3D Documentation of Condominium in Switzerland

Today and a draft for the future / May, 30\textsuperscript{th} 2017

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Agenda

• Context in Switzerland
• Documentation of condominiums today
• Two kinds of digital documentation
• Ideas for the documentation of condominiums in future
The Swiss Cadastral System

Definition of condominium:
a kind of co-property, a value share with the exclusive right to use a part of the house
Switzerland, a Confederation of 26 Cantons

Legal and organisational consequences for

Cadastral surveying:
• a common task between confederation and cantons
• regulations mostly on federal, some on cantonal level
• strategy is developed by confederation (in cooperation with cantons)
• supervision by confederation, execution led by cantons

Land registry:
• a task of the 26 cantons
• general rules in Civil Code and Land registry ordinances
• the cantons themselves regulate the execution
Documentation of Condominiums

• On federal level only very general and no technical regulations
• Unknown situation in the 26 cantons, no statistic

Therefore, a first survey was conducted in 2016 by the working group with the goal to get:
• an overview of existing cantonal regulations
• information on how the documentation is made today in practice
• statistical data on a national scale
• knowledge of problems or of possible needs for improvement
Existing Cantonal Regulations (2016)

Do the cantonal laws or directives stipulate how the documentation of condominiums has to be done in the allocation plan and in other documents?

- No: 19
- Yes: 5
- (thereof in revision: 1)
- Yes, digital, raster: 1
- Yes, digital, vector: 1

Map showing the distribution of cantons with different statuses regarding the requirements for documenting condominiums.
The Documentation of Condominiums Today (normal case)

A representative example (canton Basel Landscape): A paper-based CAD-map per floor, with additional cross sections and side views containing height information.

- Exclusive use
- Common use
## Comparison of the Digital Solutions in the Cantons of Geneva and Neuchâtel

<table>
<thead>
<tr>
<th>Canton of Geneva</th>
<th>Canton of Neuchâtel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vector data</td>
<td>&lt;&gt; Raster data</td>
</tr>
<tr>
<td>Specified data model (2D + H) &lt;&gt;</td>
<td>Pdf/A format</td>
</tr>
<tr>
<td>Mandatory for all new units =</td>
<td>Mandatory for all new units</td>
</tr>
<tr>
<td>Current no digitization of existing documentations &lt;&gt;</td>
<td>Digitization of all existing documentations in progress</td>
</tr>
<tr>
<td>Buildings and condominium units part of the cantonal GIS =</td>
<td>Buildings and condominium units part of the cantonal GIS</td>
</tr>
<tr>
<td>Data management independent of cadastral surveying &lt;&gt;</td>
<td>Part of the cadastral surveying data model (cantonal extension)</td>
</tr>
<tr>
<td>No direct link to the land register</td>
<td>&lt;&gt; Directly linked to the land register</td>
</tr>
</tbody>
</table>
Workflow in the Cadastral Surveying Office in Geneva Today  (1)

- Accept the architectural data and import into a CAD
- Georeferencing
- Manual generalization with simultaneous control
- Assembly of units
- Transfer to a GIS
- Assembly of sub units (geometry and attributes)
- Calculation of value shares
- Establishment of the allocation documentation (on paper) containing allocation plan, overviews and detailed tables, additional plans for servitudes, …
- Controls (incl. a as built survey)
Workflow in the Cadastral Surveying Office in Geneva Today (2)

Source: Presentation «Le cahier de PPE numérique 2D/3D à Genève», Bizouard, KKVA 28.04.16
On-going Adjustments in Geneva

Next steps:
• Adapt the workflow for integration of BIM
• Later (semi-)automated interface BIM to GIS

Obstacles:
• There are no federal technical regulations and no data model for geometrical documentation of condominium
• Missing national standard or federal regulation on BIM for data exchange with federal or cantonal administration
Arguments for New Regulations on Federal Level

• 4.5 million parcels (in all 26 cantons)
• 1.1 million condominium units (in 23 cantons), at least 1.2 million in all of Switzerland
• Total amount of mortgages almost 1,000 billion CHF (approx. 910 billion EUR)

➢ No unique digital documentation of condominiums, a big part of mortgages.

➢ Other e-government processes: construction permit, urban planning
Approaches for New Regulations on Federal Level

Proposed adjustments for the digital 3D documentation of condominiums:
• to establish a new data model and test it;
• to propose necessary adjustments to the legal and technical regulations;
• in particular, to examine a possible improvement of the legal meaning of the allocation plan.
• Idea: The allocation plan can be part of cadastral surveying, and not only a document of land registry.
New Data Models for Cadastral Surveying (CS)

Categories of immovable property in Switzerland:

<table>
<thead>
<tr>
<th></th>
<th>Parcels</th>
<th>Easements</th>
<th>Mines</th>
<th>Co-ownership shares</th>
</tr>
</thead>
<tbody>
<tr>
<td>Today</td>
<td>CS mandatory</td>
<td>CS optional</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>In future?</td>
<td>CS mandatory</td>
<td>CS optional</td>
<td>no</td>
<td>CS mandatory</td>
</tr>
</tbody>
</table>

The responsibility for documentation would change!

In parallel (and unaffected by the results according to the documentation of condominiums), the development of a new data model for cadastral surveying is underway. Expected new features:

• 3D, 4D, integration of point cloud, …
Thank you for your attention!

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