

National Aeronautics and
Space Administration

M I O

Introduction

NASA's Multisource
Integrated Observatory

John Haynes

MIO Program Manager

A large, curved image of the Earth from space, showing the Western Hemisphere with North and South America visible. The image is set against a dark blue background.

NASA Earth

The Upfront:

Increasing the Speed of Earth Science

NASA's Earth Science Division is accelerating functions and simplifying processes with the goal of increasing speed of science and scale of impact.

- **Speed to orbit**
- **Speed to science and scientific discovery**
- **Speed and scale of impact of science**
- **Driving interdisciplinary science to go after most complex questions**



Three Major Objectives in Implementing Earth Science in 2026

Drive Alignment with Presidential Priorities

- Advance Gold Standard Science and understanding of the Earth System
- Technology Innovation & Advancement
- Economic Growth
- Strengthen National, Regional and Local Preparedness and Resilience

Focus on Impact

- Reduce programmatic complexity of ES Research and Applied and Responsive Earth Sciences
- **Multisource Integrated Observatory** to maximize science and applications value from NASA and commercial missions
- Modeling integration to answer complex questions
- Engage the broader Earth Observation community including private sector service providers and end-users, academia, commercial EO industry, and state and local governments

Drive Efficiency

- Improved fidelity of planning for DAAC transition to Science Enabling Teams
- Focus on more rapid mission development timelines
- Streamlined and faster ROSES solicitations

PROJECT STATUS: PRE-FORMULATION

About MIO

*Integration for Innovation:
Accelerating Earth Understanding, Maximizing Impact*

GOAL

NASA's Multisource Integrated Observatory (MIO) maximizes science by combining trusted multisource data, innovative technology, and world-leading science expertise to accelerate the pace of discovery and advance applications for real-world use.

Multisource

Extracting maximum value and impact by combining observations from multiple sources

Including ground-based, airborne, partner, and commercial observations, plus stakeholder insights

Integrated

Breaking through collaboration barriers to enable cross-cutting teams

Coordinating observations, cross-validation, and measurements across platforms

Observatory

Unifying the program of record into an enterprise for Earth system science questions

Addressing the most important societal challenges

MIO Components

OBJECTIVES

- Integrate the broad spectrum of data and tools required to accelerate the pace of scientific discovery and innovation
- Enhance capabilities to harness the exponentially growing volume of Earth Observation data
- Maximize the value of Earth Observations on science, the economy, and national resilience

COMPONENTS



Multisource DARTs



Mission DARTs



Project Office

Accelerating applications for real-world use

MIO serves as the bridge, translating raw observations into actionable insights to enable smarter, faster, and more impactful decisions

Multisource Earth observations

Fusing high-quality, multi-sensor observations from NASA and partners

Cross-cutting expertise & ideation

Coordinating interdisciplinary approaches for the most pressing complex science questions

Actionable Earth insights

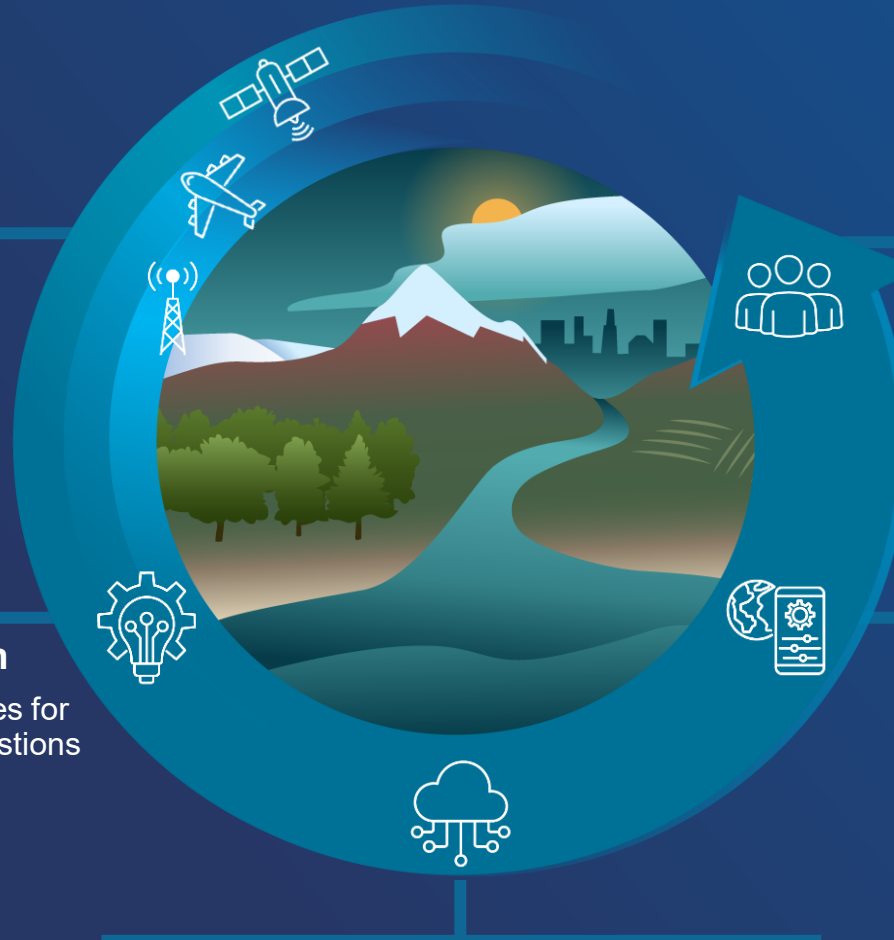
Accelerating science-to-application pipelines across public and private sectors

Data product development

Sparking innovative products to advance scientific discovery and meet stakeholder needs

Core capabilities & infrastructure

Leveraging a unified computing environment for collaboration and efficient data harmonization



Project Leadership



John Haynes
Program Manager



John Sullivan
Deputy Program Manager

HEADQUARTERS

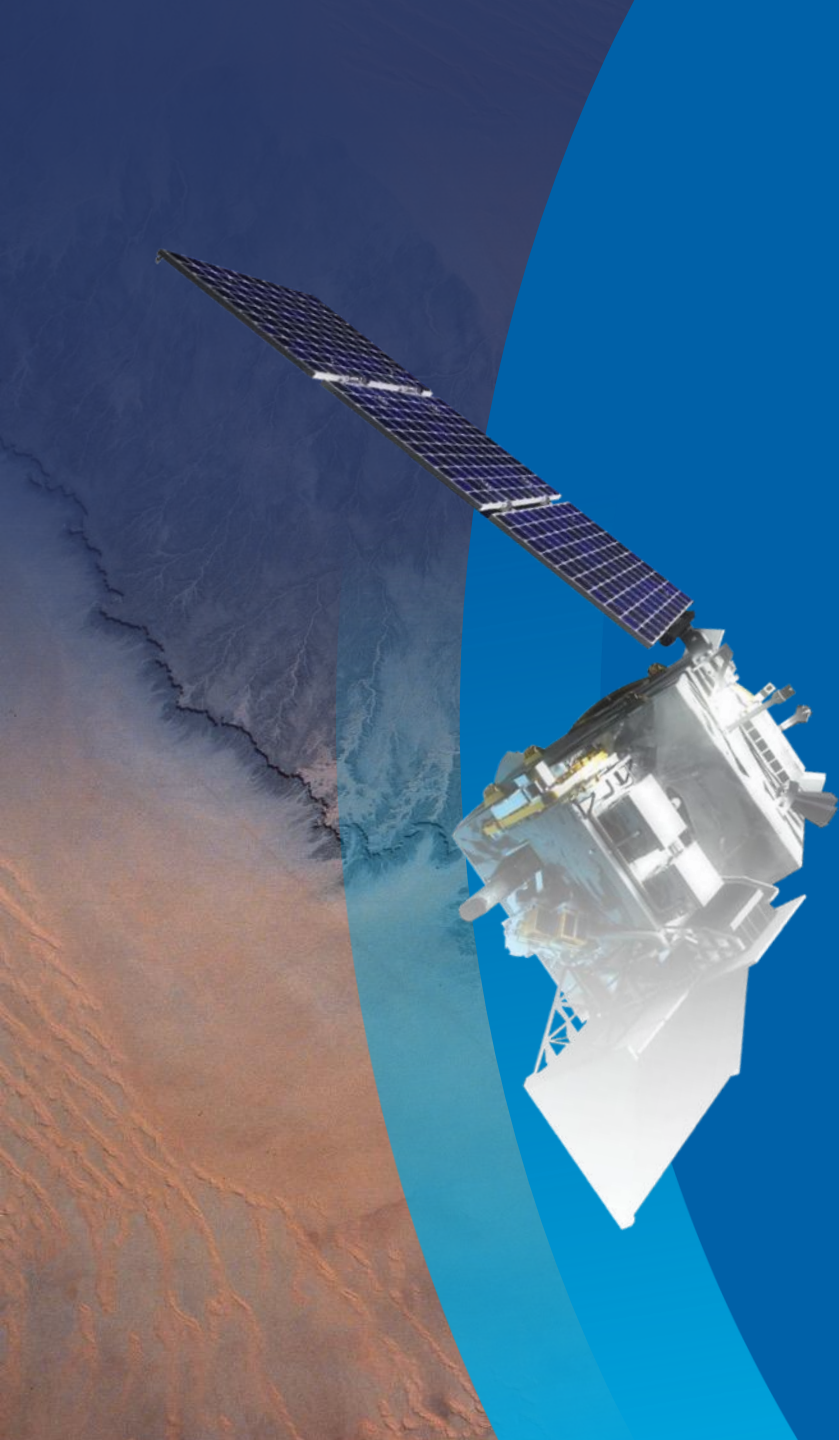
Leadership and oversight of all MIO activities, including DARTs and Project Office.
Programmatic alignment across ESD.



Cecile Rousseaux
Project Scientist

PROJECT OFFICE (GSFC)

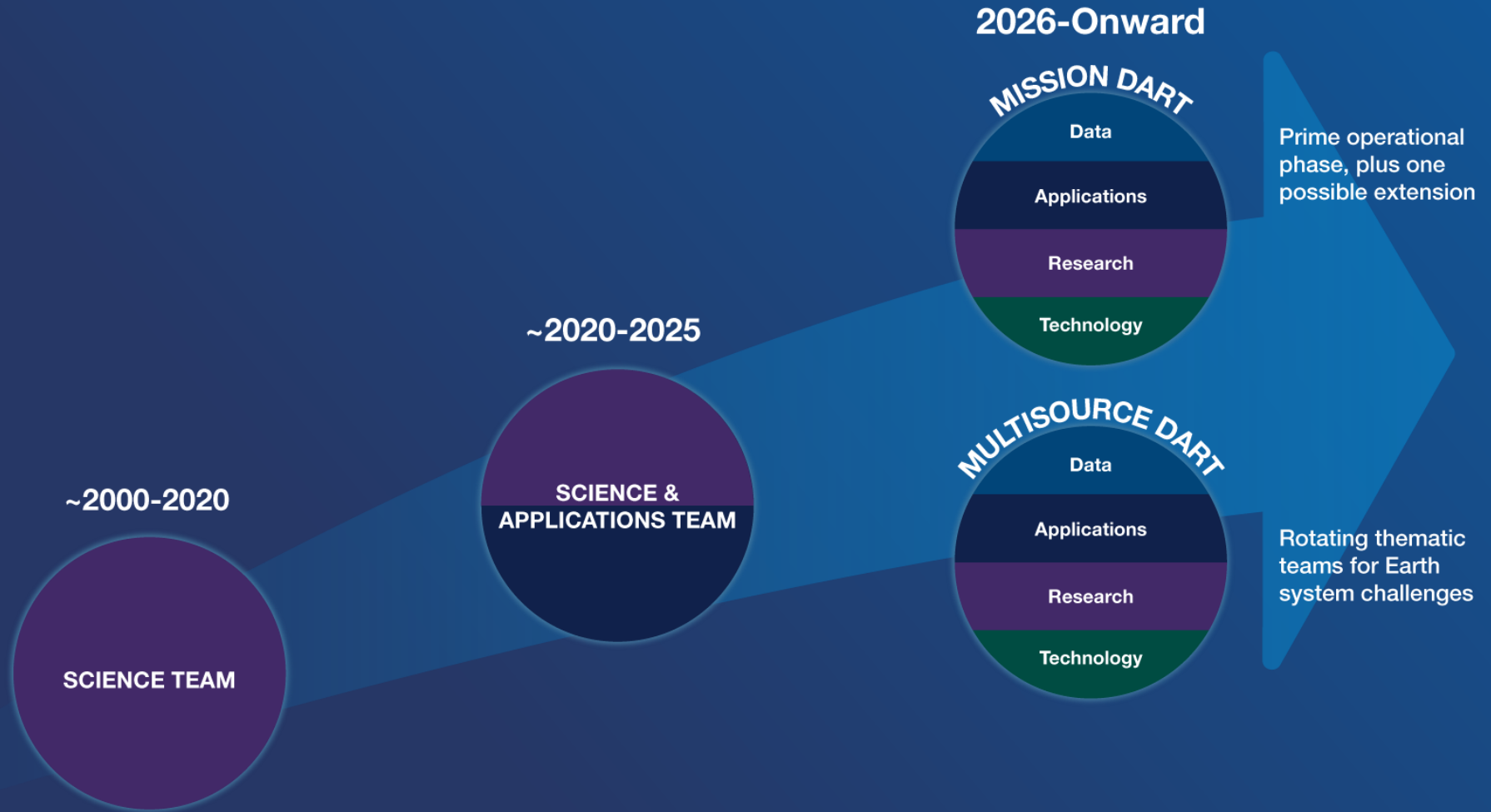
Facilitation of Multisource DARTs, integration support for Mission DARTs, and delivery of enabling infrastructure and capabilities.



M I O C O M P O N E N T S

DART Teams

Transformative Structure



MIO DART Teams

Data
Applications
Research
Technology

MULTIPLE MISSIONS

Multisource DARTs

An interdisciplinary approach to answering the most complex and impactful Earth system science questions

Focused on rotating "challenge" themes to accelerate discovery and innovation, advancing science-to-application pipelines across public and private sectors

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CHALLENGE THEMES

More details to come in ROSES-2026.

SINGLE MISSION

Mission DARTs

Transitioning from Science and Applications Teams to the more cross-cutting DART team structure

Accelerating integration and impact of mission data during prime operations

May also propose continued innovation for use of mission data through Multisource DARTS

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MISSIONS

NISAR proposals included in ROSES-2025. Existing mission Science & Application teams transitioning to DART structure.

Multisource DART Teams (ROSES-26)



MULTISOURCE DART **Water**

Characterizing the movement, distribution, and availability of water

- Droughts and flood impacts
- Precipitation, snow melt, evapotranspiration rates, sea level rise
- Ground water storage and land subsidence
- Energy cycles
- Intersections with applications (i.e., water management, agriculture, health, disaster preparedness)



MULTISOURCE DART **Life**

Integrating measurements to understand the interactions between Earth systems and life

- Hazards
- Air quality and pollution
- Land and ocean management practices
- Ecosystem characterization
- Environmental determinants of disease



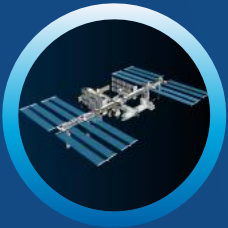
RFI **Challenges**

Identifying large scale interconnected challenges that can be addressed with multisource data

RFI planned in Fall 2026 through the NASEM to incubate Challenges Solicitation for ROSES-27

DART Integrators

The DART Integrator serves as the formal coordination conduit between the operational mission's DART Team and other DARTs, creating a two-way bridge for information and collaboration.

**EMIT**

Dana Chadwick
JPL

**PACE**

Jeremy Werdell
GSFC

**SWOT**

Augusto Getirana
GSFC



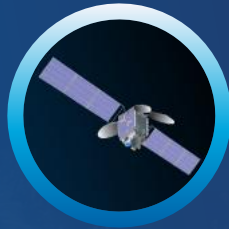
NISAR
FALCON
EAGLE

Upcoming

TBD

**PREFIRE**

Brian Kahn
JPL

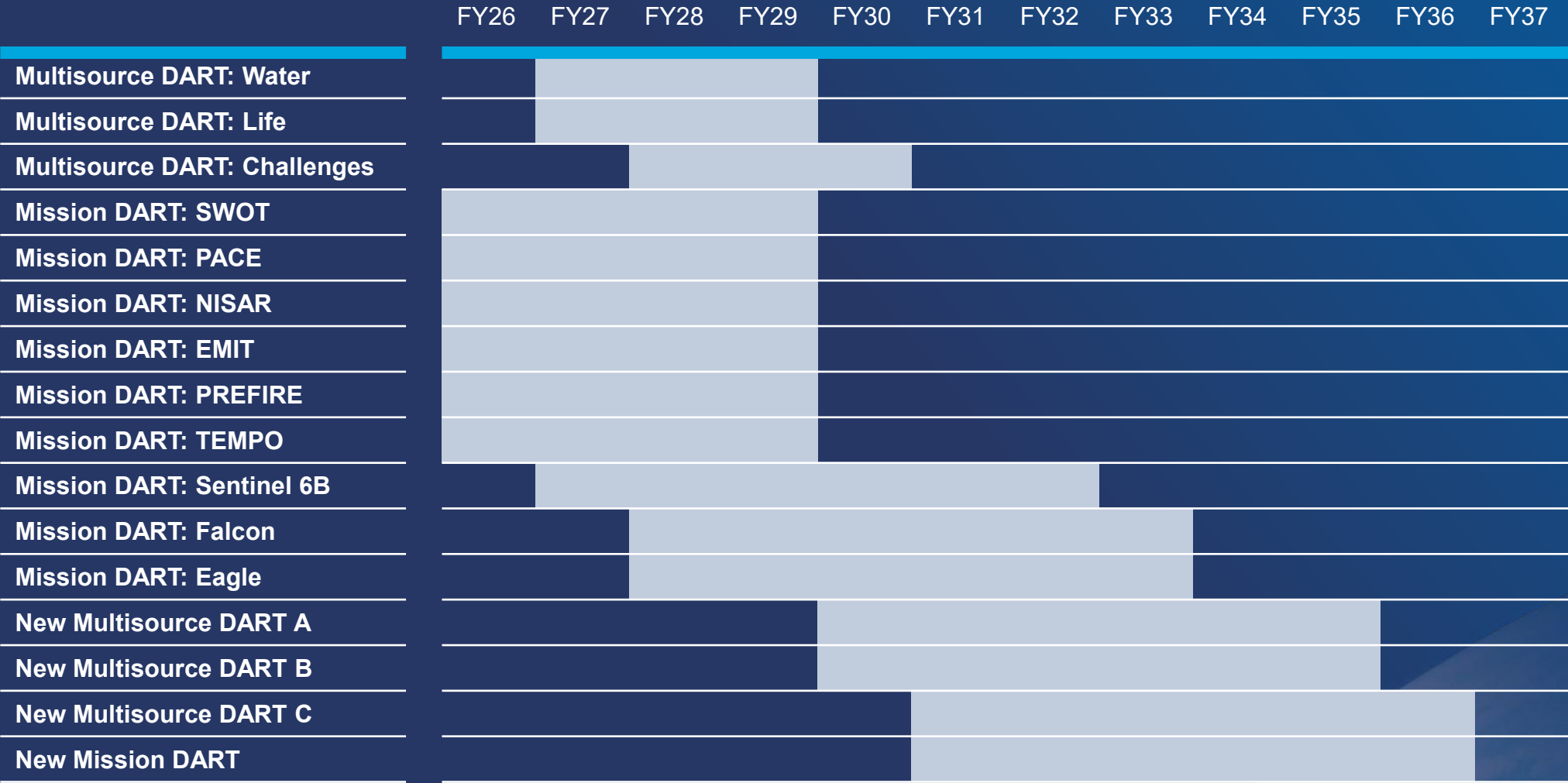
**TEMPO**

Laura Judd
LaRC

**SENTINEL-6B**

Joshua Willis
JPL

DART Rotation Schedule*



* Notional



MIO COMPONENTS

Project Office

Core Capabilities & Infrastructure

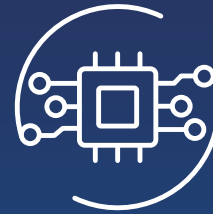
Project Office

*Three Pillars of Support:
Enabling Integration,
Efficiency & Impact
Across the MIO Program*



Integration

Coordinating DART teams to ensure efficient integration of data, ensure timely program-wide impact, while ensuring direct alignment with partner needs



Efficiency

Facilitating a unified computing environment to enable collaboration among cross-cutting DART teams and support efficient multisource data harmonization



Impact

Supporting HQ in translating program results into compelling narratives for the public to maximize the science and applications values of observations

Cloud Architecture

For Multisource DARTs



Unified, flexible,
and scalable



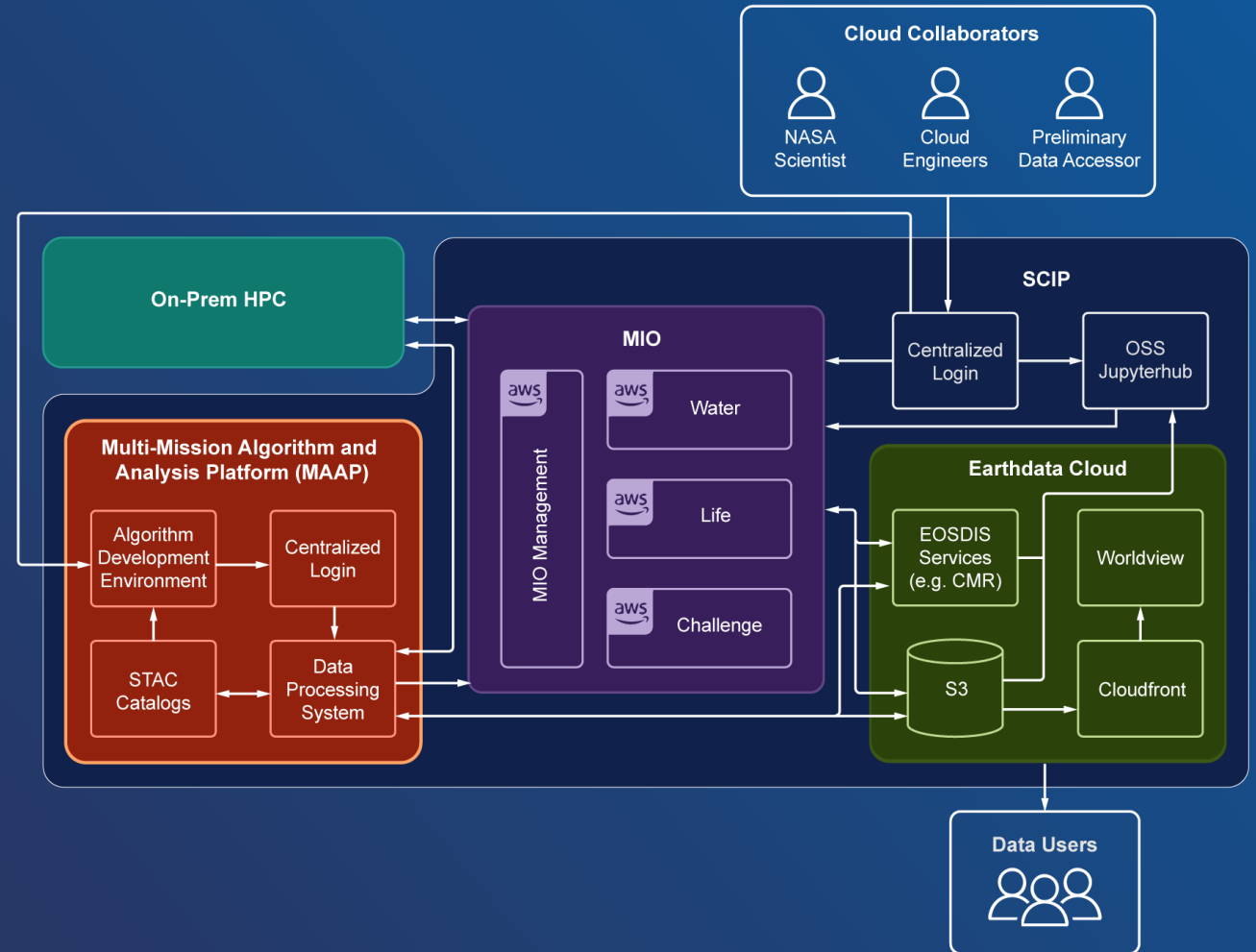
Increase efficiency,
reduce redundancy



Onboarding & support



Maximize potential of
NASA's missions



INTERNAL ROLLOUT: FALL 2026

NASA Worldview AI-Powered Chatbot

Developed in cooperation with MSFC's Office of Data Science and Informatics, the new AI-powered interface democratizes access for users across all proficiency levels to enable seamless data exploration, retrieval, and visualization.

- Responsive experience to adapt to user expertise levels
- Intelligent discovery of most relevant data
- Streamlined scientific workflows for research acceleration
- One-stop for data resources, visuals, and documentation



Main Takeaways

- **Tackling the most pressing questions**
Focus on NASA's unique position
- **Infusing technology and data science**
Ensure full integration across efforts
- **Expanding investigator opportunities**
Create productive pathways for mid-career scientists
- **Driving continuous innovation**
Empower DARTs to push boundaries over time
- **Navigating the transition together**
Work together with the community to ensure success



Multisource Integrated Observatory

Integration for Innovation: Accelerating Earth Understanding, Maximizing Impact

Scan the QR
code or go to
go.nasa.gov/MIO

