Advanced Air Mobility (AAM)

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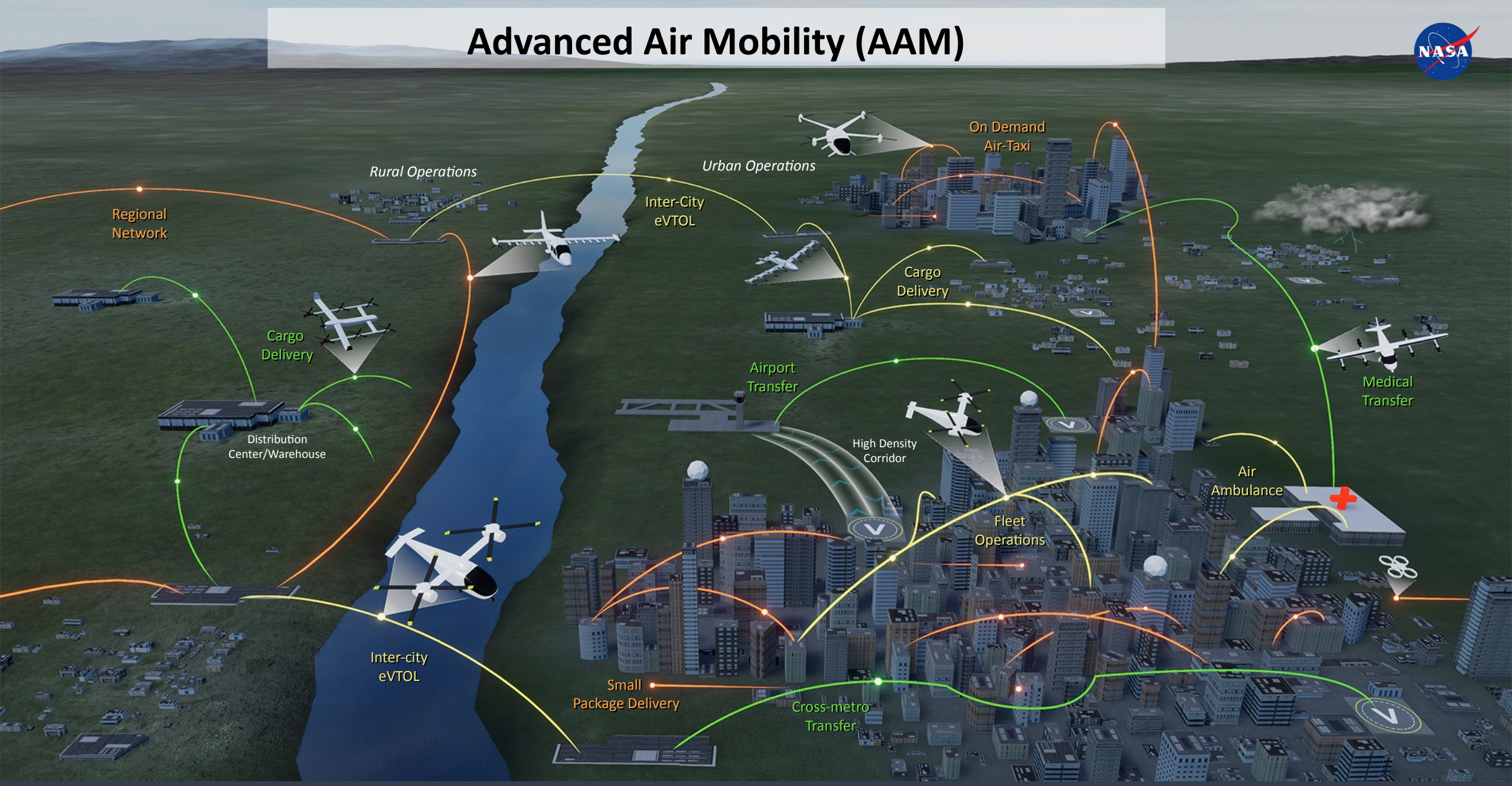
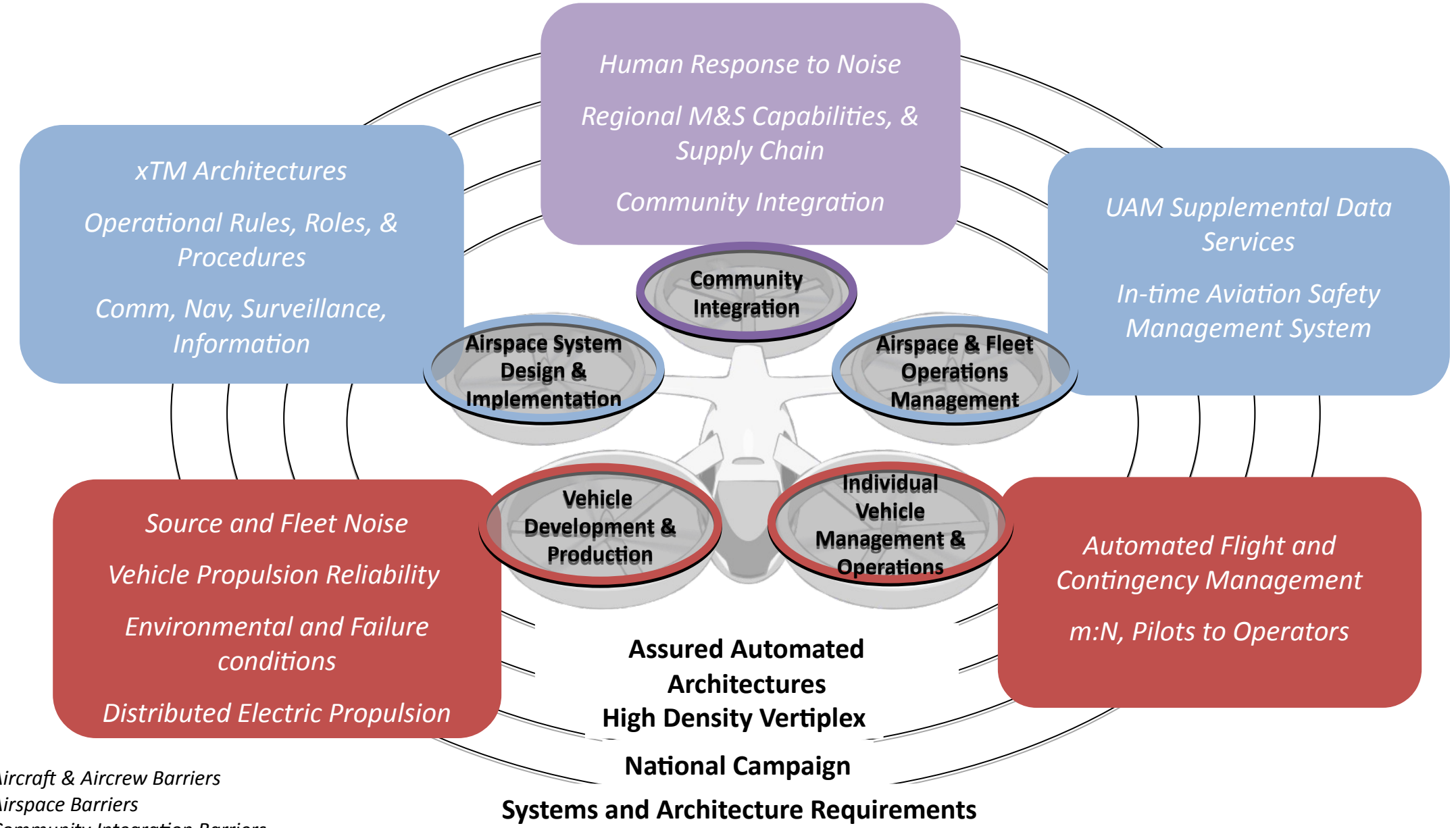
Airspace system should be ready when vehicles are ready

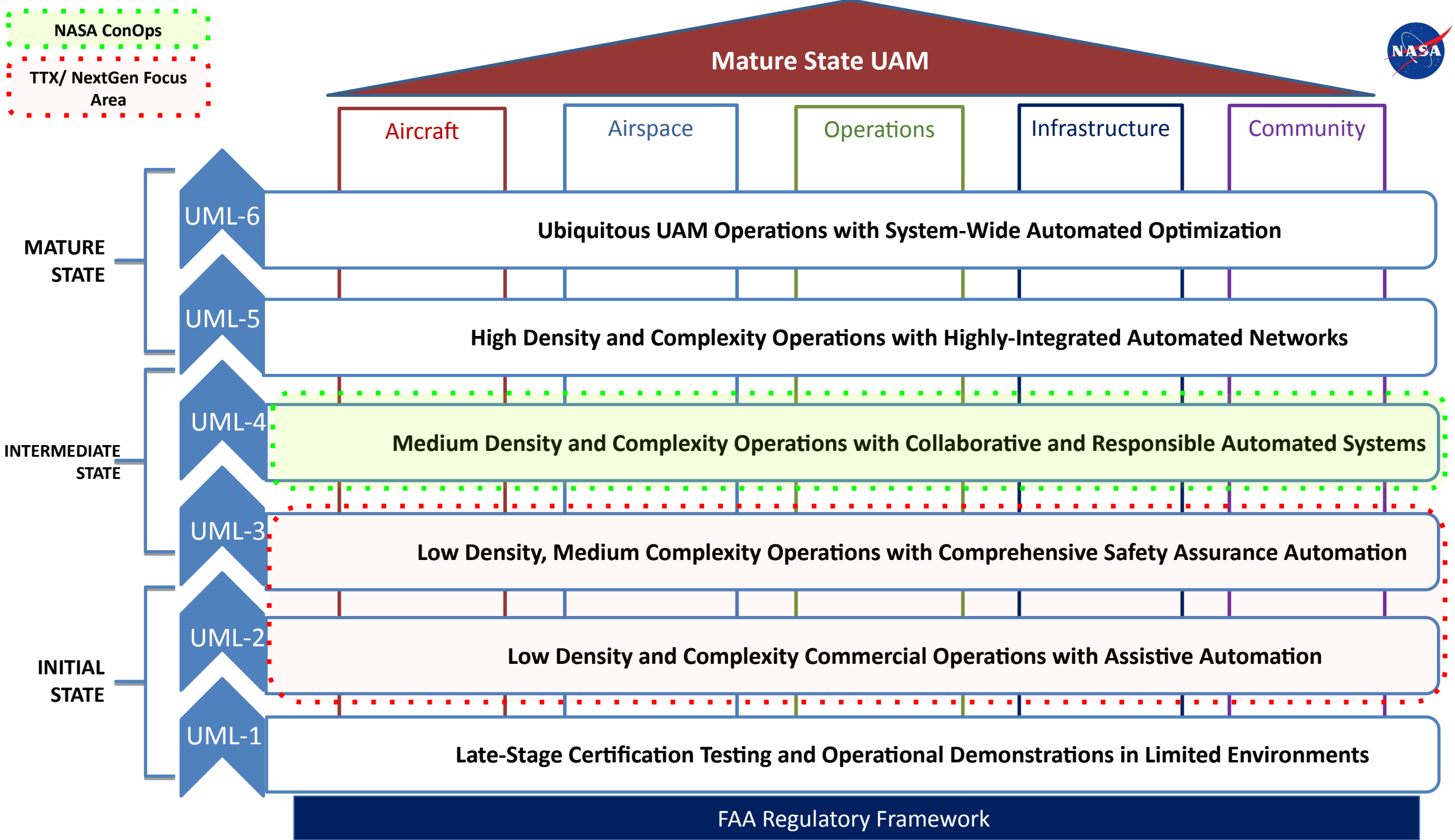
Advanced Air Mobility (AAM)



Safe, sustainable, affordable, and accessible aviation for transformational local and intraregional missions

NASA AAM Mission Priorities




NASA ConOps
TTX/ NextGen Focus Area
Mature State UAM
Aircraft
Airspace
Operations
Infrastructure
Community
MATURE STATE
INTERMEDIATE STATE
INITIAL STATE
UML-6
Ubiquitous UAM Operations with System-Wide Automated Optimization
UML-5
High Density and Complexity Operations with Highly-Integrated Automated Networks
UML-4
Medium Density and Complexity Operations with Collaborative and Responsible Automated Systems
UML-3
Low Density, Medium Complexity Operations with Comprehensive Safety Assurance Automation
UML-2
Low Density and Complexity Commercial Operations with Assistive Automation
UML-1
Late-Stage Certification Testing and Operational Demonstrations in Limited Environments
FAA Regulatory Framework

Evolution of Airspace Operations and Safety

S-curves

Safety

Procedural
Estimate the current and planned a/c positions

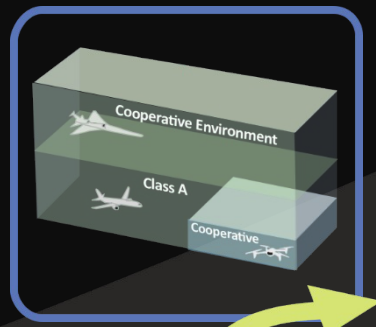
+Density

Radar
Know the current and **estimate** planned a/c positions

+ Efficiency and proactive planning

Trajectory
Know & exchange current and planned a/c positions

+ Service oriented architecture for tailored mission oriented services



Collaborative
Connected, performance-based, collaborative ATM
Introduces 3rd-party service providers

+ Complexity, scalability, and dynamic adaptation

Highly-Automated
ML/AI – based dynamic, robust performance and safety
Machine-to-machine interactions and humans collaborate

Digital Transformation of ATM

Human-centered safety monitoring, assessment and mitigation

Automated in-time safety monitoring and alerting services

Integrated predictive risk mitigation across domains

Automatically-assured adaptive in-time safety threat management

Epoch 1 | Epoch 2 | Epoch 3 | Epoch 4 (~2035) | Epoch 5 (~2045)

CANSO CATS Vision

- Current State of the Art
  - ATM system limited
  - Enable new entrants' operations seamlessly
  - Leverage advances in technology – ML, IOT, Cloud services

- Total System Performance: sustainability, scalability, safety, interoperable, etc.

- Paradigm shift is needed
  - Flexibility – Airspace design
  - Management by exception where possible
  - Automation to support humans

- Performance-based and dynamic: UTM inspired!
  - Cooperative, digital, managed-by-exception, service-oriented architecture – *Share and Care*

Innovating in aviation while respecting its safety tradition.

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