6th Annual Airworthiness Seminar

Federal Aviation Administration

FAA Aircraft Certification Overview & International engagement

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From: Aircraft Certification – International (AIR-400)

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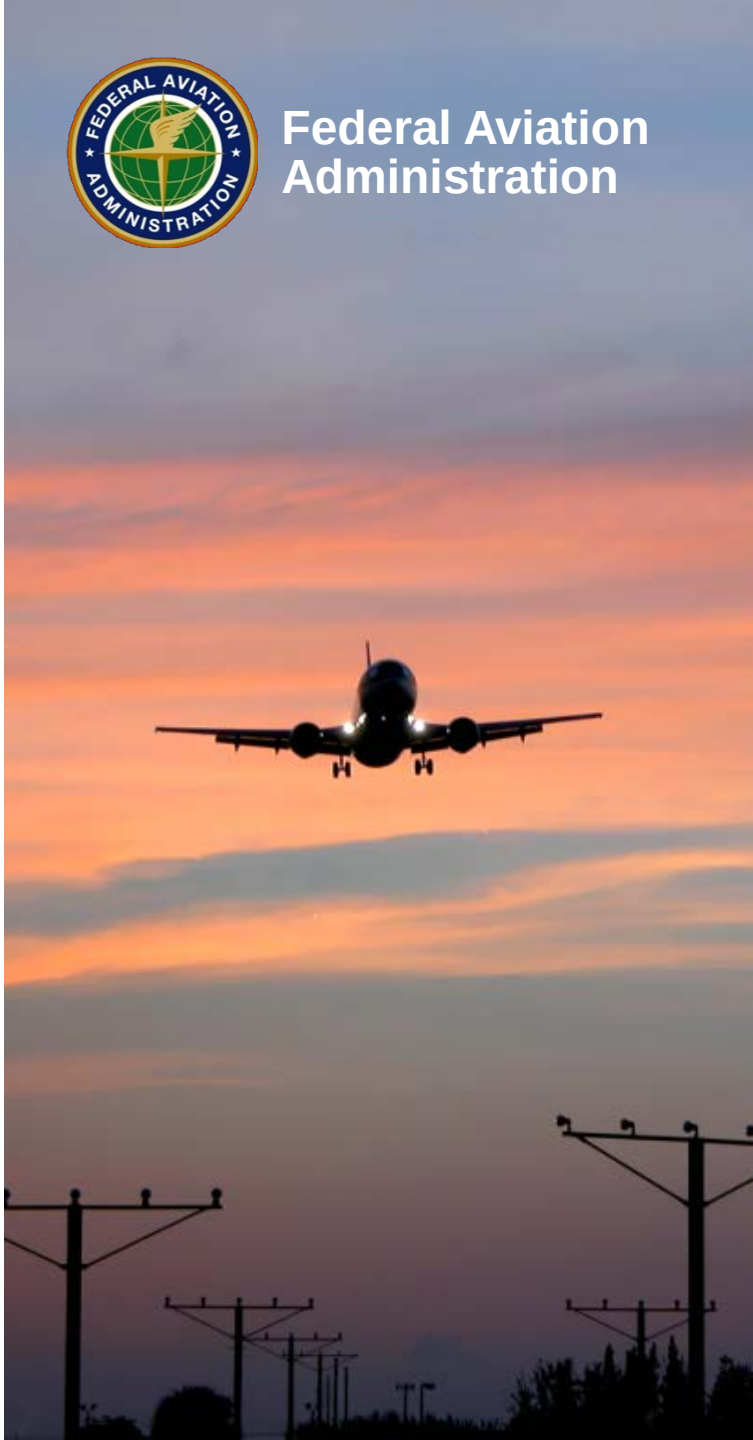
Santa Cruz, Bolivia



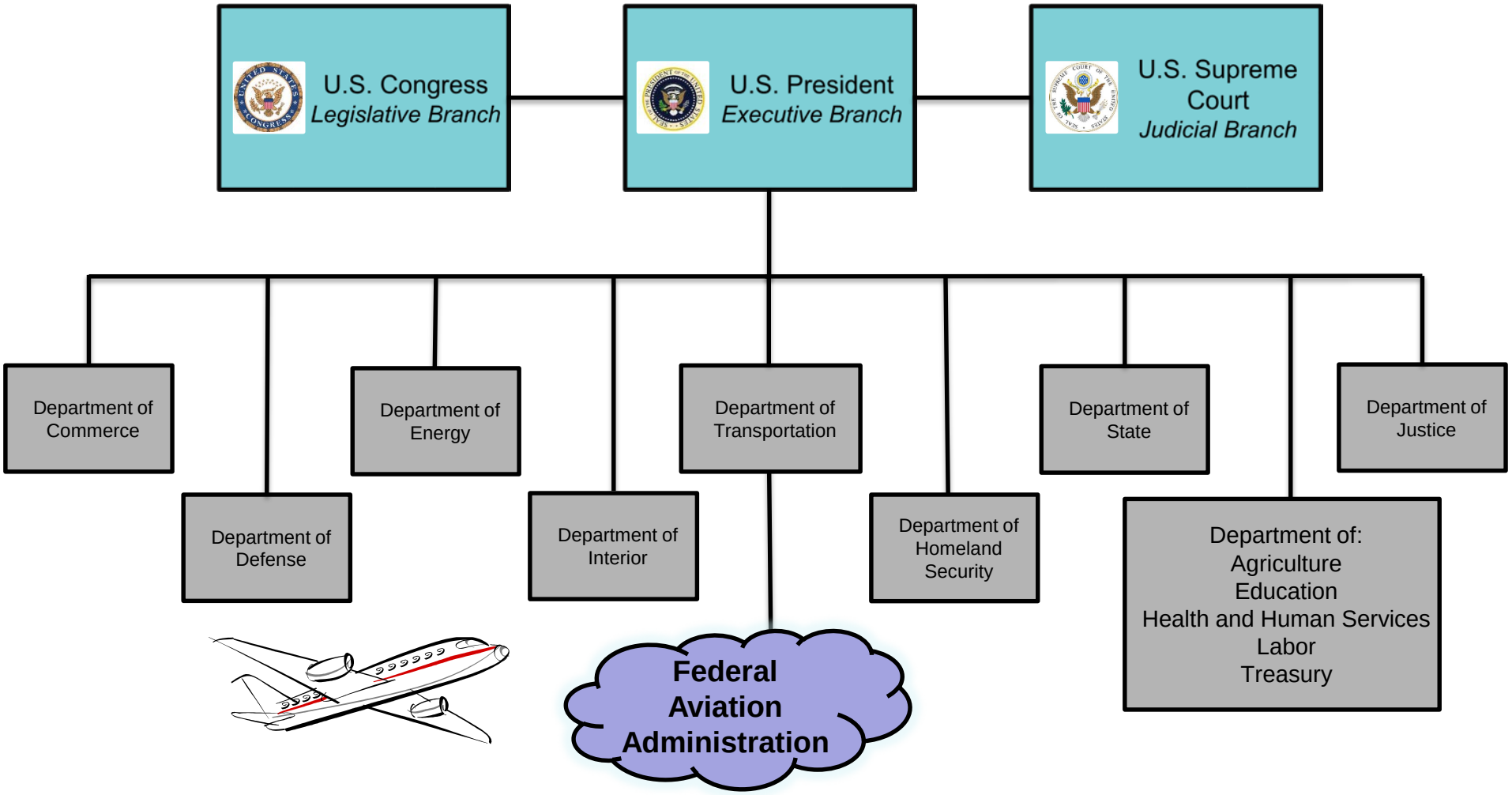
Topics

- FAA Mission and Structure
- FAA AIR Transformation Update
- FAA Regulations
- Type Certification
- Article Approvals
- Airworthiness Approval
- Continued Operational Safety
- Role of FAA Designees
- International Engagement
- International Working Procedures

FAA's Mission

Our continuing mission is to provide the safest, most efficient aerospace system in the world

U.S. Gov. Structure



U.S. Gov. Aviation Structure

PRESIDENT

Department of State

- US Foreign Policy
- Air Transport Agreements
- Bilateral Aviation Safety Agreements

Department of Commerce

- Export Licenses
- Trade Promotion

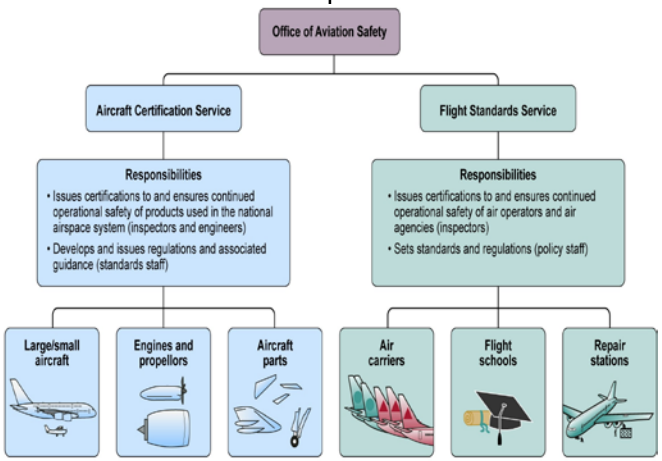
National Oceanic & Atmospheric Administration (NOAA)

- Weather Services
- Weather Research with FAA

Department of Transportation

- Bilateral Air Transport Agreements

Federal Aviation Administration



Department of Homeland Security

Transportation Security Administration

- Airport security issues for U.S.

National Aeronautics & Space Administration (NASA)

- Research and Development with FAA on Safety and Security
- Independent Reporting of Aviation Incidents to FAA

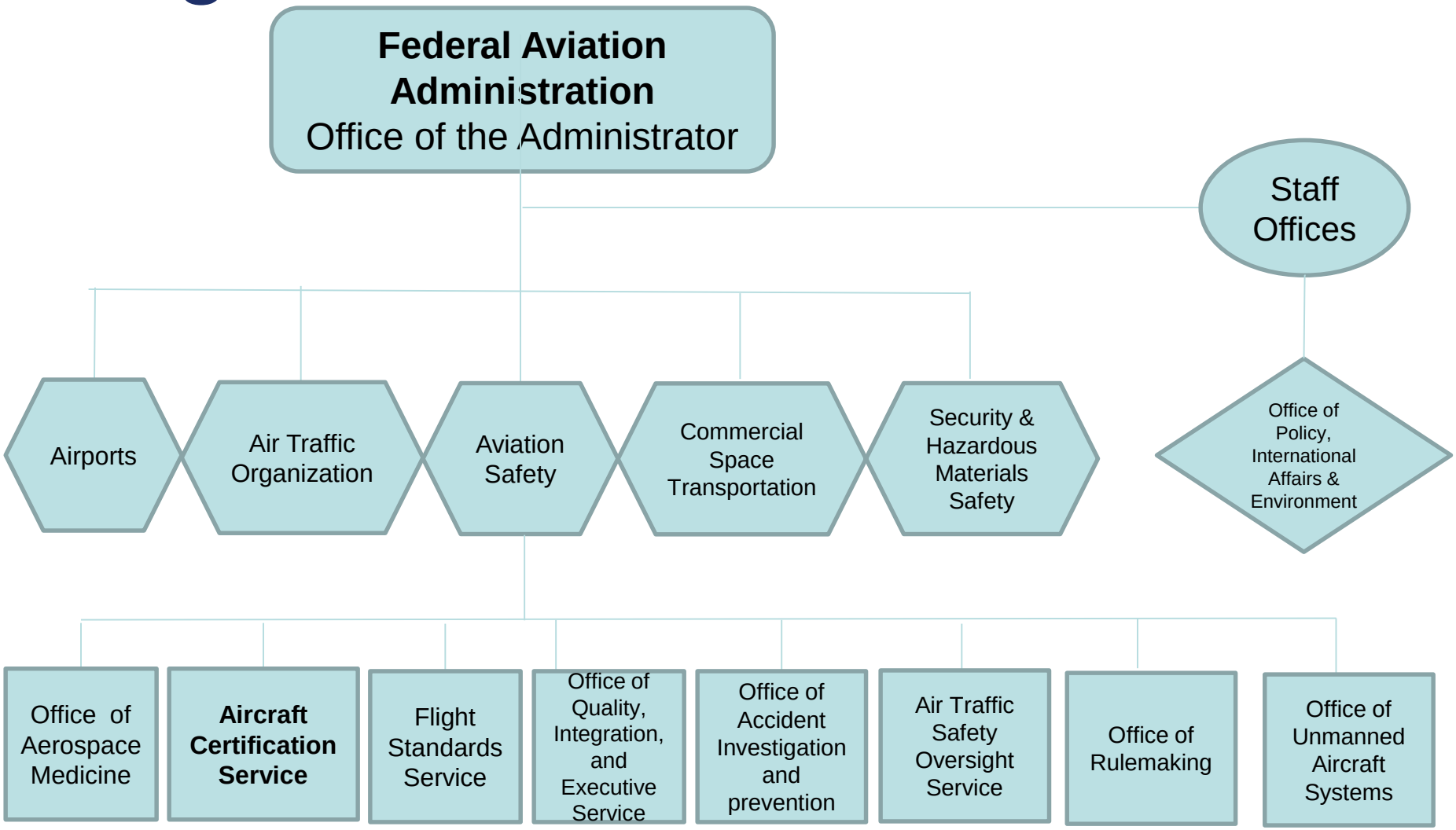
Department of Defense

- Civil/Military Airspace System
- Joint Use Airports

National Transportation Safety Board (NTSB)

- Accident Investigation
- Safety Recommendations to FAA

Organizational Structure

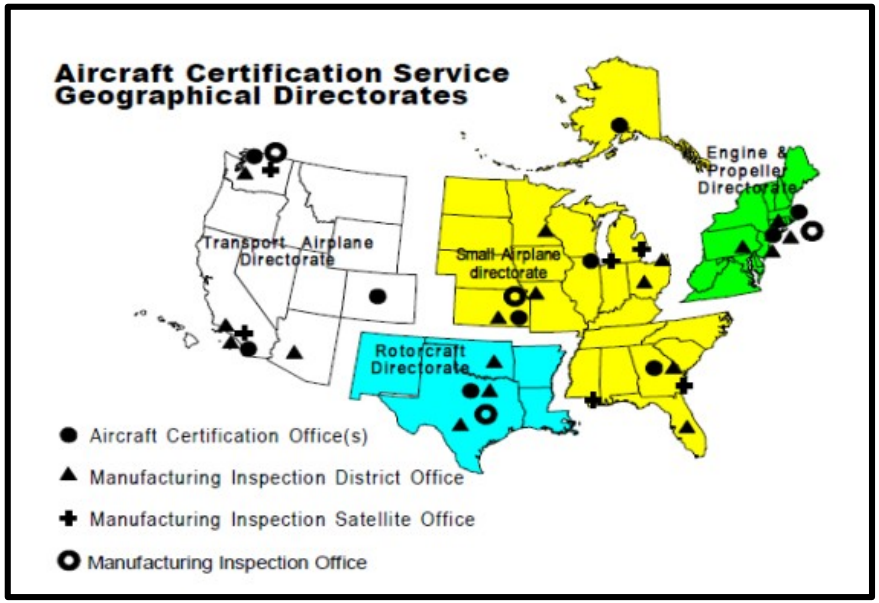


FAA Mission Priorities

FAA Strategic Priorities	Strategic Priority Initiatives
Make aviation safer and smarter	**Risk-Based Decision Making (RBDM):** Build on safety management principles to proactively address emerging safety risk by using consistent, data-informed approaches to make smarter, system-level, risk-based decisions
Deliver benefits through technology and infrastructure	**National Airspace System (NAS):** Lay the foundation for the NAS of the future by achieving prioritized NextGen benefits, integrating new user entrants, and delivering more efficient, streamlined services
Enhance global leadership	**Global Leadership:** Improve safety, air traffic efficiency, and environmental sustainability across the globe through an integrated, data-driven approach that shapes global standards, enhances collaboration and harmonization, and better targets FAA resources and efforts
Empower and innovate with the FAA's people	**Workforce of the Future:** Prepare FAA's human capital for the future, by identifying, recruiting, and training a workforce with the leadership, technical, and functional skills to ensure the U.S. has the world's safest and most productive aviation sector

Aircraft Certification Service

•**Aircraft Certification Service MISSION*** is to promote aviation safety. To do this, we:



•**Work with aviation authorities, manufacturers, and other stakeholders** to help them successfully improve the safety of the international air transportation system.

•**Provide a safety performance management system** to ensure continued operational safety of aircraft.

•**Administer safety standards** governing the design, production, and airworthiness of civil aeronautical products.

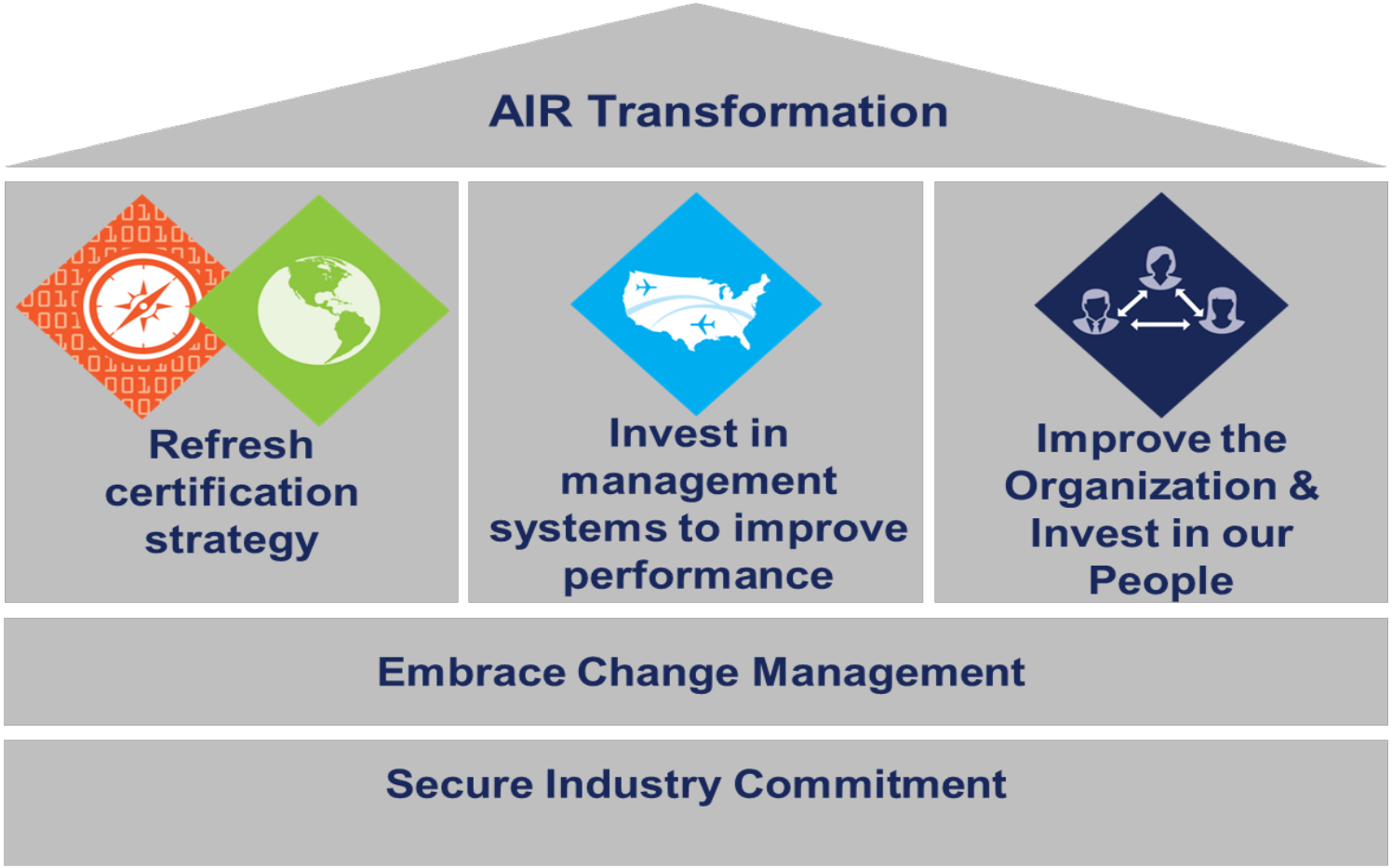
•**Oversee design, production, and airworthiness certification programs** to ensure compliance with prescribed safety standards.

*Ref. Order 8100.5A

AIR TRANSFORMATION UPDATE

AIR Transformation

Improving Efficiency and Effectiveness



Visit the AIR Transformation website: www.faa.gov/go/AIRTransformation.

Drivers of Change

Industry growth

- Industry expands and contracts much faster than the FAA's current structure can manage

Globalization of aviation

- Industry is made up of an international web of networks and complex business arrangements that are challenging our traditional regulatory model

Heightened expectations

- The public, industry and government entities continue to increase their expectations of us to do things faster and without error

Velocity of change

- Technological advances and business model changes are precipitating higher rates of change and increasing the need for organizational agility and adaptability as our environment changes

AIR Transformation Timeline

Federal Aviation Administration

Jul 2017 — Dec 2017 — Mar 2018

Realign

Reorganize the Service into a functional model to align people and processes

Leadership

Select permanent executives and deputies to stabilize the new functional organization

Renew Approach

Complete strategic planning to reform our 1980s-era policy and processes – keeping pace with technology and the global marketplace

Engage Stakeholders

Ongoing

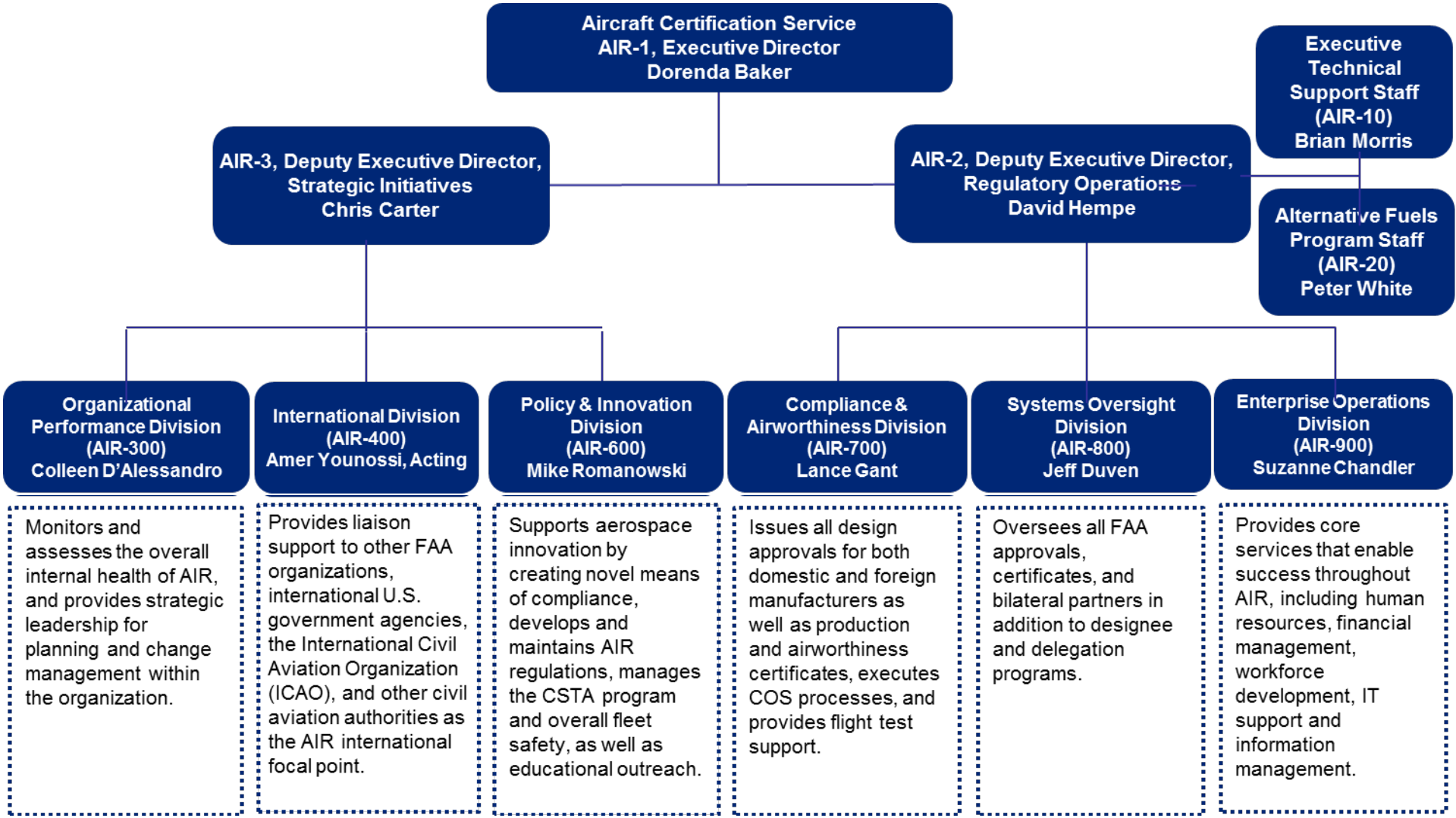
Engage internal and external stakeholders to identify best practices and develop strategies to streamline certification and oversight

Refine

Ongoing

Further refine the organization by allocating Resources to support AIR Transformation Goals

AIR's Current Organization



FAA REGULATIONS

Federal Aviation Regulations Basics

- **Rules that affect the "aircraft"**
  - Part 21
    - General certification requirements
  - Parts 23, 25, 26, 27, 29, 31
    - Certification requirements specific to aircraft category
  - Parts 33, 34, 35, 36
    - Certification requirements specific to engines and propellers
  - Part 39
    - Changes to type design to correct an unsafe condition
  - Part 43
    - Maintenance and alteration

Federal Aviation Regulations Basics

- **<u>Regulations that affect the "owner/operator"</u>**
  - Part 91
    - General operational requirements
  - Part 121
    - Operational requirements for most airlines
      - Generally 10 or more passengers
  - Part 125
    - Defines basic operating and flight rules for charters
  - Part 135
    - Operational requirements for commuter/ air taxi

FAA Orders

- **Orders (also known as Directives) are the FAA Policy holders talking directly to our FAA field offices**
  - Orders provide interpretation and clarify the “gray areas” of the regulations
  - Orders are “required” to be followed by the FAA field offices for which they are written for
    - Formal policy deviations are needed to waiver from a directive
- **Orders are the FAA’s playbooks freely available on our public websites**

FAA Advisory Circulars

- **Advisory Circulars (AC) are the FAA policy holders talking directly to our applicants**
  - ACs represent "one way but NOT the ONLY way"
    - Applicants are welcome to present an alternate path of showing compliance to the FAA regulations
  - Following the AC does NOT guarantee a "rubber stamp"
    - The applicant must "show" and the FAA must "find" compliance to all applicable regulations
    - FAA has statutory requirements for administrative procedures (i.e. Special Conditions, ELOS, and Exemptions)
- **ACs can NOT undermine a rule or an Order**

Where do I find the rules?

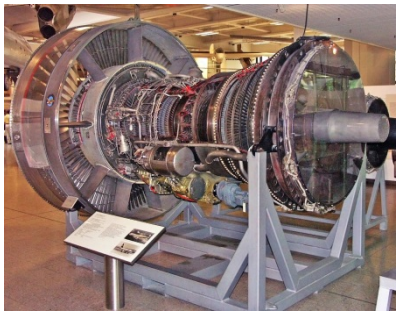
Your most important resource for FAA reference documents!

- **www.faa.gov**
  - http://rgl.faa.gov/ (RGL = Regulatory and Guidance Library)
    - Regulations – current and historical (and future and proposed (NPRM))
    - Advisory Circulars (and draft ACs)
    - Airworthiness Directives (and proposed ADs (NPRM))
    - Orders and Notices
    - Type Certificate Data Sheets
    - Supplemental Type Certificates
    - FAA Part Manufacturer Approvals
    - Technical Standard Order Authorizations
  - http://fsims.faa.gov/– Flight Standards information

Type Certification

Part 21

- **Applicant applies for, and the FAA may issue, a type certificate (design approval) of a product**
  - Product is an aircraft, an aircraft engine or, an aircraft propeller
- **If approved, the FAA issues of a type certificate**
- **Major change to the design of a type-certificated product is approved by –**
  - Supplemental type certificate <or>
  - Amended type certificate



Type Certification

An FAA Type Certificate is more than a certificate

- **A Type Certificate includes**
  - Information about the Type Design
  - Operating limitations
  - Type Certificate Data Sheet
  - Applicable airworthiness standards
  - Any other limitations or conditions prescribed by 14 CFR, Subchapter C

Type Certification Process

- **The details of Type Certification are described in:**

FAA Order 8110.4C, Type Certification

•Note: In addition to 8110.4C, Military Commercial Derivative Aircraft design process details are described in Order 8110.101A, Type Certification Procedures For Military Commercial Derivative Aircraft.

FAA Articles - § 21.8

PMA Part

TSO Article

Product

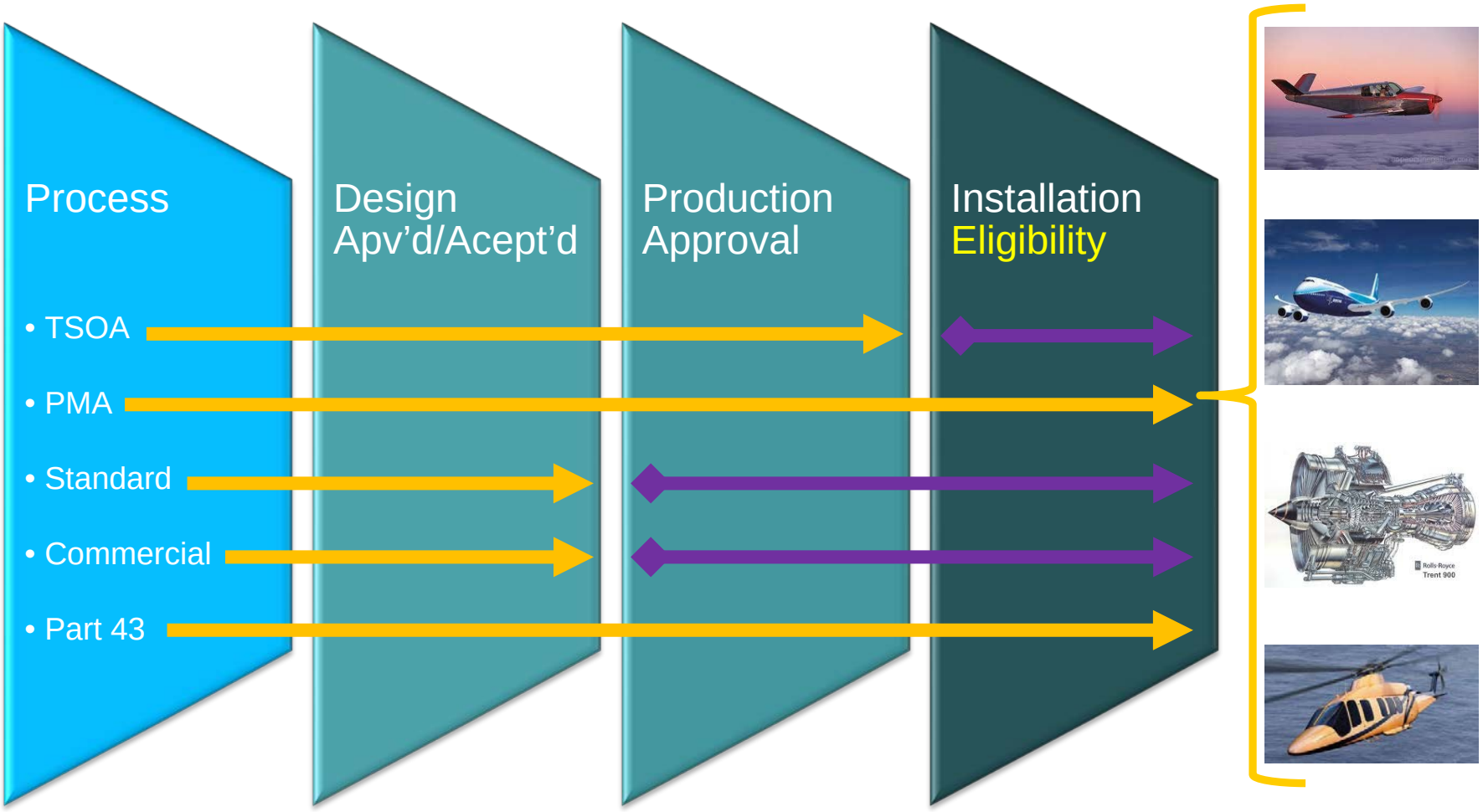
[Approval of articles.]

[If an article is required to be approved under this chapter, it may be approved--
(a) Under a **PMA**;
(b) Under a **TSO**;
(c) In conjunction with **type certification procedures for a product**; or
(d) In any other manner approved by the FAA.]

Article Installation 14 CFR 21.9(a)

"(a) If a person knows, or should know, that a replacement or modification article is reasonably likely to be installed on a type-certificated product, the person may not produce that article unless it is--
(1) Produced under a type certificate;
(2) Produced under an FAA production approval;
(3) A standard part (such as a nut or bolt) manufactured in compliance with a government or established industry specification;
(4) A commercial part as defined in Sec. 21.1 of this part;
(5) Produced by an owner or operator for maintaining or altering that owner or operator's product; or
(6) Fabricated by an appropriately rated certificate holder with a quality system, and consumed in the repair or alteration of a product or article in accordance with part 43 of this chapter.

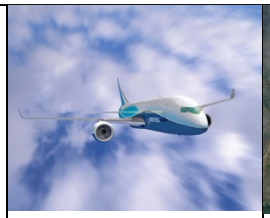
Visual Summary of 21.8 and 21.9



Aviation Lifecycle

AVS is actively involved throughout the life-cycle of every aviation product

Standards → Design → Produce → People → Operations → Maintenance → Continued Operational Safety

Standards	Design	Produce	People	Operations	Maintenance	Continued Operational Safety
Establish safety and certification regulations and policy **Provide guidance on ways to meet the intent of the regulations and policy** **Promote voluntary engagement and cooperation with enhanced safety programs**						• **Continual Oversight and Surveillance of:** - Air Carriers - **Manufacturers** - Repair Stations - **Designees** - Airmen - Air Traffic Organization • **Apply tools to manage risk and gain compliance:** - **Airworthiness Directives** - Precursor identification - Data Sharing - **Enforcement**
	• **Determine design meets performance and certification standards** • **Issue design approvals (type certificates)**	• **Evaluate manufacturers quality and production systems** • **Issue production and airworthiness approvals for aircraft, engines, and parts**	• Certify Airmen: ➢ Pilot ➢ Mechanics • **Appoint Designees:** ➢ **Individual** ➢ **Organization**	• Approve Air Carrier operations • Issue recurrent airworthiness certificates	• Approve Repair Stations and Maintenance Facilities • Issue Repair Station Certificates	

AIR's role is identified by the bold text

Airworthiness Certification

- **Airworthiness Certification**
  - Attests that an aircraft is in condition for safe operation
  - And, as applicable, conforms to its approved type design
- **At a minimum, an airworthiness certificate allows a civil aircraft to be operated in U.S. airspace**
  - FAA does not issue A/W certificates for military commercial derivative aircraft
- **Certification is the goal of design and production certification**
  - Indicates the ability to operate at the appropriate level of safety

Airworthiness Certification

- **Two classifications for airworthiness certificates**
  - Standard ~ white in color
  - Special ~ pink in color
- **To obtain a standard airworthiness certificate, an aircraft must:**
  - Conform to its type design
  - Be in condition for safe operation

Standard Airworthiness Certification

- **Meets applicable airworthiness and environmental standards**
- **Allows the aircraft to be operated with the most minimal restrictions**
- **Are type certificated in one or more categories**
  - Normal
  - Utility
  - Acrobatic
  - Commuter
  - Transport
  - Manned free balloons
  - Special class (airships, powered lift, sailplanes, etc.)

Airworthiness Certification

- **Special Airworthiness Certificates (pink) are issued for the following aircraft:**
  - Restricted
  - Limited
  - Primary
  - Experimental
  - Provisional
  - Light sport

Airworthiness Approvals

- In contrast with airworthiness certificates, which are issued for aircraft…
  - Airworthiness *approvals* attest to the fact that an engine, propeller, or individual part:
    - Conforms to its type design
    - Is in condition for safe operation
  - Parts produced via PMA, TSOA, PC, TC or STC prototype parts, bilateral agreement
  - Parts made for repair, by repair station, for owner aircraft
- These airworthiness approvals can be in the form of data plates, stampings, etchings, labels, or even a piece of paper

Export Airworthiness Approvals

- **New or used US manufactured aircraft that meets requirements for US airworthiness certificate**
- **New or used non-US manufactured aircraft must have a valid US airworthiness certificate**
- **Bilateral agreement must be in place for engines, propellers and articles**

Sequence of Approvals

Normal sequence (are exceptions)

design → production → airworthiness

Ensures each phase lays the groundwork for the next

Certificates

Foundation of the approval process

Type Certificate (TC) for design

Production Certificate (PC)

Airworthiness Certificate

These certificates—

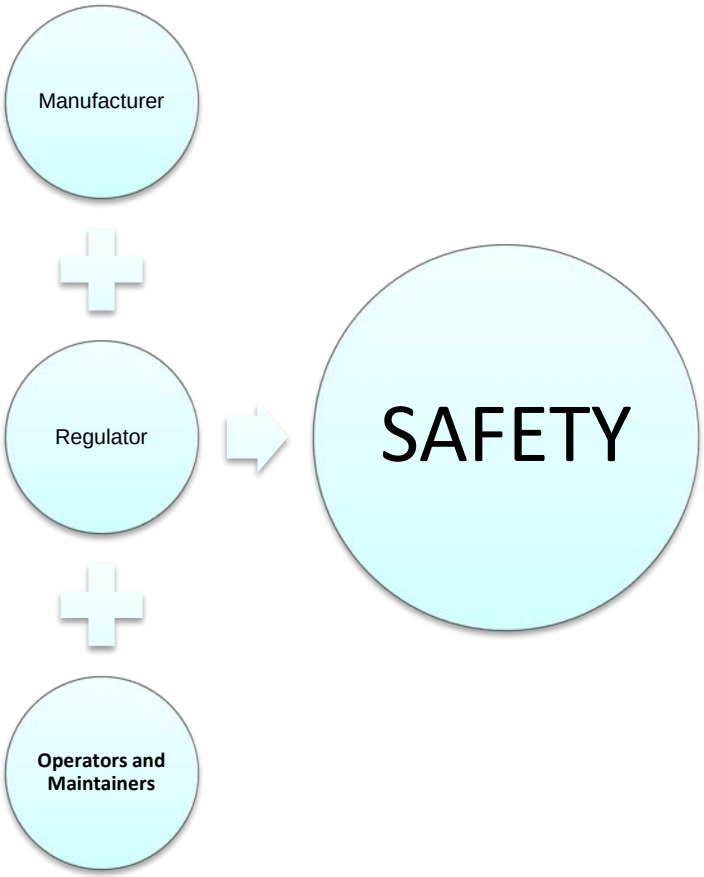
- Cover complete aircraft, aircraft engines, or propellers
- Formally recognize the approvals

Continued Operational Safety

FAA's objective

- **Monitoring and oversight**
  - Complete and effective fleet monitoring and oversight system
- **Proactive approach**
  - Cultural shift from the "fix and fly" reactive approach to a proactive one that manages risk
  - Reactive approach still necessary to investigate accidents, etc
- **Tracking/ closure of concerns**
  - Facilitation of tracking and closure of safety concerns

Teamwork between Authority, Manufacturer, Operator, and Maintainer



- Common interest in safety
- All must interact together to achieve best results
- Authority wants industry to succeed with safety
- DAH and operator require safety to succeed
- Common bond, common interest, common definition of success

FAA Delegation

- **The FAA authorizing private persons or organizations to act on the FAA's behalf**
- **We call the persons or organizations designees**
- **Delegation has been recognized by U.S. statute for over 50 years and in practice for much longer**
- **More information can be found in FAA Order 8100.8 Designee Management Handbook**

Types and number of designees

Aircraft Certification Designees

DESIGNATED AIRWORTHINESS REPRESENTATIVES (DAR)	DESIGNATED ENGINEERING REPRESENTATIVE (DER)	DESIGNATED MANUFACTURING INSPECTION REPRESENTATIVE (DMIR)	ORGANIZATION DESIGNATION AUTHORIZATION (ODA)
457	1384	1085	73

International Engagement

International Engagement

•FAA's mission is to provide the safest, most efficient aerospace system in the world.

•AIR's International Division supports U.S. design approval holders in obtaining approvals from other authorities and validating foreign import products.

- 21 Bilateral Agreements (includes EU
  •= 28 member States)
- Legacy Agreements with 15 EU member States
- Working Procedures with 3 countries + CIS States represented by Interstate Aviation Committee (tech agent).
- **Link to signed BASA's:** https://www.faa.gov/aircraft/air_cert/international/bilateral_agreements/baa_basa_listing/

International Working Procedures

- **Sets forth basic procedures for international cooperation between the FAA and a Civil Aviation Authority**
- **Facilitates the exchange of information for the export, support, and continued airworthiness of U.S. SoD and SoM products**

International Working Procedures

- **Purpose:**
  - to define the procedures by which the **U.S. Federal Aviation Administration** will assist a **Civil Aviation Authority** in accepting U.S. design approvals (including products and articles). It also sets forth the procedures for the FAA and CAA to cooperate in the area of continued airworthiness, including approval of design changes, service difficulty reporting, and accident or incident investigation.

International Working Procedures

- **Scope**

- Working Procedures generally apply to U.S. type certificated aircraft, engines, propellers and other aeronautical components as well as changes to those products.

- Working Procedures do NOT apply to other States of Design or States of Manufacture aircraft, engines, propellers or other aeronautical components

Contact Info.

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Questions?