

Nova Cartografia Náutica

As ENC S-100



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**CONHECIMENTO
DO OCEANO**

Agenda



-  Introdução
-  O S-100
-  Produtos S-100
-  Calendarização
-  GT S-100
-  Considerações finais



Introdução

- Organização Hidrográfica Internacional (OHI)
 - Standards dados, produtos e serviços hidrográficos
 - Garantir segurança no mar – contribuir economia e proteção ambiente marinho
- Modelo dados hidrográficos digitais (1992)
 - ENC (S-57)
- Necessário novo modelo dados Geoespaciais
 - Integração vários tipos fontes informação
 - Adaptação desenvolvimentos tecnológicos
 - Apoiar navegação autónoma – *e-navigation*
- 2005 – Início do desenvolvimento do conceito S-100
- 2025 – Início produção S-100
- 2026 – Publicação S-100





S-100



S-100 Universal Hydrographic Data Model

@ UKHO (<https://youtu.be/VIAP4Uo11xw>)

- Adicionar funcionalidades, adicionar dados, camadas de informação;
- Permitir ligação e operação em conjunto com dados geoespaciais marinhos, hidrográficos, cartográficos, publicações náuticas, segurança marítima/navegação, (...)
- Abrir o produto a mais aplicações;
- Assegurar as exigências do futuro em produtos e serviços digitais (*e-navigation*);



Machine readable nautical information
(Facilitate IMO MASS)

- IMO INTERNATIONAL MARITIME ORGANIZATION
- IALA International Association of Marine Aids to Navigation and Lighthouses
- IEC International Electrotechnical Commission
- WMO WORLD METEOROLOGICAL ORGANIZATION



S-100 WORLD



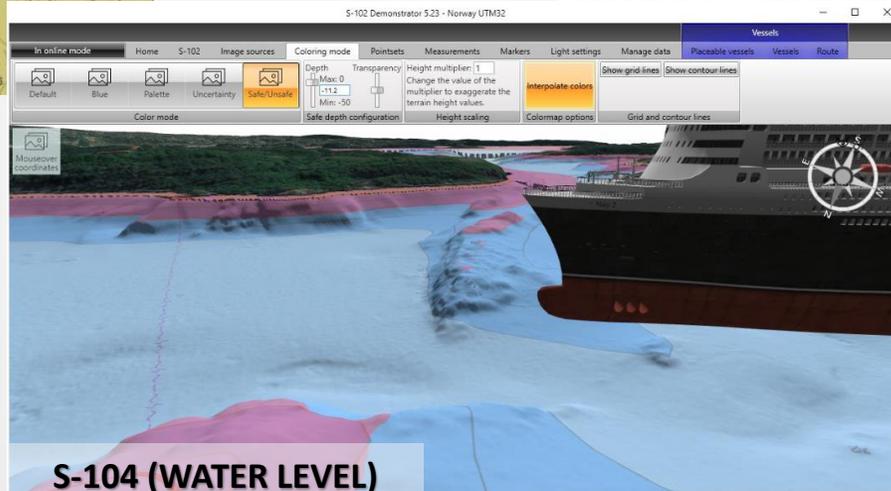
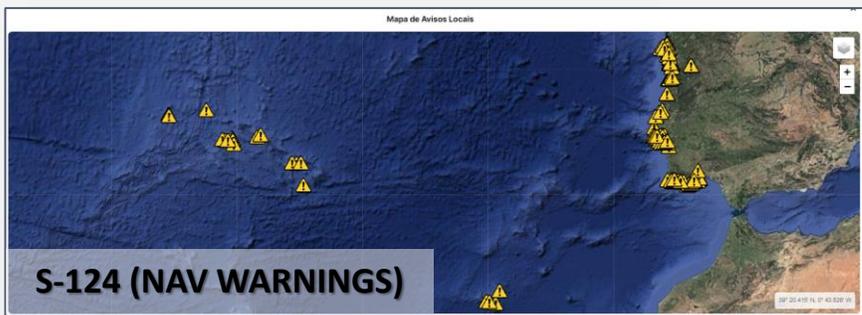
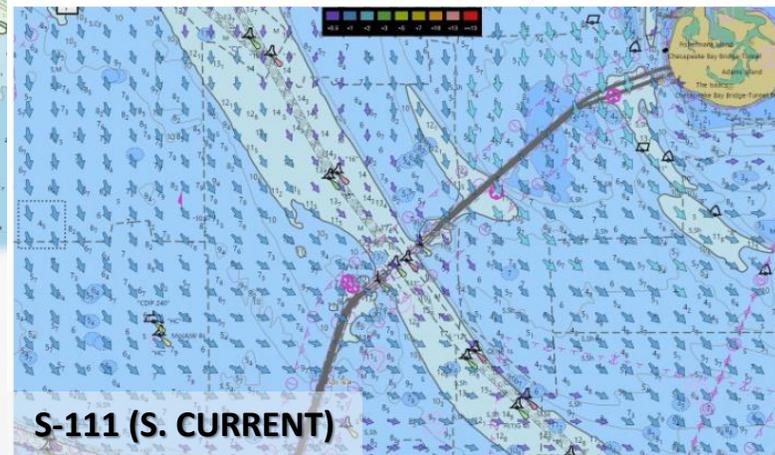
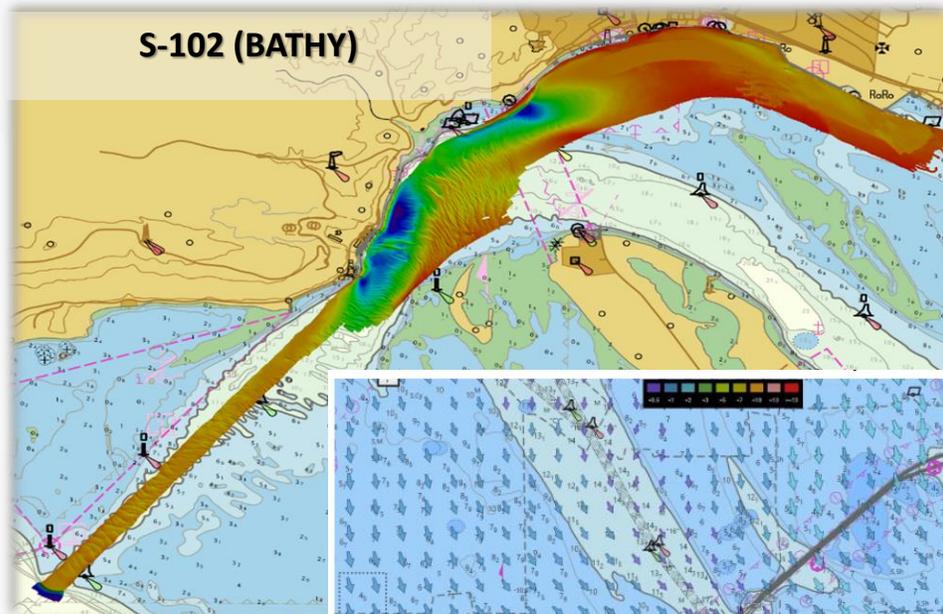
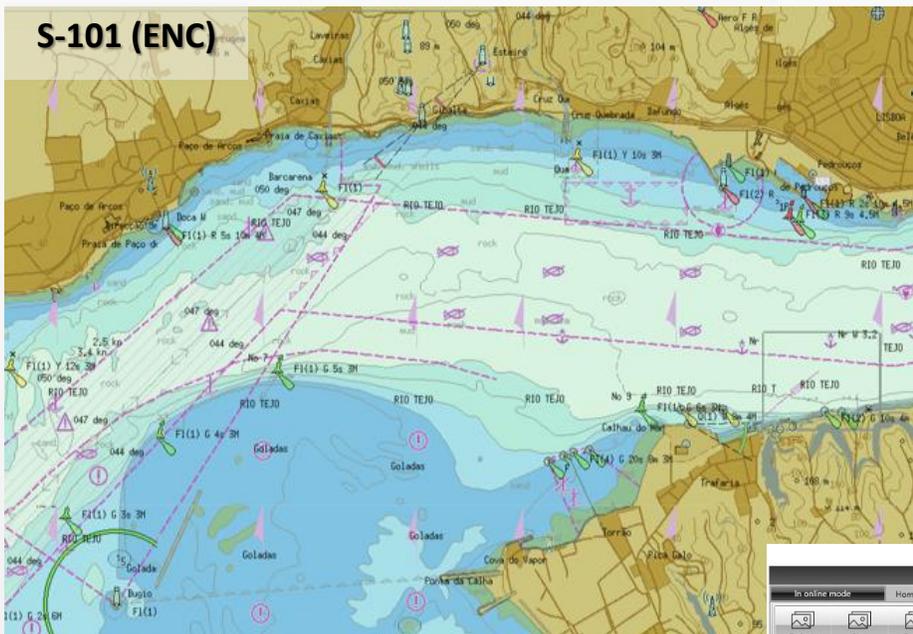
- Phase 1**
- Route Monitoring
- S-101 ENC
 - S-102 Bathymetry
 - S-104 Water Level
 - S-111 Surface Currents
 - S-124 Navigational Warnings
 - S-129 UKC Management
- Critical Framework
- IHO Geospatial Information Registry
 - S-98 Interoperability Specification
 - S-100 Universal Hydrographic Data Model
 - S-128 Catalogue of Nautical Products
 - S-164 Test Data Set for S-100 and ECDIS Type Approval

- Phase 2**
- Route Planning
- S-122 Marine Protected Areas
 - S-123 Marine Radio Services
 - S-125 Marine Aids to Navigation (AtoN)
 - S-126 Marine Physical Environment
 - S-127 Marine Traffic Management
 - S-131 Marine Harbour Infrastructure
 - S-411 Ice Information (WMO)
 - S-412 Weather and Wave Hazards (WMO)
- +
- S-100 Products used in Monitoring Mode

S-97	Guidelines for Creating S-100 Product Specifications	S-98	Data Product Interoperability in S-100 Navigational System	S-99	Operational Procedures for the Organization and Management of the IHO GI registry	S-100	IHO Universal Hydrographic Data Model	S-164	Test Data Set for S-100 and ECDIS Type Approval	S-101 to S-199	International Hydrographic Organization (IHO)
S-101 to S-199	International Association of Marine Aids to Navigation and Lighthouses (IALA)	de S-301 to S-399	Intergovernmental Oceanographic Commission (IOC)	S-401 to S-402	Inland ENC Harmonization Group (IEHG)	S-411 to S414	WMO Service Commission (SERCOM)	S-421 to S-430	International Electrotechnical Commission - TC80 (IEC-TC80)	S-501 to 525	NATO Geospatial Maritime Working Group (OMWG) for Additional Military Layers (AML)

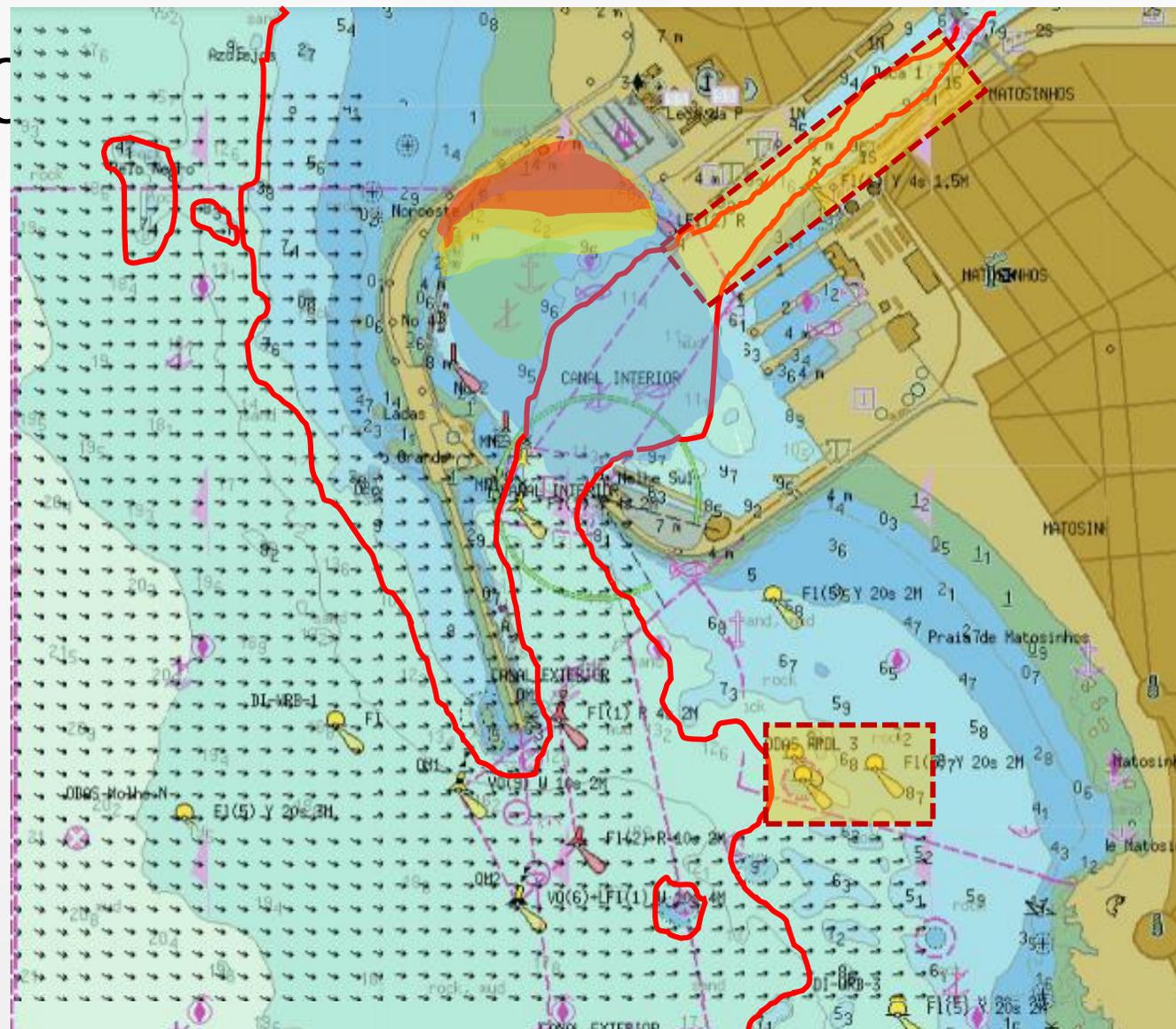


Produtos S-100

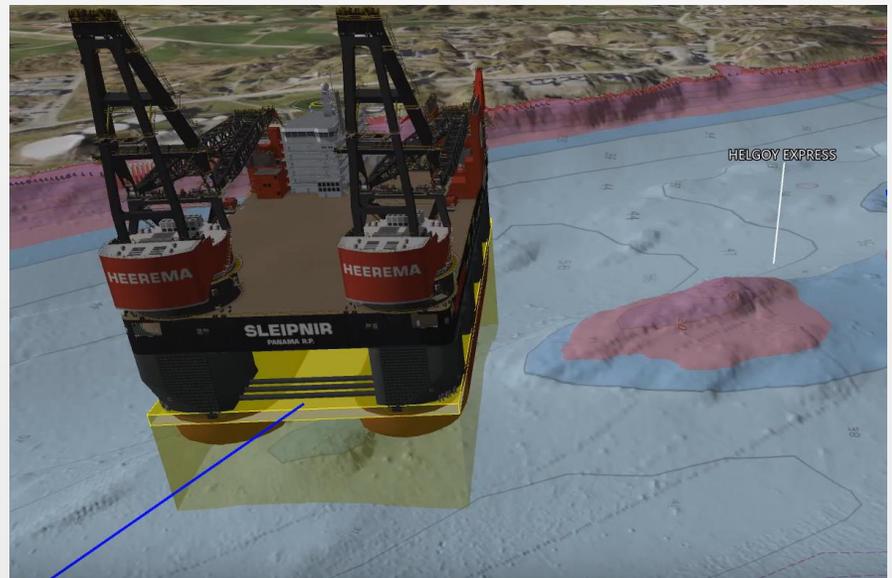
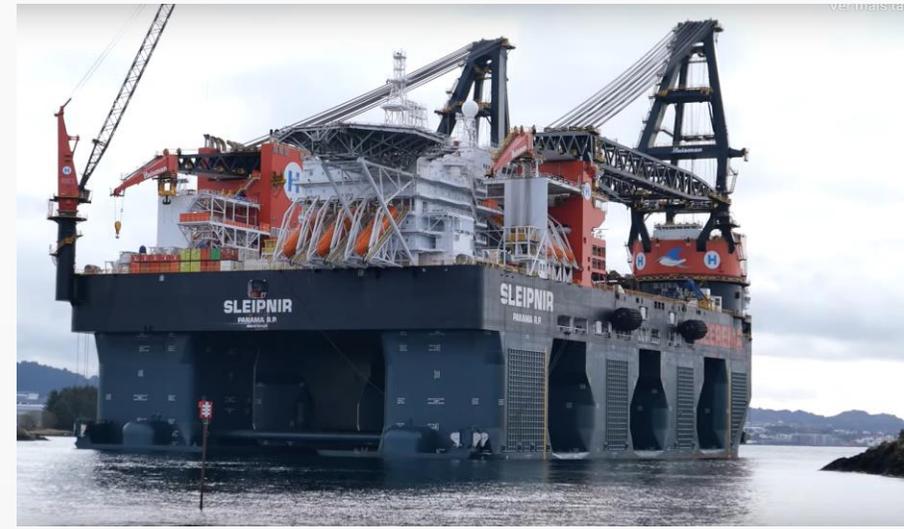


Produtos S-100

- S-101 (ENC)
- S-102 (Batimetria)
- S-104 (Marés)
- S-111 (Correntes)
- S-124 (Avisos Nav)



Produtos S-100



Calendarização



CONHECIMENTO DO OCEANO

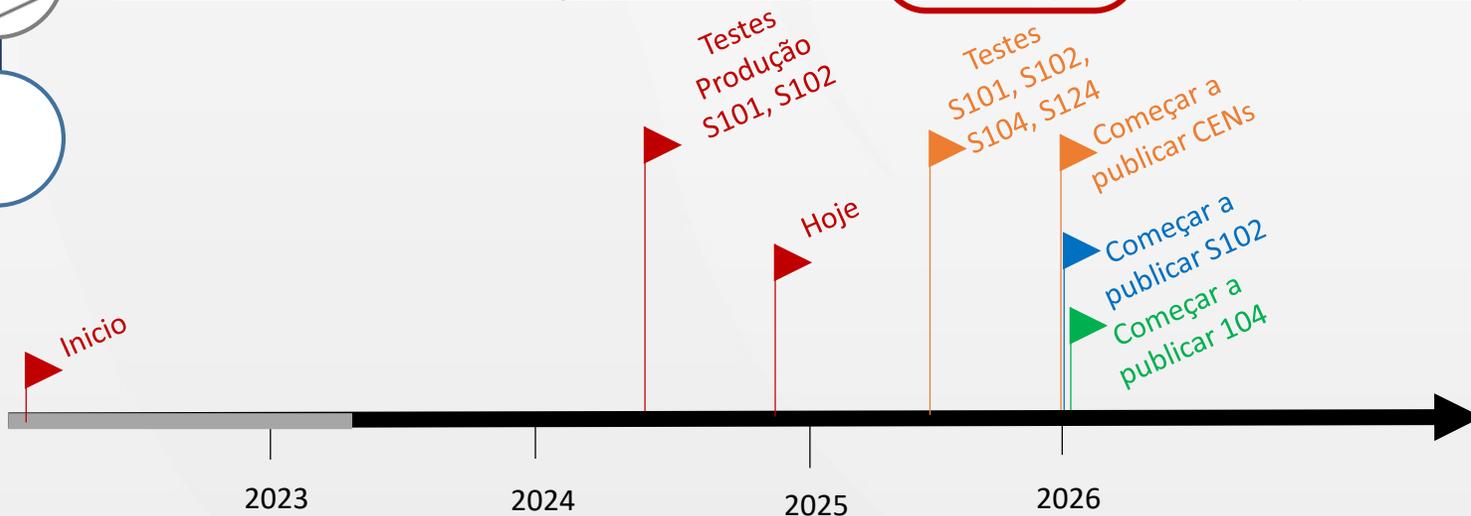


S-100 PRODUCT SPECIFICATIONS DEVELOPMENTS AND TIMELINE





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CONHECIMENTO DO OCEANO



Machine readable nautical information
(Facilitate IMO MASS)



S-100 WORLD



- Phase 1**

Route Monitoring

 - S-101 ENC
 - S-102 Bathymetry
 - S-104 Water Level
 - S-111 Surface Currents
 - S-124 Navigational Warnings
 - S-129 UKC Management

Critical Framework

 - I H O Geospatial Information Registry
 - S-98 Interoperability Specification
 - S-100 Universal Hydrographic Data Model
 - S-128 Catalogue of Nautical Products
 - S-164 Test Data Set for S-100 and ECDIS Type Approval

Phase 2

Route Planning

 - S-122 Marine Protected Areas
 - S-123 Marine Radio Services
 - S-125 Marine Aids to Navigation (AtoN)
 - S-126 Marine Physical Environment
 - S-127 Marine Traffic Management
 - S-131 Marine Harbour Infrastructure
 - S-411 Ice Information (WMO)
 - S-412 Weather and Wave Hazards (WMO)

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S-100 Products used in Monitoring Mode

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Grupo de Trabalho Nacional S-100

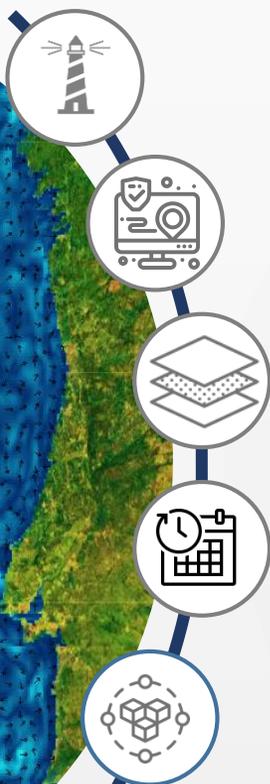


International Hydrographic Organization (IHO) (S-101 to S-199)

- S-101 Electronic Navigational Chart (ENC)
- S-102 Bathymetric Surface
- S-103 Sub-surface Navigation
- S-104 Water Level Information for Surface Navigation
- S-111 Surface Currents
- S-112 Open - (See Decision HSSC9/38)
- S-121 Maritime Limits and Boundaries
- S-122 Marine Protected Areas
- S-123 Marine Radio Services
- S-124 Navigational Warnings
- S-125 Marine Aids to Navigation (AtoN)
- S-126 Marine Physical Environment
- S-127 Marine Traffic Management
- S-128 Catalogue of Nautical Products
- S-129 Under Keel Clearance Management (UKCM)
- S-130 Polygonal Demarcations of Global Sea Areas
- S-131 Marine Harbour Infrastructure
- S-164 IHO Test Data Sets for S-100 ECDIS



Grupo de Trabalho Nacional S-100



International Association of Marine Aids to Navigation and Lighthouse (IALA) (S-201 to S-299)

- S-201 Aids to Navigation Information
- **S-210 Inter-VTS Exchange Format**
- S-211 Port Call Message Format
- S-212 VTS Digital Service
- S-230 Application Specific Messages
- S-240 DGNSS Station Almanac
- S-245 eLoran ASF Data
- S-246 eLoran Station Almanac
- S-247 Differential eLoran Reference Station Almanac



IALA

Intergovernmental Oceanographic Commission (IOC) (de S-301 to S-399)

- (None proposed yet)



unesco

Intergovernmental
Oceanographic
Commission

Inland ENC Harmonization Group (IEHG) (S-401 to S-402)

- S-401 IEHG Inland ENC
- S-402 IEHG Bathymetric Inland ENC



Inland ENC
Harmonization Group

WMO Service Commission (SERCOM) (S-411 to S414)

- S-411 Ice Information
- **S-412 Weather and Wave Hazards**
- S-413 Weather and Wave Conditions
- S-414 Weather and Wave Observations



International Electrotechnical Commission - TC80 (IEC-TC80) (S-421 to S-430)

- S-421 Route Plan



International
Electrotechnical
Commission

NATO Geospatial Maritime Working Group (GMWG) for Additional Military Layers (AML) (S-501 to 525)

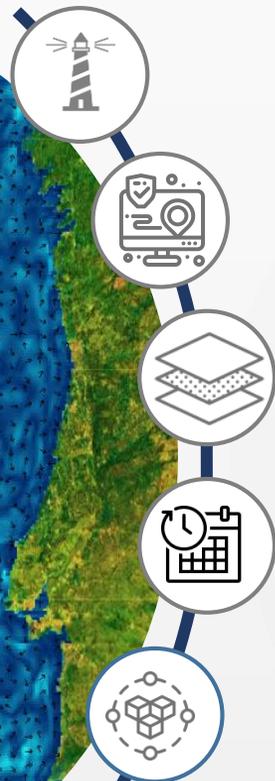
- (None proposed yet)





Grupo de Trabalho Nacional S-100

- Responsabilidade de coordenar a implementação dos serviços e produtos S-100
- Coordenação: IH
- Membros:
 - Vários intervenientes na produção S-100





Grupo de Trabalho Nacional S-100

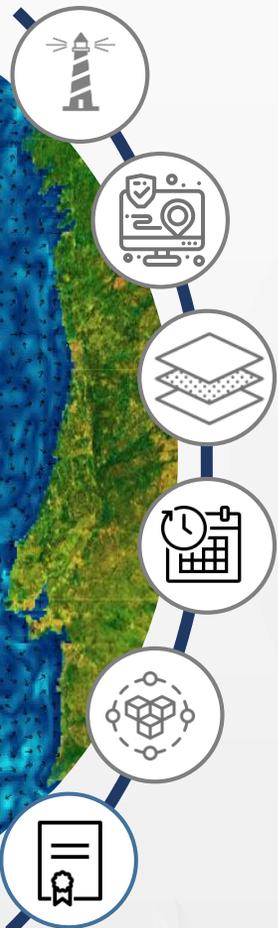
- Coordenação: IH
- Membros:
 - Vários intervenientes na produção S-100

RoadMap



Considerações Finais

- Informação/dados tempo real
- Camadas de informação
- Integração de serviços
- *E-navigation*
- Segurança da Navegação (*Safety*)
- IH acompanha planeamento OHI
- **Preparar o FUTURO**



Considerações Finais

- Informação/dados tempo real
- Camadas de informação
- Integração de serviços
- *E-navigation*
- Segurança da Navegação (*Safety*)
- IH acompanha planeamento OHI
- **Grupo de Trabalho Nacional S-100**

