Regulatory Path To Enable ODM

Presentation to: NASA ODM Workshop
By: Wes Ryan, Manager ACE-114
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Objective

• Discuss Risk-Based Certification
• Outline our Regulatory Structure for Future
Past Successes

- AGATE Started New Ideas That Became Reality
- Moving Map GPS, Synthetic Vision, ADSB, etc.
- “Unimaginable” Benefits for GA
- UAS = next prototyping space
Our Present Opportunity

- Look Ahead to part 23 in 5-20+ Yrs
- Encourage New, Safer Designs While Reducing Cert Cost
- Improving Access - Reduced Need for Training/Skill - Virtual CoPilot
- Transform entry level GA airplanes & transportation for 21st century
- Personalized Recreational & Transportation, but at a Faster Pace – Prototype in UAS Industry
- Risk Based Decisions & Performance Driven Requirements
Society’s Expectations – Circa 1945

- Cessna 140 (1946)
- Lockheed Constellation (1943)
- Douglas DC-6 (1947)
- Cessna 195 (1947)

Society’s Demand for Safe Outcomes

Societally Accepted Risk (1940s)

Less Demand → More Demand

Public Demand for Safety Assurance

Absolute Safety

Zero Risk

No Operations

Commercial

General Aviation

Types of Aircraft & Operation

Public Domain

Regulatory Structure Based on Weight/Speed

PHOTO: Everts Air Cargo

PHOTO: Bidgee

PHOTO: Tom Gideon
Today’s Risk Based Continuum

- Part 25 Transport Category Passenger Aircraft
- Large Part 25 Business Jets
- Part 23 Commuter Aircraft
- Part 23 Business Jets
- Part 23 Light Jets, Twins
- Part 23 Single Engine
- Light Sport Aircraft
- Amateur Built
- Models
- Toys

Society’s Demand for Safe Outcomes

Societally Accepted Risk & Desire for Low Cost

Public Demand for Safety Assurance

Zero Risk
No Operations
No Innovation
Absolute Safety

NASA ODM Workshop
Federal Aviation Administration

Level Of Certification Rigor & Oversight
Improving our Regulatory Structure

Updating to Respond to Changing Industry

• 2007- FAA commissioned a certification process study for normal, utility, acrobatic, and commuter category airplanes (Part 23 aircraft).

• Evaluate adequacy of the current airworthiness standards throughout a small airplane’s service life while anticipating future requirements.

• Recommended Part 23 re-organize using both safety-focused CFR requirements accompanied with government / industry standards.
Performance Based Regs

- Revise CFR to eliminate weight & propulsion divisions
- Apply FAA Resources to New & Novel, High Risk Certification
- Address Remaining Root Causes of GA Fatalities
- Utilize Industry Standards
Resulting Regulatory Continuum

Future State - Part 21 Certification & Production Requirements

Based on Typical Operations

UAS RC6 & Part 25

DRAFT

Requirements are driven by risk and scalable based on risk assessments and CONOPs.

Globally Proposed Categories

- Part 21.17(b)
- Part 21.19X
- Part 107

UAS RC6 & Part 25

UAS RC5 & Part 23 Light Jets and Twin Engines

F39 & F44 Industry Stds

UAS RC4 & Part 23 Single Engine

F39 & F44 Industry Stds

UAS RC3 & LSA

F37 Industry Stds

UAS RC1 and RC2

F38 Industry Stds

No Airworthiness Certificate Required

Adherence to Industry Standards

Certificate of Airworthiness

Scalable Production Oversight

TC & PC Required
Seek to Address Fatal Accident Rates
Annual Average from 2005 through 2009

- Scheduled part 121
- Corporate
- Scheduled part 135
- On demand part 135
- Business
- Personal
- LSA
- Amateur-built

Fatal Accidents per 100,000 Flight Hours

PHOTO BY: Oscar Perez/Casa Grande Dispatch
Factors Influencing the Reorganization

New Part 23 Regulatory Approach

- FAA Certification Process Study
- FAA Modernization and Reform Act of 2012
- FAA Strategic Initiatives – Risk-Based Decision Making
- National Technology Transfer and Advancement Act of 1995
- Small Airplane Revitalization Act of 2013
- Safety Continuum Doctrine
- Part 23 Reorganization ARC
Summary

• The FAA led the global initiative to redefine small airplane airworthiness standards with significant industry and international support for this effort.
• The teams are maturing the NPRM and an Implementation Plan.
• Performance based standards ENABLE innovation in a cost effective manner by
  • Facilitating the implementation of technologies to improve safety; an
  • Removing barriers, such as for electric propulsion.
• The use of industry standards provide agility and streamline the type certification process.
Build The Path

• Partnerships
• R&D Collaboration
• Prototyping in UAS
• Leverage UAS Tech
  – Controls
  – Air Traffic Integration
  – Sensors/Motors/Batteries/Etc.
Thank You

Contact Information

Wes Ryan
ACE-114 | Small Airplane Directorate
816.329.4127
wes.ryan@faa.gov