

OGC / IHO Marine Spatial Data Infrastructure (MSDI) Concept Development Study

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Making location count.



International
Organization for
Standardization

TC 211



UN-GGIM

United Nations Initiative on
Global Geospatial Information Management

Positioning geospatial information to address global challenges

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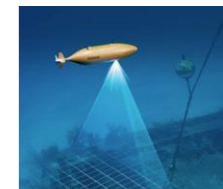
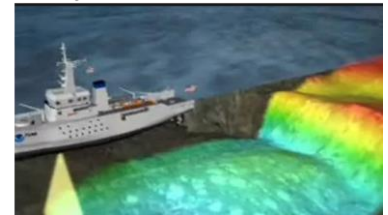
Background

- Rapid advancement of technologies, diversity of data collectors, and increased data collection from non-traditional sources (e.g. corporate, citizens)
- Expanding body of data collected for non-navigational applications (e.g. Ocean science, energy exploration, UN sustainable development goal 14)
- Opportunities related to integration of diverse data sources & capabilities such as:
 - Crowd-sourced and shipboard active bathymetric data collection
 - Autonomous surface and submerged vehicle data collection
 - Satellite / airborne imaging for shallow water bathymetric collection
 - Internet of Things (IoT) devices and their potential application
 - Big data analytics



Crowdsource (IoT)

Shipboard



Autonomous Underwater Vehicle (AUV)



Marine Spatial Data Infrastructure Concept Development Study

- Engage different stakeholders across the Marine community (providers, developers, users) to understand the most important challenges
 - Understand what data, applications, tools, and services are:
 - Currently available;
 - Needed by Stakeholders;
 - Understand discoverability, accessibility, and usability challenges;
 - Understand interoperability challenges and integration opportunities;
 - Identify gaps in data, applications, tools, and services;
- Document findings and provide recommendations on
 - Scalable, interoperable MSDI reference architectures
 - Requirements that can be addressed in a follow-on Pilot initiative that focuses on MSDI best practices.



Marine CDS Sponsor and Partner

- National Geospatial-Intelligence Agency
 - Bathymetric Navigation Plan Charts
 - Digital Nautical Charts (DNC)
 - Littoral Charts
 - Nautical Charts
 - Notice to Mariners
- International Hydrographic Organization (IHO)



Approach

1. Request for Information (RFI) - Wide request for input on relevant technologies and open standards. RFI contains draft Recommended Practice

2. Engineering Workshop - Discuss and advance the concepts in the RFI. Expert panels and keynotes

3. Roundtable – Small group of RFI respondents to review draft Engineering Report

4. Reference Architecture and Feasibility Report - Engineering Report regarding relevant open standards, architecture views, and implementations validating feasibility and maturity

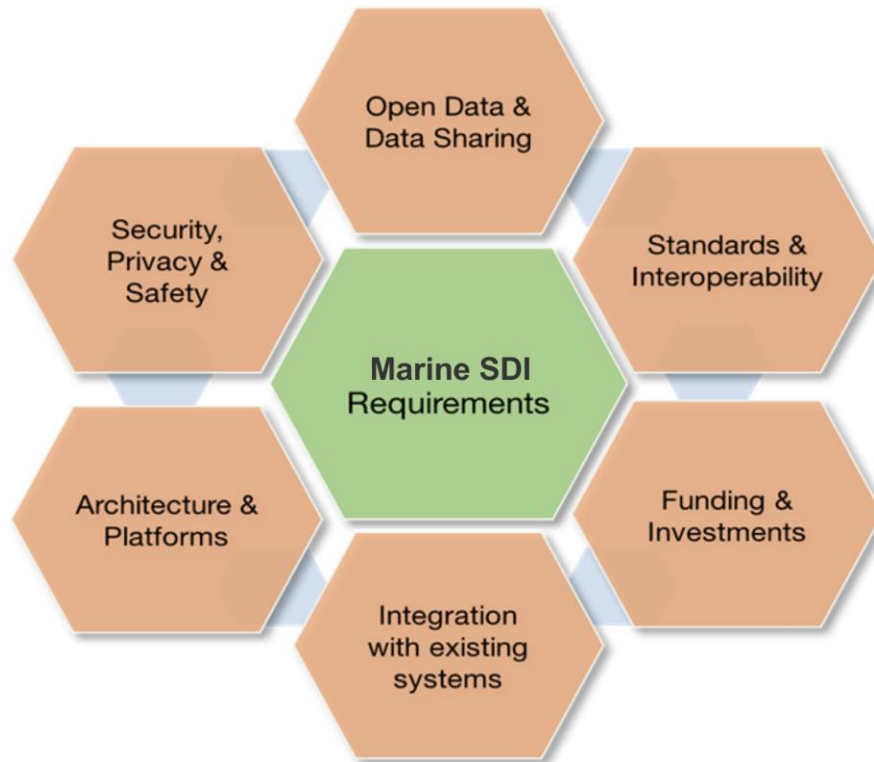


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Marine SDI requirement categories



Contributors to the CDS Report

- National Geospatial-Intelligence Agency (sponsor)
- Arctic Spatial Data Infrastructure (Arctic SDI)
- British Oceanographic Data Centre (BODC)
- Canadian Hydrographic Service (CHS)
- Cooperative Institute for Research in Environmental Sciences (CIRES)
- Danish Geodata Agency, Danish Hydrographic Office
- Directorate of Hydrography and Navigation (BRAZIL)
- Esri
- Geographic Information System Service (GISS)
- Geoscience Australia - Marine Geoscience Group
- The HDF Group
- Helyx Secure Information Systems Ltd
- Hexagon Geospatial
- International Hydrographic Organization (IHO)
- IIC Technologies
- Italian Hydrographic Institute (IIM)
- Land Information New Zealand (LINZ)
- Marine Environmental Data and Information Network (MEDIN)
- National Geospatial-Intelligence Agency (NGA), Maritime Safety Office (MSO)
- National Oceanic & Atmospheric Administration (NOAA), Office of Coast Survey (OCS)
- National Technical University of Athens (NTUA)
- Natural Resources Canada: GeoConnections and Fisheries and Oceans Canada (DFO)
- Naval Research Laboratory (NRL)
- Navy Hydrographic Center
- Netherlands Hydrographic Service
- Norwegian Mapping Authority (Kartverket)
- OceanWise Limited
- OGC Marine Domain Working Group (OGC Marine DWG)
- Portuguese Hydrographic Institute
- Sounding Science LLC & Geopoint Solutions
- Teledyne CARIS
- United Kingdom Hydrographic Office (UKHO)
- U.S. Army Engineer Research and Development Center
- U.S. Coast Guard Navigation Center
- U.S. Committee on the Marine Transportation System (CMTS)
- U.S. Department of Transportation (DOT)
- U.S. Energy Information Administration (EIA)
- University Of Colorado Boulder
- University of Southern Mississippi (USM)
- White House Office of Science and Technology Policy



Outcomes, Next Steps

OPEN GEOSPATIAL CONSORTIUM (OGC)

In partnership with

INTERNATIONAL HYDROGRAPHIC
ORGANIZATION (IHO)

**REPORT: Development of Spatial Data
Infrastructures for Marine Data
Management**

**OGC - IHO Marine SDI Concept
Development Study**



1

- Chapters:
 - Introduction
 - MSDI Definition and Stakeholders
 - Currently Used and Emerging Standards
 - Marine Data Themes in a MSDI
 - Data and Governance
 - MSDI Interoperability Reference Architecture
 - Portals, Applications and Scenarios
 - Other Factors and Conclusion
 - Appendix A: Data Identified
 - Appendix B: Marine Data Portals



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- MSDI CDS Engineering Report
Available at:
<https://www.opengeospatial.org/projects/initiatives/msdi-cds-2018>
- What's Next?
 - Pilots to
 - Engage the global marine community
 - Shape scalable best practices
 - Address challenges identified in Marine CDS



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