

PLAN4ALL – A EUROPEAN APPROACH TO SPATIAL DATA USED ON TERRITORIAL PLANNING

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ABSTRACT - In order to ensure the increased efficiency of European policies and the implementation of Structural Funds in a more balanced manner in the different territories of the country, a number of eight development regions have been established in Romania, corresponding to NUTS II level. In between these regions, as well as within each of them, a major concern is the diminution of economic and social disparities. Moreover, these disparities can manifest themselves in a cross-border context, jumping the administrative boundaries of regions and even neighbouring countries. In this sense, development plans provide certain measures in order to stimulate a more balanced development of the territories, using spatial planning as the actual support in identifying factors that lead to the emergence and intensifying of regional disparities. The present paper focuses on these aspects related to spatial planning data in the context of the recent European initiatives, through the activities of the *Plan4all* project that is being implemented by a European consortium. Romania is partner in this project and is represented by the North-West Regional Development Agency (North-West RDA). The paper presents the achievements of the running *Plan4all* project until the present day, as well as the involvement and the contributions of the North-West RDA so far.

Keywords: spatial planning data, INSPIRE, Plan4all, geoportal

INTRODUCTION

Spatial data infrastructures – frameworks of technologies, policies, and institutional arrangements to enable sharing of geospatial information for use at a national, regional, or global level (ESRI, 2010) – represent a useful tool in the process of studying economic and social disparities with respect to the geographical distribution of the surveyed indicators, thus obtaining valuable information on territorial disparities.

To guarantee the interoperability of spatial data infrastructures and to ensure that they can be accessed by users from all EU member states, the European Parliament and the Council has issued the Directive 2007/2/EC entitled *INSPIRE* (EC, 2007) requiring the sharing of spatial digital data of EU Member States and Agencies. Several pan European projects have been developed to thoroughly study, deploy and disseminate the themes ruled by this Directive. One of these projects is *Plan4all* (EC, 2008), the themes of interest belonging to the domain of spatial planning data. It is a running project in which North-West RDA is the Romanian partner.

INSPIRE ROMANIA – IMPLEMENTING THE EUROPEAN DIRECTIVE

The *INSPIRE* Directive establishes the guidelines for an infrastructure for spatial information in the European Community in order to support the elaboration, implementation, monitoring and evaluation of policies and activities which have a direct or indirect impact on the environment. It provides the creation of metadata (“data about data”) for digital data, datasets and services related to 34 data themes (thematic categories of spatial data infrastructure), as well as services to process these data. In this respect, the European *INSPIRE* Geportal was launched (www.inspire-geoportal.eu).

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The Romanian national legislation transposed the *INSPIRE* Directive under the Government Ordinance OG_04/2010 (GOV, 2010). The ordinance also defines the general legislative framework necessary to achieve the National Infrastructure for Spatial Information (INIS), coordinated by the INIS Council. This coordination organism includes 19 organizations at national level (ministries, research institutes, academy and agencies) that are responsible for developing the technical specifications for each spatial theme in *INSPIRE* annexes.

Integration and technical support are ensured by the National Agency for Cadastre and Land Registration (ANCPI). The technical support for sharing spatial data sets and related services is provided by ANCPI on the dedicated *INSPIRE* Geoportal developed on an ArcGIS platform (<http://ancpi.geoportal.ro>).

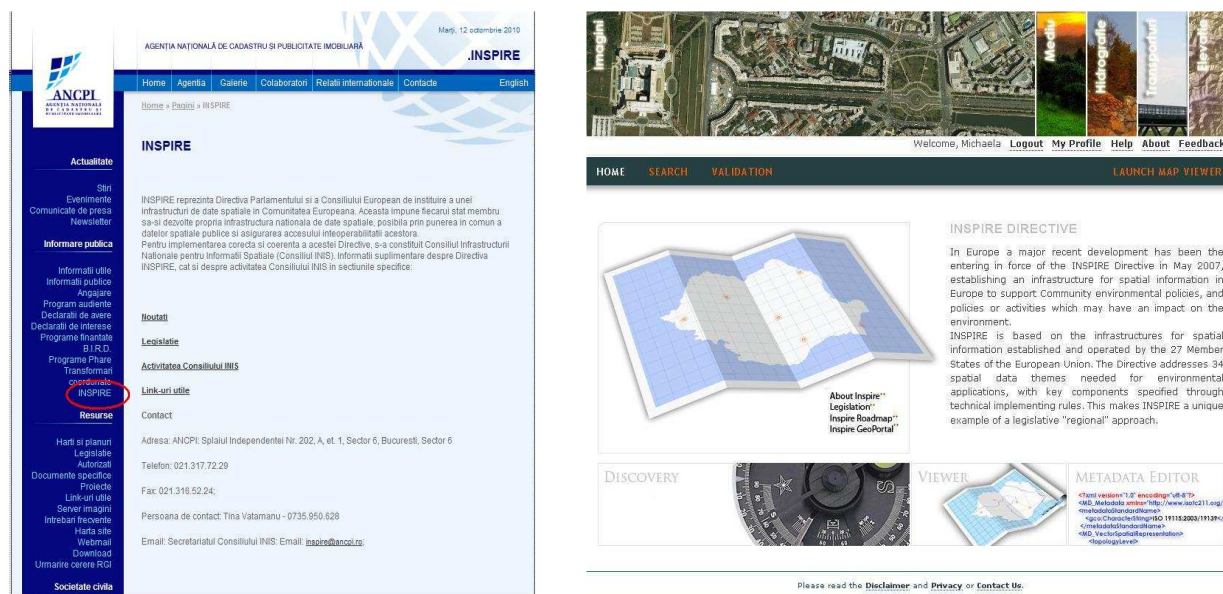


Figure 1. ANCPI site (*INSPIRE* page) and the INIS Geoportal (*INSPIRE* Romania)

PLAN4ALL REGIONAL ASPECTS

Out of the 34 thematic categories defined in *INSPIRE* documents, 7 themes have direct connection to spatial planning and became the object of *Plan4all* project. The project is based as much as possible on standards defined in *INSPIRE* implementation rules to ensure maximum interoperability and extensibility around Europe. The project started in May 2009 and will last until October 2011.

Plan4all is a European project aiming to harmonise spatial planning data and related metadata according to the *INSPIRE* principles, based on the existing best practices in the EU regions and municipalities and the results of current research projects. The European initiatives, through the activities of the *Plan4all* project, are being implemented by a consortium of 24 partners from 15 European countries (Figure 2).

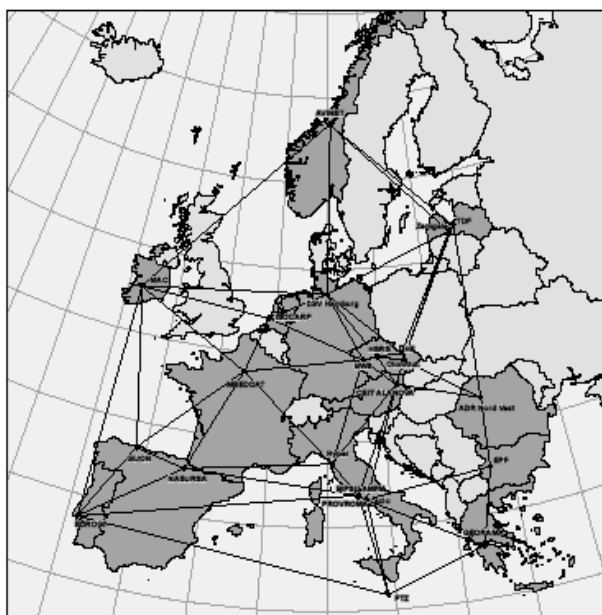


Figure 2. *Plan4all* consortium partner network

North-West RDA, as content provider and validation partner in *Plan4all* project, focuses on the deployment of metadata profiles and data models in the North-West Development Region of Romania (Northern Transylvania), as well as on sharing spatial data and services by the means of a regional geoportal for spatial planning.

Significant efforts have been made to harmonize spatial planning data sets for sharing, accessing and using them in order to compare the impact of different policies and planning strategies, thus offering useful tools for the study of social and economic disparities. Spatial planning and related information are important not only from the point of view of national, regional and local development, but they also have a cross-border and even an international dimension, especially in situations related to environmental protection and natural disaster risk prevention.

The 7 spatial data themes of interest for *Plan4all* partners are the followings:

- Land cover
- Land Use
- Utility and Governmental services
- Production and industrial facilities
- Agricultural and aquaculture facilities
- Area management/restriction/regulation zones and reporting units
- Natural Risk Zones

The *Plan4all* project should contribute to the standardisation of these spatial data themes from a spatial planning point of view, reason for which *Plan4all* can be considered as a real use case of the *INSPIRE Directive*.

The objectives of the project are:

- Design spatial planning metadata profile, data model for selected spatial data themes related to spatial planning; design networking architecture for sharing data and services;
- Validate metadata profile, data models and networking architecture on local and regional level;
- Establish a European portal for spatial planning data;
- Deploy data and metadata on local and regional level;
- Promote *Plan4all* and *INSPIRE* in countries, regions and municipalities.

In order to offer a common platform for sharing data and information related to the project, a European geoportal *Plan4all* was launched on the project website (www.plan4all.eu).

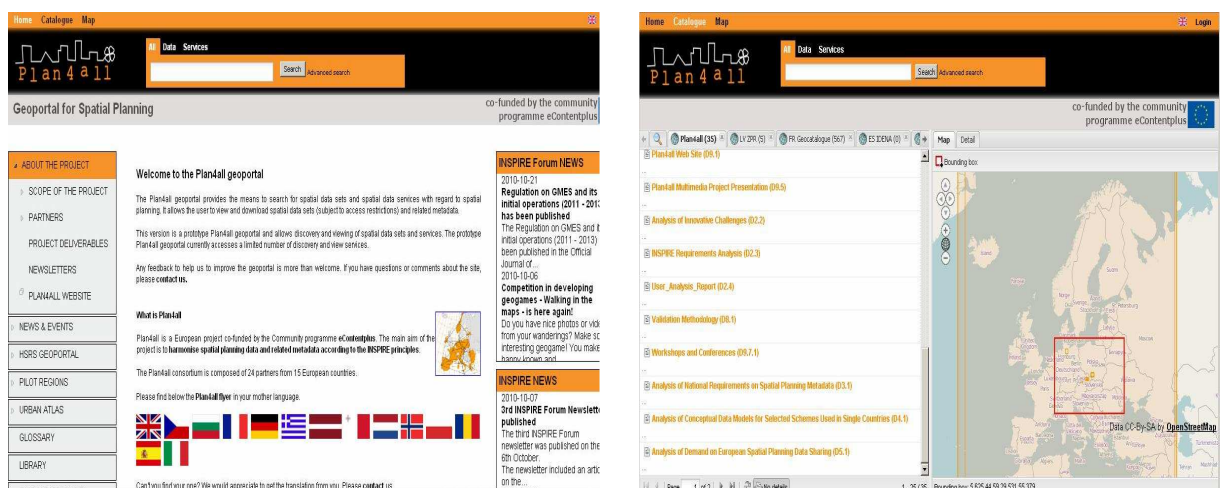


Figure 3. *Plan4all* Geoportal

This European geoportal represents a platform for publishing metadata and catalogue services (CSW), for publishing web data services (WMS and WFS), as well as for testing partners' CSW, WMS and WFS services.

Plan4all regional approach in the North-West Development Region started with an extended analysis of the state of art in spatial planning and data collection in all 6 counties from the region (no official planning data is collected at regional level). The main conclusion revealed a lack of web map services in the region and consequently North-West RDA had problems in accomplishing the role as a content provider. Therefore, the Agency decided to start designing a geoportal appropriate for exchanging spatial planning data in the region, while relevant information - according to *Plan4all* specifications – was due to be uploaded afterwards by the main data providers. The deployment of metadata profiles and data models will be facilitated by means of this geoportal. The work is currently in progress, with constant support from the partners in the *Plan4all* consortium.

The main objective for North-West RDA in the frame of the *Plan4all* project is to deploy data models and metadata which are compliant with *INSPIRE* principles on behalf of the main institutions in the region responsible for collecting and processing spatial data, as well as to publish data from the region that is relevant in spatial planning using a dedicated geoportal.

REGIONAL GEOPORTAL FOR SPATIAL PLANNING

North-West RDA started the implementation of *Plan4all* provisions by testing several platforms to publish regional spatial data and metadata, according to *INSPIRE* principles. While the ANCP *INSPIRE* geoportal involves institutions and data at national level, covering all 34 specific data themes, the regional *Plan4all* geoportal addresses local and regional administrations for spatial planning purposes, covering 7 data themes. The two geoportals have different target groups and different approaches of the subject.

The first tests towards the implementation of North-West RDA regional geoportal started in 2010 with an interim in-house test version, run on the Geoserver and GeoNetwork open source platforms installed on a local machine.

These solutions were followed by the extended version on the test platform made available by *Plan4all* consortium (<http://geoportal.nord-vest.ro:8080>). The solution uses commercial Micka catalogue and open source Geohosting, the test geoportal being customized to suit the specific needs of the North-West RDA. Several maps of regional interest were used on local server to create catalogue and map services. It is a package of applications which allows the work with maps in web environment based on OGC web services.

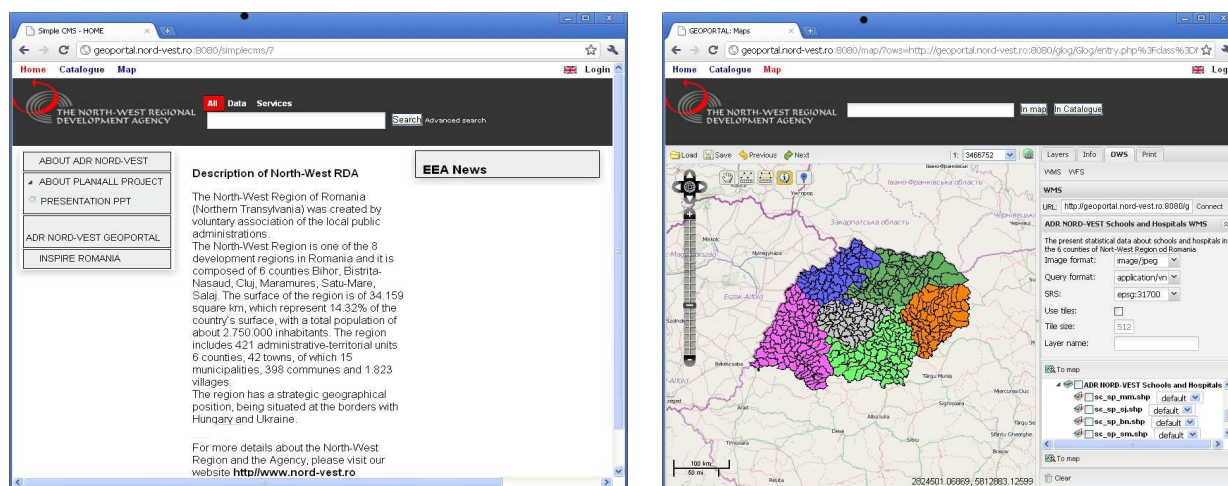


Figure 4. North-West RDA test geoportal

Several services were offered as examples on the test geoportal (to be found on: <http://geoportal.nord-vest.ro:8080/catalogue/>):

MapViewer:

<http://geoportal.nord-vest.ro:8080/glog/Glog/entry.php?class=Mapman.MapmanShowMap&mapProject=mapproject1> &

WMS service example:

<http://geoportal.nord-vest.ro:8080/glog/Glog/entry.php?class=Mapman.MapmanWms&mapProject=mapproject1&instance=&SERVICE=WMS&REQUEST=GetCapabilities>

WFS service example:

<http://geoportal.nord-vest.ro:8080/glog/Glog/entry.php?class=Mapman.MapmanWfs&VERSION=1.0.0&mapProject=mapproject1&instance=&SERVICE=WFS&REQUEST=GetCapabilities>

WMS services, for instance, were tested across several other platforms, such as open source QGIS, commercial ArcMap 9.3.1 or Autodesk Map 3D 2011.

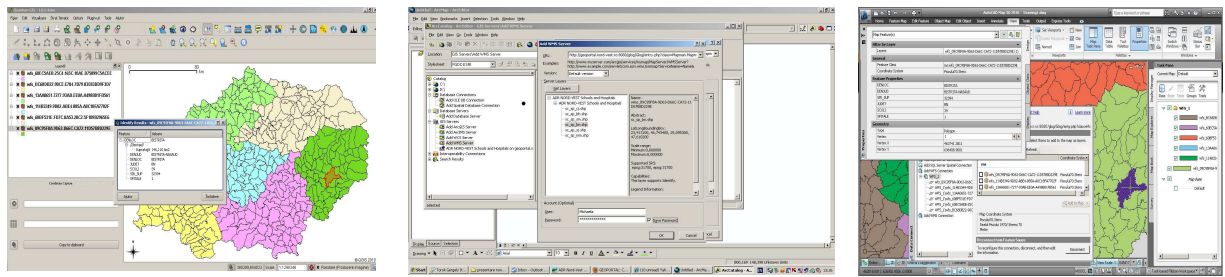


Figure 5. Using a WMS service on different desktop GIS platforms: QGIS, ArcGIS, Autodesk Map

Following the national decision of using the ESRI platform ArcGIS Server + ArcGIS Geoportal Extension for implementing the INSPIRE Romania geoportal, the Agency eventually selected the same solution; tests were run on a virtual machine installed at the RDA where ArcGIS Server 10 with Geoportal extension 10 were used on a template geoportal version to test the technical specifications.

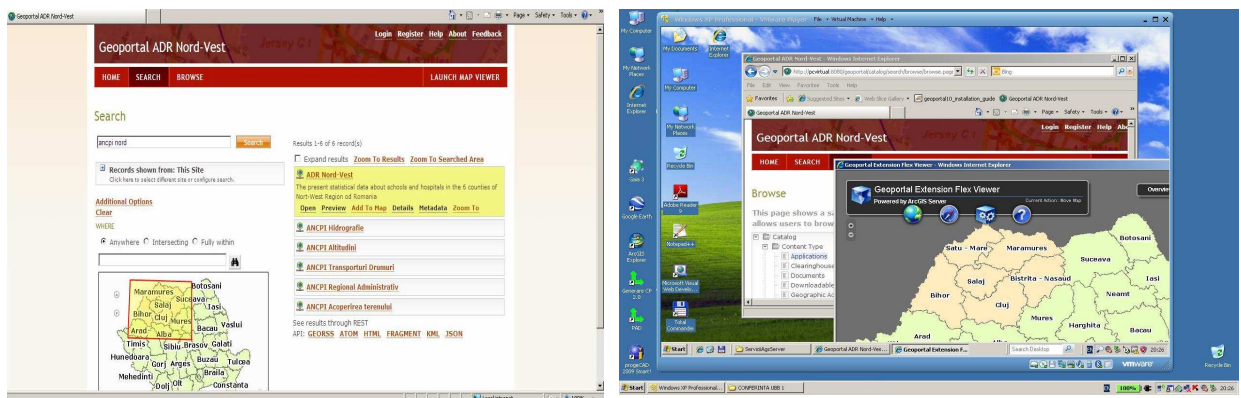


Figure 6. Commercial geoportal template installed on a virtual machine for test purposes

A final commercial solution on ESRI platform is to be installed until the end of 2010. ArcGIS Server Standard Enterprise 10, with ArcGIS Server Geoportal Extension 10 will be used to develop the Regional geoportal for Spatial Planning, implemented on a dedicated server.

CONCLUSIONS

The process of studying economic and social disparities extensively relies on the geographical distribution aspects of the surveyed indicators. The spatial data infrastructures represent useful tools in this respect, supporting analysis and decision processes, therefore it is necessary to establish a measure of coordination between the users and providers of the information so that information and knowledge from different sectors can be combined.

The European Parliament and the Council has issued the *INSPIRE* Directive providing rules regarding an infrastructure for spatial information in the European Community. Romania has transposed these rules into the national legislation. Following the Government Ordinance 4/2010 provisions, ANCPPI has become the technical responsible for the *INSPIRE* implementation process in Romania, under the coordination of the INIS Council.

While *INSPIRE* Directive addresses 34 data themes, the European *Plan4all* project selected 7 themes with regard to spatial planning. This project provides the means to search for spatial data sets and spatial data services and allows the user to view and download spatial data sets and related metadata.

North-West RDA is the Romanian partner in the frame of the *Plan4all* project. It actively participates to the testing of proposed data models and pilot applications. In the absence of resources from the regional potential suppliers, North-West RDA makes in house efforts to build maps and related metadata for the North-West Development Region and publish them for public access. With the full support of other project partners, first a test geoportal was developed to offer the means for the deployment and dissemination of the spatial data related to or about the North-West Development Region. The next step must involve local and regional authorities to gather relevant spatial plans and publish them using metadata profiles and data models according to *Plan4all* provisions.

The present paper reflects the achievements of the running *Plan4all* project, as well as the involvement and the contributions of the North-West RDA until the date of its presentation at the 4th International Conference “Regional Disparities: Typology, Impact, Management”, organized by the Faculty of Geography of Cluj-Napoca, 23rd -24th October 2010. A new commercial version of the North-West RDA geoportal for spatial planning will be launched in 2011 using ArcGIS Server 10 and Geoportal Extension 10.

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