RESOURCES DEVELOPMENT GEOSPATIAL DATA USING THE DIGITAL TOPOGRAPHIC PLAN OF ROMANIA- TOPRO5

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***Abstract**: Reference topographic plan of Romania, in digital format, corresponding to scale 1: 5,000 (TOPRO5) is the unique cartographic support to integration geospatial data for the realization the National Spatial Information Infrastructure - INIS. INIS Geo-portal provides the following functionality: publishing service of metadata; view services and search services as well as data downloading necessary for each user.*

The application is designed to facilitate of exchange geospatial data resources of a large community of users, providing the tools for search and discovery of spatial data sets and Web services within INSPIRE geo-portal of Romania.

***Keywords:** geospatial data, metadata, INSPIRE, TOPRO5*

1. Introduction

Digital mapping, besides classical representations such as plans, maps and details 2D terrain representation and encountered is the study and development of thematic maps derived. These thematic maps can be made in all the initial stages, intermediate, and final required to realize a geospatial data service.

In this context a real example is products available through INSPIRE Geoportal defining and implementing a strategy and a centralized production of digital maps. The geoportal provides the means to search for spatial data sets and spatial data services, to view spatial data sets from the EU Member States within the framework of the INSPIRE Directive (Fig. 1).

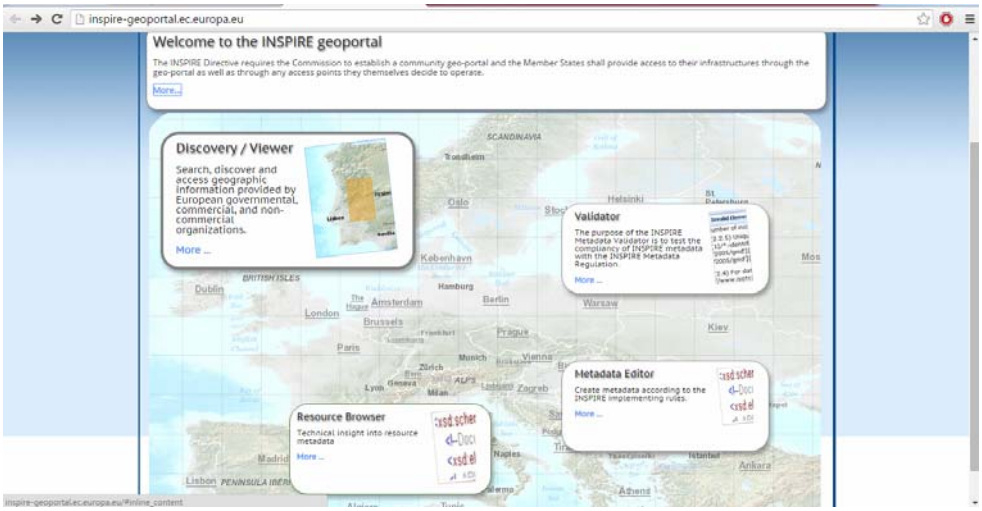

Fig. 1. INSPIRE Geoportal

One of the main products resulting is the topographical reference plan corresponding of scale 1: 5000, TOPRO5. This product, in digital format represents an important collection of spatial information available at the national level, in a centralized spatial database (Fig. 2).

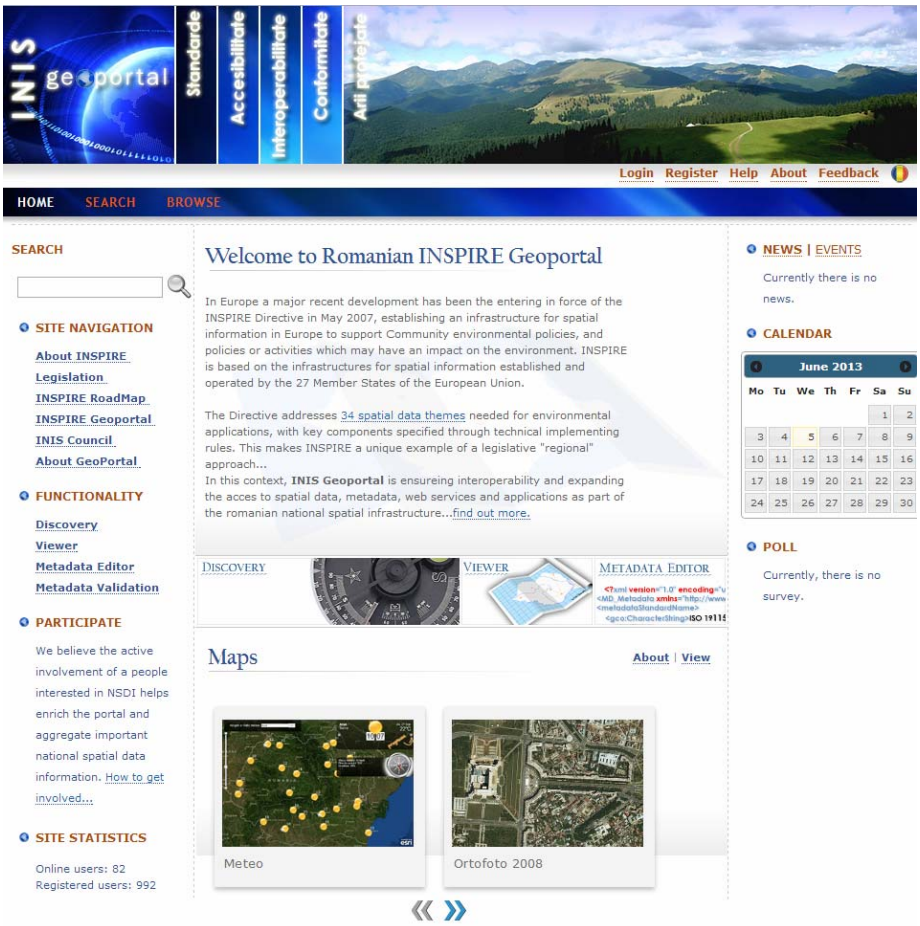

Fig. 2. INSPIRE geoportal of Romania

The main purpose of this is to provide a precise framework and uniform for all communities that create and use spatial data (administrative, environmental protection,

transportation, hydrography, utilities, etc.). The reference topographic plan TOPRO5 is an important collection of spatial information available at national, centralized in a spatial database (Fig. 3).

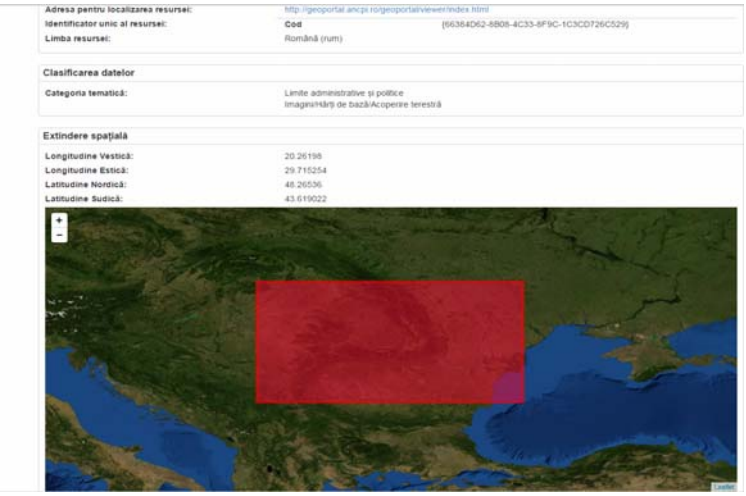

Fig. 3. INSPIRE geoportal of Romania- digital map TOPRO5

The main source of information in order to realization the topographic plan TOPRO5 was the result of flight ortophotoplans conducted in 2003-2005, covering 80% of the country. The difference was covered with satellite images and ortophotoplans in 2008, 2009, 2010-2013 (Fig. 4).

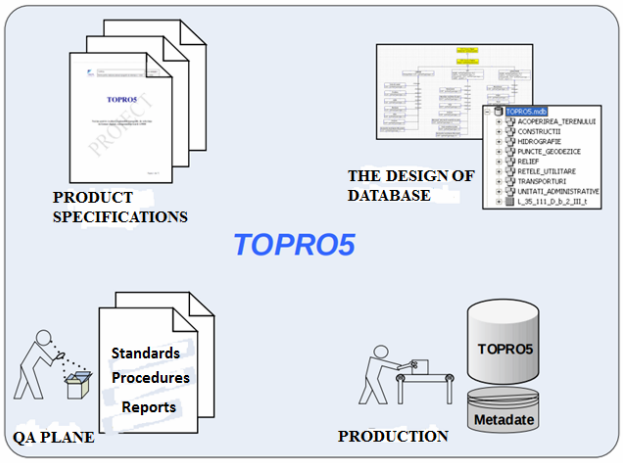

Fig. 4. Stages of TOPRO5

Through TOPRO5 standardize and defined models for national topographic data sets in the data model, rules and procedures regarding metadata, accuracy, presentation, topographic rules and methods of sharing.

2. Structure and Interrogation of geospatial datasets

Metadata is a key component of spatial data sets and also are the main sources for locating resources geospatial data on the Internet.
Through metadata provides the following services (Fig. 5):

- Search services - allowing identification of spatial data sets and services based on the contents of the corresponding metadata and display metadata contents;

- View services - allow at least display, navigate, zoom in / out, pan, overlapping visual spatial data sets and to display legend information and any relevant content of metadata.

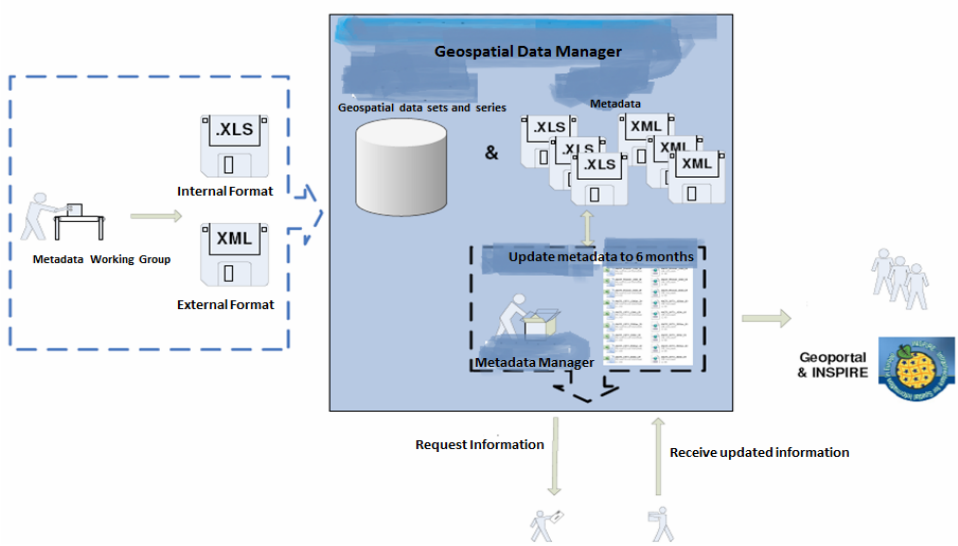

Fig. 5. Metadata Management

Publication service of this metadata has three modules:
- Metadata editor (ensures conformity with the Rules for Metadata);
- Metadata validating;
- Metadata management.

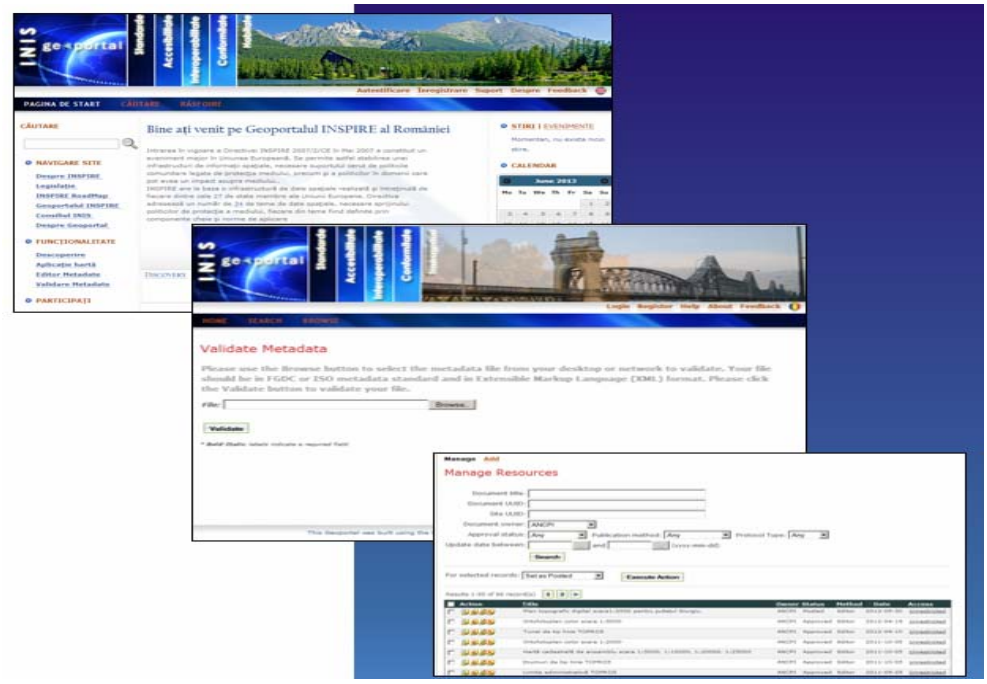

Fig. 6. The services provided through metadata

Geospatial data users may benefit, in framework geoportal INIS, the following applications:

- **Coordinates transformation** - allows the conversion of coordinates between national coordinate system 1970 stereographic and ETRS89 and vice versa. Supports input format shape (Fig. 7);

Fig. 7. Service Transformation of Coordinates

- **Downloading** - allows downloading administrative boundaries in shape format, DXF, file geodatabase, DGN, after user authentication (Fig. 8);

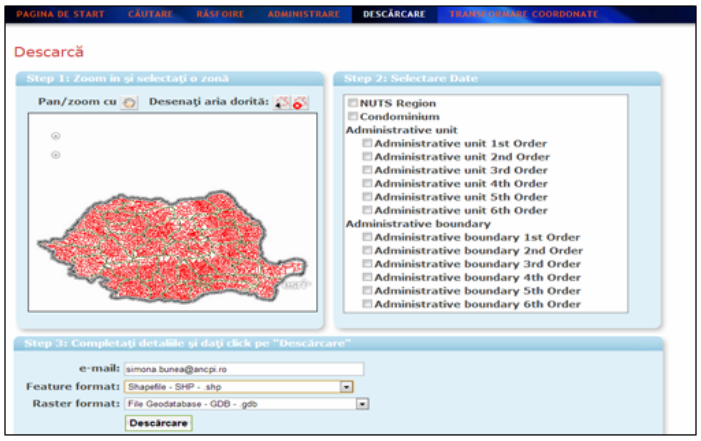

Fig. 8. The application unnloading

- **Viewing immobile** allows: quick search by name of a city or name street, immobile search by county, UAT and cadastral number and identification immobile by selecting the immobile (Fig. 9);

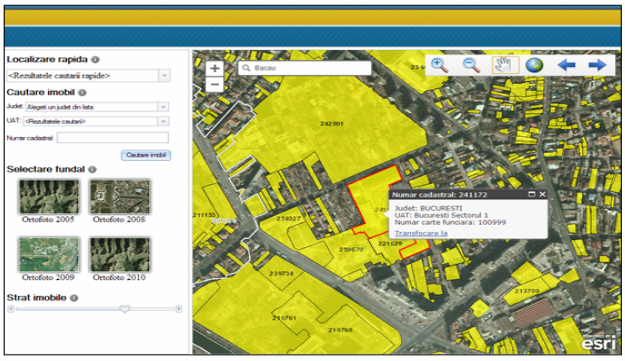

Fig. 9. Viewing a immobile

- **INIS viewer** allows resources viewing TOPRO5. Under this applications viewing, the reference topographical plan of Romania TOPRO5 comprises four layers: administrative, transportation, hydrography and land cover (Fig. 10).

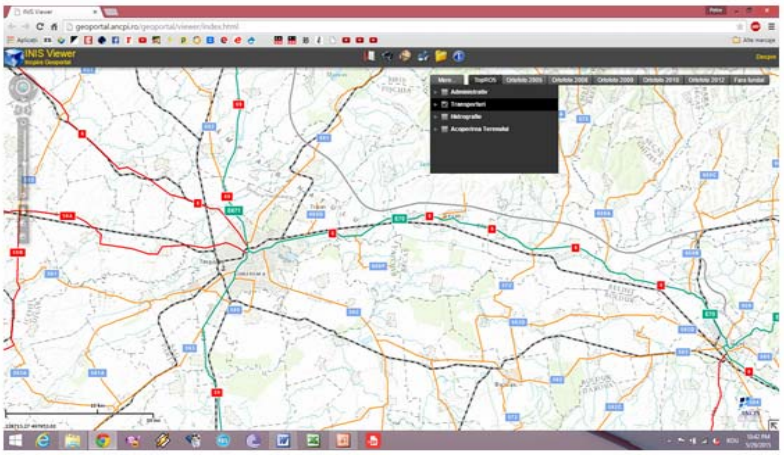

Fig. 10. Viewer Example visualization application resources within INIS Viewer

3. Conclusions

INIS plays an essential role in making available spatial data. Public institutions must provide reference data which are important in the decision-making process. The application is designed to facilitate of exchange geospatial data resources of a large community of users, providing the tools for search and discovery of spatial data sets and Web services within INSPIRE geo-portal of Romania. The implementation of the INSPIRE Directive shall contribute to the improvement of the national spatial data infrastructure particularly in the area of data interoperability and spatial data services and shall constitute a joint cooperation effort for the technical implementation of the Directive. [6]

4. References

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