

FOUR RULES TO SET UP A BASIC (LOCAL) SDI: THE PROCESS OF CREATION OF THE SPATIAL DATA INFRASTRUCTURE OF CATALONIA (CSDI /IDEC). EXPERIENCES AND CONCLUSIONS

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ABSTRACT

At the beginning of year 2002 the Autonomous Government of Catalonia (Spain) started the SDI Project. One year later, it can offer a framework of services: a Catalog Server which contents more than 17.000 Metadata records in three languages (English, Spanish and Catalan) afforded by around 50 entities: Ministries, Town Halls, private companies, etc.; connection to different interoperable map servers and a Geo-portal gathering these and other services which are based on the ISO (metadata) standards and OGC specifications (map servers, WMS, WFS).

Presently, the SDI Project can be considered a motor based on two main services: Web Mapping and Catalog Search. Although each service has its own independent operation both are becoming the basis of high level services like a platform where other organizations may develop services and applications of high added value. In other words, CSDI is a supplier of low level services on which the own SDI and other entities may develop new high level services (emergency response, e-government, application services problem oriented, etc.)

The experience obtained during the SDI Project development process, that's to say, how problems have been approached and overcome and achievements reached, can be summarized in four rules:

- *To have a minimum basis of geo-spatial information of reference and goodwill to make it approachable (information approach)*
- *To define accurately the results to be reached, specially end-users applications (business approach)*
- *To manage the process from the engineering point of view: to develop the project combining the existing elements (engineering approach)*
- *To consider and deal with the environment (social and organizational approach)*

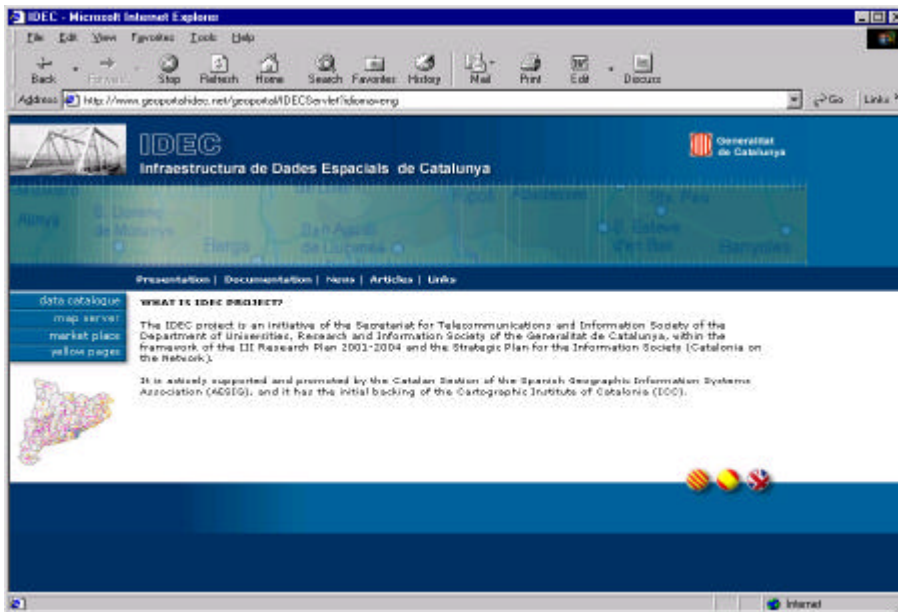
SDI creation cannot be deemed neither an academic activity nor a research task but a project, so the aimed objectives, the resources to be applied as well as the time required to implement it have to be planned.

This document is the mean to let you know how different aspects of SDI project have been faced, analyzing the investments and running costs for new similar SDI, the MD profits for the companies as well as the prospects based on concrete applications to end-users.

CSDI / IDEC : PRESENT SITUATION

IDEC project started at the beginning of 2002, from an initiative of the Society Information Department and Land Policy Department. Let us firstable present the current situation, explaining its services and products and some of its basic characteristics.

The [Geoportal](#) is the entrance door. It is a trilingual Geoportal and the language initially selected lead the user interface up the following steps.



Geoportal CSDI /IDEC contains, in addition to the usual web pages sections, the Catalog Server, a WMS and other services, like the yellow pages and the market place

Fig. 1: The Geoportal CSDI / IDEC

The Geoportal contains the usual components in any corporate Web page (Documentation, Links, News...), and other ones, like *yellow pages* and *market place*, to facilitate contacts between offer and demand.

(I) The main service is the **Catalog Server (OGC)** which offers access to Metadata registries. This service has been adapted to linguistic requirements and we will continue improving it. By now it contains about 15,000 registries, coming from the Regional Mapping Agency and more than 30 departments, city councils, organizations and private companies. An important increasing of registries from the Local Administration is expected.



Fig. 2: Metadata Catalog on Geoportal

(II) In order to generate Metadata, a **Metadata capture, edition and export tool**, has been developed, based on “core Metadata” ISO 19115, extended to some other fields (Application Schema CSDI / IDEC), which covers data descriptions including textual or tabular information (georeferenced alphanumeric data).

This is a free software (you can download it from our geoportal, choosing Catalan, Spanish or English language) which has been supervised by OGCE. OGCE made some recommendations and a favorable report about CSDI / IDEC application Schema.

(III) Since the knowledge of available information is a basic element in any SDI, the purpose goes further on, to accede, through the network, to the data itself in a distributed environment.

The interconnection of WMS within the Public Administration Organizations was considered, so we developed a client OGC application (**Geoinformation Viewer**) that connects several servers, physically located in different sites, like the Cartographic Institute of Catalonia (topographic data and orthophoto, and other reference data), the Environment Department, other Departments, some Research Centers, and several city councils .

Once initial difficulties have been overcome, technology has given the answer to expectations. The number of WMS is being extended progressively, incorporating new servers and data and creating new interoperability Projects.

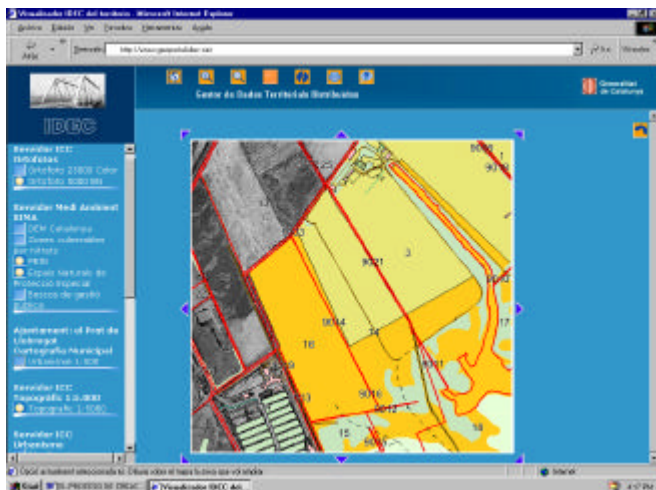


Fig. 3. Image integrating topographic data, ortophoto, environmental and urban planning, from 3 different servers.

(IV) Apart from the mentioned technological aspects, the Project has important assets for the near future. Among them, to know the real share prospects through a GIS market survey in Catalonia, made in collaboration with several Catalan Universities and the AESIG Catalan Section. After analyzing the suppliers, service companies, end users, Universities levels, etc., we have now a better knowledge of the real market.

A survey of the real technologies situation and geospatial information systems (TIG/SIG) in the Public Administration of Catalonia has allowed to have an inventory document with conclusions and proposals for strategies and policies in public services.

Conclusions

Considering the experience reached in the period of IDEC launching and to summarize it, we introduce some ideas to put into practice strategies for SDI development. These ideas can be valid for other projects of similar features:

FOUR BASIC RULES TO SET UP A SDI

- To have digital information available
- To define the SDI objective focus on giving services to end-users.
- To apply an engineering point of view, that's to say, to construct combining elements.
- To consider the technological and social environment as well as institutional support, marketing, etc..
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1) Digital information available

Digital information has to exist and be available on line (internet).

A SDI is a highway where data run. If information does not exist, the highway construction has no sense.

Anyhow, a SDI can help to issue and spread new information and promote the existing one, being neither required nor useful to concentrate only on the huge volume of data issued by relevant producers. It is of great interest the local information coming from universities, non-governmental organizations, researching centers, etc.. since these entities are more ready to share information.

In our case, the Institut Cartogràfic de Catalunya (Map Agency of Catalonia) started the policy, in the middle of the year 2003, to put at the public disposal orthophoto and topographic maps, toponymy and other cartographic data. It has allowed the access to its maps servers as a base for the geoinformation viewer (WMS Client of SDI) and progressively other servers with public and thematic information join them as per example servers from Environment Department, Statistic Department, Localret (Managerial Group of Local Administrations), Forest Researching Center, etc...

2) Main objective: useful services for end-users

End-users objectives and interests have to be scheduled as clear as possible and SDI results will be the objectives achievement.

To inventory and catalogue the available information, being or not accessible or free of charge, is the priority assumed by all providers and the real interest of end-users. A Web Catalogue can be ready in short with early information afforded by big producer centers.

Afterwards, fast results have to be reached to improve end-users options based on some projects which can perform as effect-demo, starting with the creation of a generic geoinformation viewer which can be useful for many end-users to verify the SDI performance and utility. Lastly, it allows to make practical applications to different shares:

- Emergencies
- Coast Management
- Environment
- Territory, real state share market
- Education – Universities

In place of promoting a total open architecture, from which the user choose the map servers to accede and creates its own system of distributed search, the IDEC strategy is based on sectoral construction of specialized SDI's, that's to say, instead of promoting a servers catalogue, IDEC constructs sectoral finished products combining map servers with information capable of being integrated in the specialized domain of each mentioned SDI's. Therefore, the end-user search the sectoral SDI's Catalogue and selects the SDI according to its requirements obtaining the pre-selected data set in the corresponding servers. In this respect, the Coast Management SDI's (Eurosion Project) and SDI Univers (inter-universities, in construction) have been developed and it is foreseen to develop different SDI's: provincial, metropolitan, real state, energetic, communication networks, etc.. In the present context, sectoral SDI's offer better and more coherent services to end-users that can be compatible with a total "open" configuration.

3) Engineering Point of view

Engineering: application process of scientific "know how" to practical results by means of projects.

The meaning of this engineering point of view, applied to the construction of a SDI, can be explained as follows,

- SDI is not an academic or research activity but a project.
- SDI project requires objectives, resources and time.
- In order to get concrete results, the existing elements (technological and related) have to be combined.

- SDI objectives have to be clear, understandable and assumed in a right time (objectives must not be multiplied and unnecessary goals for SDI must not be approached). The time grants to initiatives the character of project, and some times this is not considered..
- Technological resources (Internet, software for interoperability, Metadata Catalogue servers, Applications for metadata capture, etc..) exist and operate correctly with a relative low cost. Their correct use and combination allow to construct a SDI with a moderate investment in a short time.
- Development and success of SDI depends on organization as well as policy, legal framework, institutional culture, socio-economic framework and other elements more than technology, and implies a higher cost.

4) To consider the environment

- Project environment has to be considered before, during and after the process
 - o We have to face troubles
 - o We have to show information and make it accessible to end-users.
- We have to counter-argument some usual reasons that justify the non public accessibility of the data:
 - o If information is not showed it will never be improved.
 - o Politics will be pressed so that information can be improved.
- Diplomacy: a new idea, a new project is capable of being declined or seen as a negative competition. It is important the initial framework of support to the project:
 - o It is preferable that the initiative arise from more than one Department
 - o We have to avoid a leading role (IDEC acts as a services wholesaler granting the configuration of their own SDI's to other entities with their corporate identifiers).
 - o We have to convince and training before to rule.
- It is necessary not only to convince the innovative people, but mainly the pragmatic ones, if we want to succeed.

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