

Strategic vision and concept of regional planning and sustainable development in Romania based on the use of geospatial solutions

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Abstract: - The development and implementation of a strategic partnership concept of territorial planning in the short, medium and long term, as well as the identification of appropriate geospatial solutions, are key factors underpinning regional policy implementation needed to ensure the framework for the development of a sustainable and balanced development region. A four years long observation and analysis of planning and regional development within the Central Regional Development Agency lead to elaborating a strategy related to the current needs and trends in regional development. The starting point of the work consisted of an analytical review of the strategic and programmatic documents at the European, national and regional levels, as well as of the written literature in the field of regional planning and development, socio-economic development, and sustainable development. A regional strategic planning and development concept was developed based on the effective use of the Geographic Information Systems technology, a modern, dynamic and complex form of integration of geospatial solutions developed through the implementation of six support projects.

Key-Words: - region of development, GIS, geospatial solution, sustainable development, regional development, integrated spatial planning

1 Introduction

Romania's integration process into the European Union is long and complex, assuming the adoption of the European legislation (*acquis communautaire*) and the institutional development of a system compatible with that of the European Union member countries. The process of regional development in Romania is historically marked by a few important moments, the first being in 1996 when the Romanian government recognizes the role of regional policy as an integral part of the social and economic policy. In March 1997 the Green Paper for Regional Development is elaborated, government document that soon becomes the model of regional

policy and regionalization of Romania. This paper proposes a framework for policy development, administrative levels, measures, instruments and eligible institutions. The Romanian regions of development were created in 1998 with the passing of the Regional Development Act (Law 151/1998). In between 1998 and 1999 specific institutions were created at the central level (National Regional Development Council with a deliberative role and the National Agency for Regional Development carrying an executive role), as well as eight other regional development agencies with an executive role within the Councils for Regional Development (deliberative forums). Therefore, in order to align

these agencies with the EU requirements in terms of supporting territorial development, the delimitation of the eight development regions was based on the principle of territorial contiguity through the pairing of a number of 4-6 neighbouring counties, with the exception of the Bucharest-Ilfov region of development comprising two administrative units. As considered by the European Union, the national level (NUTS I) is too large for an efficient allocation of funds for territorial development, while a county level distribution would be too small (NUTS III) (Nomenclature des unites territoriales statistiques). Thus, the regions of development are considered as territorial units ranked as NUTS II, with a minimum population of two million inhabitants. From a structural point of view, the regions of development are heterogeneous, solely running as statistical units. The establishment of the regions of development follows four major objectives (Law 151/1998, article 2), namely:

- to reduce interregional imbalances focusing on the developmental recovery of disadvantaged areas;
- to prepare the institutional training framework according to the European Union membership criteria and for better access to structural funds;
- to correlate sectorial Government policies by encouraging institutions and the use of local and regional resources for the purpose of creating sustainable socio-economic regions of development;
- to stimulate interregional, domestic and international, and border regions cooperation through the participation of the regions of development in the activities of the European organizations.

The Romanian Parliament adopted the Law 315/2004 regarding the regional development in Romania with the purpose of offering a legal support for the proper management of the eight regions. Consequently, the Regional Development Agencies were designated as intermediary bodies for the implementation of the Regional Operational Programme from 2007 to 2013. From a legal perspective, Regional Development Agencies are nongovernmental public organizations (NGOs) whose main role is to contribute to sustainable and equitable development of the region by removing disparities and imbalances for the benefit of its inhabitants. Thus, roughly, the objectives of the Regional Development Agencies are:

- to elaborate and implement plans and strategies in order to reduce regional imbalances by stimulating balanced

developments, and to foreseen and prevent new imbalances;

- to link regional policies by stimulating initiatives and by building local and regional resources for sustainable socio-economic and cultural development;
- to efficiently use human and financial resources (EU funds) to assist the human community;
- to participate and get involved in European structures and organizations with the goal of establishing sustainable partnerships for the development and implementation of common interest projects in accordance with international agreements to which Romania is an active party.



Fig. 1 Administrative-territorial division of the Romanian regions of development (after the Green Paper on Regional Development, Bucharest, 1997)

Geographically, a region is a way of analyzing the spatiality of a society, more exactly an operational form in space analysis. Although there is no universally accepted definition of the region, it allows the study of spatial-temporal ordering of human activities, spatial interaction analysis [Benedek, J., 2004, p.31].

The territorial planning and development gives a "geographical expression of the economic, social, cultural and ecological politics of the society" [Charter Torremolinos, p.11], while being an "important tool for the evolution of the European society", the intensifying of the international cooperation in this area representing a "substantial contribution to the consolidation of an European identity" [Charter Torremolinos, p.12].

"The purpose of any organizing and planning action consists in reaching that territorial optimum, translated into welfare and social peace emerging from mingling of the material and social environment harmony of the mankind with the

harmony of nature, namely the establishment of a geographical harmony "(V. Surd, 2005, p. 11).

The process of territorial planning and sustainable regional development must be developed from an existent foundation based on the use and exploitation of information and data, which define, characterize or provide a geographic, demographic, economic, environmental real image at the regional level. Most of these data have a spatial reference and they can be managed in a geospatial system, analyzed, processed and modeled with Geographic Information Systems technology (GIS) in order to provide an objective support in formulating policies and measures on the implementation of territorial planning, but also to formulate regional sustainable development scenarios.

Based on a four years activity in the planning department at the Central Regional Development Agency (ADR Central), and after extensively analyzing the planning and regional development process in the eight development regions, the following observations have been noted:

- lack of a data collection system for the indicators used in regional planning;
- lack of a cartographic support at the regional level;
- little or no implementation of modern technologies (eg GIS) as a working tool in planning and regional development;
- neglect of the importance of geospatial information and data management that support the development of regional strategic documents;

In this respect, the present paper emphasizes the importance that an interoperable geospatial system plays in ensuring a planning and regional development process, through identifying a suitable regional geospatial solution based on a strategic vision and a concept of planning and sustainable development supported by the implementation of six projects.

2 The appropriate geospatial solution - key to planning and regional sustainable development

Assuming that many scientists accept the idea that the region is the most adequate description of space, we believe it represents a useful tool for ordering geographical facts. Meanwhile, the regional development represents a territorial planning concept specific to sub-national levels of society, a process which must have as its starting point the

existence and development of a geospatial database. Territorial planning and development includes those "actions consciously influencing location and spatial structures [Benedek, J., 2004, p.22].

Usefulness of geospatial technology in planning and regional development

In order to ensure sustainable development at the regional level the following main objectives need to be followed:

- strengthening the cohesion and the local and regional government's capacity based on the analysis of the existing situation and correlation and development of integrated inter-institutional plans;
- prioritization of concrete proposals for technical solutions to regional problems, based on the analysis of the impact of possible implementation scenarios using geospatial solutions.

Implementing an integrated geospatial solutions' development at the regional level is an important step in ensuring the process of sustainable regional development and territorial planning through using modern tools. Efficient management of a territory may be best realized by using the Geographic Information Systems (GIS) technology, thereby facilitating the development of maps for any type of spatial reference data.

The use of the most suitable geospatial solution as a modern tool for planning and regional development has several advantages, such as:

- providing a framework for integrated spatial planning by offering a centralized and complex database management for the entire region and means to generate sets of maps, from identification and representation of geographical elements to complex forecasting, prediction, analysis and spatial modeling;
- ensuring a consistent and transparent support to substantiate funding priorities for the region and to identify opportunities for the development and implementation of projects;
- providing a fast and efficient decision support in order to help instituting regional policies by the Regional Development Agencies;
- increasing the efficiency of local, county and regional governments by using modern geospatial solutions, as well as through the

- use of standards in planning, territorial planning and management;
- increase of transparency and of the visibility of the activities and policies of partner institutions in working with local, county or regional projects;
 - increasing citizens' awareness on sustainable regional development policies;
 - offering the possibility of instant reporting on all levels of local, central and European administration through a geographic information management system based on the operating principle of interoperability;
 - providing the decision factor and the business and research environments with a common framework for the use of a Geospatial language approach to sustainable regional development process, and thus, with the opportunity to work in conjunction;
 - developing appropriate tools for the formulation of regional development scenarios;
 - statistical data aggregation and fast and efficient management of a database of statistical indicators geospatially represented, indicators utilized in the process of planning and regional development and correlated with indicators of sustainable development (IDU) at the European level
 - offering the possibility of completion and validation of statistical data sets by the actors involved in the regional planning and development process through the use of modern geospatial tools (WebGIS application), at the same time with the possibility of publication of development policies, of the actions and results related to territory planning and development, in order to reduce disparities and attract investors;
 - aligning the Romanian geospatial technology and the Spatial Data Infrastructure (SDI) with EU standards;
 - providing the geospatial solution with an opportunity to generate income through business advice incubators based on existing information in the regional database.

Factors and the current regional planning and development process situation in Romania

Unfortunately, the planning sector of territorial development has been largely abandoned by current field studies on the basis of the assimilation of the term in a centralized statist economy. It is often omitted that good planning and organization of space is by far a source of national income growth, a desirable form of primary lever of "control and systematic management of the national geographic space. As commonly known, the engine of regional development consists of an optimal temporal association and ordering of three factors, namely labor, technology, and capital. (V. Surd, Lecture notes, UBB, 2009).

In ensuring a sustainable and balanced regional development, the process of territorial planning and development results in a partnership between experts and representatives of the main decision-making institutions belonging to both business and scientific (research) environments. The main factors underlying the objective process of planning and regional development are:

- detailed knowledge of local realities in the region;
- existing data sets and information for the indicators used in regional planning;
- existence of relevant working tools in the planning process and regional development analysis and research methodologies, GIS applications, etc.
- existence of a vision and of a macrostrategic approach of the policy makers and decision factors on sustainable and balanced regional development;
- strategic and programmatic documents drawn up at the regional level (eg Regional Development Plan - PDR, Regional Development Strategy, Regional Territory Development Plan - PATR) and their correlation with national policies and actions;
- partnerships with relevant regional actors in ensuring a sustainable regional development;
- good management of funds;
- attracting sources of financing for the development and implementation of strategic projects to alleviate imbalances and to attract investors;

At present, the concept of Regional Territory Development Plan, and that of the Regional Development Strategy is not implemented in all the regions of development. (Eg, PATR – Northwest RDA, SDR- West RDA).

The process of regional development proposed by the Regional Development Agencies is focused on two main objectives:

- providing the optimum implementation of the Regional Operational Programme 2007-2013 (actions aimed at dissemination to potential beneficiaries of funding sources, evaluation, selection, contracting, providing assistance and support for implementation and monitoring of priority projects submitted to the axes of the POR implementation procedures) as an intermediary body of the Ministry of Regional Development and Tourism;
- developing partnerships, attracting sources of financing and implementing projects whose objectives are found in the sustainable regional development policy.

Starting from the idea that ensuring sustainable development has its origins in an objective and efficient implementation of the territory planning and development process based on strategic thinking and an interoperable geospatial database, it has been found that there is currently no short, medium and long term strategy developed by the Regional Development Agencies. Similarly, there is no centralized database of relevant indicators for the planning process at the regional level, and no specialized personnel (with some exceptions) to utilize and develop appropriate solutions for the management and exploitation of geospatial data based on which to implement regional policies.

There are also several regional initiatives for implementation of geospatial technology aiming to the development of geospatial data sets and maps to support strategic documents, or the creation of the data harmonization framework in accordance with Directive 2007/2/CE on the establishment of a Spatial Data Infrastructure in the European Community. Two examples are represented by the Central Regional Development Agency ("Regional Atlas - Central Region" study "Cartographic Valorification of the Population and Housing Census 2002") and the Northwest Regional Development Agency (implemented in partnership with 23 member countries of the European Union the project "Plann4all: European Network of Best Practices for Information Interoperability of Spatial Planning Information", developing and implementing a GeoPortal system in WebGIS, " Interactive Map - Projects funded from POR in Northern Transylvania).

The macrostrategic vision of regional planning and development in Romania through the use of geospatial solutions

"The territorial planning macrostrategies originally derive from the limited land as a means of production (V. Surd, 2005, pag.11).

The implementation of geospatial solutions suitable for the regional development level and beyond, must be based on:

- macrostrategic thinking that allows a comprehensive view on the process of regional development from a future perspective, complexity of factors and the established links between them, and an ability to analyze both the opportunities and risks;
- an understanding of concepts, principles and functionality of GIS and its potential, the trends in the use and development of support geospatial solutions and applications in the regional planning process in accordance with the techniques used in developed countries of the Union Europe and beyond;
- objectivity in elaborating the resource plans at the Regional Development Agency (material, technical, financial, human, risk, etc.);
- developing partnerships and strengthening links with regional actors involved in regional planning;
- investment in qualification and professional training of employees in order to acquire the necessary competencies related to the use, implementation and even support of the development of geospatial solutions in regional planning and development;
- institutional involvement in activities focused on sharing experience and transferring the know-how with regional institutions of the European Union member countries in which modern tools and techniques of planning and regional development are being implemented;
- exploitation of research results in territorial planning, geographic space organizing, sustainable development, regional development, economic, social, and environmental development etc., as well as participation in scientific conferences that offer access to the latest information in the field.

3 Geospatial solution proposal - foundation of the macrostrategic approach and of the regional development vision

The present work aims at creating an opportunity to the development and implementation of a strategic concept of planning and sustainable development in the Regional Development Agencies based on an innovative instrument proposal focused on geospatial technology and implemented through six support projects.

The proposed geospatial solution is both the work of the actors involved in planning and regional development, while also representing an innovative tool that can be used in the process of planning for elaborating programmatic documents at the local, county and regional level for the period 2014-2020. Furthermore, the geospatial solution envisages the adoption of the European directive INSPIRE (Directive 2007/2/CE) by the Romanian legislation by offering the possibility of spatial data publishing in an electronic format at a regional and local level.

At the regional level, the interoperability of geospatial data in order to facilitate the decision-making process can be achieved through the use of a geospatial solution from a series of priority goals (A-E) correlated with the expected results (F-J), as presented in the figure below:

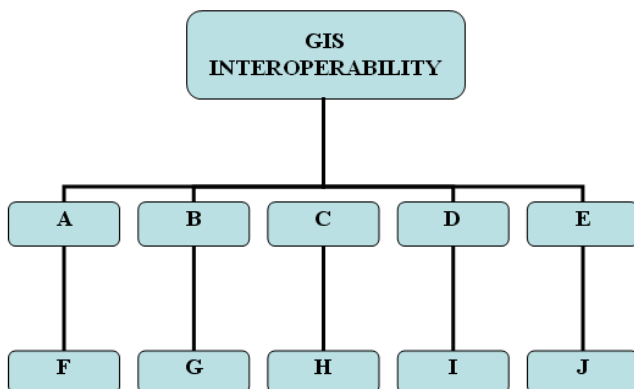


Fig.2 Proposed concept of integrated territorial planning and regional development based on the interoperability of geospatial data

Where to:

A - Identify and create a sustainable and flexible geospatial platform;

B - Create complex geospatial data at the administrative-territorial unit;

C - Develop scientific methodology approach to integrated territorial planning and sustainable regional development;

D - Identify disparities, risk and sustainable regional development potential;

E - Manage the dynamics and complexity of the region and facilitate best decisions making;

F - Know the reality of the territory and the main phenomena;

G - Create the working environment in partnership with local authorities;

H - Transfer the know-how in between the research and decision-making environments;

I - Get the involvement of the business environment in establishing economic development priorities;

J - Completion of activities by involving all relevant regional actors in the sustainable and balanced development of the region.

The architecture of the geospatial solution at the regional level is based on the development and the successive implementation of six projects in which the applicant (project leader) is the Regional Development Agency:

Project No. 1: Flexible geospatial solution within the region of development to facilitate the regional planning process and to establish a partnership with the county authorities.

- Implementation period: 2 years;
- Partnership: county councils;
- Geospatial solution: purchase of equipment and services necessary to establish a sustainable and flexible GIS platform with expansion possibilities in the future (desktop and server hardware, desktop and server GIS software);
- Expected results:
 - GIS platform at the developing region level;
 - geospatial database for the region: regions' limits, counties, administrative-territorial units, zoning of built-in areas, hydrographic network, transport infrastructure;
 - geospatial application dedicated to managing a complex relational database;
 - architecture and textual database with statistical indicators relevant to regional planning (based on PDR and PATJ);
 - WebGIS portal to promote the region by offering access to thematic maps for different indicators (geographic, demographic, economic, transport, environment, tourism, etc.)

Project No. 2: Expanding the geospatial database and integration of data related to the existent tehnico-edilitary infrastructure and

establishing a partnership with relevant regional operators.

- Implementation period: 2 years;
- Partnership: major regional operators in the field of: electricity, methane gas distribution, water supply, etc.;
- Geospatial solution: purchase of GIS software and equipment and specialized services for partners who do not benefit of the geospatial technology for achieving and managing databases;
- Expected results:
 - expansion of the database structure by introducing statistical indicators for the technical-edilatory infrastructure and its correlation with existing GIS database at the regional level;
 - completion of the spatial database with the cartographic representation of the technical-edilatory infrastructure;
 - providing data sets and information required for the elaboration of documentation, analysis, studies and development strategies at the local, county and regional level;

Project No. 3: Expanding the existent geospatial database to the administrative-territorial unit (UAT) and insuring local authorities within the region of development with access to the central database with the purpose of publishing, completing, updating and validating data.

- Implementation period: 4 years
- Partnership: County Offices of Cadastre and municipalities of the county, cities, towns and villages;
- Geospatial solution: setting up the web-GIS application for editing, updating and integration of geospatial data provided by the city hall;
- Expected results:
 - WebGIS application configuration for editing, updating and integration of geospatial data provided by the city hall;
 - geospatial database completion with topographic features that define the administrative units managed by mayors;
 - extending the database structure for defining sets of statistical indicators for each administrative unit;
 - completion of the geospatial database development background in the region by providing a very high degree of detail (at the UAT level);

- offering the possibility to use modeling and processing of large volumes of geospatial information and data integrated into a complex and dynamic WebGIS.

Project No. 4: Valuing efficient centralized database and geospatial solution based on scientific methodology developed in partnership with the research groups.

- Implementation period: 3 years
- Partnership: Academia: universities and research centers in the region of development;
- Geospatial solution: the integration into the existing GIS platform of geospatial applications based on the exploitation of research results and development of appropriate scientific methodologies useful in insuring planning and regional development of good quality;
- Expected results:
 - development of scientific research methodologies for sustainable regional development;
 - exploitation of research results to improve planning and regional development;
 - development of tools for calculation, analysis or prediction that can be integrated into the geospatial solutions through the development of computational algorithms based on the existing indicators in the structure of the alphanumeric and geospatial database. The starting point in developing the algorithms is represented by the particular region, the connections that exist between statistical indicators, principles and concepts underlying the socio-economic sustainable development;
 - integration of computational algorithms in the existent geospatial application and development of interfaces through which complex maps might be generated based on spatial analysis and modeling;
 - transfer of know-how.

Project No. 5: Extension of the existing geospatial solution in order to facilitate the achievement of goals and objectives regarding the sustainable economic development and establishment of a partnership with the regional business environment.

- Implementation period: 3 years;
- Partnership: the business environment : Companies located in the region of

- development and focused on areas such as renewable energy, agriculture, tourism, etc;
- Geospatial solution: integration of relevant indicators into the existing geospatial database for the monitoring of the economic development process and identification of development opportunities to attract new investors;
- Expected results would rely on:
 - expanding GIS applications by introducing new indicators relevant to the economic development, and defining the relationships between them and the existing indicators based on the methodology of development in partnership with the research environment;
 - elaborating complex areas of analysis and spatial modeling regarding the undertakings of major economic agents and generating reports on the economic situation and trends;
 - identifying areas with potential for attracting investments based on data sets and maps;
 - insuring efficient communication and support to the business environment in the process of regional economic development.

Project No. 6: Development of geospatial solutions and GIS integration into existing application data recorded from real-time monitoring devices and establishment of a partnership with institutions working in areas of rapid intervention.

- Implementation period: 3 years
- Partnership: Emergency Agencies (Firefighters, SMURD), the County Police Inspectorate
- Geospatial solution: acquisition of equipment and software dedicated to real-time monitoring and data integration in the geospatial solution.
- Expected results:
 - providing a technical support for real-time surveillance and data recording regarding the monitoring of possible emergency situations by authorized institutions;
 - purchase of a monitoring network for security and easy identification of various emergency situations in urban and rural areas;

- extension and development of the geospatial application by integrating real-time data from the territory recorded by monitoring devices;
- improving rapid response services in a timely manner by identifying the best intervention solutions based on access to information about the territory and various traffic conditions;
- effective management of the region of development by using a complex and dynamic database with real-time monitoring capabilities for different events;

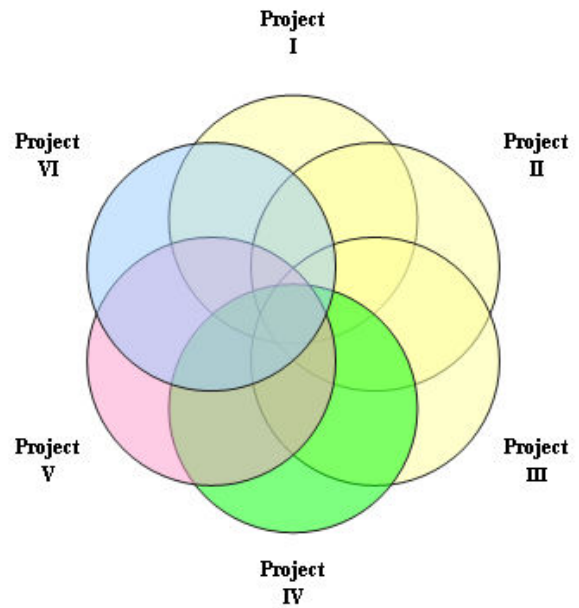


Fig. 3 Image symbolizing the regional partnership and the enhancement of existing interconnections between the six projects

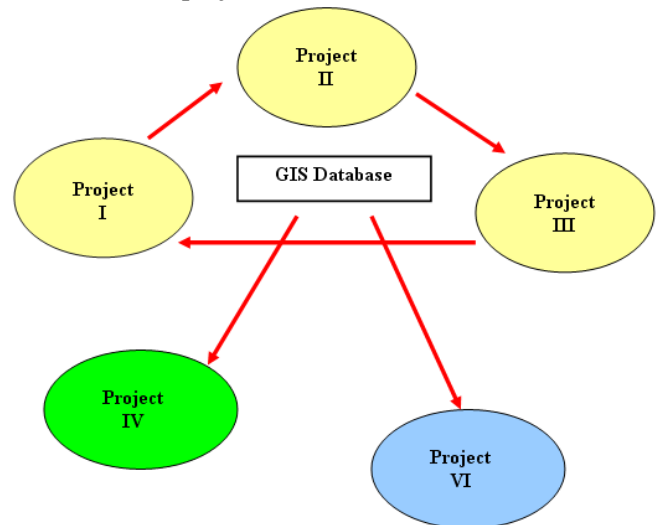


Fig. 4 The sequence of implementation of the six projects (at the region of development level) and the highlighting of their direct relationship

4 Conclusions

From the sustainable development perspective and based on GIS technology the concept of planning and regional development relies on two important aspects:

- knowledge of GIS technology and of the fact that it only represents a tool, the importance being attributed to the design approach of the most appropriate geospatial solution;
- deployment of regional development activities, implementation of projects with European funding, studies and elaboration of strategic documents in the “Central” Regional Development Agency.

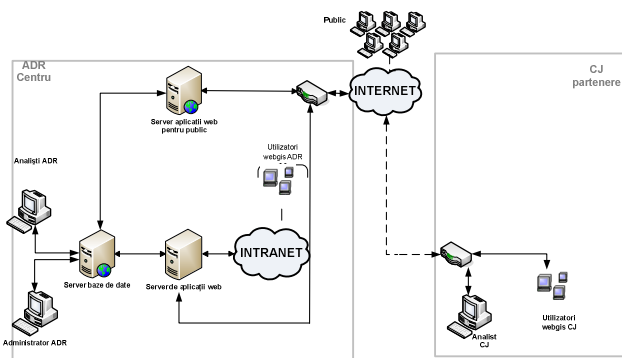


Fig. 5 Proposal for the architecture of the geospatial solution for the Central Region

The proposal for a geospatial solution (Fig.5) combined with the identification of a partnership and of appropriate funding sources, resulted in the materialization of the first steps in the development of the project number 1 based on the use of GIS technology, as well as the establishment of links between the decision-making factors at the county level through a geospatial language. By analysing the proposal idea to implement a geospatial solution, Central RDA has made the necessary arrangements for the development of the project "Development of modern tools in the Central Region Planning using GIS technology", receiving financing in 2009 through the financial mechanism of the European Economic Space. The project aims to lay the foundation for achieving a sustainable regional GIS platform with future expansion possibilities. The project was developed based on:

- Central RDA and county councils' experience with using GIS;

- potential needs of the Central RDA in ensuring an effective process for sustainable regional development;
- the role and involvement of regional actors in the sustainable development process of the Central Region;
- The European Commission Directive INSPIRE regarding the Spatial Data Infrastructure (SDI)

After analyzing the specifics of the eight development regions of Romania a few conclusions were presented in the SWOT analysis below:

○ Strengths:

- diversity of regions with potential for sustainable regional development (geographic diversity, the existence of natural resources with potential for recovery, the existence of a specific ethnographic and cultural heritage of each region, the existence of a high tourism potential recovery, existence of favorable bio-pedo-climatic conditions for agricultural development and the production of renewable energy);
- implementation of strategic projects at the regional, national or international level in each of the Regional Development Agencies;
- existence of a large volume of statistical data which can support with the creation and development of the database proposed through the geospatial solution, database resulted from the activities taking place in the departments of the Regional Development Agencies as well as from the cooperation protocols signed with various institutions (eg the National Institute of Statistics);
- opening to improving and streamlining the planning process and regional development;
- competencies in attracting suitable funding sources and writing eligible projects.

○ Opportunities:

- existing national funds and external financing;
- access to information on funding programs and priorities at European level regarding the sustainable and balanced regional development;
- staff experience with the development, evaluation, implementation and monitoring of projects financed from external funds;
- existence or the opportunity to develop partnerships with representative institutions in the area of sustainable regional

development from the European Union member countries.

○ **Weaknesses:**

- bureaucracy;
- very low level of knowledge of the utility and functionality of the GIS technology by the staff working in the field of planning and regional development at the local, county or regional level;
- low degree of open-mindedness toward the refocusing of the planning process based on modern technologies.

○ **Threats:**

- high price of hardware and software solutions required in the implementation of GIS;
- decentralization of public administration and misunderstanding of this phenomenon by the employees of the aforementioned institutions;
- difficulties in forming sustainable partnerships for the implementation of the geospatial solution focused on the development of six projects support due to financial factors (lack of funds available to cover co-financing projects), political factors, etc.

Access to information, macrostrategic approach and prediction of the planning and regional development process represent important factors in designing and implementing the appropriate geospatial architectural solution development for each separate region of development

References:

- [1] Alexandru, Diana.; Zotic, V. (2010), A Geographical Perspective on SAPARD Programme. Financial Absorption and its Influence on Rural Development in Romania. *Bulletin of University of Agricultural Sciences and Veterinary Medicine*, Volume 67, Issue 2/2010, AcademicPres, ISSN 1843-5254, pp. 11-18.
- [2] Benedek, J. (2004), *Amenajarea teritoriului și dezvoltarea regională*. Editura Presa Universitară Clujeană, Cluj-Napoca
- [3] Candea, Melinda, Bran, Florina, Cimpoeru, Irina (2006), *Organizarea, amenajarea și dezvoltarea durabilă a spațiului geografic*. Editura Universitară București
- [4] Ianoș, I. (2000), *Sisteme teritoriale*. Editura Tehnică, București.
- [5] Mazilu, Mirela Elena (2008), The Globalisation, the Environment and economic security on the perspective of the European Integration. *Journal of Environmental Protection and Ecology*, Book 1, vol. 9, No.4, No.1099/ 23.10.2006, ISSN:1311-5065, pp .159-167
- [6] Mazilu, Mirela E., Ciobanu, Mariana (2009), A New Challenge in the Current Economic Stabilization. *ISI Scientific Proceedings WSEAS Press*. Prague, ISBN:978-960-474-063-5, SSN:1790-5109, pp.286-292
- [7] Săgeată, R., Gherasim, Virginia, Toderăș, T., Bud, Maria, Bucura, Claudia (2010), Changes in the Urban Functional Zones Triggered by the Development of Commercial Services, *Volume Selected Topics in Economy & Management Transformation, I, 5th WSEAS International Conference on Economy and Management Transformation (EMT'10)*, Timișoara, WSEAS Press, p. 27-32.
- [8] Surd, V. (1997), *Geografia dezvoltării și a decalajelor economice contemporane*, Editura Presa universitară Clujeană, Cluj-Napoca.
- [9] Surd, V. (2001), *Geodemografie*. Editura Presa Universitară Clujeană, Cluj-Napoca.
- [10] Surd, V. (coordinator), (1999), *Rural Space and Regional Development*, Editura Studia, Cluj-Napoca.
- [11] Surd, V. (2003), *Geografia așezărilor*, Editura Presa Universitară Clujeană, Cluj-Napoca
- [12] Surd, V., Bold, I., Zotic, V., Chita Carmen (2005), *Amenajarea teritoriului și infrastructurii tehnice*, Editura Presa Universitară Clujeană, Cluj-Napoca.
- [13] Surd, V. (2009), *Forme specifice de organizare a spațiului geografic și amenajarea teritoriului*, Lecture notes, Doctoral school – Geography, “Babes-Bolyai” University
- [14] *** (2006), Agency for Regional Development Centre, Cartographic Recovery of Population and Housing Census 2002 http://www.adrCentral.ro/Document_Files/ADS_tudiiRegionale/00000074/scrmd_ADR_20Central-analysis%%202002.pdf
20Recensamant
- [15] *** European Spatial Planning Charter. Torremolinos Charter adopted on the 20th of May 1983 in Torremolinos (Spain) at the European Conference of Ministers responsible for spatial planning http://www.mdrl.ro/_documente/dezvoltare_teritoriala/amenajarea_teritoriului/Carta_Torremolinos.pdf
- [16] *** (1997), the Green Paper on Regional Development, Government of Romania, Bucharest

- [17] *** Directive 2007/2/CE on the establishment of a Spatial Data Infrastructure in the European Community - published on 14/03/2007 and adopted by the European Parliament and Council
- [18] *** Regional Development Law 151/1998. Law no.151 of 15th of July 1998 on regional development in Romania, Published in the Monitorul Oficial (Official Gazette). 265 of July 16, 1998, Law adopted by the Romanian Parliament
- [19] *** Law. 315/2005 on regional development in Romania. Law nr.315 of 28/06/2004 published in the Monitorul Oficial (Official Gazette), Part I no. 577 of 29.06.2004 and adopted by the Romanian Parliament
- [20] *** Project Plan4all: European Network of Best Practices for Interoperability of Spatial Planning Information
http://ec.europa.eu/information_society/apps/projects/factsheet/index.cfm?project_ref=ECP-2008-GEO-318_007