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Marine geospatial information

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Note by the Secretariat

Summary

The present paper contains the report of the Working Group on Marine Geospatial Information for consideration by the Committee of Experts on Global Geospatial Information Management.

At its eleventh session, held virtually on 23, 24 and 27 August 2021, the Committee of Experts adopted decision 11/109, in which it welcomed the Working Group's workplan for the period 2021–2022 and the progress made. The Committee expressed its appreciation for the continuing efforts to align the work of the Working Group with the Integrated Geospatial Information Framework in modernizing the geospatial information ecosystem, and welcomed the development of an integrated policy guidance and operational framework for the marine domain (the draft operational framework) that embraced all water-related elements, including oceans and seas, coastal zones and deltas, inland water bodies and waterways, as an important contribution to this modernization, while reiterating that the Working Group must not replicate the Framework. The Committee recognized the marine domain as being cross-thematic and cross-jurisdictional, covering hydrography, oceanography, marine geology, marine biology, human-related activities and maritime governance, and that the draft operational framework served as a bridge between the Framework and marine geospatial information management practices.

The Committee of Experts encouraged consideration of and support for the Working Group for the United Nations Decade of Ocean Science for Sustainable Development and the General Bathymetric Chart of the Oceans Seabed 2030 project to contribute, with the draft operational framework, to the goal to conserve and sustainably use the oceans, seas and marine resources, and in this regard noted the importance of engaging the ocean science and policy and legal communities towards developing integrated solutions. The Committee also noted that the integration of the terrestrial, maritime and cadastral domains remained a priority for Member States and encouraged further consideration to ensure that institutions collaborate to consider and develop interoperable arrangements, standards and infrastructures for the integration of all types of geospatial information leveraging the Framework. The Committee requested the Working Group to focus on developing and completing the draft operational framework in a timely manner in consultation with Member States and relevant stakeholders.

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In this report, the Working Group provides information on its progress, including a review of its workplan and activities. It discusses the focus areas of its updated workplan for the period 2022–2023 as part of efforts to continue raising awareness, providing guidance and encouraging the availability and accessibility of marine geospatial information for the benefit of society, the environment and the economy. Through the updated workplan, the Working Group seeks to advance its objectives and functions, such as: (a) the need for collaboration, partnerships, engagement and capacity development, including considerations as they relate to the International Hydrographic Organization and its regional commissions, the Singapore-International Hydrographic Organization Innovation and Technology Laboratory, the General Bathymetric Chart of the Oceans Seabed 2030 project and the United Nations Decade of Ocean Science for Sustainable Development; (b) policy and legal frameworks and authoritative data, authority and custodianship; (c) the land and sea interface and coastal zones; and (d) integration of the maritime, terrestrial and cadastral domains.

The report contains an overview of the progress made by the Working Group and the next steps in its development of and consultation on the draft operational framework, in which the Framework is recognized as providing the overarching paradigm for integrated marine geospatial information management. In this regard, the nine strategic pathways of the Framework provide the mechanism through which marine geospatial information can be integrated with any other meaningful data in order to solve societal and environmental problems and act as a catalyst for economic growth and opportunity. The draft operational framework, now agreed by the Working Group as the operational framework for integrated marine geospatial information management, is aimed at providing practical guidance that countries can use to enhance the availability and accessibility of marine geospatial information and realize the greatest benefit from their integrated geospatial information management arrangements for the betterment of society, the environment and the economy.

The report also provides the Committee of Experts with an account of the third expert meeting of the Working Group, convened in-person in Singapore from 9 to 13 May 2022 and held in conjunction with a United Nations Global Geospatial Information Management international seminar on the theme “Effective and integrated marine geospatial information management”. The Working Group noted that increasing the availability and accessibility of marine geospatial information has benefits for many aspects of the maritime domain, including with regard to: (a) commercial shipping and safe navigation, maritime resource management, the blue economy and marine spatial planning; (b) emergency management and response; (c) scientific research, maritime limits and administration; and (d) law enforcement and defence. Access to reliable, timely and quality marine geospatial information can provide the data needed for monitoring progress towards the achievement of national development priorities and the Sustainable Development Goals. Marine geospatial information must be readily available and accessible to support the data-driven, evidence-based management and administration of seas, oceans, coastal zones and inland waters. Knowing where people, marine life, events and activities are, and their spatial relationships to one another, is essential for informed policy development and decision-making. The timeliness of such data is of equal importance. Real-time marine geospatial information is needed to prepare for and respond to emergency situations such as disasters, but real-time or near real-time data can also be helpful in developing strategic priorities and measuring and monitoring outcomes, including regarding the 2030 Agenda for Sustainable Development.

I. Introduction

1. Approximately seventy percent of the Earth's surface is covered by water - lakes, rivers, deltas, coastal zones, seas, and oceans. Water is critical to socio-economic development, food and energy production, including renewable energy, healthy habitats and ecosystems, and to human survival overall. Water is at the heart of adaptation to climate change and serves as the crucial link between society, the environment and the global economy. More than four billion people depend on maritime waters for fish as a primary source of protein, and an estimated ninety percent of the world's trade is conducted upon the seas and oceans. Water connects us geographically, and digitally, marine geospatial information is integral to achieve all the sustainable development goals.
2. At its eleventh session, held virtually from New York from 23, 24 and 27 August 2021, the Committee of Experts adopted decision 11/109, in which it noted the progress made by the Working Group on its work to advance progress on the Operational Framework for Integrated Marine Geospatial Information Management (IGIF-H) in line with the United Nations Integrated Geospatial Information Framework (IGIF). The committee also thanked the government of Singapore for its ongoing support of the Working Group by hosting an on-line [webinar series on marine geospatial information](#) as a precursor to the Working Group's third face-to-face expert meeting and International Seminar on Effective and Integrated Marine Geospatial Information Management in Singapore
3. Through the webinars and the international seminar, which involved cross-thematic and multi-disciplinary speakers and participants, it was evident that increasing the availability and accessibility of marine geospatial information can benefit many sectors within the maritime domain, including: commercial shipping and safe navigation; management of maritime resources, the Blue Economy, and marine spatial planning; emergency management and response; maritime limits and administration; and law enforcement and defense. Access to marine geospatial information can provide the data needed to monitor progress towards national development priorities and the sustainable development goals (SDGs).
4. Beyond the maritime domain, as global reliance on water and its resources increases, marine geospatial information is needed to support data-driven, evidence-based management and administration of seas, oceans, coastal zones, rivers and tributaries, inland water bodies and waterways. Knowing where people, marine life, events, and activities are, and their relationships to one another, is essential for informed policy and decision-making. The timeliness of such data is of equal importance. Access to real-time marine geospatial information is needed to prepare for and respond to emergency situations, such as natural disasters.
5. This present report provides information and updates on the Working Group's progress and activities during this reporting period including its development of the IGIF-H in two parts. The Committee of Experts is invited to take note of the report and consider the IGIF-H Part One, provided as a background document to this report. The IGIF-H Part One provides a high-level summary, catalyst for change, our desired future, vision, mission, goals and background for the IGIF-H. The Committee is also invited to take note of the outcome statement of the Singapore Seminar on Effective Marine Geospatial Information Management, also provided as a background document to this report. Points for discussion and decision are provided in paragraph 26.

II. Activities during the intersessional period

6. During this intersessional period two additional Member States, Honduras and Saudi Arabia, joined the Working Group. Presently the Working Group comprises expert representatives from twenty five Member States, the International Hydrographic Organization (IHO), and four relevant organizations from the United Nations system and the Committee's stakeholder community. The Working Group is presently co-chaired by Singapore and the United States of America.

7. The Working Group made significant progress on the development of the IGIF-H in two parts during the intersessional period. The Working Group seeks endorsement of IGIF-H Part One, provided as a background document to this present report, which aims to serve as the high-level introduction to IGIF-H, including the desired future, vision, mission, and goals, with background information. During the past year, the Working Group has made a submission, the Operational Framework for Integrated Marine Geospatial Information Management, as an action for the Decade of Ocean Science for Sustainable Development.

8. The Working Group maintained its strong working relationship with the IHO and has reported its activities and progress at several regular IHO meetings, including the IHO regional commissions. The Working Group continues to defer to the IHO with regards to capacity development, particularly for aspects related to national hydrographic offices, nautical charting and bathymetry.

9. An important part of this working relationship is the engagement with the IHO Innovation and Technology Laboratory in Singapore to advance the objectives, functions and work plan of the Working Group and address the sharing, integration and interoperability of terrestrial and marine geospatial information. Initial consideration on areas for collaboration relates to the integration of onshore and offshore datasets (the land-sea interface) and the coordination between the maritime, terrestrial and cadastral domains, and a project proposal could be explored together with the IHO Marine Spatial Data Infrastructures Working Group.

10. The Working Group continues to monitor progress on and promotes the General Bathymetric Chart of the Oceans (GEBCO) Seabed 2030 Project and the United Nations Decade of Ocean Science for Sustainable Development (Decade). The IGIF-H will be an important contribution to both the GEBCO Seabed 2030 and the Decade through its promotion and encouragement for the availability and accessibility of timely, reliable and quality marine geospatial information to strengthen the management of our oceans, seas and coastal zones for the benefit of humanity.

11. The Open Geospatial Consortium (OGC) Marine Domain Working Group (MDWG) and the IHO Marine Spatial Data Infrastructure Working Group (MSDIWG) are two strategic working partners. The Working Group has held all three of its in-person meetings in conjunction with these groups and intends to hold the fourth with them as well. The meeting symmetry helps to avoid duplication and to optimize resources, including travels amongst members of the three groups, due to the significant overlap in membership. It also afforded opportunities to coordinate and to synergize agenda items. Essentially, the Working Group on Marine Geospatial Information explores the *Why*, while the IHO Marine Spatial Data Infrastructures Working Group explores the *What* and the OGC offers critical aspects of *How* we can address challenges with the open standards for technological solutions.

Meetings of the Working Group

12. The Working Group convened two virtual meetings during this intersessional period, its tenth on 12th Nov 2021 and its eleventh on 8th July 2022. The Working Group successfully convened its in-person third expert meeting together with an International Seminar on United

Nations Global Geospatial Information Management with the theme ‘Effective and Integrated Marine Geospatial Information Management’ in Singapore from 9th to 13th May 2022. During its meetings, the Working Group continued its consideration of the IGIF-H and its delivery of the work items within its work plan.

13. The Working Group was successful in agreeing on basic content, document structure and the long form name, the Operational Framework for Integrated Marine Geospatial Information Management. The Working Group, at its tenth virtual meeting, also agreed on the long name and the acronym for the Operational Framework, IGIF-H, and further agreed that the IGIF-H Part One be high-level, and expanded executive summary of the IGIF-H consisting of the introduction, vision, mission, goals and background for the IGIF-H. Within which, the vision was discussed and updated more succinctly to: “Integrating water into the global geospatial information infrastructure ecosystem”. During the twelfth virtual meeting of the Working Group, a decision was made to seek the Committee of Experts’ endorsement of the IGIF-H Part One, and agreed to produce a roadmap for completing the IGIF-H in two parts by the thirteenth session of the Committee of Experts in 2023.

14. In preparation for the International Seminar with the theme ‘Effective and Integrated Marine Geospatial Information Management’, the core team of the Working Group, together with co-organizers from the MSDIWG and MDWG, convened regular planning meetings. The preparation focused on identifying areas of focus, preparing and synergizing joint meeting sessions and seminar agendas, organizing speakers and invitations, and coordinating the program for the International Seminar.

15. The Working Group convened its formal in-person third expert meeting together with the International Seminar hosted by the Government of Singapore through its Maritime and Port Authority. The Working Group progressed its work including the draft for IGIF-H Part Two, agreed on an updated timeline for completion that includes regional and global consultations, discussed possibilities for piloting the implementation of the IGIF-H, and worked on updating its work plan for 2023- 2024. During the meeting, the Working Group unanimously agreed to extend the tenure of one of the co-Chairs, the expert representative from the United States of America, for at least one more year.

16. Also at the meeting, the Working Group welcomed an offer from the Italian member to host the fourth expert meeting of the Working Group in conjunction with the annual meeting of the IHO-MSDIWG and OGC-MDWG from 30th January to 3rd February 2023 in Genoa, Italy.

Regional Workshop on Strengthening National Geospatial Information Management, Suva, Fiji

17. The co-Chairs of the Working Group participated in a regional workshop on Strengthening National Geospatial Information Management on 16th and 17th June 2022 in Suva, Fiji. The regional workshop was organized by the Ministry of Lands and Mineral Resources Fiji, the Pacific Geospatial and Surveying Council (PGSC), the Pacific Community (SPC), and substantively supported by the UN-GGIM Secretariat. The workshop provided a forum for expert representatives from the Pacific small island developing states to engage and interact with one another, share and exchange information, experiences and practices, and discuss and consider the feasible pathways towards strengthening national geospatial information management across the terrestrial, maritime and cadastral domains.

18. The workshop promoted and facilitated peer-to-peer exchange, interaction and learning for the operationalization of the IGIF. The co-Chairs presented progress on the IGIF-H and were highly appreciative of the opportunity to learn from the implementation of the IGIF with Country-level Action Plans as well as related other geospatial experiences in the region.

19. It was observed that several participating island countries and territories, members of PGSC, were motivated to strengthen their national geospatial information management arrangements leveraging the IGIF, including as a mechanism to raise awareness on the importance, value and benefits of integrated geospatial information nationally.

20. In the ensuing discussion, the approach to strengthen national geospatial information management must recognize national circumstances, country-owned and country-led, the strengthening of geospatial capacities and capabilities embedded within their indigenous efforts to strengthen national geospatial information management holistically – bringing together the terrestrial, maritime and cadastral domain. In this regard, the Framework for Effective Land Administration, the Global Statistical Geospatial Framework and the IGIF-H will be leveraged synergistically.

Work plan 2023 – 2024

21. The Working Group reviewed its goals, activities, progress and achievements at both its virtual meetings and its formal in-person meeting. The Group agreed that an update would be appropriate after this twelfth session, wishing to consider any views and guidance from the Committee of Experts on its goals, focus areas and activities. The Working Group intends to progress its work on the IGIF-H in two parts, in particular Part Two after the twelfth session with a view to the draft ready for consultation with relevant stakeholders, thematic networks, functional groups and regional committees for the Committee of Experts before bringing the IGIF-H before the Committee of Experts at its thirteenth session for endorsement.

22. In its update to its work plan, the Working Group intends to include cooperative activities with the IHO Innovation and Technology Laboratory in Singapore and appropriate engagement and awareness raising activities for effective and integrated marine geospatial information management with regional committees and relevant regional bodies including the Pacific Geospatial and Surveying Council and the Pacific Community. In this regard, the work plan will address the need to develop partnerships to support better understanding, including pilots, for the implementation of the IGIF-H that will meet the operational requirements at the country-level.

III. International Seminar on United Nations Global Geospatial Information Management with the theme Effective and Integrated Marine Geospatial Information Management

23. The Government of Singapore and its Maritime and Port Authority hosted the International Seminar on Effective and Integrated Marine Geospatial Information Management. The Seminar welcomed international speakers and participants, representing diverse maritime domains and fields of expertise, notably the maritime, hydrographic, marine and GIS science. Presenters and participants also included those from the terrestrial and cadastral domains, private sector and academia, the Pacific Community and the International Seabed Authority. The meeting and Seminar were held back-to-back with the fourth meeting of the Expert Group on Land Administration and Management (16 – 20 May 2022), also in Singapore. This provided the opportunity for experts from the terrestrial, maritime and cadastral domains to meet and exchange knowledge, promoting the integration of geospatial information from the terrestrial, maritime and cadastral domains.

24. The Singapore Statement on Effective and Integrated Marine Geospatial Information Management, a consensus-based outcome document by the participants of the International Seminar, highlights the importance of increasing the availability and accessibility of marine geospatial information, notes the importance of marine geospatial information management

as an essential component within any national geospatial information management arrangement as part of the larger geospatial information ecosystem for evidence-based policy development and decision making, and that marine geospatial information needs to be integrated with other meaningful data to solve societal and environmental problems, and act as a catalyst for economic growth and opportunity.

25. The Singapore Statement also notes that the IGIF-H must provide practical guidance that countries can use to enhance the availability and accessibility of marine geospatial information (inclusive of hydrography, oceanography, marine geology, marine biology, human-related activities, maritime governance, and other water-related jurisdictions) while striving to bridge the digital divide through the strengthening of capacities and capabilities, partnerships, and innovation – leaving no one behind. The Singapore Statement, attached as background document to this present report, is recommended to the Committee of Experts for its consideration.

IV. Points for discussion

26. **The Committee of Experts is invited to:**

- (a) Take note of the present report, express its views and provide guidance to the Working Group on its progress, activities and next steps including for its updating of its work plan for 2023 – 2024;**
- (b) Express its appreciation to the Government of Singapore and its Maritime and Port Authority for hosting the virtual webinar series in October 2021, the third expert meeting of the Working Group and the International Seminar in May 2022, and to welcome with a view to support the Singapore Statement on Effective and Integrated Marine Geospatial Information Management;**
- (c) Express its views and provide guidance on efforts to leverage the Integrated Geospatial Information Framework and develop an integrated policy guidance and operational framework, the Operational Framework for Integrated Marine Geospatial Information Management (IGIF-H), the proposed roadmap for the development of the IGIF-H in two parts; and express its view and support for IGIF-H Part One; and**
- (d) Take note that the formal in-person fourth expert meeting of the Working Group will be convened from 30th January – 3rd February 2023.**