

Test and Implementation of DATR System in Hungary

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Key words: unified land registry, cadastral map, Hungary

SUMMARY

During the last years there has been an important development in the Hungarian Land Administration. The new system, called DATR, provides authentic updating of the unified land registry. This system is an object-oriented map manager system and manages the digital cadastral map and the land registry together in an integrated way.

DATR is used in all the 123 district land offices are able to solve their tasks: integrated data service, geometric and legal part authentic updating.

In this paper the characteristics of DATR system, the test, the implementation period and connected activities are presented.

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1. INTRODUCTION

During the last years there have been important developments in the Hungarian Land Administration. FÖMI would like to achieve an e-Government Programme with these developments, which is a European Union-supported operative programme, namely the Digital Land Office Programme. The first project in this programme is the so-called Central Land Office Non-Stop Service System (shortly the TakarNet24) which started in December 2008, and will be finished by September 2010.

The result of these innovations will bring an important change in the Hungarian governmental administration, and these developments are the first steps towards a modern countrywide hardware system of high technical level for the land registration network [4,6].

Services will be available for citizens via the Central Client Gate as well as the Digital Land Offices.

Authentic and integrated real-property registry is one of the most important base data infrastructures in any country providing the sustainable development of the economy. This justifies the importance of developing the Land Administration.

2. THE UNIFIED LAND REGISTRY AND LAND ADMINISTRATION SECTOR

The Unified Land Registry Cadastral Mapping and Registration of Lands belong to the same organisation, the Land Office Network. Since the middle of 90's there have been developments in the Land Office Network. The main target has been to achieve an authentic updating of the land registry (real property registry) and cadastral maps together, where the mapping and land registry data are stored in one database.

All IT developments and support in Land Office Network are in charge of FÖMI (Institute of Geodesy, Cartography and Remote Sensing) [3].

In Hungary there are 19 County Land Offices and a Land Office of the Capital. In the 19 counties there are 118 District Land Offices. The daily update of the real property registry and Cadastral mapping are made by District Land Offices.



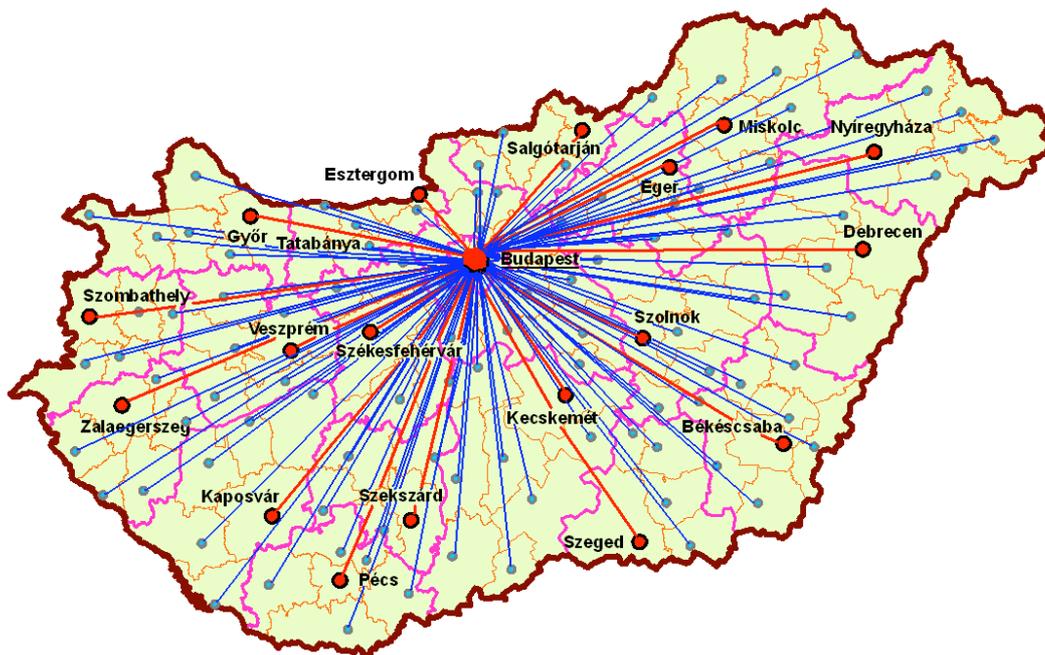
County Land Offices and District Land Offices in Hungary

3. HISTORY OF HUNGARIAN LAND ADMINISTRATION

One of the main steps to achieve the Unified Land Registry occurred when all legal part data were available in digital form (1997).

In 2000 the Land Registry IT system (TAKAROS) was completed. TAKAROS system contains an integrated real property registry with the digital cadastral maps. In this system the District Land Office can manage the changes in the legal part data (properties) [2,3].

In 2003 Network of Land Offices (TAKARNET) was carried out, therefore the Integrated Land Information Services have been available from 2003 via Internet for registered users. TAKARNET network connects all the members of the Hungarian Land Management sector, however, there is a limited public access to the system via Internet. All the registered users of TAKARNET have admittance to any data of the uniform real property registry [2].



TAKARNET Network

A significant step of the new development took place when in 2008 the digital conversion of the cadastral maps was completed, regarding the whole county in vector form and in the same projection system.

In 2003 FÖMI began the DATR development as the new solution for cadastral map management. According to the base of the scheme, the system should provide authentic updating of land registry and cadastral maps together. It should fit into the existing IT system in the Hungarian Land Administration and should cover all the business procedures in District Land Offices. In addition it should be independent from any commercial GIS software [3].

Since 2005 DATR has acted as the TAKARNET graphic engine for Land Administration network services.

4. DATR FOR LAND ADMINISTRATION

The Ministry of Agriculture and Rural Development made a decision in 2008 and ordered the implementation of the DATR system in district land offices. As a consequence of this decision FÖMI has restarted the development.

DATR is a DAT-based mapping system. The DAT standard (Digital Base Map Conceptual Model) defines an object oriented database scheme, it has been existing since 1996, and the DAT instructions have been existing since 1997. The role of DAT standard is to determine the objects included in the cadastral database, to define their geometric properties, connectional and qualitative characteristics and principles of their integration and metadata [1].

DATR is a new cadastral IT system for land offices. DATR is an object-oriented map manager system. It is important to point out that there is no map editor capacity – updating of maps is available only via database transactions.

DATR has a total integration and uniform database structure with the legal part of the unified land registry (TAKAROS system) and it has a modular self-calibrating architecture.

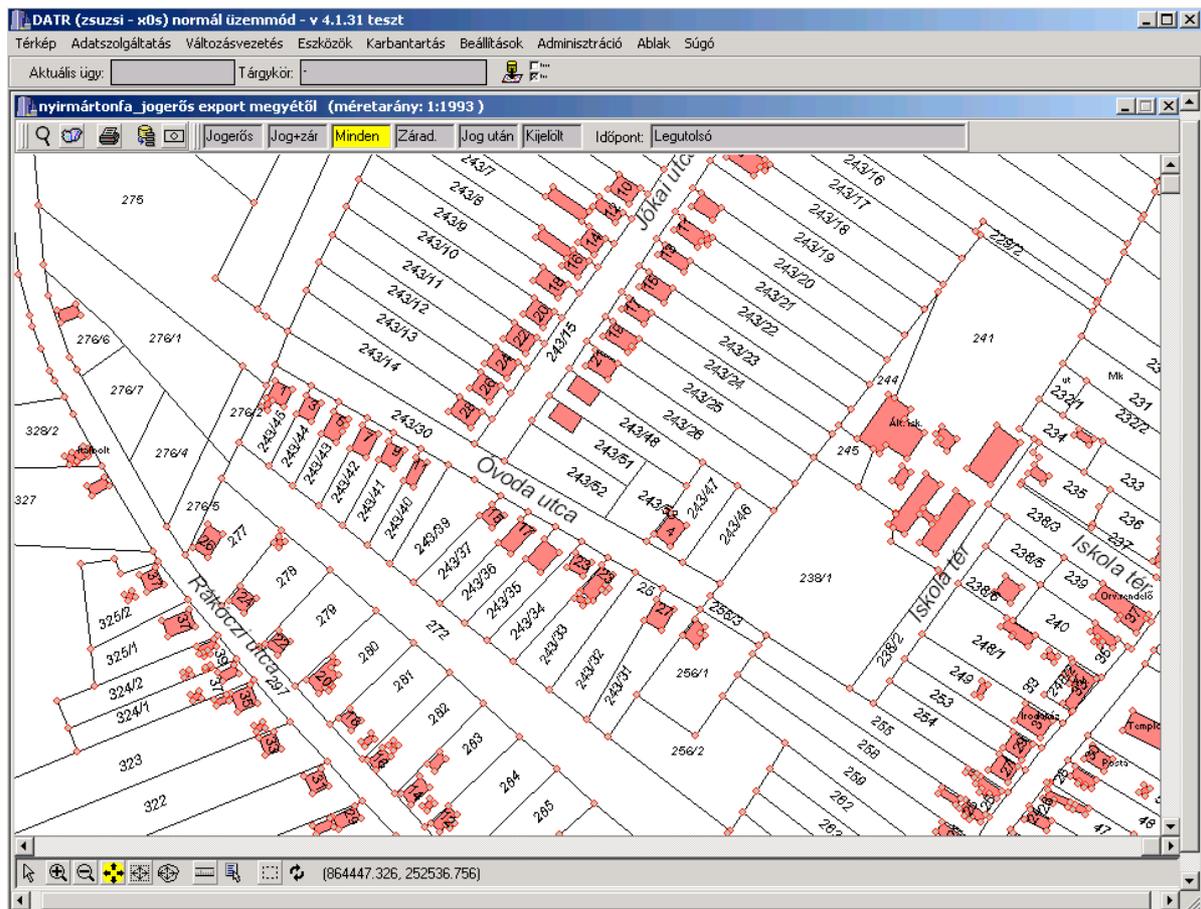
4.1 Test and development period

4.1.1. Arrangements

In March 2008 a development started in FÖMI. First task was to define the basis, including the declaration of the system structure and functions. The most important activities during the development period were to set up test servers, prepare input data and load the test databases. It was difficult to get input data because District Land Offices formerly used two different systems to manage cadastral maps. One of them was a vector based map editor and the other was an object-oriented system but unfortunately its database build-up was different from the DAT structure. FÖMI had to develop software to select data from this database and simultaneously convert these data to a correct database form. This "Selector" helped later to the District Land Offices to get bootable data.

4.1.2. First test

When the test databases were available all the functions and business procedures were tested. Writing a useful users' guide was also vital. All menus, functions and tools were collected and explained with a text and pictures in the users' guide. Additionally, some template business procedures were written.



DATR

After the first loading in April the essential operation was tested. In May one district land office joined the test and later altogether 8 district land offices participated in it. Project meetings ensured the possibility to exchange experiences and discuss proposals and solutions. The participation of district land offices was very useful because they will be the users of the new system.

4.1.3. Experiences after the first implementation

The February of 2009 is an important milestone in the project. That is, Békés county implemented the DATR system. According to the experiences of colleagues from Békés District Land Offices and after the occurring difficulties it was necessary to solve new developments and solutions in the system.

What difficulties needed new developments? First, input data brought along some mistakes stemming from the former system. Dissimilar database structures and the structure and logic of the programme caused some problems in the DATR after loading. When these problems had been solved, some Maintainer tools were inserted.

Second, regarding our experiences it has become essential to improve some developments in order to avoid typical errors. In other words, some control points are built in the programme

to enable users to check their work more times during the procedure and it also ensures a possibility to cancel the cause before validation.

The majority of problems originated from the fact that colleagues from District Land Offices had to use a completely new system. During the learning period they committed mistakes because they could not properly comprehend the integrated system, namely how to connect the mapping part (DATR) with the legal part (TAKAROS). To help using the system some extensions were put in. The most important functions got direct access in the users' guide to help users. Consequently, users may get information about the functions easily with only one click.

Another segment of problems involved the initial software errors which were corrected after version by version.

Before FÖMI published the new version, it had been first tested by the institute, then District Land Offices had had two more tests on it as well. Following the successful tests FÖMI issued the new software version.

In the spring of 2009 FÖMI had education programmes. Colleagues from all district land offices participated in a two-day programme where they could try the DATR and obtain knowledge about the integrated system.

In July of 2009 Pest and Bács-Kiskun Counties implemented the DATR system.

By the end of 2009 all district land offices implemented the DATR.

4.1.4. Support

During this period FÖMI ensures the technical and professional support as well as guidance, helps to implement the system and to solve the possibly occurring problems.

To communicate with colleagues from District Land offices FÖMI uses an on-line notice system where failures and problems can be registered. Naturally, the use of the telephone and e-mails is common. Moreover the system allows a direct contact between a client from FÖMI and the server in District Land offices. By all means, staff from FÖMI can - in an easier way - recognise and solve problems.

5. CONCLUSIONS

DATR is a system, which is flexible and effective enough to expand to the new IT challenges in Land Administration Sector.

The former cadastral information system developments could not solve the complete integration of the cadastral map and the land registry. Land offices were not able to handle the DAT based cadastral databases with land registry, therefore the databases were losing their actuality and it was possible to generate dissimilar databases.

The new system is using the same administrative functions and procedures like the operating TAKAROS real property registry IT system. In this way it is possible to develop an integrated system. Additionally the system supports real-time queries of TAKARNET network so on-line map service is available [5].

To sum up, the DATR development correlates to the new Land Administration developments. It is crucial because DATR will be the core of the Digital Land Office Programme. With the

use of DATR it is available to manage the cadastral map and land register together in order to ensure the integrity between the two databases.

FÖMI is the exclusive developer of the DATR, therefore the system is independent from several external effects. FÖMI ensures both the professional and the technical staff, which was a useful experience for three departments of FÖMI to work together in the project. Corporate work was edifying, colleagues learnt how to manage problems, how to harmonise a professional claim with technical (IT) possibilities.

The system is open, and extendable for international connections, which may be required in the near future. FÖMI is working on the development of the International version of DATR which is planned to be an internationally distributed freeware software [6].

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BIOGRAPHICAL NOTES

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Graduated Bachelor of Land Surveying in the University of West Hungary, Faculty of Geoinformatics of Székesfehérvár (Hungary) in 1998. She worked as an engineer for the DigiCart LTD. between 1998-2002. She participated in several domestic projects in cadastral work and she also took part in international projects in the same subject with French and Belgian partners. She joined FÖMI in 2002 and since then she has been in charge for engineering work. She has been involved in several national projects such as National Digital Orthophoto Programmes, Establishment of the 1:10 000 scale digital topographic database of Hungary, Digital Cadastral Information System development project (DATR), Digital Land Office Programme (TakarNet24). She has recently joined the international programmes of EURADIN and INSPIRE.

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