(Draft) Research and Theory in Advancing Spatial Data Infrastructure Concepts.
California: ESRI Press, 2007, p. 107-119. ISBN 978-1-58948-162-2

Providing SDI Services in a Cross-Border Scenario: the SDIGER Project Use Case

F.J. Zarazaga-Soria[1], Javier Nogueras-Iso[1], M.Á. Latre[1], A. Rodriguez[2], E. López[2], P. Vivas[3], P.R. Muro-Medrano[1]
[1] Computer Science and Systems Engineering Department, University of Zaragoza. Spain
[2] Instituto Geográfico Nacional, Spain
[3] Centro Nacional de Información Geográfica, Spain

Abstract

SDIGER is a pilot project on the implementation of the Infrastructure for Spatial Information in Europe (INSPIRE), funded by Eurostat, that aims at demonstrating the feasibility and advantages of the solutions for sharing spatial data and services proposed by the INSPIRE position papers, estimating the costs and finding the problems and obstacles of implementing interoperability-based solutions on the basis of real cases. One of the main areas of interest of this project is the cross-border scenario. SDIGER consists in the development of an SDI to support access to geographic information resources concerned with the Water Framework Directive within an inter-administration and cross-border scenario that involves: two countries, France and Spain; and, the two main river basin districts at both sides of the border, the Adour-Garonne and the Ebro. This paper presents details of the problems related with the cross-border scenario found during the development of the project.

Introduction

SDIGER is a pilot project on the implementation of the Infrastructure for Spatial Information in Europe (INSPIRE) (CEC 2004). This project has been funded by the European Commission through the Statistical Office of the European Communities (Eurostat), contract number “2004 742 00004” for the supply of informatics services in the various domains of the Community Statistical Programme. The objectives fixed by Eurostat for this project are three fold. Firstly, it will serve to test and demonstrate the feasibility and advantages of solutions for sharing spatial data and services, observing the principles and standards proposed by the INSPIRE position papers in 2002 and their interoperability-based approach. Secondly, it is useful to acquire experience in implementing interoperable solutions and develop processes able to be reused when INSPIRE is put into operation. And thirdly, it can help to estimate the costs of implementing interoperability-based solutions on the basis of real cases, together with the problems, obstacles which might be encountered during the subsequent large-scale implementation of INSPIRE.

The “call for tender” for this project required the cross-border application to be focused on an environmental subject. The SDIGER project that was then proposed consists in the development of a Spatial Data Infrastructure (SDI) to support access to geographic information resources concerned with the Water Framework Directive (WFD) (OJ 2000) within an inter-administration and cross-border scenario that involves: two

(Draft) Research and Theory in Advancing Spatial Data Infrastructure Concepts.
California: ESRI Press, 2007, p. 107-119. ISBN 978-1-58948-162-2

countries, France and Spain; and, the two main river basin districts at both sides of the border, the Adour-Garonne basin district, managed by the Water Agency for the Adour-Garonne River Basins ("L'Agence de l'Eau Adour-Garonne") and the Ebro river basin district, managed by the Ebro River Basin Authority ("Confederación Hidrográfica del Ebro").

This project has been developed by a consortium consisting of the following entities: IGN France International ("Institut Géographique National France International"), the National Geographic Institute of France ("Institut Géographique National"), the National Centre for Geographic Information of Spain ("Centro Nacional de Información Geográfica"), and the University of Zaragoza (together with experts from the University Jaume I). Additionally, this consortium counts on the help of the following collaboration entities: the National Geographic Institute of Spain ("Instituto Geográfico Nacional"), the Water Agency of Adour-Garonne ("L'Agence de l'Eau Adour-Garonne"), the Ebro River Basin Authority ("Confederación Hidrográfica del Ebro"), the Regional Direction of the Ministry of Environment for the Midi-Pyrenees region, and the French GIS-ECOBAG association.

As it can be observed, these entities (most of them public institutions) are the main providers of the topographic and hydrographic data in the cross-border area. SDIGER is a two-year project that has been structured in the "call for tender" launched by Eurostat in a set of activities orientated to face the problems that may arise in the large-scale implementation of INSPIRE. The activities are presented below and all of them (except for the last one), correspond to the first year of the project:

- Definition of a cross-border scenario. Two application scenario use cases have been defined for this cross-border project. Both of these use-cases are focused on the environmental domain and take into consideration the problematic of at least two adjacent countries and at least two different languages.
- Metadata related activities Three metadata profiles have been developed (a metadata profile for geographical data mining, a generic metadata profile for INSPIRE for assessing and using geographical data, and metadata profile for the Water Framework Directive) with full technical documentation and user guides. An open-source metadata management tool has to be made available. This tool must support the aforementioned metadata profiles.
- Multilingual access portal to data and services. A specific and multilingual portal has been created in order to give access to the geographic information and services produced or served by the institutions being partners or collaborators of the SDIGER consortium. The services accessed through the portal have been configured according to the standards (e.g., Open Geospatial Consortium, ISO TC 211) described in the INSPIRE AST Position Paper.
- Multilingual aspects of the application. French and Spanish are the official languages of the two countries directly involved in the project. Besides offering data and services in these two languages, an English version of the geoportal will be also available to facilitate accessibility to users not familiar with these other two languages. Therefore, multilingual resources like multilingual thesauri and multilingual gazetteers are used to facilitate the creation of metadata and the

development of ergonomic search interfaces for data and service catalogs (Nogueras-Iso et al. 2004).

- Creation of a common object-oriented data model for the data used in the application. A common data model has been created in UML for the harmonized representation of the data involved in the application, mapping later the available data at local repositories into the agreed common model.
- Configuration of the servers for access to the data and services covered by the application according to the ISO TC211 and Open Geospatial Consortium (OGC) standards.
- Internet application. The applications proposed in the application scenario will be implemented by using the elements established in the previous activities.
- Study report for implantation of INSPIRE at the European level. A report based on the previous activities has been written to provide elements to identify problems, solutions and the costs of using configurations commensurate with the European scale of INSPIRE.
- Maintenance for the second year period. The network services and applications must be maintained during the second year of the project; ensuring that average up-time of all servers allows a correct use of the infrastructure.

More details of these activities can be found at (Latre et al. 2005) or in the documents published through the SDIGER project Web site (http://www.sdiger.net). The remains of this paper are focused on the identification of the problems that have been found during the development of this Spatial Data Infrastructure and that are directly or indirectly derived from the cross-border nature of this project.

Cross-Border scenario

The SDIGER project consists in the development of an SDI (see figure 1) to support access to geographic information resources concerned with the WFD within an inter-administration and cross-border scenario that involves: two countries, France and Spain; and, the two main river basin districts at both sides of the border, the Adour-Garonne basin district, managed by the Water Agency for the Adour-Garonne River Basins and the Ebro river basin district, managed by the Ebro River Basin Authority.