National Quality Assurance Frameworks

Mary Jane Holupka
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Overview of:

• Quality Assurance Frameworks

• Work of the UN Expert Group on NQAFs
Quality management, procedures

• Some form of quality management needs to be in place in all organizations for them to effectively ensure quality in their - processes - outputs - institutional aspects.

• In the context of a statistical office, systematic quality management typically takes the form of a quality assurance framework.
Quality assurance frameworks

Basic components:

- Quality **concepts**
- Quality **assurance** procedures
- Quality **assessment** procedures
- Quality and **performance** management and **improvement** procedures
Scope of the frameworks:

• Focus on management of core statistical functions

• May refer to the quality of the data outputs, data processes, data inputs and the organization responsible for them

• Refer to the complete statistical programme of an NSO, not just an individual survey or group of surveys
Quality assurance frameworks

**Objective** - have in place an overarching framework or structure that will:

- provide context for quality concerns, activities and initiatives
- explain the relationships between the various quality procedures and tools

- A Quality Assurance Framework can be seen as a “toolkit” or an “umbrella”, and a single place to record, reference and organize the full range of quality concepts, policies, tools and practices.
Quality assurance frameworks – benefits of having one in place

a) Provide a systematic mechanism for ongoing identification and resolution of quality problems, and stimulate and maximize interaction between staff across the NSO

b) Give greater transparency to processes by which quality is assured, and reinforce the NSO’s image as a credible provider of good quality statistics

c) Provide a basis for creating and maintaining quality culture within the agency
Quality assurance frameworks – benefits cont’d

d) Can guide priority-setting and resource allocation

e) Its reference material can be useful for training staff

f) Serve as a mechanism for exchanging ideas on quality assurance with other producers of statistics
Quality assurance frameworks

And keep in mind that they are forward-looking:

– proposing current and future organization of quality assurance

– not simply an assessment of quality.
Types of Quality Frameworks - according to who developed them and who are their users:

1. Developed by an NSO for the NSO

2. Developed by an international organization for application/completion by NSOs – e.g. the IMF DQAF, the ESS CoP (this type imposes a reporting burden on NSOs);
   

3. Developed by an international organization for the international organization – an example is the OECD quality framework;
European Statistical System Code of Practice
(and Quality Assurance Framework)

Statistical Processes
European and other international standards, guidelines and good practices are fully observed in the processes used by the statistical authorities to organise, collect, process and disseminate European Statistics. The credibility of the statistics is enhanced by a reputation for good management and efficiency. The relevant aspects are sound methodology, appropriate statistical procedures, non-excessive burden on respondents and cost effectiveness.

Principle 7
SOUND METHODOLOGY

Sound methodology underpins quality statistics. This requires adequate tools, procedures and expertise.

INDICATORS
7.1: The overall methodological framework used for European Statistics follows European and other international standards, guidelines, and good practices.
7.2: Procedures are in place to ensure that standard concepts, definitions and classifications are consistently applied throughout the statistical authority.
7.3: The business register and the frame for population surveys are regularly evaluated and adjusted if necessary in order to ensure high quality.
7.4: Detailed concordance exists between national classifications systems and the corresponding European systems.
7.5: Graduates in the relevant academic disciplines are recruited.
7.6: Statistical authorities implement a policy of continuous vocational training for their staff.
7.7: Co-operation with the scientific community is organised to improve methodology, the effectiveness of the methods implemented and to promote better tools when feasible.

Heading 2 of 3 (others are institutional environment and statistical outputs)

Principle (7 of 15)

Indicators (82 in total)

The QAF, to assist in implementing the CoP includes Methods and reference documentation for indicators 4 and 7-15.
European Statistical System Code of Practice (and Quality Assurance Framework)

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Principle 7: Sound Methodology. Sound Methodology underpins quality statistics. This requires adequate tools, procedures and expertise.

Indicator 7.1: The overall methodological framework used for European Statistics follows European and other international standards, guidelines, and good practices.

Methods at institutional level

1. The methodological framework and the procedures for implementing statistical operations are integrated into a standard methodological document and periodically reviewed.
2. Divergence from existing European and international methodological recommendations is explained and justified.

Reference Documentation

Classifications and methodologies:
http://ec.europa.eu/eurostat/nomencl/index.cfm?TargetUrl=DSP_PUB_WELC
EU Legislation:

Indicator 7.2: Procedures are in place to ensure that standard concepts, definitions and classifications are consistently applied throughout the statistical authority.

Methods at institutional level

1. Concepts, definitions, and classifications are defined by the Statistical Authority, are applied in accordance with European or national legislation and are documented.
For each dimension, the DQAF identifies 3-5 elements of good practice, and for each element, several relevant indicators.
### Quality Dimensions

<table>
<thead>
<tr>
<th>3.2 Assessment of source data</th>
<th>3.3 Statistical techniques</th>
<th>3.4 Assessment and validation of intermediate data and statistical outputs</th>
<th>3.5 Revision studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Source data are regularly assessed.</td>
<td>Statistical techniques employed conform to sound statistical procedures.</td>
<td>Intermediate results and statistical outputs are regularly assessed and validated.</td>
<td>Revisions, as a gauge of reliability, are tracked and mined for the information they may provide.</td>
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</table>

### Elements

<table>
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<th>4. Serviceability</th>
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<td>Statistics, with adequate periodicity and timeliness, are consistent and follow a predictable revisions policy.</td>
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<table>
<thead>
<tr>
<th>4.1 Periodicity and timeliness</th>
<th>4.2 Consistency</th>
<th>4.3 Revision policy and practice</th>
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</thead>
<tbody>
<tr>
<td>Periodicity and timeliness follow internationally accepted dissemination standards.</td>
<td>Statistics are consistent within the dataset, over time, and with major datasets.</td>
<td>Data revisions follow a regular and publicized procedure.</td>
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### Indicators

<table>
<thead>
<tr>
<th>3.2.1 Source data</th>
<th>3.3.1 Data compilation</th>
<th>3.3.2 Other statistical procedures</th>
<th>3.4.1 Intermediate results</th>
<th>3.4.2 Statistical discrepancies in intermediate data are assessed and investigated.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Source data—including censuses, sample surveys, and administrative records—are routinely assessed, e.g., for coverage, sample error, response error, and non-sampling error; the results of the assessment are monitored and made available to guide statistical processes.</td>
<td>Data compilation employs sound statistical techniques to deal with data sources.</td>
<td>Other statistical procedures (e.g., data adjustments and transformations, and statistical analysis) employ sound statistical techniques.</td>
<td>Intermediate results are validated against other information where applicable.</td>
<td>Statistical discrepancies in intermediate data are assessed and investigated.</td>
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</table>

4.1.1 Periodicity follows dissemination standards.  
4.1.2 Timeliness follows dissemination standards.  
4.2.1 Statistics are consistent within the dataset.  
4.2.2 Statistics are consistent or reconcilable over a reasonable period of time.  
4.2.3 Statistics are consistent or reconcilable with those obtained through other data sources and/or statistical frameworks.  
4.3.1 Revisions follow a regular and transparent schedule.  
4.3.2 Preliminary and/or revised data are clearly identified.  
4.3.3 Studies and analyses of revisions are made public (see also 3.5.1).  

5.1 Data accessibility—Statistics are presented in a clear and understandable manner, forms of dissemination are adequate, and statistics are made available.  
5.1.1 Statistics are presented in a way that facilitates proper interpretation and meaningful comparisons (layout and clarity of text, tables, and charts).
Bok 2. Content of the Framework

The elements and indicators within their respective dimensions are described below.

9. Prerequisites of quality: Although not itself a dimension of quality, this group of “pointers to quality” includes elements and indicators that have an overarching role as prerequisites, or institutional preconditions, for quality of statistics. Note that the focus is on the agency, such as a national statistical office, central bank, or a ministry/department. These prerequisites cover the following elements:
   0.1 legal and institutional environment,
   0.2 resources available for the statistical program,
   0.3 relevance, and
   0.4 other quality management.

1. Assurance of integrity: This dimension relates to the adherence to the principles of objectivity in the collection, compilation, and dissemination of statistics. The dimension encompasses institutional arrangements that ensure professionalism in statistical policies and practices, transparency, and ethical standards. The three elements for this dimension of quality are the following:
   1.1 professionalism,
   1.2 transparency, and
   1.3 ethical standards.

2. Methodological soundness: This dimension covers the idea that the methodological basis for the production of statistics should be sound and that this can be achieved by following internationally accepted standards, guidelines, or good practices. This dimension is necessarily dataset-specific, reflecting different methodologies for different datasets. This dimension has four elements, namely:
   2.1 concepts and definitions,
   2.2 scope,
   2.3 classification/sectorization, and
   2.4 basis for recording.

3. Accuracy and reliability: This dimension covers the idea that statistical outputs sufficiently portray the reality of the economy. This dimension is also data specific, reflecting the sources used and their processing. The five elements of this dimension cover the following:
   3.1 source data,
   3.2 assessment of source data,
   3.3 statistical techniques,
   3.4 assessment and validation of intermediate data and statistical outputs, and
   3.5 revision studies.

4. Serviceability: This dimension relates to the need that statistics are disseminated in an appropriate periodicity in a timely fashion, are consistent internally and with other major datasets, and follow a regular revision policy. The three elements for this dimension are as follows:
   4.1 periodicity and timeliness,
   4.2 consistency, and
   4.3 revision policy and practice.

5. Accessibility: This dimension relates to the need for data and metadata to be presented in a clear and understandable manner on an easily available and impartial basis, that metadata are up-to-date and pertinent, and that a prompt and knowledgeable support service is available. This dimension has three elements, namely:
   5.1 data accessibility,
   5.2 metadata accessibility, and
   5.3 assistance to users.
Summary: A quality assurance framework provides:

A system of coordinated methods and tools to ensure a sustainable level of quality of processes and outputs, where:

- product/output quality requirements are explicitly documented
- processes are defined and made known to all staff
- the correct implementation of the processes is monitored
- users are informed about the quality of the products and possible limitations
- procedure to guarantee that the necessary improvement measures are planned, implemented and evaluated
- should be built into the organizational structure.

- will contribute to increased awareness of quality concepts and promote best practices.

- can provide a mechanism for reengineering and quality improvements.
Work done by the United Nations
Expert Group on National Quality
Assurance Frameworks (NQAF)
Expert Group BACKGROUND

• UN StatComm 2010 – QUALITY - for the first time - was the programme review

• Global consultation on Canada’s draft report; comments from 25 countries & organizations

• Final report presented to the 2010 StatComm; StatComm supported the establishment of an expert group

• Report concludes there can be no single “generic” national quality assurance framework; instead a template for a generic NQAF was proposed (recognizing that a one-size-fits-all framework was not feasible)
Expert Group BACKGROUND (continued)

• Expert Group begins by reviewing the report’s 3 proposals for a generic template (DQAF, StatCan, CoP)

• Agreed to develop a 4th variation of the report’s proposed templates

• EG’s NQAF template basically incorporates all of the elements of the DQAF, the CoP and Statistics Canada’s framework

• EG was very happy not to have to reinvent the wheel – (and you should be too, if you are just beginning – there’s no need to start from scratch … 😊).
The Expert Group’s first set of outputs

1. NQAF template
2. A “Guideline document” (90+ pages) to accompany the template
3. Mapping of the NQAF to other frameworks (e.g. CoP, DQAF, StatCan, Latin America and the Caribbean Code of Good Statistical Practice)
4. Glossary
5. Online inventory of national and int’l quality-related references

What could/should be included in a (national) quality assurance framework?

1. Quality context
   1a. Circumstances and key issues driving the need for quality management
   1b. Benefits and challenges
   1c. Relationship to other statistical agency policies, strategies and frameworks and evolution over time

2. Quality concepts and frameworks
   2a. Concepts and terminology
   2b. Mapping to existing frameworks

3. Quality assurance guidelines
   3a. Managing the statistical system
       [NQAF 1] Coordinating national statistical system
       [NQAF 2] Managing relationships with data users and data providers
       [NQAF 3] Managing statistical standards
   3b. Managing the institutional environment
       [NQAF 4] Assuring professional independence
       [NQAF 5] Assuring impartiality and objectivity
       [NQAF 6] Assuring transparency
       [NQAF 7] Assuring statistical confidentiality and security
       [NQAF 8] Assuring the quality commitment
       [NQAF 9] Assuring adequacy of resources
   3c. Managing statistical processes
       [NQAF 10] Assuring methodological soundness
       [NQAF 11] Assuring cost-effectiveness
       [NQAF 12] Assuring soundness of implementation
       [NQAF 13] Managing the respondent burden
   3d. Managing statistical outputs
       [NQAF 14] Assuring relevance
       [NQAF 15] Assuring accuracy and reliability
       [NQAF 16] Assuring timeliness and punctuality
       [NQAF 17] Assuring accessibility and clarity
       [NQAF 18] Assuring coherence and comparability
       [NQAF 19] Managing metadata

4. Quality assessment and reporting
   4a. Measuring product and process quality - use of quality indicators, quality targets and process variables and descriptions
   4b. Communicating about quality – quality reports
   4c. Obtaining feedback from users
   4d. Conducting assessments; labelling and certification
   4e. Assuring continuous quality improvement

5. Quality and other management frameworks
   5a. Performance management
   5b. Resource management
   5c. Ethical standards
   5d. Continuous improvement
   5e. Governance
### Correspondence between the Generic National Quality Assurance Framework Template and the CoP, DQAF, LAC proposal and StatCan

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<td><strong>3a. Improving the statistical system</strong></td>
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<td>NQAF2. Managing relationships with data users and data providers</td>
<td>CoP. 2.3</td>
<td>DQAF. 5.3.1</td>
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### Glossary

(Compiled by the Expert Group on National Quality Assurance Frameworks)

<table>
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<tr>
<th>Term</th>
<th>Definition</th>
<th>Context</th>
<th>Source</th>
<th>Hyperlinks</th>
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<td>Accessibility</td>
<td>The ease and conditions under which statistical information can be obtained.</td>
<td>Accessibility refers to the availability of statistical information to the user. It includes the ease with which the existence of information can be ascertained, as well as the suitability of the form or medium through which the information can be accessed. The cost of the information may also be an aspect of accessibility for some users. Accessibility refers to the physical conditions in which users can obtain data: where to go, how to order, delivery time, clear pricing policy, convenient marketing conditions (copyright, etc.), availability of micro or macro data, various formats (paper, files, CD-ROM, Internet), etc.</td>
<td>SDMX (2009)</td>
<td><a href="http://www.sdmx.org/">http://www.sdmx.org/</a></td>
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<tr>
<td>Accuracy</td>
<td>Closeness of computations or estimates to the exact or true values that the statistics were intended measure.</td>
<td>The accuracy of statistical information is the degree to which the information correctly describes the phenomena. It is usually characterized in terms of error in statistical estimates and is often decomposed into bias (systematic error) and variance (random error) components. Accuracy can contain either measures of accuracy (numerical results of the methods for assessing the accuracy of data) or qualitative assessment indicators. It may also be described in terms of the major sources of error that potentially cause inaccuracy (e.g., coverage, sampling, non-response, response error). Accuracy is associated with the &quot;reliability&quot; of the data, which is defined as the closeness of the initial estimated value to the subsequent estimated value. This concept can be broken down into: Accuracy - overall (summary assessment), Accuracy - non-sampling error; Accuracy - sampling error.</td>
<td>SDMX (2009)</td>
<td><a href="http://www.sdmx.org/">http://www.sdmx.org/</a></td>
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</table>
National Quality Assurance Frameworks

Search Data Quality References by Country or Organization...

New Zealand

- Principles and Protocols for Producers of Tier 1 Statistics (2007)
- Respondent Load Strategy
- Website of Statistics New Zealand

Norway

- Systematic quality work in Statistics Norway
- Website of Statistics Norway

Organisation for Economic Co-operation and Development (OECD)

- Generic Statistical Business Process Model, Version 4.0 (UNECE, OECD, Eurostat)
- Quality Framework and guidelines for OECD Statistical Activities, Version 2003/1
- Short-Term Economic Statistics (STES) Timeliness Framework
NATINALLY AND INTERNATIONALLY DEVELOPED DATA QUALITY REFERENCES

Please contact us to provide updates and revisions to the information shown below or to suggest new data quality references for inclusion for your country or organization.

African Union
- African Charter on Statistics

Australia
- Australian Bureau of Statistics Statistical Quality Management
- Data Quality Framework, May 2009
- Data Quality Online
- Data Quality Online - Data Statement Tool
- Data Quality Online - Glossary of Terms
- Data Quality Online - Hints and Tips - Defining A Data Need
- National Statistical Service (NSS) Handbook
- Quality Declaration - a brief summary
- Quality Management of Statistical Outputs Produced From Administrative Data, March 2011
- Reference Papers
- Statistical Quality Incident Response Plan, June 2012
- Website of Australian Bureau of Statistics

Austria
- Commitment to quality
- Reducing respondents’ burden
- Website of Statistics Austria

Belgium
- Quality Report Belgian SILC2002
- Website of Statistics Belgium

Botswana
- Coordination of National Statistical Systems and Reporting Mechanisms for MDG Data to International Agencies, Botswana experience, May 2009
- Website of Central Statistical Office

Canada
- Characteristics of an Effective Statistical System (lecture delivered by Dr. I. P. Fellegi to the Washington Statistical Society, October 25, 1995)
- Consultations with data users in the context of program reviews
- Corporate Business Plan
- Corporate Reports
- Departmental Performance Report
- Definitions, data sources and methods
- Information for survey participants
- Integrated Business and Human Resources Plan
- Plans and Priorities 2011-2012
- Policy on informing survey respondents, 1998
- Policy on Informing Users of Data Quality and Methodology, 2000
- Policy on Standards, 2004
- Privacy Notice
- Publications by Subject
- Quality Assurance
- Quality Assurance Framework, 2002
- Quality Assurance Review: Summary Report
- Quality Guidelines, Fifth edition, 2009
- Record linkage at Statistics Canada
- Research Data Centres
- Telephone
- Website of Statistics Canada
National Quality Assurance Frameworks

The development of the Template for a Generic National Quality Assurance Framework (NQAF) and the Guidelines to accompany the Template was undertaken by the Expert Group on NQAF in response to a request by the United Nations Statistical Commission at its forty-first session in 2010. The Template is intended to be used as a tool to provide the general structure within which countries that choose to do so can formulate and operationalize national quality frameworks of their own or further enhance existing ones.

Additional work carried out by the Expert Group included: a mapping of the Template to existing quality frameworks (i.e. the European Statistics Code of Practice, the International Monetary Fund’s Data Quality Assessment Framework (DQAF), Statistics Canada’s quality assurance framework, and the Proposal for a Regional Code of Good Statistical Practice for Latin America and the Caribbean); a Glossary of quality-related terms; and an inventory of national and international quality references.

A Global Consultation was undertaken to seek comments about the Expert Group’s work from senior management of statistical organizations and to gather feedback to assist the Expert Group in finalizing its report to the next Statistical Commission. The Expert Group is grateful to the respondents from the various national statistical offices who sent valuable comments and suggestions, and has taken them into consideration to the extent possible in the course of finalizing the related documents.

The Report of the Secretary-General on national quality assurance frameworks (E/CN.3/2012/13) (item 3(i) of the provisional agenda) will be discussed at the Statistical Commission. The updated "Guidelines for the Template for a Generic National Quality Assurance Framework (NQAF)" - which includes the generic national quality assurance framework template, lists of tools and references specific to sections 3 and 4 of the template, the detailed mapping showing the correspondence to several existing quality frameworks, and links to the online NQAF glossary - is being submitted to the Statistical Commission as a background document.

- TEMPLATE for a Generic National Quality Assurance Framework (NQAF) -
  - Arabic  - Chinese  - English  - French  - Russian  - Spanish
- GUIDELINES for the Template for a Generic National Quality Assurance Template
  (comprehensive background document, in English only, containing all NQAF-associated material except the online glossary and the online inventory of data quality references shown below).

- GLOSSARY

- DETAILED MAPPING OF THE NQAF TO OTHER FRAMEWORKS (alternate format)

NATIONALLY AND INTERNATIONALLY DEVELOPED DATA QUALITY REFERENCES

Please contact us to provide updates and revisions to the information shown below or to suggest new data quality references for inclusion for your country or organization.
End of Presentation 1.2

Overview of:

• Quality Assurance Frameworks (National and International)
• Work of the UN Expert Group on NQAFs

Thank you for your attention.