Session #6 “Partnerships and Innovations for Effective Land Administration”

INTERNATIONAL SEMINAR ON
UNITED NATIONS GLOBAL GEOSPATIAL INFORMATION MANAGEMENT
with the theme “Effective Land Administration”

Instituto Nacional de Estadística y Geografía (INEGI)
Av. Héroes de Nacozari Sur #2301, Jardines del Parque, 20276 Aguascalientes, México
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Content

- Introduction, background
- Geoinformation at federal and state level in Germany
- Smart Mapping (AdV, BKG)
- Recent developments in Lower Saxony
- FELA
- Conclusions
Federal Republic of Germany consists of 16 states („Länder“)

Capital: Berlin

Area ~357,000 km²
Inhabitants ~ 82,8 million
Settlement area: ~ 29,000 km²
Agricultural land: ~ 187,000 km²
Core Functions of German Cadastre

- Guarantee of private land ownership
- Official inventory of all land parcels
- Inventory of official soil valuation results

- Reference data for legal transactions, spatial planning, administration, taxation purposes

- GI services for effective risk management
- E-Government function

- Market transparency for the real estate market

- Provision of reference data for the geodata infrastructure in Germany (GDI-DE) and INSPIRE
SDI in Germany

Joint project of Federal Government, 16 states and local authorities
Steering Committee
Coordinating office at BKG

Source: https://www.gdi-de.org/
Country Action Plan IGIF
Working Committee of the Surveying Authorities of the Laender of the Federal Republic of Germany (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 and co-operation at international level
### AdV – Smart Mapping I

<table>
<thead>
<tr>
<th>A government development collaboration at state and federal level</th>
<th>Combination of official German survey data with other open geospatial data sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technical platform for agile development, continuous integration, deployment and operation of SDI systems based on cloud technologies</td>
<td>Free and Open Source Software</td>
</tr>
<tr>
<td>Simple user oriented data model for geospatial data</td>
<td>Creation of new AdV standard products. Basemap</td>
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</tbody>
</table>
Smart Mapping
Agile processes in the AdV

Map
Create vector maps with individual styles with our viewer by customizing predefined basemaps. ‘Try it out’

Applications
Our application examples show possible use cases for custom vector maps in combination with other data sources.

Documentation
With our Vector Tiles API you can use official data and styles in your own map application. Take a look at the documentation for details.

Source: AdV-Smart Mapping Beta-Version
Welcome to

base.map.de

Official maps of Germany

Modern.

Source: AdV-Smart Mapping Beta-Version
AdV – Smart Mapping V

PRODUCTS AND SERVICES

**basemap.de web vector**
- Dynamic web map in vector format
- Vector tiles: EPSG 3857
- Update: monthly
- Characteristics: relief, color, gray, etc

**basemap.de web grid**
- Web map in grid format
- WMTS: EPSG 3857, 25832, 25833
- WMS: additionally EPSG 4326 etc
- Update: quarterly
- Characteristics: color and gray

**basemap.de web raster hillshade**
- Shades in grid format
- WMTS: EPSG 3857, 25832, 25833
- WMS: additionally EPSG 4326 etc
- Update: annually
- Characteristics: oblique light, combined hillshading, etc

**basemap.de Pto grid**
- Presentation output in grid format
- Print-optimized and scale-related map output
- Scale 1:10,000
- EPSG 25832 and 25833
- Update: quarterly
- Characteristics: color and gray

Source: AdV-Smart Mapping Beta-Version
Lower Saxony

Area: ~ 48,000 km²
Citizens: ~ 8 million

Properties: ~ 3.1 million
Cadastre parcels: ~ 6.1 million

Annual workload: ~ 500,000 cadastre updates

Source: LGLN
## The Customer

- Open data, HVD implementing act of the EU
- Up-to-date reference data, much shorter updating-cycles for reference data
- Artificial intelligence algorithms and machine learning
- Distribution of data and algorithms through portals and platforms
- Geodata and services on mobile devices
- Access and use of reference data through appropriate API’s
- Quality management
- Integration within the framework for e-Government (OZG)
- Market transparency for the real estate market
Landing Page HVD
Software Architecture

Applications
Real estate market, updating of buildings, cadastre documents

Geodata Infrastructure
Geodata Services (OGC API/STAC)
Web GIS, Visualisation
Analyses (3D, Object recognition)
High performance mapping

Cloud Services Supply
Cloud-Platforms & Services:
Communication, Incident-Management, Multi Cloud

Enabling Services
Identity & Access Management, Web-Theme
Product- and Service Registry
Process-Management, Delivery and Customer Management, fees and charges, Payment

LGLN
Niedersachsen
A Platform Approach

Service Customer
- Registers on platform
- Obtains services

Platform
- Administers customers
- Lists services
- Monitors usage
- Accounting

Service Provider
- Provides services

Platform Economy
Building Detection with AI

AI-technology as easy-to-use service for other organisations.

No deep AI-expertise required on the customer side
Object-recognition on own ortho images
Integration into their own GIS

Source: LGLN
Real Estate Valuation

- Transparent data and mathematical models
- Real-time availability instead of long update-cycles
- Easy to handle on mobile devices
- Participation in data capture and model development
- Agile development for spatial and thematic sub-markets
- Authoritative certification of data sources and models

...
Partnerships

Federal Government – Länder (e.g. joint positioning service)
GDI-DE
AdV
- Distribution Centres for cadastre data, geo-topography and geodetic reference data (SAPOS®)

Multi-lateral implementation partnerships (Software)
IT
<table>
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<tr>
<th>FELA Pathways</th>
<th>Action LGLN</th>
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<tbody>
<tr>
<td>Governance, institutions, accountability</td>
<td>Security of land ownership (land register and cadastre, GDI-NI, role of LGLN as geodata and services provider for Lower Saxony</td>
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<tr>
<td>Policy and legal</td>
<td>Legal framework in place (Land registration, cadastre, surveying and mapping, land consolidation, European legislation)</td>
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<td>Financial</td>
<td>Open data, authoritative task, cost recovery through individual services to administration</td>
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<tr>
<td>Data</td>
<td>HVD, API, bulk download, various data formats, from cadastre to small-scale mapping, customising</td>
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<td>Innovation</td>
<td>Software architecture, use of advanced technologies (AI, remote sensing..)</td>
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<td>Partnerships</td>
<td>Laender, federal institutions, IT-providers, implementation partnerships, universities</td>
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<tr>
<td>Capacity building and education</td>
<td>Geomatics apprentices, support of bachelor and master studies in geo-informatics, geodesy, ...</td>
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The Bottom Line

Digitisation means a paradigm shift for land administration data and services.

Skills mix is needed. Capacity building is a critical success factor for further development and sustainable services.

New business processes and an appropriate approach to data sharing and delivery are necessary for digitisation.

Open Data requires appropriate services and IT-infrastructure (fit for purpose).

Partnership with administration, research and business required to make best use of land-related information, products and services.
Thank you for listening!