

RPAS Airworthiness Negotiation between Military Regulator and Manufacturer

THE VALUE OF PERFORMANCE.
NORTHROP GRUMMAN

March 24, 2015

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*ICAO RPAS Symposium Montreal, Quebec, Canada
March 23-25 2015*

US Airworthiness Authorities

National Airworthiness Council (NAC)

NAC

Benefits

Public Aircraft



Title 10



Minimize Duplication

Leverage Processes

Mutual Acceptance

Standard for National AW

Consistency across NAS (National Airspace System)

Single Voice on US AW

Tri-Service Standards (516)

NAVAIR Flight Clearance Authority



US Code Title X, Ch 503, Sec 5013



DoDD 5030.61

Public Aircraft Operations



SECNAVINST 5400.15C



OPNAVINST 3710.7U & 3510.15A



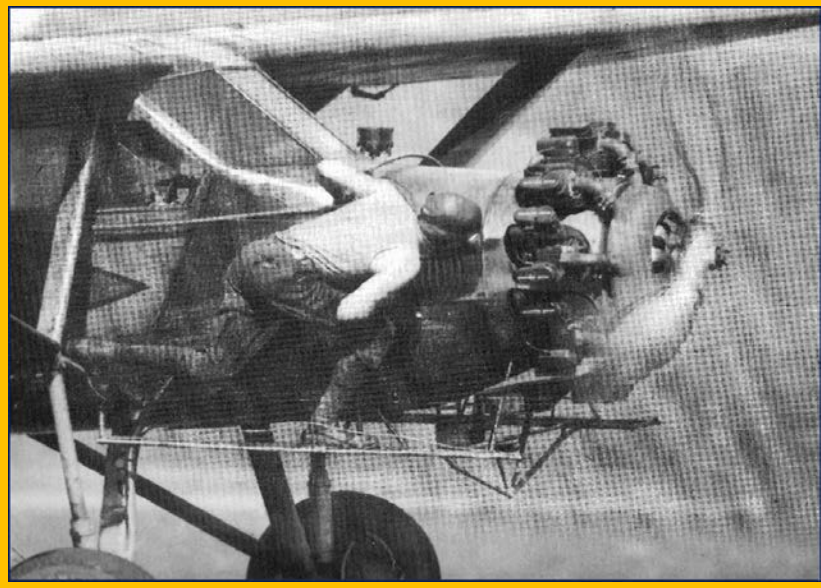
NAVAIRINST 13034.1D

AIR-00 is Design Control Activity Authority, Technical Authority, and Airworthiness Authority



Airworthiness Execution

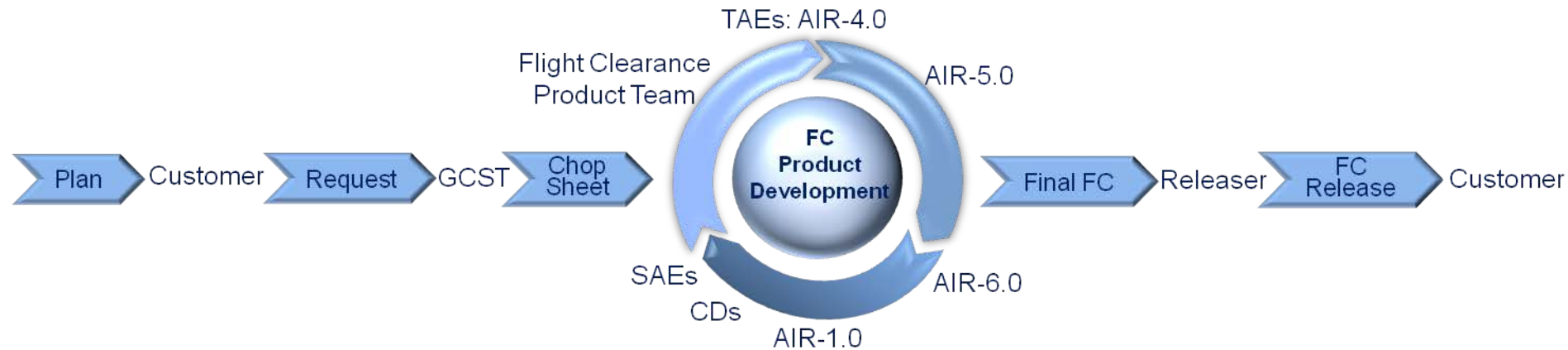
NAVAIR Airworthiness Authority as delegated to AIR-4.0P



**AIR-00 DELEGATES
AIRWORTHINESS AUTHORITY TO
AIR-4.0P**

- All USN/USMC owned or leased aircraft shall have an airworthiness approval in the form of a Flight clearance document promulgated / issued by COMNAVAIRSYSCOM
 - Per OPNAVINST 3710.7U: NATOPS General and Flight Operating Instructions (dated 23 Nov 2009)
- Flight clearances issued as an IFC/Interim Flight Clearance
 - NATOPS-Naval Air Training and Operating Procedures Standardization
 - NATIP-Naval Aviation Technical Information Product

The Flight Clearance Process UAS Specific



AIR-4.0P FLIGHT CLEARANCE PROCESS



**SAME AS GENERAL PROCESS WITH
SOME SPECIFIC STEPS**

Roles and Responsibilities

- Flight Clearance Key Players Requirements defined in NAVAIRINST 13034.1D (which governs the USN airworthiness process) including minimum and recommended training and empowerment levels for:
 - APMSE (Assistant Program Manager for Systems & Engineering)
 - Competency Managers
 - TAEs (Technical Area Expert)
 - Facilitators
 - Test Team members

Original Equipment Manufacturer / Prime

- Supports the NAVAIR Airworthiness Process
- When applicable, submit accurate requests
- Provides data, details, project descriptions, and any necessary support to NAVAIR engineers, as required

NAVAIR 4.0P– Owns the process

- Educates all participants of the process
- Provides tasking to TAEs to review flight clearances
- Ensures a proper and complete engineering review
- Releases clearances on behalf of AIR-00
- Keeps NAVAIR leadership informed of airworthiness issues

Airworthiness Terminology

Airworthiness

- The property of an air system configuration to safely attain, sustain, and compete flight per approved usage limits.
- USN airworthiness process is governed by NAVAIRINST 13034.1

EDRAP (Engineering/Data Requirements Agreement Plan)

- USN term to document the NAVAIR / NGC agreement on what engineering data is required to establish the system airworthiness.

DEL (Data Element List) = Appendix A of the EDRAP.

- An Excel spreadsheet (recommended but not mandated) listing specific MIL-HDBK-516 criteria paragraphs identified to be applicable to system. Spreadsheet also contains the allocation, artifacts (supporting data), status for each criteria.
 - MIL-HDBK-516 is the 'DoD Handbook containing the airworthiness certification criteria.
- It is important that there be a means to trace 516 criteria/standards/MOCs and data artifacts to the DEL

EDEF (EDRAP Data Evaluation Form)

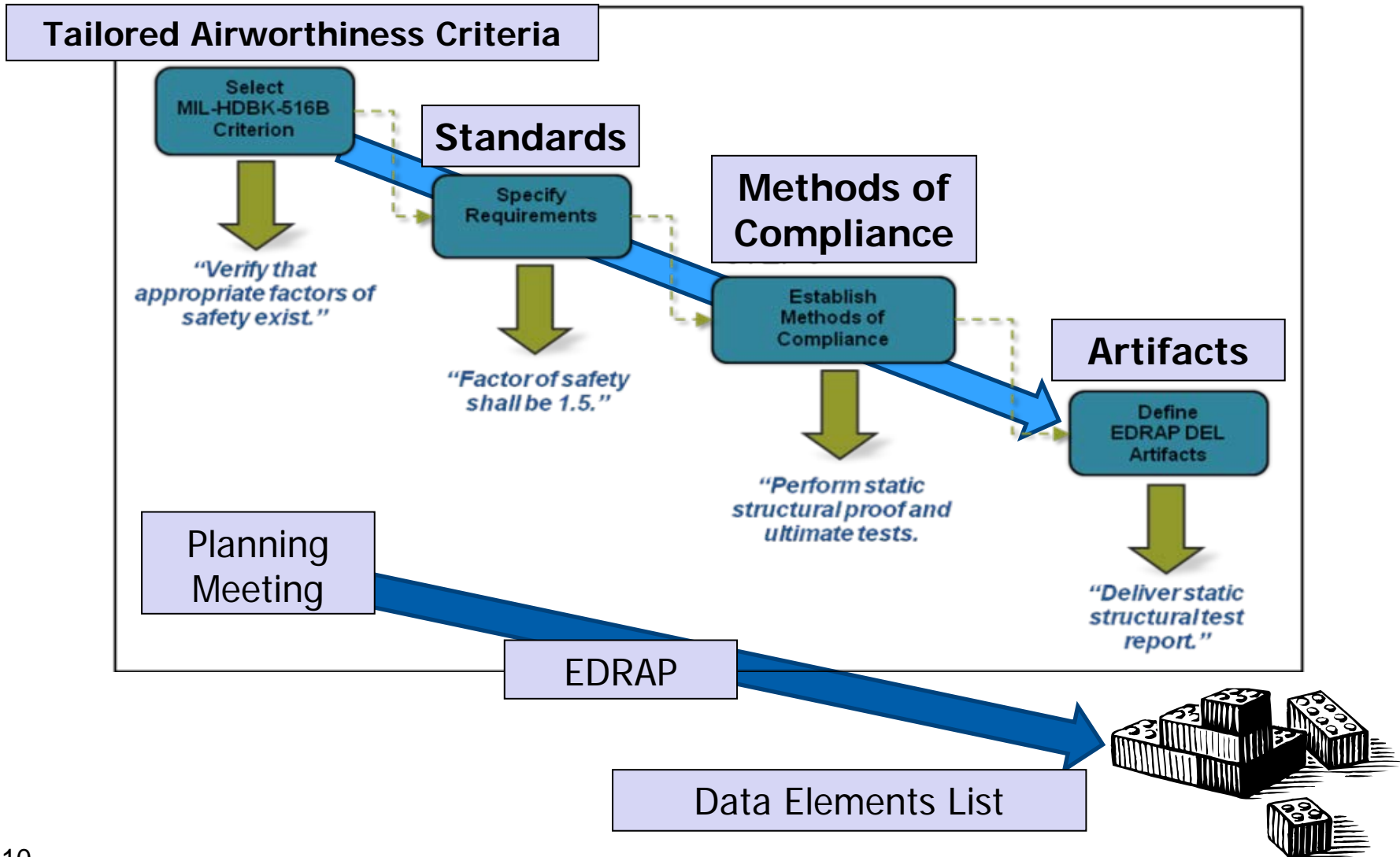
- One page word document produced to support the review of each item identified within the DEL spreadsheet. The form explicitly shows which artifact (supporting data) is used to substantiate each MIL-HDBK- 516 criteria and allows the NAVAIR TAE to:
 - Approve (with or without limitations)
 - Disapprove
- Used on several Navy/NGC programs, but is not universally applied across USN UAS airworthiness

Artifacts (data elements)

- Supporting data showing the compliance to the MIL-HDBK-516 criteria.
- Each Artifact can be used by multiple RE/TAEs and can be mapped to one or many different MIL-HDBK- 516 criteria.

MIL-HDBK-516 to EDRAP

The building blocks of the airworthiness process



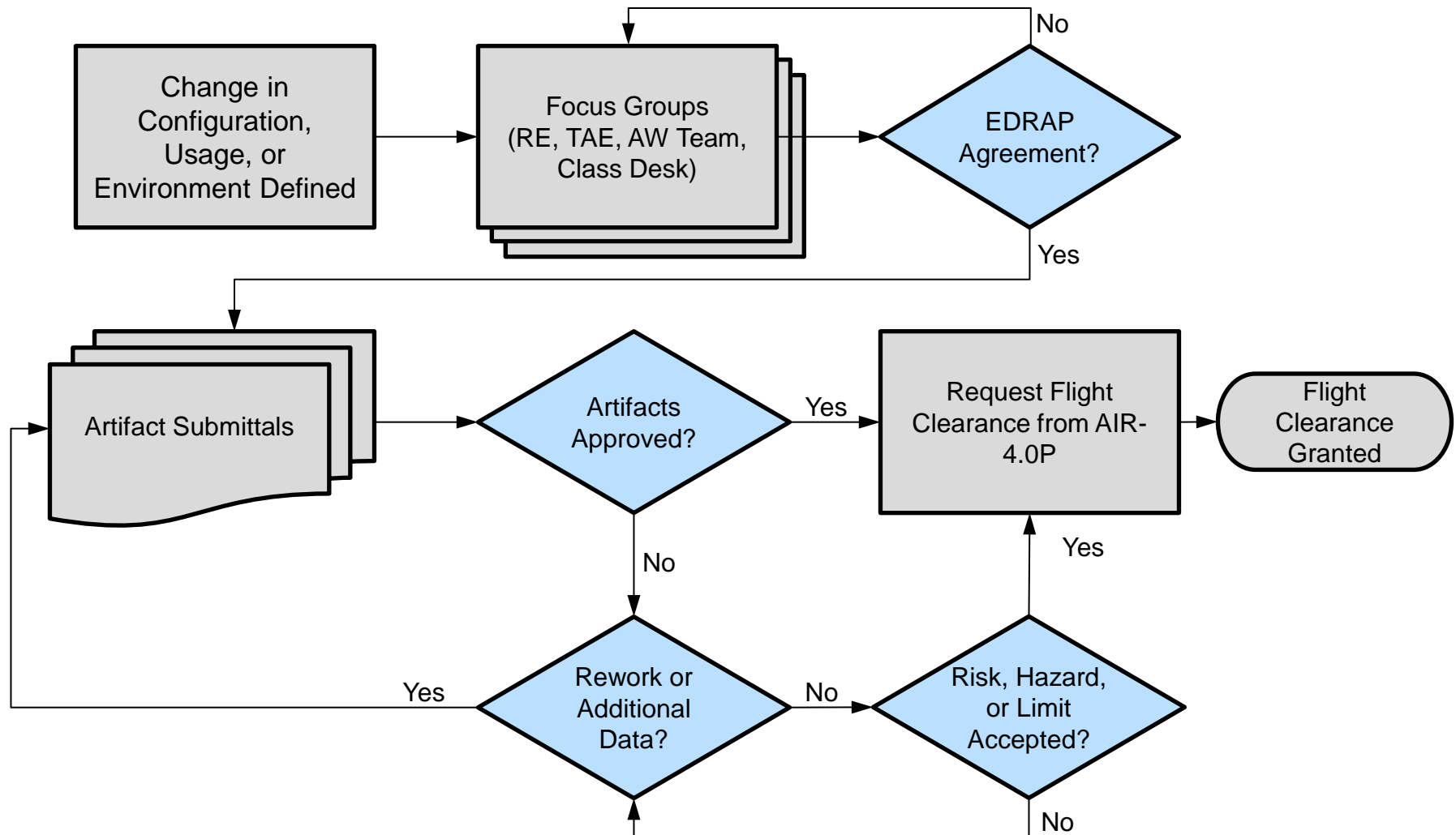
EDRAP (Engineering/Data Requirements Agreement Plan)

- EDRAP developed by program should capture meeting decisions
 - If design changes, EDRAP will need to be updated
- Ensure Contractors understand required analyses / data
 - Govt may need to help Contractors in performing analyses to support the development of the flight clearance data pkg.
 - A flight clearance “Gotcha” is to submit analyses with errors and those that do not follow MIL-STD guidance.
- IFC Request
 - Reference planning meeting & TAEs
 - Submit request with most/all of data

1. Program description
2. IPT/EDT POCs
3. Platform POC
4. Schedule
5. Need dates for FC
6. Configuration for FC
7. Limitations/envelope for FC
8. Impact to NATOPS / NATIP
9. Flight clearance facilitator
10. IPT POC to submit request
11. Data element list
12. Technical concerns / risk
13. Signature block
14. Date of issue

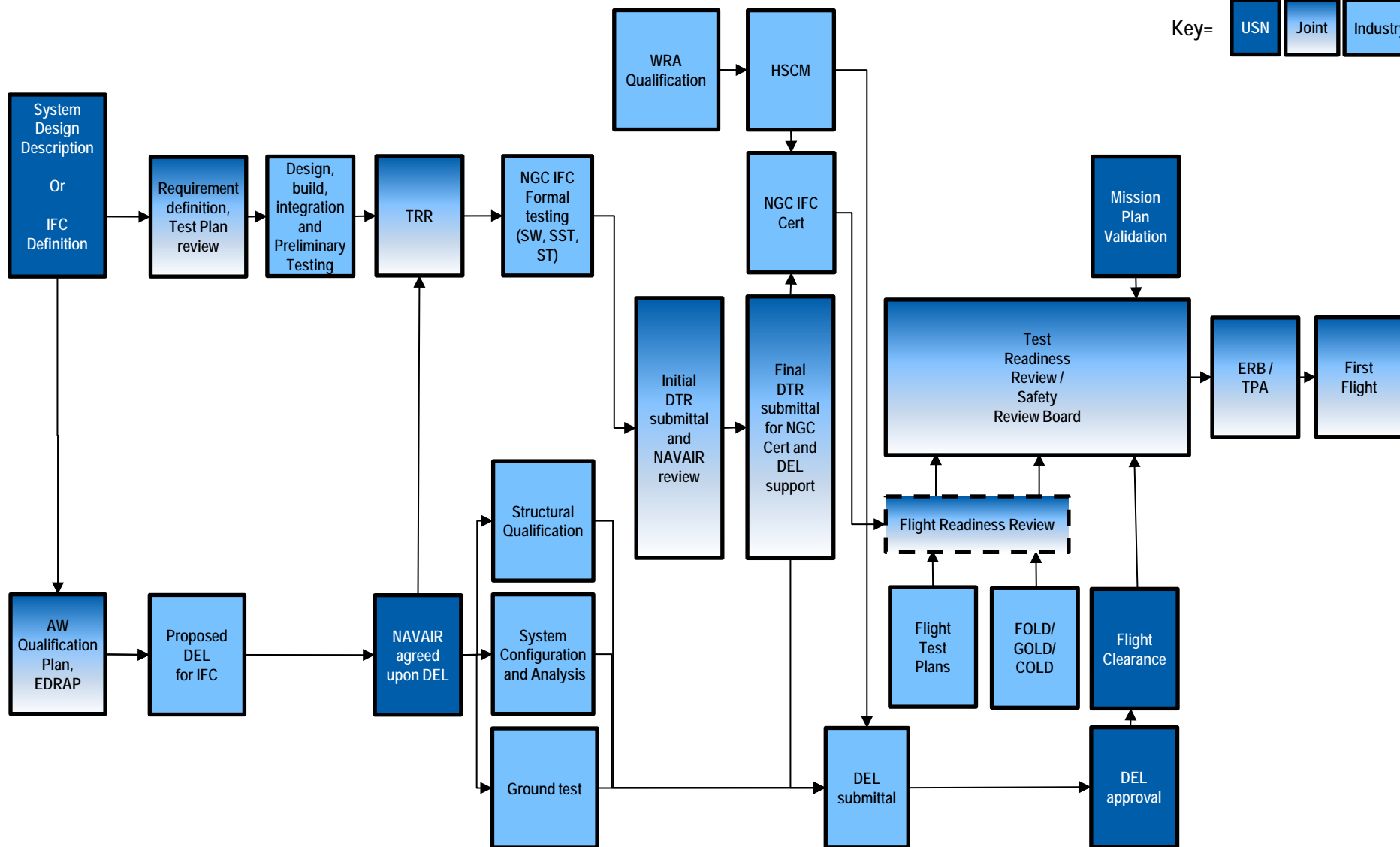
Pre-coordination = No surprises = Happy TAEs = Faster IFC!

General Airworthiness Process Flow



USN and Industry Certification Coordination

Representative Example



- USN has decades of experience and has strong processes for very effective airworthiness certification
- Joint Industry and USN working as a integrated team ensures success
- Buy in from USN upfront is critical
 - EDRAP negotiation early is key

Key to Success = Strong working relationships between USN and Industry!

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