

Cross-Border Harmonisation of Spatial Base Data between Germany and the Czech Republic



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Motivation & main objective

- Need for harmonised cross border geodata
- Close cooperation between Saxony and the Czech Republic in various sectors (environment, planning, commerce)
- → Project “Cross-Border Harmonisation of Spatial Base Data”
 - Interoperability of Spatial Base Data
 - Semantics and Geometry

Project Details

■ Partner:



Leibniz-Institute of Ecological and Regional Development e.V. Dresden (IÖR) - Lead Partner



Surveying agency of Saxony: Staatsbetrieb Geobasisinformation und Vermessung Sachsen (GeoSN)



Surveying agency of the Czech Republic: Zeměměřický Úřad (ZÚ)

■ Duration: January 2009 – December 2011

Used Data

- Official and mostly used spatial base data of the Free State of Saxony and the Czech Republic
 - German **ATKIS Basis DLM** (AAA-Model) (Authoritative Topographic Cartographic Information System, Digital Basis Landscape Model)
 - Czech **ZABAGED** data (2010) (Fundamental Base of Geographic Data/Základní báze geografických dat)

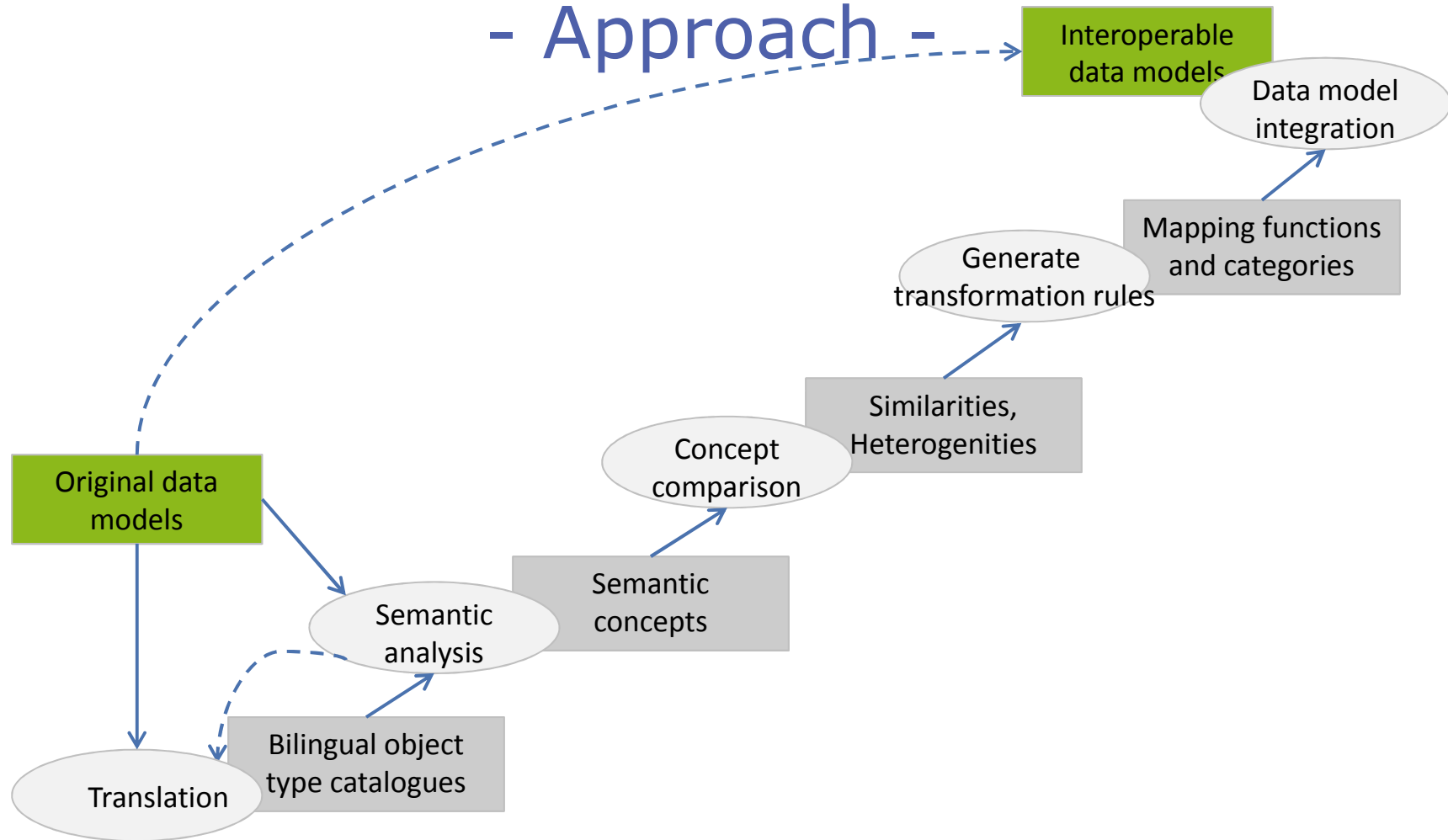
Approach for Data Harmonisation - Objectives -

- Differences on model and object level
- Semantically comparable and geometrically connected data
- Data Harmonisation has many aspects
 - Methods for:
 - Semantic harmonisation
 - Geometric homogenisation

Semantic Harmonisation

- Compatible data models and object descriptions
- Heterogeneities in
 - Schema / Level of Detail
 - Classification
 - Denotation and Language
 - ...
- Conceptual Schema Integration
 - Integration by Alignment (matching tables)
 - Separate data models

Semantic Harmonisation - Approach -

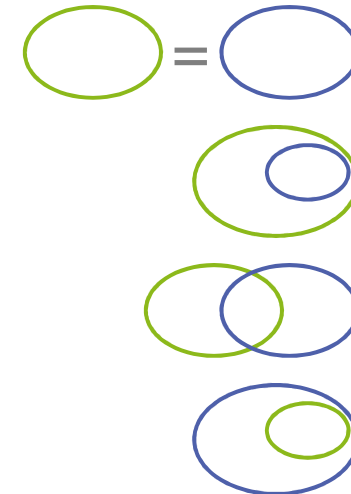


Semantic Harmonisation - mapping functions -

- Matching tables with functions for
 - each concept (more than 1400 for ATKIS and more than 300 for ZABAGED)
 - both transformation directions
- Categories for specification of mapping functions

Semantic Harmonisation - categories -

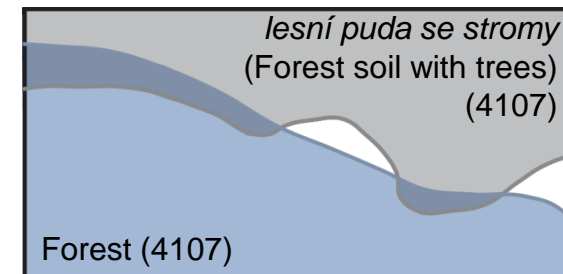
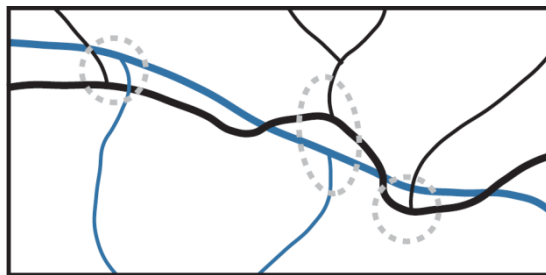
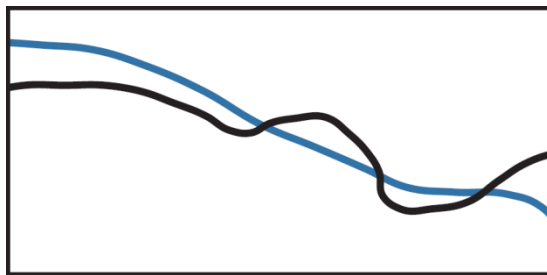
- Biunique
- Subsumption Z to A (Z is part of A)
- Overlap
- Subsumption A to Z (A is part of Z)
- Subsumption on a higher hierarchical level
- Derivation (by spatial relations)
- No mapping



(A: ATKIS; Z: ZABAGED)

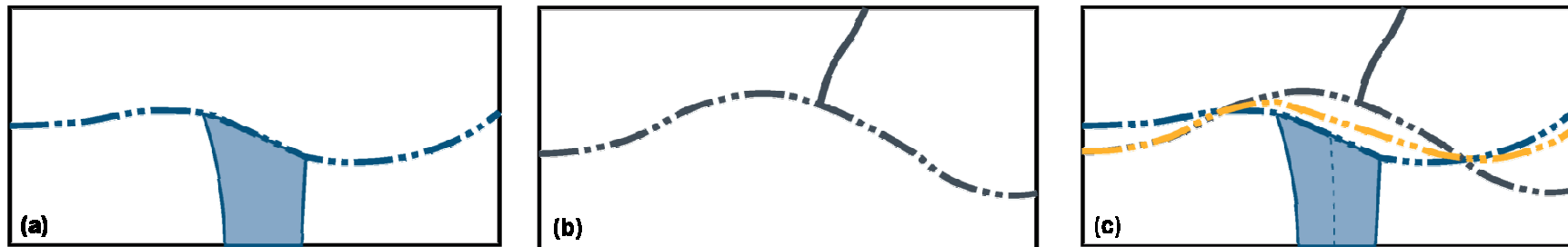
Geometric Harmonisation - Challenges -

- Geometric heterogeneity
 - Projection and reference system
 - Geometric modelling (location, accuracy, generalisation) of homologues objects e.g.



Geometric Harmonisation - Challenges -

- Geometric heterogeneity
 - Projection and reference system
 - Geometric modelling (location, accuracy, generalisation) of homologues objects e.g.
 - Level of abstraction



Geometric Harmonisation - Approach -

- Seamless and geometrically connected cross border datasets
- Coordinate Reference System
 - Definition of a common CRS - ETRS89
 - Generation of Transformation Rules
- Level of abstraction
 - Identification of objects
 - Generation of tools or guidelines for derivation of additional objects

Geometric Harmonisation - Approach -

- Connection of objects along a common border
 - Integration of exact measured border geometry to both official datasets
 - Use of same generalisation rules for smaller scales
 - Definition of Connection points – fixed points within update and generalisation processes
 - Edge matching of all cross border objects

INSPIRE directive article 10.2:

“in order to ensure that spatial data relating to a geographical feature, the location of which spans the frontier between two or more Member States, are coherent, Member States shall, where appropriate, decide by mutual consent on the depiction and position of such common features.”

(Expected) Results and Outlook

- Bilingual object catalogues
- Mapping functions for shared use, visualisation and interpretation of the datasets in both models
- Specification by categories
- Integration of exact measured border geometry in both official datasets
- Agreement about border geometry, connection points and generalisation rules
- Geometric connection of all main cross-border objects
- GIS-tool for geometric connection and adjustment of adjacent datasets – edge matching



Grenzüberschreitende
Geodatenhomogenisierung

Homogenizace
geodat na hranicích

Further information:

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This project is funded by European Union (EFRE) and the Free State of Saxony
within the Ziel 3/Cíl 3 program



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