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Geographic information — Quality assurance of data supply

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National foreword

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TECHNICAL SPECIFICATION

ISO/TS 19158

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Geographic information — Quality assurance of data supply

Information géographique — Assurance qualité relative à l'approvisionnement de données

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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In other circumstances, particularly when there is an urgent market requirement for such documents, a technical committee may decide to publish other types of document:

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An ISO/PAS or ISO/TS is reviewed after three years in order to decide whether it will be confirmed for a further three years, revised to become an International Standard, or withdrawn. If the ISO/PAS or ISO/TS is confirmed, it is reviewed again after a further three years, at which time it must either be transformed into an International Standard or be withdrawn.

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

ISO/TS 19158 was prepared by Technical Committee ISO/TC 211, *Geographic information/Geomatics*.

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Introduction

This Technical Specification provides a quality assurance framework for the producer and customer in their production relationship. It identifies methods of managing the quality of production more efficiently and effectively. It enables innovation and continual improvement within the context of existing:

— geographic information quality principles and quality evaluation procedures, and

— quality management systems.

With ever increasing demands in value and quality in the Geographic Information (GI) market the framework facilitates the production of a product that meets requirements in terms of cost, quantity, quality and timeliness.

Through the application of the framework there are opportunities for:

— better understanding of requirements by all involved in production and update especially within multiple producer environments,

— reduced data throughput time,

— reduced rework,

— improved data quality, and

— increased confidence within a mutually beneficial relationship leading to lower costs for both supplier and organization.

ISO 19157 establishes the principles for the description of geographic data quality and specifies components for reporting quality information as well as procedures for the evaluation of geographic data quality.

The quality assessment procedure, as defined in this Technical Specification, is a second-party (customer) conformity assessment activity.

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Geographic information — Quality assurance of data supply

1 Scope

This Technical Specification provides a framework for quality assurance specific to geographic information. It is based upon the quality principles and quality evaluation procedures of geographic information identified in ISO 19157 and the general quality management principles defined in ISO 9000 [2].

The framework defined in this Technical Specification enables a customer to satisfy itself that its suppliers, both internal and external, are capable of delivering geographic information to the required quality. Fundamental to the framework is the assurance of the supplier's ability to understand and meet the quality requirements. Through the quality assurance framework both the customer and the supplier are able to consider the quality required at the earliest opportunity in the production/update process.

Principles and responsibilities of the relationship between the customer and the supplier that facilitate the framework are provided. The responsibility for the quality assessment procedure is shared between the customer and the supplier.

This Technical Specification is applicable to customers and suppliers of all geographic information where the quality of the product may be impacted upon by the supplier's processes in any of the following scenarios:

— there is an agreement or legislation for the supply of data acquisition services,

— data acquisition services are being tendered for, and

— one or more suppliers exist in the supply chain.

This Technical Specification is not applicable for the supply of legacy datasets or 'off the shelf' products where there is no further data production or update activity to manage.

2 Conformance

Any organization claiming conformance with this specification shall pass all of the requirements described in the abstract test suite presented in Annex A.

3 Normative references

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

ISO 19157:—[1)], *Geographic information — Data quality*

4 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

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4.1
customer
organization or person that receives a product (4.3)

[SOURCE: ISO 9000:2005, definition 3.3.5]

NOTE The customer can be internal or external to the supplier (4.11) organization.

4.2
process
set of interrelated or interacting activities which transforms inputs into outputs

[SOURCE: ISO 9000:2005, definition 3.4.1]

NOTE The process may be broken down further into elemental activities [sub-process (4.10)] as is deemed necessary to control the quality (4.4) of the process.

4.3
product
result of a process (4.2)

[SOURCE: ISO 9000:2005, definition 3.4.2]

4.4
quality
degree to which a set of inherent characteristics fulfils requirements

[SOURCE: ISO 9000:2005, definition 3.1.1]

NOTE For the purposes of this Technical Specification the quality characteristics of a product (4.3) include:

— data quality (the elements of which are described by ISO 19157),

— volume of delivery,

— schedule of delivery, and

— cost of production and/or update.

4.5
quality assessment procedure
procedure by which a customer (4.1) assures that its suppliers (4.11) are capable of consistently delivering the product (4.3) to the required quality (4.4)

NOTE The assessment procedure is a second-party (customer) conformity assessment activity.

4.6
quality assessment result
output of the quality assessment procedure (4.5)

4.7
quality assurance
part of quality (4.4) management focused on providing confidence that quality requirements will be fulfilled

[SOURCE: ISO 9000:2005, definition 3.2.11]

4.8
quality assurance level
assurance level achieved is an outcome of the quality assessment procedure (4.5)

NOTE Three quality assurance levels can be achieved as part of the quality assurance framework: basic, operational and full.

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4.9
quality control
part of quality (4.4) management focused on fulfilling quality requirements

[SOURCE: ISO 9000:2005, definition 3.2.10]

4.10
sub-process
activity elements of a process (4.2)

NOTE Sub-processes can be broken down even further as is deemed necessary to control the quality (4.4) of the process.

EXAMPLE In the case of photogrammetric survey, aerial triangulation can be considered a sub-process.

4.11
supplier
organization or person that provides a product (4.3)

[SOURCE: ISO 9000:2005, definition 3.3.6]

NOTE 1 The supplier can be internal or external to the customer organization.

NOTE 2 In the context of this Technical Specification, the supplier has provided a product via a process that can have some impact on quality (4.4).

5 Abbreviated terms

AQL Acceptance Quality Limit (ISO 3534-2 [1]) sometimes referred to as Acceptable Quality Level

GI Geographic Information

KPI Key Performance Indicators

QC Quality Control

QA Quality Assurance

6 General principles

6.1 Quality assurance in production and update

Customers can provide data product specifications to suppliers expecting them to deliver data according to that specification with little or no input into the supplier's processes. Delivery is expected on time and to the volumes requested with data at the required quality level. This approach creates risks, as until the final product is delivered, there is limited confidence in the supplier's ability to achieve this. These risks are getting worse with the requirement for:

— more complex data,

— increased speed to market, and

— outsourced production and update (external to the customer).

Figure 1 identifies that a product is created from the culmination of several interrelated processes combining outputs to produce a final product. By introducing quality evaluation processes to the

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