



<https://www.aloft.ai>

Steve Roy - VP Marketing at Aloft

sroy@aloft.ai





Fleet Management
and
Airspace
Compliance
Software



Most Widely Used Drone Software Platform

1M

Monthly Airspace Events



84%

of All Monthly LAANC Authorizations

22K

Monthly Flight Hours

120K

Monthly Active Users

Introducing Aloft Geo



Why Aloft Geo? Fixing the Failure to Communicate

Drone interference with emergency response is an ongoing crisis.

Scenes attract onlookers and drones are the ultimate onlooker tool

Maps are not dynamic. Information is gets siloed where pilots are not looking: TV, Social Media, printed signs, etc.

LA County Fire teams up with FBI to crack down on illegal drones flying too close to fires

LACOFD, working in partnership with the FBI, is the first in the country to use a detection system that can track down drones.



By [Amy Powell](#) via
Friday, July 29, 2022



Problem Worsening at Sporting Events this Fall

GeekWire

Drone over stadium disrupts Seahawks game in Seattle, a day after same problem at UW game

BY **KURT SCHLOSSER** on September 25, 2022 at 5:46 pm

[SAFETY & SECURITY](#) | [TEAMS & LEAGUES](#) | [VENUES](#)



Drone at Petco Park Forces Dodgers-Padres NLDS Game 4 Pause, Investigation Underway as Unauthorized Drones Continue to Pose Security Threat

What is Aloft Geo?

Aloft Geo

- Launched May this year
- 100+ verified orgs as early adopters
- Free tool
- To publish safety advisories to reach the largest audience of active drone pilots

Who is Aloft Geo for?

- For verified and government users
- Emergency response teams
- Local, city and state parks
- National government agencies
- Stadium and event site managers
- Critical infrastructure managers

This Data Exists

But often in disconnected, analog formats and websites.

FAA.GOV

Drones Are Prohibited In and Around Stadiums

Flying drones in and around stadiums that seat 30,000 people or more is prohibited by law beginning one hour before and ending one hour after the scheduled time of any of the following events:



- Major League Baseball Game
- National Football League Game
- NCAA Division One Football Game
- NASCAR Sprint Cup, Indy Car, and Champ Series Race

<https://www.gillettestadium.com> › a-z-guide

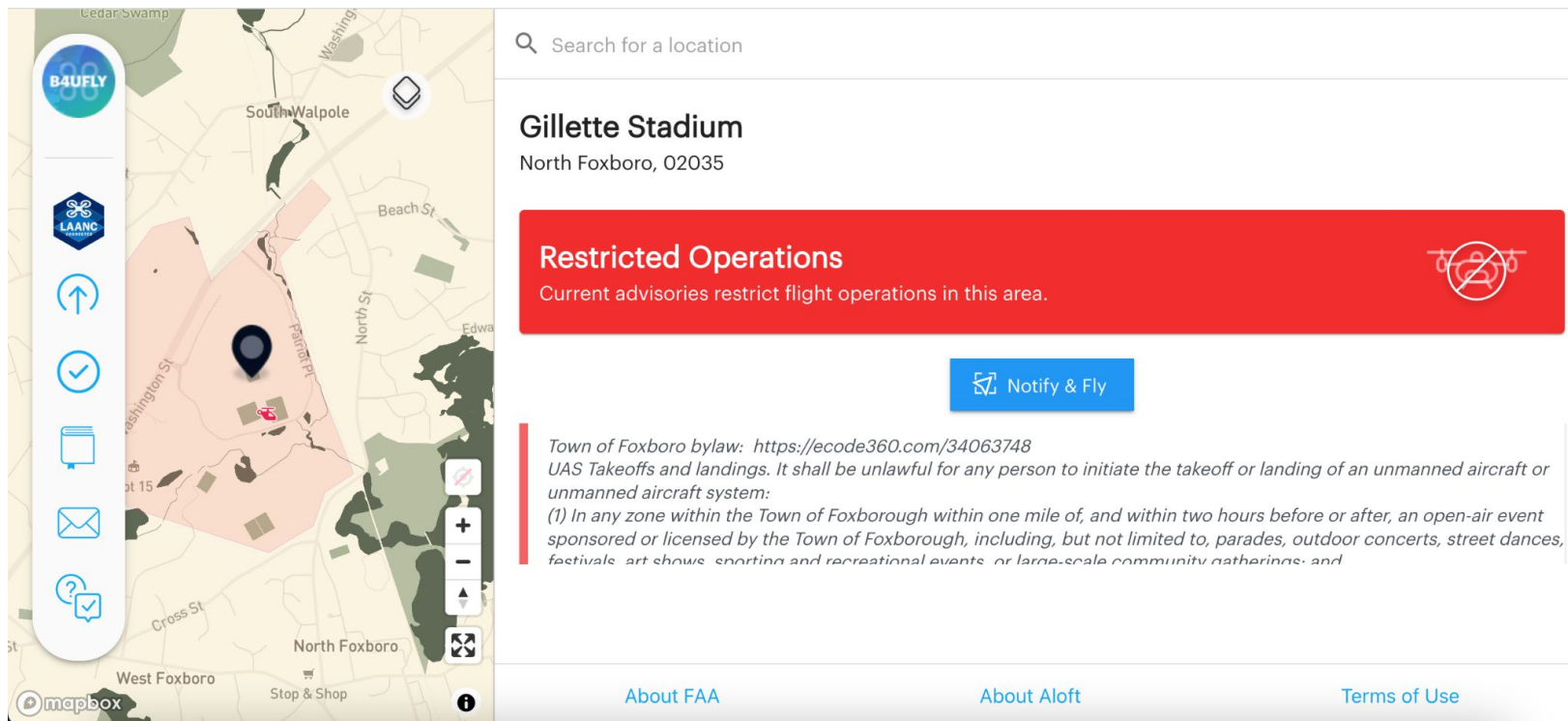
GOOGLE

Gillette Stadium A - Z Guide

Drones. Drones and other unmanned aerial vehicles are strictly prohibited on the **Gillette Stadium** property at any time.

Providing Better Info In Context with an Airspace Search

What a user sees today with Aloft Geo.



The screenshot displays the Aloft Geo application interface. On the left is a map of Foxboro, MA, with a red shaded area indicating restricted airspace around Gillette Stadium. A vertical toolbar on the left contains icons for BAUFLY, LAANC, and various navigation and information tools. The right side of the screen features a search bar, the location name "Gillette Stadium" with its address "North Foxboro, 02035", and a prominent red banner with the text "Restricted Operations" and "Current advisories restrict flight operations in this area." Below this banner is a blue "Notify & Fly" button. At the bottom, there is a text box containing a link to the Town of Foxboro bylaw and a summary of the UAS takeoff and landing restrictions.

Search for a location

Gillette Stadium

North Foxboro, 02035

Restricted Operations

Current advisories restrict flight operations in this area.

[Notify & Fly](#)

*Town of Foxboro bylaw: <https://ecode360.com/34063748>
UAS Takeoffs and landings. It shall be unlawful for any person to initiate the takeoff or landing of an unmanned aircraft or unmanned aircraft system:
(1) In any zone within the Town of Foxborough within one mile of, and within two hours before or after, an open-air event sponsored or licensed by the Town of Foxborough, including, but not limited to, parades, outdoor concerts, street dances, festivals, art shows, sporting and recreational events, or large-scale community gatherings; and*

[About FAA](#) [About Aloft](#) [Terms of Use](#)

Providing Better Info In Context with an Airspace Search

What a user sees today with Aloft Geo.

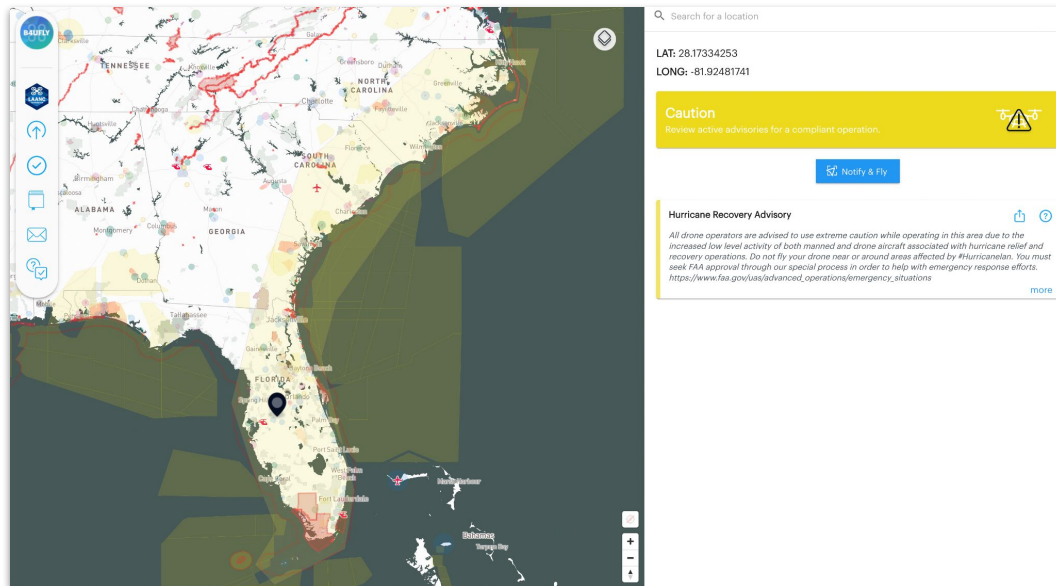
Exceptions. The takeoff and landing of an unmanned aircraft or unmanned aircraft system as proscribed herein (1) may be permitted by the Chief of Police based on an analysis by the Chief of Police that concludes there is no public safety risk associated with the permitted activity, and (2) permission shall not be unreasonably withheld for commercial flights requested by the owner/operator of the multipurpose stadium at Gillette Stadium. The burden shall remain with the owner or operator of the unmanned aircraft or unmanned aircraft system to ensure that any flight activity complies with all FAA and other federal regulations on flight.

Aloft Geo Portal Trusted by:



In Action During Hurricane Ian Response

After getting signed up on Saturday morning, this advisory was live in hours and impacting safety and situational awareness across the Southeast.



Search for a location

LAT: 28.17334253
LONG: -81.92481741

Caution
Review active advisories for a compliant operation.

[Notify & Fly](#)

Hurricane Recovery Advisory

All drone operators are advised to use extreme caution while operating in this area due to the increased low level activity of both manned and drone aircraft associated with hurricane relief and recovery operations. Do not fly your drone near or around areas affected by #HurricaneIan. You must seek FAA approval through our special process in order to help with emergency response efforts.
https://www.faa.gov/uas/advanced_operations/emergency_situations

Advisory Details

SUMMARY DETAIL

All drone operators are advised to use extreme caution while operating in this area due to the increased low level activity of both manned and drone aircraft associated with hurricane relief and recovery operations. Do not fly your drone near or around areas affected by #HurricaneIan. You must seek FAA approval through our special process in order to help with emergency response efforts.
https://www.faa.gov/uas/advanced_operations/emergency_situations

ADVISORY TYPE

Caution

RESTRICTION LEVEL

[LINK TO OFFICIAL RULE](#)

CONTACT PHONE NUMBER
+1 844-359-6982

CONTACT EMAIL
UAShelp@faa.gov

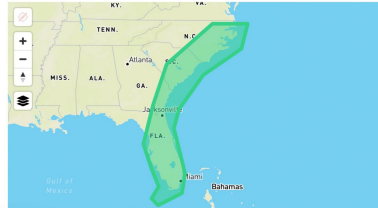
CONTACT WEBSITE
https://www.faa.gov/uas/contact_us

Date and Time Range

START DATE & TIME
10/01/2022 12:42 pm

END DATE & TIME
10/08/2022 12:42 pm

Map Location



Use Cases In Production Today

Examples and use cases to think about as you incorporate Aloft Geo into your air/ground space and safety strategies:

- **Public events where special drone rules come into effect**
- **Emergency response**
- Areas or operations where local regulations are relevant for a compliant drone flight

→ ***Aloft Geo supports both permanent and temporary advisories.***

Completely Self-Managed & Under Your Control

Create and publish advisories that will affect the safety of your areas of operation.



Aloft Geo Portal

[CONTACT ALOFT](#)

Account Profile

[EDIT PROFILE](#)

NAME

Jon Hegranes

ORGANIZATION

Aloft

ACCOUNT VERIFICATION STATUS

Verified

EMAIL

jon+geo.rocks@aloft.ai

ORGANIZATION WEBSITE

<https://www.aloft.ai>

PHONE NUMBER

+1 415-515-2613

Advisories List

[ADD ADVISORY](#)

[COLUMNS](#) [FILTERS](#) [DENSITY](#) [EXPORT](#) [APPLY ACTION](#)

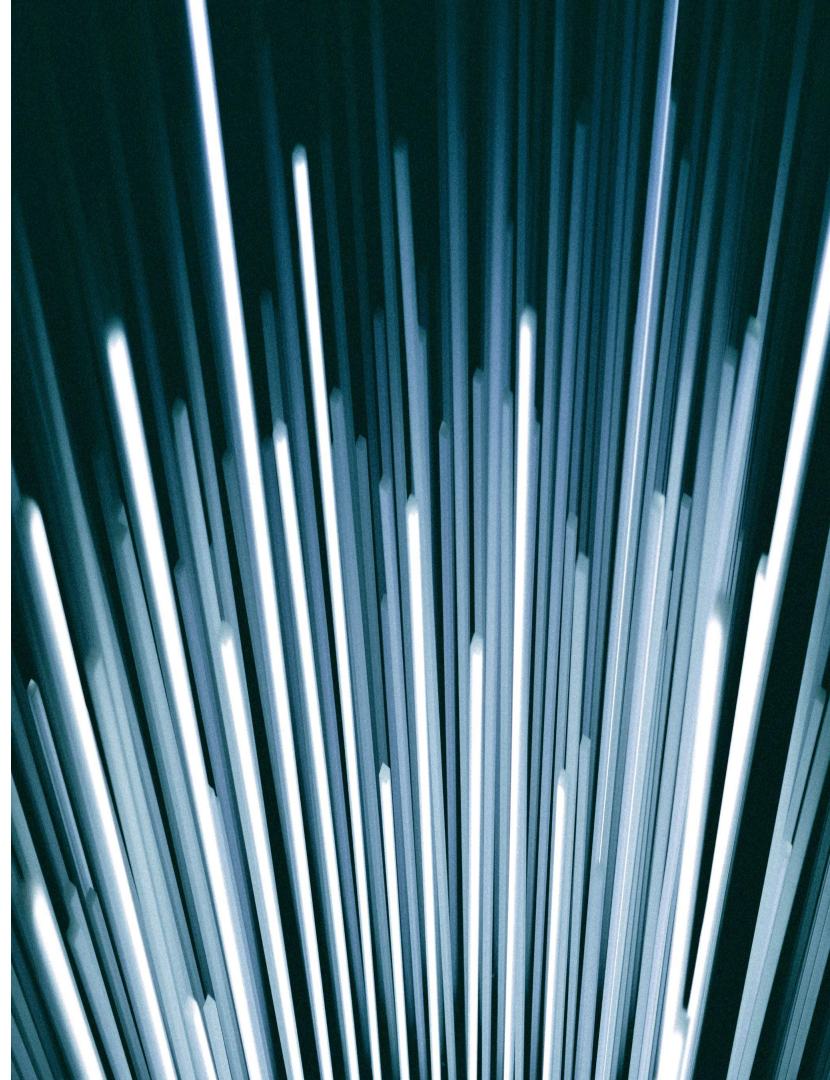
<input type="checkbox"/>	Advisory Title	Status	Published	Created On	Last Updated	Flags
<input type="checkbox"/>	NUAIR BVLOS Area of Operations	Active	Yes	08/10/2022 5:04 pm	08/10/2022 5:04 pm	0
<input type="checkbox"/>	NYS Public Safety Summit	Active	Yes	08/10/2022 5:17 pm	08/11/2022 8:50 am	0
<input type="checkbox"/>	NUAIR Drone Delivery Corridor	Active	Yes	08/10/2022 5:20 pm	08/10/2022 5:20 pm	0

Homepage:

<https://www.aloft.ai/>

Aloft Geo:

<https://geo.aloft.ai/>



Getting Started

- 1.** Search for your location:
<https://b4ufly.aloft.ai>
- 2.** Sign up for Aloft Geo:
<https://geo.aloft.ai/>
- 3.** Email Us for Help:
geo@aloft.ai



Integrating AAM into Future Mobility
UAS Safety and Integration Task Force Meeting
October 25, 2022
NCTCOG

Adrienne Lindgren, Head of City Activations

Global Top 5 Automotive OEM

Sales Rank

1		10.7
2	 	10.6
3		10.3
4		9.6
5	 	7.3
6		6.6
7		5.1

※ Global Insight / 2017 / Unit : 1M

Start
7.8K

First Export
100K

US Launch Bromont
420K Shut-down

Over 1M
1.15M

India

2.34M

China
China

Czeck
Alabama

Slovak

Georgia

Russia

Mexico

Global Expansion
5.78M

Hyundai Motor Group
Established

+ 312%
Global Top 5
7.32M

Design, Engine, Car of the Year Awards



Business Highlights

431 Global Offices & Production Bases *

with **284,114** Employees **

Group Revenue

Appx. **240** bln. USD

Global Presence



Source : 2021 Hyundai Motor Group Brochure

* Numbers include all Hyundai Motor Group Production Bases & Offices Worldwide (unit : pcs)

** Numbers include all Hyundai Motor Group employees (Unit: Persons, global workplaces included)

HYUNDAI

MOTOR GROUP

Together For a Better Future



HYUNDAI
MOTOR GROUP

53 Affiliates

AUTOMOBILE



CONSTRUCTION



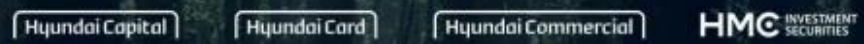
STEEL



PARTS



FINANCE



OTHERS



SPORTS TEAM

Jeonbuk Hyundai Motors FC, KIA Tigers Baseball Team, Hyundai Capital Skywalkers Volleyball Club, Hyundai Shell World Rally Team, Hyundai Steel Red Angels WFC, Hyundai Steel Archery Team, Hyundai MOBIS Archery Team, Hyundai MOBIS Phoebus Basketball Club

01

Supernal is Hyundai's commitment to the Advanced Air Mobility Industry



We want to build
human-centered cities



that leverage innovative
technology advancements



to deliver affordable and
universal mobility services

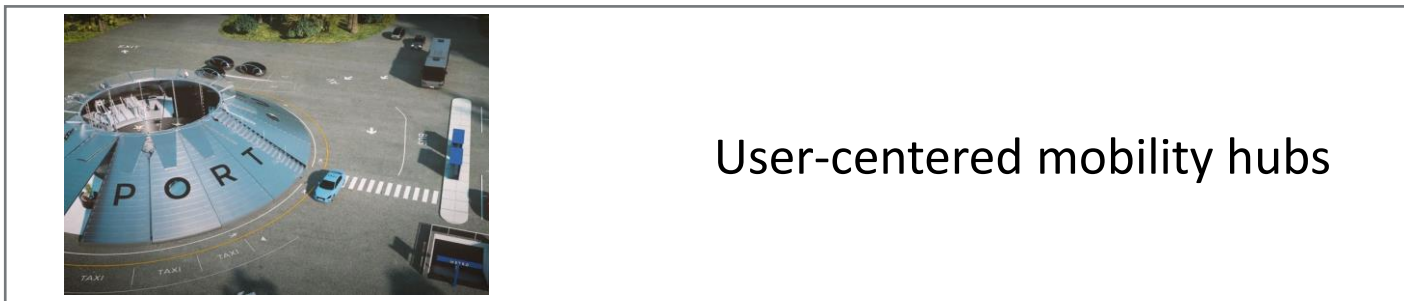
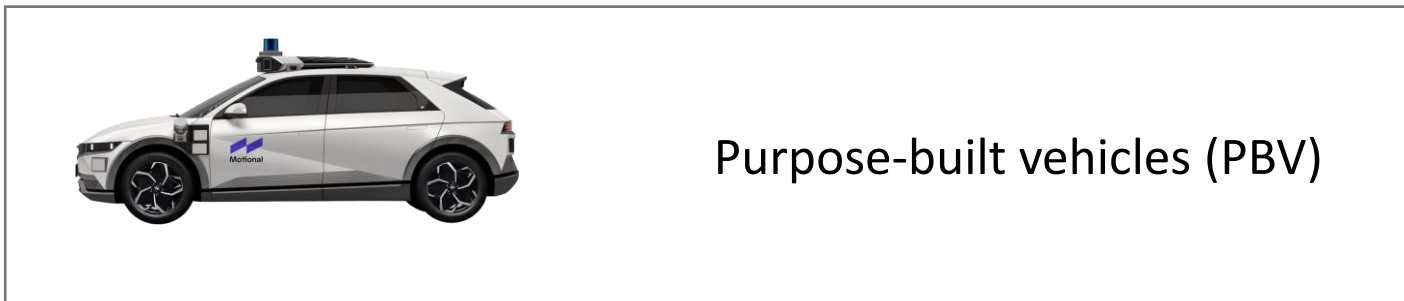
Hyundai's industrial base traces its origin to humble beginnings

The company invests in capability expansion, quality improvements and innovative technologies



Hyundai's future vision focuses on building human-centered cities

By investing in products that come together to transform urban and regional transportation systems



Enabled by advances
in



Power storage



Autonomy



Electric propulsion



Charging infrastructure



Traffic management



Mobile demand aggregation



Multi-modal connectivity



Fleet economies of scale

02 Supernal's first vehicle is a 5-seat fully electric VTOL

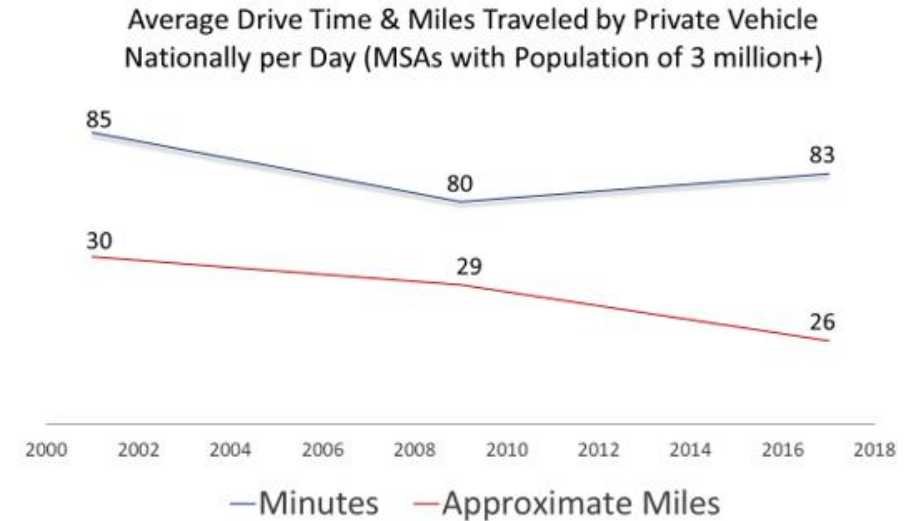
Designed in California, service globally

Urban Air Mobility (Intra-City)



As transport options increase, customer satisfaction is decreasing

- Intra-city travelers face congestion and have few alternatives
- Congestion is causing longer travel times even as distances decline
- Increased adoption of non-POV modes has not alleviated congestion
- Costs of delivering ground-based transportation continue to climb
- Long trips (> 15 miles) are still poorly served and thus limit trips taken

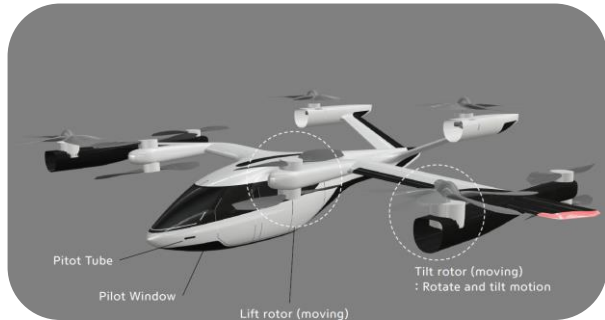


04 Vehicles are only the start to enabling transport in the 3rd dimension

Government and commercial stakeholders will need to partner to empower and regulate AAM

Supernal plans to support directly in several ecosystem areas

Vehicle & subsystems



Aftermarket & MRO



Workforce development



Physical infrastructure



And will leverage strategic partnerships in others...

Commercial Partners

Local Partners

National Partners

05

In April 2022, Supernal conducted its first infrastructure demonstration

The Coventry, UK showcase was completed In partnership with UKRI and infra builder Urban Air Port





URBAN AGRICULTURE CENTER
COMMUNITY RESOURCES
FRESH PRODUCE
FARMERS' MARKET

VILLAGE
SCHOOLING
RESIDENCES

Los Angeles
Aviation Academy

Peatónito Station

M

Eastbound to Union Station

Westbound to

PEATÓNITO ST
10000 E

PEATÓNITO ST

NO LEFT TURN

NO U-TURN

7



Peatónito Station M

Metro
1330 PICO-RIVER

MOCEAN LAB

1000 EAST LA



URBAN AGRICULTURE CENTER

PEACHTOWN ST

TICKETS

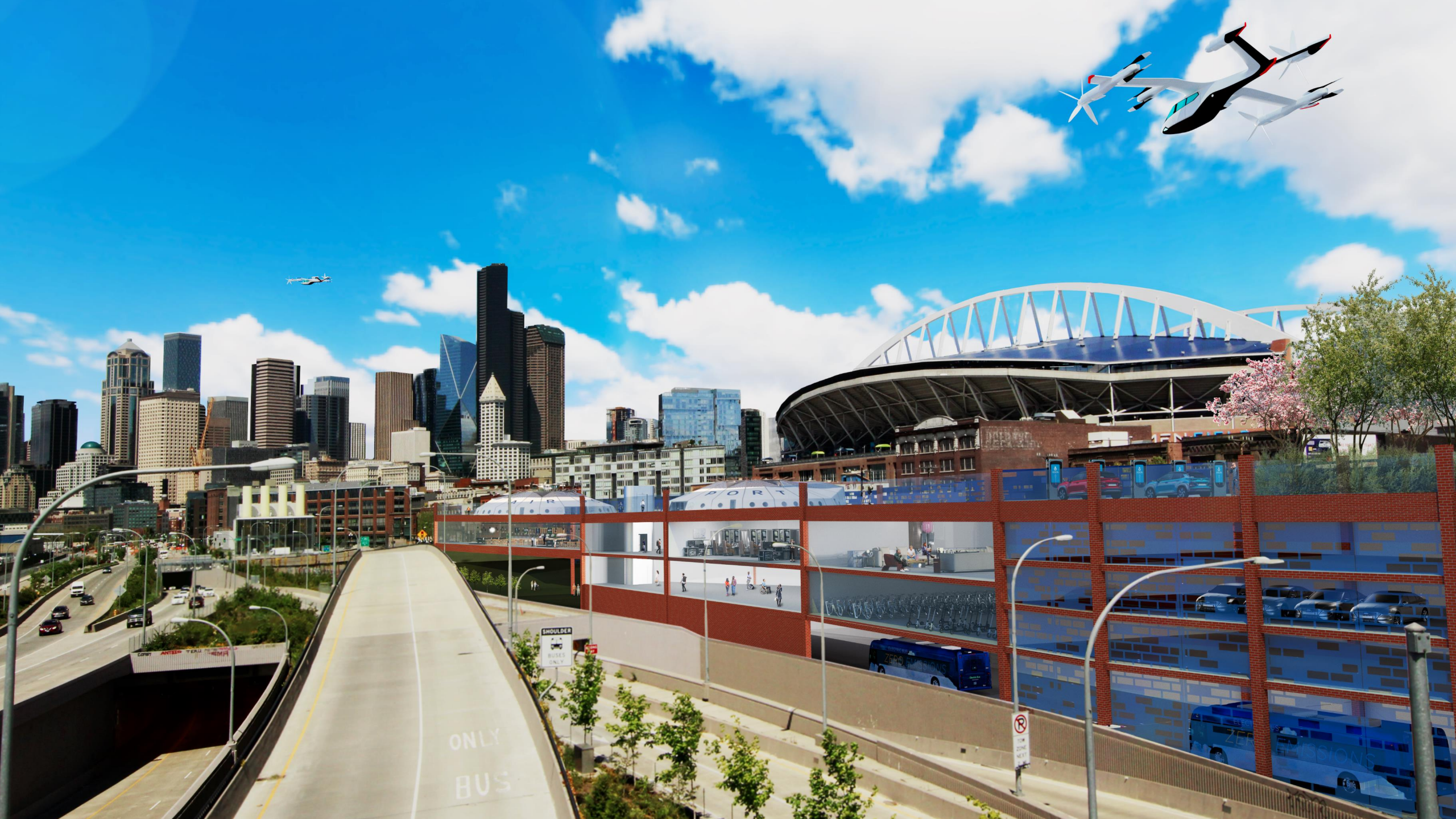
0095

Metro Local

GO METRO

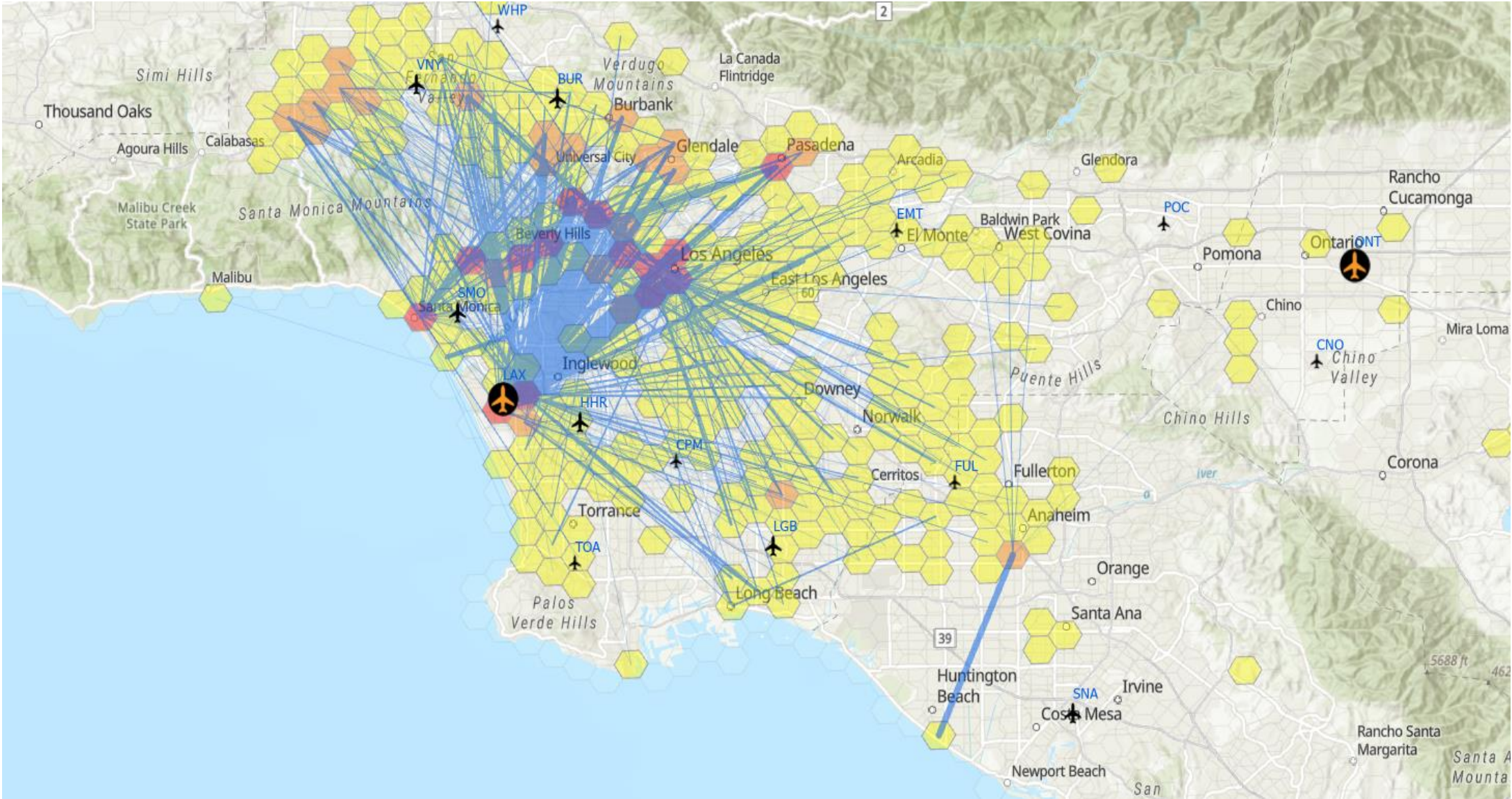
Metro

ONE WAY

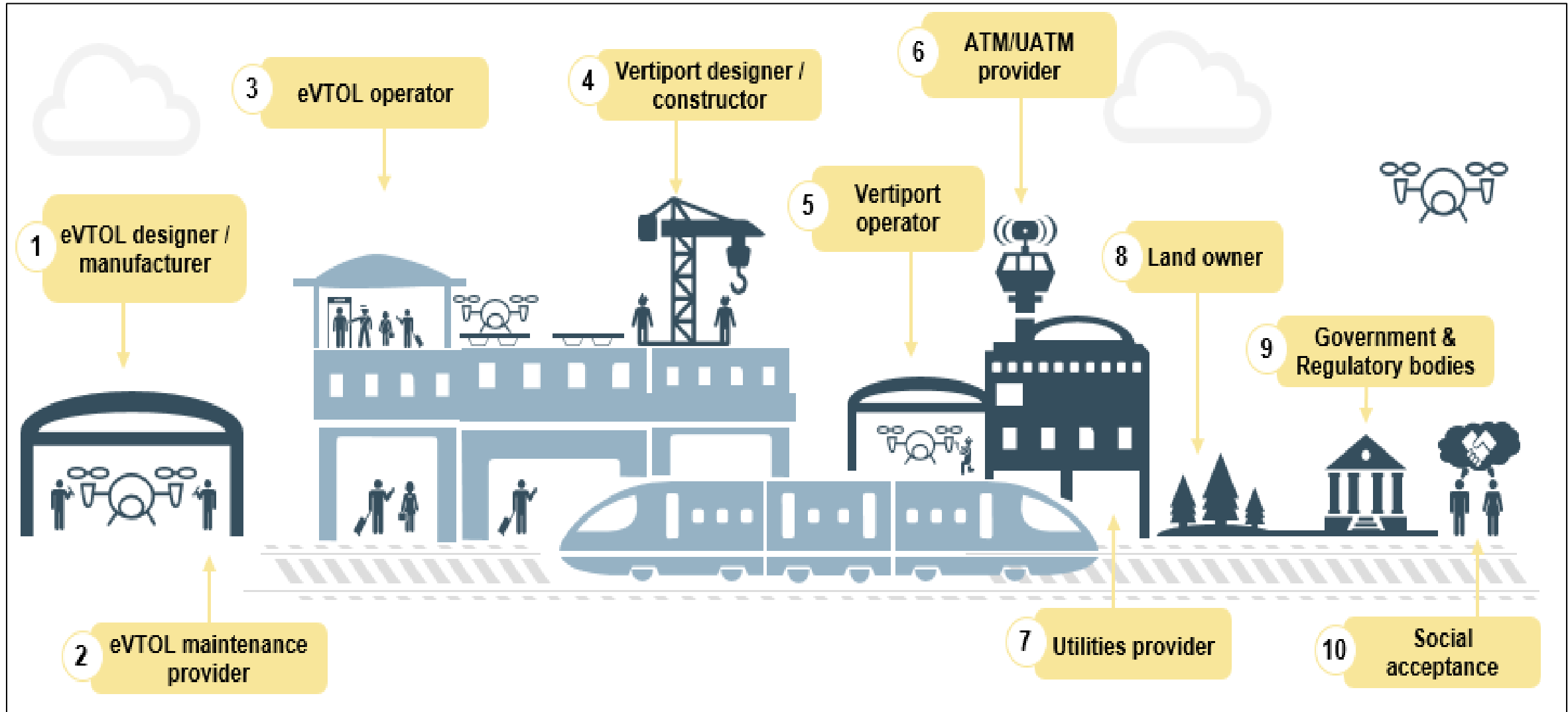


Supernal uses a variety of data sources for infrastructure planning

Current data and forecasts are critical to sourcing the right sites for UAM infrastructure



Existing transportation assets make useful multi-modal connecting points, critical to UAM



Current data and forecasts are critical to sourcing the right sites for UAM infrastructure

Today -----

EIS

Formal 'buy in'
from authorities,
developers and
financiers

Working groups
with local
enablement
partners

Passing policy for
permitting and
construction

Modeling demand
and impact to
support
permitting

Measuring
impacts and
continuous
improvement

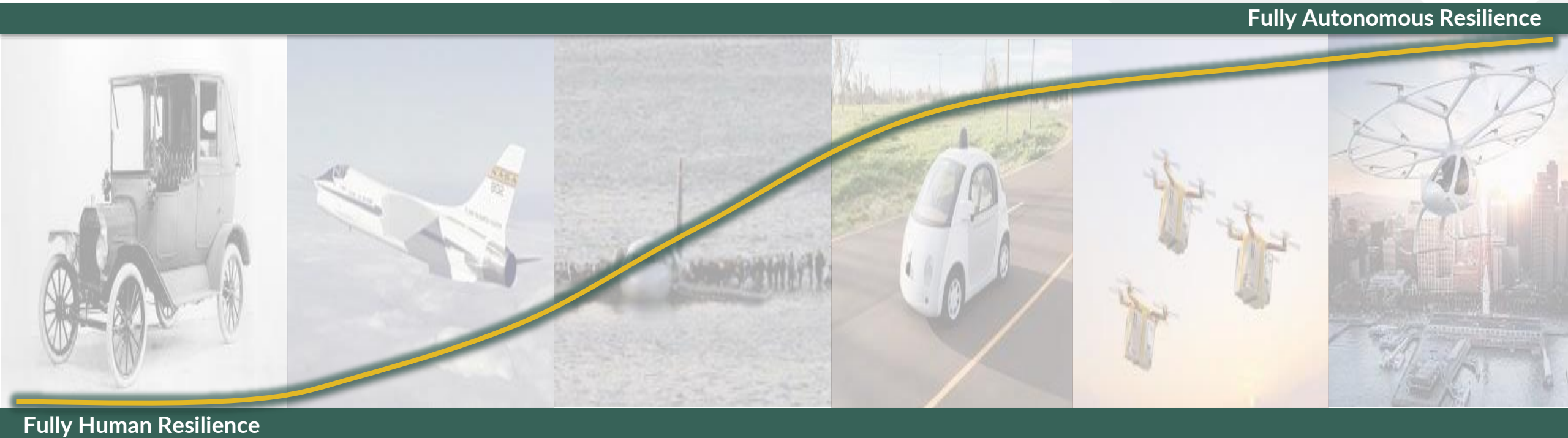


MONITOR SYSTEMS • DETECT FAULTS • MITIGATE FAILURES

RESILIENX

Resilience: The Capacity to Recover from Difficulties

A shift is occurring in the responsibility for system resilience – humans are no longer the last line of defense

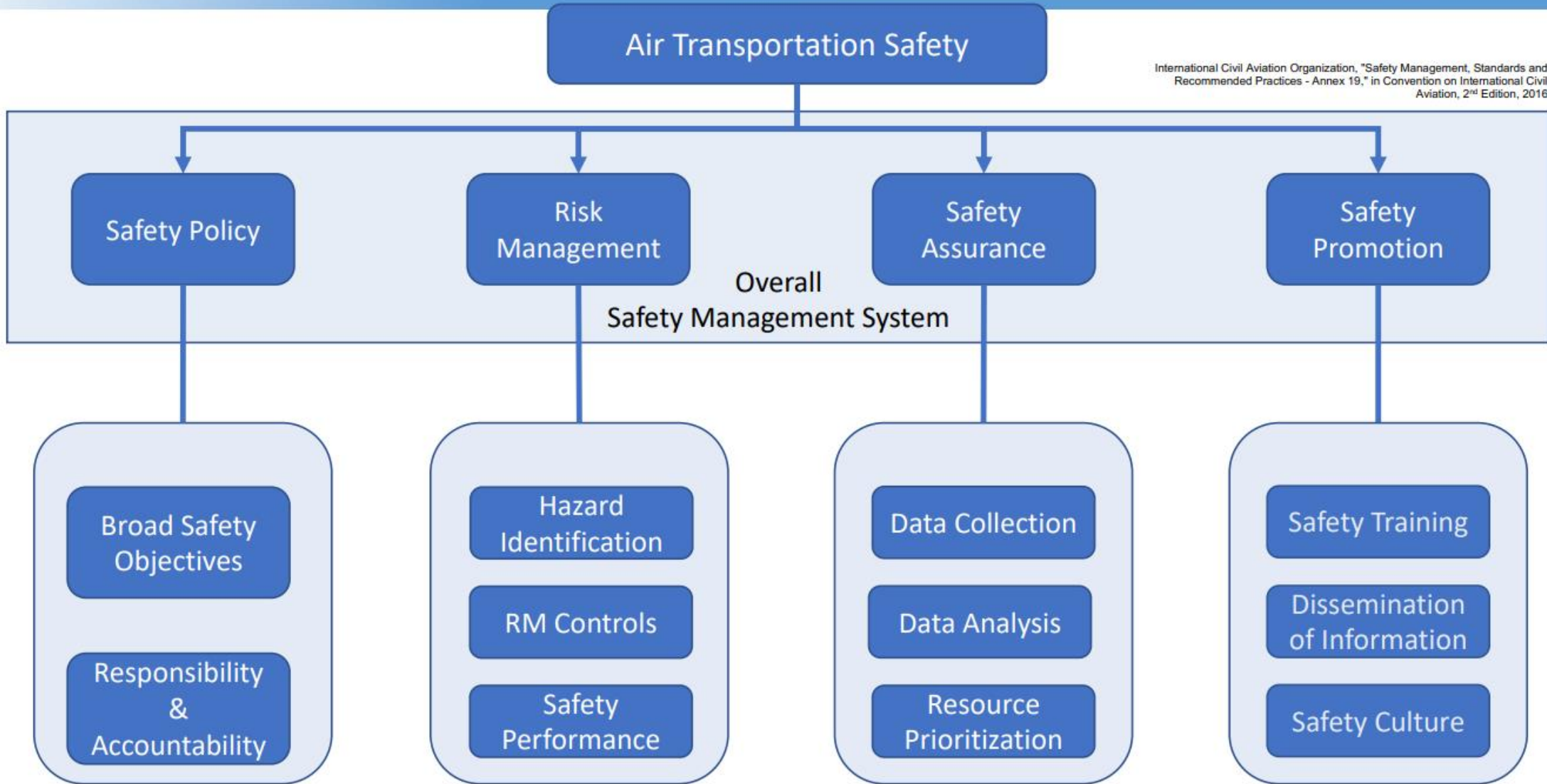


ResilienX software replaces historically human-powered resilience in automated ecosystems



Achieving Aviation Safety Today

International Civil Aviation Organization, "Safety Management, Standards and Recommended Practices - Annex 19," in Convention on International Civil Aviation, 2nd Edition, 2016

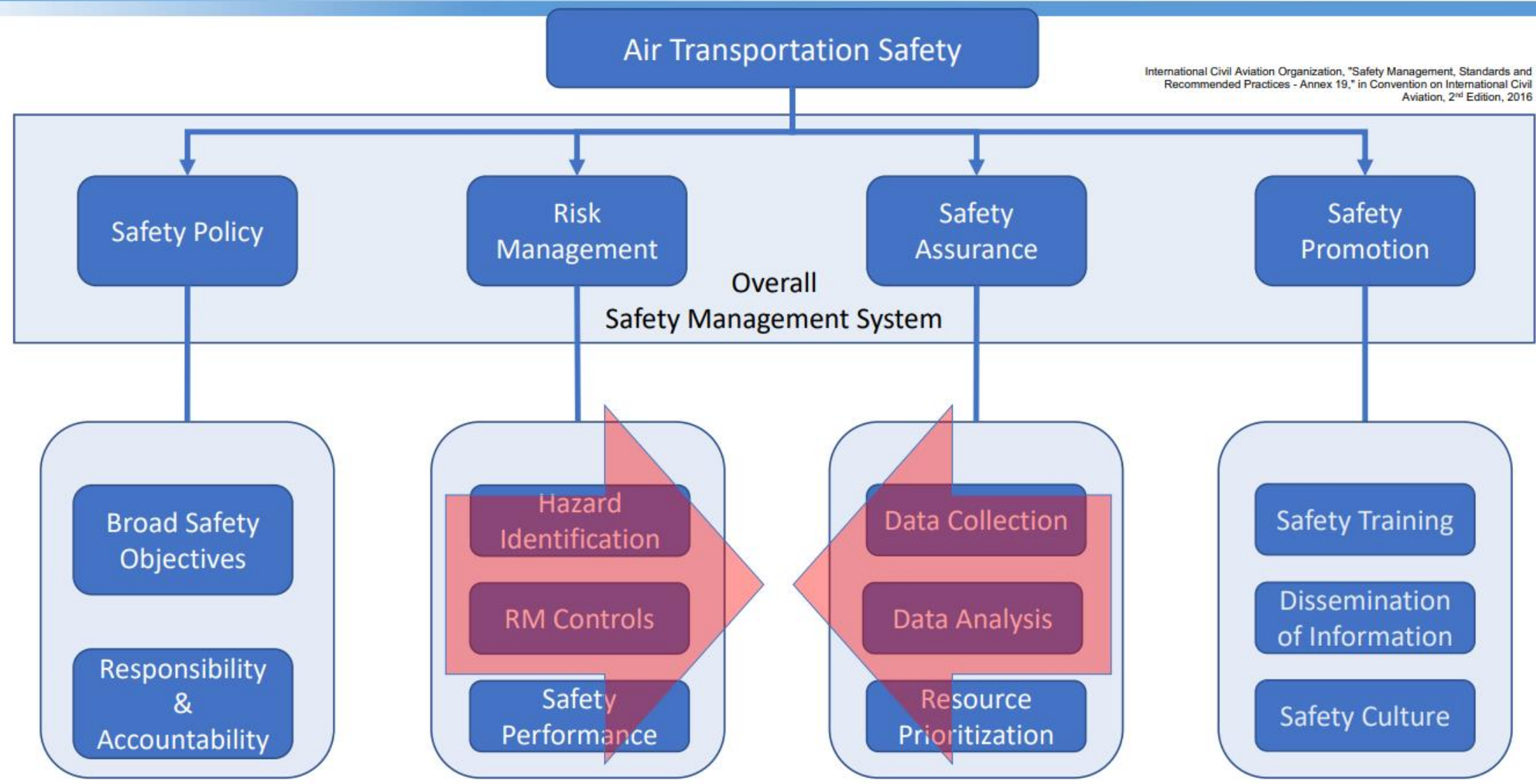


Labor intensive
Limited ability to scale
Not fast enough



Safety Management System Evolution

International Civil Aviation Organization, "Safety Management, Standards and Recommended Practices - Annex 19," in Convention on International Civil Aviation, 2nd Edition, 2016

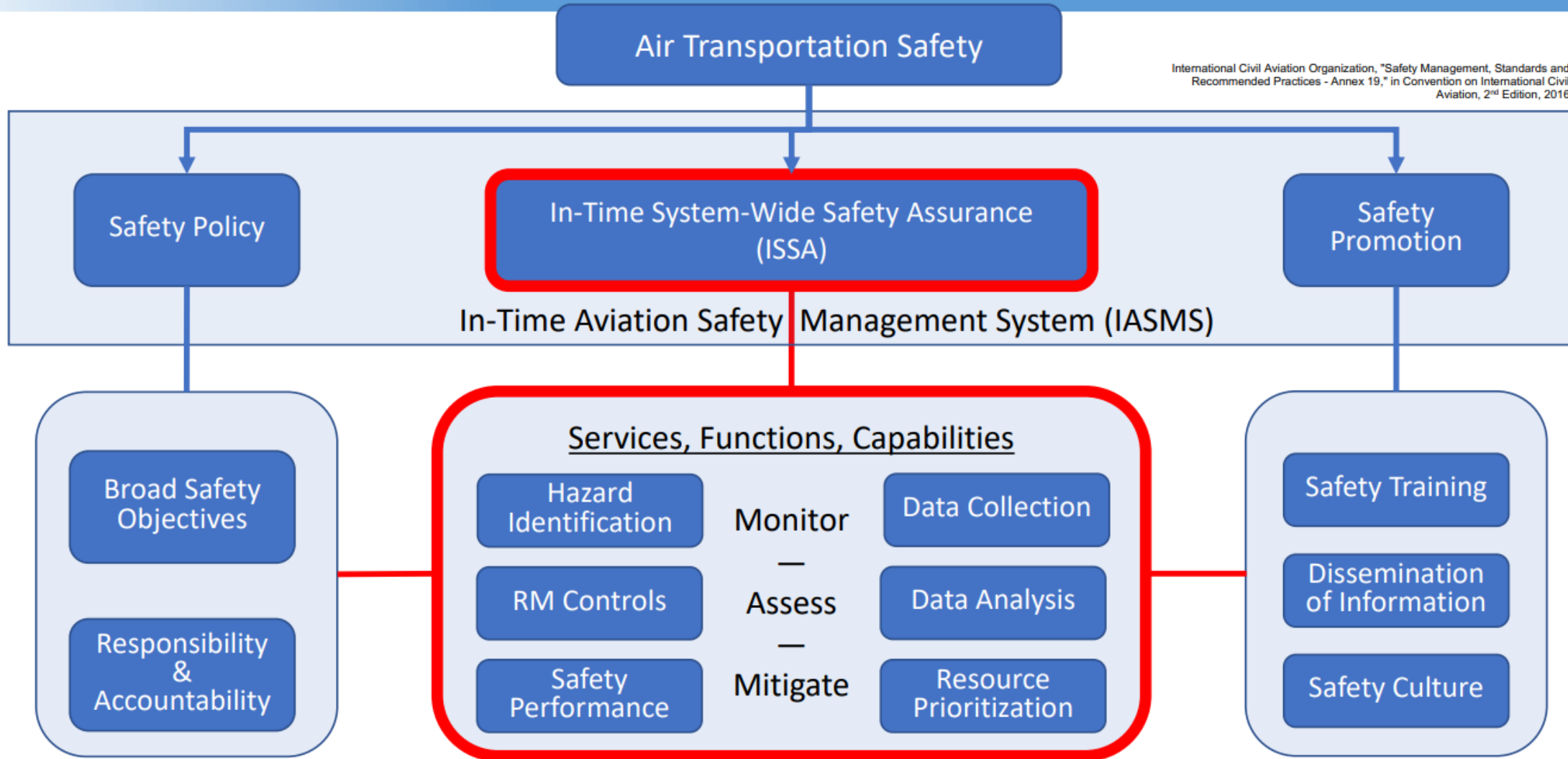


Risk Management and Safety Assurance functions must merge to identify and mitigate emergent risks and hazards much more rapidly than today.

How We Achieve Aviation Safety Tomorrow



International Civil Aviation Organization, "Safety Management, Standards and Recommended Practices - Annex 19," in Convention on International Civil Aviation, 2nd Edition, 2016



Services, Functions, and Capabilities Execute Risk Management and Safety Assurance Actions

TYPE CERT

Elements flying on the UA



- Avionics
- Autopilot
- Onboard Sensors
- Airframe
- Onboard Radio
- Parachute

ASSOCIATED ELEMENTS

All other digital or cyber-physical supporting elements



Communication



Control & Airspace Management



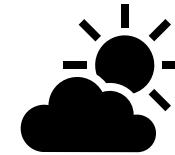
Navigation



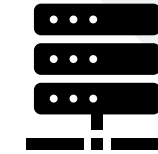
Launch/Recovery



Surveillance



Weather



IT Equipment

For “Associated Elements”, the FAA Requires
“...In-Service Monitoring Criteria To Detect Out-Of-Compliance Performance And Initiate Corrective Action...”

[FAA Policy Number: AIR600-21-AIR-600-PM01; FAA Approval of UAS Special Class UA Projects and Their Associated Elements; July 13, 2021](#)

In-Time Aviation Safety Management System (IASMS)



FRAIHMWORK® Solution

USER INTERFACE

System of Systems Identification

Event Logs

Impact Situational Awareness

System Health Situational Awareness

Contingency Management

Run-time Configuration Management

User Alerts

Uptime and Availability Tracking

MONITORING

Health



Integrity



Performance

Networks

Physical Components

IT Equipment

Cyber Physical Systems

Configuration & Modes

Sensors

Digital Infrastructure

Environmental Factors

IMPACT ASSESSMENT

Operations

Operators

Timelines

Geographic Region

Systems

Risk / Safety Thresholds

Capabilities

MITIGATION

System Alerting & Notifications

Ecosystem Specific Mitigations

Generic Mitigations (power cycle, etc.)

3rd Party Registered Mitigations

3rd PARTY PLUGINS

Digital Twins

Proprietary Algorithms

Embedded Condition Based Monitoring Sensors

Cyber Security

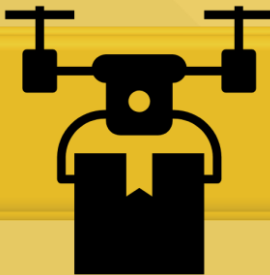
Application Specific Services



Uncrewed Aircraft System (UAS) 

Part 135 Operator

UAS Operators 



Traffic Mgmt. Services (USS/PSU) 

Controls the full stack

ResilienX FRAIHMWORK 

UTM Enabling Infrastructure (“Associated Elements”)



Communications



Surveillance



Weather



Navigation

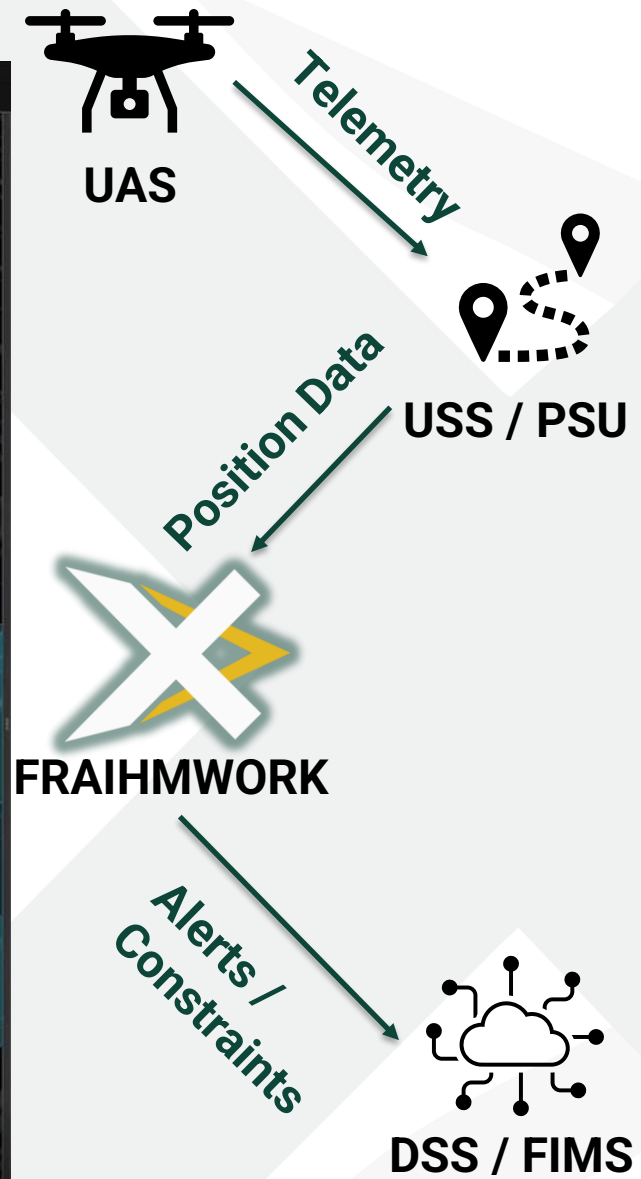
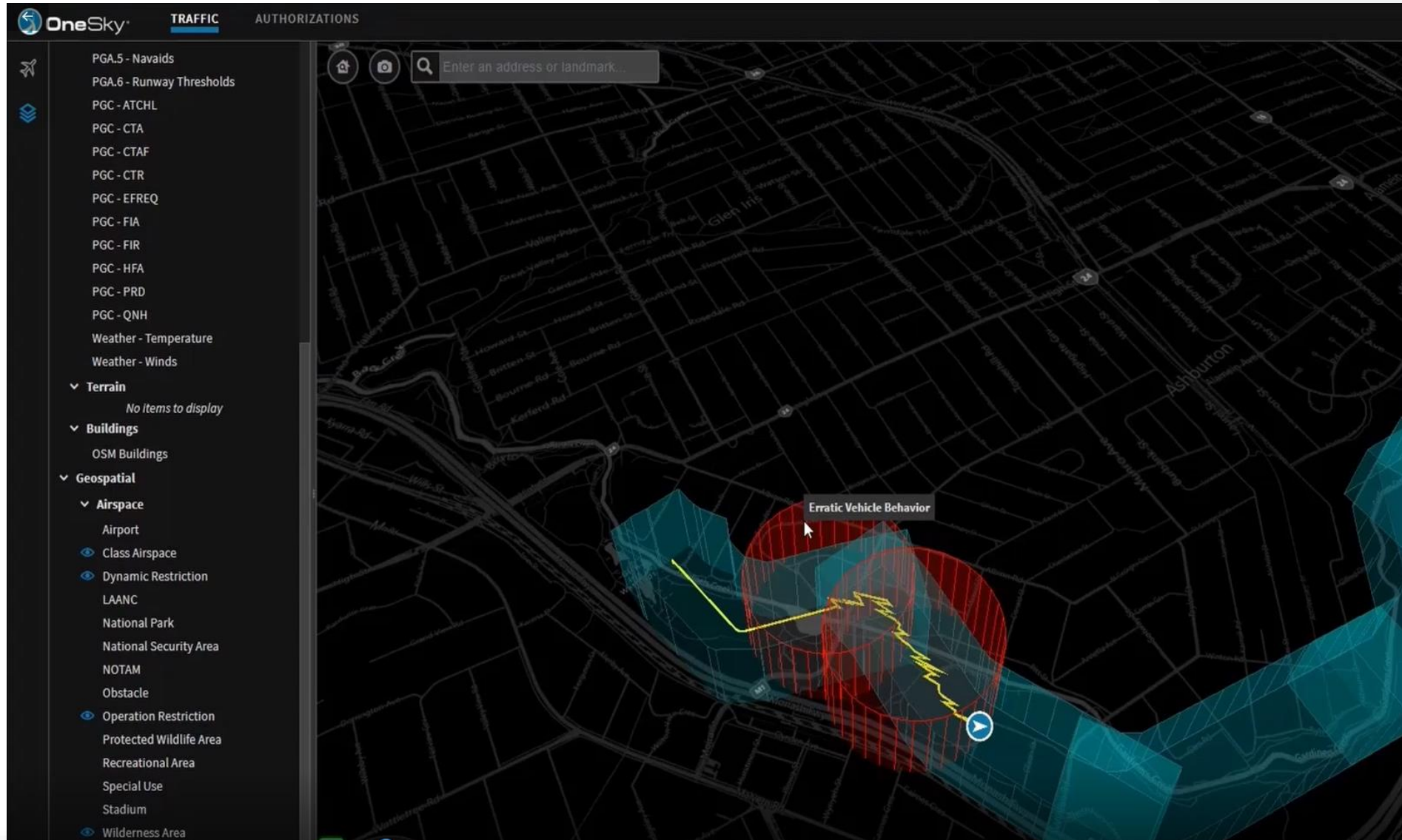


IT Networks



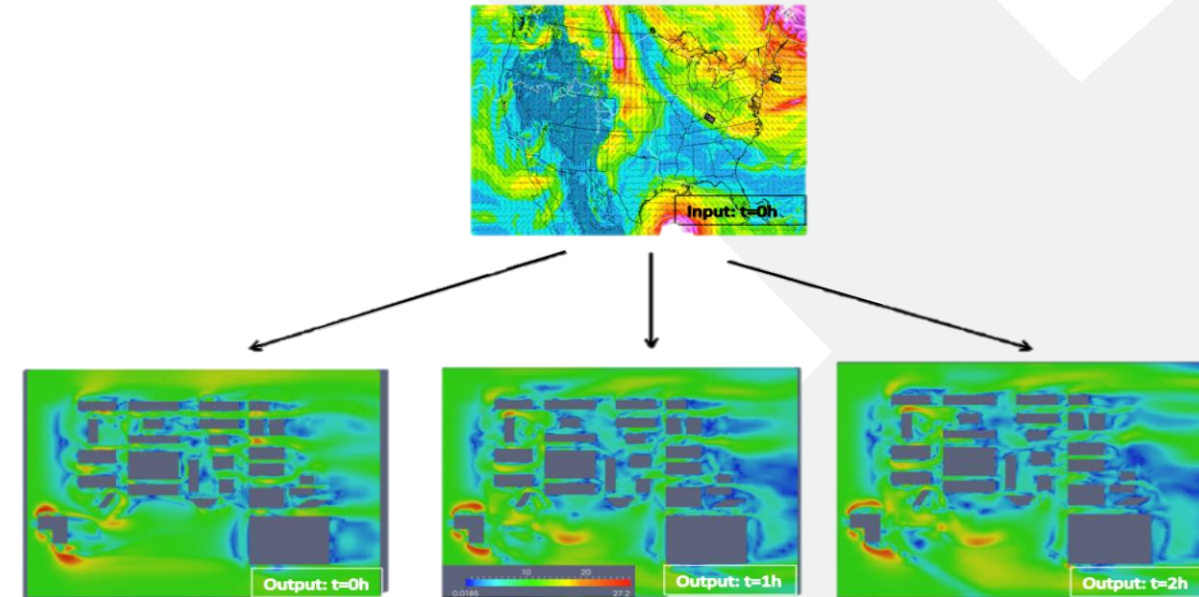
Cloud-Based Services

Data Quality Assurance



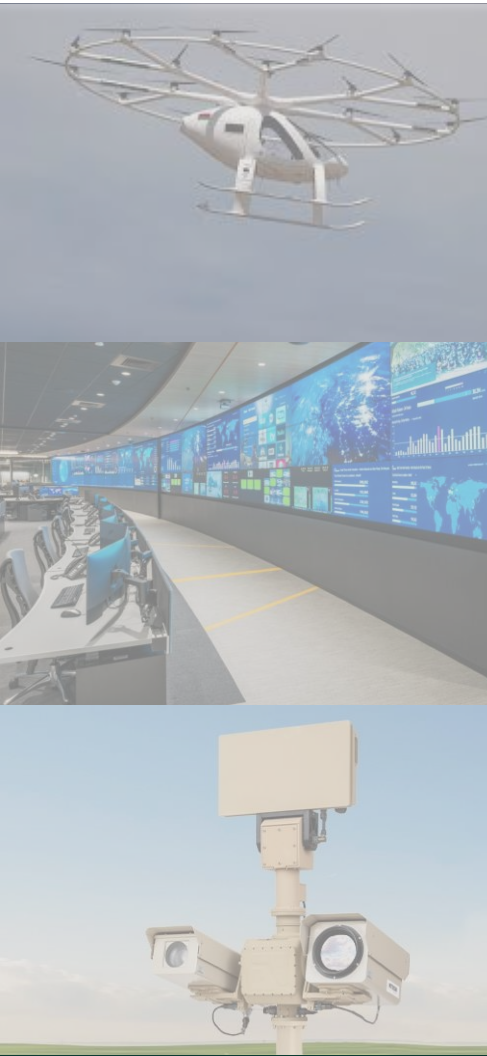
Weather Sensor Data Monitoring (WSDM) Service

- Problem
 - Low altitude, urban wind is a relative unknown but has a huge effect on UAS operations
- Goal
 - Enable cost effective deployment of anemometers (wind sensors) throughout an urban environment
 - Use high-cost sensors sparingly and low-cost sensors liberally
- ResilienX Enabled Solution
 - Monitor the health, performance and data quality of the wind sensing nodal network
 - Perform QC/QA of anemometer data
 - Ensures sensor data quality

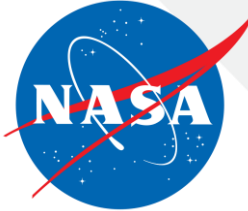


Vertiports Will Become Mini-Airports

High levels of automation will be needed for anticipated throughput



Our Customers & Partners



RoboticSkies



KONGSBERG



L3HARRIS™

Associate Elements Integrations (Current and in process)



KONGSBERG



DEMO



Emerging Infrastructure Platforms (EIP)

Intelligent Transportation

Our Mission

- Increase advanced air mobility (AAM) modes
- Expand robotics and automation, particularly for industrial use cases
- Connect the digital and physical worlds



Intelligent Transportation

Deloitte’s Intelligent Transportation group delivers Advanced Aerial Mobility (AAM), automation, robotics, and remote sensing program transformations for government and industrial clients.

Makers

Administrators

Operators






Intelligent Inspections

Remote sensing and asset management capabilities across various industries and use cases, such as:

-  **Power & utility** infrastructure inspections
-  Inventory management for **mining and natural resources**
-  **Telecommunications** infrastructure inspections
-  **Agriculture** mapping and environmental analysis
-  **Transportation** infrastructure mapping, modeling, and survey





Robotics & Logistics

Automation and roboticization of transportation across various industries and use cases, such as:

-  **Last-mile package delivery** via UAS
-  **Long-haul Air Freight** shipping via autonomous unmanned cargo aircraft
-  **Warehouse** inventory management and stocking
-  Emergency UAS **medical supply** transport
-  **Maintenance** & repair of physical assets via UAS & other specialized robotics

Advanced Air Mobility

Public and private solutions that move people and cargo between places not served by traditional aviation, such as:

-  **VTOL electric taxis** from curbside to airport
-  **Advanced radar technology** maintaining separation between UAS
-  **5G, IoT, Cloud** enabled UAS BVLOS systems
-  Interconnected **smart cities** deploying UAS
-  Public & private UAS **highways, tolls, parking, & navigation**

Counter-UAS

Technologies and solutions that protect military, public, and private people and places from harm by UAS, such as:

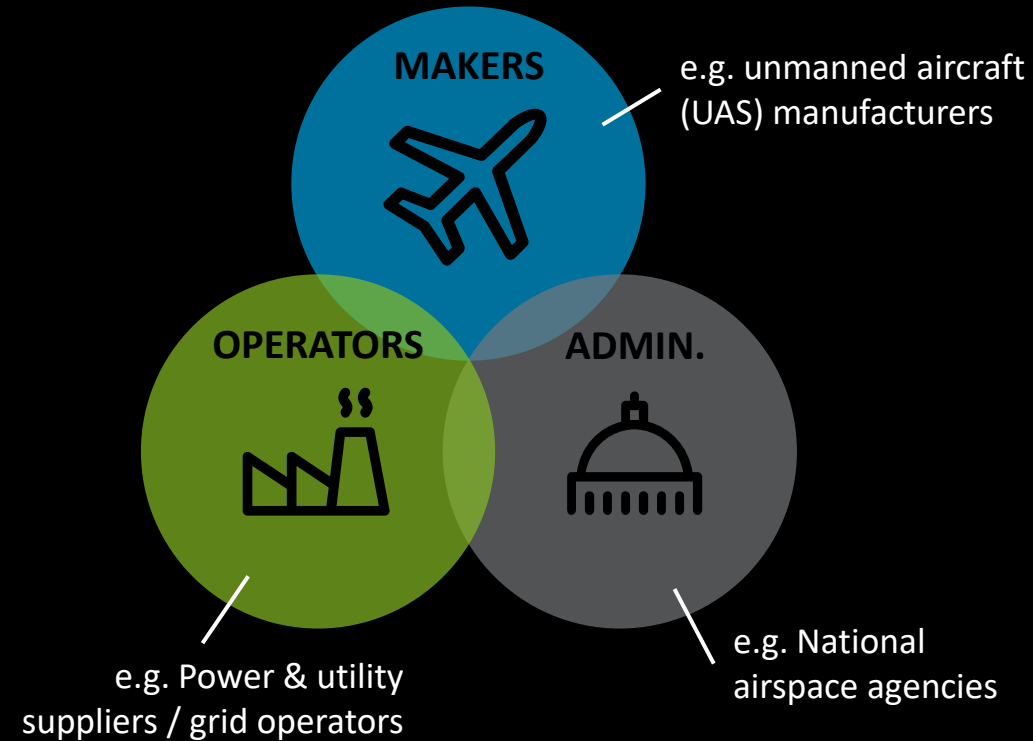
-  Mobile handheld **detect and ID** technologies
-  **Non-kinetic** selective electronic attack systems using radio-frequencies
-  UAS RF signal intercept and **remote-hijacking**
-  Drone-vs-drone, laser, & **kinetic defense systems**
-  **FCC & other C-UAS legal** environment expertise and support

Who We Serve

Deloitte's Intelligent Transportation group delivers Advanced Aerial Mobility (AAM), automation, robotics, and remote sensing program transformations for government and industrial clients.

Thought Partner & Integrator

Deloitte brings a unique perspective by working with and between administrators, makers, and operators.



Value Proposition for Deloitte's Clients

Deloitte's goal is to help its clients realize significant value from strategic, digital, and operational transformations. For large enterprises, the baseline order of magnitude for some of the below financial categories – upon which to improve – is often measured in the multiple Billions USD per year.

Grow the Top Line

Introduce new advanced air mobility products & services to market, such as drone-in-a-box and E-VTOL taxis, to create new revenue streams.

Decrease O&M Costs

Improved data and intelligence on assets can improve downstream remediation efficiency and reduce operations & maintenance costs.

Avoid or Delay CapEx

Prolonging the operational lifetime and expanding the capacity of current assets can also avoid or delay new capital expenditures.

Market & Revenue Expansion



O&M Costs



Capital Expenditures



Safety & Liability



Sustainability Climate Equity



Depreciation Expense



Improve Safety & Liability

Reduce risks to the workforce and communities from utility asset failure (e.g. ignitions and wildfires, power outages, workplace safety incidents)

Sustainability, Climate, & Equity

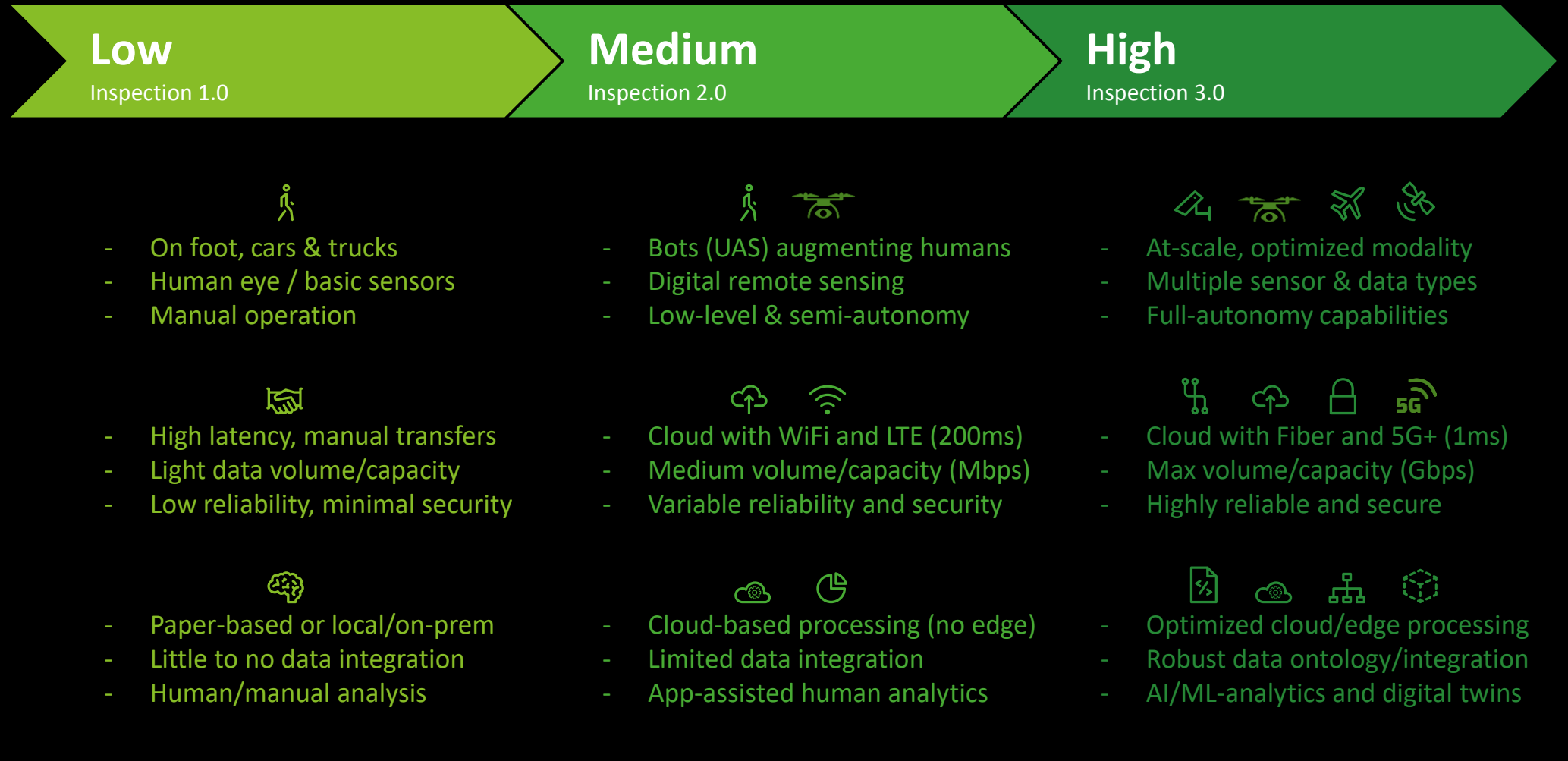
Autonomy and electrification to increase operational sustainability, achieve ESG and HSE goals, and expand economic and social opportunities for our communities.

Minimize Depreciation

Prolonging the operational lifetime of existing assets can decrease annual depreciation-related costs.

How We Deliver Program Transformation & Maturity

Using inspections operations as an example, Deloitte helps businesses transform their remote sensing programs across three capability dimensions and three maturity levels, evolving programs from reactive and manual processes, to become more proactive and automated.



What Services We Deliver

Deloitte meets clients with the most value-adding solutions wherever they are in their journey. If the problem, root cause, or appropriate solution is unclear, we recommend a set of **strategy** assessments. Deloitte can then help **implement** the appropriate systems and programs, and in later stages can support **operations** by scaling proven solutions and optimizing mature programs.

Strategy		Implementation		Operations	
Diagnostics	Solutioning	Systems	Programs	Scale-Up	Optimization
Program Assessment	Go-to-Market Strategy	Safety Management System (SMS)	Remote Sensing Program Standup	Procurement & RFP Support	Organization and Resourcing
Root-Cause Analysis	Tech. Specs & Requirement Sets	Fleet Management System (FMS)	Remediation Program Standup	Resourcing, Talent Up-Skilling	Quality Control
Market/Capability Benchmarking	Technology Roadmap	Airspace Traffic Management (ATM/UTM)	Transportation Program Standup	Program Change Management	Cost Control
Market Sizing	Operations Roadmap	Field Services Management (FSM)	Detection and Security (e.g. C-UAS, cyber)	Execution Performance Management	Speed & Capacity
Pricing/Costing	Governance & Organization	Central Data Cloud Library	Airspace Traffic Management (ATM)	Project Management Office (PMO)	
Tech/Vendor Benchmarking	Business Value Analysis & Prioritization	Inspection & Data Visualization Platforms	Regulatory process support (e.g. waiver, type cert)		
Make vs Buy Analysis	Regulatory roadmap (e.g. waiver, type cert)	CRM: Customer Relationship Mgmt	MRO: Platform Maintenance		
Cyber & Security Assessment					