

ATO/ANG Concepts, Validation & Requirements (CVR) Operating Model Overview

Presented to: V & V Conference

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Introduction

- **Why CVR?**

- Needed clarification of governance and roles and responsibilities with respect to concepts, validation, and requirements work

- **How was this clarification addressed?**

- Team of Directors from all potentially impacted organizations worked together through a comprehensive and collaborative process to develop a solution

- **What was the result?**

- The CVR Directors Forum
- The CVR Operating Model



CVR Directors' Forum

- **Enables communication and shared understanding across the FAA about the complexity and volume of operational needs in the National Airspace System (NAS)**
- **Involves key stakeholders who discuss problems, address competing priorities and agree on solutions that are consistent with the overarching needs of the Air Traffic Organization (ATO)**
- **Formally organized and facilitated by Mission Support Services**
- **Meets monthly**
- **Focus of discussion is prioritization of operational needs within the NAS – participants mediate differing interests to reach broad-based decisions that are in the best interest of the NAS**



Concepts, Validation, and Requirements

- **The CVR Operating Model is a 12 step process for defining and validating operational needs within the NAS, (designed consistent with existing FAA policies and guidance , e.g. Acquisition Management System, Systems Engineering Manual, etc), and ensuring concept and requirements continuity through solution implementation.**
- **The CVR process consists of three main components:**
 - (1) a Responsible, Accountable, Support, Consult and Inform (RASCI), which identifies the organizational roles for ATO Operational Concepts, Validation and Requirements work for ANG and non-ANG driven operational needs,
 - (2) a standard intake process for sourcing and identifying operational needs in the NAS, and
 - (3) alignment of the work to be prioritized and assigned through portfolio management.



AJV-7 Interpretation of the CVR Process

Operational Needs				Operational Concepts and Requirements								Requirements / Test																			
1. Define Need		2. Confirm Need		3. Define Concept		4. Confirm Concept		5. Define Requirement		6. Allocate Requirement		7. Confirm Requirement		8. Refine Requirement		9. Test		10. Confirm Requirement		11. Deploy		12. PIR									
A M S L I F E C Y C L E	1																						2	3	4	5					
	Scope ID Mission Benefactor(s) ID Project Resources		✓In Scope (Characterize) ✓Consistent with ATO Mission Space ✓Not Duplicative ✓Articulate Priority (Define Urgency)		GO or NO GO Decision or Recommendation		Develop CONOPS ✓Operationally Viable ✓Mission Beneficial ✓Scenarios Validated ✓Recommendation		GO or NO GO Decision or Recommendation		Functional and Performance Analysis Decompose Stated/ Derived		Assigned to People, Systems or Activities		✓Test Verification ✓Meets the Need ✓Traceability to CONOPS (RTM)		GO or NO GO Decision or Recommendation		Review and Analysis ✓Develop lower level requirements for vendor development		Observation and Discovery ✓Determine Priority Level ✓Identify level of discrepancy ✓Develop mitigation plan		Observation Acceptance: ✓Operational Viable ✓Traceability to CONOPS		Implementation ✓Train ✓Install		Post Implementation Review ✓Quality Control ✓Address Shortfall ✓Continuity of Service ✓Transfer Risks (accountability)				
	Service Analysis & Strategic Planning										CRD				CRD / IIA / FIA				Solution Implementation						In-Service Mgmt.						
	A. Assess		B. Assess						C. Assess						D. Assess		E. Assess		F. Assess						G. Assess						
	Screen/ Review Relative Importance Org Assignment		Relative Priority Validate Resources Assign/ Redirect						Relative Priority Sequencing service evolution and ID Inter-Dependencies Assign						Relative Priority Trade-Offs Assign		Relative Priority Assign		Relative Priority Assign						Disposition						
NextGen																															
AJV-7	S	R	S	A/R	S	A/R	A/R	S	S	A/R	A/R	R	A/R	R	A/R	A/R	C	I	AJV-7												
PMO	C	S	S	S	S	S	S	A/R	A/R	S	S	A/R	S	A/R	S	S	A/R	A/R	PMO												
NextGen	A/R	A/R	A/R	R	A/R	R	R	S	S	R	R	C	R	C	R	C	I	C	NextGen												
OPS - AIT/ AJR/AJI/ AJW	R	R	R	R	S/I	S/I	R	S/I	S/I	S/I	R	S/I	R	S/I	R	R	R	R	OPS - AIT/ AJR/AJI/ AJW												
Non NextGen																															
AJV-7	C	A/R	A/R	A/R	A/R	A/R	A/R	S	S	A/R	A/R	R	A/R	R	A/R	A/R	C	C	AJV-7												
PMO	S	S	S	S	S	S	S	A/R	A/R	S	S	A/R	S	A/R	S	S	A/R	A/R	PMO												
NextGen	C	R	C	R	C	C	R	C	C	C	C	C	R	C	R	I	I	I	NextGen												
AJV1, AJV5, AJV8 Service Centers	C	C	C	C															AJV1, AJV5, AJV8 Service Centers												
OPS - AIT/ AJR/AJI/ AJW	A/R	R	R	R	S/I	S/I	R	S/I	S/I	S/I	R	S/I	R	S/I	R	R	R	R	OPS - AIT/ AJR/AJI/ AJW												

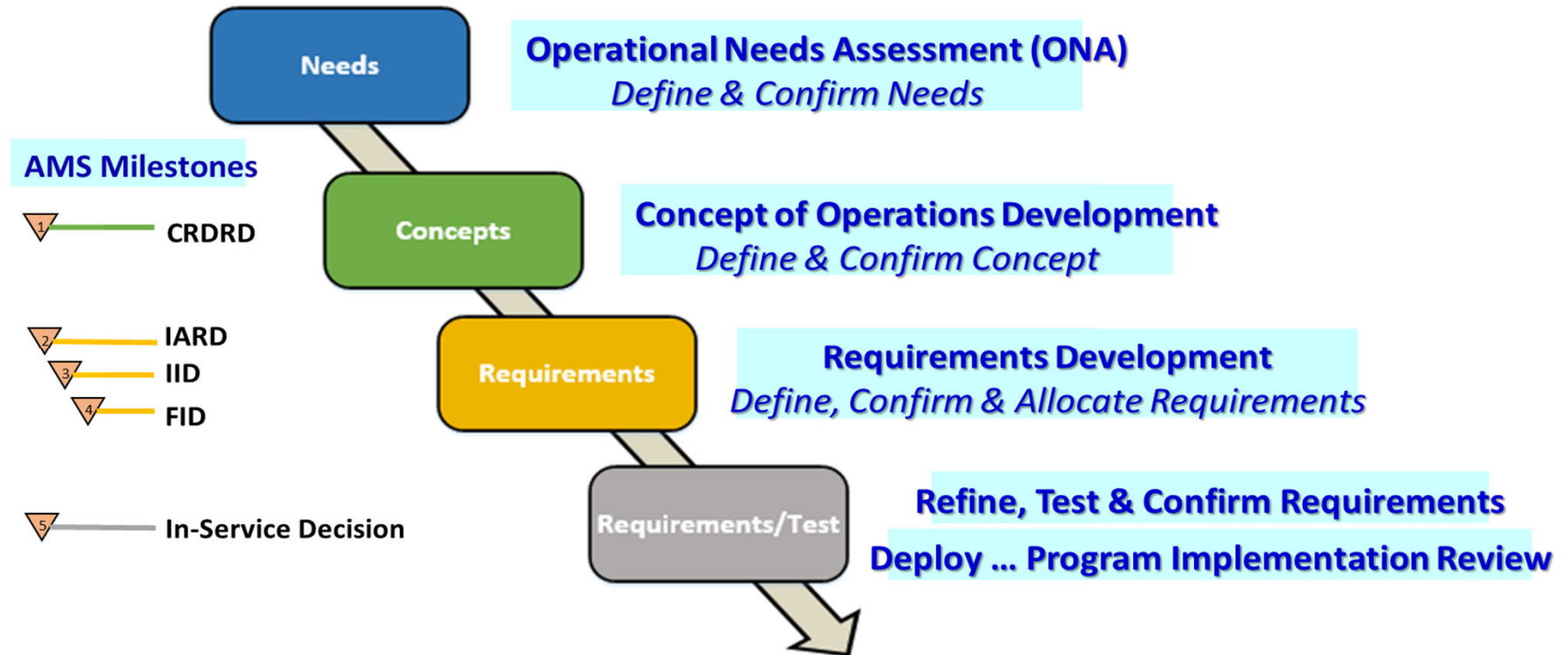
Non NAS

CVR Operating Model – RASCI



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CVR Operating Model – Summary Phases



ONA Process Summary

Process Steps

Activities

Output Artifacts

1. Define Need

- Describe the Problem
- Identify Stakeholders
- Identify Impacts

A. Assess

- Screen Need
- Screen Need Decision
- Review Need
- Review Need Decision
- Inform Directors Forum

2. Confirm Need

- Validate ONA Plan & Resource Needs
- Conduct ONA Data Discovery
- Confirm ONA Scope, Impacts & Findings
- Identify Operational Importance & Validate Concepts Plan/Resources
- Confirm Need Recommendation

B. Assess

- Front Line Managers' Decision
- Group Managers' Decision
- AJV-7 Director's Decision
- Directors Forum Decision

Non-NextGen RASCI	
AJV-7	C
PMO	S
NextGen	C
Service Centers	C
Ops: AJT/AJR/AJI/AJW/AJV	A/R

- ☐ Operational Needs Assessment (ONA) Input Request Form

Non-NextGen RASCI	
AJV-7	A/R
PMO	S
NextGen	R
Service Centers	C
Ops: AJT/AJR/AJI/AJW/AJV	R

- ☐ A. Assess – Assessment Form

Non-NextGen RASCI	
AJV-7	A/R
PMO	S
NextGen	C
Service Centers	C
Ops: AJT/AJR/AJI/AJW/AJV	R

- ☐ 2. Confirm Need – Assessment Form
- ☐ Data Discovery Template
- ☐ Work Plan Schedules
- ☐ ROM Schedule & Labor Estimate
- ☐ Operational Scenario
- ☐ Operational Importance Scorecard
- ☐ Directors Forum Package

Non-NextGen RASCI	
AJV-7	A/R
PMO	S
NextGen	R
Service Centers	C
Ops: AJT/AJR/AJI/AJW/AJV	R

- ☐ B. Assess – Assessment Form
- ☐ Directors Forum Disposition
- ☒ GO or NO GO Decision



Concept Phase Process Summary

Process Steps

Activities

Output Artifacts

3. Define Concept

Explore Concept:

- Develop AJV-7 Project Plan & Stakeholder Engagement Plan
- Describe As-Is & To-Be Environment
- Analyze Service Gaps & Capability Shortfalls

Non-NextGen RASCI	
AJV-7	A/R
PMO	S
NextGen	C
Service Centers	
Ops: AJT/AJR/AJI/AJW/AJV	S/I

- ☐ Project Plan
- ☐ Stakeholder Engagement Plan
- ☐ Concept of Operations (Prelim)
- ☐ Operational Scenarios (Prelim)
- ☐ Use Case Documents (Prelim)
- ☐ Enterprise Views (Prelim)
- ☐ Qualitative Shortfalls & Benefits Report (Prelim)

Develop Concept:

- Refine Environment Descriptions
- Refine Enterprise Views
- Quantify/Monetize Shortfalls & Benefits

- ☐ Concept of Operations (Update)
- ☐ Operational Scenarios (Update)
- ☐ Use Case Documents (Update)
- ☐ Enterprise Views (Update)
- ☐ Quantitative Shortfalls & Benefits Report (Update)

4. Confirm Concept

- Validate Environment Descriptions
- Validate Enterprise Views
- Validate Shortfall & Benefit Descriptions
- Verify Operational Suitability of Concept
- Confirm Concept Maturity
- Confirm Service Sequencing
- Confirm Interdependencies
- Confirm Relative Priority
- Concept Phase Recommendation

Non-NextGen RASCI	
AJV-7	A/R
PMO	S
NextGen	C
Service Centers	
Ops: AJT/AJR/AJI/AJW/AJV	S/I

- ☐ Concept of Operations (Final)
- ☐ Operational Scenarios (Final)
- ☐ Use Case Documents
- ☐ Enterprise Views (Final)
- ☐ Quantitative Shortfall & Benefit Report (Final)
- ☐ Service Sequencing
- ☐ Concept Maturity Assessment
- ☐ Directors Forum Package

C. Assess

- Front Line Managers' Decision
- Group Managers' Decision
- AJV-7 Director's Decision
- Directors Forum Decision

Non-NextGen RASCI	
AJV-7	A/R
PMO	S
NextGen	R
Service Centers	
Ops: AJT/AJR/AJI/AJW/AJV	R

- ☐ Directors Forum Disposition
- ☒ GO or NO GO Decision

Legend:

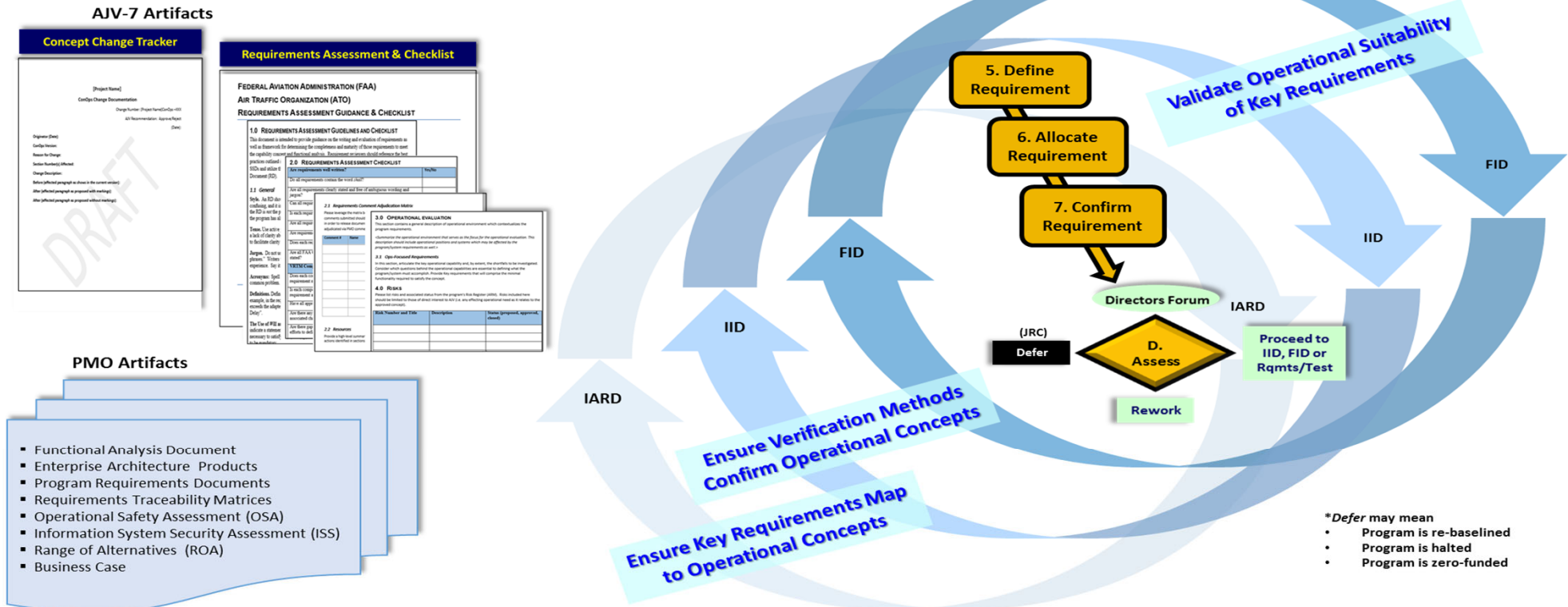
Blue Text = AJV-7

Activities & Products



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Requirements Phase Strategy



AJV-7 Staff Use Concept Tracker & Requirements Checklist to Ensure Continuity of Requirements



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AJV-7 Requirements Continuity Tools

Concept Change Tracker

[Project Name]

ConOps Change Documentation

Change Number: [Project Name]ConOps-XXXX

AJV Recommendation: Approve/Reject

(Date):

Originator (Date):

ConOps Version:

Reason for Change:

Section Number(s) Affected:

Change Description:

Before (affected paragraph as shows in the current version):

After (affected paragraph as proposed with markings):

After (affected paragraph as proposed without markings):

Requirements Assessment & Checklist

FEDERAL AVIATION ADMINISTRATION (FAA)

AIR TRAFFIC ORGANIZATION (ATO)

REQUIREMENTS ASSESSMENT GUIDANCE & CHECKLIST

1.0 REQUIREMENTS ASSESSMENT GUIDELINES AND CHECKLIST

This document is intended to provide guidance on the writing and evaluation of requirements as well as framework for determining the completeness and maturity of those requirements to meet the capability concept and functional analysis. Requirement reviewers should reference the best practices outlined in the following sections.

SSDs and utilize the Document (RD).

1.1 General

Style. An RD should be clear, concise, and it is the RD is not the program has all the information.

Tense. Use active voice to facilitate clarity.

Jargon. Do not use jargon. Writers should use plain language.

Acronyms. Spell out acronyms the first time they are used.

Definitions. Define terms, for example, in the requirements, the use of the word "shall" is not appropriate.

The Use of Will. Indicate a statement of intent or a requirement that is necessary to satisfy the mission.

2.0 REQUIREMENTS ASSESSMENT CHECKLIST

Are requirements well written?	Yes/No
Do all requirements contain the word "shall"?	
Are all requirements clearly stated and free of ambiguous wording and jargon?	
Can all requirements be implemented?	

Is each requirement a requirement?

Are all requirements necessary?

Are requirements necessary?

Does each requirement have a purpose?

Are all FAA requirements necessary?

VRIM Comments

Does each requirement have a purpose?

Is each requirement a requirement?

Have all requirements been reviewed?

Are there any associated comments?

Are there any associated comments?

Are there any associated comments?

Are there any associated comments?

2.1 Requirements Comment Adjudication Matrix

Please leverage the matrix to adjudicate comments submitted in order to release documents adjudicated via PMO comments.

Comment #	Name

2.2 Resources

Provide a high-level summary of actions identified in sections 1.0 through 2.0.

3.0 OPERATIONAL EVALUATION

This section contains a general description of operational environment which contextualizes the program requirements.

<Summarize the operational environment that serves as the focus for the operational evaluation. This description should include operational positions and systems which may be affected by the program/system requirements as well.>

3.1 Ops-Focused Requirements

In this section, articulate the key operational capability and, by extent, the shortfalls to be investigated. Consider which questions behind the operational capabilities are essential to defining what the program/system must accomplish. Provide Key requirements that will comprise the minimal functionality required to satisfy the concept.

4.0 RISKS

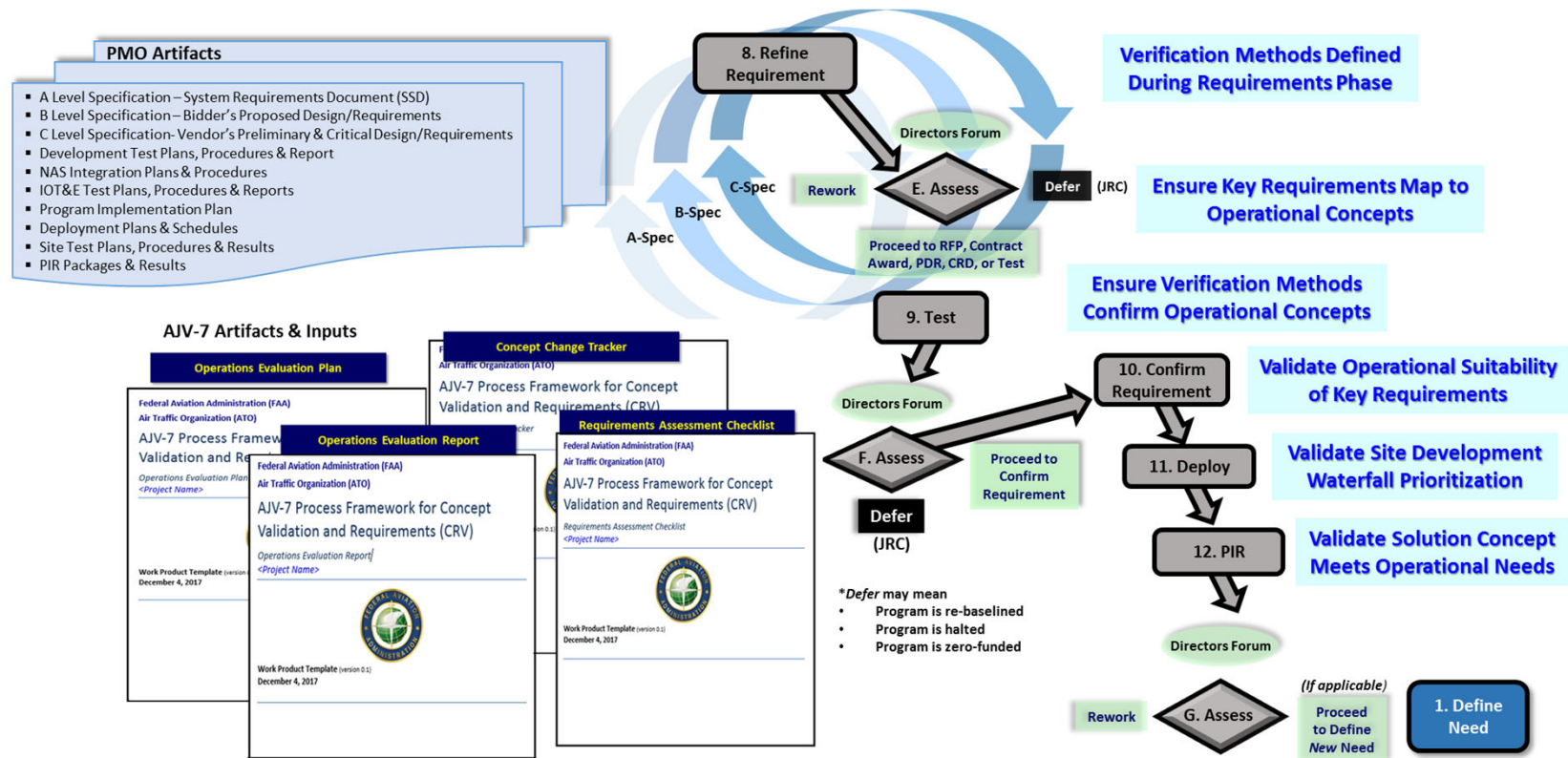
Please list risks and associated status from the program's Risk Register (ARM). Risks included here should be limited to those of direct interest to AVJ (i.e. any effecting operational need as it relates to the approved concept).

Risk Number and Title	Description	Status (proposed, approved, closed)



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Requirements/Test Phase Strategy



AJV-7 Staff Use Concept Tracker & Requirements Checklist to Ensure Continuity of Requirements



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Requirements/Test Process - 8 to F. Assess



Requirements/Test Process –10 to G. Assess

