



INSTITUTO HIDROGRÁFICO

<http://www.hidrografico.pt/>

2021

PORTUGAL

National Report

This report describes the main technical activities and developments at the Instituto Hidrográfico (IHPT), the Portuguese Hydrographic Office, during the period from August 2019 to February 2021. It is elaborated in order to be presented to the 17th SAIHC Meeting in accordance with IHO Resolution 2/1997 as amended.



17th Southern Africa and Islands Hydrographic Commission (SAIHC)

Plenary virtual meeting 03th – 04th February 2021



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1- HYDROGRAPHIC OFFICE

The IHPT is part of the Portuguese Navy and has the fundamental task of ensuring activities related to science and techniques of the sea, with a view to their military application, and to contribute to the country's development in science and protection of the marine environment.

The major activities of IHPT are in the areas of hydrographic surveying, cartography, safety of navigation, oceanography, geology and chemistry of the marine environment. The IHPT is also a State Laboratory and is the Portuguese Hydrographic Office.

It has a Quality Management System recognized by an independent, credible and competent external entity, according to the normative reference (NP EN ISO 9001). The Quality Policy includes a commitment to meeting regulatory requirements and continually improving to meet customer needs.

Among those activities, the training provided by the Hydrography and Oceanography School stands out, with FIG/IHO/ICA category A and B courses. It is an IHPT sector dedicated to the training of the Navy officers as well as civilian technicians, from Portugal and Portuguese-speaking African countries, as well as from other friendly nations.

Detailed information to update IHO Publication P-5 has been submitted using the online system, by Commander João Paulo Delgado Vicente, Head of the Hydrographic Division (dt.hi.chf@hidrografico.pt).

In SAIHC region, IHPT is the Primary Cartographic Authority (PCA) in:

- Angola
- Mozambique

2- SURVEYS

a) Coverage of new surveys

The main program of IHPT “SEAMAP 2030: Mapping of the Portuguese Sea” (<http://www.hidrografico.pt/iprojeto/16>) is in progress. This program has the mission of contributing to the conservation and sustainable use of the sea, supporting research, and promoting development. It is aligned with United Nations Decade of Ocean Science for Sustainable Development.

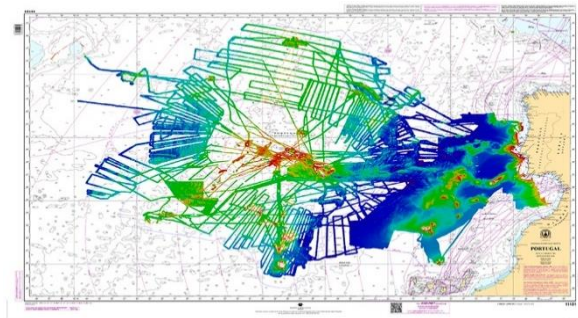


Figure 1 – SEAMAP 2030 actual coverage with multibeam survey.

No new IHPT surveys were conducted in the SAIHC area in the last years.

b) New technologies and /or equipment

Since 2015, IHPT has been doing some studies in Satellite Derived Bathymetry (SDB), from multispectral satellite images for shallow-waters. More recently, SDB studies have been developed using SAR (Synthetic Aperture Radar) imagery and Wave inversion bathymetry calculation. At this time, the goal of assessing bathymetry through SDB methodologies is not to directly produce nautical charts, but rather to evaluate the level of changes since the last survey. Besides SDB methodology being a cost-effective tool to support nautical chart production workflow in terms of field reconnaissance and hydrographic surveys planning, it is also a valid tool to retrieve updated bathymetry along a coast that could be used as input for running oceanographic coastal drift models, among other wide range of coastal applications.

In 2018, IHPT has started a new challenge in this area which aim is to process images acquired by unmanned aerial vehicles (UAVs).

c) New ships

Nothing to report (NTR).

d) Crowdsourced and satellite-derived bathymetry - national policy

IHPT has no knowledge of crowd-sourced bathymetry sources for the area at stake.

e) Challenges and achievements

Obtaining funding for new surveys off Mozambique and Angola, in conjunction with those countries, is considered the greatest challenge.

IHPT received new bathymetric data from the Angolan government authorities. This new data will be used to update several charts.

3- NEW CHARTS & UPDATES

IHPT produces Nautical Charts (NC) and Electronic Navigational Charts (ENC) in vector format. Regarding Nautical Charts production in the areas of Portuguese responsibility, both nationally and international, production programs were created to insure the coverage of these areas with “New Charts”, “New Editions” and “Updates” when necessary.

Presently, IHPT provides 100% of the national Nautical Charts using a Print-on-Demand system. All Portuguese charts are continuously updated according to the published “Notices to Mariners” and include QR Code for direct access.

IHPT also produces NC and ENC, including some charts of the International Portfolio (INT), for African Portuguese speaking countries.

In the SAIHC area a Protocol of Exchange and Cooperation between the Hydrographic Institute of Portugal (IH) and the National Institute of Hydrography and Navigation of Mozambique (INAHINA) was established in 2017. The main protocol objective is scheduling and implementation of activities related to the production of nautical charts of the International series.

a) ENC coverage, gaps and overlaps

The Portuguese ENC national portfolio includes 98 cells organized in 6 Usage Bands.

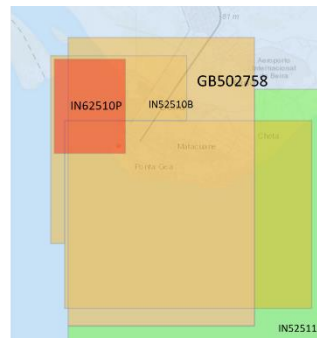
Since the last SAIHC meeting, Portugal didn't produce ENC cells in the SAIHC Region. Table I shows published and planned (next two years) ENC.

Table I – IHPT ENC published and planned

Area	Cell number	Usage Band	Status	Observations
ANGOLA				
Along coast of ANGOLA	PT 271101	2	Published	Updated
MOZAMBIQUE				
Nacala Harbour	PT 586310	5	Schemed/Planned	2021-2022
Quelimane Approach	PT 486402	4	Schemed/Planned	
Quelimane Harbour	PT 586402	5	Schemed/Planned	
Maputo Harbour	PT 586401	5	Schemed/Planned	

IHPT is still concerned with India and UK overlaps in Mozambique.

Cell name	Cell scale	Productor
IN52511A	12 000	India
IN52510B	12 000	India
IN62510P	4 000	India
GB502758	12 000	United Kingdom



b) ENC_Distribution method

IHPT is a member and participates actively in the works of the International Centre for ENC (IC-ENC), including their Technical Experts Working Group.

All Portuguese ENC are distributed by IC-ENC RENC.

c) RNC

NTR.

d) INT Charts

Since the last SAIHC meeting, IHPT did not produce any Nautical Chart of the region. However, IHPT has been involved in the production of the Nautical Charts showed in tables II and III.

Table II – INT charts produced or co-produced by IHPT

INT Number	PT NAC Number	Title	Scale	Edition	Status	Producer(s)
ANGOLA						
2089	72101	Gamba to Luanda	1/1000000	1ª 2013	Published	Co-production PT-GB
2050	72102	Luanda to Baía dos Tigres	1/1000000	1ª 2013	Published	Co-production PT-GB
2814	73201	Point Tchitembo to Cabeça da Cobra	1/350000	1ª 2012	Published	Co-production PT-GB
2550	73202	Cabeça da Cobra to Cabo Ledo	1/350000	1ª 2013	Published	Co-production PT-GB
2560	73203	Cabo Ledo to Lobito	1/350000	1ª 2013	Published	Co-production PT-GB
2570	73204	Lobito to Ponta Grossa	1/350000	1ª 2013	Published	Co-production PT-GB
2580	73205	Ponta Grossa to Foz do Cunene	1/350000	1ª 2013	Published	Co-production PT-GB
MOZAMBIQUE						
7661	-	Aproximações a Nacala	1/50000	1ª 2019	Published	Co-production MZ-PT-GB
7631	-	Aproximações à Beira	1/30000	2020	Published	Co-production MZ-PT

Table III –INT charts planned to be produced

INT Number	PT NAC Number	Title	Scale	Status	Comments	Producer(s)
MOZAMBIQUE						
7683	-	Aproximações a Maputo/Porto de Maputo	1/30 000; 1/15 000	Schemed New Edition	Compilation by INAHINA; Scheduled 2021	Co-production MZ-PT
7632	-	Porto da Beira	1/30 000	Schemed New Edition	QC/Revision; Scheduled 2020-2021	Co-production MZ-PT
7641	-	Aproximações a Quelimane/Porto de Quelimane	1/30 000; 1/10 000	Produced	New edition planned	Co-production MZ-PT
7645	-	Topuito	1/30 000	Schemed New Chart	No data available	Co-production MZ-PT
7620	-	Cabo São Sebastião à Beira	1/350 000	Schemed New Chart	Scheduled 2021-2022	Co-production PT-GB
7630	-	Beira ao Rio Zambeze	1/350 000	Schemed New Chart	Scheduled 2021-2022	Co-production PT-GB
7640	-	Rio Zambeze à Ilha Epidendron	1/350 000	Schemed New Chart	Scheduled 2021-2022	Co-production PT-GB

In a joint effort with the Angolan authorities, IHPT has maintained the updates, through Notices to Mariners (NtM), of the published charts.

e) National paper charts

All IHPT new charts and new editions are bilingual (Portuguese and English) and follow INT specifications, whether or not they belong to INT series.

The existing nautical paper chart portfolio aims to meet the specific needs of mariners, being

grouped according to their purpose. It was planned to take into consideration that the number of charts should be as minimal as possible; should comply with the navigation safety principles and, be in accordance with the requisites of the International Hydrographic Organization (IHO).

The Portuguese nautical charts portfolio is composed by the charts mentioned on table IV.

Table IV –Portuguese nautical charts portfolio

		NC (Portuguese folio)	INT	Old Folio (Portuguese folio)
Portugal		75	34	0
PAL* SAIHC Region	Mozambique	42	**	42
	Angola	46	7	39
Oceanics		6	1	5
PAL CHAtO Region		40	4	31
*PAL - African Portuguese speaking countries				
** No PT national number assigned to Mozambique INT charts				
OBS: New chart scheme under development for the PAL to allow cancellation of the old folio. These charts will be produced in the next 3-5 years in accordance with OHI specifications.				

f) Other charts, e.g. for pleasure craft

Charts for other purposes as Fisheries, Yachting, Sediments distribution, special training and Inland (Douro and Guadiana rivers) were produced for Portugal geographical area. IHPT did not produce any Other Charts for the SAIHC region.

g) Challenges and achievements

The good evolution of the cooperation with Mozambique has allowed the co-production of INT charts in accordance with the IHO standards and specifications.

The challenge is to build ENC production capacity in Mozambique for 2021/22.

As concerns/challenges it is indicated: the charts still to be produced and the resolution of overlaps in the Port of Beira (UKHO/India).

Regarding the S-100, in particular the implementation of the production of S-101 ENC (specifications/software production/QC) will be a great challenge.

4- NEW PUBLICATIONS AND UPDATES

a) New Publications

NTR.

b) Updated publications

IHPT published the Annual Group of Notices to Mariners (2020 and 2021), as well as, every month, the Monthly Group of Notices to Mariners.

In addition to the Tide Tables for the main harbors of Continental Portugal and Azores and Madeira Archipelagos, IHPT also publishes annually the Tide Table (Volume II) - African Portuguese Speaking Countries and Macau which contains tide information for the following harbors in the SAIHC region:

- Soyo, Angola;
- Luanda, Angola;
- Lobito, Angola;
- Namibe, Angola;
- Maputo, Mozambique;
- Inhambane, Mozambique;
- Beira, Mozambique;
- Chinde, Mozambique;
- Ponta Tangalane, Mozambique;
- Pebane, Mozambique;
- Angoche, Mozambique;
- Ilha de Moçambique, Mozambique;
- Nacala, Mozambique;
- Pemba, Mozambique;
- Mocímboa da Praia, Mozambique.

c) Means of delivery, e.g. paper, digital

Digital or paper, if requested.

d) Challenges and achievements

NTR

5- MARITIME SAFETY INFORMATION

a) Existing infrastructure for transmission

IHPT is the national coordinator for the Maritime Safety Information and the navigational warnings are transmitted by COMAR that provides a 24h service, in cooperation with the NAVAREA II coordinator.

NAVTEX broadcast is made both in English and Portuguese and it is transmitted from Penalva Station (near Lisbon), São Miguel Island (in the Azores Archipelago) and from Porto Santo Island (in the Madeira Archipelago).

Monthly, IHPT publishes the Group of Notices to Mariners (NtM), containing all permanent, preliminary, and temporary warnings in force for the corresponding period. This information, covers all navigation charts and publications of Portugal, Angola, Cape Verde, Guinea-Bissau and São Tomé e Príncipe, and is also available on the web site (<http://www.hidrografico.pt>).

IHPT on-line application ANAVNET (<http://www.anavnet.hidrografico.pt>), provides either entire NtM publications, or single NtM affecting individual documents; allowing in any case consultation and printing, including entire correction pages of nautical publications and graphical annexes to paste on charts. Regarding Navigational Warnings, ANAVNET allows consultation of warnings broadcasted by any of the Portuguese NAVTEX stations (coastal and local warnings), both in Portuguese and English languages.

Portugal has also three AIS coastal stations in Continental Portugal and in Azores and Madeira Archipelagos.

b) Statistics on work of the National Coordinator

IHPT doesn't have National Coordinator responsibilities for countries in SAIHC area.

c) New infrastructure in accordance with GMDSS Master Plan

No new information received from INAHINA or ISHMA

d) Challenges and achievements

Help INAHINA and ISHMA as requested in the future, by those agencies.

6- C-55

An update of C-55 for Portugal, Portugal-Madeira and Portugal-Azores was sent to IHB.

7- CAPACITY BUILDING

a) Offer of and/or demand for Capacity Building

The School of Hydrography and Oceanography (<https://www.hidrografico.pt/op/23>) is a Navy Specialization School, and the department of the Hydrographic Institute dedicated to the training of Navy officers and sergeants and civilian technicians necessary for the Hydrographic and Oceanographic activities, or to these with that interest to Navy and the Country. The training provided by the Hydrography and Oceanography School stands out, with FIG/IHO/ICA category A and B courses.

The next courses available start:

- September 2021: CAT A
- September 2022: CAT B

Table V shows the latest capacity building actions made between Portugal and Mozambique.

Table V –PT-MZ latest CB actions

Date		Where
November 2018	PT-MZ Training in MBES acquisition and processing.	INAHINA (Mozambique)
May 2019	PT-MZ Working meeting on the production of INT nautical charts	IHPT (Portugal)
2020	PT-MZ Working meeting on the production of INT nautical charts. Action cancelled due COVID-19.	INAHINA (Mozambique)

b) Training received, needed, offered

IHPT recommends a strong commitment to the training of SAIHC members in the development and production of the new generation of S-100 products and services. These activities should be coordinated in the next years by the Regions in order to include as many participants as possible, as well as to influence the standardization of training.

e) Status of national, bilateral, multilateral or regional development projects with a hydrographic component.

NTR.

f) Definition of proposals and requests to the IHO CBSC

INAHINA and IHPT proposed to 2021 a training for cartographic technicians of Mozambique Hydrographic Office in the production of ENC's aiming for the development of the country in ENC production capability.

8- OCEANOGRAPHIC ACTIVITIES

a) General

IHPT develops activity related to physical, geological and chemical oceanography, participating in national and European Union research projects in those fields, but, from September 2019 until January 2021 there is no oceanographic activities to be described in the SAIHC region.

Accordantly with bilateral cooperation agreement signed between IHPT and INAHINA, in the future, it is expected that IHPT will cooperate with INAHINA, in the SAIHC region, to build up capacities on oceanographic modelling, tides and currents data acquisition, oceanographic database administration and remote sensing applied for operational oceanography.

From July 29th to August 2nd 2021 a training course about Discovering Operational Data Products and Services will take place in Kenya and Mozambique. This course will be ministered by one element of the Oceanography Division.

Linking Earth Observation data and Sustainable Development across the Atlantic is an activity that aims at fostering the incorporation of Earth Observation (EO) and related in situ data products in the work carried out by researchers and stakeholders of coastal ocean and nearshore areas related activities, with emphasis in the countries bordering the Central and Southern Atlantic, stimulating the development of new uses of EO data products and services, in alignment with the Sustainable Development Goals the UN 2030 Agenda. The action will involve a networking event gathering different actors - experts and new users of Earth Observation data - to discuss and discover the use of Earth Observation data in a diversity of topics related with the Environment, Ocean, Coast and Sustainable Development. This workshop will help to setup a new community with members of different scientific disciplines and economic activities across the Atlantic basin, which will routinely use Earth Observation data while promoting the philosophy underlying Sustainable Development Goals.

b) GEBCO/IBC's activities

IHPT provides bathymetric data to IHO DCDB and GEBCO through EMODNet, the European Marine Observation and Data Network. With this participation in European level multidisciplinary projects IHPT learns and keeps their alignment with the best procedures in the MSDI research developments.

Part of the work involves linking to national, regional or thematic data repositories in which lies the basic information and the creation of outreach products. Thematic groups have been set up to organize the data available from various sources, assess their quality, ensure that they are accompanied by metadata and provide such data through thematic portals in the areas of bathymetry, geology, habitats, biology, chemistry, physical oceanography, and human activities.

The High Resolution Seabed Mapping (HRSM) project aims to create and maintain an operational service that provides free and open access to the seabed and coastal sea basin bathymetric models at the best resolution possible.

A harmonized EMODnet Digital Terrain Model (DTM) has been generated for European sea regions from selected bathymetric survey data sets, composite DTMs, Satellite Derive Bathymetry (SDB) data products, while gaps with no data coverage are completed by integrating the GEBCO Digital Bathymetry (see GEBCO Grid and IHO DCDB website).

IHPT has been collaborating with this project for almost a decade, providing bathymetric data in the Atlantic, Azores and Madeira regions.

c) Tide gauge and other monitoring equipment network

There is no IHPT oceanographic equipment installed on SAIHC region.

d) New equipment

NTR

e) Challenges and achievements:

The harmonic constants included on Volume II of Tide Table are not updated since 1973 for Angola and 2000 for Maputo, Mozambique. This lack of update is due to the absence on data published by the concerned national authorities.

9- MSDI Progress

IHPT has been developing and modernizing his MSDI (2018-2020) to implement the INSPIRE and MSDI best procedures to improve the data management, metadata creation, implement better data search services and optimized data access services. This will be based on a centralized web portal, which will focus on themes such as products, services, activities, means and data, with a user-oriented focus.

The operational forecast system for sea state “Qual é a tua Onda?” continues to be maintained, depicting sea state forecasts and other generic information to the public. This information system is available to the general public, on the IHPT web portal, organized into usability sectors, such as the surf community, recreational navigation and fisheries.

Notices to Mariners and Navigational Warnings issued by the IHPT are also available at IHPT Internet portal ANAVNET, as well as general information on the Portuguese Nautical Charts and Nautical Publications.

a) Status of MSDI

The MSDI (Beta version) is available in the URL <https://geomar.hidrografico.pt> and implements the components presented in the Figure 2. The geoportal is still under development with periodic deployment of new functionalities and data layers. So far the users recognize the potential of this new tool as an organizational asset capable of support diverse scientific projects and clients – Human and machines.

From the systems architecture (Figure 3) point of view the PT MSDI implements several open source technologies to achieve the Spatial Data Infrastructure (SDI) conceptual pillars. This allows IH to be compliant with INSPIRE and IHO MSDI requirements and to publish diverse data sources and formats through web services.

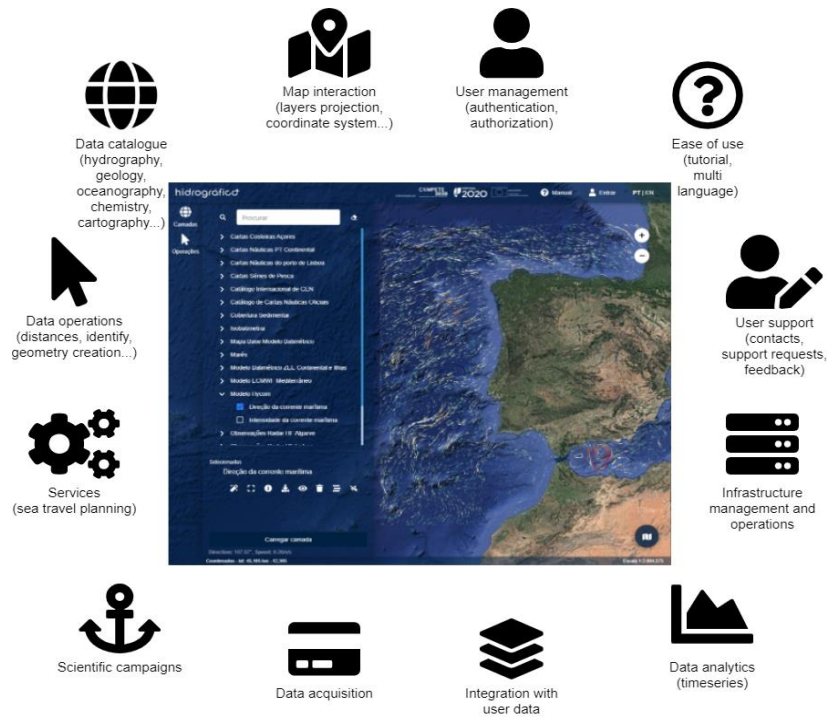


Figure 2 – Hidrográfico + MSDI functionalities and components.

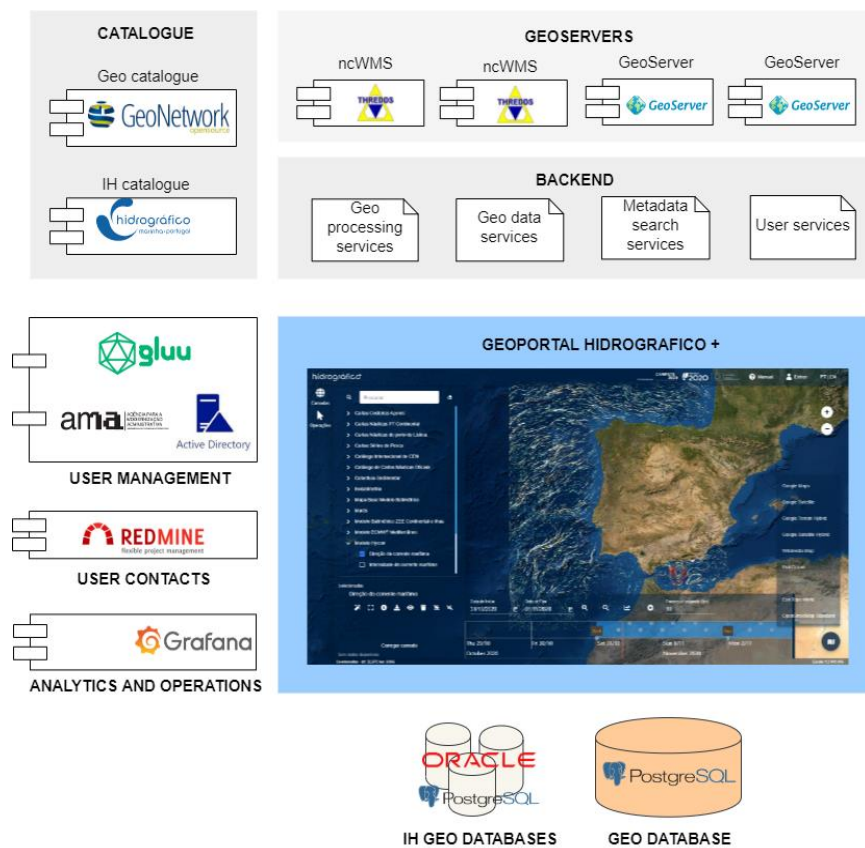


Figure 3 – Hidrográfico Plus MSDI architecture.

b) Relationship with the NSDI

IH data are available through Open Geospatial Consortium (OGC) web services in the Portuguese National Spatial Data Infrastructure (NSDI) – Sistema Nacional de Informação Geográfica (SNIG) : <https://snig.dgterritorio.gov.pt/>. SNIG maintains a centralized metadata catalogue with all national data providers and are linked to the EU INSPIRE Portal. The metadata are shared between the different infrastructures through automatic harvesting process. This approach assures data access for different clients.

c) Involvement in regional or global MSDI efforts

IH works in the SNIG Working Groups for a common effort in the INSPIRE principles implementation and provide geospatial data services to other portals like the Marine Spatial Data Portal – Geoportal do Mar Português (<https://webgis.dgrm.mm.gov.pt/portal/apps/webappviewer/index.html?id=df8accb510bc4f33963d9b03bf3674b8>).

d) National implementation of the Shared Data Principles – including any national data policy and impact on marine data.

Portuguese administrative bodies have been implementing the common European directives and orientations like INSPIRE, Marine Directive Framework, the European Strategy for Data Policy and the Directive on open data and the re-use of public sector information, also known as the ‘Open Data Directive’ (Directive (EU) 2019/1024), this are a few examples.

The main drivers of SDI and MSDI have been the European Community and regional initiatives. SNIG follows the INSPIRE directive and the Implementation Working Groups. IH combines the needs to implement the INSPIRE directive with the IHO and IMO principles and requirements to build up the Hidrográfico + MSDI, which is capable of serving multiple user needs and uses. Portugal does not have a national common marine data policy. However, data producers and providers have their own organizational data policies aligned with national and European legislation, compliant with international data management best practices.

e) MSDI national portal

Currently it is not identified one single portal as the MSDI national portal, and maybe the best approach for MSDI federate principles implementation is to implement a network of geospatial services and aggregated metadata access points like SNIG and INSPIRE portals.

f) Best practices and lessons learned

The Hidrográfico + MSDI follows the best practices and requirements identified by several recognized institutions/organizations: INSPIRE (<https://inspire.ec.europa.eu/>), OHI MSDIWG

(<https://iho.int/en/body-of-knowledge>), OGC (<https://www.ogc.org/>) and IOC OceanBestPractices (<https://repository.oceanbestpractices.org/handle/11329/139>), among others. The main lessons learned are the need to maintain a good human resources capacity building program maintaining the internal competences and technical skills aligned with the MSDI principles and implementation models.

g) Challenges and achievements.

Hidrográfico + MSDI components are used to support internal technical and scientific geospatial data management processes and to feed external clients with near real time data. This MSDI supports the organization mission as marine national laboratory, hydrographic chart authority. As navy unit it supports maritime operations extremely depend of geospatial data.

Hidrográfico + since its internet deployment has proved its value. The IH develops this project taking into account marine user needs. This MSDI should be fully working at the Ocean Decade Beginning and we have great expectations about its role for decreasing the ocean knowledge gap at National, European and Global level. This MSDI implements all identified requirements needed for interoperability. For sure will potentiate the access to IH blue geospatial data and has potential for private sector applications development. By this way IH will manage one infrastructure ready to be used in the Open Data Directive umbrella and aligned with INSPIRE requirements. This is one of the IH contributions for Ocean Decade, sustainable development goals and for national blue economy development.

The MSDI development is a never-ending process. Digital era is a living ecosystem with rapidly and continuous development. For sure new requirements for digital data should show up soon. Yet, at this moment our main goals have been achieved.

The main challenges are to keep the MSDI aligned with digital data strategies at different levels. This is a digital environment with a continuous evolution which requires a rapid adaptation to new clients and stakeholders. This and the data harmonization will for sure be the major challenges for future.

10- INNOVATION

a) Use of new technologies

IHPT is envisioning the use of UAVs, AUVs, USVs and gliders in a near future. The investment in UAVs in 2021 will provide the access for further development on the capacity of having derived bathymetry for larger identified areas in a short time. This capacity could very well be used in SAHIC region, covering some gaps on newer data that might exist, and would easily be implemented through capacity building actions. The use of other autonomous vehicles in the PT region is also being planned.

b) Risk assessment

IHPT is conducting Risk Assessment of some of the waterways in order to identify areas of improvement for the safety of navigation. These assessments are performed in accordance with the recommendations and guidelines of IALA.

c) Policy matters.

NTR.

11- OTHER ACTIVITIES

a) Participation in IHO Meetings

Due to its primary charting responsibilities, Portugal, represented by IHPT, is a member of EAtHC and Associated Member of SAIHC. Since September 2020 the Diretor-general of IHPT, RAdm Carlos Ventura Soares, is the chair of the EAtHC commission.

The detail of IHPT involvement in other IHO activities/working groups is listed in the table hereafter.

	Description	IHPT representation
HSSC	Hydrographic Services and Standards Committee	CDR João Paulo Delgado Vicente
IENWG	IHO-European Union Working Ggroup	Captain Miguel Bessa Pacheco
IRCC	Inter-Regional Coordination Committee	RAdm Carlos Ventura Soares
MSDI	Marine Spatial Data Infrastructure Working Group	LCDR Paulo Antunes Nunes
S100WG	S-100 Working Group	Eng. ^a Paula Sanches
HSPT	S-44 Hydrographic surveys Project Team	Eng. ^a Cristina Monteiro
CSBWG	Crowdsource bathymetry Workin Group	Eng. ^a Leonor Veiga

b) Meteorological data collection

NTR.

c) Geospatial studies

NTR.

d) Preparation for responses to disasters

NTR.

e) Environmental protection

NTR.

f) Engagement with the Maritime Administration

NTR.

g) Aids to Navigation matters.

NTR.

h) Magnetic/Gravity surveys

NTR.

i) International engagements

In April 2017, during the 1st IHO Assembly, a bilateral cooperation agreement has been signed between IHPT and Mozambique's Hydrographic Office – INAHINA (National Institute of Hydrography and Navigation). This agreement is focused on technical cooperation and interchange in the domains of hydrography, nautical cartography and oceanography.

The Bilateral cooperation agreement was reviewed in 2018. With respect to the hydrography and nautical cartography themes, INAHINA expects the assistance of IHPT for the acquisition and processing of MBES systems data and production of Electronic Navigational Charts.

IHPT expects the cooperation from INAHINA to achieve the compromises assumed by Portugal and Mozambique, regarding the co-production of INT charts has listed in the Charts section of this report.

IHPT also prepared in 2019 a draft protocol with Instituto Hidrográfico e de Sinalização Marítima de Angola (IHSMA). However, the IHPT is still waiting for the Angolan authorities draft review of the document to materialize this agreement that aims to enable/capacity hydrography and cartography activities in that country.

j) Others - Naval Meteorological and Oceanographic Center

IHPT has developed state of the art tools and operational systems in the field of meteorological and oceanographic forecast, in-situ ocean observation networks and remote sensing techniques, along the Portuguese margin and coastal areas.

In November 2017, IHPT activated the new GEOMETOC center of the PRT Navy, named CGEOMETOC (Naval Geospatial, Meteorological and Oceanographic Center), under the direction of IHPT's Director-general.

12- CONCLUSIONS

Due to the Covid-19 international health crisis, some capacity building activities (namely INT Chart co-production with Mozambique) which were scheduled for 2020 had to be postponed to 2021.

a) Areas of significant achievement

IHPT and INAHINA are cooperating in nautical charts co-production.

b) Areas of particular concern

Travel and accommodation are still the major concerns for any partnership or support actions IHPT can be involved in Mozambique and Angola.

It would be of major interest that further capacity building actions could be taken into consideration in Mozambique in order to continue the development of full hydrographic and cartographic capabilities and improve the communication between both parts.

c) Any other matters of interest to the SAIHC

NTR.