

Minutes from DQWG 4

DQWG 4 was held 14 to 16 June, 2011. Antti Castrén (AC) welcomed the participants to Helsinki, Finland and the Finnish Transport Agency (FTA). He gave the meeting an overview of practical arrangements, then all participants introduced themselves (see Annex A for participant list)

AC gave a presentation of FTA, how it is organized, its responsibilities, and how the hydrographic office fit within the overall organization.

The meeting was officially opened by Jukka Varonen (National Hydrographer of Finland) who welcomed DQWG to Finland and FTA.

Minutes and actions from previous meeting

First item on the agenda was a review of minutes from DQWG and actions arising from this meeting. Minutes were accepted. Status of actions;

- **DQWG3-1A:** Liaise with SNPWG; *Action transferred to Eivind Mong (EM) – ongoing*
- **DQWG3-1B:** Investigate SNPWG's wiki and assess its usefulness for the DQWG; *Chris Howlett (CH) to revitalise the DQWG Google group. The SNPWG Wiki was considered to not be suitable at this time for DQWG.*
- **DQWG3-2A:** CH to modify draft CL by 22 November, 2010 to include request for greater participation, contact details for mariners and details of the DQWG meeting planned for mid 2011; *Done*
- **DQWG3-2B:** All to review modified draft CL and return suggestions etc to CH by 1 December, 2010; *Done*
- **DQWG3-2C:** IHB to issue CL to member states early December; *Done*
- **DQWG3-3A:** AC to prepare a brief report on relevant standards by 20 November, 2010; *Done*
- **DQWG3-4A:** Sam Harper (SH) to prepare a summary of the results from CL 17/2010, CL 59/2010 and other relevant documents including the S-101 Data Quality Proposal by 3 January 2011; *Done*
- **DQWG3-4B:** All to analyse and comment S-101 Data Quality Proposal by 17 December, 2010 so results can feed into the summary being prepared at Action 4a; *Done*
- **DQWG3-5A:** CH/SH to draft the questionnaire by 1 December, 2010; *Done*
- **DQWG3-5B:** All to supply contact details for mariners who can be given the questionnaire by 3 January, 2011; *Done*

- **DQWG3-5C:** All to review draft questionnaire and supply modifications /comments to CH by 3 January, 2011; *Done*
- **DQWG3-5D:** CH to supply completed questionnaire to identified mariners by 17 January, 2011; *Done (Brazilian Navy wanted to translate the questionnaire into Portuguese and there will be an article in the French Journal of Navigation on the questionnaire)*
- **DQWG3-6A:** SH to analyse results of the questionnaire to mariners and report to the WG by 16 May, 2011; *Done – cut off for DQWG4 was 27 May, 2011*
- **DQWG3-7A:** SH to create a fully quality attributed ENC test data set by 16 May, 2011. Rob Hare (RH) to investigate potential involvement of University of Southern Mississippi (USM) students and use of ECDIS Lab; *Ongoing.*
- **DQWG3-8A:** CH to initiate the issues related to education of mariners and cartographers and the development of relevant documentation; *started during DQWG4*
- **DQWG3-9A:** All to confirm that the proposed dates for the meeting are acceptable by 1 December, 2010; *Done*

Agenda Item 2 - Review analysis of Mariner's Questionnaire

Paper from Julia Powell (Doc. DQWG4-02A) was reviewed and discussed. Paper is taken as a work item from TSMAD to DQWG. Preliminary work on response was done during DQWG4 under agenda items 3 and 4, and the following items were identified as problems with the current scheme;

- Temporal factor is missing
- M_QUAL tend to focus on survey quality rather than quality of the data used in the ENC.

Action DQWG4-2A: DQWG to respond to TSMAD (to be done by 5 December, 2011)

Action DQWG4-2B: EM and AC will draft the S-101 data quality section based on DQWG4 work by end of October, 2011.

Action DQWG4-2C: EM to contact Tony Pharaoh (IHB) and investigate ISO 19138 and where S-100 Appendix 4C-C attributeValueUncertainty2Sigma if is 90% or 95% as believed by DQWG.

Agenda Item 3 – Review analysis of Mariner's Questionnaire

SH presented the preliminary results of the survey based on 574 responses received by 27 May, 2011. Some of the preliminary conclusions are:

- Large proportions of ENC users are not using the CATZOC information;
- The additional S-57 DQ indicator attributes are not understood and not used;
- Majority of mariner's state that they have not received enough training on data quality issues and that they would like to receive more training;
- An on demand quality overlay is the preferred future method of representing data quality to the mariner.

Agenda Item 3a – Agree what quality indicators are of value to the mariner & Agenda Item 4b – Agree whether new quality indicators are needed to support 3a

DQWG feel these quality indicators are important to mariners:

- Horizontal uncertainty (e.g. QUAPOS, POSACC);
- Vertical uncertainty (e.g. QUASOU, SOUACC);
- uncertainty of existence (e.g. existence doubtful in STATUS); and
- temporal variation (e.g. changes since SUREND).

Quality may be captured in quantified values (e.g. positional accuracy) and qualitative values (e.g. statements of how likely it is for an area to change). DQWG agreed that the likelihood of change since survey need to be captured in a way that clearly communicates the potential risk to the end user. DQWG propose the following as the method to capture temporal variation. The vision is that this can be used instead of caution area notes.

Category of temporal variation:

1. un-assessed;
2. event (e.g. hurricane);
3. likely to change (e.g. river siltation);
4. unlikely to change (e.g. rock).

Agenda Item 3b – Agree what method of portrayal is best for the mariner

DQWG note that the survey showed a strong preference for an on-demand (via toggle function) data quality colour fill or as an overlay.

DQWG feel that the existing method of portraying data quality (i.e. CATZOC and its “stars”) is inadequate, therefore DQWG conclude that areas with central symbols or symbol fills are not adequate to represent data quality. Instead DQWG agreed that a colour fill or pattern fill (e.g. cross hatching) would be more appropriate, for example one colour to show areas of poor data quality, another colour to show areas of not ideal data quality and no colour fill for areas of sufficient data quality.

It is the understanding of DQWG that data quality may in the long term be used with ship parameters, tidal information, weather etc. to generate safe/unsafe zones on the display and therefore the use of red and amber for data quality may not be ideal.

Action DQWG4-3A: SH to report back on the usefulness of the current display of quality indicators in ENC, and DQWG to formulate a recommendation for data quality indicators to DIPWG by next DIPWG meeting (May 2012).

Agenda Item 4 – Review analysis of responses to CL 17/2010 “ENC Data Quality Indicators”

SH presented the results of the survey attached to CL17/2010 and had the following conclusions and recommendations:

- Resources HO's have available to populate new attributes are limited;
- There may be a preference towards composite quality indicators;
- There should be no limitation in terms of a quality object overlapping with any other meta object;
- Any quality information should be easily discoverable;
- The implications of producing ENCs from existing paper charts and the re-assessment of the source data should be taken into account; and
- There should be a clear distinction between quality attributes relating to bathymetry and those relating to topography.

Following a debate, DQWG agreed to consider the CL17/2010 conclusions and recommendations as the work on S-101 quality indicators progress.

Agenda Item 4a – Agree what existing quality indicators need to be filled to support 3a

DQWG concluded on the following recommendation to ease the transition of CATZOC from S-57 to S-101:

To support future expected uses of data quality in S-101, hydrographic offices should populate POSACC, SOUACC and TECSOU in M_QUAL if these values are better than specified in CATZOC. The reason being is that DQWG do not want CATZOC to be carried over to S-101, but keep the individual attributes to

allow S-101 systems to use the combined attribute values to drive portrayal of data quality. S-101 feature catalogue should be extended with attributes for capturing each of seafloor coverage and size of feature detected. DQWG expect that in converting S-57 to S-101 CATZOC values can auto populate the future M_QUAL feature using set rules based on the definition of each CATZOC attribute value. In addition to POSACC, SOUACC and TECSOU, DQWG think S-101 needs additional attributes that capture seafloor coverage. The following is a draft of the structure of these attributes:

Full seafloor coverage (yes/no) (*simple attribute*);

Feature detected (*complex attribute*):

- Significant features detected (yes/no)(*simple attribute*);
- Size of features detected (meters @95% confidence level) (*conditional* on significant features detected=yes) (*simple attribute*); and
- Least depth of detected features measured (yes/no) (*conditional* on significant features detected=yes) (*simple attribute*).

For S-57 any attribute value added to POSACC, SOUACC, VERACC and HORACC, must be done at the 95% confidence level.

DQWG recommend there is one attribute to capture each of the uncertainty of vertical positional measurements, horizontal positional measurements and distances. E.g. SOUACC and VERACC should be merged into one attribute. There should be no distinction in the attribute if measurements are made on land versus sea, the feature to which the attribute below should make this clear.

DQWG request that any attribute capturing a measurement also contain a sub-attribute to capture uncertainty of said value, should this value be of a different uncertainty than specified in a meta feature containing it. Any S-101 uncertainty attribute must be captured at the 95% confidence level.

The resulting feature impact display is still under discussion and DQWG will attempt to formulate a recommended display for DIPWG before their next meeting. See [Action DQWG4-3A](#)

Agenda Item 5 – Review analysis of responses to CL 59/2010 “CATZOC Classification of Legacy Data”

SH presented the results from CL59/2010. Upon discussion DQWG noted the CL59/2010 survey recommendations:

- At present there is a lack of consistency in the way CATZOC is populated for legacy data. The DQWG should therefore explore whether developing standard guidelines for the classification of legacy data would address this problem;

- The DQWG should take into account the effort that some ENC producers have put into populating CATZOC, and seek to limit the amount of reassessment that any new data quality method will require;
- The DQWG should consider the comments made by Australia with regard to the broad nature of CATZOC C, and ensure that any new method developed is more refined; and
- Any new method of representing data quality should take into account the temporal degradation of quality due to dynamic seabed topography.

Following discussion of the survey and its recommendations, DQWG recommends that the portrayal of M_QUAL be improved. In addition, DQWG consider training HOs and end-users in how to use M_QUAL is valuable in the sense that it communicates that quality counts. It also adds value to the ENC in that its use is enhanced. **See action DQWG4-5D.**

Agenda item 5a – Agree a standard method for populating CATZOC from legacy data

M_QUAL should be used to represent the best estimate of the data quality on the product, rather than represent the quality of the data at the end of the survey. Factoring in survey, data processing, expected change over time in the particular area and all factors that degrade the dataset should be taken into account.

- CATZOC will be limited in positional uncertainty by scale of source used to digitize data from (if it was);
- CATZOC will be degraded in depth uncertainty in areas of changeable seabed; e.g. areas subject to siltation, ice movement, sand waves fields;
- CATZOC will be limited in positional uncertainty; e.g. by datum transformation, cartographic processes, etc.; and
- CATZOC may be degraded by extreme events; e.g. hurricane/typhoon, earthquake, volcanic activity, etc.

DQWG did not feel it was possible to agree on a standard method for populating CATZOC from all legacy data. The above is meant to provide a guideline on how CATZOC is used. DQWG recommend that any documentation (in particular S-57 UOC) that describe the use of M_QUAL and CATZOC need to be updated.

Action DQWG4-5A: CH to draft a change to the documentation describing the use of M_QUAL and CATZOC (section 2.2 in S-57 UOC)

Action DQWG4-5B: CH to liaise with TSMAD chair, vice-chair and IHO technical director on formulating a letter to the DQWG membership stating the importance of data quality on the development of S-101 to help DQWG members get travel approval. End July 2011.

Action DQWG4-5C: CH to communicate with UKHO's IMO person on finding IMO accredited training institutions.

Action DQWG4-5D: All to consider how knowledge of data quality can be disseminated to practicing mariners in their area of influence. Reports of these activities should be given at upcoming DQWG meetings.

Agenda Item 6 – Review e-mail discussion since DQWG3

E-mail discussions were reviewed in course of meeting under the various agenda items. *Done*.

Agenda Item 7 – Review DQWG ToRs

The ToR was discussed and the term hydrographic data (ref ToR 3 a ii) was taken to mean hydrography in its wider sense. Ref. Hydrographic dictionary (S-32 (online wiki version)).

Next meeting is tentatively set for week of 14 November at IHB in Monaco.

Rob Hare (CHS) has taken the nomination for the DQWG vice-chair pending CHS approval – *Done*. His nomination was unanimous. Post meeting note: The CHS Director General has approved the nomination. Official confirmation will be forthcoming to the IHB.

Eivind Mong (Jeppesen) has been appointed secretary of DQWG.

Agenda Item 8 – Review DQWG work programme

Action DQWG4-8A: CH to modify DQWG work items as follows:

- A “Review ISO 19113, 19114, and 19115 and make recommendations for inclusion in S-100”; change priority to medium, status should be ongoing, remarks should be: An ongoing task to keep S-100 data quality in line with ISO standards;
- Add B.3; draft S-101 data quality;
- Add C.3; investigate via IMO how to add data quality into the training of mariners;
- Add C.4; investigate possible methods for how to educate practicing mariners on data quality issues;

- D.1 “Review current functionality in ECDIS with current products”; add under remarks; Full analysis of questionnaire to be completed on 14 September, 2011. Contact person is Sam Harper. Status should be ongoing; and
- E.1 “Develop logic tree for alarms in current and proposed approaches”; add remarks: DQWG will make recommendations to DIPWG on how data quality can be portrayed to the mariner.

Action DQWG4-8B: Rob Hare (RH) to investigate with the University of Southern Mississippi the possibility of them assisting in demonstrating methods of displaying data quality. See action DQWG3-7A.

Action DQWG4-8C: CH to request other IHO working groups indicate what data quality items DQWG should work on; e.g. tides, ports, real time data.

Agenda Item 9 – Review DQWG membership

In the meeting, it was agreed that a review of the membership in DQWG was required to ensure only interested members are listed.

Action DQWG4-10A: CH and Michel Huet (MH) to review the DQWG Google groups and confirm the DQWG member list.

Agenda Item 10 - Issues to be reported to HSSC3

Items to be reported to the HSSC3 were discussed. The deadline for HSSC3 documents is 20 September 2011.

Action: CH will send well in advance the draft report to DQWG members for comments.

Agenda Item 11 - Future actions

Agenda item was reviewed in previous agenda items.

Agenda Item 12 - Next meeting

Next meeting is tentatively set for week of 14 – 18 November 2011 at IHB in Monaco.

Chair thanked FTA for hosting the meeting and the attendees for their participation.

Annex A – Participant list

Member state	Name
Canada	Mr Rob HARE (Vice Chair)
Finland	Mr Antti CASTRÉN
Finland	Mr Juha KORHONEN
Finland	Mr Mikko HOVI
IHB	Mr Michel HUET
Netherlands	Mr Leendert DORST
Norway	Mr Kjetil WIRAK
Slovenia	Mr Matija KLANJŠČEK
Sweden	Mr. Kennet GUSTAFSSON
United Kingdom	Mr Chris HOWLETT (Chair)
United Kingdom	Mr Sam HARPER
Expert Contributor	Name
Jeppesen	Mr Eivind MONG (Secretary)

Annex B - Open action items

- **DQWG3-1A:** Liaise with SNPWG; *Action transferred to Eivind Mong (EM) – ongoing*
- **DQWG3-7A:** SH to create a fully quality attributed ENC test data set by May 16, 2011. Rob Hare (RH) to investigate potential involvement of University of Southern Mississippi (USM) students and use of ECDIS Lab; *Ongoing.*
- **DQWG3-8A:** CH to initiate the issues related to education of mariners and cartographers and the development of relevant documentation; *To be done during DQWG4*
- **DQWG4-2A:** DQWG to respond to TSMAD (to be done by December 5, 2011)
- **DQWG4-2B:** EM and AC will draft the S-101 data quality section based on DQWG4 work by end of October, 2011.
- **DQWG4-2C:** EM to contact Tony Pharaoh (IHB) and investigate ISO 19138 and where S-100 Appendix 4C-C attribute Value Uncertainty 2Sigma if is 90% or 95% as believed by DQWG.
- **DQWG4-3A:** SH to report back on the usefulness of the current display of quality indicators in ENC, and DQWG to formulate a recommendation for data quality indicators to DIPWG by next DIPWG meeting (May 2012).
- **DQWG4-5A:** CH to draft a change to the documentation describing the use of M_QUAL and CATZOC (section 2.2 in S-57 UOC)
- **DQWG4-5B:** CH to liaise with TSMAD chair, vice-chair and IHO technical director on formulating a letter to the DQWG membership stating the importance of data quality on the development of S-101 to help DQWG members get travel approval. End July 2011.
- **DQWG4-5C:** CH to communicate with UKHO's IMO person on finding IMO accredited training institutions.
- **DQWG4-5D:** All to consider how knowledge of data quality can be disseminated to practicing mariners in their area of influence. Reports of these activities should be given at upcoming DQWG meetings.
- **DQWG4-8A:** CH to modify DQWG work items as following.
- **DQWG4-8B:** Rob Hare (RH) to investigate with the University of Southern Mississippi the possibility of them assisting in demonstrating methods of displaying data quality.
- **DQWG4-8C:** CH to request other IHO working groups indicate what data quality items DQWG should work on; e.g. tides, ports, real time data.

- **DQWG4-9A:** CH and Michel Huet (MH) to review the DQWG Google groups and confirm the DQWG member list.
- **DQWG4-10A:** CH and Michel Huet (MH) to review the DQWG Google groups and confirm the DQWG member list.