

# South West Pacific Hydrographic Commission 20<sup>th</sup> Meeting, 2023

## National Impacts of S-100

John Lowell, National Geospatial-Intelligence Agency, United States of America

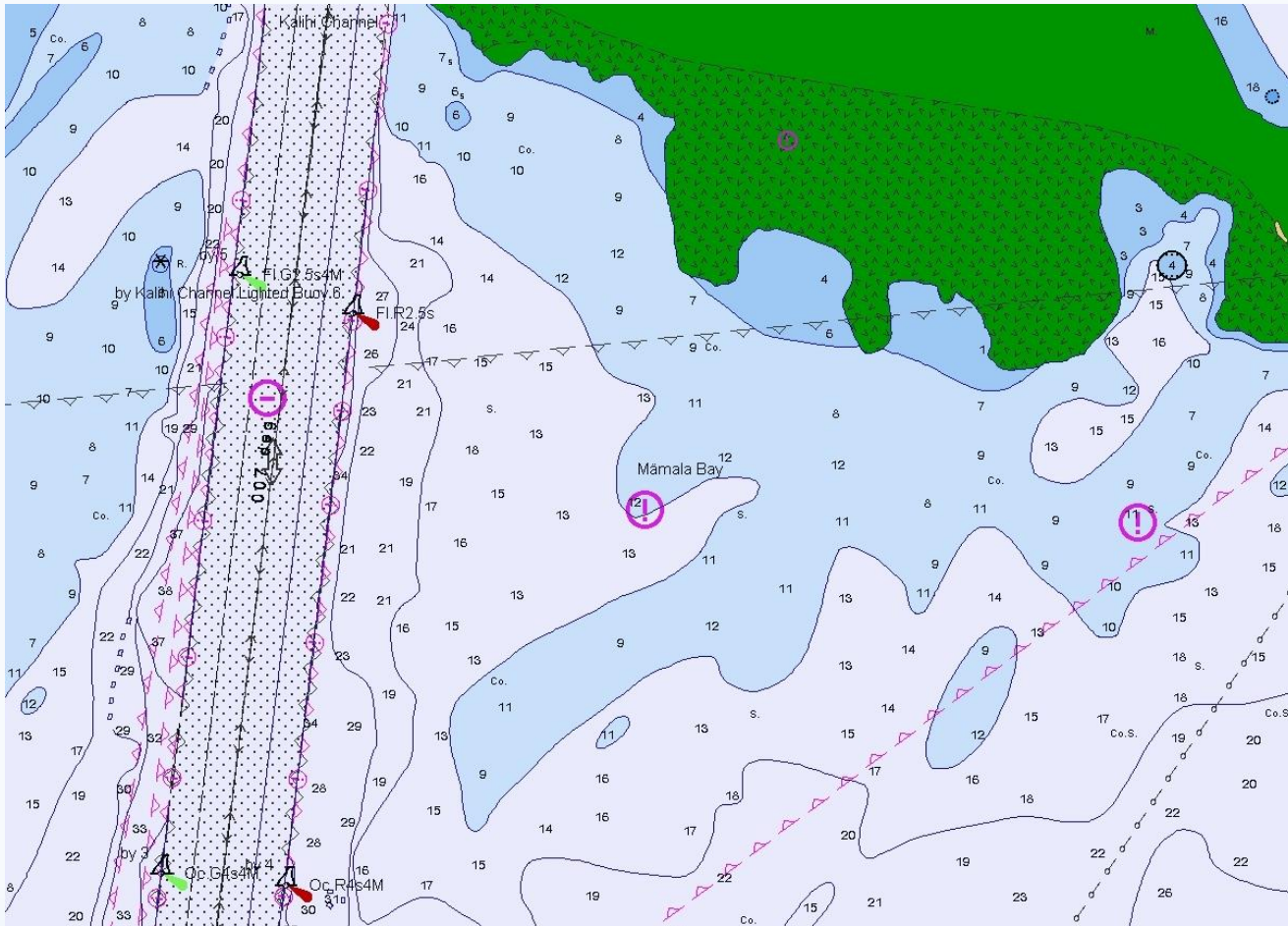


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# SOLAS – Ch V Regulation 9 Hydrographic Services



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<https://nauticalcharts.noaa.gov/updates/enc-ten-year-anniversary/>

REGULATION 9 – Hydrographic services  
Contracting Governments undertake to **arrange** for the collection and compilation of hydrographic data and the publication, dissemination and **keeping up to date** of all nautical information necessary for safe navigation.

**Substantial governance challenge by all nations to make safety of navigation data available to meet SOLAS and broader use cases.**

**Considerable return on investment to the nation.**

**How a nation fulfills it's SOLAS requirements is very flexible.**



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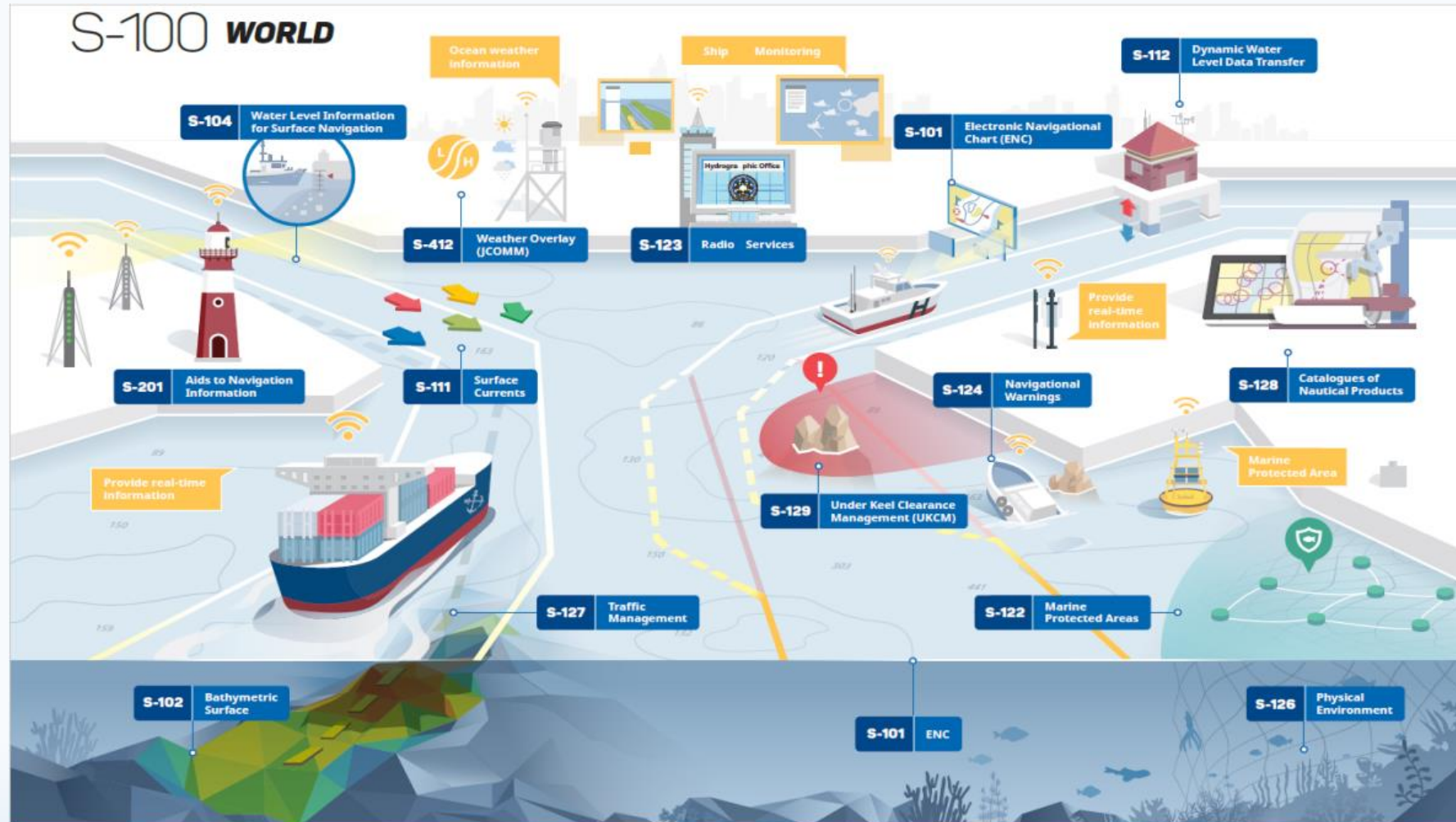
# Traditional Hydrographic Office, circa 1921

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- 1) Have Authority – can be more than one (every nation different)
  - U.S. has 4 recognized HO's
- 2) Obtain data – Self collect; partner with other Nation or industry
  - MSI, survey systems, tide and current observations, etc
- 3) Build products – In house; partner with other nation or industry
  - Paper Nautical Chart, ENC, Publications, tide tables etc
- 4) Distribute products – In house; partner with other nation or industry
  - Nationally, internationally, partners, via RENC, etc
- 5) Users consume products – traditional users are SoN focused
  - Pay for use

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# S-100 Suite of Digital Safety of Navigation Products



Permission to use image from International Hydrographic Organization (IHO)  
<http://s100.iho.int/home/s100-introduction>



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# S-100 Suite of Digital Safety of Navigation Products

## [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-121 Maritime Limits and Boundaries

#### S-122 Marine Protected Areas

#### S-123 Marine Radio Services

#### S-124 Navigational Warnings

#### S-125 Marine Navigational Services

#### 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

## [International Association of Light Authorities \(IALA\) \(S-201 to S-299\)](#)

#### S-201 Aids to Navigation Information

#### S-210 Inter-VTS Exchange Format

#### S-211 Port Call Message Format

#### S-212 Port Call Message Format

#### 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

## [Intergovernmental Oceanographic Commission \(IOC\) \(S-301 to S-399\)](#)

(None yet)

## [Inland ENC Harmonization Group \(IEHG\) \(S-401 to S-402\)](#)

#### S-401 IEHG Inland ENC

#### S-402 IEHG Bathymetric Inland ENC

## [Joint Technical Commission for Oceanography and Marine Meteorology \(WMO/IOC JCOMM\) \(S-411 to S-412\)](#)

#### S-411 JCOMM Ice Information

#### S-412 JCOMM Weather Overlay

#### S-413 Weather and Wave Conditions

#### S-414 Weather and Wave Observations

## [International Electrotechnical Commission - Technical Committee 80 \(IEC-TC80\) Numbers \(S-421 to S-430\)](#)

#### S-421 Route Plan

## [NATO Geospatial Maritime Working Group \(GMWG\) for Additional Military Layers \(AML\) Numbers \(S-501 to 525\)](#)

(In initial design stage)

## [Critical Framework – S-100 Universal Hydrographic Data Model](#)

IHO Geospatial Information Registry

S-98 Interoperability Specification

S-128 Catalogue of Nautical Products

S-164 Test Data Set for S-100 and ECDIS Type Approval



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# S-100 Ocean to customer - For every Product!

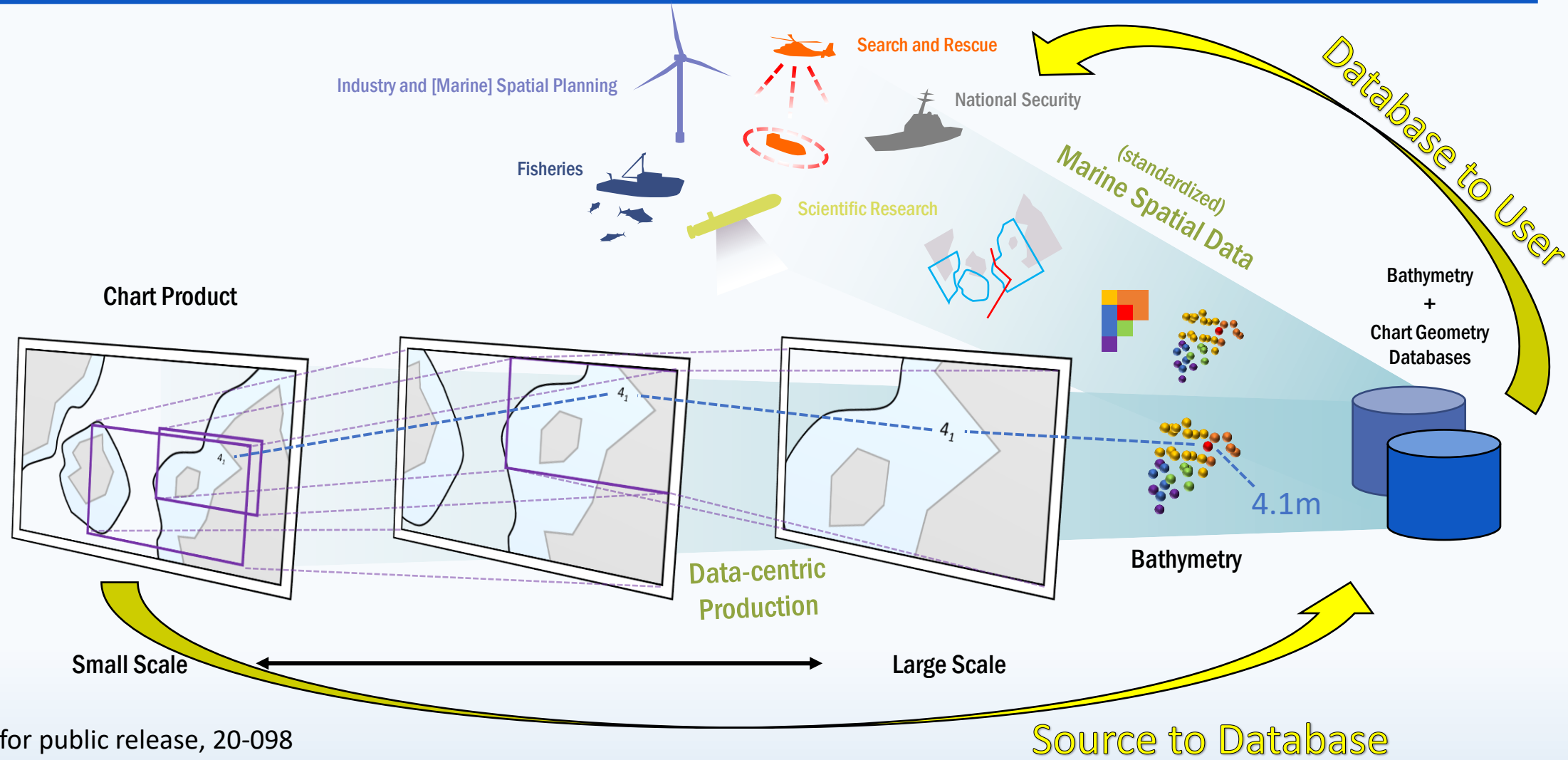
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- The building blocks from the deep blue sea to multiple users of marine geospatial data
- What is exactly the same with different S-100 product specifications?
- **GOVERNANCE!**

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# Data-Centric Production and MSDI



• Approved for public release, 20-098

# Future Hydrographic Office, circa 2023

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- 1) Have Authority – can be more than one (every nation different)
  - Many others are involved, have data, build products for many purposes,
  - HOs may have limited authority
- 2) Obtain data – Self collect; partner with other Nation or industry
  - Industry is becoming a large part of the geospatial data business
- 3) Build products – In house; partner with other nation or industry
  - Move away from building to approving (QA/QC, oversight based on liability)
- 4) Distribute products – In house; partner with other nation or industry
  - New products will require new ways to distribute data
- 5) Users consume products – Acknowledge users beyond SoN
  - Open data is the future – maximizing national value

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# Conclusion – and RHC's can help!

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- **Governance** is key
  - Understand your nations view of geospatial data
  - Establish data policy as needed
- **Arrange** for – you do not need to go alone
- **Know** your data providers
  - Cross Agency – establish National Coordination Committee (Phase 1 activity)
  - Port Authorities, MET Offices, funding agencies etc.
  - NGO's, Industry, academia, etc.
- **Work with** you Primary Chart Authority
  - The role of the PCA is to assist
  - **Coordinate, coordinate, coordinate**

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# Back Up Slides

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# Phase 1 - IHO Capacity Building Process (2014)

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Collection and circulation of nautical information, necessary to maintain existing charts and publications up to date

- Form National Authority (NA) and/or National Hydrographic Coordinating Committee (NHCC).
- Create/improve current infrastructure to collect and circulate information
- Strengthen links with charting authority to enable updating of charts and publications
- Minimal training needed
- Strengthen links with NAVAREA
- Coordinator to enable the promulgation of safety information



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# Phase 2 - IHO Capacity Building Process (2014)

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Creation of a surveying capability to conduct: Coastal projects and then Offshore projects

- Establish capacity to enable surveys of ports and their approaches
- Maintain adequate aids to navigation
- Build capacity to enable surveys in support of coastal and offshore areas
- Build capacity to set up hydrographic databases to support the work of the NA/NHCC
- Provide basic geospatial data via MSDI
- Requires funding for training, advising & equipment or contract survey



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# Phase 3 - IHO Capacity Building Process (2014)

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## Produce paper charts, ENC and publications independently

- The need shall be thoroughly assessed. Requires investment for production, distribution and updating
- Alternatively, bi-lateral agreements for charting can provide easier solutions in production and distribution (of ENC through RENCs) and rewards.
- Further development of MSDI

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