

The background of the slide is an aerial photograph of a coastline. On the left, there are turquoise waves with white foam crashing onto a sandy beach. To the right of the beach, a road runs vertically. Further to the right, the land is covered in green vegetation, and a white grid pattern is overlaid on the image, suggesting a geospatial or data visualization theme.

# OME2 – New production process for a high-value large-scale database

Noémie Grémeaux (IGN France)



Co-funded by  
the European Union

Digital Europe Programme  
Grant Agreement No 101100625

# Content

1. Production process status
2. Tools development update
3. Next steps



**Co-funded by  
the European Union**

Digital Europe Programme  
Grant Agreement No 101100625

# Production process status



Digital Europe Programme  
Grant Agreement No 101100625

## Objectives

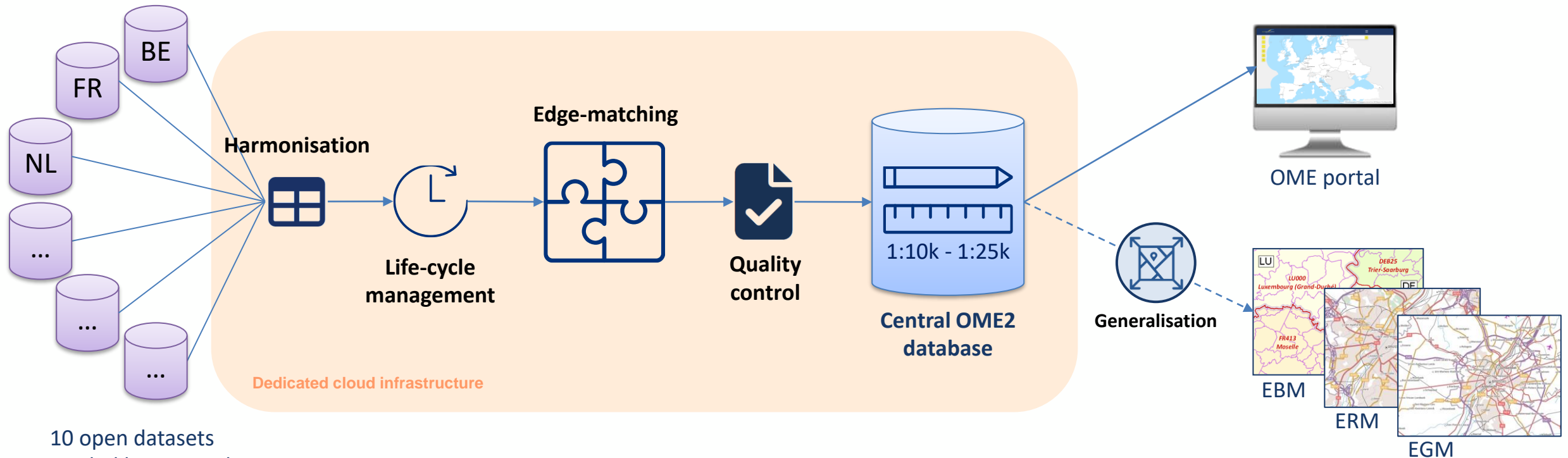
To set up a workflow to create and maintain:

- A **central pan-European** high-value large-scale prototype (**HVLSP**)
- **3 themes**:
  - Administrative units (AU)
  - Transport network (TN)
  - Hydrography (HY)
- **10 countries** by 2025 (to be extended afterwards)
- **Harmonised, edge-matched** and with **life-cycle management**

The OME2 approach:

- **Centralised** process
- **Minimal additional workload** for national producers
- **Re-use results** from previous projects
- A **technical** and **practical** approach to harmonisation:
  - Take into account feedback from users
  - Technical (not political) solutions
  - Highly automated

## Future production process



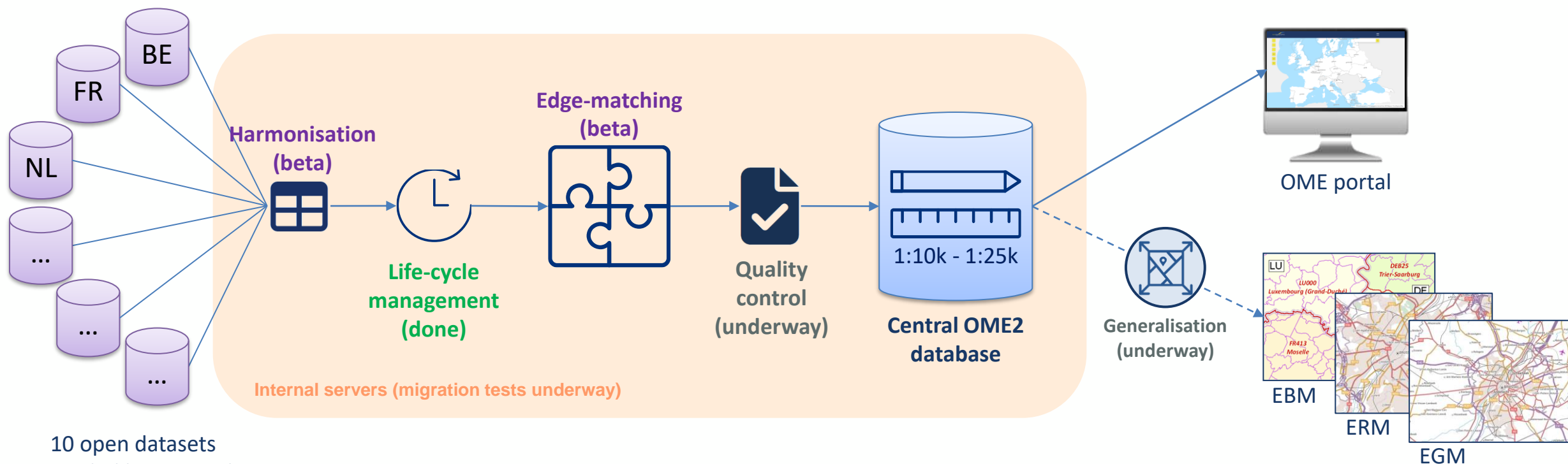
10 open datasets  
provided by national  
producers (INSPIRE or  
national data model)



Co-funded by  
the European Union

Digital Europe Programme  
Grant Agreement No 101100625

# Production process status (oct 2024)



Co-funded by  
the European Union

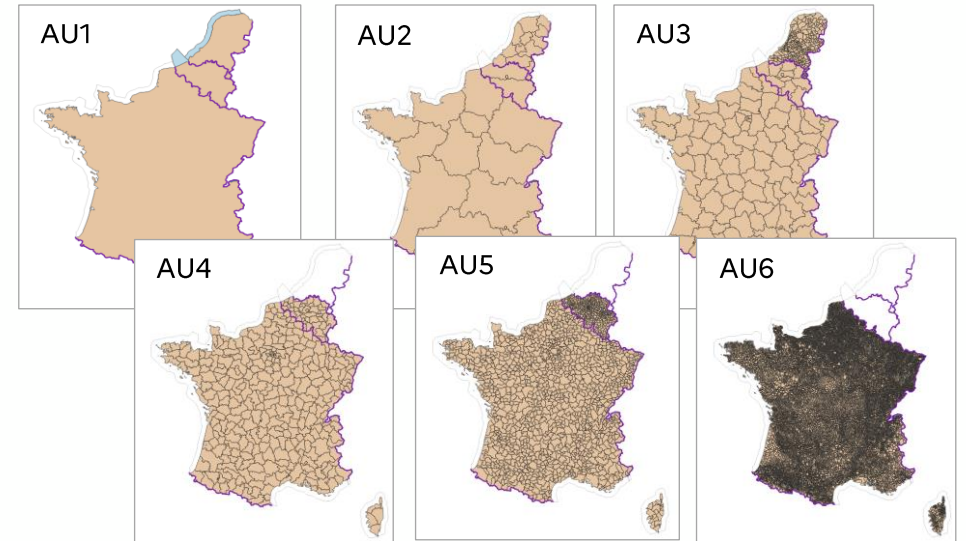
Digital Europe Programme  
Grant Agreement No 101100625

## Current status of the HVLSP

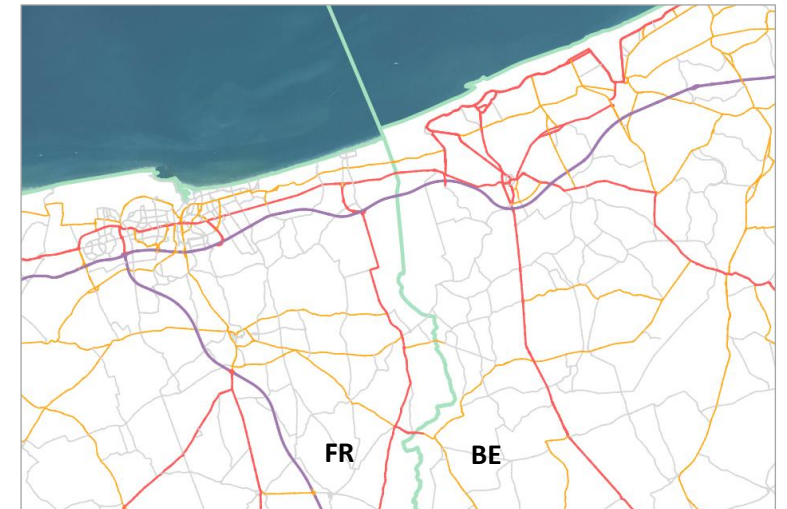
	BE	FR	NL	LU	CH	CZ	AT	DE	?	?
Administrative units										
Transport network										
Hydrography										

V1.0 ~~21 March 2024~~ ~~2024~~

- HVLSP v1.0 successfully delivered in March 2024 on <https://www.mapsforeurope.org/>
- Edge-matching errors (objective < 15%):
  - Roads: **1,24%** (3,52% before manual corrections)
  - Other tables: **0%**
- HVLSP v2.0 in November

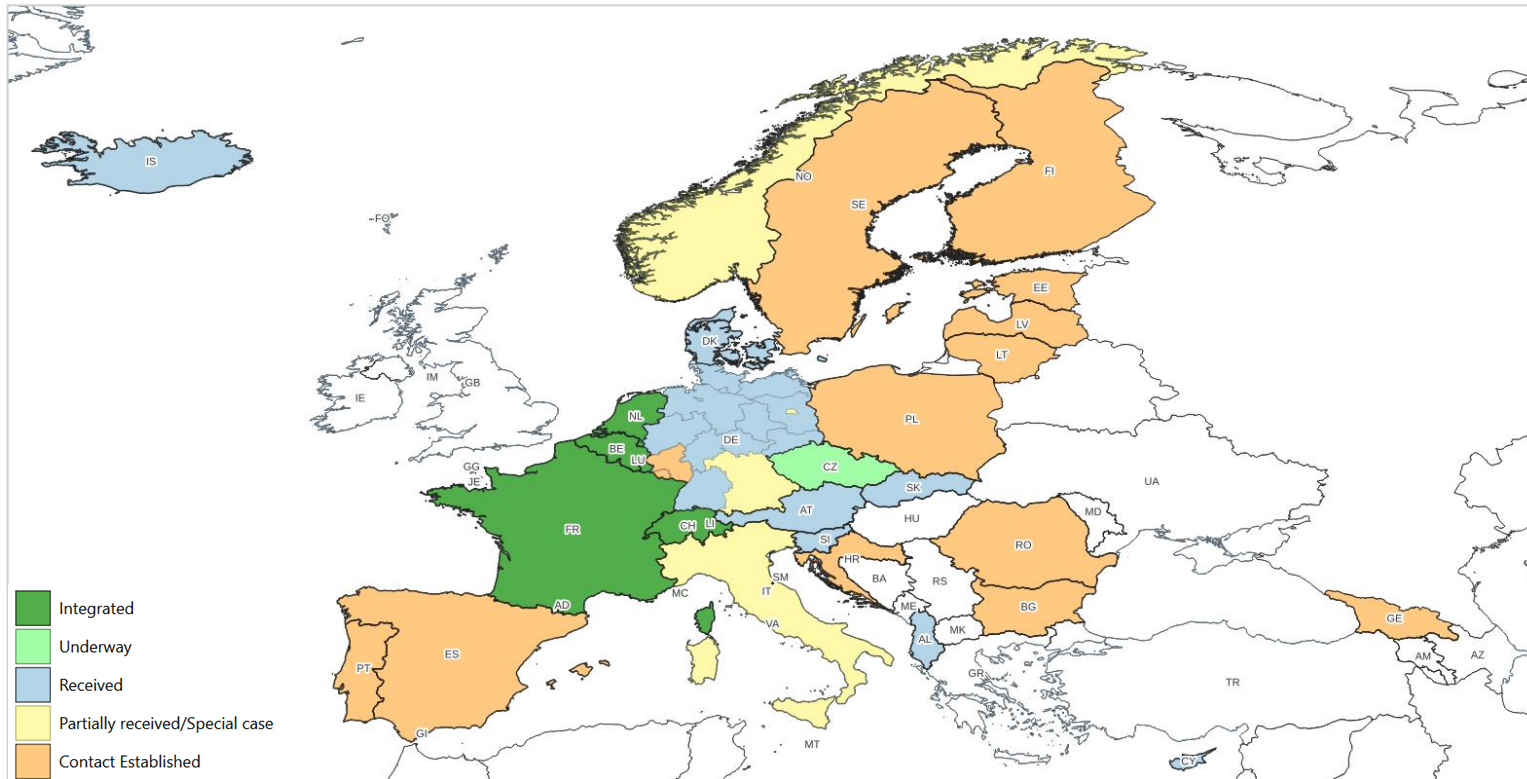


Administrative units



Road network

## Coverage extension



- Data received for:
  - 12/EU27 countries
  - 17/43 EuroGeographics' members
- Many countries are willing to participate
- But a few do not seem to have all the data we need (GR?, BG?)
- Priority: get data from at least all EU27 countries for an inventory of what is available



Co-funded by  
the European Union

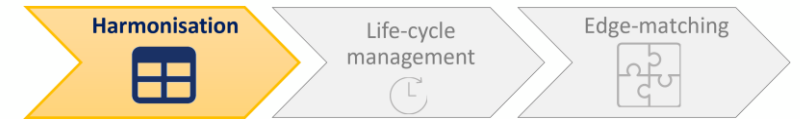
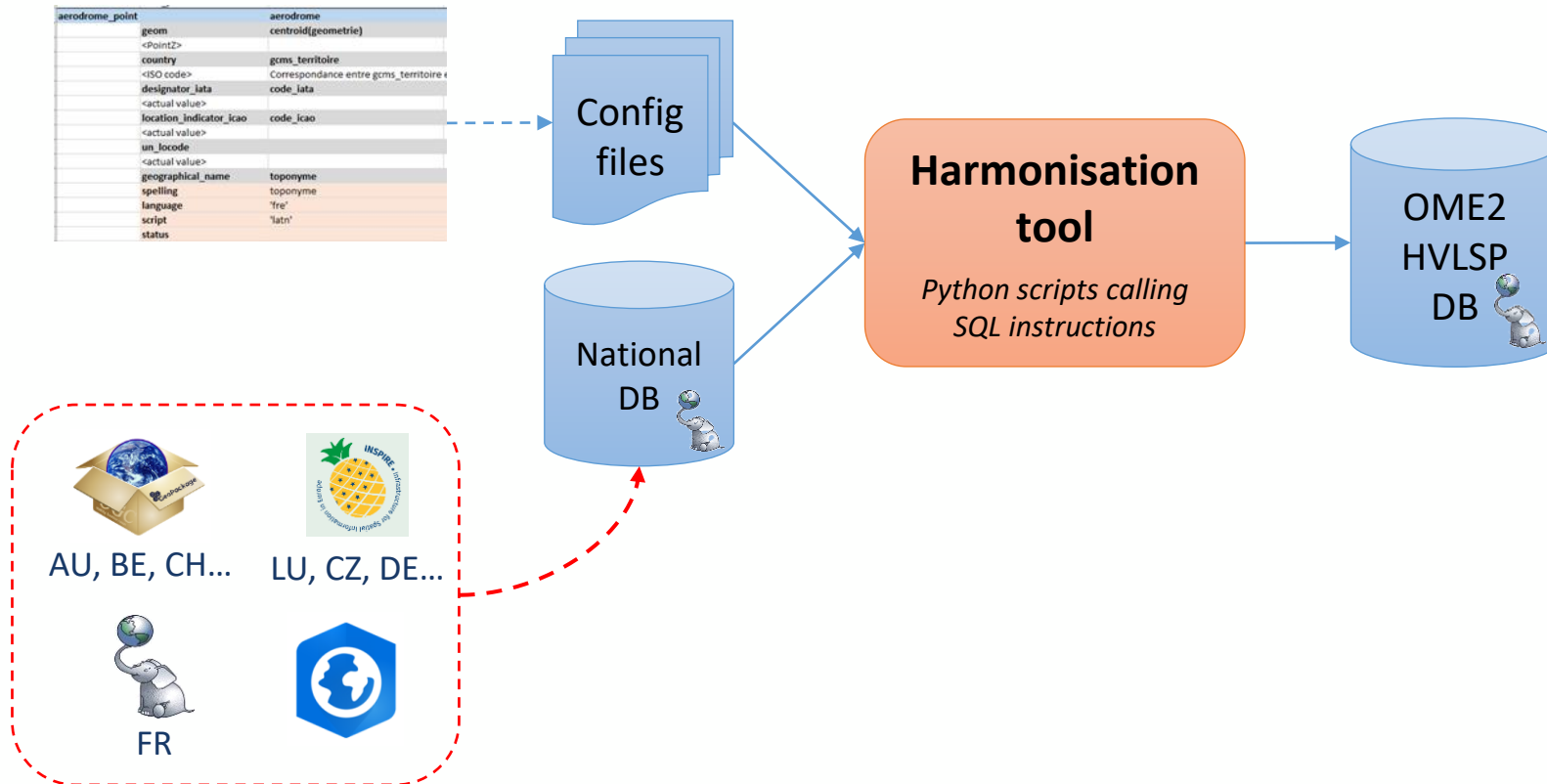


# Tools development update



Digital Europe Programme  
Grant Agreement No 101100625

# Harmonisation tool description

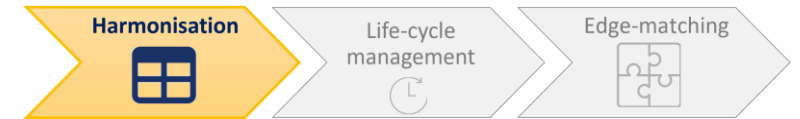


- Python tools
- Based on JSON configuration files, created using mapping tables provided by national producers
- From PostGIS to PostGIS



Co-funded by  
the European Union

# Harmonisation tool evaluation



- ✓ The harmonisation tool is fully functional
- ✓ The configuration files are rather easy to create if the mapping table is filled correctly

Technical objectives achieved



- ! (Too) many data formats to handle
- ! INSPIRE implementation differs depending on countries and makes it difficult to reuse config files
- ! INSPIRE data is sometimes not as complete or up-to-date as national data

Harmonisation is still tricky...



For an industrialised data production, we may need to be more restrictive in what we ask producers

- National gpkg preferred

# Life-cycle management



Based on the IGN-F's life-cycle management system (BDUni):

## 5 technical fields on all tables

road_link	
Columns (35)	
objectid	unique identifier
country	
begin_lifespan_version	
end_lifespan_version	
geom	
gcms_detruit	destroyed true/false
gcms_date_creation	} dates
gcms_date_modification	
gcms_date_destruction	

## A history table for each table

To store all the successive versions of every object:

- > road\_link
- > road\_link\_h
- > road\_node
- > road\_node\_h
- > road\_service\_area
- > road\_service\_area\_h
- > road\_service\_point
- > road\_service\_point\_h

## PostgreSQL triggers

To fill the required information in case of modifications:

- UID updating rules (objectid)
- Technical fields (dates, destroyed...)
- History tables

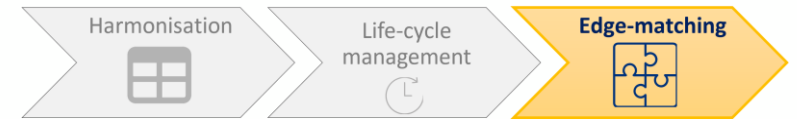
→ System put into place in HVLSP 2.0 (Nov) so little feedback for now.



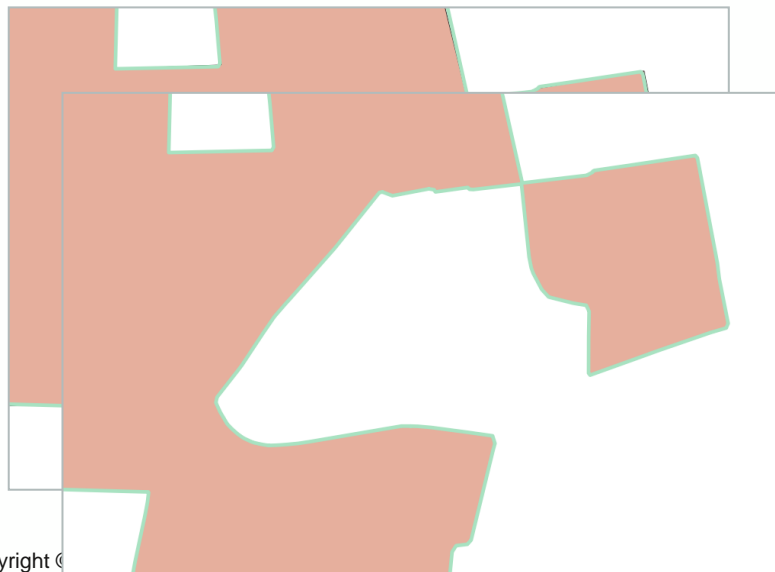
Co-funded by  
the European Union

Digital Europe Programme  
Grant Agreement No 101100625

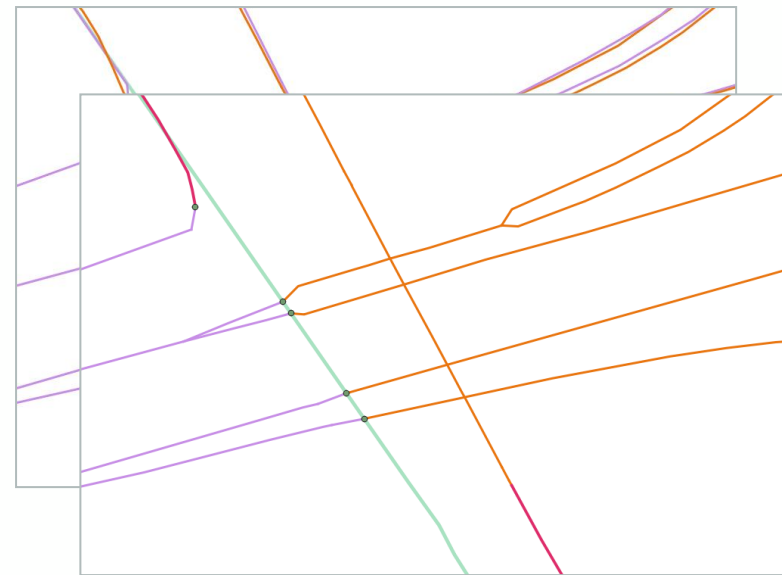
## Edge-matching tools description



- Several tools
- Implemented in C++ using IGNF's internal libraries and external libraries (e.g. CGAL) → part of the ERM/EGM generalization process is re-used.
- Based on graph theory



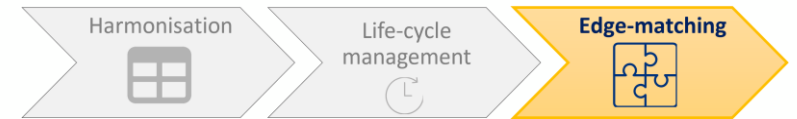
Copyright ©

*Administrative units**Road network*

Co-funded by  
the European Union

Digital Europe Programme  
Grant Agreement No 101100625

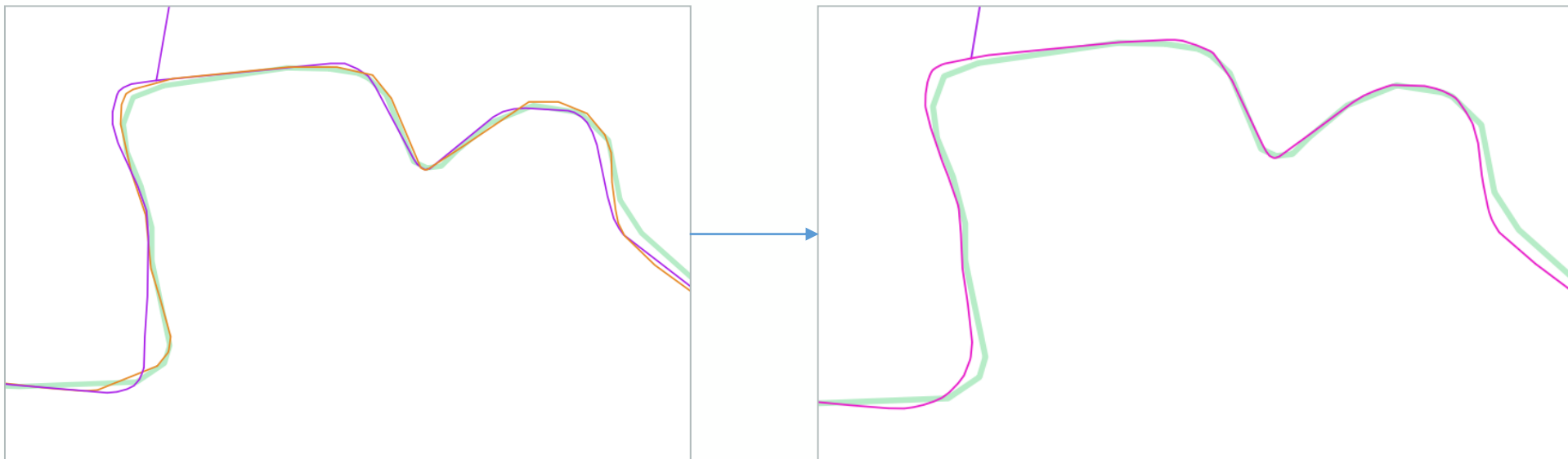
## Edge-matching tools HY



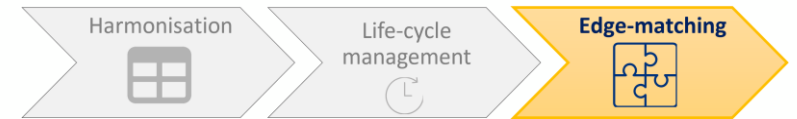
Adaptation to Hydrography:

- Morphological differences with TN
- More geometrical discrepancies between countries (curvy vs straight geometries, especially in forest areas)

→ TN algorithms needed to be adapted



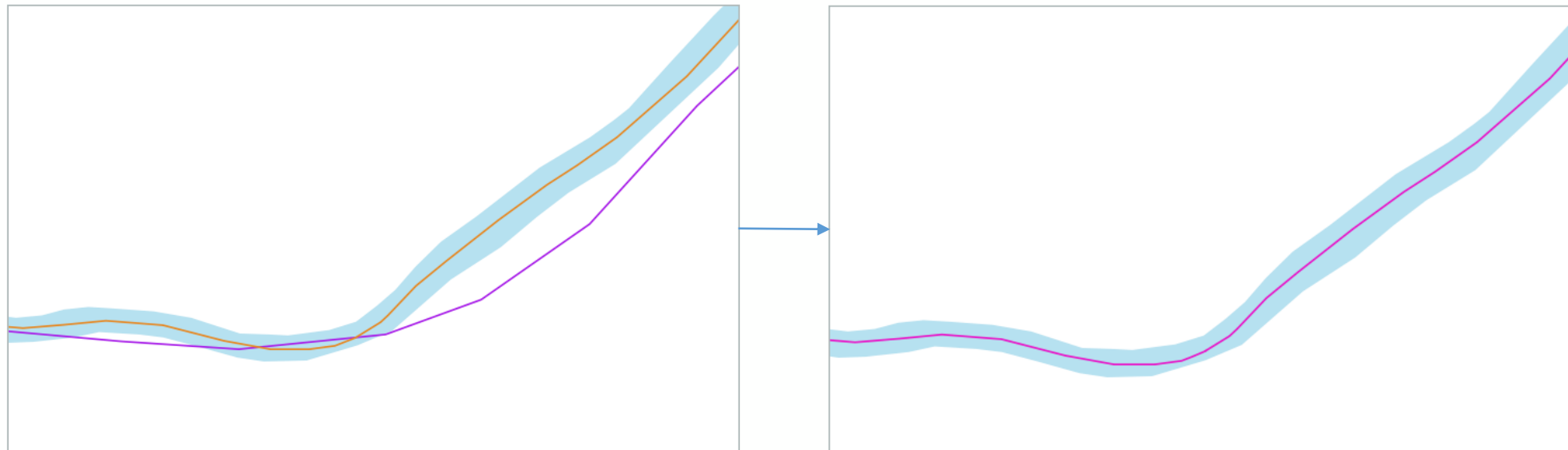
## Edge-matching tools HY



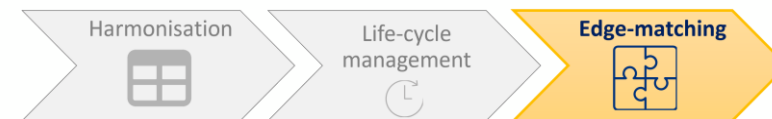
New challenge: consistency between watercourse lines and areas.

Some tricky cases:

- If only one country provided the area feature
- If the line objects are not identified as fictitious



# Edge-matching tools evaluation



- ✓ Topological edge-matching works really well (internal evaluation + by Eurostat)
- ✓ Rather fast process
- ✓ Not many errors left after automatic phase

## Strengths



- ! It is still safer to control the results with orthophotos underneath → is this control process viable in the long term?
- ! Attribute are practically not considered in the process
- ! The algorithms could still be improved on HY areas

## Weaknesses



For an industrialised data production, we need to define what are:

- the acceptable rate of errors
- the acceptable time to spend on control and manual corrections



Co-funded by  
the European Union

Digital Europe Programme  
Grant Agreement No 101100625



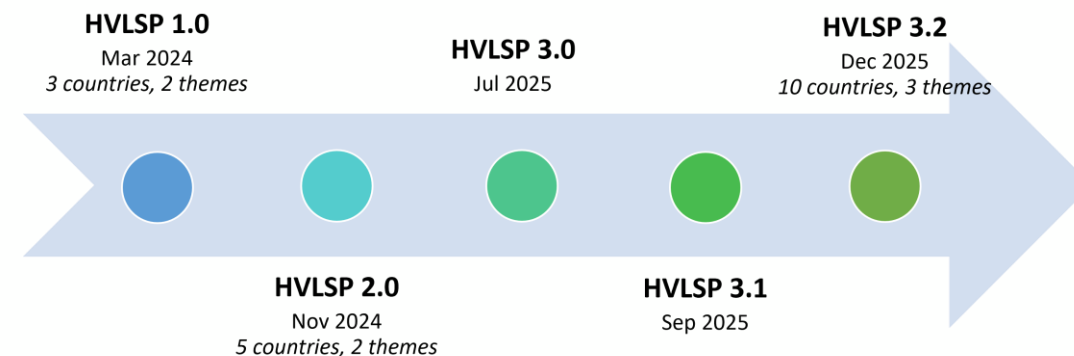
# Next steps



Digital Europe Programme  
Grant Agreement No 101100625

## What comes next...

- Delivery of HVLSP 2.0 at the end of November
- Finalize tools
- Migrate to cloud infrastructure
- Work on update process
- Coverage extension (HVLSP 3.0, 3.1, 3.2)
- Technical documents, quality procedure etc.
- Extension plan



Co-funded by  
the European Union

# Thank you for your attention!

Contact: [ome2\\_project@ign.fr](mailto:ome2_project@ign.fr) / [noemie.gremeaux@ign.fr](mailto:noemie.gremeaux@ign.fr)



Digital Europe Programme  
Grant Agreement No 101100625

## UID rules

	Main table	History table
<b>Object created</b>	<ul style="list-style-type: none"><li>➤ New entry</li><li>➤ Fill creation date</li></ul>	-
<b>Object modified</b>	<ul style="list-style-type: none"><li>➤ Fill modification date</li></ul>	<ul style="list-style-type: none"><li>➤ Record former version</li></ul>
<b>Object deleted</b>	<ul style="list-style-type: none"><li>➤ Set « destroyed » field to true</li><li>➤ Fill deletion date</li></ul>	<ul style="list-style-type: none"><li>➤ Record former version</li></ul>

