Real Time Operations/ Real Time Increment Teams Structure and Functions

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Real Time Operations

-Payload Developer Real Time Support

-Operations Change Requests

-Payload Anomaly Reports

Real Time Operations

- Real Time Operations Processes are documented in the Payload Operations Handbook (POH), Volume 2. This document is available on the POIF Website. Instructions for acquiring an account can be found at: https://payloads1.msfc.nasa.gov/
- Payload Developer (PD) Real-time Operations Support
  - PD Teams are required to support their payload operations during the following types of activities:
    - Scheduled crew-tended operations
    - Crew-tended Task List operations requiring ground interaction
    - Hazardous and/or Critical operations
  - The PD Team may relinquish monitoring responsibilities to the POIC cadre during quiescent or stand-by activities
    - Monitoring services must be negotiated with the POIC cadre
    - A Payload Regulation authorizing the POIC cadre to assume these responsibilities must be developed and baselined
    - Ground Command Procedures identifying the parameters to be monitored and appropriate response must be developed and baselined
      - In order for the POIC cadre to have the capability to monitor a payload parameter, it must be provided in the C&DH data set in PDL

Real Time Operations

- Operations Change Request (OCR) Process
  - OCRs are utilized to make realtime temporary or permanent changes to currently executing flight documentation, such as:
    - Crew Procedures
    - Ground Command Procedures
    - Payload Regulations
    - Timeline changes for ground and/or crew activities
    - Payload unique messages for the crew
    - Execution or Operations Note changes
  - OCRs must be submitted in a timely manner for evaluation and approval by the POIC cadre. Submittal requirements vary depending on the nature of the change being requested. Submittal requirements are documented in POH, Vol. 2.
  - Requests affecting IDRD resource allocations or payload priorities should be pre-coordinated with the Lead Increment Scientist and Increment Payload Manager prior to submittal.

Real Time Operations

- Payload Anomaly Report (PAR) Process
  - A payload anomaly is defined as an unexpected response during the nominal operation of payload hardware.
  - A Payload Anomaly Report (PAR) is the real-time document used for collecting and summarizing anomalies.
    - The PD is responsible for documenting the anomaly, and analyzing the available data to determine any further troubleshooting and recovery plans.
      - Additional time required for troubleshooting or recovery should be requested via the OCR process.
    - The PD is responsible for providing updates to the PAR to reflect the current status of the anomaly resolution throughout until closure of the PAR.
    - In the event the anomaly is related to a systems interface, the Payload Program Office can provide support in establishing interfaces with the system owner.
  - In the event of an anomaly, the immediate focus of the real-time cadre is to ensure the safety of the crew and vehicle.
    - Once any safety issues have been addressed, the failure of the payload hardware can be addressed.

Real Time Increment Teams Structures and Functions

-ISS Mission Management Team (IMMT)

-Increment Research Team (IRT)

-Increment Payload Real Time Management Team

-Lead Increment Science Representative (LIS-Rep)

-Daily Science Tag (DST)

ISS Mission Management Team

- The ISS Mission Management Team (IMMT) is responsible for providing programmatic oversight and decision authority for real time ISS operations.
- The IMMT has three primary areas of roles and responsibilities:
  - Decision Authority: The IMMT Chairperson is the final decision making authority for implementing real time and near real time anomaly resolution on behalf of the ISS Program.
  - Integration Responsibility: The Mission Engineering Room (MER) Manager, the Increment Manager (IM), and Lead Flight Director are jointly responsible for ensuring proper integration of on-orbit activities

ISS Mission Management Team

- Core Team Responsibilities: all other IMMT representatives are responsible for ensuring that impacts to their discipline have been considered and conveyed to the IMMT to support the decision making process.
  - The Payloads Office is represented by the Increment Payload Manager (IPM)

Increment Research Team

- The Increment Research Team (IRT) is a multilateral body responsible for coordinating integrated science research, including the implementation of research prioritization requirements, and re-planning as necessary the USOS research requirements.
  - The IRT is specifically chartered as follows:
    - "The IRT has the responsibility for coordinating science research activities during near real-time, real-time, and post increment assessment period. The IRT also has the responsibility to insure that all opportunities to increase science return are used optimally and done in an equable manner."
  - Lead by the Lead Increment Scientist (LIS) as appointed by the Multilateral Research Program Working Group (MRPWG) Chair.
  - The IRT is supported by an ISS Increment Scientist (IS) from each of the USOS partner agencies (NASA, ESA, JAXA, and CSA).
  - The IRT meets weekly. Special sessions may be convened as needed.

Increment Payload Real Time Management Team

- The Increment Payload Real Time Management Team is responsible to plan and execute the increment research complement across the USOS.
  - Commonly referred to as the “Triad”.
  - Consists of the following positions:
    - Increment Payload Manager (IPM):
      - Responsible for the overall integration of ISS payload operations for the Increment.
      - The Payload Representative to the IMMT.
      - Supported by the Increment Payload Engineer (IPE).
        - Book Manager for the Increment Definition Research Document (IDRD), Annex 5 in support of the Increment Research Plan (IRP).
        - Provides direct support during real-time in resolving integration issues.
        - Provides a current status of the Increment to the Payload Control Board (PCB)

Increment Payload Real Time Management Team

- Lead Increment Scientist (LIS):
  - Manages the Increment research complement to maximize science return.
  - Provides integrated science prioritization decisions to support the scheduling of payload operations as well as in response to any issues that may arise which affect the future scheduling and execution of payload operations
  - Supported by the Lead Increment Science Representative (LIS-Rep)
- Payload Operations Manager (POM)
  - Responsible for ensuring the planning and accomplishment of ISS mission management direction as related to NASA payload operations.
  - Provides the IPM an integrated response to impacts on the overall scheduling and execution of on-orbit payload operations as issues arise.

Lead Increment Science Representative

- The Lead Increment Science Representative (LIS-Rep) is responsible for coordinating daily science activities and communication with the scientific community during real-time science operations on behalf of the Lead Increment Scientist (LIS). The LIS-Rep is a console position located at the POIC.

Daily Science Tag

- The Daily Science Tag (DST) focuses on the daily science/investigation operations and includes the following topics:
  - Science status from the Principal Investigators and/or their representative
    - Including anomalies and planned actions to restore the payload to nominal operations
  - On orbit status of on-going payload or systems activities
    - Specifically to include any discussion that may impact current or future planning of payload activities
- All science teams conducting real-time science operations during the current Increment are expected to attend this forum.
- The DST is managed by the LIS-Rep; discussion is lead by the LIS for the current Increment.