

Interoperability of business registers in the European Statistical System: the Eurostat VIP.ESBRs project

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Introduction

Eurostat started in 2009 a reflection on the production method of EU statistics. Such reflection leaded in recent years to some strategic decisions and to a program aiming at re-engineering the statistical production in the European Statistical System (ESS).

It is in this context that the ESBRs project was launched for the period 2013 to 2017.

ESBRs stands for European System of interoperable statistical Business Registers. The project aims at better and more efficient business statistics, as well as better insight on globalisation, through interoperability of statistical business registers in the ESS and further improvement of the EuroGroups Register (EGR) on multinational enterprises groups.

In practice the ESBRs project provides continuity to two previous ESS projects, namely EGR and Profiling¹, but it has a larger scope.

Indeed, the project ambition is to rationalise, strengthen and systematise all statistical business registers in the ESS. To this end ESBRs introduces two new dimensions:

- Interoperability of statistical business registers (SBR) in the ESS
- Sharing common e-services in the ESS.

This paper presents the objectives and the rationale of the ESBRs project, focussing in particular on the issue of statistical business registers' interoperability: what is its meaning and what path it is envisaged in order to achieve it.

1. Commission Communication on the production method of EU statistics² and its implementation

In brief Communication 404/2009, generally referred to as "The Vision document", proposes the following:

- New measures to increase the ESS flexibility and hence its ability to respond to new needs and challenges.
- Full re-engineering of the production methods of statistics within the EU, going from a production system often based on numerous parallel processes to a more integrated production model.

¹ The profiling is defined in the Eurostat Business Registers Recommendations Manual as: "*a method to analyse the legal, operational and accounting structure of an enterprise group at national and world level, in order to establish the statistical units within that group, their links, and the most efficient structures for the collection of statistical data*" (annex 3.1, paragraph 19.9).

² COM(2009) 404 final – *Communication from the Commission to the European Parliament and the Council on the production method of EU statistics: a vision for the next decade –Brussels, 10.8.2009*
<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2009:0404:FIN:EN:PDF>

Therefore we can summarise the Vision's objectives as follows:

- Increase efficiency and cost-effectiveness.
- Improve the coherence and comparability of data.

The strategy for the implementation of the Vision has been the object of several discussions and decisions of the European Statistical System Committee (ESSC), leading to the launch of a 5-year (2013-2017) **Vision Implementation Programme (VIP)**.

The ESS.VIP Programme consists of three “pillars”:

1. Building up common infrastructures for sharing information services;
2. Piloting the sharing of information, services and costs in selected statistical domains;
3. Developing frameworks and administrative mechanisms for sharing information, services and costs.

VIP.ESBRs is one of the business cases chosen at ESSC level as pilot projects (second VIP pillar).

2. ESBRS

There are several forces pushing business statistics and statistical business registers towards relevant developments. The main ones are as follows:

- Statistical business registers see more and more recognised their central role in business statistics
- There is an increasing demand for business statistics
- There are quality issues, in particular concerning business statistics capacity of reflecting phenomena in the changing economy
- There is a need to measure globalisation effects. In a global world we cannot simply ignore what happens out of the national boundaries. We need to look at the “whole elephant”
- There is a need to measure phenomena at EU level
- There is a tendency to reduce the burden on enterprises to supply information
- There is a need to rationalise the statistical production in order to improve efficiency and reduce costs.

2.1. Project purpose (what are the goals)

ESBRs intervenes in this complex situation emphasizing the central role of business registers as “backbone” for all business statistics in Europe. By improving both national and European statistical business registers, ESBRs aims at the following goals:

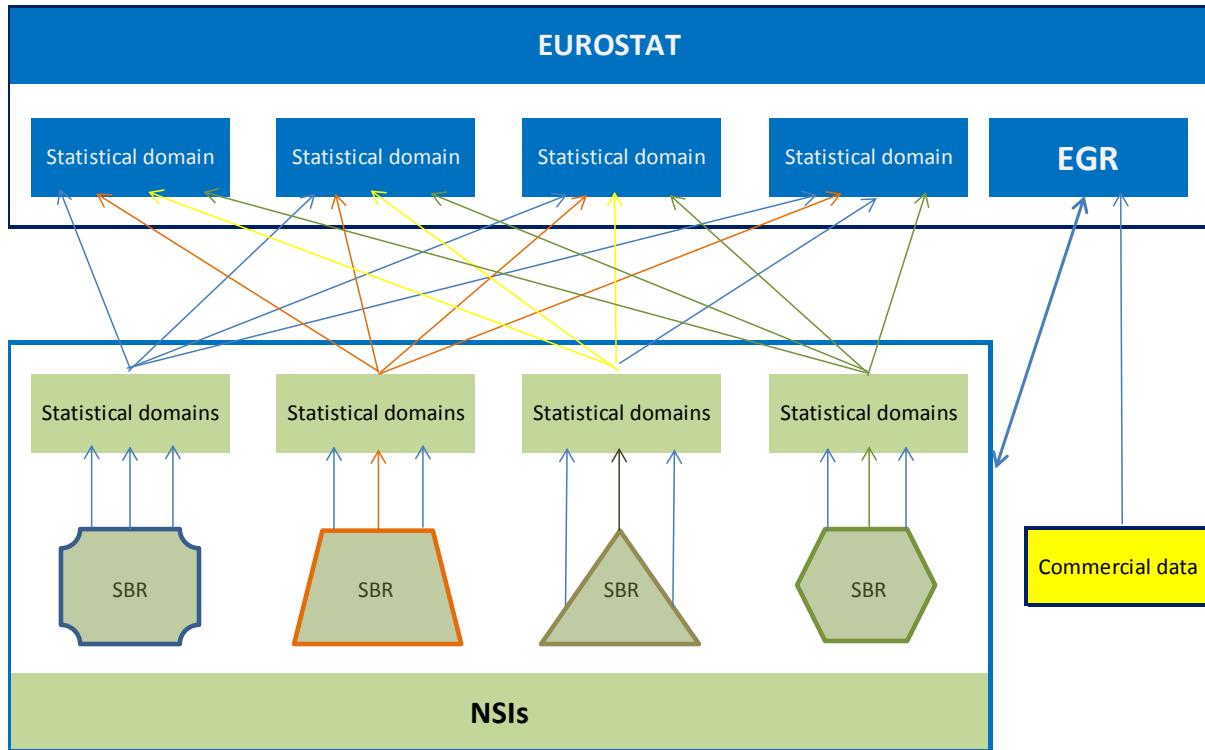
- a) Better business statistics
- b) Produced more efficiently
- c) Providing better insight on globalisation.

These goals should be achieved mainly through interoperability of SBRs in the ESS, further improvement of the EGR and supporting the delineation of the new statistical units "enterprises" that belong to global enterprise groups (profiling).

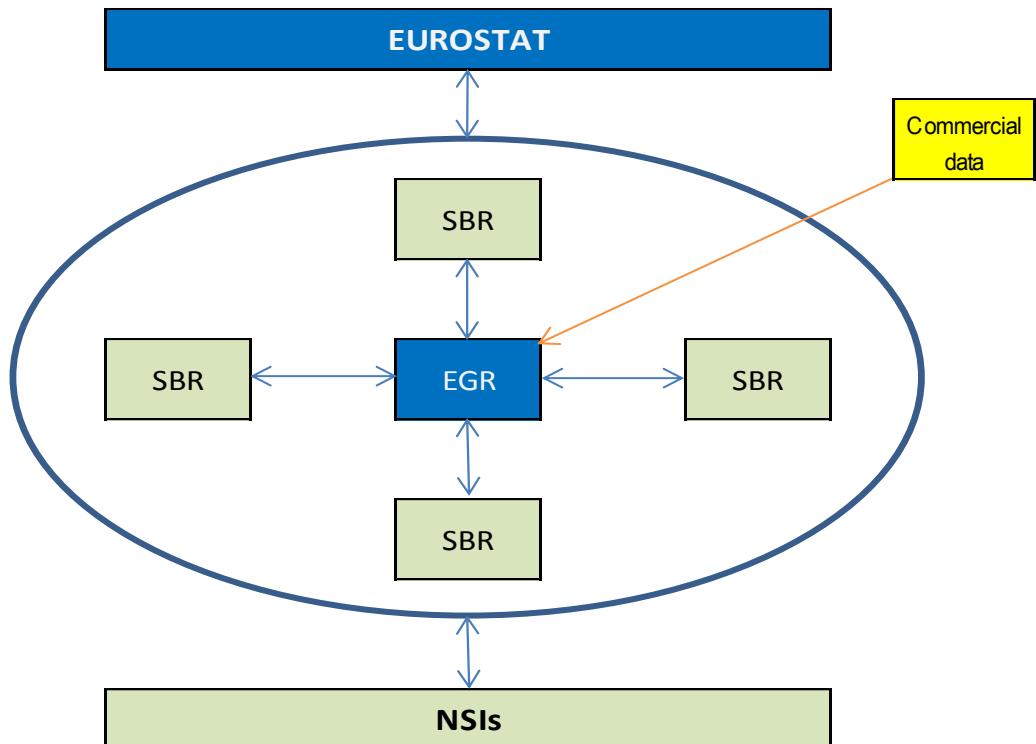
ESBRs will work hand in hand with the cross-cutting VIP projects in charge of the construction of common infrastructures for sharing information services in the ESS.

2.2. Present situation and long term vision

From an inefficient side to side approach (including EGR)....



... to a network of interoperable SBRs with EGR at its heart.



In the **current state** national SBRs are different one from the other for the sources used, the content, the frequency of updating, the methodology used to extract frames, etc. This is represented graphically with national SBRs of different shapes. Each SBR provides its support to different statistical domains at national level. The SBR information is manipulated in different ways (adding or removing units, changing classification, etc.) to meet specific domain needs. Finally information is provided to the correspondent statistical domains in Eurostat.

EGR, starting from commercial data and working at ESS level (Eurostat + NSIs) provide SBRs information on global enterprise groups and their enterprises.

The ESBRs **long term vision** is to strengthen statistical business registers (including EGR) and to promote their interoperability in order to achieve an efficient system of SBRs serving the whole ESS for the production of national and European statistics. In such a context the use and importance of commercial data for the EGR would be reduced sensibly.

2.3. Project activities (how achieve the goals)

2013 is a transitional year for ESBRs due to the overlapping with previous initiatives. Building on the work done on EGR and Profiling, the project is focussing on its governance structure and on the set up of the supporting ESSnet, which will be in place early in 2014.

In general ESBRs will answer to the mentioned goals (see 2.1) through the following actions:

- **Goal a: “better business statistics”:** developing statistical business registers in the ESS into the backbone for EU business statistics. In more details this means:
 - *strengthening SBRs (including EGR)*
 - *improving consistency between statistical domains and between National Statistical Institutes (NSIs)*
 - *improving EGR economic dimension through integration of profiling results*
 - *using EGR frame populations for FATS and FDI*
- **Goal b: “more cost effective business statistics”:** improving SBRs interoperability. In more details this means:
 - *reduce inefficiencies due to inconsistencies*
 - *reduce barriers to the circulation of relevant micro-data*
 - *made available a catalogue of suitable e-services to be shared in the ESSnet*
- **Goal c: “better statistics on globalisation”:** more efficient and consistent EGR, placed at the heart of the ESBRs. In more details this means:
 - *Improved version of EGR: more interactivity, on-line applications for data quality and adequate interfaces for users (FATS, FDI, etc.)*
 - *quality programme management*
 - *support, by implementing European profiling, the delineation of the new statistical units "enterprises" that belong to Global enterprise groups*
 - *SBRs interoperability and use of e-services, allowing EGR to rely almost completely on quality information guaranteed by NSIs, instead of commercial data*

3. Interoperability in the context of the ESBRs project

3.1 Some definitions

3.1.1 General meaning of interoperability

The word “interoperability” refers generally to the ability of diverse **entities** (computer systems and/or organisations) to exchange information and work together towards mutually beneficial and commonly agreed goals.

Interoperability is multilateral by nature and is best understood as a shared value of a community.

3.1.2 Syntactic interoperability

Two or more entities achieve syntactic interoperability when they are capable of communicating and exchanging data. This concerns data formats, communication protocols and the like. Syntactical interoperability is a necessary condition for further interoperability.

3.1.3 Semantic interoperability

Two entities achieve the semantic interoperability when they are able to automatically interpret the information exchanged meaningfully and accurately in order to produce useful results as defined by the end users of both systems.

To achieve semantic interoperability, both sides must refer to a common information exchange reference model.

The content of the information exchange requests are unambiguously defined: what is sent is the same as what is understood.

3.1.4 Interoperability framework

An interoperability framework is an agreed approach to interoperability for organisations that wish to work together towards a joint goal. Within its scope of applicability, it specifies a set of common elements such as vocabulary, concepts, principles, policies, guidelines, recommendations, standards, specifications and practices.

3.2 Interoperability of administrative business registers in the EU

Directive 2012/17/EU on administrative business registers³ aims at the interconnection of registers in order to facilitate cross-border electronic access to business information, by ensuring business registers are updated, and business information is more easily and readily accessible.

The Directive underscores the need for a common semantic standard for interconnecting business registers. In practice the main goals are: use of a unique identifier for companies, accessibility and translation in all EU languages.

The implementation of the directive through implementing acts and transposition in Member States is expected to be finalised by 2017.

³ Directive 2012/17/EU of the European Parliament and of the Council of 13 June 2012 on Interconnecting Business Registers

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2012:156:0001:0009:en:PDF>

3.3 Interoperability of statistical business registers in the frame of the ESBRs project

Some work on the way to interoperability of statistical business registers in the ESS has already started in recent years. This concerns in particular the efforts to achieve a unique identifier for legal units and to identify the main sources of inconsistencies in business statistics.

This will be the starting point for the definition of a minimum set of requirements for interoperability that will become the ESBRs **interoperability framework** (see definition 3.1.4).

The use of common statistical standards and of common e-services will also contribute to the interoperability of statistical business registers in the ESS.

3.3.1 Unique identifier for legal units

A common identifier is a necessity in order to achieve an unambiguous communication. The fact that at present legal units are not uniquely identified, in particular when cross-border relationships are analysed, is a serious obstacle to interoperability, source of errors and inefficiency.

Worldwide there exist several initiatives to improve the identification of companies.

- The already mentioned EU Directive 2012/17 requires the registration of companies, through '*a unique company identifier, building on a company's existing registration number, in order to facilitate the task of registers to identify companies that are present, for example through branches or subsidiaries, in more than one Member State*'. The format/structure of this identifier is not yet defined.
- Also the financial sector is working worldwide on this topic. The Legal Entity Identifier (LEI) initiative is supported by the G20 and is coordinated by the Financial Stability Board. The European Commission is member of the permanent governance body for the global LEI system, so that coherence with the European initiative will be ensured.
- An EGR "identification service" has been developed recently and will be made available soon to the whole ESS. The tool aims to identify foreign legal units that have a cross-border relationship with a national legal unit, and to assign them a unique identification number valid for all members of the EGR network.

This service coordinates requests and answers for the identification of European and non-European legal units. It can be used by business register staff as well as by statisticians, e.g. FDI or FATS statisticians.

Eurostat's final objective is to use in the EGR the officially recognised unique identifier in Europe (and possibly at world level).

At the moment – being Eurostat's initiative the most advanced one – EGR uses its own identifier. However the structure of such identifier is modular and very similar to the one that should be proposed in the implementation of EU Regulation 2012/17. Therefore EGR's identifier can be easily converted into the European official one.

3.3.2 Reduction of inconsistencies

The ESSnet on Consistency⁴ indicated that the main sources of inconsistencies in business statistics are:

- Target population
- Frames
- Reference period
- Coverage
- Classifications

Inconsistencies create barriers and their reduction/elimination is a necessary step on the path towards interoperability. The new ESSnet on ESBRs will have to elaborate an action plan to take into account and reduce the inconsistencies pointed out by the ESSnet on consistency, through adequate actions directed towards statistical business registers in the ESS.

3.3.3 Compliance with a set of requirements for interoperability in the ESS

The ESSnet on ESBRs will analyse the best practices in the ESS countries. It will then establish a minimum set of requirements for interoperability based on feasibility and cost/effectiveness of best practices in Member States, as well as a roadmap for implementation of this set of requirements. This set of requirements will constitute the ESBRs interoperability framework.

It is expected that by end 2017 most ESS countries will be compliant with the set of requirements.

Of course there will be space to raise the “minimum” requirements after 2017. Interoperability according to an initial interoperability framework will be achieved by the end of the ESBRs project, but the process is expected to continue, leading to more ambitious and efficient interoperability frameworks in the following years.

3.3.1 Use of common statistical standards

The use of common standards for the communication of data and metadata is in principle part of the interoperability framework. However this issue it is not specific to statistical business registers and we need to analyse it at a higher level.

The landscape of statistical standards is evolving and the maintenance of relevant portfolio of standards is more than ever a critical activity for statistical systems. Beside well established ESS standards – as the Statistical Data and Metadata eXchange⁵ (SDMX) – other initiatives are gaining importance in the statistical world, such as:

- the Data Documentation Initiative⁶ (DDI) originating for the world of social science data archive and more and more in use in statistical organizations for the documentation of micro-data.

⁴ An ESSnet project is: "A network of several ESS organisations aimed at providing results that will be beneficial to the whole ESS". For more details on the ESSnet consistency see:

<http://www.cros-portal.eu/content/consistency-0>

⁵ <http://sdmx.org/>

⁶ <http://www.ddialliance.org/>

- The Generic Statistical Business Process Model⁷ (GSBPM) providing a common abstract representation of statistical activities
- The Generic Statistical Information Model⁸ (GSIM), a common abstract representation of data objects manipulated in official statistical production and elaborated as an overarching model for implementation standards such as SDMX or DDI.

A cross-cutting VIP project is in charge of this matter. It is called “Information Models and Standards” (IMS) and has the following main objectives:

- To ensure that the European Statistical System (ESS) has access to a set of agreed-upon standards supporting the modernisation of statistical services, so that the ESS may also play a leading role in the evolution of these standards.
- To increase coherence between standards, at the same time ensuring that these are consistent with best practices and recommendations from the international community of official statistics.
- To define information models that can be used across the ESS to model structural metadata for different types of data, taking into account existing standards and on-going developments in the statistical world.
- To identify and adopt guidelines for documenting business processes in the ESS.
- To provide support mechanisms (e.g. capacity-building and training) for the practical implementation of these standards and models.

3.3.5 Use of common e-services

This is another matter that will be coordinated at ESS level through a VIP cross-cutting project, rather than just at the level of the ESBRs project. The name of the project is Shared Services (SERV) and its target is a platform that can be used across the ESS to access and use a **catalogue of shared services**, based on:

- Standards and a framework for interoperability;
- A service communication protocol.

The SERV project will make use of the Service Oriented Architecture (SOA)⁹, in order to achieve a platform-neutral approach to accessing services. Each SOA service has a service provider and quality of service associated with it.

One of the ESBRs targets is to create an e-services sub-catalogue of the general ESS catalogue, fully coherent with the ESS level, but exclusively dedicated to statistical business registers, based on tools already developed at national level and on relevant needs that could be efficiently solved through the development of new shared services.

⁷ <http://www1.unece.org/stat/platform/display/metis/The+Generic+Statistical+Business+Process+Model>

⁸ <http://www1.unece.org/stat/platform/pages/viewpage.action?pageId=59703371>

⁹ SOA provides a technological solution for industrialisation and integration of processes and the rationalisation of information systems.

Conclusion: till 2017 and beyond

Interoperability of statistical business registers in the ESS is not likely to be an objective easily and fully achievable in the short term.

Nevertheless in the coming years till 2017 ESBRs will face the challenge. Working hand in hand with the cross-cutting projects of the VIP Programme, it will create its own interoperability framework, coherent with the more general ESS ones.

Targeting better and more efficient business statistics, through improved interoperability between statistical business registers, ESBRs will initiate activities at EU level, as well as stimulate and support activities at national level in the ESS.

The expected results are improved quality of the statistical business registers in the ESS, a more efficient system and a better insight on globalisation.

Just to make few examples of the benefits expected, ESBRs will make possible:

- *interacting on-line with the EGR, to update it or for obtaining information;*
- *sharing useful information on multinational enterprise groups;*
- *looking at the whole elephant through a new model for statistical units and profiling;*
- *using on-line common tools for the maintenance of SBRs;*
- *putting together meaningful information on multinational enterprise groups from different statistical offices;*
- *comparing consistent business figures;*
- *analysing the demography and the main economic and social indicators concerning multinational enterprise groups.*

Interoperability of statistical business registers is expected to become a **shared value** in the ESS and to lead statistical business registers to go further on the path towards integration, efficiency gains and quality improvement, even after 2017.