

# Cadastral information; more than base data

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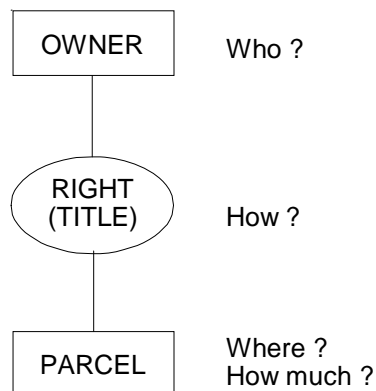
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TU Delft / NCG Seminar 'Core Spatial Data'



INTERNATIONAL INSTITUTE FOR GEO-INFORMATION SCIENCE AND EARTH OBSERVATION

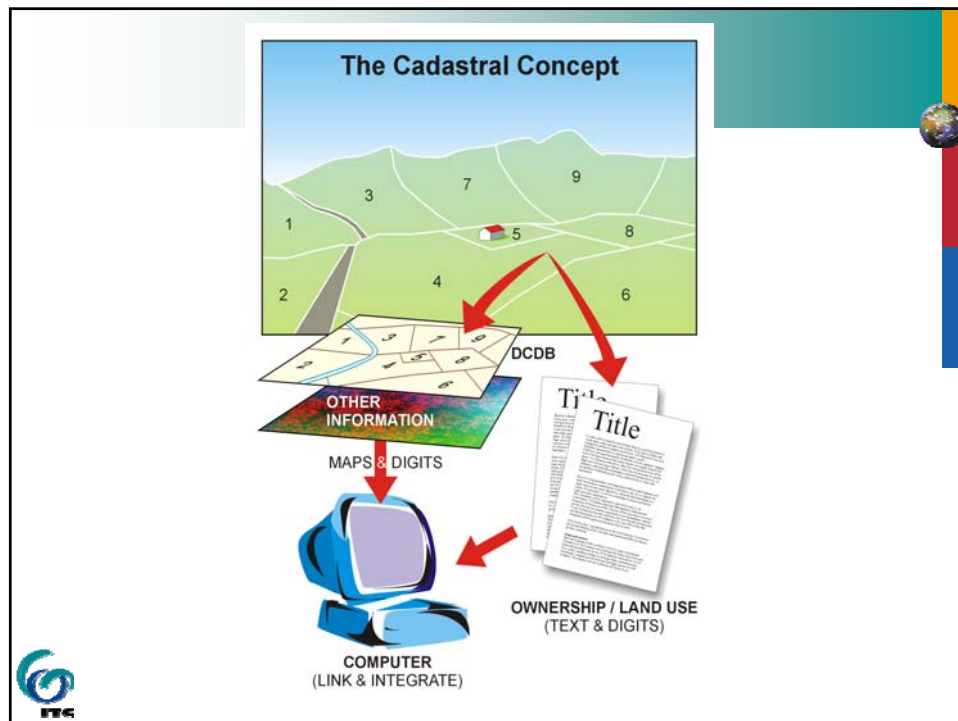
## Cadastral data

- many faces of cadastral data
- reference model for cadastral data
- cadastre data as key register



## 'Cadastral'

- As international term more narrow than the Dutch *Kadaster*
- No universal definition
  - "an official record of information about land parcels, including details of their bounds, tenure, use, and value" (McLaughlin/Nichols 1989)
- A predominantly technical registration



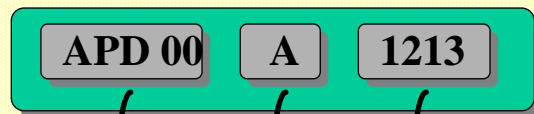
## 'Cadaastre'

- .. a parcel based, and up-to-date land information system containing a record of interests in land (e.g. rights, restrictions and responsibilities). It usually includes a **geometric description of land parcels linked to other records describing the nature of the interests, the ownership or control of those interests, and often the value of the parcel and its improvements.** (FIG 1995: p.1).
- Linked via UPIN (e.g. cad. parcel number)



### **Cadastral Parcel-number**

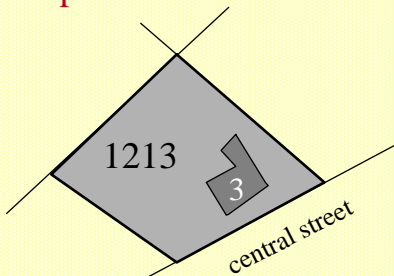
(unique national identification)



municipality-code    section    number

#### Administration

#### Map



identifier	APD00 A 1213
owner	Smith, J.P.
right	full ownership
object-adress	3 Central street Motown
area	20 a 85 ca
culture	house, garden
history	APD00 A 1027 APD00 A 936

Cadastral LIS in the Netherlands



## 'Cadastre'

- For different purposes: fiscal, legal or land management
- combined with land registration
  - 'the process of recording legally recognized interests (ownership and/or use) in land'
- It forms *land administration*: process of determining, recording and disseminating information on ownership, value and use of land when implementing land management policies (UN ECE)

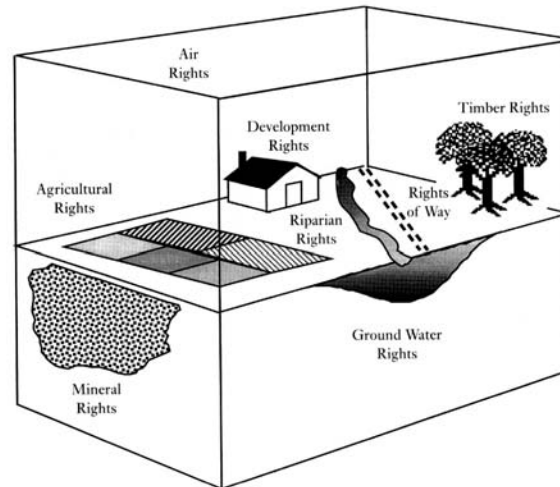


## 'Cadastre'

- Goals attributed to Land Administration:
  - improving land tenure security,
  - regulating the land market,
  - urban and rural land-use planning
  - taxation of land (Van der Molen 2001)
- These different goals need partially the same data, but partially different data
- Prime goal influences (national) choices



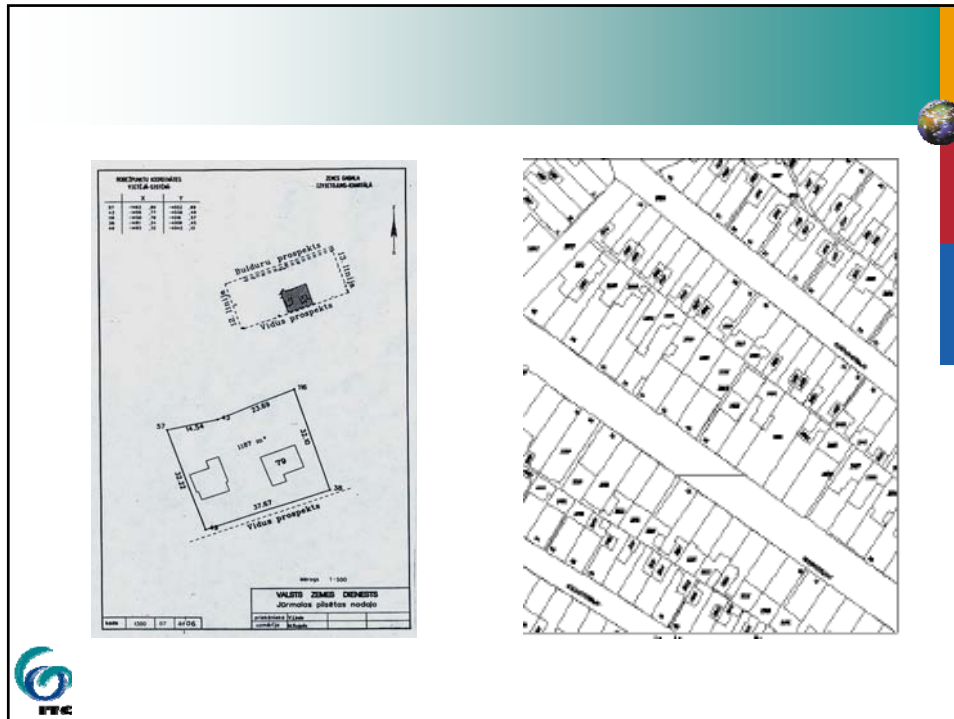
## The cadastral parcel and ownership rights



Source: Land Administration (Peter Dale and John McLaughlin)

## Parcel

- piece of land (D: *Grundstück*)
- with a certain characteristic being the same throughout
  - normally with legal (property law) connotation: 'largest area over which the property right situation does not change'
- with determinable size and bounds
  - 'legal description' in words and numbers, with a sketch/plat/plan or based on survey results (map, CoGo)

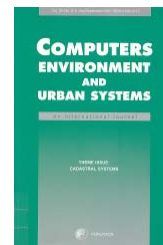


## Cadastral Data

- object (parcel, apartment, spatial unit)
- right (ownership (...,...), usufruct, mortgage, restriction, informal, unknown, conflict...)
- person (natural, non natural, group, group of groups), person can be represented
- identifiers
- value
- Area (GIS area and legal area)
- classification
- geographic name
- person name
- date (birth, establishment, acceptance, transaction, survey, check-in)
- ranking order
- source document
- forms
- Point (x1, y1, x2, y2)
- boundary
- face, edge, node: topology
- GIS Layers
- apartment - 3d
- land use
- share
- transaction type
- purchase price
- history (check-in, check-out, mother-child, history class)
- right relation
- mortgage, interest

## A reference model for cadastral data

- Started FIG 2002 (van Oosterom/Lemmen 2002)
- Reference model to:
  - avoid reinventing and re-implementing the same functionality
  - enable parties (in and between) countries to have shared vocabulary (ontology)
    - helps for sharing cadastral data between countries, e.g. via webservices (EULIS)
- CCDM, 2 workshops, 2006 article



## A reference model for cadastral data

- Adaptation for developing countries: STDM (Social Tenure Domain Model)
  - relates to continuum of rights
  - flexible types of objects and groups
- prototype completed by ITC this week for UN Habitat / GLTN
- aiming at field test in Ethiopia in 2009 (with World Bank) and satellite imagery



## A reference model for cadastral data

- CCDM renamed Land Administration Domain Model: LADM
- In February 2008 submitted by FIG to ISO, under consideration as ISO 19152
- 3 meetings by Project Team:
  - Copenhagen, Denmark, May 2008
  - Delft, The Netherlands, September 2008
  - Tsukuba, Japan, December 2008



## ISO 19152 Scope

- reference model (abstract, conceptual schema)
- basic land/water, below/above surface, information-related Land Administration components
- basic classes: (1) parties, (2) spatial units, (3) rights, responsibilities, and restrictions, (4) spatial sources, and (5) spatial representations
- terminology enabling communication
- shared description of formal or informal practices
- basis for national, and regional profiles



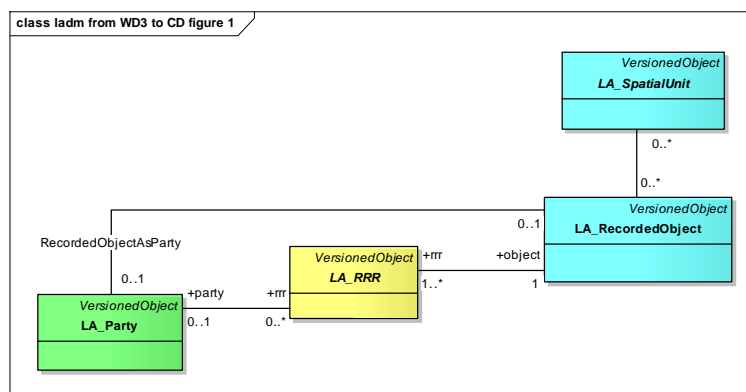


## Outside the ISO 19152 Scope

- the interference with (national) land administration laws, that might have any legal implications
- the construction of external data bases with person data, address data, valuation data, usage data, and taxation data. However, LADM provides so-called blueprint stereotype classes, where it is indicated what data LADM expects from these external sources, whether available



## Core Classes of LADM



## ISO 19152 Project Team (PT)

- 28 PT Members from
  - Australia, Canada, Denmark, Finland, Germany, Hungary, Japan, Malaysia, Netherlands, UK, US, South Africa, Thailand, Saudi Arabia, Spain, Sweden
  - FIG/UN Habitat, EU Joint Research Centre (JRC), INSPIRE; via FIG also input from Turkey & Portugal
  - participation from Korea and China
- agreement on most important issues
- discussions on “restrictions” and “surveying”
- challenging to keep it simple



## Related international work

- Cadastral parcels are also a subset in INSPIRE (moved up to Annex I)
- Work on data specification is being done, and there is coordination (at least in personal overlap) with ISO work



## Cadastral data as a key register

- Notion of key registers (*basisregistratie*) from Interior Ministry report *Stroomlijning Basisgegevens*
- Long preparation and discussion, extensive (and still growing) list of key registers, including quite many with geo-component
- Latter ones resemble list from the 1992 SVI
- Kadaster heavily involved, is keeper of two (cadastre and topography) and will be national portal for several others

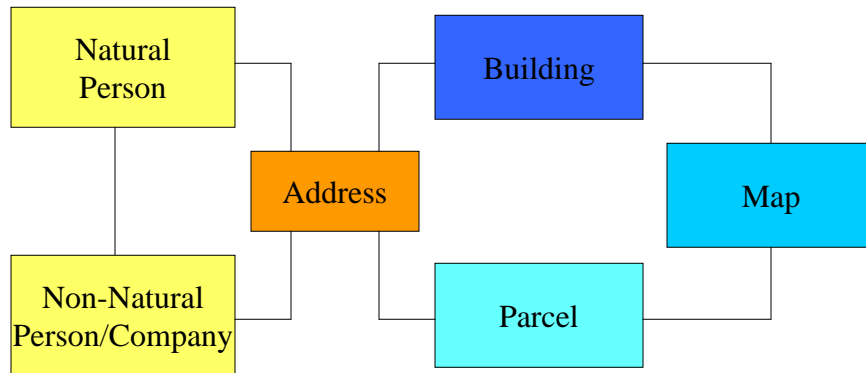


## Cadastral data as a key register

- 1. Natural Persons
- 2. Legal Persons
- 3. Buildings
- 4. Addresses
- 5. Basic Register Cadastre
- 6. Maps [Topographical Base Map (TBM)]
- 7. Registration Numbers (for vehicles)
- 8. Wage, Employment and Benefit Relationships and
- 9. Income and Assets.
- And possibly:
  - the Large Scale Base Map of the Netherlands and
  - subsoil geo-data (DINO) (Besemer et al, 2006)



## Linking Information



## Requirements for a key register

- 1. Registration is regulated by law.
- 2. The clients have a report obligation.
- 3. All public institutions are obliged to use the basic register.
- 4. Clear accountability.
- 5. Costs within reason and clearly allocated.
- 6. Transparency about the scope and content of the registers.
- 7. Firm agreements and procedures
- 8. Clear procedures for accessing the basic registers.
- 9. A strict regime of quality control. (Besemer ea 02)



## Requirements for a key register

- Wet basisregistraties kadaster en topografie, Wet 5 maart 2007, Stb 105
- This act changes esp. the Cadastre Act
- It redefines the (former) cadastral registration (AKR, cadastral map) to key register cadastre
- It indicates which cadastral data is 'authentic data' which falls under the regime
- Leaves the 'negative' (semi-positive) system intact for private law relations



## Effect in public administration

- For several administrative purposes cadastral data was already 'binding' (or at least safe starting point):
  - Expropriation order
  - Real estate tax payment
  - (voting in land consolidation before July 2007)
- Now this applies to the whole public administration
- Still no obligation for base of bestemmingspl.



## Effect in public administration

- Cadastral map has always been 'sold' as an index map, with warning about lack of (absolute) accuracy
- In certain areas (esp. older city centres that have not been 'hermeten') there are differences, e.g. block of houses half a house offset from parcelation



## Effect in public administration

- Strict interpretation would mean:
  - An authority that wants to address one house, would need to mention both parcels (owner's and the offset neighbour's)
  - The authority would need to inform the Kadaster of the imperfection
  - Kadaster would need to repair this
- Not heard about this in practice yet

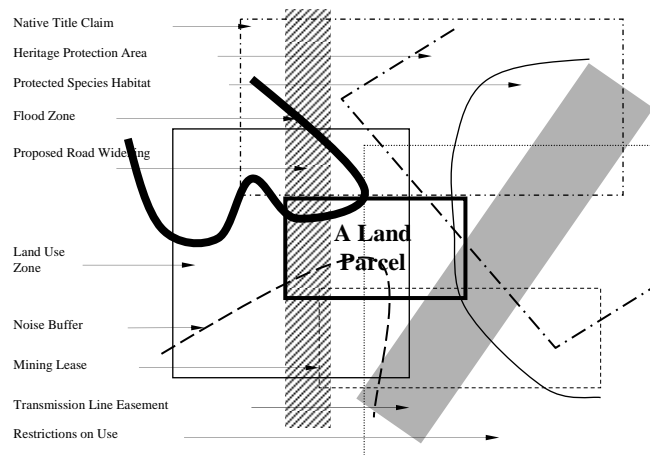


## Cadastral data, more than base data

- Cadastral data has many faces, between countries and between disciplines
- International activities to improve mutual understanding is ongoing
- Cadastral data is good to describe social-economic processes
- Within GIS/SDI this can be overlapped with other phenomena



## Schematic of overlapping rights, restrictions and responsibilities in a modern multi-purpose cadastre



## Tjeu

- Als student kwam ik kort na Tjeu op de TU
- Ik heb maar een keertje college van Tjeu gehad
- We zaten samen in Opleidingscommissie
- Hebben samen vak opgevangen en gegeven
- Hebben allebei veel buitenlandse projecten gedaan
- Zien elkaar nu vaker op ITC als in Delft

