3D Cadastres in Europe and The Netherlands

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3D-cadastres

- Complex spatial situations (special)
- Condominiums/Apartments (common)
- Cables and pipelines (special -> common)
Developments and state of play

- Increasing complexity in land (space) use
- Resulting complexity in land (space) rights
- No country with true 3D Cadastre
- Partial solutions:
  - 3D in public register (not in map)
  - Specific object types (buildings, constructions)
Questionnaire status of 3D cadastre world-wide
FIG working group on 3D-cadastres

- Questionnaire starts with definition of 3D parcel:
  ‘spatial unit against which (one or more) unique and homogeneous rights (e.g. ownership right or land use right), responsibilities or restrictions are associated’

- Important distinction between 3D physical and 3D legal object
Global analysis of responses

- 36 FIG completed questionnaires received (19 European)
- Nearly all jurisdictions allow registration of 3D parcels, in practice often (limited to) apartments
- Despite efforts to harmonise, concept ‘3D cadastre/parcel’ still ambiguous
- Completed questionnaires give overview of the different systems: organizational, legal, technical
Some observations

- 3D parcels in most cases within surface parcel
- Sometimes parcel under/above surface parcels
- Most countries have no explicit rules if 3D rights are connected to (empty) spaces or physical objects
- Some countries require construction (Sweden, Norway)
- Boundaries often refer to physical elements of buildings or constructions
- Absolute (e.g. France) and relative heights are in use
- No registration in any cadastral database
- Floorplans often in land register
Cables and pipelines

- Specific type of 3D object: below/above several land parcels
- Sometimes registration of right spaces related to networks (Netherlands, Switzerland)
- Some countries have separate ‘utility’ maps (Croatia)
Localización, Altura de edificios, croquis por planta, Datos catastrales, fotografías de fachada.

Real state location, buildings height, floor sketches (CU1), Cadastral data, front photographs.

Toda esta información permite el estudio de la realidad territorial incorporando el volumen de las edificaciones, obtenida directamente de la cartografía

All this information allows territorial studies. Buildings are also incorporated, directly taken out directly from the cartography.
Sweden

- “3D-property” introduced in 2004
- Main aim: division in ownership between apartments and shops (streetlevel).
- Can also be used for bridges, tunnels, etc
- Property unit must be related to building or construction
- Cadastral procedure to form 3D property units
- Boundaries may defined by physical elements or coordinates
Sweden

Kv Grinden, Stockholm

Grinden 24

Grinden 25

LANTMÄTERIET
Norway

- A new Law on the Cadastre (2010) makes “construction parcels” possible
- 3D parcels that can be established both under and above the surface parcel and in multiple layers
- The 3D parcel is registered as a separate property
- Property unit must be related to construction (permit)
- The cadastral map shows only the projection of the 3D property on the surface.
- To get 3D information the survey must be consulted. A construction drawing is sufficient.
Norway: apartment complex and underground parking garage
Norway Case

Surface parcels (red), with underground parking (black)
Norway Case
Current legal framework in the Netherlands

- Rights to establish multi-level property:
  - right of superficies
  - condominium rights (or right to an apartment)
  - easement rights (which also can be used to guarantee line of sights)
  - right of long lease.
The Netherlands
Cadastral map
3D Description (right of superficies) in the deed

- ground floor and intermediate floor
- 1st floor
- 2nd floor
- 3rd floor
Conclusions The Netherlands

- 2D parcel is entry point of registration
- 3D information in cadastre is limited
- Mental exercise (puzzle of separate drawings) to understand the real situation
- "Ineffective parcel formation"; one object is divided over (many) parcels
Towards 3D registration (1/3)

- how can 3D situations be better registered and portrayed within current legal framework
- Current legal framework is starting point because:
  - Change of law is lengthy process
  - To avoid unnecessary resistance
Towards 3D registration (2/3)

- Currently: in consultation with the notary if a land registrar should refuse a registration of very small parcels due to projecting of 3D situations for sake of “effective parcel formation”.
- Land registrar should be able to require 3D representation in some situations
- For condominiums it would mean an extension on the guidelines for apartments.
Towards 3D registration (3/3)

- Guidelines are being set up:
  - To identify situations for which a 3D approach is recommended
  - How 3D information should be offered for registration
Further research

- Further research should identify situations which require a 3D approach as well as exact requirements for the 3D representations. Currently only a 3D PDF is mentioned, which provides the user 3D interaction functionalities.