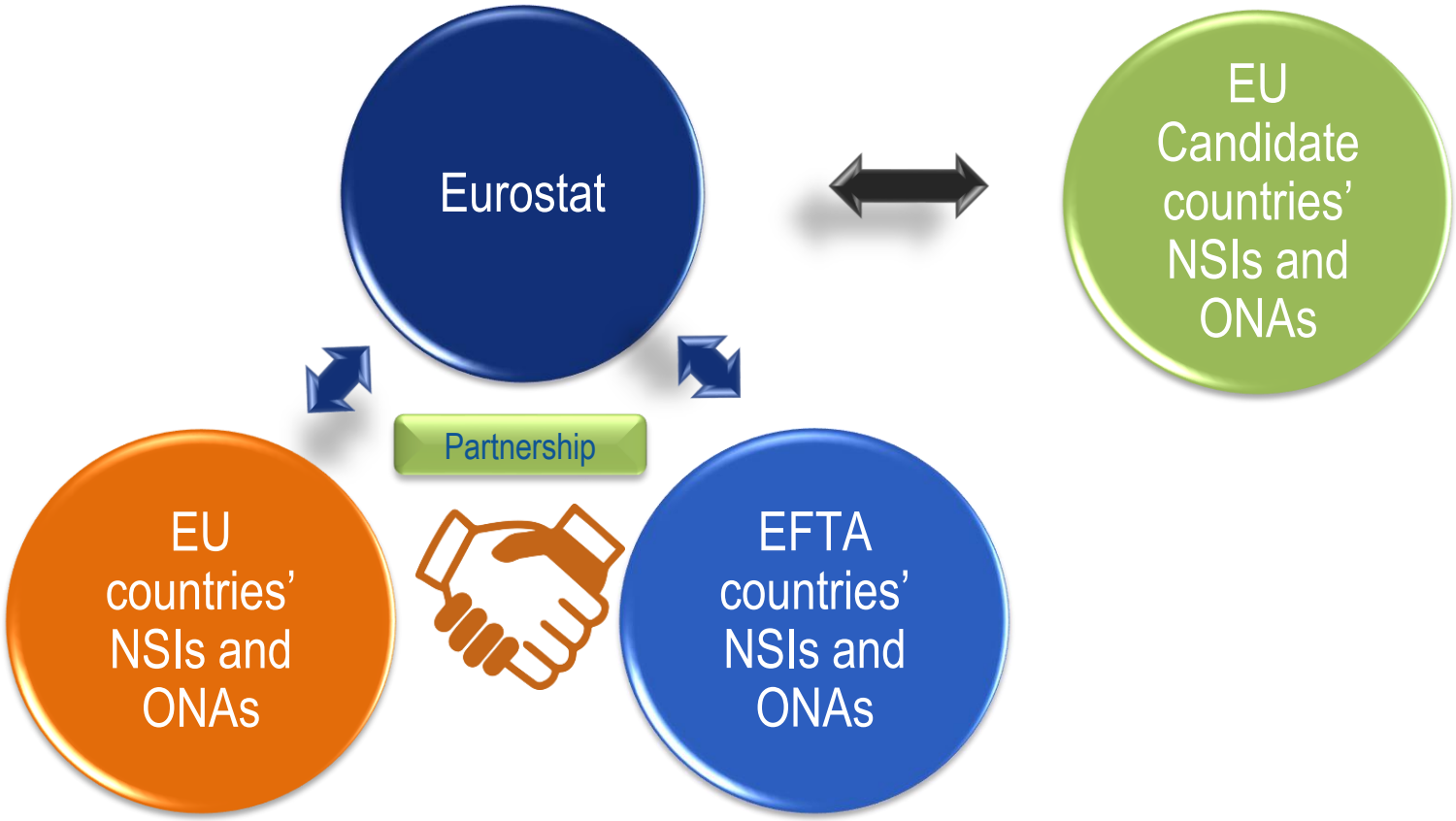
The integration of geospatial and statistical data for European statistics

Christine Wirtz
Director (acting) - Sectoral and Regional Statistics
European Commission – DG Eurostat

The European Statistical System (ESS)



European Commission

Together the Members of the ESS produce:

Official European statistics for informed decisions by EU policymakers, businesses and citizens

Value added of Eurostat in the development of European Statistics

→

Harmonised data for EU indicators
Common methodologies
Quality and comparability across MS

Why do we need geospatial data?

To provide information with the appropriate spatial level from local to global

To underpin socio-economic and environmental analysis

To allow for policy interventions at the level where they are most effective

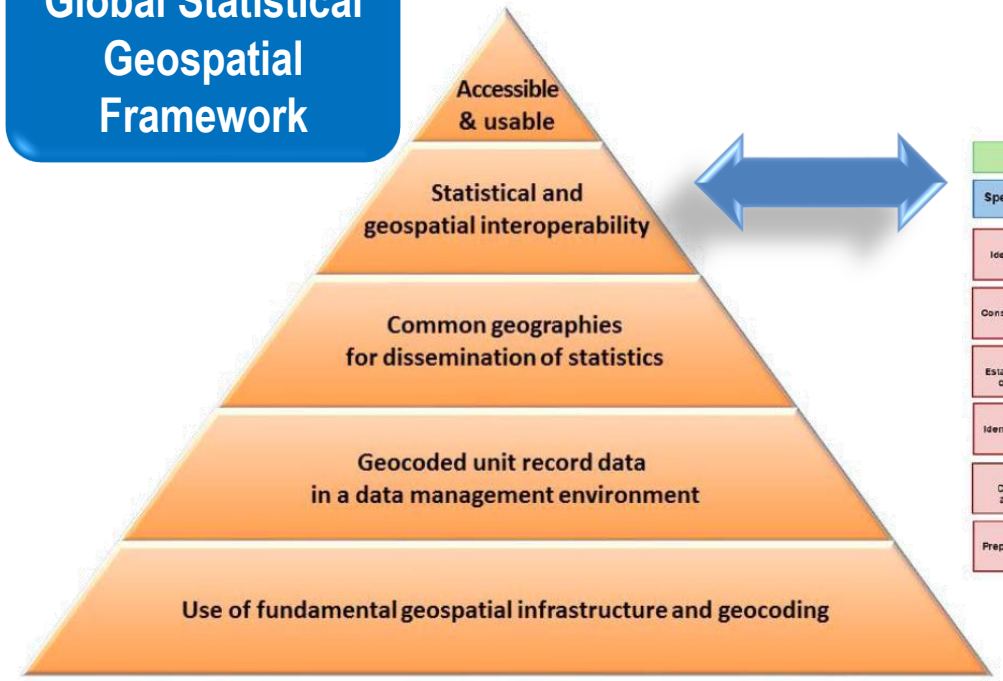
European Commission

Statistical and geospatial data integration

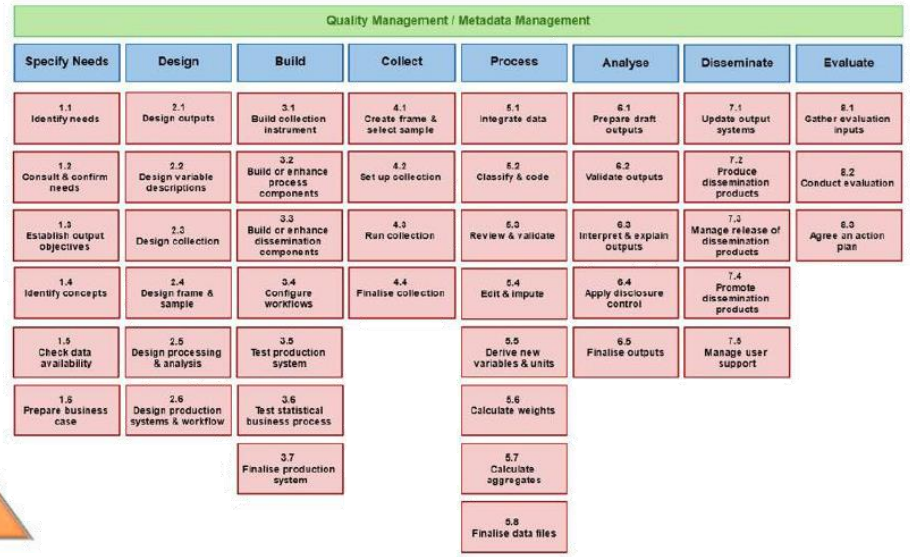
European Commission

Enhancing the generic business process model to better fit geospatial data production

Global Statistical Geospatial Framework

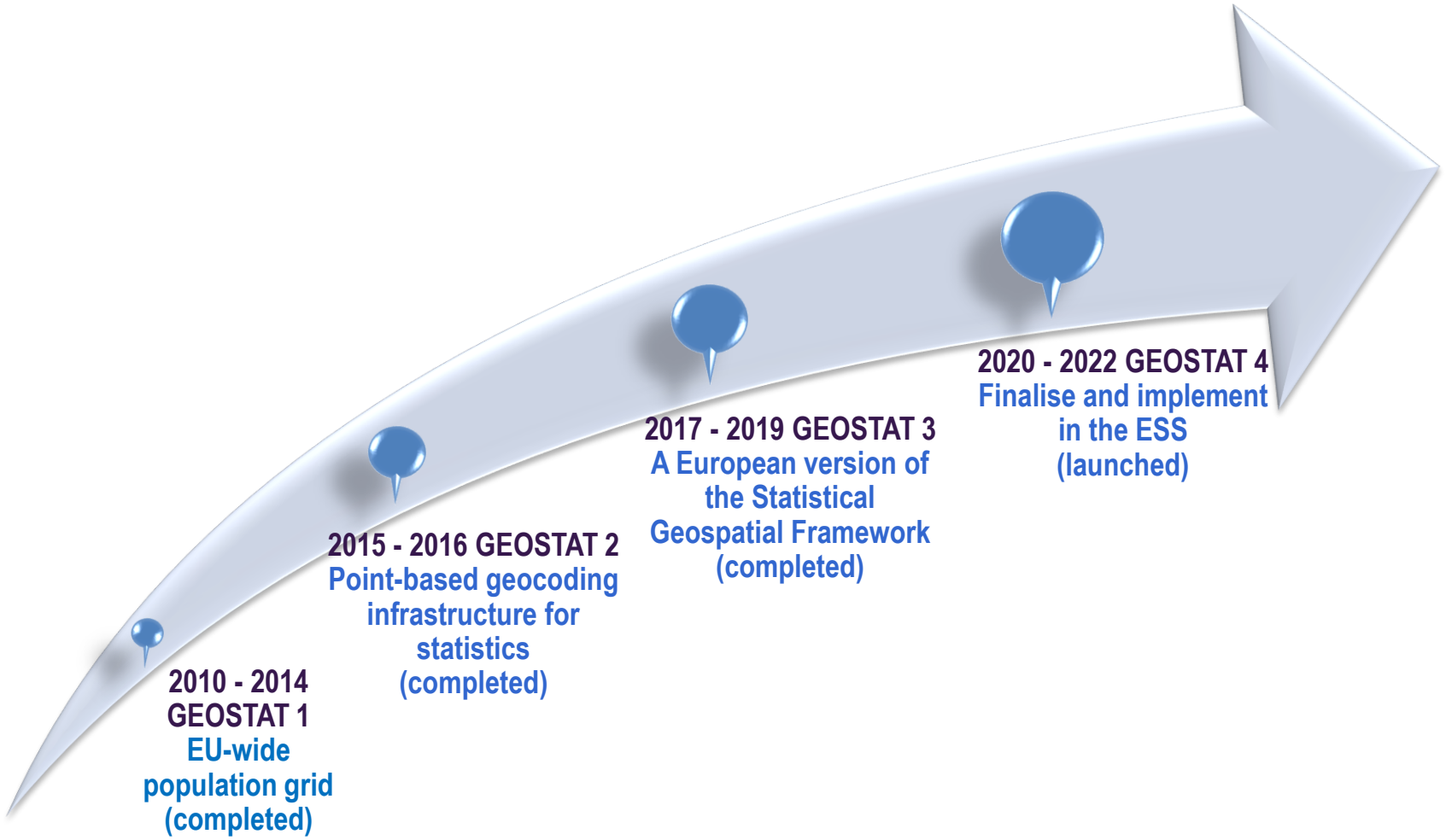


Generic Statistical Business Process Model



European Commission

EU GEOSTAT projects



European Commission

Supporting the Integration of Statistics and Geospatial data

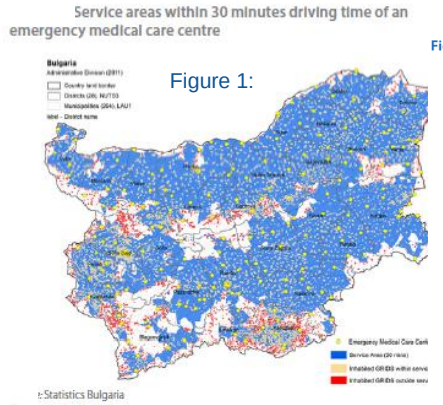
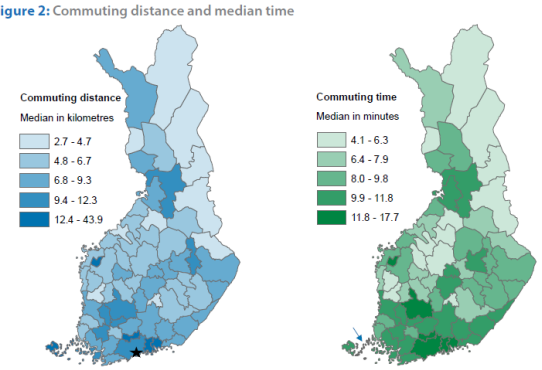
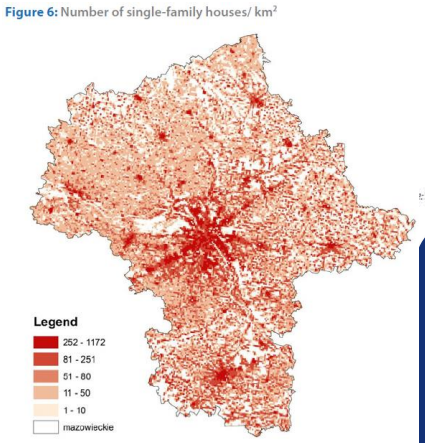


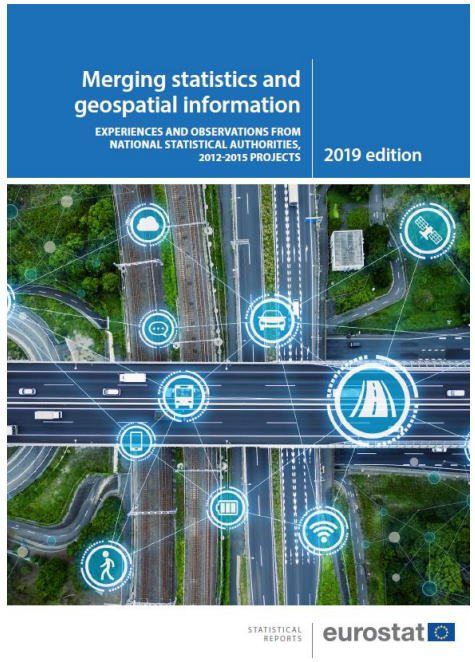
Figure 1:





2012 - 2019

Over 40 national projects on merging statistics and geospatial information supported by Eurostat



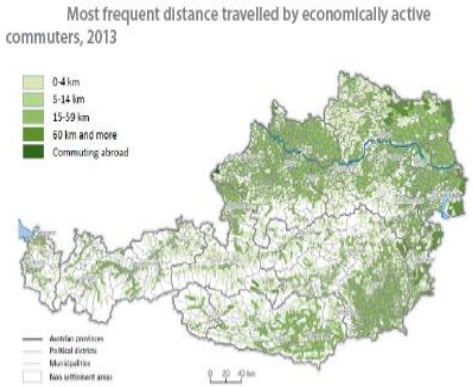


Figure 5

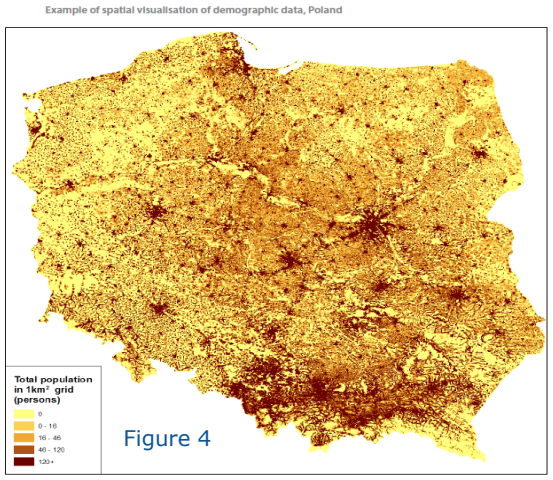


Figure 4

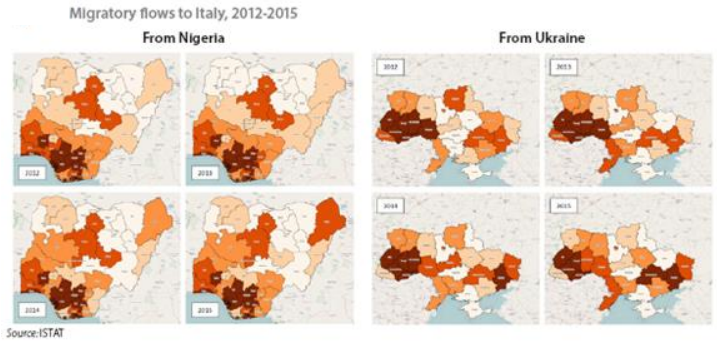


Figure 3

European Commission

Eurostat's Geographical Information Systems to the Commission (GISCO)

Answers the needs of Eurostat and the European Commission for geographical information at the level of the European Union (EU), its Member States and regions.

Provides reference geographical information and related services for use within Eurostat and the Commission and to the European citizens at large.

Maintains the GISCO database with geographical data for all Europe such as administrative boundaries and thematic geospatial information (e.g. population grid).

European Commission

Enabling spatial analysis: Airport Catchment areas

Eurostat supported the European Court of Auditors and calculated the number of potential passengers by defining the catchment areas for 20 audited airports in Europe plus their regional competitors.

The size of the catchment area, their resident population and the potential number of tourists were determined based on a journey time of 120min along the road network, the GEOSTAT 1km² population grid and NUTS3 based tourism statistics.

ECA found that more than 2/3 of the airports have largely overlapping catchment areas and often a large number of residents could reach several competing airports in less than two hours

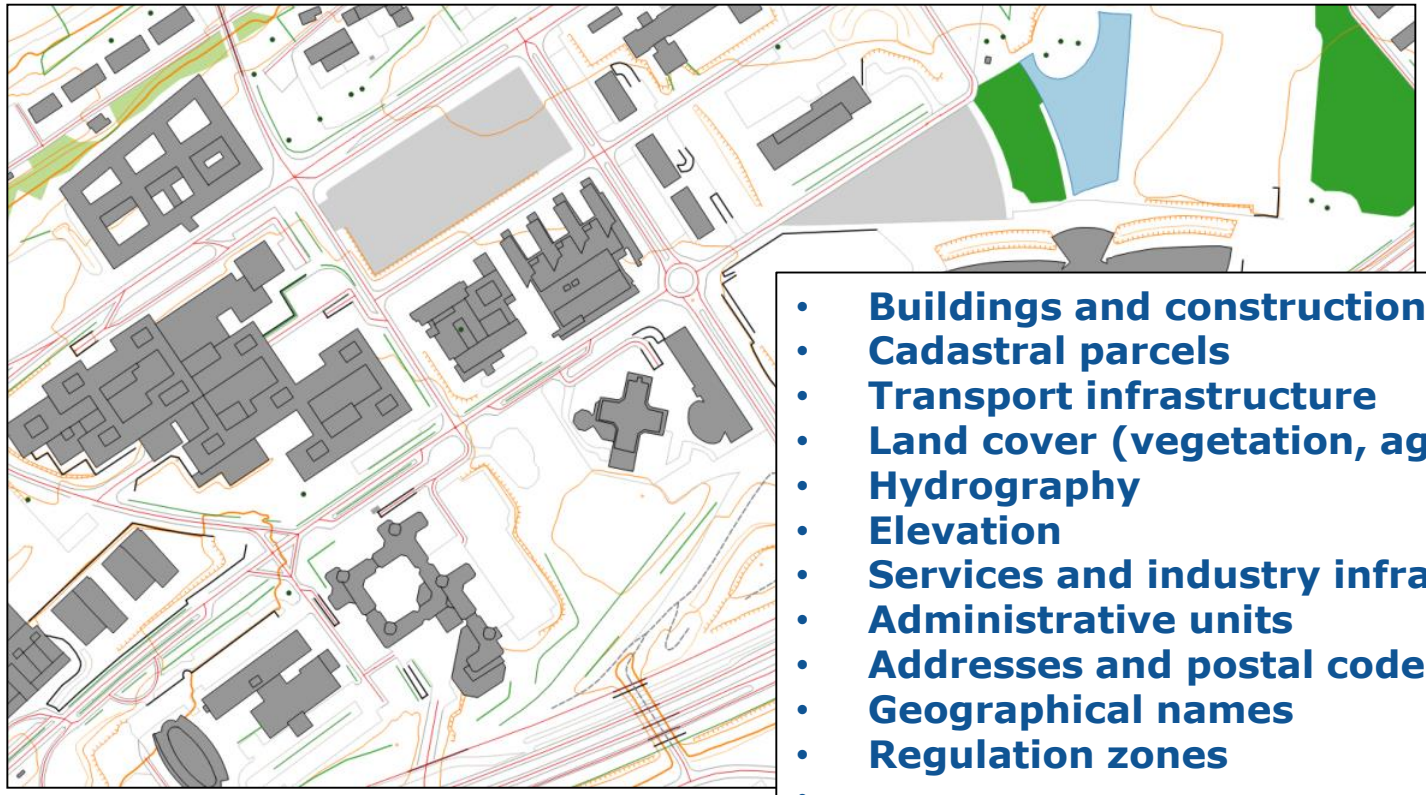
European Commission

Use of pan-European geographical datasets for EU policy

https://ec.europa.eu/regional_policy/en/newsroom/news/2019/01/01-03-2019-access-to-universities-in-the-eu-a-regional-and-territorial-analysis

https://ec.europa.eu/regional_policy/sources/docgener/focus/2013_09_passenger.pdf

National topographic databases

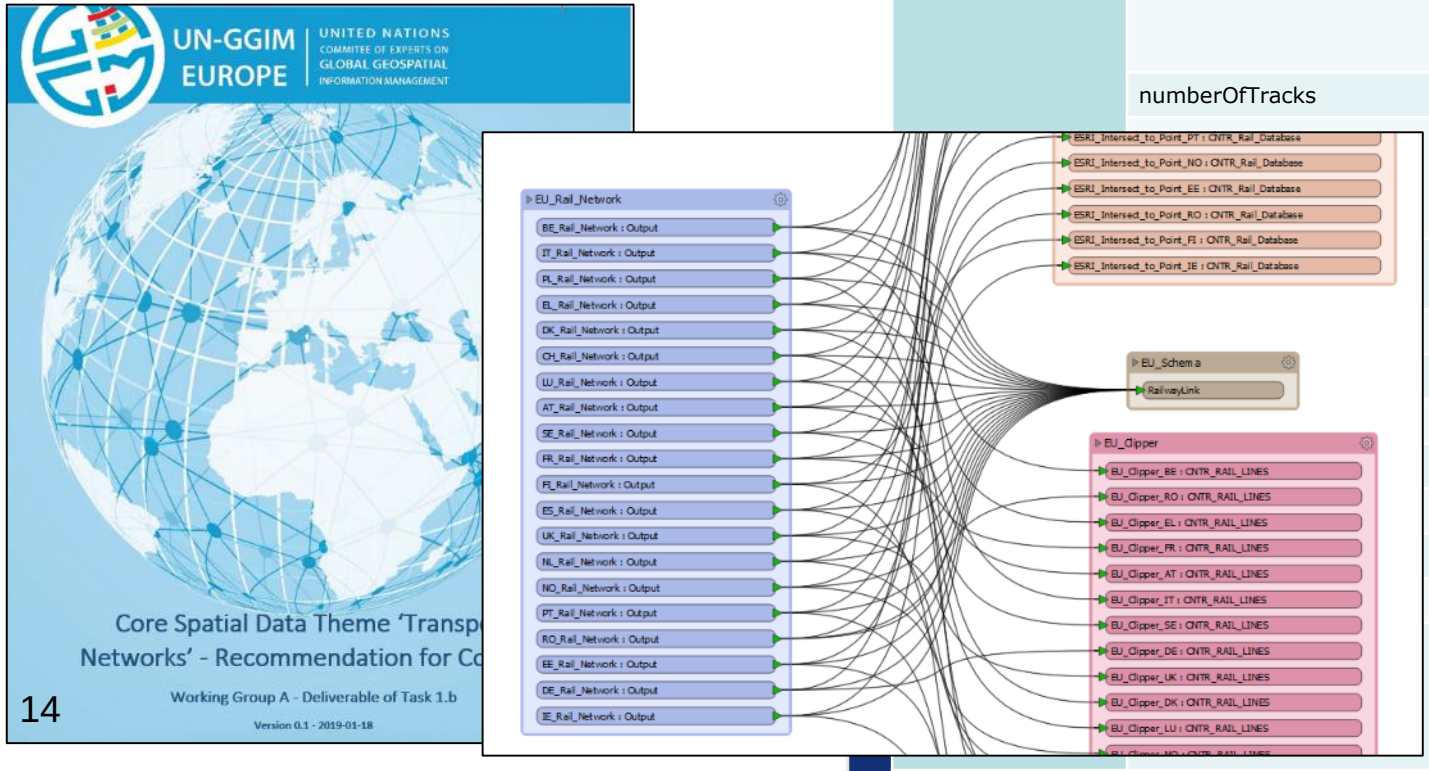


- Buildings and constructions
- Cadastral parcels
- Transport infrastructure
- Land cover (vegetation, agriculture, etc.)
- Hydrography
- Elevation
- Services and industry infrastructure
- Administrative units
- Addresses and postal codes
- Geographical names
- Regulation zones
- …

European
~~National~~ topographic database ?

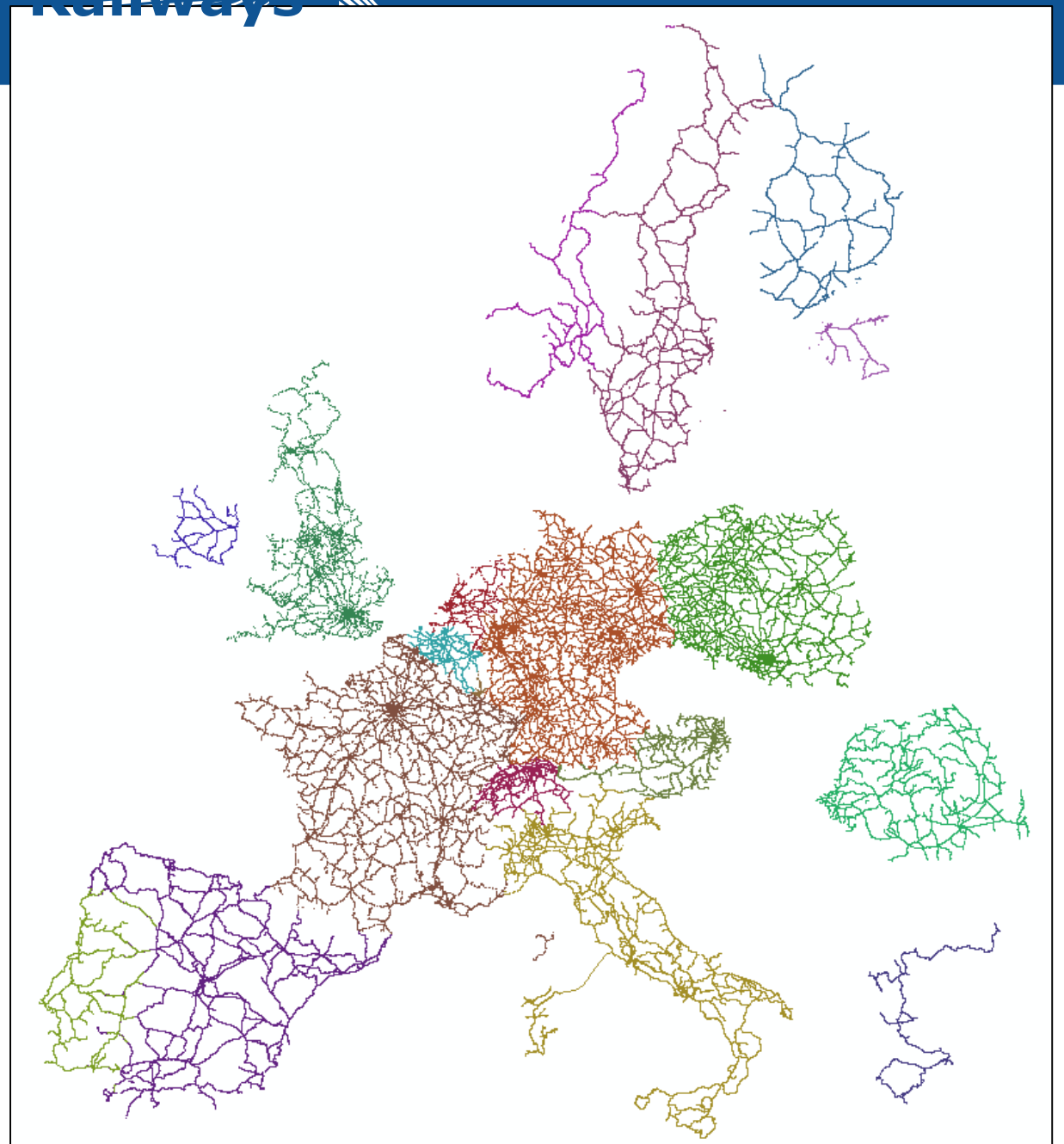
Developing Eurostat's technical capacity to combine national geospatial data

Type	Attribute	Values / enumeration	Priority
RailwayLink (priority 1)	Geometry	GM_Curve	1
	Type	RailwayTypeValue * cogRailway * funicular * magneticLevitation * metro * monorail * suspendedRail * train * tramway	1
	numberOfTracks	Integer	1
		VerticalPositionValue * onGroundSurface * suspendedOrElevated * underground	1
		boolean	
		boolean	1
		Set of railway links	1
		CharacterString	1
		GeographicalName	1
		GM_Surface or GM_Point	1
		GeographicalName	1
		CharacterString	1
		RailwayUseValue * Cargo *mixed * carShuttle *passengers	1



Interconnected EU Railways

https://www.arcgis.com/apps/Styler/index.html?appid=d3c5b0b95c404a5181833886df50912d

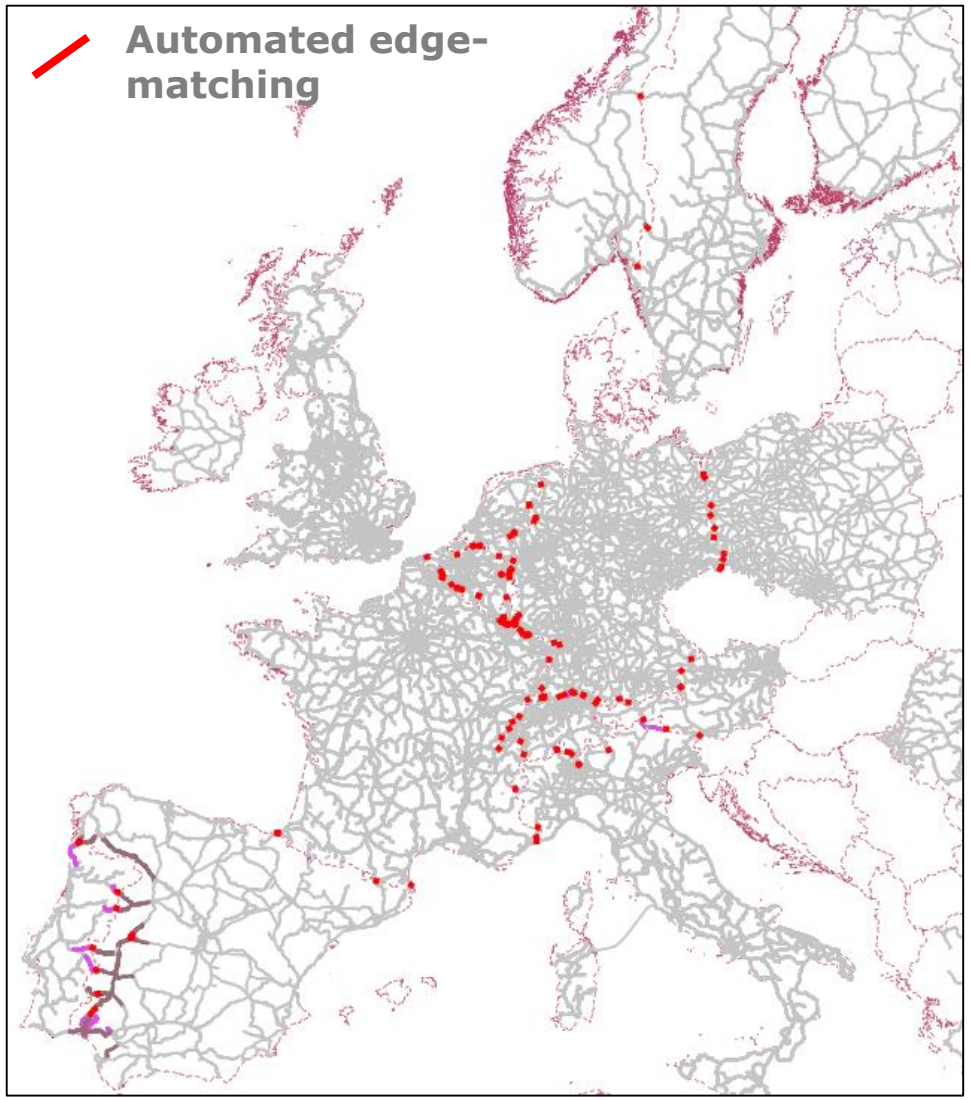


Edge-matching

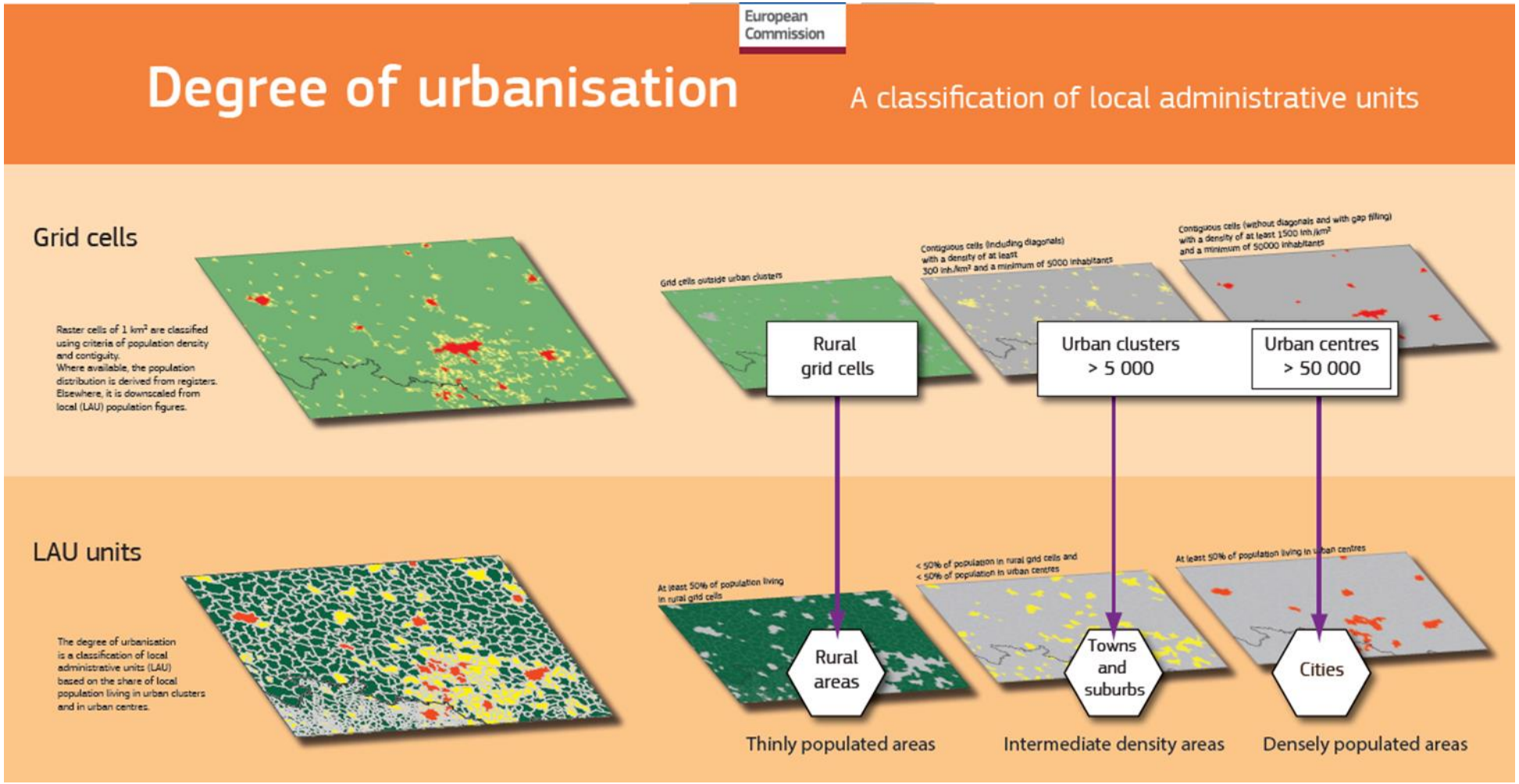
Automated procedure developed and successfully tested

Next:

- Fill missing gaps
- Routable and multi-scale
- Integrate other data sources (RINF, UIC, OpenStreetMap, ERM, transport statistics, ERA-ERTMS data, accessibility features, etc.)



Typologies for Statistics



Member States' expectations from Eurostat (GISCO WG in 2019)

- Foster cooperation between the National Mapping Agencies and NSIs. Create legislation on data access and financial support (grants, projects, training)
- Improve the availability of pan-European geospatial datasets
- Promote harmonisation, standardisation and common methodologies
- Provide a centralised infrastructure for geospatial data
- Provide guidance on the geocoding of new data sources

European Commission

As-is: How we work today

National Mapping Agencies participate to Eurostat's GISCO Working Group, created to bring together NSI and NMA

NMAs are the main geospatial data provider (Eurostat contracts with Eurogeographics, bilateral agreements, etc.)

Common projects in the framework of GEOSTAT, INSPIRE, UN-GGIM, UN-GGIM: Europe, 2021 census, etc.

Other?

European Commission

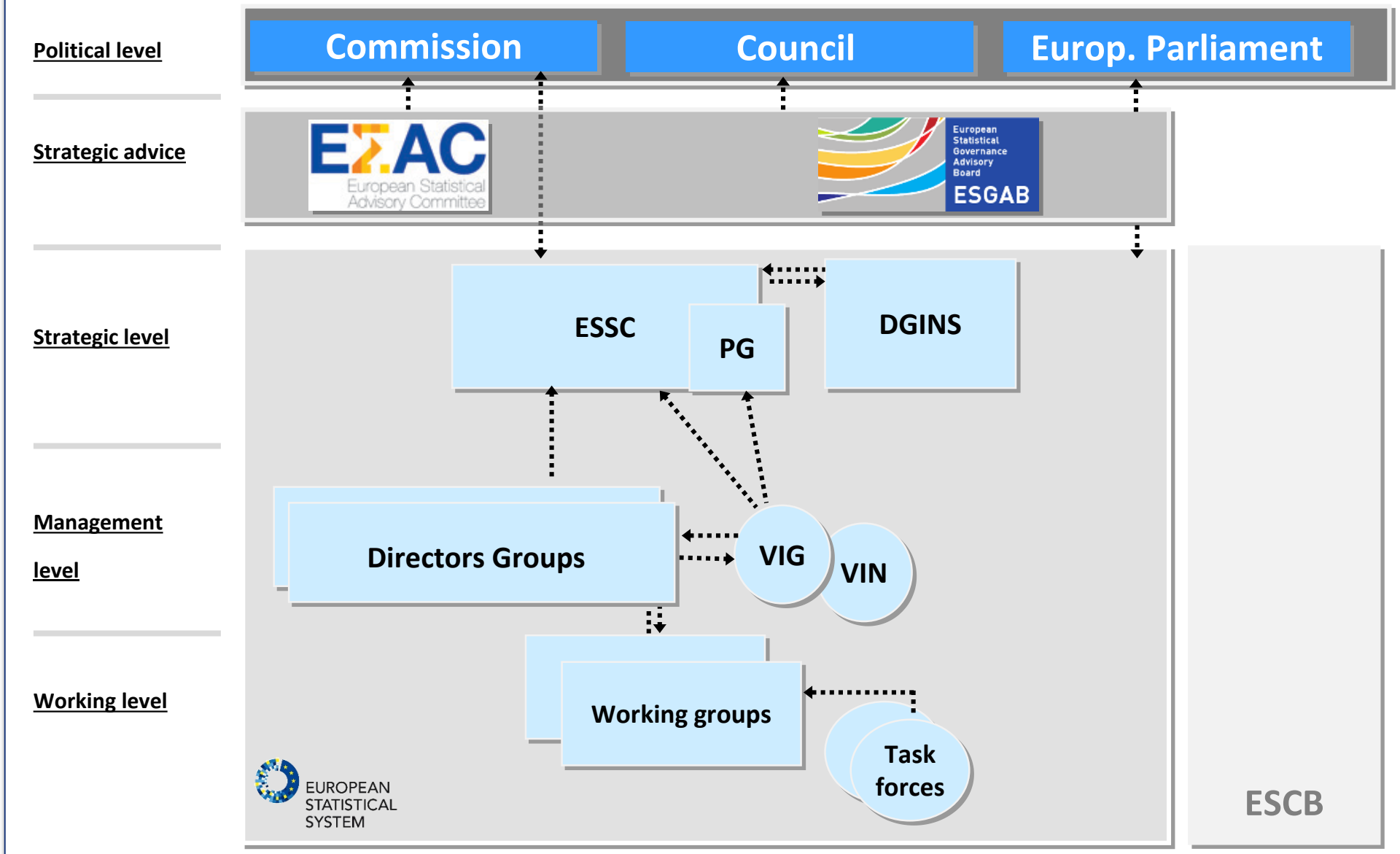
To-be: Proposal for future collaboration

- Enhance cooperation in creating new pan-European geospatial data – Eurostat needs authoritative geospatial data from the NMA
- Develop more joint actions (at national level-NMA and European level-Eurostat)
- Provide more support to NMA to work closer with NSIs
- Organise regional meetings with NMA and NSIs to help enhance collaboration
- Other?

European Commission

Eurostat's Geospatial Data Strategy
Next Steps

- Promote the use of the Global Statistical Geospatial Framework in the ESS and enable more georeferenced statistics
- Develop pan-European geospatial datasets for key policy domains
- Further promote the integration of statistics and geospatial information
- Support and coordinate the collaboration of NSI and mapping agencies
- Contribute to the setting of international standards on geographical information

European Commission

Statistical governance structure