



31ST ASSEMBLY OF THE INTERNATIONAL MARITIME ORGANIZATION
IMO Headquarters, London, UK, 25 November to 05 December

Contribution to the IHO Work Programme 2019	
Task 1.1.8.1	Maintain relationship with the International Maritime Organization (IMO)

The biannual Assembly is the main organ of the International Maritime Organization (IMO). It regularly addresses a wide range of administrative and contentious operative issues. The 31st IMO Assembly was held from 25 November to 05 December at the IMO Headquarters in London, United Kingdom and was attended by over a thousand participants representing the vast majority of the overall 174 member states and numerous observers. The IHO was represented by the Secretary-General, Dr Mathias Jonas for the first four days.

The core elements of each Assembly are the regular reports of the subordinate committees such as:

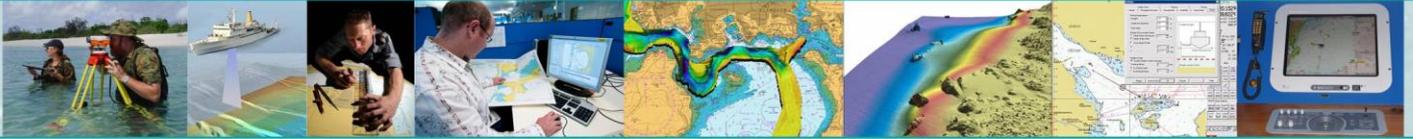
- Maritime Safety Committee
- Legal Committee
- Marine Environment Protection Committee
- Technical Cooperation Committee
- Facilitation Committee

Before the respective committee chairs reported, the re-elected IMO Secretary-General Kitack Lim addressed the delegation by a thorough report on the Secretariat’s performance, including budgetary issues. After his report, many Member States provided their respective national statements. The majority of these statements identified IMO’s response to climate change as the most relevant item placed on the Organization’s agenda for the forthcoming years. Proposed measures to be taken in support are new regulations to extend the use of low sulphur fuels and the accelerated development of a legal framework of Maritime Autonomous Surface Ships (MASS).

The Secretary-General Lim further reported on the ongoing reform of the IMO Council. It is planned to extend the term of the Council from two to four years and to increase the overall number of Council seats from 40 to 52. Among others, the Council reform addresses the subject of terms and conditions of media attendance at meetings of IMO committees and their subsidiary bodies. The regulations



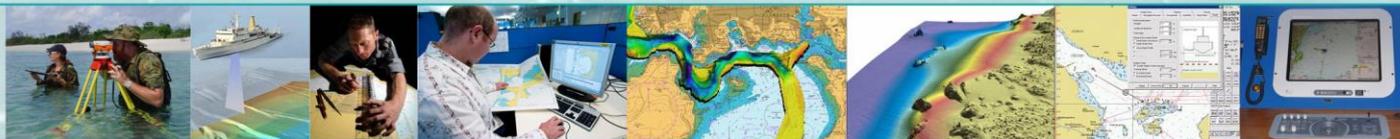
IHO Secretary-General, Dr Mathias Jonas and IMO Secretary-General Kitack Lim at the Reception at the German Embassy in London in company with the German Delegation led by Dr Norbert Salomon (3rd from left)



to be put in place insist on accurate, factual reporting and fair comment, including on social media.

The IHO Secretary-General took the opportunity to approach several IMO Member States to advertise for IHO membership and discussed ways to deepen the collaboration between IMO and IHO on the fields of technical standardization – namely the extension of the S-100 framework to harbour data.

Next IMO Assembly is scheduled to be held in November 2021 in London, UK.



7TH MEETING OF THE NAUTICAL INFORMATION PROVISION WORKING GROUP (NIPWG)

Tallinn, Estonia, 25 - 29 November

Contribution to the IHO Work Programme 2019	
Task 2.1.2.5	Organize, prepare and report meetings of NIPWG
Task 2.5.2	Support the development and implementation of Maritime Services
Task 2.8.1	Maintain S-12, as appropriate - <i>Standardization of List of Lights and Fog Signals</i>
Task 2.8.3	Maintain S-49, as appropriate - <i>Standardization of Mariners' Routeing Guides</i>

The 7th meeting of the Nautical Information Provision Working Group (NIPWG) took place in Tallinn, Estonia, hosted by the Estonian Maritime Administration (EMA) from 25 to 29 November.

Ms Kaidi Katus, Head of Aids to Navigation and Hydrography Division and Deputy Director General of EMA, welcomed the participants and gave an opening address emphasising the importance of NIPWG activities in the development of some of the key components of the S-100 Implementation Strategy. The meeting was chaired by Mr Jens Schröder-Fürstenberg (Germany), supported by Mr Thomas Loeper, Secretary (USA). Twenty-five delegates from 14 Member States (Canada, Denmark, Estonia, Finland, France, Germany, Italy, Japan, Netherlands, Norway, Republic of Korea, Spain, United Kingdom and United States) and seven expert contributors (Anthropocene Institute, Furuno/IEC, ICS¹, IHMA², KRISO³, National Taiwan Ocean Centre and University of New Hampshire) attended the meeting. The IHO Secretariat was represented by Assistant Director Yves Guillam.

The meeting was opened with an important clarification on the functional terminology - *route monitoring* or *route planning* – the only one to be used when addressing the use of future digital nautical publication products in an ECDIS environment and issues related to the architecture of navigation systems. These terms match with the IMO definitions in use.

The Secretariat reported on the outcome of the 3rd meeting of the Council in relation to NIPWG activities. The participants were in particular informed that following the Council's endorsement of a draft S-100 Implementation Strategy, engagement with the IMO will be starting soon with a

¹ International Chamber of Shipping.

² International Harbour Masters Association.

³ Korea Research Institute of Ships and Ocean Engineering.

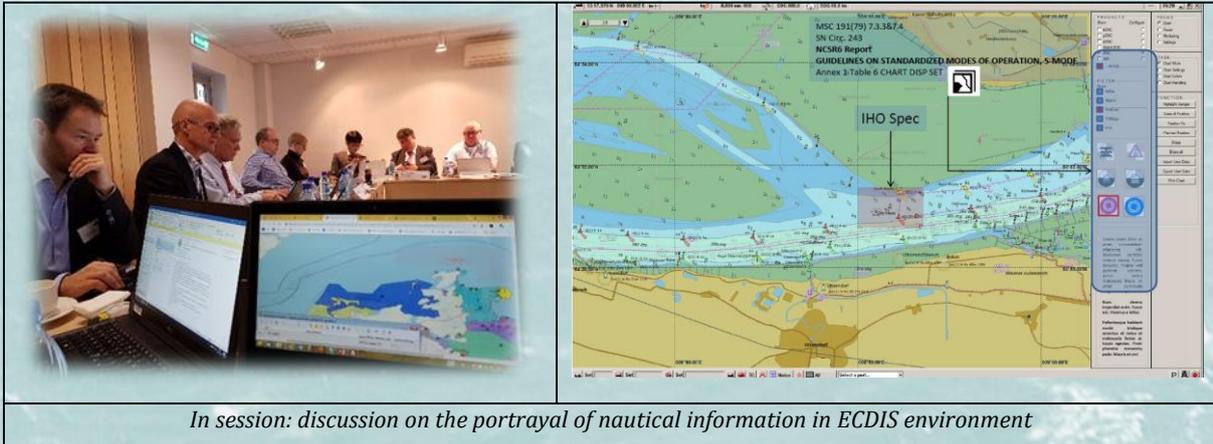


submission paper to NCSR7⁴ which presents a roadmap of the introduction of the next generation of S-101 Electronic Navigational Charts (ENC) and introduces the resulting implications for existing and new ECDIS installations. Attention was drawn on the fact that the timeline is set to achieve synchronization of the implementation of S-101 ENC compatibility with the application of MSC.1/Circ.1593 - *Interim Guidelines for the Harmonized Display of Navigation Information Received via Communications Equipment* - coming into force on 1 January 2024 for new ECDIS equipment by OEMs.

As part of the national projects presented during the meeting, the working group noted the good progress made on the development of the Norwegian Pilot Guide, which has led to a certain level of harmonization of harbour infrastructure data in cooperation with port authorities. The potential reuse of this concept for the provision of nautical information in non-SOLAS environment was noted as well as the possible benefit for the S-100 Implementation Strategy, if data models could be derived from S-12x Product Specifications. In the presence of the representative of IHMA, the meeting agreed that the assessment of needed information to produce a potential product specification on Marine Harbour Infrastructure, including *services* to be established by the HOs to collect data from harbour authorities, was now required. A convincing presentation by the representative of UNH also confirmed the need to move forward in the development of the S-126 - *Marine Physical Environment* data modelling. The intention to initiate or resume the relevant Product Specification development will be submitted for approval to HSSC.

In the context of the S-100 Implementation Roadmap, the meeting acknowledged the increasing importance of the development of the S-128 Product Specification - *Catalogue of Nautical Publication* as a possible driver to provide end-users with the up-to-dateness of the products to be used and to be recognized during Port State control inspections in the future. A set of subsequent actions was decided, some of which with a possible impact on the "WENS" concept. This development was reported by the representative of KRISO for KHOA. The KHOA's project for portrayal harmonization, which is so critical for S-12x based products used in ECDIS environment, led to the decision to have a one-day workshop at the next meeting to assess use-cases and lessons learned provided by Member States. Portrayal issues were also discussed for S-124 - *Navigational Warnings*, and on S-122 - *Marine Protected Areas*. It was noted that some nations have started to produce test datasets in support of some provision and portrayal experimentations.

⁴ IMO Sub-Committee on Navigation, Communications and Search and Rescue (NCSR 7) – Reference: IHO CL 54/2019.



In session: discussion on the portrayal of nautical information in ECDIS environment

Representative of the USA reported on the final steps of the revision of S-49 - *Standardization of Mariners' Routing Guides* that will be submitted as Edition 2.1.0 to HSSC for endorsement in application of the recently amended IHO Resolution 2/2007. In this context, the meeting also considered briefly the possible implications of the discontinuity, within a five years' time frame, of the production of paper charts by the US.

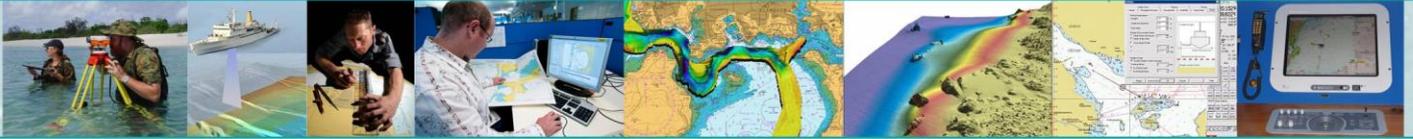
Mr David Lewald (US Coast Guard) informed the participants on the outcome of the recent IALA technical meetings. The working group noted with appreciation the IALA's initiative aiming to develop S-125 - *Marine Navigational Services* for the IHO, as well as the existence and ongoing development of the Marine Resource Name Management Guideline by IALA.

At the end of the meeting, Mr Stefan Engström (Finland) was elected as Vice-Chair of NIPWG.

The 8th meeting of the NIPWG is scheduled to be held in Brest, France, from 21 to 25 September 2020.



NIPWG-7 participants in Tallinn, Estonia



IHO-IOC GEBCO (GENERAL BATHYMETRIC CHART OF THE OCEANS) PROJECT
ANNUAL MEETINGS

Portsmouth, New Hampshire, USA, 4 – 8 November

Contribution to the IHO Work Programme 2018	
Task 3.6.1	Attendance of GEBCO Guiding Committee (GGC) and associated bodies including TSCOM, SCRUM and GEBCO symposium



University of
New Hampshire

A series of meetings related to the IHO-IOC GEBCO (General Bathymetric Chart of the Oceans) project were hosted by the Center for Coastal and Ocean Mapping-Joint Hydrographic Center/University of New Hampshire (CCOM-JHC/UNH) in Portsmouth, NH, USA, from 4 to 8 November 2019:



- 4 and 5 November: Joint meetings of the Technical Sub-Committee on Ocean Mapping (TSCOM), the Sub-Committee on Regional Undersea Mapping (SCRUM) and the Sub-Committee on Communications, Outreach and Public Engagement (SCOPE);
- 6 November: GEBCO Symposium; and
- 7 and 8 November: 36th Meeting of the GEBCO Guiding Committee (GGC).

The IHO Secretariat was represented at the joint TSCOM, SCRUM and OWG meeting by Assistant Director David Wyatt and joined by Director Mustafa Iptes for the GEBCO Symposium and the meeting of the GGC.

TSCOM, SCRUM and SCOPE

The joint meeting of TSCOM-SCRUM-SCOPE was co-chaired by Ms Caitlyn Raines (USA), Vice-Chair of TSCOM, Dr Vicki Ferrini (USA), Chair of SCRUM, and Professor Hyo Hyun Sung (ROK), Chair of SCOPE.

The initial sessions covered a number of topics relevant to TSCOM and SCRUM, including an update brief by the Director of the IHO Data Centre for Digital Bathymetry (DCDB) and the Chair Crowdsourced Bathymetry Working Group (CSBWG), which highlighted recent developments, current projects and future considerations. A comprehensive brief on the Seabed 2030 structure and the activities of the Regional Data Centers were received. A number of new applications were demonstrated, including the Arctic App and the Meso-American and Caribbean Sea Hydrographic Commission (MACHC) Discovery App, both of which greatly assist in gaining a better knowledge of data availability within the applicable region.



TSCOM, SCRUM and OWG in plenary session

A detailed brief on the B-11 – *GEBCO Cookbook* – was provided and a number of new chapter titles were identified as well as those existing chapters which needed to be updated. Details of the generation of the GEBCO 2019 Grid were given, in which the new data was highlighted, and the current development state for the 2020 Grid was provided.

Professor Hyo Hyun Sung, Chair SCOPE, presented a detailed update on activities, the proposed GEBCO communications, outreach and capacity building strategies and suggested activities to increase the public engagement with GEBCO and the subordinate Seabed 2030 project. The updating and improvements to the GEBCO and Seabed 2030 websites were noted and the proposal to generate a new world map version from the 2020 Grid was considered.

As a result of the increased interest in ocean mapping and the significant increase in participation at the Sub-Committee meetings and the symposium, it was proposed that a restructuring of the GEBCO week could be considered by the GGC to allow more time to review the various activities and generate more measured future work plans and funding applications.

The Vice-Chair of SCRUM, Pauline Weatherall, advised the Chair of her desire to step down, and as a result Aileen Bohan (Ireland) was elected as Vice-Chair of SCRUM for the period 2019 to 2022.

GEBCO Symposium

For the twelfth consecutive year, the GEBCO project organized a symposium on the theme of 'Map the Gaps'. The symposium was opened by Kevin Hope, Deputy Director Source Operations at the National Geospatial Agency (NGA) of the USA. The symposium, which included digital poster sessions and contributions from a broad spectrum of institutions involved in all aspects of ocean mapping, featured 16 presentations and two panel sessions on a diverse range of topics. The associated presentations will be available from the GEBCO web site at: (<https://www.gebco.net/about-us/gebco-symposium/>).



Kevin Hope, Deputy Director Source Operations, NGA, opening the GEBCO Symposium

GEBCO Guiding Committee

All of the IHO appointed representatives on the GEBCO Guiding Committee were present. Representatives of Australia, Bangladesh, Brazil, Canada, Ecuador, France, Germany, Guam, India, Indonesia, Ireland, Israel, Italy, Japan, Mexico, New Zealand, Nigeria, Peru, Philippines, South Africa, Republic of Korea, Saudi Arabia, United Kingdom, USA, IOC, IHO and representatives from various government departments and academic institutions attended the meeting as observers with a number of industry stakeholders attending as expert contributors.

The Chair, Mr Shin Tani (IHO - Japan), introduced the agenda and programme. The GGC received brief reports from its Sub-Committees and endorsed the work which they had undertaken. The GGC also received reports from key personnel performing functions on behalf of GEBCO as well as reports from its parent bodies, IHO and IOC, on activities since the previous meeting.



GEBCO Guiding Committee meeting at GGC36

The Chair of the Sub-Committee on Undersea Feature Names (SCUFN) reported on an automatic discovery process for undersea features. He noted that this year was the first year that supporting data had been provided to the DCDB by states proposing feature names. He requested guidance on how the SCUFN should consider feature name proposals that were not visible on a $\geq 1:1\,000\,000$ scale map. After detailed consideration, the GGC agreed that the use of the variable depth resolution approach with a provision for Polar Regions should be employed, which would align with the future GEBCO grid product.



The revised harmonized Terms of Reference (ToRs) of all the sub-committees were reviewed and approved along with the ToRs of the Sub-Committee on Communications, Outreach and Public Engagement (SCOPE).

The GGC considered outreach and ways to raise the profile of the GEBCO project among the different stakeholder and user communities, including the IHO and the IOC Member States, the maritime and scientific community and the general public. The GGC reviewed the draft communications strategy and approved SCOPE to commence work in line with the proposed strategy. The GGC devoted considerable time on discussions on the Seabed 2030 Project. The acting Seabed 2030 Project Director provided a comprehensive presentation on the activities of the Seabed 2030 Project Team and the Regional Centers. The GGC reviewed a proposed Seabed 2030 Funding Strategy, as well as reviewing the Year 2 Seabed 2030 Project report and the proposed Year 3 Project Work Plan and both were endorsed after inclusion of some amendments and recommendations. He highlighted the recent appointment of the Director, Mr Jamie McMichael-Philips, who will take up his post on 1 December.

The GGC also reviewed its current financial situation in relation to proposed planned projects. The Committee addressed the budget submissions from its subordinate bodies and approved revised allocations to ensure a suitable contingency balance was maintained for 2020 to cover emergent items. The draft consolidated GEBCO Work Plan and budget will be reported to the 12th meeting of the IHO Inter-Regional Coordination Committee (IRCC) and the 53rd meeting of the IOC Executive Council, for consideration and endorsement of the parent organizations.

The GGC reviewed the state of membership and it was noted that one IOC appointed member had not attended for a second meeting. It was agreed that the Chair would investigate the membership statuses in collaboration with the IOC Secretariat.

All meeting documents and reports will be available from the IHO website (IHO → Committees and Working Groups → IRCC → GEBCO).

The next GEBCO annual meetings are planned to take place in November 2020 in France. Due to the increased number of sub-committees and the expansion of tasks, it was proposed that for the 2020 meetings the GGC should meet the week after the sub-committees and the symposium. Additionally it was agreed that for 2021 onwards the GGC should meet for 3 days in the northern spring period with the sub-committees and symposium taking place over 5 days in the northern autumn period, it was further agreed that initially the GGC meetings should rotate between the IOC and IHO Secretariats.



**5TH MEETING OF THE NAUTICAL CARTOGRAPHY
WORKING GROUP (NCWG)
AND 2ND WORKSHOP FOR REGIONAL
INT CHART/ENC COORDINATORS
Stockholm, Sweden, 4–9 November**

Contribution to the IHO Work Programme 2019	
Task 2.1.2.4	Organize, prepare and report meetings of NCWG

Hosted by the Hydrographic Office of the Swedish Maritime Administration, the 5th meeting of the Nautical Cartography Working Group (NCWG-5) took place in Stockholm, Sweden, from 5 to 8 November. The meeting was chaired by Mr Mikko Hovi (Finland), supported by Mr James Timmins, Secretary (United Kingdom). Thirty-four delegates from 21 Member States (Australia, Brazil, Canada, Denmark, Estonia, Finland, France, Germany, India, Indonesia, Italy, Japan, Latvia, Netherlands, Norway, Republic of Korea, Romania, Spain, Sweden, United Kingdom and USA), two Expert Contributors (Esri, Teledyne-Caris), Dr Lysandros Tsoulos, representing the FIG/IHO/ICA International Board of Competence for Nautical Cartographers and the ICA Commission on Marine Cartography participated in the meeting. The IHO Secretariat was represented by Assistant Director Yves Guillam, who also facilitated a workshop for Regional INT Chart/ENC Coordinators on 4 November, preceding the NCWG-5 meeting.

Mr Magnus Wallhagen (Sweden) welcomed the participants on behalf of Mr Patrik Wiberg, Director of the Swedish Hydrographic Office. In his opening address, he highlighted the challenges the Swedish Hydrographic Office's cartographers face every day due to Sweden's archipelago environment. In his position as Vice-Chair of the HSSC, he also stressed the most important issues raised by the HSSC and the Council, which included the requirement for the NCWG to develop at this meeting, as a matter of priority, the recommendations on the Future of the Paper Chart. He emphasized in particular the issues faced by Hydrographic Offices for the allocation of resources in the sustainable maintenance and production of traditional charts (paper and ENCs) and the investments needed for preparing the future with S-100 based products.

Following a proposal from India in support of the IHO Resolution 1/2005 as amended – *IHO response to disasters* – the working group noted that amendments to this Resolution were currently submitted for approval at the next Session of the Assembly and was of the opinion that the provision of emergency contact details was likely to be more appropriate in Nautical Publications than printed on or included in nautical charts. In a proposal from Australia justifying the need for a new type of chart designed with the main purpose of serving as back-up to electronic navigation that can be easily produced from officially (and richer) published ENC data, the working group noted that “two” standards would certainly create some confusion to the mariners. It was also agreed that the associated proposed Australian amendment to the IMO

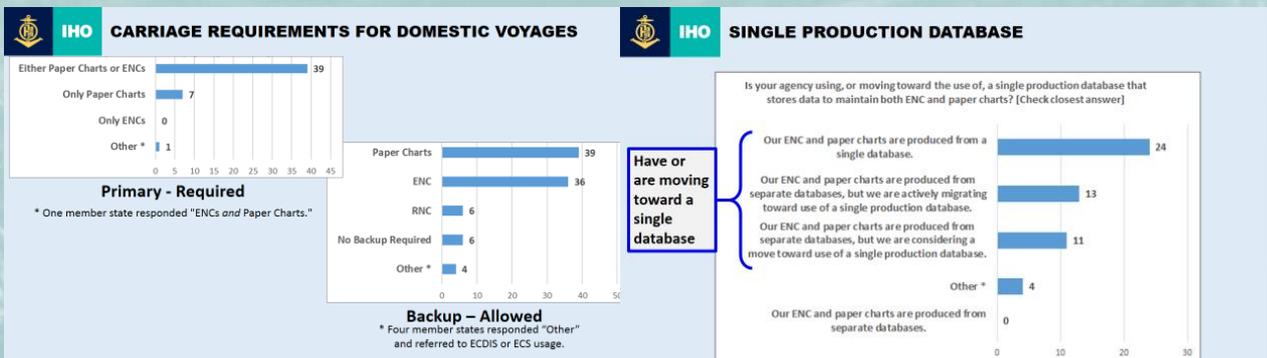


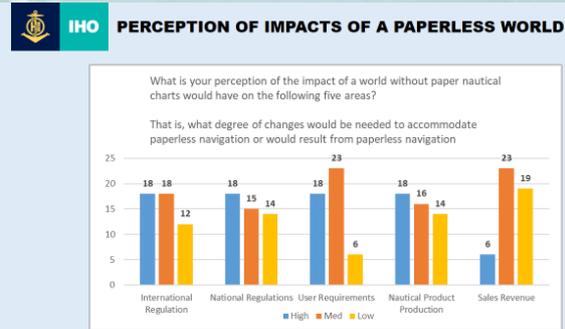
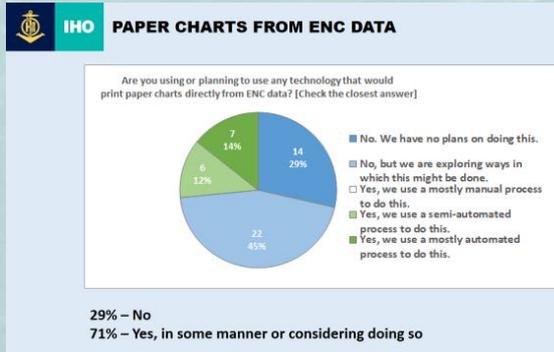
definition of what constitutes a back-up paper chart was not helpful on the matter. The US representative presented the outcome of their experimentation on the automated production of paper charts from an ENC chart database, supported by Esri who stressed the current limitation factors in the IHO standards for automation.



NCWG-5 participants

The Chair (US) of the Sub-Working Group on the Future of the Paper Chart (FNPC) provided a summary report on the outcome of the survey on the Future of Nautical Paper Charts to which 52 Member States responded.





FNPC Survey Excerpt

Discussions on the outcome of this survey led to the preparation of three draft challenging and composite recommendations that will be finalized, together with the report on the FNPC, for submission to HSSC. It was noted that due to the deadline for submission to HSSC (mid-March 2020), the report will be available prior to the 2nd Session of the Assembly. As a consequence and by anticipation, the NCWG also drafted some amendments to its Terms of Reference in order to propose a better alignment of its activities with the IHO Work Programme and priorities, such as the S-100 Implementation Decade.

The working group noted the concept for the visualization of the quality of bathymetric data for safe navigation presented on behalf of the Chair of the DQWG, which was questioned mainly due to portrayal issues illustrated by some “counter-examples” provided by Finland. In response to an action from HSSC-11, the meeting welcomed the offer made by the UK to take over the role of custodian for the maintenance of INT-1 – *Symbols, Abbreviations and Terms used on Charts*. This topic was complemented by several suggestions from industry and representatives of the ROK in favour of the development of a *.svg IHO library of symbols to be made available in the IHO Geospatial Registry.

Following the workshop for Regional INT Chart/ENC Coordinators, that included some brainstorming about the future role of Regional Chart Coordinators, it was generally agreed that the INT Charts schemes are not a priority anymore. The IHO Secretariat provided an update on the preparation of the commissioning and timelines of the INTtoGIS II⁵ web services (S-11 Part B, web catalogue of ENCs and INT charts, new layers in the Manager mode such as AIS data, CATZOC, Ports database, enhanced user interface, layers with different patterns and transparency cursors...).

At the end of the meeting, the working group welcomed the offer made by Spain to host the 6th meeting of the NCWG in Cádiz in November 2020.

⁵ A project that is supported by KHOA.



IMO EXPERTS GROUP ON DATA HARMONIZING (EGDH)

IMO Headquarters, London, UK, 04 - 08 November

Contribution to the IHO Work Programme 2019

Task 2.1.5.1	Attendance of IMO Experts Group on Data Harmonizing (EGDH) meeting
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The 1st session of the IMO Experts Group on Data Harmonization (EGDH-1) meeting took place from 04 to 08 November 2019 at the IMO Headquarters in London, United Kingdom, under the chairmanship of Mr Mikael Renz (Sweden).

EGDH-1 was attended by representatives from the following Member States: Denmark, France, Germany, Ghana, Liberia, Marshall Islands, Netherlands, Norway, Singapore and Ukraine. The meeting was also attended by delegates from the United Nations Economic Commission for Europe (UNECE), World Customs Organization (WCO), European Commission (EC), International Chamber of Shipping (ICS), International Organization for Standardization (ISO), International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA), International Radio Maritime Committee (CIRM), Baltic and International Maritime Council (BIMCO), International Association of Classification Societies (IACS), Oil Companies International Marine Forum (OCIMF), International Transport Workers' Federation (ITF) and International Port Community Systems Association (IPCSA). Director Abri Kampfer represented the IHO Secretariat.



EGDH-1 in session



Director Kampfer provided a report on the status on the S-100 framework Standard and highlighted the changes and extensions included in S-100 Edition 4.0.0. The report also included an update on the status of the suite of S-100 based product specifications currently under development by various bodies and the IHO GI Registry operated by the IHO Secretariat. The meeting acknowledged the potential for developing common work in the future between the IMO FAL Committee, and the competent bodies of IALA and IHO on S-127 – Marine Traffic Management. IHO and IALA informed the Group of the possibilities to use MRN as unique identifier not only for objects but also for reports and publications, and IALA invited IMO to become a Domain Manager. The meeting noted the IHO website (<http://s100.iho.int/S100/>) which was a visual representation of the scope of the S-100.

Since the EGDH was meeting for the first time, an introduction to the IMO Compendium was made to ensure that the meeting had the same understanding at the starting point of the discussions. The IMO data set, the IMO Reference Data Model and the Annexes of the IMO Compendium (FAL.5-Circ.41) were introduced by the Organizations that had collaborated to create them. It was recalled that phase 1 of the revision of the IMO Compendium was completed by FAL 43, with data elements included in the FAL Convention, security and waste messages. The first meeting of the EGDH was the starting point of phase 2 to extend the IMO Compendium to other data elements related to the information normally exchanged between ship and shore. During the discussions, the Group amended the definitions of data elements, the code list of data elements and added new business rules to data elements.

Inputs to the IMO Reference Data Model on port logistic operational data and real time data that will allow easy implementation of the IMO Just-In-Time Concept were discussed. The need for enhanced communication between the terminal and the port was also identified. The meeting identified clear links and overlaps with some Maritime Services in the context of e-navigation with organizations conducting ongoing work. The EGDH concluded that the IMO Compendium was a way to bridge the gap between different standards and was not meant to create new standards or change existing standards or conventions. The aim was to facilitate electronic messaging. The meeting agreed in principle the need to align the work of the EGDH with the work of NCSR Sub-committee on e-navigation.

After some consideration, the meeting prepared the terms of reference for the two next meetings of the EGDH that will take place in 2020. These terms of reference were drafted as generic as possible to be used at the two meetings. EGDH 2 had been tentatively scheduled to take place from 27 April to 1 May 2020 and the EGDH 3 from 26 to 30 October 2020.