

Aging Aircraft Program

Systems & Wiring

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Task 2 Working Group member

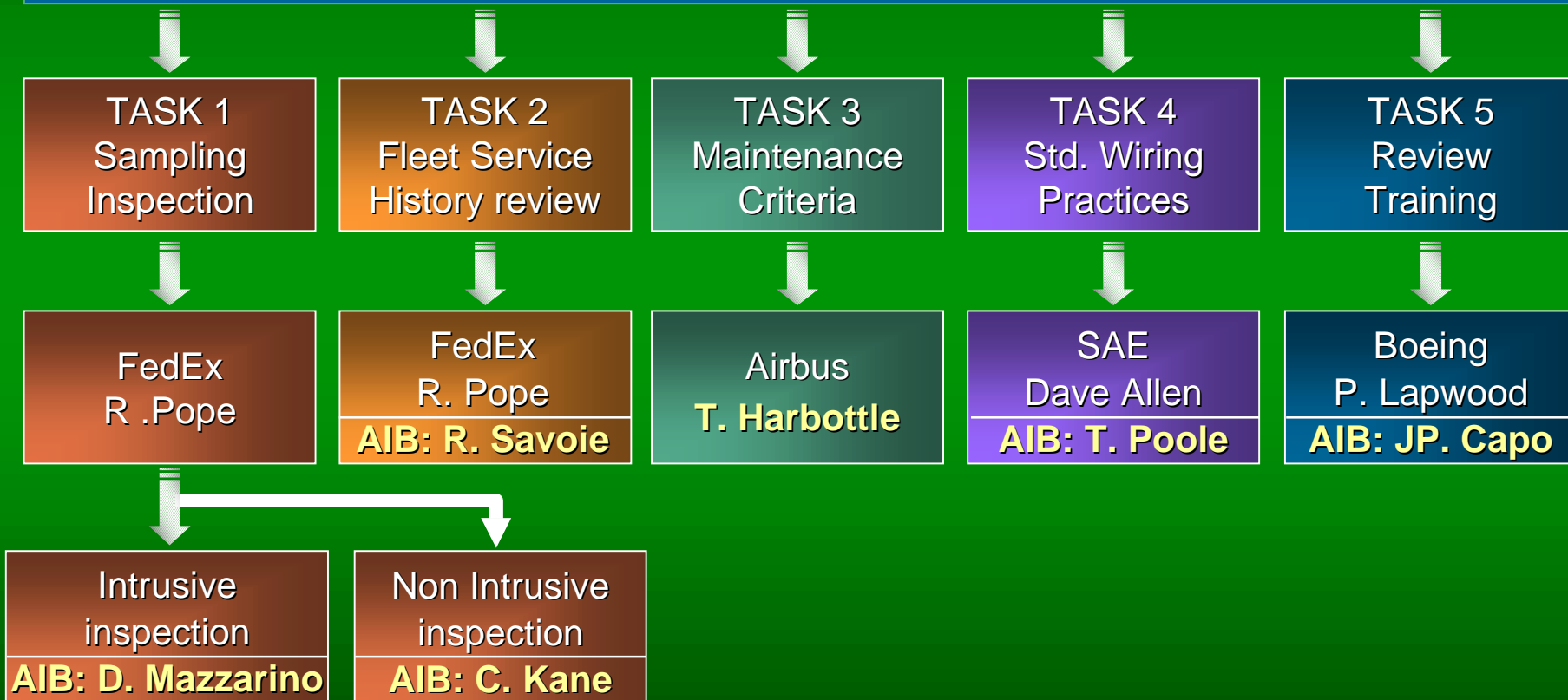
Seattle November 2001

→ Contents

- Airbus participation to ATSRAC phase 1
 - Sampling inspection of the fleet
 - Review fleet service history
 - Improvement of maintenance criteria
 - Electrical wiring standard practices manual
 - Aircraft wiring systems training
- Airbus participation to FAA Aging Mechanical Systems program
- Airbus participation to ATSRAC phase 2

Airbus participation to ATSRAC Phase 1

Aging transport systems rulemaking advisory committee - ATSRAC 1998 - 2000



Phase 1 - Sampling Inspection of the fleet

→ Task 1 - Airbus work

- Situation from each of the 5 A300 significant items

Action	Issue date	Compliance	Title	Comments
ISB 24-0094	Planned end 2001	R	Clamp slippage on strut in zone 270	ESPM 20-52-13 repair section provides enhanced technical process for improved gripping of the clamping attachment when found loose
MPD-Intro	Planned mid 2002	R	Bundle sagging	ESPM 20-52-13 repair section provides enhanced technical process for improved gripping of the clamping attachment when found loose
MPD-Intro	Planned mid 2002	R	Conduit clamping at conduit end	ESPM 20-52-13 repair section provides enhanced technical process for improved gripping of the clamping attachment when found loose
MSB 24--0096	Planned end 2001	R	Bundle contacting structure at 811VU	IPC 31-16-12 will reflect the latest installation configuration after MOD/SB embodiment reporting
MSB 24-0097	Planned end 2001	R	Bracket unstuck in 800VU	IPC31-16-11 will reflect the latest installation configuration after MOD/SB embodiment reporting

Phase 1 - Sampling Inspection of the fleet

→ Task 1 - Conclusion

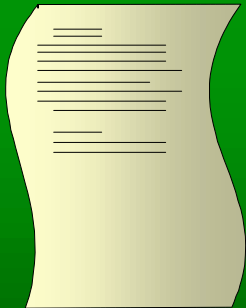
- Status for Airbus: No wiring / wire type airworthiness concern requiring immediate action on the Airbus fleet
- Each findings from the 10 A300 inspections reviewed & investigated due to their repeat occurrence
- None of the five classified as an airworthiness concern
- Fixes for the five items defined. SBs, enhanced guidelines and processes to prevent similar conditions provided through SIL 92-004 dated April 30 / 01

Enhanced awareness of maintenance personnel on wiring issues is necessary. Training is the key.

Phase 1 - Review of fleet service history

→ Task 2

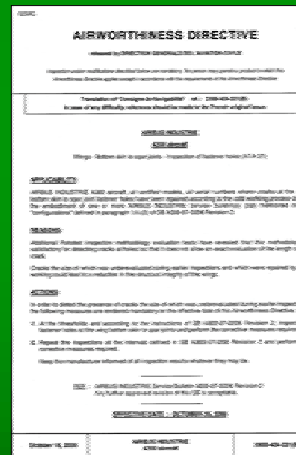
- Review existing airworthiness directives, service data and service experience:



OIT
Operator
Information
Telex



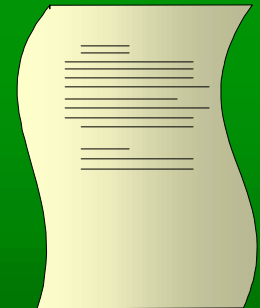
SBs
Service
Bulletins



AD/CN
Airworthiness
Directives/
Consigne de
Navigabilité



SIL
Service
Information
Letter



AOT
All
Operator
Telex

Phase 1 - Review of fleet service history

→ Task 2 - Airbus review of service history/document

- Significant numbers of documents have been scanned:



- 52 documents (mainly SB's) further reviewed for reassessment of Failure Mode Effect Analysis (FMEA)
- Result:
 - 1 CN to be revised to reflect content of AD 84.066.061
 - 3 SB 's upgraded from recommended to mandatory
 - 5 SB's upgraded from desirable to recommended

→ Task 2 - Conclusion

- All ASTRAC queries have been fully answered
- Status for Airbus: few SB revisions issued, Customers informed with OIT's and SIL 92-004
- A300 recommendations validated on A310/A300-600 A/C (Airbus voluntary basis)
- Similar A310/A300-600 service history/document review planned in 2002 (Airbus voluntary basis)

→ Task 3 - Implementation of new logic on A300

- Airbus plan to apply EZAP to the A300 as soon as possible - target mid 2002
- An industry working group will be formed with operators and Authorities
- A new Zonal Inspection Program will be developed using MSG-3 logic
- For A300, promulgation of the new ZIP and the tasks to be added to operators Systems & Power Plant programs will be by Inspection Service Bulletin (ISB),
- reflected in the Maintenance Planning Document (MPD)

Phase 1 - Improvement on Maintenance Criteria

→ Implementation of new logic on A310/A300-600

- Time scale for application on A310/A300-600 not yet identified
- Work will be done through the existing Industry Steering Committee under the Maintenance Review Board (MRB) process
- New tasks developed will be added to an updated MRB Report and reflected in the MPD

→ Task 3 - Conclusion

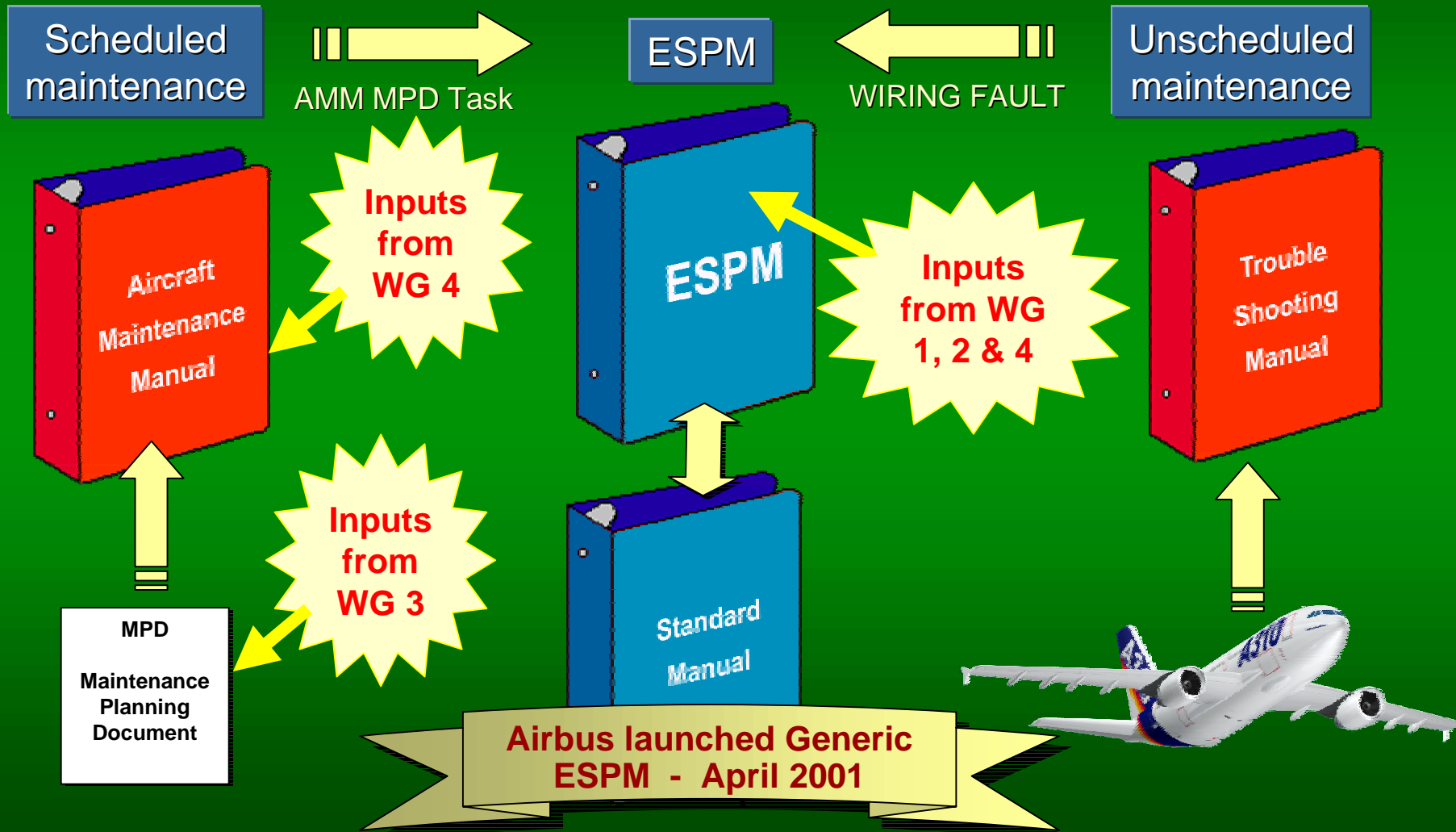
- EZAP developed to enable closer attention to be given to wiring during maintenance program development
- Operators will need to address the consequences of the Task 3 activity relating to new maintenance tasks, revised inspection criteria and enhanced maintenance practices

Taken together, these actions will result in a significant enhancement in the condition of wiring installations

- Airbus has initiated the process that will lead to application of EZAP on its aircraft types

Phase 1 - Electrical wiring Standard Practices Manuals

Task 4 - ESPM & Associated Documentation



Phase 1 - Electrical wiring Standard Practices Manuals

→ Task 4 - Scheduled Maintenance Links

A300 AIRCRAFT MAINTENANCE

ELECTRICAL ROUTING - AFT SECTION

Detailed Visual Inspection of the

WARNING : PUT THE SAFETY DEVICES AND THE M START A TASK ON OR NEAR:

- THE FLIGHT CONTROLS
- THE FLIGHT CONTROL SURFACES
- THE LANDING GEAR AND THE RELAT
- COMPONENTS THAT MOVE.

1. Reason for the Job

Refer to the MPD TASK: 240000-03

2. Job Set-up Information

A. Fixtures, Tools, Test and Support Equipment

REFERENCE	QTY	DESIGNATION
No specific		mirrow
No specific		torch
No specific		access platform 3.4 m (11 ft. 2 in.)

B. Referenced Information

REFERENCE	DESIGNATION
ESPM 20-53-00	Inspection criteria

A300 MAINTENANCE PLANNING DOCUMENT

REV CODE	TASK NUMBER	ZONE	DESCRIPTION	THRESHOLD INTERVAL SAMPLE	SOURCE	REFERENCE
	240000-02-1	330 340 500 600	ELECTRICAL POWER DETAILED VISUAL INSPECTION OF WIRE BUNDLES AT THEIR CONDUIT EXIT (EXCEPT ZONES 574 AND 674)	E 3500 FH	ISB CN	249200-210-001 AMM 249200/6 ISB 24-1044 CN 91-182-020 (B)
	240000-03-1	511 312	ELECTRICAL POWER DETAILED VISUAL INSPECTION OF WIRING BETWEEN	E C	ISB	249219-210-001 AMM 249219/6
	240000-04-1	521	ELECTRICAL POWER	E C	SIL	ISB 24-1060 249200-210-003

ESPM

20-10-00:	Safety Practices
20-42-XX:	Sleeves, Caps, Shield Terminations
20-43-XX:	Splices and Pressure Seals
20-44-XX:	Connectors
20-45-XX:	Direct Connection Components/Relay
20-48-XX:	Terminal Lugs and Contacts
20-50-00:	Electrical Standard Processes
20-51-00:	General Rules
20-52-00:	General Processes
20-53-00:	Repairs Processes
20-54-00:	Miscellaneous Processes
20-55-00:	Standard Tools
20-57-00:	Wires Protections and Attachments
20-71-00:	Engine data

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Probable future implementation for the A300/A310/A300-600

→ Task 4 – Conclusion (as applicable to Airbus)

- ASTRAC Task Groups' recommendations are being applied in Airbus documentation
- Airbus generic ESPM applicable to all Airbus a/c is available
- Enhanced ESPM will include “Maintenance Tips” resulting from ATSRAC recommendations
- Airbus will continue to promote the efficient use of all maintenance manuals by
 - Documentation familiarization courses (on-site)
 - “How To Use” section in the “Introduction” of all manuals, including practical examples
 - User-friendly training and consultation media (Cadets)

→ Task 5 - Airbus wiring systems course project

- Airbus course program development planned
- Customized to cover all Airbus aircraft family
- Based on ATSRAC task 5 curriculum and lesson plans
- Theoretical: 50% / Practical: 50%
- Minimum 1 week course
(expandable as required or necessary)
- Course development completion and availability planned end 2002

→ Task 5 - Airbus wiring systems course *(cont'd)*

- Objective is to develop an effective and attractive training course, balancing
 - Media, films, pictures presentation
 - Hands-on components / documentation familiarization
 - Troubleshooting exercises with
 - Line-oriented scenarii to solve problems
 - Actual standard tool kit for practical repairs

Phase 1 - Aircraft wiring systems training

→ Wide range of training media

CD-ROM

Wiring

Systems

Training

Course

Video clips

Pictures



Hard-copy
+ CD-ROM

← ESPM

Microfilms

← WDM (AWM,
ASM, AWL)

CD-ROMs

← CAATS

← ADRES

← TPCI

Phase 1 - Aircraft wiring systems training

→ Standard tool kit for hands-on repair practice

Connector
Assembly

Disassembly

Wire
stripping

Contact
crimping

Insertion
Extraction



Splice
assembly

Solder
Sleeve
&
sleeve
heat-shrink

Electrical
test
meters

→ Task 5 - Conclusion

- Feedback received from airlines, repair stations & industry
 - + Recommendations from task 1, 3, and 4 WGs
 - + Assessment of the effectiveness of current training programs
- = Model Curriculum with detailed lesson plans on aircraft wiring systems developed & provided to operators (SIL 00-076)

This training Model will effectively focus greater attention on the issue of aging wiring systems

- Airbus course availability planned end 2002

→ Atsrac phase 1 (1998-2000) - Summary

- FAA has launched an ambitious & aggressive program on Aircraft system aging
- Airbus has actively participated in ATSRAC, providing expertise and resources to all working groups
- Airbus operators have been regularly informed through the Operator Information Telex (OIT) channel
- More details on the ATSRAC tasks and results are provided through Service Information Letters (SIL)
- Airbus also encourage operators to visit the FAA web site (www.mitrecaasd.org/atstrac/)

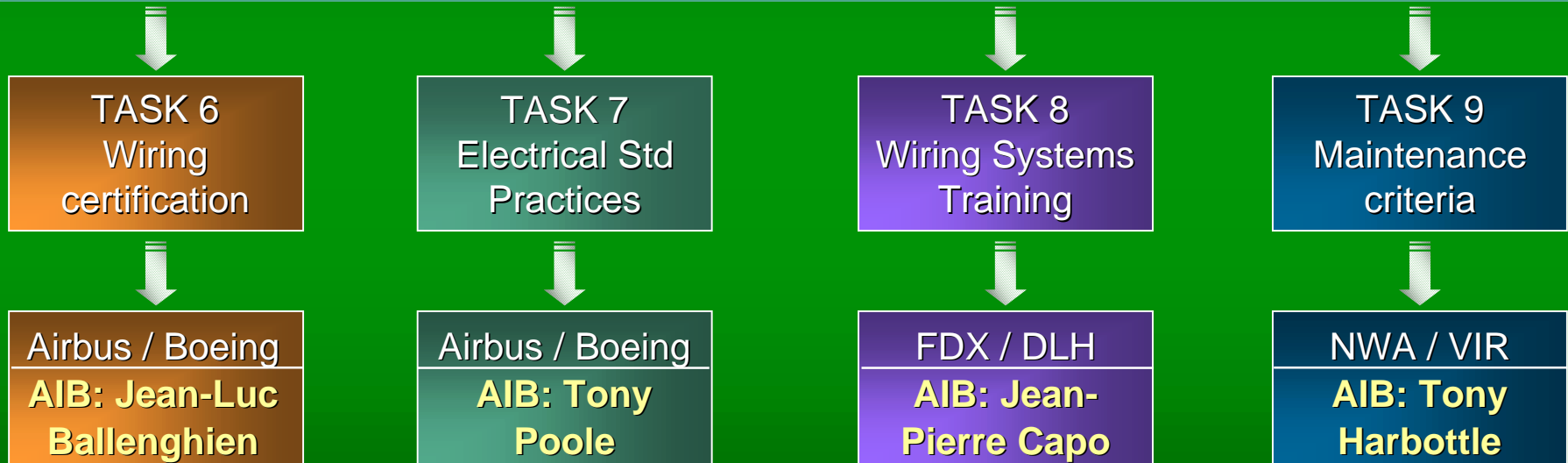
→ Phase 1 (2001-2003) - Flight Control Systems

- Airbus supports the new FAA's research program to evaluate aging mechanical system processes to continued operational safety
- Airbus will contribute to :
 - the assessment of design & manufacture's maintenance instructions on the A320 Flight Control system Yaw axis
 - the assessment of maintenance & service history associated with this flight control system
 - the assessment of the condition of flight control linkages on aging aircraft (SEDLP)

Airbus participation to ATSRAC Phase 2

→ Atsrac phase 2 (2001-2002) - On-going

Aging transport systems rulemaking advisory committee - ATSRAC 2001 - 2002



→ Atrac phase 2 (2001-2002) - On-going

- FAA & JAA will implement ATSRAC recommendations
- Proposed rulemaking advisory material expected from 2002 onwards
- OAMs, STC applicants, operators, PMIs, ACOs will be affected
- Airbus, Boeing, Bombardier, Dassault, Embraer fully involved with FAA and ATSRAC to enhance aircraft design, maintenance and safety



Thank you for your attention