International Space Station

How to Get Your Research Onto the Space Station

Station Research Integration Office
ISS Program Science Office
Mission And Program Integration Team
NASA/Johnson Space Center • February 2019

WELCOME!

This publication will give you an overall introduction and insight into how we can help you get your research onto the International Space Station.

NASA and/or the ISS National Laboratory will work with you at your pace to develop your experiment.

We will work with you throughout the integration process, which is illustrated via phases in the following pages, to ultimately get your research flown and operated on this unique microgravity laboratory.

For a top-level overview on Station science and technology, please see www.nasa.gov/iss-science

This information was prepared by the Station Research Integration Office, the ISS Program Science Office, and the Mission And Program Integration teams at NASA/Johnson Space Center.

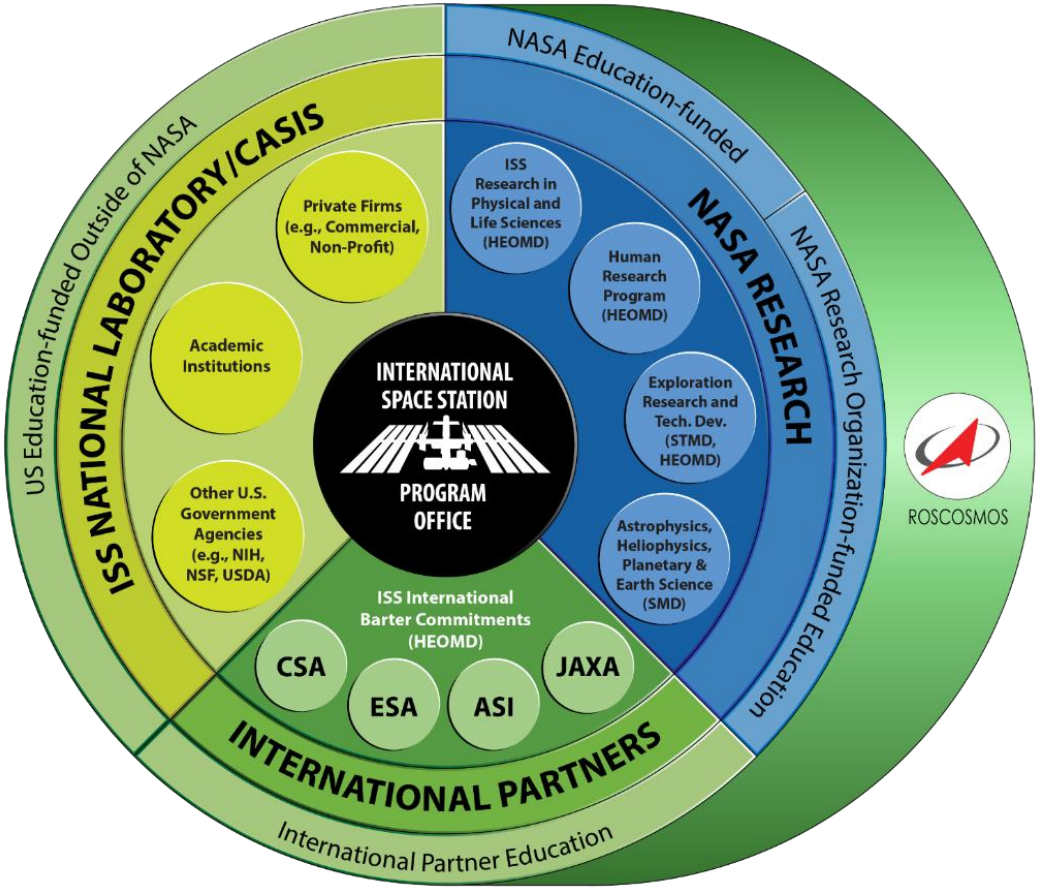
How to Get Your Research Onto the Space Station

THE PHASES

PHASE 0: SPONSORSHIP

Funding Sources

Every experiment on the space station needs to be sponsored and funded in order to be developed, integrated, flown, and operated onboard. Here are possible sources of funding:



For more information on research sponsorship and funding, see:
http://www.nasa.gov/mission_pages/station/research/ops/funding/

(Acronym list on last page of this package)

(a) NASA Research

Find grant opportunities and information in NASA Solicitation and Proposal Integrated Review and Evaluation System (NSPIRES) at *http://nspires.nasaprs.com/external/*

(b) National Laboratory Research / The Center for the Advancement of Space in Science (CASIS)

The 2005 NASA Authorization Act designated the U.S segment of the space station as a national laboratory, enabling access by other Federal agencies, non-profits, and the private sector.
Find opportunities and information on the ISS National Lab website: *https://www.issnationallab.org/*

(c) Educational Activities

Both NASA Education and National Lab offer education opportunities and information at NASA:
http://www.nasa.gov/stemonstation/
and at ISS National Lab:
https://www.spacestationexplorers.org/

(d) International Partner Research

International investigators should seek sponsorship through their space agency.

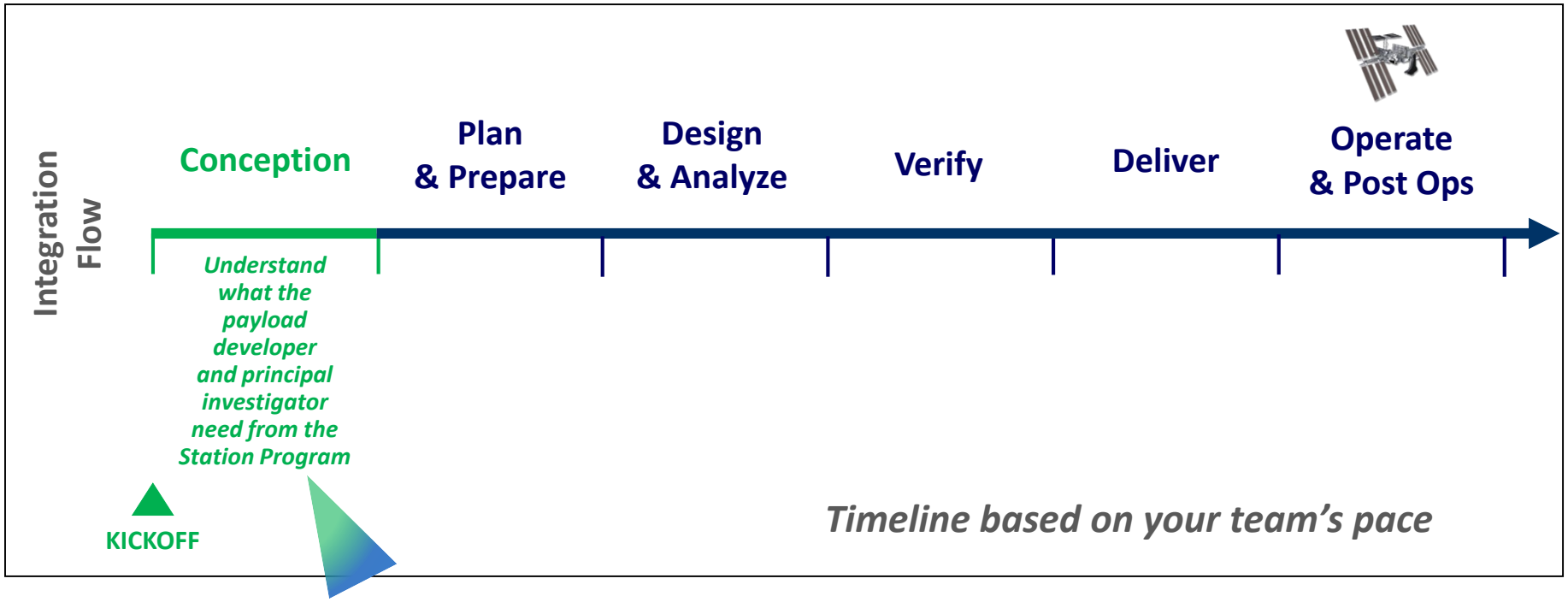
PHASE 0: SPONSORSHIP

Initial Points of Contact – Who Can Help You

SPONSORING ORGANIZATION Division or Program *(Funding Source)*	International Space Station Program Research Integration Contact
NASA Human Exploration Operations Mission Directorate **NASA Space Life and Physical Sciences Research and Applications Division** - Physical Science Research Program *(NASA-funded)* - Space Biology *(NASA-funded)*	George Nelson, *Manager* Technology and Science Research Office NASA/JSC, 281-244-8514 george.nelson-1@nasa.gov
NASA Human Exploration Operations Mission Directorate - Human Research Program *(NASA-funded)*	Suzanne McCollum, *Manager* Human Research Program Office NASA/JSC, 281-483-7307 suzanne.g.mccollum@nasa.gov
NASA Science Mission Directorate **NASA Astrophysics, Earth Science, Heliophysics, Planetary Science Divisions** *(NASA-funded)*	George Nelson, *Manager* Technology and Science Research Office NASA/JSC, 281-244-8514 george.nelson-1@nasa.gov
NASA Space Technology Mission Directorate **NASA Human Exploration Operations Mission Directorate** **NASA Technology Development and Demonstration** *(NASA-funded)*	George Nelson, *Manager* Technology and Science Research Office NASA/JSC, 281-244-8514 george.nelson-1@nasa.gov
International Space Station National Laboratory **The Center for the Advancement of Space in Science (CASIS)** *(Other government agency funded, non-profit / commercially funded, academia funded)*	Michael Read, *Manager* Commercial Space Utilization Office NASA/JSC, 281-244-7656 michael.e.read@nasa.gov Ken Shields, *Vice President and Chief Operating Officer,* ISS National Laboratory, 321-253-5101 kshields@issnationallab.org
Education **International Space Station National Laboratory** **The Center for the Advancement of Space in Science (CASIS)**	Dan Barstow, *STEM Education Manager* ISS National Laboratory 321-757-6125 dbarstow@issnationallab.org

Station Research Client Service Helpline 281-244-6187 ◆ jsc-iss-research-helpline@mail.nasa.gov

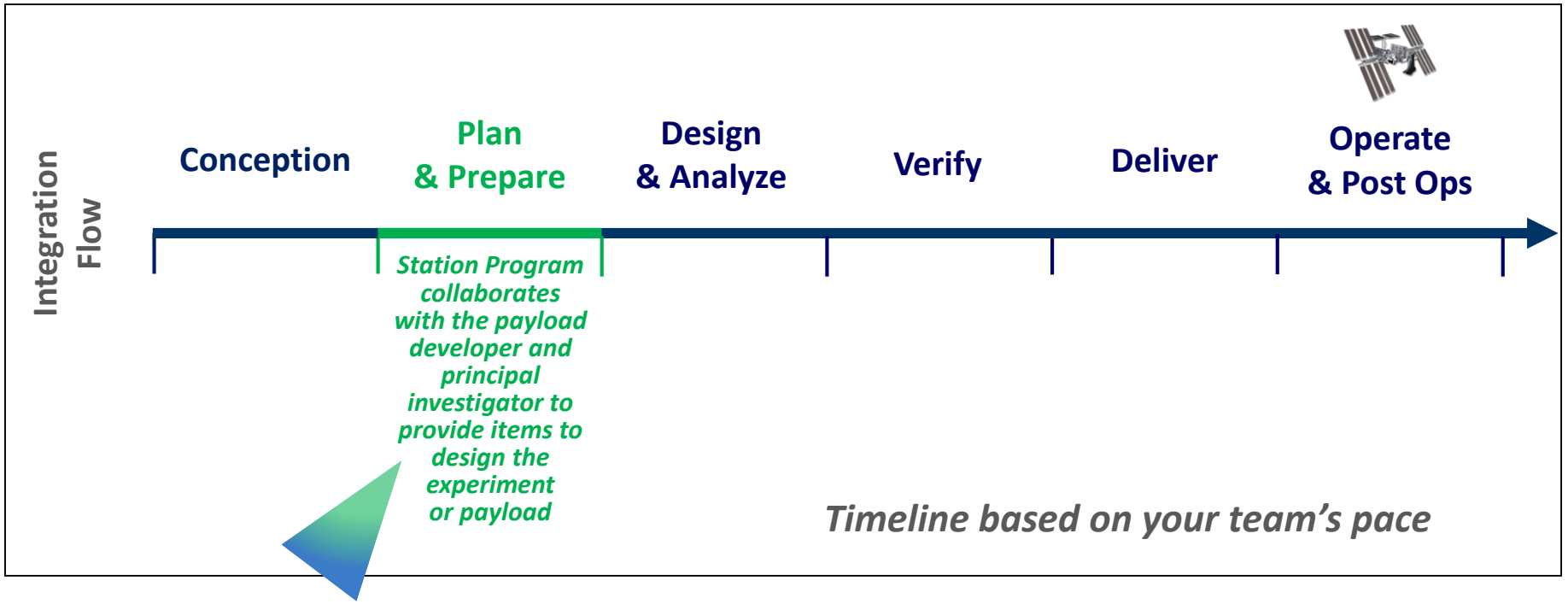
PHASE 1: CONCEPTION



Integration Activities – with NASA, you will…

- Establish NASA information technology access
- Provide initial data set
- Conduct initial assessment of interfaces and services needed from Station
- Establish project schedule
- Create agreement on payload integration
- Develop schedule for payload integration support

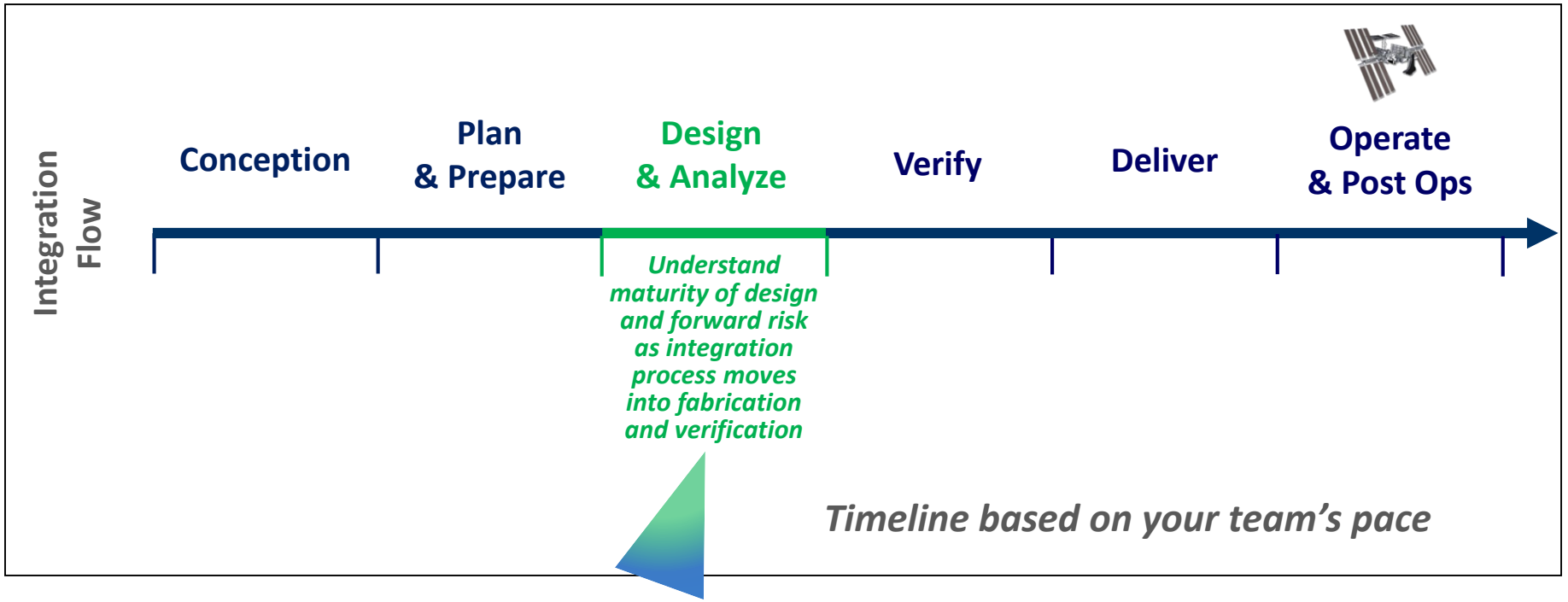
PHASE 2: PLAN & PREPARE



Integration Activities – with NASA, you will…

- Participate in initial safety review
- Develop baseline requirements (Station and Visiting Vehicles)
- Understand command & data handling, ground data services
- Identify NASA test facility needs
- Provide operational constraints
- Establish payload readiness dates

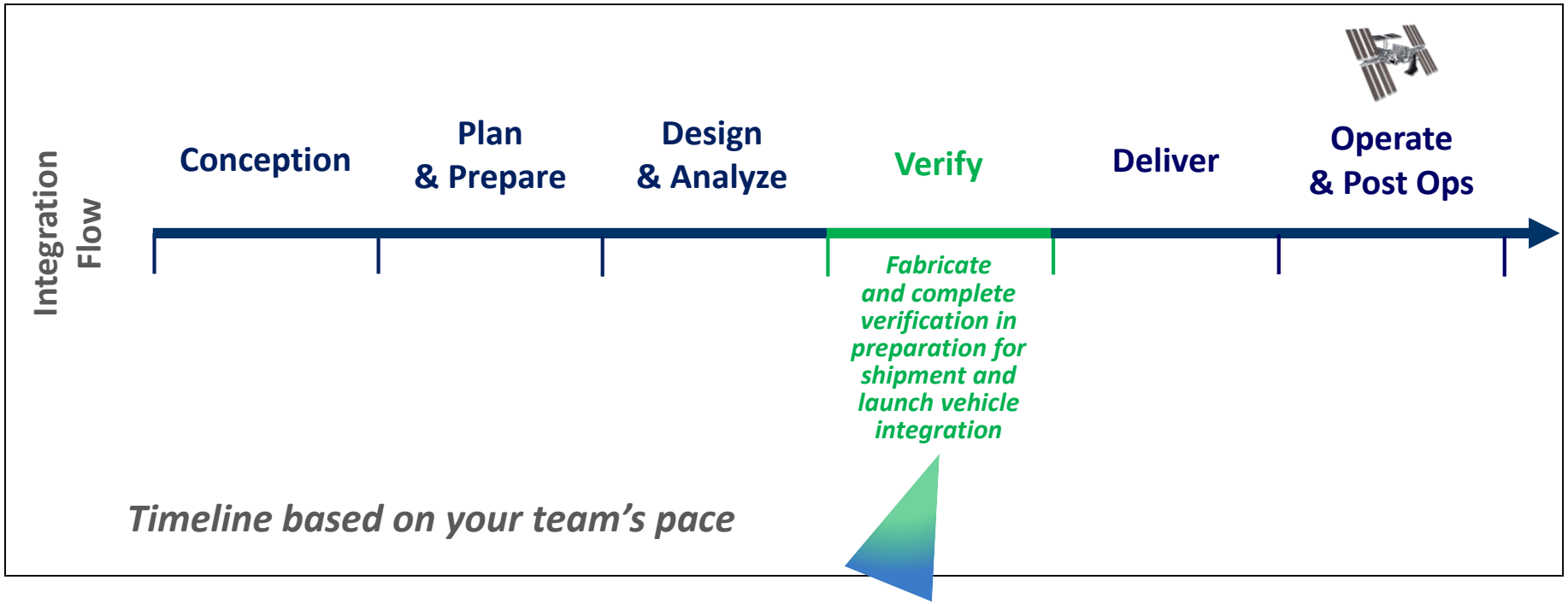
PHASE 3: DESIGN & ANALYZE



Integration Activities – with NASA, you will…

- Complete preliminary design review and concept development
- Develop non-compliance approaches, if needed
- Complete next safety review
- Identify crew training needs

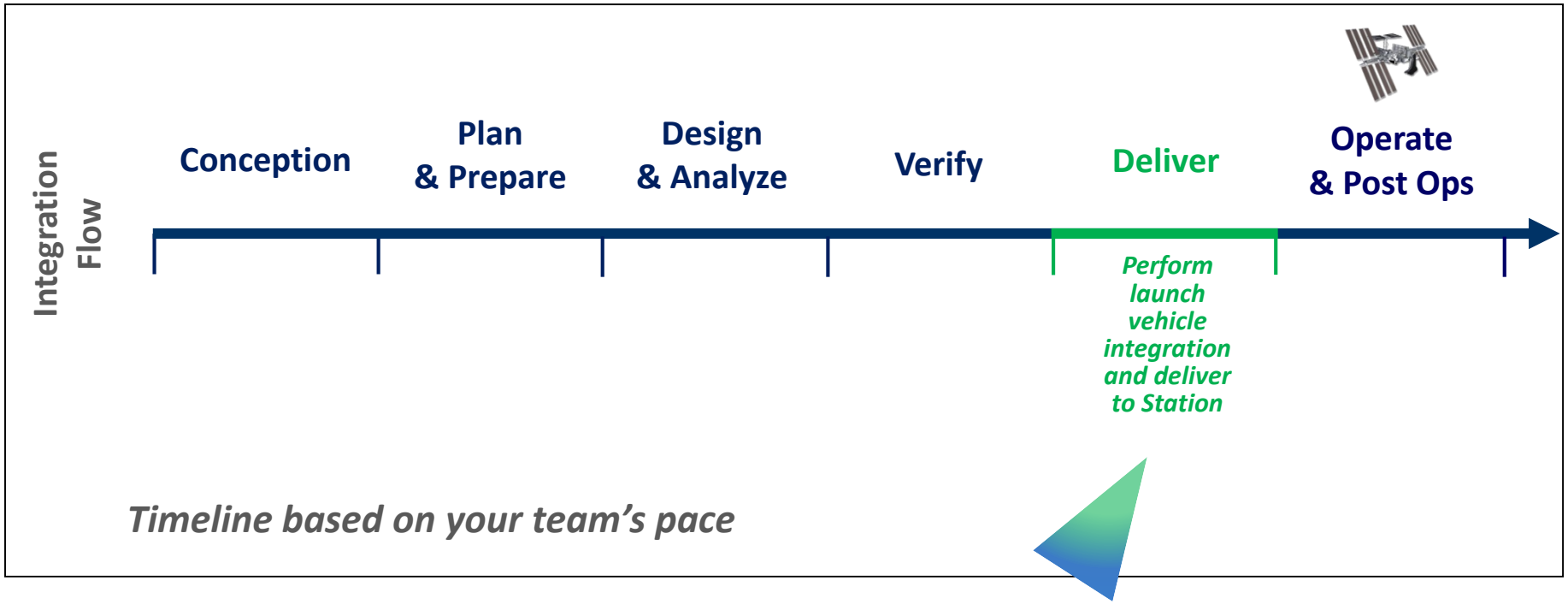
PHASE 4: VERIFY



Integration Activities – with NASA, you will…

- Complete final safety review
- Conduct verification testing and generate verification data for hardware, software, science, operations
- Update operations and planning products, payload regulations, fight rules, and conduct review
- Identify part-level flight manifest data
- Finalize Command & Data Handling inputs
- Review interface verification data and non-compliance reports
- Participate in Science Symposium
- Receive training for operations support
- Conduct training for crew and visiting vehicle team
- Establish ground facility requirements

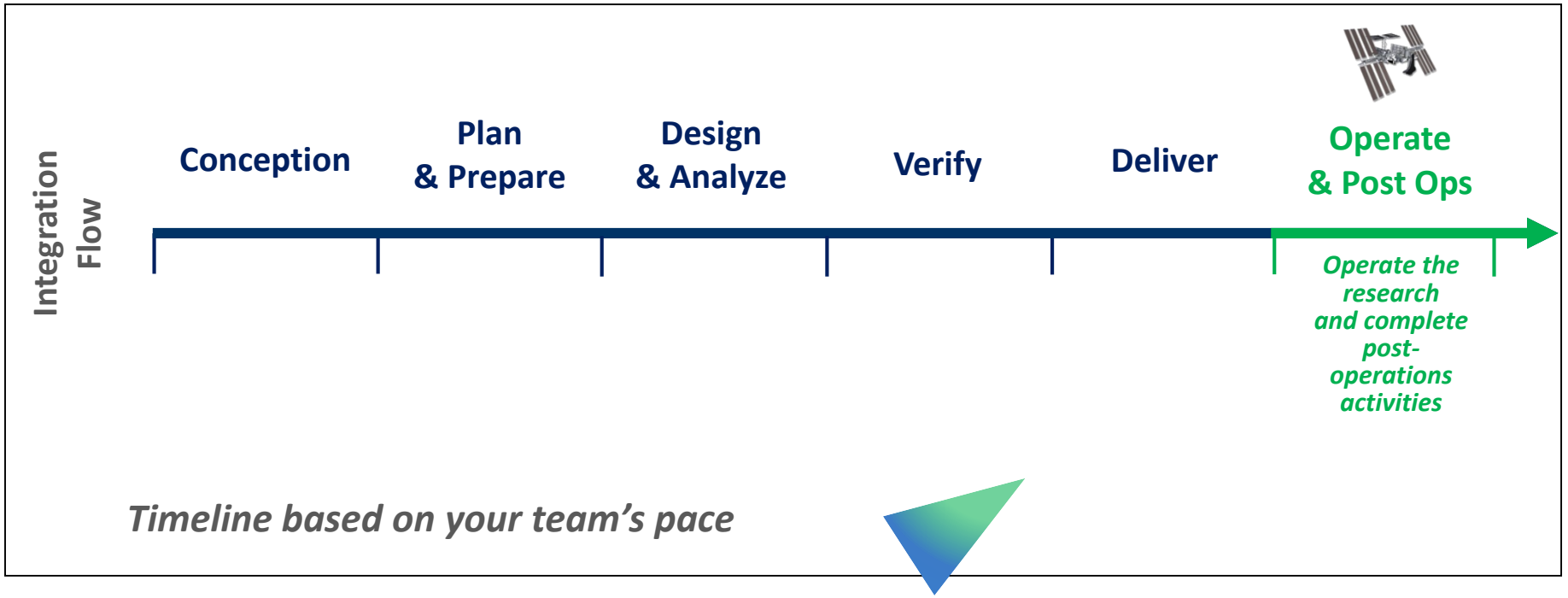
PHASE 5: DELIVER



Integration Activities – with NASA, you will…

- Define time-critical ground handling requirements and launch campaign constraints
- Pass Certification of Flight Readiness
- Deliver hardware and processes at launch site
- Provide final inputs to operations and planning products
- Participate in open work tracking log meeting to report non-standard open work

PHASE 6: OPERATE & POST OPERATIONS



Operation and post-operation activities – with NASA, you will…

- Operate experiment
- Facilitate sample and data return
- Communicate your science to the world
- End Huntsville Operations Support Services
- Conduct crew debrief
- Collect and evaluate lessons learned
- Enable principal investigator publications of your experiment results

THANK YOU!

We look forward to discussing Station research opportunities with you…

Please contact us via the points of contact or the Station Research Client Research Helpline information back on page 5 of this publication to initiate your development…

FAQs and acronyms on the following pages.

FAQs

Q: **What are the advantages of doing research on the space station vs. ground-based?**
A: The space station provides a unique environment of microgravity, extreme conditions, and an observation platform to conduct science and technology research. The microgravity environment may cause things to behave differently from Earth-based laboratories, and achieve previously unseen or unexpected results.

Q: **How long will it take to get my research onto Station? Quickest to longest time?**
A: Each experiment's development and integration is unique, but on average, getting onboard could take 6 months to 2 years.

Q: **What kind of research is being conducted on Station, how do I know if my area of expertise is applicable?**
A: Station's research is multi-disciplinary and diverse. A set of Station researcher's guides explains how to conduct these various types of science and technology: https://www.nasa.gov/station-researchers-guides

Q: **How do I know what facilities and/or capabilities are on Station that I can use for research?**
A: A catalog of all of Station's facilities and capabilities is located here: https://www.nasa.gov/stationfacilities.

Q: **How do I submit a proposal to conduct research on Station?**
A: Learn about the proposal submission process here: https://www.issnationallab.org/research-on-the-iss/proposals/

Q: **How much will it cost to fly my research on Station?**
A: Every experiment is different, and there is no set price. Experiment complexity varies greatly – the amount of experiment hardware needed, does it exist already or must it be developed, degree and number of samples or observations needed, is it inside or outside ISS, etc. You and your potential funding sponsor will discuss your experiment and what it could cost.

Q: **What are the limiting resources for conducting research on Station?**
A: We will work with you and consider the facilities and capabilities you need, the amount of mass being launched, what types of results can be returned to earth, if required, and the amount of crewtime available to be used for your research.

Q: **I'm stuck and have some other questions, whom can I contact for assistance?**
A: Please see the points of contact on page 5 of this publication or contact the Station Research Client Helpline at 281-244-6187, jsc-iss-research-helpline@mail.nasa.gov

Acronyms

AES	=	Advanced Exploration Systems
ASI	=	Agenzia Spaziale Italiana
CASIS	=	The Center for the Advancement of Science in Space
CSA	=	Canadian Space Agency
DoD	=	Department of Defense
ESA	=	European Space Agency
FAQ	=	Frequently Asked Question
HEOMD	=	Human Exploration Operations and Mission Directorate
ISS	=	International Space Station
JAXA	=	Japan Aerospace Exploration Agency
JSC	=	Johnson Space Center
NIH	=	National Institutes of Health
NSF	=	National Science Foundation
NSPIRES	=	NASA Solicitation and Proposal Integrated Review and Evaluation System
OCT	=	Office of the Chief Technologist
SMD	=	Science Mission Directorate
STMD	=	Space Technology Mission Directorate
ST&E	=	Science, Technology & Exploration
Tech. Dev.	=	Technology Development
USDA	=	United States Department of Agriculture