OGC Collaborative Solutions and Innovation Initiatives - 2023 and beyond

UN-GGIM 13th Session Side event - Standards and Innovation - Enabling the global geospatial information community

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July 2023
OGC Collaborative Solutions & Innovation

Sponsor with a challenge

OGC evaluations

Bring OGC members in

Deliver solutions
Around 40% of the World’s population lives in a Coastal zone
75% of Megacities are in coastal zones

How well do we connect land and water data (a big challenge!)
What the regional connectivity between MSDIs?
Value of data for non-navigational purposes

With Climate change comes a massive increased risk to billions of people – e.g. disasters, reduced food security, environmental degradation and much more.
We need to get better at connecting data and information!
Connecting Land and Sea for Global Awareness

Federated Marine Spatial Data Infrastructure Pilot 2023

Singapore - Arctic - Caribbean
Partnerships are critical

**WHY?**
Socio-economic motivations and inclusive benefits from global geospatial information management

**WHAT?**
Developing a spatial data infrastructure suited for unlocking the value in marine and maritime data

**HOW?**
Implementing OGC Standards to maximise the capabilities of Tech via the cost benefits of interoperability

**FINANCING?**
Defining and measuring socio-economic benefits to justify and/or monitor the use of financial resources
Background: FMSDI Initiative

Phase 1 (Sep-Dec 2021)
Understand status quo
Running an RFI on resource collection focus on MPA
Availability of S-122 (Marine Protected Areas) data, who produces it, where is it held

Phase 2 (Jan-Jun 2022)
Demonstrate marine protected areas at OGC API endpoints
Demonstrating S-122 Standard for MPA in Baltic and North
Demonstrate S-1XX and other marine standards and data
UNGGIM-IGIF derived maturity model for Marine SDIs

Phase 3 (Jun-Feb 2022/23)
Extend to new location: Arctic
Add more data, more services to address more complex scenarios

Phase 4 (Apr-Oct 2023)
Extend to new locations: Singapore
Arctic Canada
Caribbean
Demonstrating interoperability between land and marine data, general sensitivity to climate change, and storm surge, and different use-cases
Disaster Pilot

Eyes in the sky, feet on the ground.

Open Geospatial Consortium
What Goes into an OGC pilot?

- Geospatial data sharing challenge (discovery, access, integration, exploitation)
- Sharing scenario(s)
- People! (Sponsors, supporters, participants, stakeholders, coordinators)
- Distributed systems agile prototyping
- Interchange of components and datasets -> measure of interoperability
- Simulation of scenario workflows
- Evaluation of results
- Feedback into standards development and adoption
- Considerations for further maturation and operational deployment
- Communication!
- (New) Persistence!
Data - To - Action Collaboration

Analysis Ready Data

Interpretation Ready Data

Actionable Observations

Analyze, Process, Predict

Interpret, Standardize, Normalize
Data - To - Action Collaboration

- **Analysis Ready Data**: Analyze, Process, Predict
- **Interpretation Ready Data**: Interpret, Standardize, Normalize
- **Actionable Observations**: Transform, Translate, Explain
- **Decision Ready Indicators**: Reporting & Dissemination at scale - When-Where-What-Who
**Indicator Workflow Collaboration Triplet**

- **Physical**
  - Incident scene
  - In-person collaboration
  - Shared experience
  - Operations

- **Digital**
  - Sensing/reporting data
  - ARD-DRI workflows
  - Models and predictions
  - Visualization

- **Social**
  - Communication
  - Culture
  - Communities
  - Common Purpose
Disaster Pilot 2021 Readiness Guides

As part of the Pilot’s mission, Readiness Guides were developed based on the following remit:

1. A guide for Earth Observation (EO) data providers, Analysis Ready Data (ARD) product providers, Decision Ready Indicators (DRI) analysts, and other supporting stakeholders on how to prepare and coordinate with others in order to leverage standards-based cloud computing platforms in support of disaster management and response efforts.

2. A guide for EO data users, relief organizations, field personnel, and other response stakeholders on how to prepare and coordinate with others in order to leverage standards-based cloud computing platforms in their disaster management and response efforts.

Red River flood occurrence, developed by Wuhan University, overlaid on the DEM.
Interoperable and Open Information
Climate Resilience Pilot
Climate Pilot

Global Drought Observatory (Copernicus EMS)

Copernicus Climate Service Climate Data Store (CDS): ERA5

NOAA Monthly U.S. Climate Gridded Dataset

Drought Analysis
OGC Climate Resilience Pilot
Need for OGC Blueprints

Agenda 2030 - Leave noone behind

- Example of **hydrological forecast from ZAMWIS** (Zambezi Water Resources Information System) software interface
  - [Source: ZAMCOM]

Example of **Tropical Cyclons graphical warning** issued by Météo-France one day before Cyclone Idai’s landfall in Mozambique (14 March 2019)
  - [Source: Météo-France La Réunion]
OGC Building Blocks for Climate Services

The following sections are instructions, guidelines and backgrounds around OGC API based software which can be used to set up Climate Resilience Information Systems (CRIS). In the following sections we are using the Duck software as example to guide you through the different steps necessary to set up a Building Block for Climate services. The demo web-application has been created by Carsten Ehbrecht and Étienne Plé sant in the framework of the work package 8 of the CLINT H2020 project. Duck provides an AI-enhanced service to fill missing values in climate datasets.

Here we understand Building Blocks for Climate Services as standalone software in line to the OGC API standards. In the Birdhouse organisation you can find a collection on OGC Standards based software. These software blocks can be used to build customised Climate Resilience Information System. The building blocks for climate services can be named with birdnames.

- Science for an OGC Building Block for climate services
- Develop your own building block for climate services
- Deploy a building block as Climate Service
- GUI for Climate Services Information Systems
- Commands to call a Climate Services Information System
- FAIR Climate Services
- Existing OGC building blocks for climate service
- Bibliography
OGC Rainbow

FUNCTION 1: VOCABULARY SERVICE WITH STABLE URLs FOR EACH RESOURCE AT A STANDARDIZED WEB INTERFACE WITH SUPPORT FOR MULTIPLE FORMATS.

FUNCTION 2: A FULLY FEATURED VOCABULARY MANAGEMENT SERVICE THAT ALLOWS CREATING AND MANAGING VOCABULARIES COLLABORATIVELY.

FUNCTION 3: DISCOVERY AND FORMAL STORAGE RELATIONSHIPS BETWEEN RESOURCES.

FUNCTION 4: BUILDING BLOCKS AS REUSABLE COMPONENTS.

FUNCTION 5: A CONTINUOUS TESTING/CONTINUOUS DEPLOYMENT ENVIRONMENT FOR GEOSPATIAL RESOURCES.
Towards specific products and services
Next Generation SDI

Development of the Saudi Arabian National Geospatial Ecosystem (SANGE)
OGC Academy

• How do things work?
• How to publish my data?
• How to produce ARD?
• ...

Welcome to the Academy!

Location Innovation Academy offers **3 courses and 12 e-learning modules** (see the courses below) to help government agencies, particularly national mapping organizations, make the most of their existing geospatial platforms and create an ecosystem of generic services that can connect various datasets and services with geospatial data.
Summary: COSI produces

1. Technology solutions to enhance geospatial data handling
2. Specific service portfolios and building blocks
3. OGC Academy around leading challenges
4. Interoperability frameworks: OGC Rainbow
5. Training & education: OGC Academy
Thank you for your attention!

Innovation
- 120+ Innovation Initiatives
- 380+ Technical reports
- OGC hosted services
- GeoCipher
- OGC Advice and Capabilities building

Community
- 550+ Members
- 60+ Alliance partners
- 50+ Standards Working Groups
- 45+ Domain Working Groups
- 25+ Years of Not for Profit Work

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

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