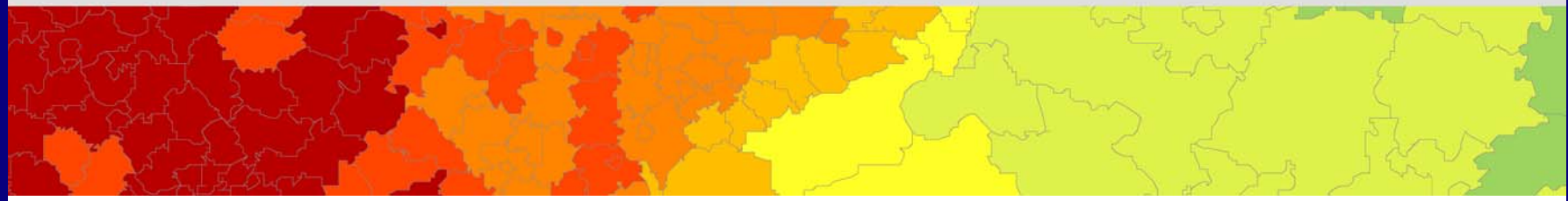
ESPON

EUROPEAN SPATIAL PLANNING OBSERVATION NETWORK



Monitoring territorial dynamics, a view from ESPON Database 2013

Geoffrey Caruso

University of Luxembourg

ESPON DB2013 Project

Monitoring Territorial Dynamics

ESPON 2013 Programme Workshop

November 12th, 2008

Esch-sur-Alzette, Luxembourg

Content

- My views on the ‘4 questions for this afternoon’, i.e. on linking Territorial Cohesion concept to Territorial Monitoring System needs

- The ESPON DB2013 project/consortium: Crucial DB challenges for monitoring spatial change

...more about it in Bordeaux

4 Questions

2. A) What type of indicators of territorial dynamics?
   B) At which spatial scale ?
   > Largely lead by the (agreed?) Territorial Cohesion concept

3. What database possibilities and limitations?
   > Challenges of ESPON DB2013

1. What components for a Territorial Monitoring System?

4. What communication instruments?

Territorial Cohesion

- Explicit definition:
  - Not yet or ignored?
  - Debated…and debate revived: « What is the most appropriate definition of territorial cohesion ? » *(p.11 Green Paper on Territorial Cohesion – SEC2008-2550 (GP TC))*

- Implicitly at least, sound agreement on:
  - « **Balanced** and **harmonious** development » *(p.4 GPTC)*
  - « **More even** and **sustainable** use of **assets** » *(p.5 GPTC)*
  - « **Better** living conditions and quality of life with equal opportunities [...] **irrespective of where people live** » *(p.1,§3, Leipzig 25 May 2007, EU Territorial Agenda)*

- **Question 2 A**:
  - Which indicators to select?
  - What needs to be monitored to achieve Territorial Cohesion ?

- **Answer:**
  - 'Elementary, my dear Dr. Watson', since the *Green Paper* is quite precise in terms of the geographical features to consider

The «3D's» of the World Development Report = *mutatis mutandis* the «3D's+1» of EU Territorial Cohesion GP

- Density
- Distance
- Division

  « may affect the pace of economic and social development »

- \+ Geographical specificities (Determinism)

  « pose particular challenges »

(p.5 GP TC)

(www.worldbank.org/wdr2009 11/11/08)

ESPON
EUROPEAN SPATIAL PLANNING OBSERVATION NETWORK

The «3D's» and « 3C's »

- Density ⟷ Concentration
- Distance ⟷ Connection
- Division ⟷ Cooperation

+ Geographical specificities (Determinism)

Mountains-islands-deep rural

GEOGRAPHICAL & DYNAMIC

(« better », « more », « toward », « pace of development »)

⟷

POLITICAL ACTION on

Cohesion objectives of the « 3C's »… the importance of accessibility

- Concentration
  - Facilitating **access** to agglomeration economies and avoiding excessive concentration
- Connection
  - Facilitating **access** to services, telecoms, energy for all (including the remote and the disadvantaged)
- Cooperation
  - Improving cross-border (internal and external) cooperation in the field of economic development, transport (**~access**), migration**(~access**).

(based on GP TC)

=> Personnally, if I was to choose only one single index for cohesion, I would certainly opt for a ***generalised accessibility*** measure (i.e. from all places, for different kind of people, and to different destinations)

Implications for Monitoring System

- Example : Density – Concentration

- A territorial monitoring system should be able to
  - Monitoring **change in density and concentration of activities and people** over time,
  - but also checking the **significance and direction of the asserted impacts on cohesion**

    - Example: Density of jobs and population

      => Positive effects: Increasing returns, Innovation, Social capital

      => Negative effects: Congestion, central city decay, social exclusion, deprived neighbourhoods,…

(see p.6 GP TC)

=> Monitoring density change is thus useless for cohesion purpose, you need monitoring the impacts!

- **Question 2 B**:
  - What scale ?
  - Which monitoring areas ?

- **Answer:** 'It depends...'
  - Analyst viewpoint: the finer, the better
  - Political assessment: objective is Europe as a whole, isn't it ?
  - Political actions: multi-scale

Analyst scale: **the finer, the better** as a general rule to find evidences and track changes

- Why?
  - **Downscaling** is usually possible but **errors** are difficult to assess, and depend on homogeneity of spatial units
  - **Accessibilities** are important for cohesion and not correctly measured over aggregated spatial units
  - Ex-post **aggregation is easy** and you keep track of information losses.
    - e.g. You can summarize the number of deprived neighbourhoods or the average access time to schools at NUTS1 keeping track of the level of internal variations
    - but be careful to avoid bad 'ecological inference' as the link with density is probably lost at that scale!
    - Aggregation is also needed to communicate the need of coherent set of actions at different scales
- In practice, pragmatism and data availability lead to choosing aggregated spatial units for monitoring and analysis purpose.

Political scales: EU assessment, multi-scale actions

- *« balanced…», « irrespective of where people live »*
  - => In practice, Territorial Cohesion is ‘almost axiomatically’ in search for a **global index**,

    i.e. one single value for the entire EU, and its evolution through time
  - An objective function for European policy ?
    - **Enforce political actions at different scales in order to *MAX* (a ‘EU Cohesion Performance Index’)**

      (I guess this program, if ever, would only come true with constraints, e.g.…

      SUBJECT TO maintaining EU competitiveness,... (Lisbon))

- **Question 3**:
  - Database possibilities and limitations ?

- **Answer:**
  - ESPON DB2013 main objectives

ESPON DB2013 Main objectives

- **Enlarging spatial scales** to more global and local levels – broadband spatial analysis (From Europe in the World to LAU2 for regional projects)
- **Combination of heterogeneous sources** (Eurostat +EEA, OECD, UN,... and **geographical representations** of objects (administrative units, networks, raster,...)
- Reconstitution of **medium and long-term time series** – facing **MAUP** and **missing values** (estimation of future trends and reconstitution of past trends)
- Exploration of **new thematic fields** – zooms, surveys and case studies (towards policy-driven rather than data-driven projects

ESPON DB2013 - Consortium

LEAD PARTNER

- **(1) RIATE (Paris)** : Cartography – Spatial Analysis – Europ. Planning
- **(2) LIG (Grenoble)** : Computer science – Data model – Time GIS

CORE PARTNERS

- **(3) UAB (Barcelonna)** : GIS – Environmental data – Grid
- **(4) ULB (Brussels)** : Socio-economic data – Historical data
- **(5) TIGRIS (Iasi)** : National data – Local statistics
- **(6) GEOGRAPHIE-CITES (Paris) :** Urban data – Flows and networks
- **(7) U.LU (Luxembourg)** : Policy – Synthetic indicators – Statistics

+EXPERTS

Facing problems for monitoring spatial dynamics

- Data availability
  - OK for demographics and economics

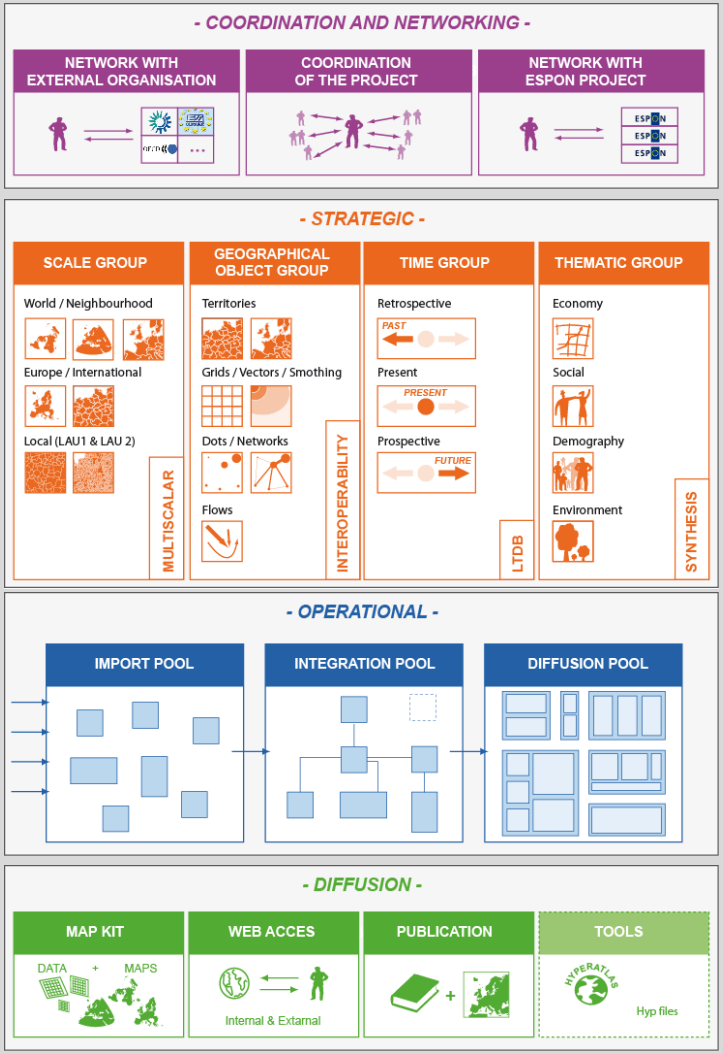
  <u>But</u>
  - Time series for social data, accessibility to infrastructures, services, environmental data
  - Even more problematic at LAU level, while crucial for cohesion

- Missing values problem has no simple answer: spatial interpolation/prediction methods
  - See E-S-T-I methods (see ESPON 3.2, LTDB)
  - Autoregressive models with spatial lags & time lags
  - + Changing units

- Harmonization
  - Data of different types (land use + statistics)
  - Downscaling of upper scale to be consistent with aggregation from lower scale

ESPON
EUROPEAN SPATIAL PLANNING OBSERVATION NETWORK

Workplan



- **Question 1&4**:
  - What components for a Territorial Monitoring System?
  - How to communicate towards policymakers?
- **Answer:**

Spatial Database (DB)

Continuously updated

Rich

Evidence base

Analyses, Typologies, Indicators, TIA, ...

From ESPON, and others

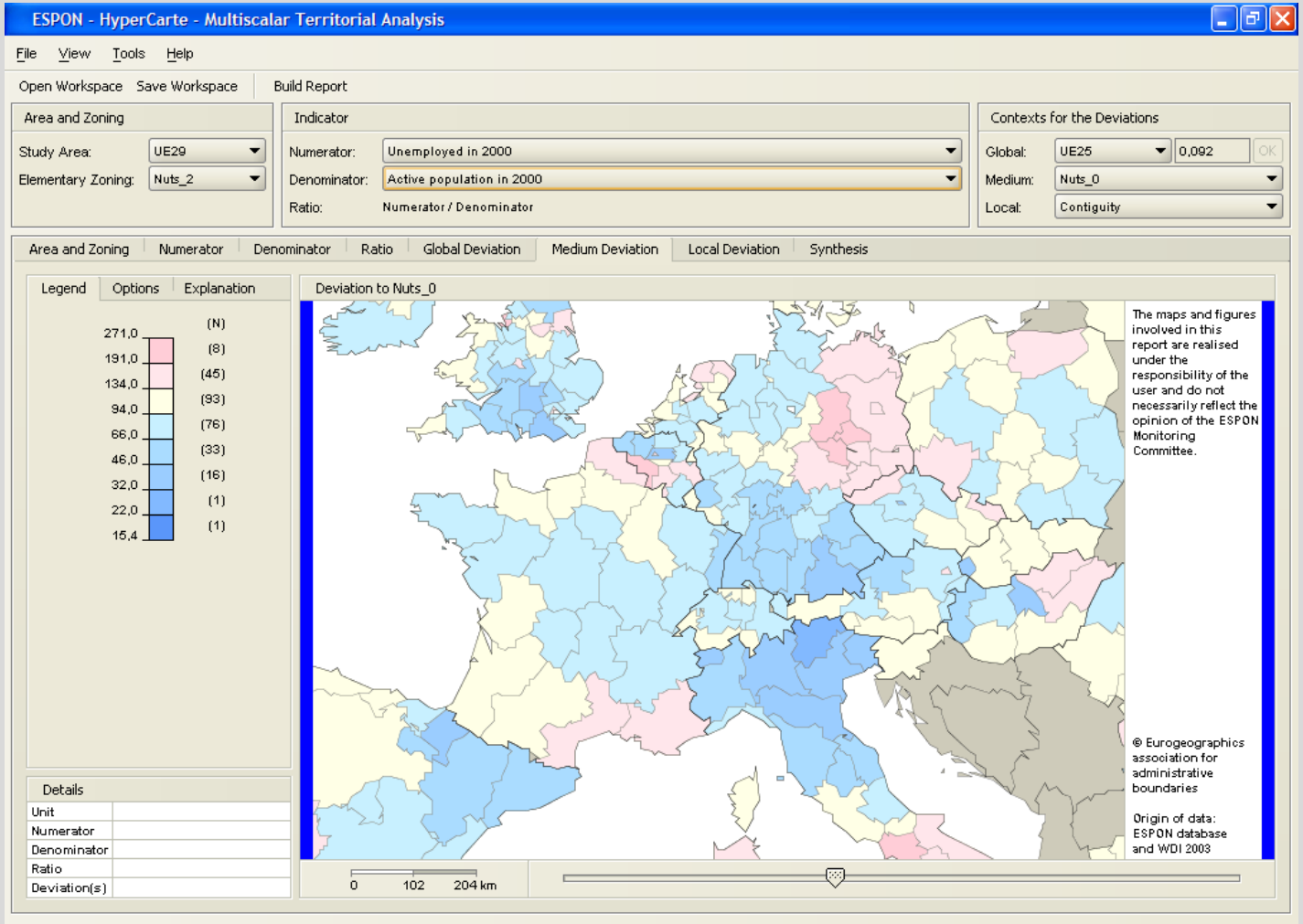
Spatial Decision Support System (SDSS)

Interactive computer system to support stakeholders and political decision making

Including maps (composite or not) and scenario analyses

Documenting and simplifying key but sometimes complex indicators and analytical findings

HyperAtlas – a possible interactive and multi-scale component of SDSS



(after C. Grasland – Spatial Analysis tools and territorial cohesion, Luxembourg 2005)

ESPON

EUROPEAN SPATIAL PLANNING OBSERVATION NETWORK