



19th Meeting of the Data Quality Working Group

Proposal for approving amendments of S-97 Part C

Agenda Item 6.2A

DQWG-19, VTC Event, 25- 26 March 2024



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INTRODUCTION / BACKGROUND

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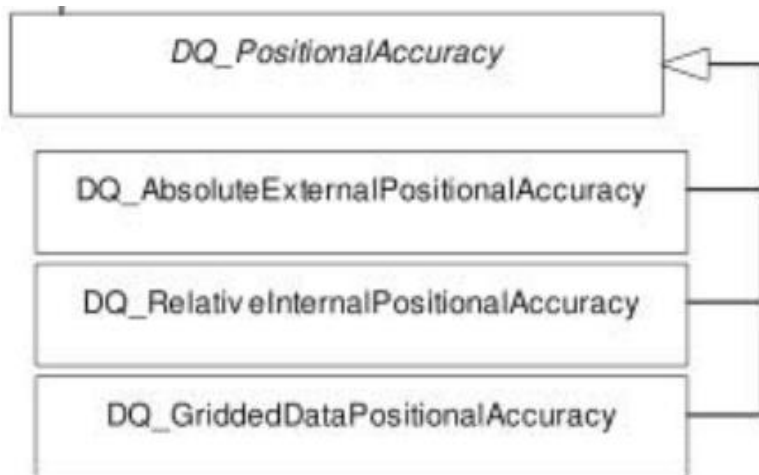
According to Action 18/17, the subWG comprised of Chair, NL and PRIMAR complete the review of S-97 Part C in accordance with ISO 19157.



It is recommended to:

- a) Update the C 6.6 Positional Accuracy to maintain consistency within S-97 and with ISO 19157.

ISO 19157



S-97

C-5.1 Data quality measures

Positional Accuracy is defined as the accuracy of the position of features within a spatial reference system. It consists of three Data Quality Elements:

- Absolute or external accuracy – closeness of reported coordinate values to values accepted as or being true;
- Relative or internal accuracy – closeness of the relative positions of features in a dataset to their respective relative positions accepted as or being true;
- Gridded data positional accuracy – closeness of gridded data spatial position values to values accepted as or being true.



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DISCUSSION/RECOMMENDATIONS

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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.



b) Revise Table 7-1 as follow:

① Amended **the DQ measure / description of Absolute or External Accuracy.**

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.
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② Amended the DQ measure / description of Vertical Position Accuracy.

14	Positional Accuracy / Vertical Position Accuracy	Closeness of reported coordinative values to values accepted as or being true.	LinearMapAccuracy95 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.
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S-100 Part 4C

linearMapAccuracy95[0..1] : Real

Half length of the interval defined by an upper and lower limit in which the true value lies with probability **95%**. [~~Adapted from ISO 19138~~] [Adapted from ISO 19157].



③ Amended the DQ measure / description of Horizontal Position Accuracy.

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.
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S-100 Part 4C

circularError95[0..1] : Real

Radius describing a circle in which the true point location lies with the probability of 95%. ~~[Adapted from ISO 19138]~~ [Adapted from ISO 19157].

The Public Attribute is only used for horizontal positional uncertainties.



④ Add : Positional Accuracy / Relative or Internal Accuracy

16	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.	relativeVerticalError/ An evaluation of the random errors of one relief feature to another in the same data set 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]	spatial object / spatial object type	PS with objects that have coordinative values associated.
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.



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DQ_RelativeInternalPositionalAccuracy

Closeness of the relative positions of features in a dataset to their respective relative positions accepted as or being true. [Per ISO 19115]

Public Attributes:

relativeVerticalError[0..1] : Real

An evaluation of the random errors of one relief feature to another in the same data set 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 19138]~~ **[Adapted from ISO 19157].**

relativeHorizontalError[0..1] : Real

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 19138]~~ **[Adapted from ISO 19157].**



⑤ Amended the DQ measure / description of Gridded Data Position Accuracy

18	Positional Accuracy / Gridded Data Position Accuracy	Closeness of reported coordinative values to values accepted as or being true.	t mean square error of planimetry RMSErrorPlanimetry $\sqrt{\sigma^2}$ / 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.
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⑥ Amended the definition and DQ measure / description of Temporal Consistency .

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.
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⑦ Add : Temporal Quality / Temporal Validity and Temporal Quality / DQ_AccuracyOfATimeMeasurement.

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)	attributeValueUncertainty95/ 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.	PS with objects that have a time value associated.



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Temporal Quality is defined as the quality of the temporal attributes and temporal relationships of features. It consists of three Data Quality Elements:

- Accuracy of a time measurement – closeness of reported time measurements to values accepted as or known to be true;
- Temporal consistency – correctness of the order of events;
- Temporal validity – validity of data with respect to time.



⑧ Add : Thematic Accuracy / Non-Quantitative Attribute Accuracy and Quantitative Attribute Accuracy

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.	attributeValueUncertainty95/ 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.



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Thematic Accuracy is defined as the accuracy of quantitative attributes and the correctness of non-quantitative attributes and of the classifications of features and their relationships. It consists of three Data Quality Elements:

- Classification correctness – comparison of the classes assigned to features or their attributes to a Universe of Discourse (for example ground truth or reference data);
- Non-quantitative attribute correctness – measure of whether a non-quantitative attribute is correct or incorrect;
- Quantitative attribute accuracy – closeness of the value of a quantitative attribute to a value accepted as or known to be true.



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ACTION REQUIRED OF DQWG

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The DQWG is invited to:

- a. Note the information provided;
- b. Approve amendments in Annex A;
- c. Take actions to include these amendments in the new edition of S-97.