

Registration of Public Land Rights and Restrictions in a Land Administration System

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SUMMARY

One of the six statements of Cadastre 2014 expressed that a cadastre in the future "*will show the complete legal situation of land, including public rights and restrictions*". This statement has led in Switzerland to a number of studies and several working groups were established in this context. The new law on geoinformation – soon to be submitted to the national government – explicitly provides for the establishment of a cadastre of public rights and restrictions.

As Switzerland disposes of a well established legal cadastre of private land rights, it is not possible to simply add the public rights and restrictions. Some cadastral principles, however, would have to be respected in order to maintain the reliability of the information provided to the public as well as the decision autonomy of the authorities. The surveyor as a potential administrator for such information platforms would have to respect certain conditions to fully assume his/her role as a provider of services and interfaces between authority and citizen.

This article will present the principal rules as they are proposed in the new Swiss law on geoinformation. Based on the specific Swiss case study, these rules are valid in a general context. They deal with issues such as spatial reference framework, registration and enforcement principles, fuzzy boundaries, conversion from paper to digital, data modeling, comprehensiveness and reliability of information, and functionality of such a system.

LES CONDITIONS RELATIVES A L'ENREGISTREMENT DES DROITS A INCIDENCE SPATIALE DANS UN SYSTEME DE GESTION DU TERRITOIRE.

Le rapport Cadastre 2014 postule que "Le Cadastre 2014 indiquera la situation légale complète du territoire, y compris les droits et les restrictions de droit public". Cet objectif est partagé en Suisse. De nombreuses études et plusieurs groupes de travail vont dans ce sens et la nouvelle loi fédérale sur la gestion de la géoinformation, prochainement soumise au Parlement suisse, prévoit explicitement la constitution d'un cadastre des restrictions de droit public à la propriété foncière.

Bien que la Suisse dispose d'un cadastre juridique de la propriété foncière, il n'est pas possible de simplement ajouter les droits publics à l'enregistrement des droits privés. Un certain nombre de conditions doivent être respectées pour garantir la fiabilité des informations livrées au public ainsi que l'autonomie décisionnelle des autorités. Le géomètre, gérant d'une telle plateforme d'information, doit respecter un certaines conditions pour assumer pleinement son rôle de prestataire de services et d'interface entre l'autorité et le citoyen.

Nous présentons les règles principales telles qu'elles ont pu être définies dans le cadre de l'entrée en vigueur la nouvelle loi suisse sur la géoinformation. Basées sur le cas spécifique de la Suisse, ces règles restent valables dans un contexte plus général.

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1. THE NEED TO RELY ON HIGH QUALITY INFORMATION ABOUT PUBLIC RIGHT LIMITATION OF LAND OWNERSHIP.

The judicial cadastre established in Switzerland since 1912 has instituted the fact that no land ownership is possible without registration in the land register, that the land register requires a parcel plan, and that this plan requires a preliminary delimitation of boundaries in collaboration with the concerned owners. Land property assessment is therefore based on a unique and absolute source of information. On top of that, free access to the land register granted to the public guarantees that no one shall pretend ignore who is the owner of a parcel. Judicial and spatial level of information can be considered as complete, easily accessible and trustworthy by all citizens.

The management of servitudes is definitely the area of private right for which the quality of spatial information should most be improved.

In the field of public rights, which allow the government to set rules and restrictions to the people, the situation is currently far from being so clear.

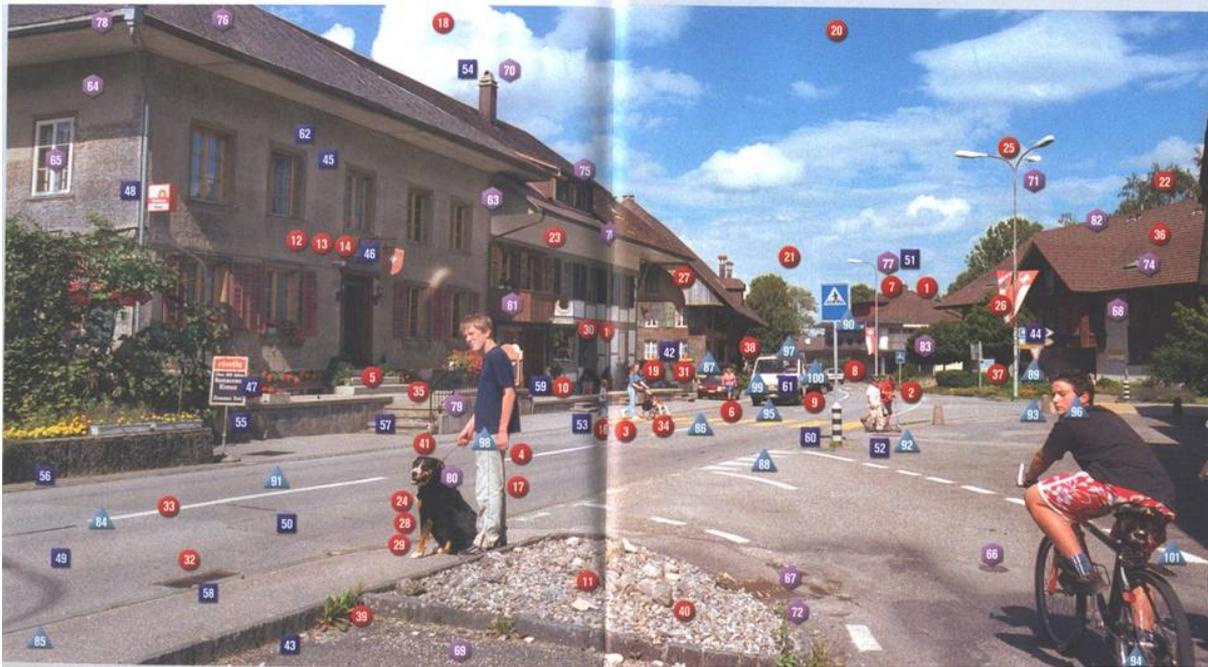
1.1 More and more Legal Dispositions

For long, the right to property was considered as so natural and obvious that it wasn't even mentioned in the national constitution. In 1969, a new article was added by referendum, which stated that « The right to property is guaranteed » and was immediately attenuated by the statement: « This right may be restricted by law ». Since then, a wealth of bills and ordinances have been introduced in order to restrict the rights of land owners : law on land planning, on water protection, against noise, on forests, on landscape and heritage protection,...

The complete register of Swiss federal laws currently includes about 55'000 pages, an increase of 30% since 1990. National authorities “produce” an average of 800 bills per year (3,5 for each workday

Each of the 26 cantons has its own legal competence, extensively used. Local communities also have the right to edict local regulations.

On the following image, taken randomly somewhere in Switzerland, at least 101 spots at which a law applies may be identified.

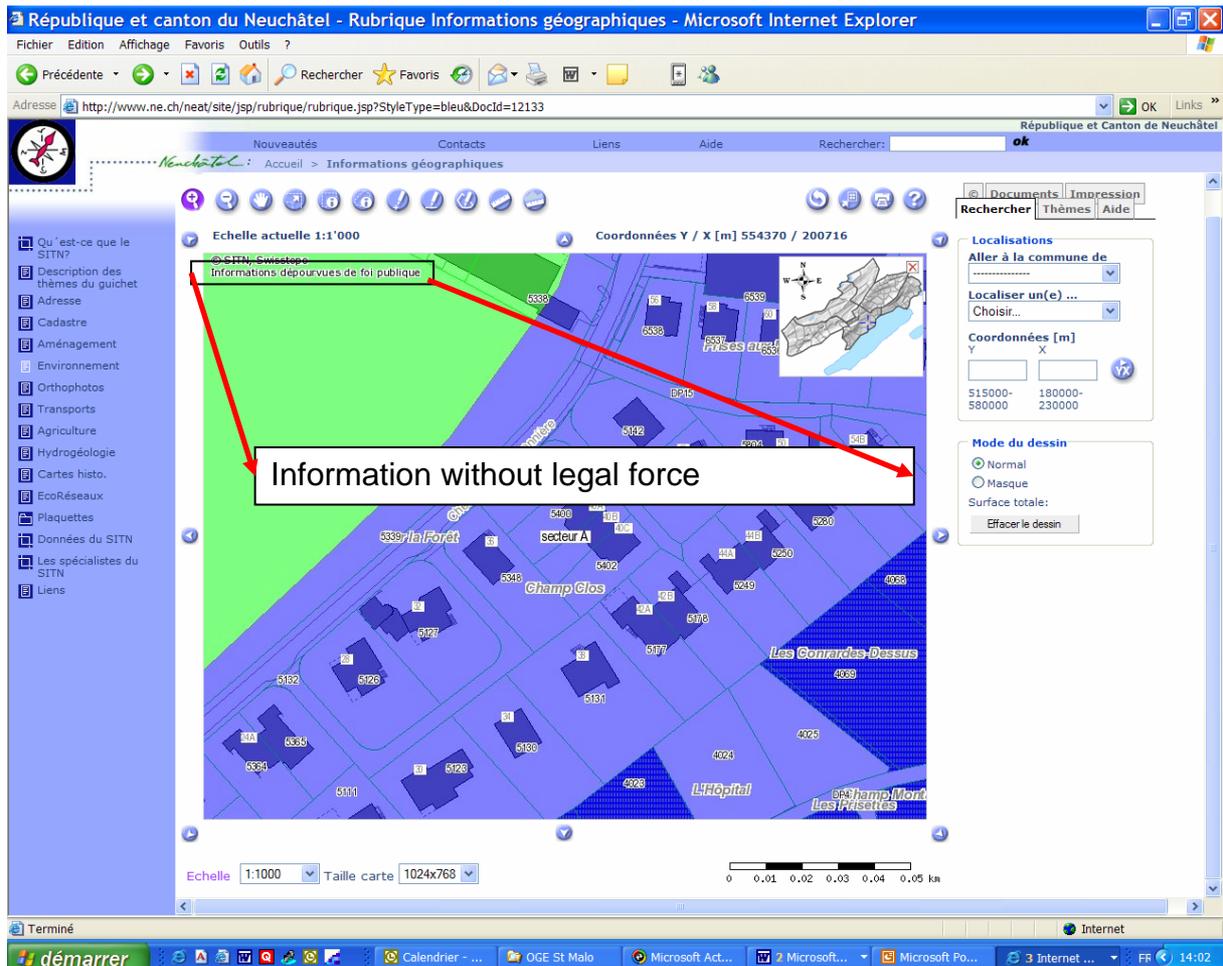


This exponential increase of legal dispositions, without any clear overview, certainly leads to measures and restrictions which may be inconsistent and aberrant. Therefore comes the fear of certain legal bodies to see the inconsistencies brought up to light through a system integrating all information, without being able to solve them easily and efficiently.

1.2 Craving for Information

The increase of legal dispositions has been done over the years in dispersed order. The only base rule being « No one shall ignore law » the citizens feel lost when they need to establish a comprehensive list of rights and restrictions related to land ownership.

Bills limiting rights are often completed by a plan. On the one hand, archiving of these plans is little or less organized. On the other hand, their readability is often made difficult by inappropriate storing or protection. When plans are on paper support, their scale is fixed and the overlay with other plans is quite impossible. Plans in digital form however only give the illusion of being easy to overlay and access. Scanned plans stored in raster format are difficult to view and the overlay is not easy. If they were vectorized, the interpretation margin between the original plan and the digitized elements is such that very often they lose their legal force.



Several such information systems, which don't guarantee legal force, have been recently set up and are widely used, even though the quality of the published information cannot be certified.

When an investor wants to buy or sell a real estate, an owner wishes to require a building permit or an administration wants to take some new land-related measures, it is necessary to go through a long and harassing process, visiting each public service to get the required and reliable geo-information.

Nevertheless, the safety of the real estate market relies on that system. The total value of the Swiss housing stock is estimated at about US\$ 1'300 billion, whereas the amount under mortgage is about US\$ 400 billion. In the case where banks would decide to increase their mortgage rate by 0,1% going from 4% to 4.1%, for example in order to reduce investment risk due to lack of information, the extra charge for debtors would be about US\$ 400 billion, or the equivalent of 3 to 4'000 employments !

It is therefore absolutely necessary to be able to rely on a geographic information system which brings together official, reliable and easily accessible data on right limitations which concern land property.

The report « Cadastre 2014 », written by MM Jürg Kaufmann and Daniel Steudler, published by the FIG commission 7, is a pioneer in this domain and has constituted in Switzerland a strong lobby towards the improvement of information regarding public right limitations on land property.

2. SETTING UP NEW RULES FOR NEW RIGHTS

Since 1912, Switzerland has a registration system in place that deals with land ownership information based on a legal cadastre. The rules are simple and absolute:

- no land ownership without registration in the land registry
- no registration without a cadastral map
- no cadastral map without parcel boundary definition

This system has clearly demonstrated its quality and one can pretend that the information related to land property is fully reliable and covers the whole country. Spatial influence of right is clearly identified since it has been delimited on the field in collaboration with the concerned parties. However, this quality of information only applies to private right. It only includes contracts between private owners, regardless if they are ownership or property restriction. The inscription puts the right into force.

As soon as public rights are concerned, the situation is dramatically different. The decision only depends on the state and spatial influence of the new right can be identified with more or less precision. Border-line cases are appreciated by the authority.

3. THE CADASTRE OF PUBLIC RIGHT RESTRICTIONS TO LAND OWNERSHIP

In order to compensate for the information deficit on land rights and to give citizens a complete and reliable overview of the rights concerning their property, we are currently setting up a cadastre of public right restrictions to land ownership, to be included in the new law on geoinformation. This tool should be seen as a mediator between the decision takers (state) and the citizens, by publishing current legal restrictions on a land information system. This will let the state assume the current restrictions are known by citizens (principle of publicity), and the owner will be given access to unambiguous information, which the administration will not contest during the procedure (principle of good faith).

In the following, we describe the requirements and conditions set for the rights to be published in respect with the publicity and good faith principles.

3.1 A Tangible Spatial Reference

The decision which sets up the new right, or right restriction, must be linked to a tangible spatial definition, as a polygon, point or line, either located on the field or represented on a plan.

3.2 Only currently Valid Rights or Restrictions are Published (Opposable to others)

In order to be reliable, information must only concern a truly enforceable right. The decision itself determines the time from which a right is valid. It may however be interesting that the applicant links the start of validity to its inscription in the cadastre.

3.3 The Authority must be Strictly Respected

The cadastre manager is only an interface between the decision-maker and the applicant. He's not habilitated to impose conditions which would let the decision-maker to modify a validated decision. Technology must fulfill the judicial and political needs, not the other way around! A close collaboration between both actors should be a precondition to the establishment of a data model which suits everyone's needs.

3.4 Fuzzy Borders

Quite often, the authority lacks technical or judicial documents needed to define with a high level of accuracy the delimitation of a right to be established. For example, delineating a water protection area with a high precision requires detailed studies, at an unreasonable cost related to the general decision to be taken. In cases related to the area, the precise determination will be done only at the time of the demand, which would justify the detailed studies. This uncertainty is implicitly expressed on paper maps through the scale of the map and the width of the line delineating the area. In the digital representation of the plan, either scanning will be used, and therefore the graphical metadata will be kept, or the applicant will have to be informed by an ad-hoc attribute describing the need for further investigation. This uncertain area, expressed in meters, does not introduce a gradation of the applicable right, it rather informs on the authority in charge of taking the specific decision.

Uncertainty should not be seen negatively, as a lack of precision or reliability. On the contrary, it represents an efficient way to implement a frequently used judgment process, which is usually non compatible with the needs of digital data.

3.5 Correctly Interpreting Symbolology

Graphical language is much richer than text. While the first one is sequential and linear, leaving only little space to interpretation, the second one is spatial and allows multi-level interpretations (global, local, unitary) and relies on the richness of the eye (size, colour, intensity, orientation, shape, dot-density). All these factors play an important role in the interpretation of graphical information, even though they usually are used unsuspectingly.

When data is transformed into a digital form, metadata included in symbology must be correctly interpreted and converted.

This interpretation can usually not be done by the technician in charge of the job on his own, but rather in collaboration with the authority.

3.6 Formal Validation of the Symbology by the Authority

Generally is the decision expressed as a text, often completed by a plan on paper. In order to guarantee digital access to information, mandate will be given to a specialist to digitize the plan. For good faith to be guaranteed, i.e. for the applicant to be sure that what he gets meets the authority's will, the cadastre will be allowed to publish a digital image of the validated decision, only once acknowledged as correct by the authority.

3.7 Common Geographic Reference Frame and Data Model

The added-value brought by the cadastre lies on the ability to overlay data layers coming from different sources in order to create an inventory. For example, the possibility of building on a parcel will be determined through the superposition of the cadastral plan, the constructible areas map, the danger map and so on. As only compatible data may be overlaid, the need for a unique geographic reference frame and for clearly determined data models is critical.

3.8 Link to laws and regulations

As said before, text and graphical documents work on a quite different manner and are not always compatible. However, the cadastre of public rights restrictions must not only answer to the « graphical » question *where?* but also to the “textual questions” *what?* and *when?* A link between right and localization will therefore have to be provided. In Switzerland, the consortium C2014, setup by surveyors as a consequence of the Cadastre 2014 report, has modeled all spatially-related (textual) laws to establish this link.

3.9 Maintain a gap in the attributions of the authority and the cadastre manager.

The decision-maker is still the « master » of the data: Only he has the ability to create, modify or delete data. He can interpret them and decide to whom they may be transmitted.

The cadastre manager, on the other hand, must keep an eye on the correct diffusion of data. He makes sure that the data he's in charge of stays at a high level of quality and meets the decision-maker's requirements. If needed, he'll be in charge of collecting fees. He's responsibility is also to mention any inconsistency identified by using data in relation to other sources. However, he doesn't have the power to correct these inconsistencies.

4. CONCLUSIONS

In the future, the surveyor will have a very active role to play in the implementation of information systems regarding the public rights restrictions on land property. His technical and judicial background will be especially valuable to:

- Act as an advisor for the decision-makers and help them to graphically translate their decisions
- Interpret and express the actual will of the decision-makers
- Model, structure and manage data
- Edit and publish data
- Provide the required technical infrastructure to allow the best possible management and diffusion of geo-related data
- Mention and help solving the inconsistencies discovered during the overlay of multi-source data.

Since «Too much information kills information», the user will quickly find himself overwhelmed by a flow of information available only a few mouse-clicks away. The surveyor will here also play a role, not only as information provider, but also as an assistant who would help the client to interpret the available data on the basis of his judicial and technical background. Initial training of young surveyors should therefore be more and more oriented towards the clients, private or public, and thus becoming somehow a technical clerk. The term “Expert”, used in several countries to qualify the status of surveyors, takes here a new meaning.

BIOGRAPHICAL NOTES

Academic experience : Ing. géomètre et du génie-rural dipl. Ecole Polytechnique fédérale de Lausanne EPFL, 1972

Swiss registered surveyor, 1973

Teacher for Land information system and for cadastral surveying 1989 - 2004

Current position : scientific advisor D+M

Practical experience : géomètre cantonal 1979-1989; private office in cadastral surveying 1989-2003

Political activity : municipal counselor 1992-2002; canton deputy since 2003.

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