



Lift-Off!



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25th Annual Systems and Mission Engineering Conference 3 November 2022

Digital Transformation in NSSL Quality Engineering

Establishing the Digital Data Chain Framework through the Provenance Chain Transparency Platform



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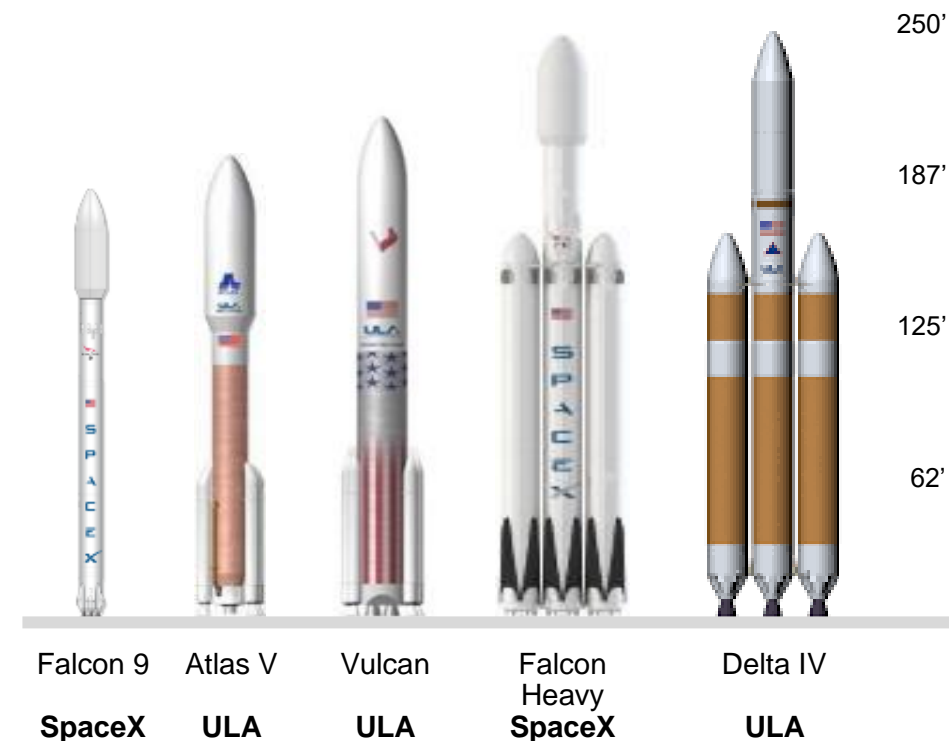
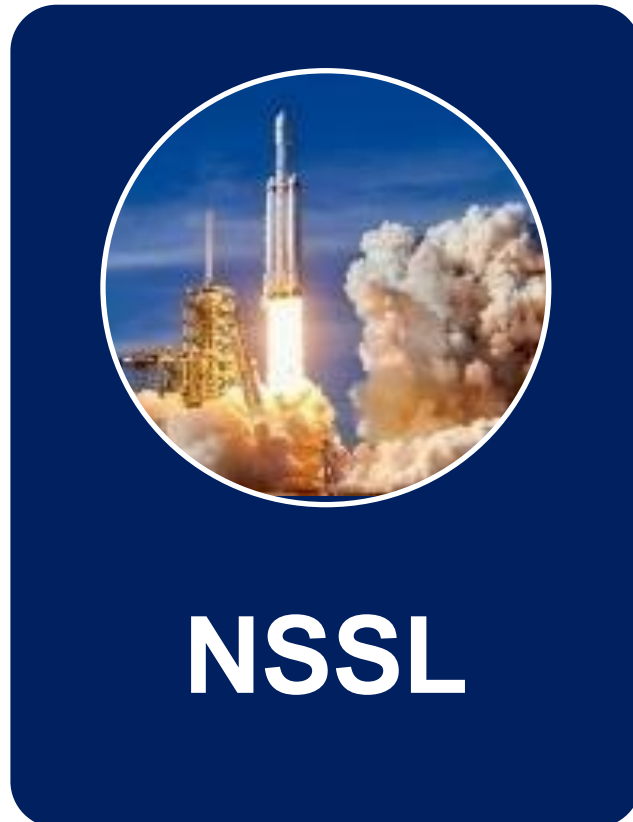
Bottom Line Up Front...

- Mission and the Need for Transformation
- New Paradigm - Data Centric
- PCN's Supply Chain Platform
- Digital Data Chain Transparency Framework



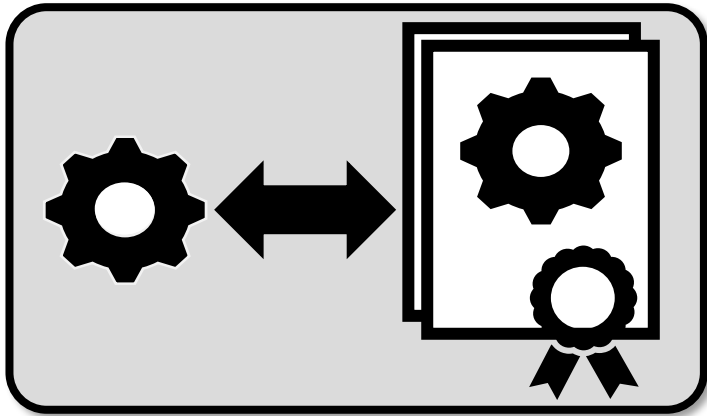
National Security Space Launch (NSSL)

The NSSL Program of the USSF has the responsibility of assuring access to space for the nation's most valuable military satellites for the DoD and other U.S. Government agencies.

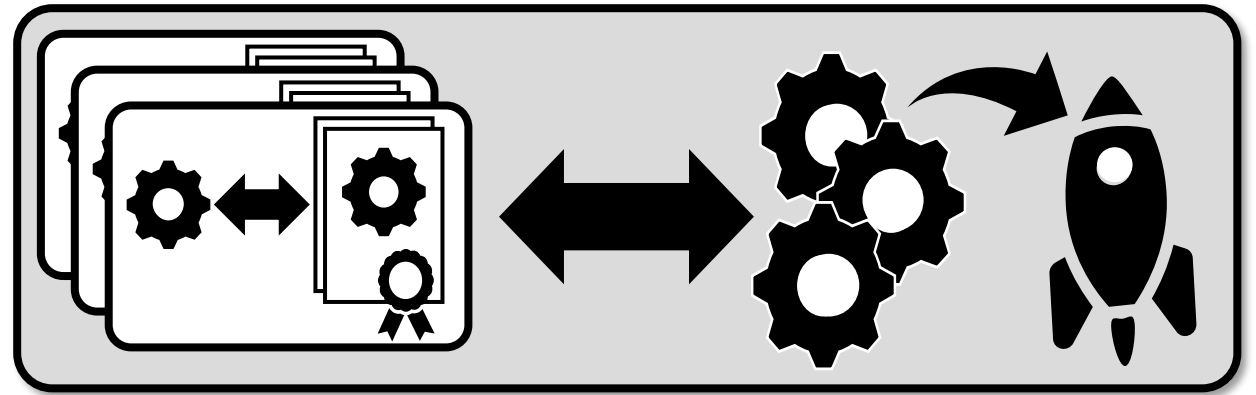




NSSL Pedigree Review Program



Verifying Hardware Builds



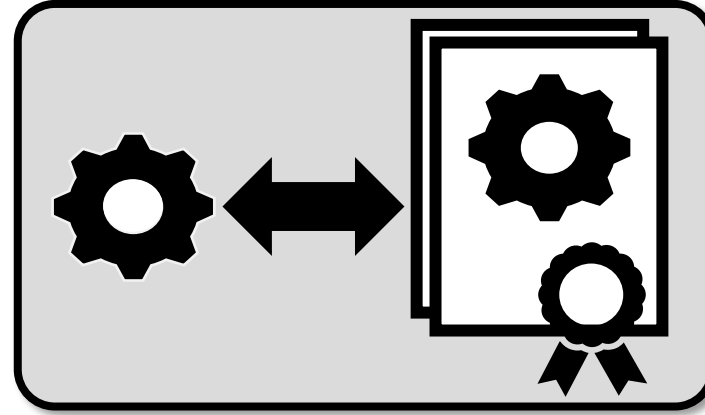
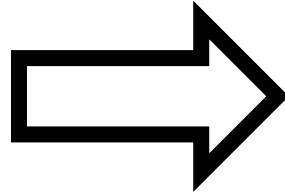
Launching Verified Hardware



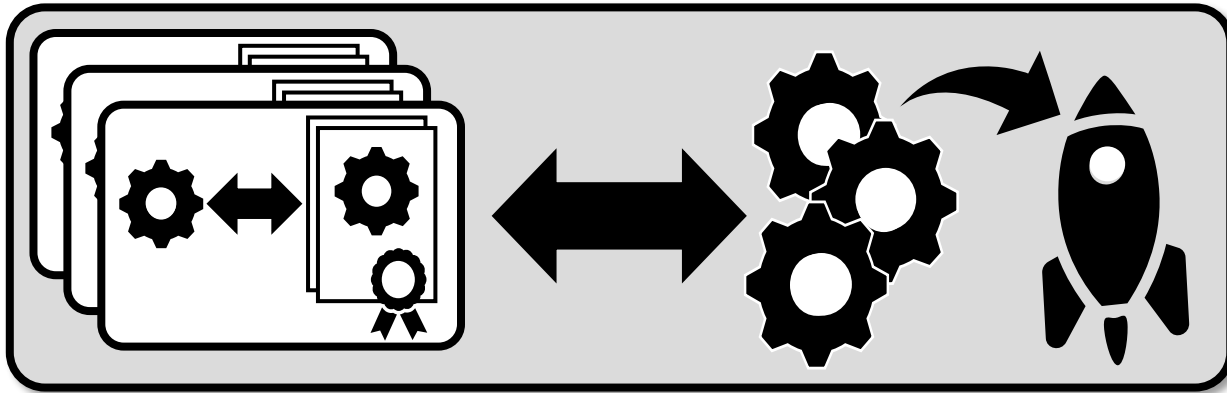
NSSL Pedigree Review Program



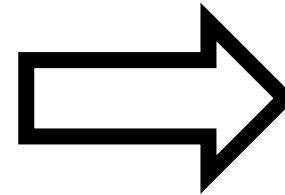
**Pedigree
Review
Matrix
(PRM)**



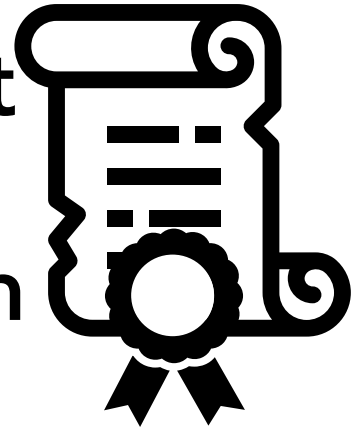
**Verifying
Hardware
Builds**



Launching Verified Hardware

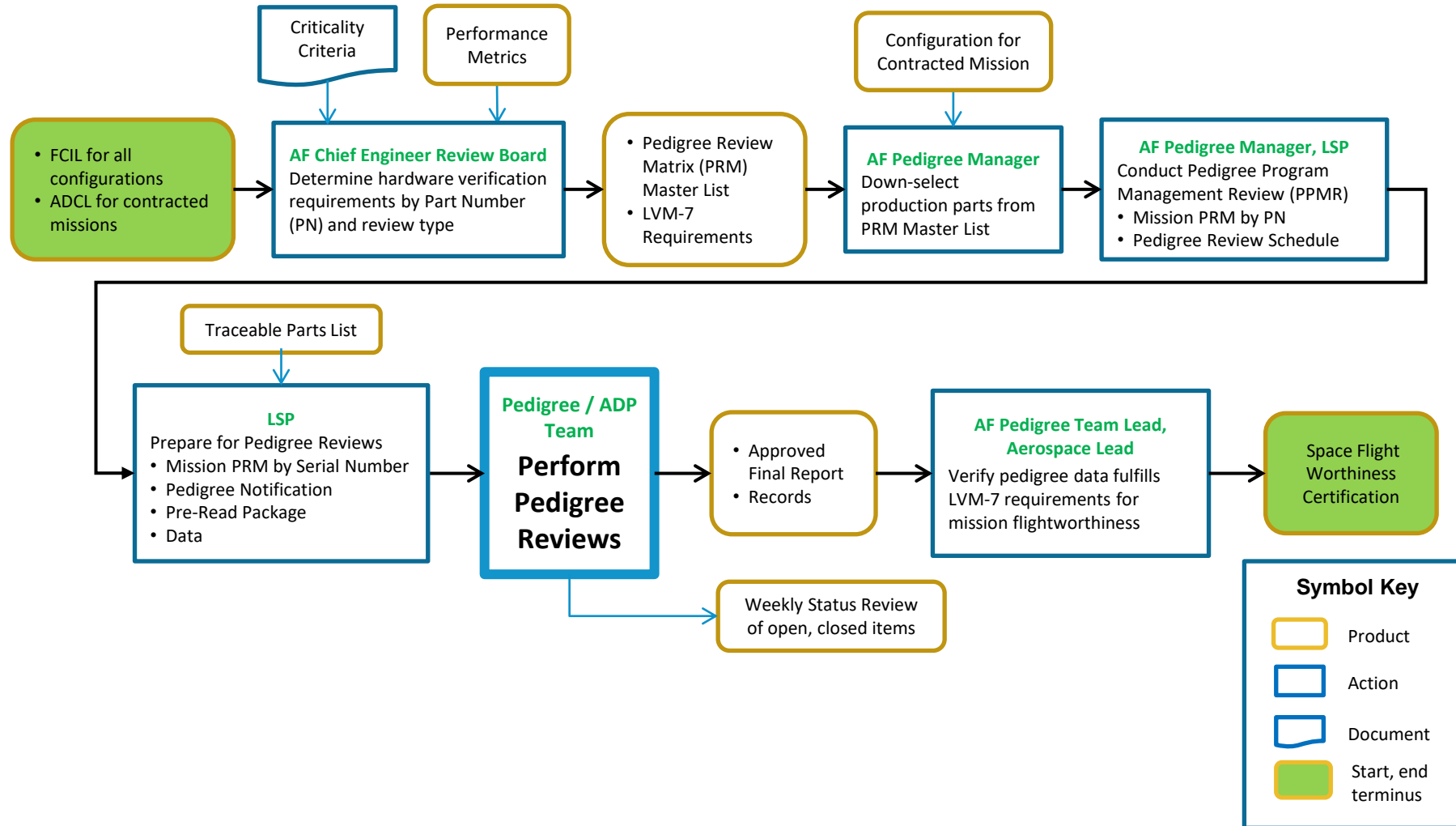


**Space Flight
Worthiness
Certification**



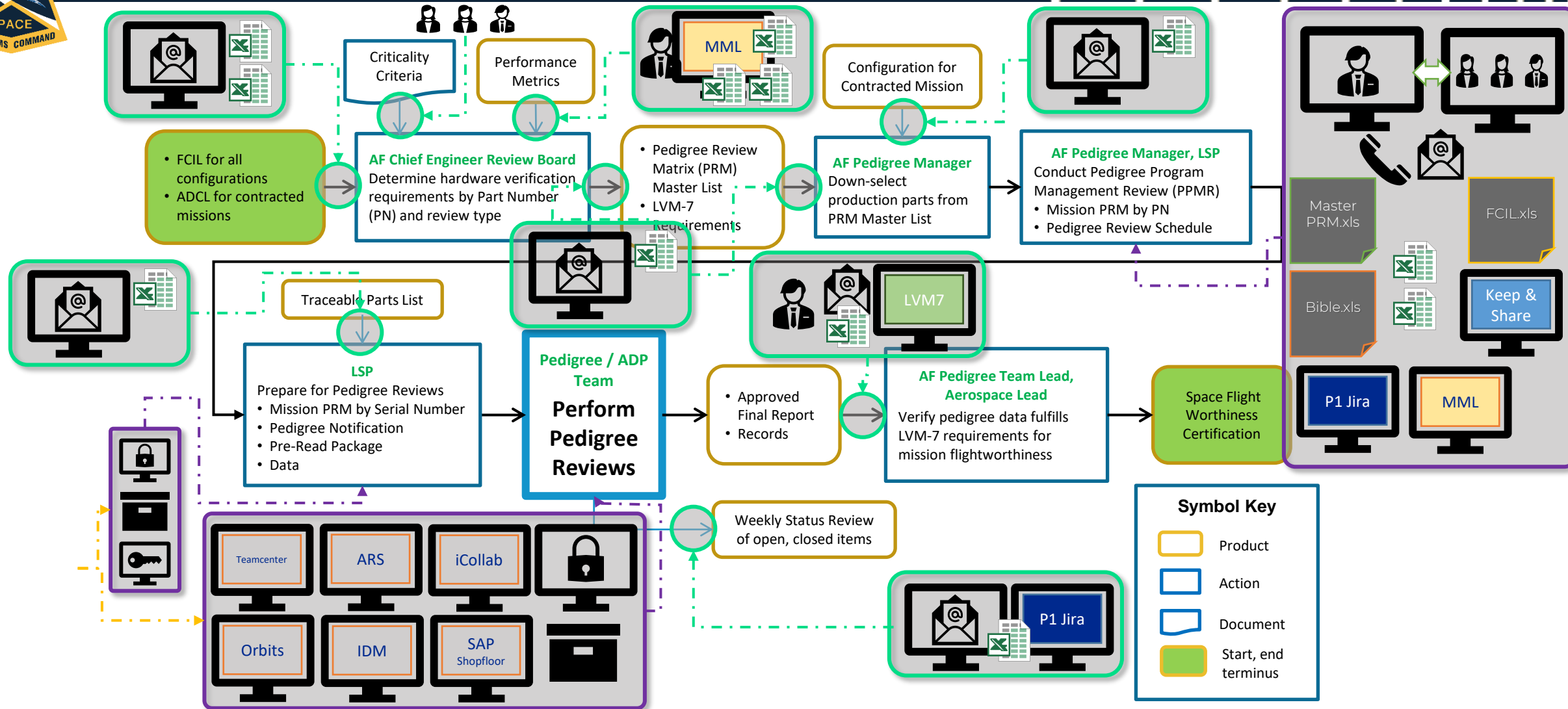


Current Pedigree Process - How it works





Current Process - Pain Points



Multiple Systems of Record & Tribal Knowledge Dependency



Strategic Guidance on Digital Transformation



“...isolated, stagnant deliverables that are onerous to create and manage...”

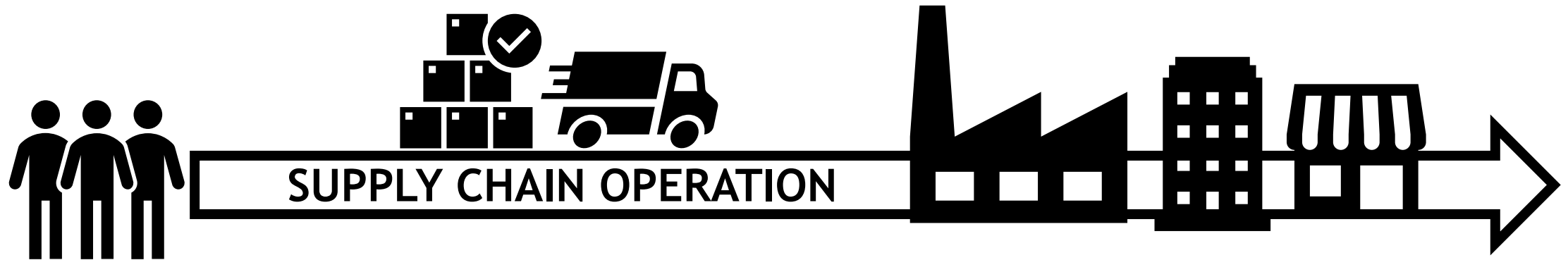
“The superior paradigm is to be data-centric.”

Product-Oriented vs Data-Centric

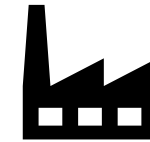
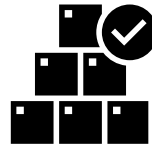


The Provenance Chain Network

Transparency as a Service (TaaS)

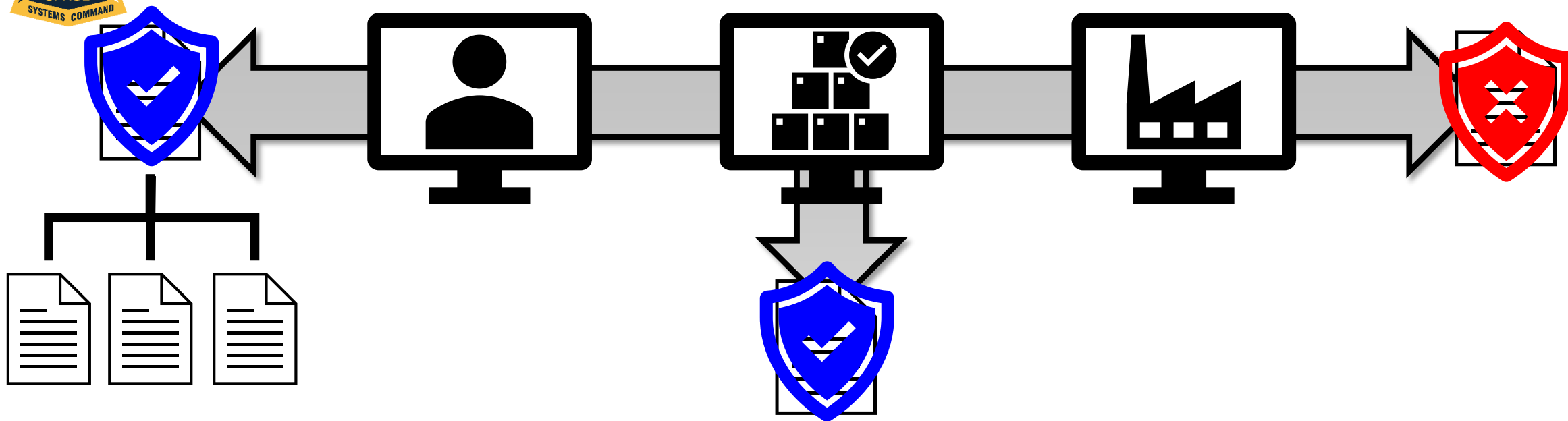


People moving Things through Places





PCN Technology



Time
Stamps

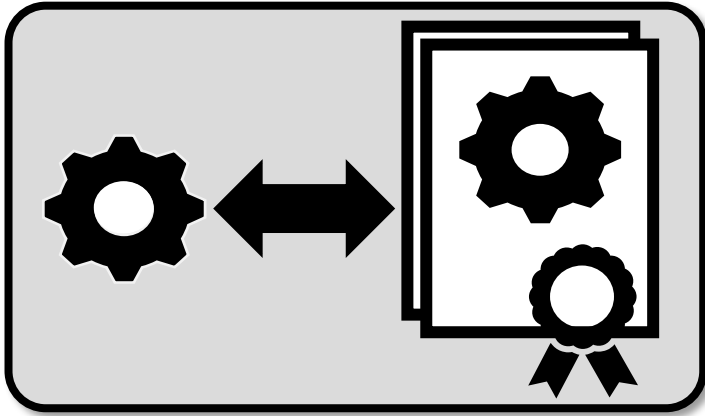


Secure

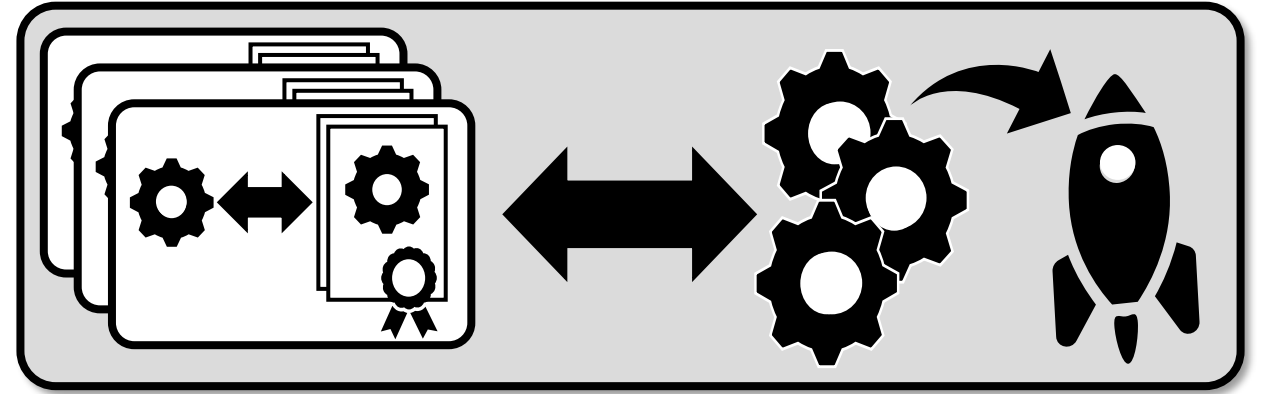


Immutable





Verifying Hardware Builds



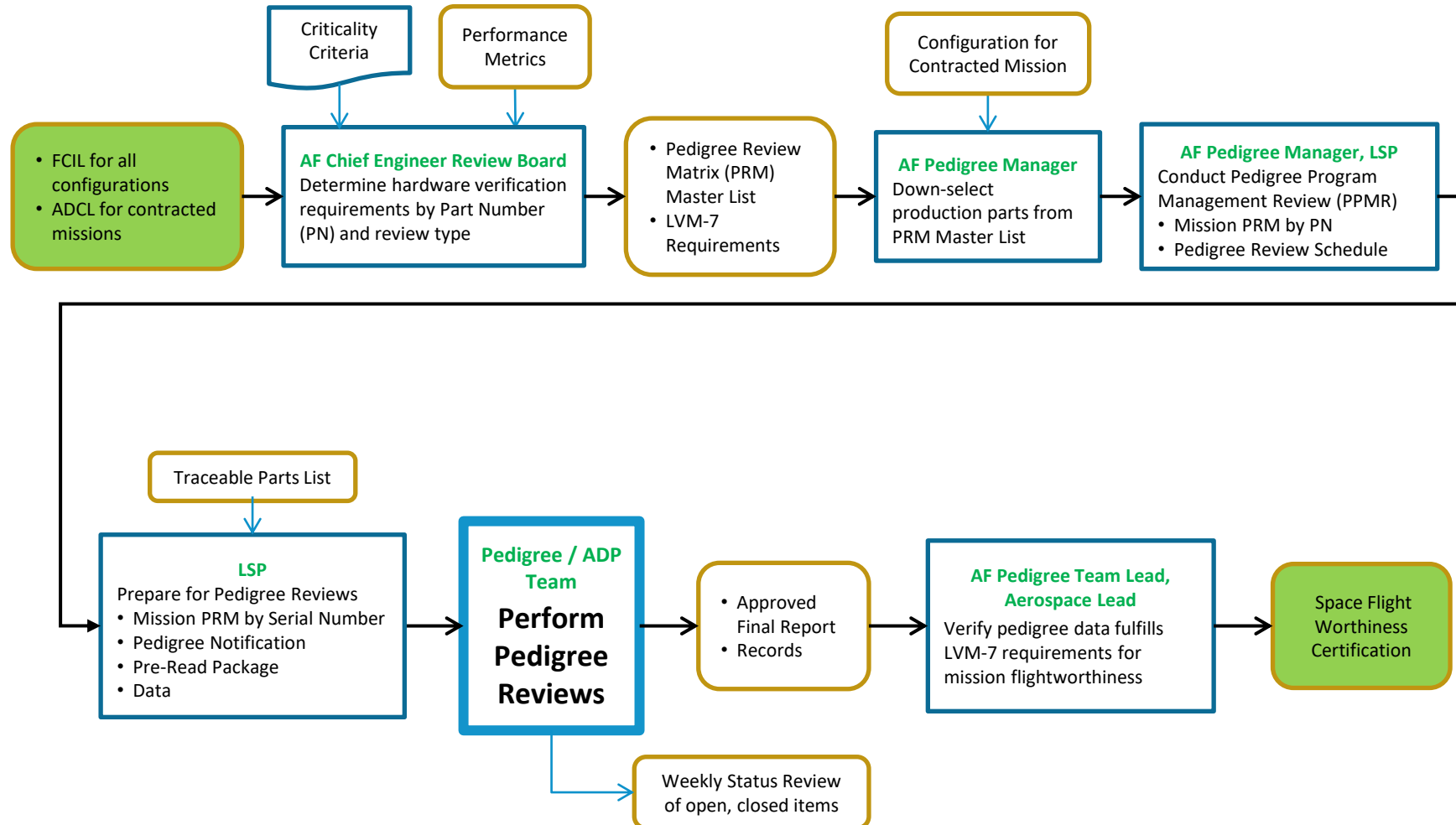
Launching Verified Hardware



Pedigree Review Matrix (PRM)

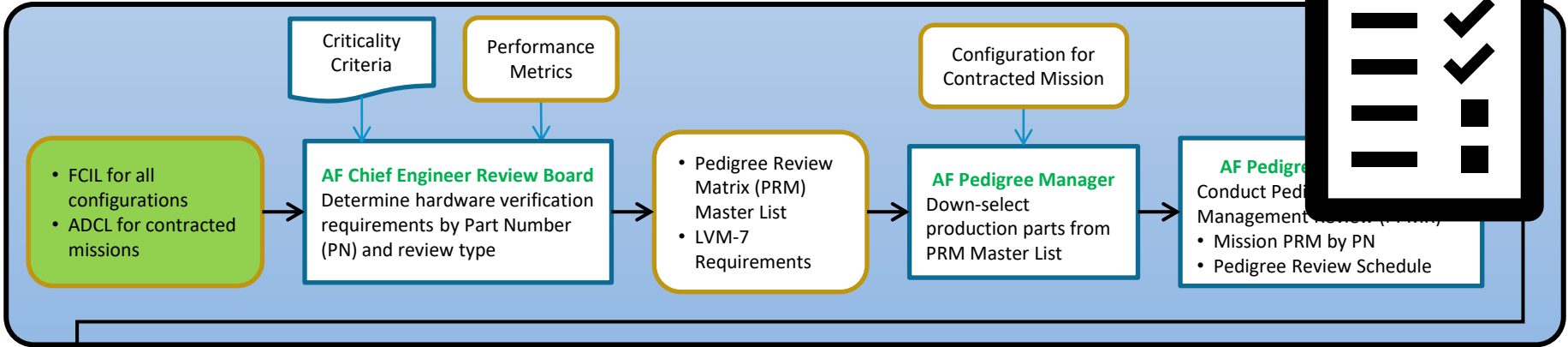


Current Pedigree Process - How it works

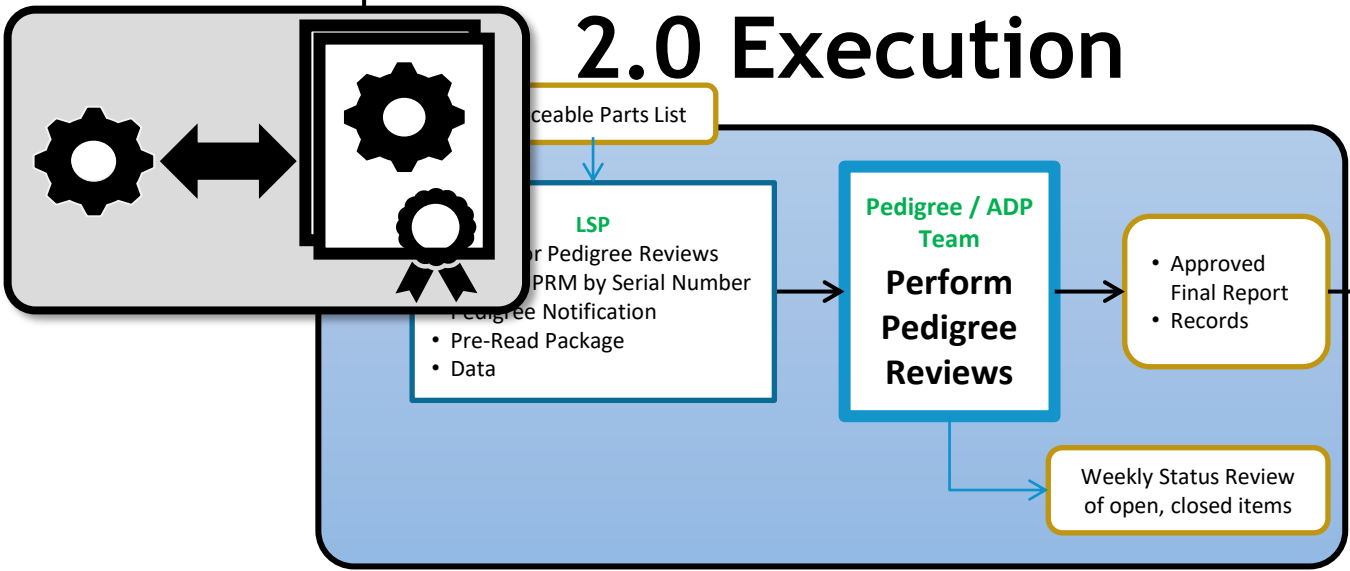




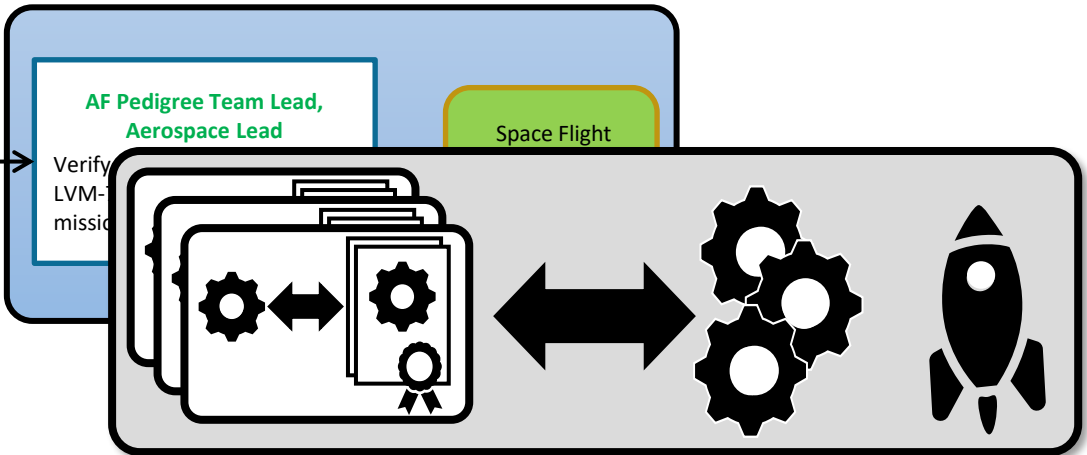
1.0 Planning



2.0 Execution

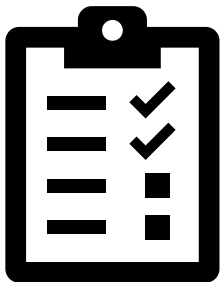
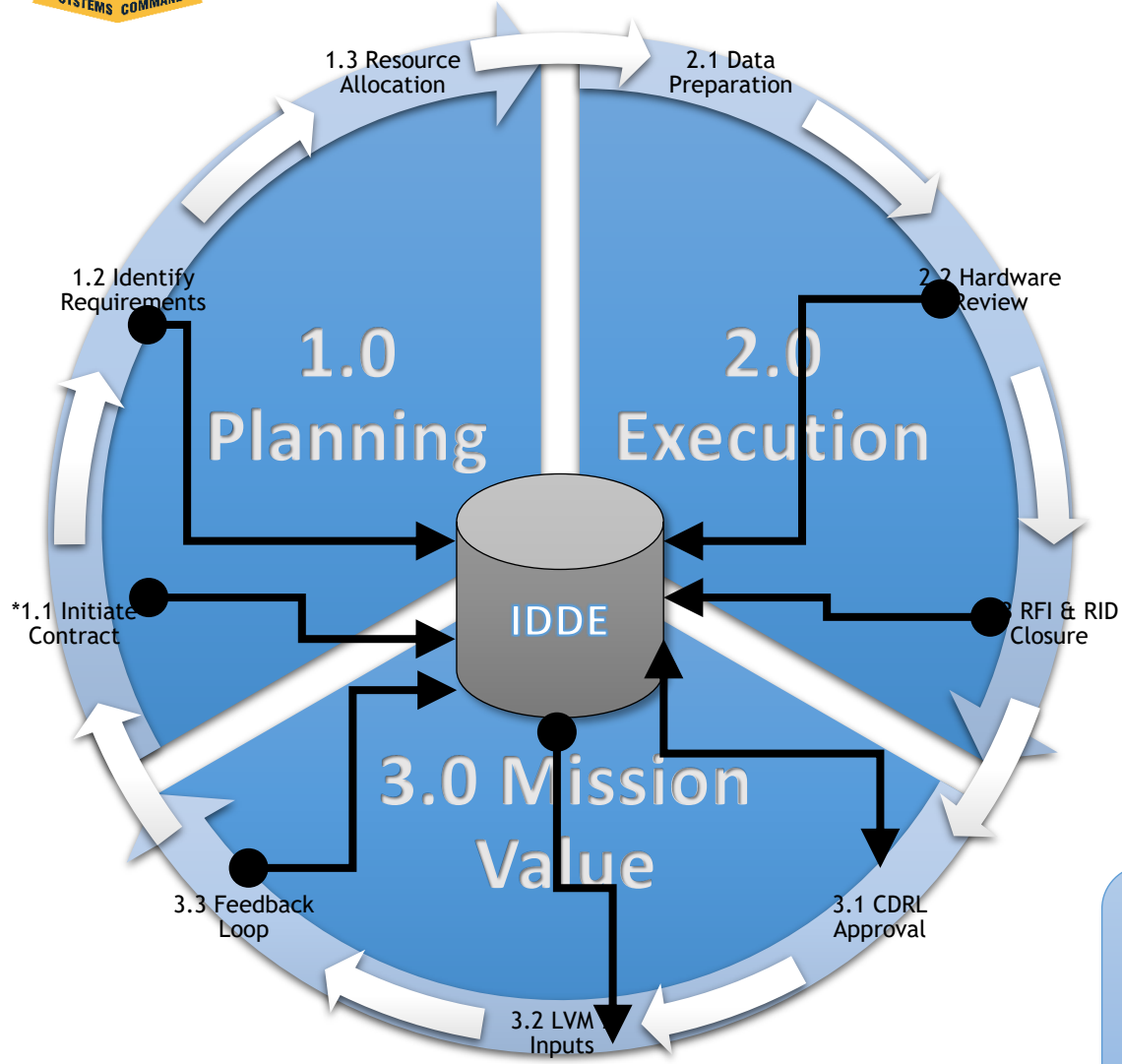


3.0 Mission Value



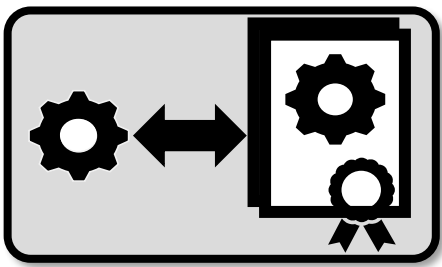


Digital Solution Implementation

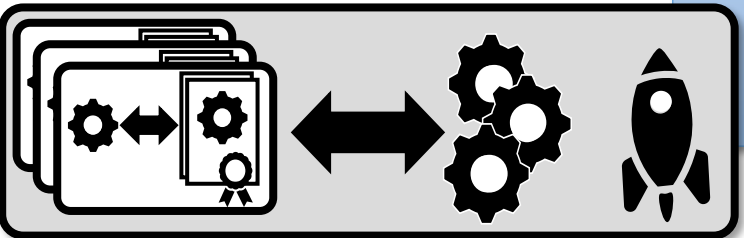


PRM

1.0 Planning



2.0 Execution

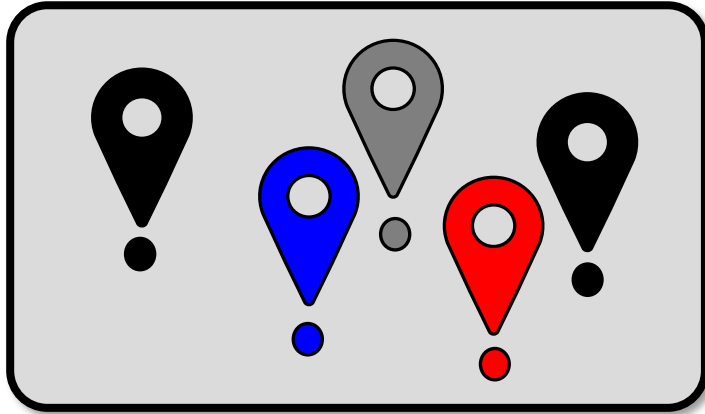


3.0 Mission Value

IDDE Enables Data-Centric Architecture

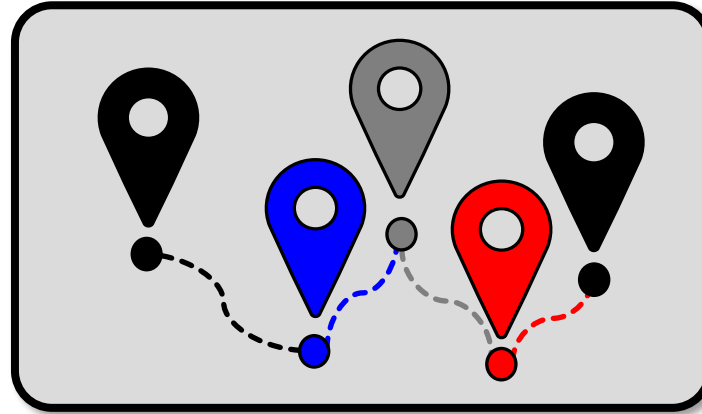


Digital Data Chain Transparency...



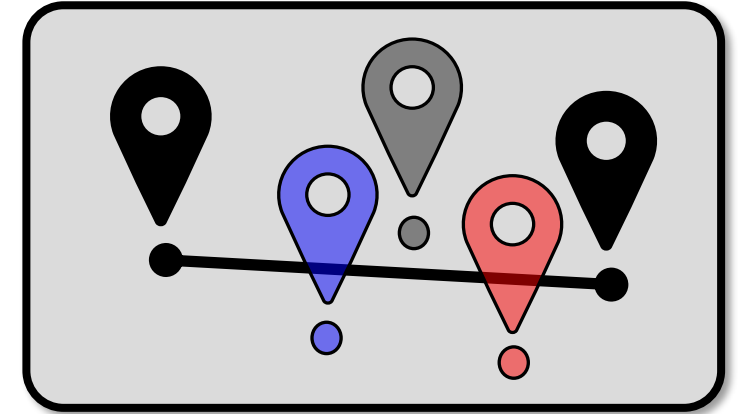
Visibility

Existence of data
Is it captured and
accessible?
Access to data



Traceability

Connection of data
Can it be linked across the
supply chain
Connecting links between
data



Transparency

Level of effort required
to establish connections
How difficult is it to link
the required data?



What's Next?

My Pedigree Reviews

See All >

Most Recent

PEDIGREE	LAST MODIFIED	
NGAS / NROL-70	January 20th, 2022	RESUME WORK

Bookmarked Issues

NGAS / NROL-70	Whiteboard	LAST MODIFIED: January 20th, 2022
NGAS / NROL-70	Ongoing RFI	LAST MODIFIED: January 20th, 2022
NGAS / NROL-70	Drawing	LAST MODIFIED: January 20th, 2022
NGAS / NROL-70	RID	LAST MODIFIED: January 20th, 2022
NGAS / NROL-70	RID	LAST MODIFIED: January 20th, 2022

My Products

Atlas

DETAILS >

NEXT MISSION LAUNCH
DECEMBER 1ST, 2021

75%

Delta

DETAILS >

NEXT MISSION LAUNCH
DECEMBER 1ST, 2021

50%

Vulcan

DETAILS >

NEXT MISSION LAUNCH
DECEMBER 1ST, 2021

100%

My Calendar

FEBRUARY (5 REVIEWS)

NGAS / NROL - 70	2/5 - 2/10
NGAS / NROL - 70	2/5 - 2/10
NGAS / NROL - 70	2/5 - 2/10
NGAS / NROL - 70	2/5 - 2/10
NGAS / NROL - 70	2/5 - 2/10

MARCH (2 REVIEWS)

APRIL (6 REVIEWS)

Product Details

P/N: 58-0412-101

Description: [REDACTED]

Revision: N/A

Lot / Batch ID: N/A

Serial #: AV101

Known Deviations

10 Change Notices	10 Non-Conformances	10 Major Findings	10 Minor Findings
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Review Findings

10 / 10 Request for Information	10 / 10 Review Item Discrepancy
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Action Items (Open / Closed)

10 / 10	10 / 10
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Requirements Complete

38%

5% QUEUED 43% IN PROGRESS

OVERVIEW BREAKDOWN SUPPLIERS REQUIREMENTS HISTORY

Avionics (5 P/N)

3 out of 5 complete

Ordnance (5 P/N)

2 out of 5 complete

Propulsion (5 P/N)

2 out of 5 complete

Engines (5 P/N)

2 out of 5 complete

Structures (5 P/N)

2 out of 5 complete

Search in table

Filter By: SUPPLIER % COMPLETE LOCATION

Part Number	Part Description	As Designed Revision	As Built Revision	Lot / Batch ID	Serial Number	Supplier	Location	%Complete
1F01006	165 AH Battery (US)	-501	-501	00-000	00-000	BST Systems	Plainfield, CT	38%
1F01009	70 AH Battery (US)	-1	As Built: Revision	00-000	00-000	BST Systems	Plainfield, CT	38%
22-66202	Booster Main Veh Battery (2)	-5	As Built: Revision	00-000	00-000	EaglePicher Tech.	E. Greenwich, RI	38%
22-66212	Battery, Pyro (4)	-4	As Built: Revision	00-000	00-000	EaglePicher Tech.	E. Greenwich, RI	38%
1F04650	Inertial Navigation Control Assembly	-1	As Built: Revision	00-000	00-000	Honeywell	Clearwater, FL	38%
22-62220	RRCU	-4	As Built: Revision	00-000	00-000	Honeywell	Clearwater, FL	38%

- USG Authoritative Source
- New capability to make



Digital Transformation in NSSL Quality Engineering

Questions...Let's Talk

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