RCE workshop

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✈ **FAA Notice 8110.110**
(overview and discussion)

Coffee Break

✈ **Early Involvement vs. Independence**
(brainstorming)

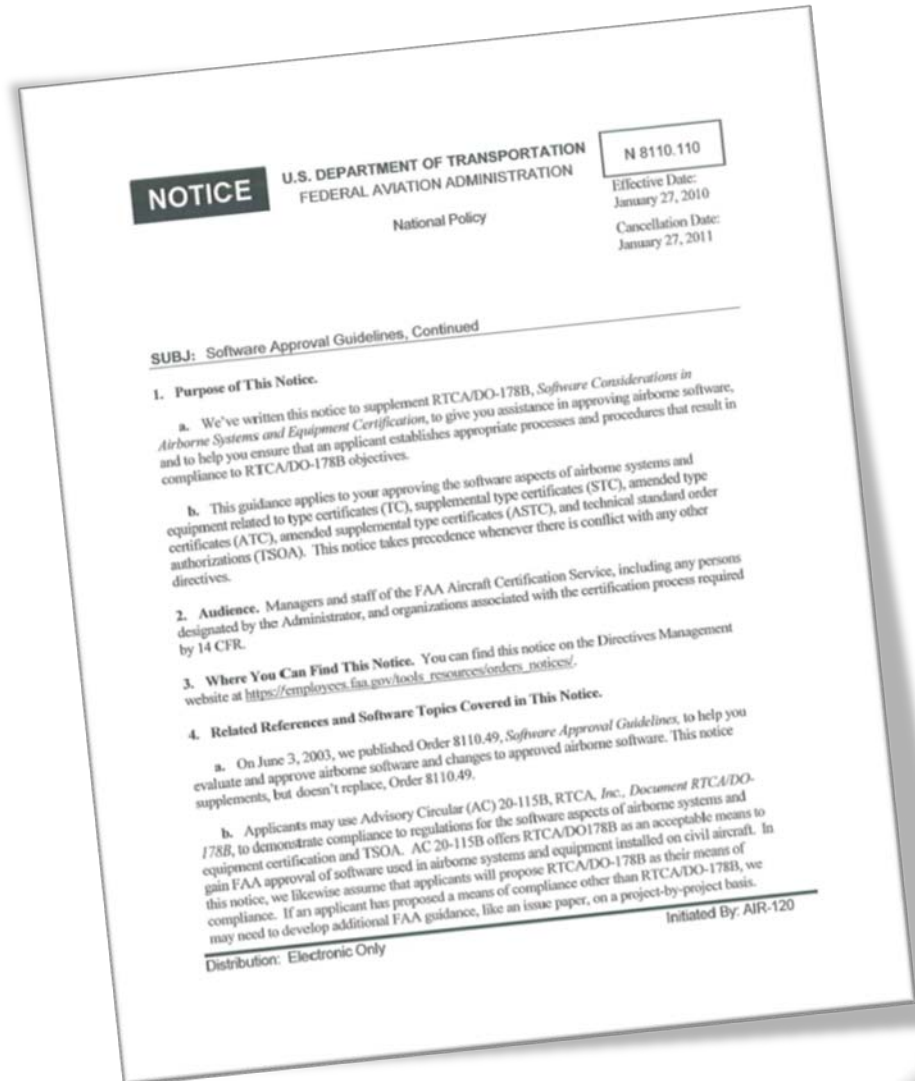✈ **Type of Delegation vs. Activities Visibility**
(brainstorming)

FAA Notice 8110.110

☆ **January 27, 2010**

✢ **January 27, 2011**

Plan: revise FAA Order 8110.49

- ✈ **Overseeing Suppliers**

- ✈ **Software Problem Reporting**

- ✈ **Databases**

- ✈ **Software Environment**

Chapter 1:
Properly Overseeing Suppliers

✈ **When to Apply**

✈ **Contemporary Issues**

✈ **Oversight Plans and Procedures**

✈ **Review the Applicant´s Plans**

→ **When to Apply?**

When an applicant uses suppliers and sub-tier suppliers to perform system and software development,verification, and certification activities

→ **Contemporary Issues**

lack of expertise in compliance activities

V&V of LCData at transition point

Certification tasks in foreign countries

Retention of substantiating data

Oversight Plans and Procedures

Create oversight Plans&Proc: ensure suppliers will comply with all regulations, policy, guidance, agreements and standards ...

Planning docs (e.g. CertPlan, PSAC): how visibility of suppliers' activities (including COTS vendors)

Review the Applicant's Plans (1/2)

Visibility into compliance with regulations, policy, plans, standards, and agreements

Integration Management: ...

Designee tasks and responsibilities

Problem reporting and resolution

Review the Applicant's Plans (2/2)

Integration verification activity

Configuration management

Compliance substantiation & data retention...

Cert.Data in the USA and in English

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✔ **Overseeing Suppliers**

✈ **Software Problem Reporting**

✈ **Databases**

✈ **Software Environment**

Software Problem Reporting

Certification Issues

Aircraft impact analysis

Applicant visibility

Large number of OPRs

Oversight

→+ **Objectives**

Reported & Resolved

Software Development Assurance Before Certification

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Requirements

PR Management Plan

- Suppliers and sub-tiers process
- PR Categorization
- Applicant notification
- Review & change control boards
- OPR acceptability criteria

Requirements

Suppliers and sub-tiers process

Reported	Re-verified
Assessed	Closed
Resolved	Controled
Implemented	

Requirements

PR categorization

Aircraft and design assurance impact.

Before certification X Beyond certification

Criteria for deferring problem

Requirements

Applicant notification

- Applicant X supplier PR system

- Describe any tools (action items or observations)

- Only one supplier PR system

- Visibilities to appropriate disciplines

➤ **Requirements**

Review & change control boards

Flight Test   Systems

Human Factors   Software

Requirements

OPR acceptability criteria

- Safety, functionality, and operation impacts

- Upper boundary or target limit on the number of OPRs

- Time limit that OPR will be resolved

Authority Activities

- Review all OPRs

- Assure reassessment of PDS

- Assure inter-relationship of multiple POR

- Assure review of AD, SB, or Op. Limitation related OPR

- Assure compliance with DO-178B 11.20 (j)

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→ **When to Apply?**

Suppliers & Sub-tiers

Before & After Certification

✓ **Overseeing Suppliers**

✓ **Software Problem Reporting**

✈ **Databases**

✈ **Software Environment**

Databases

→ **Database Types**

Aeronautical Databases

Airborne System Databases

Other Applications and Databases

➔ **Certification Issues**

⌒ Aeronautical Databases appropriate assurance level

⌒ Airborne System Databases properly verification

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→ **Authority Activities**

⟋Review loading procedures

⟋Ensure maintenance instructions and limitations

⟋Ensure a process for updating each database

Authority Activities

Aeronautical Databases

- Ensure DO-200A
- Ensure appropriate assurance level

Authority Activities

Airborne System Databases

Review safety assessment

Ensure appropriate software level

→ **When To Apply?**

Aeronautical Databases

Airborne System Databases

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✓ **Overseeing Suppliers**

✓ **Software Problem Reporting**

✓ **Databases**

↗ **Software Environment**

Chapter 4: Managing Software Development and Verification Environment

↝ **When to Apply**

↝ **How representative is the Environment?**

↝ **Controlling the Development and Verification Environment**

When to Apply?

When applicant is using a software development or verification environment that may not be completely representative of the target computer

How representative is the Environment?

DO-178B: target computer, target emulator, host computer simulator.

Go through several iterations

Environment   Not-EQ final hardware

Needs: ConfigCtrl + PR system

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✈ **Controlling the Software Development and Verification Environment (SDVE)**

SVP should include:

⌒ difference between SDVE and production

⌒ SDVE description and DO-178B objectives

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Controlling the SDVE   (cont'd)

SVP should include:

How SDVE will be used to comply with 178B for entire .exe

Completed Verification Activities

(SDVE-CIA + SDVE evolution + regression?)

Controlling the SDVE (cont'd)

SCMP should include:

SDVE ConfigCtrl description + responsible

SDVE PR system available to all users

(see Chapter 2)

✓ **Overseeing Suppliers**

✓ **Software Problem Reporting**

✓ **Databases**

✓ **Software Environment**

FAA Notice 8110.110

30 minutes...

5 minutes...

✓ **FAA Notice 8110.110**
(overview and discussion)

Coffee Break

✈ **Early Involvement vs. Independence**
(brainstorming)

✈ **Type of Delegation vs. Activities Visibility**
(brainstorming)

Coffee Break

20 minutes...

Coffee Break

5 minutes...

✓ **FAA Notice 8110.110**
(overview and discussion)

✓ **Coffee Break**

→ **Early Involvement vs. Independence**
(brainstorming)

→ **Type of Delegation vs. Activities Visibility**
(brainstorming)

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How am I involved?

Not as an RCE yet ?

What is my technical role?

Commitment?

Consultant?

+ + & - - ?
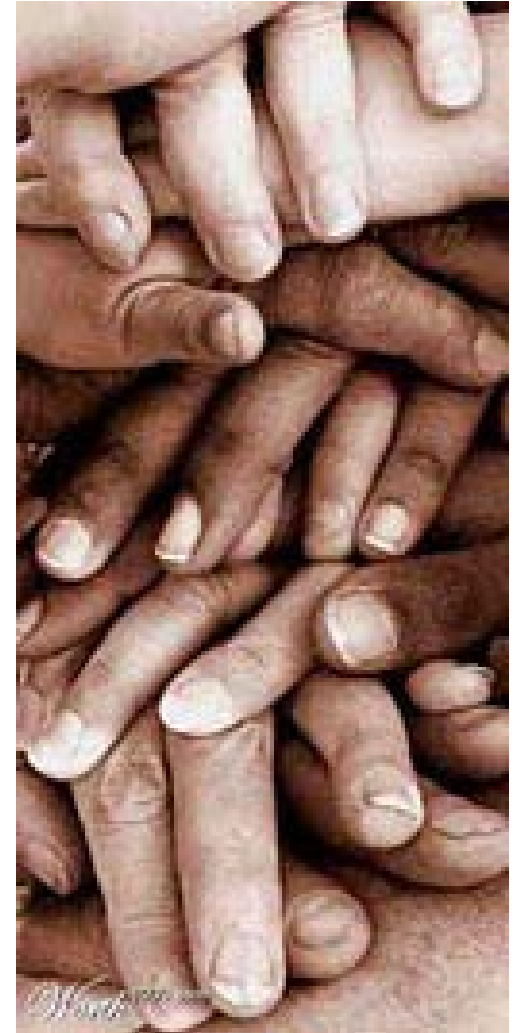
Early Involvement

X

Independence

30 minutes...

Discussion

5 minutes...

✓ **FAA Notice 8110.110**
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✓ **Coffee Break**

✓ **Early Involvement vs. Independence**
(brainstorming)

Type of Delegation vs. Activities Visibility
(brainstorming)

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Are we working together?

Enough autonomy?

Bureaucracy?

Identity crisis?

+ + & - - ?

Type of Delegation
X
Activities Visibility

30 minutes...

Discussion

5 minutes...

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