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Cadastré 2014 – Visions and Developments

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FIG Commission 7 – Working Group

Working group 1994-1998 had the mandate to:

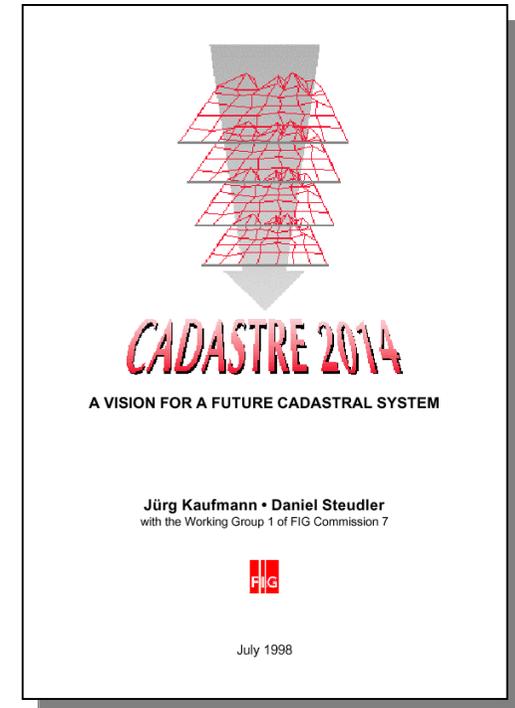
- *... study cadastral reform and procedures as applied in developed countries, take in consideration the automation of the cadastre and its role as part of a larger land information system, evaluate trends in this field and produce a vision of where cadastral systems will be in the next twenty years, show the means with which these changes will be achieved and describe the technology to be used in implementing these changes.*



The Six Statements of Cadastre 2014



1. Cadastre of the future will show the **complete legal situation** of the land, including public rights and restrictions !
2. Separation between maps and registers will be abolished !
3. Cadastral mapping will be dead ! Long live **modelling** !
4. Paper and pencil-cadastre will be gone !
5. Cadastre of the future will be **highly privatised** ! Public and private sectors are working closely together !
6. Cadastre of the future will be **cost recovering** !



www.fig.net/cadastre2014/



Two Definitions by Cadastre 2014

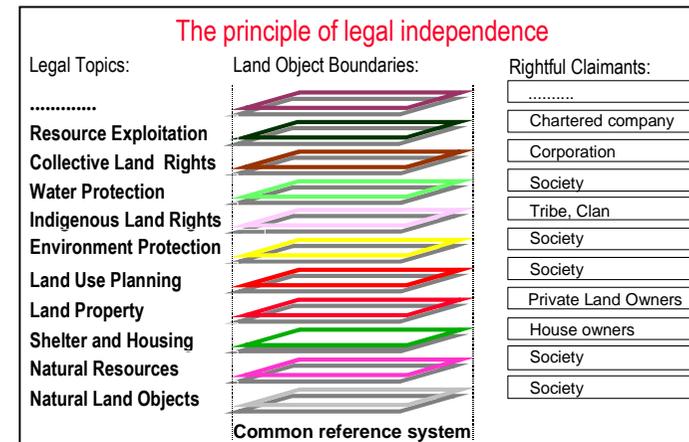
- **'Land Objects'**

- there are other land related objects than parcels;
- important for accommodating public-rights restrictions.

Land Parcel	Land Object
A land parcel is a piece of land with defined boundaries, on which a property right of an individual or legal person applies.	A land object is a piece of land in which homogenous conditions exist within its boundaries. A legal land object is described by the legal content of a right or restriction and the boundaries which demarcate where the right or restriction applies.

- **'Principle of Legal Independence'**

- layer concept known from GIS;
- at first sight mainly a technical issue, but it has **crucial management impacts**: data can be modelled, acquired and managed independently;
- a common reference system and a common data modelling mechanism have to be used.





Developments since 1998

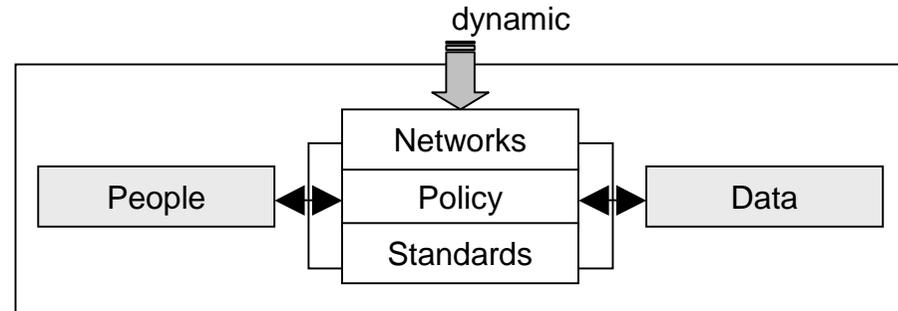
- **SDI, NSDI, INSPIRE**

- **Internet**

- portals, web applications

- **Land Administration**

- three pillars: process of determining, recording and disseminating information about the **ownership, value** and **use** of land
- basis for **sustainable development** (Bathurst Declaration, Land Administration Guidelines) and **good governance**
- basis for reliable and efficient **land market**, thus for good economic development



(Rajabifard, 2003)



Evaluation – Statement 1

Cadastre 2014 will show the complete legal situation of land, including public rights and restrictions!

- Increasing pressure on the resource "land" and changing humankind to land relationship, require the cadastral system to be flexible and to adapt to the changing needs;
- with European agricultural subsidy system depending on the land-use, there is a growing need to have reliable information about land-use rights and obligations attached to a specific land parcel;
- **we need to know what we are allowed to do with the land that we own – as much as we need proof of our ownership.**

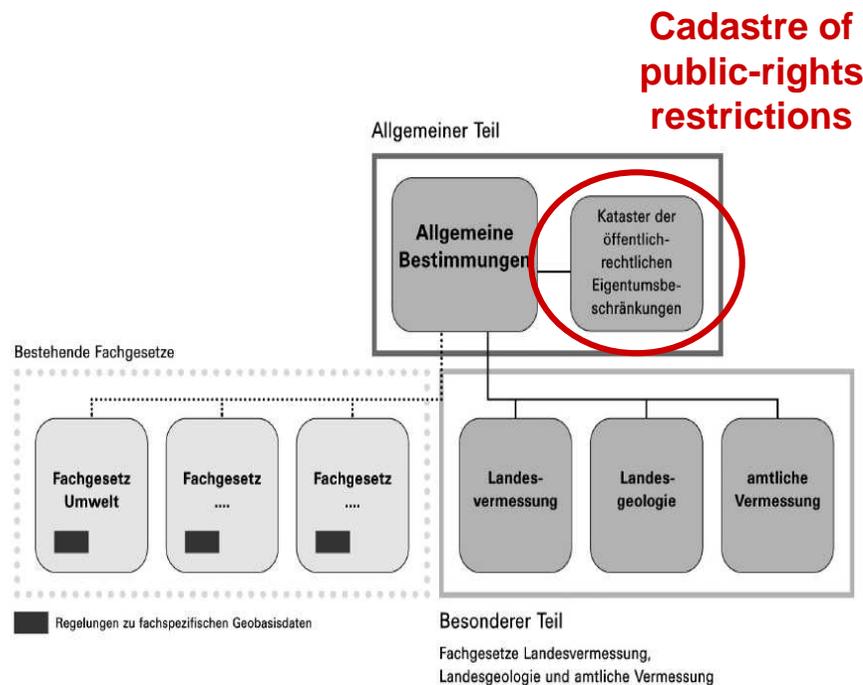
(Dale, 2006)



Evaluation – Statement 1

Cadastre 2014 will show the complete legal situation of land, including public rights and restrictions!

Example Switzerland (I)



Structure of new Law on Geoinformation

Estimation of cost/benefit for systematic and public inventory of spatial objects that carry public-rights restrictions (Jan. 2006):

Estimated costs:

- 0.6-2.7 million EUR to establish the data model and the legal basis
- 54-215 million EUR for data acquisition of 10 most important restrictions

Estimated benefits:

- 63 million EUR per year



Evaluation – Statement 1

Cadastre 2014 will show the complete legal situation of land, including public rights and restrictions!

Example Switzerland (II)



Intermediate report by working group:

- land market is in clear need of reliable information (considering the total value of real estate of more than EUR 1,300 billion);
- if benefit of reliable information is only 0.1‰, this would amount to some EUR 130 million.

(Miserez, 2006)



Findings of a study about legal aspects:

- wealth of public-rights restrictions calls for an inventory and their geographic delimitation;
- problems to solve: privacy issues, priorities in disputes, liability of register, maintenance of register by private sector.



Evaluation – Statement 1

Cadastre 2014 will show the complete legal situation of land, including public rights and restrictions!

Example Switzerland (III)



Initiative by private sector land surveyors:

- to establish an information service about all public rights and restrictions affecting private land ownership (land-use planning, zoning, environmental protection, heritage protection).

(Dütschler, 2006)



Evaluation – Statement 2

The separation between 'maps' and 'registers' will be abolished!

- Over the last ten years, there was an increasing tendency to merge cadastral and land registry organizations:
 - HUN: operates an integrated cadastre and land registry system for many decades;
 - NL: the Dutch Kadaster provides an integrated service to their customers for more than ten years now;
 - DK: the cooperation and sharing of data is enforced for the purpose of providing efficient service to clients;
 - N: the cadastre and land register are kept as separate databases, but the user enjoys an integrated one-stop access.
- a complete integration of the two organizations, however, is not necessary to achieve cooperation.



Evaluation – Statement 3

'Cadastral mapping' will be dead!
Long live modelling!

- Over the last 4-5 years, data modelling came increasingly on the agenda of international discussions in the cadastral field;
- Initiative for a '**Core Cadastral Domain Model**' by Lemmen and van Oosterom serving at least two goals:
 - to provide an extensible basis for efficient and effective cadastral system development based on a model-driven architecture;
 - to enable communication based on the shared ontology implied by the model, which is to be kept as transparent and simple as possible.
- "Workshop on Cadastral Data Modelling" in Enschede, The Netherlands (March 2003)
- "Conference on Standardization in the Cadastral Domain" in Bamberg, Germany (December 2004)

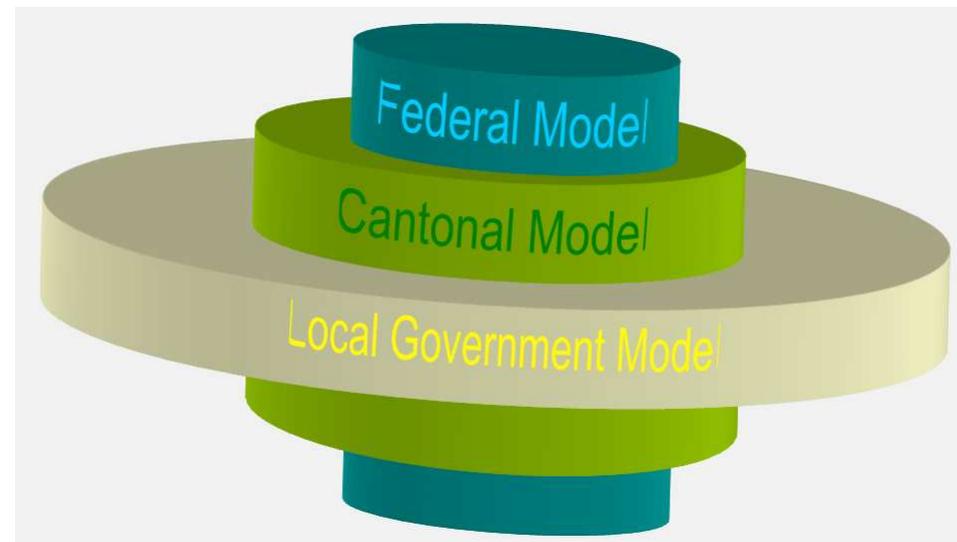


Evaluation – Statement 3

'Cadastral mapping' will be dead!
Long live modelling!

Example Switzerland

- Core cadastral data model: revised data model "DM.01" based on INTERLIS2:
 - a clearly defined federal data model;
 - hierarchy of data models (Cantons can add options to federal model, but have to provide data in federal model);
 - checking of data becomes much easier → introduction of check service on Internet;
 - technical possibility of incremental updating (requires OID and INTERLIS2).





Evaluation – Statement 3

'Cadastral mapping' will be dead!
Long live modelling!

Both definitions, given by Cadastre 2014 have become the issue of international attention:

- Fourie et al. (2001) observe that in the light of sustainable development and land management, a whole range of land objects, not only ownership parcels have to be part of a land information system, and that it is high time to start discussions on this issue.
- The principle of legal independence basically states that – independent from the different stakeholders – data and information from different sources can be integrated and shared by using a layered approach.



Evaluation – Statement 3

'Cadastral mapping' will be dead!
Long live modelling!

Legal topic	spatial data	textual data	Stakeholders (data owners)
Water protection			Local government
Noise protection			Local government
Environm. protection			Environmental department
Land use planning			Planning department
Indigenous land rights			Tribe, clan
Collective land rights			Corporations
Land ownership, cadastre			National government State government Local government

Two conditions:

..... **common geodetic reference framework**
 common data modelling concept



Evaluation – Statement 4

'Paper and pencil cadastre' will be gone!

The digital age has come a long way and is in full swing. A digital cadastre is therefore not much in question anymore, although the context and the circumstances need to be carefully considered.



Evaluation – Statement 5

Cadastre 2014 will be highly privatized! Public and private sector are working closely together!

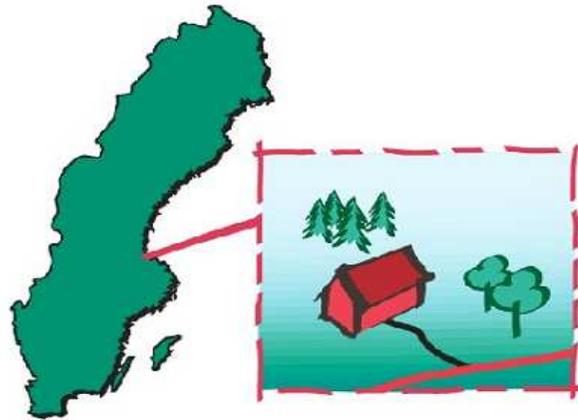
- Not a call for privatization of overall responsibility !!
- But: the involvement of private sector – under supervision of public sector – is of great benefit to the whole cadastral system (→ private sector injects innovation);
- PPP has very much come on the agenda of the international community.



Evaluation – Statement 6

Cadastre 2014 will be cost recovering!

Facts and Figures about Swedish Land



The Market

- ❖ Total market value
550,000 million USD (Jan2001)
- ❖ Total value of mortgages
204,200 million USD (Feb2001)

- ❖ Total value of shares at the
Stockholm Stock Exchange
350,000 million USD (2000)
- ❖ Ericsson 76,000 million USD (2000)

Taxation

- ❖ Assessed value
252,900 million USD (2000)
- ❖ Total real property tax
2,500 million USD (2000)
- ❖ Transaction tax, titles mortgage
470 million USD (2000)

GNP

- ❖ 205,000 million USD (1999)

State Budget

- ❖ 79,000 million USD (2000)

Hans-Erik Wiberg. 2001-06.





Conclusions

- Cadastre 2014 statements are valid for developed countries; developing countries may have different problems to solve in the first place, but Cadastre 2014 can serve as guidelines.
- Cadastre is **part of something bigger**
 - "land administration" functions are serving the wider society
 - "geoinformation" serving government and private sector.
- Cadastre has to be open and **pro-active towards SDI** and the wider geoinformation community in order to provide the services and products that are in demand.
- Cadastre is an **information system**
 - an information system can only live up to expectations when information is: complete, reliable (maintained, updated) and available in an efficient way.