How to Create a European INSPIRE Compliant Data Specification

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ESDIN Key Goals

- Further the ambition of the European Commission to create a European Spatial Data Infrastructure (ESDI) building on the National Spatial Data Infrastructures (NSDI) in Member States.
- Help member states, candidate countries and EFTA States prepare their reference data for INSPIRE related to Annex I themes in co-ordinate reference systems, administrative boundaries, transport network, cadastral parcels, hydrography and geographical names.

- Improve data access to partners data by **implementing and testing services based on distributed service architecture**
- As a results project will provide the **Data Specifications (ExM)** as a set of profiles of the INSPIRE Data Specifications for large, medium and small scales.
- Build a best practice network of all related stakeholders.
ExM Specifications and Guidelines (1)

- EGM/ERM/EBM specifications migrated into framework of the INSPIRE Data Specifications
  - ExM Data specification (medium/small scale)
ExM Specifications and Guidelines (2)

- National specifications migrated into framework of the INSPIRE Data Specifications
  - ExM Data specification (large scale)

- Including UML and GML schema
- Corresponding multilingual feature, attribute and attribute value catalogue
- Inspire Data Specification
- Other requirements
- Dataset NMCA A Large scale
- Dataset NMCA N Large scale
ExM Specifications and Guidelines (3)

- General Guidelines and rules completed by developed scripts and tools for Edge-matching and Map generalisation
- General specifications and guidelines for sustainable maintenance at the European level for Stable Unique Identifiers, Incremental update delivery and Geo Rights Management services
- Data policy and pricing guidelines
- Prepare guidelines for the creation of discovery metadata and data evaluation
- Develop a quality model
Pan-European User Requirements

• Geographic extent beyond EU27
  – Strongly desired: EFTA, candidate and assession countries
  – Asset: Balkan countries, Ukraine, Belarus, European part of Russia

• Harmonised spatial resolution and accuracy

• Data structure

• Data delivery

• European-wide classifications for
  – Roads
  – Watercourses
  – Settlements
Methodology

Start → INSPIRE Schema

Derive

Matching Tables

ExM Schema

Analyse

Transformation Specification

Transformation

Yes → Implementation

No

Operational Services

Yes → Done
ShapeChange

Main themes

Candidate themes

Analyses of the matching tables
<table>
<thead>
<tr>
<th>Type</th>
<th>Documentation</th>
<th>Attribute Association</th>
<th>Norway</th>
<th>Sweden</th>
<th>Denmark</th>
<th>France</th>
<th>Remarks</th>
<th>Netherlands</th>
<th>Remar</th>
<th>Finland</th>
<th>ExM</th>
</tr>
</thead>
<tbody>
<tr>
<td>ResidenceOfAuthority</td>
<td>Data type representing the name and position of a residence of authority.</td>
<td>name</td>
<td>1 to 1</td>
<td>1 to 1</td>
<td>Easy</td>
<td>Easy</td>
<td>Choice</td>
<td>Not available</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>geometry</td>
<td>1 to 1</td>
<td>Difficult</td>
<td>BEAT</td>
<td>ATTX</td>
<td>Easy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AdministrativeUnit</td>
<td>Unit of administration where a Member State has and/or exercises jurisdictional rights, for local, regional and national governance.</td>
<td>Multiple</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
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<tr>
<td></td>
<td></td>
<td>geometry</td>
<td>Easy</td>
<td>Difficult</td>
<td>Kolla</td>
<td>Sigma</td>
<td>Easy</td>
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<td>Easy</td>
<td>lowest level: difficult</td>
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<td></td>
<td></td>
<td>nationalID</td>
<td>Easy</td>
<td>Easy</td>
<td>How</td>
<td>det</td>
<td>lagra</td>
<td>ID exists only</td>
<td>lowest</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td>Easy</td>
<td>i 1 to 1</td>
<td>Sigma</td>
<td>Easy</td>
<td>on commu</td>
<td>level easy, other</td>
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<td>Easy</td>
<td>available</td>
<td>levels: not available</td>
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<td>nationalLevelNa</td>
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<td>Easy</td>
<td>exist only</td>
<td>level easy, other</td>
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<td></td>
<td>Easy</td>
<td>available</td>
<td>levels: not available</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**ExM**: Indicates whether the data is existing or not.
General Principles

• Extensions shall not
  – Change the specification but normatively reference it with all its requirements
  – Set any additional requirements that break any requirement of the INSPIRE data specification

• Extensions may
  – Add new application schemas importing INSPIRE or other schemas as needed
  – Add new types and constraints in the new application schemas
  – extend INSPIRE code lists if not centrally managed
  – Add portrayal rules
How to read the ExM model

- 1 application schema per theme
- Per application schema
  - Overview
  - Feature Types
  - codeLists
  - Detailed views for HY and TN
- ExM features marked
  - Red = mandatory
  - Green = optional
UML Model - detailed
Results

• facilitating the interoperability of topographic and administrative reference data according to the requirements set in the INSPIRE directive and to other user requirements at the European and global levels

• conceptual data model for creating harmonised cross-border, cross-theme and cross-resolution pan-European reference data from national contributions

• base for the definition of future user-oriented pan-European data services and products of EuroGeographics

• aggregation of data in a more cost effective and efficient way within a co-ordinated production and maintenance program for the EuroGeographics product range
<table>
<thead>
<tr>
<th>ExM Added Value</th>
<th>INSPIRE Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pan-European Products</strong></td>
<td><strong>INSPIRE Specifications</strong></td>
</tr>
<tr>
<td>• Experience of real products</td>
<td>• INSPIRE expertise</td>
</tr>
<tr>
<td>• Cross-border consistency</td>
<td>• Feature Concept Dictionary</td>
</tr>
<tr>
<td>• Cross-theme consistency</td>
<td>• Glossary</td>
</tr>
<tr>
<td>• Homogeneous levels of details</td>
<td>• Unique Identifiers and temporal attributes</td>
</tr>
<tr>
<td>• European classification</td>
<td>• Multilingual aspects</td>
</tr>
<tr>
<td></td>
<td>• Consistent network model</td>
</tr>
</tbody>
</table>
Open Issues

• General
  – To discuss and agree on the data content

• Technical
  – To resolve UML modelling issues
  – To provide a physical implementation of the data model
Any questions?

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<table>
<thead>
<tr>
<th>Session</th>
<th>Advantages of ArcGIS Spatial Data Infrastructure Interoperability and Advanced Technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date</td>
<td>Thursday, July 15th</td>
</tr>
<tr>
<td>Time</td>
<td>10:15 AM – 11:30 AM</td>
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<td>Room</td>
<td>28D</td>
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