Co-ordination Initiatives for the Creation and the Updating of the Cadastre

1st Congress on Cadastre in the European Union
Granada, 15 – 17 May 2002
„Land Administration

refers to the process of recording and disseminating information about the ownership, value and use of land and its associated resources. It includes, inter alia, cadastre, land registers, land consolidation, valuation and land information systems for sustainable management of land resources“.
Core Functions:

- Official register of all real estate
- Integral part of land administration
- Security of ownership
- Taxation
- Soil valuation
- Land use, ...

Real Estate Cadastre

Multipurpose Cadastre:

- essential part of SDI
- set of reference data for all planning purposes
- subject to market requirements
- ...

Arbeitsgemeinschaft der Vermessungsverwaltungen der Länder der Bundesrepublik Deutschland
Use of Real Estate Cadastre

Geospatial Base Data

Real Estate Cadastre

- Owners/Customer
- Land Register
- Local Government
- Statistics
- Regional Planning
- Environmental Protection
- Soil Protection
- Tax Administration
Co-ordination Initiatives - Examples

EU initiatives

Donor Agencies

ISO

EuroGeographics

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„...Countries with different histories, cultures and environments share common aspirations for certainty and for growth. A framework of land and property laws that recognize the rights and duties of the individual, but also the shared concerns of the wider community, is essential, if these aspirations are to be realized.“

UNECE: Social and Economic Benefits of Good Land Administration
„...Recognizing, that land is a source of wealth lies at the heart of good government and public administration....“

„For nations to unlock that wealth requires effective systems of land registration...“

UNECE: Social and Economic Benefits of Good Land Administration
UNECE Working Party on Land Administration (WPLA) - Aims

- Improvement and promotion of land administration issues in the ECE region
- Assistance to Committee on Human Settlements
- Focus on privatisation through security of tenure and establishment of real estate markets in countries in transition and facilitation of the European integration processes
- Forum for cooperation and exchange of experience of senior officials within the ECE region
UNECE WPLA-Areas of Work

- Land Management Legislation
- Land Administration Measures
- Land Information Systems
- Organisational and Management Issues
- Cooperation with other governmental organisations and NGO
Spatial Data Infrastructure
Possible Fields of Interest for the EU (I)

- Enable a healthy land market in EU accession countries
- Improve procedures for real estate transactions within the EU region
- Harmonise access to cadastral datasets
- ...
Possible Fields of Interest for the EU (II)

- Support sustainable development in the EU
- Improve the use of public sector information
- Facilitate EU-wide decisions on spatial planning and environmental issues
- Overcome market barriers within the EU
- Improve return on investment
- Integrate cadastral data to SDI, ...
Harmonisation of Legal Framework

- Legal relevance of cadastre
- Establishment + maintenance of cadastre compulsory
- Data privacy
- Data protection issues
- Access to cadastral data, dissemination
- Qualification, licensing regulations, ...
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Cadastre on the Internet

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Processes in Real Estate Cadastre

Establishment

Maintenance

Use

Quality Requirements
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Spatial Reference
GI-issues
Legal Framework
Technical Framework

GI-Tasks
(model harmonisation, quality management)

IT-based Methods
(data access tools, metadata, Internet-based methods)

Cadastral Systems
(LIS, integration cadastral + topographical data)
Content of Real Estate Cadastre

- Land parcels, buildings
- Parcel boundaries, administrative boundaries
- Information on ownership
- Parcel and Building identifiers
- Land Use
- Topographical objects, ...
Institutional Framework

- Relation to and cooperation with land register
- Scope of statutory tasks
- Involvement of private sector, PPP
- Education, qualification
- Capacity building
- Interface to citizens, customers...
Technical Requirements

- Accuracy and reliability of cadastral data
- Surveying methods
- Spatial reference system
- …
Standards for Reference Data

- Data modelling according to international standards (ISO/OGC)
- Consistency with other geospatial datasets provided by the countries
- Object catalogues
- Unique object identifiers
- Standardised data exchange format
- Metadata available ...
Quality Management

- Determination of customer- or application oriented quality features
- Orientation of production process towards these features
- Compliance of concepts and products with these features
- Description and guarantee of product quality
- Establishment of QM-systems, ...
Some Quality Features

- Standard range of products in EU
- Standard labelling
- Standard core content of datasets
- Completeness of data
- Data currency, ...
Geodata Management

- Relief from Digital Terrain Model (dtm)
- Buildings from Real Estate Map (ALK)
- Topography from Digital Landscape Model (dlm)
- Additional cartographic information

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• Urgent EU-wide tasks may require the availability of core cadastral data throughout Europe

• Cost recovery issues, state budgets and new tasks (Europe, SDI) may require the co-ordination of institutional arrangements for real estate cadastre (updating and maintenance)

• Challenges of new markets require customer orientation and value-added services based on cadastre

• Metadata should be compulsory

• International standards for geodata and exchange formats should be applied to cadastre

• Access to data needs to be harmonised
EU-wide cadastre co-ordination is clearly necessary but needs to take carefully into account each country’s individual circumstances.

Guidelines and recommendations on cadastre already available to a certain extent (WPLA, FIG, ...)

Benefits of cadastral data must be used for the overall benefit of the EU.
A = Authoritative
L = Real Estate
K = Cadastre
I = Information
S = System

- Authority Cadastral Office
- Statutory tasks
- Official character of products
- Formal procedures for action
- Land parcels/buildings
- Object data/proof of ownership
- Accessible public register
- Right on information
- Information on all real estate
- Establishment of a real estate data base
- Fixed procedures for data maintenance and use
Reasons for Development of ALKIS

- ALK-concept established during 70ties and 80ties
- Need to harmonise ALK and ATKIS as far as modelling of the landscape is concerned
- No constant object orientation
- No appropriate description of data model (standards!)
- Missing concept for description of quality aspects
- Maintenance costs for ALB- and ALK/ATKIS-database
- No concept for description and integration of metadata
ALKIS-Aims

- Common ALKIS/ATKIS-data model
- Harmonisation of ALKIS / ATKIS
- Metadata and data on quality
- Integration of specific information and graphics
- Constant object orientation
- Historical data (optional)
- Avoiding of redundancies
- Better economicalness and efficiency
ALKIS- Framework

✓ Project of the AdV
✓ Involvement of GIS industry (Workshops)
✓ Integration of customers interests
✓ Orientation towards ISO - standards
  ISO/TC211 -
✓ Use of GI-systems available on the market
✓ System-independent interface ALKIS/ATKIS
3-Scheme-Architecture of a Data Model

AdV-Standard

Data model of the external scheme

Data model of the conceptual scheme

Data model of the internal scheme (dependent on software)

Supply of excerpts

Data transfer external user

Depiction of reality in a structured dataset

Real World

Realisation with GIS

GIS Implementation

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Data/Metadata and Processes within ALKIS

Standards for Modelling of
- Georeference frame
- Geometry + Topology
- Quality Metadata
- Query + Updating mechanisms
- Data transfer

Integrated Data Model / Functional Model / Communication Model

Common ALKIS/ATKIS-Standard

Application-scheme in ALKIS
- Application-scheme ALKIS-UPDATING
- Functions for Maintenance
- Application-scheme ALKIS-datasets
- Functions for Use
- Application-scheme ALKIS-excerpts
- Functions for Transfer
- Application-scheme ALKIS-Transfer data

Processes and Data / Metadata
- ALKIS-data for Updating
- Maintenance
- ALKIS-data
- Use
- ALKIS-Excerpts
- Transfer
- ALKIS-Transfer-data

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ALKIS®/ATKIS® - Reference Model

**Ordinances**

- ALKIS-ATKIS-Object Catalogue
  - settles
  - describes

**Production**

- ALKIS-data
  - add, data
  - processed to
  - data capture

- ATKIS-DLM
  - add, data
  - processed to
  - data capture

- Digital ATKIS-excerpts
  - to be reproduced in
  - printed as

- ATKIS-DTK
  - to be reproduced in
  - NAS: standard-orientated data exchange format

- Paper-based ATKIS-excerpts
  - Topographical Map

**Communication**

- Users of object-structured data
  - supplied to

- Users of processed information
  - supplied to

- Users of paper maps
  - supplied to

05/12/2002

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Co-ordination of Surveying and Mapping in Germany

Working Committee of the Surveying Authorities of the States of the Federal Republic of Germany

More than 50 years of experience in cadastre co-ordination

http://www.adv-online.de
Members of the Plenum

- All 16 State Surveying Administrations
- Federal Ministry of the Interior (BMI)
- Federal Ministry of Defense (BMVg)
- Federal Ministry of Traffic, Construction and Housing (BMVBW)

President
Advisory Group
Secretary General

AdV Working Groups
Task Forces
Working Groups of AdV

Real Estate Cadastre

Spatial Reference

Information- and Communication Technology

Geotopography

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Responsibilities of AdV

- Recommendations, guidelines and binding regulations for state survey and real estate cadastre in Germany
- Co-ordination of State overlapping projects
- Collaboration in research, development and application of technical methods and procedures
- Representation of official surveying and mapping of the states of Germany in international organisations and co-operation at international level
“...all cadastral surveys are expensive, although in some systems the true costs are not immediately apparent; nevertheless it is important to resist the temptation to sacrifice long-term needs for the sake of short-term savings. This is often difficult when dealing with politicians, treasury officials, and some administrators; but the kind of study we have just advocated will amply demonstrate the problems that have arisen in many countries through substituting expediency for proper planning. “

S. Rowton Simpson: Land Law and Registration