**Submission to United Nations Open-ended Informal Consultative Process on Oceans and Law of the Sea, twenty-third meeting, 5 to 9 June 2023, on the theme 'New maritime technologies: challenges and opportunities'**

**By the Secretariat of the International Seabed Authority**

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For more than a hundred of years, the development of marine science and technology has revealed, and continues to reveal knowledge of the ocean and its resources. Since the 1950s, the need for equity in access to and use of technology has been a key driving force in the decision to internationalize the deep seabed. The rapid technology developments opening access to the wealth of the seabed beyond national jurisdictions, combined to growing recognition of environmental imperatives have created the foundations for the international community to negotiate and adopt a unique legal regime establishing a machinery for the regulation and management of seabed minerals for the benefit of humankind as a whole. To that end, a dedicated international organization equipped with unique competence and powers has been established. At the core of this unprecedented achievement is the philosophy that the seabed and its resources should not be only accessible by a few technologically advanced countries but placed under the stewardship of the international community the International Seabed Authority (ISA).

Building on ongoing exploration carried out by pioneer investors since the late 1960's, and further, by exploration contractors whose activities are regulated by ISA, the development of technology and associated innovation has progressed steadily opening a new frontier in human scientific knowledge.

## Technology innovation and development in support of the regulation and sustainable management of seabed minerals for humanity

By discharging its mandate, ISA has contributed to the development of highest global regulatory standards to realize the vision of UNCLOS in achieving the sustainable management of seabed minerals for humanity. This, which is currently limited to prospecting and exploration, has stimulated over the last 20 years the development of technology and innovation to address the societal demands for increased science and sustainable management of ocean resources. Such strong linkages between the development of international law through ISA and the need for state-of-the-art technology can be found in the importance that technology

plays in the fulfilment of ISA responsibilities pertaining also to the promotion and encouragement of marine scientific research in the Area, the protection of the environment and the equitable sharing of benefits derived from activities carried out in the Area including through capacity development and technology transfer.

Such priorities are reflected in the Strategic Plan and High-Level Action plan for 2019-2023 adopted by ISA members respectively in 2018[1] and 2019[2] and further developed through the Action Plan adopted in support of the UN Decade of Ocean Science for Sustainable development[3] and the Capacity Development Strategy[4].

**Impact**

After almost 30 years, ISA has accumulated unique experiences in marine spatial planning at global scale, facilitating collection of data and information in the deep sea and their dissemination in total transparency thanks to the ongoing development and innovation of technology.

Since 2001, ISA contractors have invested more than $260 million on environmental studies in their exploration areas that were made possible through new technologies. The collected environmental data are accessible through ISA's open database, DeepData. Deep-Data is thriving and expanding with cutting edge data on deep-sea biodiversity and ecosystems collected by contractors. Few of them have also initiated the testing of pieces of potential seabed mining equipment with the involvement of independent scientists in charge of monitoring and analyzing the results of such experiments. The results available are then used to inform the further development of prototypes and concepts that would have to meet the strongest regulations and technical standards under discussions by ISA members to ensure the protection of the marine environment.

Being a fundamental pillar of the work of ISA, technology development and innovation currently support a series of activities implemented by the organization with the view to: (i) advance scientific knowledge and understanding of deep-sea ecosystems and biodiversity; (ii) create platforms of cooperation amongst stakeholders to progress the standardization and development of methodologies for deep-sea biodiversity assessment; (iii) improve ocean observation and monitoring; (iv) enhance scientific knowledge and understanding of potential impacts of activities in the Area ; and (iv) strengthen deep-sea scientific capacity of ISA members, in particularly developing States. This has for instance be achieved through the implementation of unique trainings by exploration contractors through the Contractors' Training Programme; the organization of information webinars and workshops (Marine Scientific Research Information Webinar Series for Africa: Topic 1 on Deep-sea Mineral Resources and Technologies (2021); Workshop on Enhancing Image-based Biodiversity Assessments to Advance Deep-Sea Taxonomy (2021)); facilitating future research and publications (Consultancy on technological developments for sustainable mining and environmental protection and monitoring in the Area); or engagement of expert groups to inform future policy dialogue (Expert Scoping Meeting on Advancing Technology to Support

[1] ISBA/24/A/10.
[2] ISBA/25/A/15.
[3] ISBA/26/A/17
[4] ISBA/27/A/11.

the Sustainable Mining of Mineral Resources in the Area organized in collaboration with the UK National Oceanography Centre (2021))

More recently, ISA launched the Sustainable Seabed Knowledge Initiative (SSKI) at the 2022 UN Ocean Conference, which aims at further advancing scientific knowledge of deep-sea ecosystems in the Area. One of its primary objectives is to describe at least 1,000 new deep-sea species by 2030. To this end, SSKI also focuses on developing innovative tools and technologies, best practices for data collection, and scientific capacity. A suite of tools that improve the consistency, efficiency and reusability of scientific information collected in the Area will be one of the lasting legacies of SSKI.

**Challenges and opportunities**

New maritime technologies are essential for all areas of ocean governance. For ISA they constitute basic working tools for the fulfilment of the mandate conferred by the UNCLOS, especially with regard to the equitable sharing of non-monetary benefits from activities carried out in the Area (Art. 140.2), the development, promotion and encouragement of marine scientific research and the coordination and dissemination of the data obtained (Art. 143.2. and 3.(c)), and the transfer of technologies (Art. 144). The timely, efficient, and comprehensive achievement of these objectives is a concrete manifestation of the principle of common heritage of mankind.

Deep-sea exploration and biodiversity assessment demands high investments in human and technology capacity. In addition to the challenges inherent to the deep-sea sample collection, the downstream steps in sample processing, taxonomic/ functional description, data analysis and ecosystem characterization require expertise and specialized tools. Particularly in developing countries, such capacities are often very limited, hampering the contributions of those states to deep-sea assessments. Therefore, identifying key priorities for scientific research and technology development for those States implies an additional challenge in order to focus efforts on terms of resource allocation, selection of activities, capacity building, training, collaboration processes and execution of scientific dissemination and data sharing programs. ISA involves their interests and views in all actions undertook by it, as UNCLOS mandates. The capacity development Strategy of ISA is one of the mechanisms available to facilitate the transfer of knowledge and marine technology.

Further, efforts should be engaged by all relevant stakeholders to enhance quantity and quality of data shared as well as the conditions under which access to data is granted. In fact, data is at the core of the opportunities new technologies offer.

In that vein, the environmental data shared through DeepData contributes to global ocean observation and multidisciplinary studies to improve our understanding of the deep-sea environment. In 2021, ISA became the very first UN body to become a node of the Ocean Biodiversity Information System (OBIS) of IOC-UNESCO and has been sharing its deep-sea biodiversity data through the OBIS network. To date, the ISA OBIS node contains 88 datasets from 2004 to 2019 with data on 53,490 species observations (presence records), 1,242 taxa (organisms) and 145 species.

This project adds to the already existing platform of international cooperation in this field provided by ISA (Marine Scientific Research Action Plan and the aforementioned SSKI,

among others), which offers broad, rich and multi-sectoral opportunities for data exchange and technology development.

Mobilizing resources for internationalized science is also one of the critical challenges preventing optimal access and transfer of technology remain two major areas in need of consideration by the international community. To that end, it is essential to facilitate dialogue and exchanged among all relevant stakeholders, particularly end-users with a view to clearly identify key priorities for scientific research and technology development. Many of those are now embedded in the strategic directions guiding the work of ISA creating the enabling conditions upon which members, contractors, scientific research institutes and academia are increasingly joining the work of ISA and contribute collectively to transform strategic partnership into transformative actions.