14th Meeting of the Hydrographic Services and Standards Committee

Report of the Open Geospatial Consortium (OGC)

Scott Simmons, OGC
Jonathan Pritchard, Chair OGC Marine DWG

Agenda Item 7.7

HSSC-14, Denpasar, Bali, Indonesia - Hybrid Event, 16 – 19 May 2022

What is OGC?

A hub for thought leadership, innovation, and standards for all things related to location

Our Vision

Building the future of location with community and technology for the good of society

Our Mission

Make location information Findable, Accessible, Interoperable, and Reusable (FAIR)

Our Approach

A proven collaborative and agile process combining consensus-based standards, innovation project, and partnership building

SINCE WE LAST MET (2019)...

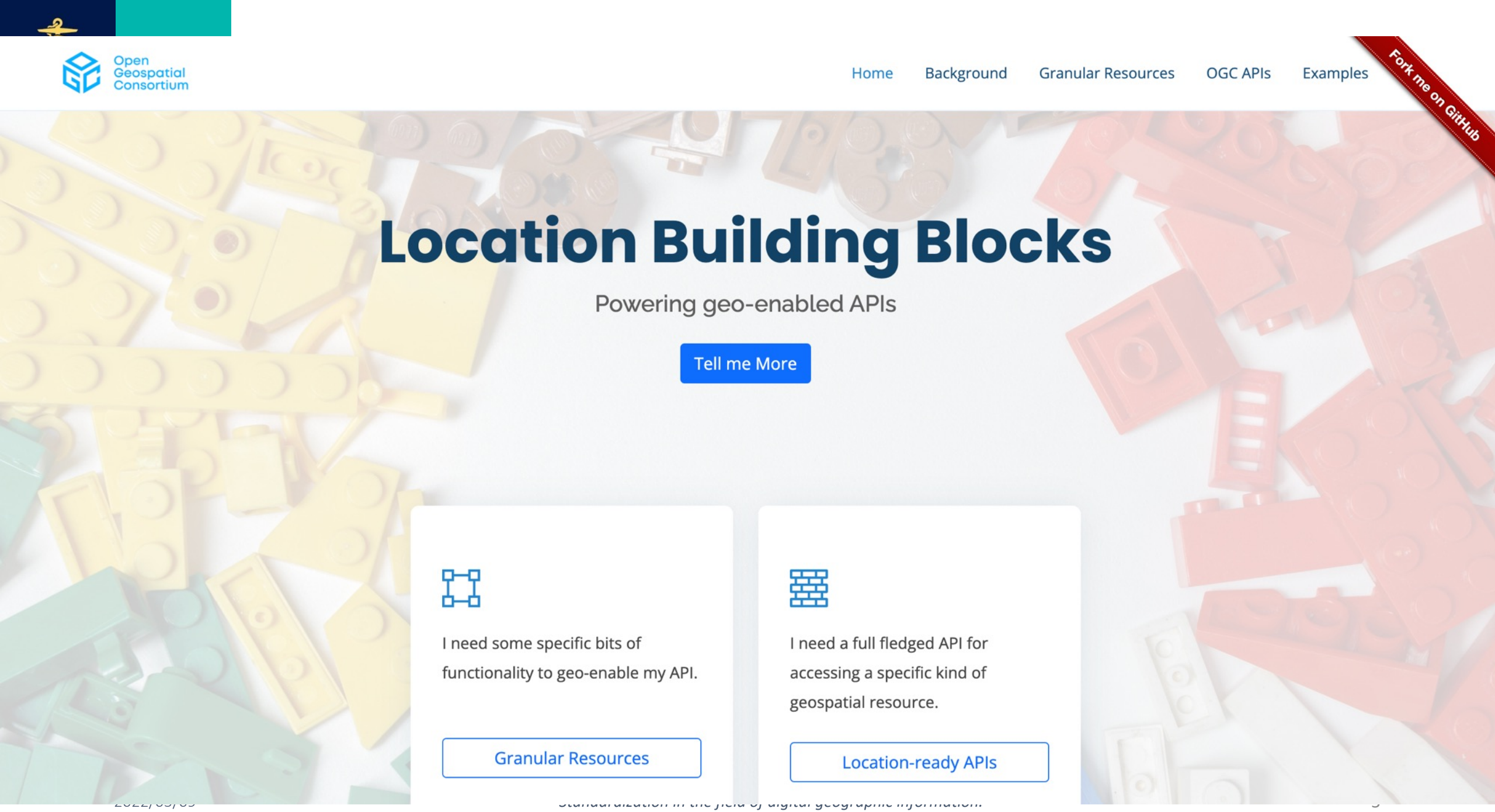
- 36 Standards approved
- 9 Best or Community Practices approved
- 87 Engineering Reports approved
- 17 Discussion or Technical Papers approved
- 10 new Working Groups

Progress of Official OGC Standards OGC & Community Standards Community 2022-05-03

Show Previously Completed Standards

https://www.ogc.org/roadmap

Proposed Standards	SWG Work / Work Item	OAB Review	OGC-NA Review	Public Review	Prepare for Approval	TC Approval to Vote	TC Vote	PC Vote	Public Release	
OGC Abstract Spec Topic 20 - Observations, Measurements and Samples 20-082	✔48d	✔49d	✔7d	✔32d	?470d					
OGC Abstract Spec Topic 6 - Schema for coverage geometry and functions	?676d									
OGC CDB 2.0	?1300d									
OGC Common Object Model Container SWG	?1296d									
OGC Coverage Implementation Schema - ReferenceableGridCoverage Extension 1.1 16-083r6	✔94d	✔39d	✔63d	✔155d	✔58d	✔14d	✔135d	?219d		
OGC Encoding Linked Data Graphs in NetCDF Files 19-002	✔10d	?28d								
OGC GeoAPI 09-083r4	?896d									
OGC GeoPackage Conceptual and Logical Model 21-053	✔252d	✔27d	✔225d	?245d						
OGC GeoPackage Tiled Gridded Coverage Extension 17-066	✔232d	✔35d	✔267d	✔26d	✔36d	✔	✔48d	✔17d	?160d	
OGC GeoPackage WKT for Coordinate Reference Systems Extension 1.1 21-057	✔219d	✔35d	✔	?203d						
OGC GeoPose	✔251d	✔33d	✔13d	✔46d	✔76d	✔14d	✔58d	?23d		
Community Indexed 3D Scene Layers (I3S) 1.2 17-014r8	✔57d	✔36d	✔142d	✔66d	✔35d	✔14d	✔45d	✔15d	✔43d	
OGC OGC API - Common - Part 1: Core 19-072	✔3d	✔32d	✔112d	✔74d	✔541d	✔	?225d			
OGC OGC API - Common - Part 2: Geospatial Data 1 new 20-024	✔191d	✔20d	✔182d	✔71d	?118d					
OGC OGC API - Coverages	?726d									
OGC OGC API - Features - Part 3: Filtering and the Common Query Language (CQL) 19-079	✔167d	✔20d	?476d	✔97d	?379d					
OGC OGC API - Features - Part 4: Create, Replace, Update and Delete 20-002	?663d									
OGC OGC API - Features - Part 5: OpenAPI 3.1	?663d									
OGC OGC API - Maps	?726d									
OGC OGC API - Processes	✔25d	✔14d	✔169d	✔124d	✔244d	✔	✔50d	✔16d	?253d	
OGC OGC API - Records	?726d									
OGC OGC API - Routes - Part 1: Core 2 new 21-000	✔60d	✔14d	✔57d	?64d						
OGC OGC API - Styles	?726d									
OGC OGC API - Tiles - Part 1: Core 1 new 20-057	✔647d	✔15d	✔47d	?64d						
OGC Route Exchange Model 2 new 21-001	✔60d	✔14d	✔57d	?64d						
OGC Simple Features 2021 21-011	✔372d	✔70d	✔302d	✔72d	✔25d	✔	✔47d	✔18d	?160d	
OGC TimeseriesML 1.3 15-042r6	✔27d	✔28d	✔13d	✔80d	✔231d	✔14d	✔51d	✔17d	?462d	
OGC Two Dimensional Tile Matrix Set and Tile Set Metadata 17-083r4	✔230d	✔18d	✔212d	✔81d	✔7d	✔	✔72d	✔15d	?57d	
Community Zarr	✔49d	✔25d	✔157d	✔94d	?278d					


Open Geospatial Consortium
Home
Background
Granular Resources
OGC APIs
Examples
Fork me on GitHub
Location Building Blocks
Powering geo-enabled APIs
Tell me More
I need some specific bits of functionality to geo-enable my API.
Granular Resources
I need a full fledged API for accessing a specific kind of geospatial resource.
Location-ready APIs

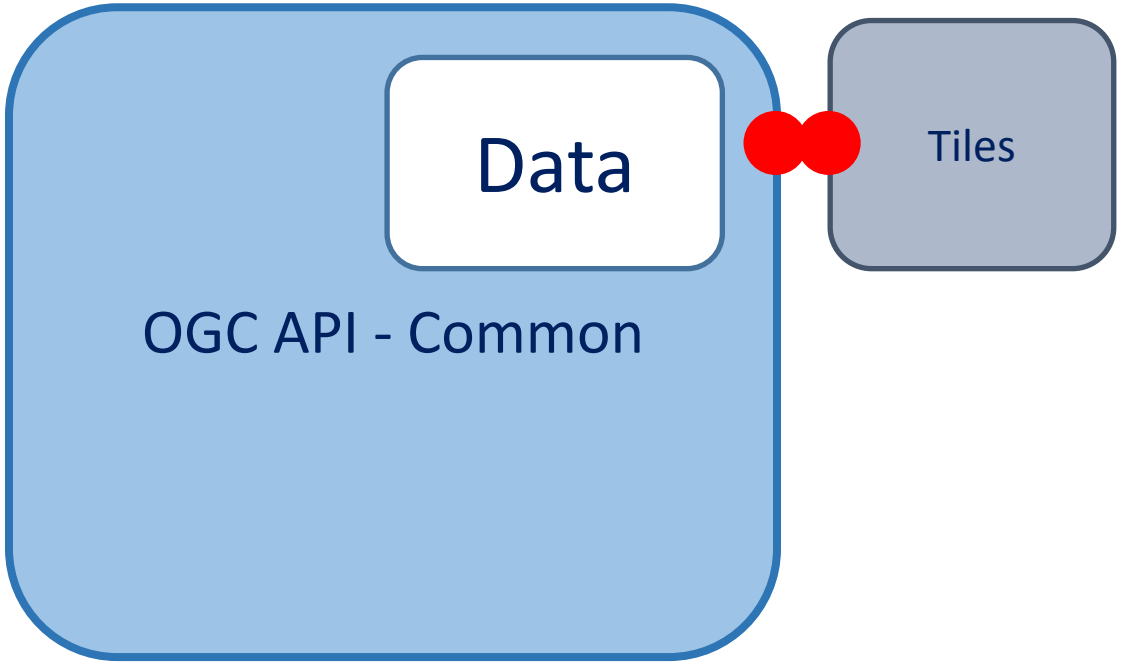
Deployment model example

Deployment model example

Data

User: tile it up and make it work on my phone

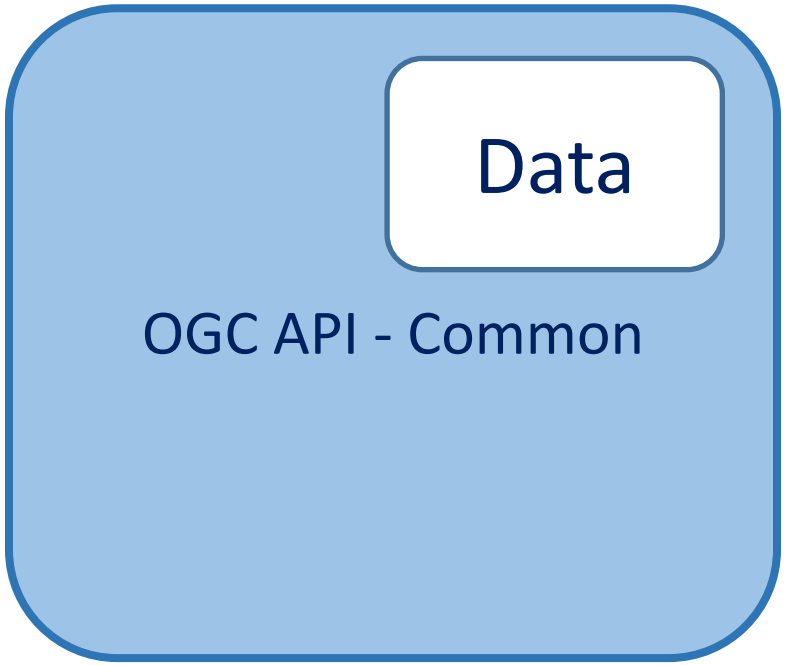
Deployment model example



User: tile it up and make it work on my phone

Deployment model example

User: just want features in WGS 84, but want to query



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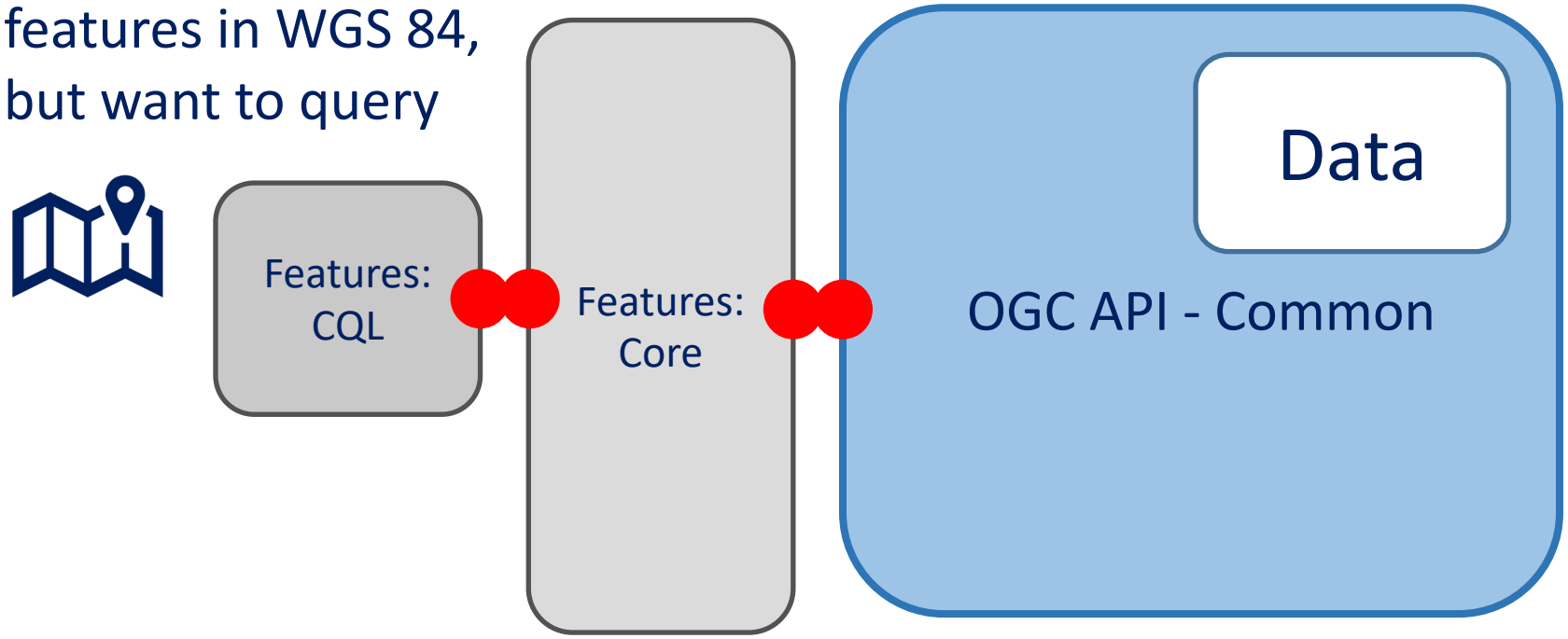
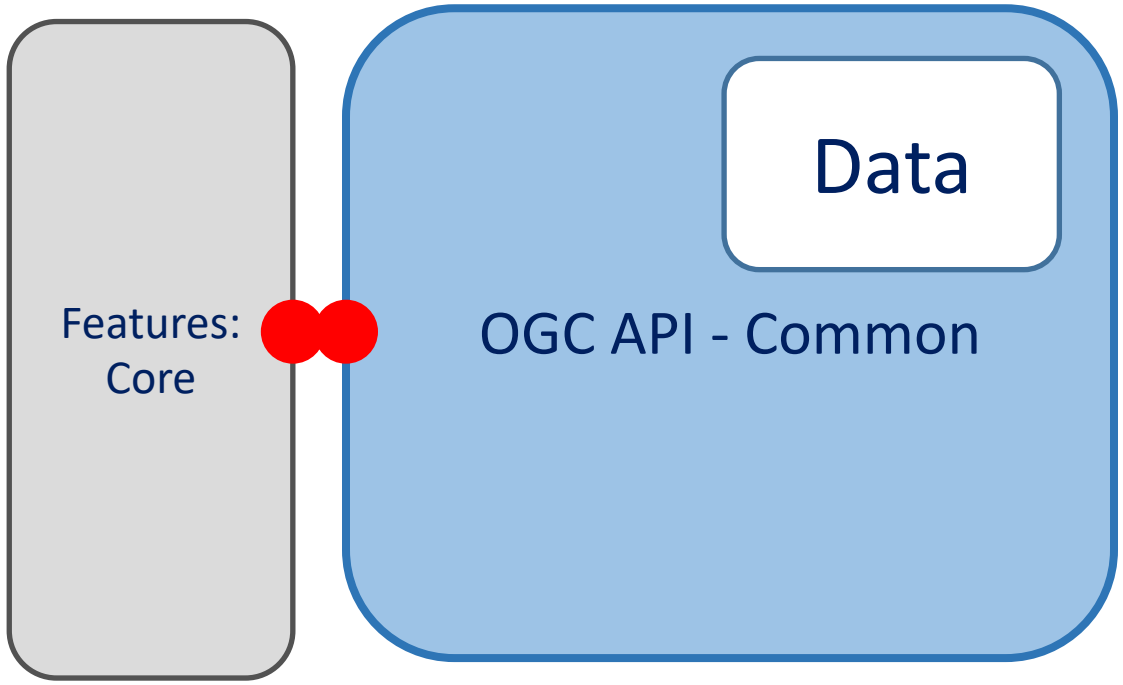
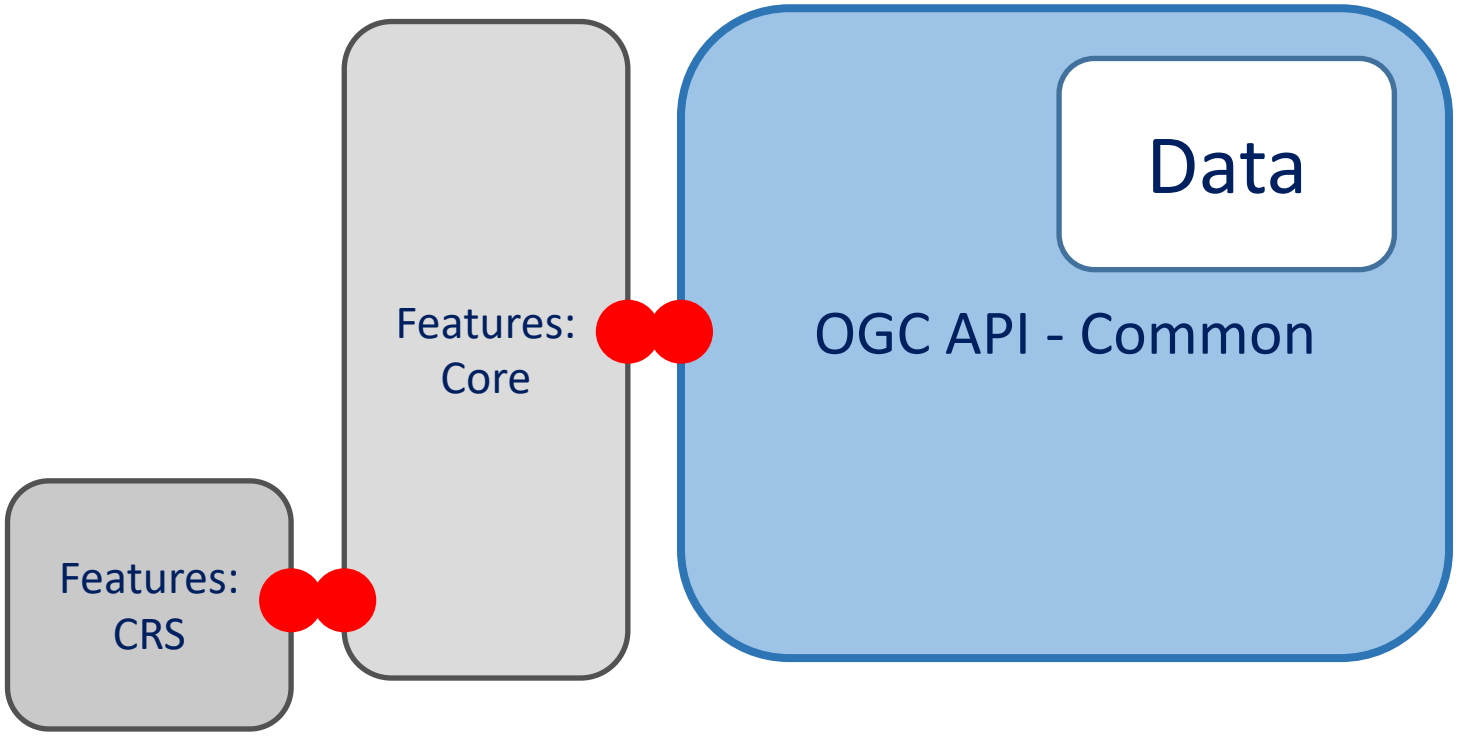


Deployment model example



User: need features supporting other CRSs

Deployment model example



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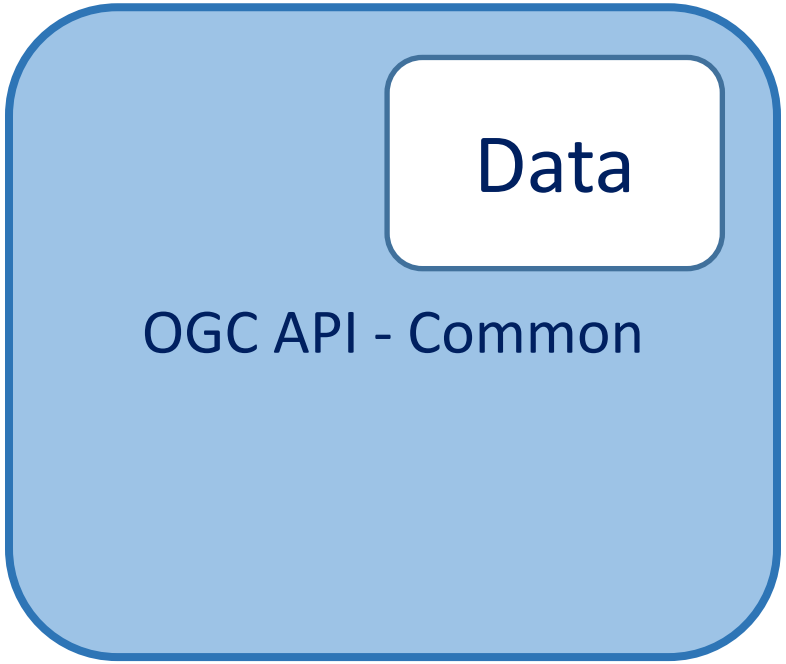


User: I am an emergency response commander: give me everything

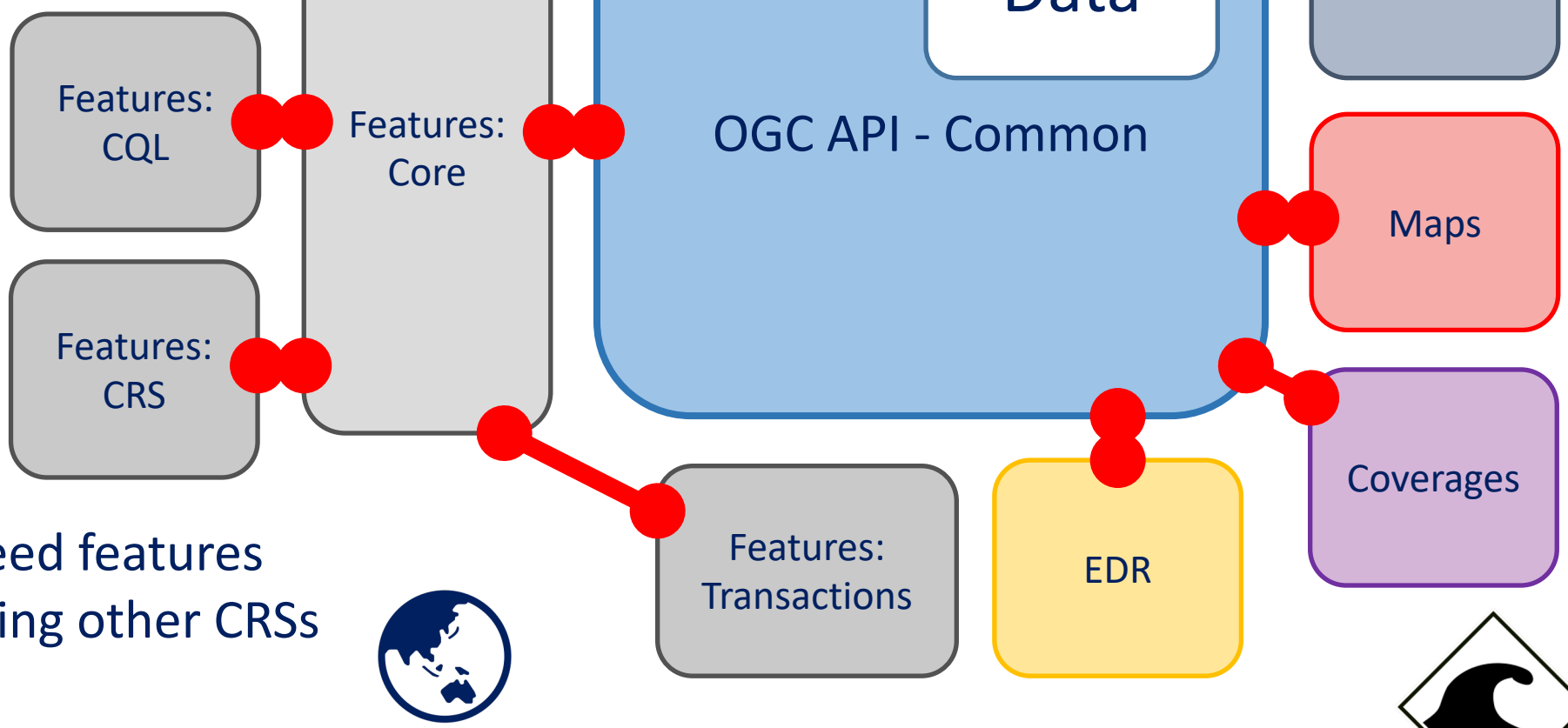
Deployment model example

User: just want features in WGS 84, but want to query

User: need features supporting other CRSs

User: tile it up and make it work on my phone

User: I am an emergency response commander: give me everything

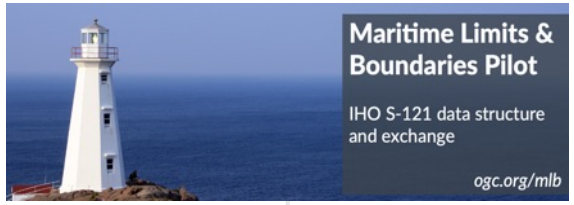


Marine topics

TIMELINE

International Hydrographic Organization

OGC Marine DWG Approved



2016 — Now

Supporting Work

UN-GGIM

Standards Guide Edition 3 (Aligned with IGIF)

"Where do I start?"

Iliad

Digital Twin of the Ocean

The Iliad consortium will develop virtual representations of the sea that will integrate earth observing, modelling and digital infrastructures to provide predictions of future developments "at sea".

Next challenges

Phase IV+

IHO — Open Geospatial Consortium

First joint IHO MSDIWG and OGC Marine DWG Meeting

IHO — Open Geospatial Consortium — UN-GGIM

First joint IHO MSDIWG , UN-GGIM MG and OGC Marine DWG Meeting

+ 2 more

IHO — Open Geospatial Consortium — UN-GGIM

IHO — Open Geospatial Consortium — UN-GGIM

The IHO-OGC Federated MSDI Pilot

THE FMSDI PILOT

International Hydrographic Organization

- Built on multi- stakeholder IHO-OGC MSDI Concept Development study
- Demonstrate aspects of multi-country/region , Federated Marine Spatial Data Infrastructure (SDI) to:
  - **Stakeholders** - inclusivity
  - **Delivery** - Demonstrate simple, secure access using Modern Standards-based approaches (OGC APIs, IHO S-122)
  - **Areas of interest** - Baltic and North Sea (potentially Arctic, South East Asia, others)

IHO-OGC collaborative Pilots work extremely well – Example : IHO-OGC Maritime Limits and Boundaries Pilot

Thanks to our founding Sponsors!

Danish Geodata Agency

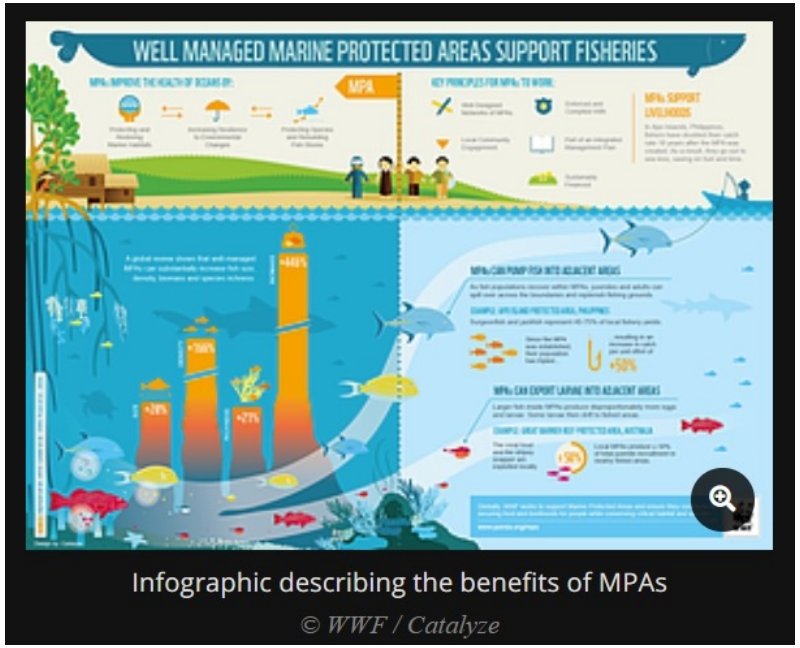
UK Hydrographic Office

NGA NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY

PROGRAMME SCOPE

International Hydrographic Organization

- **Marine Data Availability and Accessibility Study** (MDAAS) via Stakeholder Consultations
- Examine S-122 data availability, how to better utilize S-122, and what **appropriate governance** considerations should be taken
- Explore how to **incorporate additional domain** data (land content standards, meteorological, oceanography, etc.)
- Guided by the **UN-GGIM Integrated Geospatial Information Framework** (IGIF) to develop a roadmap for MSDI maturity



Infographic describing the benefits of MPAs
© WWF / Catalyze

S122 – Marine Protected Areas

Supports

UN-GGIM

IHO

International Hydrographic Organization

OUTCOMES

- **Demonstration** - technology demonstration from global community experts showcasing federated Marine SDI and APIs 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 inform the work of the IHO HSSC Working Group
- **Impact on Next Steps** – what is next… creation and delivery of IHO S-1XX product specs using OGC standards; Data Management – data cubes, Discrete Global Grids?
- Advancing **FAIR** (Findable, Accessible, Interoperable, Reusable) approaches

FMSDI INITIATIVE

International Hydrographic Organization

Phase I

Request for Information on resource collection with a primary focus on Marine Protected Areas (MPA).

Phase II

Phase II (currently running) includes:

Task 1- Developing a federation of S-122 Standard MPA data sets;

Task 2- Developing various data services. Exploring data fidelity, mobility, and versatility of S-122 as well as other marine standards and data;

Task 3- Designing a UNGGIM-IGIF derived Marine SDI maturity model which provides a roadmap for MSDI development.

hase III

Expected to start later in 2022; will primarily extend the use cases developed in the second phase and add the **Arctic region** as a new location to the demonstration scenarios.

PHASE I: RFI DATA RESOURCES

- Detailed responses from…
  - HELCOM - Baltic Marine Environment Protection Commission
  - UK Hydrographic Office
  - The Danish Agency for Culture and Palaces
  - Danish Geodata Agency
  - Finland Traficom
  - Lithuanian Transport Safety Administration
  - German Federal Maritime and Hydrographic Agency
  - Swedish Hydrographic Organization
  - Flemish Hydrography
  - Geoscience Australia
  - AusSeabed

IHO

International Hydrographic Organization

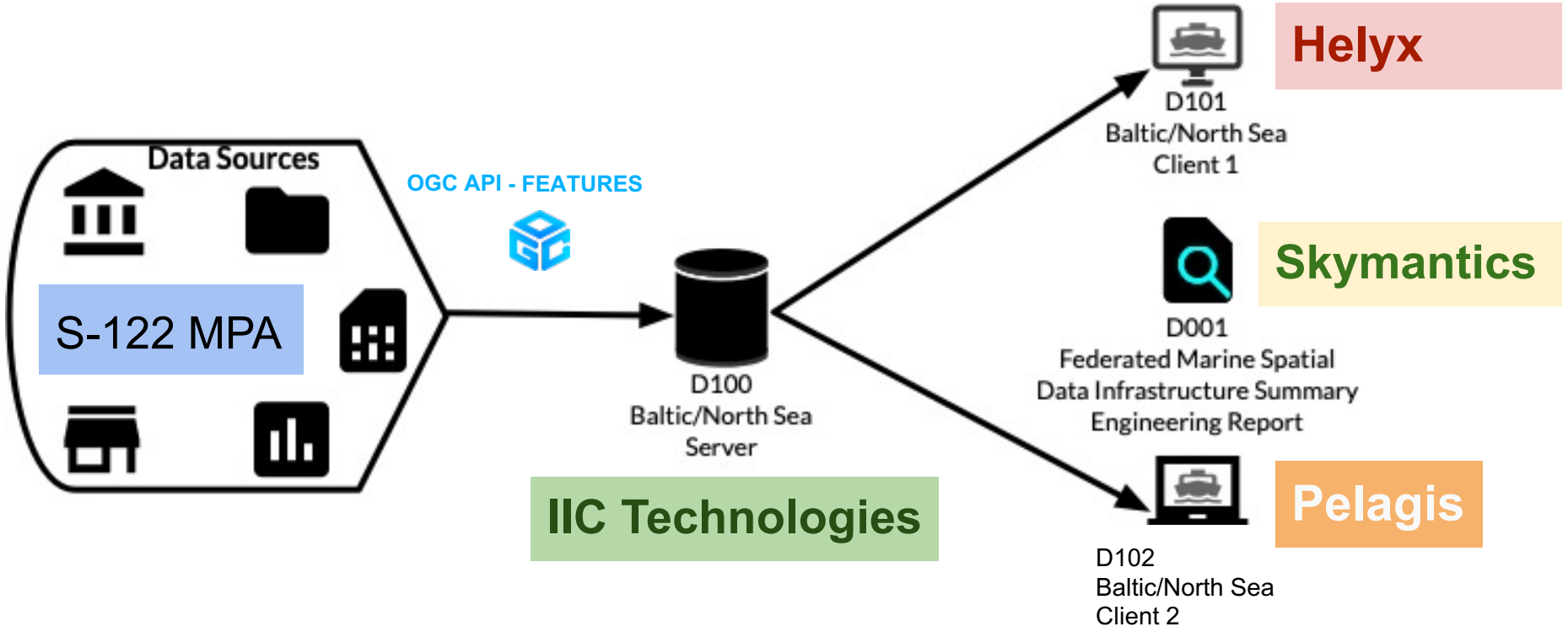
PHASE II: SCHEDULING

Milestone	Date	Event
M05	**January 5 - 7, 2021**	Kick-off Workshop
M06	**January 8 - 20, 2022**	Scenario Development
M07	**January 10 - 27, 2022**	Phase 1 TIE (Technology Integration Experiment) Testing
M08	**January 24 - 28, 2022**	Phase 1 Documentation Completion
M09	**April 15, 2022**	**Phase 2 TIE Testing**
M10	**April 29, 2022**	**Draft ER: Thread 2 & 3 Documentation Completion**
M11	**May 15, 2022**	**Submitting Final ER before June TC deadline**
M12	**June 13-17, 2022**	**Demonstration of Results at the OGC member meeting**

Phase II - Task 1: Baltic and North Seas

Baltic Sea / North Sea – S122: Federated Marine Protected Area Data

Demonstrate improved access to Baltic/North Sea MPA data for a wider variety of end users outside of the traditional MSDI domain.



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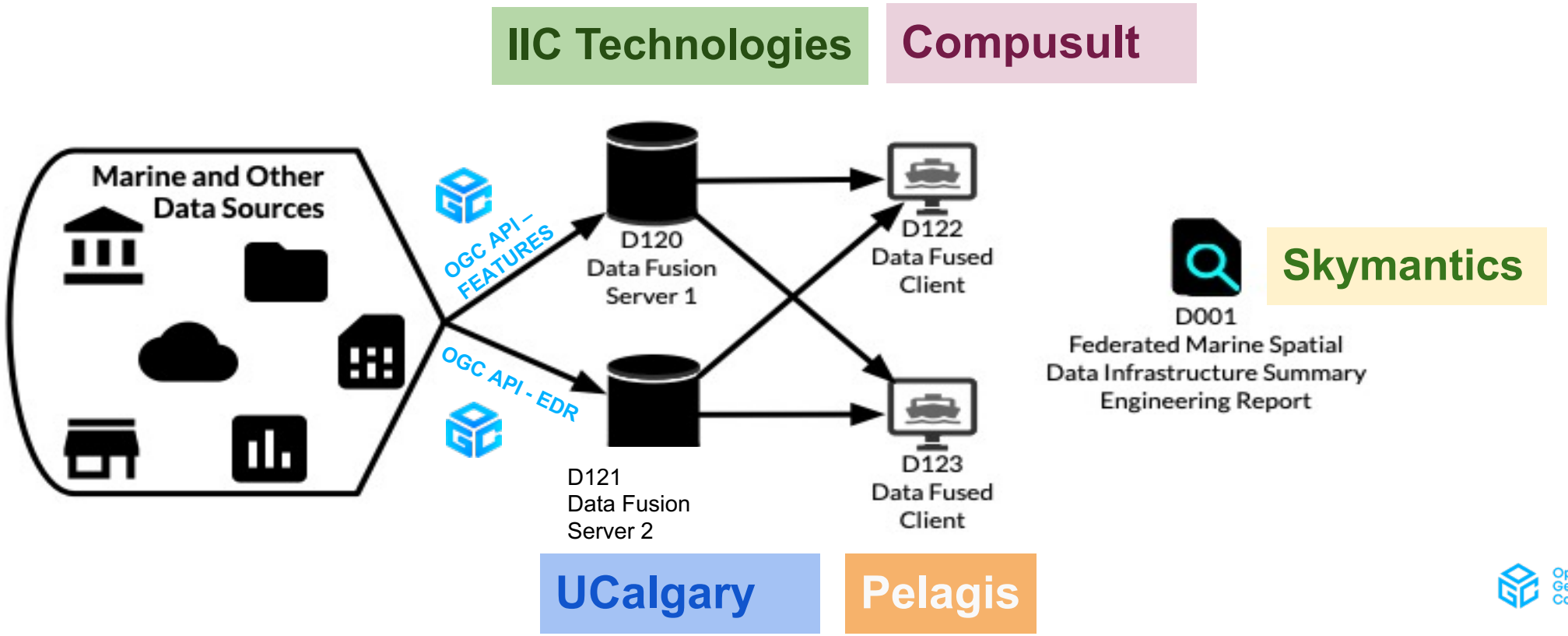
Phase II - Task 2: Fusion

Fusion Service: Data Fidelity, Mobility and Versatility

Go beyond MPA data: and examine a broader set of data and standards such as: terrestrial data, meteorological data, earth observation data, online sensors, etc.



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PHASE IV (2023 +)?

Building on progress to date – what should the focus be?

Policy Drivers

- Climate Change, Disasters, Environment, Open Science

Potential Themes

- Sea level Rise, Coastal Erosion, Species tracking, Continued Cross Boundary / Domain sharing (e.g. Arctic)

Related Technology and Standards

- Discrete Global Grid, 3D Visualisation and Data Management, Simulation and Modelling, Cloud Native

OGC MEMBER MEETINGS

Date	Location	Host/Sponsor
28 Feb – 4 March 2022	Virtual	AWS
13 – 17 June 2022	Madrid, Spain	SatCen
Sept/Oct 2022	Singapore	Singapore Land Authority
December 2022 Innovation Meeting	Virtual	
March 2023	Dubai	
June 2023	Huntsville, AL USA	
September 2023	Singapore	Singapore Land Authority

ACTIONS REQUESTED FROM HSSC

1. Consider requirements for upcoming phases of the joint IHO-OGC Federated Marine Spatial Data Infrastructure Pilot: primarily with respect to standardization targets for interoperability.