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Implementing GIS Technology for Spatial Data Management at National and Global Level in Republic of Moldova

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Summary

The estimation of a condition of sphere of geoinformation recourses of Republic of Moldova is carried out and the basic ways of creating a national infrastructure of the spatial data of Republic of Moldova as priority direction of the program of development of land activity and national mapping in Moldova are determined from 2003 to 2010. Participation of Moldova in international project Global Mapping is covered.

Background and problem relevance. A communications and IT revolution is taking place in the world today and this affects our lives, services, relations and behavior. The rapid development of GIS technology penetrates our daily life: GIS is ever more evident in education, business, manufacturing, planning and public governance with an impact on planning, management and maintenance systems.

Over the past ten years Moldova has come a long way on IT use – from automating separate mapping & surveying operations at the national level to integration of GIS mapping systems for development and implementation of *Spatial Data Infrastructure Projects* at global level, including: 1994 NSDI USA – National Spatial Data Infrastructure, 1994-1997 – Global Mapping, GSDI – Global Spatial Data Infrastructure and many more.

The problem with spatial data collection and processing for building a Spatial Data Infrastructure in Moldova is that in the mid-90s the *State Program for Mapping Updates* was cut short due to economic constraints of the transition period. At the same time, the administrative and land reforms undertaken in the county brought about changes in boundary patterns and geographical names of places.

Considering that collection and updating of geospatial data for mapping materials is done at a large scale, it is necessary to decide on building the *Spatial Data Infrastructure for Moldova* based on source geographic data, digital methods of geodetic surveying and GPS, remote sensing and digital photogrammetry. This technology requires a new infrastructure comprising the following components:

- topography & geodesy data bank;
- digital terrain model database for the whole country; and
- unified system of classification and coding of topography objects and their attributes.

GIS ESRI, Intergraf, MapInfo and Oracle could be employed to serve as the technological base. The *state mapping databank* (SMDB) may serve as a unified mapping database for the country.

The principle for building the *state mapping databank* is to coordinate the identification of mapping objects with State Standards, Classifiers and Registers of industry related authorities. This will ensure the coordination between the mapping database and the classifiers of related organizations and also will allow for the possibility to produce automatically thematic maps with additional data collected from relevant organizations.

Considering the globalization of information technology and strong implication of standards in global GIS projects, accession and reference to ISO 19100 standards and harmonization of rules and regulations would be the most effective way to address this problem.

Integration into the world environment. Global mapping was initiated at the UN conference on “Human Environment” of 1997 where it was stated that global environmental problems should be resolved based on global cooperation and therefore, international organizations and institutions should develop and provide global mapping.

Our Agency is actively cooperating in the GlobalMap project which was initiated during 1992-1994 by the Government of Japan. In 2001 Moldova became an active member of EuroGeographics where we agreed to participate in GlobalMap and SABE (Seamless Administrative Boundaries in Europe) Projects.

Databases are developed with specifications by partitions into $1^0 \times 1^0$ with file identification in GEOREF system. The system of coordinates is ITRF 94. Data production in WGS 84 is accepted.

GlobalMap project is supported by the International Institute ESRI. In 2002 ESRI announced a Grant Program in memory of “John Jack Estes” under which 100 countries, including Moldova, received technical assistance estimated at 60 000 US\$, covering advance technologies for spatial data processing: ArcGIS (ArcInfo 8, ArcSDE 8, ArcIMS, ArcPLTS) and training support.

The ESRI methods will allow our specialists to develop geographic databases in compliance with GlobalMap specifications – unified interface base OpenGIS.

Conclusions

- Building and supporting GIS sources in priority development areas of GIS industry for the next 10 years.
- The complexity of implementing similar projects requires the mobilization of funds, organizational and intellectual resources to address issues related to implementation of GIS technologies at national and global levels.
- *A Spatial Data Infrastructure Concept* is required to improve the situation.
- The intellectual potential needs to be consolidated by organizing seminars and conferences at national and international level aimed at creating the spatial data infrastructure at the national level.

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