OGC-IHO Federated MSDI Pilot

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The world's leading and comprehensive community of experts making location information:

Findable

Accessible

Interoperable

Reusable

OGC®

Members

Mission

Approach

Products

Open Standards

Best Practices

Proof of Concepts

Advancing & Applying S&T

Collective Problem Solving

Driving & Enabling Integration

01

02

03

Who are our members?

The world's leading and comprehensive community of experts making location data more findable, accessible, interoperable and reusable

OGC

Commercial

- Business Development
- Competitive Technical Advantage
- Global; Brand Exposure
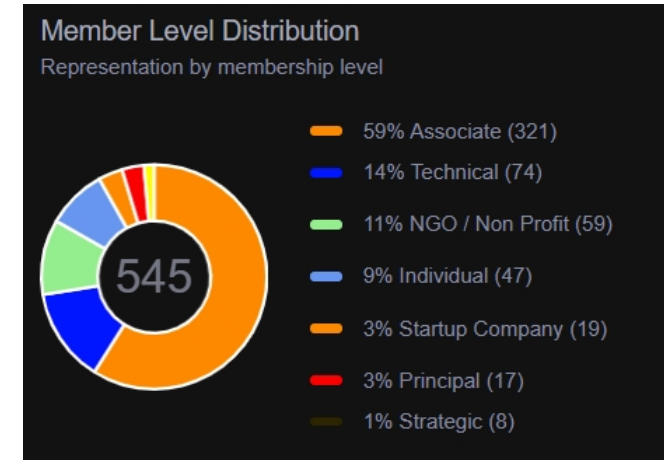- Funding for Innovation

Government

- Innovation and Market Support
- Trusted Advice
- International Partnerships
- Operational Policy, Support, and Certification
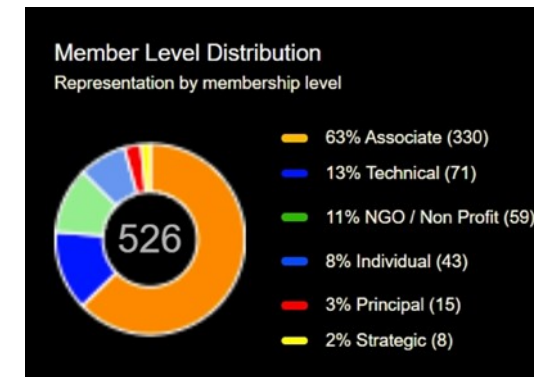
Research & Academia

- Applied Research Partners
- Funding for Innovation
- International Collaboration
- Citations

MAX - 34 - 685
KL - IT - 3678 - 986

4583

2995

Strength in Numbers

- The OGC Community continues to grow globally – increasingly from outside the traditional Geospatial Industry (e.g., mainstream companies and innovative start-ups)

- Answering the call for increased innovation, impact and the need for collective problem solving (e.g Climate Session)

- F.A.I.R. location data, information and knowledge is even more important – everywhere , especially across domains (e.g Federated MSDI Pilot)

Member Level Distribution
Representation by membership level

545

- 59% Associate (321)
- 14% Technical (74)
- 11% NGO / Non Profit (59)
- 9% Individual (47)
- 3% Startup Company (19)
- 3% Principal (17)
- 1% Strategic (8)

Now

Member Level Distribution
Representation by membership level

526

- 63% Associate (330)
- 13% Technical (71)
- 11% NGO / Non Profit (59)
- 8% Individual (43)
- 3% Principal (15)
- 2% Strategic (8)

Q1-21

Many Tech Trends

▪ New sensors
▪ Small sats
▪ LIDAR
▪ IoT
▪ Drones/CAVs
▪ …

**More sources
More data**

**Visualization and
Interaction w data**

▪ 3D
▪ AR, VR, MR
▪ Gaming & simulation
▪ Maps on the web
▪ Natural language
▪ …

▪ GNSS
▪ 5G
▪ Global grids
▪ Indoor
▪ Underground
▪ …

**Location/Position
Accuracy**

**Data Science and
Analytics**

▪ Artificial Intelligence
▪ Machine Learning
▪ Big data analytics
▪ Linked data
▪ Analysis Ready Data
▪ …

▪ Cloud
▪ Edge
▪ Streaming
▪ Internet
▪ APIs
▪ …

**Computing
Advancements**

**Modeling and
Simulation**
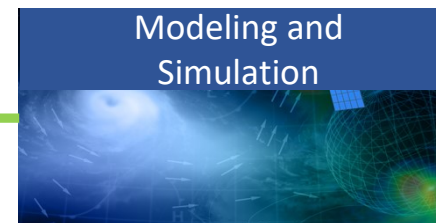
▪ Weather
▪ Disaster risk
▪ Pandemics
▪ Human activity
▪ Hydro/soil/air/etc
▪ …

OGC

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FEB - 05 - 3254
167   78   894

Modernizing SDI:
Data Interoperability
for Cumulative Effects

Data & services to study
cumulative effects

ogc.org/mod-SDI

Now Available: Engineering Reports documenting
method for simple cloud-based EO Applications
OGC
ogc.org

Smarter Cities Through
Use of Digital Twins
The Location Powers
2021 Report Preamble
OGC |

OGC APIs | Building Blocks for Location

OGC
Seeking public comment on charter
for Artificial Intelligence
in Geoinformatics
Domain Working Group

Public Comment Requested on Proposal
for Revision to I3S Community Standard
OGC
ogc.org

Public Comment Requested:
Recharter of GeoPackage SWG
OGC
ogc.org

Leveraging Sensor Data
and the Internet of Things
SENSORUP | **OGC**

OGC – IHO
Federated Marine SDI
Demonstration Pilot
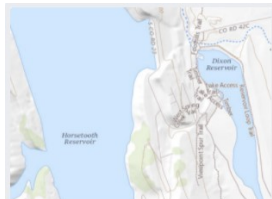*Connecting Land and Sea Across Nations*

MAX - 34 - 685
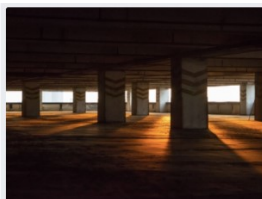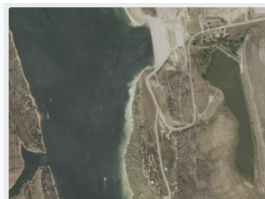KL - IT - 3678 - 986

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Features

Approved Standard

OGC API - Features - Part 1: Core and Part 2: Coordinate Reference Systems by Reference are both publicly available.

Common

OGC API - Common provides those elements shared by most or all of the OGC API standards to ensure consistency across the family. The candidate standard will soon released for public review.

Maps

OGC API - Maps offers a modern approach to the OGC Web Map Service (WMS) standard for provision map and raster content.

Tiles

OGC API - Tiles provides extended functionality to other OGC API standards to deliver tiled data, such as Map Tiles.
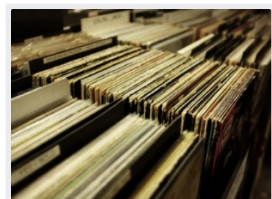

Styles

The OGC API - Styles defines a Web API that enables map servers, clients as well as visual style editors, to manage and fetch styles...

EDR

Environmental Data Retrieval (EDR) API provides a family of lightweight interfaces to access Environmental Data resources. Each resource addressed by an EDR API maps to a defined query pattern.

Records

OGC API - Records updates OGC's Catalog Services for the Web by building on the simple access to content in OGC API - Features.

Processes

OGC API - Processes allows for processing tools to be called and combined from many sources and applied to data in other OGC API resources though a simple API.
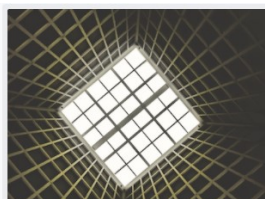
Coverages

OGC API - Coverages allows discovery, visualization and query of complex raster stacks and data cubes.

OGC APIs | Building Blocks for Location

https://ogcapi.ogc.org/
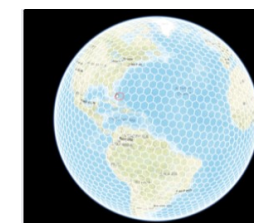
DGGS

Enables applications to organise and access data arranged according to a Discrete Global Grid System (DGGS).
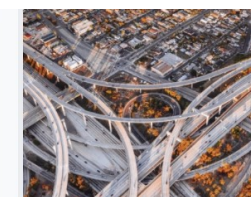
Routes

Enables applications to request routes in a manner independent of the underlying routing data set, routing engine or algorithm.

Innovation Continuum

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167   78   894

Innovation

- Create public call
- Call for Sponsors
- Identify Project
- Select best members
- Executive Project
- Generate Results

IHO

Standards Development

- DWG discussion
- SWG formation
- Standards development
- DWG/SWG Presentation
- Formulation of enhancements
- Interest gathering

ogc.org |
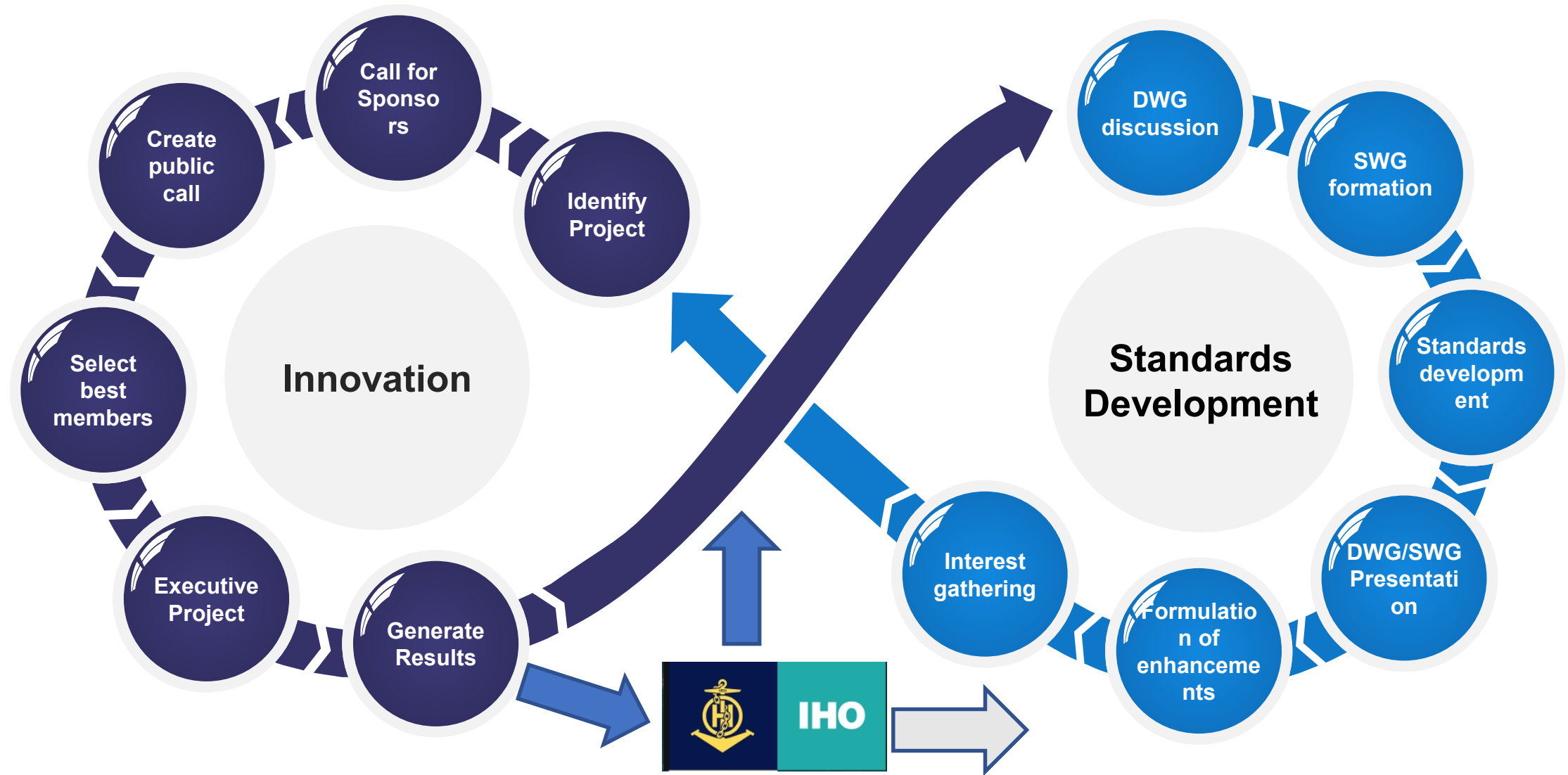
OGC Innovation:
Engineering Services:
Applied research for geospatial challenges

OGC Innovation:
Concept Development Studies:
Applied research, market analysis, and state of art analysis

Domain Working Group (DWG)
Discusses geospatial challenges, research results, and solutions for a specific domain.

OGC Innovation:
Pilots & Testbeds:
Collective problem solving &
best practice generation

Standard Working Group (SWG): Develops a single standard or series of standards.

Compliance Program (CITE): Compliance tests for OGC Standards
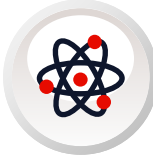
- Collective Problem Solving – Innovation
- Representation from the community
- Multiplier effect + reduce redundant work
- Long History on collaboration – which is accelerating

IHO

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UN-GGIM MWG

Background – Work to date

Maritime Limits & Boundaries Pilot

IHO S-121 data structure and exchange

ogc.org/mlb

UN-GGIM

Standards Guide Edition 3 (Aligned with IGIF)
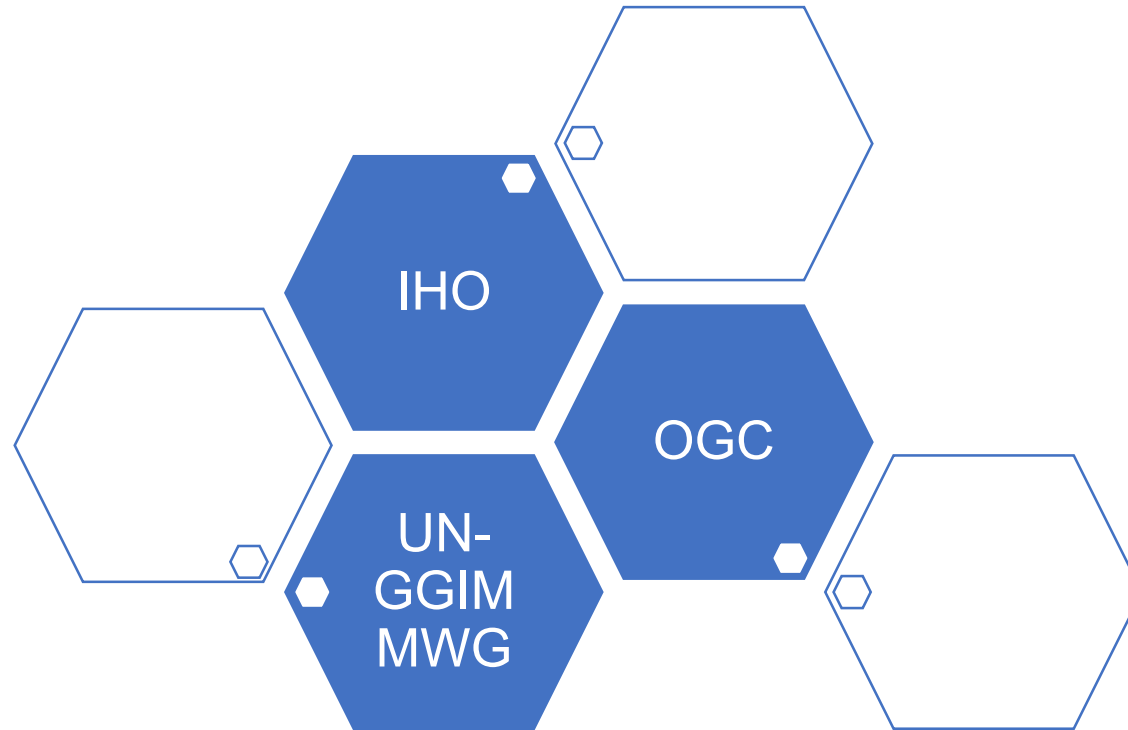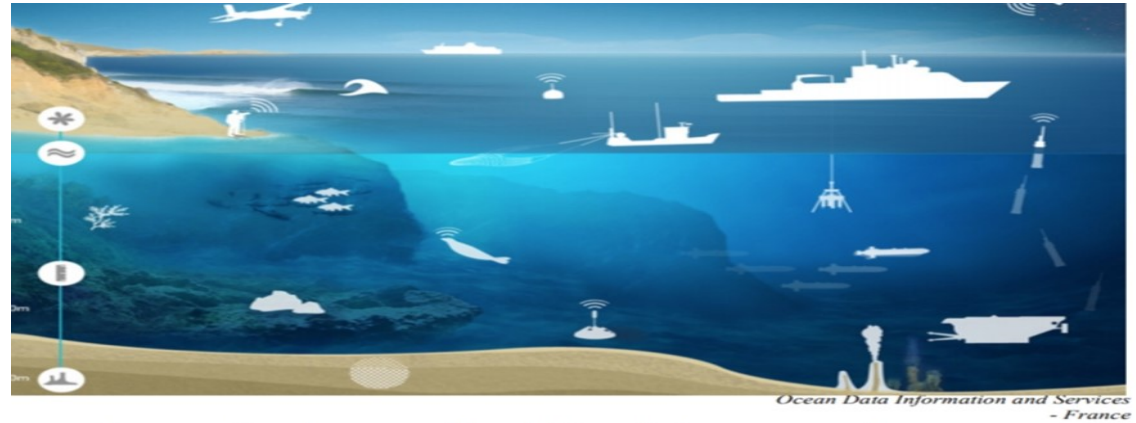
"Where do I start?"

REPORT: Development of Spatial Data Infrastructures for Marine Data Management

OGC - IHO Marine SDI Concept Development Study

Ocean Data Information and Services - France

OGC – IHO Federated Marine SDI Demonstration Pilot
Connecting Land and Sea Across Nations

Overall :

- **Demonstration -** technology demonstration from global community experts showcasing federated Marine SDI for selected Land/Sea use cases across domains and jurisdictions

- **Impact on OGC Standards -** Lessons learned, gaps, and the need for changes to the OGC Standards Baseline that will inform the OGC Standards Program.

- **Impact on IHO Standards -** Practical testing of relevant S-100 based IHO standards will accelerate the process for adoption and implementation of IHO standards to help to inform the work of the IHO HSSC Working Group

- **Impact on Next Steps –** what is next (demonstrating creation and delivery of IHO S.1XX product specs using OGC standards? Data Management –data cubes, Discrete Global Grids ?)

OGC – IHO
Federated Marine SDI
Demonstration Pilot
Connecting Land and Sea Across Nations

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- Build on successful [multi- stakeholder IHO-OGC MSDI Concept Development study](#)
- Demonstrate aspects of multi-country/region , federated Marine Spatial Data Infrastructure (SDI) to:
  - **Stakeholders** - inclusivity of more!
  - **Delivery** - Demonstrate how federated Marine SDI can provide simple, secure access using Modern Standards based approaches (OGC APIS, IHO S-1XX)
  - **Areas of interest -** Baltic and North Sea (Arctic, South East Asia, others under discussion with potential other sponsors)

  OGC- IHO collaborative Pilots work extremely well – Example : IHO-OGC [Maritime Limits and Boundaries](#) Pilot

Thanks to our founding Sponsors!
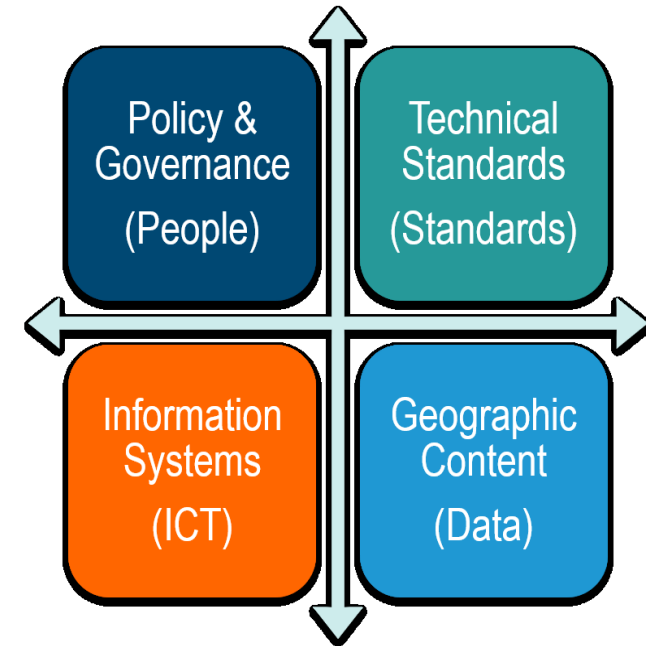
Danish Geodata Agency

UK Hydrographic Office

In discussion with more sponsors, e.g. Arctic

- Development of a Marine Data Availability and Accessibility Study (MDAAS) through a Request for Information (RFI)

- Workshop with sponsors to review RFI responses and inform if further information is needed before compiling the MDAAS report

- Examine S-122 data availability, how to better utilize S-122, and what appropriate governance considerations should be taken

- Explore where the S-1XX product specifications provides sufficient, good quality data and how to incorporate additional domain data (land content standards, meteorological, oceanography, etc.)

- Demonstrations of use cases leveraging the S-122 framework that is developed and a demonstration bringing together the additional data domains

- Utilizing the UN-GGIM Integrated Geospatial Information Framework (IGIF) to develop a roadmap for MSDI maturity, defining when, where, and how the S-1XX product specifications are integrated

Supports   UN-GGIM

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- Explore who the stakeholders are and who they interact with; what privacy/confidentiality requirements are there?
- What is the current MSDI architecture; is it national, regional, or international; what standards are currently used?
- Are Marine Protected Area data and other marine data available; what standards are used; what analysis tools are available?
- Utilizing the Four Pillars of an MSDI

Policy & Governance (People)

Technical Standards (Standards)

Information Systems (ICT)

Geographic Content (Data)

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- **Use Case(s)**
  - Shipping routes through the Baltic/North sea with enhanced awareness of S-122 Marine Protected Areas
  - Simulation of the development and installation of a wind farm, recognizing S-122 Marine Protected Areas and other standards

- **Outcomes**
  - Identification of S-122 data, who produces it, where is it held, how it is accessed
  - Determine and document the appropriate governance framework needed for accessing and utilizing S-122 data
  - Technology demonstration for the usage of a Federated MSDI framework actively being informed by S-122 data – forward looking – e.g. OGC APIs

- **Use Case(s): Data Fidelity, Mobility, and Versatility**
  - Disaster response, through simulation of a man-made disaster (oil spill, tanker damaged/stuck/sinking, etc.) or a natural disaster (hurricane storm path, tsunami response, both could come with resulting mudslide/flooding)
  - Simulated development and installation of a wind farm in the North/Baltic Sea, going beyond S-122 data to incorporate other data sources (e.g., land, weather, etc. data) to determine location efficacy and transportation of materials strategy

- **Outcomes**
  - Documenting where S-1XX product specifications excel, where supporting data is needed, and how these data are being combined and used
  - Demonstrating how the various data can be brought together to enhance data analysis and understanding

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- **Use Case(s): IGIF-MSDI Maturity Roadmap**
  - Scoring a new MSDI and tenured MSDI along the roadmap to reveal potential MSDI enhancement or areas of focus
  - *Opportunity for additional sponsors (separate call coming)*

- **Outcomes**
  - A well-defined roadmap following the IGIF domains of focus with indicators for areas of improvement and areas of focus for enhancing a new of existing MSDI

Draft Federated Marine SDI Schedule

Milestones	Description	Delivery Date
M01	Request for Information (RFI) for S-122 data Release - Determining S-122 data availability and accessibility	September 6, 2021
M02	RFI Response, Sponsor Workshop - Discussion of the responses with the Sponsor to determine where follow up is needed	September 27, 2021
M03	Call for Participation Released	October 11, 2021
M04	Request for Information for IGIF-MSD Maturity Roadmap Release - Sponsor input needed	October 11, 2021
M05	Kick-off Execution Phase - Development of the S-122 Framework and the Fidelity, Mobility, and Versatility	November 6, 2021
M06	Initial Technology Integration Experiment (TIE) Testing, Draft Engineering Reports and Demonstration during December 2021 OGC Member Meeting	December 31, 2021
M07	TIE Testing Completed	February 28,2022
M08	Engineering Report Presentation at March 2022 Member Meeting	March 31, 2022
M09	Final Engineering Reports	March 31, 2022
MXX	*Additional Sponsor Requirements (Arctic, etc.)*	*April…*

DGA	Shared	UKHO

	September	October	November	December	January	February	March	April...
M01	███							
M02		██						
M03		███	█					
M04		██	███					
M05			███	███	███	███	██	
M06				███				
M07				██	███	███		
M08							███	
M09							███	
MXX				The pilot timeline may be adjusted/extended based upon additional sponsor inclusion and requirements				

RFI Processes	Execution Processes	TIE Testing and ER Processes

IHO-OGC FMSDI Pilot – Next Use Cases

Additional Sponsors Welcome!
https://www.ogc.org/projects/initiatives/fmsdi

In discussion with other potential sponsors to cover e.g. Arctic Use cases supporting Climate Change (could build on the Arctic SDP)

OGC – IHO
Federated Marine SDI
Demonstration Pilot
Connecting Land and Sea Across Nations

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Arctic Spatial Data Pilot
Value of Standards ARCTIC

https://www.ogc.org/pub/ArcticSDP/index.html

Contact ttaylor@ogc.org for more details

Milestone 01 - Call Imminent!

OGC Marine Special Session - Agenda

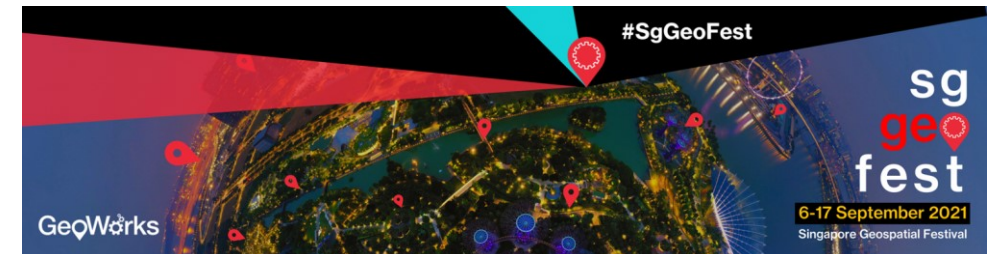**120th OGC Member Meetings and the Singapore Geospatial Festival**

Thursday, September 16, 2021
14.00-1530 SGT, 0800-0930 CET, 0200-0330 EST

Session Information
- **Welcome and Introductions**, OGC Marine DWG Co-chairs
- **Setting the Scene**, Nadine Alameh, CEO (OGC)
- **Keynote** – Peter Sparkes, Chief Executive (United Kingdom Hydrographic Office)
- **Update on the IHO-OGC Federated Marine SDI Pilot**
- **Connecting Land and Sea** – Organizational, Technical and Cross Institutional Elements
- **Discussion** – Future Challenges and Trends for standards and innovation in the Marine Domain
- **Close and Next steps**

Register at OGCMeet.org

120th OGC Member Meeting
The evolution of location information continues here.
Co-located with Singapore Geospatial Festival 2021

#SgGeoFest
GeoWorks
sg geo fest
6-17 September 2021
Singapore Geospatial Festival

OGC

Thank You!

Community

500+ International Members
110+ Member Meetings
60+ Alliance and Liaison partners
50+ Standards Working Groups
45+ Domain Working Groups
25+ Years of Not for Profit Work
10+ Regional and Country Forums

Innovation

120+ Innovation Initiatives
380+ Technical reports
Quarterly Tech Trends monitoring

Standards

65+ Adopted Standards
300+ products with 1000+ certified implementations
1,700,000+ Operational Data Sets Using OGC Standards

Mr. Trevor Taylor ttaylor@ogc.org
Mr. Scott Simmons ssimmons@ogc.org
Mr. Rollin Phillips rphillips@ogc.org

Contact info@ogc.org to schedule a meeting for an in-depth discussion with OGC staff and join our community today!