Aircraft Certification Service International Activities & Initiatives

Federal Aviation Administration

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By: Sarbhpreet Sawhney, Manager(a), International Division, AIR, FAA

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Federal Aviation Administration

Purpose

To provide an overview of the international activities and initiatives of the FAA's Aircraft Certification Service (AIR)

International Division (AIR-400)

- **Advocate in worldwide Aircraft Certification activities**

  – Promote strategic and effective international partnerships

  – Promote risk-based, streamlined validation process

  – Promote U.S. priorities at International Civil Aviation Organization (ICAO) and other international forums

    - Representative on ICAO Airworthiness Panel

- **Policy holder for FAA Order 8110.52, Type Validation Procedures (TVP)**

  – Currently at Revision A

  – Rev. B due out end of FY17

International Division (AIR-400)

- **Bilateral Agreement Development and Management**

  – Assessment, negotiation, development, and management of bilateral agreements

  – Address issues faced by AIR offices and U.S. industry in foreign certification activities

- **Special Arrangements and Management plans**

  – Supplemental IPA language; provides additional authority and provisions

  – Detailed "how to" information describing a technical situation (design, production, or airworthiness)
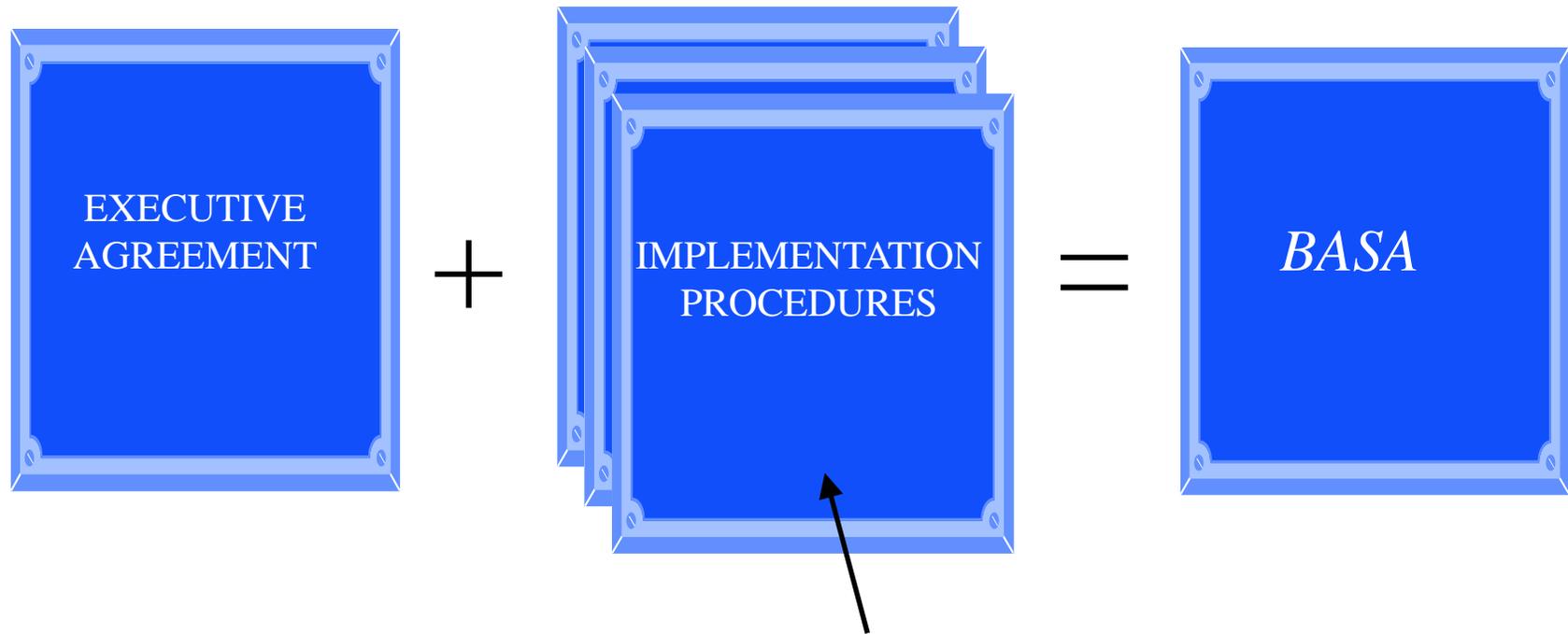
Bilateral Agreement Overview

Bilateral Aviation Safety Agreement (BASA)

Promote aviation safety and environmental quality and enhance cooperation and increase efficiency in matters relating to civil aviation.

Provide for bilateral cooperation in a variety of aviation areas: airworthiness certification, maintenance, flight operations, and environmental certification.

Bilateral Agreement Overview, Cont'd

EXECUTIVE AGREEMENT + IMPLEMENTATION PROCEDURES = BASA

IPs provide guidance for use of FAA designees in the validation process

Bilateral Agreement Overview, Cont'd

- **Implementation Procedures**
  - Implementation Procedures for Airworthiness (IPA)
    - Represents the majority of IPs between the FAA and our FCAA partners
    - TCCA, ANAC, JCAB, India's DGAC, etc…
  - Schedule of Implementation Procedures (SIP)
    - Older version no longer utilized moving forward
    - CAAC, Indonesia's DGAC, Mexico, etc…
  - Technical Implementation Procedures (TIP)
    - ONLY between the FAA and EASA
    - Unique in its specifics and breadth

Bilateral State

Regulatory Hierarchy

Chicago Convention

ICAO Annex 8

49 U.S.C. 44701

49 U.S.C. 44704

14 CFR 21.29
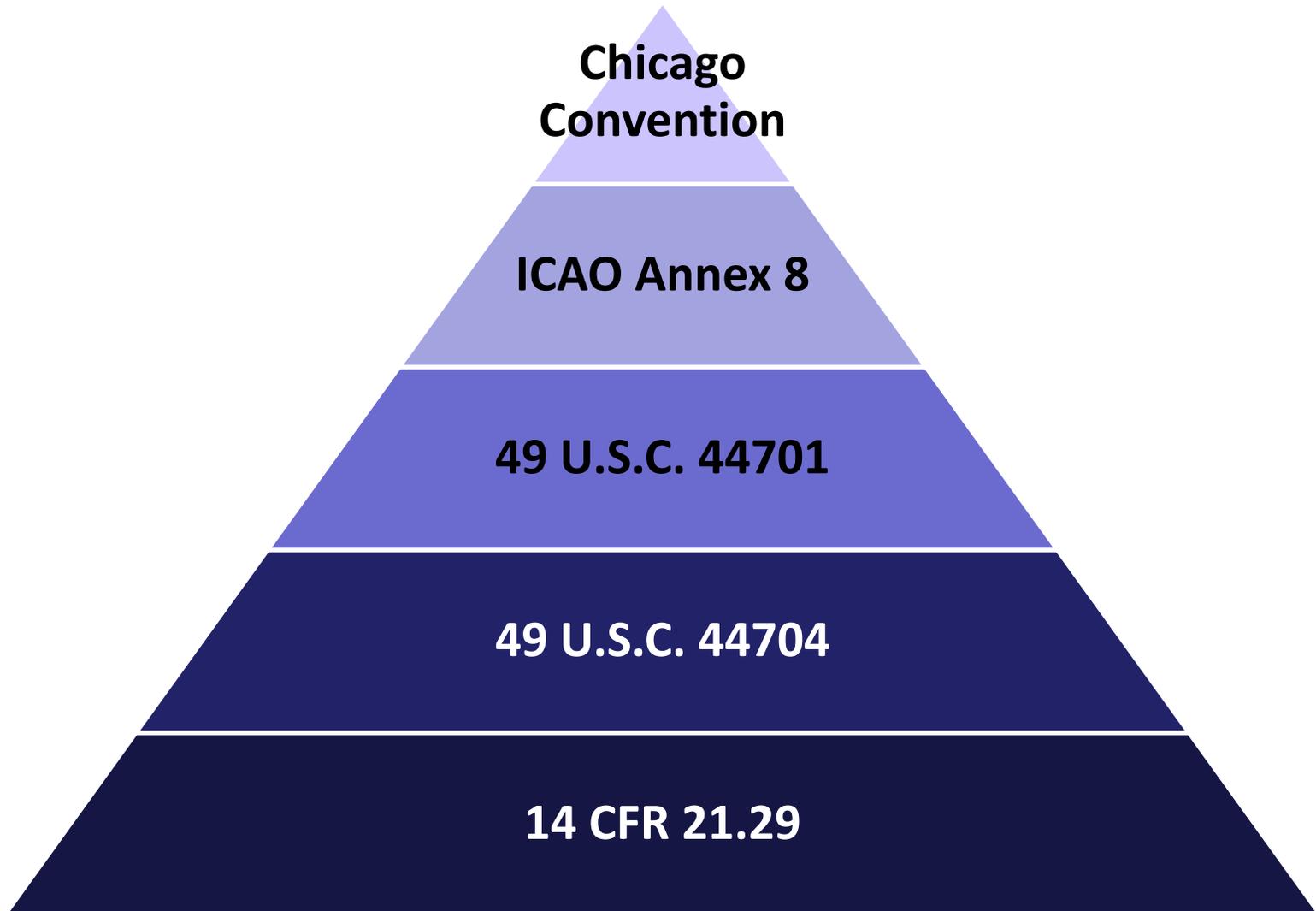
Current AIR Bilateral & Unilateral Map

28 TIP Countries

● = BAA/BASAIPA   ● = US/EU TIP   ● = WP

AIR Bilateral Agreements and Working Procedures

- **21 Bilateral Agreements - 48 countries (28 in European Union)**

- **Legacy Agreements with 15 EU member States**

http://www.faa.gov/aircraft/air_cert/international/bilateral_agreements/baa_basa_listing/

- **4 Working Procedures (CIS, UAE, Ukraine, and Hong Kong)**

http://www.faa.gov/aircraft/air_cert/international/working_procedures/

FAA and EASA TIP

- ## EASA Represents –

EU Member States (28)		Non-EU States*
Scope defined under Executive Agreement		
Austria, Belgium, Bulgaria, Czech Republic, Croatia, Cyprus, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, United Kingdom		Norway Iceland Liechtenstein Switzerland

* These countries chose to adopt EC legislation for aviation safety

AIR International Guidance and Policy

- **FAA Order 8110.52**

- **FAA Advisory Circular 21-2**

- **FAA Advisory Circular 21-23**

- **FAA Advisory Circular 21-52**

All policy can be found on the AIR Regulatory and Guidance Library at http://rgl.faa.gov.

FAA International Strategy

Global Leadership Initiative (GLI) - Vision

The FAA is recognized and respected as the global leader in aviation.

GLI - Mission

The FAA will exercise leadership, utilize a risk-based strategy, and support U.S. interests while conducting international activities.

Strategic Focus Areas:

- *Ensure Safety and Security of U.S. Lives*
- *Ensure Efficient Global ATS to Support U.S. Economy*
- *Ensure Aviation Growth While Reducing Environmental Impacts*
- *Promote Regulatory Harmonization and Partnerships to Ensure a Seamless Transfer of Technology*

Drivers of Change

Industry growth

- Industry expands and contracts much faster than the FAA can ever keep pace

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

AIR Transformation

Refresh certification strategy

Invest in management systems to improve performance

Improve the Organization & Invest in our People

Embrace Change Management

Secure Industry Commitment

AIR Blueprint

Blueprint: Strategic Vision — High level messaging for broad audiences internal and external to the AIR Safety System

Informs

Comprehensive Strategic Plan — Detailed requirements for achieving transformational change across all components of the future Aircraft Certification Safety System

Collaboration with stakeholders to identify requirements, including actions & timeframes

Informs

Integrated Implementation Plan — Detailed plans for ensuring successful implementations

AIR – Blueprint– Promote International Partnerships

Global Leadership:

AIR promotes international partnerships to reduce barriers and leads the advancement of aviation safety across geopolitical boundaries.

Promote International Partnerships – End-state vision

- Methodical process to establish, build and maintain confidence in FCAA.
- Leverage mature partners' certification systems and maximize mutual recognition of certification approvals to minimize duplication.
- Promote knowledge sharing to mature FCAAs and shape global standards and processes – both bilaterally and via ICAO.
- Promote harmonization of safety systems

Transformation Initiatives

- Actively demonstrate leadership to maximize harmonization, partner with FCAA to develop common solutions to challenges and engage with ICAO
- Establish and refine agreements needed to optimally leverage partners' systems and maximize seamless transfer.
- Enhance transparency and knowledge sharing with partners to promote safety assurance and mutual confidence
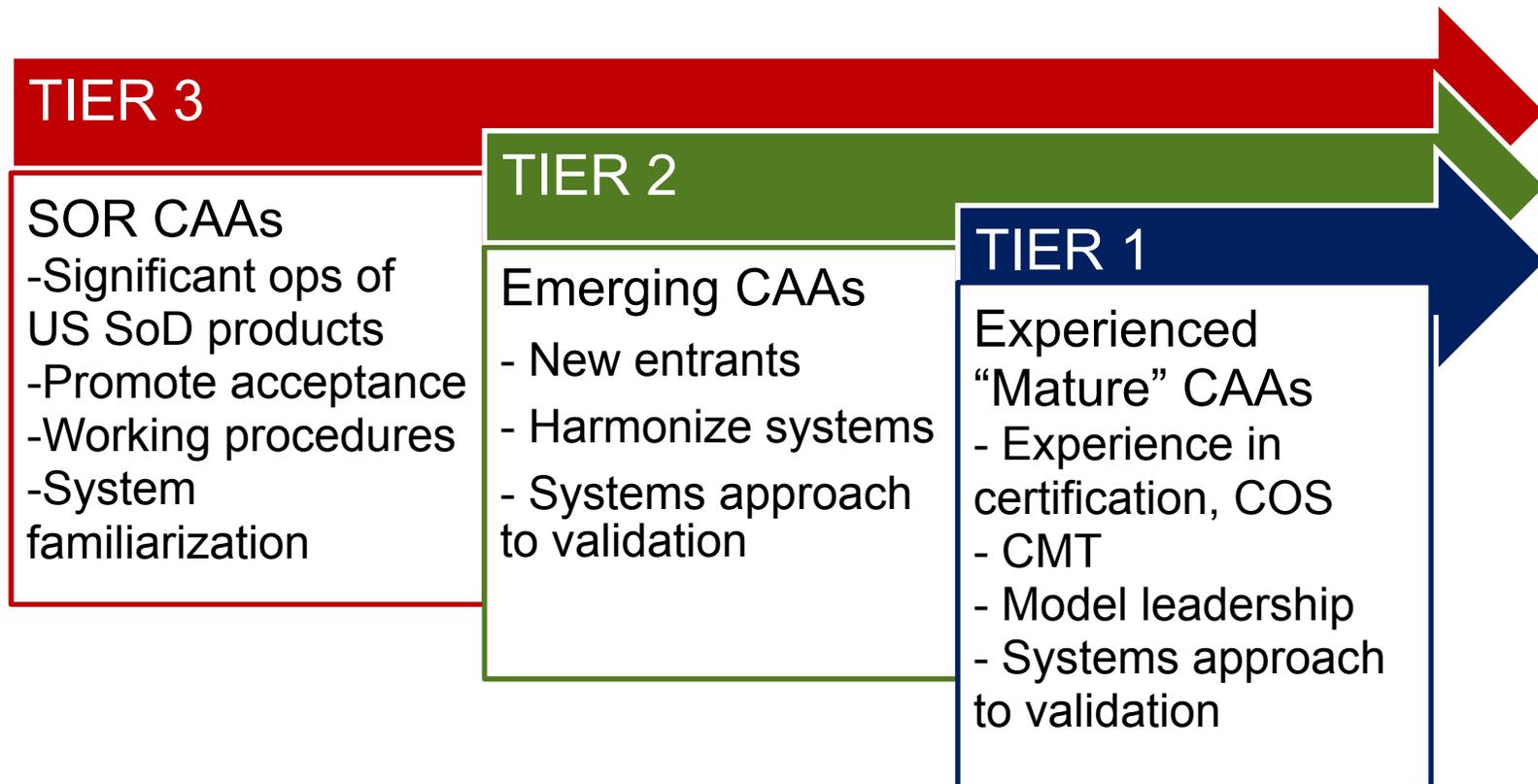
AIR International Partnerships

Strong International Relationships

Globally Shared Safety Initiatives, enhance confidence

Globalization Vision

Leverage systems and minimize duplication

Seamless Transfer of Products

AIR International Strategy - Approach

Goal: **Enhance the FAA's network of global partners. Three tiered strategy based on the certification experience of partner civil aviation authorities:**

TIER 3

SOR CAAs
-Significant ops of US SoD products
-Promote acceptance
-Working procedures
-System familiarization

TIER 2

Emerging CAAs
- New entrants
- Harmonize systems
- Systems approach to validation

TIER 1

Experienced "Mature" CAAs
- Experience in certification, COS
- CMT
- Model leadership
- Systems approach to validation

Tier 1 Partnerships

Certificate Management Team

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CMT Focus Areas

Partnership Leveraging	Certification System Harmonization	Global Leadership	Continued Confidence Building

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Certification Authorities Groups

Certification Authorities for Bilateral Agreement & Certification Policy (CABA)	Certification Authorities for General Aviation Products (CAGP)	Certification Authorities for Transport Airplane Products (CATA)	Certification Authorities for Rotorcraft Products (CARP)	Certification Authorities for Propulsion Products (CAPP)

Tier 1 Partnerships

Certificate Management Team

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CMT Collaboration Strategy

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FAA-TCCA VIR	FAA-EASA COB VIR	FAA-ANAC VIR

↓

| FAA-TCCA IPA (rev Nov 2016)	FAA-EASA TIP (rev 6 August 2017)	FAA-ANAC IPA (rev 2 Sept 2017)

Tier 2 Partnerships

Emerging authorities:
- Include partners such as India, China, Japan, Australia, New Zealand and others certifying products.
- Establish systems approach to bilateral partnership.
- Incorporate risk-based approach to validation
- Conduct targeted technical assistance - collaborate with industry
- Incorporate confidence maintenance – System level
- Address globalization challenges

IMF Data Mapper ®
Real GDP growth (2016)
Source: World Economic Outlook (April 2016)

Annual percent change

10% or more	0% - 3%
6% - 10%	less than 0%
3% - 6%	no data
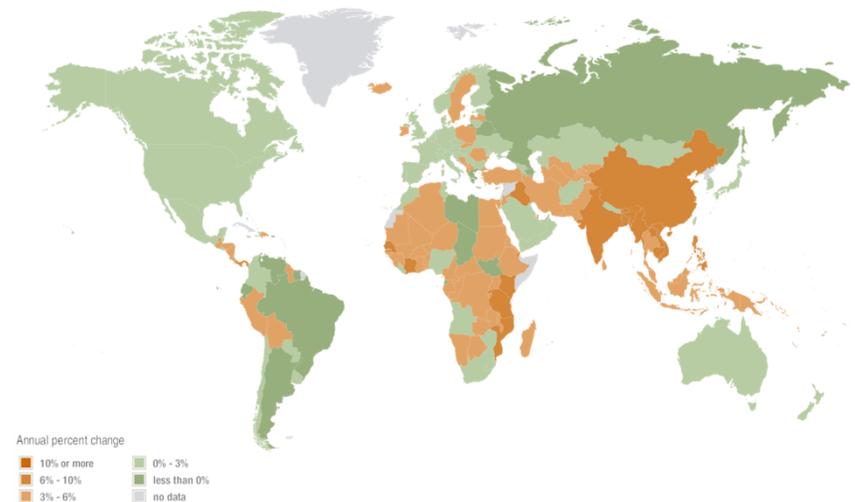
Tier 3 Partnerships

SOR authorities:

- **Include CAAs such as Vietnam, Hong Kong, UAE, CIS States, Philippines, and others CAAs which are SOR for US products.**
- **Establish relationship to document acceptance or streamline validation in a Working Procedure.**
- **Promote alignment with US system to greatest extent to reduce barriers for acceptance of US approvals**
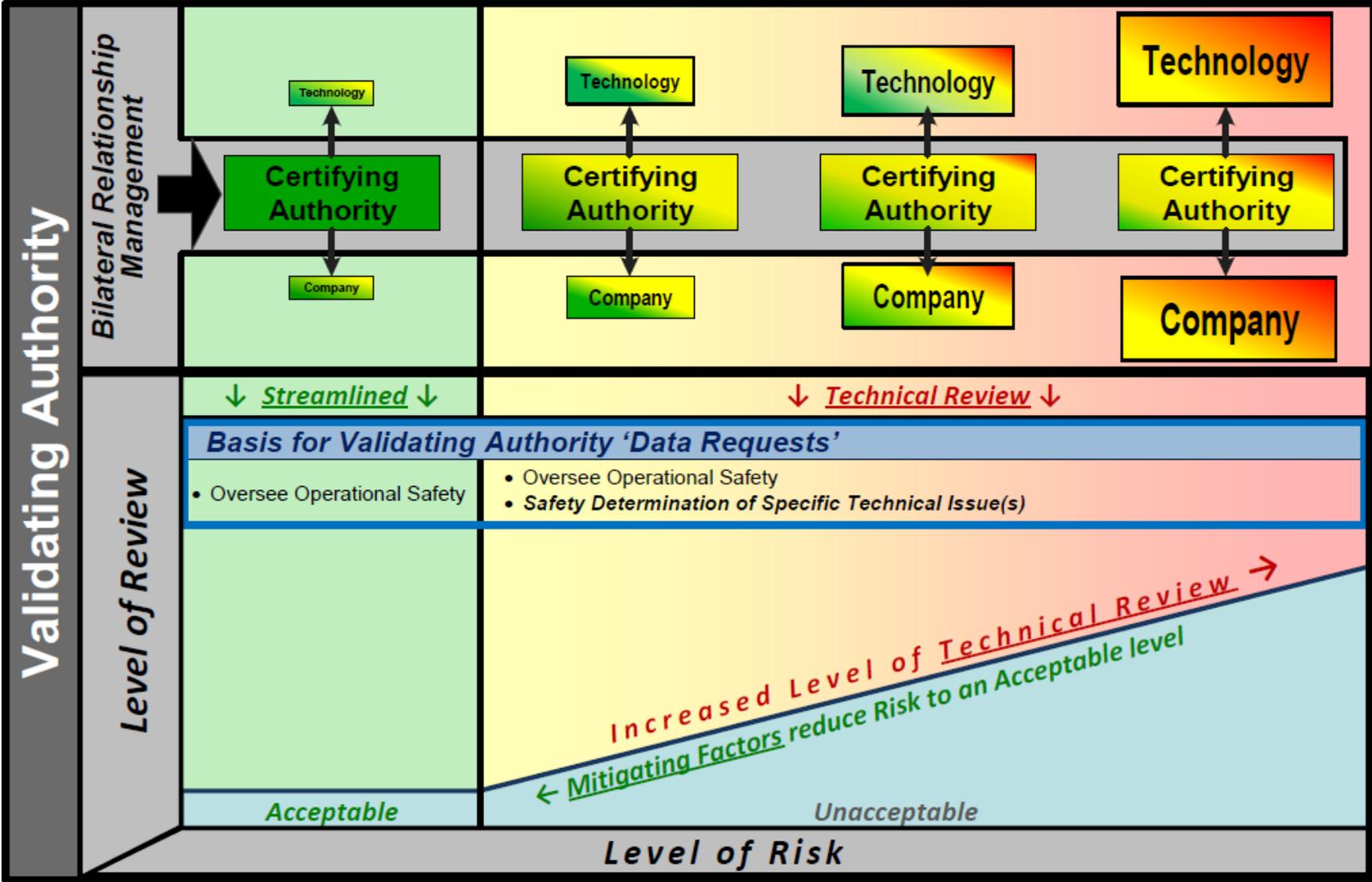- **Address globalization challenges**

CAA Validation of FAA TCs

- **AIR surveyed all 190 ICAO Member States to determine their validation efforts with the FAA**

  - Received 69 responses

    - **46.4%** accept the type certificate issued by the FAA

    - **56.3%** validate the type certificate issued by the FAA
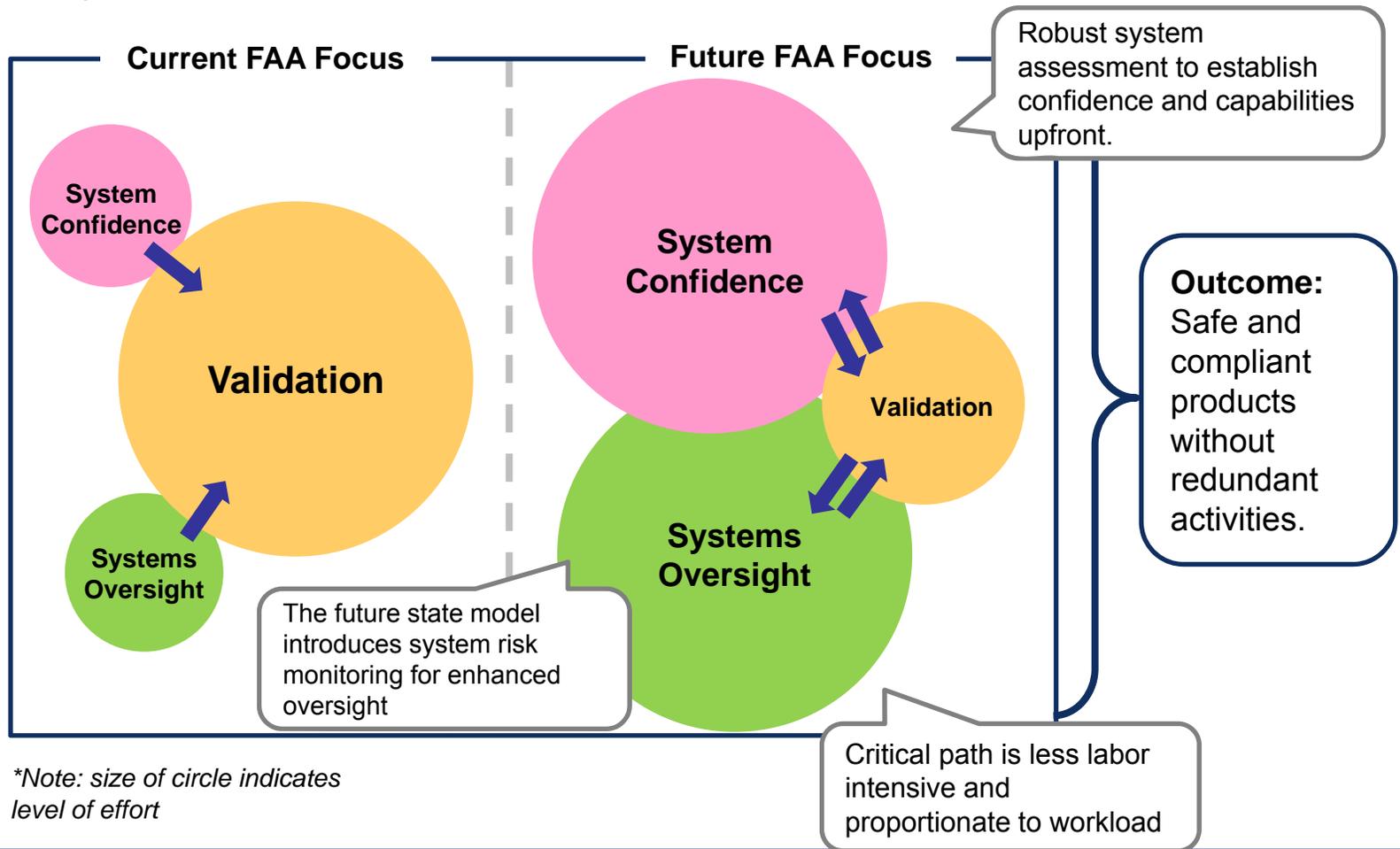
Comprehensive Validation Risk Model

Refresh Validation Strategy

AIR's future state model will streamline validation by applying a systems approach and promote **early and iterative actions** between bilateral partners and AIR.

Current FAA Focus

System Confidence

Validation

Systems Oversight

Future FAA Focus

System Confidence

Validation

Systems Oversight

Robust system assessment to establish confidence and capabilities upfront.

Outcome: Safe and compliant products without redundant activities.

The future state model introduces system risk monitoring for enhanced oversight

Critical path is less labor intensive and proportionate to workload

Note: size of circle indicates level of effort

Validation - Current State

- VA conducting re-certification

- Redundant activities burdening both CAAs and industry

- VA activity in critical path – delay in time to market with little to no added safety value

- Lacking focus on SoD's system resulting in SoR continued airworthiness challenges

- Lacking continuous bilateral relationship progress

- Lacking promotion of systems harmonization

- Lacking effective resolution of issues between partners

- Lacking standardization across partnerships – resulting negative impact to both CAAs and industry.

Validation - Future State

- Envisions a data-driven, risk-based approach within a System framework
- Closed-loop system with continuous maintenance of **confidence**
- Partners focused on enhancing confidence based on system oversight to reduce involvement in critical path
- Improved SoR continued airworthiness with knowledge of SoD COS process and safety data sharing
- Active bilateral relationship progress/expansion
- Active systems harmonization – policy and MOC
- Structured issue resolution between partners
- Standardized risk-based IPs across partnerships – resulting positive impact/predictability to both CAAs and industry.

What is System Approach to Validation?

Validation – Future State: Risk-based approach

Continuous Maintenance of **Confidence**

Risk = System risk based on assessment and identified regulatory and technical competence differences mitigated thru validation

Improving Validation – A System Approach

System Confidence

- Conduct system and technical assessment (baseline)
- Gain knowledge of partner CAA system (FAA 12 elements)
- Understand technical competence and capabilities

Validation

- Conduct risk-based validation – VA LOI
- Rely on the CA based on confidence of assessed competencies
- Use escalating issue resolution process – policy impact

System Oversight – 2-tier

- Monitor partner **system** (FAA 12 elements) and **technical** competence

Continuous Maintenance of Confidence

- Data-driven decision-making to continuously manage all aspects of partnership in a closed loop system

Validation Improvement Activities

System Confidence

- Streamline system assessment – simultaneous assessment/validation
- Compare systems and identify differences (potential risk) - Library
- Identify risk-based criteria based on system confidence outcome

Validation

- Conduct multi-authority validation engagement - MAV
- Use risk-based criteria for VA LOI and document in work plan
- Use IPA addendum in support of active confidence management

System Oversight

- Annual update of FCAA system assessment - **System**
- Conduct post-validation sampling inspection system - **Technical**

Continuous Maintenance of Confidence

- Actively work to harmonize systems
- Identify/measure key system performance indicators – internal/external
- Develop partnership scorecard
- Engage to jointly review performance of partnership - BRM

Maintenance of Confidence - System

- **BRASS is a system that monitors the health of our bilateral relationships**
  - Uses statistical data to ensure mutual understanding of international aviation standards affecting both the U.S. and the current/potential bilateral partner
  - Verifies implementation of and compliance with ICAO standards

- **BRM is one aspect of BRASS with the key factor being the BRM feedback form submitted by FAA employees**

Maintenance of Confidence - Technical
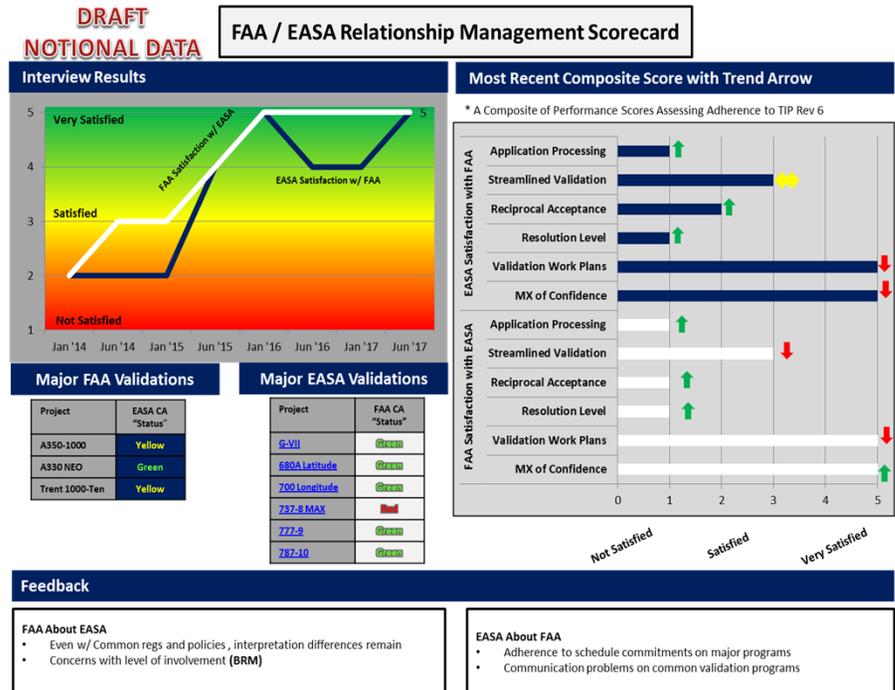
Post-Validation Audits/Evaluation

| Streamlined STC Validation Audit |

| Streamlined TC Validation Audit |
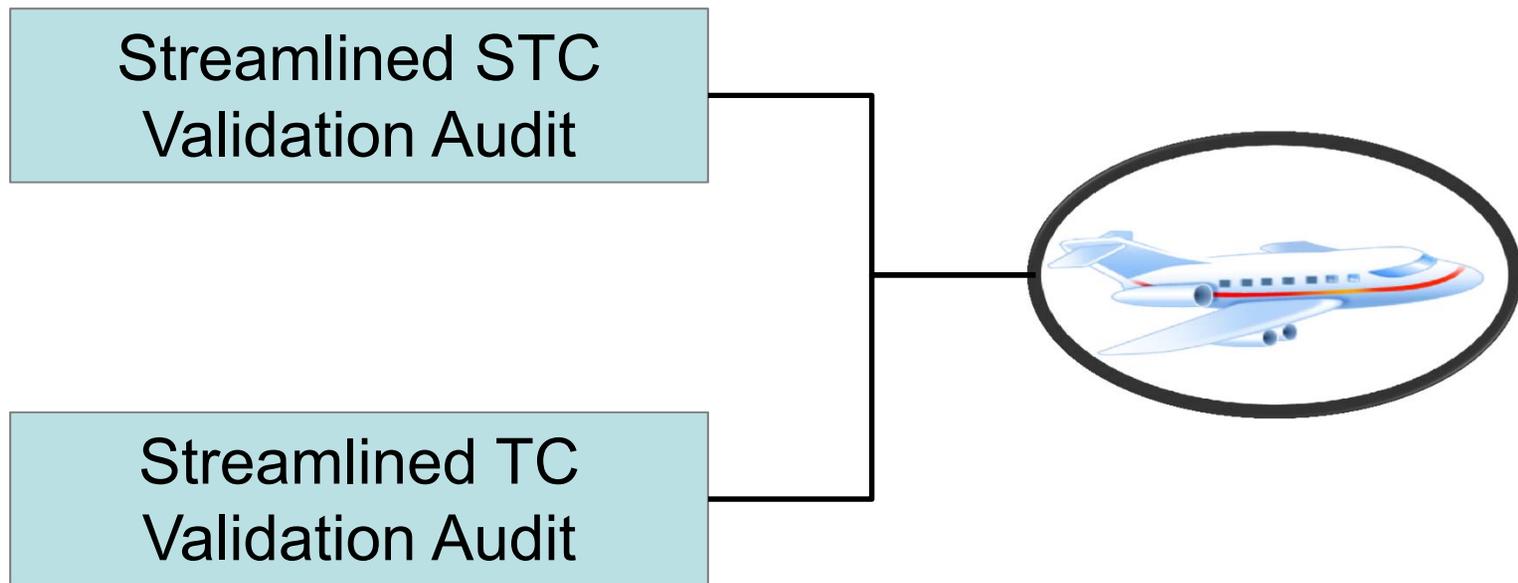
Performance Management

Measure the overall health of bilateral partnership with an individual CAA.

Define key performance metrics for both system and technical confidence

Measure, analyze and correct

Include input from industry stakeholders

DRAFT NOTIONAL DATA

FAA / EASA Relationship Management Scorecard

Interview Results

Most Recent Composite Score with Trend Arrow

* A Composite of Performance Scores Assessing Adherence to TIP Rev 6

FAA Satisfaction w/ EASA

EASA Satisfaction w/ FAA

Very Satisfied

Satisfied

Not Satisfied

Jan '14 Jun '14 Jan '15 Jun '15 Jan '16 Jun '16 Jan '17 Jun '17

EASA Satisfaction with FAA:
- Application Processing
- Streamlined Validation
- Reciprocal Acceptance
- Resolution Level
- Validation Work Plans
- MX of Confidence

FAA Satisfaction with EASA:
- Application Processing
- Streamlined Validation
- Reciprocal Acceptance
- Resolution Level
- Validation Work Plans
- MX of Confidence

Not Satisfied   Satisfied   Very Satisfied

Major FAA Validations

Project	EASA CA "Status"
A350-1000	Yellow
A330 NEO	Green
Trent 1000-Ten	Yellow

Major EASA Validations

Project	FAA CA "Status"
G-VII	Green
680A Latitude	Green
700 Longitude	Green
737-8 MAX	
777-9	Green
787-10	Green

Feedback

FAA About EASA
- Even w/ Common regs and policies, interpretation differences remain
- Concerns with level of involvement (BRM)

EASA About FAA
- Adherence to schedule commitments on major programs
- Communication problems on common validation programs

Next Steps

- **Validation Risk Model is gaining broad global acceptance**

- **Improving mutual confidence among CAAs and their certification systems using BRM information and BRASS data**

- **Provide a clear *global* foundation for the FAA to assist CAAs with the institution of *their* individual progression plans using our Bilateral Scorecard information**

- **Audit/Evaluate our post-validation streamlined efforts**

- **Work with ICAO to promote mature Validation Risk Model**

FAA Global Leadership Initiative – ICAO Engagement

39th Assembly Engagement

- **Working Paper:**
  - Risk-Based Approach toward Standard Principles for the Validation of Civil Aeronautical Products

- **Information Papers:**
  - Aircraft Certification Cybersecurity Regulatory Efforts
  - Increasing the Safety of Small General Aviation Airplanes Using International Consensus Standards
  - Developing a common international framework for reporting, sharing, and analyzing maintenance data
  - State of Design and State of Operator Collaboration on Aircraft Certification in Consideration of the Carriage of Hazardous Materials

- **Airworthiness Panel:**
  - Collaboration with Dangerous Goods Panel and Ops Panel to achieve ban on lithium ion batteries as cargo on transport aircraft
  - Introduction of Safety Continuum concept into ICAO SARPs
  - Engage with ICAO to influence changes to Annex 8 and Airworthiness Manual – e.g. COS, responsibilities of SoD/SoM, SSI, orphan aircraft policy

Helpful Links

AIR-400 Mailbox Address:

9-AWA-AVS-AIR400@faa.gov

Federal Aviation Administration

Questions?