Digital Aviation Ecosystem

- Digital evolution impacts all stakeholders in the aviation ecosystem
- Both systems and people are fundamentally affected
- Changes in one area will be felt by everyone, intentionally or not
Changes are underway

- Digital transition and transformation of the aviation ecosystem
- New entrants
  - UTM, drones, commercial space, etc…
- The next “big thing”…
Convergence is needed

• Interoperability requires global coordination and cooperation

• Identify common needs that can unite all aviation ecosystem stakeholders

• Develop common frameworks that build on existing foundations

• Agree on a common destination – where there is still one interoperable sky – the International Aviation Trust Framework (IATF)
What is in the IATF?

- Harmonized digital identity policies and procedures
- Information security requirements
- Management processes and mechanisms
Why ICAO

• The foundational principle of the global aviation system that connects us today
• A core function of ICAO since 1944
• An evolution of this framework now seems essential
  – Based on common standards
  – Anchored in State sovereignty
  – Facilitating global recognition of digital identities
  – Applied consistently across the aviation ecosystem

• ICAO was requested by its Member States and partner industries to lead this effort
A Common Destination

• Foundations based on international law
  – Chicago Convention, Beijing Convention (Article 21), Annexes, etc…

• Interoperable digital identities
  – Built on globally agreed standards
  – Anchored in proven regulatory processes
ICAO’s Role

• A digital certificate is only as good as the reputation of the organization that backs it.

• International aviation is a global industry that needs global solutions
  – Lack of harmonization leads to divergence in policies and technologies and will result in higher costs.

• ICAO provides the forum for all civil aviation stakeholders to come together and define global standards for identity interoperability.
ICAO standards are going digital
Many other examples:

- Certificates
- Digital aircraft libraries
- Flight plans
- Maintenance records
- Air Traffic Services
- MET Services
- Communications (air/ground/space)
Current Issues

• Digital identities from different entities are not interoperable with each other

• Each entity issuing digital identities can choose its own implementation path and what information to include in its credentials
  – Lack of universally harmonized digital identity credentials format/content for civil aviation
  – Each data field in the digital credential can vary between entities (Boeing-777 ≠ Boeing 777)

• Inconsistent implementation of existing technical requirements
  – Where standards exist, there is no global policy to enforce them uniformly and consistently

• Lack of harmonized identity/credential assurance criteria between entities
  – A “highly” trusted credential in one context may not be trusted in another
Implementation Pillars

• Legal framework
  – Global basis for mutually recognizing digital credentials
• Operations
  – Operational policies to enable mutual recognition of identities
• Technical requirements
  – Criteria that ensure interoperability of credentials
• Oversight
  – Continuous monitoring and follow-up
Implementation Considerations

• Adoption of operational and technical policies and technical requirements
  – IATF Certificate Policy

• Identity credential cross-recognition mechanism requirements
  – Criteria and Methods for Cross-recognition of Digital Identities

• Business process speed differences between aviation stakeholders
  (airframers vs drones)
  – Harmonized vision of IATF

• Consideration of legacy systems (forward-fit vs. retrofit)
Digital credentials from different entities are interoperable with each other through a global mechanism.

Standardized digital credential structures, formats and contents
- Universally harmonized digital identity credentials format/content for civil aviation applications
- Credential data fields based on ICAO-standard values (e.g. Doc 8643)

DI technical standards applied consistently across aviation stakeholders
- Even stakeholders not participating in the trust framework will base their digital credentials on ICAO requirements to ensure forward-fit compatibility

Globally harmonized identity/credential assurance criteria between entities
- Robust and proven assurance mappings widely available
In conclusion…

- Trusted exchange of information is key to the future of the air navigation system
- Without global alignment, interoperability is jeopardized
- Globally accepted digital identities facilitate trust and operational efficiencies between stakeholders
- ICAO is leading the charge to realize this vision