

# Reforming the Swedish Cadastre

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**Key words:** Real property formation legislation, the Cadastral Procedure – the "förrättning" procedure, working methods and technical support routine, the cadastral surveyor's responsibility and decision, market, clients and cost.

## ABSTRACT

In Sweden, real property formation, which includes cadastral surveying and real property registration, is an important mean of implementing legal changes and measures relating to real property. Official authorisation is required and Lantmäteriet has the overall responsibility for the activities in the entire country. This cadastral system is relatively unique to Sweden and Finland. The "förrättning" procedure is a secure, simple, neutral and cost-efficient system. The legislation is from 1970's, but has a long history. However, legislative work is currently in progress in Sweden aimed at making possible the formation of properties in strata.

During recent years, Lantmäteriet has carried out a rationalisation programme to improve the efficiency of cadastral procedures: new technology and new working methods have been introduced and comprehensive training programmes have been undertaken. By using new technical support routines, modern field surveying methods, based on GPS and GIS, productivity has further increased.

Property formation includes – in addition to technical work - making legal decisions concerning the formation of new properties (subdivision), changes to existing properties (reallotment), creation of joint-properties, easements, utilities and common facilities. Previously the process was divided into several parts with many employees involved but is now handled by only one or two cadastral surveyors. The cadastral surveyor is responsible for the whole procedure and takes important decisions such as the right to use new land, the time for taking over ownership, compensation and distribution of costs. The decisions are finally registered in the Real Property Register, which includes the Digital Cadastral Index Map.

Clients include private property owners and also many companies and organisations. Nowadays the market for cadastral services includes key activities within environmental and infrastructure sectors such as telecommunications, energy, railways, public and private roads, forestry and the Swedish Church.

In our presentation we will use the cadastral survey procedure (the "förrättning" procedure) as an example of one good way to solve issues related to land and compensation.

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The first cadastral system in Sweden was created in the 17<sup>th</sup> century. The purpose was to establish a base for real property taxation. In 1628 the National Land Survey (Lantmäteriet) was established.

All land in Sweden and, in principle, also all water areas, are divided into property units or joint property units. This means that there is a comprehensive division into property units, entered in the Swedish Real Property Register. There are no unregistered public areas. The only areas not included in property subdivision are those comprising public water areas, which are in the sea and in four of Sweden's largest lakes.

The Swedish cadastral system consists of the Land Law, the Real Property Formation Act, the Utility Easements Act, the Joint Facilities Act, the Land Survey Code, the and the Real Property Register, which includes the Land Register. The Swedish cadastral system is considered to be a well functioning, straightforward, efficient and secure system for all concerned parties.

## 1. THE LAND LAW AND THE REAL PROPERTY FORMATION ACT

The formation and re-formation of property units can only be carried out through an official decision. Changes to property division are normally made through a cadastral procedure under the Property Formation Act. This is the responsibility of the public cadastral authorities. There are both national and municipal authorities of this kind and national responsibility is vested in Lantmäteriet.

The current Land Law and Real Property Formation Act were introduced in 1972. The legal structure is still modern and logical. Together with the Planning and Building Act (1987) and the Environmental Act (1999), the government has also created a number of other valuable instruments for implementing its land policies.

The Real Property Formation Act covers subdivision, reallocation, amalgamation, property boundaries determination, registration etc. The law is applied in both urban and rural areas, and is a powerful tool which authorises the cadastral surveyor to make decisions concerning changes in the division of land, even those that are not voluntary.

The view taken in Sweden is that the division of land into property units shall reflect the current use of the land. Thus property units cannot be freely constructed, as is reflected in the provisions of the Property Formation Act, which require property units to be deemed suitable for their intended use and sustainable on a long-term basis. When a property unit is formed for housing purposes, for the construction of a dwelling house to be approved there must be access to a road, it must be possible for the building to be supplied with water and sewerage services, and so on. Similarly, it is not normally possible for a new housing property to be

formed next to an environmentally disruptive facility. Further, it is stipulated that property units may not be formed at variance with existing plans or other land-regulating provisions. For example, shoreline areas in Sweden are under general protection, so as to make them accessible for the general public. Property units may not be formed in these areas if this would frustrate the purpose of the provisions. The rules for land policy sometimes preclude partial transfers of property units.

The law includes compulsory purchase and, therefore, the cadastral survey process is frequently used in infrastructure project instead of time-consuming expropriation processes.

Sweden is one to the countries that uses a system of fixed boundaries. In this system a cardinal principle is that all boundaries shall be clearly defined: a boundary resulting from property formation shall be demarcated on the ground to the extent that is considered necessary. New boundaries are determined with fairly high standard of accuracy. Normally they are carefully demarcated on the ground at the time of their establishment, but older boundaries still exist which were privately created in the days when this was permitted. The importance of boundary demarcation is reflected by it being a punishable offence, for example, to remove or alter the position of a boundary beacon or to set out what can be taken for a boundary beacon.

## **2. THE CADASTRAL PROCESS**

The activities of the cadastral authorities are regulated by the legislation mentioned earlier in the paper - the Property Formation Act, the Utility Easements Act and the Facilities Act. A cadastral surveyor carries out cadastral procedures. A cadastral procedure differs from a judicial procedure in that the cadastral surveyor, independently, has the task of investigating and taking decisions concerning the suitability of the measures to be taken. This includes carrying out investigation, contacts with landowners and liaison with relevant public authorities. The latter is required in order to obtain supportive documentation for assessing the compatibility of the intended measures with planning requirements for the area concerned. Within the framework of a cadastral procedure, the cadastral surveyor can engage other outside experts, for example to compile background material for complicated compensation decisions or to plan a road.

Rules concerning the formation and re-formation of property units are contained in the Property Formation Act. There are three distinct procedures for the formation of new property units: subdivision, partition and amalgamation. There is only one re-formation procedure, namely reallocation. Reallocation, however, can embrace several different changes. Land can be transferred from one property unit to another which can involve major reallocation or the relocation of boundaries between property units. Reallocation can also be used as a mean of forming joint property units and amending participation in them. It is also a mean of forming, amending and cancelling easements. In addition, the Property Formation Act contains provisions on property definition whereby the extent of a property unit can be determined, for example as regards the correct course of a boundary or the existence of an easement.

Cadastral procedure can be used for taking certain coercive decisions such as procurement of land for streets within areas subject to a detailed development plan or giving one property

unit the right to construct a road across another unit, against the wishes of the owner of the servient property.

Property formation procedures are documented in cadastral documents, which normally comprise minutes together with a description of the property formation and a cadastral map.

When a cadastral procedure has gained force of law, an entry to this effect has to be made in the Real Property Register. A cadastral procedure is deemed complete when this entry has been made.

A cadastral survey starts with an application for a survey to be carried out. The survey may involve only a few persons but in some cases as many as hundreds of people may be involved. The process consists of following components:

- Application
- Investigation
- Meeting (negotiation)
- Field survey, measuring/demarcating boundaries
- Decisions (juridical, economic and technical)
- Registration.

The cadastral surveyor is frequently obliged to carry out investigations on his/her own. During meetings with the parties (the applicants, neighbours and more), the surveyor will encourage those present to become involved in the process with the aim of reaching a decision which can be accepted by all parties. Participation in meetings is not compulsory in "easy" cases. All decisions must be based on the law, land policies and regulations and taken in consultation with the local authority, the County Administration Board and different sector agencies such as the National Road Administration.

If, when all concerned parties have been heard, the investigation shows that it is possible to carry out a survey, the surveyor can take decision concerning both the new subdivision of land and other questions such as easements, economic matters and new boundaries etc. The surveyor is also responsible for securing the interests of creditors where there are mortgages. The surveyor must not favour anyone; the decision must be fair. The decision must consider the need of the society as well as concerned parties. Therefore, the surveyor must be totally independent. In addition to being responsible for implementation the surveyor is also responsible for the costs of the procedures.

If any of the parties is dissatisfied with the cadastral authority's decision, an appeal must be lodged within four weeks.

### **3. THE REAL PROPERTY REGISTER (which includes the Land Register)**

In addition to being responsible for legal, economic and technical matters, the cadastral surveyor is also responsible for updating the Real Property Register, which including the digital index map (and the land register). After four weeks, when the cadastral procedure has gained

force of law (or at once if the concerned parties agrees), the new or changed information must be published in the Real Property Register. From this date all decisions are valid for third parties. The Real Property Register is open to the general public.

After the new real property is entered in the Real Property Register the title registration transaction can take place.

All changes in the Land Register are recorded in the Real Property Register. The responsibility for the Land Register rest with the local Land Registration Authority. The contents of the Land Register are guaranteed by the state.

#### **4. ORGANISATION**

The task of Lantmäteriet is to contribute to an efficient and sustainable use of Sweden's real estate, land and water. The organisation has three divisions: Cadastral Services, Land and Geographic Information and Metria.

The Division of Cadastral Services is responsible for Lantmäteriet's cadastral activities.

The main activities are carried out within twenty-one Cadastral Authorities, one in each county. At the headquarters' office there are units for development, marketing and management. The division has a total staff of approximately 850 persons of whom 800 are working at the Cadastral Authorities and 50 at the central level.

In thirty-eight of the municipalities there are also Cadastral Authorities within the local administration.

#### **5. THE CADASTRAL PROCEDURE (The "förrättning" procedure)**

The Cadastral procedure has proved to be a good way of resolving land-related issues and compensation questions. Briefly, the advantages of the Cadastral Procedure model are (G.Larsson, p 35):

1. The Cadastral procedure is a suitable form of consultation and negotiation with the parties involved, while simultaneously collecting concrete information about conditions on the spot. On this basis a balance can then struck and, if possible, the interest of individual claim-holders reconciled and third party interests duly protected.
2. The Cadastral procedure is a suitable form of consulting of authorities whose field of activity is affected by the measure, and for the co-ordination of public interests.
3. Apart from the actual handling procedure, the cadastral surveyor can supply useful information and advice with a bearing on the assessment and implementation of the measures contemplated
4. All forms of cadastral procedure require the matter to be objectively and comprehensively investigated.
5. Both private and public interests, together with various other aspects, can be examined and balanced against each other in one single procedure. Existing forms of cadastral pro-

cedure provide great possibilities in this connection of linking different measures together.

6. Cadastral procedure, as a rule, not only leads to legally binding decisions but endeavours to ensure as far as possible that those decisions are actually implemented.
7. The handling procedure itself is flexible and less complicated than alternative forms of decision making, such as judicial procedures. These are based more on correspondence, investigations by the parties themselves, involvement of legal representatives of the parties and pleading by the parties, all of which limits the scope for negotiations and more flexible decision-making within the framework of the procedure.

Through its construction, the model should be capable as serving as a democratic tool for the achievement of greater consensus and user participation. Experience appears to confirm this. Appeals, for example, are rare (G.Larsson, p 53). Our experiences of the use of this model are very good: it is a secure, simple, neutral and cost-efficient procedure.

## **6. WORKING METHODS AND TECHNICAL SUPPORT**

Lantmäteriet has recently carried out a radical rationalisation of the activities of the Cadastral Services Division. Where previously, as many as ten persons could be involved in the survey and registration process, today the same work, including updating the databases, can be handled by 1-3 persons.

How was this possible? Huge investments have been made in developing prototypes for the final databases in the Real Property Register and the digital cadastral index map. These prototype systems were developed to integrate the cadastral and registration processes. Today, a cadastral survey starts with the export of data from the Real Property Register and the cadastral index map databases to a working-database. The working database is continuously updated throughout the survey. An important part of the contents of the working database is the legal information including all decisions that may affect the procedure and the existing cadastral map. When the cadastral survey gains legal force, the new data from the survey is imported into the central databases.

As both the technology and the techniques were new to most of the staff it was necessary to arrange comprehensive training. Courses were also arranged in the Land Law and the Real Property Formation Act. Some of the studies were carried out outside working.

The development of new systems, investments in technology and infrastructure and staff training have involved considerable costs and human resources. Naturally many problems were encountered along the way, but today the investments are bearing fruit and the decisions that were taken have proved to be correct. As experienced is gained both costs and the time required to carry out the survey work are decreasing.

Since the rationalisation programme was started there have been major organisational changes in Lantmäteriet: the internal organisation has been totally restructured and changed from a large number of independent units to a unified "flat" organisation. Previously the cadastral survey organisation was separate from the real property registration authority

whereas today the two organisations are merged into one. Today, as a result of the rationalisation, the same volume of work is carried out by two thirds of the original staff.

With the aim of further rationalising cadastral procedures a project for scanning historical cadastral documents has been started. This will make it easier to carry out cadastral investigations and lessen the wear and tear on the invaluable historical maps in the archives.

## **7. MARKET AND CLIENTS**

Traditionally the market for cadastral services has mainly been centred on subdivision and reallocation for building development, principally for dwelling houses and second homes. During the 1970's, for example, of the order of 25.000 new units were created through approximately 20.000 cadastral procedures each year. In addition to subdivision surveys for dwelling houses, cadastral procedures were carried out for restructuring and improvement in the Swedish agricultural and forest sectors. Currently, in addition to subdivision surveys for approximately 15.000 new property units per year, the focus is on infrastructural development such as the construction of railways and roads, telecommunication networks and utilities for water, sewerage and district heating systems. This has resulted in cadastral procedures becoming increasingly complex and affecting a larger number of property owners than was previously the case. The need to maintain a delicate balance between public and private interests means that the cadastral surveyor, more frequently than before, must make the decisions when agreement cannot be reached between the involved parties.

Numerically, private property owners are still the largest client group. Nowadays, however, Lantmäteriet's clients also include many companies and organisations. The largest of these is The National Rail Administration, which annually applies for cadastral procedures for approximately SEK 30 million (3,3 Euro). The latter years' active marketing policy has resulted in an increasing use of cadastral procedures for land acquisition.

The market sectors that are deemed to have the greatest development potential during the next few years are those that will be affected by restructuring, the conversion of local and central government facilities (electricity, water etc) to independent companies, privatisation and investments in the development of infrastructure. Within the infrastructure sectors the demand is greatest for large and complex cadastral procedures. Cadastral procedures will be required for, amongst other purposes: restructuring the land used for railways; the road sector (as a result of the introduction of State subsidies to stimulate the re-examination of old decisions and modernisation of road maintenance associations); guaranteeing the availability of land for telephone stations; the extension of broadband networks; the extension of the UMTS network for 3G mobile telephones with approximately 8 000 masts and antennas; the introduction of new legislation concerning the transmission of fixtures; utility easements for district heating systems; the implementation of EU's directives concerning water up to 2004, with recommendations for run-off districts and management; and nature conservancy and biotope protection areas (Natura 2000).

Within a year or so the new legislation concerning three-dimensional property formation will most probably lead to a demand for a large number of cadastral procedures.



To summarise, the prognosis for the next few years is that the demand for cadastral procedures will increase by approximately 5 % per year. The major increases in demand for cadastral services will be in connection with developments of infrastructure where many parties are and for which cadastral procedures will be a suitable tool.

## **8. FINANCE**

Cadastral procedures are financed through fees (a monopoly function) and through income from cadastral consulting services. For activities financed through fees the requirement is that the fees shall cover the total costs and give a return on the invested capital.

Fixed fees for the various types of work involved in cadastral procedures have been discontinued. When requested, and to the extent that it is possible, time-based charges can be replaced by fees that are agreed on in advance. The fee for a subdivision, including fieldwork, of a parcel with an area less than 5000 m<sup>2</sup> within an area for which there is a detail plan is for 2002 SEK 13.000 (1430 Euro) and for a parcel outside an area with a detailed plan, SEK 15.000 (1650 Euro). The fee for reallocation between two real properties, including fieldwork, is at present SEK 13.000 (1430 Euro).

The costs for the property registration and some other official duties are financed by government grants.

## **9. DEVELOPMENT OF LEGISLATION**

During the last few years Lantmäteriet has actively participated in the development of cadastral legislation. New requirements and demands have resulted in, amongst others, the following changes or proposals for changes to legislation:

### **9.1 Transmission and Detachment of Fixtures**

An important principle in Swedish cadastral legislation is that a property unit, in addition to land, also comprises certain objects that are connected to it, so called fixture, such as buildings or other facilities, utilities, trees and similar. Buildings and facilities which have been built outside the property based on servitudes or through utility easements.

From January 1<sup>st</sup> 2002 it is legally possible to transmit buildings and other facilities that belong to a property to another property without the need to physically move them. A prerequisite is that there is an official easement or that an easement can be created by a cadastral procedure. It is also possible to detach utilities that belong to a property in order that they, thereafter, shall constitute personal property. A requirement is that there is a utility easement or that an easement can be created.

The transmission or detachment of property fixtures can only be carried out through a cadastral procedure. The new regulations will certainly result in an increased use of and confidence in cadastral procedures.

## 9.2 Mortgage-Free Subdivision

Currently, subdivision does not lead to any changes to the object for the lien. Following subdivision, a mortgage that has been registered in the property that has been the subject of the subdivision encumbers the same land area as prior to the subdivision. Responsibility for the mortgage is shared between the residual property unit and the subdivided parcel. The joint responsibility for the mortgage that arises in this way is seldom permanent. This is a situation that normally is undesirable. A separate process, called relaxation, which is carried out by the land registration authority, is required to free the subdivided parcel from the residual property's mortgages

Currently, there are proposals for changes in the legislation, which would make it possible for a cadastral surveyor to formally decide, within the framework of a cadastral procedure, that a subdivided parcel shall not be encumbered by mortgages on the residual property.

Such a possibility would significantly simplify the situation for the involved property owners. At present the result, of the subdivision is the creation of an independently functioning property unit that can immediately be used as security for loans.

It is proposed that this change to the legislation should come into force during 2003.

## 9.3 Cadastral Procedures for Nature Conservancy

On the national level, it has been determined that, within the next ten years, there will be a need for protection of the remaining areas of natural forest by the designation of approximately 250.000 hectares of forest land as nature reserves and approximately a further 25.000 hectares as protected biotope areas. Large areas and a large number of property owners will be affected by these measures. With the aim of carrying out this work in an effective and legally secure way, a proposal for a new act regulating cadastral procedures carried out for nature conservancy has been formulated. The new act would give County Administrative Boards, local authorities and affected property owners the possibility to request that questions concerning to compensation and payment for compulsory acquisition of land, as a result of decisions concerning nature reserves, biotope protection areas and water protection areas, could be handled, and decisions taken, as part of a cadastral procedure. In connection with such procedures initiatives could be taken concerning measures to prevent damage such as exchange of land. This legislation is being drafted in the Ministry of the Environment.

## 9.4 Three-Dimensional Property Units, 3D

Legislative is currently being prepared aimed at making possible the formation of properties which are three-dimensionally delimited, i.e. they have both horizontal and vertical boundaries. At present, in Sweden, properties can only be delimited at ground level.

For some time now there has been a demand in urban areas for dividing up ownership in buildings so that different persons can own different parts or can own a delimited space below ground. This is a demand which the existing legislation is unable to meet. The

situation can arise where there is a need for dividing ownership between one part of a building which is used for commercial activities - shops, for example - and another part of the same building which is used for housing purposes. A similar case is underground storage, which is used for different types of activities, has no connection with the use of the ground above.

Within Lantmäteriet, experimental work and development is in progress to prepare for the introduction of three-dimensional property formation. The report on the division into three-dimensional property units, cited in the list of references, does not deal specifically with the way in which 3D property units are to be documented in cadastral documents, how they are to be registered or how they are to be plotted on the cadastral index map. A number of questions thus remain to be tackled. For example, should 3D property units be shown on the present-day two-dimensional map, or should a three-dimensional cadastral index map to be created? The same applies concerning presentation on the cadastral map.

Whatever the design of the cadastral map, the delimitation of the property units either within a building or below ground will have to be very clearly documented. One possibility is to use the building plans as the documentation, either on their own or together with other measurements. A written description will most probably also be needed. Another possibility is to show co-ordinates for the delimitation of 3D property units. This would call for measurement of the buildings "as-built." Thus several different questions remain to be resolved on the subject before implementation in 2003.

## **10. CONCLUSION**

As a result of the reformation the Swedish cadastre, Lantmäteriet has reduced costs by between 10 and 15 % for the most commonly executed cadastral procedures such as subdivision and reallocation. The reform has also led to a reduction in the time required to carry out cadastral procedures by 30% compared with 1997, when the reform was started. We have also seen a noticeable increase in the demand for cadastral procedure, particularly for larger and more complex cadastral procedures, in connection with the infrastructure and environmental sectors. There has been a similar trend regarding procedures in which several properties are involved and where public interests must be balanced against private. In this connection there is clear evidence that the cadastral procedure is a powerful tool for solving land acquisition problems especially in cases where it is not possible for the involved parties to reach an agreement - so-called compulsory cadastral procedures. By tradition, the Swedish cadastral surveyor has always a wide-ranging, all-encompassing responsibility - legal, technical and economic - for cadastral procedures.

Well-educated cadastral surveyors are a prerequisite and guarantee in order that further rationalisation of the cadastral process can be carried out and for the continued development of new methods so that Lantmäteriet can "contribute to an efficient and sustainable use of Sweden's real estate, land and water" (business philosophy).

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## Existing laws

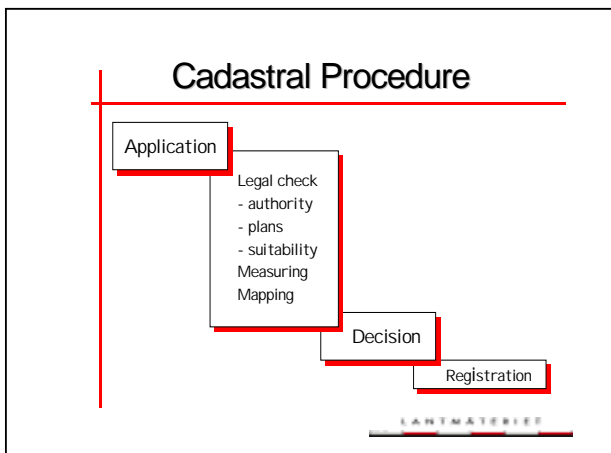
- Real Property Formation Act (1970)
- Joint Facilities Act (1973)
- Utility Easements Act (1973)

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## Real Property

- Land
- Buildings on the land
- All land is divided into properties (units)
- Registered in the property register
- Every property has a designation
- The cadastral authorities (the land survey organisation)

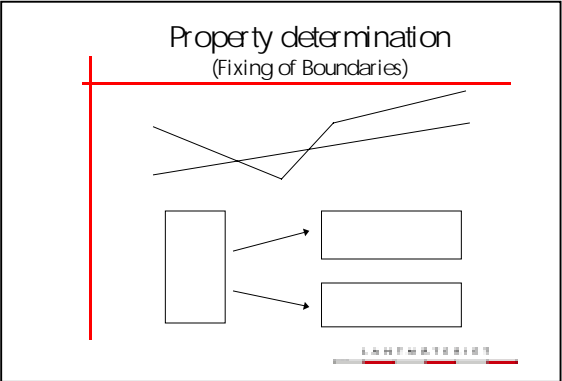
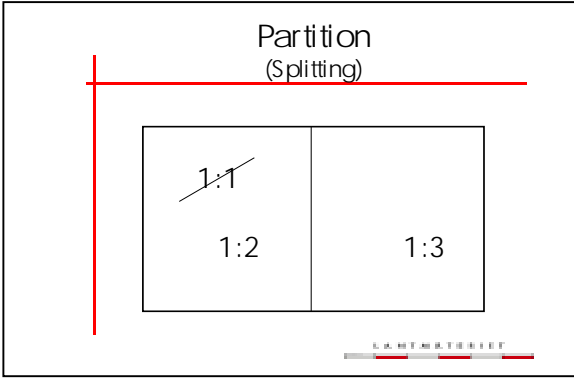
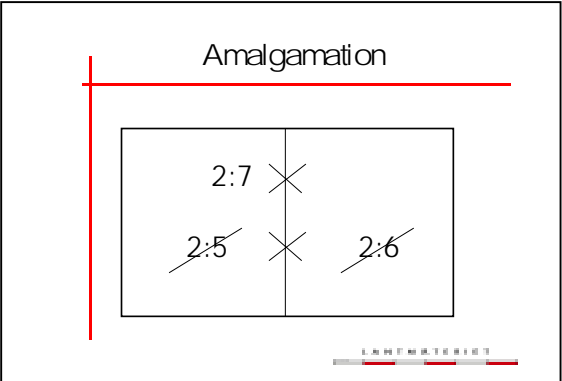
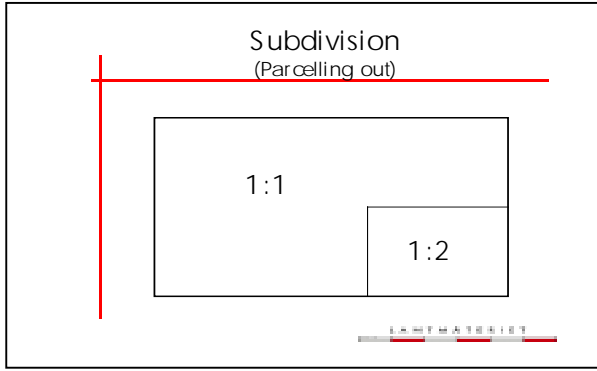
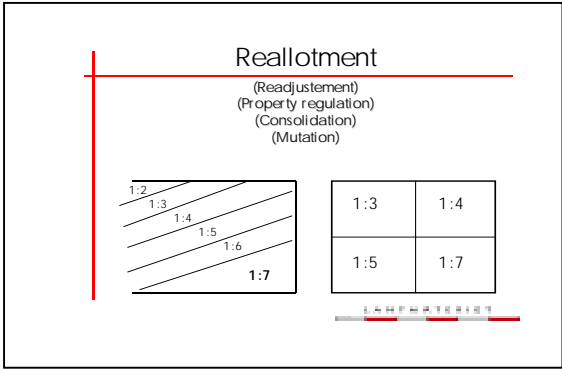
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## Procedure

- Cadastral Authority
- Surveyor
- In some cases: Surveyor + two laymen
- Simple cases
- Conflicting interests
- Meetings
- Decisions
- Agreements, consent
- Compulsory decisions

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- ### Market 2002 - 2005
- The nature and environmental sector
  - Telephone and data communication
  - The energy sector
  - Railways
  - Public roads
  - Private roads
  - The forest sector
  - Church - State year 2000
  - Civil aviation sector
  - Number of cadastral procedures:  
13000 per year
  - Number of new real properties:  
15000 per year