

# Geofencing & Airspace Authorization

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**AIRMAP**

# On the Horizon

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**\$127 BILLION**

**GLOBAL ECONOMIC IMPACT**

**100,000**

**JOBS**

# Guiding Principles

UTM must be:

- ✓ Designed for the highly automated drone
- ✓ Performance-based to encourage innovation
- ✓ Open and democratic
- ✓ Agile and able to move at the pace of an emerging technology
- ✓ Globally interoperable (GUTMA)



# Low-altitude airspace is complex



## MANNED AIRCRAFT

AirMap's real-time traffic alerts from various sources automatically notify drone operators when manned aircraft trajectories create a hazard for the drones's area of operation.

## AIRSPACE

Controlled Airspace (B,C,D,E)  
Restricted Airspace  
Prohibited Airspace

## TEMPORARY FLIGHT RESTRICTION

VIP Movements  
Sporting Events  
Emergency Response

## AIRPORTS

Public Airports  
Private Airports  
Heliports  
Military Airfields

## PUBLIC AREAS

National Parks  
Marine Protected Areas  
City Parks\*  
Playgrounds\*  
Stadiums  
Ballfields

## WILDFIRES

AirMap sources wildfire information directly from the U.S. Department of the Interior and pushes it to millions of drone pilots in real time.

## PUBLIC BUILDINGS

Schools  
Prisons  
Hospitals  
Power Plants

## WEATHER

Together with The Weather Company, AirMaps gives drone operators access to real-time data such as current and future conditions with temperature, precipitation, pressure, cloud cover, and more.



# Contextual airspace

The screenshot displays the AirMap interface for a mission in Yonkers, New York. On the left, a sidebar titled "WHAT'S YOUR MISSION?" lists various mission types: "United States" (Pick One), "Fly for Fun (Part 336/101E)", "FAA Section 333 Exemption Holder", "FAA Part 107 Certified" (highlighted), "Optional", "AIRMAP Recommended Guidelines", and "Required Rules". Below this, it shows "ADVISORIES (16)" for August 2nd 2017 at 1:36:53 pm. The main map area shows a blue-shaded area representing the mission's operational zone. A large, detailed panel titled "FAA PART 107 CERTIFIED" is overlaid on the map, providing the following guidelines:

- FAA PART 107 CERTIFIED**  
Guidelines for commercial/recreational drone use in the USA under Part 107
- Unmanned aircraft must weigh less than 55 lbs. (25 kg).
- Visual line-of-sight (VLOS) only; the unmanned aircraft must remain within VLOS of the remote pilot in command and the person manipulating the flight controls of the small UAS. Alternatively, the unmanned aircraft must remain within VLOS of the visual observer.
- At all times the small unmanned aircraft must remain close enough to t...
- Small unmanned aircraft may not operate over any persons not directly participating in the operation, not under a covered structure, and not inside a covered stationary vehicle.
- Daylight-only operations, or civil twilight (30 minutes before official sunrise to 30 minutes after official sunset, local time) with appropriate anti-collision lighting.

## Real-Time Airspace Discovery

Learn everything you need to know about the airspace in which you intend to operate, including airspace regulations, temporary flight restrictions, critical infrastructure, VIP movements, nearby air traffic, and more.

## Basic Mission Planning

Plan your mission based on flight rules, aircraft performance, time of day, micro-weather, and more.

## Timely Updates

Pushes real-time alerts such as temporary flight restrictions, nearby traffic, and first responder activity.

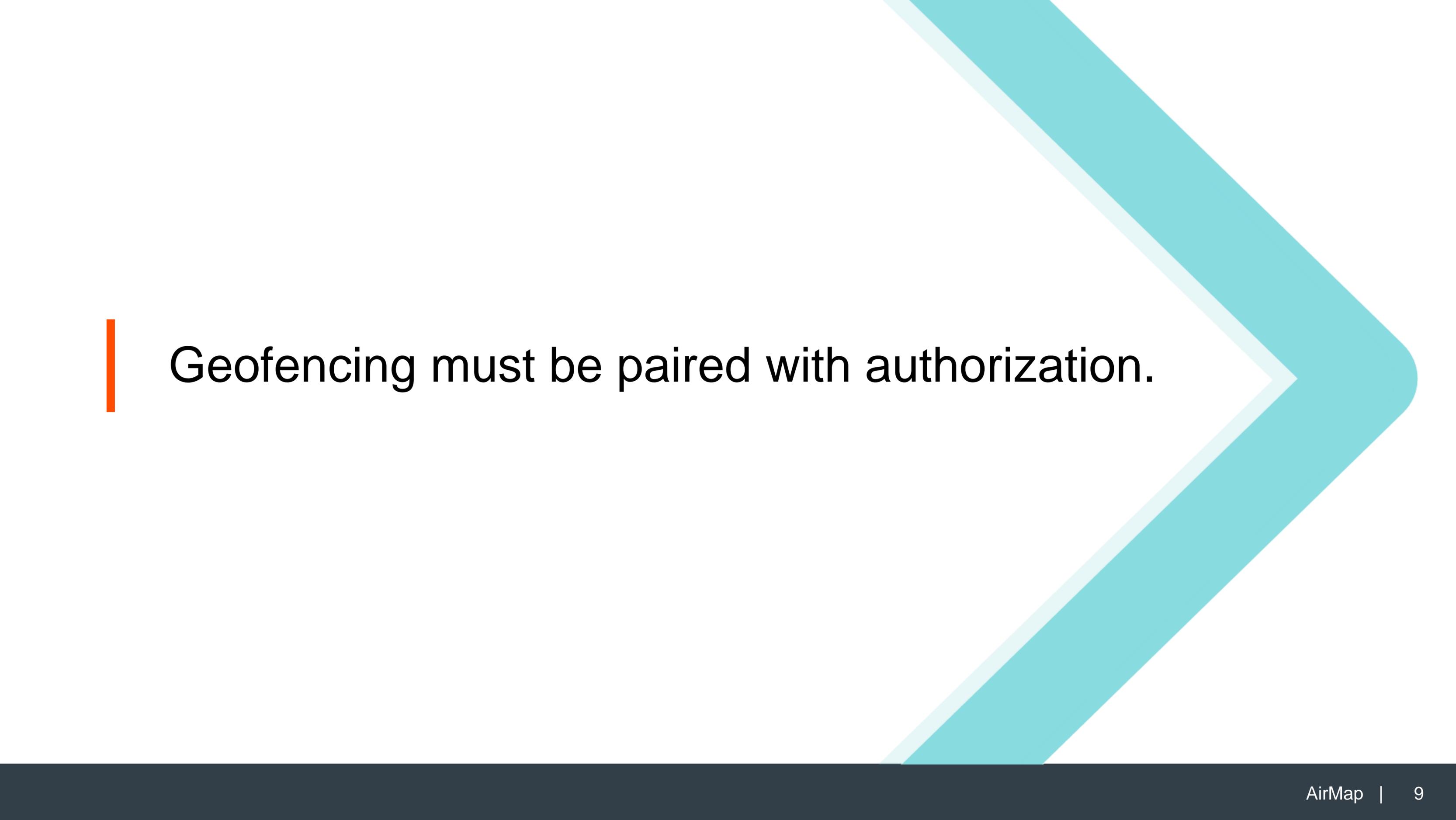
# Active geofencing is reshaping our airspace

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A large teal arrow graphic pointing to the right, with a lighter teal shadow behind it, positioned on the right side of the slide.

Geofencing is not a complete solution.



Geofencing must be paired with authorization.

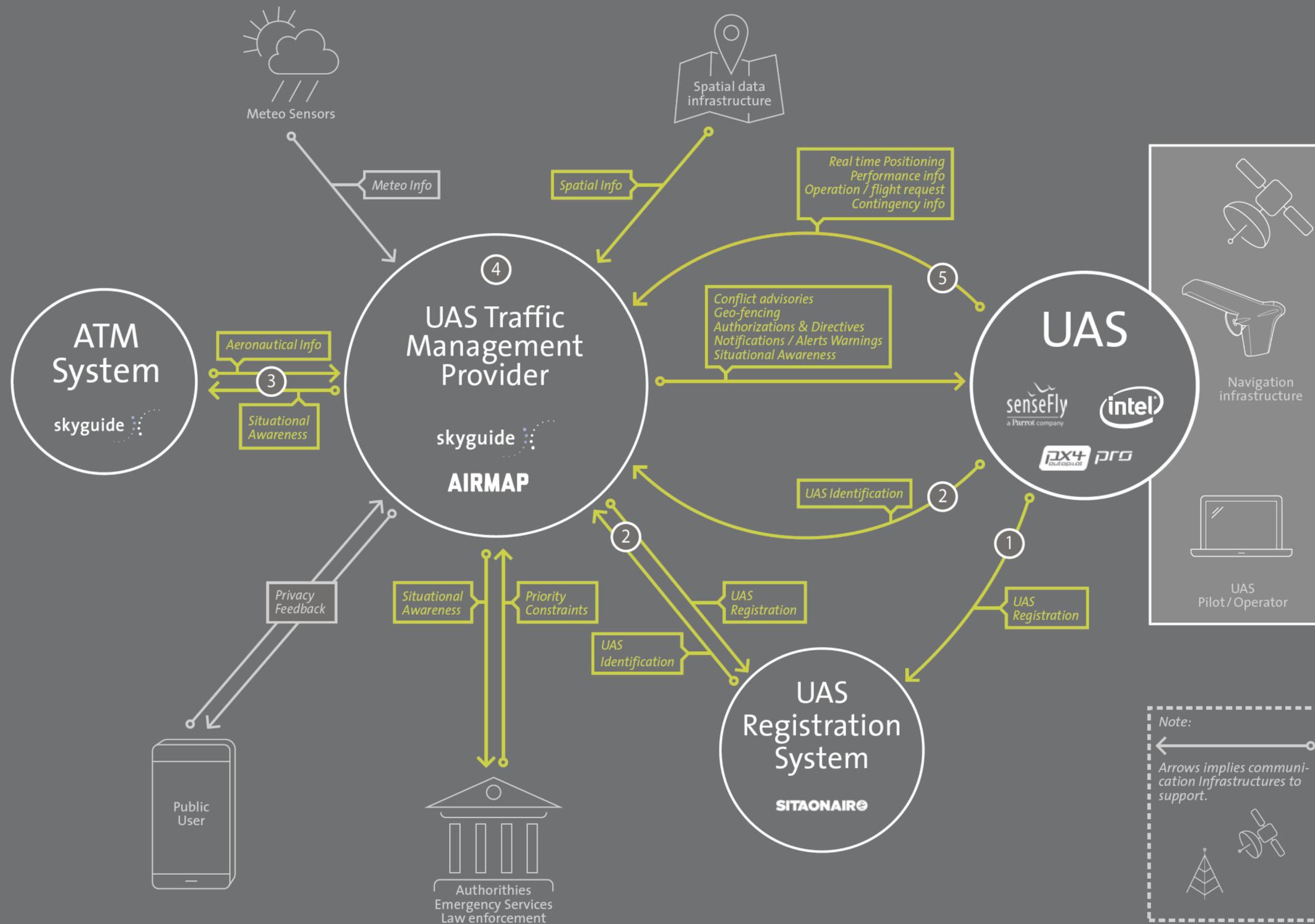
# Case Study: AirMap + skyguide partner on U-space

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Demonstrating U1 & U2 U-space services, including:

- ✓ Pre-tactical geofencing
- ✓ Dynamic geofencing
- ✓ Airspace authorization
- ✓ Integration with air traffic control + radar system
- ✓ Flight planning, management, and monitoring





Note:  
 ← Arrows implies communication Infrastructures to support.

Adapted from GUTMA Architecture

- 1 Drone registration with a Blockchain based database managed by SITAONAIR
- 2 Authentication of the drone's identity against the SITAONAIR registration database using AirMap technology
- 3 Integration with ATC & digital airspace authorisation from skyguide through the AirMap platform
- 4 Dynamic flight plans and live telemetry visualized on AirMap U-space dashboard
- 5 Real-time drone telemetry data sent by senseFly

1 Foundation Services

2 Initial Services

3 Advanced Services

4 Full Services

### e-Registration

### e-Identification

### Pre-tactical Geofencing

**Profile**



**Andreas Lamprecht**  
andreas +49151E

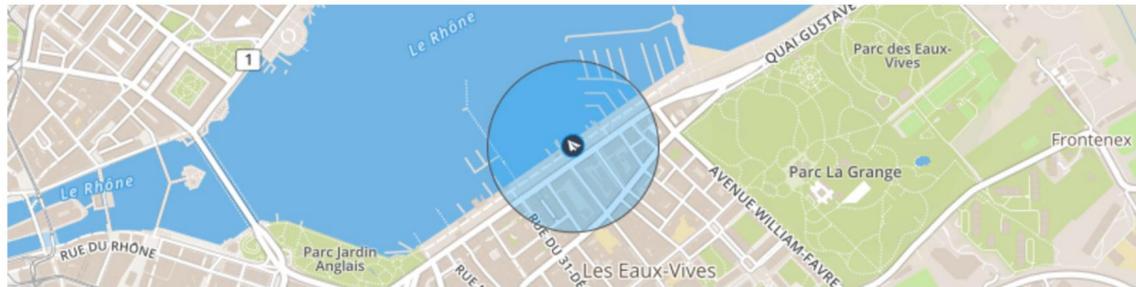
**Flight Plan**

Start Time  
September 12, 2017  
12:17 AM

End Time  
September 12, 2017  
12:32 AM

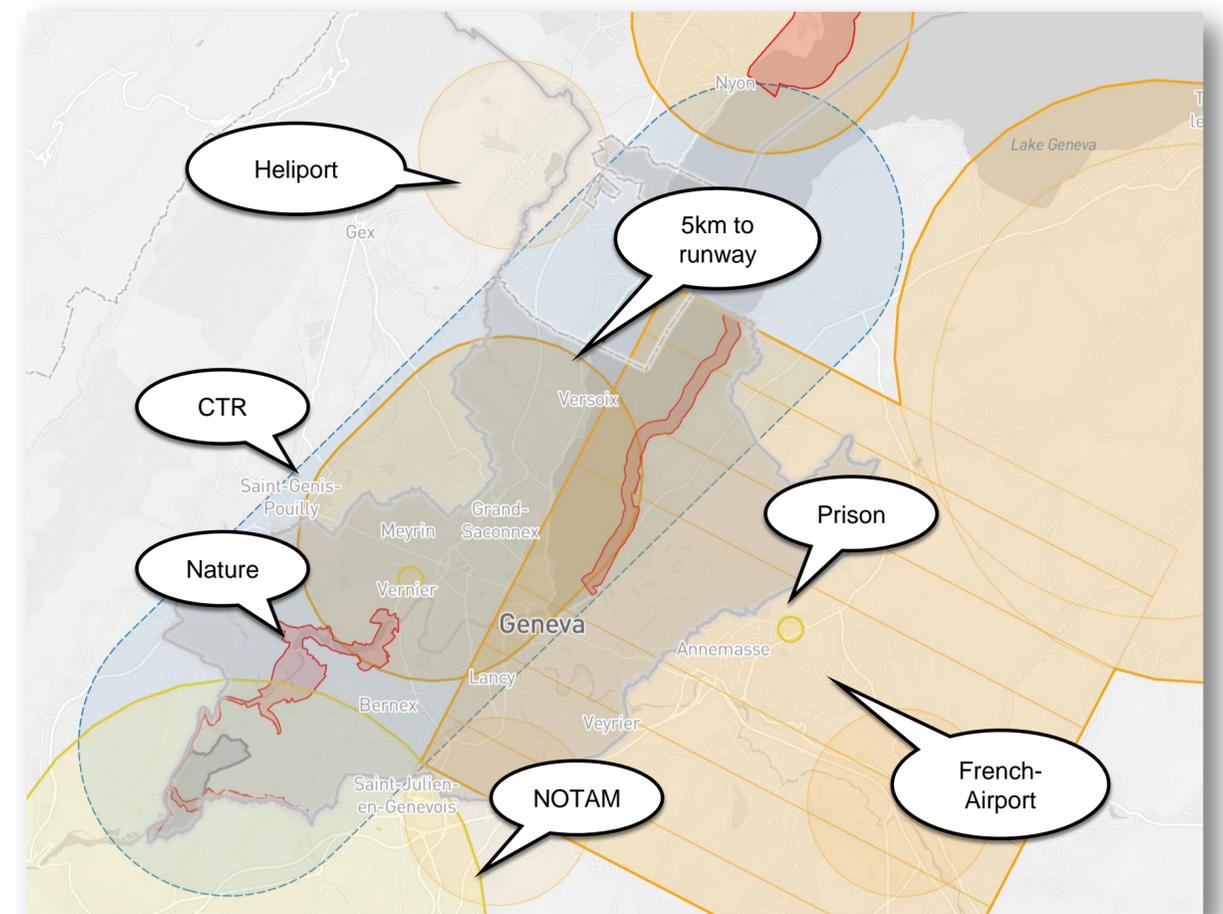
Overall Flight Status  
● Pending

Max Altitude  
328 feet AGL



Compliance Information

● skyguide U-space Dashboard authorization	✓ ✗	Pending
● skyguide drone registration identifier	SUI-35MY0D84	Valid
● skyguide pilot registration identifier	CH.LUC-OMRME6Q	Valid



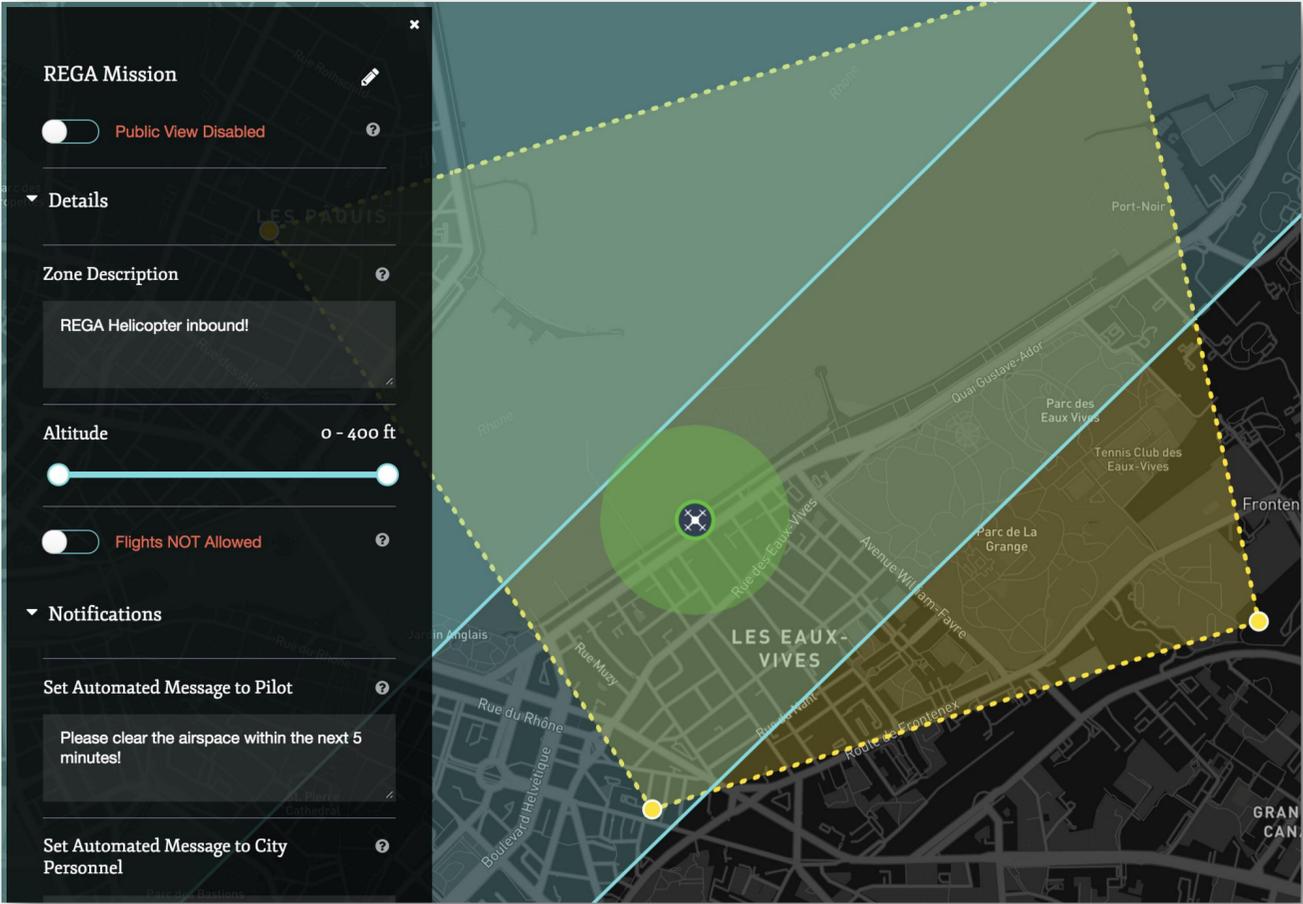
1 Foundation Services

2 Initial Services

3 Advanced Services

4 Full Services

### Procedural Interface with ATC



### Monitoring

The monitoring interface is divided into three main sections:

- Working Area Parameters**:
  - Radius: 3417 ft
  - Ceiling: 492 ft/AED
  - Centre: 46.2103248° N, 6.1686306° E
  - Download map data
- Mission Dates**:
  - Time Zone: UTC
  - Start Date: 11.09.2017 09:37 Now
  - Duration: 1 h 0 mins
- U-space**:
  - You are logged in. Login
- Flight**:
  - Drone ID: SUI-YXDN2MVR
  - Created: 2017-09-11 09:37 (UTC)
  - Approval: ✓
  - Air traffic: ✓
  - End flight
- Estimated Mission Wind**
- Mission Weather**

The map on the right shows a satellite view of the Geneva area with altitude callouts: SWR353 +1130 ft, PEA301 +145 ft, and EP-01-008 -1 ft/ATO (1245 ft/AMSL) at 21:57, Idle, Ready for take-off.

1 Foundation Services

2 Initial Services

3 Advanced Services

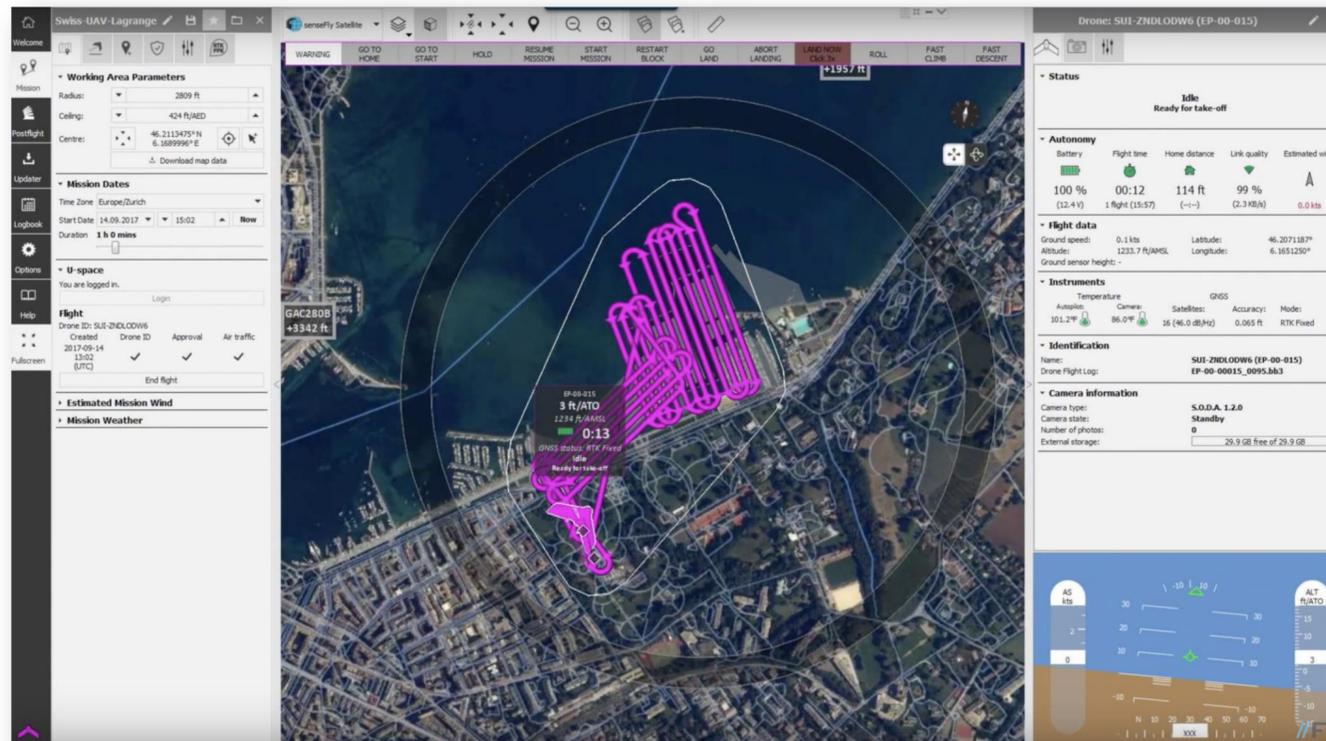
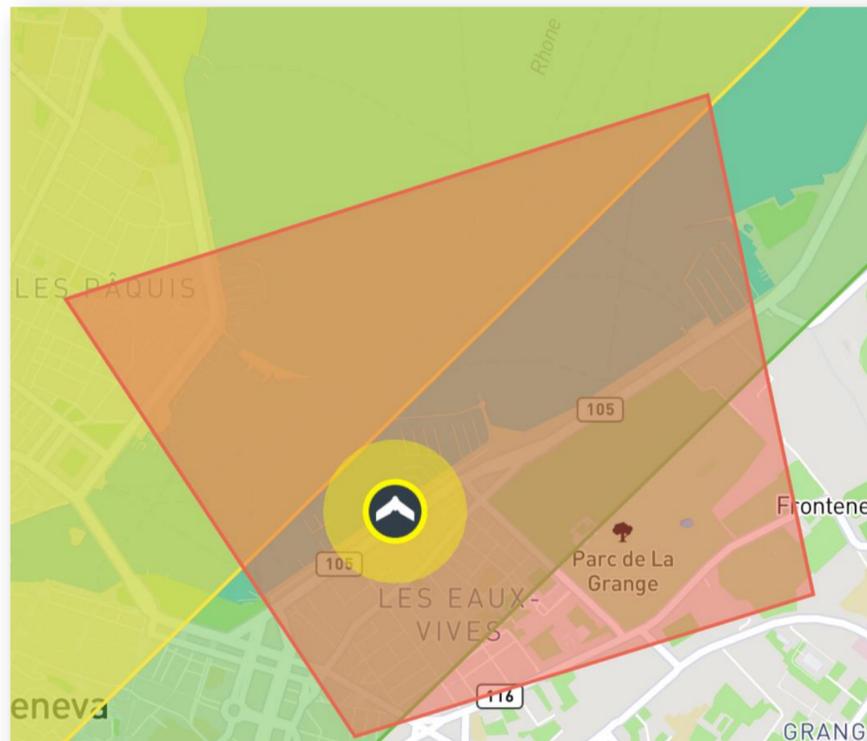
4 Full Services

### Tactical Geofencing

### Flight-Planning, Management, & Tracking

### Weather Information

andreas@airmap.com      September 12, 2017 12:17 AM      September 12, 2017 12:32 AM      ● Pending      ✓ ✗      📞 📍 ⬆





# Case Study: AirMap + LAANC

## FAA, Industry Work To Automate Drone Airspace Authorizations

by Bill Carey - March 28, 2017, 4:38 PM



Airspace authorization to fly commercial drones such as the Matrice M200 will be expedited under the LAANC capability. (Photo: DJI)

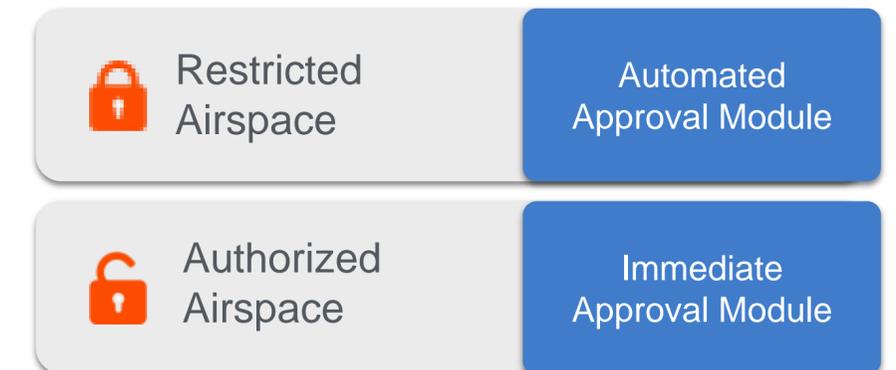


The Federal Aviation Administration is taking steps to automate the approvals that drone operators need to fly in controlled airspace and to track small unmanned aircraft systems (UAS) that are already in flight.

### Current

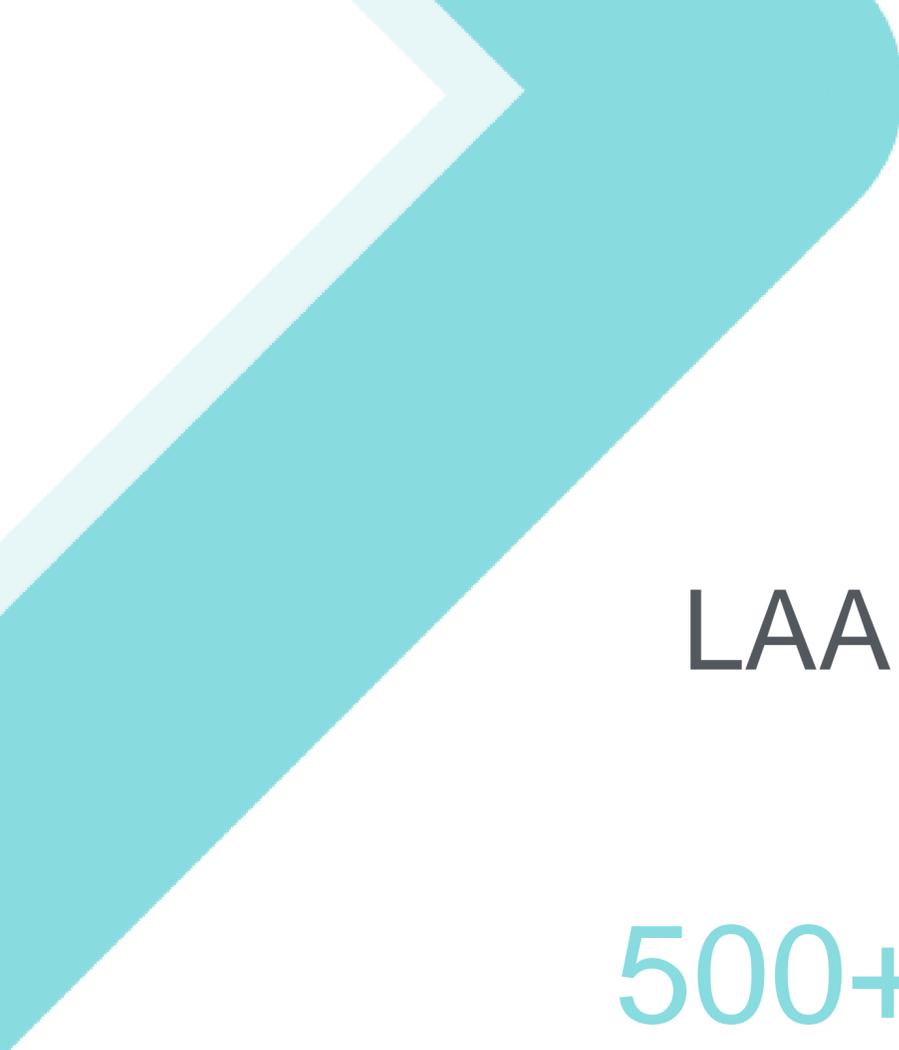


### Est. 2017





**Low Altitude Authorization and Notification Capability (LAANC)**



# LAANC is opening the airspace for drones

500+

Part 107 airports  
by Fall 2018

75,000+

Square miles of airspace  
as of Aug 2017

68%

Airspace open  
below 200ft

# AIRMAP