Payload Operations Integration Management

Operations Integration Milestones and Payload Operations
Integration Function (POIF) Responsibilities
Agenda

• Operations Integration Phase Support
• Operations Integration Management
  • Payload Operations Integration Function (POIF) Purpose and Goals
  • Definition of Operations Lead (Ops Lead)
  • Discussion of the Operations Integration support provided to the PD through phases 2-4
• Contact Information
How to Get New Research Onto ISS

A 5-Phase Template

Summary

PHASE 1: SPONSORSHIP
- Funding Sources
- Points of Contact

PHASE 2: STRATEGIC PLANNING

PHASE 3: TACTICAL PLANNING

PHASE 4: OPERATIONS

PHASE 5: POST-FLIGHT
Payload selected by research sponsor

“Strategic” payload
- RIM/PIM assigned
- Payload Integration Agreement
- Ops Assessment
- PDR, CDR
- Phase 0/I/II Safety
- Displays
- HW/SW ICD

Manifest by RPWG
- Integration into research plan
- Cold stowage plan
- Prioritization
- Hardware readiness
- IDRD Annex 5
- POIF engaged!

“Tactical” payload
- Crew procedures
- Planning
- Ops products
- Crew training
- Ground training
- Ground interfaces
- Informed consent and BDC

Selected for funding

Entry point to Research Integration Office (OZ)

CoFR!

Operations
- Changes
- Anomalies
- Science return

8/25/2014
ISS Payload Operations Integration Function (POIF): Purpose, Goals, and Objectives

• **PURPOSE**
  To provide crew and ground personnel training, flight activity planning, and flight operations to ensure successful payload operations on the Earth to Orbit Vehicle (ETOV) and ISS

• **GOALS & OBJECTIVES**
  – Perform the training, planning, and ops integration for ISS Managed Earth to Orbit Vehicle (ETOV) Payloads and ISS NASA Payloads
  – Perform station-wide payload planning and data management
  – Provide certified flight operations products
  – Provide certified personnel to support real time payload operations
  – Certification of Flight Readiness to the ISS Program for flight operations products and certified ground support personnel
PAYLOAD OPERATIONS INTEGRATION FUNCTION (POIF) INTERFACES

**Payload Developers and Principal Investigators**
- Define science objectives
- Provide operations requirements to POIF specialists
- Represent your payload’s requirements

**ISS Research Office (OZ)**
- Research plan development (RPWG)
- Integrate and prioritize NASA and IP payload requirements
- Payload manifesting
- Research Integration Manager (RIM)/Payload Integration Manager (PIM)
- Lead Increment Scientist (LIS)

**POIF**
- Implement documented processes to develop and integrate operations products
- Represent NASA payloads to Mission Operations Directorate (MOD) systems team members

**Mission Operations Directorate (MOD)**
- Overall ISS integration, both systems and payloads
- Crew safety
- Vehicle health
- Implement ISS Program integrated priorities
OPERATIONS INTEGRATION MANAGEMENT

• Through phases 2-4, the POIF Operations Lead provides service functions for Payload Developers in the development and integration of operations products, crew and ground team training, support in the development of planning requirements, and near real-time operations preparation.

<table>
<thead>
<tr>
<th>Operations Lead</th>
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<tbody>
<tr>
<td>Operations Nomenclature for payload hardware</td>
<td>Assist PD with development of Payload Regulations and Flight Rules</td>
</tr>
<tr>
<td>Crew Procedures – Ops Lead may author if PD desires</td>
<td>Ground Support Personnel Training</td>
</tr>
<tr>
<td>Crew Training – Ops Lead may certify as instructor if PD desires</td>
<td>Product Reviews</td>
</tr>
<tr>
<td>Coordination of Planning Requirements with POIF Payload Activity Requirement Coordinator</td>
<td>Overall Point-of-Contact for POIF related questions</td>
</tr>
</tbody>
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PHASE 2: STRATEGIC PLANNING

POIF Support

- Participation in PDR/CDR
- Review of Payload Interface Agreements
- Support Operations Feasibility Assessments
- Support PD in the development of Crew Displays
- Provide input to PIM Schedule
**PHASE 3: TACTICAL PLANNING**

**Payload Developer Inputs**
- Participate in Training Strategy Team
  - Crew and GSP Training
- Train and certify your operations team
- Provide inputs to Operations Products
  - Crew/Ground Command Procedures
  - Planning Requirements
  - Payload Regulations/Flight Rules
**PHASE 3: TACTICAL PLANNING**

**POIF Support**

- Lead Training Strategy Team Discussions
- Certify as Crew Training Instructor, if desired
- Provide Operations Interface Training for PD Operations Team
- Develop and Baseline Operations Products
- Represent Payload Operations requirements to MOD
- CoFR Operations Product and Training readiness to support flight operations
PHASE 4: OPERATIONS

Payload Developer

- Support Real-Time (e.g., Console Operations)
- Maintain cognizance of timelines for the operations of your payload
- Respond to Crew questions
- Command and Control of your payload
- Anomaly Resolution
- Submit Operations Changes to payload requirements
PHASE 4: OPERATIONS

POIF Support

- Provide 24x7 Console Staffing
- Integrated Mission Timeline Development and Data Management
- Manage resource availability to support payload operations
- Command and Control of Payload Facilities and Payload Support Systems
- NASA Payloads Voice to ISS Crew
- Support PDs in Anomalty Resolution
- Enforce compliance with established safety requirements, flight rules, and payload regulations
Our job is to help the PD be successful!

Carmen S. Price
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International Space Station

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“Evolving the ISS into a well-run laboratory, in high demand, with widely recognized value.”
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
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<tbody>
<tr>
<td>AES</td>
<td>Advanced Exploration Systems</td>
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<tr>
<td>ASI</td>
<td>Agenzia Spaziale Italiana</td>
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<td>CASIS</td>
<td>The Center for the Advancement of Science in Space</td>
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<td>CSA</td>
<td>Canadian Space Agency</td>
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<td>DoD</td>
<td>Department of Defense</td>
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<td>ESA</td>
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<td>HEOMD</td>
<td>Human Exploration Operations and Mission Directorate</td>
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<td>ISS</td>
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<td>Japan Aerospace Exploration Agency</td>
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<td>NASA Solicitation and Proposal Integrated Review and Evaluation System</td>
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<td>SMD</td>
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<tr>
<td>Tech. Dev.</td>
<td>Technology Development</td>
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<tr>
<td>USDA</td>
<td>United States Department of Agriculture</td>
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Payload Operations Product Baseline

Crew Training for new payloads (Inc-9 to 2 months)

Payload Training Dry Run (L-9)

Payload Regulations (Inc-4 to 2)N

Team Integrated Review (L-7)

Planning Data Set (L-4 to 2)N

Crew Procedures (L-4 to 2)p

Phase III Safety

Flight Rules (L-4 to 2)FRCB

Ground Cmd Proc. (L-4 to 2)p

Just In Time Review (E-4 weeks) - changes if needed

Notes:
- All milestones for ECR review/baseline are in months EXCEPT the JIT Review
- Milestones are typical of new payloads; some baseline earlier and some baseline later
- Most milestones for payloads are tied to that payload’s launch
- NPOCB baselined items denoted with superscript “N”, USPODFCB baselined items denoted with “P”

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