RVTEC
NOAA - Marine Operations Program Updates

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Katie Watkins-Brandt
Office of Marine and Aviation Operations
Section Chief, Science Services

Marine Operations

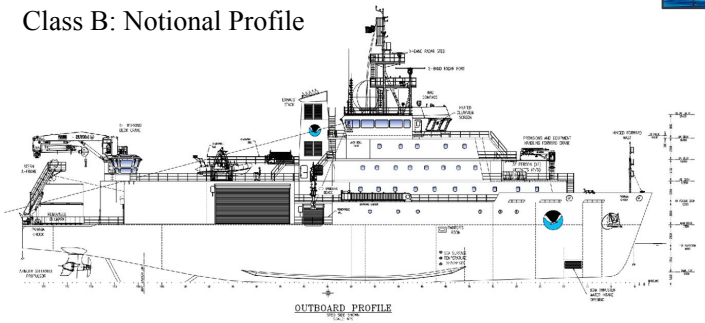
Current Fleet of 15 NOAA Ships and expansion of Uncrewed Systems (UxS)

- Hydrographic, Oceanographic/Fisheries, Multi-mission
- Class A's (AGOR variants) delivery 2026
- Class B's delivery 2028
  - 2 Uncrewed Platforms
  - 2 Hydrographic Survey Launches
- Class C's in design phase

The Future is Multi-Mission
and more sensors/systems = more data!

Class A: New Paint Scheme

Class B: Notional Profile



Established the Science Section under Marine Operations - Engineering, transitioned to Section Chief of Science Services in April 2024!

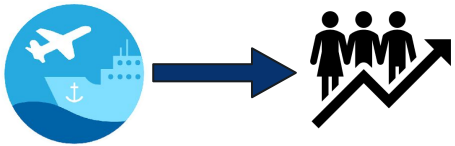
Science Services

The overarching goal of the SS is to support operations and to improve data quality and data management practices in the fleet by ***supporting people*, *improving practices*, and *innovating facilities*.**

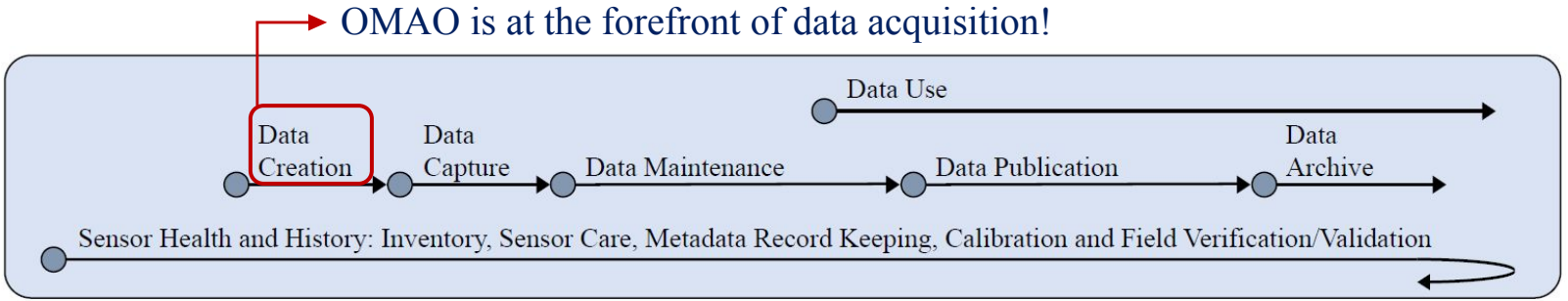
Bridging the gap between operations and science.

Supporting People: Survey Technicians (ST's)

- Total of 68 Survey Techs (OMAO's version of Marine Techs)
  - 1-9 ST's on each NOAA Ship depending on mission
- Management of Relief Pool and Science Section ST's (21 billets)
- ST hiring and placement
- All training and development for ST's
  - Annual training and development of new training/career ladders
  - LANTERN details and cross-training opportunities in NOAA and ARF
- Hiring 2 Functional Manager Positions under Science Section
- Deployment of purpose built tools and services
- Remote Data Processing Pilot



Improving Practices and Innovating Facilities



1) **Infrastructure Refresh**: Ship Network and Cloud + Standardization of Scientific Sensors
2) **Improving Data Management Workflows:** Deploying Purpose Built Tools and Services
3) **Compliance & FAIR:** Meeting the Requirements and Reporting the Metrics of Today and Tomorrow and Promoting Open Data/Open Science

Building the foundation for a future of:

- *Operating continuous sampling multi-mission platforms*
- *AI- data compatibility*
- *Advanced reporting of scientific and operational data products*

Infrastructure Refresh:
Ship Network and Cloud

- **FortiNET** Solution: *A secure architecture with network infrastructure that allows for scalability without compromising security.*
- Multi-terminal **Starlink**: *Expanding bandwidth based on mission requirements, maintaining quality of life bandwidth, and adding dedicated bandwidth for scientific data transfer.*
- **Dell HCI Stack** Architecture: *hyperconverged infrastructure (HCI) solution that hosts Windows and Linux VM or containerized workloads and their storage; a hybrid product that connects on-prem systems to Azure for cloud-based services, monitoring, and management.*
- **Azure Commercial Cloud** Subscription: *Cloud architecture that implements a logical framework and hierarchical relationships that ensure security while also allowing for end user autonomy.*

Infrastructure Refresh:
Scientific Sensors

- **Let's compare apples to apples:** *Purchased 3 sensors to standardize across the fleet including Kipp & Zonen Radiometer suite, Paroscientific MET 4A All-in-one Weather Station, and Vaisala WXT-536 All-in-one (includes wind speed and direction and precipitation).*

  Next up, ECO-Triplet flow-through fluorometer, ultrasonic anemometers.

Standardization of Scientific Sensors = Standardization of Practices

Improving Data Management Workflows:
Deploying purpose built tools and services

CORIOLIX: *Suite of software and hardware solutions to promote access to and visualization of quality real-time data on the ship and on shore; to promote situational awareness and adaptive sampling at sea.*

Azure Ocean Data Lake Solution: *Creating a cost predictive, efficient, and scalable solution to meet current and future data management needs; making data accessible to promote operational and scientific decision making.*

GLOBUS: *Automated transfer of large data files between two endpoints (e.g., ship to shore/source to destination)*

Tableau: *Business Intelligence (BI) tool for compiling, displaying, and communicating meaningful metrics from various data sources (CORIOLIX, Ocean Data Lake, SDAL, VPASS, etc.)*

CORIOLIX:

Cruise Observations Real-time Interface and Open Live Information eXchange

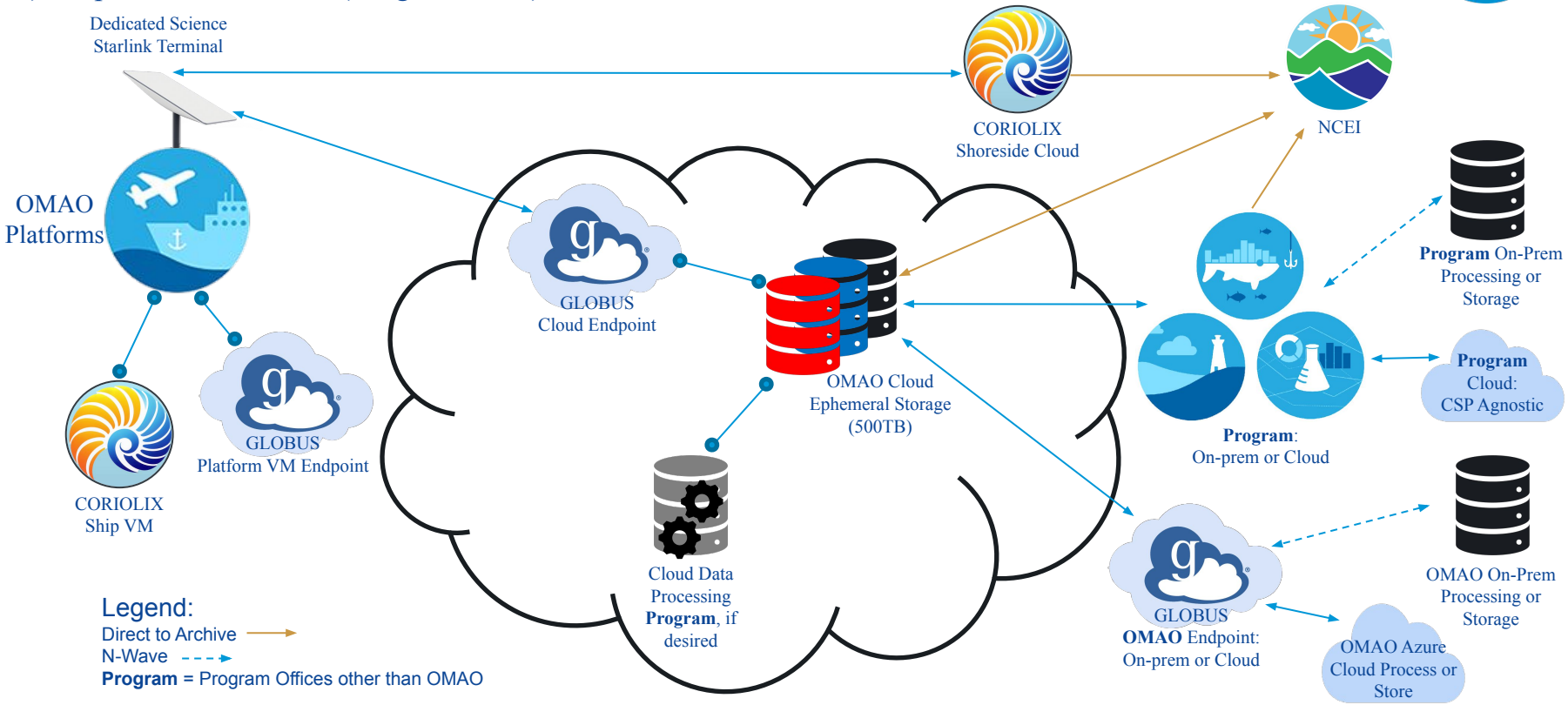
Contract awarded in August, Integration into the NOAA Fleet this year, deployment 2025

- Suite of hardware and software solutions to facilitate research at sea
- Real-time ship and shore access to quality data
- Promote situational awareness in operations and science

Ocean Data Lake Pilot Project

1.) Acquisition to Archive (OMAO Data)

2.) Acquisition to Access (Program Data)



Compliance & FAIR:

Meeting the Requirements and Reporting the Metrics of Today and Tomorrow & Promoting Open Data/Open Science

Compliance & FAIR: *Ensure compliance with the many existing and future Data Management Directives, Mandates, Policy, & Administrative Requirements; Operationalize FAIR Principles to ensure data is Findable, Accessible, Interoperable, and Reusable.*

Tools for Gathering and Communicating Metrics and Promoting Open Data and Open Science: *Deploying tools to promote FAIR principles and to collect, compile, and communicate metrics for reporting (leveraging CORIOLIX, ODL, and Tableau)*

Communicating the Value of OMAO Data: *Changing our culture around data by effectively communicating the importance and value of OMAO data; OMAO is greater than Days At Sea (DAS)*


Questions?