

Paper for Consideration by the Data Quality Working Group

Data Quality sections of S-100 and S101

Final round of comments for submission to update S-100 and S-101 for submission to the S-100WG

Submitted by:	USA,NOAA
Executive Summary:	Final round of comments for submission on data quality sections in S-100 and S-101
Related Documents:	S-100 and S-101 Product Spec draft (January 2016).
Related Projects:	Data Classification and Encoding Guide

Introduction / Background

The DQWG was tasked by the S-100WG to update sections in both S-100 and S-101 that refer to data quality issues. The below are sections that have been updated through comments from DQWG members. These sections update S-101 and the current draft of S-101 presented to the S-101 working group dated March 2016 at the working group's most recent meeting in Japan.

Discussion

The wording below should be discussed so that all members have a background. This discussion should simply facilitate the last round of comments via correspondence. After comments have been received the changes will be sent to the S-100 WG to update the sections of S-100 and S-101.

The text in blue represent changes made from comments.

SECTION 6 OF S-101 DRAFT JANUARY 2016

6 Data Quality

6.1 Introduction

For S-101 Data Quality is considered to be meta information and is divided into two parts: Bathymetric Data Quality and Non-Bathymetric Data Quality. Survey Data Quality is a subset of Bathymetric Data Quality

6.1.1 Data Compliance and Integrity (logical consistency)

For S-101, the data must be validated using conformance checks that are located in Annex <<TO DO>>. ~~S-101 datasets must conform to all mandatory elements of the ENC DCEG where the word 'must' is used.~~

6.1.2 Bathymetric Data Quality

Bathymetric data quality comprises the following:

- completeness of data (e.g. seafloor coverage).
- currency of data (e.g. temporal variation);
- uncertainty of data;
- source of data;
- status of data (unassessed or assessed)
- logical consistency (adherence to rules of product spec)

Data quality can be encoded at three different levels (dataset metadata, feature metadata, meta-feature instance). All positional (2D) and vertical (1D), ~~horizontal distance (1D) and orientation (1D) uncertainty~~ attributes concern the 95% confidence level of the variation associated with all sources of measurement, processing and visualization error. Uncertainty due to temporal variation should not be included in these attributes.

The meta feature for Bathymetric data quality is: Quality Of Bathymetric Data,

6.1.3 Non Bathymetric Data Quality

The meta feature Quality Of Non-bathymetric Data allows for data quality to be expressed for non-bathymetric items [using the same criteria of quality of bathymetric data but also includes horizontal distance \(1D\) and orientation \(1D\) uncertainty attributes.](#)

6.1.4 Survey Data Quality

Quality of the surveys that originated from which charted features are derived can be further expressed using the meta feature Quality Of Survey. Quality Of Survey can apply only to bathymetry (e.g. underwater rock), ~~non-bathymetry (e.g. navigational aids) and a combination of these (e.g. LIDAR survey).~~

SECTION 0-7 (S-100 PARTS) OF S-100 EDITION 1.0.0 JANUARY 2010

0-1.7 Part 4 – Metadata

Increasingly, hydrographic organizations are collecting, storing and archiving large quantities of digital data which are becoming an important national asset. Knowledge of the quality of hydrographic data is crucial for the application of the data, as different users and different applications often have different data quality requirements. In order to achieve this, data custodians will need to record quality information about their data (i.e. metadata) in order to assure reliability.


ISO 19115 provides an abstract structure for describing digital geographic information by defining the quality metadata elements and establishing a common set of metadata terminology, definitions, and extension procedures.

This part also describes how to use ISO 19115 metadata classes, elements and conditions, and incorporates rules for populating quality metadata. It also incorporates quality measures as described in ISO 19113, 19114 and 19138.

SECTION 4B OF S-100 EDITION 1.0.0 JANUARY 2010

4b-3.2.2 Data quality information for Imagery

Information about the sources and production processes used in producing an imagery or gridded dataset has been included in an additional Data Quality for Imagery package, as 19115 only makes provision for a general assessment of the quality. The following additional classes are listed below. A more detailed description of the classes and associated data dictionary are provided in 19115-Part 2, sections A.2.2 and B.2.2 respectively).

- 1) QE_CoverageResult is a specified subclass of DQ_Result and aggregates information required to report data quality for a coverage. It is based on concepts from 19115 and 19139.
- 2) QE_Usability is a specified subclass of DQ_Element. It is intended to provide user specific  quality information about a dataset's suitability for a particular application;
- 4) LE_ProcessStep is a specified subclass of LI_ProcessStep and contains additional information on the history of the algorithms used and processing performed to produce the data. LE_ProcessStep aggregates the following entities;
 - a) LE_Processing, describes the procedure (such as software used, parameters, and processing documentation) by which the algorithm was applied to generate the data from the source data. LE_Processing aggregates LE_Algorithm, which describes the methodology used to derive the data from the source data;
 - b) LE_ProcessStepReport identifies external information describing the processing of the data;
 - c) LE_Source is a specified subclass of LI_Source and describes the output of a process step.

Action Required of DQWG

The Data Quality Working Group is invited to discuss the following key points from comments:

1. Whether or not quality of survey can apply to non-bathymetric items.

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2. The use of the logical consistency in this wording (taken from section 7.1 of the INSPIRE Data Specification v3.0).