



EUROPEAN CONFERENCE ON QUALITY IN OFFICIAL STATISTICS 2024 ESTORIL - PORTUGAL



EUROPEAN CONFERENCE ON
QUALITY IN OFFICIAL STATISTICS
2024 ESTORIL - PORTUGAL

Quality monitoring system for the European statistical business registers

Authors: Isabelle Collet, Iliyana Iskrenova

Presenter: Pau Gayà Riera

Eurostat - Unit G1 - Coordination and infrastructure development



Why?

- **EBS Regulation (EU) 2019/2152** applicable from the reference year 2021
 - Strengths the role of the statistical business registers.
 - Authoritative sources for statistical business register populations

What?

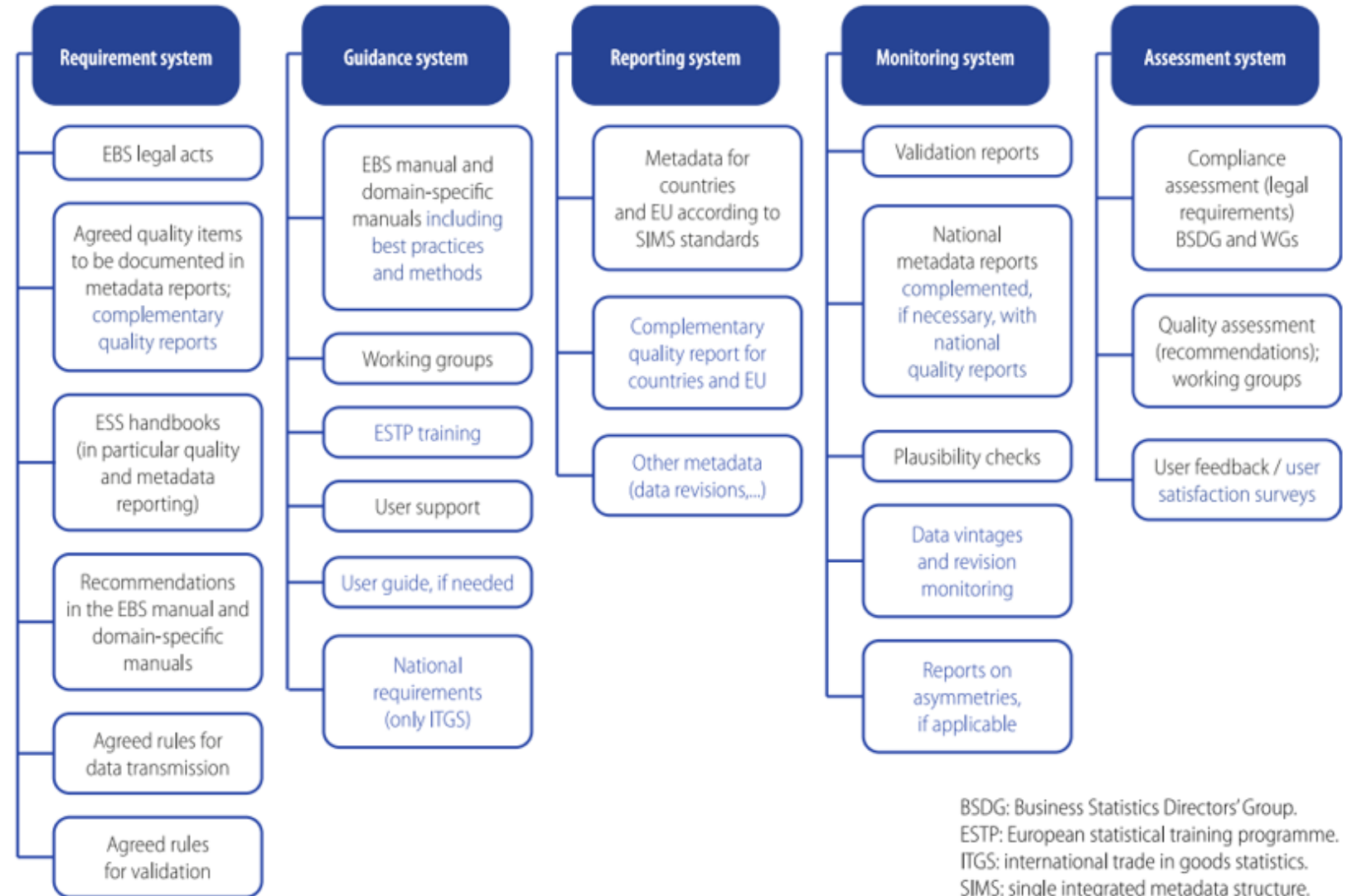
- **European framework for statistical business registers**
 - National statistical business registers (NSBRs)
 - EuroGroups register (EGR)

How?

- **EBS quality and compliance framework** especially including a process: Monitoring and reporting, Assessment
 - Four-indicator set:
Punctuality, Completeness, Accuracy and reliability, Coherence and comparability

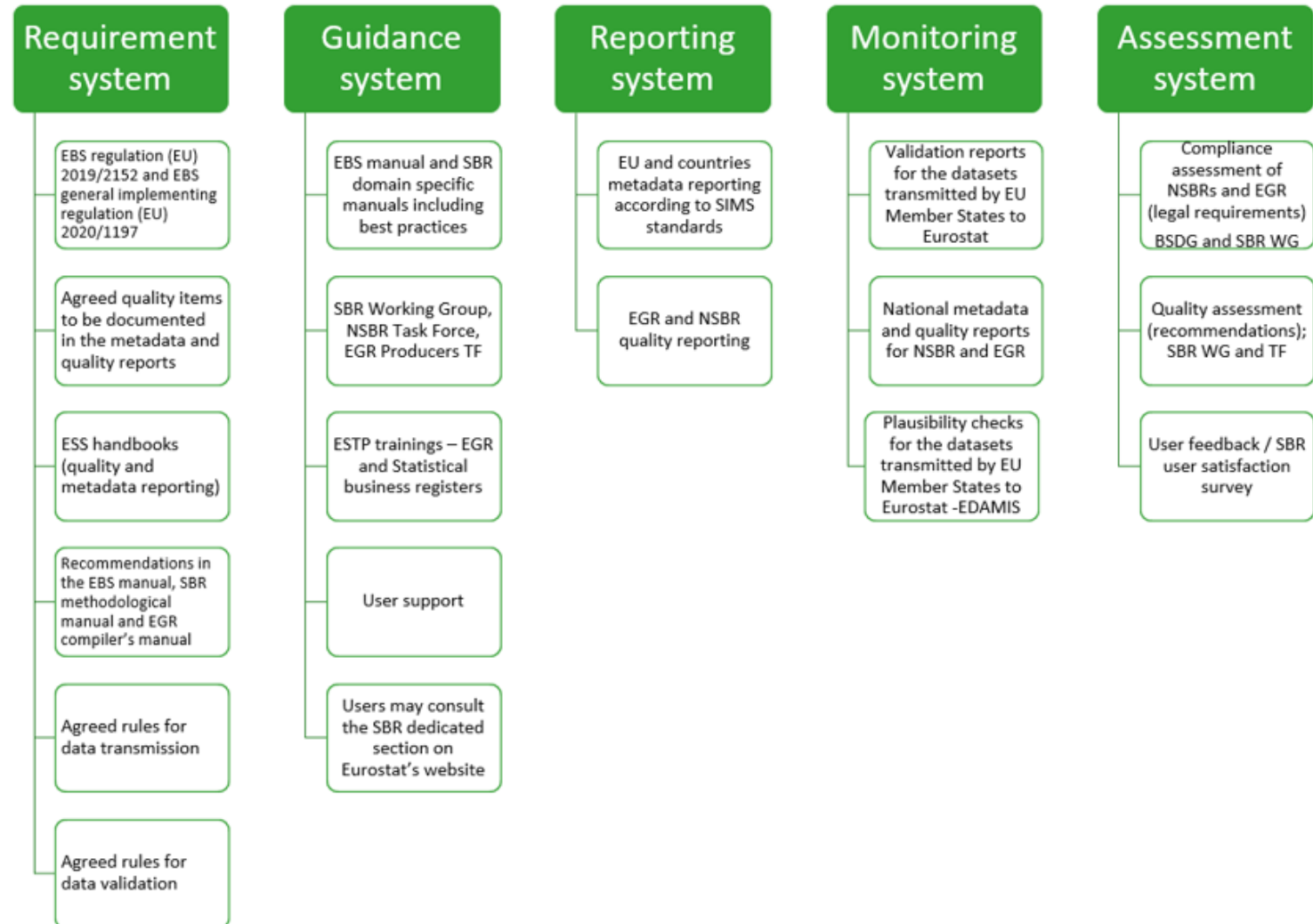
EBS quality and compliance framework

- A harmonized quality and compliance framework for all statistics produced under the EBS Regulation.
- Follows the principles set out in the *European statistics code of practice* and in the *Quality assurance framework of the European statistical system*

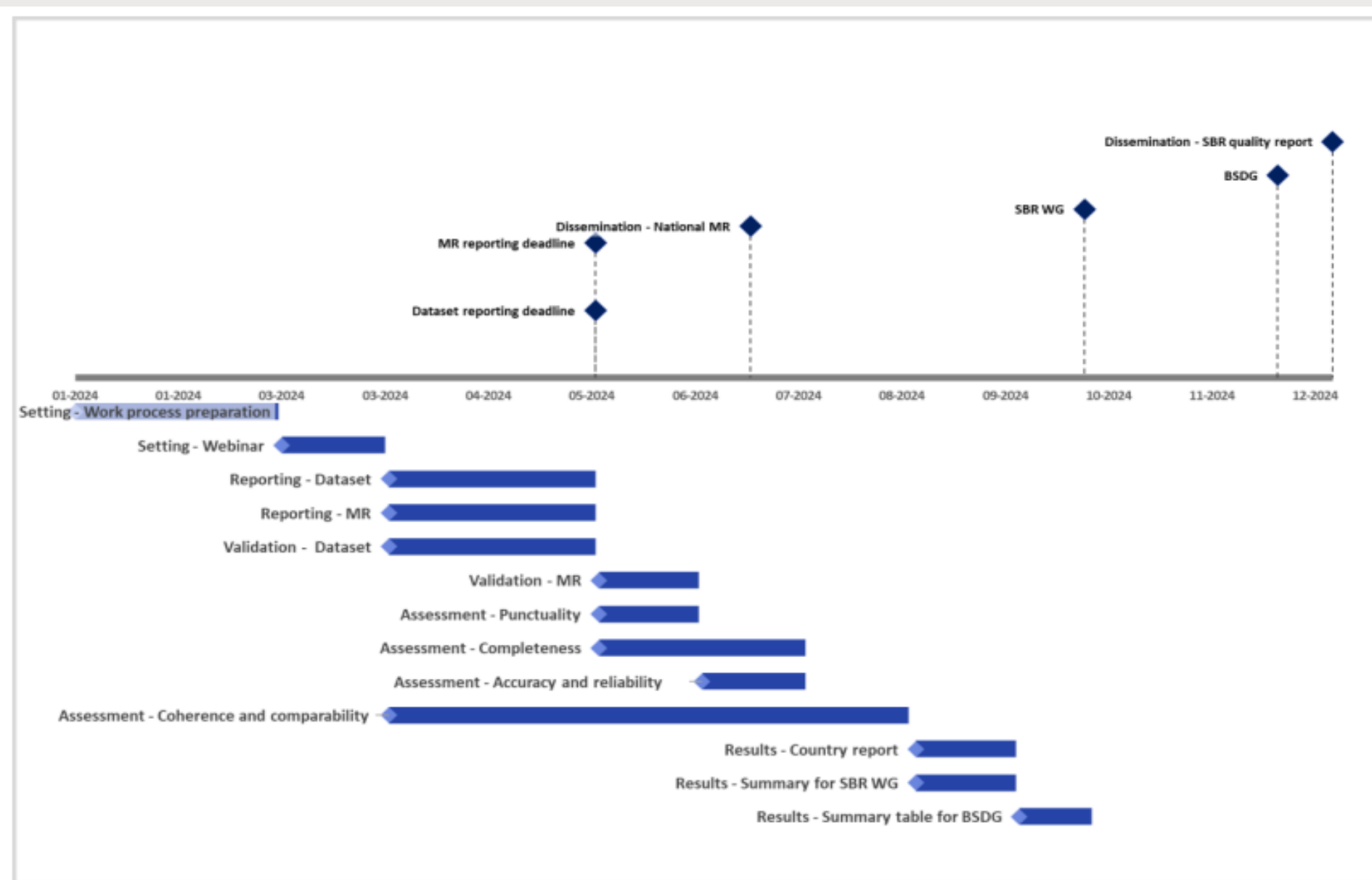


European statistical business registers quality and compliance framework

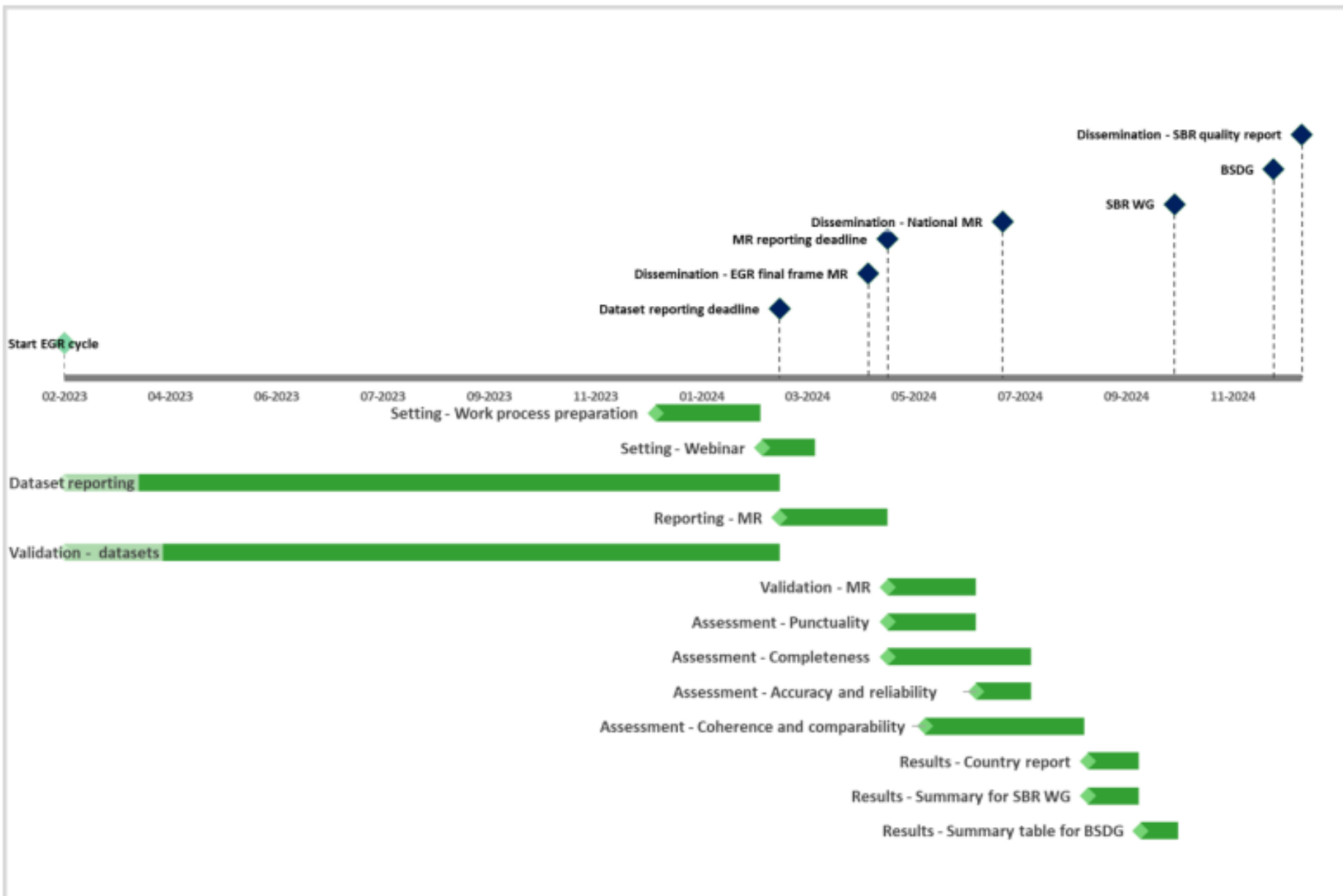
- **Systems** aligned with the EBS quality framework
- **Setting**
 - Requirements
 - Guidance
- **Process**
 - Monitoring
 - Reporting
 - Assessment



Quality and compliance process timeline for the national statistical business registers

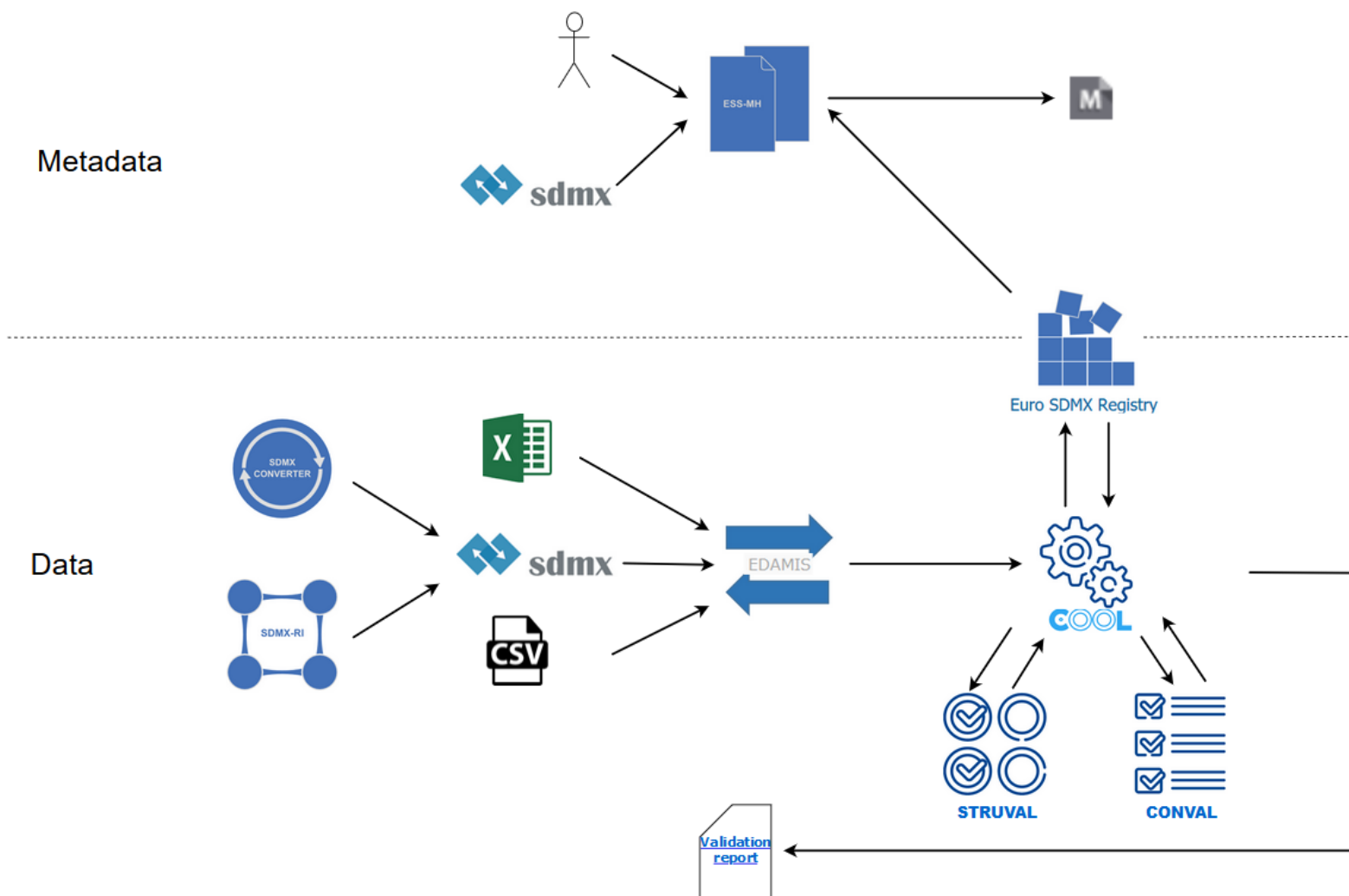


Quality and compliance process timeline of the data transmitted for EGR by NSIs



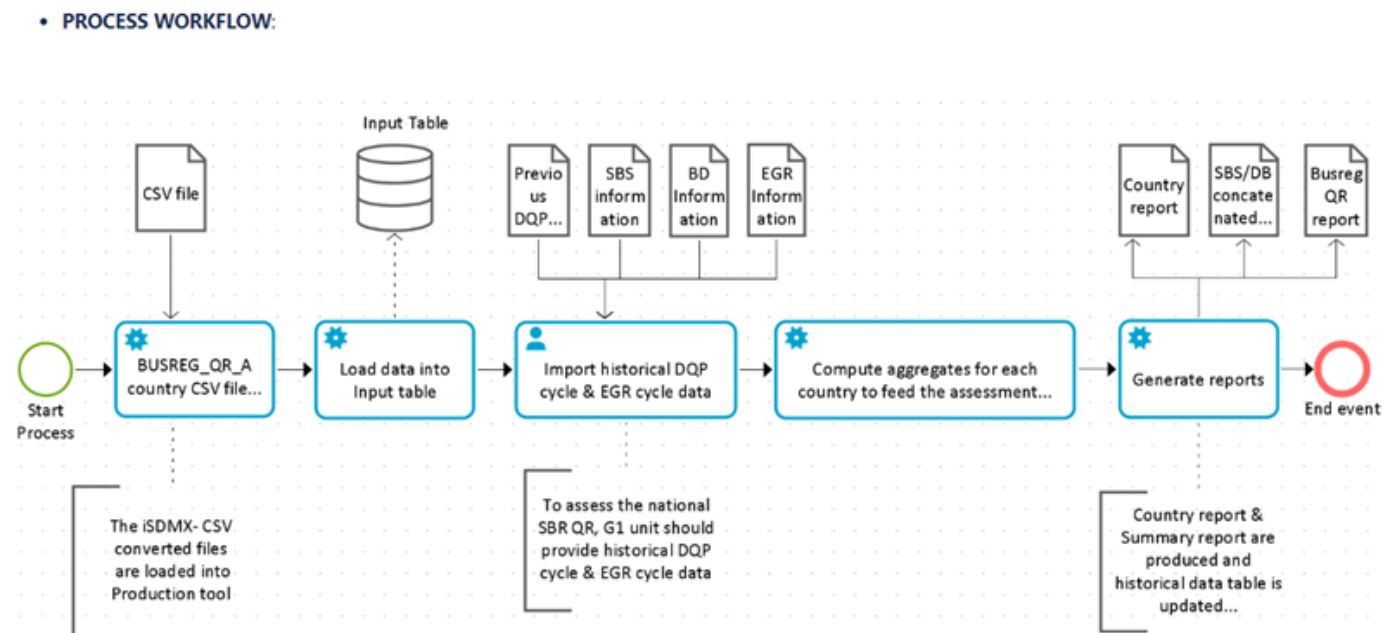
Reporting and monitoring

- Dataset transmissions, NSIs use SDMX format and EDAMIS secure channel, and accompany them by metadata according to SIMS
- Automated validation system
 - dataset structure validation (STRUVAL) and
 - the content validation (CONVAL).
- Metadata transmitted via ESS Metadata Handler



Assessment process workflow – NSBR example

- Eurostat assesses the EBS compliance and quality of European SBRs based on the metadata and datasets received from the NSIs
- Automation of the assessment process for the NSBRs was introduced by Eurostat in 2023
- Validated datasets are loaded in the production system (SAS) that computes the four quality dimensions in an automated way and creates the national assessment reports
- Detailed assessment reports are sent to the national statistical business register coordinators
- The results of the compliance assessment are reported to the statistical business registers (SBR) working group and to the Business statistics directors' group (BSDG) at their annual meetings.
- Concerning the compliance and quality assessment of the data transmitted by the NSIs to the EGR an automation was initiated in 2023 and will need further development.



Quality dimensions

- **4 quality dimensions** considered for the quality and compliance assessment to the EBS regulation for the business and trade statistics domains:
 - *punctuality, completeness, accuracy and reliability, coherence and comparability*
- The classification includes **four classes**:
 - *(i) compliance, (ii) minor non-compliance, (iii) serious non-compliance and (iv) serious and persistent non-compliance*
- **Punctuality** indicator measures the delay between the data delivery date and the target date
- **Completeness** measures, in percentage from 0% to 100%, the availability of each of the mandatory, conditional, and optional variable in the datasets provided by the NSIs, according to the EBS Regulation requirements

Completeness indicator: $C = \sum (\text{availability of variable}) / (\text{Total number of variables})$

Punctuality assessment considering several dataset deliveries (weight in %)

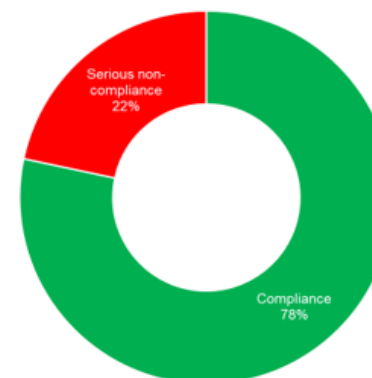


In this example a dataflow includes 6 datasets to be delivered. The settings are as followed:

Dataset	weight	Days of delay	Assessment
Dataset N°1	30%	0	Compliance
Dataset N°2	20%	0	Compliance
Dataset N°3	10%	6	Minor non compliance
Dataset N°4	5%	5	Minor non compliance
Dataset N°5	15%	10	Serious non-compliance
Dataset N°6	20%	0	Compliance

The overall punctuality assessment considers that 60% of the dataflow comply with the punctuality request, 25% show minor non-compliance and 15% serious non-compliance.

Completeness assessment of the NSBR



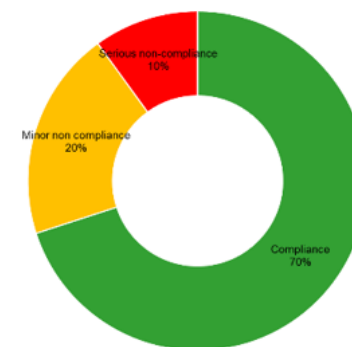
In this example, a NSBR includes 2 types of units, each of them having 3 recorded variables. 78% of the variable are available so comply but 22% are missing which is considered as serious non-compliance.

Unit	Variables	Availability
Legal unit	ID number	100%
	Name	90%
	Date of incorporation	30%
Enterprise	ID number	100%
	Name	90%
	NACE code 4-digits	60%
Indicator	Value	Status
Completeness	78%	Compliance
Missing	22%	Serious non-compliance

Quality dimensions

- **Accuracy and reliability** indicator is measured by a binary variable (Y/N) based on the information provided by the national statistical institutes in the metadata reports under this quality dimension.
 - Improving accuracy and reliability indicator by adding user survey and distribution comparisons
- **Coherence and comparability** measures the difference between the data transmitted by NSIs on NSBRs and other business statistics domains (cross-domain coherence) or between data sent in previous years (coherence over the time).
 - NSBR and SBS: indicator measures the difference between NSBRs and SBS figures in terms of employment
 - NSBR and BD: indicator measures the difference between number of enterprises and number of legal units reported in NSBR and in business demography
 - NSBR and EGR final frame: indicator measures the difference of number of multinational enterprise groups (MNEs) in NSBR and EGR.

Accuracy and reliability assessment



In this example, the Accuracy and reliability considers 3 components as followed.

Accuracy components	Indicator	Assessment	weight
Metadata	Yes	Compliance	70%
EU SBR survey - %good+very good	60%	Minor non compliance	20%
Chi-square test Distribution identical SBR/SBS	N	Serious non-compliance	10%

Note: Depending on dependency hypothesis one may use either

Chi-square test statistic

$$\chi^2 = \sum (O - E)^2 / E$$

Where O = the observed frequency for each category E = the expected frequency for each category or/

McNemar test statistic

$$\chi^2 = (|b-c|-1)^2 / (b+c)$$

, with b = the number of discordant pairs c = the number of concordant pairs

Dissemination of results

- **Quality and compliance assessment results**

- At the conclusion of the assessment, each NSI coordinator receives two detailed assessment reports (NSBR assessment report and a report on the assessment of the datasets transmitted to the EGR)
- Each report includes a set of tables. The first table presents the results and values of the four indicators, and the other tables provide a detailed evaluation of each indicator.

- **Dissemination**

- Eurostat publishes all the validated national metadata reports of the national business registers and of the EuroGroups Register on the Eurostat website: [Methodology - Statistical business registers - Eurostat \(europa.eu\)](#)
- Additionally, Eurostat disseminates the [Statistical business registers quality report](#) publication providing users comprehensive information on the quality of European statistical business registers (SBRs)
- The SBR dedicated section [Quality - Eurostat \(europa.eu\)](#) provides different info on various aspects of BRs



SBR dedicated section on Eurostat website

Statistical business registers - Eurostat (europa.eu)

The screenshot shows the Eurostat website's 'Overview' page for Statistical Business Registers. The header includes the Eurostat logo, a search bar, and navigation links for Home, Data, News, Publications, About us, Contact us, and Help. The breadcrumb trail reads: Home > Data > Statistical themes > Statistical business registers > Overview. The main heading is 'STATISTICAL BUSINESS REGISTERS Overview'. A left-hand navigation menu lists: Overview (selected), Database, Visualisations, Publications, Information on data, Methodology, Quality, and Legislation. A large image of hands typing on a laptop is featured on the right.

Which information can I find here?

This section provides information on European statistical business registers, including national statistical business registers (NSBRs) and the EuroGroups register (EGR). These registers are part of the European business statistics.

European statistical business registers play a central role in the production of business statistics. They provide populations of units and variables to coordinate statistical production. European registers exchange data on multinational enterprise groups to create the EuroGroups register and to ensure the consistent recording of the multinational (MNE) group's populations across EU.

Start discovering this topic and consult our [information on data](#) page.

In focus



Read our first findings

This article presents the



Experimental statistics

Find out how why our



EGR and industry concentration

This article presents the

The screenshot shows the Eurostat website's 'Methodology' page for Statistical Business Registers. The header is identical to the Overview page. The breadcrumb trail reads: Home > Data > Statistical themes > Statistical business registers > Methodology. The main heading is 'STATISTICAL BUSINESS REGISTERS Methodology'. A left-hand navigation menu lists: Overview, Database, Visualisations, Publications, Information on data, Methodology (selected), Quality, and Legislation. A search bar contains the text 'Consult our methodological publications'. Below this, there are sections for 'Classifications' (with a link to 'Statistical classification of economic activities (NACE)') and 'Metadata' (with a link to 'multinational enterprise groups in EuroGroups Register - experimental statistics').

EU and EU countries

European Union		
Belgium	Bulgaria	Czechia
Denmark	Germany	Estonia
Ireland	Greece	Spain
France	Croatia	Italy
Cyprus	Latvia	Lithuania
Luxembourg	Hungary	Malta
Netherlands	Austria	Poland
Portugal	Romania	Slovenia
Slovakia	Finland	Sweden

The image shows the cover of a report titled 'Quality report on European statistical business registers 2024 edition'. The cover is primarily blue with a white geometric design element. The Eurostat logo is at the top left. The background of the right side of the cover features a photograph of hands pointing at a document with charts and graphs. At the bottom left, the text 'STATISTICAL REPORTS' is visible.



EUROPEAN CONFERENCE ON
QUALITY IN OFFICIAL STATISTICS
2024 ESTORIL - PORTUGAL



Thank you

Contact: ESTAT-BUSINESS-REGISTERS@ec.europa.eu



EUROPEAN CONFERENCE ON QUALITY IN OFFICIAL STATISTICS 2024 ESTORIL - PORTUGAL

