

European Location Services and Core Reference Data – two new products and services meeting EU needs

Sonja Werhahn, BKG, 29.03.2019
SESSION 1: Building pan-European data from official national data



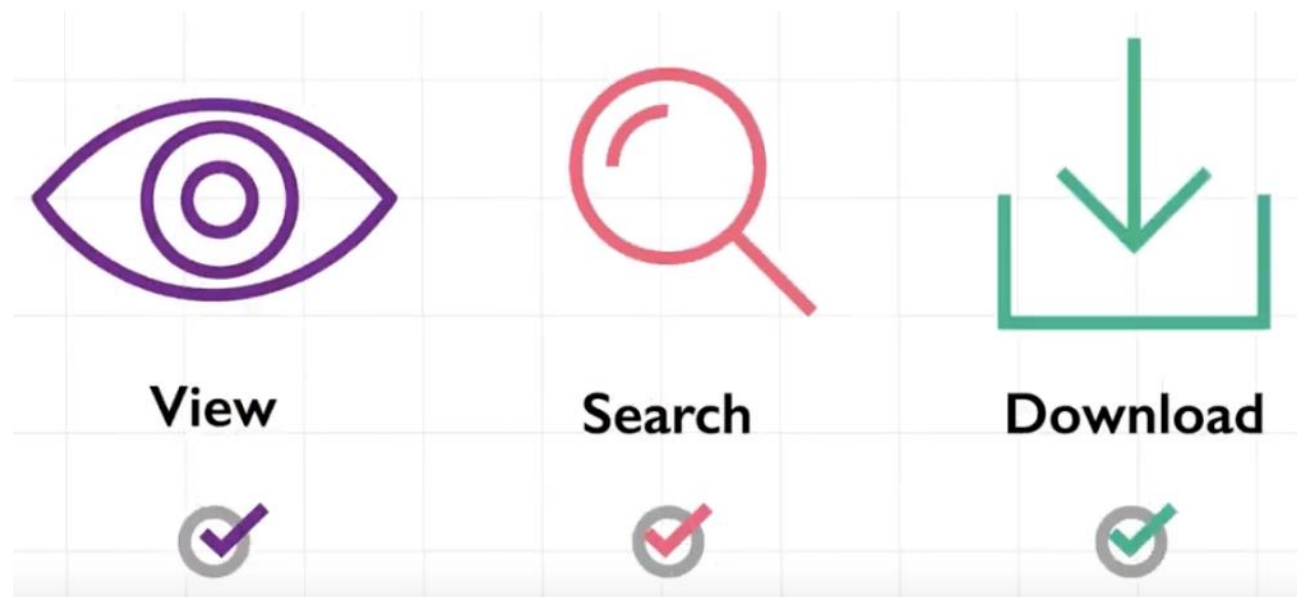
Agenda

- OpenELS Project
- Core Reference Dataset - CRD
 - Initial Idea
 - Content
 - Data model
 - Production steps
 - Prototype
 - First lessons learned
 - What are the advantages?
 - What comes next?

What do OpenELS and CRD have in common?

- Provide authoritative reference data for cross border usage
- Single point of contact
- Two different approaches:
 - Provide open data via service → OpenELS
 - Provide data as dataset → CRD

European open geospatial data services from official national sources



High-value open geospatial data to support the wider digital economy

- **copy, publish, distribute, reuse and share** the Open ELS Data
- **adapt** the Open ELS Data & Services
- **exploit** the Open ELS Data **commercially and non-commercially**



Core Reference Dataset (CRD) – the initial idea

EuroGeographics wanted to create a

- Reference Data set
- at Master Level of Detail
- for all of Europe
- make use of **INSPIRE-** / ELS-Data provided by NMCAAs

Core Reference Dataset (CRD) – the initial idea

Make use of INSPIRE but:

- Easy to use
- Limited content, only few themes, only basic attribute information → “Core”
- Simplified data model
- Harmonised at International boundaries
- Centralised data production (at least for the moment)
 - Production team located at BKG

CRD content (for first version)

Themes

- **Hydrography:** Watercourse, StandingWater, LandWaterBoundary
- **Transport Network:** Road Network, Railway Network including RailwayStationNode

Scale, positional accuracy

- **Multiscale approach:** data from 1:10.000 to 1:50.000 will be accepted
- **Positional accuracy:** about 5-15m (or better)

Coverage

- Priority 1: EU28
- Priority 2: other EEA 39
- Priority 3: other European countries

Data model: Based on INSPIRE but flattend data model (I)

1.) INSPIRE properties defined as data type

For CRD:

- Data types are resolved into a list of attributes
 - geographicalNames
 - width
- Data types are concatenated into a single attribute delimited by hash (#)
 - inspireId (namespace#localId)
 - hydroid (namespace#localId#ClassificationScheme)

2.) INSPIRE transport networks consist of Links, LinkSequences and LinkSets as linear feature types

For CRD:

- CRD uses only Links
- Some Attributes of LinkSets are transferred to the Links
 - railwayLineCode from RailwayLine to RailwayLink

Data model: Based on INSPIRE but flattend data model (II)

3.) INSPIRE transport properties are own feature types which are associated to the transport links by linear referencing

For CRD:

- No linear referencing
- The transport properties are assigned as attributes to the transport links

4.) Some INSPIRE attributes have multiplicity greater than 1 (e.g. [0.*] or [1.*]).

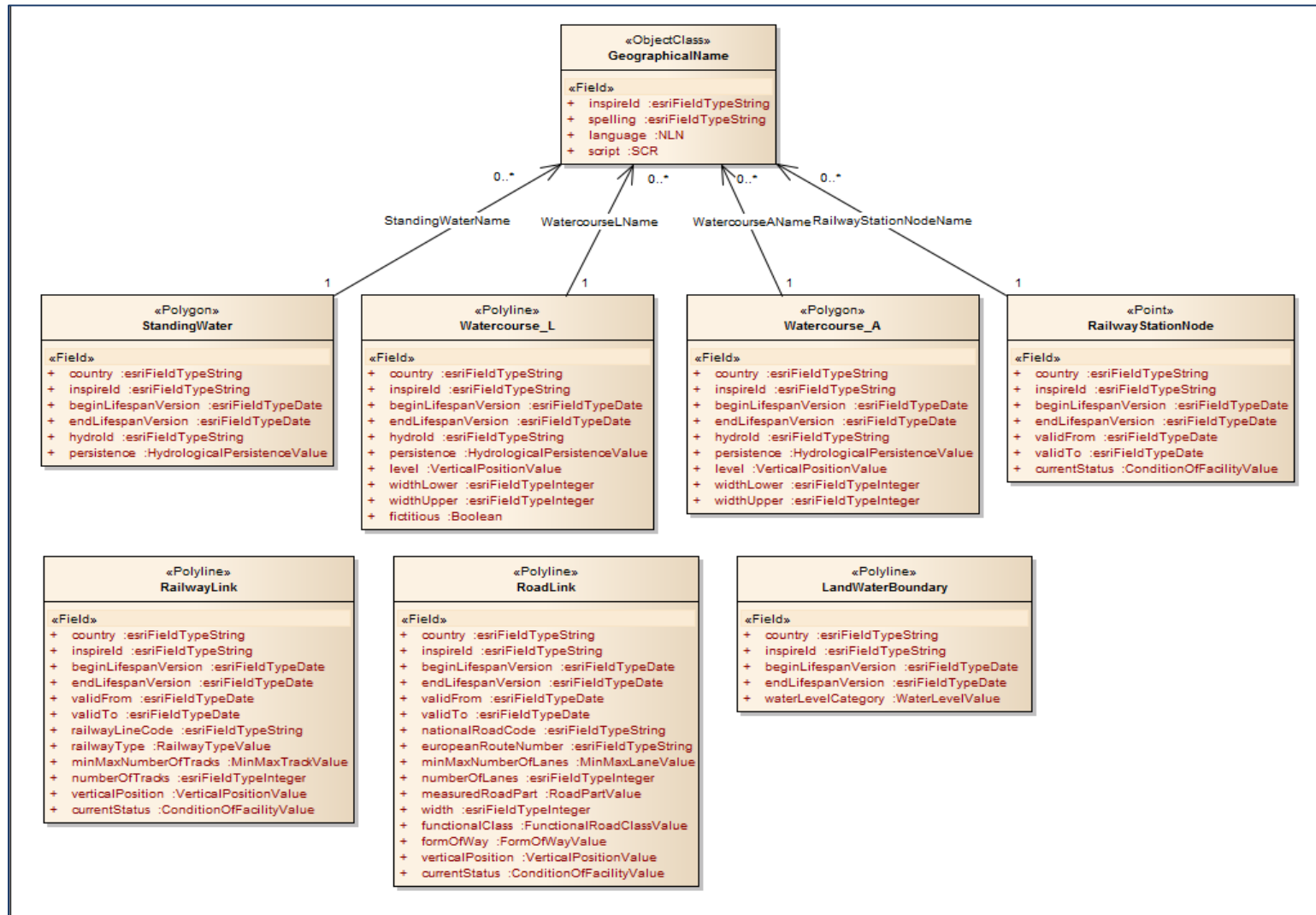
For CRD:

- all attributes have multiplicity [0...1] except GeographicalName

5.) Features may be of different geometric types (point, curve, surface)

For CRD:

- the feature type is split (e.g. Watercourse_L and Watercourse_A) or only one option is kept (only surface for StandingWater)



Production steps:

- Data delivery by NMCAAs
- Quality checks
- Edge matching
- Final assembly of CRD

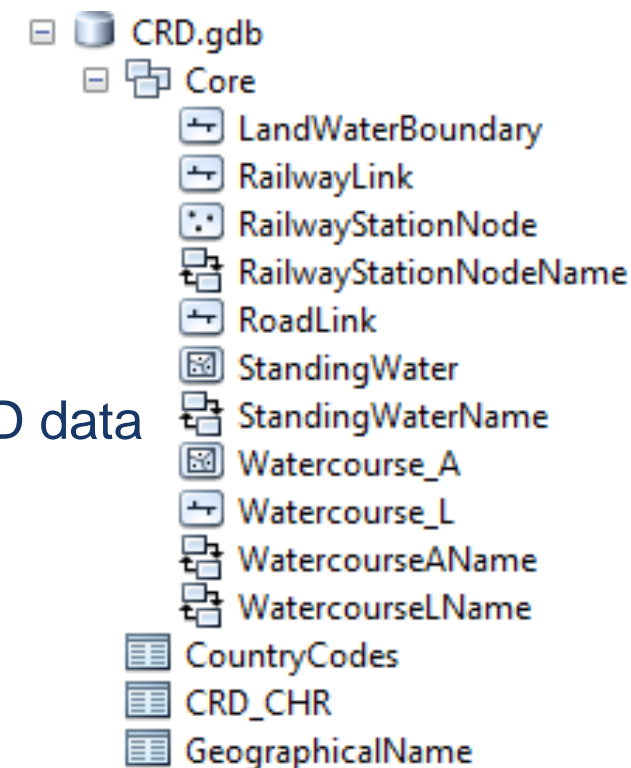
Production steps: Data delivery by NMCAAs

- INSPIRE data → transformation to CRD done by BKG

OR:

- NMCAAs transform national data to CRD → delivery to BKG as CRD data

BKG provides template → ESRI gdb



Production steps: Quality checks

CRD relies on the quality checks done by NMCAs for the original data

- Focus on topology checks
- Basic Consistency checks
- But only minor corrections can be amended

Corrections / errors found will be reported back to NMCA after final data assembly

Production steps: Edge matching

- Tool: ERM tool + manual work
- International Boundaries:
 - Boundary representations collected in ELF project
 - Boundaries from SBE database

Workflow: first version

1. Automatic analysis of cross-border features
2. Manual improval of analysis results
3. Automatic creation of connecting features
4. Automatic edge matching
5. Manual quality check of edge matching results

update

1. Automatic analysis of cross-border features
2. skip
3. skip
4. Automatic edge matching
5. Manual quality check of edge matching results

Production steps: Edge matching

- For Prototype: Done by BKG
- The defined Connecting Features communicated to NMCA's

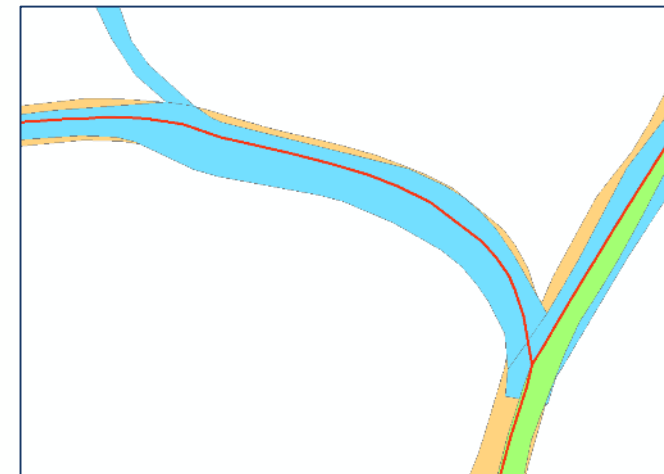
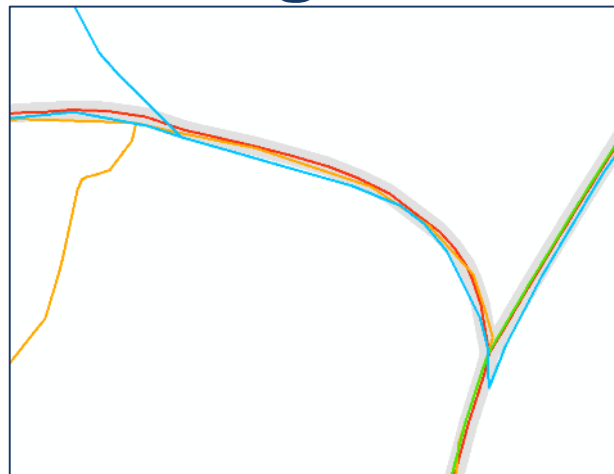
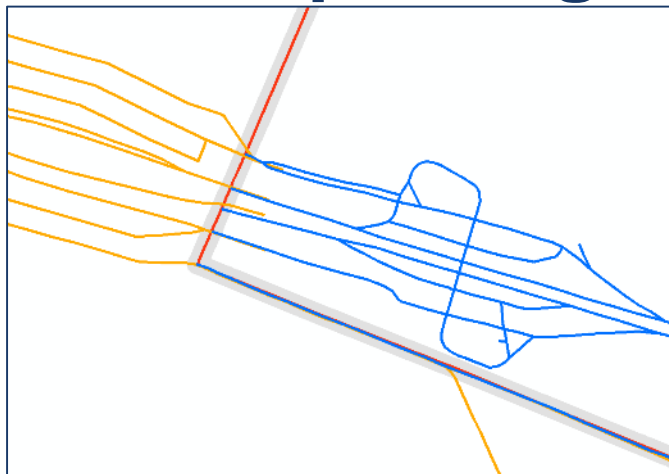
Where Connecting Features are available (eg. FR-BE):

- Connecting Features are provided by NMCA's, used for edge matching in CRD

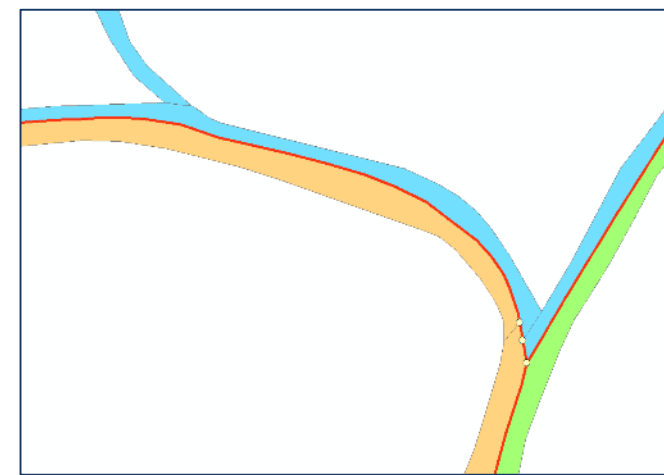
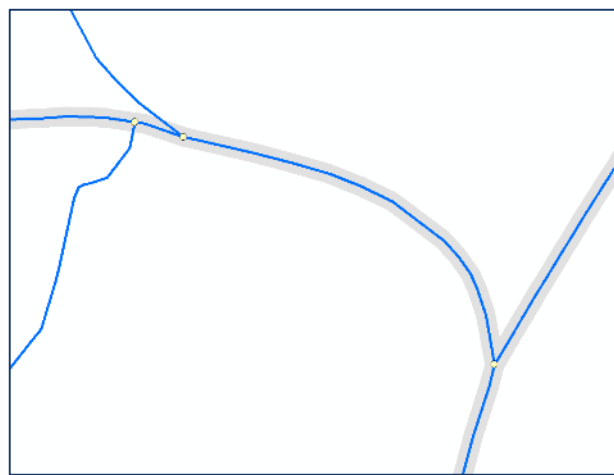
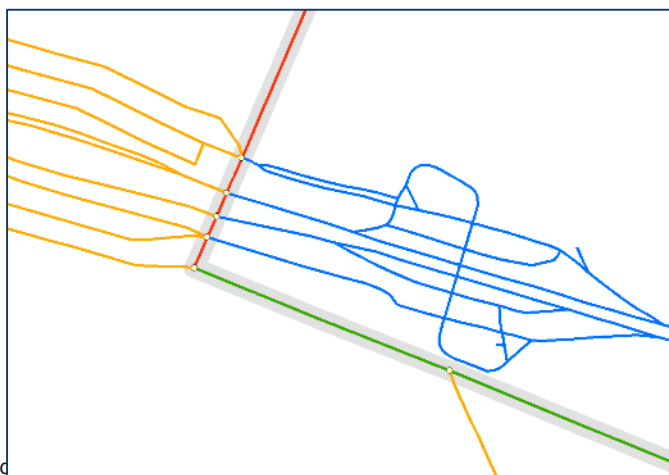
International boundary will not be provided in CRD

Production steps: Edge matching

Before edge
matching



After edge
matching

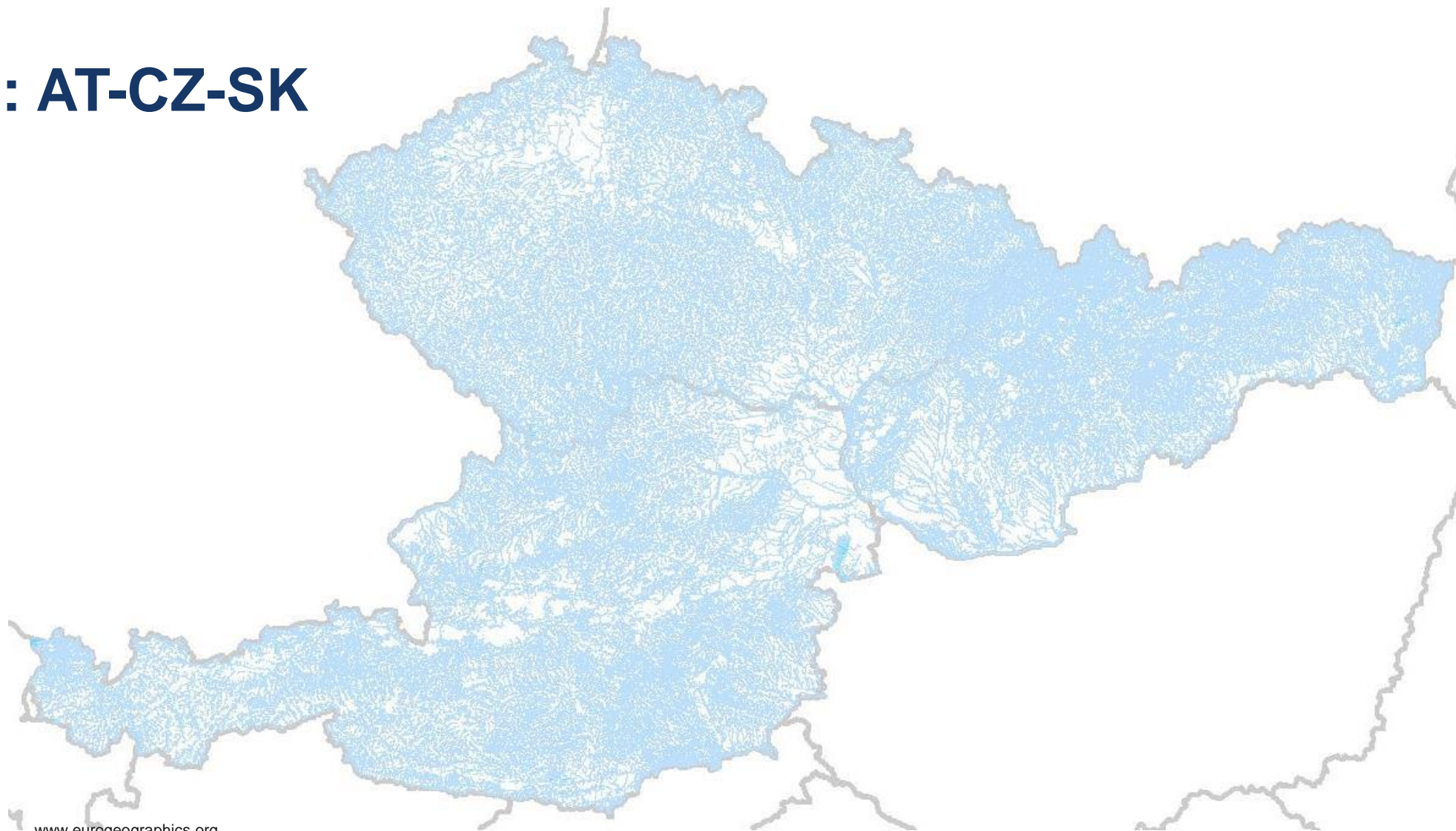


Production steps: Final data assembly

- All countries in one data base
 - Last basic quality checks
 - Metadata
 - Documentation
-
- Done for a **prototype** including 3 countries: Austria, Czech Republic, Slovakia

Prototype: AT-CZ-SK

Hydro



Prototype : AT-CZ-SK

Road



Prototype : AT-CZ-SK

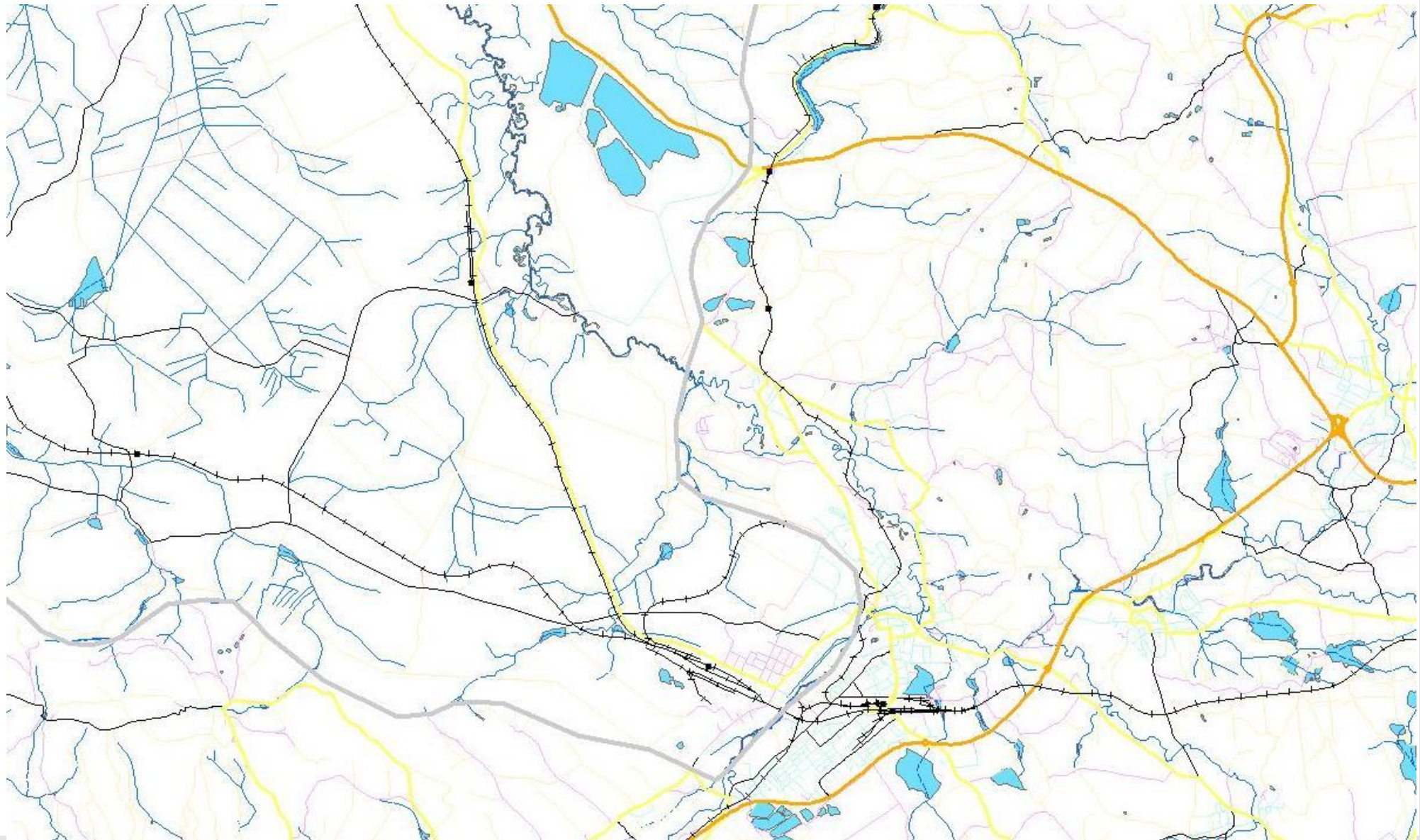
Railway



Prototype

50k

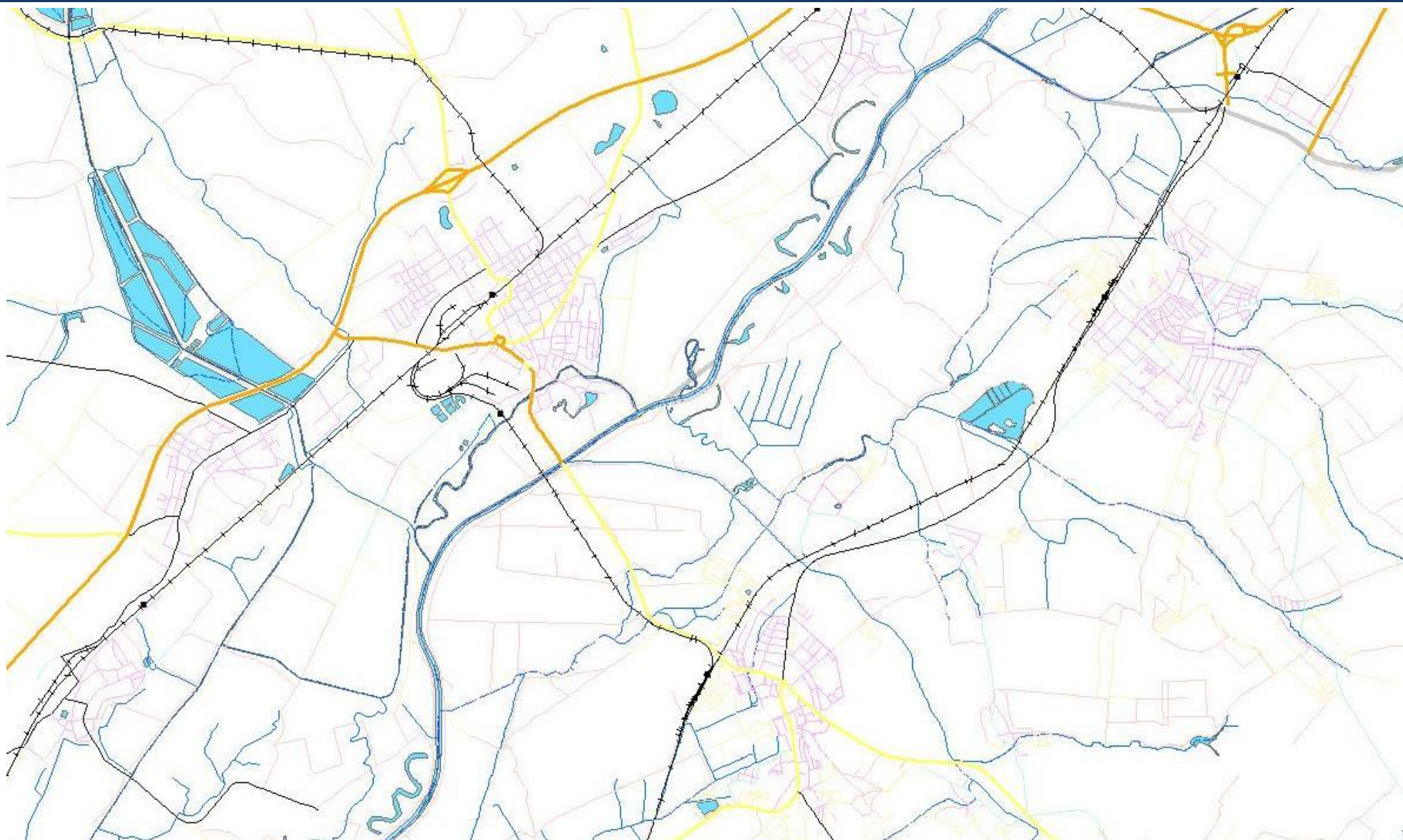
AT#CZ



Prototype

50k

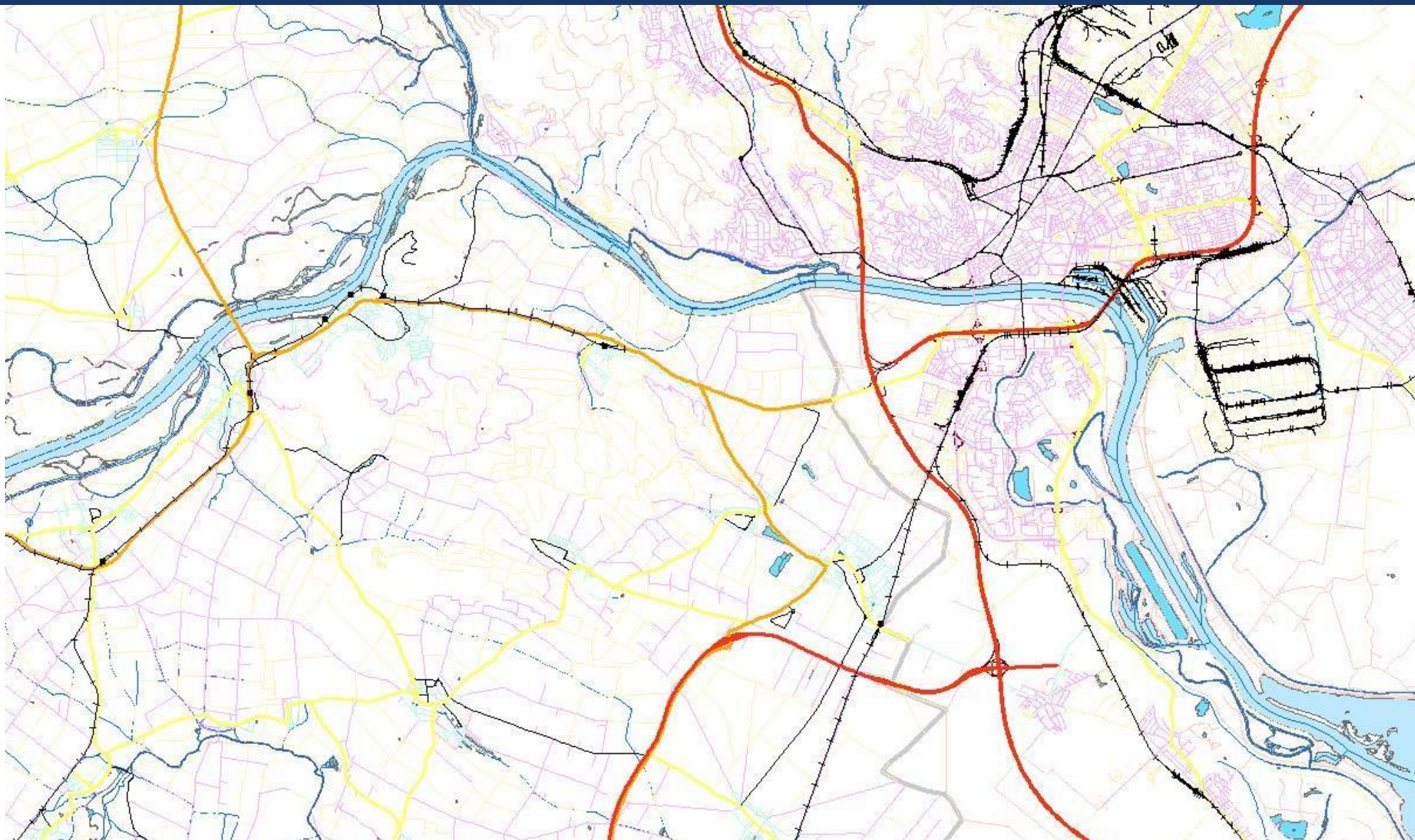
CZ#SK



Prototype

50k

AT#SK



First lessons learned

	Problem	Solution for CRD
WFS services	<ul style="list-style-type: none">• Access difficult (because text only in national language)• Download of whole country not possible• Connections not stable	Ask NMCAs to deliver data directly to BKG or provide download possibility
Data content	<ul style="list-style-type: none">• Not all information (attributes) available as INSPIRE data → some countries use additional sources for CRD• Not all themes / geometry types are available (Watercourse as surface, railways)	Ask NMCAs to add missing information
Data quality	<ul style="list-style-type: none">• Even simple quality checks show errors (short lines, simple geometry, no gap between adjoining surfaces)	report found errors back to NMCAs
Edge matching	<ul style="list-style-type: none">• Neighbouring countries use different boundary lines• Delivered data overlapping neighbouring country (surface watercourses)	shows importance of Eurogeographics International Boundary data set

What are the advantages of CRD compared to INSPIRE data?

- Simple data model
- Similar content across borders
- Geometries are harmonised across borders (edge-matched)
- Available as dataset (ESRI geodatabase)
- Only one point of contact

What comes next?

- Prototype available since end of November 2018
- Next Region ready by September 2019

Evaluation of production process / lessons learned

- From data delivery by NMCAs
- From production process
- Feedback / requirements from (potential) users

Plans for the future

- Additional themes
- Additional coverage
- Regular updates of all themes
- **Step from Prototype to Product needs investment → EuroGeographics is looking for funding**

Thank you for your attention

Contacts

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BKG

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