



Open  
Geospatial  
Consortium

# Brief Intro: OGC APIs and the Marine Domain

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# The Open Geospatial Consortium (OGC)

Community – Innovation - Standards



230+ members from industry

120+ government agencies

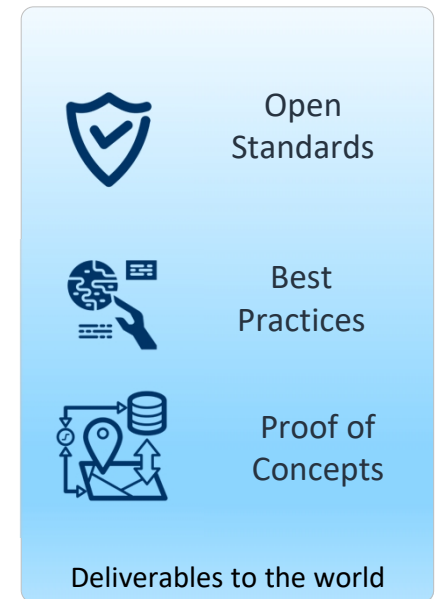
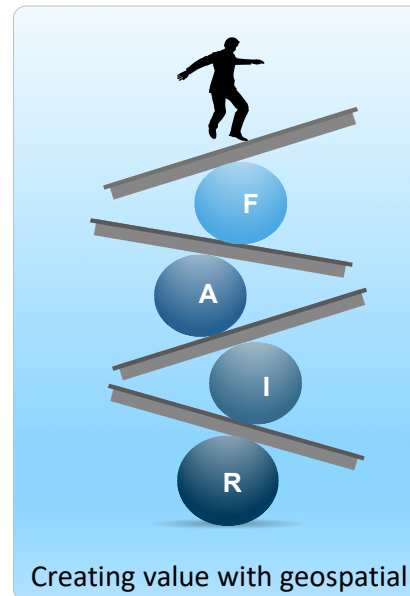
185+ universities & research orgs

70+ standards

100+ working groups

# The Open Geospatial Consortium (OGC)

Collective problem solving – Findable, Accessible, Interoperable and Reusable (FAIR)



<https://www.ogc.org/standards>

# Many Trends – Geospatial is Everywhere

- . New sensors
- . Small satellites
- . LIDAR
- . IoT
- . Drones
- . ...



- . GNSS
- . 5G
- . Global grids
- . Indoor
- . Underground
- . ...



- . Cloud
- . Edge
- . Streaming
- . Internet
- . APIs
- . ...



- . 3D
- . AR, VR, MR
- . Gaming & simulation
- . Maps on the web
- . Natural language
- . ...



- . Artificial Intelligence
- . Machine Learning
- . Big data analytics
- . Linked data
- . Analysis Ready Data
- . ...



- . Weather
- . Disaster risk
- . Pandemics
- . Human activity
- . Hydro/soil/air/etc
- . ...

# Requires Practical Collaboration



**Modernizing SDI:  
Data Interoperability  
for Cumulative Effects**

Data & services to study  
cumulative effects

[ogc.org/mod-SDI](http://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.org



**OGC  
APIs** | Building Blocks  
for Location



**OGC - IHO**  
Federated Marine SDI  
Demonstration Pilot

*Connecting Land and Sea Across Nations*



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.org



**OGC**

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

# Based on Building Blocks, Now and the Future



## 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 be 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.

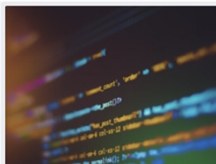


<https://ogcapi.ogc.org/>



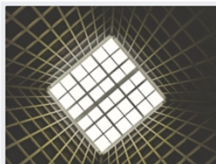
## Records

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



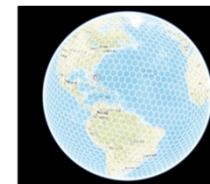
## Processes

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



## Coverages

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



## DGGS

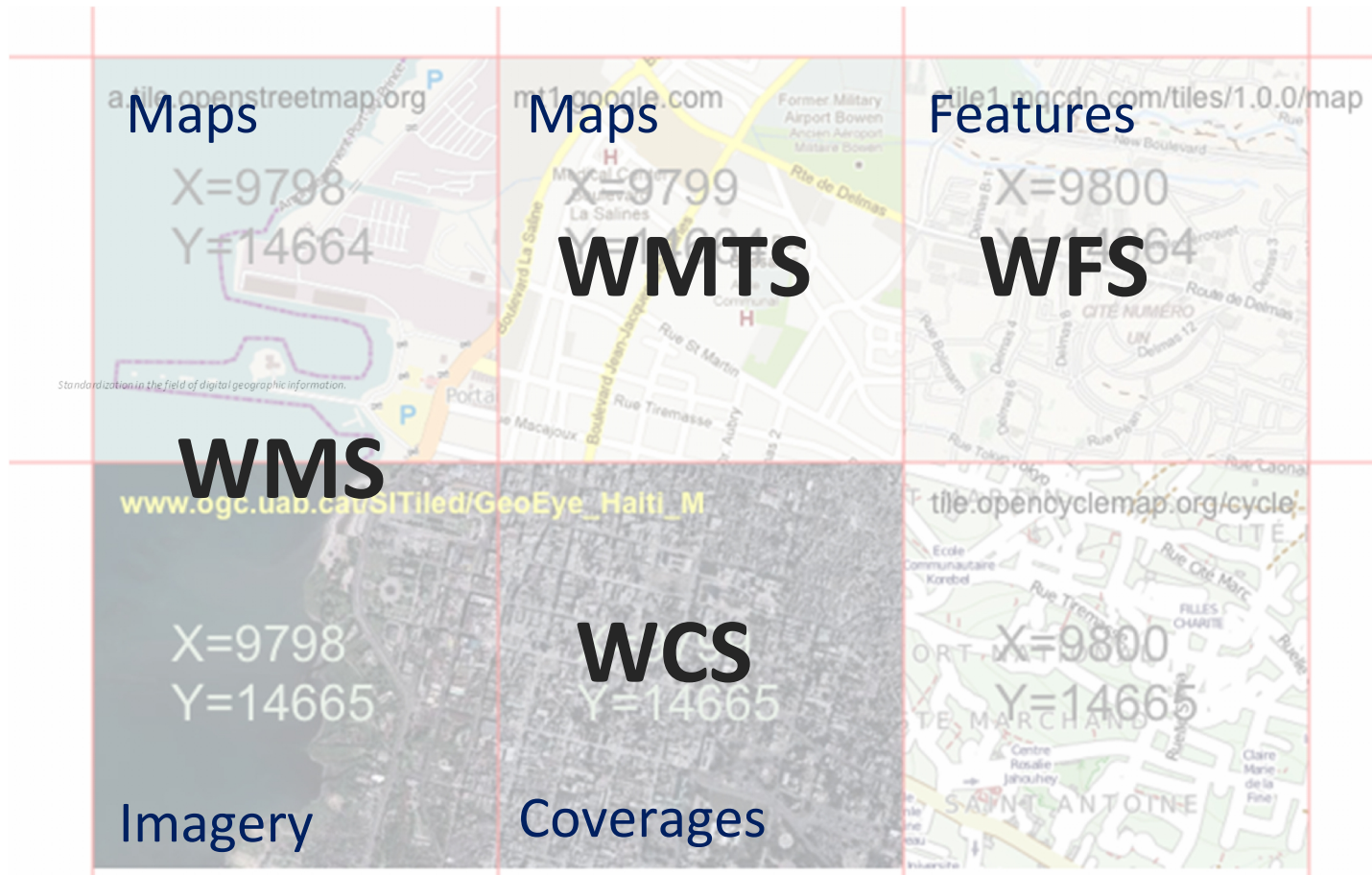
Enables applications to organise and access data arranged according to a Discrete Global Grid System (DGGS).



## Routes

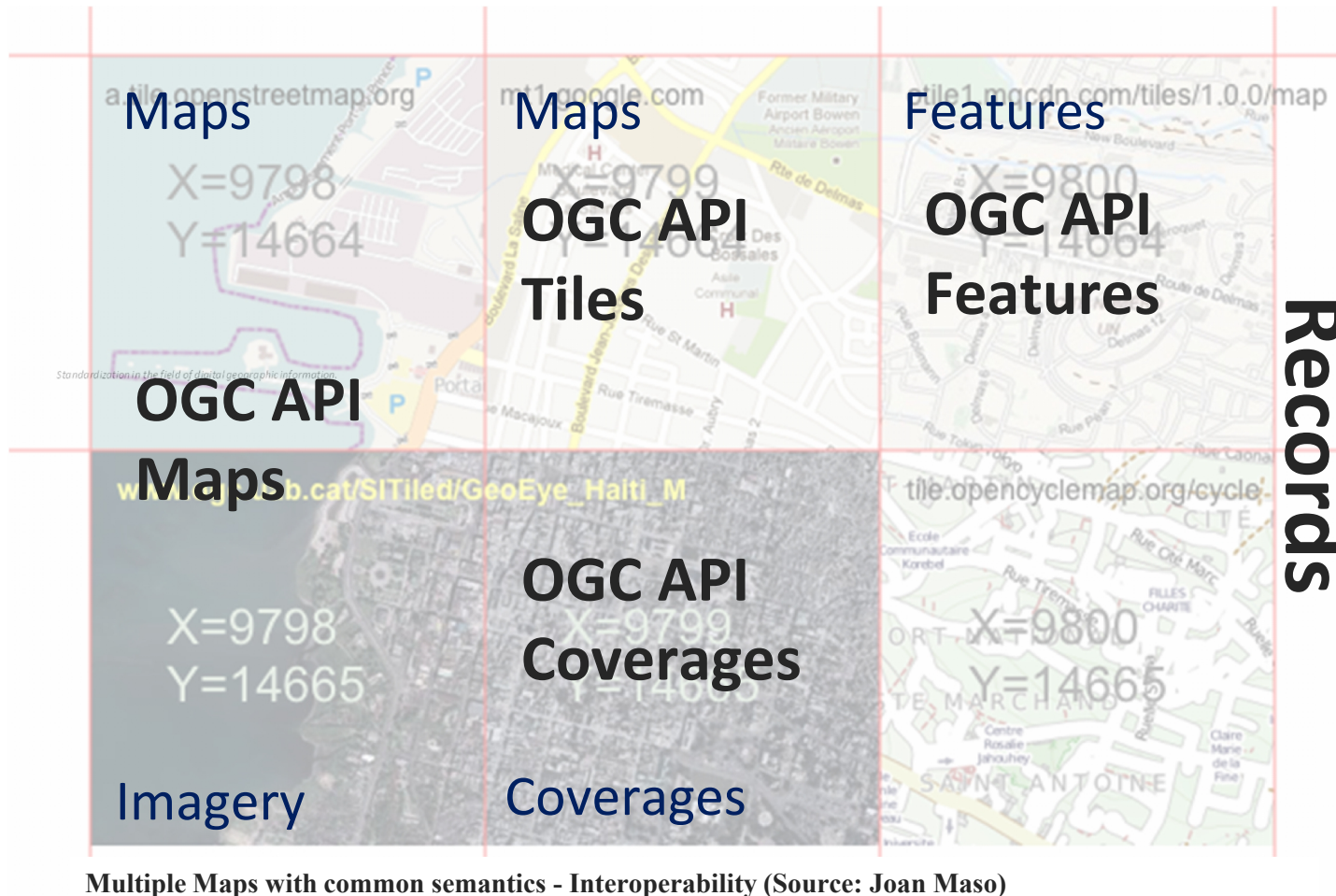
Enables applications to request routes in a manner independent of the underlying routing data set, routing engine or algorithm.

# Legacy OGC Web Service Standards



Multiple Maps with common semantics - Interoperability (Source: Joan Maso)

# OGC API Standards



Multiple Maps with common semantics - Interoperability (Source: Joan Maso)



# OGC APIs - <https://ogcapi.ogc.org/>

- “Building blocks” that can be used to assemble novel APIs for web access to geospatial content
- Ultimately will replace and enhance the existing OGC Web Service standards
- Defined with OpenAPI and published in discrete, easily implementable parts
- Ensure that geospatial data are “web ”
- Easy to implement for any developer -

# OGC standards - Marine work

- OGC APIs used in Phase I-III of the FMSDI
- OGC Features API
- OGC Sensorthings API
- OGC Discreet Global Grids API (including 3D)
- OGC Environmental Data Retrieval API
- Classic W\*S standards (to show backwards compatibility)
- OGC GML



*More on  
Thursday !*

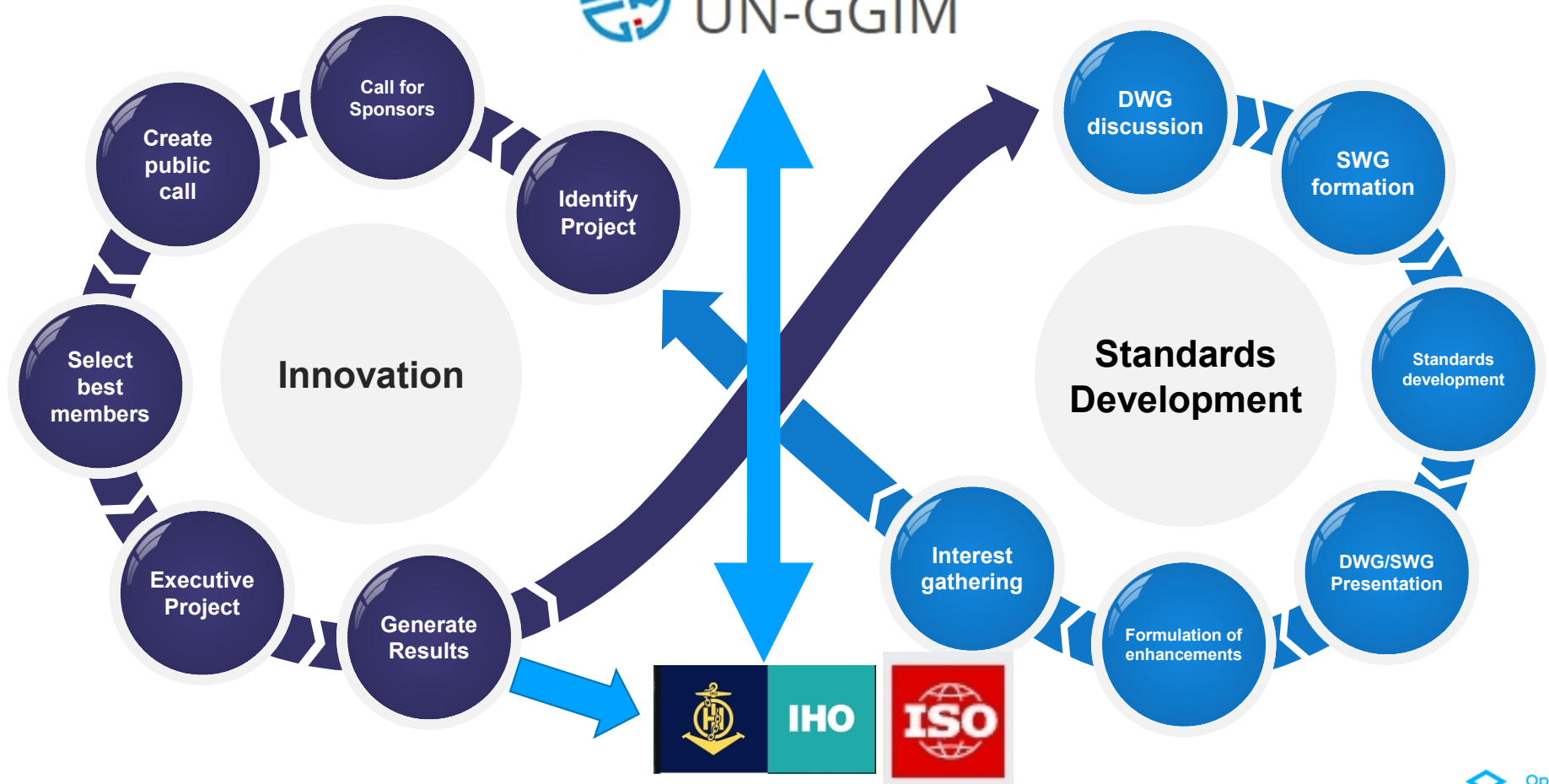
# Partnerships – Critical!

- Collective Problem Solving – Innovation
- Multiplier effect + reduce redundant work
- Maximize Investments
- Long History on collaboration – which is accelerating



Slide Courtesy of UKHO –  
Maturity Work Item example

# Close Collaboration - Marine



# Multi-Year Marine Initiative





# Thank You

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## 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

