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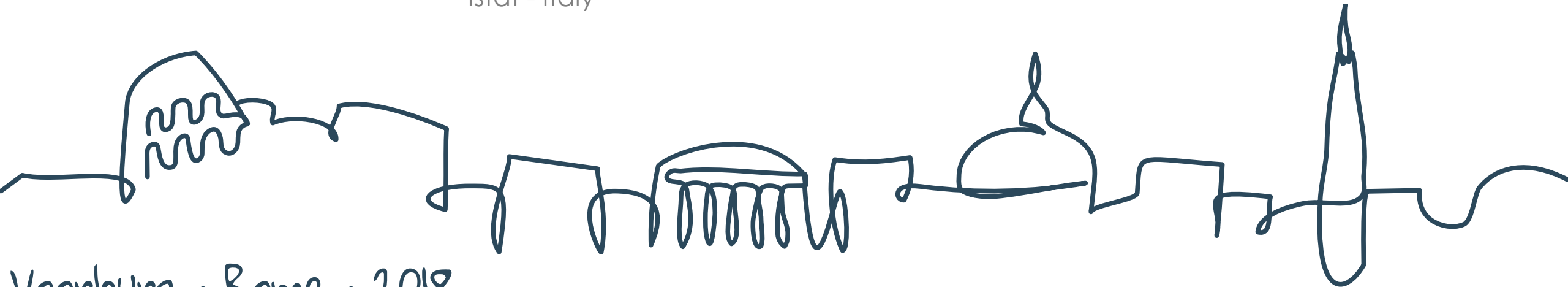
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# The Integrated System of Statistical Registers: methodological approach and impact on official statistics

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Voorburg · Rome · 2018



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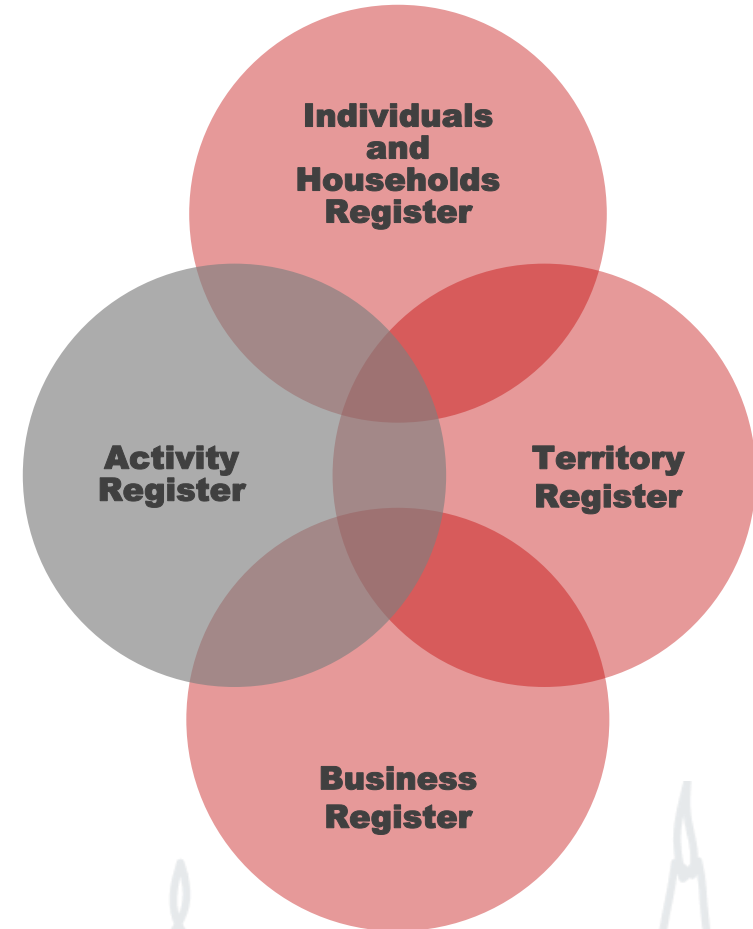
# Outline

- ① Istat's register-based statistical system
- ② Integrated use of data sources
- ③ Governance
- ④ Enhancer of statistical capacity
- ⑤ Conclusions



# Integrated System of Statistical Registers (ISSR)

- **Unique logical asset of data** resulting from the integration of survey data, administrative data and new sources.
- Consistency in the identification and estimation of units and variables for the system as a whole.
- **System**, rather than set.



**Connecting people, businesses and places.**



# 1. ISSR - statistical production model

The methodological framework for an integrated use of data

- **ISSR**: system of statistical registers (**integrated microdata covering the entire target populations**) which generates official statistics based on a multi-source approach (administrative, survey, Big data).
- **Functions**: unified management of the thematic areas (social, environmental, economic, etc.) through the conceptual and statistical integration of its elements (units and variables).
- **Components**: Base registers, Committed registers, Functional (or “thematic”) registers.
- **Output**: improved quality of data and indicators; increased information content; multipurpose (official statistics, research, public policies).



# 1. ISSR - Functions

- **Conceptual and statistical integration**

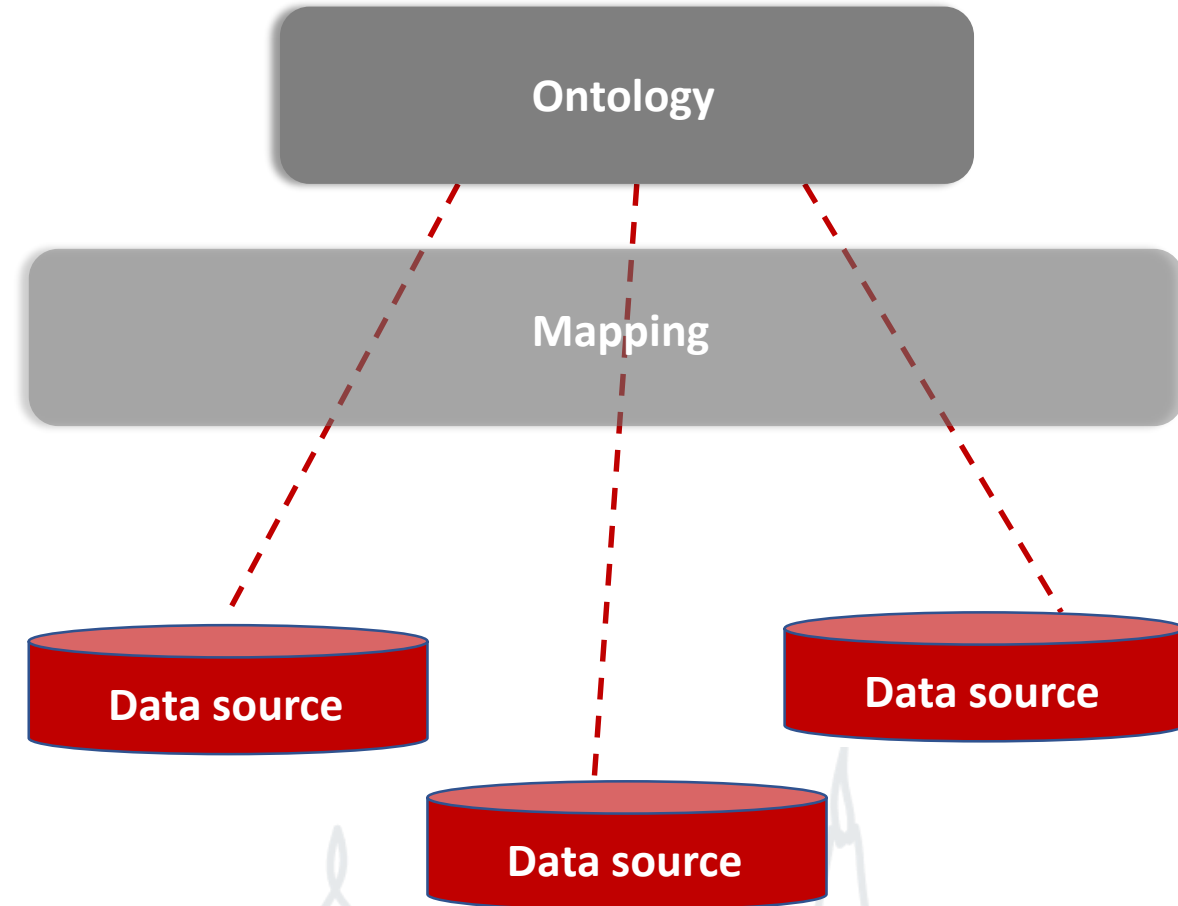
  - Ontology-based data management

  - Strong dependence on metadata

    - (GSIM: SUM-MS)

- **Coherent management of Processes**

  - GSBPM, CSPA





# 1. ISSR – components

	Base	Committed	Functional
Definition	basic unit	sub-population + variables + output	Variables
Characteristics	many sub-populations  minimal combination of variables necessary to unambiguously identify the units	unique sub-population  well-defined set of variables	(possible) different sub-populations  core variables (standardized treatment)  multipurpose registers for a specific topic
Output		national/international regulations  Official Statistics	input for production processes  national/international agreements  experimental statistics



## Gains

# 1. ISSR - output

- **Higher precision and accuracy estimates** (e.g. committed business register Frame SBS: 4,4 mln enterprises having 17 mln persons employed, more than 700 mld value-added).
- **Ensured consistency of micro-macro analyses**
- Enabling **structural analyses** of heterogeneity within
  - populations (individuals, economic units, etc.) and
  - thematic areas (population structure, competitiveness, labour, income, etc.).
- Enabling **longitudinal analyses** of high information value (e.g. enterprises, decomposition of aggregate trends into sub-groups components).



## 2. ISSR – integrated use of data sources

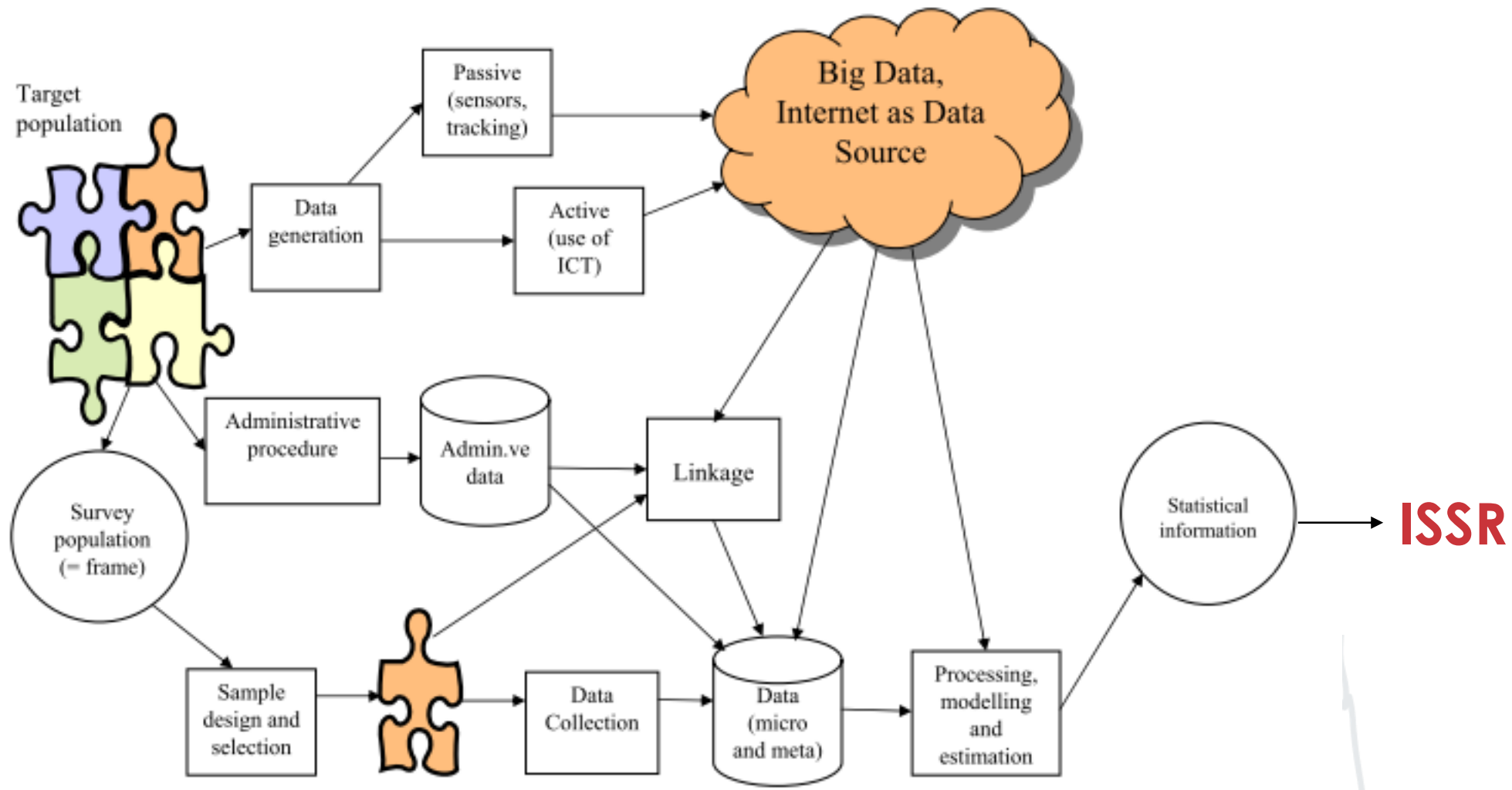
Official statistics  
production model  
based on a steady  
increase of the  
integration between  
data sources

- **European approach:** model formally adopted by European Statistical Regulations (art 24. Reg. CE N. 223/2009 of the Parliament and of the Council), and assessed by authoritative control institutions; European Statistical System commitment to Vision 2020
- Aligned to **international standards and best practices:**
  - United Nations - Unece HLG-MOS, City groups;
  - OECD
- **Advantages:**
  - Reduced **response burden**;
  - **Definite cost reduction** (e.g. Permanent Population and Housing Census);
  - **Increased accuracy of the estimates** (usage of exhaustive data bases);
  - **Increased informative capacity** of the outputs





## 2. ISSR – integrated use of data sources





## 2. ISSR – integrated use of data sources

Increased usage of  
administrative data  
in Italian official  
statistics

	Statistics from survey data	Statistics from administrative data
2013	376	206
2016	327	222
2019	310	275

- 17,6 %

+33,5%

Source: National Statistical Programme



## 2. ISSR – integrated use of data sources

### Administrative data collection

arcam

- **Infrastructure:** high-quality governance, processes and tools to guarantee the collection and processing of huge and complex administrative data bases, in full compliance with regulations on privacy
- **Engineered process for Administrative Data acquisition:**
  - security, centralized repository, monitoring, interoperability,
  - QRCA** - Quality Report Card of Administrative data
- **Planning:** official statistics' processes schedule the data acquisitions
  - In 2018, flows from 50 institutions (40 in 2015);
  - In 2018, 428 acquisitions (280 in 2015) stemming from 190 administrative repositories (90 in 2015);
  - The Revenue Agency, Inps and Ministry of Education – top three providers.

## 2. ISSR – integrated use of data sources

From  
administrative data  
to statistics

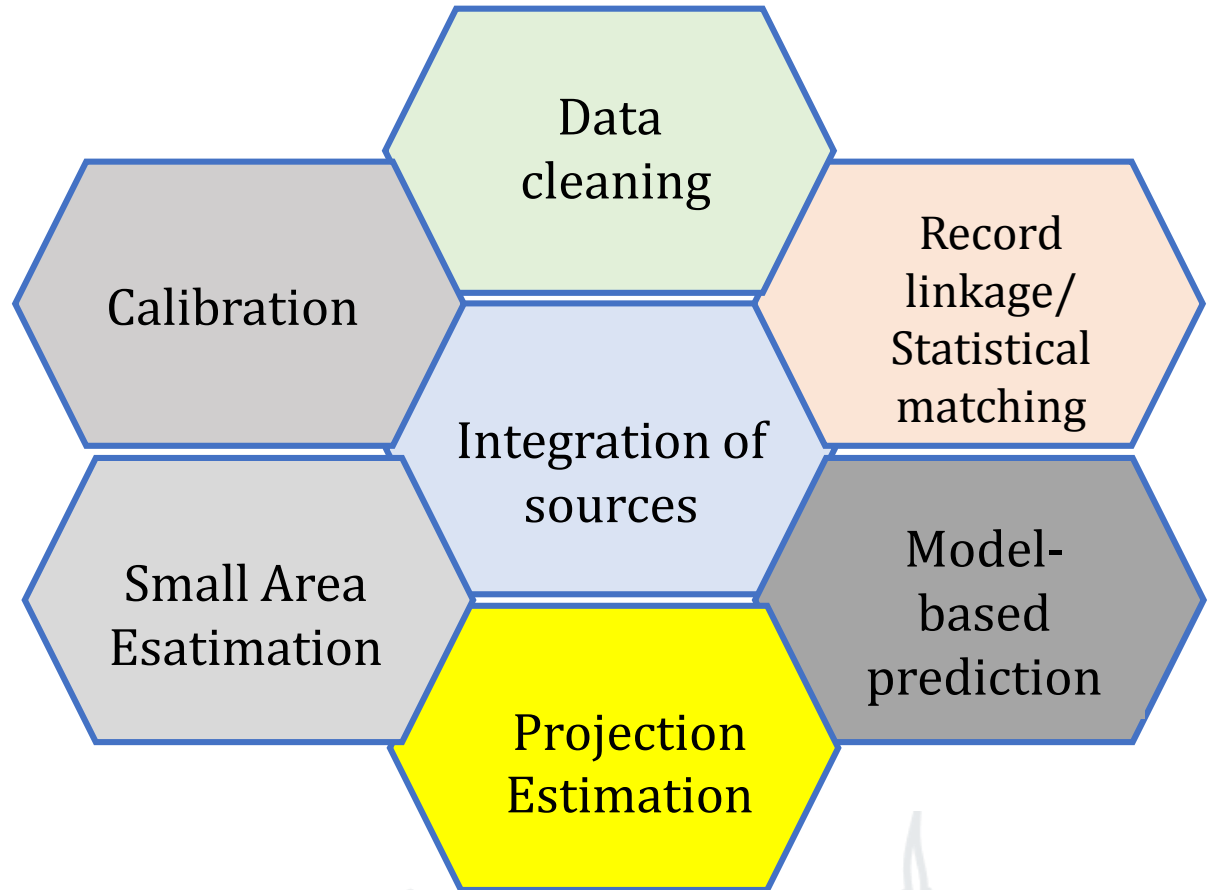
- **Revision** of the traditional statistical production model (stovepipe/silo)
- **Investment in advanced methodologies and infrastructures** designed to transform administrative data into statistical information (classifications, coverage, variables, imputation, estimates, etc.) (Eurostat, 2003).
- **Set-up methodological research networks** to identify robust and modern solutions for dealing with administrative data.
- Relevant results at European level in all statistical areas, with positive impact on National Accounts

## 2. ISSR – integrated use of data sources

### From administrative data to statistics

- Eligibility of units of the Register's target population
- Integration methods
- Estimation/prediction of missing values
- Consistency among same variables from different administrative sources
- Consistent estimation of statistical aggregates within ISSR and w.r.t. direct surveys

▪ .....





## 2. ISSR – integrated use of data sources

### Direct surveys

### Evolving role

#### ○ **New challenges of the traditional role**

- Observe elusive or hard to reach populations not captured in the ISSR
- Integrated survey framework (e.g. coordinated samples, classifications)

#### ○ **Enhancing quality and enriching contents of the ISSR**

- Validation, correction, imputation, update, etc. (Units, variables)

## 2. ISSR – integrated use of data sources

### Integrated surveys

### Evolving role



### ISSR supporting surveys

- Frame for sample selection
- Calibration
- Auxiliary variables for missing data imputation
- Direct estimation of target aggregates
- ...

### Survey supporting the ISSR

- Providing information on register's variables not available in admin data
- Correcting for coverage errors
- Correcting for measurement errors
- Provide information for model-based data estimation
- ...

## 3. ISSR - governance

Rule the  
complexity

### Committee for the management of the ISSR

Oversees and decides on the information role of the variables of ISSR w.r.t. the needs and **priorities** of the official statistics production, taking care of the **relationships between the registers**, the **exhaustiveness** and **consistency** of the information included in the system itself.

Directors

production, data collection, methodology and IT



## 3. ISSR - governance

### Manifold activities

#### **Strategic, managerial, methodological, thematic and technical issues:**

- interactions between strategic planning and the process of building the registers system (strategic programmes, **prioritization** of projects, etc.);
- methodological and technical **guidelines** on specific topics (e.g. information requirements, coherence between domains, integration between sources, estimation of interest variables, timeliness);
- periodic updates, **monitoring** of the work pipeline.



## 3. ISSR - Governance

### State-of-the-art

- **Base registers: close to the first official release for** individuals and territory. Dissemination **almost completed** for economic units (farms, enterprises, non profit, public administration).
- **Committed registers: first prototypes** increased level of commitment and capacity to generate official statistics
  - June 2018, first release of Frame SBS Terr – economic performance and employment data on the entire population of local units of enterprises.
- **Functional registers under development:** pursuing a planned high capacity to generate official statistics on main domains while maintaining their multifunctional traits (e.g. Labour, Income).
- Relevant interaction with Censuses.

## 4. ISSR - Enhancer of statistical capacity

Policy support

Key issues

- **Micro** (minimal statistical unit level which is possible to include in analyses).
- **Exhaustiveness** (of measurements w.r.t target population)
- **Integration** (of information from different sources)
- **Heterogeneity** (of target population)
- **Multidimensionality** (measured phenomena).
- **Flexibility** (design of outputs).

High impact on the statistical system capacity to satisfy the rapidly increasing needs for qualitative, recurrent and reliable information.



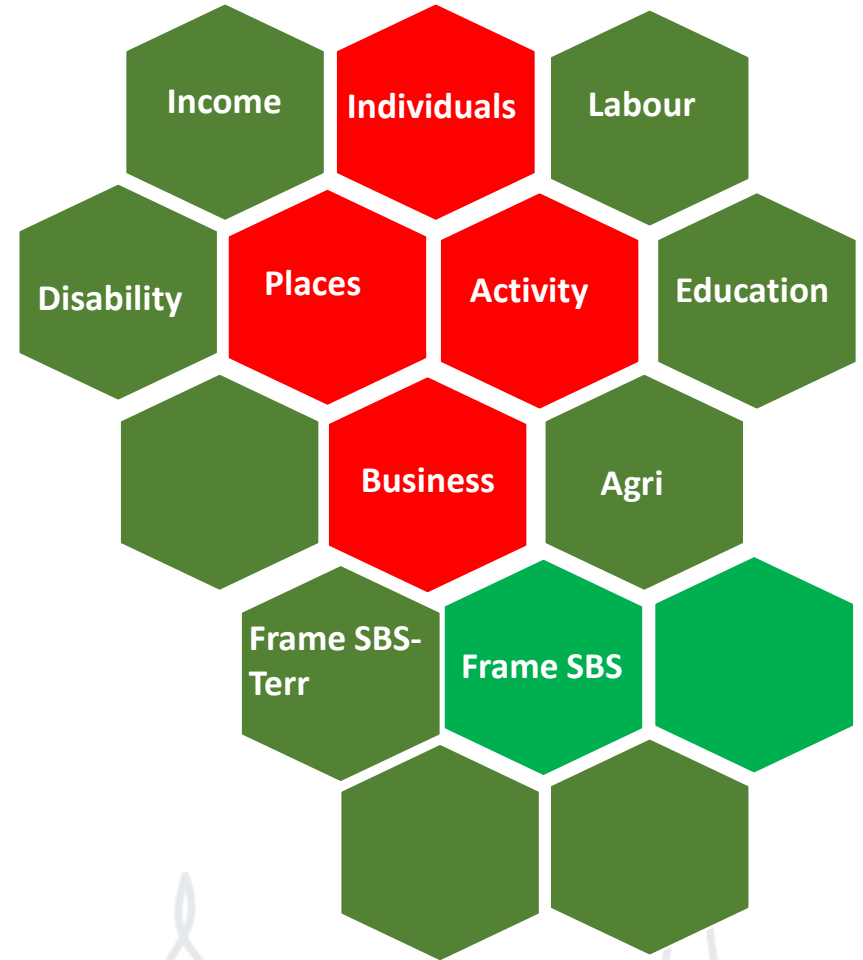
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## 4. ISSR - Enhancer of statistical capacity

Extend the model.

Connect by design.





# Conclusions

## ISSR

- **ISSR**: advanced response to the increasing and evolving need of statistical information in a complex society.
- **Multi-tasking**: production of official statistics; shaping support and evaluation of public policies; input for scientific research.
- Important **investments in research and infrastructure**, generating cumulative processes founded on a growing integration of the registers.
- **Growth scenario** of the information potential of the provided statistical information.
- **Crucial issues**:
  - Management of the trade-off among accuracy, completeness, resolution and timeliness;
  - Ensure the usability of the information potential by disseminating outputs tailored on the stakeholders' needs (public, institutions, policy-makers, researchers)



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Thank you!