How is the development in the world of cadastre towards more than two dimensions?

This presentation will give some details on both cadastre and dimensions and show some examples from various countries

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3D CADASTRES IN THE WORLD

• No country in the world has a complete solution for 3D cadastral registration

But some countries have passed laws that make it possible to create specific “3D parcels”.

The need to create properties in strata in our crowded cities is definitely present

Example of 3D-drawing in strata title (by courtesy of Michael Barry).

WHAT IS A CADASTRE

Cadastre is a methodically arranged public inventory of data concerning properties within a certain country or district, based on a survey of their boundaries
CADASTRE OF UTILITIES?

MORE THAN 3 DIMENSIONS?

Although very few countries have a 3D cadastre there is talk about a 4D cadastre or even a multidimensional cadastre. The idea is to introduce time in the cadastre. The fourth dimension used in the theory of relativity is a spatial and not a temporal dimension.

2009 is the year of Astronomy!
**3D CADASTRE IN AUSTRALIA**

Queensland has for the last 10 years allowed volumetric subdivisions. Queensland started early to create 3D parcels, but according to Ken Michael the system could be improved further.

**3D CADASTRES IN SWEDEN**

- Sweden introduced a new type of property called 3D-property in 2004
- The idea was that you could separate the residential part of the buildings from the lower commercial part
- It is also possible to create bridges, tunnels and caverns as 3D-properties
3D CADASTRE IN SWEDEN

3D CADASTRES IN TURKEY

Lack of information and maps caused in 2006 in Istanbul a serious accident. Foundation work went right through a metro tunnel and a train carrying 700 passengers hit the foundation pillars.
3D CADASTRES IN GREECE

A typical example of a settlement’s vertical development is Santorini island in Greece

Here a property’s yard can at the same time be the roof of a neighbouring one, providing two registered rights and consequently two different cadastral id numbers. In this case the only way to clarify the status of the ownerships and to visualize the position of the properties, is 3D registration and representation.

3D CADASTRES IN ISRAEL

A cadastral map that illustrates the tunnel design under the cadastral 2D parcel in Block Number 16353 in Israel

All the sub-parcels that have been produced by intersecting the 3D regular parcel with the tunnel and the station objects, may be united together in order to produce the main 3D parcel of the tunnel.
In the full 3D cadastre it will be possible to entitle a person or a company, to a volume parcel that is no longer related to the surface parcel (Jantien Stoter).

Current cadastral registration of 3D situations can be accomplished by a notification in the cadastral registration specified with an "OB" code (underground construction). Such a notification is registered on the surface parcel.

3D CADASTRE IN NORWAY

New Law on Cadastre

• A new law to replace The Subdivision Act has been in the making since 1998. It was approved by the Parliament in 2007, but the law will not be enacted before January 2010.
• This law does not make any property three-dimensional, but it opens up for the creation of special “construction parcels”. These are three-dimensional and can be both below or above the surface parcel.
The 3D Cadastre

The present law on subdivision from 1978 had no provision for three-dimensional parcels, but some municipalities developed their own 3D system based on agreements locally.

The 3D Cadastral System of Oslo

- The present law on subdivision from 1978 had no provision for three-dimensional parcels so the City of Oslo established a system called the Oslo Method in 1987 based on an agreement between the City of Oslo and the local court.
- About 100 3D parcels have been registered since.
- An underground parcel is precisely defined in all three dimensions and ownership is limited to the constructed volume only.
- Special register number, since 300 are added to the area number of the surface parcel.
- Underground parcels may also be surveyed, but usually we accept the contractors drawings.
- Survey certificates are always made and used to register the new parcels in the national property register.
All cadastral surveying are carried out by municipal surveyors

3D CADASTRE IN OSLO
SURVEY CERTIFICATE AND CADAstral MAP

CADAstral MAP with underground parcels (black) and surface parcels (red)
3D CADASTRE IN OSLO
(OBLIQUE PHOTOS)
Some countries like Finland are now preparing for new legislation allowing 3D objects in their cadastre.

In the near future there will probably not be established any real three dimensional cadastre. But to develop national 2D cadastres to include 3D parcels will be more common.

It will also be necessary for the new legislation to differentiate between condominiums and 3D parcels.

Thank you for your attention