SNIT Chile

Since a few years the management of information, particularly geospatial information, is a topic of interest for individuals, businesses and of course for government organizations, who, due to institutional and territorial scope of their actions, have a large and difficult task in these subjects.

Well known are the technical problems related to the lack of knowledge about existing information, the loss of value in the data caused for the absence of documentation, the access restrictions, the duplication of efforts, the inefficient use of resources and lack of interoperability, among many others.

The tendency to face these problems at a national level, points to the generation of organizations and structures that allow ordering the management of geospatial information. An example of this is the creation of Spatial Data Infrastructures, SDI.

In the case of Chile, SDI building has meant a great challenge, whose formal existence dates back to 2006, with the publication of Supreme Decree N° 28 / 2006 which created the National System for Coordination of Territorial Information, SNIT or SDI Chile.

The vision, orientation or emphasis of SNIT is given by the support of its coordination mechanisms, aimed at modernizing the management of the superior administration of the State in geospatial information management matters, promoting transparency, democracy and decentralization.

The SNIT is formally defined as a distributed coordination mechanism for managing geospatial information. This vision becomes operational by creating different levels of coordination:

- A Council of Ministers chaired by the Minister of National Assets and also composed by 11 Secretaries of State who has allowed installing this theme at highest level of decision of the country. The main function of the Council is to deliver the guidelines and emphasis of the system and also validate and formalize the various initiatives developed within the overall coordination.

- An Executive Secretary serving as active entity for the permanent operation of the coordination instances. It resides in the Ministry of National Assets.

- An inter-ministerial bureau, integrated of representatives of the Ministers that acts as an advisory body of the Executive Secretary and as a link to the senior management of ministries.

- Eight multisectorial working groups called Thematic Areas. The operation of each one of them is the responsibility of one Minister; however they

are composed by a large number of institutions depending on the interests and expertise of the institution.

- Finally 15 regional coordination bureaus, whose proper operation is the responsibility of each Regional Major, principal authority of the region. In these instances also attend a large number of institutions, including local governments or municipalities.

The strategy for creating this structure, in the practice has required the combination of to types of views. One is the hierarchical view where the creation of SNIT obeys to the publication of the legal instrument (Supreme Decree N°28 / 2006) that instructs the installation, duties and responsibilities. Moreover, the horizontal view from the technical side, that has permitted to SNIT becomes a structure where each institution involved is actually the system itself, where collaboration and integration of activities and products is the core enabling the operation of the system.

Common Technological Solutions

From a technological perspective, SNIT has focused on the creation of an infrastructure that model, like its organic, a distributed architecture, where each agency is responsible for the documentation and distribution of information relating to its mandate and expertise.

Consistent with this, public institutions are increasingly adopting appropriate technologies and processes so that information they generate may be available to users through the implementation of information services. Projecting the interaction of these multiple organizations in the form of interconnected nodes, it has been consolidated in our country a large information network, where it is possible to add value through the integration of various cartographic coverages with associated databases.

In order to support this process, the Executive Secretariat of SNIT, in accordance with Supreme Decree that created the system, has assumed the task of developing transversal tools that enable communication and exchange of information among different actors, where each institution is a potential provider of information and a potential user of it.

The SNIT Portal is the gateway to a wide variety of sites that allow visualization and spatial information discovery. In addition, it contains context information, history, advances, news and diffusion in general about the business of SNIT.

The National Geospatial Information Catalogue (Metadata Catalog) is used by a wide range of public bodies to disseminate spatial information generated and / or maintained, and secondly, to discover and evaluate existing information products. Similarly, the general public, academia and the private sector can access information that exists in the State. Each institution is a registered user of the system and documents their products in a separate work space.

To complement the services offered by the Catalog, a tool called Geoportal Chile has been built. In our country the generation of geospatial information is developed on specific objectives arising from each institution. As result of this, information resides separately in each one of them, so those interested in acquiring and using such information must rely on each service separately. The Geoportal Chile allows an integrated view of information residing in different institutions. It has the shape of a distributed system, where a set of feeder nodes provides a single portal maps through map services via the Internet.

Geonode is a software tool that allows an institution to publish its geospatial information in an own website on the Internet. This application has been built on open source with the intention of it being distributed freely in the country's institutions without the associated licensing costs. This will provide basic skills for free access to geospatial information. Nowadays Geonode is installed and operating in the regions of Atacama and Los Ríos and it is also in use in the Undersecretary of Telecommunications.

Standards

The work of the SNIT is aimed at promoting collaborative management of geospatial information generated by different institutions, each one of them providing the matters that are particular to the sector, achieving together an integrated view of reality that involves a high added value for spatial analysis and the decisions it supports. For this, it is essential that the information provided by each of the agencies comply with requirements to ensure interoperability.

From the above, is underway since December 29, 2009 a project to generate Chilean standards related to geospatial information management, based on international standards developed by the Technical Committee 211 of the International Organization Standards (ISO TC 211). The execution period is 36 months and funding was obtained from INNOVA Chile, CORFO.

The project will generate as a result 19 Chilean standards corresponding to ISO 19100 family, following the standardized process established by INN, for the development of each one of them. Within this, it is considered a public consultation period, so that experts can submit comments about each standard. Thus, Executive Secretariat of the SNIT has invited more than 200 specialists in geomatics -from public, private and academic sectors- to be part of the process.

In addition, as a result of the project it is included the development of guidance on the implementation of the 19 national standards in the management of geospatial information. The idea is to have a didactic document providing tools and knowledge in order to use these standards in the daily work with this type of information. Similarly, the project will finance an initial training by international experts in this family of standards and seminars for dissemination of results in several regions of the country.

Data and coverage integration

As for data integration and layers, it has been developed an important work at the level of the institutions that are coordinated through the SNIT, aimed at consolidating the supply of national geospatial information. Next step will be to prepare the various products that constitute this offer or this basis, so that they are able to integrate with each other.

The tasks carried out in this line have been the identification of priority geospatial information products for public management in the country, documenting their ideal technical characteristics in view that are suitable to overlay and integrate with each other (in relation to geodetic reference system, attributes and domains for the construction of associated databases, scale of data capture, etc.).

Since 2007, it began the work on the definition and documentation of the priority thematic data (DTP) through a collaborative work of the institutions, grouped into six thematic areas (working groups) related to the content of geospatial information (Infrastructure, Social, Natural Resources, Property, Heritage and Territorial Planning). In order to continue this work, it is planned to develop a set of data dictionaries so that they become a framework document, with normative character, that standardize and unify the generation of cartographic coverages and databases associated with these DTP and additionally, specify the institution that has responsibility to maintain and update each of them.

The data dictionary or DTP technical registering form provides for each of them their name, definition, responsible institution or institutions, scale, geodetic reference system, update frequency, geometry of the elements, and standardized description of each attributes included in the database, establishing domains, fixed and variable, in each case.

Another important issue in data integration has been the formalization of the Geocentric Reference System for the Americas (SIRGAS) by issuing a ministerial instruction in September 2009. Through it, public institutions are instructed to generate their mapping based on the single national reference system indicated.

Data and Systems Interoperabilty

In terms of interoperability of geospatial information, the National System for Territorial Information Coordination (SNIT) has adopted technological platforms that support standards and protocols recognized by the international geospatial community, as they are the standards of the Open Geospatial Consortium (OGC) and Technical Committee ISO / TC 211 (this latter dedicated to geographic information and geomatics in particular).

Then they are presented SNIT technological tools that allow work in an environment of interoperability, in relation to systems and data.

Geoportal Chile allows to display and overlay in a simultaneous manner, digital maps published by various public services remotely via the Web, relying on OGC service standards such as Web Map Service (WMS), Web Feature Service (WFS) and Web Coverage Service (WCS), as well ESRI services as ArcIMS, and metadata standards ISO 19115 and ISO 191 139. From these standards, various State institutions can act as information provider nodes, allowing, for example overlaying data from the Ministry of Public Works, Ministry of Agriculture, Ministry of Health and Ministry of Education. In this way, the user can integrate different variables from distributed sources in his spatial analysis.

Geonode is a standard tool of SNIT that allows each institution to publish with own capabilities the geospatial information they produce. It is the key element oriented to the generation of a national network of interconnected information services. Geonode has characteristics that allow connect with applications built on multiple platforms, that support international standards and enables integration of information from a decentralized architecture, whose main entrance is given by the Geoportal of Chile (www.geoportal. cl).

Capacity building and technology transfer

The Executive Secretariat of SNIT permanently promotes capacity building and technology transfer in the field of geospatial information between public institutions that are part of national coordination. The aim is to maximize the professional expertise and technological resources available to make them available to other institutions.

Consistent with this, one line of work has been to provide technical assistance to various institutions and regional coordination in geospatial information publication on the Internet, as a tool for supporting management. In this way, both at the central level and in the regions has relied on building sites for the deployment of maps and images that add value to the alphanumeric information that has been used as an input.

In relation to transversal SNIT tools, they have been developed systematic training activities for publishing metadata records in the National Geospatial Information Catalog (application built on the Internet to discover and access information in the State). In all regions of the country workshops have been conducted, where representatives from various services, learn to use the functionalities of creating and publishing metadata records in order to document geospatial information products in their respective organizations.

In addition, it has been done training in cartographic edition using free platform applications, in order to facilitate the creation of maps to be published in the tool "Geonode".

Technology transfer has even gone beyond the national border. It is ongoing the implementation of the Metadata Catalog of Dominican Republic, based on software developed by SNIT in Chile. Currently, both the database and the computer platform of the Dominican Catalog reside in the servers of Ministry of National Assets of Chile. In addition, it has conducted a workshop for building

skills in the use of this catalog with the participation of professionals from various Dominican public services.