

Improvement of Effectiveness – Present Developments in Hungarian Land Administration

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SUMMARY

New Act on Surveying and Mapping Activities in Hungary (adopted by the Hungarian Parliament on 7th May 2012, came into force on 1st January 2013) has generated a lot of tasks and opportunities in the development of Hungarian Land Administration. Maintenance, development and operation of Land Administration databases and IT systems became the responsibility of Institute of Geodesy Cartography and Remote Sensing (FOMI), independently from their physical place. FOMI became the National Archive of Land Administration and Remote Sensing Data. New Act introduced National Spatial Data Infrastructure, 3D Cadastre and other important issues which are great challenges in the future.

In accordance with the new legal framework several projects have been established related to the changes. These projects propose mainly the improvement of the effectiveness of Land Administration sector, including business procedures, informatics and services. The paper deals with these new projects, developments, solutions, which drives to a better performance and effectiveness of Hungarian Land Administration.

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1. INTRODUCTION

Hungarian Land Administration has old tradition based on the establishment of Cadastre-Land Registry in the ages of Austro-Hungary, at the end of the XIX. Century. The Cadastre and Land registry has been fully operational since then. Hungary was the only socialist country operating and updating the cadastre and land registry without any gap during the socialist period.

In 1972 a new legislation on the integration of Land Registry and Cadastral Mapping was introduced, which established the Hungarian Unified Land Registry and its institution named Land Office Network, which is responsible for the Cadastral Mapping and Land Registry activities. Institute of Geodesy Cartography and Remote Sensing (FÖMI), is a part of this system, it is the overall responsible institution of research and development, maintenance and data service. More information about Hungarian Unified Land Administration are available in this publication (OSSKÓ, 2008.)

In the mid of the 90's two, new acts has taken into force, which determine Land Administration activities, Act on Surveying and Mapping activities (1996), and Act on Land Registry (1997).

Technical development of Land Administration sector has been started at this time as well. At first step the legal part of the Unified Land Registry has been developed (TAKAROS system, 2000), then the Network of Land Administration Sector (TAKARNET, 2003) and its services were introduced and at the end of 2009, a new, integrated IT system, DATR (contains both the legal and cadastral part) were introduced. All these IT systems are the result of FÖMI's development work.

From 2000 all land records and from 2008 all cadastral data are available in RDMBS format. Act on Surveying and Mapping activities (1996) dealt with the traditional, paper based mapping, therefore a new legislation on these fields has been required. New Act on Surveying and Mapping Activities went into force at the beginning of 2013. New Act introduced map databases on the field of cadastral, topographic and remote sensing. New legislation deals with National Spatial Data Infrastructure (NSDI), 3D Cadastre, which are very important issues for the future development of Land Administration.

In order to achieve the goals of legislation new projects have been established, which are fit to concept of Digital Land Office. Digital Land Office concept defined middle-term renewal of informatics in Land Administration Sector after millennium. Most important element of the concept are the following: providing non-stop land registry services from a central database via internet, establishment of an electronic document repository, providing data change

management in land registry based on an unified structure central database, electronic transaction management.

The whole conception is carried out by FÖMI, financed by EU and National Funds, from which the Central Land Registry Data Service System, called TAKARNET24, put into operation in 2011. (IVÁN et. al., 2009.)

Integrated National Real Property Management System (INIK) project has started by FÖMI, in consortium with National Land Fund Management Organization (NFA), for the preparation of a unified structure and harmonized content central transaction database, which is also financed by EU and National funds. National Real Property Management System includes real properties, which are fully or partly owned by the Hungarian State. This system is a property management system for state owned properties and does not take over the role of Unified Land Registry. Most important goal of the project is renewal of IT systems of Land Administration by the usage of modern, central hardware infrastructure and software applications, which builds the foundation of introduction of central transaction database.

Beside INIK project FÖMI has successfully applied to EU and National funds for Establishment of Electronic Document Repository of Land Offices (DALNET24) project. Planned application will provide handling of documents and layout-plans of condominiums in an electronic document repository related to Land Office transactions. The new system based on electronic documents will provide back-office and front-office services on the fields of data services and Land Office transactions.

FÖMI also successfully received financial support for On-line Service of Digital Aerial Photography Archive (DLA) project. This project includes the digitization (scanning) of aerial photographs (with photogrammetric resolution), processing of aerial photography plans, approximate orientation of aerial photos and integration of them into a database, which will be served for the public.

This paper deals with the changes, affected by the new legislation, and the above mentioned projects, which would improve the effectiveness of Hungarian Land Administration.

2. EFFECT OF NEW LEGISLATION ON LAND ADMINISTRATION

The goal of Act on Surveying and Mapping Activities is to determine the tasks of the State in Surveying and Mapping and to establish a condition system, which provides map databases in a cost-effective way for the whole economy and society.

The main issues, which are handled in this Act are the following:

- State works and State Data
 - State Databases
 - Data Services,
 - Control Networks
- State Databases
 - Database of State Boundary

- Database of Control Points,
- State Cadastral Map Databases,
- State Topographic Databases,
- State Remote Sensing Databases,
- Databases for State Defence,
- National Gazetteer,
- Archive Databases.
- Surveying and Mapping Activities
 - Mounting and measuring surveying marks
 - Ownership of surveying marks,
 - Protection of Surveying Marks
- Ownership of Surveyed Data
- Institutional Issues in Surveying.

New concept on Surveying and Mapping activities changed from the old, map-based regulation to database fundament. State Cadastral Map Database is the geometric part of the Unified Land Registry Database, which is defined in the Act on Land Registry. Unified Land Registry Database contains two main themes, Cadastral Map Database and the Database of Land Records, which must be integrated.

Topographic mapping activities are shared between the public (FÖMI) and military mapping agencies. Large scale (1:10 000) topographic mapping is the responsibility of public (FÖMI), while smaller scale topographic mapping belongs to the military mapping agency.

State Remote Sensing Databases are Orthophotos, Satellite Images, LIDAR (including Terrestrial LIDAR technics), Photogrammetric products, which production is financed by the State are also regulated. There is a very strict statement in the new Act, which really helps the renewal, updating and production of State Map Databases:” A copy of any map database product, of which production is fully or partly financed by public funds, must be provided for FÖMI, without any financial and natural compensation.” This means that every map database, produced in Hungary, of which production financed by public money, can be used for State level map database renewing, establishment. It is very important, if the financial resources in State Budget are generally low or not existed (like in Hungary). This statement really helps the Hungarian Mapping Agencies in their work.

New concept also includes 3D Cadastral issues, which determine that 3D parcels, related to Land Registry, should be stored in State Cadastral Map Databases. Because of the importance of 3D Cadastre solution (e.g. Condominiums in Hungarian Land Registry are registered since 1930’s as quasi 3D parcels), Hungarian Land Administration Sector now is elaborating the legal restrictions of 3D Cadastre. 3D Cadastre legislation will take into force at the mid of 2015.

New Act defines that the National Spatial Data Infrastructure (NSDI) should be based on State Databases. This provides a stable geometric frame for NSDI activities. In the prepared implementation rules of NSDI FÖMI is the central, governmental organization for the management of NSDI in Hungary, which is also an important issue in the life of the institute.

New Act named FÖMI, as the National Archive of Land Administration and Remote Sensing Data. Practically FÖMI has been such an archive till now, but now this role is legally confirmed.

Unfortunately, because of the public administration changes, Land Offices got off from the administrative supervision of Ministry of Rural Development in 2011. Administrative direction of Land Offices is the task of Governmental Offices under the Ministry of Public Administration and Justice, but the professional supervision remains at the Ministry of Rural Development. Land Offices lost their independent organization status, they became a part of Governmental Offices. This double authority, the missing independency, led to problems in many cases.

The introduced new legislation on Land Registry and Surveying and Mapping Activities really modernized the legal framework of Hungarian Land Administration, and FÖMI has just started to receive and understand the benefits and troubles of it.

3. IMPROVEMENT OF EFFECTIVENESS

New legislation has created the opportunity to establish new developments, architectures and to support the sustainable future of Land Administration system in Hungary. First steps of the development are three projects, which initiate the foundations of further challenges. All of these projects are financed by National and EU Funds.

3.1 On-line Service of Digital Aerial Photography Archive (DLA) project

On-line Service of Digital Aerial Photography Archive (DLA) project is based on the archive of aerial photographs stored in National Archive of Land Administration and Remote Sensing at FÖMI.

This archive contains approximately 412 000 photographs from 1950 till now. Project duration is only 1 year and the cost is about EUR 710 000, so FÖMI can cover only 15% (approx.. 62 000) of the total number of photographs, which are in the worst condition. Estimated time of processing of the rest 85% of photographs takes about six years, therefore FÖMI tries to find financial resources for the continuation of the project.

DLA project contains the following tasks:

- Establishment a metadata database for photos
 - Digitization of 4 157 Aerial Photography Plan, derived orientation parameters,
 - If no Aerial Photography Plan available, approximate position of photos determined by visualization,
 - metadata, orientation parameters derived from previous documentation
- Restoration, cleaning and scanning of photos
- Development a WEB interface for services on five levels:
 - Metadata services,
 - Reduced resolution photo services,
 - Native resolution photo services,

- Native resolution photo services with georeference data,
- Orthophoto production services based on ordering.

DLA project services will provide a flexible access to users for analyzing up-to-date and historical photogrammetric data for any purposes.

3.2 Integrated National Real Property Management System (INIK) Project

FÖMI and National Land Fund Management Organization (NFA) established a consortium for the implement the Integrated National Real Property Management System (INIK) project. Project duration: 2012-2014. Project cost: EUR 5 million.

Main objective of the project is to provide real-time Land Registry Data for State-owned Lands and Real-properties for Land Management purposes. FÖMI is the organization responsible for Land Registry services, while NFA manages State-owned Land and Real Properties. In the project FÖMI must provide database connections among National Assets Registries, develop a software solution, which uniformly register State Assets and tracing the changes in any Registry. FÖMI is responsible for the maintenance and development of the system. Architecture of INIK IT system is shown on Figure 1.

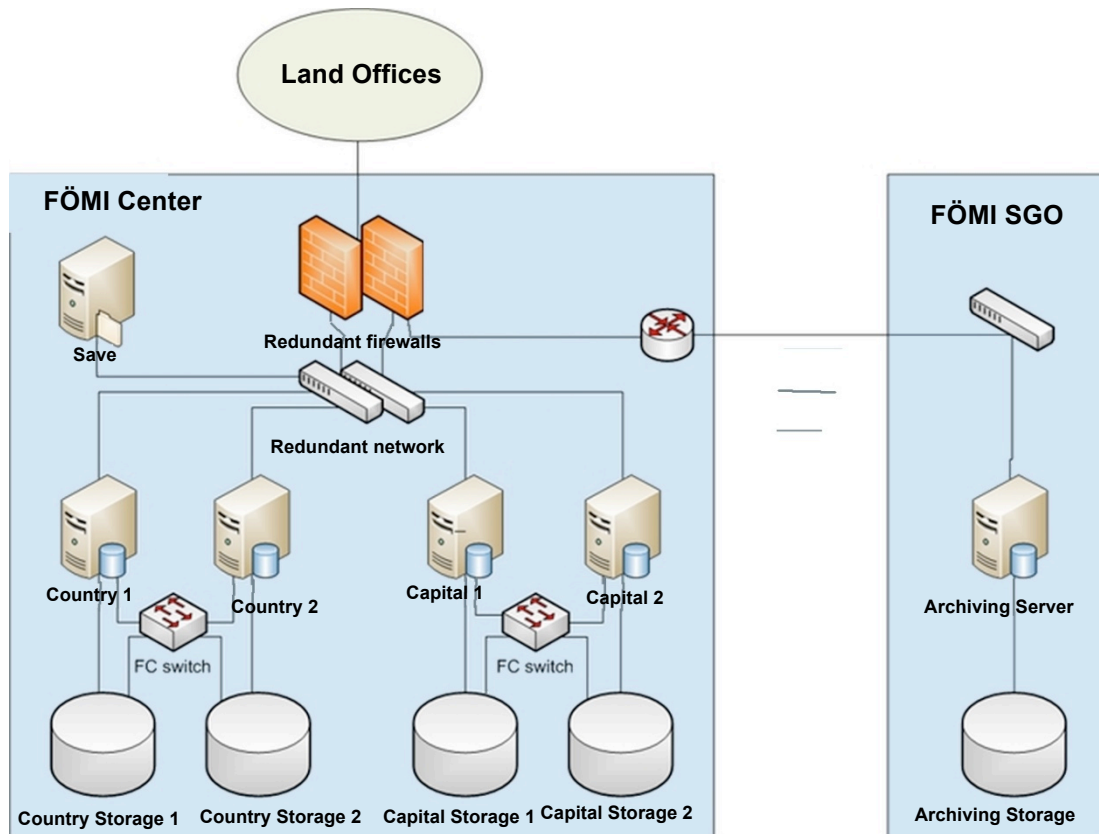


Figure 1.: Architecture of INIK system

At FÖMI Center redundant firewalls and redundant network is responsible for the safety operating of INIK system. All Land Offices' Unified Land Registry Databases physically will

be operating at FÖMI, Land Officers will have access to their databases via thin-client architecture. For the maximum safety of the system, the archiving procedures will be executed at Satellite Geodetic Observatory (SGO) of FÖMI, which physically totally separated from FÖMI Center (FÖMI SGO is operating at Penc, 40km away from Budapest, from FÖMI Center).

FÖMI's development work covers the following activities in INIK project (DOROSZLAI, 2013):

- FÖMI centralizes all Land Registry, Land Leasing and Cadastral Map Databases at the institute to provide foolproof services for all State Assets Registries,
- Central informatics support for the centralized database farm,
- Because of the grown dataflow and data services, providing higher capacity network solutions, including hardware and software development,
- Redevelopment of FÖMI established Land Leasing Registry IT system to ORACLE server architecture,
- Redevelopment of Billing Software System for the optimal network operation,
- Development of interfaces for the State Assets Registers,
- Development of software solution for supporting fast transactions, which related to large number of properties,
- Development of data services from all databases for licensed surveyors.

Pilot project in INIK has been successfully executed at the end of 2013. In this year the rest, the largest work has to do, to make INIK system operable till the end of the year.

3.3 Establishment of Electronic Document Repository of Land Offices (DALNET24) project

FÖMI successfully applied to the Establishment of Electronic Document Repository of Land Offices (DALNET24) project in 2012. Project duration: 2012-2014. Project cost is EUR 5 million.

Main objectives of the project are the following (DOROSZLAI, 2013):

- Central electronic document handling by the digitization of condominium contracts and layout plans of condominiums (“cadastral map” of condominiums),
- Processing of previous files, establishment of business procedures for processing new files,
- DALNET24 creates the foundation of further, wider-range document handling procedures,
- Front Office services to be developed:
 - Electronic copy of files for interested people,
 - Electronic copy of layout plans, as cadastral maps, for interested people,
 - Thematic lists about condominium information (rights, restrictions, responsibilities),

- Tracing of condominium establishment,
- Services about the status of cases for interested people via internet.
- Back Office services to be developed:
 - Support of Land Offices staffs in their work, based on the electronic document repository.

Structure of DALNET24 project is shown on Figure 2.

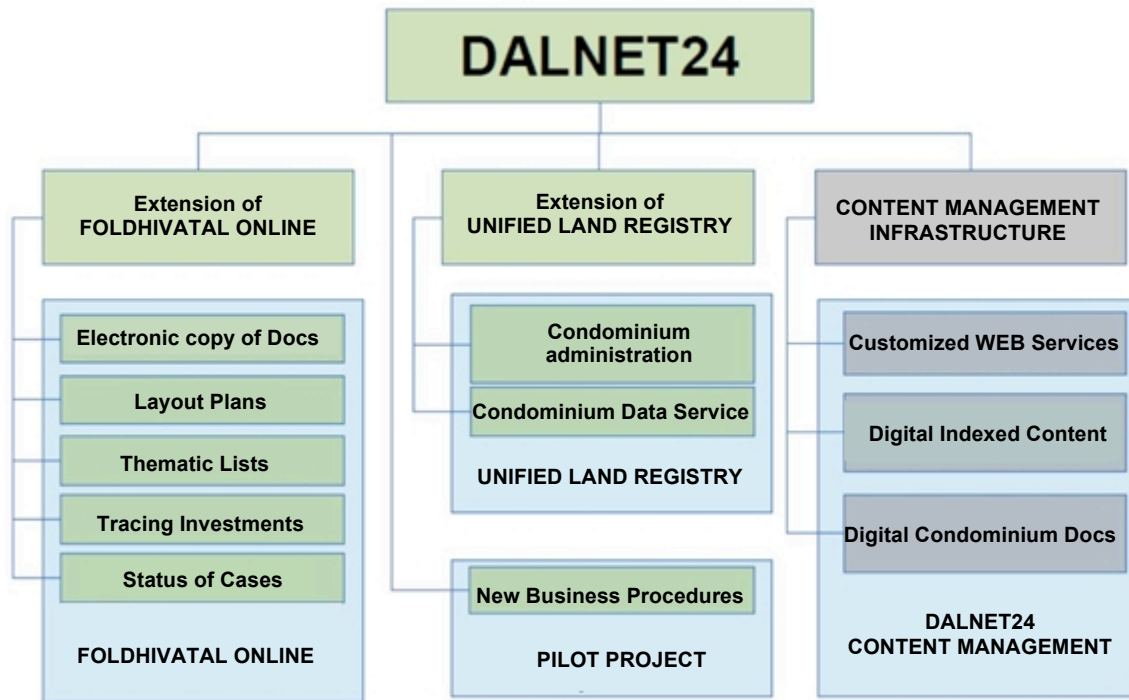


Figure 2.: Structure of DALNET project

Two existing IT systems are concerned by DALNET24 project development.

FOLDHIVATAL ONLINE is an online Service of Unified Land Registry Data for anyone, who registered him/herself at the Governmental Portal of Hungary. DALNET24 expand FOLDHIVATAL ONLINE services with the electronic copies of documents, layout plans. With the help of new services client will be able to get information from thematic lists, to follow the run of investments (condominiums), to check the status of cases interested in.

DALNET24 will modify business procedures and some schemas in Unified Land Registry Database. Digital condominium administration should be developed and introduces, and condominium data services must be introduced, including layout plans.

DALNET24 project requires a new content management infrastructure, which is a document repository, including the required applications as well.

In DALNET24 the planned new business procedures will be carried out only on pilot level.

DALNET24 project's planned finish is the end of 2014.

4. CONCLUSION

New legislation on Surveying and Mapping activities has given the opportunities and the foundation to continue the developments in a very effective, information technology based way in Hungarian Land Administration. Presented three projects make the basis for the further developments, which lead to a sustainable future and Land Administration.

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BIOGRAPHICAL NOTES

Gyula IVÁN (49): has a master degree in civil engineering (faculty of surveying and geodesy) from Technical University of Budapest, HUNGARY. He is currently the Chief Adviser of Director General of FÖMI. He was the vice-chair of administration in FIG Commission 7 (Cadastré & Land Management) between 2006-2010. He is a member of Hungarian Association of Surveying, Mapping and Remote Sensing, member of FIG.

András OSSKÓ (72): has a master degree in surveying and geodesy from Technical University of Budapest, HUNGARY. He is currently advisor at FÖMI. He was an international expert in the field of surveying in Nigeria between 1977-79 and 1982-86. Project advisor in Swiss supported Budapest INFOCAM Digital Cadastral Mapping project between 1993-95. Advisor and consultant in PHARE supported international projects. Member of Advisory Committee at Central European Land Knowledge Center (2002-2005). Consultant in Moldova First Cadastral Project (2007-2009). He is a member of Hungarian Association of Surveying, Mapping and Remote Sensing, member of FIG from 1971. He is a Member of Chamber of Judicial Experts from 1988.

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