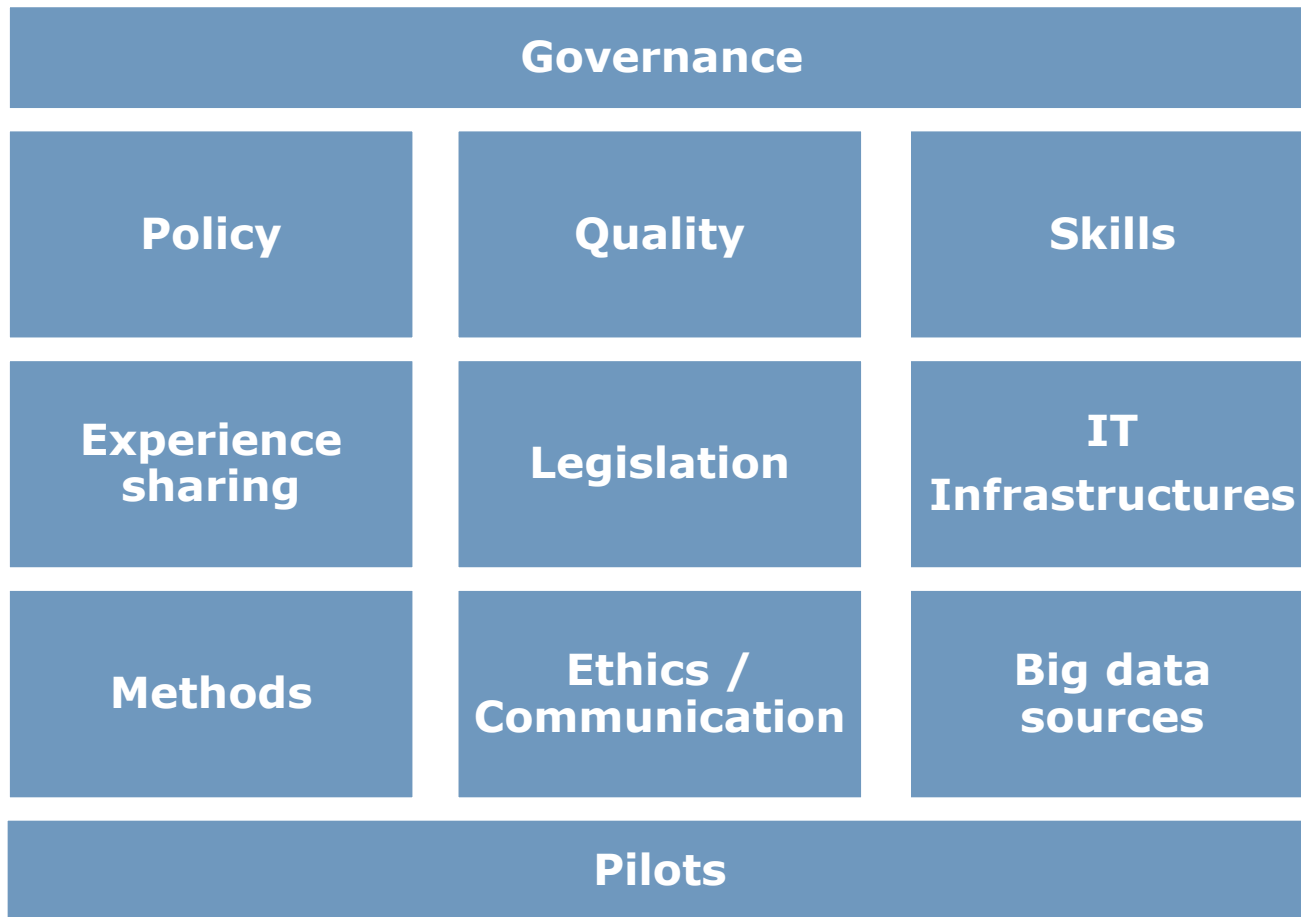# Big Data and Alternative Data Sources on Migration

Ispra, 30th November 2017

The use of big data in official statistics
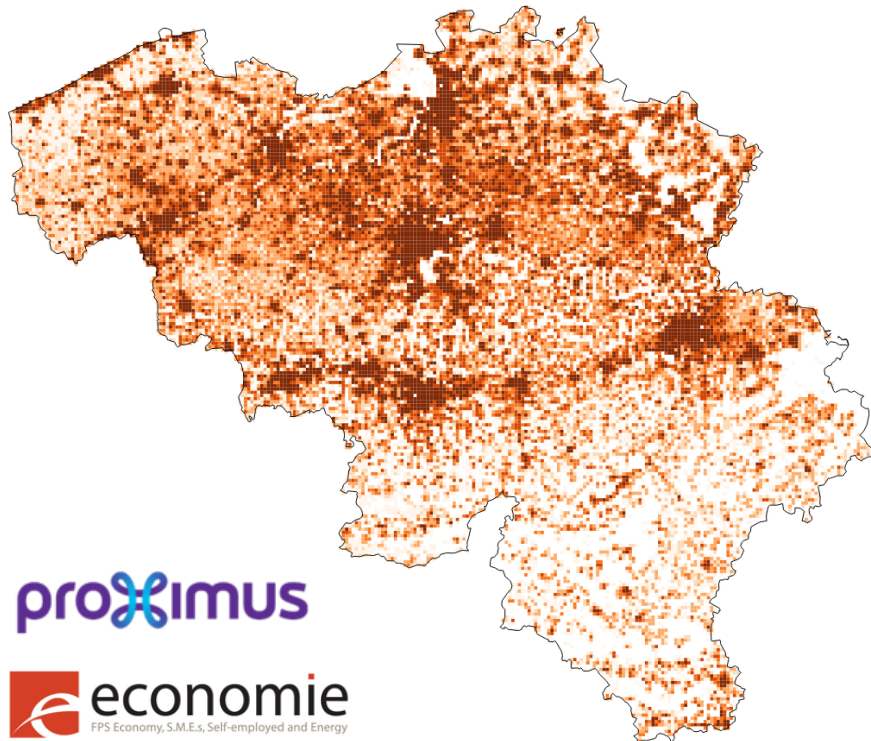
Fernando Reis, Task-Force Big Data
European Commission (Eurostat)
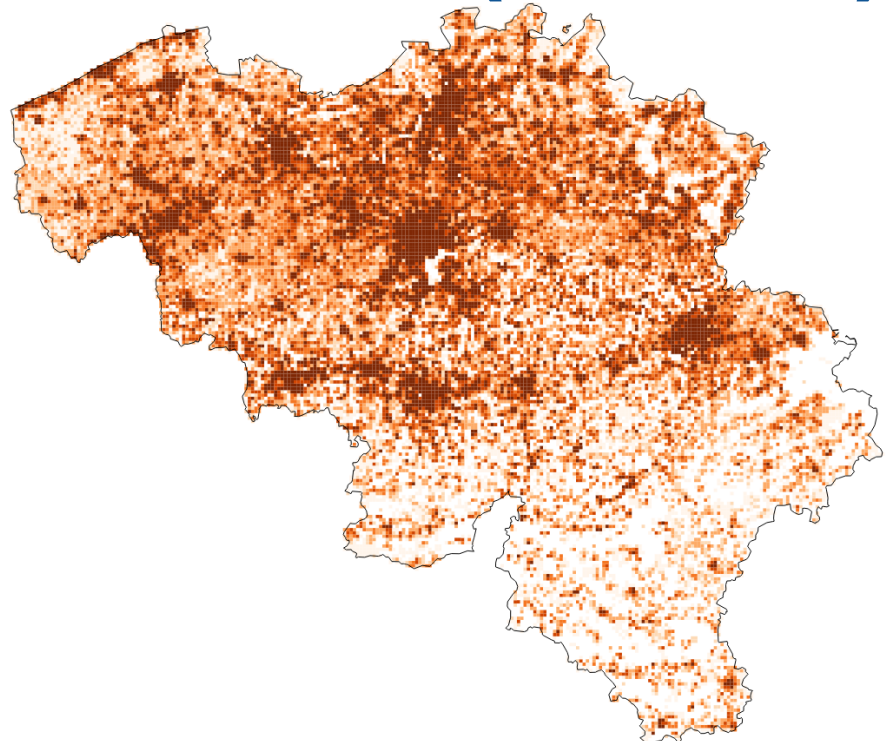
Big Data Action Plan and Roadmap @ a glance

Governance		
Policy	Quality	Skills
Experience sharing	Legislation	IT Infrastructures
Methods	Ethics / Communication	Big data sources
Pilots		

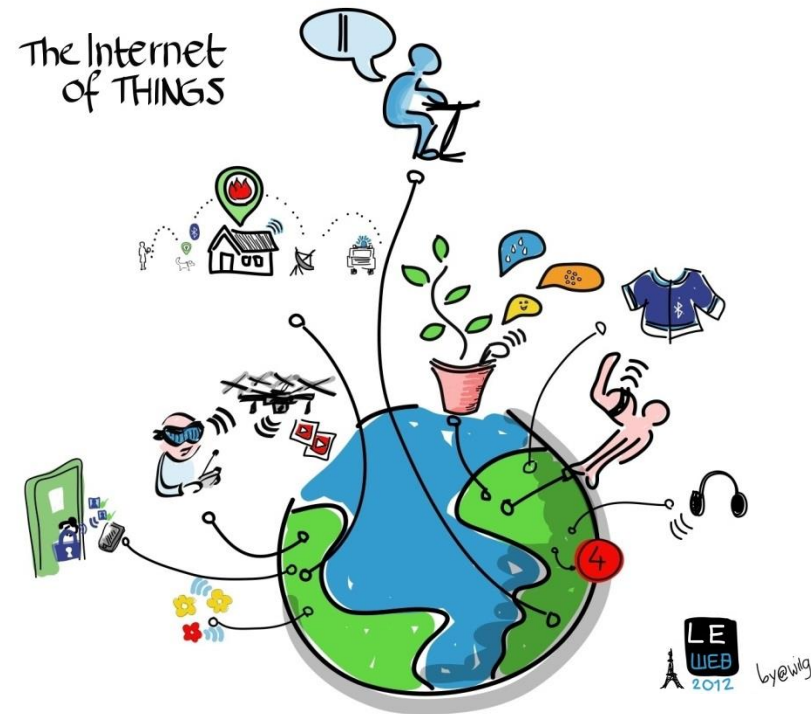# Mobile network data for population statistics (Belgium)

Census (2011)

Number of devices at 2:30 - 4:00 (8 Oct 2015)

From Internet of Things and Smart Systems...

- The network of interconnected smart devices

- Smart devices
  - **Connected**
  - **Interactive**
  - **Intelligent**
    - Predictive
    - Function autonomously

- Smart technologies
  - **Adapt automatically**
  - **Sense things with sensors**
  - **Draw conclusions from rules**
  - **Capable of learning**

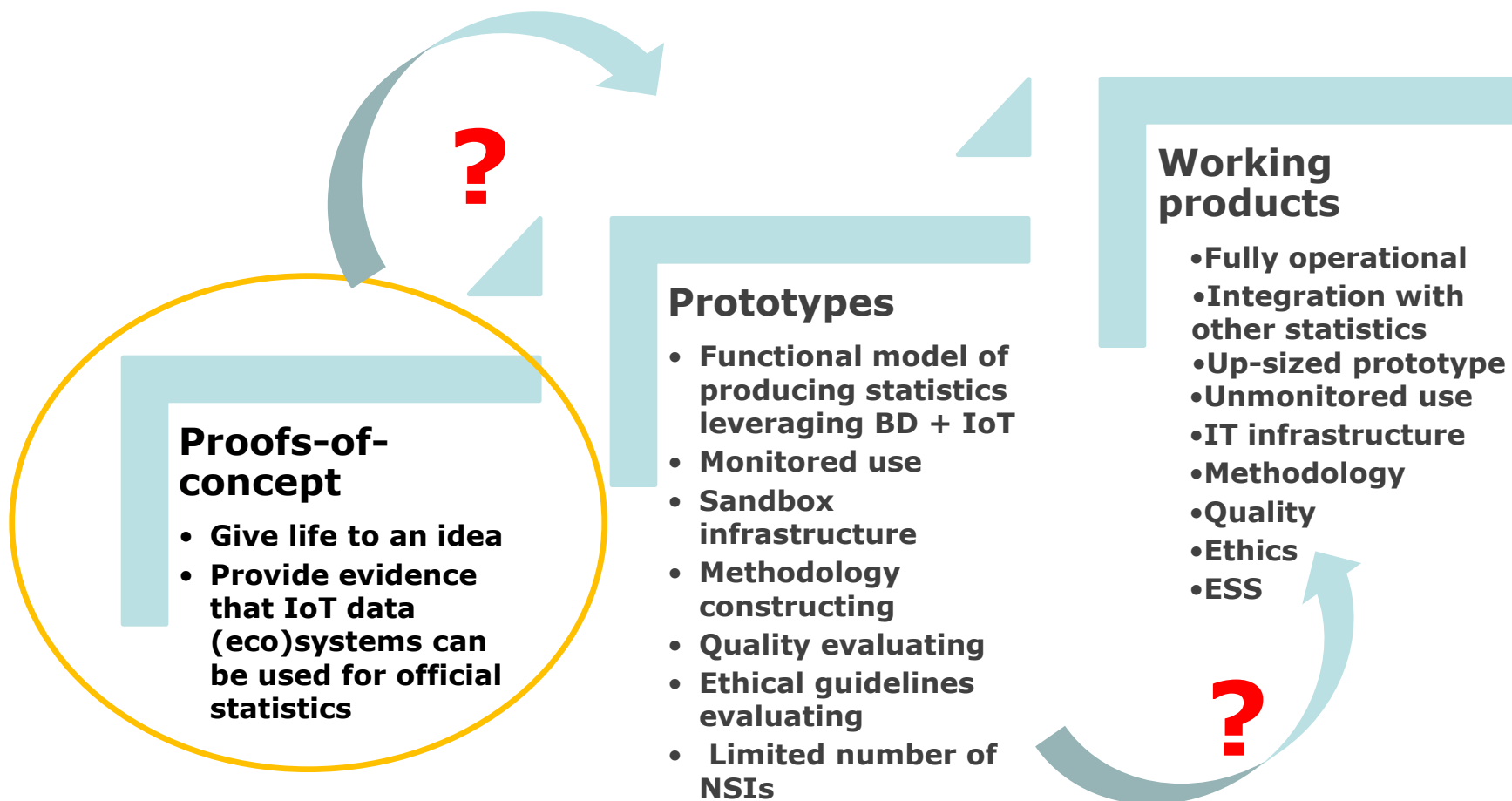Licensed under the terms of cc-by-2.0.

... to Trusted Smart statistics

Data capturing, processing and analysis will be embedded in the system itself

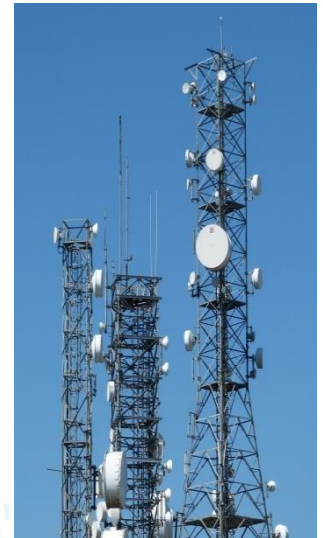**Intelligence along data life-cycle enhanced with cognitive processes**

Trusted Smart Statistics

Proofs-of-concept

- Give life to an idea
- Provide evidence that IoT data (eco)systems can be used for official statistics

Prototypes

- Functional model of producing statistics leveraging BD + IoT
- Monitored use
- Sandbox infrastructure
- Methodology constructing
- Quality evaluating
- Ethical guidelines evaluating
- Limited number of NSIs

Working products

- Fully operational
- Integration with other statistics
- Up-sized prototype
- Unmonitored use
- IT infrastructure
- Methodology
- Quality
- Ethics
- ESS

?

?

Partointerships

Partnerships

- National Statistical Institutes or other statistical authorities
- Mobile network operators
- Telecommunication regulators
- Data protection authorities

Role of statistical authority

- Has legal mandate to produce official statistics (statistical law)

- Has legal basis to collect personal data (statistical authority)

- Has legal guarantees and obligations to protect it (statistical confidentiality)

- Has experience in statistical production

- Has access to other data sources to assess and guarantee quality / accuracy

Role of mobile network operator

- Data holder
- Knowledge on the data source
- Technical capacity (IT)
- Collaboration will depend on:
  - **Maturity in the exploration of the data**
  - **Technical capacity to explore / handle the data for purposes other than managing the infrastructure**
  - **Regulatory requirements**
- Potential gains for MNO:
  - **Profit from statistical expertise of NSI**
  - **Access to other data sources in the NSI**
  - **Image and social responsibility**

Role of telecommunications regulator

- May already have mandate to collect records
- Already has regular contacts with MNOs
- Can facilitate the partnership in the initial phase before regular statistical production is established

Role of data protection authority

- Sometimes obligatory by law to involve DPA
- Can help strike balance between public interest and privacy preservation
- Can enhance public trust in the partnership

Other stakeholders

- Research community
- Third parties (e.g. with expertise in the data source)
- International organisations (e.g. if project involves several countries)
- Legislators

Thank you for your attention

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Eurostat Task Force on Big Data

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