ARCHITECTURE, METADATA AND INTEROPERABILITY

IDENA: Spatial Data Infrastructure of Navarre

Several years ago Navarre (Spain) implemented a Land Information System (SITNA) within its corporate Information System. Notwithstanding the success of this initiative there remains a lack of metadata, an issue highlighted over the past two years by INSPIRE (Infrastructure for Spatial InfoRmation in Europe). This is the context for IDENA (Spatial Data Infrastructure of Navarre), developed by Trabajos Catastrales S.A., to give SITNA a catalogue of meta-information, distribution of metadata and interoperability with other SDIs.

The 2004 Commission of the European Community publication *â€œProposal for a Directive of the European parliament and of the council establishing an infrastructure for spatial information in the Community (INSPIRE)â€* established an infrastructure for spatial information for the European Union. It also endorsed standard ISO-19115 and acceleration of the Spatial Data Infrastructure (SDI) within Europe: SDI had to be made accessible to any user via the internet. This is the context within which IDENA aims for integrated and open internet access to geographic information of the corporate Information System of Navarre.

IDENA Objectives

More particularly, IDENA objectives with respect to data include the establishment of five services: documentation, localisation, viewing, downloading and pay service. The documentation of all information will be done according to standard metadata definitions. The localisation service enables a search for information based on criteria of the INSPIRE directive through a metadata catalogue. The viewing service allows the free viewing of search results, both for metadata and data. The download service offers the free download of basic data. Finally, the pay service facilitates the dissemination of paid data through electronic commerce.

For the component part of the system IDENA objectives include development of a map viewer, implementation services for access to spatial data services and development of a features server (WFS), a coverage server (WCS) and a map server (WMS). Both the data and the component parts are based on the standards and protocols recommended by INSPIRE - ISO 19100 and Open Geospatial Consortium (OGC) - for interoperation with other SDIs on various levels.

Three-tool Portal

The IDENA portal consists of three main tools.

- Map Viewer, which enables viewing of spatial information of Navarre, querying and identification of features, connecting with other information servers that follow the same standards and protocols and visualising spatial data on other scales.
- Metadata Browser, which enables searching of metadata based on the INSPIRE criteria. The result is a list of five main characteristics (title, summary, editor, format and additions) and some data visualisation options.
- Shop, which includes the following tasks or elements: shopping cart, on-line downloads, physical product orders, payment, tracking of orders and authentication. The telematic platform of the Government of Navarre enables the purchase of geographic information using electronic signature, a payment method and Safe Electronic Communication. This utility is not yet operational in the IDENA portal.

Defining Metadata

Metadata is commonly defined as â€˜data about dataâ€™. Metadata describes the content, quality, condition and other characteristics of data and helps users to locate and understand the spatial data available. Metadata is an essential element that should facilitate communication with citizens, improve their knowledge of geographic information and bring this type of information closer to them. More specifically, the main functions of metadata can be listed as follows:

- organising data to enable users to arrive at a better understanding of its contents, with as main results avoiding duplication and error and preserving investment in data
- facilitating transfer of data by offering information on, for example, file formats, volume and localisation
- on-line distribution of data by incorporating addresses from which files can be downloaded, either free of charge or prepaid, through descriptions of how to carry out the necessary steps
- facilitating search for data in a complex corporate database; metadata standards allow a user to make a query that is redirected to

the various metadata catalogues registered in the main server and results in a list of metadata originating from differing servers
- avoidance of wrong use of data by description of origin, initial intended use and allowed processes
- assurance of integrity and safety of data.

According to INSPIRE, metadata should be updated by a person responsible for that data and must present a background compatible with metadata standard ISO19115 (obligatory within INSPIRE). The set of metadata described in the ISO19115 standard is large and requires extensive data documentation. The standard is very general so as to make it useful in any discipline related to land, and in any country. As a result, many of the elements of ISO19115 will never be used. To avoid the need for excessive effort in the creation of metadata a more limited nucleus is proposed. The SG NEM (Work Subgroup of the Spanish Metadata Nucleus) of the Superior Geographic Council for the Infrastructure for Spatial Data of Spain (IDEE) is working intensively on definition of the Spanish Metadata Nucleus, NEM. This is a minimal group of metadata items for geographic data recommended for use in Spain, based on the nucleus of the ISO19115 metadata standard and consisting of Dublin Core Metadata, descriptive elements of Quality and others of interest in cataloguing. In the same way as this nucleus has been created, IDENA has established its own nucleus adapted to its own needs and based on the NEM.

Interoperability
Another INSPIRE requirement involves interoperability between different SDIs. IDENA is capable of interoperation with other SDIs using the OGC standards, such as IDEE (SDI of Spain), INSPIRE (European SDI), GEODATA.GOV (United States of North America SDI).

Concluding Remarks
We found a great need amongst producers of geographical information to start creating open networks. Navarre and SITNA believe in the SDI world and have therefore begun documenting all their information in a warehouse, a process that has currently reached a fairly advanced stage.

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