aligned to a system of interconnected levels of plans, objectives and targets. This National Institutional Arrangement is fostered by giving individual organizations in the United Kingdom clear objectives and targets within

a framework (program) of broader inter-organizational or even government-wide goals. The different levels of the program are linked to one another to avoid duplication, gaps and to enhance the pursuit of overarching goals. The strategy plan is monitored and evaluated, after which plan can be adjusted and fine-tuned.
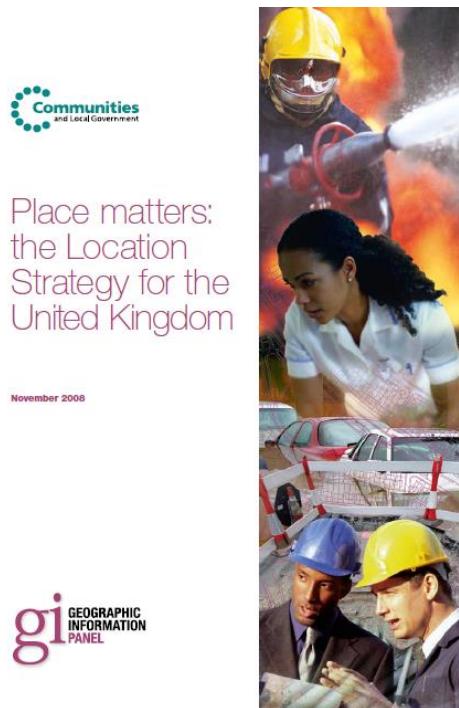
Figure: Frontpage of Location Strategy (2008)

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Government Investment in Bahrein Spatial Data Infrastructure

Country

Kingdom of Bahrain

Type NIA-instrument

M2. Financial Management: Input-oriented

Aim

Investments in Bahrain Spatial Data Infrastructure contributes to the management improvement of spatially-related national projects, increase efficiencies of Ministries, Public and Private Organizations, creation and maintenance of a national geoportal with a centralized data repository, and support decision-makers towards efficient planning, studies and coordination of government services.

NIA-instrument description

The government has systematically financed the BSDI. Approximately 30% of the financial resources was invested in Data production and update; 30% in Technology acquisition and infrastructure; 10% in Methodology development/capacity building; 2% in Research; 18% in Maintenance services and/or Geoportal; and 10% in Development of national/regional/local SDI.

Background

The GIS Directorate of the Central Informatics Organization (CIO), Kingdom of Bahrain, in compliance to a Government Decree and directives of National GIS Steering Committee (NGISSC) officially implemented National Spatial Data Infrastructure (NSDI) for the Kingdom of Bahrain, in February 2005. Bahrain Spatial Data Infrastructure (BSDI) is as an innovative endeavor in conformance to the policies of the Government of Bahrain, in effectively recognizing the significance of spatial information, to the planning, governance of the nation and provision of public services. BSDI provides a base or structure of practices and relationships among data producers and users that facilitate data sharing and use. It is also a set of actions and new ways of accessing, sharing and using geographic data that enables far more comprehensive analysis of data to help decision-makers chose the best course of action. BSDI is considered as a major achievement of the National GIS Steering Committee with leadership being provided by GIS Directorate - CIO.
Over time the Kingdom of Bahrain has taken several progressive steps towards the implementation of Spatial Data Infrastructure in the country and has successfully achieved targeted milestones over the last 5 years. It includes Development of Bahrain Spatial Data Infrastructure Portal, Development of Data Exchange Policy and Data Standards. The GIS implementation has curtailed duplication of data creation and reduced the cost of Ownership of GIS technologies by various Govt. Organizations. The BSDI portal is a sort of "Enterprise Spatial Portal" which not only acts as a spatial catalogue portal, creating, maintaining and cataloguing metadata and data but also integrates spatial data with business enterprise solutions. It serves Government Agencies with Geospatial Intelligent Systems integrated with BSDI spatial data layers and organization business data assisting them to more effectively serve their respective customers. In achieving the targeted milestone, the GIS Directorate - CIO has also reached a level of maturity where spatial datasets are acquired and managed comprehensively and optimized strategically.

Use

The usage of BSDI resulted in a Reduction of Cost of Development of Geospatial Data; Elimination of Duplication of effort in development and capture of Geospatial Data; Quick delivery of services which rely on Geospatial Information; Easy accessibility of Geospatial data for the Government, Private Organization, Academicians and General Public; Effective Planning and coordination of Government Services; and Geospatial One Stop Shop offering multiple online Spatial Information Services.

Good practice motivation

The governmental investment resulted in a significant Return on Investment (ROI) including: - 75% reduction in time of service delivery to end-users. - 60% reduction in cost of data creation and maintenance - Private sectors projects streamlined significantly. - More commitment of stakeholders and various levels. - Move from Silo-based information into a corporate knowledge base. - To reduce Total Cost of Ownership of Technology. - Enterprise Spatial Intelligence Platform
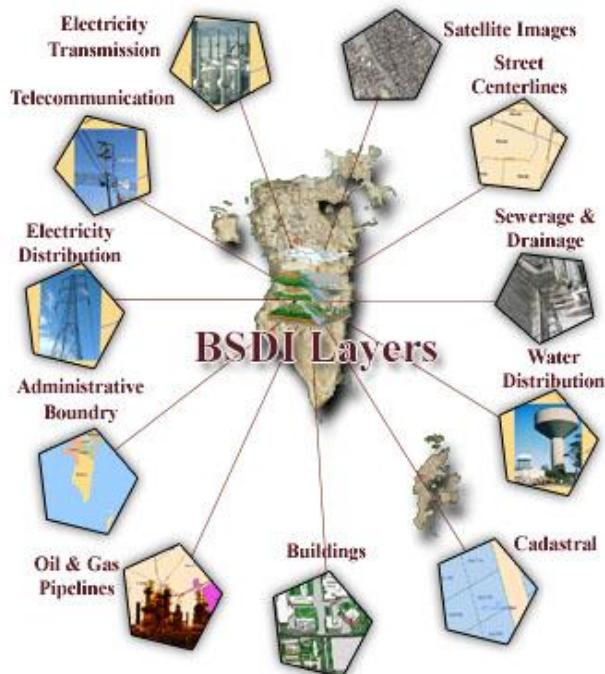
Figure: Core Data layers of Bahrain Spatial Data Infrastructure

Reference

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Financial investments in Chinese geospatial information Management

Country

China

Type NIA-instrument

M2. Financial management: input-oriented M1. Strategic Planning

Aim

To strengthen the geospatial information management for the entire country at different administrative levels

NIA-instrument description

In China, the "Five-Year Plans" are a series of social and economic development initiatives shaped through the plenary sessions of the Central Committee and National Congresses. Digital China Geospatial Framework – the Chinese spatial data infrastructure - was listed in the 12th Basic Surveying Five-Year Plans. In the "Thirteen Five-Year Plan" of 2016-2020, the "space governance framework" will be built for managing spatial planning, natural resources asset audit and land use control based on the "strategic emerging industry" on geographic information.

Background

China started to apply geographic information in public administrations and business operations in 1980s. The rapid economic development of and technology during the latest three decades has enhanced the development of geo-information industry. It has been estimated that the total product value of Chinese geo-information industry of 2015 will achieve ￥360 billion, with 15,699 surveying and mapping qualification units and 370,000 employees. The Chinese NSDI, which is officially called as Digital China Geospatial Framework (DCGF) in China was initiated in 2006 with the support of the main leaders of the Chinese central government and it was listed in the 12th Basic Surveying Five-Year Plans. The DCGF contains five parts: 1) basic geospatial database, 2) data catalogues and exchanging system, 3) policies, regulations and standard system, 4) organization system, 5) and geospatial information platform (DCGF, 2009). At the local levels, there are also 34 Digital Province Geospatial Framework and 330 Digital City Geospatial Framework**,** which are connected with the DCGF in a hierarchical way. The Regulation on Basic Surveying and Mapping (2009) requires that the basic surveying and mapping plans at the national, provincial, municipal and county levels should be made by the governments and included in the "Five-Year Plan". Every year, the financial authorities should provide financial support to the programs listed in the basic surveying and mapping plans. This basic surveying and mapping funds is one of the most important financial sources of the Chinese NSDI. Due to the large area and the quickly changing urban landscape in China, the maintenance of the Chinese NSDI is very expensive. The Chinese government has invested huge amount of money on the basic surveying and mapping works. For example, the famous "Western China Mapping Project" cost ￥1.7 billion and generated 5032 topographic maps at the scale of 1:50,000 for an area of around 2 million square kilometers in the west part of China despite the fact that the average altitude of the terrain is 4,500m above sea level. Because of the project, China has completed 100% coverage of its land territory with 1:50,000 topographic maps and fundamental geographic information data. Special funds are supported by the Ministry of Finance to support some specific programs and tasks. For example, the national Tianditu (Mapworld) geoportal has the annual financial support from the "Surveying, Mapping and Geographic Information Public Service Industry Research and Special

Funds" and the "Special Financial Grant Funding of NASG". The development of the local SDIs also gets the special funds from the "Digital City Special Funds". It has been estimated that the total investment of the digital city which contains the task of local SDI development is ￥6.1 billion, ￥0.6 billion from central government and ￥5.5 billion from local governments.

In the "Thirteen Five-Year Plan" of 2016-2020, the "space governance framework" will be built for managing spatial planning, natural resources asset audit and land use control. The "Internet +" and big data industries are highly concerned by the government and relative policies and guidelines were proposed in 2015. The Geographic information industry was defined by the State Council as the "strategic emerging industry".

Use

The Five-Year plans are applicable for the entire country and different administrative levels. The Chinese NSDI - Digital China Geospatial Framework (DCGF) **-** was explicitly listed in the 12th Five-Year Plan, and so was strongly supported by the main leaders of the Chinese central government. At the local levels, there are also 34 Digital Province Geospatial Framework and 330 Digital City Geospatial Framework, that are embedded in the overall framework of DCGF.

Good practice motivation

The Chinese five year plans are an excellent practice example of the input-oriented financial management in which the associated budgets clearly define what resources related to geospatial information management should be spent on, and in great detail. Through the budgets, policy priorities are set and communicated downwards.
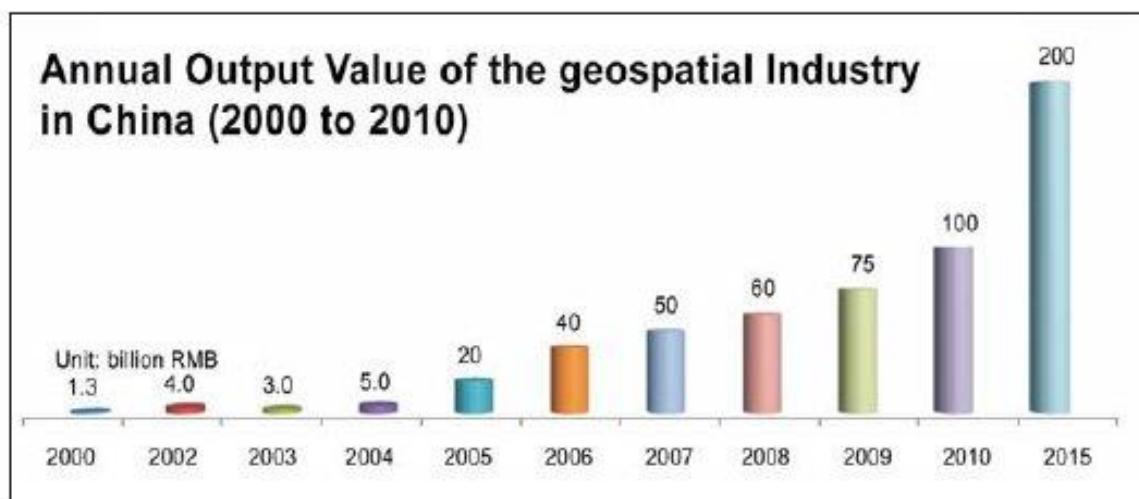
Source: 3S News

Reference

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NSDI Financial Strategy and Funding Models

Country

India

Type NIA-instrument

M2. Financial management: input-oriented

Aim

To establish a NSDI Financial strategy and propose relevant funding models for NSDI India.

NIA-instrument description

A phased financial strategy for a successful implementation of NSDI India was developed. The strategy had a short-term (0-5 years) and a medium-term (5-10 years) scope.

In the immediate term, it would not be possible for NSDI to tap the private sector for funding because the private sector would come only after an enabling environment is put in place. The private sector would also be interested in successful precedencies. Therefore, in the short-term, NSDI should focus on a mix of government support (direct and indirect) and donor agency funding. Significant initiatives had been taken by multilateral institutions in India in augmenting infrastructure in the country. Therefore, getting the requisite funds from donor agencies would not be an issue.

In the long term (> 5 years), it was proposed that NSDI focus on limiting the exposure to government and multilateral funding thereby becoming either more self-reliant or reliant on the private sector. To do this, it should encourage increased private participation. As mentioned earlier, the private sector would participate only if they see some economic return from the investment. Some of the revenue sources could include internal revenue generation wherein NSDI could become a standard setting body on the lines of BIS and all data from NSDI comes with a quality certification for which NSDI charges a fee. NSDI cold also look at sharing of user charges.

Background

The economic issues involved in implementing a SDI have been a topic for debate in the last few years. Successful implementation of an SDI to some extent depends on ability of the SDI community to sell the benefits/gains of an SDI to the financiers. Infrastructure financiers generally tend to look for two main types of benefits/gains when investing: competitive financial return on investment and the creation of a product that will generate growth (e.g. economic, political and environmental) within the implementation environment or across the wider society. In India where funding is a severe constraint, financial strategic initiatives become all the more important for development of NSDI.

Use

The total annual spend on SDI activities was estimated to be around Rs. 2500 cr. An annual outlay of Rs. 7500 cr. was proposed for NSDI through combinations of funding.

Good practice motivation

This good practice included clear budgetary guidelines and advice. In the immediate term, NSDI needs to undertake the following as the first steps towards implementation of the financial strategy: Freezing funds requirement for the NSDI; Identifying specific sources of funding and initiating dialogue; and Putting in place the skill sets and capabilities required in the implementation of NSDI
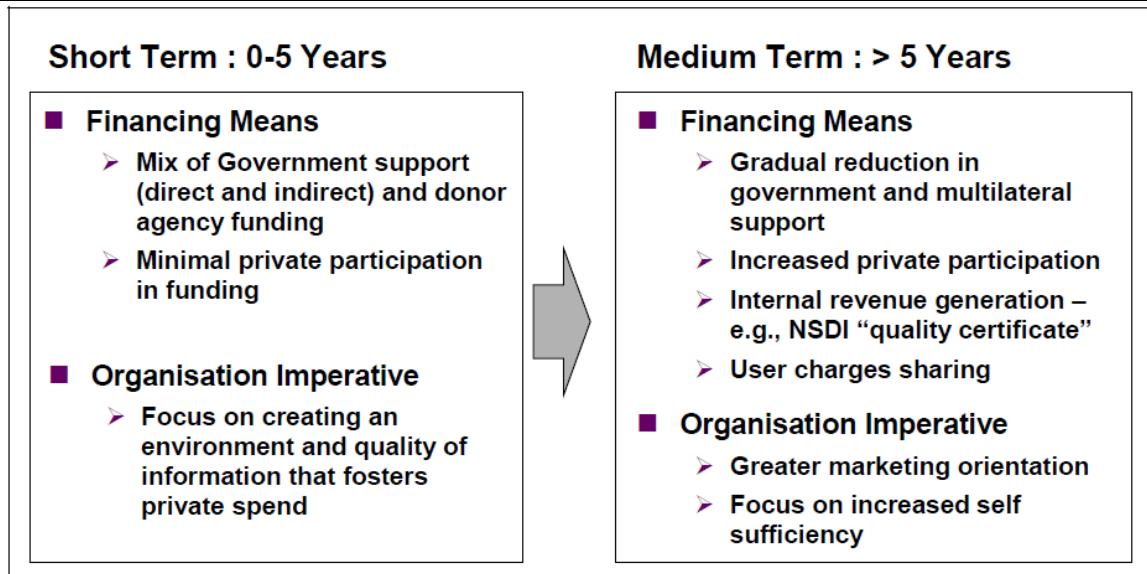

Short Term : 0-5 Years

- **Financing Means**
  - Mix of Government support (direct and indirect) and donor agency funding
  - Minimal private participation in funding

- **Organisation Imperative**
  - Focus on creating an environment and quality of information that fosters private spend

Medium Term : > 5 Years

- **Financing Means**
  - Gradual reduction in government and multilateral support
  - Increased private participation
  - Internal revenue generation – e.g., NSDI "quality certificate"
  - User charges sharing

- **Organisation Imperative**
  - Greater marketing orientation
  - Focus on increased self sufficiency

Figure: NSDI Financial strategy with a short and medium term scopes

Reference

Strategic Consultancy Services Ltd. (2003). Financial strategy for National Spatial Data Infrastructure

Cadastral Modernization Program

Country

Mexico

Type NIA-instrument

M2. Financial management: input-oriented

Aim

Strengthening municipal own income through updating the cadastral database and cartography and improving the administrative efficiency.   This NIA-instrument related to the financial management system, encompasses processes and instruments for budgeting, accounting, framework agreements, supervision of actions and elaboration of opinion of compliance to the projects; Expenditure review committees, bilateral negotiations and conflict resolution processes are all oriented to the actions contained in the Executive Project, clearly defining the resources related to the management of geospatial information in which to spend and in great detail.

NIA-instrument description

Indeed, this NIA instrument applies ad hoc to this project because it is a national program in which the management of financial resources is very strictly supported and its application in a program whose main concern is the Modernization of Cadasters and with this we speak of the professionalization of the people who work in the municipalities, the cadastral management, processes, products, technical-technological inputs, offices, services to the citizenship in order to guarantee the quality, congruence, cadastral data, as well as the mapping and geospatial inputs necessary for the generation of products such as solid cartographic bases, updated cadastral cartography and database , functional cadastral systems, Infrastructure and equipment, normativity and a documentary collection in order and in digital format.

Background

The National Bank for Public Works and Services (BANOBRAS) and INEGI have been instrumented since 2006 and permanently strengthen the Cadastral Modernization Program, with the main objective of improving municipal own revenues through the increase in the collection of the Property Tax.   The Program comprises two stages: 1) Elaboration of Studies and Projects: Non-recoverable supports to cover 100% of the total cost of studies, projects and services required and   2) Execution of the cadastral modernization actions. Supports up to 40% of the total cost.

Use

Entry requirements: Preferably, municipalities have 15 million cadastral counts. Provide the following documents: Request for admission. Agreement with the authorization of the municipal council about the actions and resources to be exercised and letter of adhesion to the Program.   The Cadastral Modernization Program applies very strictly the economic or financial resources in the modernization of the following items: Updating of the descriptive database and the cartographic base, remodeling and equipment of the cadastral area, development of Management Systems and Municipal Geographical Information Systems, linking of graphical and tabular information, training of personnel and general documentation of processes.

Good practice motivation

The application of the NIA Instrument gives security to the various government spheres and State Units involved and to society in general, because the implied requirements in the Input-oriented Financial Management for the generation of geospatial information in the territory are useful inputs for National and all State Units that require it for the best performance of its functions in the Territory Management, generating significant savings for the public heirloom and avoiding unnecessary expenses.

Area of documentary archive before the modernization

Area of documentary archive after the modernization[1]

Figure: Example of one of the actions included in the BANOBRAS Cadastral Modernization Program
[1]In addition of the physical organization of the area, the documents are digitalized in order to have a digital storage.

Reference
www.inegi.org.mx
atencion.usuarios@inegi.org.mx

Rating according to their level of application (1..10), a value of 10 means that it has a strong level of application.

1	2	3	4	5	6	7	8	X	9	10	

Less application ……………………………………………… Strong application

Automated performance procedure for German SDI Monitoring

Country

Germany

Type NIA-instrument

M3. Financial Management: Performance-oriented

Aim

To implement the most extensive possible automated procedure for monitoring the performance of INSPIRE in Germany

NIA-instrument description

A set of tools to automate the performance monitoring of the implementation of the German Spatial Data Infrastructure aligned with the Implementing Rules of INSPIRE.

Background

The basis of INSPIRE implementation in Germany – as required in recital 5 and Article 1(2) of the INSPIRE Directive – is the German Spatial Data Infrastructure (GDI-DE). Accordingly, the Steering Committee for Spatial Data Infrastructure Germany (LG GDI-DE) is responsible for the monitoring and reporting pursuant to Article 21 of the INSPIRE Directive. In 2010, the LG GDI-DE communicated the first result of the INSPIRE monitoring relating to the year 2009 and the first report for Germany to the European Commission and made it available to the public on the internet GDI-DE website. In the following years until the reporting year 2012, the monitoring was carried out continuously and communicated to the European Commission annually at 15 May and published on the GDI-DE website. All the monitoring results forwarded to the European Commission were drawn up jointly by the GDI-DE network and coordinated across administrations in the LG GDI-DE. The results serve not only for the reporting to the European Commission provided for by law, but also for quality assurance in the context of the implementation of the INSPIRE Directive in Germany.
The 'INSPIRE monitoring procedure' within the GDI-DE has been carried out across administrations since 2009. The INSPIRE monitoring is therefore interpreted as a continuous and iterative procedure. The spatial data holding entities at all levels of the administration are responsible for the identification and reporting of the INSPIRE-relevant spatial data sets and services. They enter this and further information necessary to calculate a set of monitoring indicators in a message list provided by the Coordination Office for GDI-DE. The contact points at the federal government and Länder collect the respective information from the spatial data holding entities and add it to the Land or federal lists and update them regularly. In this respect, the Länder are also responsible for inclusion of the lowest level of the administration in the monitoring procedure. The Land or federal lists are then returned to the coordination office for GDI-DE, deposited in the GDI-DE wiki and can be updated there at any time. The lists are entered into a GDI-DE Registry before the reporting time and the necessary formats are produced for publication and submission to the European Commission (xml, html). This GDI-DE Registry also provides support for carrying out the monitoring in Germany. From 2014, the monitoring is automated in order in this way to cut the costs of all offices concerned down to the municipal level. For the automation process, the metadata are to be used to a high extent to gather information. The results of the monitoring performance forms an important basis for future actions to further develop the GDI-DE and to strengthen the technical and organisational implementation of INSPIRE.
With the help of the national test environment of GDI-DE, all data suppliers and service providers can check their spatial data and services for conformity with the standards or the specifications of

the INSPIRE Directive. The GDI-DE Test Suite has been freely accessible since the end of September 2011. In addition to a web application and a download variant, an interface is also usable for carrying tests from other applications. At present, tests for checking metadata, search services (CSW) and view services (WMS) are ready. The spatial data holding entities are required to use the GDI-DE Test Suite to check conformity with the INSPIRE requirements. The further functional development of the GDI-DE Test Suite is being coordinated and financed jointly in the GDI-DE in the context of the technical operation and a coordinated change management process. This also includes consideration of the requirements resulting from the INSPIRE Directive. The basis for this is the performance list from the Annex to the GDI-DE Administrative Agreement, in which the change management process is defined including GDI-DE stakeholders.

In the GDI-DE, the aim is for the most extensive possible automated procedure for the INSPIRE monitoring. In future, INSPIRE-identified spatial data sets and services are to be read directly from a data catalogue service and on the basis of the metadata, the information necessary for the monitoring transferred to the GDI-DE Registry. The acquisition of information for the calculation of the indicators, such as for example accessibility through services and the conformity to implementing rules, is then to be automated with the support of the GDI-DE Test Suite. The spatial data-holding entities and the federal government and Länder contact points then have the possibility to examine the entries and where appropriate to amend or supplement them. Overall, through this procedure, the currently still high expenditure for the INSPIRE monitoring will be reduced and the quality assurance as a whole optimized.

Use

All relevant spatial data holding entities at different administrative levels, the federal government and Länder contact points are making use to automate their monitoring processes in the context of INSPIRE implementation.

Good practice motivation

This example is strongly performance-oriented, with a heavy emphasis on organizational incentives for performance by means of automating the performance monitoring procedures and providing relevant tools. The initiative was co-financed by several key players in the context of the implementation of GDI-DE as well as INSPIRE. The automation reduces the burden for monitoring and contributes to optimize the quality assurance issues.

Figure: Screenshot of GDI-DE Testsuite

Reference

GDI-DE Steering Committee (2013). Member State Report: Germany. Report on the constructions of spatial data infrastructure in Germany under Article 21(3) of the INSPIRE Directive

Geomaturity Assessment of Abu Dhabi Spatial Data Infrastructure

Country

United Arab Emirates

Type NIA-instrument

M3. Financial management: performance-oriented

Aim

To monitor the progress of GIS at stakeholders organizations and the implementation of Abu Dhabi Spatial Data Infrastructure and to provide a set of relevant recommendations for further advancement.

NIA-instrument description

The Geomaturity model assess an entity's Readiness through evaluating factors related to Enterprise Alignment, Data Management, Infrastructure, and Resource Management. These factors build the framework necessary for the second component Usage. The Usage component evaluates how GIS is used internally to support and enhance operations, and how it is presented externally to support communications and eGovernment initiatives. Six GeoMaturity Levels have been defined to represent the normal evolution of Geographical Information System (GIS) within an organization. The characteristics of each level lead to indicators and targets that can provide guidance to organizations implementing GIS. The results are sets of recommendations for stakeholder organizations and the Abu Dhabi Spatial Data Infrastructure

Background

This assessment was commissioned to determine how the government of the emirate of Abu Dhabi and subsidized entities are leveraging GIS within their organization. The results form a benchmark of Geomaturity ratings from which the Emirate can monitor progress from year to year. The assessment team interviewed representatives that were identified as stakeholders of the Abu Dhabi Spatial Data Infrastructure (AD-SDI) initiative. The first assessment was conducted in 2010. The Geomaturity Framework used to structure the assessment was patterned after the eMaturity model defined by the Abu Dhabi Systems & Information Centre (ADSIC). ADSIC has been conducting assessments of e-Government throughout the Emirate with this model since 2007.

Use

In the first round of the assessment (2010), representatives of 32 organizations were interviewed. These stakeholders participants represent thirteen operational sectors and five areas of government. In order to evaluate such a diverse group of organizations, it was necessary to recognize that the need for GIS varies across sectors. Each sector was categorized according to Core, Moderate, and Beneficial (Low) Relevance levels. Relevance reflects the difference in need, investment and staffing for GIS based in its applicability to the overall mission of the organization. For example. GIS applicability to a legal firm will be of much lower relevance than to a construction firm. Each stakeholder received an individual assessment with rating and recommendations at a detailed level In the years after more stakeholder entities joined to assess their level of geomaturity. .

Good practice motivation

> This practice clearly provides incentives to relevant organizational units to improve their performance.

The implementation of GIS technology within organizations tends to follow a natural continuum. Geomaturity is a term used to describe the continuum and the characteristics of each evolving stage. The Geomaturity levels below identify and describe the phases of this continuum. The characteristics of each level are used to benchmark the current state of an entity's GIS program, and provide guidance for advancing to the next phase. The relevance and impact of the technology to the primary business functions will determine the speed in which the use of GIS evolves.
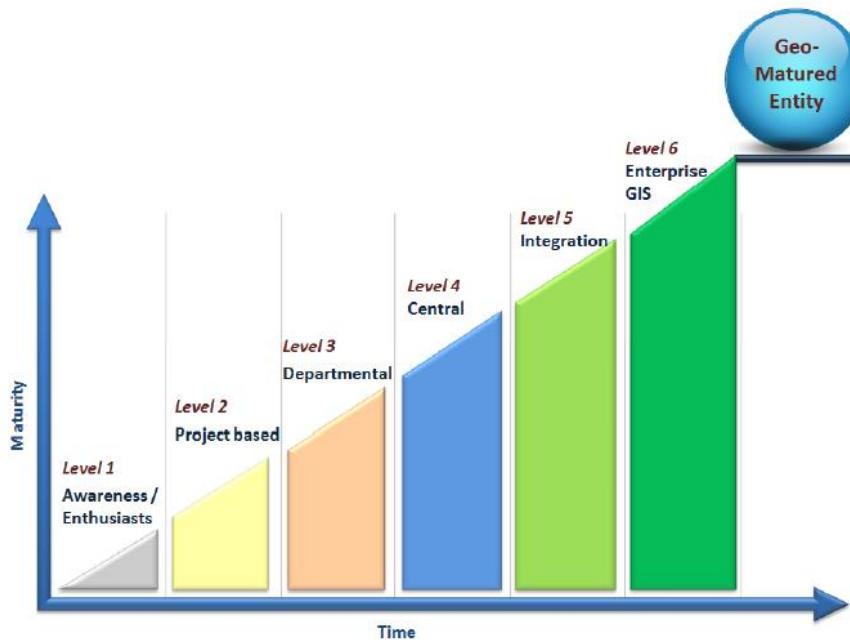

Figure: Levels of Geomaturity

Reference
Abu Dhabi Systems & Information Centre (2010). AD-Stakeholder GeoMaturity Assessment. December 2010.

Geospatial Maturity Assessment

Country

USA

Type NIA-instrument

M3. Financial management: performance-oriented

Aim

The evident success of the National States Geographic Information Council's (NSGIC) fifty States' Initiative for improving intergovernmental cooperation and geospatial capacities is built on a sound strategic and business planning process, to advance the performance of NSDI by improving state government coordination of stakeholders. Grant assistance for state projects under the Fifty states Initiative has been designed to help develop and implement "statewide strategic and business plans that will facilitate the coordination of programs, policies, technologie s, and resources that enable the coordination, collection, documentation, discovery, distribution, exchange and maintenance of geospatial information in support of the NSDI and the objectives of the Fifty States Initiative Action Plan."

NIA-instrument description

| The Geospatial Maturity Assessment (GMA) is an objective baseline assessment for routinely monitoring and validating a state's geospatial business performance capabilities. FGDC provided funding assistance in FY 2010 to support the development of the GMA. Without it, decision-makers in each state (e.g., state Chief Information Officers (CIOs), Geographic Information Officers (GIOs), Governors, Legislators, etc.) have little sense of the extent and value of geospatial assets and capabilities within their state. These assets and capabilities include, but are not limited to, the following components:
- Geospatial Coordination and Collaboration
- Geospatial Data Development (documentation and maintenance)
- Geospatial Asset Discovery and Access (sharing and distribution)
- Statewide Partnership Programs
- Participation in Pertinent National Partnership Programs and Initiatives
- Geospatial Policies, Standards, Guidelines and Best Practices
- Geospatial Training, Education and Professional Networking Activities
- Governance, Policy, Management and Planning
- Enterprise Integration and Design
- Societal Impacts |
| --- |

Use

The GMA was launched in 2010 and has been regularly updated since that time. The most recent update was the outcome of a survey of all states that was carried out in 2016.

Good practice motivation

In parallel to the Fifty States Initiative, driven in part by the findings and recommendations of the various state planning projects, NSGIC has worked with FGDC on enhancing and augmenting the process used by the states for summarizing progress on goals related to advancing the performance of NSDI, by developing and implementing the Geospatial Maturity Assessment (GMA).

Does your state have a current GIS strategic plan?

Please select an option

Responses »

Other (please specify) »

38 states
Yes

11 states
No
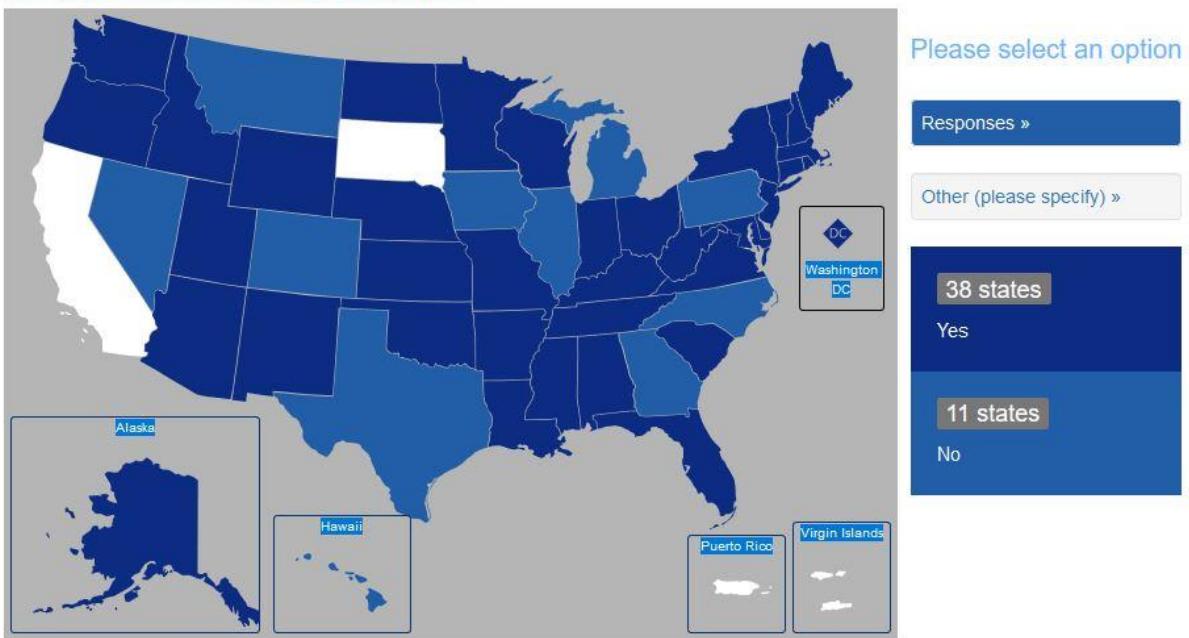
Australia and New Zealand Cooperative Research Centre for Spatial Information

Country

Australia / New Zealand

Type NIA-instrument

M4. Financial Management: Joined up working

Aim

The CRC for Spatial Information (CRCSI) is a joint venture of government, academic and private sector organizations in Australia and New Zealand who aim to use spatial technologies to solve complex problems of national significance (www.crcsi.com.au).

NIA-instrument description

While not necessarily directly involved with spatial policy, the CRCSI conducts collaborative research that leads to accelerated industry growth, improved social wellbeing and a more sustainable environment. It aims of solve complex problems of national significance for Australia and New Zealand and plays a key role in making decisions about spatial research and development that delivers commercially applicable end-user outcomes. In particular, the tendency for small-to-medium organizations to proliferate the spatial industry is specifically attended to through the '43pl' initiative, which could also be perceived as another instance of this NIA instrument. The CRCSI works with over 100 partners across multiple sectors.

Background

| CRCSI is an international research and development centre set up in 2003 under the Australian Government Business Cooperative Research Centres Programme. The Cooperative Research Centres (CRC) Programme is a competitive, merit based grant programme that supports industry-led and outcome-focused collaborative research partnerships between industry, researchers and the community. CRCSI is an unincorporated joint venture of 95 partners that operates through its wholly-owned entity Spatial Information Systems Research Ltd. Partners include federal and state government agencies, universities and over 50 companies. Reflecting the key categories of partners and stakeholders, CRCSI has established 3 colleges: the Research and Education College, the Government College, and the SME College to facilitate communication, accountability and decision-making across all the partners.
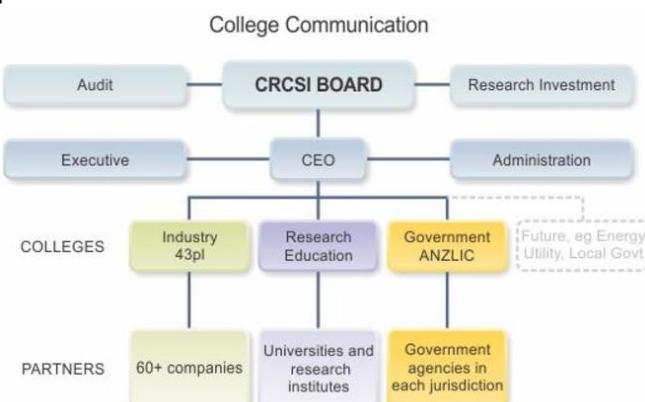
 Figure 1. CRCSI College communication and relationship with partners (source: www.crcsi.com.au). |
| --- |

The SME consortium, 43pl, representing the numerous small businesses that exemplify the nature of the spatial industry in Australia and New Zealand, is also a significant partner in CRCSI, providing a mechanism for SME engagement and technology diffusion.

The purpose of the CRCSI is to find robust solutions to three major challenges (CRCSI, 2016):
1. Solving the technical challenges that will permit Australia to use all global and regional navigation satellite system signals to deliver 2cm positioning accuracy to anybody, anywhere outdoors in real-time. This will support the development of Australia's National Positioning Infrastructure and is estimated to result in over $32 billion of new value to the Australian economy (for precision agriculture, autonomous transport and infrastructure construction).
2. Improving the ability and efficiency of government and industry to rapidly create and value-add spatial information products from mobile devices and cloud-based infrastructure (examples include the use of drones for monitoring powerline infrastructure, real-time analysis of patterns of people movement for improved logistics planning and safety, road crack detection and maintenance and visualisation of traffic).
3. Identifying and exploiting the emerging capabilities of the intelligent web to enable the Foundation Spatial Data of Australian and New Zealand governments, and the critical supply chains that are underpinned, to support value-added use (city planning and the regeneration of old industrial areas, health services, and the agricultural value chain).

CRCSI focuses on 3 application research themes: positioning, rapid spatial analytics, and spatial infrastructure. In turn, these are supported by four key program areas. These program areas are:
- **agriculture, natural resources and climate change** through creation of a biomass and carbon monitoring system for high resolution and high frequency application on farms and through improved environmental monitoring
- **defence** by adapting the capabilities of CRCSI's research portfolio
- **built environment** to build new tools to support sustainable built infrastructure development
- **health** by helping agencies to spatially enable their clinical databases.

Use

The CRCSI is an unincorporated joint venture (UJV) and is governed, managed and operated by a single unlisted public company limited by guarantee, Spatial Information Systems Research Limited (SISR). There are seven essential participants in CRCSI/SISR: 43pl (43 Version 2 Pty Ltd), Curtin University of Technology, Department of Environment, Land, Water and Planning, VIC, Land and Property Information, NSW, Landgate, WA, Queensland University of Technology, University of New England.

CRCSI is in partnership with 61 organisations from government, private and research sectors, with a further 59 third-party organisations who have provided cash or in-kind contributions. CRCSI also has significant membership from New Zealand including a lead government agency, Land Information New Zealand (LINZ), the University of Canterbury, and two companies who are members of 43pl.

The impact expected to be achieved by the CRCSI from its activities since 2010 is AU$733 million meaning that for every AU$1 invested by the CRCSI there will be a resulting benefit of AU$2.50 (CRCSI, 2016). Since 2010 the CRCSI has delivered a research impact of AU$256 million from AU$215 million in costs. Much of the benefit results from CRCSI research delivering outcomes that reduce costs to end users either in collection, processing, delivery, maintenance or usage (http://www.crcsi.com.au/impact/). In addition, two start-up companies have been formed from CRCSI activities.

Good practice motivation

Feedback and endorsements from participants indicate the CRCSI has not only been effective in providing a structured way of including SMEs in large research projects, this inclusion has also provided the pathway for translating research into commercial impact. This strategy of engaging industry in research development and commercialisation remains fairly unique in Australia and New Zealand, and its success as a model has been recognised within the CRC program in Australia.
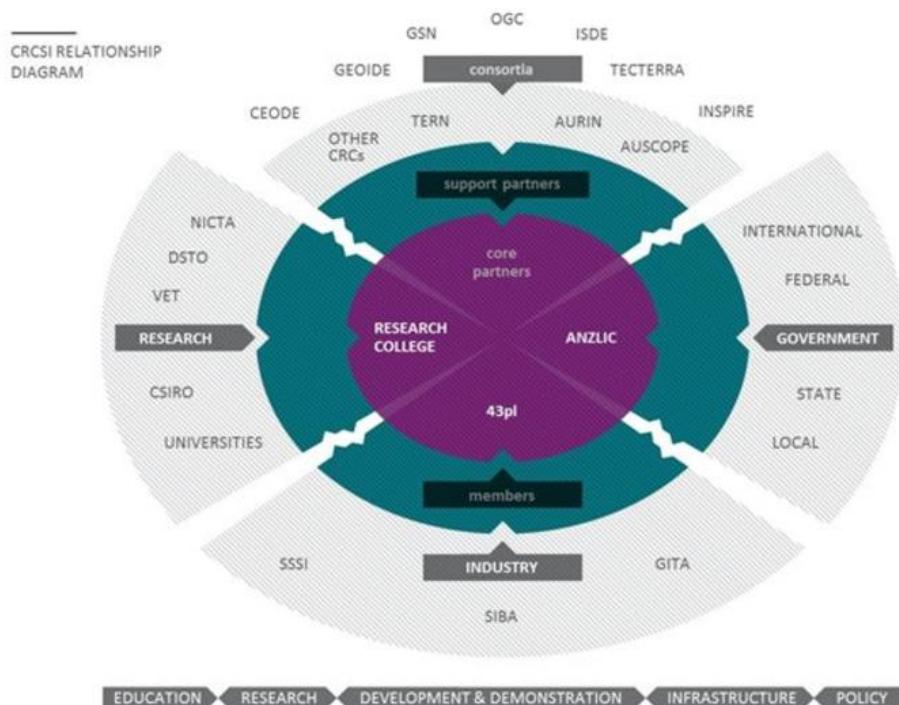

Figure 2. CRCSI partner relationships (Source: www.crcsi.com.au).

Reference

CRCSI (2016). Australia and New Zealand CRC for Spatial Information, Year in Summary 2015-16. Available at http://www.crcsi.com.au/assets/Resources/CRCSI-Year-in-Summary-2015-16-FINAL-WEBSITE.pdf.

CRCSI (2017). CRCSI website. Available at: www.crcsi.com.au.

Geonovum

Country

The Netherlands

Type NIA-instrument

M4. Financial Management Joined up working

Aim

Executing the management entity of the National Spatial Data Infrastructure in The Netherlands by means of join-up working and co-funding.

NIA-instrument description

Geonovum aims to make public sector information accessible, develops the necessary supportive standards, and valorize the information sources for the government. The core activities of Geonovum, its so-called basic program, are funded by resources from different government bodies. Partners that financially support the execution of the basic program are the Ministries of Infrastructures and Environment, Economic Affairs, Agriculture and Innovation, Cadastre and Geological Survey (TNO-NITG). Also other government bodies, such as the Ministry of the Interior and Kingdom Relations, the Hydrographical Service and the Interprovincial Co-operative Body (IPO) contribute to the execution of the basic program.

In addition to the funding received for the implementation of the basic program, Geonovum also carries out particular activities at the request of specific public bodies. These assignments are financed by the promotor or client of the assigned or by funding from other resources. However, these assignments have to meet certain requirements: they should be in line with the vision and aims of Geonovum and/or the Dutch vision on geo-information and have to contribute to the cooperation between different stakeholders of the Dutch SDI.

Most of the staff members of Geonovum (with different fields of expertise) are 'detached' from key organizations such as Ministry of Economic Affairs, Delft University Technology, Provinces Overijssel and Utrecht, municipalities of Apeldoorn The Hague, Eindhoven, and Arnhem, and Kadaster

Background

In 2006, the GI Council of The Netherlands was created. All ministries and agencies involved in the SDI (development and use) are represented in this board. Next to the GI-Board, Geonovum – established in 2007 – plays an important role in the execution of the Dutch Spatial Data Infrastructure. Together they took over the roles of RAVI (Dutch Council for Real Estate Information) and the NCGI (National Clearinghouse Geo-Information). The main aims of Geonovum's are: 1. To improve the access to geo-information (*accessibility*); 2. To enable the exchange of geo-information and the integration with other types of information through standardization (*standardization*); and 3. To share knowledge about the implementation of the geo-information infrastructure and the practical use of the infrastructure (*knowledge*). The core activities of the foundation are funded by the ministry of Infrastructure and Environment, the ministry of Economic Affairs, Agriculture and Innovation, the Cadastre and Geological Survey (TNO-NITG).

Use

Geonovum is key player in the Dutch National Spatial Data Infrastructure. The staff members focus on relevant topics such as 3D modelling, key registers, policy making, geo-standards, network architectures, Geography Markup Language (GML), information modelling, INSPIRE, legislation, metadata, (national) geoportals in several different projects.

Good practice motivation

A nice example of join-up working and cooperation among public organizations focusing on the horizontal policy of geospatial information management. Moreover, Geonovum is subsidized by several partners of the Dutch public sector.
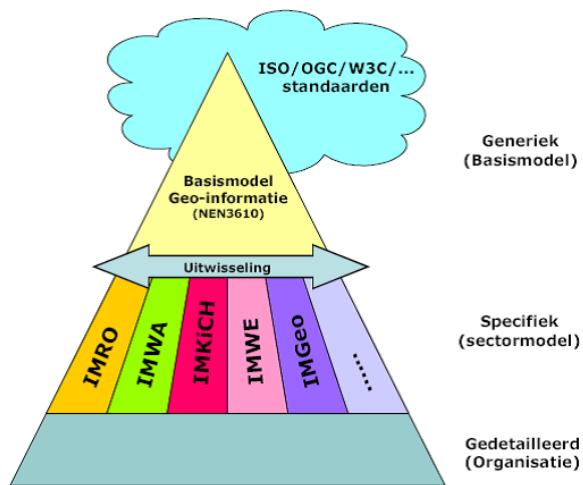
GeoNovum geo-standards activities (in Dutch)

Reference

http://www.geonovum.nl/

Digital Norway (NSDI) shared financing of basis geodata

Country

Norway

Type NIA-instrument

M4. Financial management: joined up working and cooperation

Aim

The shared financing mechanism of basis geodata of the Digital Norway program aims to facilitate cost effective and high quality geospatial data through common financing of production and maintenance of basic spatial data.

NIA-instrument description

The NIA-instrument covers a financing mechanism of the Digital Norway program for the provision and distribution of basic geospatial data among the partners.

Background

Following the Parliamentary White Paper no. 30 "Norway Digital – a joint fundament for value-adding" in 2002-2003, Digital Norway has been established as the national spatial data infrastructure of Norway. The formal start of the Digital Norway co-operation program was at 1 January 2005. All public institutions participating in Digital Norway bring their own data into the infrastructure making them available to the other partners. The geospatial data is aligned with the European INSPIRE initiative and divided in to main categories: basic (reference) data and thematic data. Basic data includes topographical data, hydrography, roads and other infrastructure, land used, buildings, cadastral parcels, elevation, bathymetry, and aerial ortho-photos. Thematic data includes a broad range of datasets produced by national institutions and municipalities at local level covering thematic aspects such as demography, risks, risk management, protected sites, biodiversity and nature values, pollution, fisheries, geology, mineral resources, agricultural and forest resources, cultural heritage and outdoor recreation facilities. Core elements of Digital Norway are the geoportal (geonorge.no), geo data and data services, common standards and cooperation agreements for public agencies and stakeholders. An important component in Digital Norway is Geovekst. The basic concept of Geovekst is pooling money for jointly executed projects for establishing, improving and maintaining large scale digital geospatial data. A general agreement on the Geovekst program includes all the major national services. The Geovekst program is based on a shared responsibility concerning mapping and costs of mapping. The national Agreement commits each participant to di their besr to take part in all relevant projects. The parties may however consider if they want and have the possibility to take part in the actual projects. The data production is generally outsourced to private companies. There are two contracts made for each project, one for the participants in the cooperation and one between the cooperation entities and the private company. The contracts are based on standard contract formulas with the possibility for local adjustment.

Use

Coordinated by the Norwegian Mapping and Cadastre Authority, all public enterprises who provide or use geospatial data are obliged to cooperate with Digital Norway following two steps. First, through a shared financing of basic geospatial data and second through the delivering of their thematic data. The former is based on the Geovekst, that was originally composed of six public and private organizations. Based on appendix 1 of the geospatial data law, all organizations pay an

annual fee, depending on the size and the number of users of their data and services. The fees finance the basic geospatial data that is open for all partners to use.

The main participants in Geovekst are the Norwegian Mapping Authority, Road Department, national telecommunication department, State Agriculture administration, electric supply-oriented utilities, and local authorities. Most of the 426 municipalities have joined Digital Norway.

Good practice motivation

The common financing of basic geospatial data contributes to the cost effective digitization and standardization of geospatial data and the provision of high-quality data because partners are interdependent. Furthermore it stimulates innovation concerning the development of new services, because data are accessible for all partners.
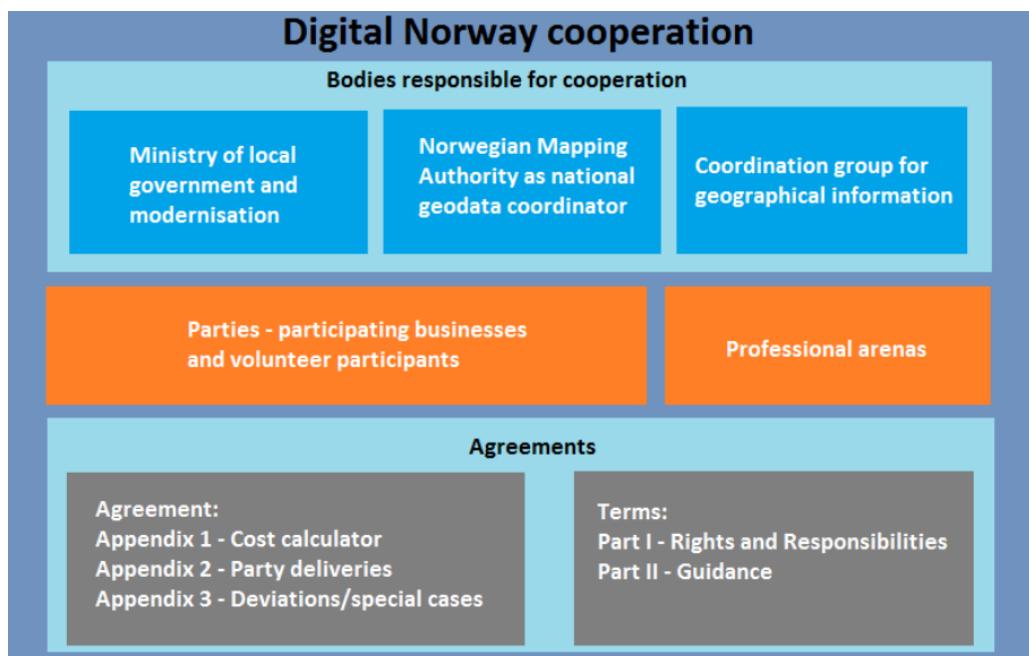

Figure: Overview of Digital Norway cooperation

Reference

http://www.digitalnorway.com/english/

Federal Committee on Geomatics and Earth Observations (FCGEO) and Canadian Committee on Geomatics (CCOG) – Public Sector Geomatics Cooperation in Canada

Country

Canada

Type NIA-instrument

M5 - Inter-organizational culture and knowledge management

Aim

To share best practices and achieve commonly-held program objectives in a national environment where geospatial data collection, management and dissemination activities are undertaken by many federal government organizations as well as different units in each of 10 provinces and 3 territories.

NIA-instrument description

The Federal Committee on Geomatics and Earth Observations (FCGEO) is a committee of senior executives from some 20 Federal Government departments and agencies that are producers and/or consumers of geospatial data, or have an interest in activities, requirements and infrastructure related to geomatics. Its two principal aims are to: (1) provide proactive, whole-of-government leadership in establishing priorities for geomatics and Earth observation and their application in support of government priorities, decision-making, and Canada's competitive advantage; and (2) collectively enhance the responsiveness, efficiency and sustainability of the federal geomatics and Earth observation infrastructure.   The Canadian Council on Geomatics (CCOG) is a federal-provincial-territorial government cooperative body that advances geomatics activities of common interest, and facilitates data collection, interoperability and integration between jurisdictions.

Background

While operating under different titles and mandates for more than 30 years, the FCGeo most recently has supported the Federal Geospatial Platform (FGP) initiative, a collaborative Internet-based environment consisting of authoritative geospatial data, services, and applications that will enable the government's most relevant information to be managed spatially, analyzed, and displayed to enhance decision-making on government priorities. The FGP will also provide accessible and reusable geospatial information and visualization services to foster innovation and ensure better service for Canadians.   The CCOG provides a consultative forum for federal, provincial and territorial governments to discuss items such as: Current and future geomatics programs; Proposed legislation; Collaboration opportunities; National geomatics standards; and Achievements, new ideas, technologies and procedures that could benefit other jurisdictions. The CCOG develops and endorses national data and data exchange standards that enable sharing of information and technical expertise between governments, and advocates for the use of geospatial data and information in enhancing policy and decision making.   The Canadian GeoSecretariat, within the GeoConnections Division of Natural Resources Canada actively provides coordination and support to both the FCGeo and the CCOG.

Use

In addition to the Federal Geospatial Platform, the FCGeo has been an important forum for discussion of Canadian participation in Marine SDI and Arctic SDI initiatives.

The CCOG provides the home for the Canadian Geomatics Accords, agreements which have institutionalized geospatial data sharing between the top two levels of government in Canada since 2001. See http://www.ccog-cocg.ca/en/accord for details.) Key successful CCOG initiatives are the creation of the Canadian Geospatial Data Infrastructure (CGDI) and the GeoBase collection of products – a collaboratively produced series of datasets providing national geospatial data coverage to Canadian users.

Good practice motivation

Over the years, both FCGeo and the CCOG members have individually and collectively provided important policy-level input to senior decision-maker at the Assistant Deputy- and Deputy Ministerial levels in national, provincial and territorial governments across Canada.

Reference

For further information, see:

FCGeo https://www.nrcan.gc.ca/earth-sciences/geomatics/canadas-spatial-data-infrastructure/8900

CCOG http://www.ccog-cocg.ca/en/welcome

Canadian Geomatics Accord http://www.ccog-cocg.ca/en/accord

The Canadian Geomatics Community Roundtable and GeoAlliance Canada

Country

Canada

Type NIA-instrument

M5. Inter-organizational culture and knowledge management

Aim

To provide a multi-stakeholder forum for open dialogue on issues and concerns that affect professional practice and activities in Canada's geomatics sector

NIA-instrument description

The Canadian Geomatics Community Round Table (CGCRT) was formed in 2012. It was intended to be representative of organizations spanning the geomatics sector, including: federal and provincial/territorial levels of government; private sector companies; academic, non-governmental, and professional organizations and associations; and geospatial data and service consumers.

Use

In its formative stages, the CGCRT members were instrumental in developing "Pan-Canadian Geomatics Strategy" discussion papers and reports examining issues of shared importance to the Canadian Geomatics Community. (See examples below.) More recently, the Committee has evolved into a new "umbrella organization" called GeoAlliance Canada.

Good practice motivation

Provides a good forum to bring together geospatial professionals from industry, government, and academia to discuss issues and undertake investigations and developments of common interest.

Reference

Pan-Canadian Geomatics Strategy http://www.nrcan.gc.ca/earth-sciences/geomatics/canadas-spatial-data-infrastructure/geospatial-communities/pan-canadian

GeoAlliance Canada http://geoalliance.ca/en/

GeoAlliance Canada Project: "Canadian Spatial Data Infrastructure (SDI) And Open Data: An Overview" http://projects.geoalliance.ca/en/projects/SDI

Enhanced cooperation among relevant stakeholders of geospatial information applications and services at local level

Country

Japan

Type NIA-instrument

M5: Inter-organizational culture and knowledge management

Aim

To facilitate the cooperative development and applications of geospatial information including Fundamental Geospatial Data and Digital Japan Basic Map with local governments, industry and academia

NIA-instrument description

Establishment and management of local cooperation mechanism among the industry, academia and governments for each of the ten regional blocks across Japan

Background

These measures are implemented in accordance with the Article 7 "Enhancement of Cooperation among Related Organizations" of the Basic Act on the Advancement of Utilizing Geospatial Information (Act No. 63 of May 30, 2007)   - Basic Act on the Advancement of Utilizing Geospatial Information (excerpt) Article 7: In view of the fact that advancement of utilizing geospatial information is effectively implemented when mutual liaison and cooperation are facilitated among the State, local governments, related businesses, and research institutions such as universities, the State shall take necessary measures that are vital in enhancing cooperation among these organizations.

Use

A local cooperation mechanism has been established among local governments, the academia and private organizations for ten regional blocks in the country. Specifically, by organizing meetings and seminars for local public bodies, and joint meetings for the industry, academia and local governments for sharing good practices, and enhancing communications with these stakeholders, GSI has been making substantive efforts for information sharing including useful geospatial information applications and services, the latest technological trends, and successful use cases. (Achievements in FY 2015: 143 meetings across Japan for local public bodies and 31 industry-academic-government meetings were held).

Good practice motivation

Since 2009, GSI's ten Regional Survey Departments across Japan have been successful in continuing efforts on these measures in each regional jurisdiction to facilitate the effective cooperation among the national and local government agencies, local private companies, local universities and other research institutes, so that the utilization of geospatial information can be effectively promoted.

Training cycle on INSPIRE Directive implementation

Country

Poland

Type NIA-instrument

M5. Inter-organizational culture and knowledge management

Aim

To reinforce the commitment to the implementation of INSPIRE and to strengthen coordination and interoperability between various administration units engaged in the development of spatial data infrastructure in Poland.

NIA-instrument description

A training cycle on the INSPIRE Directive implementation addressed to employees of public administrative bodies

Background

In 2007, the European Council and Parliament adopted the Directive 2007/2/EC Establishing an Infrastructure for Spatial Information in the European Community (INSPIRE). The purpose of this Directive is to lay down general rules aimed at the establishment of the Infrastructure for Spatial Information in the European Community (INSPIRE) for the purposes of Community environmental policies and policies or activities which may have an impact on the environment. Inspire shall build upon national infrastructures for spatial information established and operated by the Member States. One of these EU Member States is Poland. The implementation of the national infrastructures should be progressive and, accordingly, the spatial data themes covered by this Directive should be accorded different levels of priority. The implementation should take account of the extent to which spatial data are needed for a wide range of applications in various policy areas, of the priority of actions provided for under Community policies that need harmonized spatial data and of the progress already made by the harmonization efforts undertaken in the Member States. In this context, the Ministry of Public Administration with support of the Surveyor General of Poland and the Board of Infrastructure for Spatial Information (ISI) initiated a training cycle on the INSPIRE Directive implementation addressed to employees of public administrative bodies. The training cycle was delivered between 2009 and 2012.

Use

The training was attended by more than 4 900 people. The execution of the training contributed to a remarkable dissemination of knowledge about the INSPIRE Directive and about establishing and operating the national Spatial Data Infrastructure. According to 90% of the participants, the knowledge and practical skills acquired in the course of the training was useful for their jobs.

Good practice motivation

This example of good practice related to NIA-instrument M5. Inter-organizational culture and knowledge management refers to the enhancement of institutional arrangements by fostering shared visions, values, norms and knowledge between public organizations. As such, this practice example fosters the creation and growth of inter-organizational networks to be achieved by means of common trainings.

Figure: Impression of the INSPIRE Training courses

Reference

Surveyor General of Poland (2013). Member State Report: Poland, 2010-2012. Report on progress in the implementation of the INSPIRE Directive

The COGO Report

Country

USA

Type NIA-instrument

M5. Inter-organizational culture and knowledge management

Aim

The NSDI Report Card is 'a qualitative evaluation of the status and condition of the NSDI and its Framework data layers.' The objective of this evaluation is to draw attention to the need for current and accurate geospatial data for the United States.

NIA-instrument description

The Coalition of Geospatial Organizations (COGO) was set up in 2008 to serve as a forum for thirteen non-profit organizations concerned with national geospatial issues. These represent approximately 170,000 individual geospatial practitioners. In 2014 COGO commissioned an Expert Panel to develop a Report Card for the NSDI. The Expert Panel focused on the NSDI Framework to grade Federal efforts, and points out some of the shortcomings of those efforts. The model for the COGO report is the Report Card approach developed by the American Society of Civil Engineers. Every four years, it carries out a comprehensive assessment of the nation's major infrastructure categories that is published in ASCE's Report Card for America's Infrastructure. Using a simple A to F school report card format, this Report Card assesses current infrastructure conditions and needs, both assigning grades and making recommendations for how to raise the grades. The report card approach has been used extensively at the US state level as a tool for evaluating infrastructure performance as well as in several other countries.

Use

The Report Card for the NSDI Framework data is based in the five grades. The NSDI Framework consists of seven designated themes of data that were given the following scores: 1. Cadastral data - Grade: D+ (At Risk) 'The grade is based on the fact that a comprehensive parcel database for cadastral information does not exist… Until the FGDC supports a comprehensive approach to assembling parcel information from local stewards, it should acknowledge that the United States does not have a program to create and support a Cadastral data theme' (p.16).   2. Elevation data - Grade: C+ (Requires Attention) 'Elevation data are generally available across the nation, but they are not suitable for many purposes, and more work needs to be done to better leverage budgets, coordinate data collection efforts, and collaborate across levels of government' (p.31).   3. Geodetic data - Grade: B+ (Adequate for Now) 'The National Geodetic Survey (NGS), a component of the National Oceanic and Atmospheric Administration (NOAA), developed its "Ten Year Strategic Plan 2013-2023," 2013. Goal 3 of that plan is important to this report, because it demonstrates the serious nature of NGS's desire to foster the goals of the NSDI' (p.37).   4. Governmental units data - Grade: C (Requires Attention) 'The Expert Panel's grade of C reflects positively on the ease of access to nationally consistent, digital representations of numerous governmental units. The "C" grade reflects the challenges in obtaining the most current reliable information, as well as uncertain methods for integrating governmental boundaries with other Framework data' (p.41).   5. Hydrography data - Grade: C (Requires Attention) 'There has been good coordination among the Federal agencies that require these data for their program and mission needs and with non-federal entities. However, as with other types of Framework data, more work needs to be done to

better leverage budgets, coordinate data collection efforts, and collaborate across levels of government' (p.48).

  6. Orthoimagery data - Grade: C+ (Requires Attention) 'The "leaf-on" orthoimagery layer warrants a grade of A-, given coverage, standards, and collaboration among supporting agencies. However, "leaf-off" orthoimagery, a documented requirement, lacks coverage. As a result, the grade for the combined layers is a C+' (p.52).

  7. Transportation data - Grade: D (At Risk) 'The grade reflects poor stewardship in the past as reflected by the multiple sources of road centreline data (e.g. TIGER, ARNOLD, and privately produced) in use by Federal agencies' (p.57).

 These scores are summarised in a Report Card which gives an overall score to the Framework data of C. It also includes scores in relation to seven overall criteria: capacity, condition, funding, future need, operation and maintenance, public use, and resilience.

Good practice motivation

The COGO report was prepared by an expert panel of independent professionals. It critically evaluates the current state of the NSDI Framework data and draws attention to the need for current and accurate geospatial data for the United States.

GRADE REPORT OF: National Spatial Data Infrastructure (NSDI)   **SEMESTER**: Fall 2014

Subject	Dept.	Grade	Subject	Dept.	Grade
CADASTRAL DATA	DOI	D+	CAPACITY	FGDC	C
GEODETIC CONTROL	DOC	B+	CONDITION	FGDC	D
ELEVATION DATA	DOI	C+	FUNDING	Various	D
HYDROGRAPHY DATA	DOI	C	FUTURE NEED	FGDC	D
ORTHOIMAGERY DATA	DOI & USDA	C+	OPERATION & MAINTENANCE	FGDC	C
GOVERNMENT UNITS DATA	DOC	C	PUBLIC USE	FGDC	C
TRANSPORTATION DATA	DOT	D	RESILIENCE	FGDC	C
OVERALL DATA GRADE		C	COMPREHENSIVE GRADE		C -

TO: Federal Geographic Data Committee
590 National Center
Reston, Virginia 20192

FROM: Coalition of Geospatial Organizations (COGO)
http://www.cogo.pro
See the full report for an explanation of each grade.

Reference

Bossler, J.D., and D.J. Cowen, J.E. Geringer, S. Carson Lambert, J.J. Moeller, T.D. Rust and R.T. Welch, (2015). *Report card on the US National Spatial Data Infra*structure, Report compiled for the Coalition of Geospatial Organisations http://www.cogo.pro

Capacity Building in the National Spatial Data Infrastructure of Brazil (INDE)

Title:

Capacity Building - NSDI

Country

Brazil

Type NIA-instrument

M6. Capacity Building

Aim

To train public servants and other relevant actors of the Brazilian National Spatial Data Infrastructure (INDE) for advancing competences related to relevant (geo-)standards, and the concepts of spatial data infrastructures including metadata and geospatial services and to be aware of the added value of the implementation of the components of INDE

NIA-instrument description

A series of courses was set up and executed to train relevant public staff members allowing them to execute basic tasks in the context of INDE, to advance (personal) knowledge about the topic or to increase the motivation for making INDE a success. There were 22 training courses organized. Approximately each two months a course is held in the federal capital where most of the federal institutions that produce geospatial data are concentrated. The courses consisted of three modules are: 1) Spatial Data Infrastructure Concepts (SDI) and the National Spatial Data Infrastructure (NSDI); 2) Geospatial Metadata; and 3) Geoservices.

Background

This activity was foreseen in the INDE Implementation Plan. See M1. Brazil Good practice description. According to Decree 6,666 – the Federal regulation for establishing INDE – the sharing and dissemination of geospatial data and their associated metadata is mandatory for all agencies and entities of the Executive Branch of the Federal Brazilian Government. In addition, it is also allows agencies and entities of state, district and municipal administrative levels to voluntarily share and disseminate their data and metadata via INDE.

Use

So far 520 people from 75 institutions were involved. 30 new potential instructors were trained in order to strengthen and widen the capacity in the country. Indirectly, 14,852 new metadata and more than 1,130 Geoservices were published as a consequence of the courses.

Good practice motivation

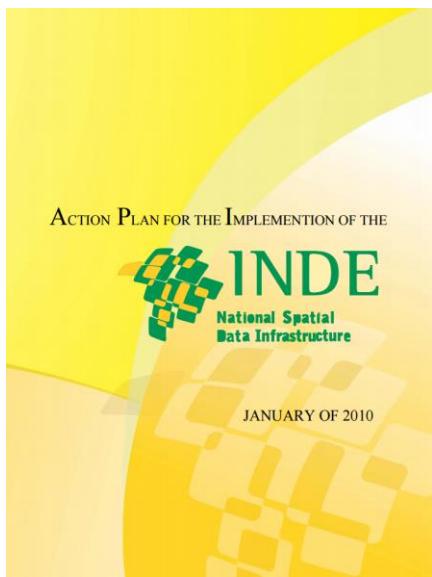| These well-attended training courses strengthen the human capacity for managing geospatial information in the country. |
| --- |

Figure: INDE Action Plan with the proposal to launch a series of training courses

Reference

http://www.inde.gov.br/

http://www.metadados.inde.gov.br/geonetwork/srv/por/main.home

http://www.visualizador.inde.gov.br/

Regional training workshops for managing the National System on Territorial Information (SNIT)

Country

Chile

Type NIA-instrument

M6. Capacity Building

Aim

To develop human capacity in geospatial information management in order to enhance the governance of the National System on Territorial Information (SNIT – Spanish abbreviation)

NIA-instrument description

The Executive Secretary of SNIT annually organizes series of regional workshops to train professionals in the management of SNIT.

Background

In the context of Supreme Decree No. 28 of the Ministry of National Assets, it is established that the governance of SNIT in each region of the country has to be executed by a corresponding person who is charge to serve the role as regional manager. This person manages regionally SNIT including multiple public services with a regional scope. In order to achieve this objective, the SNIT Executive Secretary annually organizes series of training courses in order to build the necessary capacity.

Use

SNIT managers are professionally trained in geographic information management, including the management and use of SNIT technology platforms, relevant GIS Geographic Information Systems, standards and standards, metadata, etc. Around 225 professionals are trained each year in relevant topics related to SNIT that are necessary to know and/or apply.

Good practice motivation

This practice clearly shows that human capacity can be built in different parts of the country by organising relevant training courses to professionals who have not the right competences to fully fulfil their necessary tasks and fully exploit the regional geographic information products

Figure: Impressions of the training workshops

Reference

http://www.ide.cl/noticias-2/item/secretaria-ejecutiva-snit-ofrece-apoyo-a-instituciones-publicas-en-la-aplicacion-de-normas-para-la-gestion-de-informacion-geografica-y-el-desarrollo-de-sus-ide.html

Strengthening geospatial information capacity and the use of Geospatial Information, Science & Technology

Country

Singapore

Type NIA-instrument

M6. Capacity Building

Aim

To strengthen geospatial capacity by facilitating education, training opportunities and interest in geospatial information management at various levels.

NIA-instrument description

Singapore's geospatial information capacity building program consists of a number of initiatives targeting students to working adults. For example, education courses and programs, a Centre of Excellence for the Public Service, and awareness increase activities such as the Singapore Geospatial Challenge and hackathons.

Background

Capacity building is a key component of Singapore's NSDI as it underpins the long-term, sustainable adoption and growth of geospatial information competences and human resources across the public, private and people sectors.

Use

In order to build geospatial information interest for youngsters, the government of Singapore set up the Singapore Geospatial Challenge, a national competition to encourage students apply basic geospatial skills to solve thematic challenges. At a more advanced level, universities and polytechnics provide a range of education opportunities ranging from running professional training courses, executing specific certified courses, to applying a GIS master program. Hackathons were also organized to expose the use of geospatial information in multiple domains such as in the social sector for voluntary welfare organizations (VWOs) and NGOs.

In addition, a competent framework is being developed to assist in curriculum development and to help to equip geospatial specialists with the relevant skillsets. Geospatial information has also been identified as a strategic asset to be built within the Public Service. To this end, a Geospatial Centre of Excellence is being setup to enlarge and enhance the geospatial information expertise, to provide a central consultancy and professional technical service to government agencies to implement geospatial projects, to undertake strategic workforce planning and talent development, as well as to conduct R&D. .

Good practice motivation

The capacity building program is driven by the need to create a demand for geospatial information skills and adoption, in order to generate a supply of geospatial talent and humnan resources.
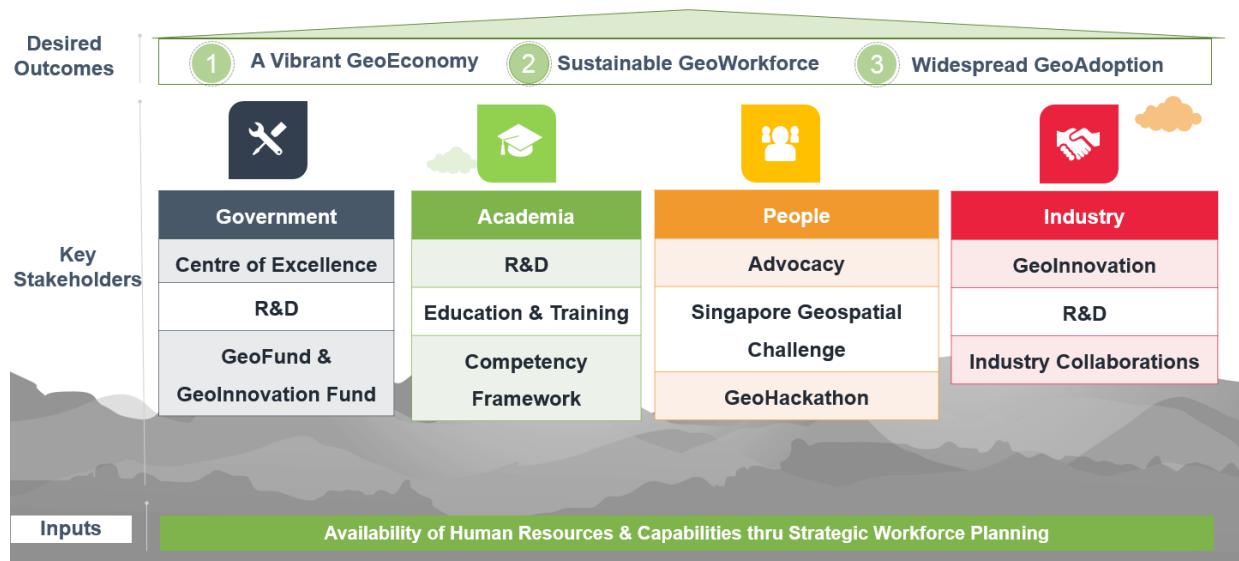
Strategic Framework for Capacity Building

Figure: Multi-Sector Approach Towards Demand Generation in Capacity Building

Reference

UN-GGIM Singapore Country Report. 2012.
ggim.un.org/2nd%20session/country%20reportss/Country_Report_Singapore.pdf
hm.onemap.sg