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Geospatial World Forum 2022

Workshop

Geo-enabled statistics: Implementation of quality assurance frameworks

Geostat 4 WP3

Quality of geospatial information management for statistics

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12 May 2022

WP3 Objective and Outputs

Objective

Develop quality assessment measures for geospatial information management in the Member States and for geospatial statistics and propose ways to integrate these measures into the existing ESS quality framework.

Outputs

1. Proposal for a catalogue of methods related to geospatial information, which could be included in the Quality Assurance Framework (QAF) of the European Statistical System (ESS)
Name: Proposal for Geospatial Enhancements of the ESS Quality Assurance Framework (here)

2. Enhancing quality reporting by including more geospatial information – qualitative information + a set of quality indicators
Name: Recommendations for Geospatial Quality Reporting (here)

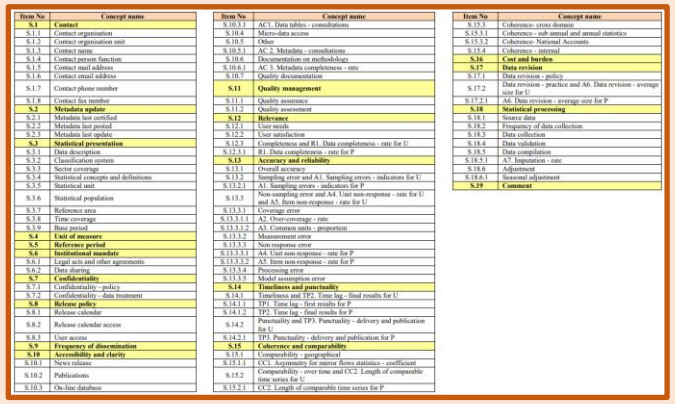
3. A quality checklist related to geospatial processing as part of the statistical production process – a prototype of the checklist
Name: GEOCHECK – A Quality Checklist for geospatial processing related to a specific statistical product (here)

The **integration of statistical and geospatial information** can contribute to all dimensions of **input and output data quality** and must consider all phases within the statistical production process as all related quality assurance frameworks and reports should formally address geospatial aspects.

ESS QAF

CoP

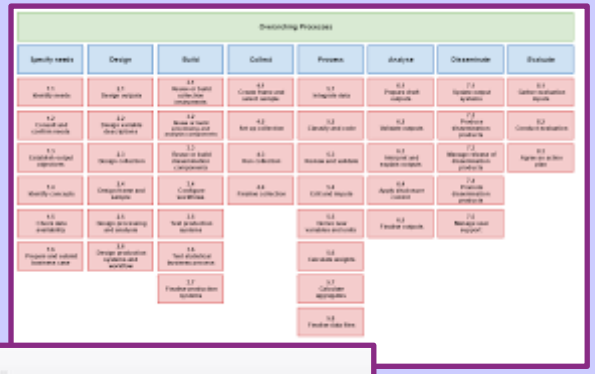
ESS handbook for quality and metadata reports (2020)

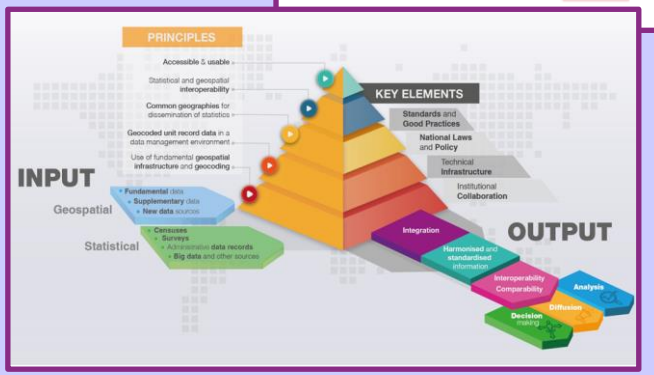


Single Integrated Metadata Structure (SIMS 2.0)

ESS Quality Framework

GSBPM





GSGF

ISO

Output 1 – main results and findings

Proposal for Geospatial Enhancements of the ESS Quality Assurance Framework (here)

14 changes to the QAF regarding geospatial aspects – 8 textual enhancements and 6 new methods -, presented to and commented on by the Working Group on Quality (WGQ) of the ESS

Principle 1bis (Coordination and Cooperation) Indicator 1bis.3	**Principle 2** (Mandate for Data Collection) Indicator 2.2	**Principle 4** (Commitment of Quality) Indicator 4.4	**Principle 5** (Statistical Confidentiality and Data Protection) Indicator 5.5	**Principle 7** (Sound Methodology) Indicator 7.3

Principle 8 (Appropriate Statistical Procedures) Indicator 8.3	**Principle 11** (Relevance) Indicator 11.3	**Principle 12** (Accuracy and Reliability) Indicator 12.1	**Principle 14** (Coherence and Comparability) Indicators 14.1 & 14.2	**Principle 15** (Accessibility and Clarity) Indicators 15.2 & 15.4

Main topics: institutional agreements, geospatial data availability, assessment and monitoring of geospatial output's quality, treatment of identifiers, validity of geospatial data, guidelines consistency, territorial classifications, geospatial statistics as services, tailor-made cartographic outputs

Output 2 – main results and findings

Recommendations for Geospatial Quality Reporting (here)

- **Description of the ESS quality framework:**

  Quality Assurance:
  - European Statistics Code of Practice (CoP)
  - ESS Quality Assurance Framework (QAF) - aligned with general quality management principles from ISO 9001:2015

  Standard for quality reporting: Single Integrated Metadata Structure (SIMS) – user-oriented quality report & producer-oriented quality report

- **List of geospatial quality indicators:**
  - 20 indicators (usage, definition and computation – quantitative and qualitative)

  - Relation of the quality indicators to GSGF, GSBPM and ISO 19157:
    - 3 tables showing which elements of the three frameworks the indicators should be assigned to

  - Recommendations for quality reporting on geospatial aspects:
    - Identification and enrichment of the concepts and sub-concepts of SIMS relevant for geospatial processing and outputs > **SIMSgeo**

Output 2 – main results and findings

Recommendations for Geospatial Quality Reporting (here)

Key ideas

- Within the ESS quality framework , there is a gap in quality criteria concerning geospatial data and processes:
    - **GSGF** as a common high-level framework to assign the quality indicators to its principles, but also as a backbone when it comes to cross-references to other standards
- Guarantee comparability between assessment methods and criteria, through specific **quality standards and guidelines** while keeping in mind the differences between data ecosystems and actors
- The recommendations for the geospatial contents can be used to highlight the growing importance of **geospatial data and outputs** by providing metadata in a quality report
- Take advantage of the modular structure of SIMS to produce tailor-made geospatial reports for internal and external purposes

Output 3 – main results and findings

GEOCHECK – A Quality Checklist for geospatial processing related to a specific statistical product (here)

- GEOCHECK is a generic checklist for a systematic quality assessment of the geospatial processing related to a specific statistical product (where geospatial aspects are either the main topic or part of it)
- Self-assessment and guidance tool considering improvement measures, but also to evaluate the geospatial maturity level of the statistical product
- It should support NSOs and their teams together with geospatial experts in evaluating the quality of the geospatial-related activities, promoting a multi-disciplinary quality assessment approach
- It provides a means for simple comparisons of the level of quality over time and across domains (assuming data are centrally stored in the statistical organisation)
- Structured in a process-oriented way and consists of 6 parts, following the some of the GSBPM's phases: Design, Collect, Process, Analyse, Disseminate and Evaluate

Output 3 – main results and findings

GEOCHECK – A Quality Checklist for geospatial processing related to a specific statistical product (here)

Main topics:

- Granularity level of the geospatial input data (coordinates, addresses, buildings, area codes, etc.)
- National, regional and/or logical territorial division
- Types of and accessibility to geospatial data sources
- Standardised metadata/documentation for input geospatial data and statistical-geospatial output
- Geo-sampling practices
- Statistical and geospatial data matching methods and quality measures
- Point-based location (geocoding) practices
- Spatial-based criteria for data aggregation
- Spatial analyses maturity level
- Disclosure control methods
- Statistical-geospatial output visualisation
- Production of a geospatial quality report, quality indicators and feedback practices

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