



# Regulations and Maintenance: Drone and Advanced Air Mobility Market



# Agenda

- Market Overview
- Maintenance and Associated Elements
- Advanced Air Mobility
- About Robotic Skies Network
- Q&A



# Cargo Transport & Delivery Ecosystem



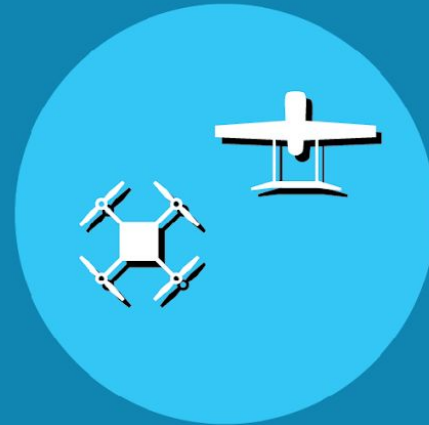
**First Mile**

9.5 - 100 tons



**Middle Mile**

300-500 lbs.



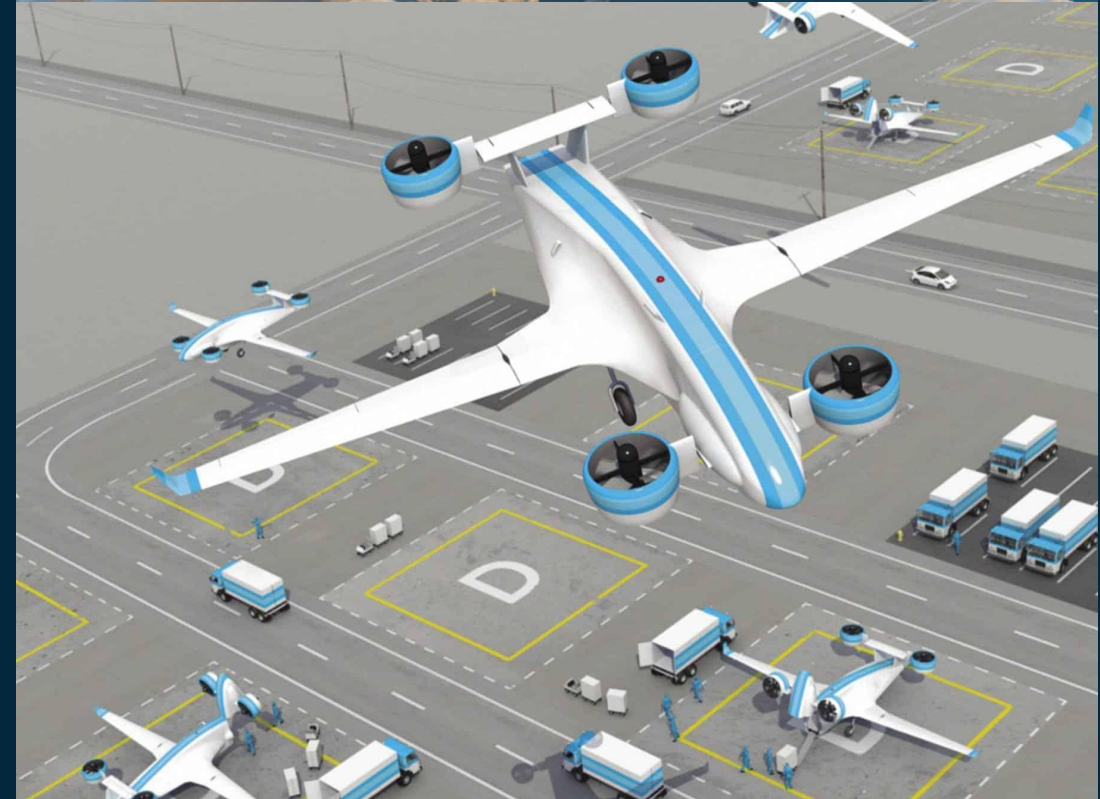
**Last Mile**

1-4 lbs.

# First Mile Cargo Transport

Large cargo across long distances

- Plans scale to 100 ton capacity
- Natilus N3.8T: MTW 19,000 lb – Range 1,035 miles – Capacity 8,500 lb
- Sabrewing RG-1: MTW 3,000 lb – Range 1,150 miles – Capacity 1,000 lb



# Middle Mile Cargo Transport

Regional cargo transportation

- Dronamics Range 1550 miles – 770 lb payload
- Elroy Air
- MightyFly VTOL 150 Max Speed  
Range 600 miles – Capacity 500 lb

THE BLACK SWAN



# Last Mile Drone Delivery

Food, consumer items and medicine delivered to your backyard

- Operations include Matternet, Zipline, DroneUp, Flytrex, Wing (Google), Amazon, Manna and Avy
- Customers include major medical and retail partners (eg: Walmart)



# Maintenance and Associated Elements



# Maintenance Regulations

## 14 CFR Part 107 sUAS Maintenance Requirements

- § 107.73 Knowledge of Maintenance and preflight inspection procedures
- § 107.74 Training on Maintenance and preflight inspection procedures
- § 107.140 Category 4 operations

### The sUAS must be eligible for Category 4 operations

- The sUAS aircraft must operate in accordance with all operating limitations
- No remote pilot may operate a sUAS in sustained flight over human beings unless the operation meets additional requirements
  1. Airworthiness certificate issued under part 21
  2. Operated in accordance with the operating limitations specified in the approved Flight Manual or as otherwise specified by the Administrator.
  3. Have maintenance, preventive maintenance, alterations, or inspections performed
- Compliance with part 43 and part 91, subpart E, of this chapter





# Maintenance Regulations

## § 107.140 Category 4 operations

- (c) Maintenance Requirements for Category 4 operations
  1. The Owner/Operator must ensure the person performing the maintenance
    - i. Uses the methods, techniques, and practices prescribed in the manufacturer's current maintenance manual or Instructions for Continued Airworthiness that are acceptable to the Administrator, or other methods, techniques, and practices acceptable to the Administrator
    - ii. Has the knowledge, skill, and appropriate equipment
    - iii. Performs the maintenance, preventive maintenance, or alterations on the small unmanned aircraft in a manner using the methods, techniques, and practices prescribed in the manufacturer's current maintenance manual or Instructions for Continued Airworthiness
    - iv. Inspects the small unmanned aircraft in accordance with the manufacturer's instructions or other instructions acceptable to the Administrator
    - v. Performs the maintenance, preventive maintenance, or alterations using parts of such a quality that the condition of the aircraft will be at least equal to its original or properly altered condition
  2. Maintain all records of maintenance, preventive maintenance, and alterations performed on the aircraft
  3. Maintain all
    - i. Life-limited parts
    - ii. Inspection status
    - iii. Status of applicable airworthiness directives including the method of compliance, the airworthiness directive number, and revision date
  4. Retain records
  5. Ensure the records are available for inspection



# UAS Maintenance Industry Change

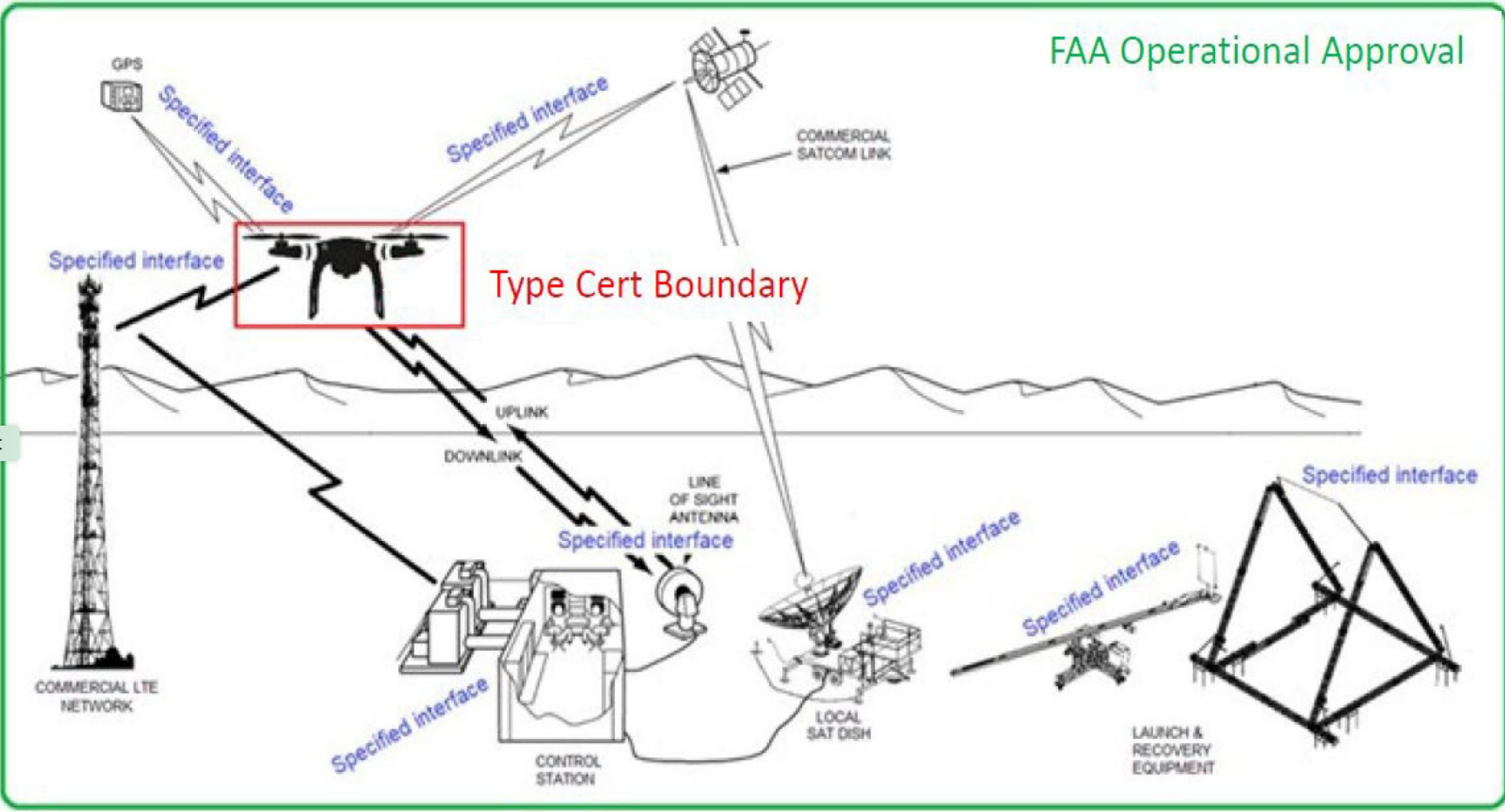
- 49 U.S.C. § 44807 Exemption
- (BVLOS) Beyond Visual Line of Sight
- CFR Part 108
- (MOSAIC) Modernization of Special Airworthiness Certification open for NPRM

Robotic Skies is working with commercial UAS manufacturers to develop repair procedures and Instructions for Continued Airworthiness so when the regulatory requirements change the UAS industry is compliant

The more manufactures with maintenance manuals and technical data the safer and better maintained the industry will be.

# Associated Elements

FAA Operational Approval



# Maintenance on Associated Elements

Maintenance is required and must be tracked on the following AE

- Launch and recovery equipment
- LTE Network
- Ground Control Stations
- Line-of-site connections
- Sat-Com links
- Satellite dish installations
- GPS infrastructure
- Local internet infrastructure
- Other



# Advanced Air Mobility

Moving people from A to B

- Leading: Joby, Lillium, Archer, Wisk



# AAM Maintenance Regulations

- AAM/UAM regulations are currently expected to meet certificated aviation requirements with subtle changes
- The UAM market will need requirements for verta-ports regulations
- Changes in this industry are going to happen quickly and the administrator is looking to help advance this industry the safest way possible
- Urban Air Mobility Market is currently certified under 21.17(b)



# About Robotic Skies



# Local Maintenance On A Global Scale

## Robotic Skies Service Center Network

250 Service Centers  
in 50 countries – *and  
growing*

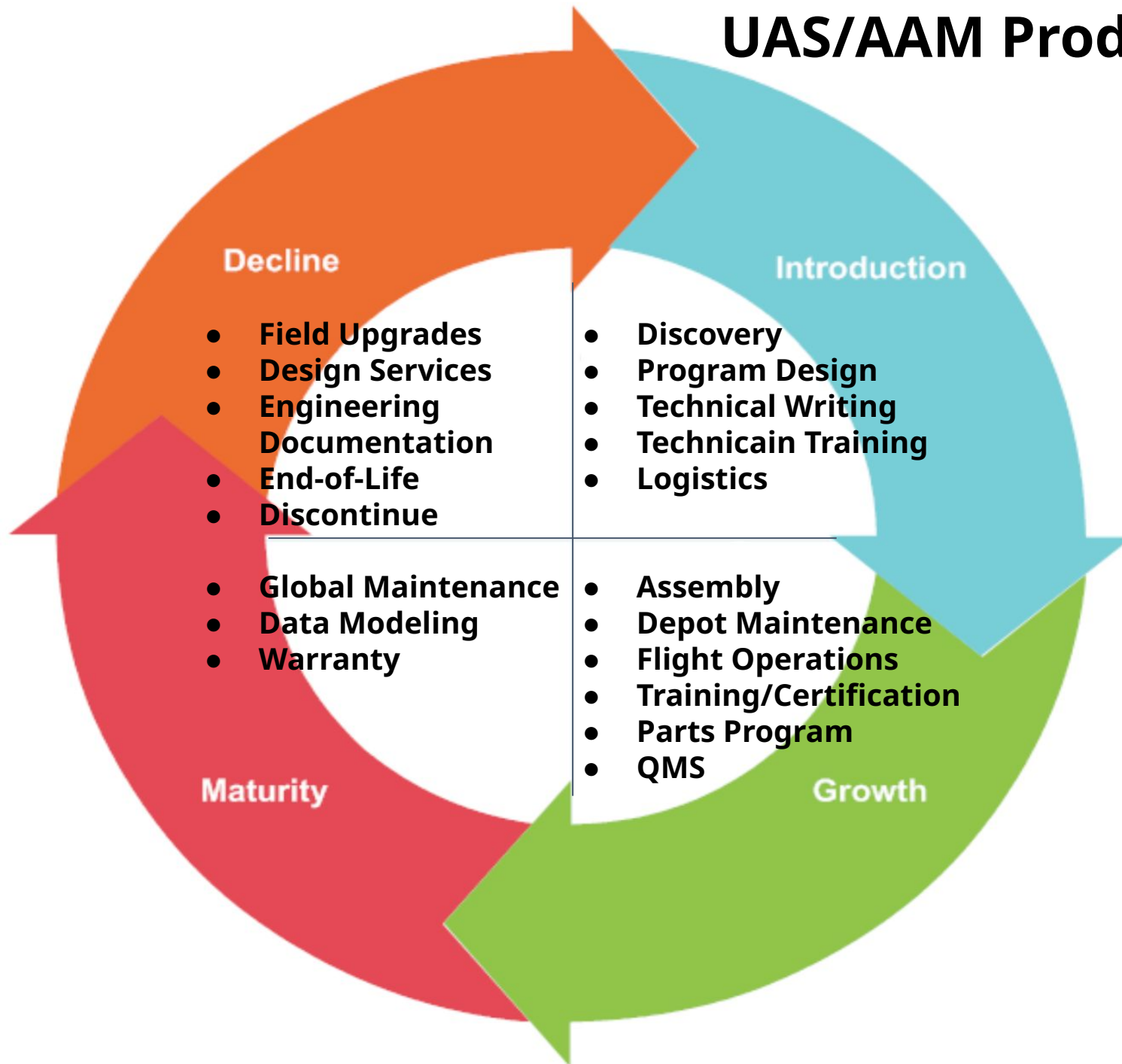


# Robotic Skies Benefits

- Allowing MRO's access to new revenue opportunities in an emerging market
  - No risk to join - no upfront investment in fees or equipment
- Complimentary business development - Robotic Skies pursues opportunities with manufacturers and operators on the customers behalf
- Comprehensive, factory-approved training for technicians
- Regulatory guidance and on-demand support from Robotic Skies' in-house experts
- Technical data and Maintenance Manual creation or improvements



# UAS/AAM Product Lifecycle





# Market dynamics and development

- **Technology:** Electric, hybrid, eVTOL, autonomy
- **Robotic Skies:** Guiding maintenance and technician standards through
  - **Astronomy and Astrophysics Advisory Committee (AAAC)**
  - **ASTM International, formerly known as American Society for Testing and Materials**
  - **National Business Aviation Association (NBAA)**
  - **Aircraft Electronics Association (AEA)**
- **Regulatory:** 44807 waivers; 21.17b Type Certification; BVLOS



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# Q&A

