Executive Summary

An official review was convened on October 25-26, 2023, to review and assess the success of the Multi Mission Data Processing System (MDPS) study from the perspectives of potential key stakeholders of such a system in the future. A continuation from the Earth System Observatory (ESO) Data Processing Study conducted in 2022 to 2023, MDPS is the second study to explore the specific recommendations, which included the service-based data processing architecture and gave rise to deliverables in this review.

The review board was briefed by the chair on the protocols, but also on the focus of the review, its objectives, and success criteria.

Review Objectives

• Demonstrate the maturity of the architecture and system design aligns with validating the concept architecture
• Demonstrate architecture and system design responds to the specified requirements of the T2V4 concept recommendation
• Demonstrate stakeholder inputs and objectives have been incorporated into requirements and validation objectives
• Demonstrate the architecture and system definition is sufficient to proceed into a development and prototyping phase

Review Success Criteria

1. Assess if the maturity of the architecture is responsive and credible in supporting the study objectives.
2. Affirm stakeholder inputs have been documented and incorporated into validation objectives.
3. Ensure that the architecture as documented responds to the specified requirements.
4. Evaluate the degree of definition of requirements, system design, and concept of operations are sufficient to support the prototype.

The review board was given until October 31, 2023, to submit Request For Action (RFA) forms, and 59 were submitted. Of those 59, 46 were accepted and 13 were deferred. The RFAs were categorized into 5 affinity groups: additional use cases (11), clarification (14), requirements update (13), programmatic (13), and further study (8). Specific RFA and their dispositions are openly available.

In response to evaluating the success criteria for the review, the review board concluded that: The maturity of the architecture is responsive and credible in supporting the study objectives; Stakeholder inputs have indeed been documented and incorporated into validation objectives; The architecture as documented responds to the specified requirements. Additionally, the

board evaluated that the degree of definition of requirements, system design, and concept of operations are sufficient to support moving to prototyping.

However, the board noted that the proposed prototyping activity was solely cloud-based. Thus, it recommended that NASA's Earth Science Data Systems (ESDS) Program collect additional use cases for the MDPS Study team to analyze and that ESDS consider commissioning additional non-cloud platform tenant prototype development to fairly assess the MDPS capacity to support both types of tenants.