



UAS Symposium



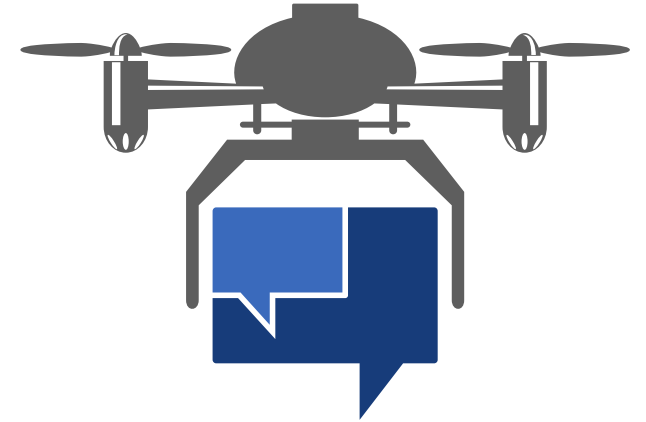
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Welcome

Dr. Tim Brady, *Interim Chancellor and
CAO Daytona Beach Campus, ERAU*



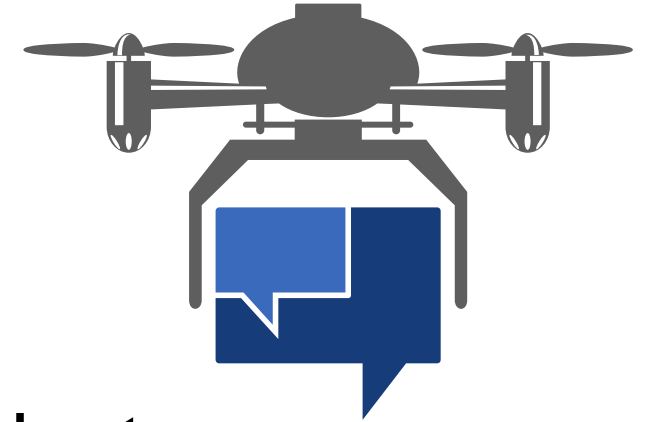


Symposium Overview & Objectives

Maj. Gen. (Ret.) Marke “Hoot” Gibson,
FAA Senior Advisor on UAS Integration

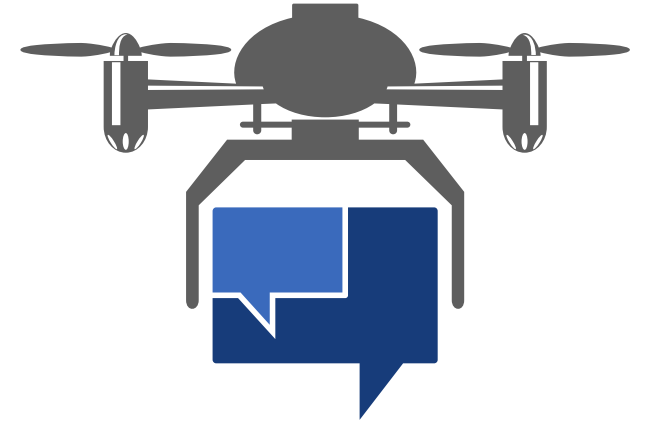
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Purpose



- Outline FAA strategy & vision
- Engage with stakeholders and industry
- Understand stakeholder perspectives on FAA's strategy, challenges
- Understand how to best maintain stakeholder collaboration

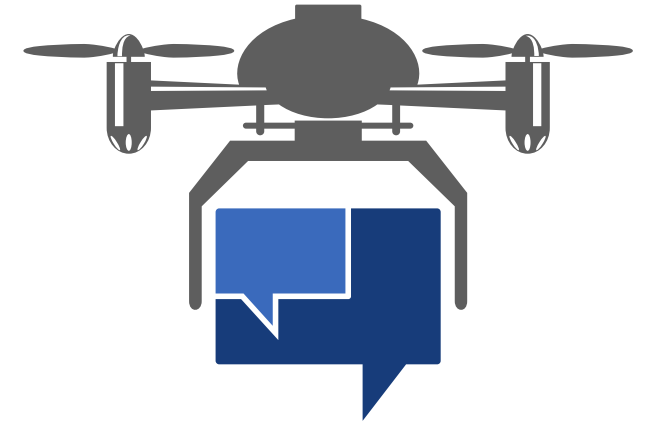
**** Develop symposium report ****



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Keynote Luncheon Address

UAS Integration – Strategies for Success

Michael Huerta, *FAA Administrator*

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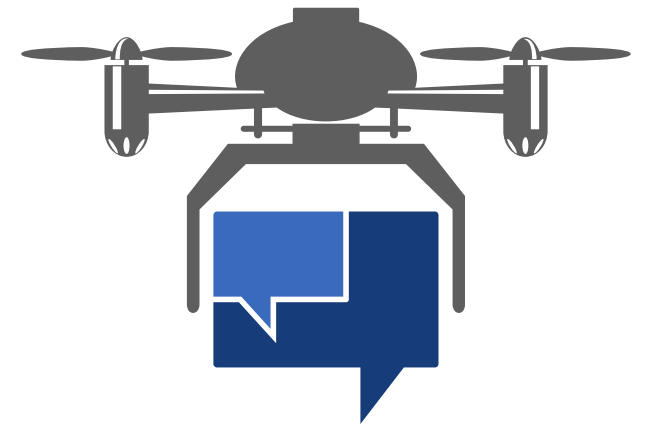
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Airspace Management Discussion

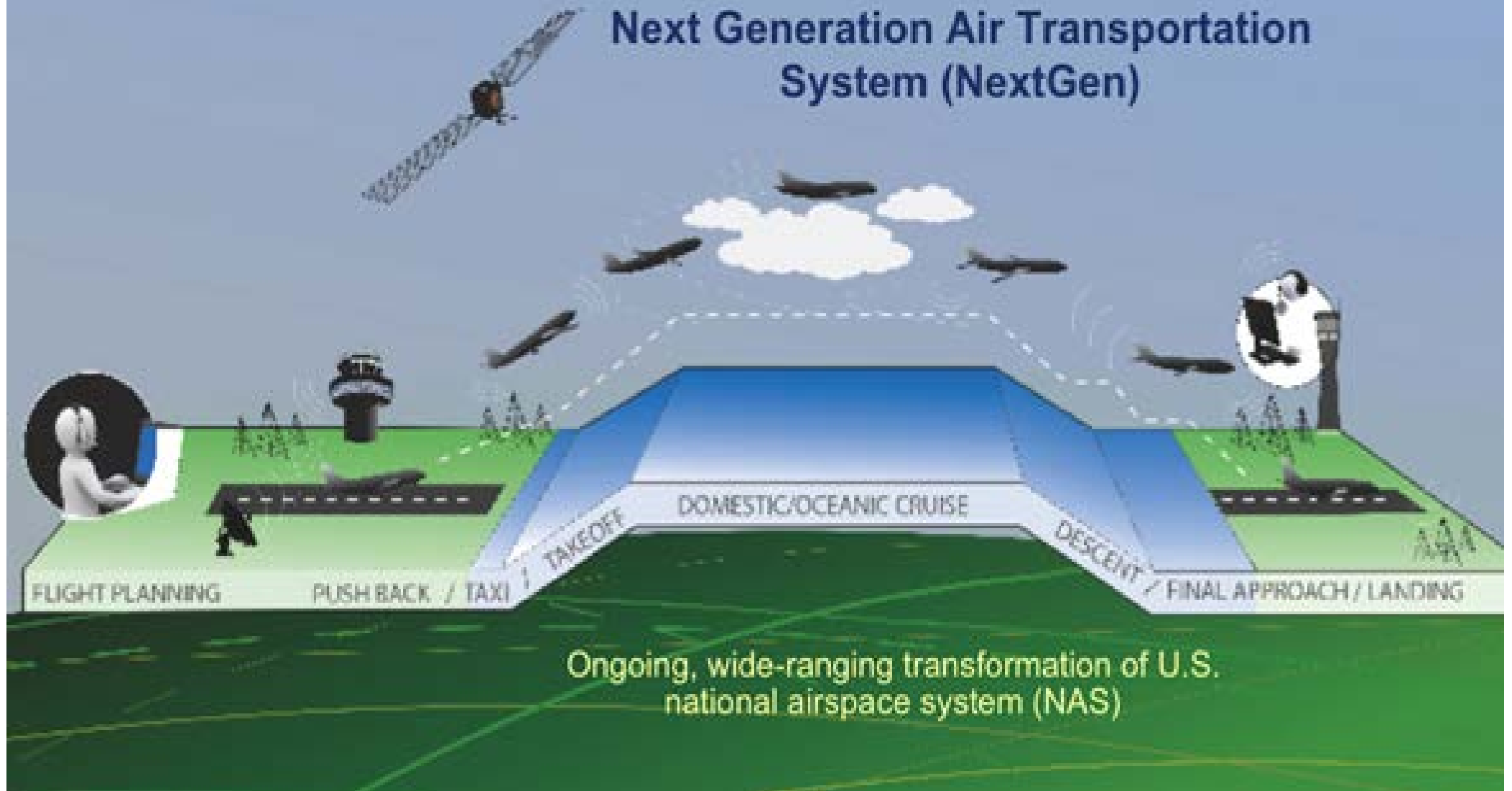
Welcome to the NAS

- Lynn Ray
- Steven Pennington
- John Cavolowsky
- Thomas Haun

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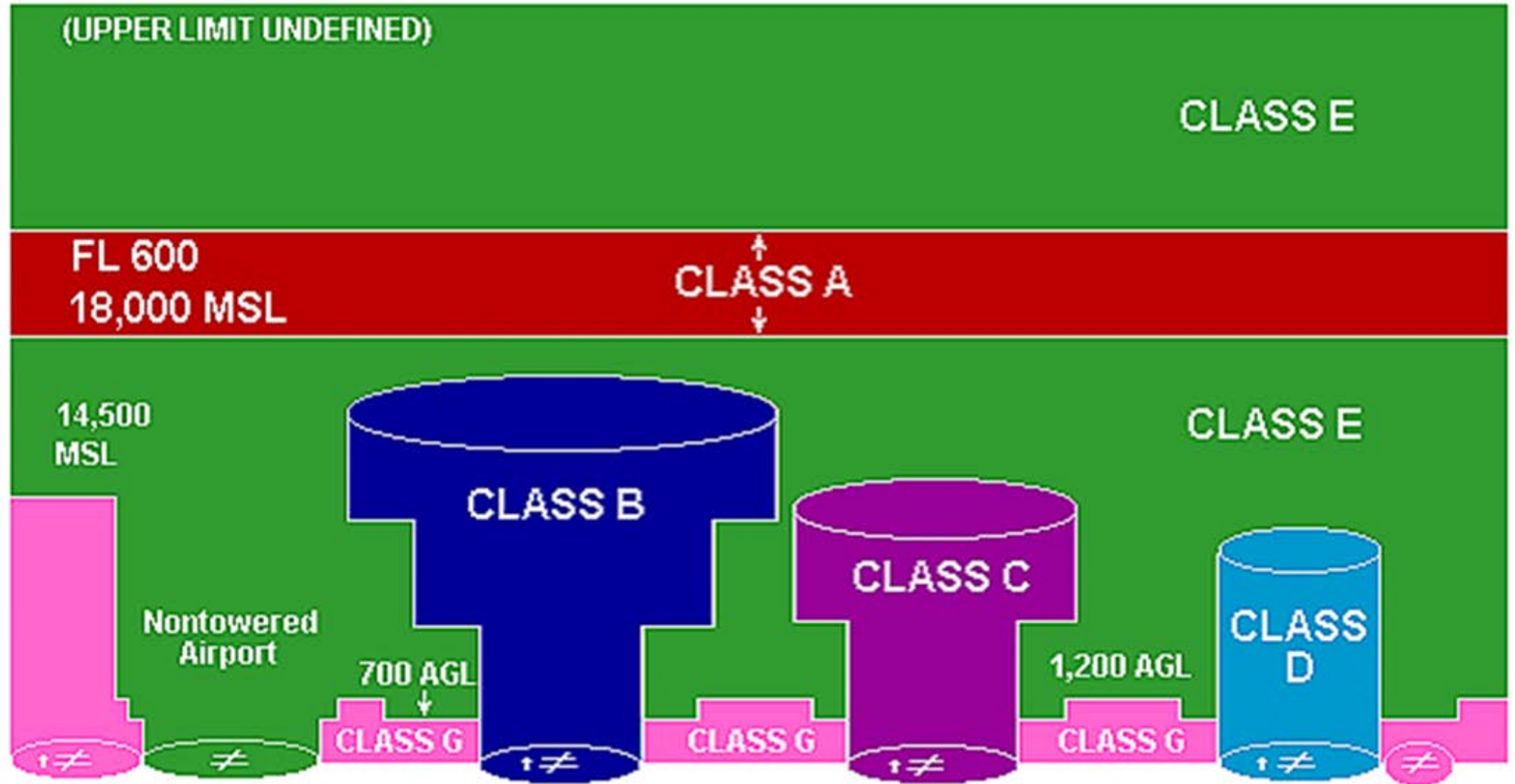


Next Generation Air Transportation System (NextGen)

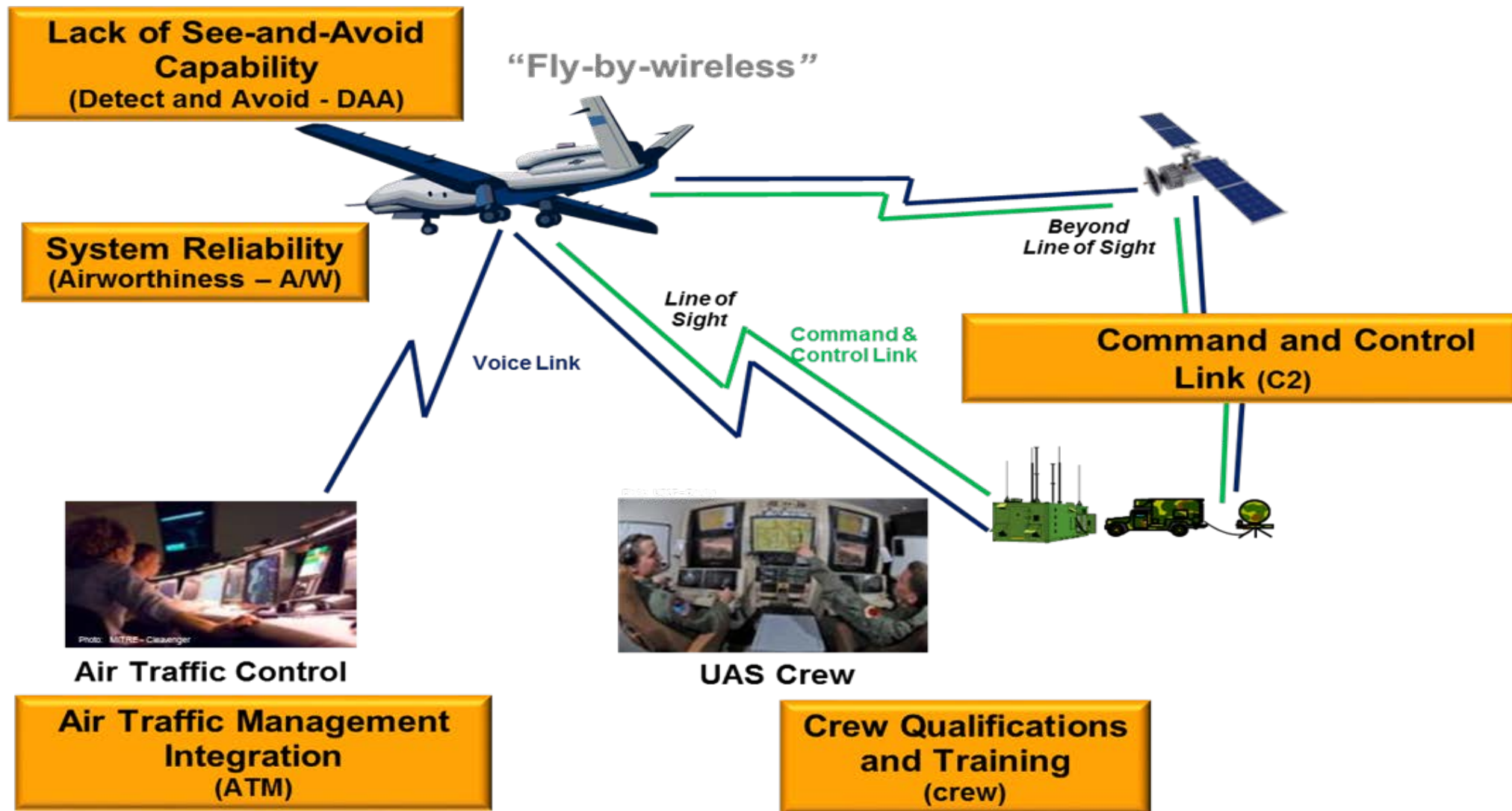


Ongoing, wide-ranging transformation of U.S. national airspace system (NAS)

U.S. Airspace Classification



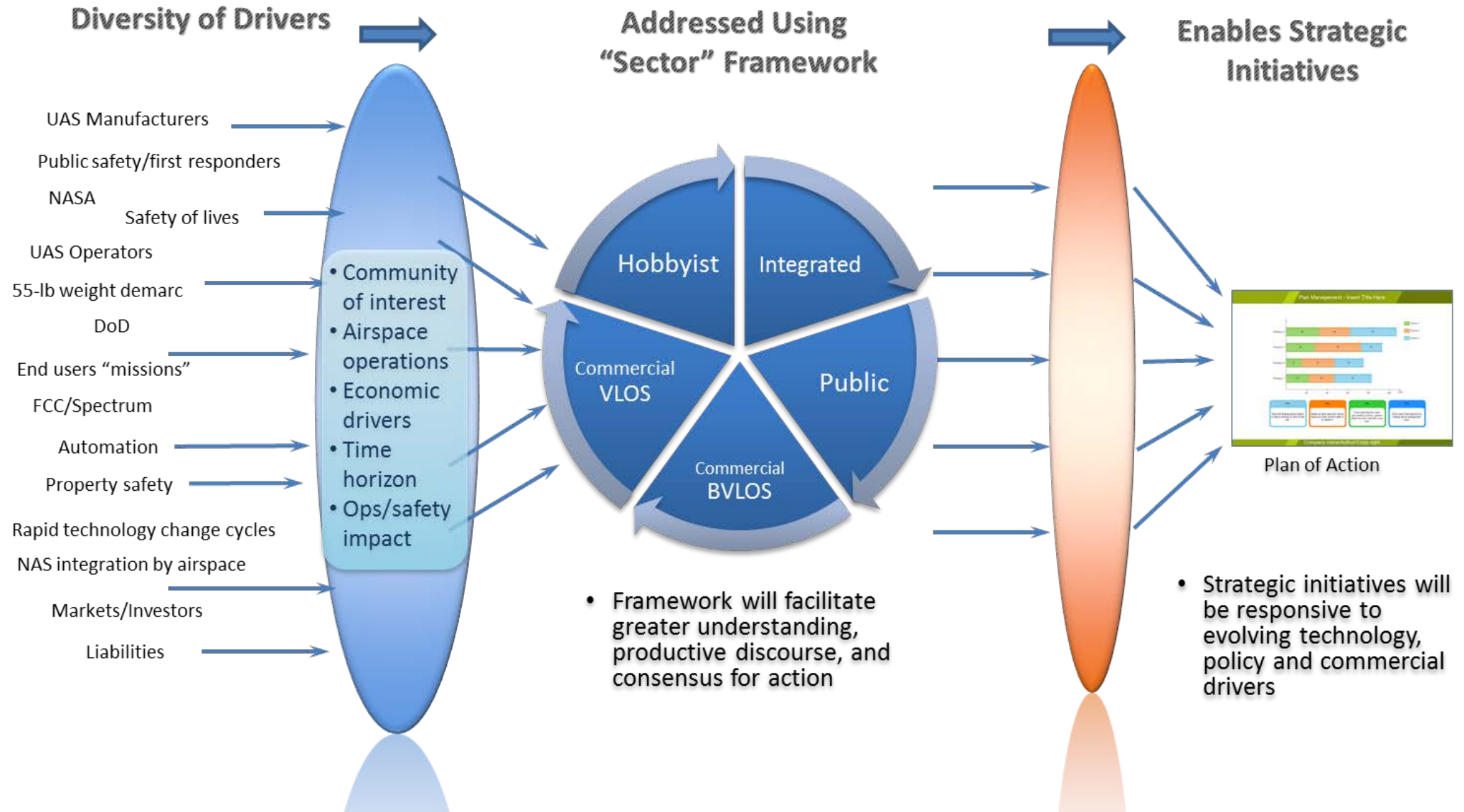
Large UAS Challenges to File & Fly



Low Altitude Airspace of the Future



Need for Common Discussion Framework



Thank you!



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Perspectives for Discussion

All United States airspace will remain under the authority of the FAA. The FAA is not currently pursuing any new, special or modified airspace classes or structures for the purpose of accommodating or integrating UAS.

The current NAS puts airspace management structures such as regulations, automation, and procedures in place based on the complexity or demand for the airspace, i.e. structure where needed. UAS integration will follow this same path.

The FAA is framing its UAS work into five categories or sectors: Integrated... Public... Low Altitude Commercial BVLOS... Low Altitude Commercial VLOS... Modelers/Hobbyists.



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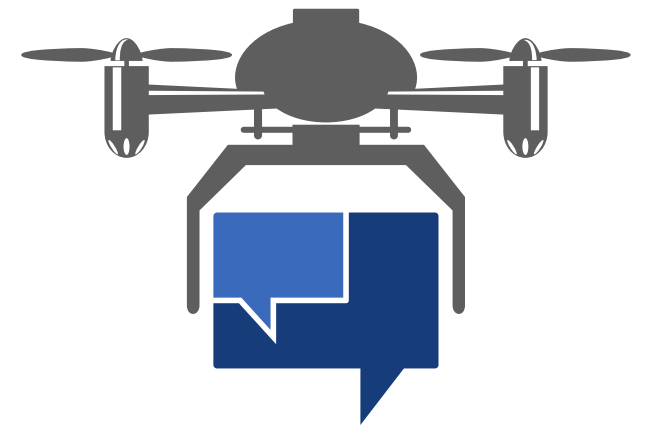
Certification Discussion

Rules of the Game

Moderator: Earl Lawrence

- Dorenda Baker
- John Duncan
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Aircraft Certification Service (AIR)

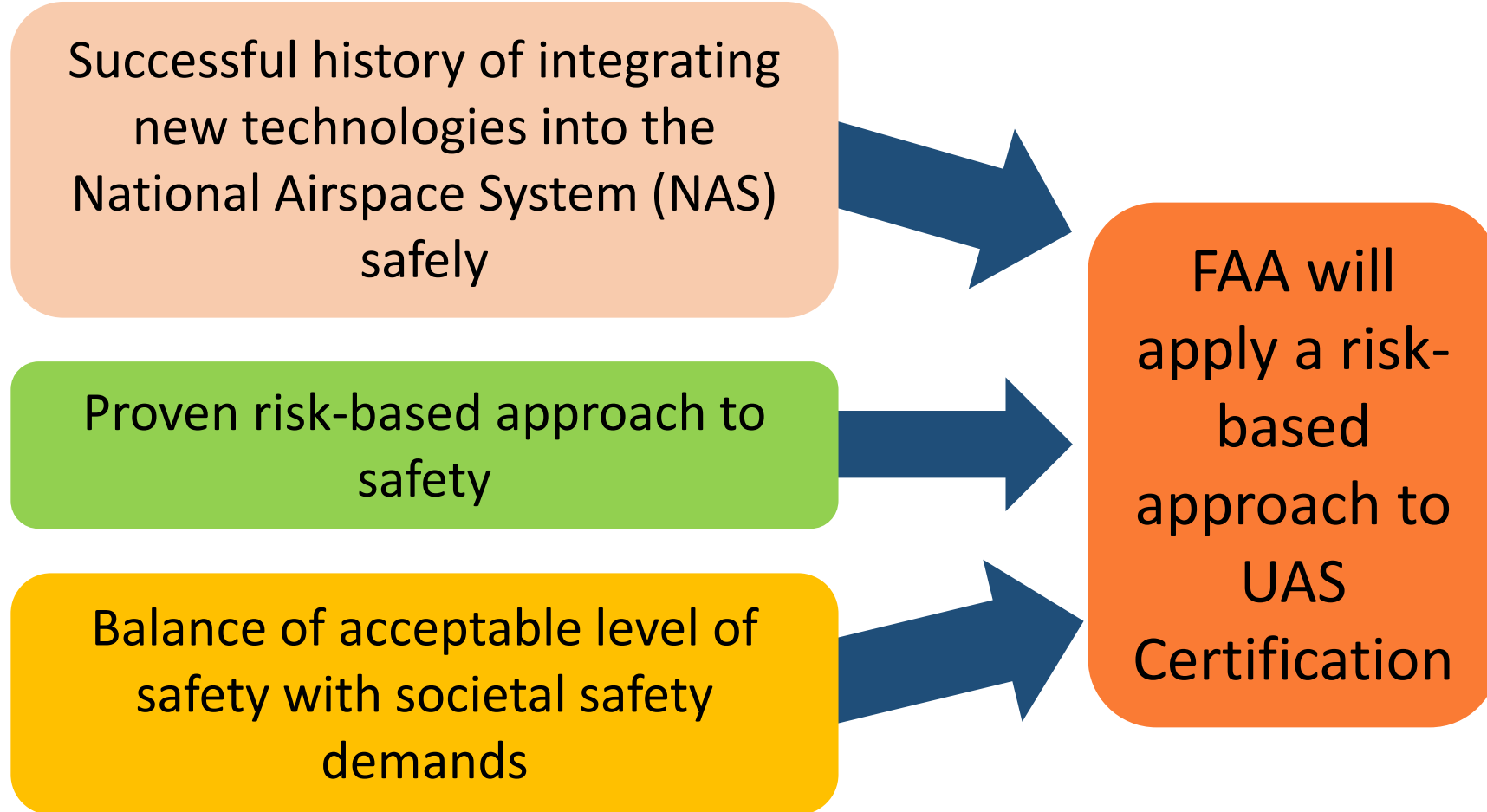
- Development of Standards and Policy
- Certification and Production of propellers, aircraft parts and appliances;
- Continued operational safety (COS) management



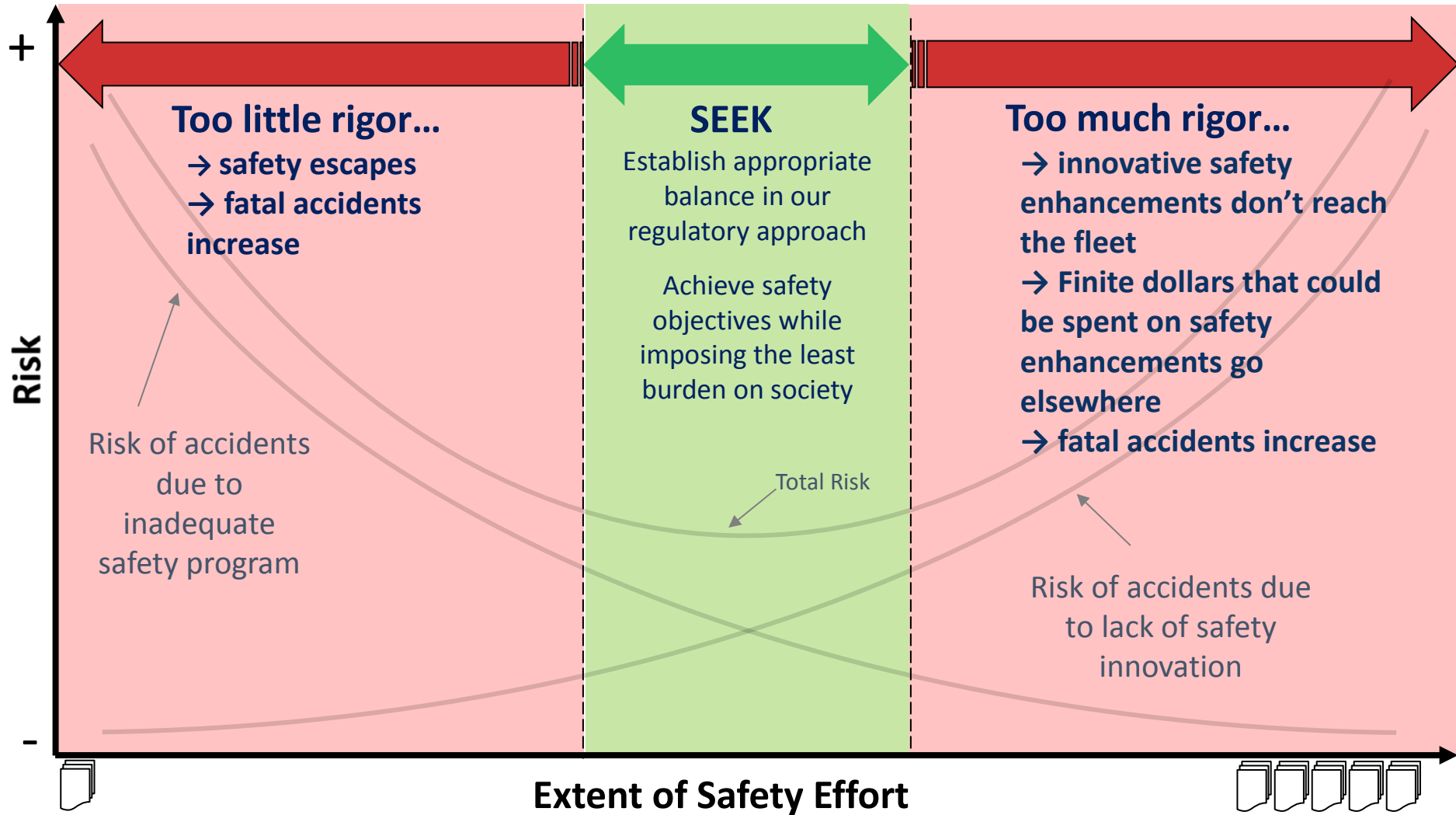
AIR Organization



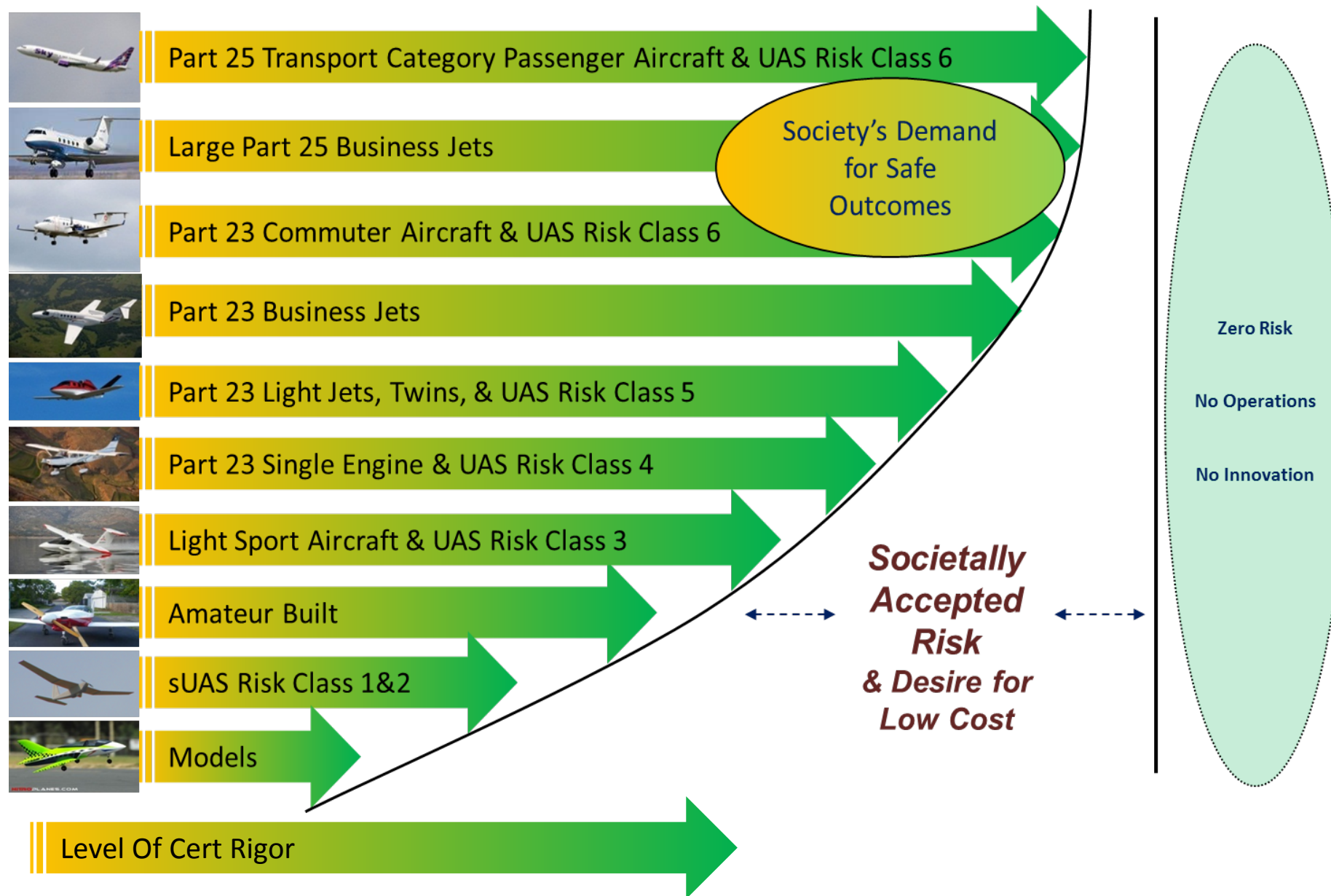
UAS Safety – From Experience



System Safety – The Safety Continuum

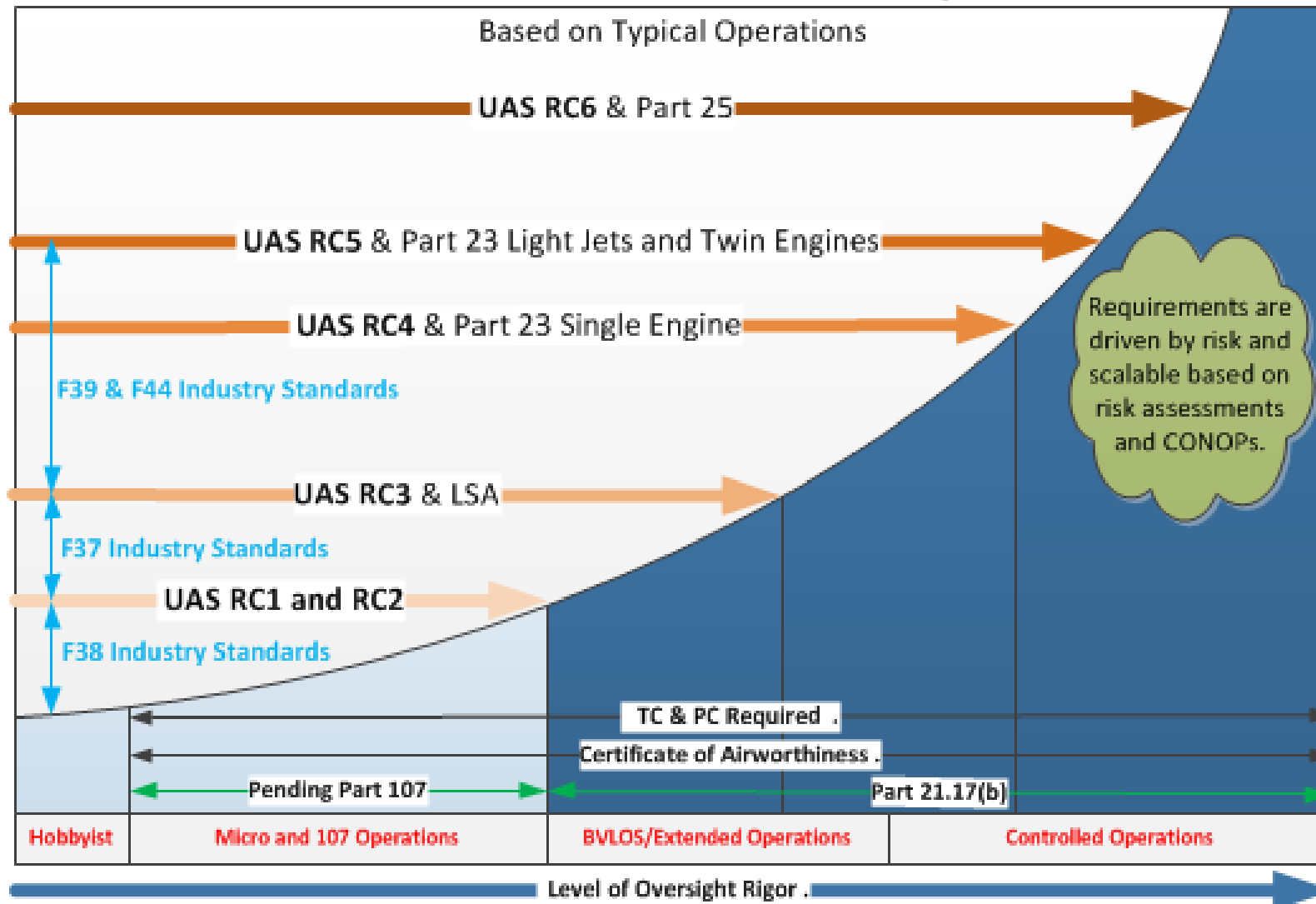


Applying Our Safety Continuum

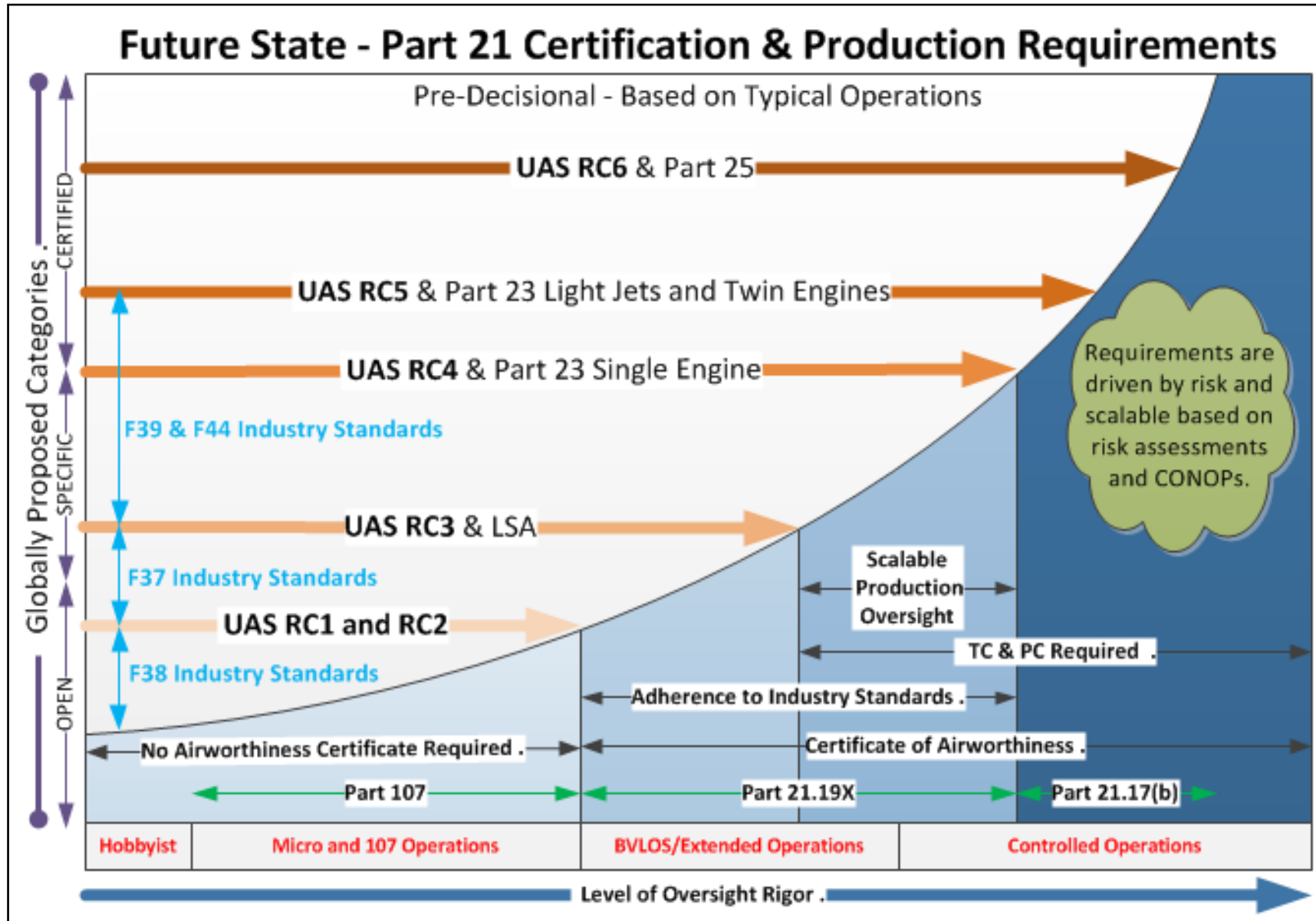


Existing Regulatory Framework

Part 21 Certification & Production Requirements



Future Regulatory Continuum



Scalable Production Oversight

- **Establish production certificate (PC) risk categories similar to the type certificate (TC) risk classes**
 - Current resources will not accommodate PCs for all UAS
 - Scalable approach allows the dedication of FAA resources where the risk is highest

Strategic Goal, Risk-Based Certification

Rising to the Challenge

- **Creating Our Regulatory Continuum Now**
 - Working pathfinders and 13 projects under the current regulatory structure
 - International Collaboration - ICAO, EASA, etc.
- **Ready for the Future**
 - Our certification projects inform future rule changes
 - Considering further changes for low and medium risk UAS
- **Importance of Industry Engagement**
 - Engage **EARLY** and **OFTEN** about new technologies
 - Upfront involvement will help the FAA determine the certification basis and get out of the critical path to certification

Open For Business! <https://www.faa.gov/uas/>



www.faa.gov/uas/

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FAA Mission & Responsibilities

The FAA's mission is to protect life and property within the National Airspace System (NAS).

The Flight Standards Service fulfills its part of the FAA mission through:

- *Standards* (pilots, mechanics, air carriers, air operators, training facilities)
- *Certification* ("licensing" of those who meet standards)
- *Continued Operational Safety* (risk-based decision-making)

The goal of these functions is to provide protection for operators, passengers, and non-participants (people and property on the ground).



Regulatory Parts – Rules of the Road

Part 91 – General Operating Rules

Part 61 – Pilot Knowledge & Skill Requirements

Part 135 – Air Transportation – Small Aircraft

Part 121 – Air Transportation – Large Aircraft

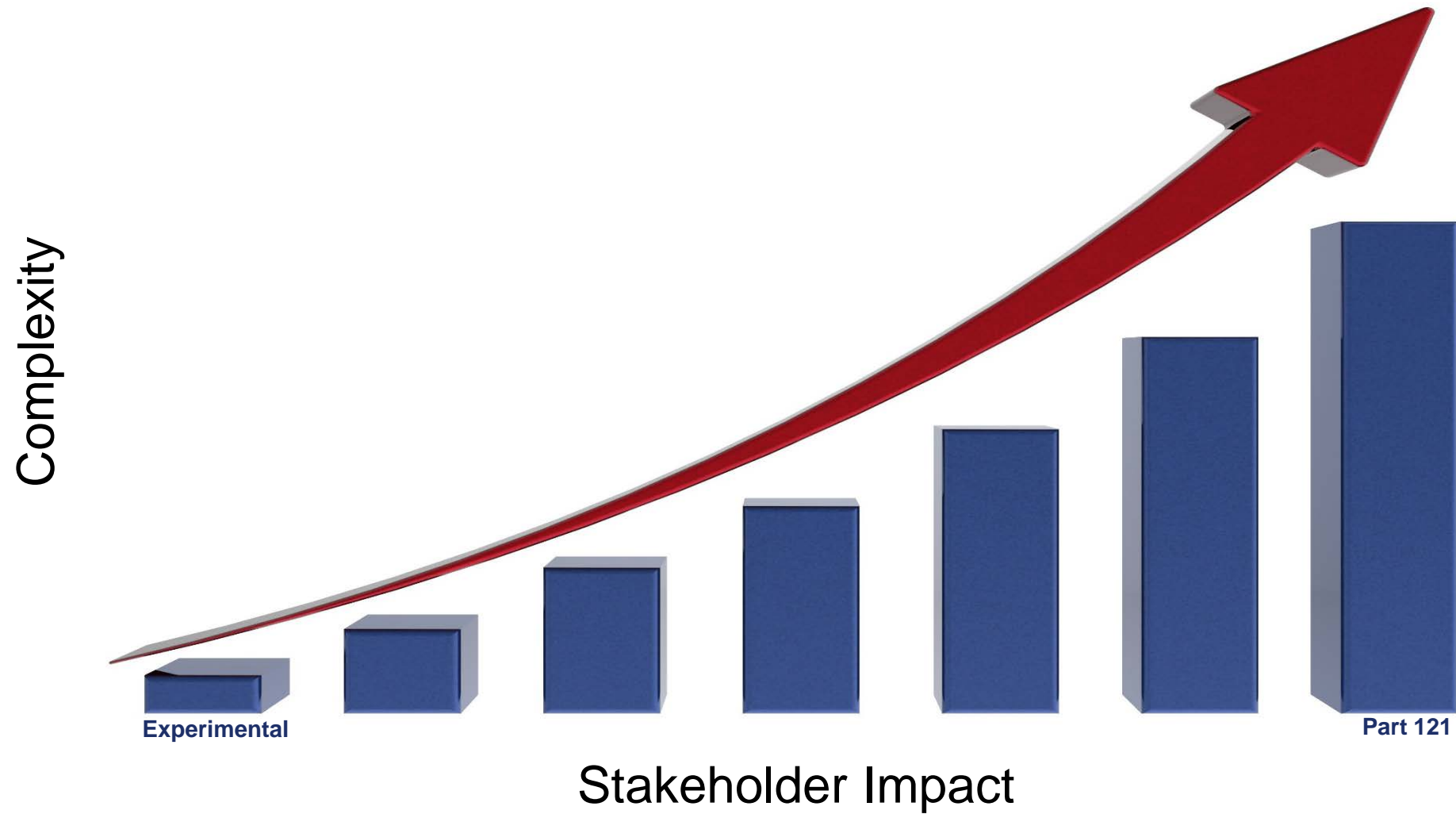
Part 137 – Agricultural Operations

Part 133 – External Load Operations

Part 141 – Pilot Schools



Regulatory Requirements



FAA Vision for UAS Integration

Safe, efficient, and timely integration of UAS into the National Airspace System (NAS)

- The FAA did not envision UAS when today's prescriptive civil aviation safety regulations were developed.
- As UAS activity increased, the FAA recognized the need for integration of these aircraft into the NAS.
 - We have begun to set standards for full integration of UAS, which will eventually be treated like any other aircraft.
 - In the near term, the FAA is accommodating the demand for UAS operations by creating a niche in the NAS (part 107 and section 333 exemptions) to enable UAS activity.
 - This approach allows UAS to operate as the FAA works to create performance-based (vice prescriptive) standards that enable UAS operations.

Looking Ahead

- UAS are becoming more complex and more capable. We expect UAS to further evolve in size and complexity that will be comparable to that of manned aircraft.
- Next steps will involve expanding the scope of operations under part 107.
- To achieve the goal of full integration into the NAS, however, the FAA will have to make broad changes in the structure and scope of existing rules to accommodate UAS.
- These changes will shift regulations from the existing prescriptive approach to a performance-based standard.



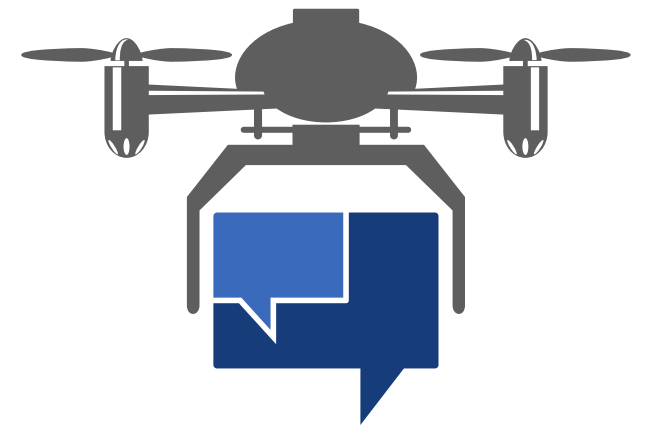
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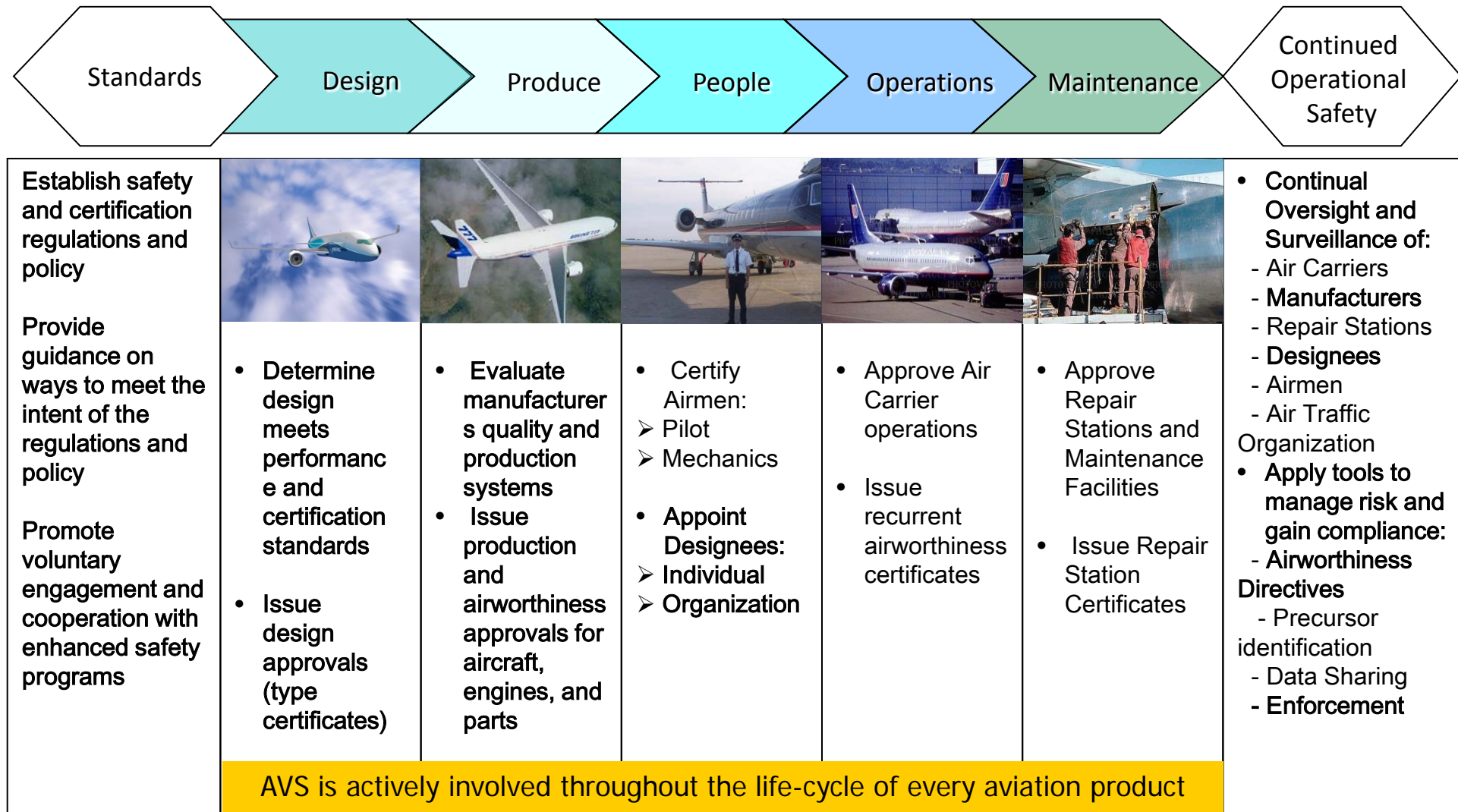
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Aviation Lifecycle





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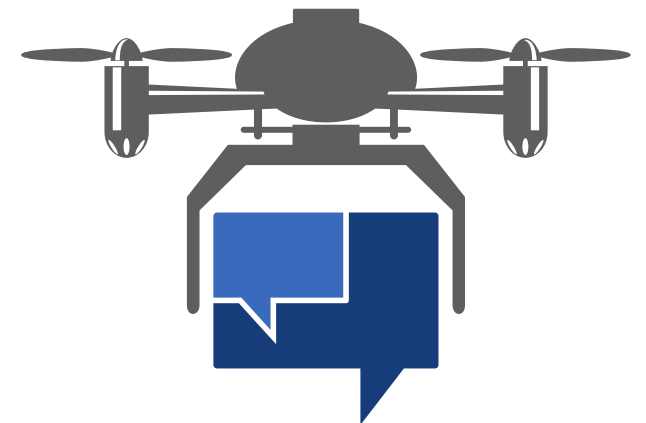
Technological Enablers and Restrictors Discussion

How Do We Evolve Together?

Moderator: Jim Eck

- Jay Merkle
- Earl Lawrence
- Dr. Ed Waggoner
- Paul McDuffee
- Michael Lewis

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CNS/ATM Evolution

Risk/Complexity

Integrated Operations
By Full Performance-Based Rules
(Class A/B/C/D Ops)

Segregated Operations VLOS –
Over People /
High Density

Segregated Operations –
VLOS Over People /
Low Density

Segregated Operations
By Rule 107 –
VLOS Class G

333/336 Ops –
Segregated Operations
By Waiver/Exemption

UAS CNS
systems
Compliant with
risk based
performance
standards

Notification

Schedule
(UTM)

Transit Controlled
Airspace (UTM)

Integrated
Class A,B,C,D
Airspace

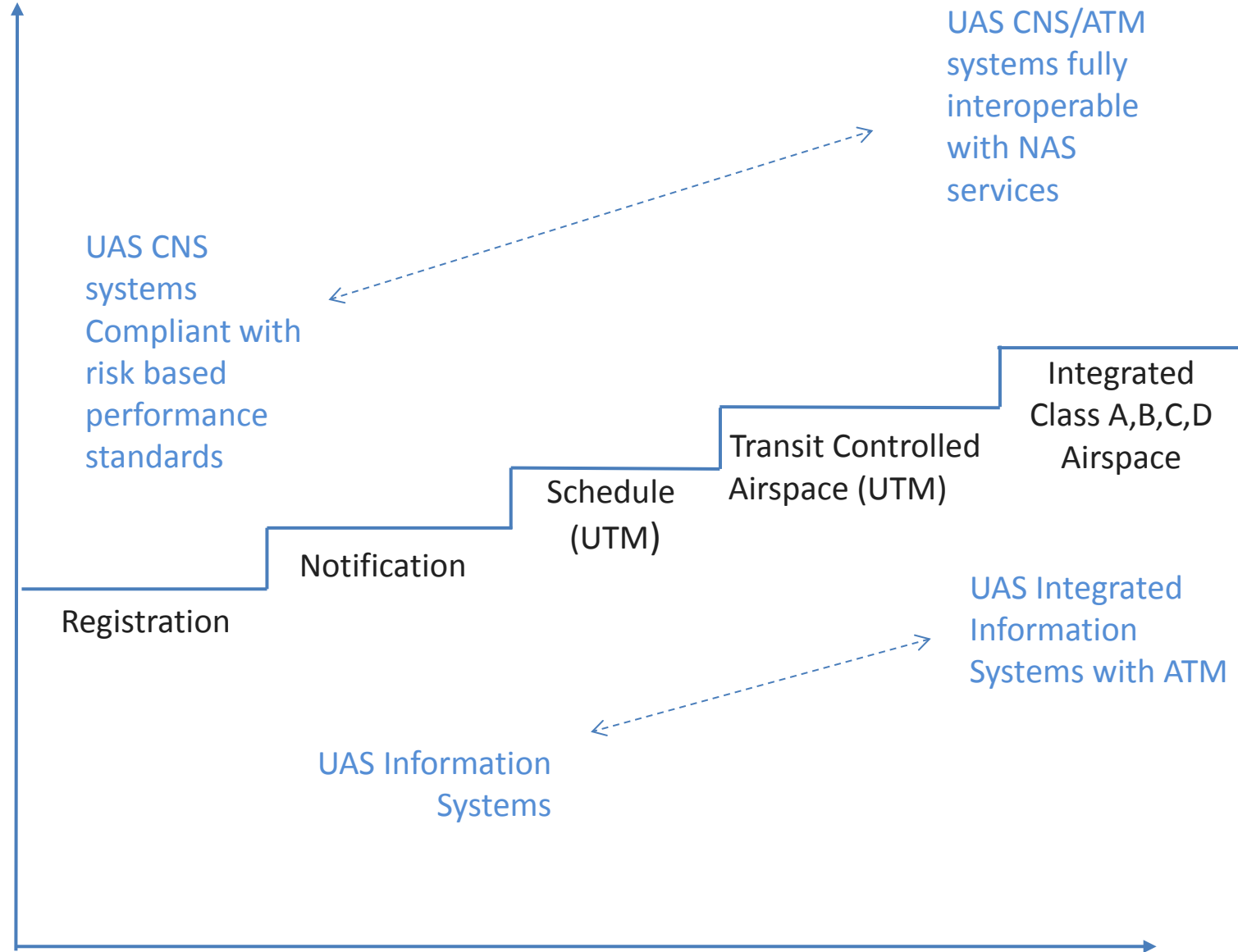
UAS CNS/ATM
systems fully
interoperable
with NAS
services

UAS Integrated
Information
Systems with ATM

UAS Information
Systems

Registration

Functionality Over Time



CNS/ATM Evolution

Risk/Complexity

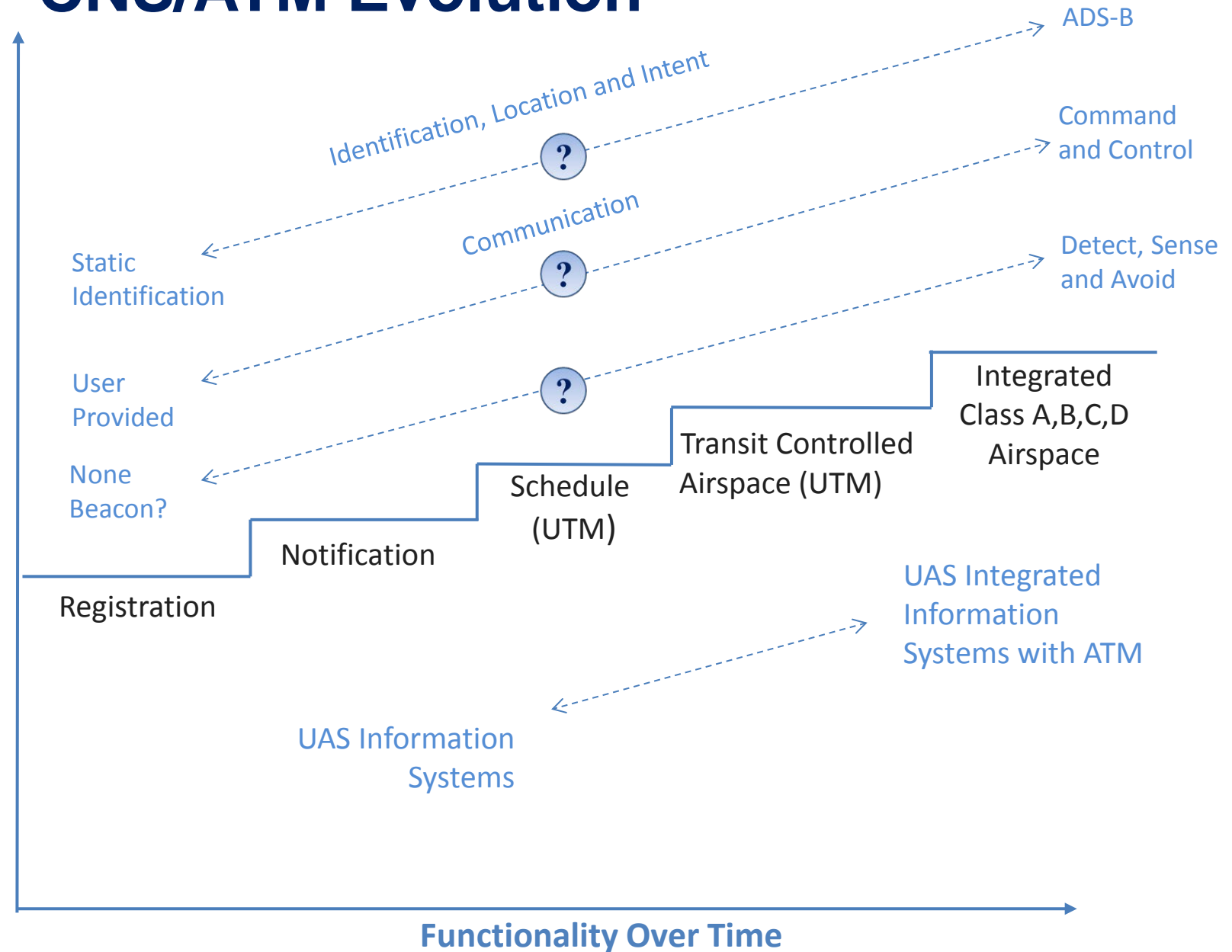
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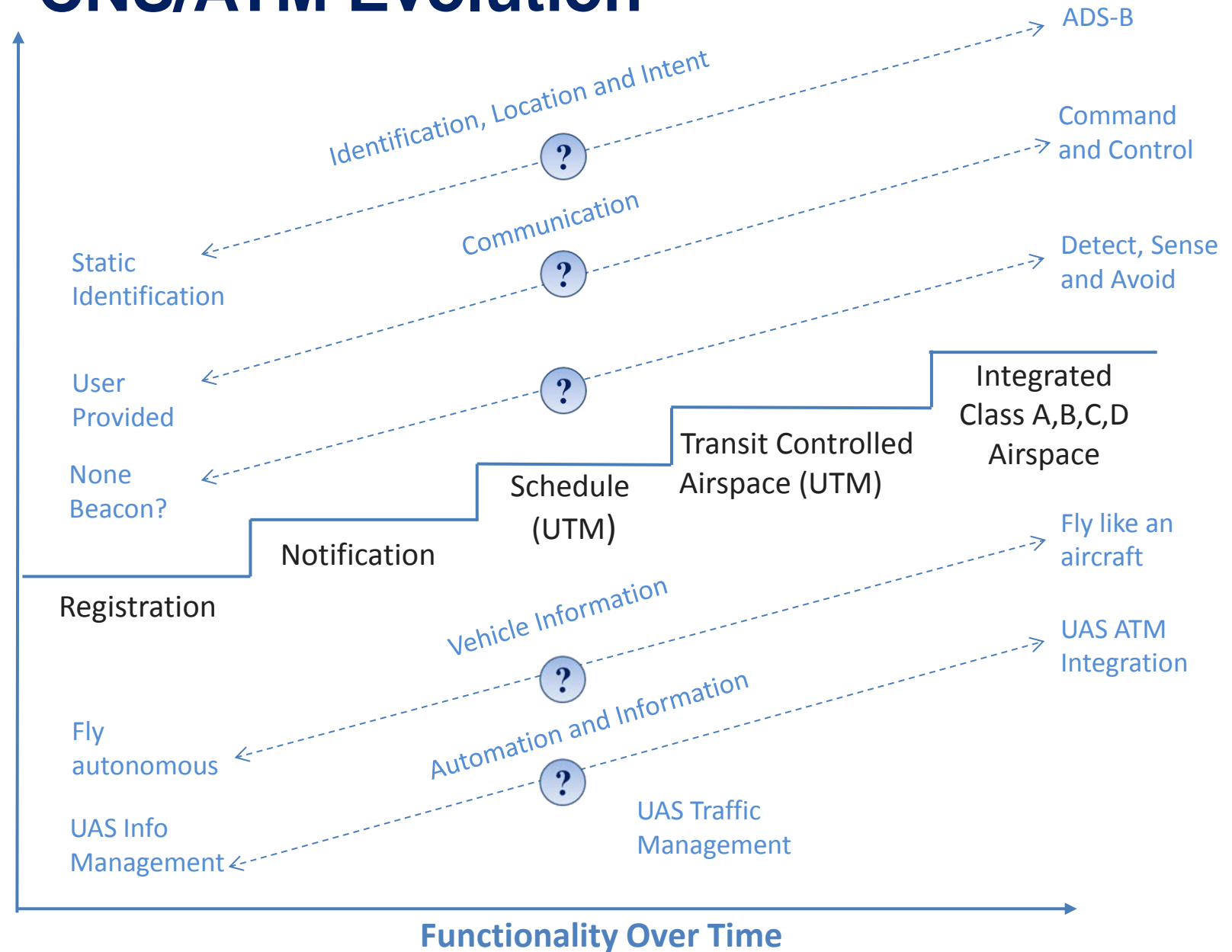
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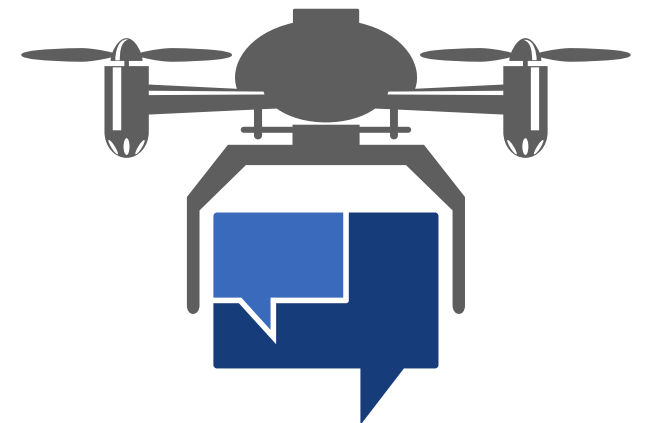
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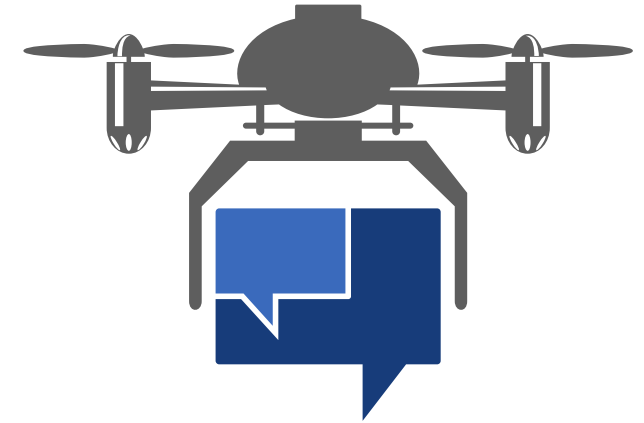


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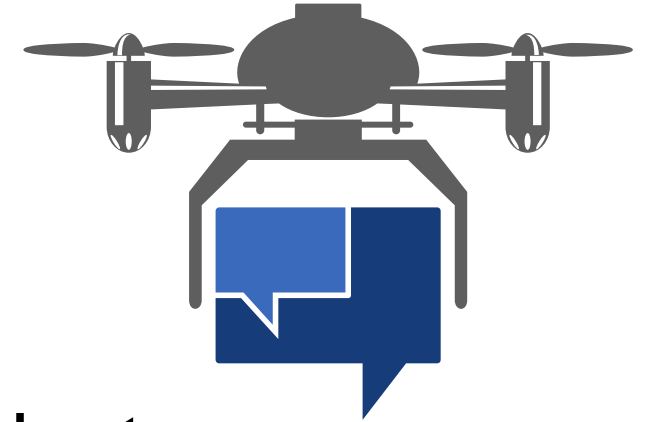


Day 1 Recap Day 2 Logistics

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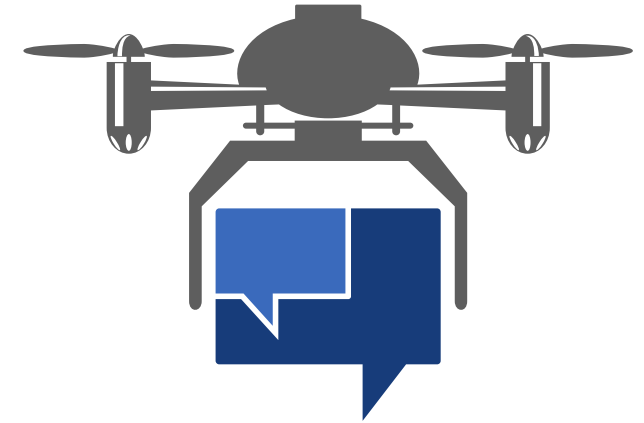
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