



EXPLORE FLIGHT

WE'RE WITH YOU WHEN YOU FLY

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Global Aviation

Achieving Growth and Innovation while Overcoming Challenges



Over Next 20 Years...

Traditional Aviation grows by 2.5X RPKs and 2X Fleet Size
Emerging aviation markets grow to millions? billions? of operations

While Aviation Also...

Improves Safety
Reduces Environmental Impact
Enhances Mobility
Increases Workforce Productivity

Is it all possible?

Traditional Aviation – A New Era of Innovation



Reintroduction of commercial supersonic flight will emerge as long-standing hurdles are solved

On the horizon is the next generation highly efficient subsonic airliner and the introduction of hybrid-electric propulsion



Emerging Aviation Markets – UAS, UAM and Thin Haul



Commercial small UAS missions emerging today and will likely accelerate in growth

eV/S/CTOLs for Urban Air Mobility and Thin-Haul Intercity markets will likely emerge in the *early* 2020s and accelerate by *late* 2020s



The Operating Environment: A More Highly Complex and Dynamic System



Diverse Operations

Service Oriented Architecture

Increasing Autonomy

In-Time System Wide Safety

In-Time System-Wide Safety Assurance



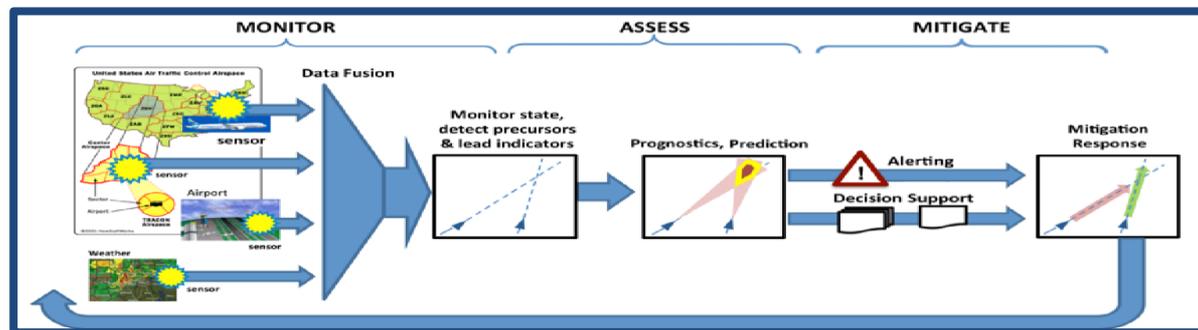
U.S. National Academies Report Identified 4 Fundamental System Element Development Areas:

1. Concept of Operations and Risk Prioritization
2. System Monitoring
3. System Analytics
4. Mitigation and Implementation



NASA Working to Achieve Three Incremental Milestones

1. Domain-Specific Safety Monitoring and Alerting Tools
2. Integrated Predictive Technologies with Domain-Level Applications
3. Adaptive In-Time Safety Threat Management



NASA Aeronautics

NASA Aeronautics Vision for Aviation in the 21st Century



Global

Sustainable

Transformative

6 Strategic Thrusts



Safe, Efficient Growth in Global Operations



Innovation in Commercial Supersonic Aircraft



Ultra-Efficient Commercial Transports



Transition to Alternative Propulsion and Energy



In-Time System-Wide Safety Assurance



Assured Autonomy for Aviation Transformation

ARMD continues to evolve and execute the Aeronautics Strategy
<https://www.nasa.gov/aeroresearch/strategy>

U.S. leadership for a new era of flight



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THANK YOU

