

Big data in the field of territorial development

The ESPON experience



[Hy Dao](#)



[Jacques Michelet](#)

October 12th 2020

European Territorial Observatory Network

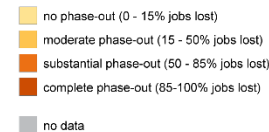
- Territorial evidences
- To reinforce EU Cohesion policy
- To support national and regional territorial development policies
- 50 million Euros (2014-2020)

ESPON project's network links

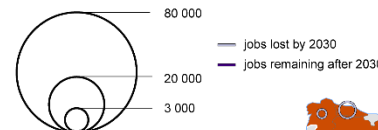
- Policy makers
- Scientific community

EU coal phase-out regions

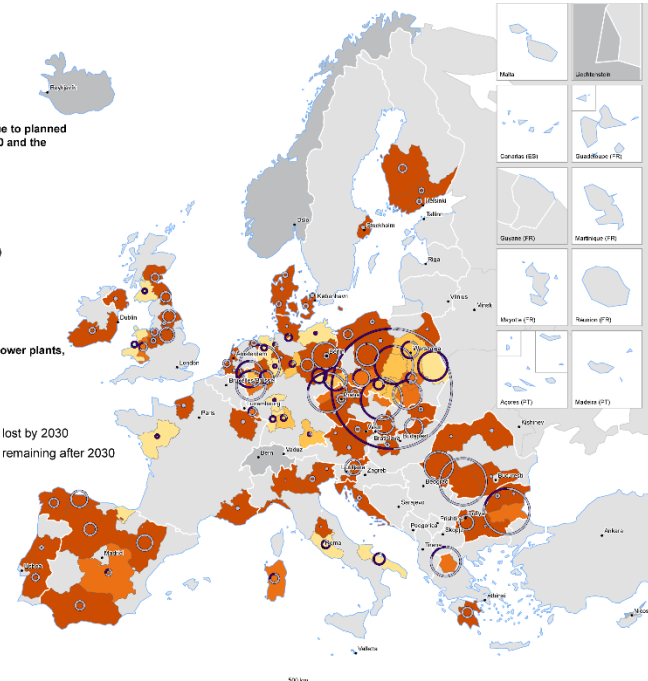
Degree of coal-phase out in EU coal regions due to planned closure of coal mines and power plants by 2030 and the respective changes in jobs



Current direct employment in coal mines and power plants, jobs lost and jobs remaining by 2030



Regional level: NUTS 2 (2013)
 Origin of data: JRC, 2018;
 ESTAT GISCO for administrative boundaries
 Author: Martin Gais



11 years ESPON projects @ UNIGE

Applied research

[ESPON TEDI](#) - Territorial Diversity in Europe

[ESPON GEOSPECS](#) - Geographic Specificities and Development Potentials in Europe

[ESPON INTERCO](#) - Indicators of Territorial Cohesion

[ESPON ACTAREA](#) - Thinking and Planning in Areas of Territorial Cooperation

[ESPON BRIDGES](#) - Territories with Geographical Specificities

Monitoring and tools

[ESPON ETMS](#) - European Territorial Monitoring System

[ESPON FUORE](#) - Functional Urban Areas and Regions in Europe

[ESPON 2020 Database Portal](#) - Central ESPON data repository

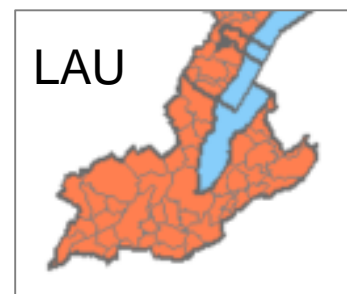
[ESPON MAPKIT 2020](#) - Map templates and geographical layers for ESPON

} Strategic data projects



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Uncovering the limits of institutional data

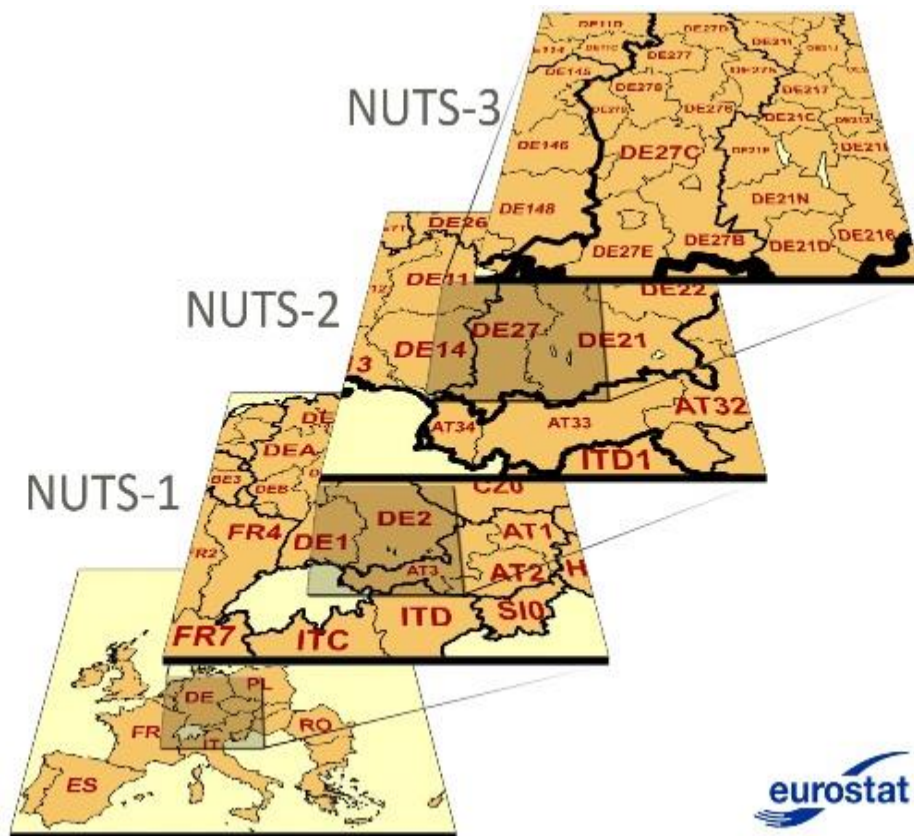


Issues

= administrative
≠ territorial

Update frequency

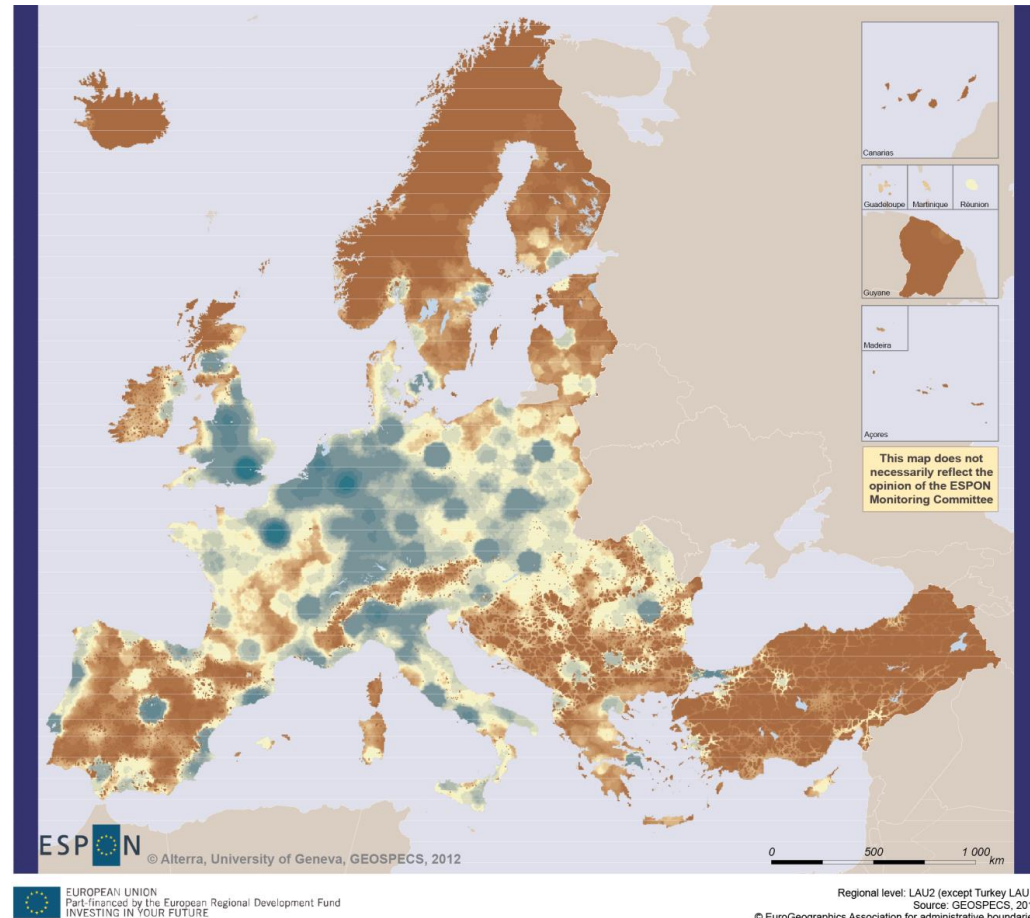
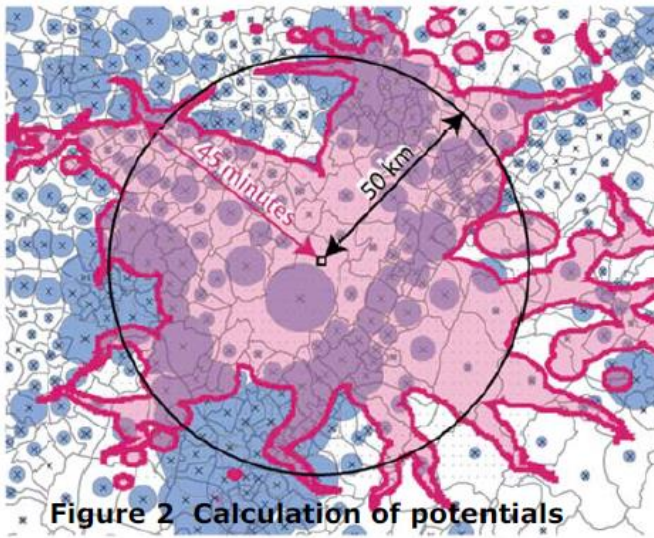
Limited number of subjects



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Overcoming the limits of NUTS data

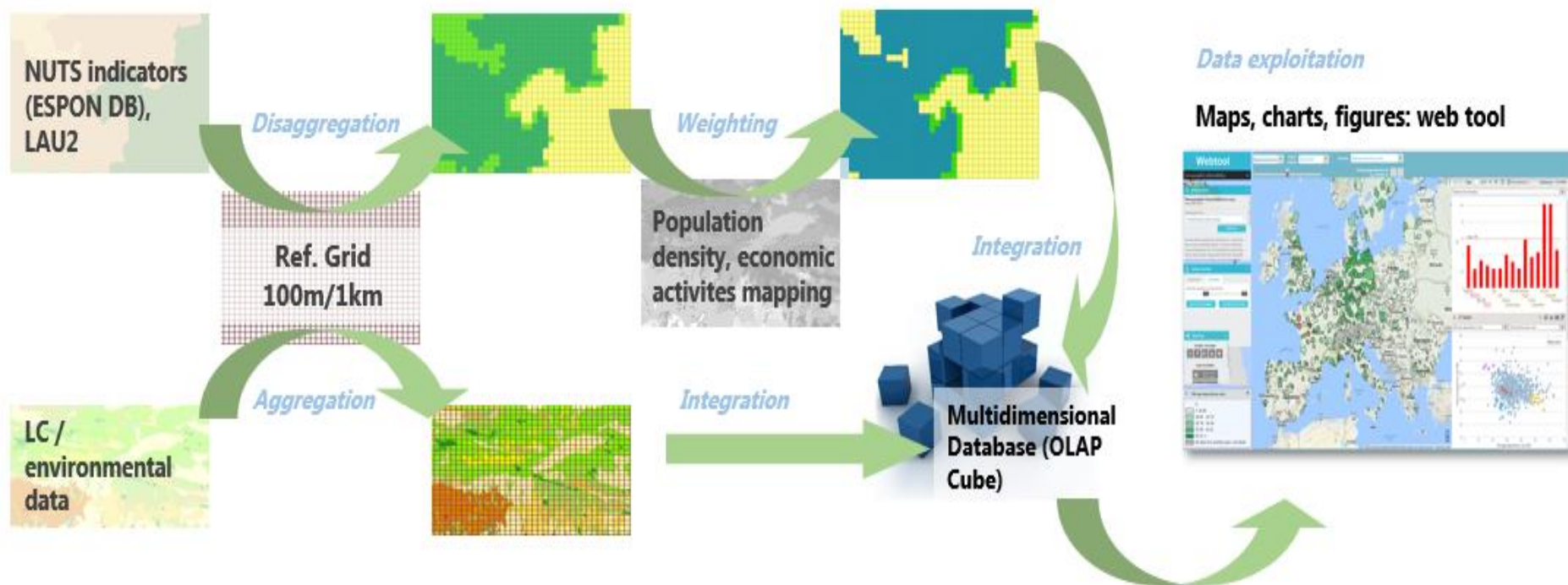
ESPON GEOSPECS



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Overcoming the limits of NUTS data

ESPON FUORE



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Observation

Many themes are not sufficiently covered by official NUTS statistics

Big data and web scrapping have proved new potentials for territorial analysis

Big data requires managing a diversity of interdisciplinary & complementary skills

Example of recent ESPON demands for high resolution / live data :

- Digital Economy and Society Index (job offers in digital sector)
 - [Big Data for Territorial Analysis and Housing Dynamics](#) (real estate market prices)
- => ESPON DB 2020 (lead = UNIGE) cannot reply positively



Emerging geospatial data sources

Data generated as a by-product

Unintentional crowd-sourced data.

- Mobile network operator (MNO) data
- Web activity (content, traffic, searches...)
- Social media (tweets, check-ins, photos...)
- Transactions (costumer, financial...)

Data generated on purpose

Intentionally produced as a core component of ICT-based service.

Aspects in common with of Big Data.

- Navigation/mapping data (e.g. POI, road networks), but volunteered/collaborative or private initiatives
- Sensors (count of vehicles, pedestrians, air-borne, satellite, weather stations)



Presentation by Filipe Batista, Joint Research Centre - EC, ESPON Scientific conference, London 2018



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FDI data from www.fdimarkets.com (FT)

projects	Year	sourceCntr	sourceState	sourceCity	destCntr	destState	destCity	subsidiaryCompany	cluster	activity	subSector	typeFDI	market	motive	capitalEx	Jobs	signal
Feb-18	Czech Republic	Czech Republic	Humpolec	Romania	Romania	Pitești	CTP Invest	Construction	Construction	Industrial	Expansion				\$ 108.50 m	* 2,775	Feb 19 2018
Feb-18	Czech Republic	Czech Republic	Humpolec	Romania	Romania	Timisoara	CTP Invest	Transportation, Ware	Construction	Industrial	Expansion				\$ 108.50 m	* 2,775	Mar 05 2018
Feb-18	Czech Republic	Czech Republic	Humpolec	Romania	Romania	Floresti	CTP Invest	Transportation, Ware	Construction	Industrial	New				\$ 108.50 m	* 2,775	Mar 05 2018
Feb-18	United States	California	Long Beach (CA)	Cuba	Ciudad de La Habana	Havana City	Cuba Travel Services (CTS)	Tourism	Sales, Marketing & Support	Travel	New	Domestic	Proximity to markets or customers	\$ 0.90 m	* 13	Mar 23 2018	
Feb-18	United States	California	Long Beach (CA)	Cuba	Camaguey	Camaguey	Cuba Travel Services (CTS)	Tourism	Sales, Marketing & Support	Travel	New				\$ 0.90 m	* 13	Mar 06 2018
Feb-18	United States	California	Long Beach (CA)	Cuba	Cienfuegos	Cienfuegos	Cuba Travel Services (CTS)	Tourism	Sales, Marketing & Support	Travel	New				\$ 0.90 m	* 13	Mar 06 2018
Feb-18	United States	California	Long Beach (CA)	Cuba	Matanzas	Matanzas	Cuba Travel Services (CTS)	Tourism	Sales, Marketing & Support	Travel	New				\$ 0.90 m	* 13	Mar 06 2018
Feb-18	United States	California	Long Beach (CA)	Cuba	Santiago de Cuba	Santiago de Cuba	Cuba Travel Services (CTS)	Tourism	Sales, Marketing & Support	Travel	New				\$ 0.90 m	* 13	Mar 06 2018
Feb-18	Cuba	California	Long Beach (CA)	Cuba	Ciudad de La Habana	Havana City	Cuba Travel Services (CTS)	Tourism	Sales, Marketing & Support	Travel	New				\$ 0.90 m	* 13	Mar 06 2018
Feb-18	United States	New York	NYC (NY)	Czech Republic	Czech Republic	Brno	Cushman & Wakefield	Professional Services	Business Services	Real estate	New	Domestic	Domestic Market Growth Potential	\$ 35.90 m	* 20	Feb 16 2018	



Multidimension dataset on FDI:

Spatial: Source – Destination (country/region/city).

Temporal: Monthly for 2003-2018.

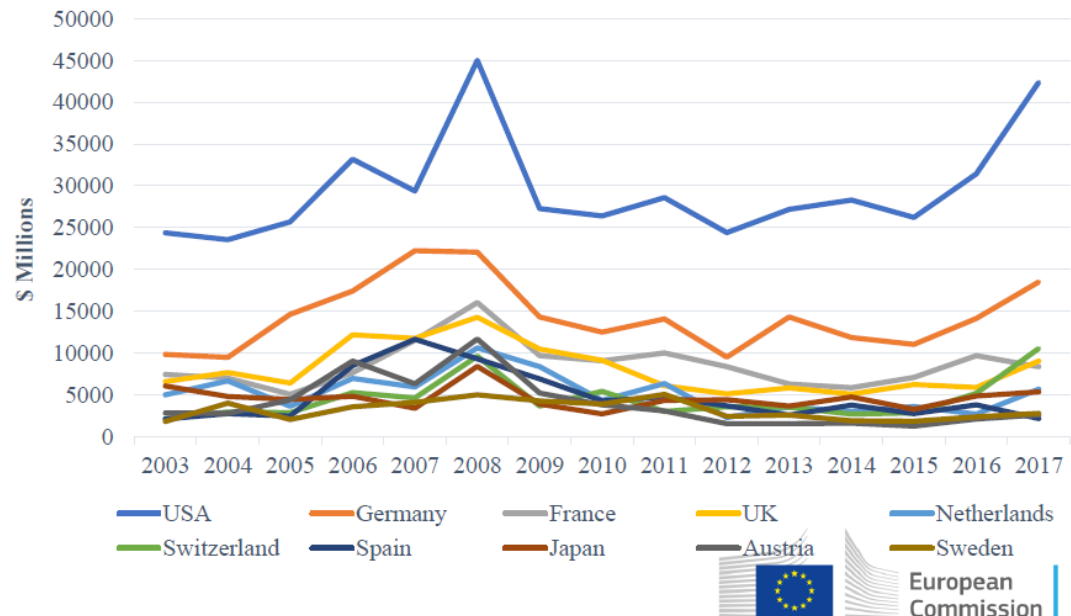
Thematic: Sector, activity, type, market, motive...

Capital expenditure and Jobs created.

EU28 investors: most common value (frequency)

Period	Source Country	Sub Sector	Market	Motive
2003-2018	United States (14576)	Software publishers, except video games (5279)	Regional (8028)	Proximity to markets or customers (1357)

EU28 FDI: Top 10 investors (2003-2017)



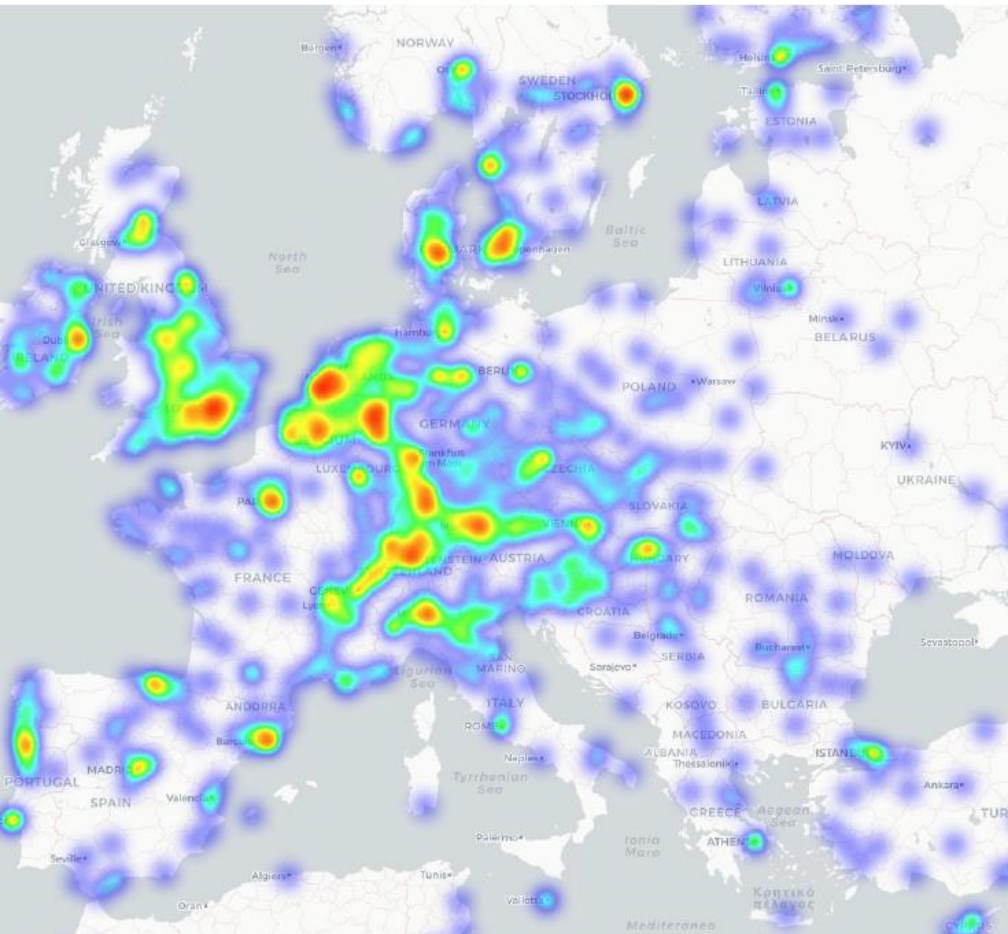
Presentation by Filipe Batista, Joint Research Centre - EC, ESPON Scientific conference, London 2018



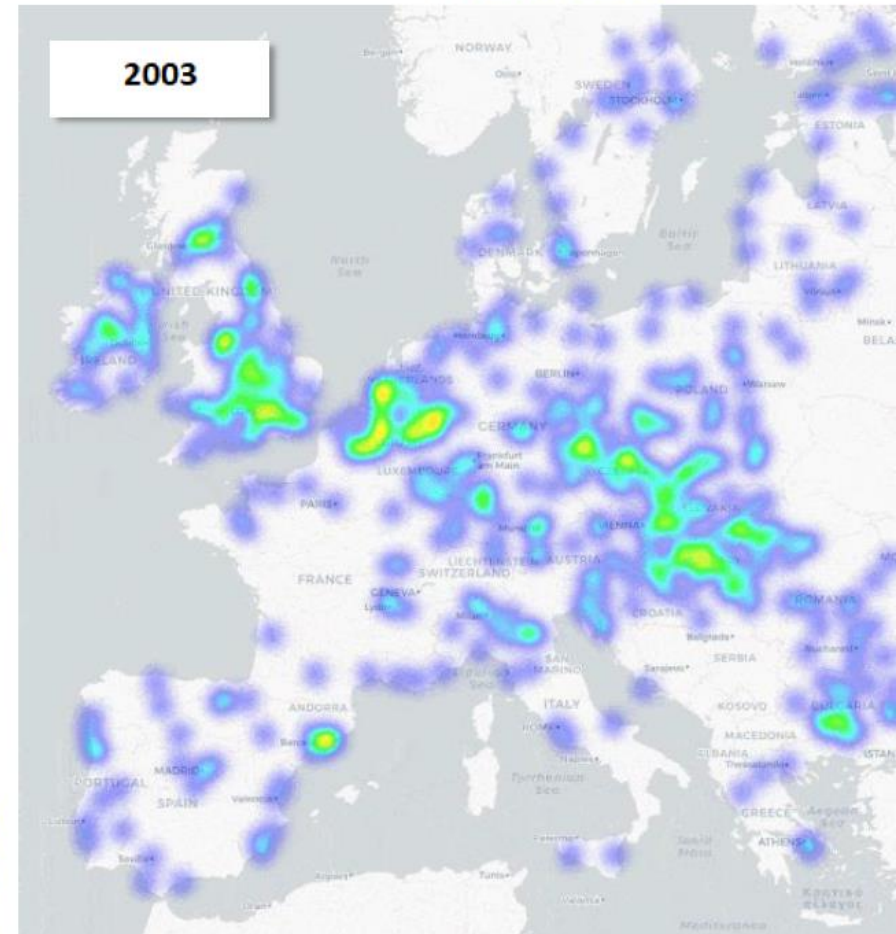
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Mapping hot spots of FDI origin and destination

Source (2003-2018)



Destinations

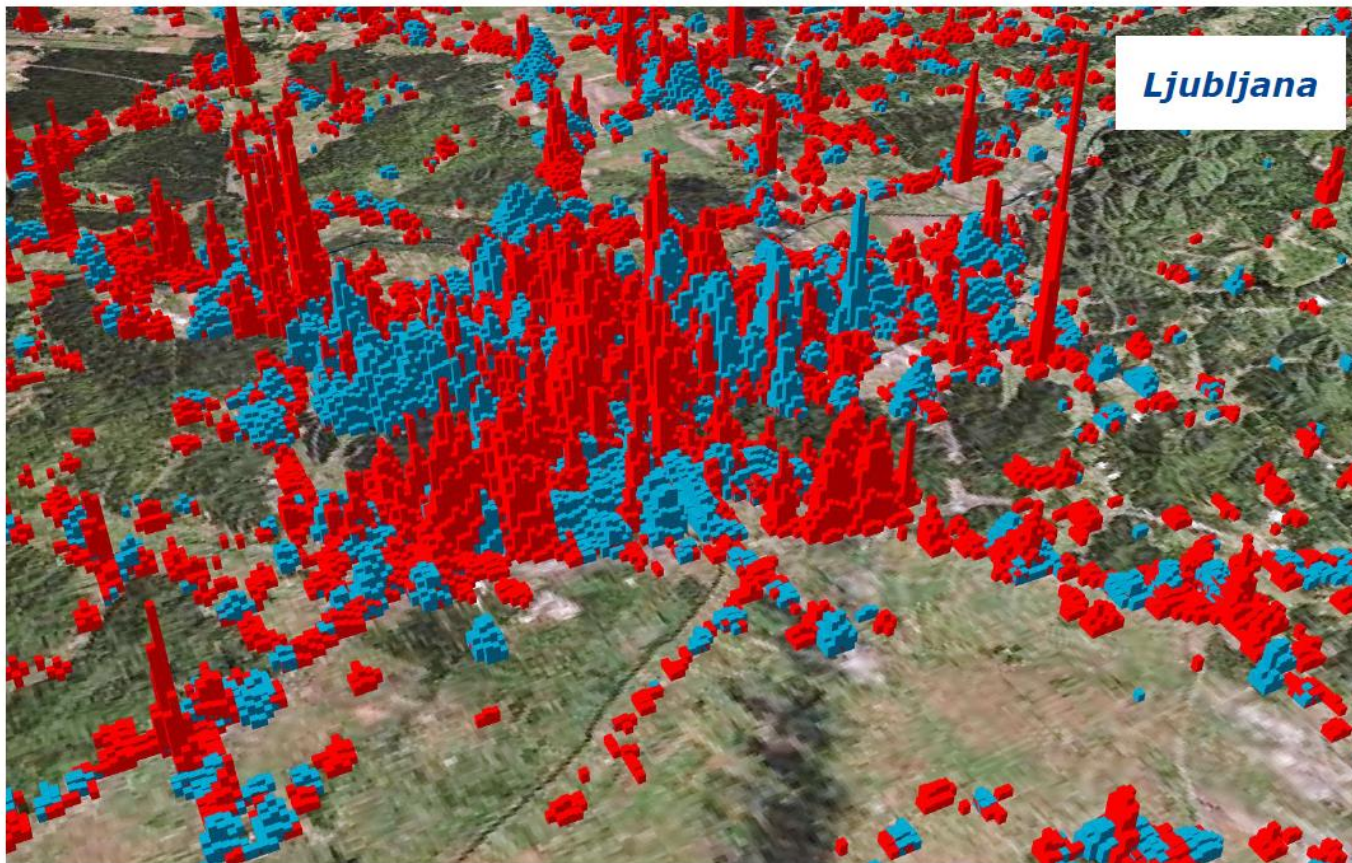


Presentation by Filipe Batista, Joint Research Centre - EC, ESPON Scientific conference, London 2018



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Day and night-time population



■ Night-time population density ■ Day-time population density



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What we have

- Expertise in spatial information and GIS
- Experience in ESPON program = funding opportunities
- Network of external partners

Identified needs are

- Computer scientists for web content mining
- Physicians / mathematicians for data processing (e.g. baobab)
- Central resources to help development of public-private partnerships
- Legal experts to invent a legal frame for the use and diffusion of results
- ...

The whole is more than the sum of its parts...

- Internal control over the chain to generate new spatial information
- Partners would benefit of the network in term of competitiveness for their projects
- UNIGE would gain expertise and positions itself in emerging data fields



DISCUSSION

Who has experience in (parts) of the process?

Who's willing to bring expertise for UNIGE network?

How to position UNIGE as a competence centre?

What can the CCSD do ?

Towards spatiotemporal population

Workflow

