

Minutes from DQWG5

Meeting opened with a welcome from IHB President Vice-Admiral Maratos. He stressed that data quality is an important issue being discussed frequently at IMO. Further he mentioned that the directing committee has proposed that the 18th International Hydrographic Conference put focus on hydrographic survey and data availability to address the many survey gaps in world.

Michel welcomed all to Monaco and went through practical items.

1. Review of DQWG4 minutes and actions;

Further elaborations to existing actions are marked in **yellow highlight**.

DQWG3-1A: ongoing, **report of SNPWG data quality work was presented during the meeting.**

DQWG3-7A: ongoing, **University of Southern Mississippi (USM) is quite keen to take part. A test dataset is being constructed. A formal proposal to USM should be put together. All to contribute via correspondence once S-101 data quality draft has been finalized. Due at end of January 2012.**

DQWG3-8A: Ongoing. Chris Howlett (CH) to initiate the issues related to education of mariners and cartographers and the development of relevant documentation; started during DQWG4

DQWG4-2A: Ongoing. **Draft of S-101 chapter 6 being developed for submission to TSMAD. Due date mid December 2011.**

DQWG4-2B: ongoing, **draft being updated following corrections requested by DQWG. Eivind Mong (EM), Leendert Dorst (LD) and Rob Hare (RH) will draft words for use of model for S-101 chapter 6, this was done immediately after DQWG5 ended. Antti Castren (AC) and Sam Harper (SH) will draft high level architecture for use of model elements in ECDIS for S-101 chapter 6. Due date end of November 2011.**

DQWG4-2C: Done. **However DQWG concluded answer from Tony was incorrect. Change proposal has been completed and will be submitted by LD. Pending no comment, LD will submit to TSMAD on November 25. 2011.**

DQWG4-3A: **SH reported that use of current ENC data quality indicators is inconsistent, and often poorly understood by the mariner. DQWG concluded this justifies a change of data quality indicators in S-101. A specification of what further development should be was completed. Draft specification for data quality indicators will be developed together with University of Southern Mississippi. Previous due date will have to be extended to end of 2012.**

DQWG4-5A: Ongoing, CH to draft a clarification for TSMAD to consider. **Due date mid December 2011.**

DQWG4-5B: Done

DQWG4-5C: Done. There are no IMO accredited training institutions.

Action DQWG5-1A: DQWG to review the IMO ECDIS model course (AC sent out link via DQWG Google site), and if the data quality portion is lacking, draft revision proposal for HSSC. Due date mid August 2012.

Action DQWG5-1B: CH to approach MCA to find out if there is an international body of training institutes.

DQWG4-5D: Ongoing. Consider adding further descriptions to the IHO Check dataset on data quality. Sam Harper (SH) to discuss with Tom Richardson (UKHO). SH will also speak to the UKHO marketing people to see if a data quality disk can be sent out via their VARs. A presentation with key findings from the data quality survey will be put together and put online so Notice to Mariners and other publications can reference this.

DQWG4-8A: Done

DQWG4-8B: Done. USM is happy to help.

DQWG4-8C: Ongoing, will be addressed during DQWG5. Chris Howlett (CH) reported on this at HSSC3. CH to reach out to TWLWG to discuss any needs.

DQWG4-9A: Ongoing CH and Michel Huet (MH) to review the DQWG Google groups and confirm the DQWG member list. MH had been unable to get in contact with Indonesian HO.

DQWG4-10A: Done

DQWG4 minutes accepted with the following amendments;

Action DQWG4-10A renamed to DQWG4-9A and action item under agenda item 10 named DQWG4-10A.

2. Report on the DQWG data quality survey

SH reported on the final analysis of the DQWG survey; Over 600 returns received, however only 574 were used due to time constraints. In general the preliminary results from DQWG4 were confirmed by the final analysis. Reviewing and marking the qualitative responses had taken much longer than anticipated. Furthermore, it was stressed that these results were subjective and that a different reviewer might get slightly different results.

A proposal to share the raw data with paper chart working group (CSPCWG), to enable them to make their own marking of the data, along with the DQWG interpretation of the raw data was supported by DQWG.

Action DQWG5-2A: SH to facilitate sharing of survey raw data and results overview.

Survey results shows that a large portion of ENC users (about 80%) do not use S-57 CATZOC. Comparison shows that number is fairly stable regardless of years of experience.

Survey results show very poor understanding of S-57 acronyms. DQWG5 discussed the clarity of the S-57 acronyms, and recommend that more understandable definitions/labels be used.

Survey results show that end users wish to have more training in wider data quality issues; this ties in with a number of active action items.

Survey results indicate that users want an easy area representation for data quality; how this can be done will be further examined in the cooperation with USM.

The effort in validating the survey results confirms the following conclusions:

- 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 mariners state that they have not received enough training on data quality issues, and that they would like to receive more training.

Using the survey results and input from SH, DQWG has the following recommendations for developing future methods of representing data quality in ECDIS. These recommendations are meant to bring in new possibilities for implementation into ECDIS systems.

- As a minimum the constituent elements of S-57 CATZOC (positional uncertainty, sounding uncertainty, features detected and seafloor coverage) must be encoded in S-101 ENC for depth areas, as separate attributes
- All encoded data quality information must be discoverable
- The data quality of near shore topography (piers/quays, fixed aids to navigation, clearances, etc) should be included, and a method of representing this data quality must be developed
- Temporal degradation of data should be encoded
- New representation methods should be able to accommodate inputs such as dynamic tides, under keel allowance and vessel specific parameters. It is understood that international efforts on standardization of display and mariner training address possible issues with user inputs.
- Where possible, ENC attribute names should be more descriptive (eliminate 6 letter acronyms and make use of camelCase)
- Visualisation should take advantage of the mariner's preference for an on demand colour overlay
- Recommend to improve on the ability for mariners to add notes to specific features. This might also change the presentation of the feature (as an addition to the mariners objects)
- Any representation method should be accompanied by an appropriate education strategy

Action DQWG5-2B: CH to use the DQWG5 minutes to draft an IHO circular letter to report on the DQWG survey results.

Action DQWG5-2C: SH to use the DQWG5 minutes to make a submission for next CSPCWG meeting (2 weeks after DQWG5) to inform the WG about the survey results and make the raw survey data available for the WG for review. See action DQWG5-2A.

3. S-101 data quality model;

EM and AC presented draft quality data model version 1 to the working group. The review and follow on discussions resulted in revised draft data models version 2, 3 and 4. See Appendix 1, Appendix 2, Appendix 3 and Appendix 4 to follow the evolution of the model during the meeting.

The conclusion to the data model is summarised as DQWG agrees that there should be three data quality meta features:

- one that deals exclusively with bathymetric data;
- one that deals with survey quality;
- one that deals non-bathymetric data.

The survey quality meta feature can be used to describe survey quality for both sea and land. The draft data model version 4 will form part of the submission to TSMAD as part of action DQWG4-2A.

As part of the discussion the following items were noted regarding the use of data quality in S-101;

DQWG concludes that coastline is not within the scope of bathymetric data quality. Pending TSMAD approval of the model, this conclusion should be added to S-101 Product Specification.

Specify a bundle of bathymetric data quality attributes for features which contain depth, including categoryOfTemporalVariation. VerticalUncertainty needs to be included – add as either a note in the draft model or S-101 chapter 6.

S-101 product specification, chapter 6 rule to express that verticalUncertainty is prohibited for GM_Curves.

DQWG5 has agreed that only one uncertainty attribute for the vertical dimension should be in S-101. soundingUncertainty is eliminated.

3D uncertainty was discussed, but no practical application for ENC at this moment was found and therefore DQWG has not elaborated this any further.

DQWG has concluded that it is very likely that quality features can have multi-polygon associations and the data quality model therefore reflects this.

3.1 Discussion on Quality of Survey

DQWG considered the use of QualityOfSurvey, and concluded that its use is for both bathymetric and non-bathymetric surveys (e.g. LIDAR can contain both types of features). Therefore, sounding type attributes were changed to vertical measurements to remove the bathymetric exclusive use of these attributes. This change resulted in a number of amendments to the draft data model version 3, and draft model version 4 was the result. The enumerate list of the attribute survey type was reviewed and considered too limited.

Action DQWG5-3A: RH to improve on SURTYP (surveyType). Due date mid-December, 2011.

Action DQWG5-3B: CH to draft a proposal to request S-32 working group to update the definition of bathymetry in the hydrographic dictionary as the current definition was considered insufficient.

Action DQWG5-3C: EM and LD to draft proposals for submission to Hydro register, including the draft definitions in 3.2. This draft will form part of the overall DQWG submission to TSMAD. Due date end of November, 2012.

3.2 Proposed definitions for new attributes

Definitions to enumerates of categoryOfTemporalVariation;

1. Un-assessed; temporal variation not assessed
2. Event; no new survey conducted after an event (e.g. hurricane, earthquake, volcanic eruption, landslide, etc), which is considered likely to have changed the seafloor significantly.
3. Likely to change; continuous or frequent change (e.g. river siltation, sand waves, seasonal storms, ice bergs, etc).
4. Unlikely to change; significant change to the seafloor is not expected.

verticalUncertainty - definition of vertical accuracy (S-57) can be used, but limitation on sounding measurements must be removed.

orientationUncertainty - definition "uncertainty in angular measurements made relative to true north"

surveyDateEnd to have definition changed to be "the end date of survey or group of surveys"

surveyDateStart to have definition changed to be "the start date of survey or group of surveys"

Definition of line spacing – distance between survey lines.

4. Outreach

Steve Shipman was invited into the group for discussions on DQWG's requirements of TWLWG in terms of data quality of water level predictions or forecasts. In general it was considered a good idea, and accepted that data quality was needed to give an uncertainty prediction for under keel allowances. TWLWG lacks experience in S-57/S-100, but this can be overcome by asking specific and direct questions.

Action DQWG5-4A: CH to discuss with UK TWLWG member. Ref Action DQWG4-8C.

Action DQWG5-4B: CH to contact the UK CSPCWG member, on the need for existence doubtful.

Action DQWG5-4C: EM to clarify with TSMAD what more is expected from DQWG in relation to S-100 part 4C, considering the UML model DQWG has already developed.

5. SNPWG report

SNPWG report was presented and noted with the following comment; the work DQWG has done in data quality for S-101 could serve as guidance for SNPWG in the development of data quality.

Action DQWG5-5A: EM to take the DQWG report and draft of S-101 chapter 6 to TSMAD, to SNPWG at the next meeting, and present the work DQWG is doing as work that SNPWG can make use of for the development of data quality in NPubs.

6. DQWG workplan update

D.1 can be listed as complete

E.1 next milestone needs to show the dependency on B.3 added to account for dependency on the data quality model, data quality architecture and use of the data quality model.

Action DQWG5-6A: CH to update workplan.

7. Next meeting;

The chair thanked Michel and the IHB for hosting DQWG5

Date of next meeting will be approximately end of July 2012, location to be determined.

Action DQWG5-7A: MH and CH to draft an invitation letter with a draft agenda to assist in getting travel approved for members. Due date end of February.

Annex A – Participant List

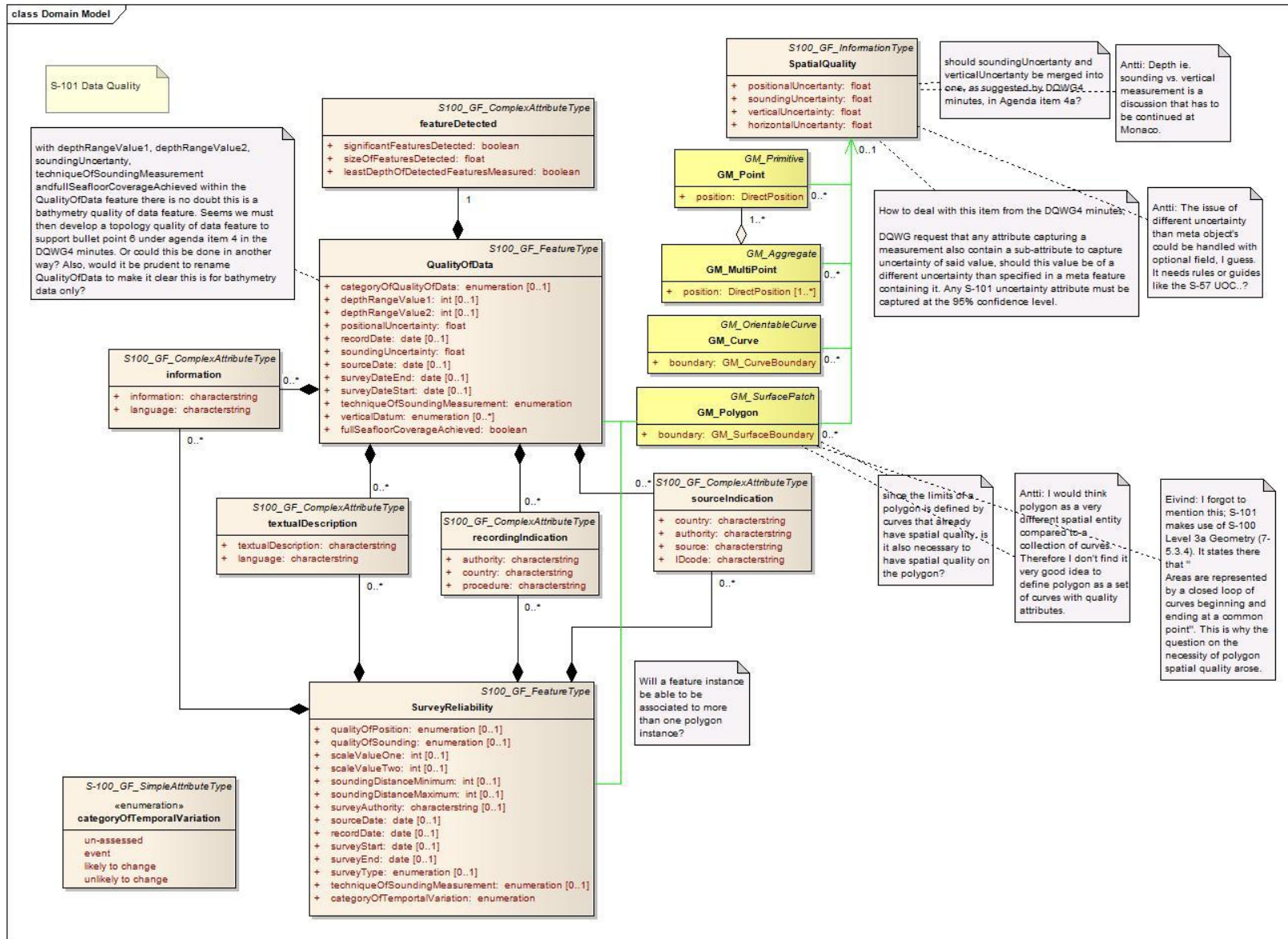
Member state	Name
Canada	Mr Rob HARE (Vice Chair)
Finland	Mr Antti CASTRÉN
IHB	Mr Michel HUET
IHB	Mr Satoshi YAMAO
Netherlands	Mr Leendert DORST
Sweden	Mr. Kennet GUSTAFSSON
United Kingdom	Mr Chris HOWLETT (Chair)
United Kingdom	Mr Sam HARPER
Expert Contributor	Name
Jeppesen	Mr Eivind MONG (Secretary)

Annex B – Open action items

- **DQWG3-1A** – *SNPWG liaison work*: Report of SNPWG data quality work was presented during the meeting.
- **DQWG3-7A** – *Fully quality attributed ENC test dataset*: University of Southern Mississippi (USM) is quite keen to take part. A test dataset is being constructed. A formal proposal to USM should be put together. All to contribute via correspondence once S-101 data quality draft has been finalized. Due at end of January 2012.
- **DQWG3-8A** – *Education of mariners and cartographers*: Chris Howlett (CH) to initiate the issues related to education of mariners and cartographers and the development of relevant documentation; started during DQWG4.
- **DQWG4-2A** – *Provision of S-101 Data Quality Section to TSMAD*: Draft of S-101 chapter 6 being developed for submission to TSMAD. Due date mid December 2011.
- **DQWG4-2B** – *Development of S-101 Data Quality Section*: Draft being updated following corrections requested by DQWG. Eivind Mong (EM), Leendert Dorst (LD) and Rob Hare (RH) will draft words for use of model for S-101 chapter 6, this was done immediately after DQWG5 ended. Antti Castren (AC) and Sam Harper (SH) will draft high level architecture for use of model elements in ECDIS for S-101 chapter 6. Due date end of November 2011.
- **DQWG4-3A** – *Display of quality indicators*: SH reported that use of current ENC data quality indicators is inconsistent, and often poorly understood by the mariner. DQWG concluded this justifies a change of data quality indicators in S-101. A specification of what further development should be was completed. Draft specification for data quality indicators will be developed together with University of Southern Mississippi. Previous due date will have to be extended to end of 2012.
- **DQWG4-5A** – *Amending UOC §2.2 on the use of M_QUAL and CATZOC*: CH to draft a clarification for TSMAD to consider. Due date mid December 2011.
- **DQWG4-5D** – *Dissemination of data quality knowledge to practicing mariners*: Consider adding further descriptions to the IHO Check dataset on data quality. Sam Harper (SH) to discuss with Tom Richardson (UKHO). SH will also speak to the UKHO marketing people to see if a data quality disk can be sent out via their VARs. A presentation with key findings from the data quality survey will be put together and put online so Notice to Mariners and other publications can reference this.
- **DQWG4-8C** – *HSSC WGs input to DQWG*: Chris Howlett (CH) reported on this at HSSC3. CH to reach out to TWLWG to discuss any needs.
- **DQWG4-9A** – *DQWG Membership*: CH and Michel Huet (MH) to review the DQWG Google groups and confirm the DQWG member list. MH had been unable to get in contact with Indonesian HO.

- **DQWG5-1A** – *IMO ECDIS Model Course*: DQWG to review the IMO ECDIS model course (AC sent out link via DQWG Google site), and if the data quality portion is lacking, draft revision proposal for HSSC. Due date mid August 2012.
- **DQWG5-1B** – *Training of Mariners*: CH to approach MCA to find out if there is an international body of training institutes.
- **DQWG5-2A** – *Sharing of data quality survey with CSPCWG*: SH to facilitate sharing of survey raw data and results overview.
- **DQWG5-2B** – *IHO CL reporting on the data quality survey results to MS*: CH to use the DQWG5 minutes to draft an IHO circular letter to report on the DQWG survey results.
- **DQWG5-2C** – *Reporting on data quality survey results to CSPCWG*: SH to use the DQWG5 minutes to make a submission for next CSPCWG meeting (2 weeks after DQWG5) to inform the WG about the survey results and make the raw survey data available for the WG for review. See action DQWG5-2A.
- **DQWG5-3A** – *Attribute SURTYP (Survey Type)*: Rob Hare (RH) to improve on SURTYP (surveyType). Due date mid-December, 2011.
- **DQWG5-3B** – *Definition for Bathymetry*: CH to draft a proposal to request S-32 working group to update the definition of bathymetry in the hydrographic dictionary as the current definition was considered insufficient.
- **DQWG5-3C** – *Proposals for additions and changes to the Hydro Register*: EM and LD to draft proposals for submission to Hydro register, including the draft definitions in 3.2. This draft will form part of the overall DQWG submission to TSMAD. Due date end of November, 2012.
- **DQWG5-4A** – *Data quality of water level predictions*: CH to discuss with UK TWLWG member. Ref Action DQWG4-8C.
- **DQWG5-4B** – *Existence Doubtful (ED)*: CH to contact the UK CSPCWG member, on the need for existence doubtful.
- **DQWG5-4C** – *Completion of S-100 Part 4C review*: EM to clarify with TSMAD what more is expected from DQWG in relation to S-100 part 4C, considering the UML model DQWG has already developed.
- **DQWG5-5A** – *Data Quality in Nautical Publications (NPubs)*: EM to take the DQWG report and draft of S-101 chapter 6 to TSMAD, to SNPWG at the next meeting, and present the work DQWG is doing as work that SNPWG can make use of for the development of data quality in NPubs.
- **DQWG5-6A** – *DQWG Work Plan*: CH to update workplan.
- **DQWG5-7A** – *Facilitating participation in next meeting*: MH and CH to draft an invitation letter with a draft agenda to assist in getting travel approved for members. Due date end of February.

Appendix 1 – version 1 data model



Appendix 2 – version 2 data model

