OGC Disaster Pilot 2022

Call for Sponsors (CFS)

Version 1.0 - 31 May 2022

2022-05-31

Advancing Disaster Awareness and Collaboration with FAIR Data

Building on the success and outcomes of the Disaster Resilience Pilot, Disaster Pilot 2021, and subsequent preparatory tasks, OGC is now preparing to execute the main thread of Disaster Pilot 2022. If you are interested in being part of this critical opportunity to shape collaborative innovation activities, please contact Dr. Josh Lieberman, Director of Innovation Programs, at jlieberman@ogc.org to discuss your organization's goals and challenges in improving disaster resilience and response, as well as the role that spatial data sharing can play in meeting those challenges.

Challenges put forth by sponsoring organizations are refined and mapped to a set of work items that OGC member organizations will compete to address. The Innovation Program team together with the OGC member sponsors will then select the most qualified organizations to participate in Disaster Pilot 2022. Pilot participants, sponsors, supporters, and the OGC team then work together to design and prototype standards-conformant components, collaborative information ecosystems, and data sharing practices that bring the right disaster information to the right people at the right time and in the right place.

Vision

Disasters occur all the time, but many types of disaster are occurring more frequently, more severely, and in more regions than ever before. Disasters and disaster impacts are increasingly complex and consequential. Drought, high winds, and extreme heat drive wildfire occurrence, leaving hillsides vulnerable to landslides in subsequent storm events. Health disasters such as pandemics, exacerbated by respiratory diseases (caused for example by those same wildfires) increase population vulnerability and hinder response

efforts. All of this is being thrown into a higher gear in more places by the energy effects of climate change and global warming.

At the same time, earth observation data, whether collected from space, measured by in situ sensors, reported by authorities, or captured by a volunteer's cellphone, are available in almost unimaginable volume, velocity, and variety, supplemented by large and small scale predictive models and other analytical / interpretive tools. The challenge we face is to work collaboratively with this data to produce information that directly guides those in the field and on the ground to improve disaster prediction, resilience, response, and recovery.

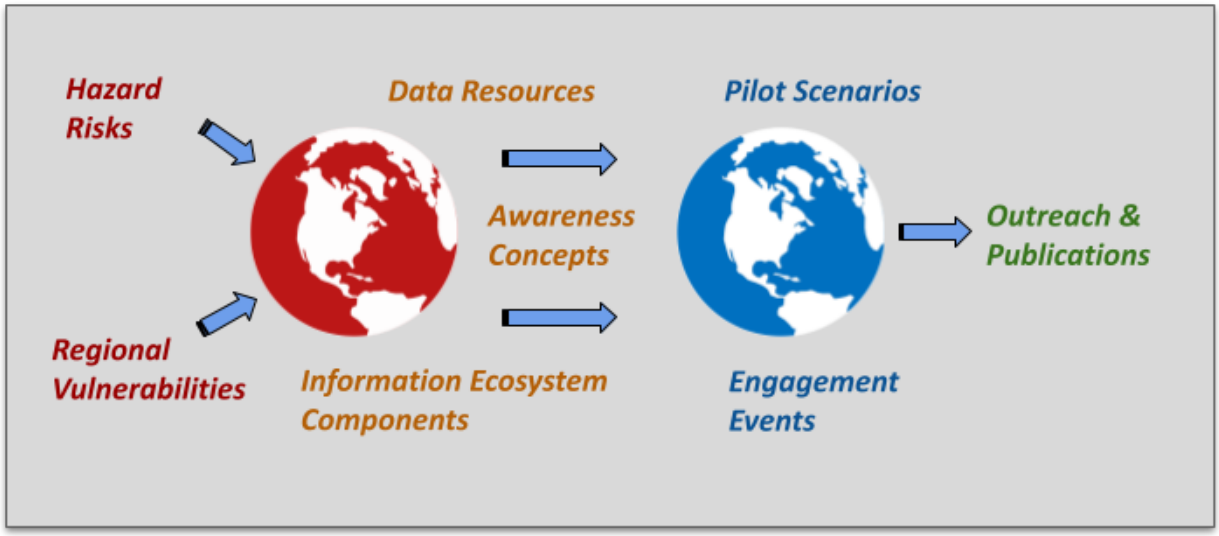
Our vision is to use spatial data sharing standards together with Web technologies and cloud computing so that the responsible stakeholders can work together wherever they are located, use relevant data wherever they are stored, and manage every phase of a disaster at any scale wherever it threatens. In a global, cloud-scale disaster information ecosystem, awareness of threats, vulnerabilities, and impacts can be fostered and shared through joint development of workflow recipes that integrate and transform analysis-ready observation and prediction data (ARD) into decision ready indicators (DRI). Indicator workflows, ready to run and adaptable to each situation, provide the guidance that the right people at the right time in the right place need to make decisions, take actions, and improve disaster outcomes.

Pilot Scope

Disaster Pilot 2021 took the first steps towards designing and prototyping the disaster awareness ecosystem envisioned above. Disaster Pilot activities in 2022 are being designed and initiated to advance this work in multiple directions and dimensions, from FAIR data sharing, cloud computing access, predictive services, ARD standards, and models for health spatial data infrastructure, to reusable apps and indicators for first responders that provide the directed information they need to do their jobs. Under consideration are:

- **Concepts**: technologies and processes touched on in DP21, now ready for further development and maturity
- **Hazards**: types of hazards, in addition to the floods, landslides, and pandemics considered in DP21, that are increasingly impacting our lives.
- **Scenarios**: processes and situations to be prototyped by a pilot initiative
- **Components**: software systems supporting standard interfaces to be integrated and interchanged within a disaster awareness ecosystem
- **Data resources**: types of EO and other data recognized as important inputs to DRI "recipes"
- **Regions**: geographic areas posing particular challenges but also providing special opportunities for access to disaster relevant data and engagement with stakeholders
- **Events**: Activities to foster engagement, reach out to interested communities and energize experimentation.
- **Publications**: Documents and other media for capturing and disseminating the experiences, best practices, and lessons learned from Disaster Pilot 2022

Disaster Pilot 2022 Initiative Elements



Concepts

1. **Analysis Ready Data (ARD)**
    - ARD products are processed to common spatiotemporal and phenomenological standards allowing direct analysis and integration with other ARD products
2. **Decision Ready Indicators (DRI)**
    - DRI are the result of workflow recipes that integrate, interpret, and transform ARD to directly guide actions and decisions
3. **Applications to the Data (A2D)**
    - Computing architecture that minimizes data transfer by processing large-scale datasets “close” to where they are stored in cloud environments
4. **Analysis Ready Computing (ARC)**
    - Ready-to-use cloud computing environments for producing timely ARD and DRI products
5. **Climate Change Impact Services (CCIS)**
    - Model services for predicting changes to disaster locations, frequencies, and severities based on shifts in local and global climate parameters
6. **Live Workflow Graphs**
    - Live cloud computing workflows that respond to updated EO inputs by generating new near-real-time ARD and DRI products.
7. **Linked Hazards**
    - Workflow graphs that estimate the dependencies in risk and impact between different types of hazards.

Hazards

- Violence
- Pandemic / Endemic
- Severe Storms
- Flooding
- Landslides
- Wildfires
- Drought
- Extreme Heat
- Famine
- Marine Oil Spills
- Snow Avalanches
- Tsunamis
- CBRN (chemical-biological-radiological-nuclear) Releases
- Meteor Strikes
- (Infra)structure failures

Scenarios

- ARD Readiness
- DRI Readiness
- Recipe Collaboration
- Elastic Processing
- Last Kilometer Delivery
- Data-centric Secure Data Exchange
- Critical Facilities Linked Data
- Near-real-time Sky-to-ground Delivery
- Information Awareness Ecosystem Sustainability
- Reusable, Rapid-deployment Responder App
- Drought awareness and resilience across multiple governmental stakeholders

Components

- Cloud Workflow Manager
- Resource Registry
- Discovery Service (
- Recipe Workflow Repository
- API Features Service
- API Processes Service
- API Geo Datacube Service
- Environmental Data Retrieval Service (EDR)
- Data Access and Processing API Service (DAPA)

- Sensor Things Service
- Cloud Native Storage Service (COG-STAC-ZARR)
- Application Deployment and Execution Service (ADES)
- Reusable Dashboard Application
- API Routes Service
- Predictive Model as a Service
- API Gateway for non-standard data interface

Data Resources

- Digital Elevation Model
- Framework Data for Administrative / Physiographic Regions
- Framework Data for Transportation
- Framework Data for Infrastructure
- Framework Data for Demography
- Indices of Hazard Risk and Vulnerability
- Optical EO Data
- SAR EO Data
- Microwave EO Data
- Lidar Point Cloud Data
- Response-relief Resource Inventories
- Disaster Timeline / Extent / Impact Data
- Wildfire Fuel Availability
- Weather Conditions / Predictions
- Health Status Spatial Data

Regions

- New Orleans Area, Louisiana USA
- Peru
- Central Asia
- Manitoba Canada
- California
- Taiwan, East Asia
- Australia
- Zambesi Region, Africa

Events

- Collaboration Sprint
- Cloud-portable Elastic Processing Sprint
- Dashboard - Notebook - App Deployment Sprint
- Rapid Response Challenge
- Public Reporting & Communication Roundtrip
- Responder Training Simulation
- Disaster Scenario Demonstration

- Transportation Logistics Simulation
- ARD Workshop
- DRI Workshop
- Spatial Framework / Spatial Data Infrastructure Workshop

Publications

- Summary Engineering Report (ER)
- Readiness Guides
- Disaster Awareness Reference Architecture Guide
- Training Course Guide
- Operationalization Guides

If you are interested in sponsoring Disaster Pilot 2022, OGC staff will help you develop detailed requirements, and will identify cross-sponsor synergies for you. The following schedule identifies the major steps towards Disaster Pilot 2022.

Disaster Pilot 2022 Timeline

The following timeline shows the major DP22 initiative milestones and events.

Milestone	Date(s)	Activity
DP22 Thread 1 Tasks initiation	March 1 - June 30, 2022	Cloud computing tools, ARD standardization, predictive services, access to health SDI
DP22 Call for Sponsors	May 31, 2022	Call for sponsor engagement and selection of challenges and priorities
DP22 Call for Participation	June 15, 2022 (and rolling)	Call for participant proposals addressing sponsor challenges. May be in multiple parts according to funding schedules
DP22 Thread 2 Kickoff	June 30, 2022 (and rolling)	Initiation of Pilot activities within Thread 2
DP22 Thread 2 Conclusion	September 30, 2022 to March 31, 2023	Tasks within Thread 2 will be coordinated around the same priorities, but their periods of performance may vary according to scope and

		funding schedules.

About the OGC Innovation Program

The OGC Innovation Program (OGC IP) is an innovative, collaborative, and hands-on engineering and rapid prototyping program. In the IP, OGC members bring forward technology and technology integration challenges. These challenges are refined and mapped to a set of requirements, use cases, and implementation scenarios and eventually addressed in different types of initiatives. These initiatives bring OGC vendors and research institutions together with sponsoring organizations. Coordinated and managed by the OGC IP Team, each initiative has the goal to stepwise increase Technology Readiness Levels (TRL) for geospatial IT solutions, including software architecture, interface design, information and data models, as well as related standards and specifications. Run globally, the Innovation Program further validates and tests geospatial technology based on OGC standards and identifies future OGC standardization work items.

Call to Action

Interested? Please contact Dr. Josh Lieberman, Director of Innovation Programs, via the OGC contact form https://www.ogc.org/contacts. The first sponsor coordination telephone conferences are planned for late May and early June. If you are interested, please get in contact no later than May 31st.