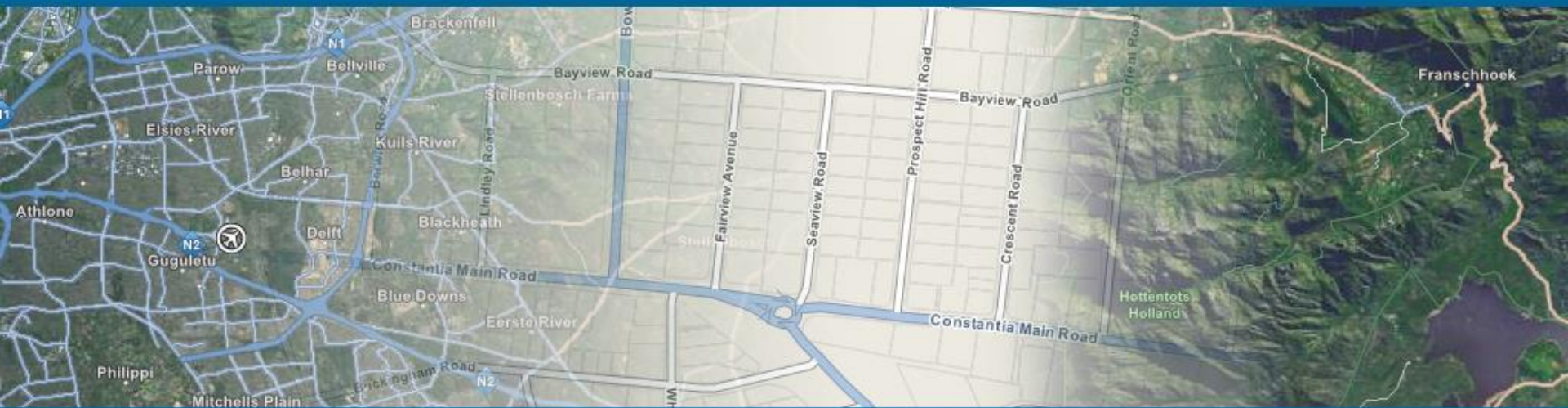


Motivation and the need for the revision of ISO 19157:2013 Geographic information – Data quality

Malta 28th January 2020

Torsten Svärd Ivana Ivánová Mats Åhlin



ISO/NP 19157-1 – introduction

Introduction to ISO/NP 19157-1

- From PMG meeting in 48th ISO/TC211 Plenary in Maribor, Slovenia:
- “Resolution 950 – N5036: **Revision of ISO 19157:2013, Geographic information – Data quality**
 - Noting the result of the systematic review of ISO 19157:2013 (N 5036) and the recommendation in the PMG report, ISO/TC 211 resolves to revise this International Standard in accordance to resolution 684 with the timeframe of 36 months. ISO/TC 211 instructs the secretariat to send out a call to the members for project leader and experts within 30 days.”

Introduction to ISO/NP 19157-1

- Decision on the revision of ISO 19157 comes after ISO 19157 systematic review with ballot done between 2018-10 and 2019-03.
- Result: **19 confirm, 3 revise, 14 abstain.**
- Despite the results and derived from the comments, PMG decided to propose the standard for revision.

Introduction to ISO/NP 19157-1

Project leaders:

- Mr Torsten Svärd
 - Lantmäteriet Sweden – responsible for defining and managing quality
 - QKEN Eurogeographics
- Dr Ivana Ivánová
 - Curtin University – research mainly on spatial data quality
 - OGC Data Quality DWG co-chair
 - Standards Australia, IT-004 member
- Mats Åhlin
 - Swedish Institute for Standards
 - Secretariat

Introduction to ISO/NP 19157-1

Group of Experts:

Roland Grillmayer, Austria
Jake V. Th. Knoppers, Canada
Ms. Joselyn Robledo, Chile
Mr. Pablo Morales Hermosilla, Chile
Prof. Shang Yaoling,
Lars Erik Storgaard, Denmark
Jan Hjelmager, Denmark
Yoshihisa SERIZAWA, Japan
Reese Plews, TMG Convenor, Japan
Liz Kolster, New Zealand
Knut Jetlund, Norway
Mr Zenon Parzynski, Poland
Luncedo Ngcofe, South Africa

Joan Masó-Pau, Spain
F. Javier Ariza, Spain
Gonzalo Moreno-Vergara, Spain
Pablo Barreira-González, Spain
Louise Norlin, Sweden
Lena Bengtsson, Sweden
Mr. Tatiya Chuentragun, Thailand
Mr. Tanapat Tanaratkaiikul, Thailand
Mrs. Supakit Sakolsawakao, Thailand
Col. Chokchai Poathanachokchai, Thailand
Ed Mainwaring, United Kingdom
Sean Uhl, USA
Dave Danko, USA
Morten Borrebaek, Norway
Magnus Karge, Norway

Introduction to ISO/NP 19157-1

Timeline:

- Start – July 2019,
- Committee Draft – June 2020,
- Draft International Standard – June 2021, and
- International Standard – June 2022.

WD to be sent to GoE – April 2020

Source documents – received from ISO/TC211 secretariat

- ISO 19157:2013 Geographic information – Data quality
- ISO 19157:2013/Amd. 1:2018 Geographic information – Data quality – Amendment 1: Describing data quality using coverages
- Collated comments from the ISO 19157 Systematic Review

Work so far

- Started in September 2019
- Regular PL (≈fortnightly) teleconferences + heavy email exchange (also with GoE members)
- *WD in progress..*

ISO/FDIS 19157:2013(E)

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;

Table of comments on systematic review ISO 19157:2013

MB/ NC¹	Line nr	Clause	Paragraph/ Figure/Table	Type of comment ²	Comments	Proposed change	Observations of the secretariat /Torsten
SE 001				GE	ISO 19157 should be harmonized with GUM [ISO/IEC 98-3:2008] with regards to the terms of accuracy and uncertainty	Harmonize terminology with GUM	TS: Check GUM Maybe add a text about accuracy and uncertainty. A couple of datatypes use accuracy in this standard. Probably a huge effort to change it
SE 002				GE	There is a new version of ISO 19131, which gives effect on ISO 19157.	Make appropriate updates to conform to the new version of ISO 19131.	
DK 003				Ge	The reason for our vote for revision is that the terminology need to be sharpened, as reflected in our comments related to this document.		TS: I do not think we shall have the 19157-types in the list of terms. They will be described in the standard itself e.g. Ch 7 and annex C and D
DK 004		01	Para 1	Jc	There should be a slight addition to the scope. Since this standard provides the principles for quality description of geospatial data perhaps, it should also be mentioned that there is a need for a well-considered system of concepts.	Consider adding some sentences regarding a well-considered system of concepts to the scope.	
DK 005		04		Ge/Jc	When reading the title of this standard and the content of clause 4 it becomes clear that the concept "Data Quality" is not defined. We think that this vital concept should be defined.	The definition could be located in either the Introduction, clause 1 (Scope) or as preferred in clause 4. A definition can be found e.g. in ISO 25012 or ISO 8000-2:2018, 3.8.1	Check 25012 and 8000 See also Annex C 2.1 TS: data quality added as a term
DK 006		04.01			Concept "accuracy": is the meaning of this concept (coming from ISO 25012) the same as accuracy from ISO/IEC Guide 99:2007, 3.12, then	If "accuracy" is the same as "measurement accuracy" from ISO/IEC Guide 99:2007, 3.12, then	Check GUM

Svið Torsten
Formatted: Normal

Svið Torsten
DK 004

There should be a slight addition to the scope. Since this standard provides the principles for quality description of geospatial data perhaps, it should also be mentioned that there is a need for a well-considered system of concepts.

Svið Torsten
DK 007

Concept 'conformance': Equivalent to 'conformity' in ISO 9000:2015: Entry 3.6.11 conformity fulfillment of a requirement (3.6.4)
Note 1 to entry: In English the word 'conformance' is synonymous but deprecated. In French the word 'conformité' is synonymous but deprecated.
Add perhaps also concept 'requirement' from ISO 9000:2015 entry 3.6.4 requirement
used or expectation that is stated, generally implied or obligatory

Svið Torsten
If: Conformance is used in "all" other standards in the introduction chapters
TS: add a describing note, see comment on 19105

Comments received so far

Comments from ISO 19157 Systematic Review

- During SR we received comments from only 2 (Sweden and Denmark) of 3 countries suggesting revision
- We decided to solicit more comments:
 - From GoE:
 - Request: sent on 24 September 2019,
 - Response: so far 2 received, some are work in progress
 - From other quality groups:
 - Eurogeographics' QKEN
 - OGC's DQ DWG

Comments solicited from OGC's DQ DWG

- OGC Data Quality Domain Working Group (<https://www.opengeospatial.org/projects/groups/dqdwg>)
- 1st ISO/NP 19157-1 session organized at OGC/TC in Toulouse, FR on 18 November 2019:
 - Review of existing related work
 - Prompt for reports on (positive/negative) experience with ISO 19157
- Decision to set-up regular monthly teleconferences on ISO 19157-1 starting from January 2020

ISO 19157 terminology

ISO/NP 19157-1 – terminology

- Request for terminology raised by several experts
- Call for terminology harmonization:
 - With other standards from ISO 19100 series – e.g. on consistent use of prefixes rename:
 - 'DQ_Element' to 'QualityElement'
 - 'DQ_Completeness' to 'Completeness'
 - With other ISO standards
 - With other data quality standards

Few examples from GoE

- Denmark:
 - ISO 19157 should be harmonized with other standards, e.g. GUM [ISO/IEC 98-3:2008], new versions of ISO 19100 series (e.g. ISO 19131)
- Spain:
 - Revise terminology with respect to the new perspectives on data quality (e.g. from semantic web domain, VGI) and considering other, existing data quality models (e.g. GUM and VIM guides)

Example from ISO/TC211

- ISO/TC211 TMG:
 - Related ‘freshly published’ standards – e.g. 19116 was published in December and in that revision some new term revisions around, accuracy, precision, reliability, uncertainty
 - Current edition of the ISO/TC211 terminology spreadsheet

Example from ISO/TC211

- ISO/TC211 PMG:
 - GUM [ISO/IEC 98-3:2008]
 - ISO 19131
 - ISO 3534-2:2006
 - ISO/IEC Guide 99:2007
 - ISO 9000:2015
 - ISO/IEC 25012:2008
 - ISO 8000-2:2018, Data quality — Part 2: Vocabulary
 - ISO/IEC 2502n series of standards, Systems and software Quality Requirements and Evaluation

Request for new DQ elements

Examples from comments received so far

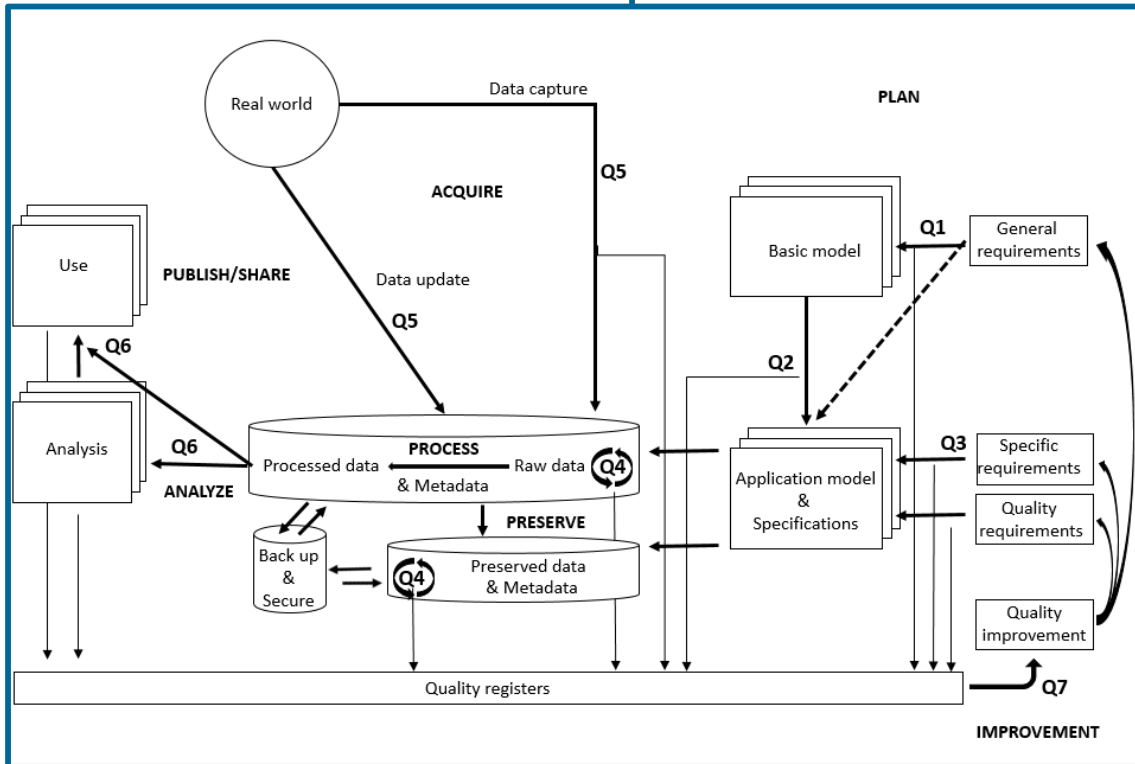
- Denmark:
 - ‘conformance’ vs ‘conformity’
 - ‘correctness’ vs ‘measurement trueness’
 - consider including ‘trustworthiness’ or ‘credibility’ as per current practice of DQV for data on the web.

Examples from comments received so far

- Spain:
 - Geometric correctness
 - Geometric fidelity
 - Radiometric discontinuity
 - Integrity
 - Quality of free text

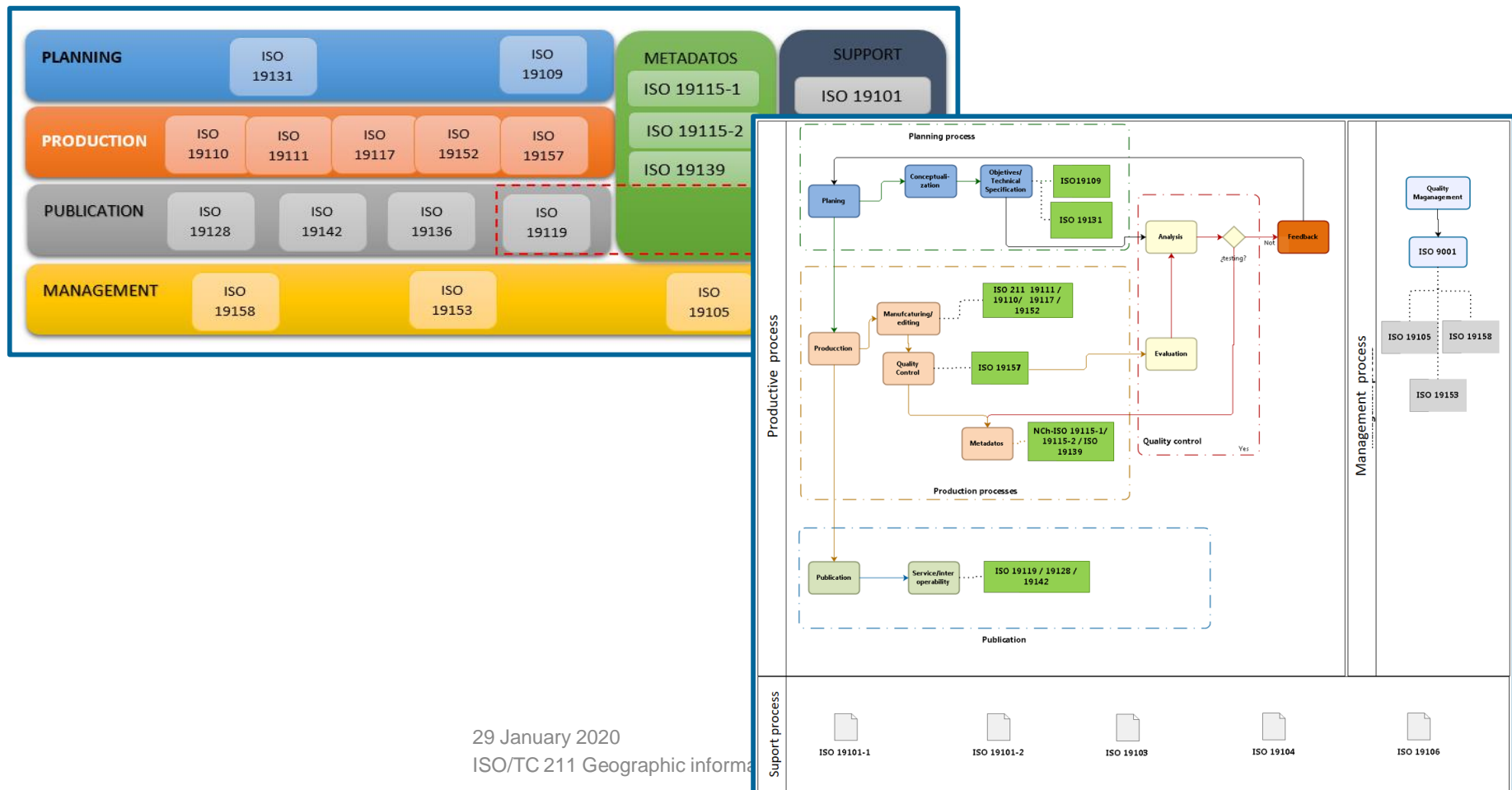
Improve description of quality evaluation and management procedures

- Spain:



Examples from comments received so far

- Chile:



Other comments

Examples from comments received so far

- Spain:
 - Improve the use of ‘metaquality’
 - Improve data quality report
 - Clarify relationships between 19131 and 19157
 - Improve user feedback
 - Unify ISO 19157 with UncertML
 - Improve description of quality of the data product lifecycle

Align with other Data Quality initiatives

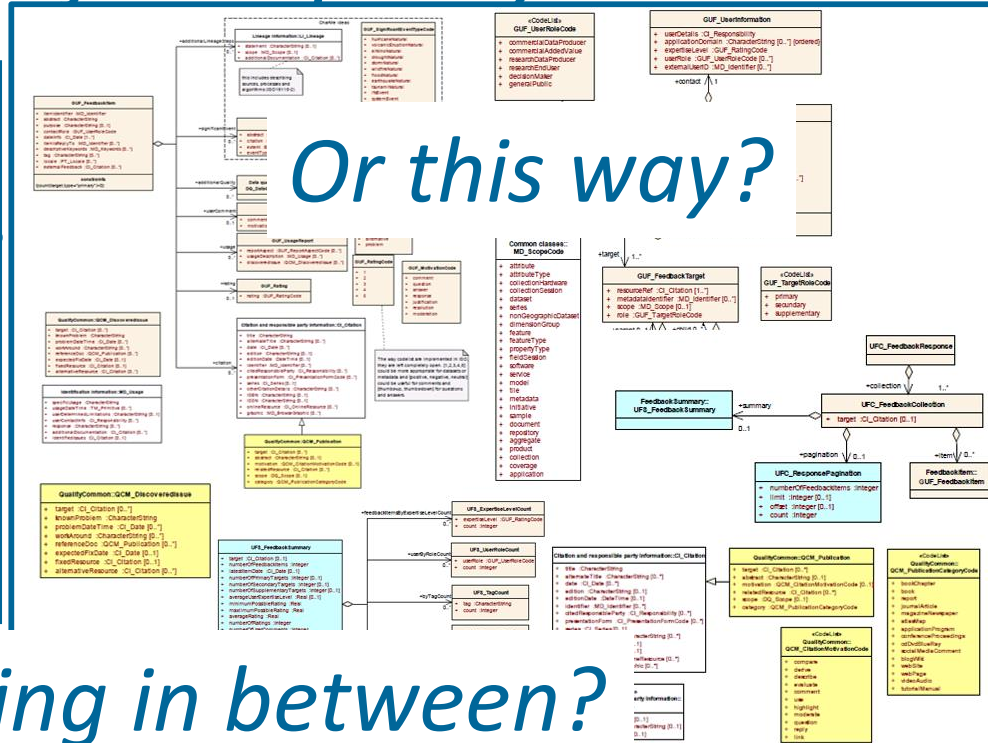
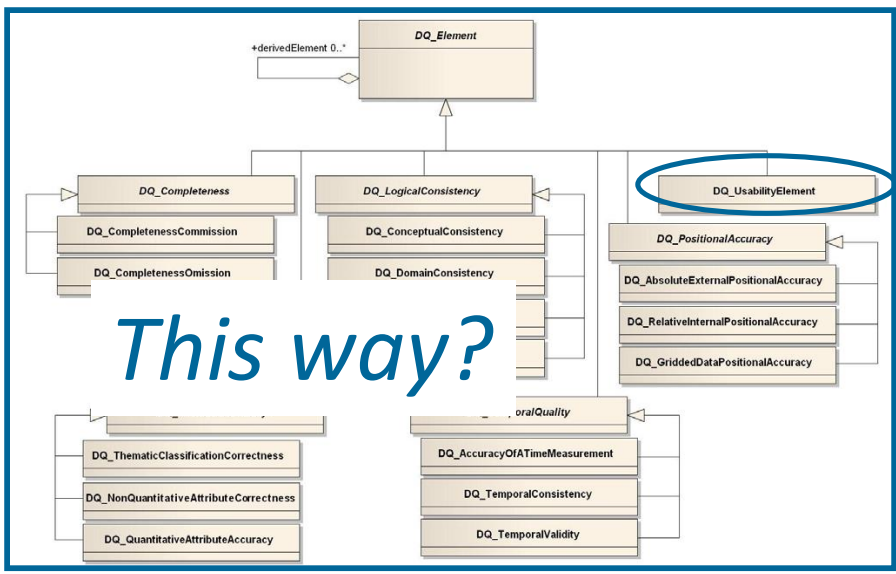
Items that came up during several discussions

- OGC Metadata & Cat DWG:
 - Specification of accuracy related to dynamic datum
- OGC Testbed 13:
 - Insufficiency of 'temporal accuracy'
 - Definition of new elements

OGC

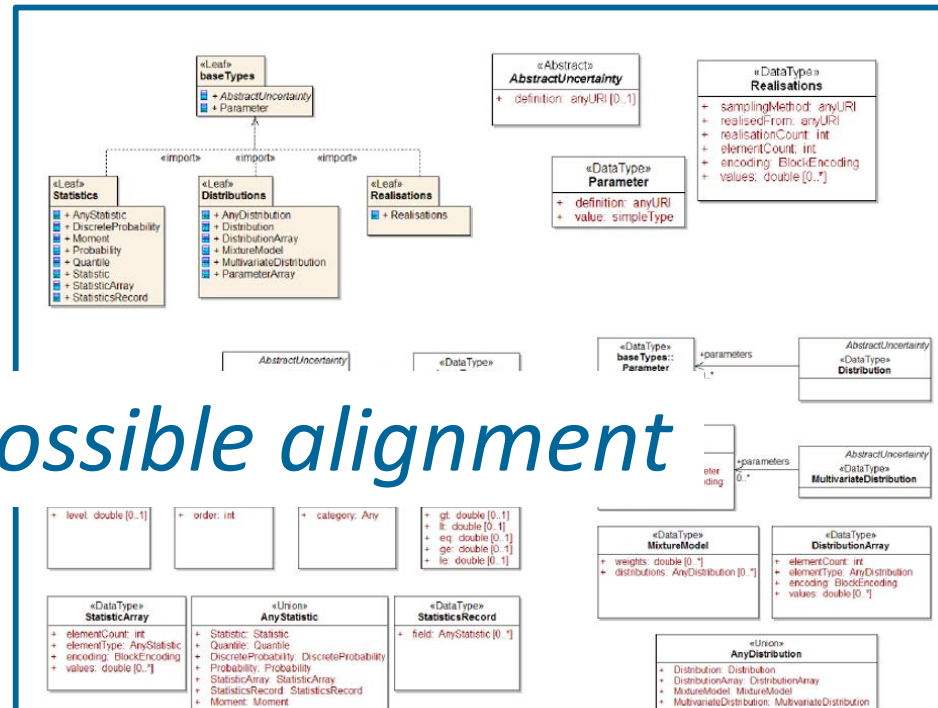
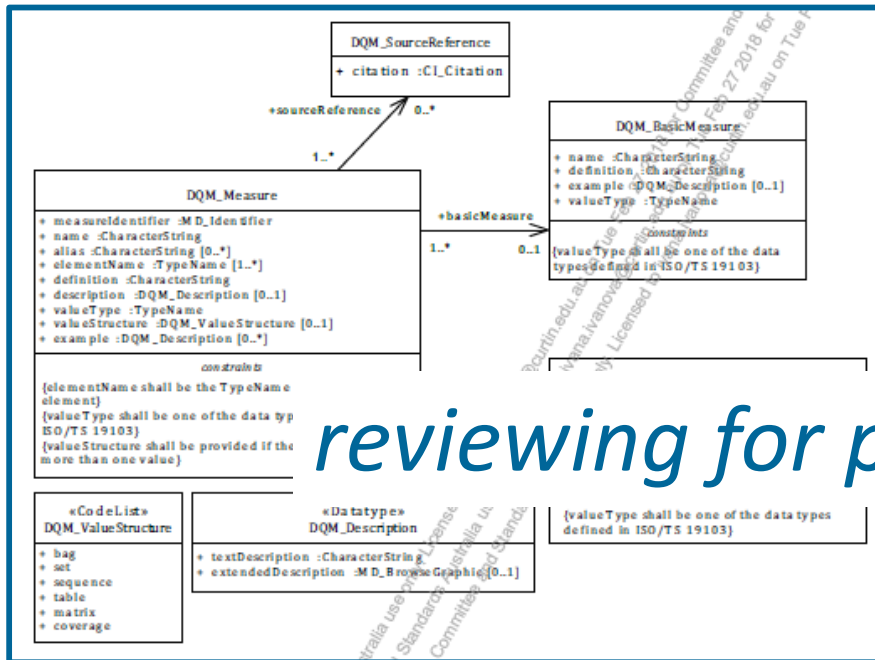
- Geospatial User Feedback (<https://www.opengeospatial.org/standards/guf>) :

Dealing with user defined quality



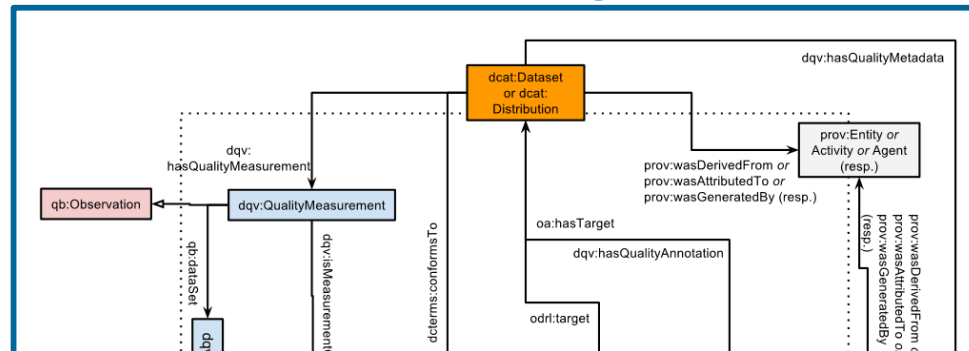
OGC

- UncertML
(https://portal.opengeospatial.org/files/?artifact_id=33234)

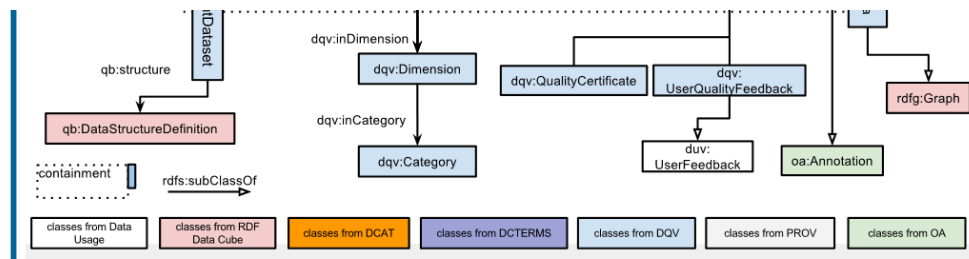


W3C

- Data Quality Vocabulary (<https://www.w3.org/TR/vocab-dqv>) – referred to by W3C/OGC joint Spatial Data on the Web Best Practice (<https://www.w3.org/TR/sdw-bp>)



reviewing for possible alignment



Discussion

What is your experience with implementation of ISO 19157 (or any of its predecessors) – what was straightforward and what was problematic?

Which DQ elements did you miss, or found inadequate and why?

When implementing ISO 19157, how did you make connection between ISO 19131 (data product specification) and ISO 19157?

What is your opinion about the ISO 19157 data quality model – do you find it simple or too complicated?

Do you follow ISO 19157 data quality evaluation procedure? If not, do you follow any other standard quality evaluation procedure? If so, which one?

Any further comments/questions?

Contact

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ISO 19131 and ISO 19157

Idea for the case of DPS

