The (Legal) Reliability of the Cadastre from the Perspective of the Czech Republic

Mgr. Martina Hercegová
Ing. Karel Štencel

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Basic information about the CR

Area: 78,866 km\(^2\)
Population: 10 mil.
Administrative division: 14 regions
22 mil parcels
13,094 cadastral units
Land Administration System

Till 1993
- Separated model

After the re-establishment of democracy in 1989
- Merge model (from 1993)
Land Records

Fiscal Cadastre

Topographic Mapping
Principle of Material Publicity

• New Civil Code – Act. Nr. 89/2012 Coll. (NCC)
• Material Publicity – what is written is given
Digital Cadastral Maps in the Czech Republic

- Digital maps 1:1000 (44%)
- Digitized maps 1:2880 (55%)
- Non-digitized maps (<1%)
Two Basic Types of Maps

1. Maps Based on Original Measurement

- New maps produced within last 70 years – 1/3 area CR
- Current coordinate system, homogenous, accuracy 14 cm
- Results of original measurement – coordinates calculation, later coordinates saved in register
- No technical problems, only a lot of work, high quality result
Two Basic Types of Maps

2. Maps Based on Stable Cadastre

- Originate from 1st half of 19th century
- Different coordinate system, fathom scale, graphical triangulation – main reason of partial deformations, accuracy ± m
- Different methods of updating within 150 years – source of many technical problems
- Digitalization mainly by vectorization of raster images of cadastral maps
Map of Stable Cadastre
Digital Cadastral Maps in the Czech Republic

Using the results of measurement of changes to improve the precision of map during digitization and subsequent updating.
4. Technologie přepracování sáhových map

- Transformace rastrových obrazů map do S-JTSK
  - Přehled identických bodů
  - Porovnání výsledků transformace s ortofotomapou
  - Detekce výsledků zeměměřických činností s chybným polohovým určením

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Digital Cadastral Map + orthophoto

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Digital Cadastral Map
Refinement of Maps during their updates

- Owners have the opportunity to review the quality of geodetic cadastral data and then refine these data.
- For refinement (improvement of the accuracy) of the boundaries, it is necessary to submit:
  - Survey Plan
  - Document signed by all the owners that they agree with the refinement of boundaries
Refinement of Maps during their updates

Document signed by all the owners that they agree with the refinement of boundaries (agreement) = the ownership boundary is marked in the cadastral map

=>

Diagram illustrating the refinement of a map with marked boundaries.
Refinement of Maps during their updates

Without the owner's agreement, the original boundary remains unchanged in the map

=>
Activities of the Cadastral Offices till 2030


The most important issues:

1. Insufficient geometric quality of cadastral maps
2. Discrepancies between registered data and actual status in terrain caused by non-compliance with reporting obligations of the owners
3. Out-of-date technical data already registered (in particular data on land types, land use, type and mode of property protection)
Increasing the Geometric Quality of Cadastral Maps

- Completion of digitization does not solve the problem of insufficient cadastral map accuracy in approximately 60% of Cadastral Units
- We will devote a part of the capacities to the works that will lead to the improvement of Cadastral Maps
  - New Mapping
- The problem of geometric quality of Cadastral Maps is solvable within next 20-30 years
Process of New Mapping - Phases

- Project
- Preparatory Work
- Investigation of Boundaries
- Detailed Survey
- Creating of new Cadastral Documentation
- Presentation of Results to Owners (Public Consultation)
- Solving Objections
- Declaration of Effect of Renewed Cadastral Documentation
New Mapping

Number of renewed cadastral units

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Investigation of Boundaries
Detailed Survey - Used Technologies

- New mapping – mostly combination of GNSS and terrestrial methods
- Exploring the use of new technologies (laser scanning, super-precise ortophoto)
Presentation of Results to Owners

• The new cadastral documentation is presented on web
• The new mapping is completed by Declaration of Effect of Renewed Cadastral Documentation
Results

- We improve quality of cadastral data for better use in multi-purpose geospatial information systems.
- We want to use digitalized maps for many years and refine them on the basis of Survey Plans.
- Some Cadastral Units will be necessary to map newly (150 cadastral units yearly).
Thank you for your attention.

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