State of the Art in Spatial Planning Data Harmonisation & Spatial Data Infrastructure (SDI)

Julia Neuschmid, CEIT ALANOVA
A multiannual **Community programme** to make digital content in Europe more accessible, usable and exploitable.

Harmonisation of spatial planning data

based on the existing best practices in EU regions and municipalities and the results of current research projects.
Infrastructure for Spatial Information in the European Community

http://inspire.jrc.it
### INSPIRE SPATIAL DATA THEMES

**Annex I**
- Coordinate reference system
- Geographical grid systems
- Geographical names
- Administrative units
- Addresses
- Cadastral parcels
- Transport networks
- Hydrography
- Protected sites

**Annex II**
- Elevation
  - Land cover
  - Orthoimagery
  - Geology

**Annex III**
- Statistical units
- Buildings
- Soil
- Land use
- Human health and safety
- Utility and Government services
- Environmental monitoring facilities
- Production and industrial facilities
- Agricultural and aquaculture facilities
- Hydrography
- Protected sites
- Area management/restriction/regulation zones and reporting units
- Natural risk zones
- Atmospheric conditions
- Meteorological geographical features
- Oceanographic geographical features
- Sea regions
- Bio-geographical regions
- Habitats and biotopes
- Species distribution
- Energy resources
- Mineral resources
Plan4all Consortium

Commercial companies
Research institutes
Municipalities
Universities
Authorities
Regions

Data providers
Management team
Validation partners
Dissemination partners
Technological providers
Research and standardisation partners
State of the Art

- Best Practices
- Spatial Planning Systems and Leading administrations in
- Spatial Data Infrastructures (SDI)
- Technology
- INSPIRE requirements
- User requirements
- Challenges
Methodology

- Standardised questionnaires
- Analysis of Best Practices
- Analysis of literature/documents
- Experts’ experience
- Workshops
40 Best Practices
<table>
<thead>
<tr>
<th>Best Practice #3</th>
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<tbody>
<tr>
<td><strong>Name</strong></td>
<td>CentropeMAP</td>
</tr>
<tr>
<td><strong>Type</strong></td>
<td>Public project</td>
</tr>
<tr>
<td><strong>Dimension</strong></td>
<td>International (cross-border)</td>
</tr>
<tr>
<td><strong>Start</strong></td>
<td>2003</td>
</tr>
<tr>
<td><strong>End</strong></td>
<td>Open end</td>
</tr>
<tr>
<td><strong>URL</strong></td>
<td><a href="http://www.centropemap.org">http://www.centropemap.org</a></td>
</tr>
<tr>
<td><strong>Leader, partners</strong></td>
<td>PGO, Ceit Alanova, administrative authorities of the regions</td>
</tr>
<tr>
<td><strong>Content keywords</strong></td>
<td>Centrope region, cross-border data harmonisation, map client, cross-border statistic client</td>
</tr>
<tr>
<td><strong>Description</strong></td>
<td>CentropeMAP brings one dataset from the four countries Austria, Czech Republic, Hungary and Slovak Republic together in one map client. .....</td>
</tr>
<tr>
<td><strong>Used technology</strong></td>
<td>UMN Mapserver, Geoserver, Mapbender, PostgreSQL, ...</td>
</tr>
<tr>
<td><strong>Strengths/chances</strong></td>
<td>Datasets from different servers are displayed in one map; next goal is the harmonisation of data layout and classification so that datasets become comparable; all interfaces are build on open source software</td>
</tr>
<tr>
<td><strong>Weaknesses/risks</strong></td>
<td>Slow progress due to lack of time and financial resources at state administrations</td>
</tr>
<tr>
<td><strong>Accessibility</strong></td>
<td>All project data are free accessible on the Internet; all datasets are available as WMS</td>
</tr>
<tr>
<td><strong>User interface/software</strong></td>
<td>Web mapping client (web browser interface): Mapbender 2.4.2., WMS: UMN Map Server 4.8</td>
</tr>
<tr>
<td><strong>Challenges</strong></td>
<td>SLD integration, future web mapping standards (xml/gml/WCS)</td>
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Spatial Planning Systems & Leading Administrations in SDI
Framework for analysing relevant technology

<table>
<thead>
<tr>
<th>Framework for analysing relevant technology</th>
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<table>
<thead>
<tr>
<th>Technology</th>
<th>Mapbender 2.5.2</th>
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<tbody>
<tr>
<td>Manufacturer</td>
<td>OSGeo</td>
<td></td>
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<tr>
<td>Developed from/to</td>
<td>see <a href="http://www.mapbender.org/Part">http://www.mapbender.org/Part</a></td>
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<tr>
<td>Contact</td>
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<tr>
<td>Short Description</td>
<td>Mapbender is the software and port</td>
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<tr>
<td></td>
<td>geodata management of OGC OWS</td>
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<td>Type</td>
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<tr>
<td>Approach</td>
<td>Web Mapping</td>
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<tr>
<td>Interactivity</td>
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<tr>
<td>Technology</td>
<td>PHP</td>
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<td>Database Access</td>
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<td>Scripts</td>
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<tr>
<td></td>
<td>HTML</td>
<td></td>
</tr>
<tr>
<td>Server side</td>
<td>WMS (OGC conform)</td>
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<td></td>
<td>WFS (OGC conform)</td>
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<td>WFS-T (OGC conform)</td>
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<tr>
<td></td>
<td>SLD/... (OGC conform)</td>
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<tr>
<td>Client side</td>
<td>every</td>
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<tr>
<td></td>
<td>every</td>
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<tr>
<td>Webserver</td>
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<td>Browsers</td>
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<td>Projections</td>
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<td>Which</td>
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<tr>
<td>Where</td>
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<tr>
<td>Metadata management</td>
<td>CentropoMAP</td>
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<td>Known usage in planning</td>
<td>Clemens Beyer, CEIT ALANOVA</td>
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<tr>
<td>Challenges</td>
<td></td>
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<td>Collected by</td>
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<tr>
<td>Additions by</td>
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<tr>
<td>Remarks</td>
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<td></td>
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<tr>
<td>Manufacturers remarks</td>
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## Project/document info

<table>
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<th>Contacts of the submitter</th>
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<tr>
<td>Project name and/or acronym</td>
<td>Project URL:</td>
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<tr>
<td>Document(s) to analyse</td>
<td>Document Type</td>
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<tr>
<td>Document availability</td>
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### Strengths

### Weaknesses

### Opportunities

### Threats

Kind of data approach, reason harmonisation process tools
USER Requirements

Analyses on User Requirements

**Case Studies**
- Olomouc
- ProvRoma
- Lazio
- EPF
- NWRDA
- LGW Hamburg
- Georama
- Nasursa
- MEDDAT
- Gijon
- Avinet
- ZPR/TDF

**State of Art**
- Procedures and Processes in Spatial Planning
- Characteristics of spatial planning data
- Data standards and models
- SW facilities
- Technological processes
- Metadata and INSPIRE
- User groups specification
- Digital Right Management

**Results**
- Requirements and Ideas
- Bottlenecks & Challenges
- Vertical and horizontal interoperability of tools and methods
- Possibility to publish own data
- Free access to spatial planning data
- The implementation of web services and the use of WMS from other data providers
Requirements and Ideas

- Definition of **STANDARDS**
  - spatial data **legend** for data presentation
  - Glossary and multilingual thesaurus
  - **Metadata** profile
  - **Data model** description with UML

- **INSPIRE** compliance

- Description of the data **transformation** process and tools for data transformation
Challenges

- Fragmented planning systems
- Actors with different interests, intentions and requirements
- Weak standardisation process in several countries
- Problematic quality of service and data provided by data suppliers
- Weak stimulation of data providers to provide appropriate data and metadata formats
Challenges

- Restrictive copyrights practices
- Terminology
- Technical compatibility – mostly no interoperable SW
Challenges

- Rising number of data harmonisation activities
- INSPIRE as the regulatory framework for data harmonisation
- Create awareness for data harmonisation and cross-border data use
- Holistic planning — ADMINISTRATIVE BORDERS MUST NOT BE KNOWLEDGE BORDERS
- ...
Next steps...

State of the art analysis

Design of metadata profile

Plan4all data model definition

Networking architecture