A Lean Cadastral System: Switzerland’s contribution to sustainable land management for poverty reduction

Jürg Kaufmann, Switzerland

Annual Conference on Land and Poverty 2012, April 24, Washington
Agenda

1. Clear view of the role of the cadastre in land operations
2. A lean cadastre system is based on a legal base with lean provisions
3. The key provisions of the Swiss cadastral law
4. Why is this an efficient and low priced solution?
5. Future development in direction of a comprehensive spatial model
6. Conclusions
7. What is SWISS LAND MANAGEMENT?

Jürg Kaufmann, Switzerland, KAUFMANN CONSULTING, Annual Conference on Land and Poverty 2012, April 24, Washington
## SWISS VIEW OF CADASTRE SYSTEM’S ROLES IN LAND OPERATIONS

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THE SWISS LEAN CADASTRE SYSTEM THANKS TO A LEAN LEGAL BASE WITH LEAN PROVISIONS

211.432.2

English is not an official language of the Swiss Confederation. This translation is provided for information purposes only and has no legal force.

Ordinance on Official Cadastral Surveying

of 18 November 1992 (Status as of 1 July 2008)

The Swiss Federal Council,
LEAN: NO OVERLOADED LEGAL FRAMEWORK

Chapter 1: General Provisions

Art. 1 Definition and purpose
1 Official cadastral surveying as defined in Article 950 of the Swiss Civil Code consists of the surveying work approved by the canton and by the Confederation for the establishment and maintenance of the land register.

Art. 58
This Ordinance shall come into force on 1 January 1993.

Experience from different projects:
• Parallel development of legal framework and execution of cadastral work
• Good will to create modern law
• Stepbacks during the legal work -> finally 200 to 300 articles with the traditional provisions -> inefficient, complicated, too expensive
LEAN: DATA-CENTRIC INSTEAD OF MAP-CENTRIC PARADIGM

Statement 3 on Cadastre 2014

The Cadastral mapping will be dead! Long live modelling!

Comment:  Maps have always been models, but the available technology did not allow for the use of these models in a flexible manner. So in mapping flexibility had to be brought in by different scales. Different scales had to be represented by different data models. Modern technology allows the creation of maps of different scales and registers in different forms from the the same data model.

Consequences:  In 2014 there will be no draftmen and cartographers in the domain of cadastre.
Chapter 2: Content of Official Cadastral Surveying

Art. 5 Elements of official cadastral surveying

Official cadastral surveying consists of:

a. the markers of the control points and boundary points;

b. the data in accordance with the data model of official cadastral surveying;

c. the cadastral map and further extracts of the cadastral data set required for the land registration;

d. the required technical documents;

e. the components and principles of former cadastral surveying under the old regulations;

f. the base map of official cadastral surveying.
LEAN: MAPS EXTRACTED FROM CADAstral DATA SET

Land Registry Map
1:250-5'000

Base Map 1:2'500-10'000

1:1'000

1:10'000
Art. 6 Data model of official cadastral surveying

1 The data model describes the content in accordance with the object catalogue, and the data structure in a standardized data description language.

2 The object catalogue comprises the following information layers:
   a. control points;
   b. land cover;
   c. single objects;
   d. heights;
   e. local names;
   f. landownership;
   g. pipelines;
   h. territorial boundaries;
   i. permanent landslip areas
   j. building addresses;
   k. administrative subdivisions.
Title 3: Standardised Data Description for Official Cadastral Surveying and the Official Cadastral Surveying Interface

Chapter 1 General

Art. 42 Definition

1 The INTERLIS data description language is used for the description of the data model of official cadastral surveying in accordance with Swiss Standards SN 612030 (1998 edition) and SN 612031 (2006 edition).

2 The official cadastral surveying interface is defined by the data model of official cadastral surveying described in INTERLIS and by the description of the corresponding transfer format from the INTERLIS compiler.

Experience from different projects:

• A lot of money is lost for data exchange Data loss, misunderstandings.
• INTERLIS is the only functioning solution.
LEAN: NO OVER-DETAILED REQUIREMENTS

Freedom of methods

Chapter: Principles

Art. 1 Basic principle
Surveying work must be carried out in accordance with the rules of the profession and with due regard to economy.

Accuracy according to needs

Art. 3 Division into tolerance levels
For the purposes of official cadastral surveying the territory of the Confederation is divided into a range of tolerance levels (TS) as follows:
TS1: Urban areas
TS2: Built-up areas and building zones
TS3: Areas of intensive agriculture and forestry
TS4: Areas of extensive agriculture and forestry
TS5: Summer pastures and unproductive areas
EFFICIENT AND LOW PRICED: ONLY TEXTUAL AND GRAPHICAL OBJECT DATA TO BE HANDLED

Chapter 2: Data Transfer
Art. 44 Basic principle
1 Anyone wishing to obtain official cadastral surveying data has the right to receive it by means of the official cadastral surveying interface.
2 Those who supply official cadastral surveying data have the right to transmit it by means of the official cadastral surveying interface.

Art. 45 Compatibility with the Official Cadastral Surveying Interface
1 Computer systems used for the transfer or exchange of official cadastral surveying data must fulfill the following conditions:
   a. be able to receive data from the official cadastral surveying interface;
   b. be able to supply data to the official cadastral surveying interface; and
   c. be able to receive data from the official cadastral surveying interface and return it to the interface after further processing.
EFFICIENT AND LOW PRICED:
INNOVATIVE TECHNIQUES AND FLEXIBLE PROCEDURES
EFFICIENT AND LOW PRICED: FLEXIBLE DATA MODEL CONCEPT

Independent topics can:

- be combined as needed
- removed without destroying the model
- added to model without conceptual change
EFFICIENT AND LOW PRICED:
ONLY NEEDED THEMATIC DATA LAYERS
EFFICIENT AND LOW PRICED:
STEPWISE COMPLETION OF DATA MODEL
POTENTIAL FOR SPATIAL MODELING:
SWISS CADASTRE OF PUBLIC-LAW RESTRICTIONS
ON LANDOWNERSHIP

Zoning plan
Groundwater protection
...

Cadastre of PLR
Copy of data or crosslinking

Potential for spatial models
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CONCLUSIONS:

Because the law was ready before the renovation work was started, the homogeneous lean Swiss cadastral system became a reality timely for the 100th anniversary of the Swiss Cadastre 2012.

The efficiency is proved by the fact that the cadastre renovation reached area coverage in 20 years (10 years earlier than estimated).

The Swiss approach corresponds to the Land Governance Indicators of the LGAF:

At the same time, rather than trying to squeeze cost of operation to unrealistically low levels, cost should be kept low through adoption of appropriate technology, especially with regard to the precision required from ground surveys (LGI-18).

This approach should be taken into consideration to support solutions affordable also for the poor.
WHAT IS SWISS LAND MANAGEMENT?

Swiss Land Management...

... is a private foundation aiming at transferring experiences of methodologies and technologies to reach the UN millennium development goals. The foundation acts as a think tank in the land related fields of development and management.

Our Mission – Our Goals

SWISS LAND MANAGEMENT’s interdisciplinary team led by experienced program directors and implementing experts consists of specialists from diverse fields.

SWISS LAND MANAGEMENT is convinced that development is at the base of building human and organizational capacity in order to establish local ownership of suitable processes and technologies.

Sustainable land management is an essential contribution to GOOD GOVERNANCE and CONFLICT PREVENTION.

www.swisslm.ch
Thank you for your attention...

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