Workshop on Implementing Standards for Statistical Modernisation 2016

Geneva, 21-23 September 2016

Complementing the GSBPM with Quality Indicators for admin data and mixed sources

Joint work of Modernisation Committee on Standards and Modernisation Committee on Production and Methods

Members

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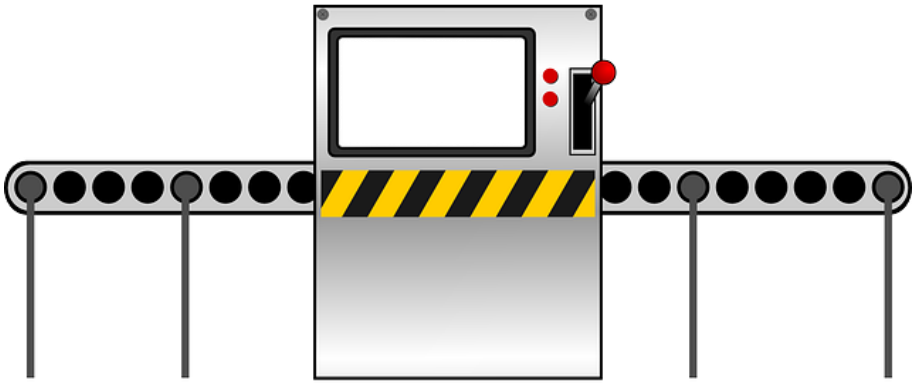
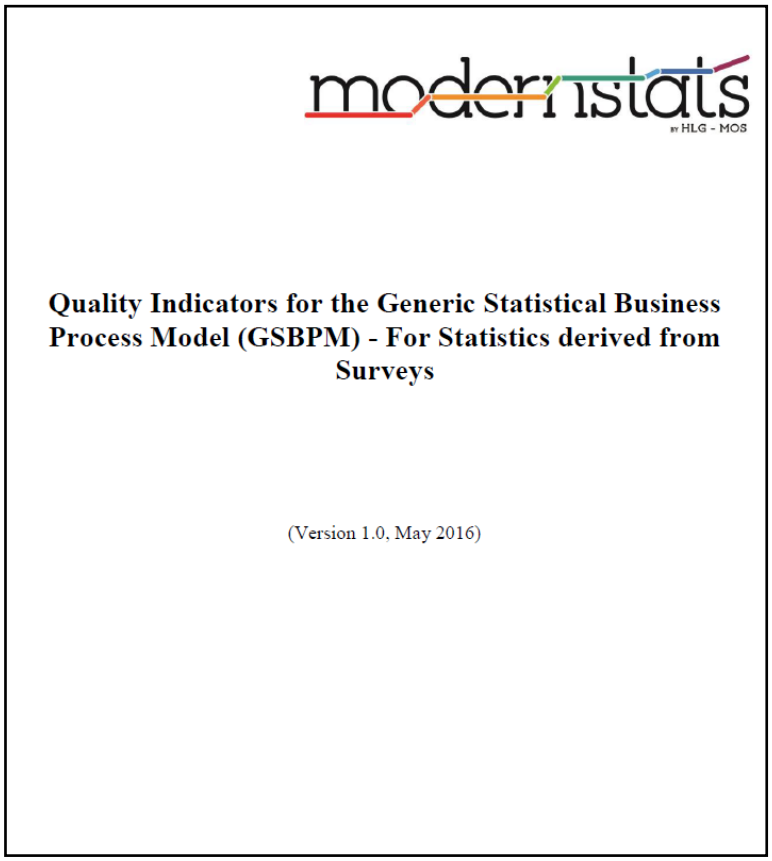


Presentation

- ✓ Developing QIs for GSBPM phases and sub-processes
- ✓ 2014 – 2015: Mapping QIs to the GSBPM for survey-derived statistics
- ✓ 2016-2017: Extending the mapping of QIs to admin data and mixed sources

Survey-derived statistics

Quality indicators were developed for the Generic Statistical Business Process Model (GSBPM) with the aim of expanding the quality management layer for the GSBPM

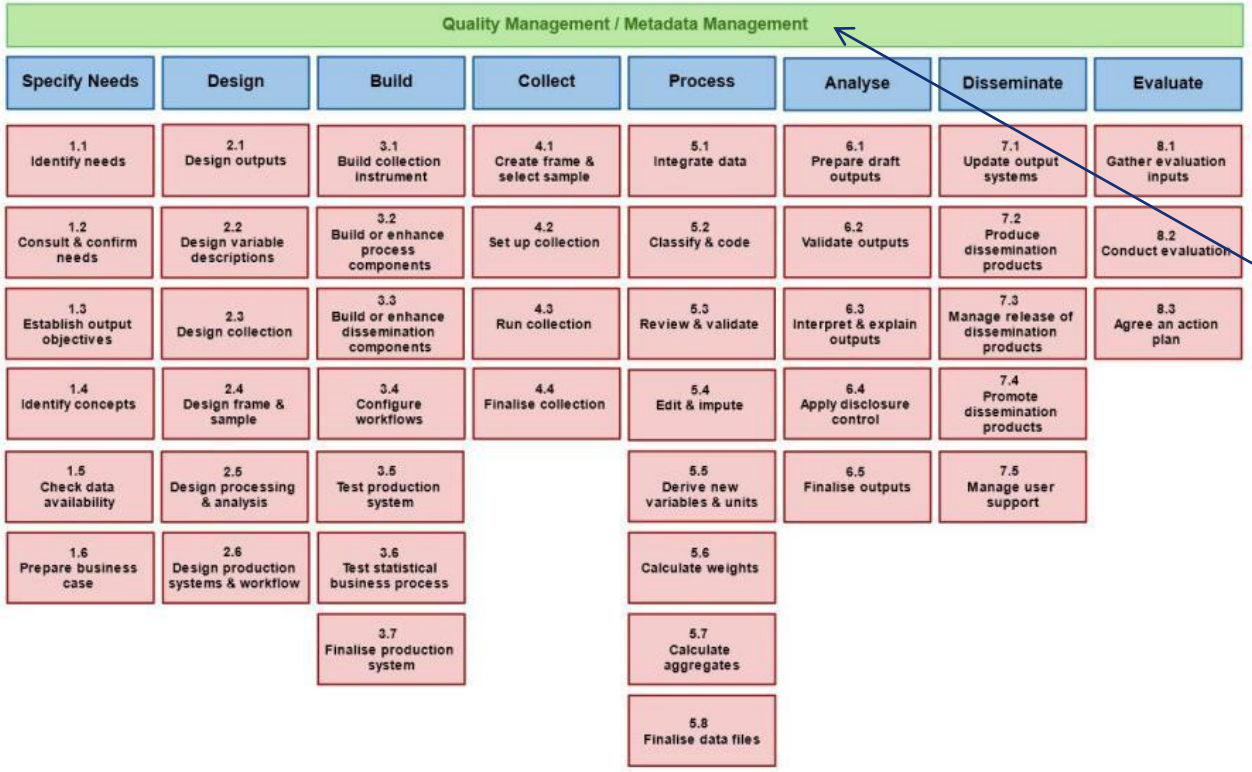


- Version 1.0 of Quality Indicators for the GSBPM was released May 2016
- http://www1.unece.org/stat/platform/pages/viewpage.action?pageId=123142969
- Task team: Statistics Canada, Istat, Turkstat and Eurostat
- Potential users and stakeholders were consulted on the GSBPM QIs in 2015 via

i) a group work session during the Standards-Based Modernisation Workshop,

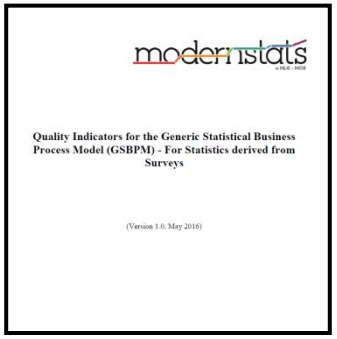
ii) an open consultation on the UNECE website.

Survey-derived statistics



Quality management overarching process

Quality indicators were developed for each phase (1 to 8) and sub-processes of GSBPM



Developing QIs for Survey-derived statistics

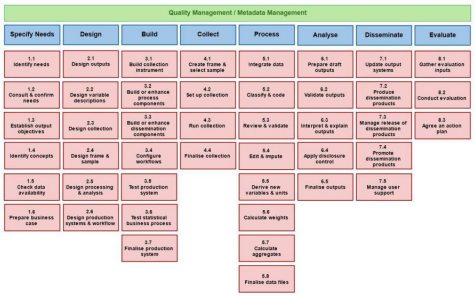
- ✓ Generic indicators
- ✓ Coherence with existing frameworks:

  UN National Quality Assurance Framework (NQAF), EU CoP, ESS Q&P Indicators, National quality assurance frameworks (e.g. Statistics Canada Quality Guidelines …)
- ✓ Quantitative indicators whenever possible
- ✓ Qualitative indicators

  yes/no

  low/medium/large

Personalisation of the indicators left to NSIs, e.g. setting targets or levels



Admin data and mixed sources

Extending QIs for GSBPM to the use of admin and mixed sources was one of the priorities for the WG in 2016-2017 as emerged from the consultation process in 2015

Key features

- ✓ Build on existing work and frameworks
- ✓ Coordination with ongoing activities
- ✓ Follow similar guiding principles as for developing QIs for survey-derived statistics

Work is still in progress

Literature review

- Many experiences from NSIs
  - e.g. Stats Netherlands Checklist, Stats Canada Guidelines, Istat Guidelines and assessment questionnaire, Statistics New Zealand's Guide to reporting on administrative data quality, …
- International/ European experiences
  - MIAD: Methodologies for an Integrated Use of Administrative Data in the Statistical Process (2013 – 2014)
  - EU FP7 Blue-Ets: BLUE-Enterprise and Trade Statistics (2010-13)
  - Essnet Admin Data: Use of Administrative and Accounts Data for Business Statistics (2009-2013)
- On-going activity at International/ European level
  - 2016 HLG-MOS project on Data Integration
  - Essnet Quality of multisource statistics (2016-2020)

Use of admin data

Administrative Body

NSI

Statistics from admin sources

Administrative process not under the NSI control

- strategy to increase **USABILITY** for statistical purposes

Data Acquisition

- relationships with data owners, protocols, ….

Input Quality

- analyis of data source; metadata availability; …

Different usages

- admin data based statistics, mixed sources based statistics, indirect usage

Input, throughput, output quality

- more focused input quality indicators
- errors generated during the statistical process
- quality of the estimates

Usage Mapping

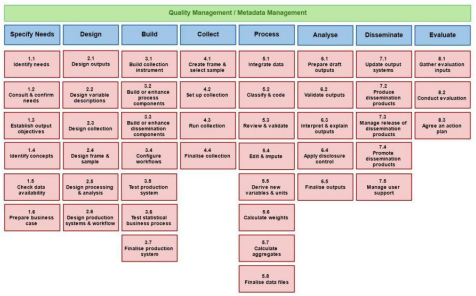
The MIAD project identified the following usages of admin data sources for statistical purposes

DIRECT

1. Direct tabulation (for full coverage admin sources)
2. Substitution and Supplementation for Direct Collection

INDIRECT

3. Creation and maintenance of survey frames
4. Construction of sampling designs
5. Editing and imputation
6. Indirect estimation and weighting
7. Data validation/confrontation



Developing QIs for admin data and mixed sources

- ✓ Review of the GSBPM descriptions for phases and sub-processes to verify that the use of admin data and mixed sources is duly accounted for
- ✓ Screening of QIs already mapped to the GSBPM for survey-derived statistics that are also meaningful for admin data and mixed sources
- ✓ Developing additional QIs for admin data and mixed sources taking into account the different usages

Some examples are presented in next slides

QIs for Admin data and mixed sources

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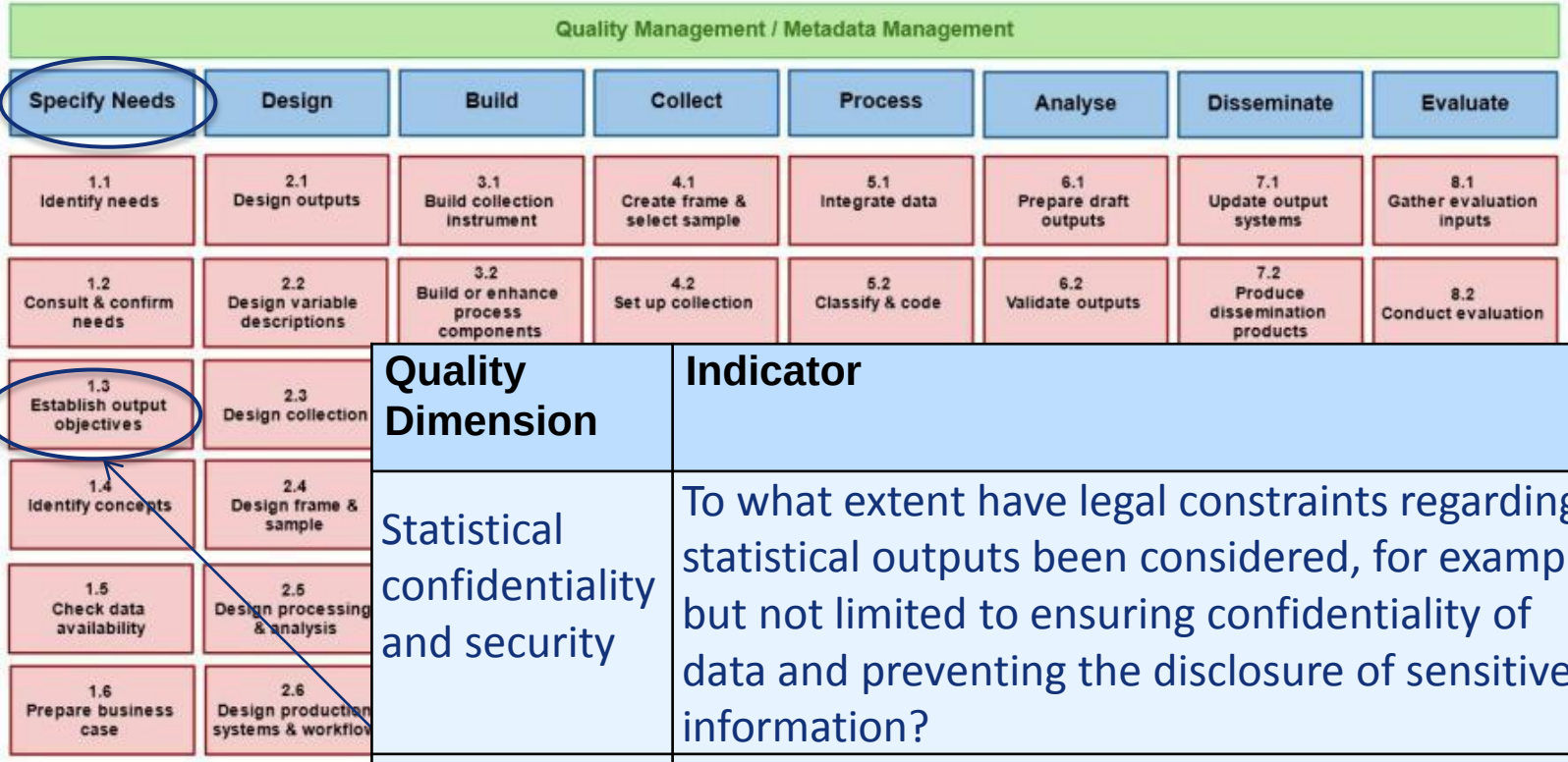
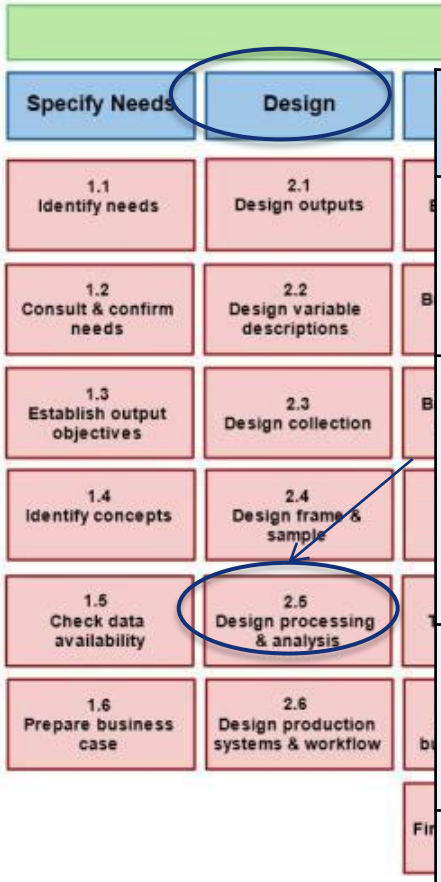


Quality Dimension	Indicator	Notes
Statistical confidentiality and security	To what extent have legal constraints regarding statistical outputs been considered, for example but not limited to ensuring confidentiality of data and preventing the disclosure of sensitive information?	
Relevance	To what extent have all statistical needs been addressed by the proposed outputs?	
Accuracy and reliability	To what extent are the proposed outputs and their quality measures suitable to user needs?	

QIs for Admin data and mixed sources 2



Quality Dimension	Indicator	Notes
Cost effectiveness	To what extent is the process planning to re-use systems for coding, E&I, data integration, weighting, estimation	
Soundness of implementation	To what extent is the business process using standard or well-known methods for subsequent phases (e.g. coding, E&I, data integration, weighting, estimation, revision,…), in a transparent way?	See also phase 5 and 6 yes/partly/no indicator Corresponds to the appropriate statistical procedures principle in the ES Code of Practice
Soundness of implementation	When have the methodologies for subsequent phases (e.g. coding, E&I, data integration, weighting, estimation,…) last been assessed?	See also phase 5 and 6 for outputs produced on a regular basis
Soundness of implementation	Specifications for coding, editing, imputing, estimation, integrating, validating and finalizing datasets take into consideration the type of data being processes, i.e. respondent data or ADS or a combination.	Take into consideration of ADS in the process, including specification of routines for coding, editing, imputing, estimating, integrating, validating and finalising data sets of ADS data.

QIs for Admin data and mixed sources

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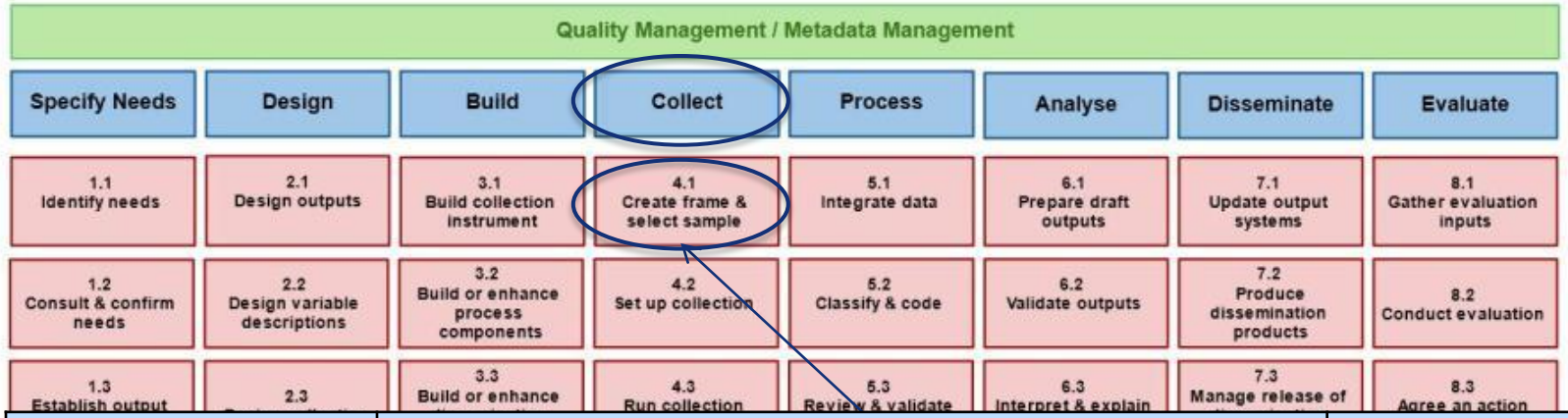
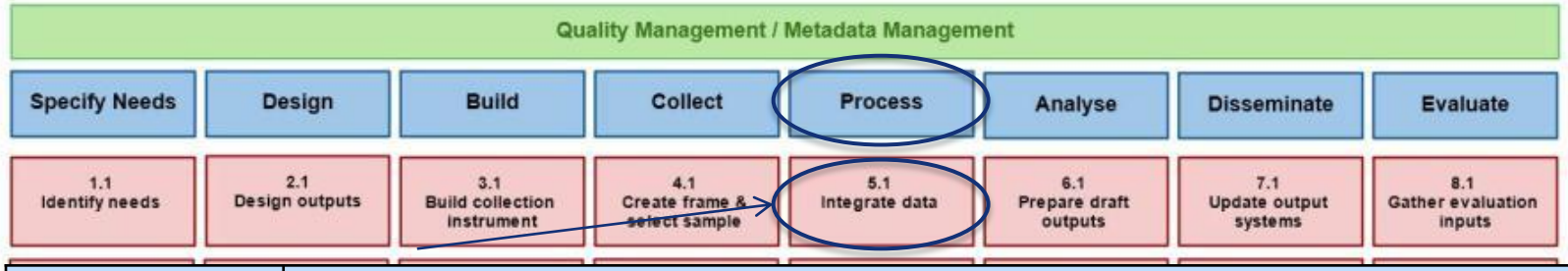


Quality Dimension	Indicator	Notes
Accuracy and reliability	Extent to which admin data supplement direct collection (e.g. % or records from admin sources; % of variables from admin sources)	
Accuracy and reliability	Extent to which administrative data sources are used to create/ maintain or assess the quality of the frame	
Accuracy and reliability	Extent to which administrative data sources are used as auxiliary variables in the construction of the sampling designs	Also in the design phase

QIs for Admin data and mixed sources



Quality Dimension	Indicator	Notes
Accuracy and reliability	If record linkage is required, percentage of records that were successfully matched Linkage rate - the proportion of objects in each dataset which can be connected with units on the other datasets	
Accuracy and reliability	Reliability of the linkage results False positive and false negative rates Precision and recall An indicator of the effectiveness of the cut off weight for determining the threshold of passes in probabilistic matching Proportion of duplicated records in linked data	

Concluding remarks

- The QI study requires a good process knowledge of GSBPM
- Each of the sub-processes needs to be reviewed carefully as some of the sub-processes have natural links with each other
- In the forthcoming reviews of the GSBPM, we need to think about the link between GSBPM, GAMSO and also the quality indicators
- As this study is important for measuring the quality of the processes and products and will be used for a resource document, the feedbacks from international community is welcome
- Next steps : QI-GSBPM version 2.0 to be approved by MC Standards and presented at next Workshop (2017)