A regional perspective on what has been done so far to achieve the vision of integrated statistical and geospatial information, and how the journey is going

Ekkehard PETRI – European Commission / DG Eurostat

An operating manual for spaceship Earth

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Dimensions of the integration process

Infrastructure
Standards
Technologies

Organisation

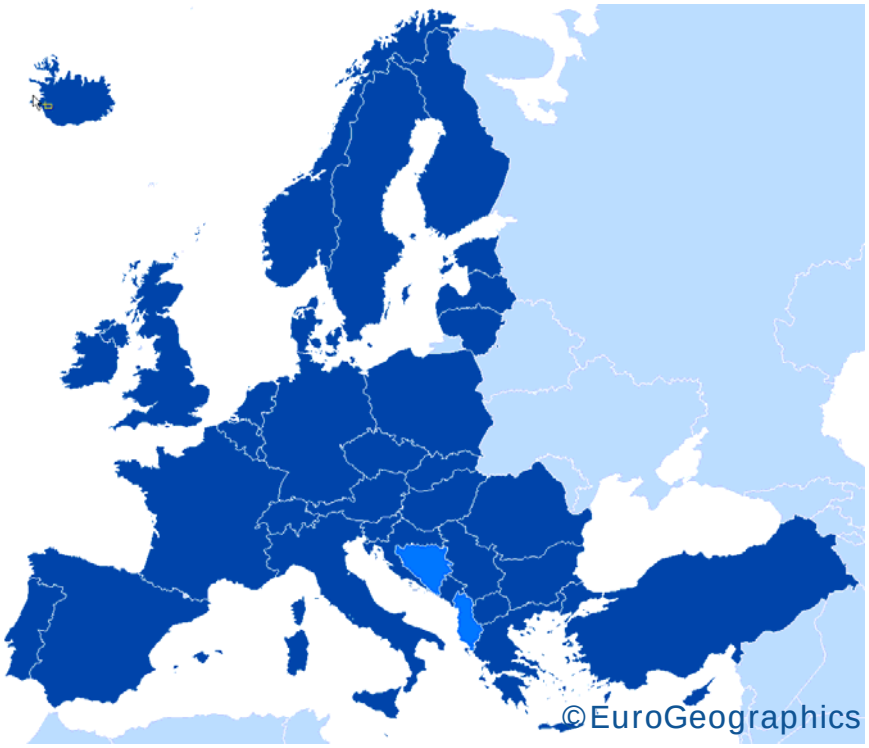
Content
Data and system design

Rules and procedures
Legal aspects
Data policy
Quality management

Organisation

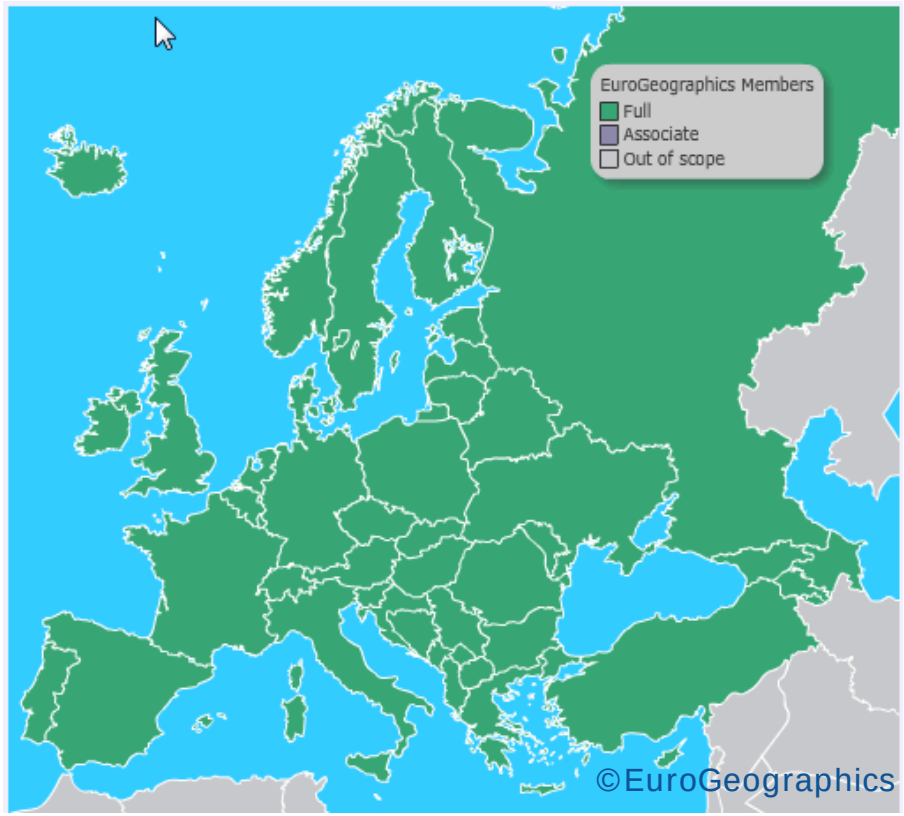
The European Statistical System

- *36 Member Countries*
- *covers~615 million people*
- *Strong partnership between the European statistical office (Eurostat) and the national institutes*



NMCA community - EuroGeographics

- *Association of National Mapping and Cadastral Authorities*
- *45 Member Countries*
- *Voluntary association with a Head Office*



Differences between statistical and geospatial community

European Statistical System (ESS)	***Geospatial system (NMCAs)***
• *Sound legal basis (national and European)*	• *No European legal basis*
• *High degree of harmonisation* • *Strong quality framework*	• *High quality data, but only partially internationally aligned*
• *Open data policy*	• *Usage restrictions and diverse licensing situation* • *Issues with funding open data*

Common challenges

- *Scarce resources (financial and human)*
- *Data revolution with increasing role of alternative data sources (Voluntary and Big Data)*
- *Increasing complexity of our societies with major trends like globalisation, the financial crisis, and limited resources, asking for new, more timely products and services*
- *Increasing demand for evidence based public actions*

Achievements

- *Recognition of the importance of the topic at senior management level*
- *Full consensus on the usefulness of location aspects for public data and statistical information*
- *High degree of involvement of a number of NSIs*
- *Eurostat task force working on the topic*
- *UN-GGIM expert group*
- *Continued financial support from the European Commission for implementing projects*
- *UN-GGIM*

Important platforms of co-operation

- *Forthcoming establishment of UN-GGIM: Europe (senior level)*
- *The European Forum for Geography and Statistics EFGS www.efgs.info*
  - **Voluntary network of experts**
  - **Brings together producers and users**
  - **Two pillars**

    Flagship project GEOSTAT

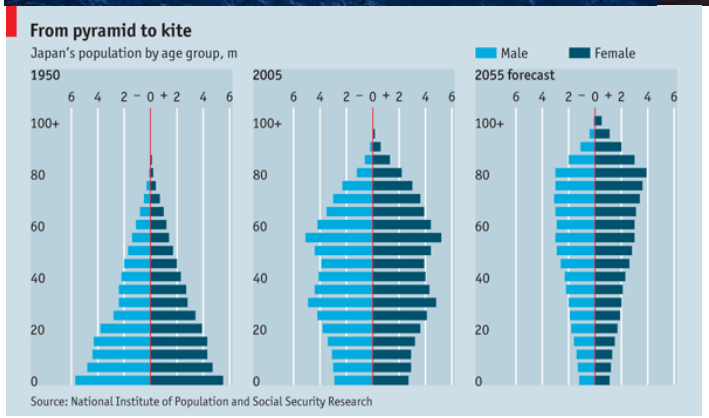
    Annual conferences

Content

Data

System design

Solvable Problems?



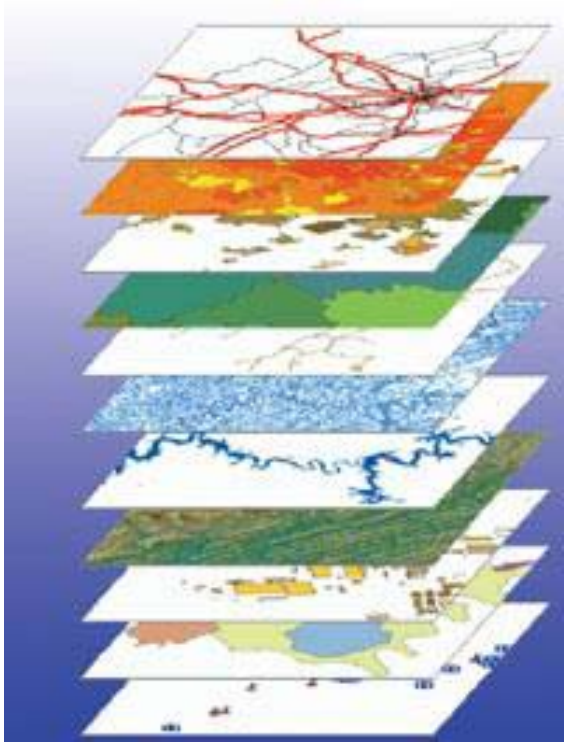
The structure of an integrated system

- *Layered, object based modelling strategy*
- *Each layer has to cover several scale levels*

Statistics →

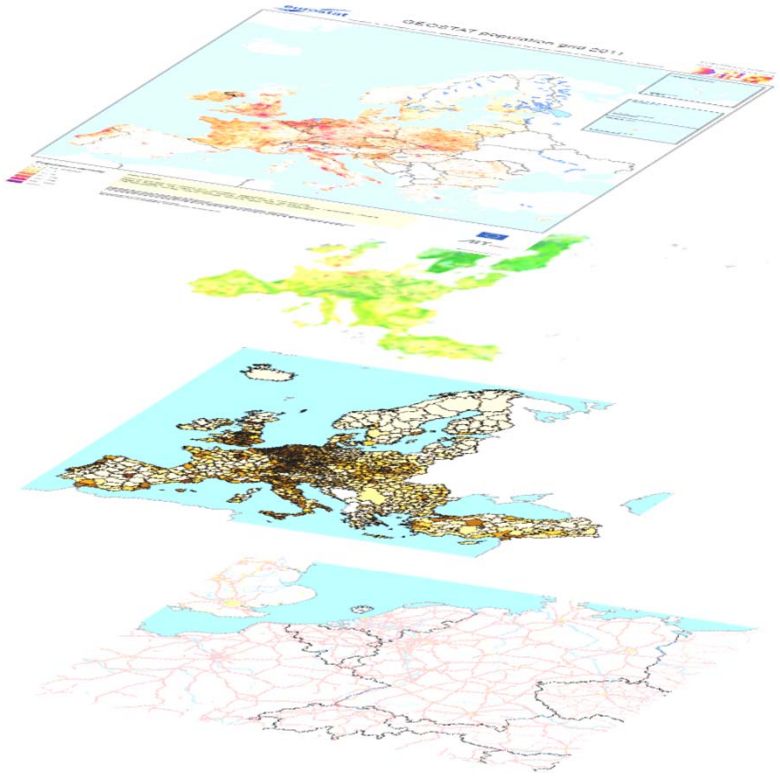
Map feature →

Scientific data →



European Datasets

- *A 1km² population grid*
- *Land Cover and Land Use information of High and Very High resolution from the Copernicus program*
- *Regional statistics at the 3rd and 2nd administrative level, some at city level*
- *Midscale geographical databases (administrative units, topography, elevation)*
- *…*



Current issues - scope

Scope of INSPIRE

Annex I

1. Coordinate reference systems
2. Geographical grid systems
3. Geographical names
4. Administrative units
5. Addresses
6. Cadastral parcels
7. Transport networks
8. Hydrography
9. Protected sites

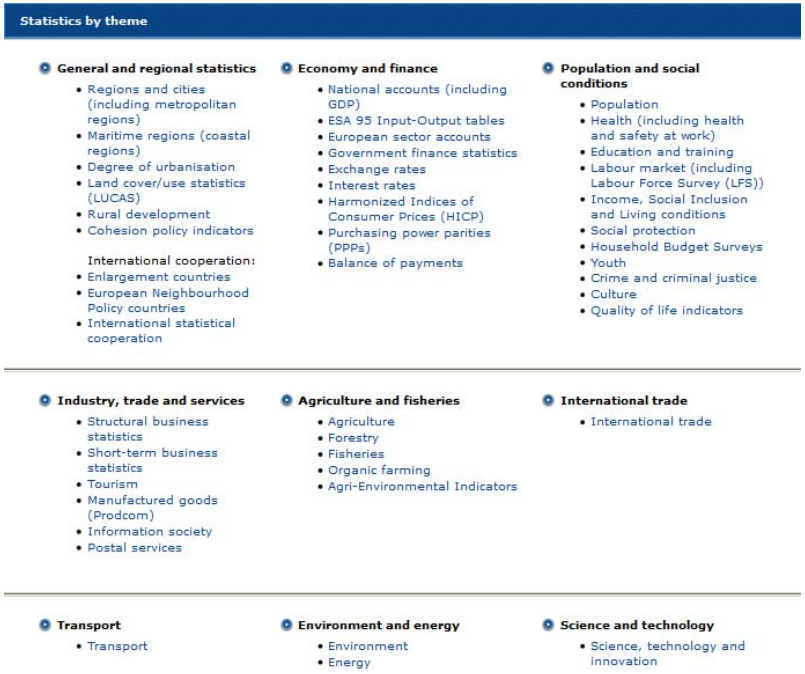
Annex II

1. Elevation
2. Land cover
3. Orthoimagery
4. Geology

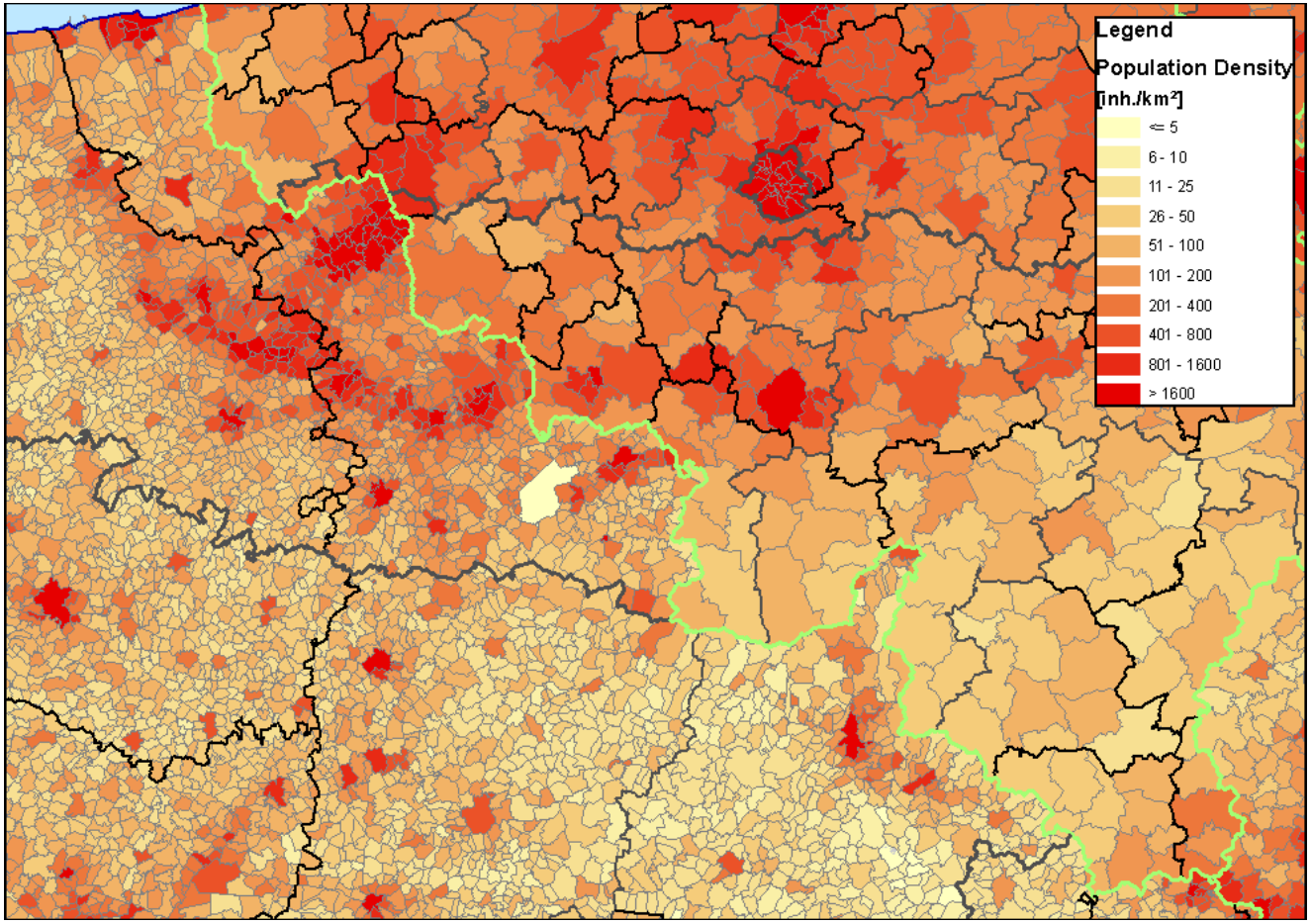
Annex III

1. Statistical units
2. Buildings
3. Soil
4. Land use
5. Human health and safety
6. Utility and Government services
7. Environmental monitoring facilities
8. Production and industrial facilities
9. Agricultural and aquaculture facilities
10. Population distribution – demography
11. Area management / restriction / regulation zones & reporting units
12. Natural risk zones
13. Atmospheric conditions
14. Meteorological geographical features
15. Oceanographic geographical features
16. Sea regions
17. Bio-geographical regions
18. Habitats and biotopes
19. Species distribution
20. Energy resources
21. Mineral resources

Scope European Statistics

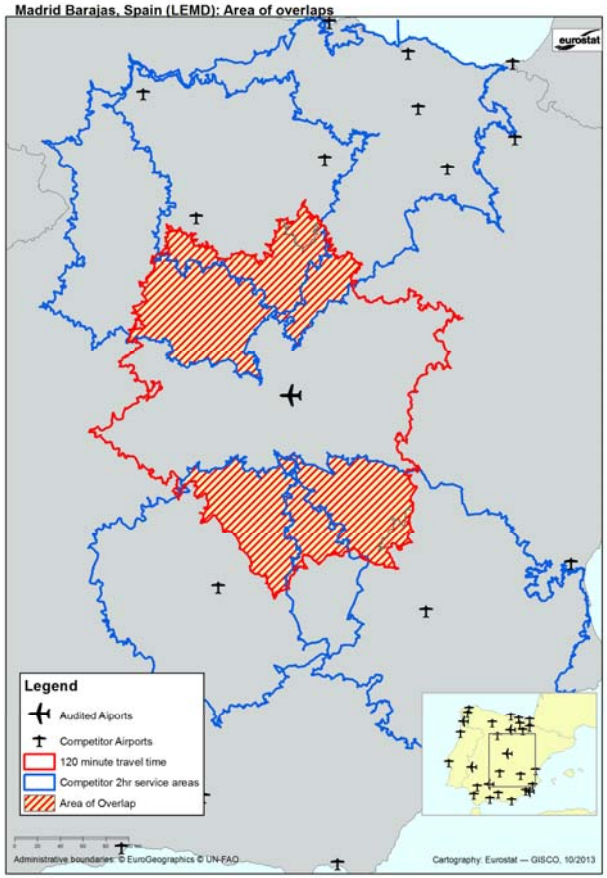


Issues - scale



Recent example of EU spatial analysis

- *Catchment areas of regional airports*
- *Performance audit for public investment*
- *Based on population grid, road-network, tourism statistics*



Achievements

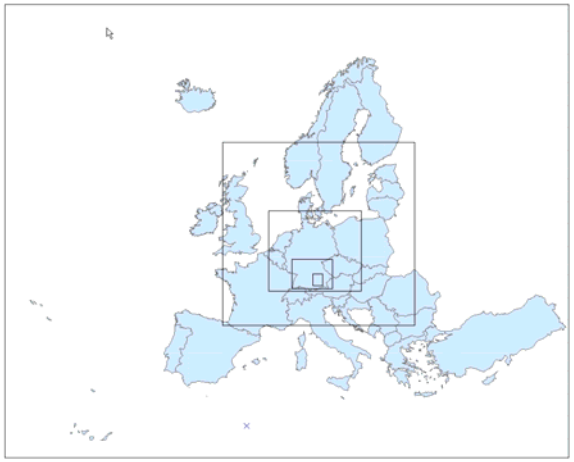
- *GEOSTAT project successfully created a 1km² population grid of the 2011 Census*
- *Population grids in the discussion for the UNECE census recommendations and the European Statistical System for the next census*
- *Geospatial information increasingly used in the production of statistical information*
- *Growing number of joint NSI NMCA projects at national and European level*
- *Growing trend towards geocoding administrative data sources*
- *Space data program Copernicus*
- *INSPIRE - still with shortcomings regarding quality, scale, and creation of data.*

Current issues

- *European statistics are mainly focused on administrations - good for accounting and ex-post types of action (benchmarking among administrations).*
- *The current system is less suitable for preventive and re-active types of action (based on spatial temporal analysis and feedback mechanisms).*
- *The objects of information in the mapping and statistical community are not aligned (scope and scale).*
- *Geospatial information not yet internationally harmonised*
- *Essential economic, social, and environmental European statistics are missing at high spatial resolution.*

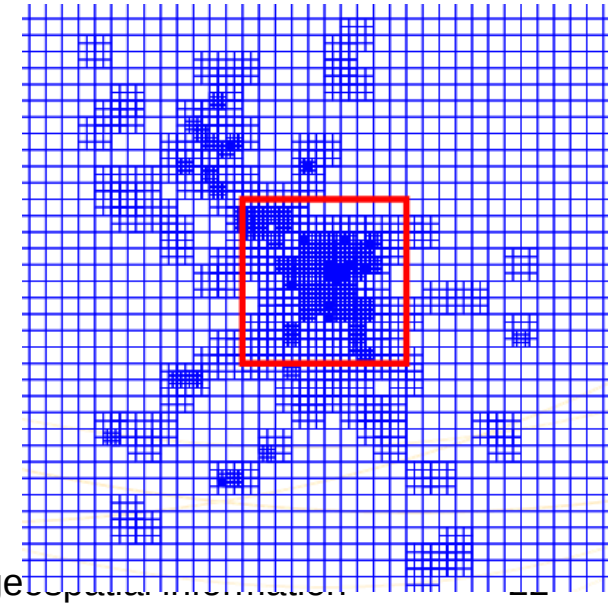
The top two do´s for an integrated statistical-geospatial information system

Cover all scales



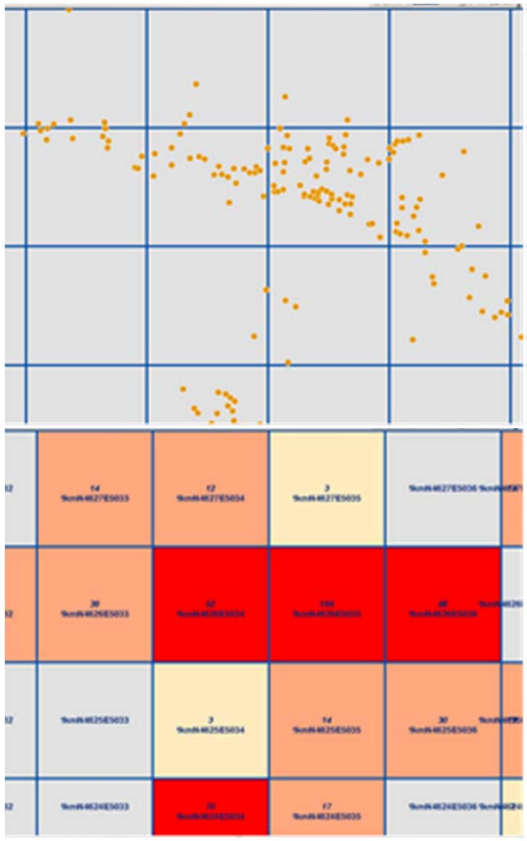
Six scale intervals for all types of information are required from Local to Global:

- Global (the whole)
- Hemisphere / Continental / Europe) (10000 km perspective)
- National (1000 km perspective)
- Regional (100 km perspective)
- Commune (10 km perspective)
- Local (1 km and less perspective)



Separate storage and output

- *Statistical micro-data are stored as point coordinates and not as map objects. Creating spatial statistical products is then primarily a question of aggregation.*
- *Geo-enabled statistical data warehouses with a common, single spatial reference system allow for a flexible combination of information according to their location.*



How is the journey going?

Our common destination

- *We want to build an information system for the sustainable development of our planet.*
- *We want to remain the key public authorities in our countries that are responsible for the production of reliable geospatial and statistical information.*

Main obstacles for an integrated statistical-geospatial information system

- *Privacy concerns*
- *Unclear access to geospatial information and their licensing conditions*
- *Difficult funding of open geospatial data*
- *High resolution statistical information expensive*

- *Missing institutional framework for the cooperation between the statistical and geospatial information community*
- *No comprehensive European location strategy with a legal basis*

- *Absence of a well organised European user community*

Relevant trends

- *Increased use administrative and alternative data (Big Data) sources for statistics and geospatial information*
- *Industrialisation of information production*
- *Open data*

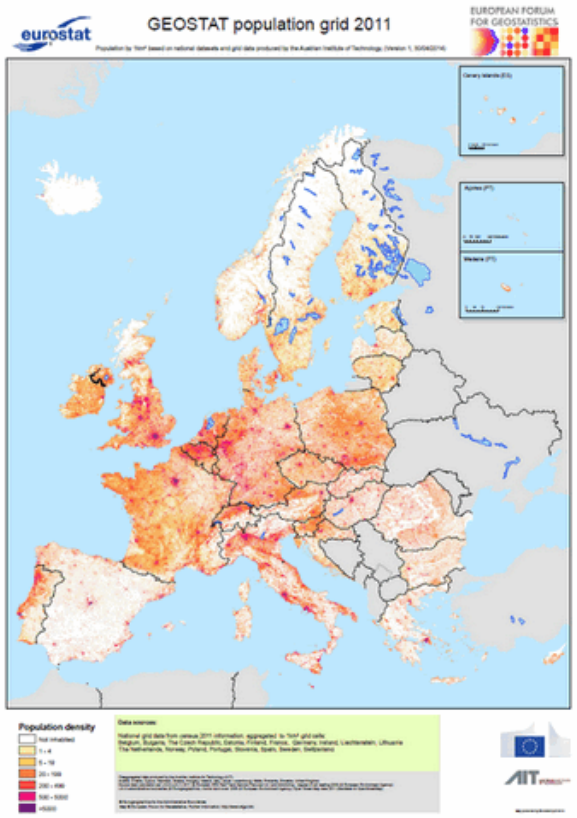
Some concrete action points

- *Propose a single point-based, spatial reference framework for European statistics based on administrative address registers*
- *Define a set of spatial statistics products as part of the official statistics portfolio*
- *Include more statistical information in the INSPIRE infrastructure of geoportals*

- *We need to launch a debate on which information products need to be available at what level of detail. This must include an open discussion on the conceptual design of our information objects.*

A joint global project – the next census

- Our shared responsibility - a joint NSI, NMCA project
- *Has the potential for fundamental change at national, European and even global level.*
- *Goal: annual 1km² population grids from 2021*



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