Geographic information - Data quality (ISO 19157:2013)
Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

ICS 35.240.70
English Version

Geographic information - Data quality (ISO 19157:2013)

This European Standard was approved by CEN on 9 November 2013.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.
Foreword

This document (EN ISO 19157:2013) has been prepared by Technical Committee ISO/TC 211 “Geographic information/Geomatics” in collaboration with Technical Committee CEN/TC 287 “Geographic Information” the secretariat of which is held by BSI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by June 2014, and conflicting national standards shall be withdrawn at the latest by June 2014.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.


According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Endorsement notice

The text of ISO 19157:2013 has been approved by CEN as EN ISO 19157:2013 without any modification.
## Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foreword</td>
<td>iv</td>
</tr>
<tr>
<td>Introduction</td>
<td>v</td>
</tr>
<tr>
<td>1 Scope</td>
<td>1</td>
</tr>
<tr>
<td>2 Conformance</td>
<td>1</td>
</tr>
<tr>
<td>3 Normative references</td>
<td>1</td>
</tr>
<tr>
<td>4 Terms and definitions</td>
<td>2</td>
</tr>
<tr>
<td>5 Abbreviated terms</td>
<td>4</td>
</tr>
<tr>
<td>6 Overview of data quality</td>
<td>5</td>
</tr>
<tr>
<td>7 Components of data quality</td>
<td>6</td>
</tr>
<tr>
<td>7.1 Overview of the components</td>
<td>6</td>
</tr>
<tr>
<td>7.2 Data quality unit</td>
<td>7</td>
</tr>
<tr>
<td>7.3 Data quality elements</td>
<td>8</td>
</tr>
<tr>
<td>7.4 Descriptors of data quality elements</td>
<td>11</td>
</tr>
<tr>
<td>7.5 Metaquality elements</td>
<td>14</td>
</tr>
<tr>
<td>7.6 Descriptors of a metaquality element</td>
<td>15</td>
</tr>
<tr>
<td>8 Data quality measures</td>
<td>16</td>
</tr>
<tr>
<td>8.1 General</td>
<td>16</td>
</tr>
<tr>
<td>8.2 Standardized data quality measures</td>
<td>16</td>
</tr>
<tr>
<td>8.3 User defined data quality measures</td>
<td>16</td>
</tr>
<tr>
<td>8.4 Catalogue of data quality measures</td>
<td>16</td>
</tr>
<tr>
<td>8.5 List of components</td>
<td>17</td>
</tr>
<tr>
<td>8.6 Component details</td>
<td>18</td>
</tr>
<tr>
<td>9 Data quality evaluation</td>
<td>20</td>
</tr>
<tr>
<td>9.1 The process for evaluating data quality</td>
<td>20</td>
</tr>
<tr>
<td>9.2 Data quality evaluation methods</td>
<td>21</td>
</tr>
<tr>
<td>9.3 Aggregation and derivation</td>
<td>23</td>
</tr>
<tr>
<td>10 Data quality reporting</td>
<td>23</td>
</tr>
<tr>
<td>10.1 General</td>
<td>23</td>
</tr>
<tr>
<td>10.2 Particular cases</td>
<td>24</td>
</tr>
<tr>
<td>Annex A (normative) Abstract test suites</td>
<td>26</td>
</tr>
<tr>
<td>Annex B (informative) Data quality concepts and their use</td>
<td>28</td>
</tr>
<tr>
<td>Annex C (normative) Data dictionary for data quality</td>
<td>34</td>
</tr>
<tr>
<td>Annex D (normative) List of standardized data quality measures</td>
<td>50</td>
</tr>
<tr>
<td>Annex E (informative) Evaluating and reporting data quality</td>
<td>96</td>
</tr>
<tr>
<td>Annex F (informative) Sampling methods for evaluating</td>
<td>119</td>
</tr>
<tr>
<td>Annex G (normative) Data quality basic measures</td>
<td>127</td>
</tr>
<tr>
<td>Annex H (informative) Management of data quality measures</td>
<td>132</td>
</tr>
<tr>
<td>Annex I (informative) Guidelines for the use of Quality Elements</td>
<td>135</td>
</tr>
<tr>
<td>Annex J (informative) Aggregation of data quality results</td>
<td>144</td>
</tr>
<tr>
<td>Bibliography</td>
<td>146</td>
</tr>
</tbody>
</table>
Introduction

Geographic data are increasingly being shared, interchanged and used for purposes other than their producers’ intended ones. Information about the quality of available geographic data are vital to the process of selecting a data set in that the value of data are directly related to its quality. A user of geographic data may have multiple data sets from which to choose. Therefore, it is necessary to compare the quality of the data sets to determine which best fulfils the requirements of the user.

The purpose of describing the quality of geographic data is to facilitate the comparison and selection of the data set best suited to application needs or requirements. Complete descriptions of the quality of a data set will encourage the sharing, interchange and use of appropriate data sets. Information on the quality of geographic data allows a data producer to evaluate how well a data set meets the criteria set forth in its product specification and assists data users in evaluating a product’s ability to satisfy the requirements for their particular application. For the purpose of this evaluation, clearly defined procedures are used in a consistent manner.

To facilitate comparisons, it is essential that the results of the quality reports are expressed in a comparable way and that there is a common understanding of the data quality measures that have been used. These data quality measures provide descriptors of the quality of geographic data through comparison with the universe of discourse. The use of incompatible measures makes data quality comparisons impossible to perform. This International Standard standardizes the components and structures of data quality measures and defines commonly used data quality measures.

This International Standard recognizes that a data producer and a data user may view data quality from different perspectives. Conformance quality levels can be set using the data producer’s product specification or a data user’s data quality requirements. If the data user requires more data quality information than that provided by the data producer, the data user can follow the data producer’s data quality evaluation process flow to get the additional information. In this case the data user requirements are treated as a product specification for the purpose of using the data producer process flow.

The objective of this International Standard is to provide principles for describing the quality for geographic data and concepts for handling quality information for geographic data, and a consistent and standard manner to determine and report a data set’s quality information. It aims also to provide guidelines for evaluation procedures of quantitative quality information for geographic data.
Geographic information — Data quality

1 Scope

This International Standard establishes the principles for describing the quality of geographic data. It
— defines components for describing data quality;
— specifies components and content structure of a register for data quality measures;
— describes general procedures for evaluating the quality of geographic data;
— establishes principles for reporting data quality.

This International Standard also defines a set of data quality measures for use in evaluating and reporting
data quality. It is applicable to data producers providing quality information to describe and assess how
well a data set conforms to its product specification and to data users attempting to determine whether
or not specific geographic data are of sufficient quality for their particular application.

This International Standard does not attempt to define minimum acceptable levels of quality for
geographic data.

2 Conformance

Any product claiming conformance to this International Standard shall pass all the requirements
described in the abstract test suite presented in Annex A as follows:

a) A data quality evaluation process shall pass the tests outlined in A.1;
b) Data quality metadata shall pass the tests outlined in A.2 and A.3;
c) A standalone quality report shall pass the tests outlined in A.4;
d) A data quality measure shall pass the tests outlined in A.5.

3 Normative references

The following referenced documents, in whole or in part, are normatively referenced in this document
and are indispensable for its application. For dated references, only the edition cited applies. For undated
references, the latest edition of the referenced document (including any amendments) applies.

ISO/TS 19103:2005, Geographic information — Conceptual schema language
ISO 19108:2002, Geographic information — Temporal schema
ISO 19115-2:2009, Geographic information — Metadata — Part 2: Extensions for imagery and gridded data
ISO 19135:2005, Geographic information — Procedures for item registration

1) Under preparation.