Standard for Statistical Processes

Peter van Nederpelt

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Explanation of symbols

.	data not available
*	provisional figure
**	revised provisional figure (but not definite)
x	publication prohibited (confidential figure)
–	nil
–	(between two figures) inclusive
0 (0.0)	less than half of unit concerned
empty cell	not applicable
2011–2012	2011 to 2012 inclusive
2011/2012	average for 2011 up to and including 2012
2011/'12	crop year, financial year, school year etc. beginning in 2011 and ending in 2012
2009/'10– 2011/'12	crop year, financial year, etc. 2009/'10 to 2011/'12 inclusive

Due to rounding, some totals may not correspond with the sum of the separate figures.

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Information
Telephone +31 88 570 70 70
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Standard for Statistical Processes: content, structure and comparison with other standards

Peter van Nederpelt (Statistics Netherlands)

Summary: In 2010, Statistics Netherlands developed – granted by Eurostat - a Standard for statistical processes. This Standard integrates requirements originating from the European Statistics Code of Practice, IMF's Data Quality Assessment Framework, the National Statistical Law, board decisions and local guidelines.

The Standard is used as foundation for audit standards, self-assessment and will be promoted for redesign of statistical processes. It is approved by the board and it is available on Intranet. The Standard fulfils an equivalent role as quality guidelines and frameworks.

The Standard is structured in accordance with the concepts of the Object-oriented Quality Management (OQM) model. This means that at top level 24 objects are identified that can be assessed, e.g., statistical output, secondary data sources and information systems.

Each requirement is explained in the Standard. In addition, the risk involved in not meeting the standards is mentioned. Auditors and users of the self-assessment are using the Standard as guideline in order to see what is meant by the requirement.

The "Standard for Statistical Processes 2011" is published in English and is available on the internet [9].

Keywords: standard, statistical processes, Object-oriented Quality and Risk Management (OQRM).

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1. Introduction

Audits are carried out at Statistics Netherlands for a number of years. In the past, for each audit, a new audit standard was determined by copying a standard from a former audit and modifying it. There was a strong need for one Standard approved by the Board of Directors. With one Standard, the auditee knows in advance what the requirements are for their statistical process. Requirements for the Standard were:

- Scope: All factors that influence the quality of the output should be part of the Standard. And, the Standard should be applicable on process level.
- Completeness. All requirements should be explained. All existing standards should integrated in one Standard.
- Compliance with existing frameworks. The Standard should integrate existing frameworks at international, national and local level, e.g., the European Statistics Code of Practice and IMF's Data Quality Assessment Framework.
- Maintainability. The Standard should have a clear structure that can be easily adapted.
- Risk-orientation. Effects of non compliance to the standard should be formulated.
- Clarity. The standards should be easy to read and understand. Difficult terms should be explained in a glossary.
- Unambiguity. Requirements should be mentioned once.
- Importance. Requirements should be prioritized.

The Standard is developed based on the concepts of Object-oriented Quality and Risk Management (OQRM) [8]. It resulted in a Standard [9] organized in three levels, i.e., objects, focus areas and requirements. The Standard is successfully used for auditing and self-assessments and will also be promoted for redesign purposes. It meets all requirements mentioned above.

2. Method

Statistics Netherlands developed recently a new quality and risk management model called Object-oriented Quality and Risk Management (OQRM) [8]. OQRM belongs to the family of 'empty' models like The Balanced Scorecard

[7], COSO ERM [2] and ISO 31000 [6] and can be used to develop frameworks and quality assurance plans in any field of expertise. This model (tool, technique) does not contain domain knowledge like the CoP, the EFQM Excellence Model [3] and ISO 9001 [5].

One of the key concepts of the model is a 'focus area'. A focus area is a combination of an object and one accompanying attribute. An object is anything that can be conceived or perceived. An example of a focus area is *relevance of statistical output* where *statistical output* is the object and *relevance* the attribute. Another example is *level of reporting burden*. In this last example *reporting burden* is the object and *level* the attribute. This model can, among other things, be used to develop standards/frameworks.

Existing frameworks are collected and analysed. For each requirement, the associated focus area is determined resulting in a list objects and related focus areas.

Examples of these frameworks are the European Statistics Code of Practice, Data Quality Assessment Framework (IMF), the EU Statistical Law, the Dutch Statistical Law, decisions of the Board of Directors and guidelines. Also existing audit standards are used. The EFQM Excellence Model en ISO 9001 are not used as input for the Standard because these frameworks are not specific enough for statistical processes. The ESS Quality Assessment Framework (QAF) will be integrated in the next release of the Standard.

In the Standard, the requirements are grouped by focus area. Each object contains one of more focus areas. For each focus area, one or more requirements are formulated originated from the existing frameworks. Moreover, each requirement is explained and the source of the requirement is mentioned. Also the possible effects of non-compliance are formulated. These effects are mostly insufficient quality of the output.

The Standard was extensively reviewed by eight experts. The audit of the Producer Price Index was used to test the Standard.

Finally, the Standard is compared with standards from Canada, Finland and the United Kingdom. Criteria for comparison were the scope, the structure of the standard and the suitability for auditing purposes.

3. Results

3.1. The Standard

The result of the development process is a Standard with 23 objects (table 1), 66 focus areas and 175 requirements [9].

Table 1 List of objects covered by the Standard (in alphabetical order)

Agreements with external data suppliers		Processes
Conceptual meta data		Provision of data sources
Corrections, adjustments and revisions		Quality document
Data		Quality reports
Data source (input)		Release policy
Dissemination of statistical output		Remaining sources and services
Documentation		Reporting burden
Information systems		Staff
Internal agreements with users and suppliers		Statistical concept
Knowledge		Statistical data
Methodology		Statistical output
Output specifications		

The hierarchical structure of the Standard is at first level the object, second level the focus area and at the third level the requirement extended with an explanation of the requirement, sources of the requirement and risk of non compliance (table 2 and 3).

Table 2 Part of the Standard

7 Dissemination of statistical output

In order to assess the standards in this chapter an overview of all internal and external deliveries should be available.

Data can be delivered passively by making data available to the user, or actively by sending the data to the user.

The term release is also used instead of dissemination.

Characteristics of dissemination of statistical output are:
1. Completeness
2. Timeliness
3. Predictability
4. Punctuality
5. Simultaneity

7.1 Completeness of release of statistical output

See chapter 15 in the Checklist quality of statistical output (Van Nederpelt, 2009b) for further information about this quality area.

Completeness can only be assesses if agreements are available. It regards output for internal as well as external users. Compliance with agreements is assessed here.

A	All statistics listed in the annual plan of SN are published on StatLine.

Explanation:
- The annual plan of SN indicates when which tables are published on StatLine.
- Not more than the statistics listed in the annual plan are published for reasons of efficiency.

Risk if the standard is not met:
- Less published than planned. → Dissatisfied supervisors and users.

Each requirement in the Standard has a unique code for reference purposes, e.g., 7.1.A. Seven focus areas has been identified as weighty, e.g., confidentiality of data and accuracy of data.

Table 3 Structure of the Standard (example)

Nr	**Object, focus area, requirements, explanation, source, risk**	
7	**Object**	Dissemination of statistical output
7.1	**Focus area**	Completeness of dissemination of statistical output
7.1.A	**Requirement:** All statistics in the annual plan of SN are published on StatLine. **Explanation:** The annual plan describes when which tables are published. **Source**: Former audit standard **Risk:** Dissatisfied users	
7.1.B	**Requirement:** All agreed data items are delivered **Explanation:** This applies to all deliveries to internal and external users. **Source**: Former audit standard. **Risk**: Dissatisfied users	
7.2	**Focus area**	Timelines of dissemination of statistical output

7.2.A	**Requirement:** The 1-to-1 standard is met. **Explanation:** 1-to-1 means that e.g. an annual statistics is published within one year. The standard applies to the first version of the data (preliminary). **Source:** CoP Indicator 13.1 states that timeliness should meet the highest European and international disseminations standards. **Risk:** Irrelevance of the data	
8	**Object**	Statistical data
8.1	**Focus area**	Accuracy of statistical data
8.1A	Etc.	

Statistics Netherlands developed a separate standards for methodologies. So, there was no need to describe these methodologies in the Standard. The Standard only refers to this set of documents.
Excel spreadsheets are available for auditors, pre filled with the requirements. The auditors can add their observations, conclusions, risk analysis and recommendations to these spreadsheets.
The final version of the Standards was approved by the Board of Directors at 4 April 2011. The Standard was granted by the Eurostat. Therefore, the document is translated in English and available at the Statistics Netherlands' website.

3.2. Comparison of the Standard with other standards

The result of the comparison of the Standard with similar documents [1, 4 and 10] is described in the next paragraphs.

3.2.1 Canada

Canada's Quality Guidelines [1] follows the survey steps, e.g., sample design, use of administrative date and imputation. Each survey step has four paragraphs, i.e., scope and purpose, principles, guidelines and quality indicators. The guidelines paragraph defines requirements like *"Design questionnaires to be attractive and easy to complete"*. Each section ends with references. The Guidelines are very complete and clear. It would, however, take some effort to convert the Guidelines into an audit standard. Its purpose is to provide a list of principles and good practices in survey design.

3.2.2 Finland

Finland's Quality Guidelines [4] looks quite similar to Canada's guidelines. The guidelines paragraph defines also requirement, e.g., *"A paper questionnaire must be easy and convenient to complete"*. Because the set-up of Finland's Guidelines is the same as Canada's Guidelines, it would take the same effort to convert the Guidelines into an audit standard. The Guidelines aims to support the development of statistical production.

3.2.3 UK

UK's Code of Practice [10] consists of eight principles and three protocols and, in relation to each, a statement of associated practices. These practices are short statements like *"Publish a timetable of statistical releases for twelve month ahead"*. The purpose of the Code is assess official figures and statistical publications and to label them. The scope of the Code is similar to the European Statistics Code of Practice. Conversion to an audit standard is not necessary because it is already an audit standard. The requirements are not explained in the Code. Guidance will be provided by 'The National Statistician and The Head of Assessment'.

4. Discussion

The Standards was implemented in 2011 by the auditors. The auditors use the Standard to select requirements for their specific audits in cooperation with the auditee and principal. Audits are carried out each three years for the most important statistical processes. Experiences with the Standard are positive. Audit mandates are made much more efficient than before. The scope of the audit is discussed with the auditee based on the Standard. The auditors use the Standard as guideline. Discussion about the content of the Standard is separated from discussions about the statistical process that is audited. Answers to questions about requirements can, in most cases, be found in the Standard.

Secondly, a self-assessment questionnaire is developed. This questionnaire is fully consistent with the Standard and is mandatory for all remaining

processes. The Standard can be used as a guide for the self-assessment questionnaire.

Finally, the Standard is also meant for redesign of statistical processes. So far, the Standard is not used for that purpose. In May 2012, the Standard is presented to project managers who are responsible for the redesign projects and it will be presented to other target groups. In the near future, it will become clear if the Standard is suitable for this purpose.

End of 2012, the Standard will be evaluated and updated. At least, the new version of the European Statistics Code of Practice and the new ESS Quality Assurance Framework will be integrated in the 2013 release of the Standard.

5. Conclusion

Statistics Netherlands needed a Standard approved by the Board of Directors that can serve as basis for audits, self-assessment and redesign of statistical processes. With the help of the OQRM model, the Standard got a clear structure. The Standard consists of 175 requirements, originating from international, national and local frameworks and guidelines. Experiences with the Standard are so far positive concerning auditing and self-assessment. Suitability of the Standard for redesign processes will become clear in the near future. Added value of the Standard is that it can serve multiple purposes and increases the efficiency and effectiveness of the audit process. Evaluation of the Standard is separated from the evaluation of the statistical processes and questions are, in most cases, answered in the Standard.

References

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