Chapter 28
User-Friendly Geoportal Interfaces for Geospatial Resource Discovery

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ABSTRACT

The Spatial Data Infrastructure of Catalonia (IDEC) was launched in 2002. From the beginning, the Metadata Catalog (MC) service has been considered as one of the main pieces of the infrastructure. Building a metadata catalog is important for any Spatial Data Infrastructure to foster resource interoperability and integration. In addition to organizing, classifying, and sorting metadata records, one of the hardest parts in the IDEC was to design web applications that allow users to easily discover and access such geospatial resources. This chapter reviews the different trends in building friendly user interfaces of web applications to search and discovery metadata records through the evolution of user interface of the IDEC Geoportal.

INTRODUCTION

This chapter attempts to explain how to create a web application to search metadata records focusing on the evolution experimented by the IDEC (Spatial Data Infrastructure of Catalonia) metadata search client application over the past 8 years. The first part provides a general introduction to the metadata catalog technologies and the standardized process. The second part focuses more on the design of web applications and how the knowledge and observation of the "user experience" has permitted the creation of more useful and effective applications in terms of user interfaces and functionalities.

To build a metadata catalog from a technological point of view means implementing a complex system based on ISO[1] standards (International Standards Office) for the metadata description and Open GeoSpatial Consortium[2] (OGC) specifications for the catalog service implementation, which allows geodata and geoservices providers

DOI: 10.4018/978-1-4666-2038-4.ch028

to register resources, and final users—consumers—to locate and use these resources.

Nevertheless, a Spatial Data Infrastructure (SDI) is not only a technological implementation, but also is a set of institutional agreements and policies to identify and encourage local and regional institutions, research centers, universities, and companies to describe—creating metadata—and to share its geographic information. We might say that the IDEC has achieved some significant results as its catalog had more than 37,000 metadata records from over 200 providers at the end of 2010.

All of this work may go unnoticed if an SDI is not able to build good front-end applications—such as a shop window—to discover, find, or bind the metadata records. We are talking about web services and a Web Catalog Client Application (WCCA).

This chapter explains and justifies the changes applied during the last 8 years to the IDEC WCCA. With every change and update, there is always the same aim of trying to facilitate access to the information in the most accessible and easy way possible. All of these changes have been following the same trend, decreasing the complexity and search options in the design of the web interface, while the server processes—hidden from the end user—have been increasing exponentially.

This trend in minimal user interfaces has had nothing to do with successive versions released by the specification producers such as OGC or ISO. The key factors have been: (1) improvements related to the design and web programming; (2) web usability and a commitment to focus on responding to user demands; and (3) a perspective change from data centric *offer* to user centric *demand*.

Obviously, the emergence of new web-programming techniques such as AJAX (Asynchronous JavaScript and XML) and Javascript API (Application Programming Interface) frameworks like jQuery[3] and OpenLayers[4] have impacted web applications' design and performance; however, the biggest impact has probably been the existence of a search engine like Google[5]. It has changed the users' behavior when using web search applications. This impact has affected all web search applications, even the metadata catalogs, and has been called "*googlization*" (Battelle, 2003; Salkever, 2003). Google offers a single search box. Usually what we are looking for appears well positioned in the first page and it is also very fast. This does not happen in most metadata search engines, despite having a smaller and very well described volume of information.

Finally, the future work section will introduce the latest improvements developed in the metadata search using natural language programming techniques.

OGC CATALOG SERVICES SPECIFICATION

Among the applications, which lie at the core of all SDIs, perhaps the most important ones are the metadata catalogs. Implementing a catalog may be a tedious and think-less task but it is vital to the success of an SDI. The job basically consists of locating all possible producers of cartographic data (departments, agencies, companies, or even universities) and convincing them to make an inventory of all their geographic information and to describe it following a standardized procedure. This is what we call "creating metadata."

This metadata, which is stored in eXtensible Markup Language[6] (XML) encoded files according to the International Standards Office (ISO) standards, 19115, are loaded into the metadata catalog so that they can be interrogated by any user. It has to be said that the creation of metadata is not an easy task and involves describing fields such as map creator, creation date, revisions data, accessibility, information formats, quality, distribution, and the coordinate box corresponding to the information described.