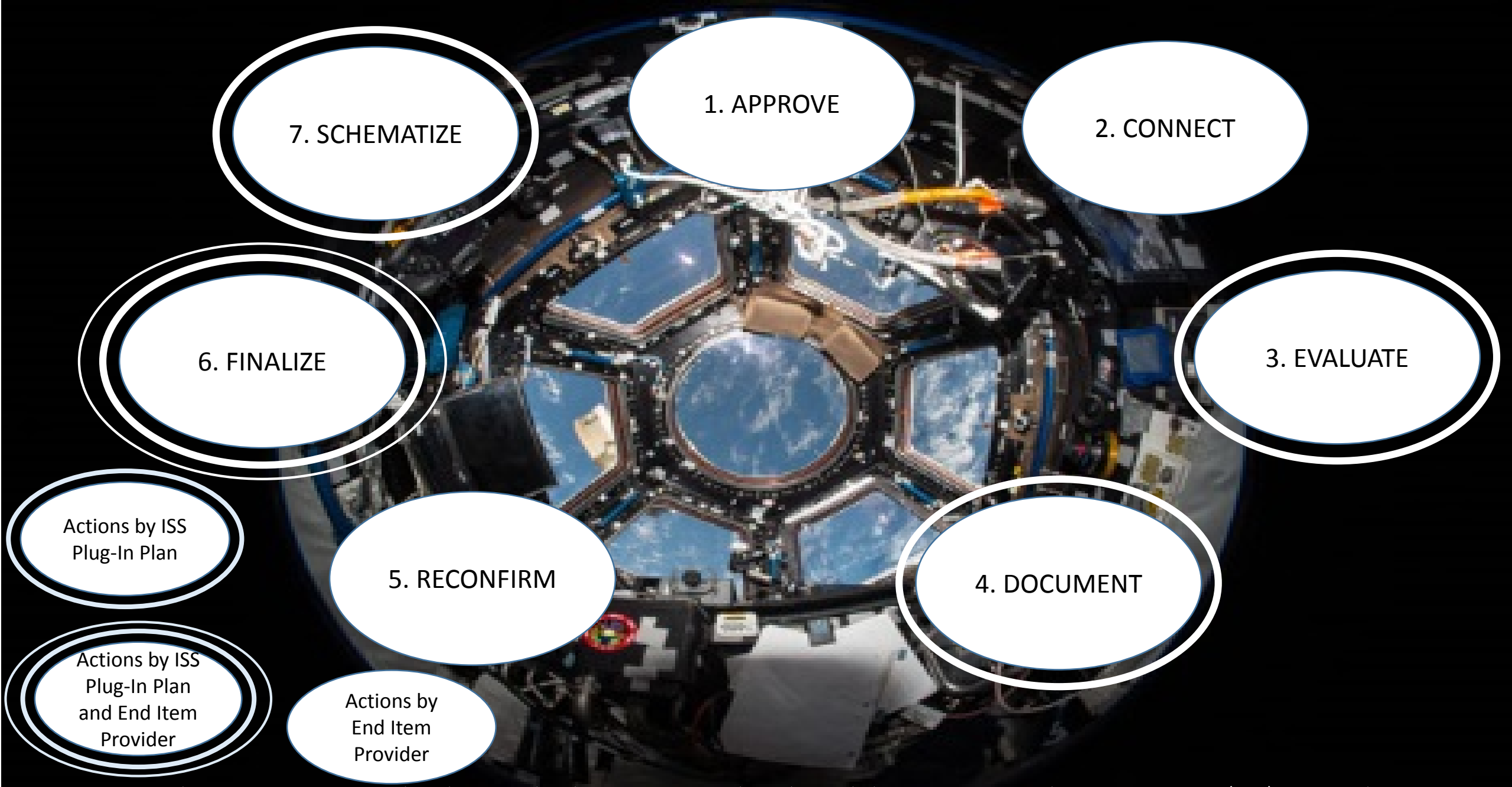
Get the Power You Need, When and Where You Need It Aboard the International Space Station (ISS) Using the ISS Plug-In Plan (IPiP) Requirement Request Process

Trying to get your experiment aboard ISS? You likely will need power. Many end item providers do. ISS Plug-In Plan (IPiP) supports power and data for science, Payloads (or Utilization), vehicle systems, and daily operations through the Electrical Power System (EPS) Secondary Power/Data Subsystem. Yet limited resources and increasing requirements continue to influence decisions on deployment of ISS end items. Given the fluid launch schedule and the rapidly-increasing number of end item providers requiring power support, the focus of the Plug-In Plan has evolved from a simple FIFO recommendation to provide power to end item users, to anticipating future requirements by judicious development and delivery of support equipment (cables, power supplies, power strips, and alternating current (AC) power inverters), employing innovative deployment strategies, and collaborating on end item development. This paper describes the evolution of the ISS Program Office, Engineering Directorate, Flight Operations Directorate (FOD), International Partners and the end item provider relationship and how collaboration successfully leverages unique requirements with limited on-board equipment and resources, tools and processes which result in more agile integration, and describes the process designed for the new ISS end item provider to assure that their power requirements will be met.



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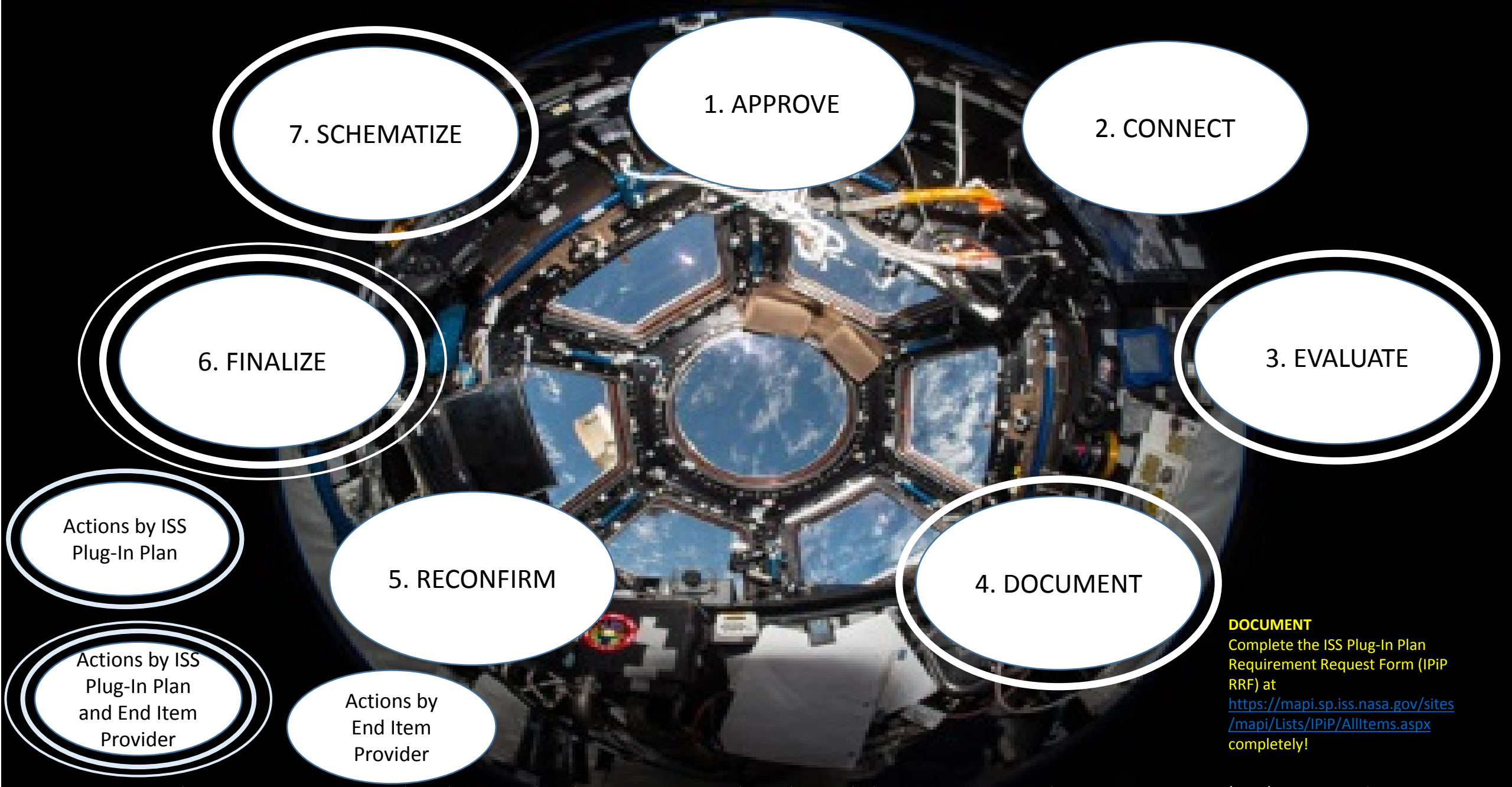

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APPROVE

Are you approved for ISS? Next, determine if you can be on the ISS Plug-In Plan: must be Intravehicular Activity (IVA) only, US Operating Segment (USOS) only, not connected to ExPRESS Racks, Internal Camera Ports, or non-rechargeable batteries only. Complete ISS Change Request (CR) process, begin Science, Technology and Environment (ST&E) process for Payloads. Then plan Kickoff or COTS Precoordination Meeting with power requirements.

CONNECT

Connect to ISS Plug-In Plan, Timothy K. Bishop (281.244.8329) or Kevin D. Moore (281.244.8313), or to Payload Integration Office or to ISS Vehicle Office. Prepare CAD models and schedule Payload Topology Forum with Craig Gordon (281.226.4395) for payload configurations or Internal Volume Configuration Working Group with Rebekah Anchondo (281.244.0657) for non-payload configurations. Contact Avionics Office Stephen Hunter (281.244.7684) if using 120 Volts AC (VAC), power bricks, or laptops. Determine any certification requirements and follow through with those contacts.

EVALUATE

Decide: Standard 120 Volts AC, 120, 28, 16 Volts DC (VDC) or other non-standard VDC? Where do you want to be on ISS? When do you want to operate and for how long? What are your support equipment needs? What are your certification requirements and when they need to be completed?

DOCUMENT

Complete the ISS Plug-In Plan Requirement Request Form (IPiP RRF) at https://mapi.sp.iss.nasa.gov/sites/mapi/Lists/IPiP/AllItems.aspx completely!

RECONFIRM

Ask yourself: 1) Did IPiP receive the Form? 2) Is ALL of the information filled out? 3) Have there been any changes in your contact information, power requirements, location, or frequency of use? 4) Have you contacted ISS Plug-In Plan or the ISS contacts above as required? Have you confirmed certification status and timelines?

FINALIZE

Assure ISS Plug-In Plan of your final power requirements, location, time of operation, and frequency of use. Do you have approval in writing for support equipment? Is certification complete? Certification is complete when all paperwork is signed, not after testing is done!

SCHEMATIZE

ISS Plug-In Plan will prepare schematics for all known end items for the Increment Operations Review at Increment Start minus four (4) months and the FOD Joint Operations Panel at Increment Start minus one (1) month. Baselined schematics may be viewed at https://iss-www.jsc.nasa.gov/nwo/seio/vcer/ipip/web/increment.shtml.