Unmanned Aircraft System (UAS) Integration

Overview and Perspectives

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FAA UAS Integration Office

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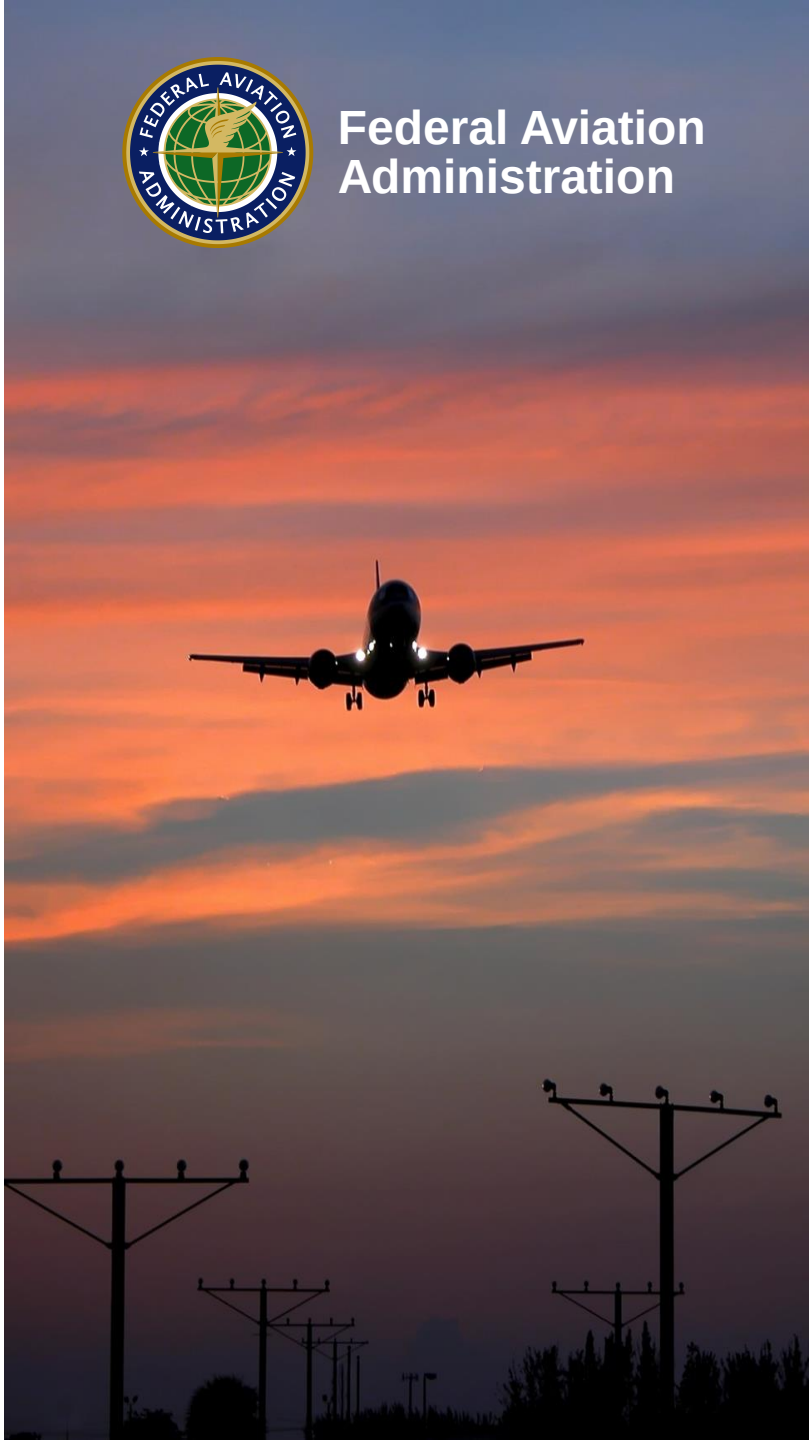


The Challenge

UAS integration is not just about creating new rules, policies, and processes…

Volume

- New UAS entering the NAS
- New users joining the aviation community

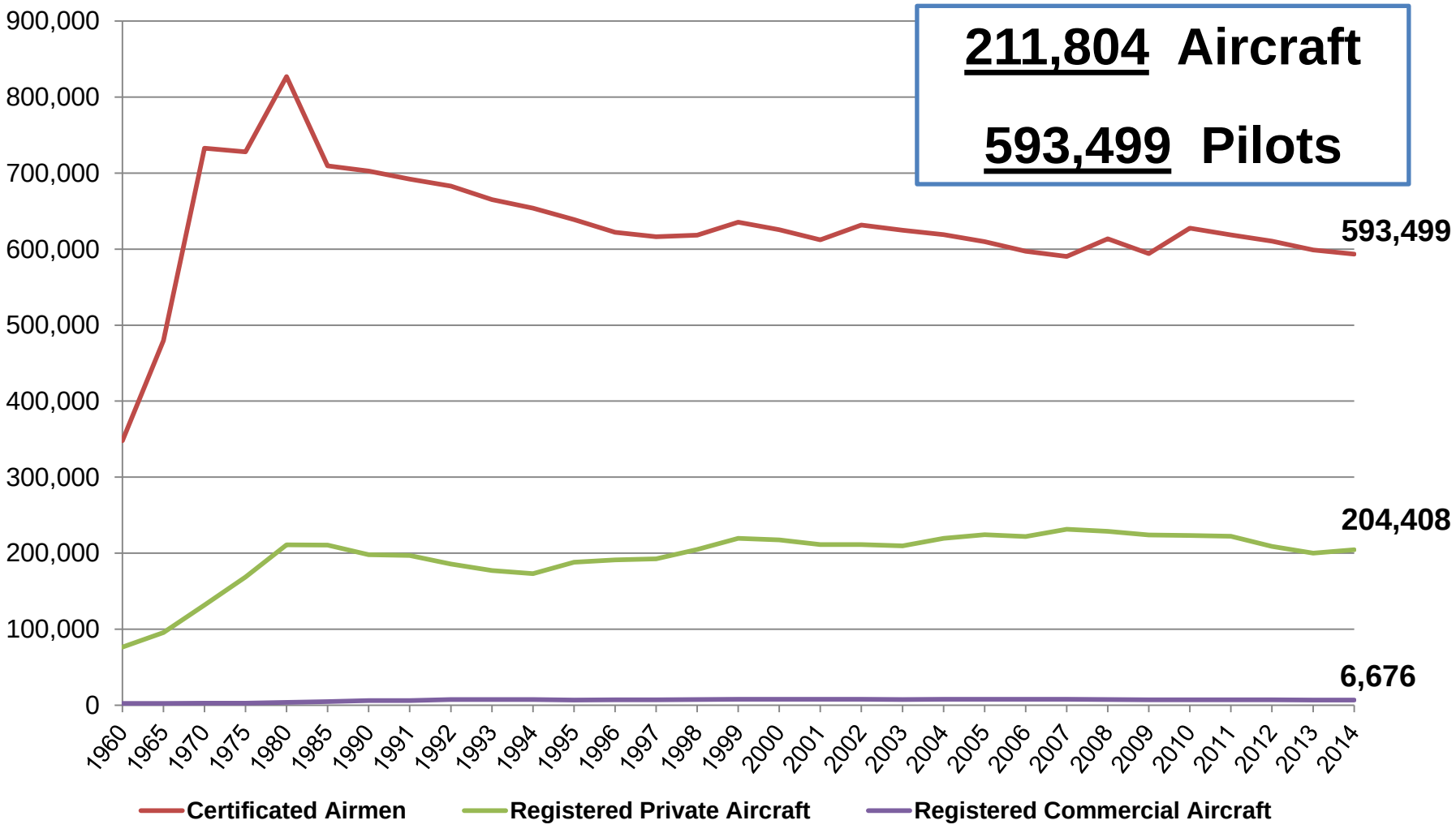
Pace

- Technological innovation
- Regulatory, policy, and procedural changes

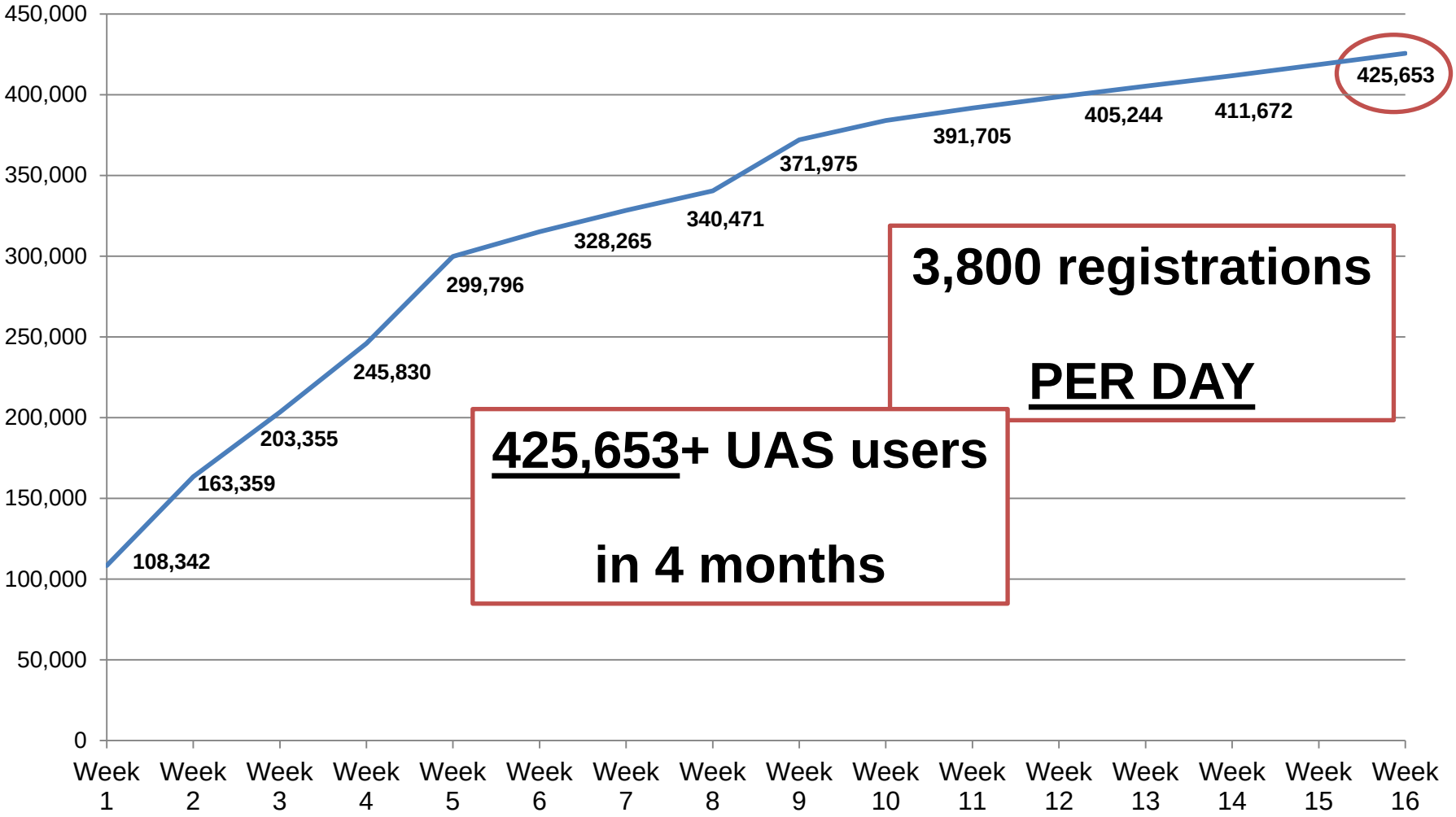
High demand on FAA time and resources

Growing Commercial Interest

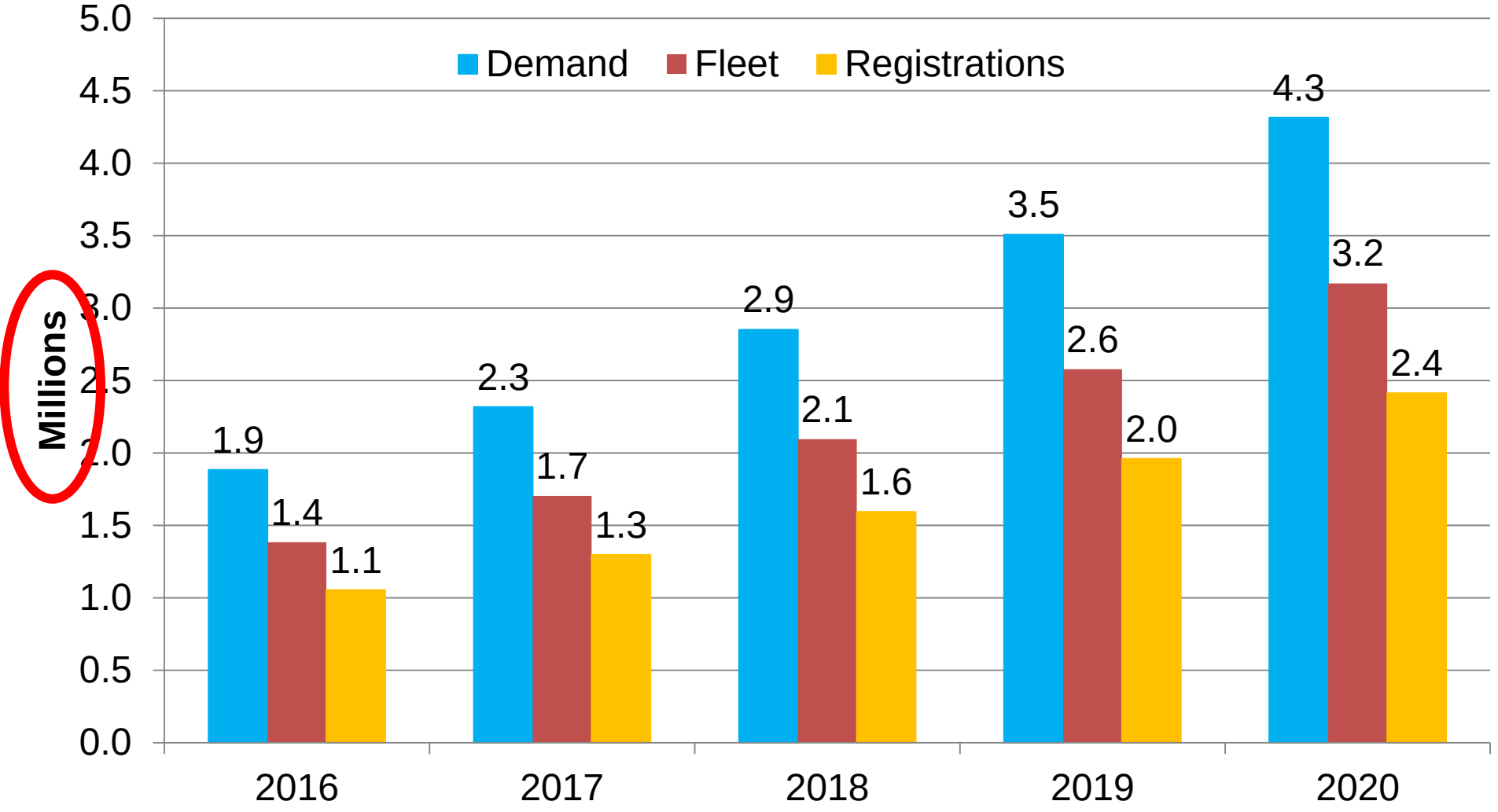
Traditional Aviation Industry



Small UAS Registration (Dec-Apr)

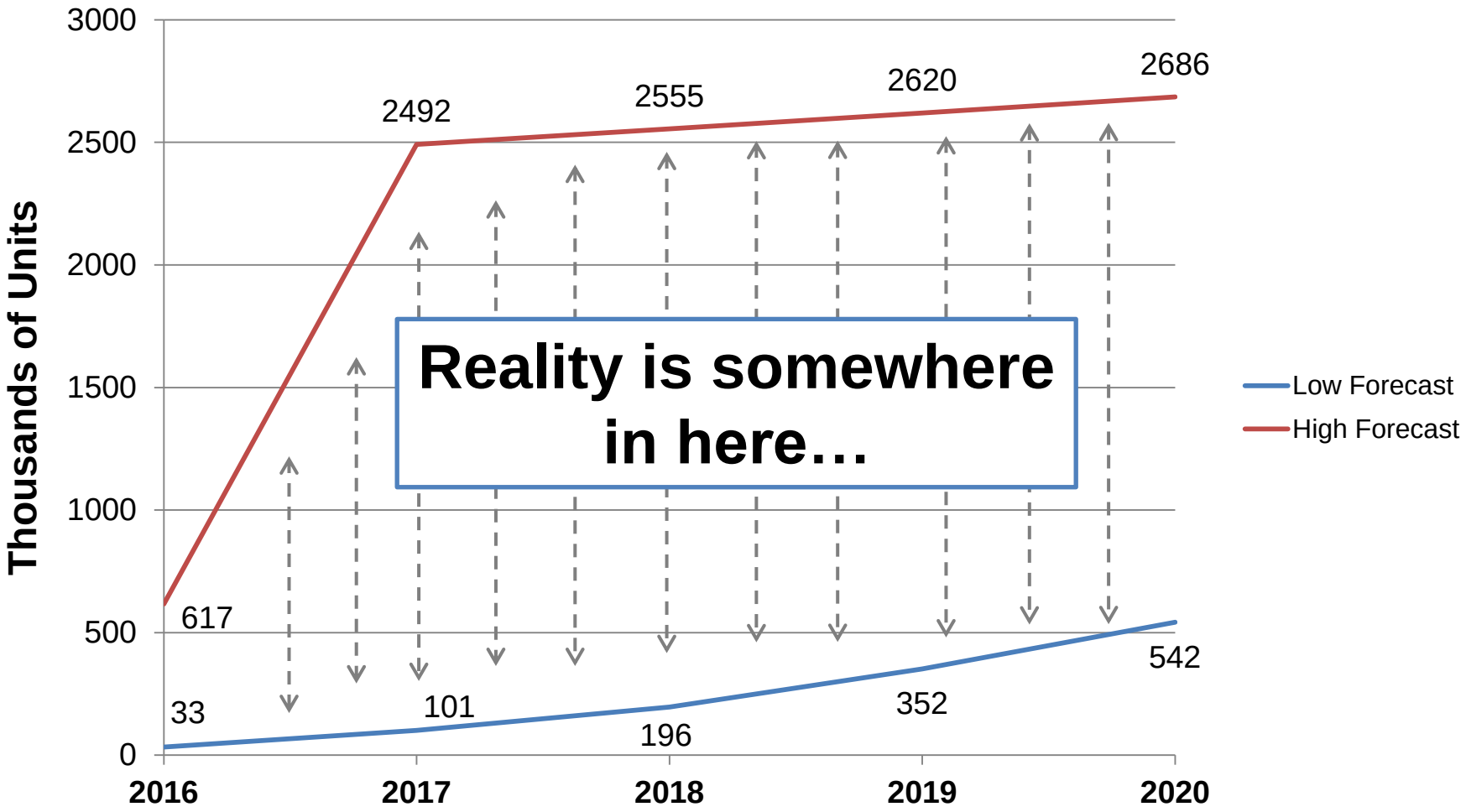


UAS Model Aircraft



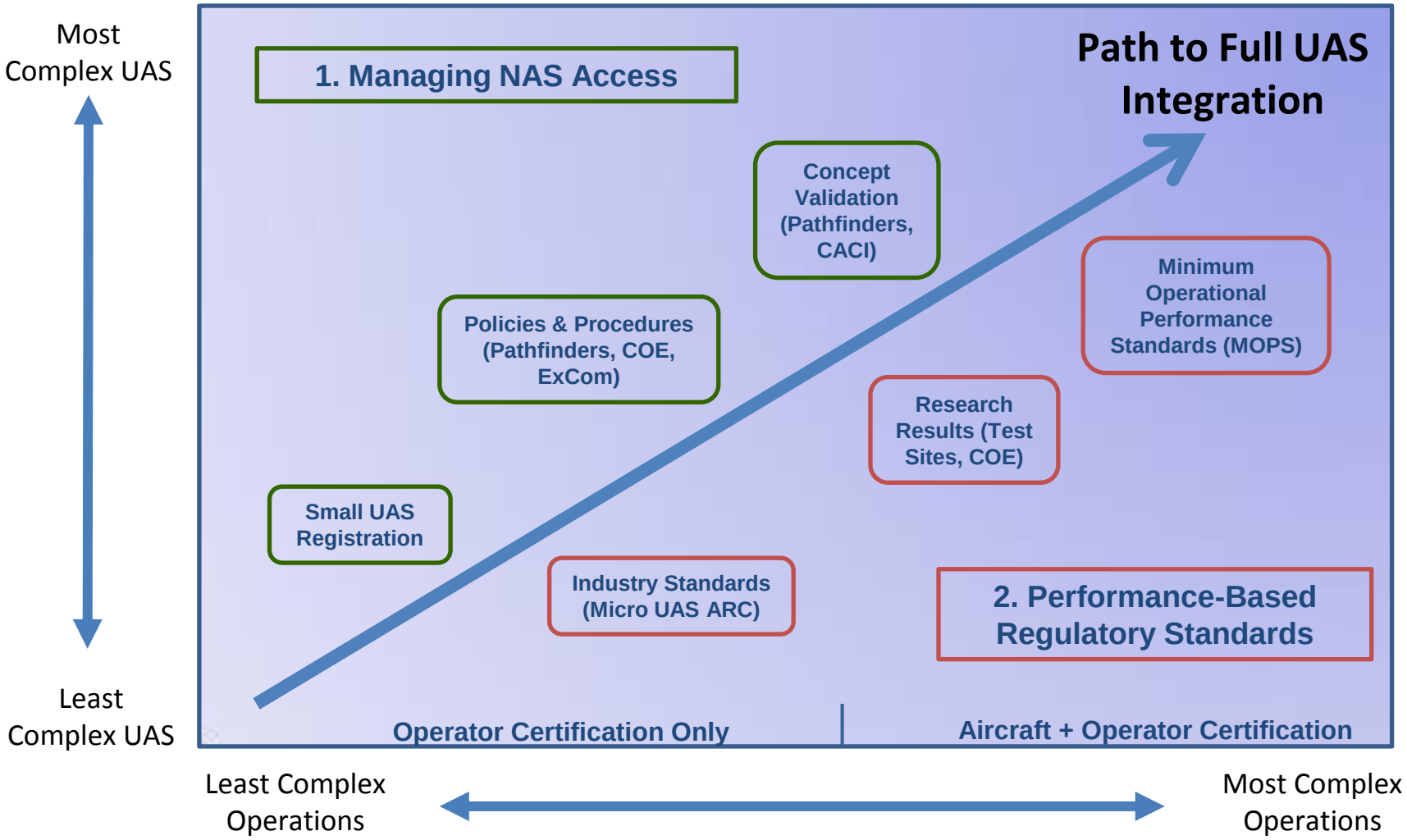
Source: FAA Aerospace Forecast (2016-2036)

Small UAS (non-model) Fleet



Source: FAA Aerospace Forecast (2016-2036)

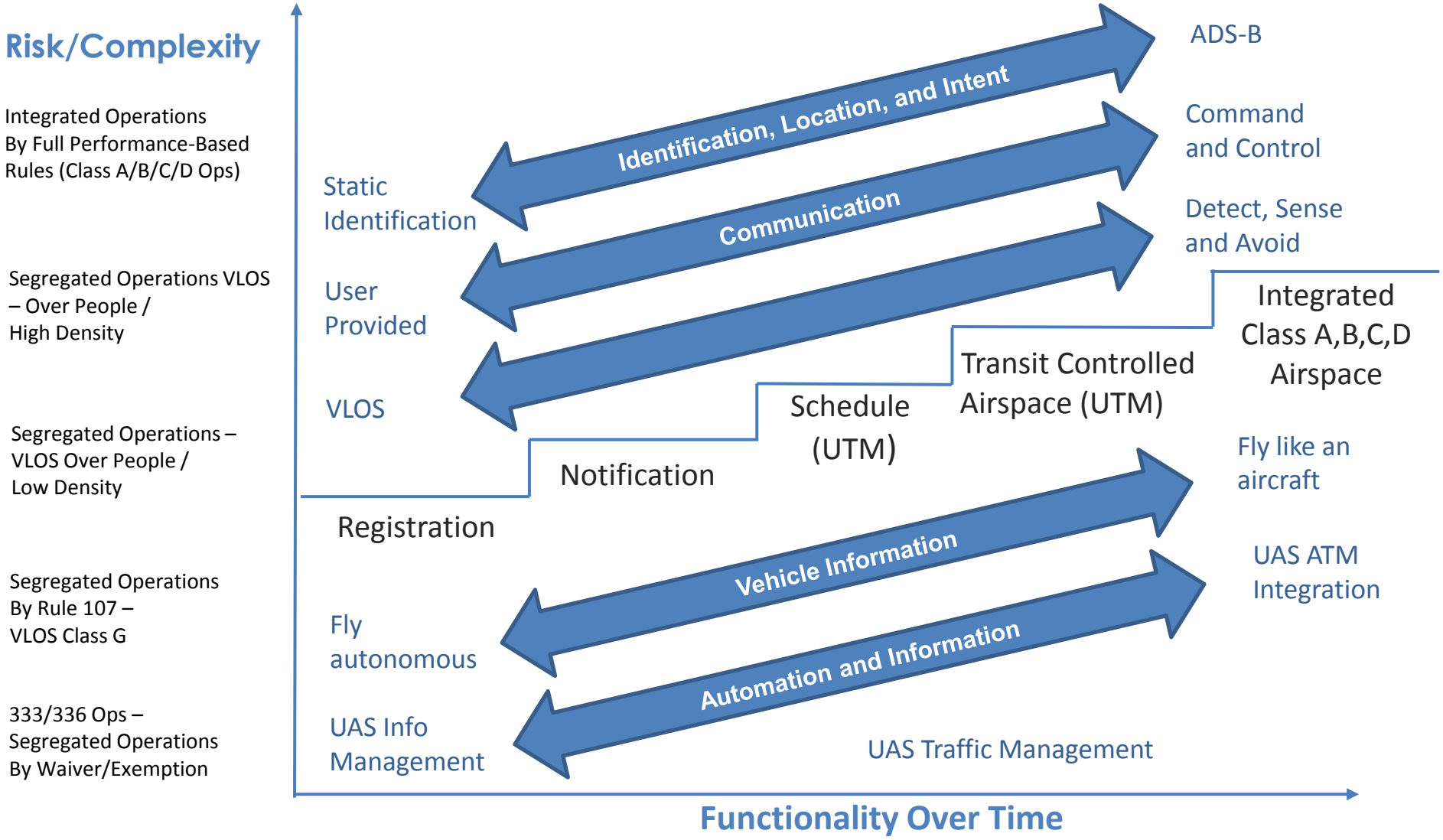
UAS Integration Strategy



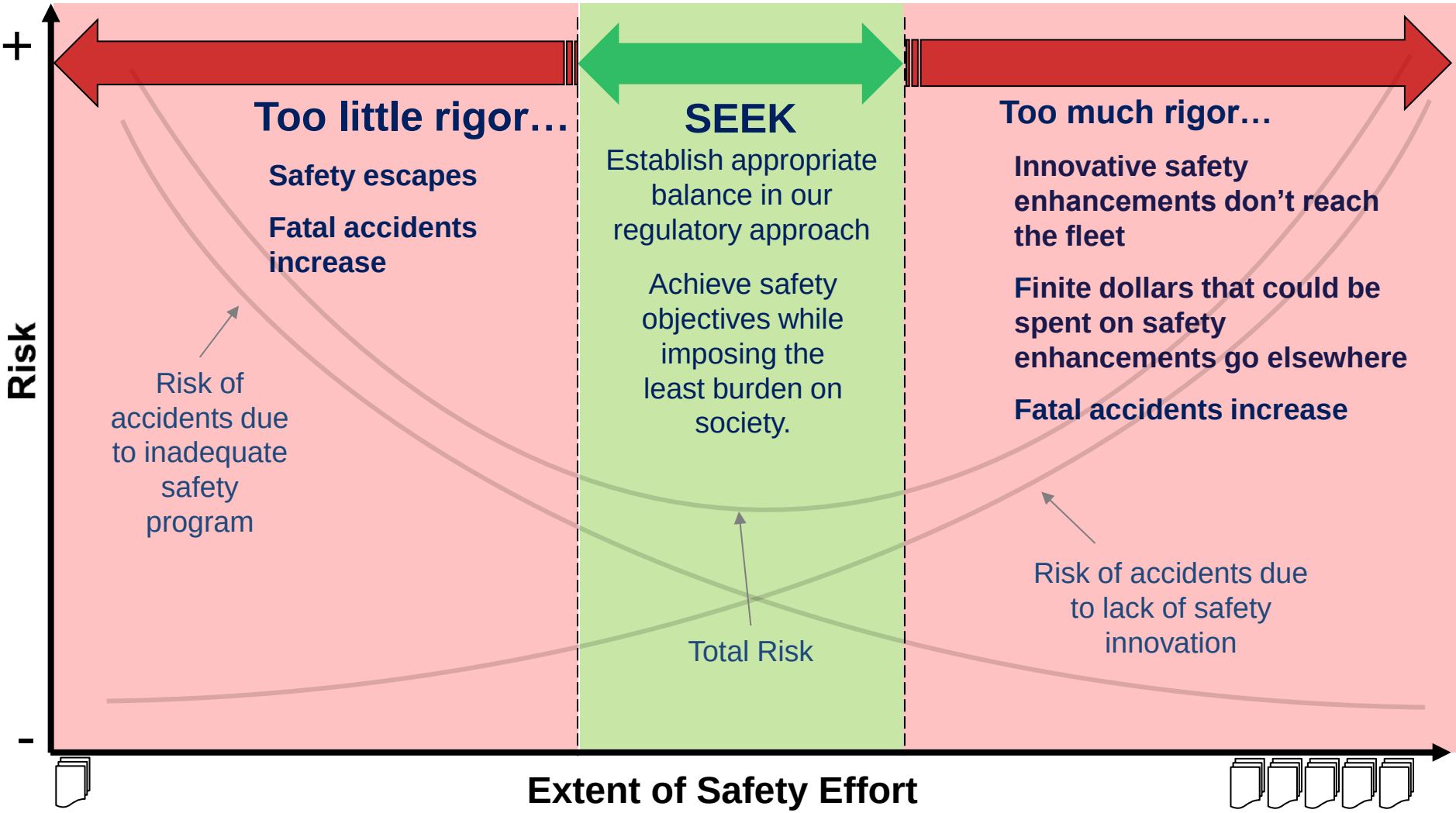
FAA UAS Activities

1. Manage NAS Access	2. Provide Minimum Standards
UAS Advisory Committee (DAC)	
UAS Center of Excellence *Research informs development of procedures for airspace access and performance standards*	
UAS Registration *Informs airspace management by creating traceability*	UAS Test Site Program *Operational data, research, concept validation to inform regulatory framework*
Focus Area Pathfinder Program *Informs policies and procedures for managing airspace access*	FAA Research Portfolio *Operational data, research, concept validation to inform regulatory framework*
UAS Detection at Airports *Informs policies and procedures for managing airspace access*	RTCA Special Committee 228 *Developing Minimum Operational Performance Standards (MOPS) for Detect and Avoid (DAA) and Command and Control (C2)*
Low Altitude Airspace Access (e.g. UAS Traffic Management System – UTM) *Informs policies and procedures for managing airspace access*	Part 107 Rule *Sets minimum operational standards for routine non-hobby UAS operations*
UAS Executive Committee (ExCom) *Streamlines airspace access for federal UAS operations*	Micro UAS Aviation Rulemaking Committee *Will inform development of a performance standard for operations over people*

Managing NAS Access



System Safety – The Safety Continuum



Rulemaking Approach

Increasing Operator Certification

>12,500 lbs. (Global Hawk)

>2,000 lbs. (Predator)

>1,000 lbs. (Hunter)

<55 lbs. (Scan Eagle)

<4.4 lbs. (3DR Solo)

<2.5 lbs. (DJI Phantom)

<1 lbs. (Parrot Bebop)

<0.5 lbs. (Hubsan X4)

Society's Demand for Safe Outcomes

Societally Accepted Risk & Desire for Low Cost

Zero Risk

No Operations

No Innovation

Absolute Safety

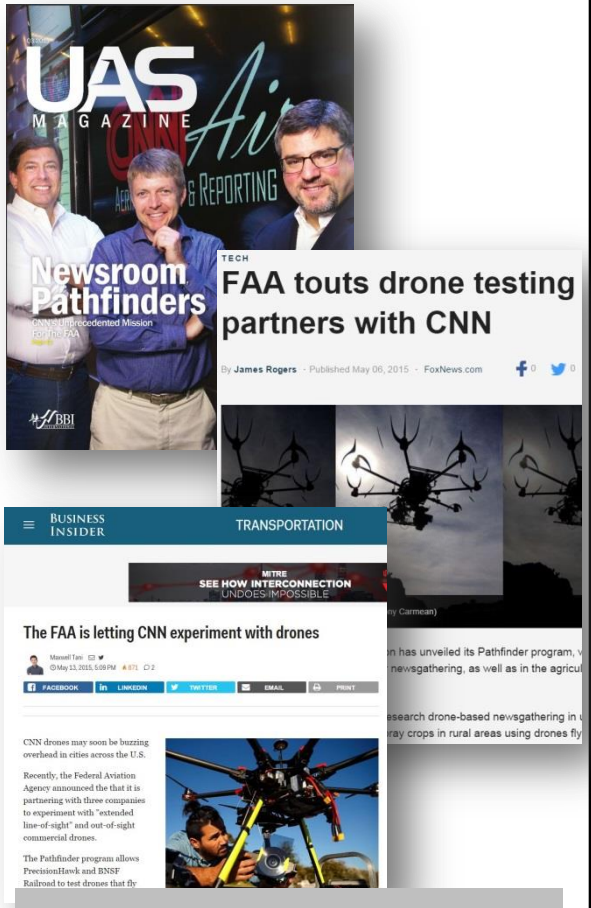
Less Demand

Public Demand for Safety Assurance

More Demand

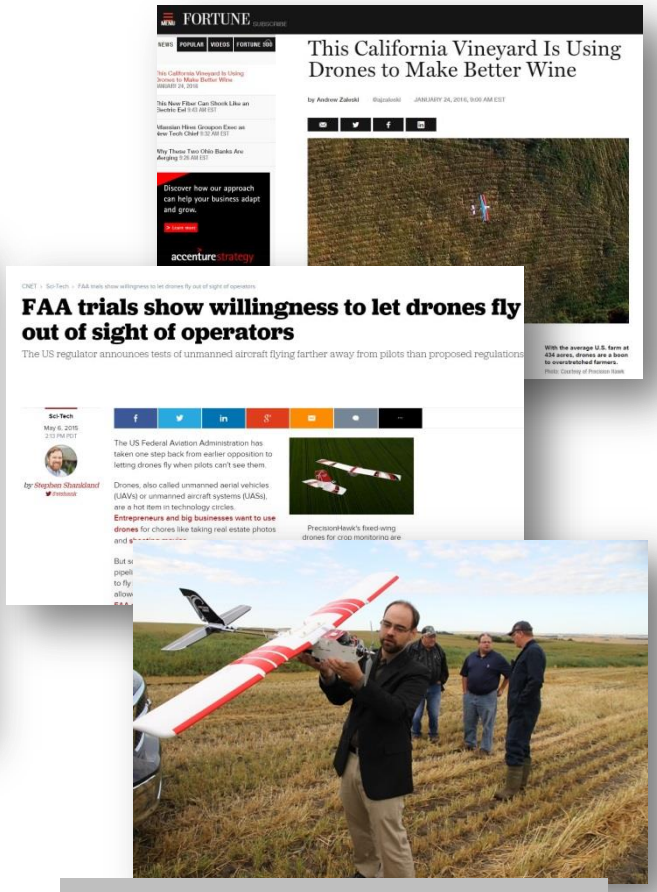
Focus Area Pathfinder Operations

Pathfinder 1: CNN



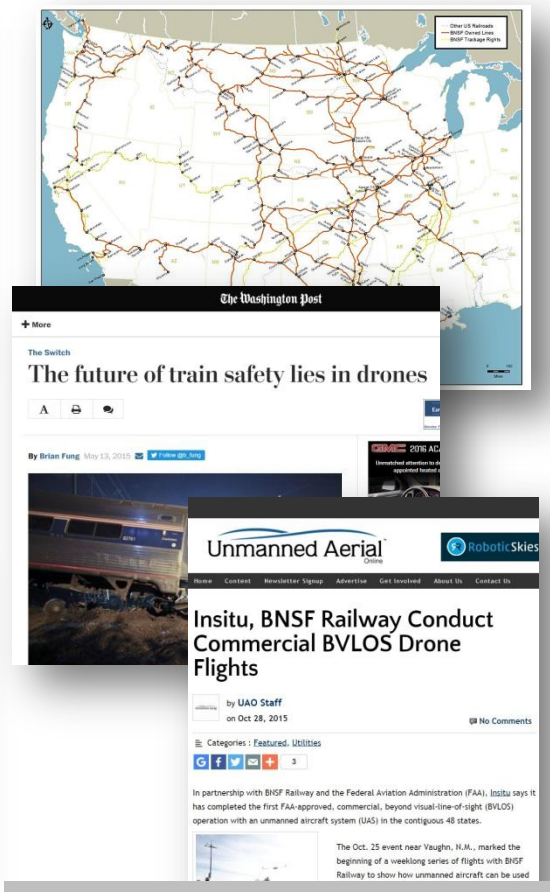
Ops over People

Pathfinder 2: PrecisionHawk



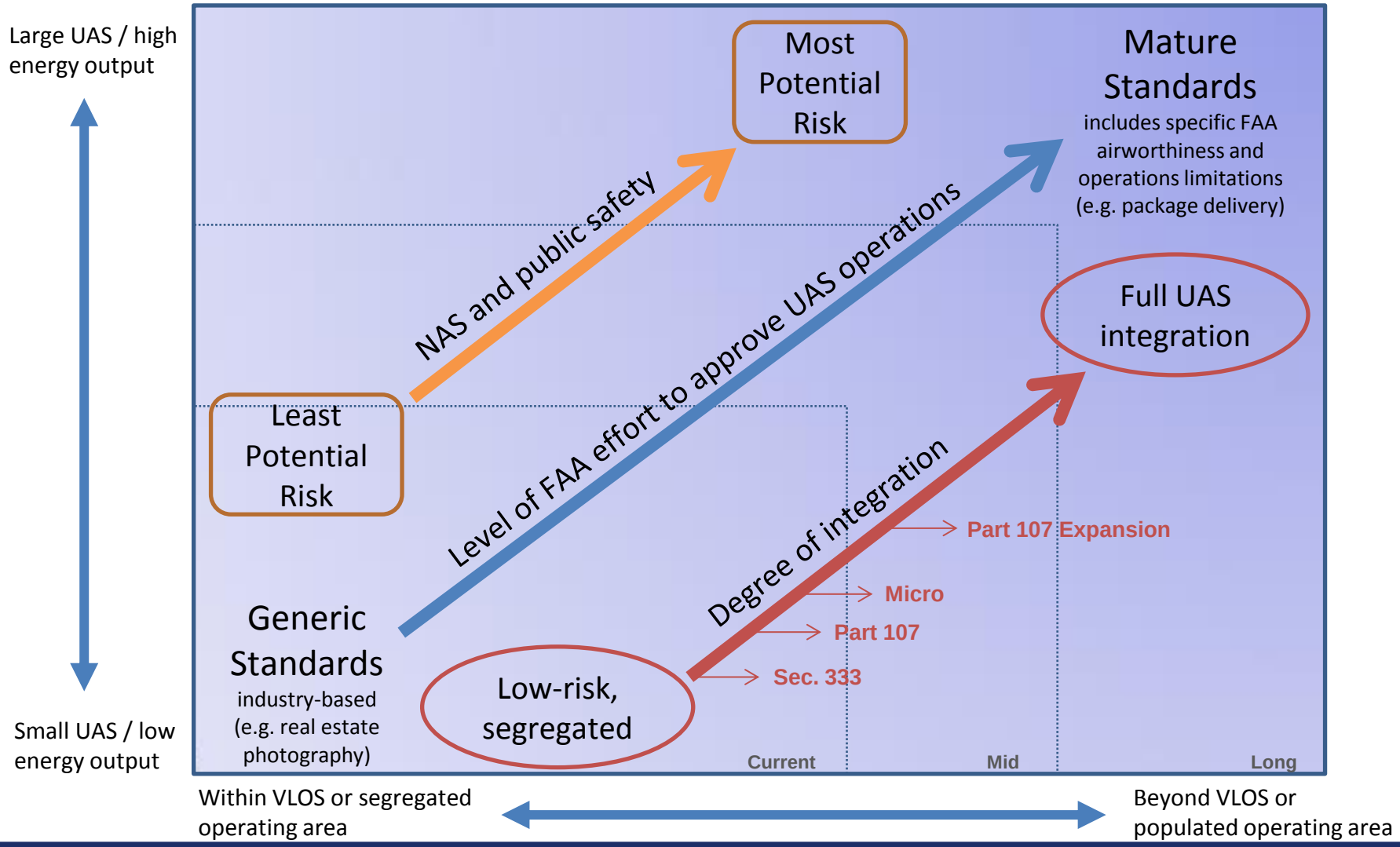
EVLOS Ops

Pathfinder 3: BNSF

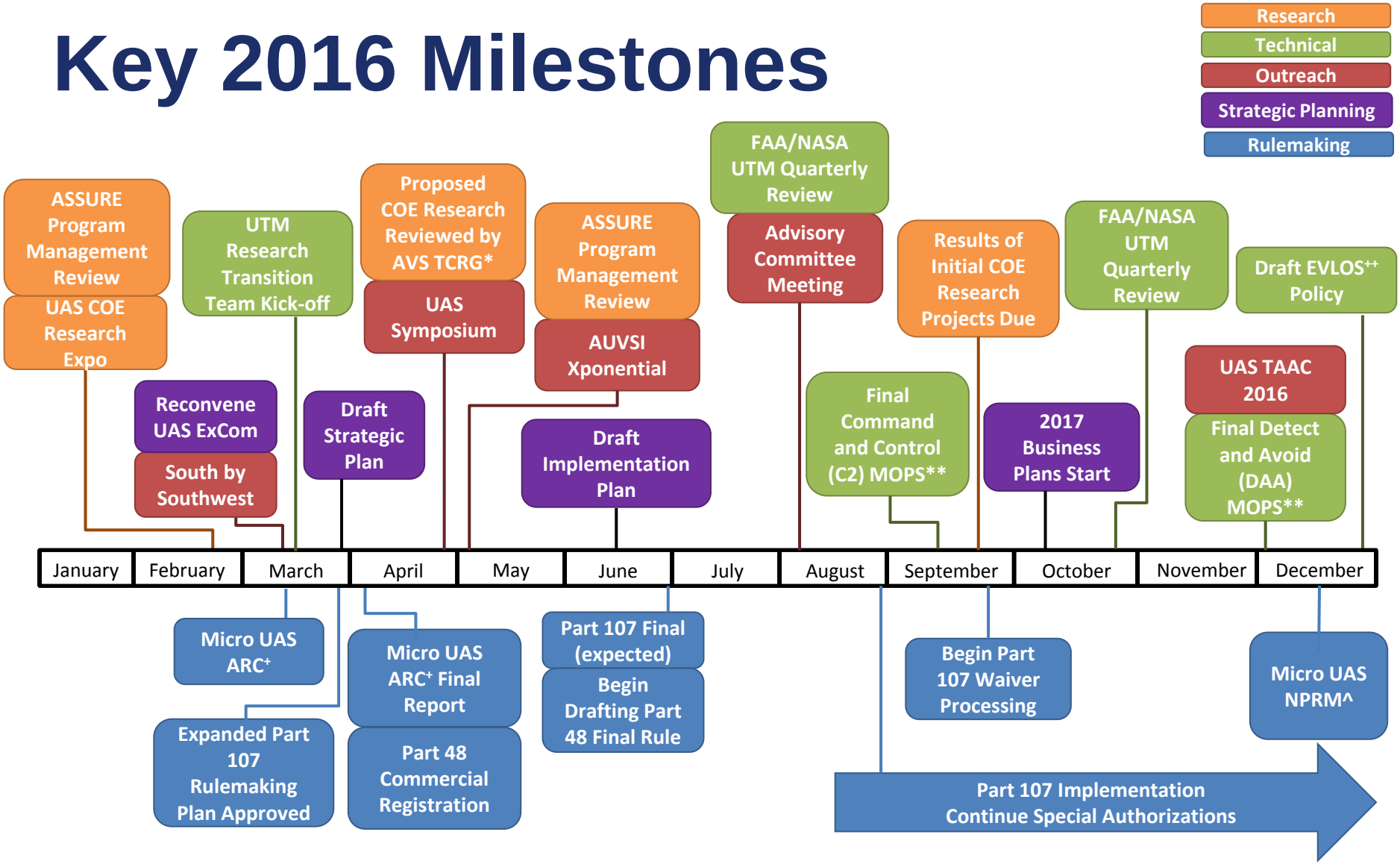


BVLOS Ops

Developing Operating Standards

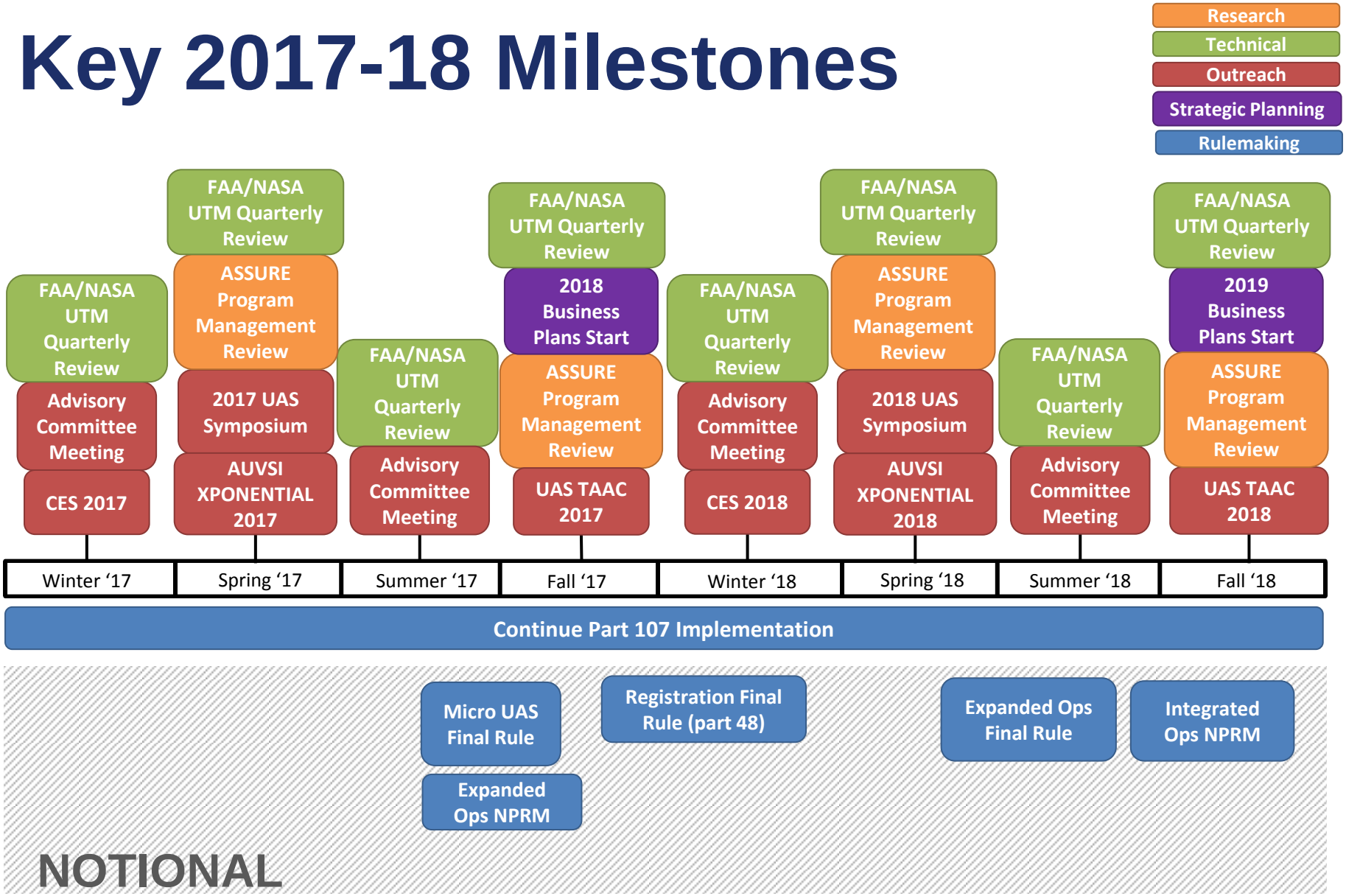


Key 2016 Milestones



*Technical Community Representative Group | +Aviation Rulemaking Committee | ^Notice of Proposed Rulemaking | **Minimum Operational Performance Standards
++Extended Visual Line-of-Sight

Key 2017-18 Milestones



UAS Strategic Planning

Filled boxes = public documents

UAS Strategic Priorities

UAS Strategic Plan

- **Safety:** *Enable safe UAS operations within the NAS*
- **Adaptability:** *Create an environment where emergent technology can be safely and rapidly introduced into the NAS*
- **Global Leadership:** *Shape the global standards and practices for UAS through international collaboration*

Meeting the Challenge

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- Regulatory, policy, and procedural changes

Internal and external coordination, communication, and collaboration