

# Quick Start Guide to Payload Design



FREQUENTLY ASKED  
QUESTIONS (FAQs)

Sep 27, 2024

# Frequently Asked Questions (FAQs)



## ▶ PEOPLE — WHO WILL HELP?

**Q: Who will I encounter during the payload development process (names, affiliations, roles, responsibilities, contact info)?**

**A:** An integration team of individuals from relevant offices and departments is assigned to support your project for its duration, based on the specific needs of your payload. You will meet some of these team members at your project's Kickoff meeting. Contact lists with names, titles, affiliations, roles, phone numbers, and email addresses are typically provided. Note: Your primary contact will be your assigned Payload Integration Manager (PIM), who will be able to connect you with the rest of the team (more about the PIM below).

**Q: When will I interact with these individuals and/or teams?**

**A:** Taking a payload or experiment from concept to flight will take time, and you will go through a methodical process that evolves as payload development matures. At different junctures of this integration flow, you will work with different individuals with various areas of expertise.

**Q: Where can I find a directory of everyone?**

**A:** There are a number of locations for finding contact information:

- Your PIM
- Roster files made available at your Kickoff meeting
- PIM Roadshow materials
- ORBIT database, (see 'List of Contacts' file for your payload)
- NASA Global Address Directory

Your PIM can show you how to access each of these resources.

**Q: Who are the key personnel?**

**A:** Your most important and frequent contact is the Payload Integration Manager (PIM), who will guide you through the integration process, answer questions, make referrals, and enlist additional support, if needed. You are encouraged to go to your PIM for assistance first. He or she is your central liaison to NASA. PIMs typically work for Boeing or GC Controls.

**The PIM's role is:**

- To act as your point of contact and guide on this journey.
- To assist you to ensure the safe launch, integration, operation, and data return for your payload.
- To build an integration schedule to help keep your project on track as your project approaches key milestones and reviews.
- To facilitate regular PIM Tag-Ups that include you and the integration team to routinely keep all project components, personnel, milestones, and issues in sync.

You may also occasionally interact with a Research Portfolio Manager (RPM), a civil servant from the ISS Research Integration Office (Code OZ at NASA/Johnson Space Center) who supports the sponsor and NASA's ISS Research Integration Office in collaboration with the PIM.

**Q: What if my PIM is not available when needed?**

**A:** Often a backup PIM is assigned to whom you can reach out. Also, the manager or lead of the PIM team can be contacted for assistance.

**Q: What will I need help doing during the process vs what ought I expect to accomplish independently?**

**A:** Some payload developers or implementation partners might feel well-equipped to facilitate certain aspects of their project development on their own; however, there are specific areas within the integration and operations process that require NASA support. You will be advised when these items come up, and subsequent NASA guidance will help to ensure the safe launch, integration, operation, and data return for your payload.

**Q: What if things aren't working out with someone?**

**A:** If an issue arises that is inhibiting your progress and does not involve your PIM, have a conversation with the PIM about your concerns.

## PROCESS — WHAT SHOULD I EXPECT?

### **Q: How does the integration process work?**

**A:** The ISS Program uses an orderly process for executing the end-to-end activities required to integrate station payloads. This structure provides a process flow tailorable to the specific needs and maturity of each payload. The process covers the entire life-cycle, from the point of receiving funding to the return of data results from experiment operation in orbit. Integration activities ensure that the information exchange between you as the Payload Developer (PD) and the Program are timely and that they support integration and flight readiness milestones. Throughout, the process focuses on early identification of risk and risk mitigation. Consider integration to be an orderly process of specific phases of activity all aimed toward launching your payload to ISS, have it operate on the station, and return results back to you.

### **Q: What kind and amount of paperwork should I anticipate?**

**A:** Your PIM will explain what the paperwork expectations are for data submittals, other deliverables, meeting attendance, and more. You will be guided along the way, and there are resources and people to support you in providing required documentation, data input, etc.

**As an example, the payload development process will typically include providing the following types of information:**

- Payload hardware/science overviews, including science timelines, data requirements, and success criteria.
- Payload planning overview data.
- Hardware mass/dimension properties for manifesting.
- Safety/hazard information applicable to the payload.
- Hardware testing data/ISS interface verification data.
- Launch and return constraints data pertaining to turnover, scrubs, launch to activation timelines.
- Research planning data.
- Crew procedure information/training products, if needed.

### **Q: When will we be done and ready to fly?**

**A:** Each experiment's development and integration is unique, but on average, getting onboard takes 6 months to 2 years.

### **Q: Where will I have to go?**

**A:** While much of the development and integration work is handled online using NASA database tools, teleconferences, emails, etc., during the activity at any given time throughout the process, you may be required to attend meetings in person. Your PIM will inform you about when or where you might be required to be present to support.

### **Q: How much am I responsible for?**

**A:** Your PIM will explain what the expectations are concerning any data inputs, deliverables, meeting attendance, and other information. You will be guided along the way and resources and people are available to support you.

**Q: Throughout the schedule outlined for development of my payload, will there be any flexibility in deadlines, if needed?**

**A:** The schedule can be flexible to a degree. Please address any issues or concerns about the schedule with your PIM, and he/she will work with you to set the most realistic schedule, including working to revise it as necessary as your experiment/hardware develops.

**Q: Where can I obtain any ISS Program documents listing out requirements for development of new payloads; e.g. SSP 57000 - Pressurized Payloads Interface Requirements Document?**

**A:** Most of the ISS Program's technical documents and publications are contained within the Electronic Document Management System (EDMS), an online repository housed within the NASA network. Once your payload development project is under way, you can apply for a NASA Domain Credential (NDC) account with NASA IT Personnel, and upon approval, you will be able to access the EDMS library and search and obtain technical documents. Your PIM can initiate the facilitation of this NDC access with you, as well as indicate which documents are pertinent to the data you will need.

**Q: What kinds of meetings will I be expected to attend and how many are there?**

**A:** The Development and Integration process is tailored to the particular investigation and the team developing and integrating the payload. Every payload/investigation must meet certain safety requirements and feasibility criteria. The integration team determines the number of meetings required for your particular payload, along with the schedule and meeting cadence, at the beginning of the integration process. As time progresses, the team may collectively determine what level of engagement is required until the payload is launched, executed, and returned (if applicable) to the Principal Investigator. However, the work will vary depending on payload complexity in order to help you gauge the amount or type of work will be involved.

**Here are some examples of activity you can anticipate in conjunction with NASA:**

- Kickoff
- PIM tag-ups throughout the integration phase
- Safety reviews
- Verification requirements/testing coordination
- Shipping/final packaging/mass verification of hardware prior to turnover

**Q: Where can I find a list of NASA acronyms?**

**A:** NASA maintains a database called Acronym Central at this link:

<https://www9.jsc.nasa.gov/acronymcentral/scripts/index.cfm>

*(note: this web page is viewable once you are granted access to NASA's internal network)*

In addition, the documentation or database tools you are provided usually will have acronyms spelled out or listed for reference. Your PIM also can answer acronym questions.

**Q: Am I required to provide backup payload hardware as replacement for my original in case an accident occurs at launch or before?**

**A:** Not in every case; there are plenty of payloads where the hardware flying is the only hardware that exists. Having a full replacement for your experiment could be very expensive. It is recommended, however, that if affordable, you should have some replacements for pieces that are most likely to fail so the hardware can be repaired if it goes down in the lab on the ground. Alternately, if the experiment has perishable components/samples, it is advisable to have back-ups of these elements in case the launch slips.

**Q: What if I need resolution to an issue with the process?**

**A:** Consult with your PIM, who is always your first line of communication.

## **TOOLS — WHAT TOOLS ARE AVAILABLE?**

**Q: What kinds of software and databases will I encounter?**

**A:** Depending on the needs and requirements for info/data submittal, a range of online tools have been developed to help facilitate and share your info/data with NASA. For example, one of the most frequently used tools that captures much of your data inputs during the integration process is the ISS OZ Requirements Baseline and Integration Tool (ORBIT). ORBIT is a web-based software system intended to provide users, specifically International Space Station (ISS) payload developers, with a single-source location for input and communication of information required during the payload integration process for the purpose of launching, operating, and/or returning payloads on the ISS.

Additional online tools you might encounter address research planning, payload interface requirements, general planning, flights, as examples. Your PIM and other support personnel will guide you on which databases will serve your particular set of needs. Orientation and training are included.

**Q: Do I have to use these databases? Even though the ORBIT online database is a comprehensive tool used for much of the integration process, it looks daunting. Will there be anyone to assist me in learning it, using it, etc.?**

**A:** These tools are the go-to location for all the support organizations you rely on to fly your payload, so yes, their use is required. The tools were developed based on years of clients walking through the payload integration and operations processes with NASA support personnel and have been customized using essential client input to efficiently collect the most appropriate and accurate data applicable to your project. As always, crew and payload safety and experiment success remain prime objectives. If desired, you can request that the PIM assign a Payload Data Integrator (PDI), who will interact with the databases on your behalf. As the PD, you will still have to provide any data required/requested, but the PDI interacts directly with the tools to populate databases, etc.

**Q: How do I learn enough to get up to speed?**

**A:** Depending on which online application you are offered, you can access training classes, documentation, support personnel, user forums, payload data input personnel, helplines, and your PIM to help orient you. As an example, for ORBIT, there is a users' forum held monthly for explaining any software updates and answering questions. Ask your PIM how to receive notice of this particular forum and any other user support for online tools.

**Q: Who will provide support, technical and otherwise?**

**A:** Your assigned PIM will be the primary point of contact who provides you with support services and guidance throughout the duration of your project. A variety of additional personnel and subject matter experts are available along the way for assistance with specific areas of activity.

**Q: Will I be able to use NASA's online database tools for integration in either a Windows or Mac environment? What about a mobile platform; are there apps available?**

**A:** NASA's online database tools functions in either Windows or Macintosh operating systems. Regarding use of mobile platforms and corresponding apps, mobile devices are not fully approved for use at this time, so computer workstations are the primary systems for interacting with integration online database tools. For further information, please consult with the IT technical support personnel made available to your team.

**Q: Will I need to apply for and receive access to a NASA IT account so I can use NASA's online database tools for integration?**

**A:** Yes. NASA's online database tools are accessible via a NASA IT account. Typically, an RSA SecurID token is issued to you for purpose of logon. Your PIM will help guide you through the steps to apply for the account and token.

**Q: Where can I suggest improvements?**

**A:** You can always provide suggestions for process or tool improvements to your PIM, who will determine how to approach or share with a subject matter expert to consider.