



ICAO

CALAF

ICAO 4th Civil Aviation Legal Advisers Forum

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Hosted by



Presentation Overview

Future Outlook

Emerging Legal Trends in
Liability for Critical Aviation
Infrastructure

Accountability and
Corrective Actions for
Failures

Regulatory and Stakeholder
Overview

Mechanisms for Maintaining
Government Responsibility

AIR TRAFFIC MANAGEMENT SERVICES IN 2040

Safe. Sustainable. Seamless. Human-Centric.

ATM in 2040 is a digital ecosystem that connects aircraft, people and infrastructure through intelligent automation, predictive intelligence and seamless collaboration to deliver the safest, most efficient and sustainable airspace.

CONNECTED ECOSYSTEM
All stakeholders connected in real time across a global digital network.

AI-POWERED OPERATIONS
AI and machine learning support better decisions, predict demand and detect risks before they happen.

SUSTAINABLE BY DESIGN
Optimized trajectories, alternative fuels and accurate environmental intelligence minimize aviation's footprint.

SAFETY ASSURED
Assured by advanced automation, continuous monitoring and predictive safety analytics.

HUMAN AT THE CENTER
Controllers evolve into orchestrators of the airspace, supported by smart tools and augmented intelligence.

NON-COOPERATIVE DETECTION

WEATHER INTELLIGENCE

U-SPACE / AAM INTEGRATION

SPACE-BASED SURVEILLANCE

SWARM & AUTONOMOUS OPS

HIGH ALTITUDE > FL600

UPPER AIRSPACE FL195 – FL600

LOWER AIRSPACE < FL195

U-SPACE 0 – 600 ft

DYNAMIC AIRSPACE MANAGEMENT

- Real-time airspace configuration
- Demand-capacity balancing
- Dynamic sectorization
- Optimized routes for all users

PREDICT → PREVENT → PERFORM

PREDICT AI forecasts demand, weather and events	PREVENT Proactive alerts and risk mitigation	PERFORM Optimized, efficient operations
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ENABLED BY

DIGITAL TWIN
Real-time virtual representation of the airspace and operations.

QUANTUM & CLOUD
Ultra-fast processing and secure, resilient scalable infrastructure.

DATA FABRIC
Seamless, secure and trusted data sharing.

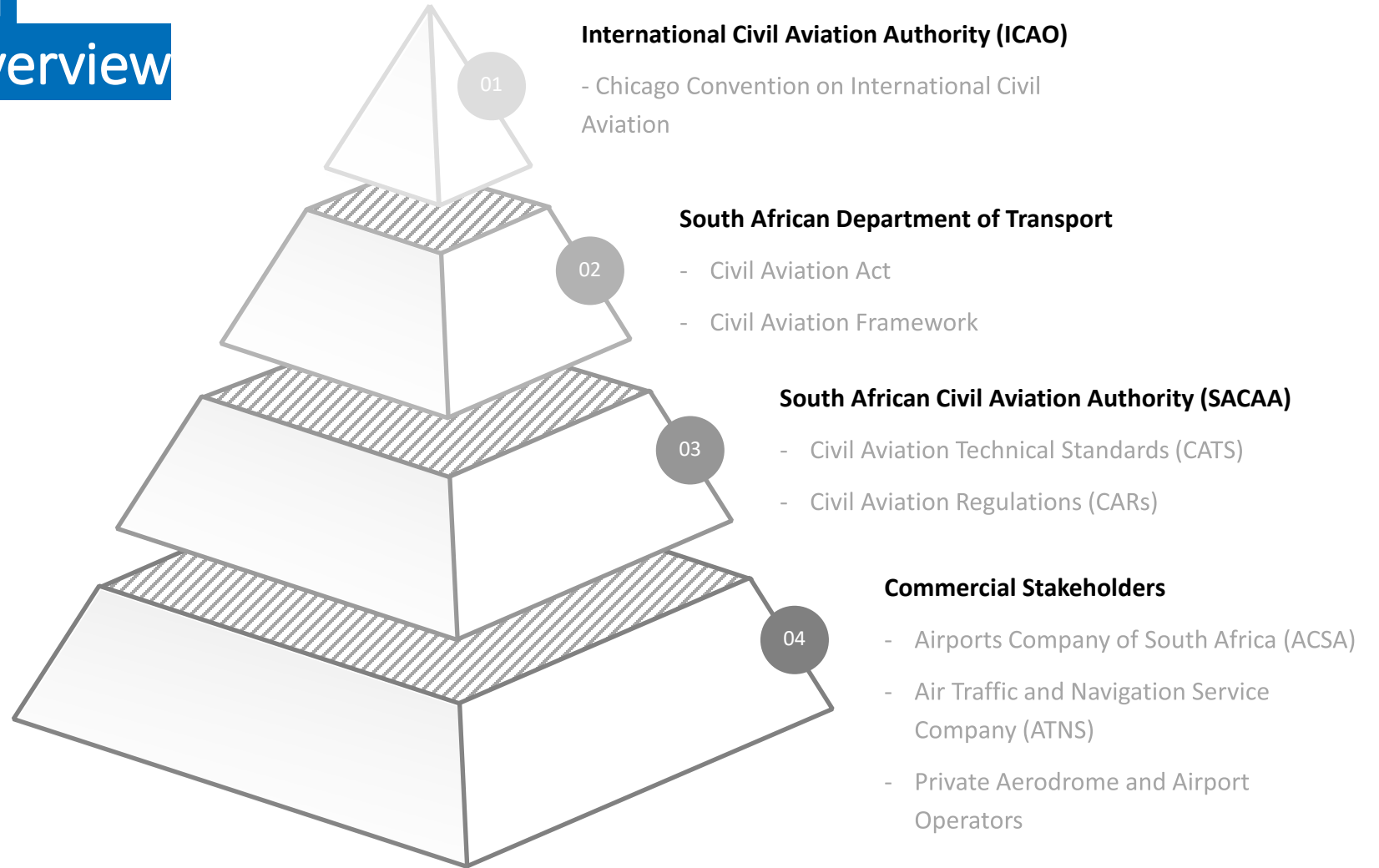
CYBER RESILIENCE
Built-in security and AI-driven threat detection.

INTEROPERABLE STANDARDS
Global standards enable seamless collaboration and innovation.

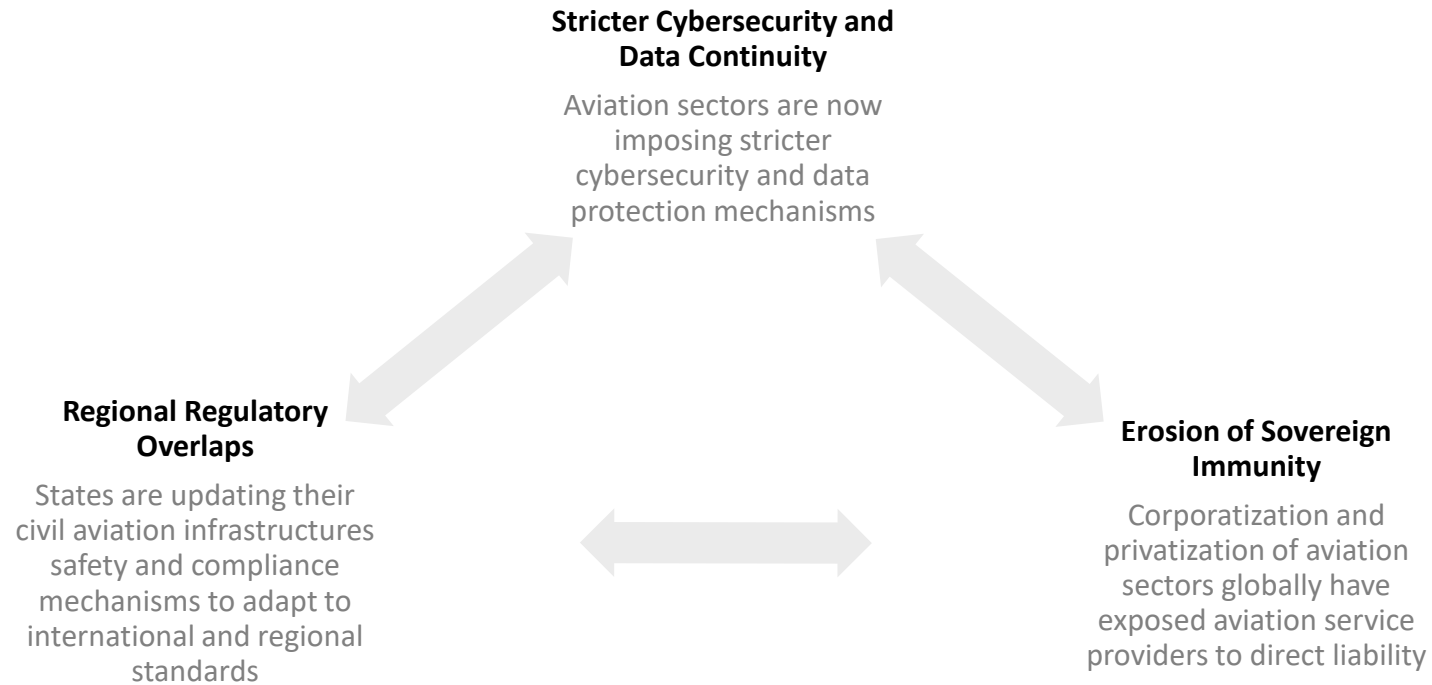
GREEN TECHNOLOGIES
Supporting net-zero aviation and sustainable operations.

ONE SKY. ENDLESS POSSIBILITIES.
Integrated. Intelligent. Inclusive. Powering the future of flight.

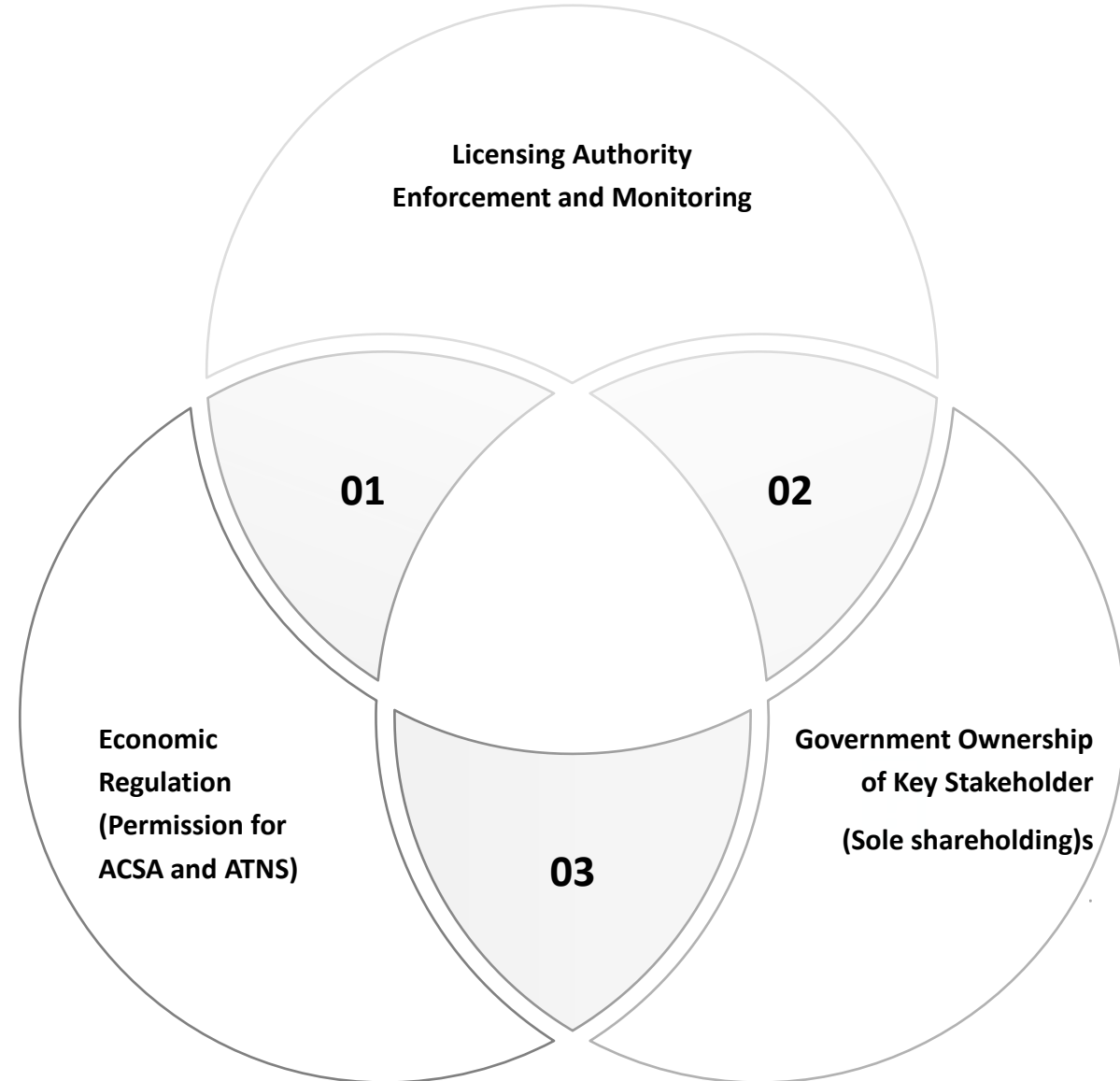
Regulatory and Stakeholder Overview



Emerging Legal Trends in Liability for Critical Aviation Infrastructure



Mechanisms for Maintaining Government Responsibility



Training pipeline and direct recruitment



ATS retention scheme



Use of operational managers



Off day buy back – Voluntary



Off day buy-back – Operational requirement



Accountability and Corrective Action for Failures

- Flight Procedure Delays
- Global Critical Staff Shortages
- Ministerial Intervention Task Team

Thank You



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