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benefit from good land registry and cadastre at European level (UN/ECE/WPLA, 1998).

Regarding the earlier mentioned Spanish initiative; one might say that—in my view—the initiative could be highly appreciated, but—to put it bluntly—it does not go far enough. The establishment of a Permanent Cadastral Committee aiming at

- the creation of a proper scenario where the cadastral activities of the EU and the members states can be known,
- the provision of complete interoperability among the EU cadastral systems through common strategies and initiatives

likely can not be successful without taking into account the harmonisation or—at least—the co-ordination of property regimes and land registration cadastre regulations.

Because of the relation with article 222 of the European Treaty such a comprehensive approach should be embedded in the EU-administration, and therefore leadership of the EU is needed. Forming a meeting place for cadastral officials might be useful for diffusion of visions, and for sharing ideas and developments, but is basically too informal, and might overlap with—for example—the Working Party on Land Administration WPLA of the United Nations Economic Commission of Europe, Commission 7 on Cadastre and Land Management of the International federation of Surveyors FIG, or the pan-European organisation of National Mapping Agencies Eurogeographics.

So—in my view—the key for the future of land registry and cadastre in the EU is a formal body under EU leadership, with the comprehensive mission to bring harmonisation or co-ordination of property regimes, registration and cadastre further within the EU policy-framework (see as a step forward the «Land Administration Guidelines» of the UN/ECE/WPLA, 1996).

Recommendation

First of all the Spanish government deserves a compliment for recognising the importance of property, registry and cadastre for the EU and for involving the issue in the Official Performance Program of the Spanish Presidency of the EU.

Secondly, the EU should be invited:

- to create an official EU committee or task force,
- consisting of officials responsible for property law, registration and cadastre,
- in order to study the impact of the free movement of people, goods and capital on property regimes, registration and cadastre,
- to take into account the support to EU policy that good land registers and cadastres can give,
- with the goal to identify appropriate EU measures to be taken,
- EU authorities definitely should chair such a committee.

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Customers of Cadastral Information in a service oriented society

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Customers of quite different profession are using Cadastral Information as a tool for their decision-making. The main categories of customers and their demands have changed dramatically over time. They are accessing components and services not only from Cadastre but from different sources in digital form. How can they manage it? Is it by a coordinated approach of the information providers or is it much more a demand driven initiative, not withstanding all the hindrances? In fact it seems that we should know more about the customers, their demands and the changes over time!

What are the challenges for the customers? The customers get more and more involved in the unpleasant aspects of **merging, transforming, overlaying, filtering information**. A sound infrastructure however needs some harmonization for optimised common use of services and data provided.

All that is just a repeating story already known from the past. It was always a process of trial and error for developing sustainable infrastructure and business models, which are still under permanent improvement.

Cadastral changes over time

What have Cadastral systems archived in the past?

In most European countries systems to collect, maintain and provide Cadastral Information has been developed during the last 200 years. We have to be aware about the changing demand on Cadastre developed for an agricultural society adapted to the demand of the Industrial Society and still shaping for the Information Society and now facing the challenges of the Service Society.

The focus of improvements within Cadastre was mainly on:

Procedural streamlining: Within Cadastral Agencies all over time the procedures and workflows were improved quite a lot.

Organizational improvements: First of all it was an organizational than a technical challenge to collect the information. Cadastre is handwork and not a science. In recent time however Cadastral systems with a sophisticated approach are introduced with the support of EC-subsidies. Such expensive approaches seem to be more in the interest of the profession instead of focusing on the customers demand. This results however in lower customer satisfaction and loss of social and economic relevance of a Cadastre in a society.

Improved access to information: Cadastral Information was adapted to the customers demand regarding structure, content and methods for easier access for the customers. At about 1975 the concept of public access to digital cadastral information developed at the University of Laval (CND) was introduced in some European countries (Sweden, Austria).

All these developments was fully in coincidence with the general changes in society.

Despite of the benefits of all these improvements of Cadastral Systems achieved the global picture however shows that we have to be aware about the incoming demand on Integrated Services.

	Industrial society	Information society	Service society
Requirements	Energy	Information	Integration of services
Infrastructure	Factories, Railroads	E-networking, data, info as property	Tools for inter-inst. Cooperation, P-P-P
Investment	Machinery, buildings	Info/com-tools, training	Tools for service on demand
Management	Patriarchal approach	Teamwork within comp/project	Meta-institutional networking
Information flow	Few, hierarchical information flow	Intensive exchange of information	Inter-institutional sharing Integration
Focus on	Assembly lines, production of goods, Taylorism	Integrated workflow	Opt. cooperation in a competitive world

Overall focus of an Society	Cadastre as a tool to support
Agricultural	Tax on rural properties
Industrial	Parcelling, Reallocation
Information	Land Market
Service	Integrated Services

Integrated services provided by different institutions as a joint approach: Integrating tools for a joint information infrastructure is a longer process similar to the political decisions in the fifties for a common currency, which needed 50 years for implementation or the strategy decision on telecom liberation, which showed good results within 10 years.

Institutional improvements within Land Administration:

These improvements seem to be the biggest of all above mentioned challenges. Some countries seem to have solved institutional cooperation of the main partners within Land Administration by having a unified Agency on Cadastre and Land Registry (NL, CZ, SK, H, MD etc.). Even in those countries however cooperation is needed with professions like «General Planning, Urban Planning, Agriculture and Environment. In addition the Financial Sectors as well as Valuation are partners of a Cadastre.

Cooperation within the profession: Public private partnership for collecting, maintaining and providing Cadastral Information improved the system. Within this workflow the licensed surveyors in French, Germany, Denmark, Belgium Switzerland and Austria managing exclusively the fieldwork for the Cadastre. The components of such a system are the flexible contribution with an operational focus from the private side and ensured sustainability from the public side. On the other end private information providers offers access to public registers and developed value added products (web-access to Cadastral Information).

In Austria the former competition between private and public side was clarified by law in 1968 and is nowadays a smooth cooperation.

Cooperation between professions: In addition to the above mentioned improvements within the profession of surveyors a cooperation within all partners of Land Administration (Cadastre – Land Registry), Land Valuation and Real Estate related Financial Services is needed for a sound Land Market.

Cadastre as part of Spatial Information Infrastructure

Cadastral Information is considered as an essential part of Spatial Information Infrastructure in order to link any legal fact to a certain geographically defined object. We often consider property, parcel, building and apartment as such objects. From the customers point of view however the units might be quite different:

- Agricultural experts consider farm units (owned or leased) as an object to be focused on.
- Environmental experts consider larger areas like a lake or valley as an object to be linked with certain rights.
- Fiscal units are often quite different from Cadastral definition of a property.
- Urban infrastructure of highest value like metro, railways, bridges etc. are often not even maintained as cadastral objects. On the other hand fragments of

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agricultural parcels with minimal value are maintained because of long tradition.

All these cases express the contradicting and changing demands over time on Cadastral Systems.

Online-user behaviour in other countries shows that the main user groups are focusing on descriptive data instead of maps.

Cooperation for GI-data and services

A regional diversity is in contradiction to a standardized demand. Similar to that GI-data products have to be developed on standardized base. And we see from the cooperation of Adv in Germany the strong development towards: «once face to the customer» (see also <http://www.adv-online.de/>).

Unified data products and services: The development of GI-data products as part of a spatial data infrastructure has to be forced on national as well as European level. A demand on unified data products comes from European wide acting users like EU, Investment banks, European infrastructure providers and the real estate market. Examples for that are:

— The INSPIRE-project: Infrastructure for Spatial Information in Europe (www.ec-gis.org/e-esdi) aims at making available relevant, harmonised and quality geographic information for the purpose of implementation, monitoring and evaluation of environmental policy-making and for the citizen.

— The EULIS-project under the eContent Programme of the European Union: An important part of such a development is the creation of international access to land and property registers. The EULIS project will create a demonstrator that will provide improved access to information on-line from eight national land registries.

Institutional Cooperation: Examples for good institutional cooperation in Europe are:

— **EuroGeographics** facilitates the cooperation of European national mapping agencies and provides guidance on geographic information incl. Cadastral Systems which they maintain.

— **UN-ECE-WPLA:** The Working Party facilitates the cooperation of European Cadastre and Land Registry agencies and aims at improving and promoting land administration among all countries of the ECE region.

— **The European Council of Geodetic Surveyors (CLGE)**, www.clge.org represents the interests of the geodetic surveying profession in Europe to the Institutions of the EU. The «Géomètres experts fonciers Européens (GE)» www.bdvi.de/BDVI/geometer/maingeo.htm have a quite similar approach with more focus on private surveyors.

The cadastre and the users demand

All the above mentioned organizations care about better cooperation among the sister institutions and about the profession of the surveyors. A good service for the main customer groups would in fact improve the position of Cadastre in Europe in a sustainable way. The real demand can only be covered in closer cooperation with the main customers as partners like the legal and financial business as well as urban and regional development.

The diversity of traditions and legislation on Land Administration in Europe has to be highly appreciated. Nevertheless this still allows a coordinated approach within

all further developments for the benefit of the customers. A satisfied customer's demand supports the interest of Cadastre Agencies and Land Registries as providers of spatial information and services. ■

The use of the Cadastre in Sweden

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Background

All land in Sweden is divided into property units. Changes to the division into property units are a continuous process-lots are amalgamated or sub-divided and other cadastral procedures are carried out. Lantmäteriet is responsible for guaranteeing legal security for individual property owners and also participates in measures to improve and formulate legislation in this field. Lantmäteriet is also responsible for register and system for land registration which shows ownership, mortgages, encumbrances etc, the custodian for that system is the National Court Administration. These two registers are the basis in the Swedish Land Data Bank System (SLDBS).

Development of the SLDBS started in beginning of the 1970s as a common system for the textual part of property and land. It started as an internal system, developed in-house and with internal demands but it has during the year grown to an open system used in the area of land administration and in the financial sector throughout Sweden with more than 25.000 users connected.

A number of additional registers have been added as time went on and today the comprehensive register is named The Real Property Register and includes:

- Address Register
- Building Register
- Co-ordinate Register
- Plan Register
- Property Assessment Register
- Sales Price Register
- Owner Associations Register
- Housing Credit Guaranties Register

Last but not least integration with:

- Geodata Bank System including digital maps of different scales and for different usage and
- Digital Archive including digitised instruments and dealings.

Lantmäteriet

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:

1. The Division Land and Geographic Information is responsible for the generation, management, development and distribution of geographic and real property information.

Real property information comprises information from the Real Property Register, including the digital cadastral index map, the Land Register and the central registers for