

Proposal on revising S-97 Part C
 Submitted by DQWG

SUMMARY

Executive Summary: This proposal proposes some amendments to S-97 Part C.

Action to be taken: See Section 3

Related documents: Action DQWG 17/01

1. Introduction

During the review and revision of S-100, it was found that S-97 also needs to be revised according to ISO 19157.

2. Discussion and Recommendations

- a) It is recommended to update the C 6.6 Positional Accuracy to maintain consistency within S-97 and with ISO 19157. See Annex A for the revised text.
- b) It is recommended to revise Table 7-1 as follow(See Annex A for the revised text):

NO.	Data Quality Measure	Original text	Amendments
1	Positional Accuracy / Absolute or External Accuracy	Root Mean Square Error	RMSError
2	Positional Accuracy /Vertical Position Accuracy	linearMapAccuracy2Sigma	linearMapAccuracy3Sigma
3	Positional Accuracy /Horizontal Position Accuracy -	linearMapAccuracy2Sigma / Half length of the interval defined by an upper and lower limit in which the true value lies with probability 95%	circularError95 / Radius describing a circle in which the true point location lies with the probability of 95%.
4		/	Add: Positional Accuracy / Relative or Internal Accuracy
5	Positional Accuracy / Gridded Data Position Accuracy	Root mean square error of planimetry	RMSErrorPlanimetry
6	Temporal Quality /	Consistency with time.	Correctness of ordered events or

	Temporal Consistency		sequences, if reported.
7	Temporal Quality / Temporal Consistency	Correctness of ordered events or sequences, if reported	temporalConsistencyStatement / This is a qualitative statement of the consistency of the time measurement. There is no qualitative measure provided for this data quality sub-element. [Adapted from ISO 19157]
8		/	Add: Temporal Quality / Temporal Validity
9		/	Add:Temporal Quality / DQ_AccuracyOfATimeMeasurement
10		/	Add:Thematic Accuracy /Non-Quantitative Attribute Accuracy
11		/	Add: Thematic Accuracy / Quantitative Attribute Accuracy

3. Action

The S-100WG is invited to:

- a. **Note** the information provided;

Annex A

Amendments

1. Amended C-6.6 Positional Accuracy

Positional Accuracy is described by S-100 Part 4c – Metadata - Data Quality.

This is further subdivided into Absolute or External Accuracy (**including Vertical Position Accuracy and Horizontal Positional Accuracy**), **Relative or internal accuracy** ~~Vertical Position Accuracy, Horizontal Positional Accuracy~~, Gridded Data Position Accuracy.

2. Amended Table C-7 Data quality measures

No.	Data Quality Measure	Definition	DQ measure / description	Evaluation scope	Applicable to spatial representation types
1	Completeness / Commission	Excess data present in a dataset, as described by the scope.	numberOfExcessItems / This data quality measure indicates the number of items in the dataset, that should not have been present in the dataset.	dataset/dataset series	All S-100 based PS
2	Completeness / Commission	Excess data present in a dataset, as described by the scope.	numberOfDuplicateFeatureInstances / This data quality measure indicates the total number of exact duplications of feature instances within the data.	dataset/dataset series	All S-100 based PS
3	Completeness / Omission	Data absent from the dataset, as described by the scope.	numberOfMissingItems / This data quality measure is an indicator that shows that a specific item is missing in the data.	dataset/dataset series/spatial object type	All S-100 based PS
4	Logical Consistency / Conceptual Consistency	Adherence to the rules of a conceptual schema.	numberOfInvalidSurfaceOverlaps / This data quality measure is a count of the total number of erroneous overlaps within the data. Which surfaces may overlap and which must not is application dependent. Not all overlapping surfaces are necessarily erroneous.	spatial object / spatial object type	PS with geometric surfaces.
5	Logical Consistency / Domain Consistency	Adherence of the values to the value domains.	numberOfNonconformantItems / This data quality measure is a count of all items in the dataset that are not in conformance with their value domain.	spatial object / spatial object type	All S-100 based PS.

6	Logical Consistency / Format Consistency	Degree to which data is stored in accordance with the physical structure of the data set, as described by the scope	physicalStructureConflictsNumber / This data quality measure is a count of all items in the dataset that are stored in conflict with the physical structure of the dataset.	dataset/dataset series	All S-100 based PS.
7	Logical Consistency / Topological Consistency	Correctness of the explicitly encoded topological characteristics of the dataset, as described by the scope.	rateOfFaultyPointCurveConnections / This data quality measure indicates the number of faulty link-node connections in relation to the number of supposed link-node connections. This data quality measure gives the erroneous point-curve connections in relation to the total number of point-curve connections.	spatial object/ spatial object type	PS with curves.
8	Logical Consistency / Topological Consistency	Correctness of the explicitly encoded topological characteristics of the dataset, as described by the scope.	numberOfMissingConnections Undershoots / This data quality measure is a count of items in the dataset within the parameter tolerance that are mismatched due to undershoots.	spatial object/ spatial object type	PS with curves.
9	Logical Consistency / Topological Consistency	Correctness of the explicitly encoded topological characteristics of the dataset, as described by the scope.	numberOfMissingConnections Overshoots / This data quality measure is a count of items in the dataset within the parameter tolerance that are mismatched due to overshoots.	spatial object/ spatial object type	PS with curves.
10	Logical Consistency / Topological Consistency	Correctness of the explicitly encoded topological characteristics of the dataset, as described by the scope.	numberOfInvalidSlivers / This data quality measure is a count of all items in the dataset that are invalid sliver surfaces. A sliver is an unintended area that occurs when adjacent surfaces are not digitized properly. The borders of the adjacent surfaces may	dataset/dataset series	PS with geometric surfaces.

			unintentionally gap or overlap to cause a topological error.		
11	Logical Consistency / Topological Consistency	Correctness of the explicitly encoded topological characteristics of the dataset, as described by the scope.	numberOfInvalidSelfIntersects / This data quality measure is a count of all items in the dataset that illegally intersect with themselves.	spatial object / spatial object type	PS with curves / geometric surfaces.
12	Logical Consistency / Topological Consistency	Correctness of the explicitly encoded topological characteristics of the dataset, as described by the scope.	numberOfInvalidSelfOverlap / This data quality measure is a count of all items in the dataset that illegally self-overlap.	spatial object / spatial object type	PS with curves / geometric surfaces.
13	Positional Accuracy / Absolute or External Accuracy	Closeness of reported coordinative values to values accepted as or being true.	RMSError Root Mean Square Error / Standard deviation, where the true value is not estimated from the observations but known a priori.	spatial object / spatial object type	PS with objects that have coordinative values associated.
14	Positional Accuracy / Vertical Position Accuracy	Closeness of reported coordinative values to values accepted as or being true.	linearMapAccuracy3Sigma linearMapAccuracy2Sigma / Half length of the interval defined by an upper and lower limit in which the true value lies with probability 95%.	spatial object / spatial object type	PS with objects that have coordinative values Associated.
15	Positional Accuracy / Horizontal Position Accuracy	Closeness of reported coordinative values to values accepted as or being true.	circularError95/Radius describing a circle in which the true point location lies with the probability of 95%. linearMapAccuracy2Sigma / Half length of the interval defined by an upper and lower limit in which the true value lies with probability 95%.	spatial object / spatial object type	PS with objects that have coordinative values Associated.
16	Positional Accuracy / Relative or Internal	Closeness of the relative positions of features in a dataset to their	relativeVerticalError / An evaluation of the random errors of one relief feature to another in the same data set	spatial object / spatial object	PS with objects that have coordinative values associated.

	Accuracy	respective relative positions accepted as or being true.	or on the same map / chart. It is a function of the random errors in the two elevations with respect to a common vertical datum. [Adapted from ISO 19157]	type	
17	Positional Accuracy / Relative or Internal Accuracy	Closeness of the relative positions of features in a dataset to their respective relative positions accepted as or being true.	relativeHorizontalError / An evaluation of the random errors in the horizontal position of one feature to another in the same data set or on the same map/chart. [Adapted from ISO 19157]	spatial object / spatial object type	PS with objects that have coordinative values associated.
18	Positional Accuracy / Gridded Data Position Accuracy	Closeness of reported coordinative values to values accepted as or being true.	RMSErrorPlanimetry Root mean square error of planimetry / Radius of a circle around the given point, in which the true value lies with probability P.	spatial object / spatial object type	PS with objects that have a gridded coordinative values associated.
19	Temporal Quality / Temporal Consistency	Correctness of ordered events or sequences, if reported. Consistency with time.	chronologicalOrder / This data quality measure that indicate that an event is incorrectly ordered against the other events. [Adapted from ISO 19157] Correctness of ordered events or sequences, if reported.	dataset/dataset series/spatial object type	PS with objects that have a time value associated.
20	Temporal Quality / Temporal Validity	Validity of data with respect to time	numberOfNonConformantItems / This data quality measure is a count of all items in the dataset that are not in conformance with their value domain. [Adapted from ISO 19157]	dataset/dataset series/spatial object type.	PS with objects that have a time value associated.
21	Temporal Quality / DQ_AccuracyOfATimeMeasurement	Correctness of the temporal references of an item (reporting of error in time measurement)	attributeValueUncertainty3Sigma / This data quality measure indicates the attribute value of uncertainty where half the length of the interval defined by an upper and lower limit in which the true value for the quantitative attribute lies	dataset/dataset series/spatial object type.	PS with objects that have a time value associated.

			with a probability of 95%. [Adapted from ISO 19157]		
22	Thematic Accuracy / Thematic Classification Correctness	Comparison of the classes assigned to features or their attributes to a universe of discourse.	<p>miscalculationRate / This data quality measure indicates the number of incorrectly classified features in relation to the number of features that are supposed to be there. [Adapted from ISO 19157]</p> <p>This is a RATE which is a ratio, and is expressed as a REAL number representing the rational fraction corresponding to the numerator and denominator of the ratio.</p> <p>For example, if there are 1 items that are classified incorrectly and there are 100 of the items in the dataset then the ratio is 1/100 and the reported rate = 0.01.</p>	dataset/dataset series/spatial object type.	All S-100 based PS.
23	Thematic Accuracy / Non-Quantitative Attribute Accuracy	Correctness of non-quantitative attribute.	numberOfIncorrectAttributeValues / This data quality measure is count of the total number of erroneous attribute values within the relevant part of the dataset. It is a count of all attribute values where the value is incorrect. [Adapted from ISO 19157]	dataset/dataset series/spatial object type.	All S-100 based PS.
24	Thematic Accuracy / Quantitative Attribute Accuracy	Accuracy of a quantitative attribute.	attributeValueUncertainty3Sigma / This data quality measure indicates the attribute value of uncertainty where half the length of the interval defined by an upper and lower limit in which the true value for the quantitative attribute lies with a probability of 95%. [Adapted from ISO 19157]	dataset/dataset series/spatial object type.	All S-100 based PS.

25	Aggregation Measures / Aggregation Measures	In a data product specification, several requirements are set up for a product to conform to the specification.	DataProductSpecificationPassed / This data quality measure is a boolean indicating that all requirements in the referred data product specification are fulfilled.	dataset/dataset series/spatial object type.	PS that a require a complete pass of all elements of a dataset/dataset series/spatial object types
26	Aggregation Measures / Aggregation Measures	In a data product specification, several requirements are set up for a product to conform to the specification.	DataProductSpecificationFailed Rate / This data quality measure is a number indicating the number of data product specification requirements that are not fulfilled by the current product/dataset in relation to the total number of data product specification requirements.	dataset/dataset series/spatial object type.	PS that a require a complete pass of all elements of a dataset/dataset series/spatial object types.