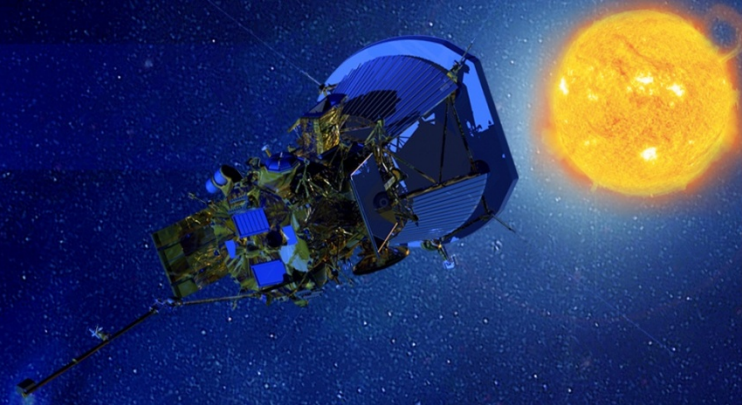


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Solar Probe Plus Requirements Plan & Context

*Dan Kelly
SPP Requirements &
Verification Engineer*

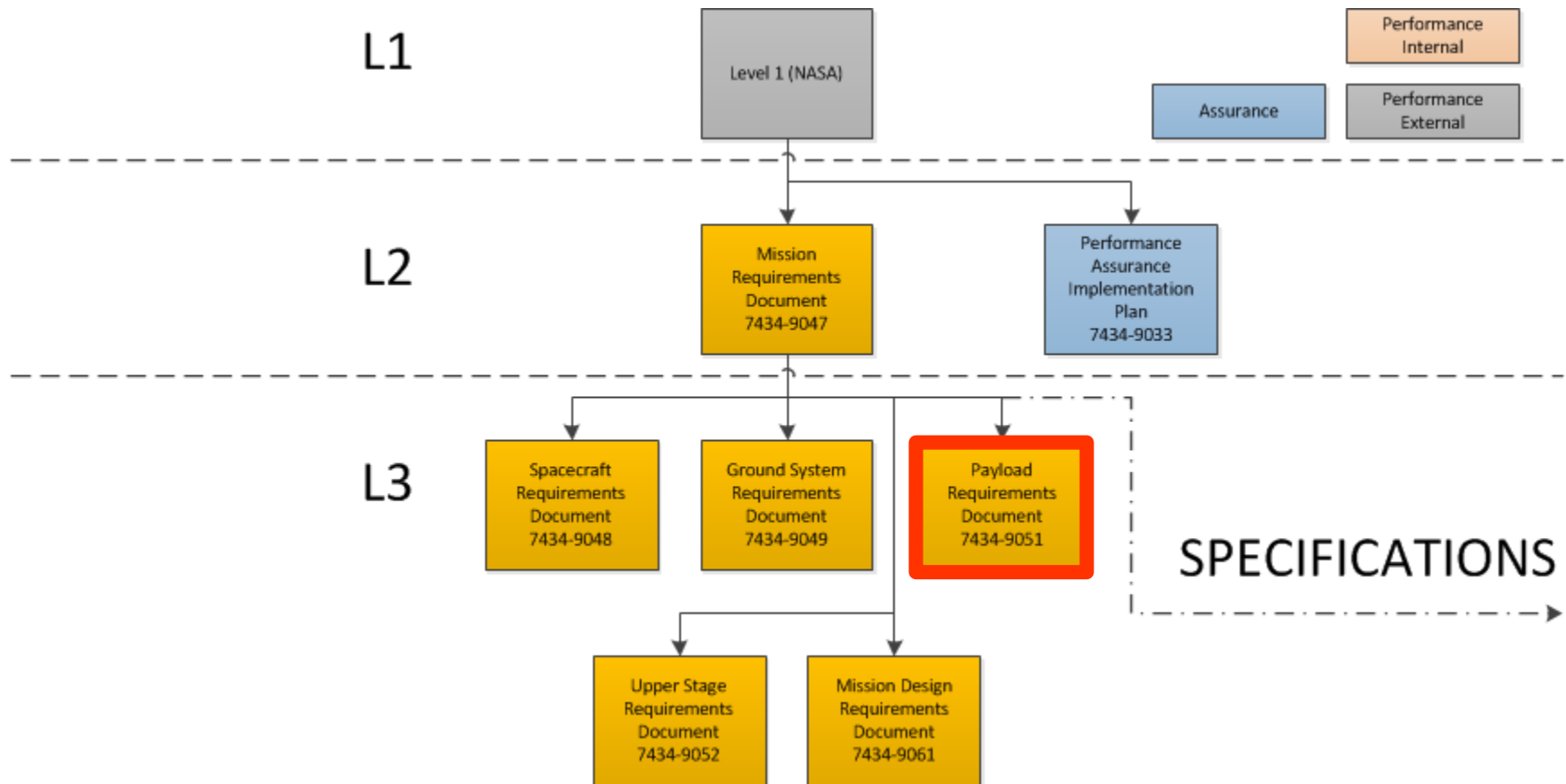
APL

The Johns Hopkins University
APPLIED PHYSICS LABORATORY

Level 2 – Mission (MRD)



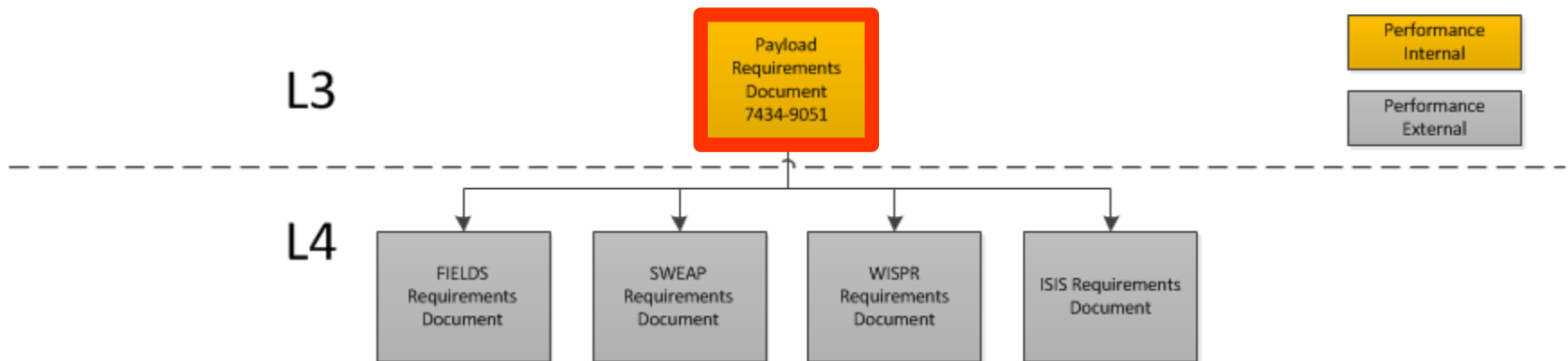
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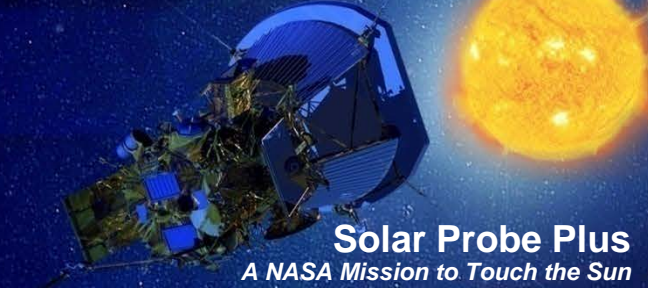
Level 3 – Payload (PAY)



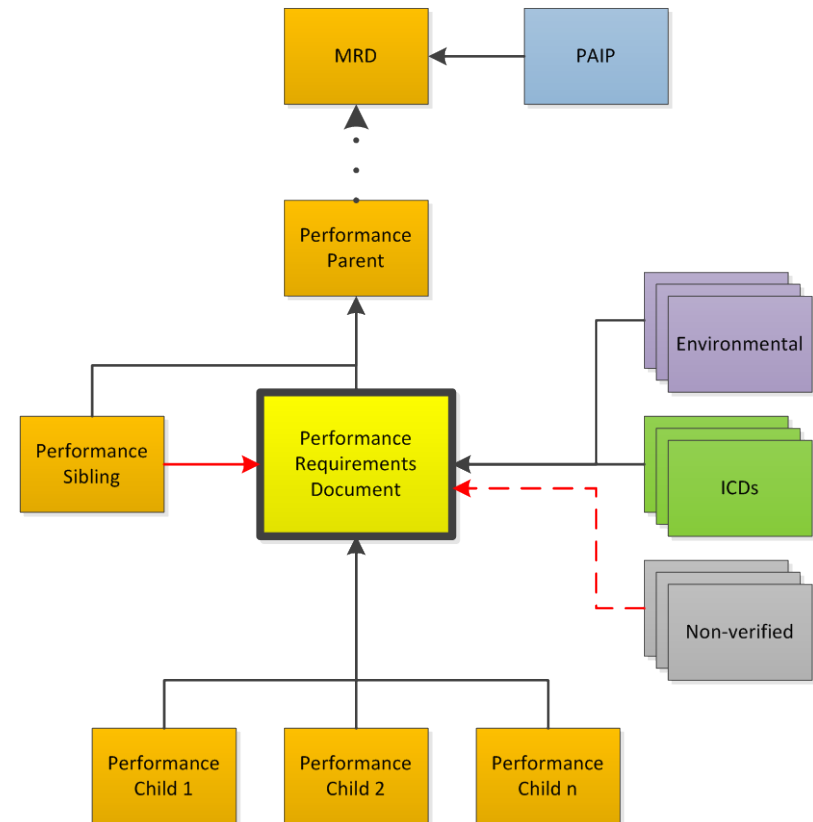
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Allocation & Traceability



- Performance Document in question (i.e. PAY) is central verification document for subject
- Requirements traceable to parent performance document
- Requirements allocated to documents one level below
- Functional leads given oversight into many or all documents (tracking enabled by DOORS)
 - Timekeeping
 - Fault Management
 - I&T
- Links traceable between sibling documents in certain cases
- Specifications referenced via “compliance” requirements (liens)
- Non-verifiable documents (i.e. plans) handled case-by-case (derived requirements, verification by inspection)



Requirement Subjects

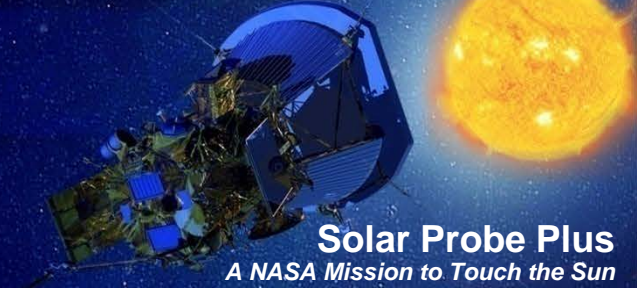


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- The name of an investigation refers to any or all parts of the team, including flight components (sensors, boards), ground components (SOCs) or the team entity
 - **FIELDS**
 - **SWEAP**
 - **WISPR**
 - **ISIS**
- A particular sensor or instrument refers only to specific flight components. All measurement requirements are at the instrument/sensor level
 - **FIELDS:** **MAG, SCM, EFI**
 - **SWEAP:** **SPC, SPAN-A+, SPAN-B**
 - **WISPR:** **WISPR**
 - **ISIS:** **EPI-Lo, EPI-Hi**
- “All instruments” refers to all flight components
- “All Science Operations Centers” refers to all SOCs

Verification Method



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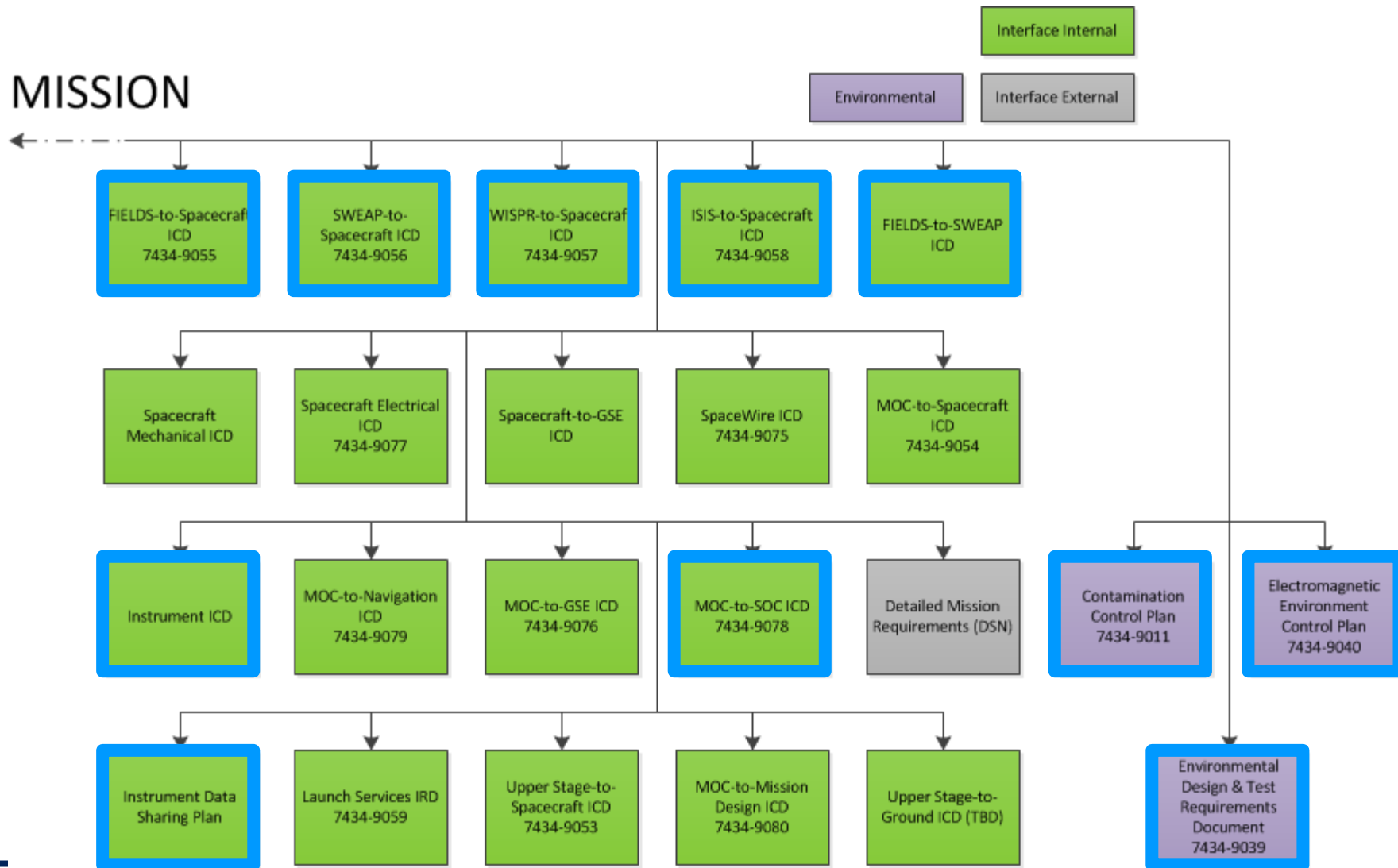
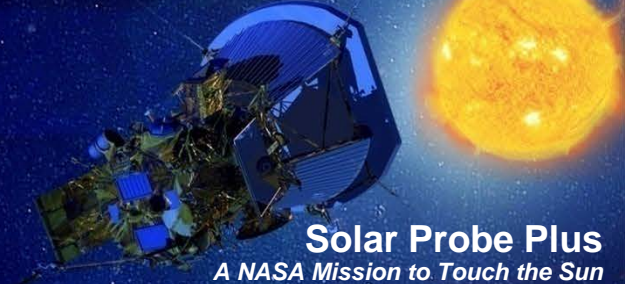
- **SPP Requirements track Verification Method and Activity**
 - **Methods: Test, Analysis, Demonstration, Inspection**
 - **Activity specifies type of T, A, I, or D to fulfill verification**
- **Majority of all PAY document requirements are verified at Level 3 by 'Inspection'**
- **Traditional T A I D methods implemented at Level 4 (instrument teams top-level)**
- **Level 3 requirements 'Inspect' verified Level 4 requirements flowed down from Level 3**

Compliance Requirements



- **Nomenclature of document types**
 - **Payload Requirements Document – ‘Performance’ Requirements Document**
 - **‘Specification’ Documents comprised of Environmental documents and ICDs – contain verifiable information relevant to multiple elements or subsystems**
 - **PAY document section dedicated to compliance with various specification documents**
 - **Relevant requirements developed, validated, tracked, and verified within Specification document**
 - **Verification of ‘Compliance’ requirements within PAY ensure full verification of relevant requirements held in Specifications**
- **“Placeholder” requirements currently held in PAY that will likely migrate to Specifications noted as such – in backup slides**

Specification Documents



Presentation Sample



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<u>ID Number – Requirement Title</u>	
Requirement Text.	
<u>Description/Clarification</u>	
Additional information used to help interpret the intended meaning of the requirement (if necessary)	
<u>Rationale</u>	<u>Requirement Allocation</u>
Used to describe why requirement is necessary (explanation or linking to upper-level requirement). This section is mandatory for requirement validation.	List of planned allocated documents for this requirement.
<u>Parent Traceability</u>	<u>Functional Allocation</u>
If applicable, the upper-level requirement to which this requirement is traceable.	If applicable, list of “flagged” functions for cross-functional analysis. <ul style="list-style-type: none">• Fault Protection• Timekeeping• I&T

PAY Schedule



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- **5/24: Payload Requirements Document Peer Review**
- 5/27 – 6/7: Incorporate feedback & action items
- **6/24: Baseline document distributed for signature**
- **8/30 : PDR Deliverables Due**