

FAA Composite Safety & Certification Initiatives



Federal Aviation
Administration

- *Background*
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- *Summary of progress and plans*

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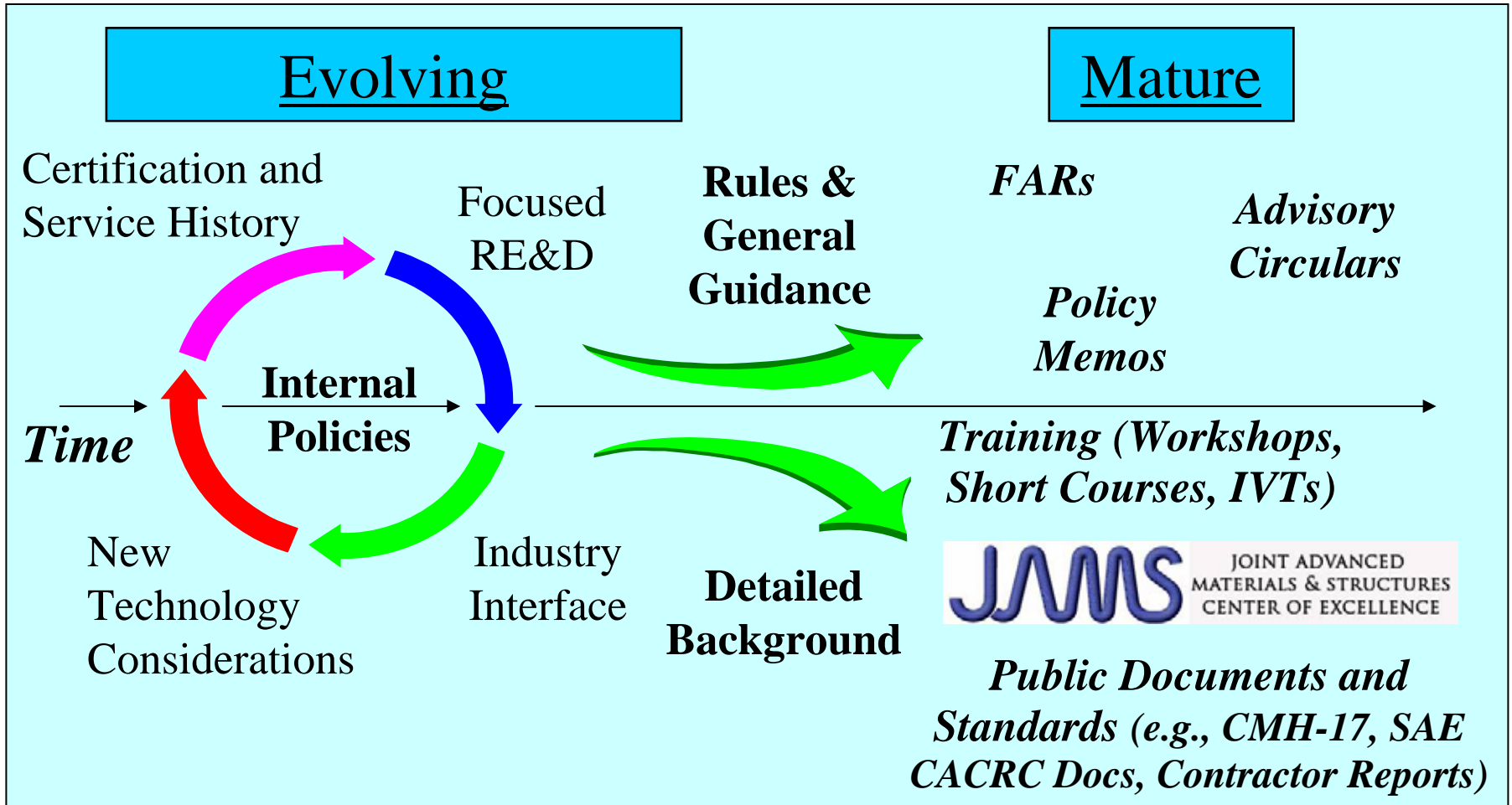
Ongoing Composite Safety & Certification Initiatives*

Objectives

- 1) Work with industry, other government agencies, and academia to ensure safe and efficient deployment of composite technologies used in existing and future aircraft
- 2) Update policies, advisory circulars, training, and detailed background used to support standardized composite practices

** Efforts started in 1999 to address issues associated with increasing composite applications*

FAA Approach to Composite Safety and Certification Initiatives



Important Teammates

- NASA support to composite applications
 - Significant research support since 1970/1980s
 - AA587, A300-600 accident investigation
 - NCAMP support to material standardization
- Partnerships with industry have been essential, e.g., CMH-17, SAE P-17, CACRC, ASTM, SAMPE, AGATE, SATS, RITA, SAS/IAB/AACE



Training
Databases
Standardization
Engineering guidelines



- Safety Management working groups in CMH-17 and CACRC
- DOD and DARPA research
- EASA and other foreign research/standardization

Composite Technical Thrust Areas

Advancements depend on close integration between areas

Material Control, Standardization
and Shared Databases

Structural Substantiation

- Advances in analysis & test building blocks
- Statistical significance
- Environmental effects
- Manufacturing integration

Progress to Date

- 2 Advisory Circulars
- 6 Policy Memos
- 9 Workshops
- 3 Training Initiatives
- 2 Technical Reports
- CMH-17 Updates
- SAE CACRC Standard
- ~50 FAA R&D Reports

Damage Tolerance and Maintenance Practices

- Critical defects (impact & mfg.)
- Bonded structure & repair issues
- Fatigue & damage considerations
- Life assessment (tests & analyses)
- Accelerated testing
- Structural tear-down aging studies
- NDI damage metrics
- Equivalent levels of safety
- Training standards

Bonded Joint
Processing Issues

Advanced Material
Forms and
Processes

Flammability &
Crashworthiness

*Support to cabin
safety research groups*

Significant progress, which has relevance to all aircraft products, has been gained to date

Summary of Progress and Plans

- Composite Safety & Certification Initiative Highlights
 - Policy/guidance on material qualification, equivalency testing, and M&P specifications for shared databases (2000-2003)
 - Policy/training for static strength substantiation (2001)
 - Rotorcraft fatigue and damage tolerance Rule/AC (2002)
 - Composite certification roadmap (2003)
 - Bonded joints and structures policy (2004-2005)
 - Maintenance & repair awareness training standard (2005-2007)
- Ongoing and near-term efforts
 - Current focus on damage tolerance and maintenance
 - CMH-17 Revision G (2008)
 - Update AC 20-107A: Composite Aircraft Structure (2008-2009)
- Desire additional DOD interface in the future

