FIG Commiccion 7 Annual meeting
Open symposium
Environment and Land administration
„Big works for the Defence of the Territory”
Development of 3D Cadastre Land registry

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VERONA, ITALY
11-15 September 2008
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Introduction

Many countries in Europe and all over the world, especially in metropolitan area, there is scarcity of vacant land on surface for development.

In big cities there are many real estate development under and above ground creating engineering constructions as valuable properties without registration in the land registry, cadastre.

There are many countries with condominiums creating residential, commercial, industrial properties but as unique properties are not legally registered.
Introduction

- Condominium registration is not part of the majority of land registries or cadastres.
- There is growing interest by investors for registration of these objects as properties in the cadastre and land registry, creating secure ownership and mapping facilities of them.
- On the other hand, the traditional cadastre, land registry haven’t been prepared to register 3D.
Introduction

Development of 3D registration requires comprehensive legal and technical solution, changes in law but gradual approach can be possible

The first step should be registration of condominium in the cadastre, land registry, as a kind of 3D registration

There are not too many land registry or cadastre containing condominium registration but the Hungarian Unified Land registry in one of them
PROBLEMS IN REGISTRATION

❖ CADASTRE
   Paper based cadastral map, registration in 2D space
   Digital cadastral maps remain in 2D

❖ LAND REGISTRY
   Legal difficulties to register ownership and other rights
   of real objects under and above the surface
   In many cases public domains (road, street, etc.) haven’t been handled the same way as other parcels, properties, and many objects have been constructed under and above the surface of public domains
Legal changes in the land registry law didn’t follow the rapidly growing demands concerning the registration of real objects under and above the surface.

The right geometric description and digital mapping of above objects is not yet solved though the IT is available.

Registration of objects as properties in strata requires comprehensive tools, simultaneous solution in the legal and mapping sides.

The simultaneous solution can guarantee the data consistency.
There are several types of Cadastre and legal registry concerning data content, legal and institutional framework. The aim is to find common elements in different systems creating guidelines for all countries to solve 3D registration.

- Multi authority cadastre and land registry
- Single authority unified land registry
THE HUNGARIAN SITUATION

Growing number of objects, potential properties have been constructed under and above the surface in **Budapest** capital and big cities.

The legal and mapping registration of these objects is not possible except in two cases:

- Condominium
- Underground object, cellar with direct access to public domain
The new Land Registry Law issued in 1997 but still based on the traditional law and the 3D registration is not yet solved.

The comprehensive solution is easier due to the single authority Land Registry system.

But more difficult because the data consistency between the legal and mapping part compulsory by law.
CURRENT CONDITION AND POSSIBLE SOLUTIONS

- Hungarian Land Registry is a multipurpose nature system
- Condominiums, condominium units as properties are registered in the land registry
- In Budapest Land Registry 970000 properties have been registered
In case of condominiums there is no problem to register any objects, condominium units as property under or above the surface within the construction or building.

It’s essential that every registered property has a unique identity number.

The identity number of properties in condominium are based on the parcel number of the land.

When we form condominium for registration of condominium units, map and legal documents is required.

The “map” is a scaled lay out plan about each level of the building with identifying of each unit (property).
The units way of creating ID number of condominium

Parcel number of the land: 11829/5

ID number of condominium: 11829/5/A
ID number of condominium units

11829/5/A/1
Registration of condominium, creation of legal document (property sheet)

- Basic property sheet of the parcel contains the description of the land parcel
- This property sheet contains the land parcel information only
**Property sheets of condominium units**

- Each unit in condominium has unique ID number and separate property sheet (legal document)
- There are three parts of the property sheet

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<th>L. rész</th>
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<td>1. Az egyéb összefűzott ingatlan módosítás:</td>
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<tr>
<td>terület számokra</td>
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<td>Bejegyző határozat: 275712/1999/1999.10.26</td>
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<td>jogcími szerzői felismerés: 275712/1999/1999.10.26</td>
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<td>jogcími ajánlókészítés: 23510/1994/1994.06.05</td>
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<td>Jogcími felismerés: nev: Vinyai Szusanna</td>
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<tr>
<td>szül. év: 1946</td>
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<td>cím: 1025 Budapest II. ker. Kupyc utca 40/A</td>
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<th>III. rész</th>
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<td>1. bejegyző határozat: 39571/1966/1966.07.16</td>
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<td>jelzési jog: 120 000 Ft, azaz szállásköltség a fiad és jár-e, terület nagy-</td>
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<td>területi felület változási jogcími szerzői felismerés: 3333</td>
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<tr>
<td>Jogcími felismerés: nev: ORSZÁGOS TAKARÉKÉPÍTŐ KERESZTKERETI BANK NT törzscím: 10537914</td>
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<td>cím: 1050 Budapest VII. ker. Nádor utca 16</td>
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| 2. bejegyző határozat: 39571/1966/1966.07.16 |
| jelzési jog: 20 000 Ft, azaz bélyegzérek és jár-e, jogcím: |
| területi felület változás: |
| Jogcím: nev: ORSZÁGOS TAKARÉKÉPÍTŐ KERESZTKERETI BANK NT törzscím: 10537914 |
| cím: 1050 Budapest VII. ker. Nádor utca 16 |

| 3. bejegyző határozat: 39571/1966/1966.07.16 |
| Ellenőrzési és terhelési tilalom a jelzési jog: hiteletről, teljesítmény |
| Jogcím: nev: ORSZÁGOS TAKARÉKÉPÍTŐ KERESZTKERETI BANK NT törzscím: 10537914 |
| cím: 1050 Budapest VII. ker. Nádor utca 16 |

| 4. bejegyző határozat: 01094/1966/1966.10.02 |
| jelzési jog: 60 000 Ft, azaz bélyegzérek és jár-e, jogcím: |
| Jogcím: nev: MAGYAR FIATLANÍTÁS VÁLLALAT |
| cím: 1441 Budapest II. ker. Arcua utca 17 |

| 5. bejegyző határozat: 01094/1966/1966.10.02 |
| jelzési jog: 80 000 Ft, azaz bélyegzérek és jár-e, jogcím: |
| Jogcím: nev: Vinyai Szusanna |
| szül. év: 1926 |
| cím: 1025 Budapest II. ker. Kupyc utca 40/A |
3D registration, possible solution

- The Hungarians LRS. already registers certain properties under or above the surface, like condominiums, other objects, but no comprehensive solution

- Three large groups of objects in vertical dimensions, currently with registration problems
  - underground constructions, public garages, metro stations, shops etc.
  - Public utilities, cables, telecommunication lines, etc.
  - Roads, railways, tunnels, flyovers, etc.
Two problems must be solved to introduce the 3D registration:

- The geometric description, mapping of real objects above or under the surface.
- Creation of unique identity number of real objects as properties.
1, Geometric description

- Introduction of digital cadastral maps allowing to create different layers
- Important to determine the horizontal and vertical position of the object
- Symbols and ID number of real objects must be used on cadastral maps
- In analogue environment the 3D mapping is more complicated but possible
- Key symbols on cadastral maps must be used to indicate the location and ID number of real objects under and above the surface
2, Creation of unique ID number

Any property has unique ID number, registered in the land registry and cadastre.

In the 3D issue it is important to find out an ID numbering method of objects under and above the surface.

ID number is the link between the cadastre and legal registry, in case of Unified Land Registry between the legal document and mapping information.
ID number of condominium unit is related to the land parcel

Using the similar method, ID numbering of objects under and above the surface could be related to the parcel number on surface.

UNDERGRAND CONSTRUCTION SIMILAR TO CONDOMINIUM

ID number of the underground construction 100/I

ID number of units
100/I/1 shop
100/I/2 corridor
100/I/3 cafe
100/I/4 shop

Parcel number 100

ID number of the underground construction 100/I

ID number of units
100/I/1 shop
100/I/2 corridor
100/I/3 cafe
100/I/4 shop

ID number of the underground construction 100/I

ID number of units
100/I/1 shop
100/I/2 corridor
100/I/3 cafe
100/I/4 shop

Parcel number 100
**Possible steps in Hungary**

- In the Hungarian Unified Land Registry the comprehensive solution – mapping and registration as properties in 3D – must be simultaneous task.
- Major part of underground objects could be registered in the land registry in case of few changes in the land registry law.
- Implementation of the 3D registration must be gradually according to the possibilities of legal changes and the needs by the clients.
- The registration of underground construction, like metro stations underground shops public garages in metropolitan area, are the most important issues.
- I’m convinced, there are no fundamental legal difficulties to amend L.R. law to fit it to the 3D registration.
- The introduction of the 3D registration depends on the will of the legal side and decision makers.
Economic aspects of the 3D registration

INVESTORS, POTENTIAL OWNERS

- Guarantee the security of tenure, owners can deal with these objects as real estate properties
- Owners can use these properties for collateral of mortgages
- Investors are encouraged for developing space under and above the surface

STATE

- Extension of the land markets
- Increasing number of transaction generates more tax, stamp duty
- Extended data content in the cadastre, land registry increasing the income by the data service
Thank you for your attention!