

REACHING FOR THE CLOUD: ADVANCING THE NATIONAL DMAC ARCHITECTURE

Kelly Knee, RPS

IOOS DMAC Annual Meeting

June 15, 2022

AGENDA

- 1** Background
- 2** Project Goals
- 3** Workplan Overview
- 4** Role and Responsibilities
- 5** Project Progress
- 6** Prototypes



TODAY'S
AGENDA

Project Background

- **Funding:** FY21 Implementation of the U.S. Integrated Ocean Observing System (IOOS) – Topic Area 2, *Advancing the National Data Management and Cyberinfrastructure System Architecture*.
- **Topic Area 2 Theme:** incorporate advances in HPC, data science, and data modeling into DMAC
- **RPS focus:** opportunities provided by the cloud to improve DMAC and meet a variety of needs from across the IOOS community

Project Goals

- Goal: increase the use of IOOS data and promote connections to other disciplines by lowering the barriers for entry
- Objectives:
 - understanding the current state, challenges, and opportunities
 - Identify state-of-the-art technology and standards that build toward vision
 - developing a technical roadmap for what DMAC should look like in 5-10 years
 - prototypes and demonstration datasets

Year 1: Gather requirements, develop prototypes, draft roadmap



Year 2: Demonstrate Value



Year 3: Final Roadmap and Recommended Architecture



Workplan

- **Task 1:** Establish Steering Committee
- **Task 2:** Conduct RA Assessment
- **Task 3:** Roadmap/Architecture
- **Task 4:** Design and implementation of prototypes
- **Task 5:** Host community webinars
- **Task 6:** Final report and recommendations

Roles and Responsibilities

RPS Team

- Strategy and Vision
- Tools, Interim Solutions, Prototypes, POCs
- Status Reporting and Finances
- Final Report and Recommendation



IOOS Program Office

- Contract management
- Lead IOOS and DMAC strategy and vision
- Communicate NOAA cloud strategy
- Represent IOOS on Steering Committee



IOOS Association

- Conducting Assessments
- Organizing Steering Committee
- Organizing Webinars and Workshops
- Assisting with Final Report



Steering Committee (RPS, RA Management, RA Data Managers, IOOS Program Office, 3rd parties)

- Provide input on project direction / Prioritize prototypes
- Communicate external considerations and influences
- Guide IOOS/RA cloud strategy



Regional Associations/Stakeholders

- Participate in assessment of requirements & needs
- Share cloud aspirations and challenges
- Attend workshops and webinars
- Test prototypes and provide feedback



User Groups / Software Communities

- Test and use mature prototypes
- Participate in open-source collaboration



Project Progress

Outreach and Communication

- Established Steering Committee
- Presented project to RA Directors
- IOOS Code Sprint
- Talk at *Cloud-Native Geospatial* (April 2022)
- Regional Association Assessment
- IOOS DMAC Annual Meeting (next week)

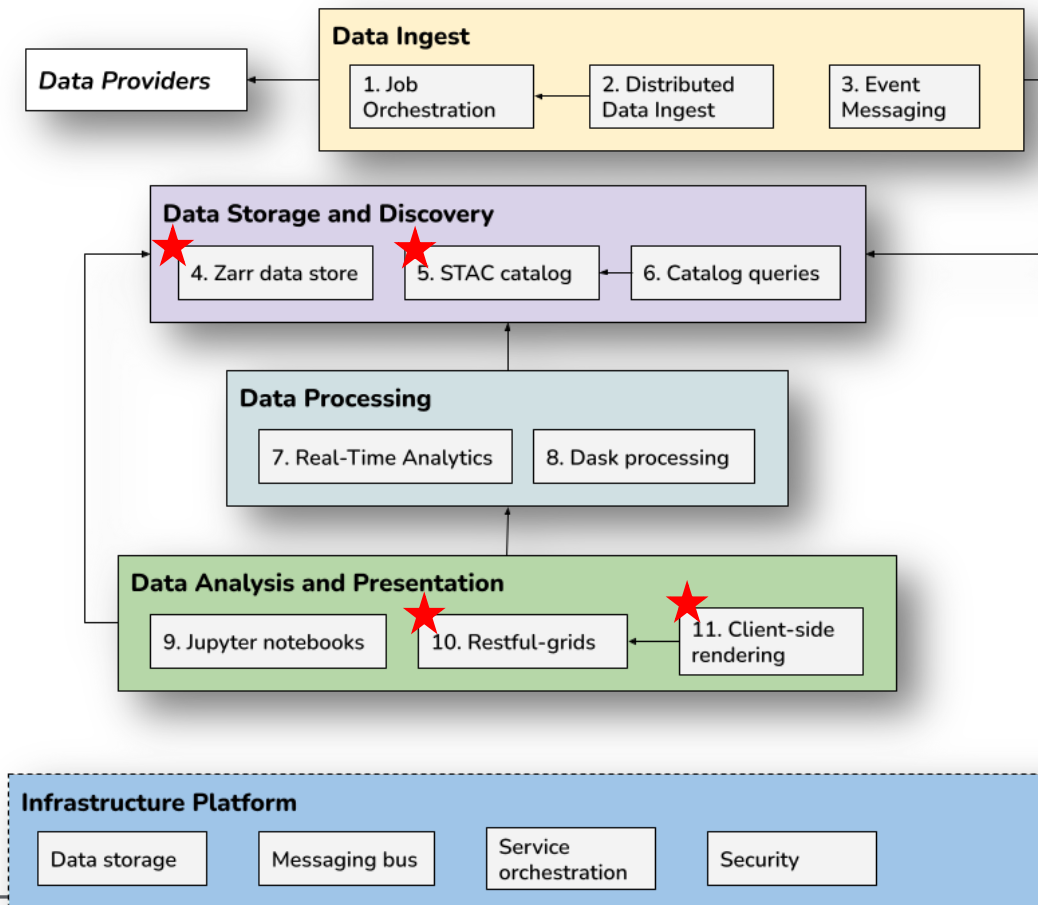
Technical Implementation

- Numerous technical brainstorming sessions
- Identified major technical themes and technologies of interest
 - Early vetting of: Zarr, Xarray, Xpublish, STAC, Xcube, FastAPI Kubernetes, TileDB
- Developed high-level, idealized system architecture diagrams
- Discussed software development processes and core values (e.g. modular, language-agnostic, etc.)
- Development of prototype ideas for discussion with the steering committee
- Progressed 4 prototype ideas

Steering Committee Members

NAME	ORGANIZATION	NAME	ORGANIZATION
Adrienne Simonson	NOAA, Open Data Dissemination	Kelli Paige	GLOS
Analise Kenney	NOAA, NOS	Max Grover	Argonne
Audra Luscher	NOAA, NOS	Micah Wegner	NOAA, IOOS
Carrie Wall Bell	NOAA, NCEP	Parker MacCready	University of Washington
David Stuebe	Camus Energy	Patricia Chardon-Maldonado	CARICOOS
Derrick Snowden	NOAA, IOOS	Rich Signell	USGS
Jim Potemra	PacIOOS, University of Hawaii	Tiffany Vance	NOAA, IOOS
Jorge Brenner	GCOOS	Tom Shyka	NERACOOS

Prototype Relationship Diagram



★ = currently in progress

Questions?

