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Federal Office of Topography swisstopo  
Cadastral surveying and PLR-cadastre

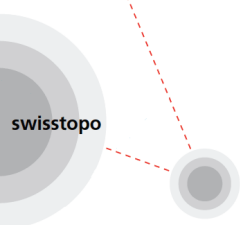
**Presented at the FIG Working Week 2017  
May 29 - June 2, 2017 in Helsinki, Finland**

wissen wohin  
savoir où  
sapere dove  
knowing where

# 3D Documentation of Condominium in Switzerland

Today and a draft for the future /  
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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



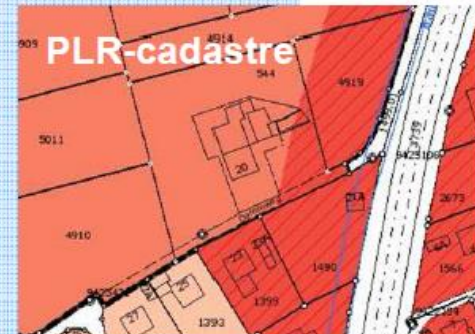
# The Swiss Cadastral System



Secured through:



Restricted through:



Supervisory authority: swisstopo

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

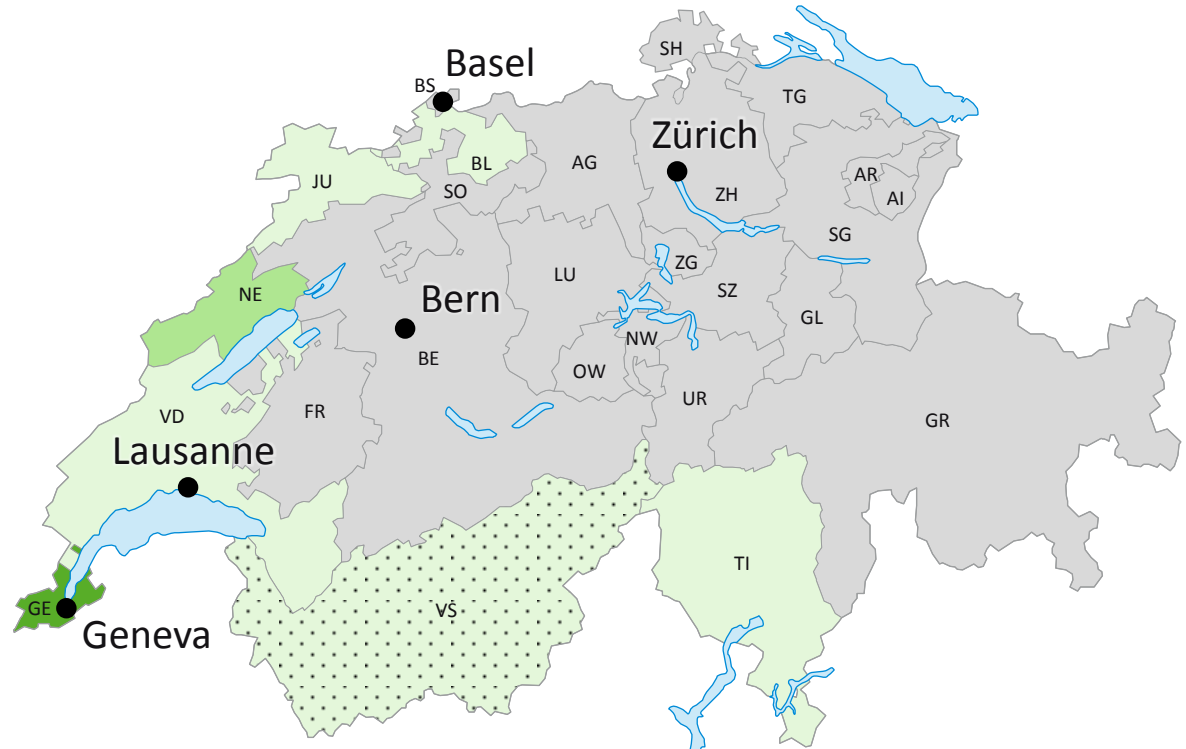
- On federal level only very general and no technical regulations
  - Unknown situation in the 26 cantons, no statistic
- Therefore, a first survey was conducted in 2016 by the working group with the goal to get:
- an overview of existing cantonal regulations
  - information on how the documentation 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

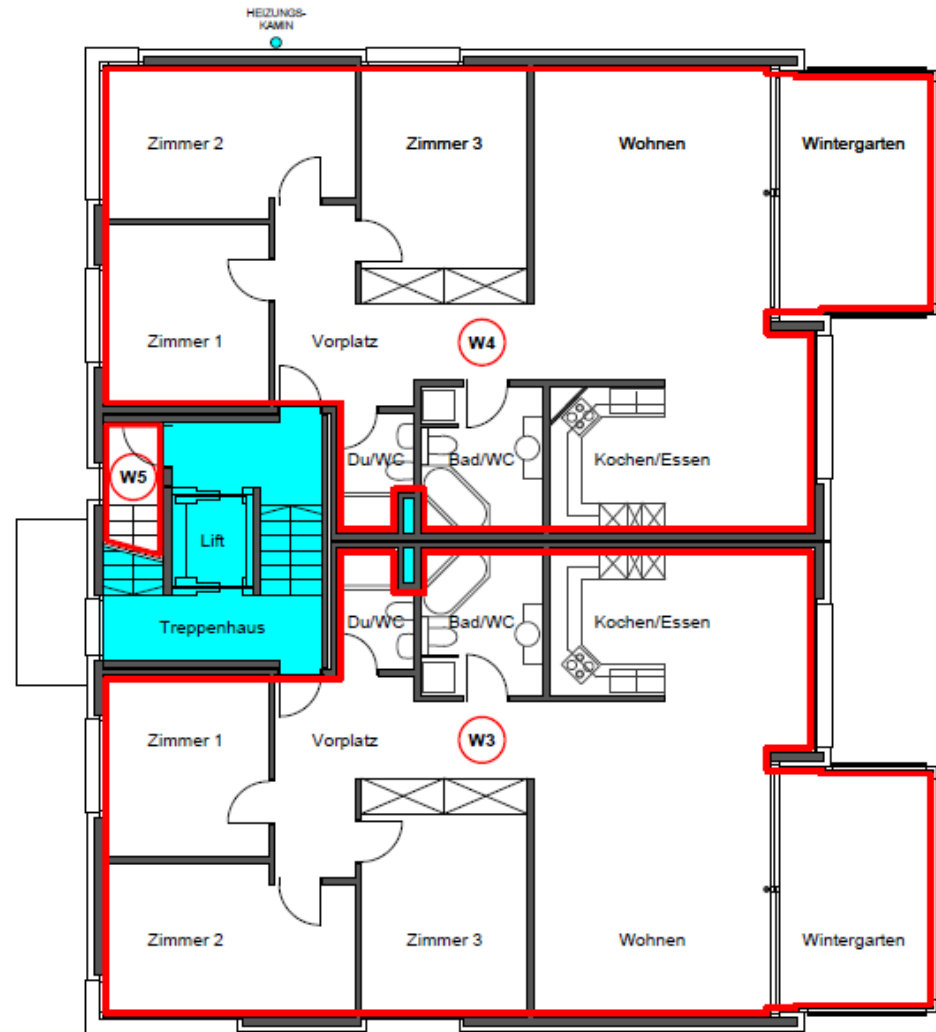




# The Documentation of Condominiums Today (normal case)

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

Canton of Geneva	Canton of Neuchâtel
Vector data	<> Raster data
Specified data model (2D + H)	<> Pdf/A format
Mandatory for all new units	= Mandatory for all new units
Current no digitization of existing documentations	<> Digitization of all existing documentations in progress
Buildings and condominium units part of the cantonal GIS	= Buildings and condominium units part of the cantonal GIS
Data management independent of cadastral surveying	<> Part of the cadastral surveying data model (cantonal extension)
No direct link to the land register	<> Directly linked to the land register





# Workflow in the Cadastral Surveying Office in Geneva Today (1)

CAD

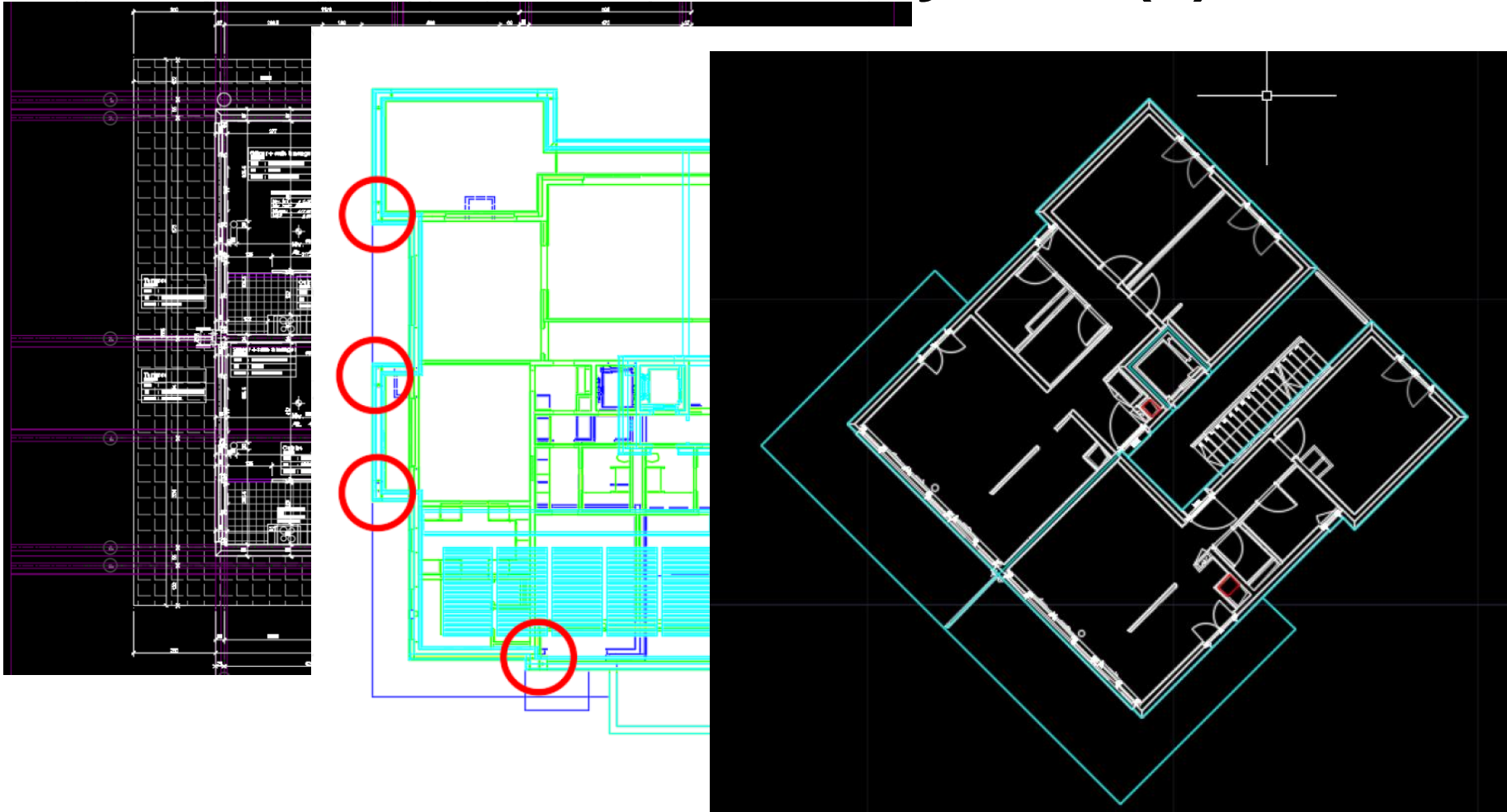
- Accept the architectural data and import into a CAD
- Georeferencing
- Manual generalization with simultaneous control
- Assembly of units

GIS

- 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:

	Parcels	Easements	Mines	Co-ownership shares
Today	CS mandatory	CS optional	no	no
<b>In future?</b>	CS mandatory	CS optional	no	<b>CS mandatory</b>

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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