

The New Swiss Law on Geoinformation and the Ordinance on the Cadastre on Public Law Restrictions (4064)

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Key words: Law, Geoinformation, NSDI, Cadastre of public-right restrictions of landownership

SUMMARY

Switzerland has put to force one of the first laws on geoinformation in the world by July 1, 2008. This law is also the legal base for the implementation of the Swiss NSDI. In this context a Cadastre of public-law restrictions shall be built up. For the regulation of this new cadastre the Ordinance on the Cadastre of Public-right Restrictions of Landownership was developed and put to force by October 1, 2009. This paper gives an overview on the development and the content of these new pieces of legislation. In addition the problems occurring during the drafting process, first experience, and the consequences of the new legislation on the profession are outlined.

ZUSAMMENFASSUNG

In der Schweiz wurde per 1. Juli 2008 das Gesetz über die Geoinformation in Kraft gesetzt. Dies ist weltweit einer der ersten umfassenden Geoinformationserlasse und er bildet auch die Rechtsgrundlage für den Aufbau der nationalen Geodateninfrastruktur NGDI. In diesem Kontext soll auch ein Kataster der öffentlich-rechtlichen Eigentumsbeschränkungen aufgebaut werden. Dieser neue Kataster wurde mittels der Verordnung über den Kataster der öffentlich-rechtlichen Eigentumsbeschränkungen (ÖREB-Kataster) geregelt, welche per 1. Oktober 2009 in Kraft getreten ist. Diese Präsentation gibt einen Überblick über die Erarbeitung und den Inhalt dieser zwei neuen Erlasse. Zusätzlich werden die Probleme, welche in der Entwurfsphase aufgetreten sind, die ersten Erfahrungen und die Konsequenzen für den Berufsstand dargestellt.

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1. INTRODUCTION

In view of a new regulation of the financial compensation between the Swiss Federation and the Cantons a new article was introduced in the Federal Constitution of April 18, 1998. This change concerning the National Survey was among others approved in the popular vote on November 28, 2004 and put to force by January 1, 2008.

Art. 75a¹ National Land Survey

¹ *The National Land Survey shall be the responsibility of the Confederation.*

² *The Confederation shall issue regulations on official surveying.*

³ *It may issue regulations on the harmonization of official information relating to the land*

Figure 1 New article in the constitution

It was the first time the Land Survey was provided with a constitutional base. Before these aspects were regulated by a special federal law, The Federal Act of 21 June 1935 on the Creation of the National Map Series.

For the cadastral surveying, called official surveying in Switzerland, the legal foundation was the Ordinance on Official cadastral Surveying of 18th November 1992 based on Article 950 of the Civil Code saying:

¹ *Registration and description of the properties in the land register have to be done on the basis of a map, which as a rule, has to be the result of an official surveying.*

The task to elaborate the new legal framework in this field was given to the Federal Office of Topography, swisstopo, the authority concerned with the geographic reference data, the cartography and the cadastral surveying and the national geological survey.

swisstopo was a pure Geodetic and Cartographic Office for a long time and its key business was cartography for defense purposes. It still belongs to the Federal Department of Defense, Civil Protection and Sport.

In 1987 the office was transferred from a normal office to a body managed along commercial lines as part of the NPM (New Public Management) pilot project (productivity commitment and global budget).

The Federal Directorate of cadastral Surveying was transferred from the Federal Department of Justice and Police to swisstopo in 1999 and in 2000 COGIS the federal coordination unit responsible for the coordination of geoinformation on federal level was built up.

In 2005 the National Geological Survey authority was subordinated to swisstopo and its legal base was included into the legislation

So swisstopo has a rather strong position in the field of geoinformation.

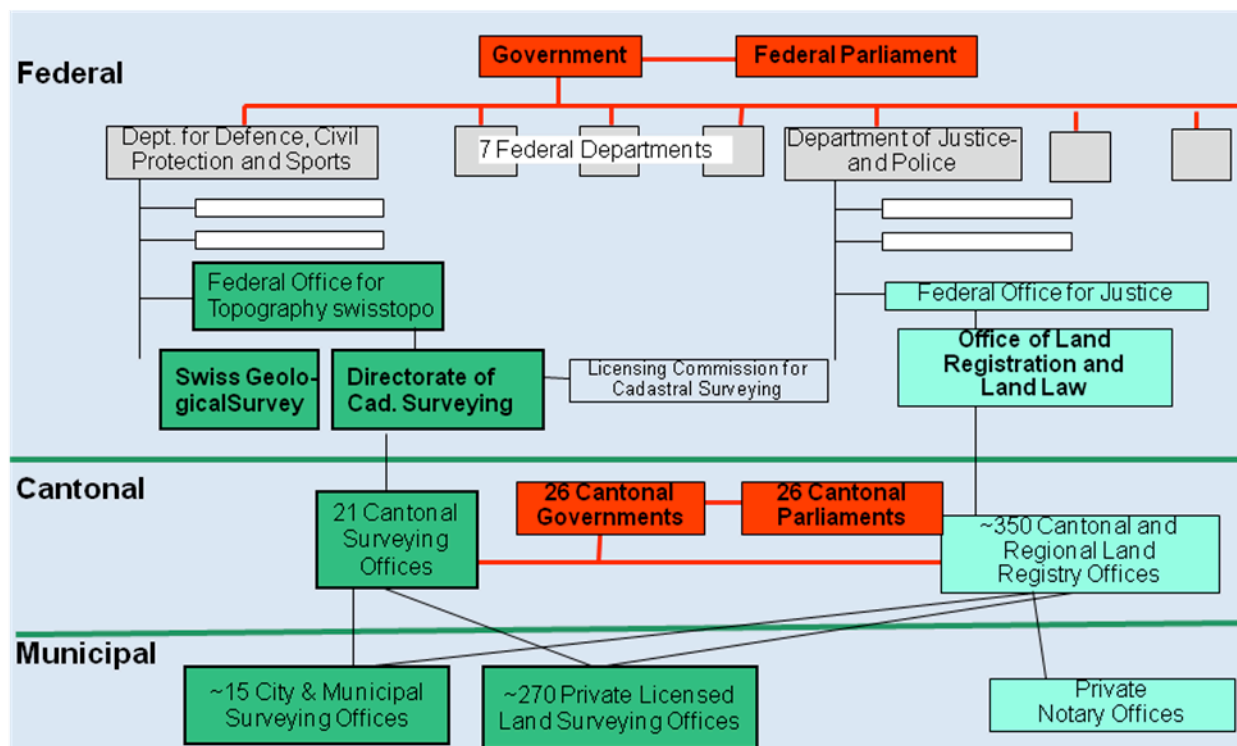


Figure 2 Organization of the Swiss State Survey System

The organization and the structure of swisstopo is shown in figures 2 and 3.

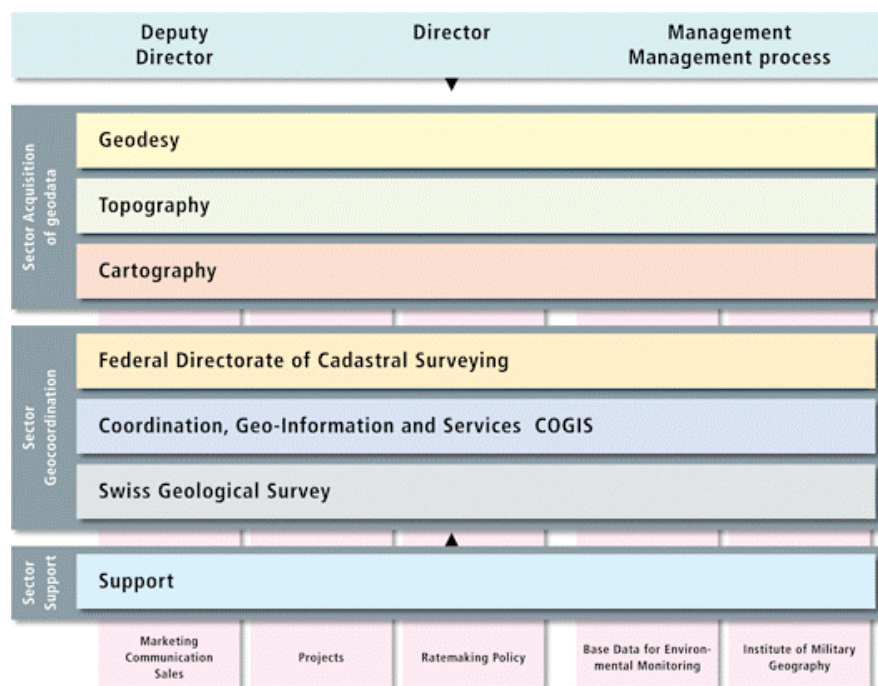


Figure 3 Organizational Structure of swisstopo

2. STARTING CONDITIONS

Due to the fact that the Swiss legislation on the cadastre was fully re-engineered after 1980 with a totally new approach to the application of modern IT for the cadastral surveying significant experience was available, The result of this re-engineering work was a new standard for cadastral surveying, called AV93 (official surveying 1993), because the new regulations entered into effect in 1993. This new standard can be characterized as follows:

Elements of AV93

- Information content was not changed compared with traditional cadastral surveying
- Definition of a data model with 8 information layers
- Data description with standardized data description language INTERLIS
- Possibility for the setting up of general land information systems LIS

These achievements are illustrated by figure 4 to 6.

8 Information Layers:

- Control points
- Land cover
- Single objects / line elements
- Heights
- Local names
- Ownership
- Pipelines >5bar
- Administrative subdivisions

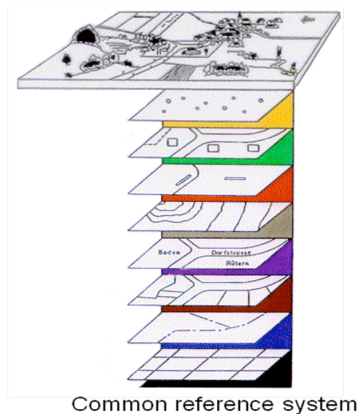
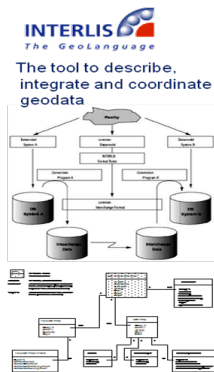


Figure 4 The information layers of AV93



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TRANSFER Data_Catalogue;
MODEL Basic_Data_Set
DOMAIN
LKoord=COORD2 480000.000 70000.000
840000.000 300000.000;
HKoord=COORD3 480000.000 70000.000 0.000
840000.000 300000.000 5000.000;
Height = DIM1 0.000 5000.000;
Precision = [0 .. 300];
Reliability = (yes, no);
LetterOrientation = GRADS 0.0 400.0;
Status = (planned, valid);
TOPIC Control_Points =
.....
END Control_Points;
TOPIC Land_Cover =
.....
END Land_Cover;
TOPIC Ownership =
.....

```

Figure 5 INTERLIS for representation of reality and data transfer without information loss

Information topic	Data owner	Data acquisition	Data maintenance, Data administration, Data output
Other topics	other		
Land use planning Forestry	planning zones Canton, Communities		
Cable TV	facilities Private firms		
Electric power supply	facilities Power company		
Civil protection	protection zones Communities		
Fresh water Waste water	facilities Corporations, Communities, ...		
Railways Telecom	rails, facilities Railways Telecom	Railways Telecom	Railways Telecom
AV93	basic data Canton	Canton (licensed surveyors)	Canton (licensed surveyors)

Figure 6 Ideas to build LIS

swisstopo therefore disposed of experience in the drafting and implementation of a legal framework in the field of geoinformation. swisstopo was able to base on lessons learned since 1993 when AV93 became effective.

swisstopo engaged a lawyer as drafting specialist and formed a working group for the elaboration of the geoinformation law. This group consisted of persons with experience in geoinformation from different stakeholders concerned with geodata and working with GIS/LIS including representatives of the cantons and the interested organizations. In parallel different task forces were working on the ordinances as soon as the first draft of the law was available.

3. TIME FRAME

The work on the new Geoinformation Law started in 2003, after the Federal Council of Ministers had approved the geoinformation strategy developed by swisstopo's COGIS body. At

the same time the strategy for a new financial compensation scheme was adopted by the Swiss parliament, which created the need to accelerate the legislation process. The time frame for the elaboration of the law package can be seen in figure 7.

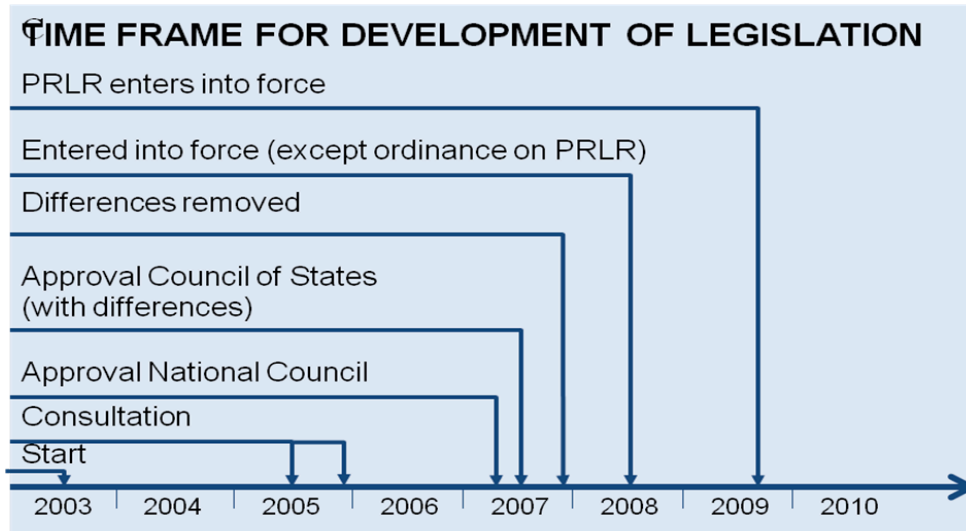


Figure 7 Time frame for the law development work

4. RESULT OF THE WORK

4.1 Structure of the Law

The result of the work is first the Federal Act on Geoinformation with 47 articles on 14 pages. Its structure is shown in figure 8.

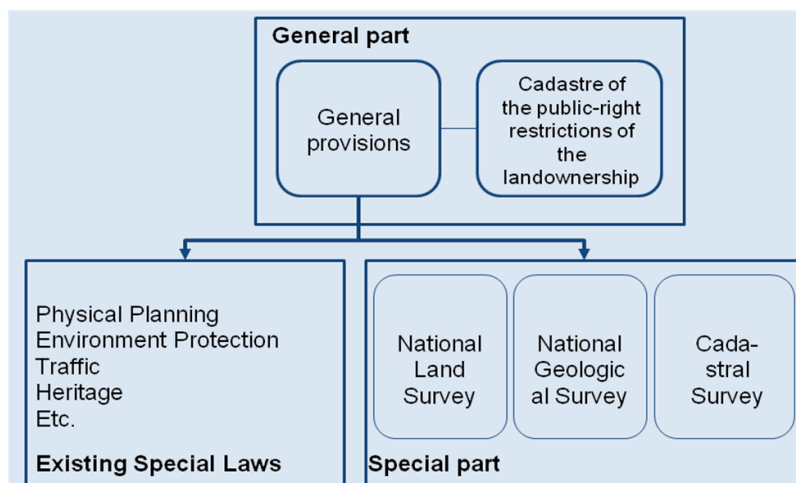


Figure 8 Structure of the Act on Geoinformation

4.2 Effectiveness

The general provisions have direct impacts on the special parts, regulating the tasks National Land Survey and Cadastral Survey given by constitution as well as the National Geological

Survey and the Cadastre of the public-right restrictions of the landownership. At the same time it impacts all special laws, which deal in one or another way with space related arrangements, be it plans, maps, description of boundaries and places - in short geoinformation.

4.3 Ordinances

In addition 11 ordinances were on the topics shown in figure 9 were drafted and 9 of them entered in effect together with the Act. The Ordinance on the Cadastre of Public-right Restrictions of Landownership was put into force on October 1st, 2009 and the Ordinance on the Fees for Geoinformation on January 1st, 2010.

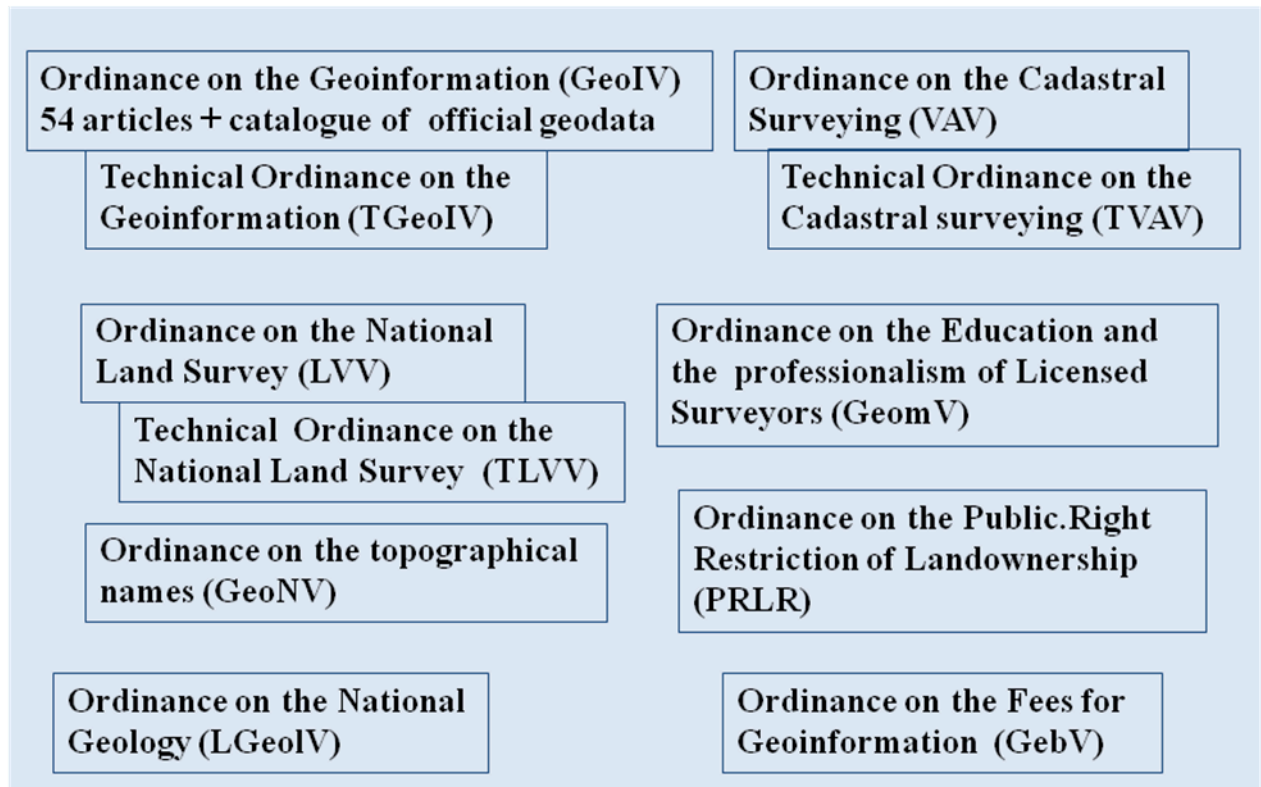


Figure 9 Ordinances connected with the Act on Geoinformation

The Ordinance on the Geoinformation regulates the details concerning geodata. In the annex all the official geodata identified in the different special laws of the federal legislation are listed in the Official Data Catalogue, which contains 175 data sets, describing spatial objects. An extract of this catalogue is presented as an example in figure 10.

Nr.	Description	Legal base	Responsible	Georeference	PRLR Cad	Access right	Online access
95	Groundwater protection zone	SR 814.20, §20	cantons	no	yes	A	yes
96	Groundwater protection area	SR 814.20, §21	cantons	no	yes	A	yes
97	Groundwater source	SR 814.201, 30	cantons	no	no	A	yes
98	Inventory of groundw.sources	SR 814.20, §82	cantons	no	no	A	no
99	Inventory of water rights	SR 721.80, § 31	BAFU	no	no	B	no
100	Regional sewerage plan	SR 814.20, § 7	cantons	no	no	A	yes
101	Municipal sewerage plan	SR 814.20, §	cantons	no	no	A	yes

Figure 10 Extract from the official geodata catalogue

5. CONTENT OF THE ACT ON GEOINFORMATION

The List of chapters and Sections of the Act can be seen from figure 11.

The highlights of the different regulations are

- The aim is it to make available the geodata on the whole territory of Switzerland easily available to every interested person or institution at reasonable cost;
- The law covers all official geodata under federal legislation;
- The technical requirements include data and representation models for geodata and metadata;
- The responsibility for geodata is with the authority which according to the law has to collect, update and manage the respective data and which is to make the data available in every moment;
- The geodata are public unless public or private interests are violated;
- The cadastre of the restriction on landowner rights is introduced and shall be operated by the cantons;

- The legal base has priority on every other regulation concerning geoinformation.

Chapter 1: General provisions
Chapter 2: Principles
 Section 1: Qualitative and Technical Requirements
 Section 2: Collection, Updating and Management
 Section 3: Data Access and Data Use
 Section 4: Cadastre of Public-law Restrictions on Landownership
 Section 5: Commercial Activities of the Confederation
 Section 6: Obligation to Support and Tolerate
Chapter 3: National Land Survey
Chapter 4: Swiss Geological Survey
Chapter 5: Cadastral Surveying
Chapter 6: Organisation
 Section 1: Responsibility and Cooperation
 Section 2: Financing
 Section 3: Education and Research
Chapter 7: Final Provisions

Figure 11 Content of the Act on Geoinformation

6. CADASTRE OF THE PUBLIC-RIGHT RESTRICTIONS ON LANDOWNERSHIP (PRLR)

The really new instrument introduced by the Act on Geoinformation is the Cadastre of public-right restrictions on landownership. The base for this decision was significantly influenced by the FIG publication ‘Cadastre 2014’ – A Vision for a Future Cadastral System. The need for reliable information on facts restricting the landownership rights was expressed already in the years 1970 - 1980 by land experts concerned with physical planning. In their request for a better documentation of restrictions on landownership they wrote:

The most important information of the planning and housing legislation worthy to be published are the public-right restrictions of the landownership rights. Those restrictions have their base in a confusing amount of laws and regulations of the federation, the cantons and the municipalities and public bodies of different domains of the public law.

After different initiatives on all political levels, the Law on Geoinformation brings now a solution of this problem which creates legal insecurity for all stakeholders in the field of territorial work.

The base for this new cadastre is laid in the Act on Geoinformation Art. 16 and the wording is shown in figure 12.

Art. 16 Subject matter and form

1 The Cadastre of public-law restrictions shall contain public-law restrictions on landownership rights which, in accordance with the provisions of the Civil Code, are not part of the Land Register.

2 The Federal Council determines which official geodata under federal legislation are entered in the Cadastre of public-law restrictions.

3 The cantons may define additional official geodata of proprietary nature that must be recorded in the Cadastre of public-law restrictions.

4 The Cadastre of public-law restrictions shall be made available in electronic form either online or by any other method.

5 The Federal Council shall determine the minimum requirements with regard to the organisation, management, data harmonisation, methods and processes for the Cadastre of public-law restrictions.

Figure 12 Legal base for the PRLR-Cadastre

Restrictions can be documented either by the Land Register when they are individual decisions of an authority or the PRLR cadastre when the decisions have a general character as boundary definitions by laws and official regulations. This provision corresponds to the ideas of ‘Cadastre 2014’ as shown in figure 13. The PRLR cadastre contains only space related objects and only those determined by the federation and the cantons. This is not totally conforming to ‘Cadastre 2014’ which stated to include all restrictions of landownership into this cadastre.

It is self-evident that this form of cadastre can only be realized with the help of IT. A respective practical example can be found in the following presentation by Peter Dutschler. The provision that the Federal Council determines minimal requirements is a principle of the Swiss legislation, which has to respect the sovereignty of the cantons. The cantons will have the operational responsibility for PRLR cadastre.

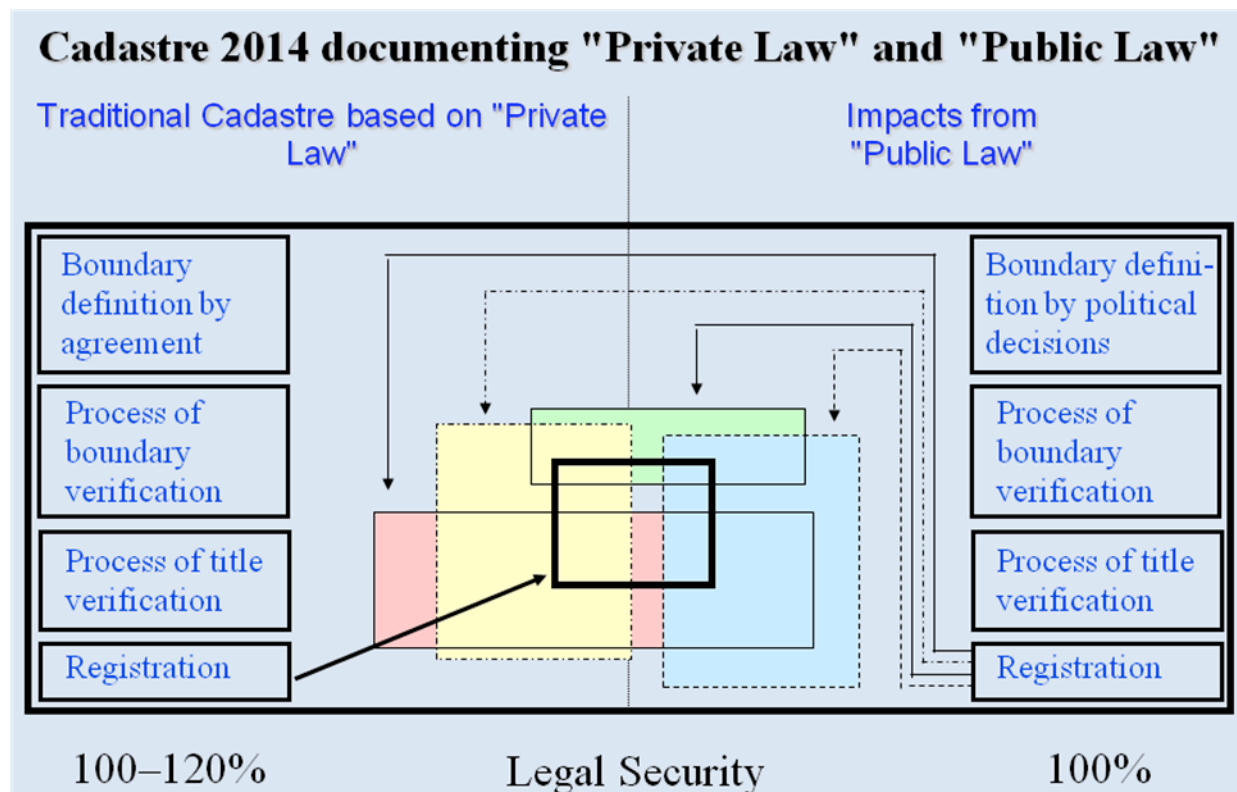


Figure 13 Idea of Cadastre 2014

The ordinance contains the sections represented in figure 14.

- Section 1: General provisions**
- Section 2: Content and Information**
- Section 3: Inclusion into the Cadastre**
- Section 4: Forms of Access**
- Section 5: Authentication**
- Section 6: Function as official gazette**
- Section 7: Organization**
- Section 8: Financing**
- Section 9: Participation**
- Section 10: Final Provisions**

Figure 14 Content of the Ordinance on the Cadastre on public-right restriction of landownership

The most important provisions of this ordinance are:

- The responsibility for the determination of the restrictions remains with the authorities charged with the execution of legal prescriptions. These fix the boundaries where the restrictions are effective. The cadastre has to include these arrangements;
- The boundaries are to be fixed on the basis of the cadastral data;
- Every interested person will get an extract from the cadastre concerning one or several land parcels;
- The person getting an extract can ask for an authentication of the content of the extract by the cadastre manager;
- The cantons can declare the cadastre to be the official gazette on respective decisions;
- The cantons are responsible for the management of the cadastre while the federation keeps the strategy and the supervision;
- The implementation of the cadastre is co-funded by the federation and the cantons, the cost of maintenance is to be borne by the bodies which cause the changes in the cadastre;
- The implementation of the cadastre is taking place in two steps. First some pilot cantons will develop their regulations until 2014 and start operation by January 1st, 2015. All other cantons are to be ready to operate the cadastre from beginning of the year 2020.

7. LESSONS LEARNED

The elaboration of this law package was a challenging task. It was not easy to get all the involved bodies and their ideas together and to achieve a comprehensive and coherent solution. The following problems and their solutions are to be mentioned as lessons learned:

- The whole topic was new to the involved bodies and it needed a lot of discussions to achieve a common view;
- Most of the involved persons were involved in the implementation of GIS-Systems in different fields and they did do that in an unregulated way. To be forced to follow rules was not liked very much. The reserves created disputes;
- The prescription to model all the data in a formal and strict manner still creates big problems. It seems that GIS people in contrary to the cadastral survey officers which have positive experience with data modeling do not like the binding force of the arrangements;
- The cadastre on the public-right restrictions created a lot of resistance. Everybody feared the binding force and they were anxious that surveyors would take over their work. This was finally the reason for the determination of a subset of official geodata to be content of the PRLR-cadastre by federation and cantons and a step wise implementation of the cadastre.
- The persons working on the data catalogue found the only reasonable way to define the official geodata is a systematic scan of the laws to find spatial related arrangements. This corresponds exactly to the recommendations of ‘Cadastre 2014’ and all of these legal arrangements have the characteristic of restrictions of landownership rights;

- It is a big chance to have a law on geoinformation as a guideline for the implementation of an NSDI. But it will take still some time to get the NSDI working correctly and to have the complete information available.

REFERENCES

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BIOGRAPHICAL NOTES

Jürg Kaufmann

Date of birth: 22. August 1942

Nationality: Swiss

Education

- Federal Institute of Technology ETHZ, Dep. Mathematics/Physics, 1962, 1963
- Federal Institute of Technology ETHZ, Dep. Rural Engineering and Surveying, 1967
- Diploma of Business-School, 1968
- Licence as Swiss Federal Licensed Surveyor, 1981

Languages: German, English, French, Italian

Consulting Experience

- Member of the Project Management Board of 'Reform of the Swiss Cadastral Survey'
- Consultant to Swiss national, cantonal and municipal authorities for Cadastre and NSDI
- Consultant Cadastre Projects in Belarus, Ukraine, Kosovo, Serbia, Macedonia, Azerbaijan
- Chief Technical Advisor UN Cadastre Project of for Georgia
- Consultant to the Government of the Principality of Liechtenstein for NSDI
- Member of the drafting committee for the Swiss Law and Ordinances on Geoinformation

Professional Experience

- since 1988: Independant Consulting Engineer, *KAUFMANN CONSULTING*
- 1981-1988: Keller Vermessungen AG, Switzerland, Chief Executive Officer
- 1979-1981: Federal Institute of Technology Zürich ETHZ , Senior Assistant
- 1970-1979: Digital Ltd, Zürich, Informatics Services for Engineering, CEO
- 1967-1970: ETHZ, Assistant Land Management and Cadastre

International activities

- Delegate of the Swiss professional organization of surveyors in FIG, Commission 7, Cadastre and Land Management
- Member of working group 'Statement on the Cadastre'
- Chairman of working group 'Cadastral reform and procedures; Cadastre 2014' and 'Benchmarking cadastral Systems'

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