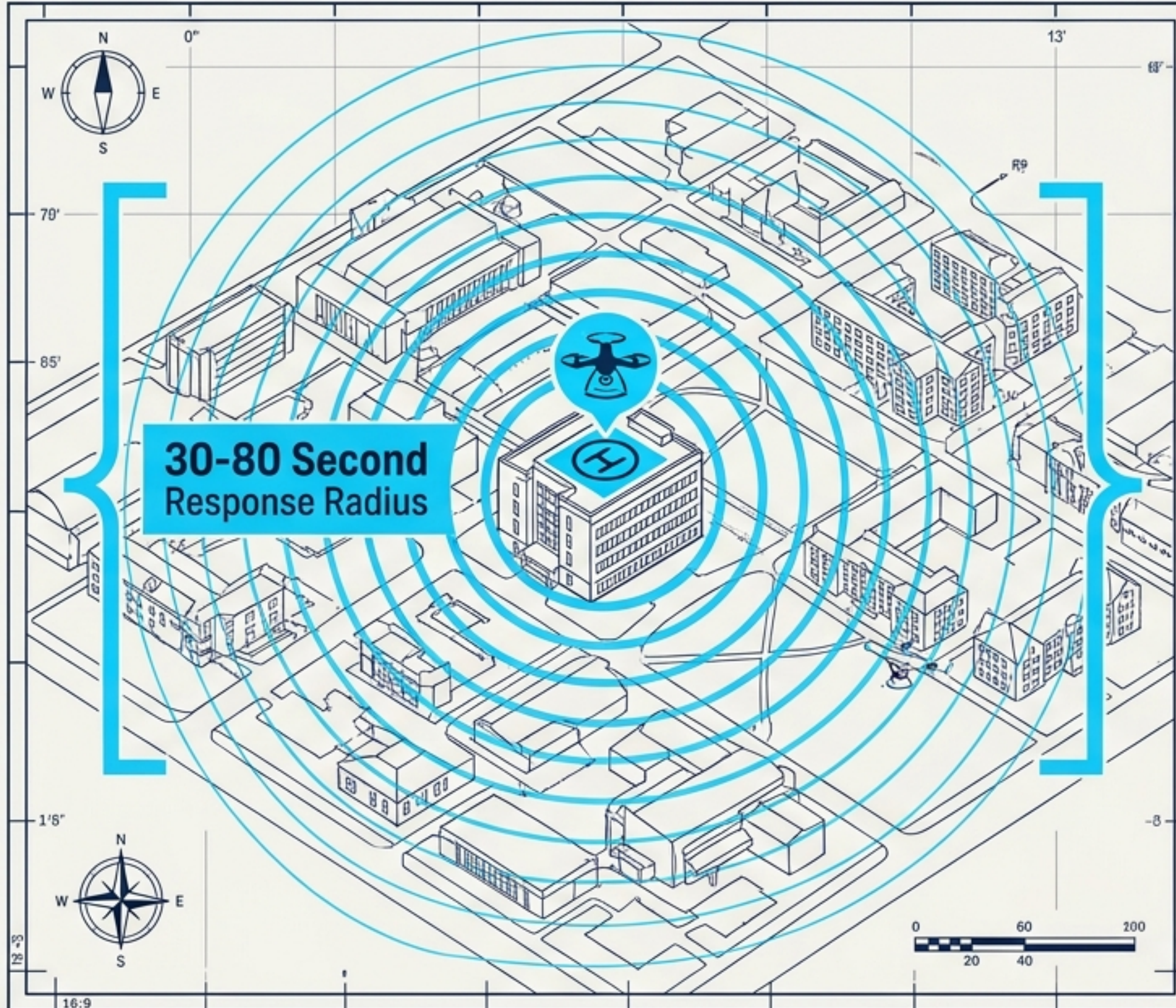


THE DFR REALITY CHECK

Building a Drone First Responder Program:
WHAT THE PRESS RELEASES WON'T TELL YOU.

THE VANDERBILT PARADIGM: PR CAPABILITIES



1 THE OBJECTIVE

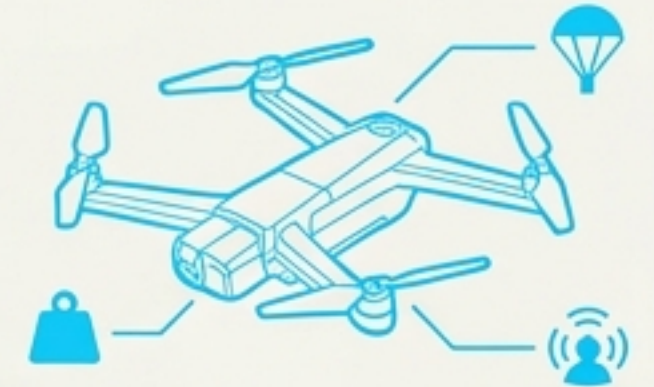
Drones airborne over any campus point within **30 to 80 seconds** of dispatch.



2 THE PLATFORM

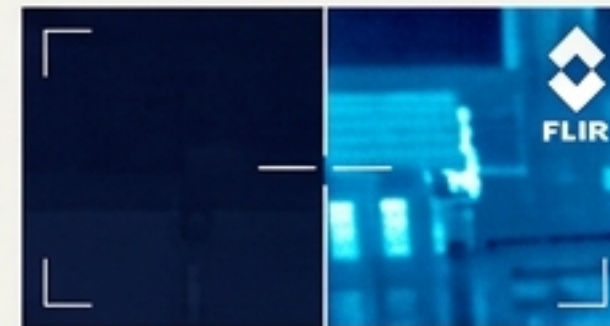
Skydio X10.

5.49 lbs max takeoff weight.
Integrated parachute recovery system.
360-degree obstacle avoidance.



3 THE VISION

→ Night operations in total darkness using Teledyne FLIR Boson+ thermal sensors and NightSense autonomy.

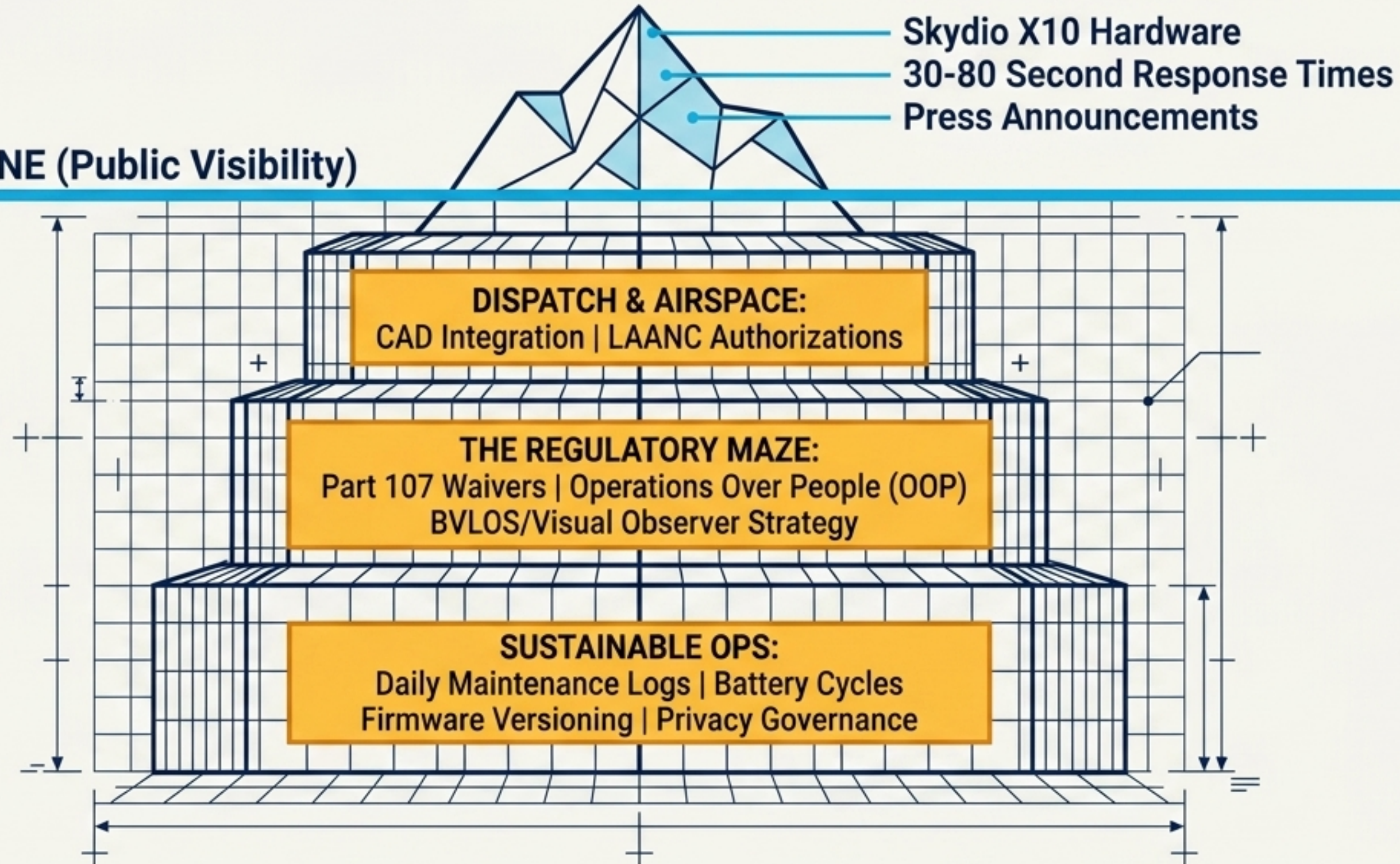


4 THE PROMISE

→ Explicitly for emergency response and situational assessment, not routine surveillance.



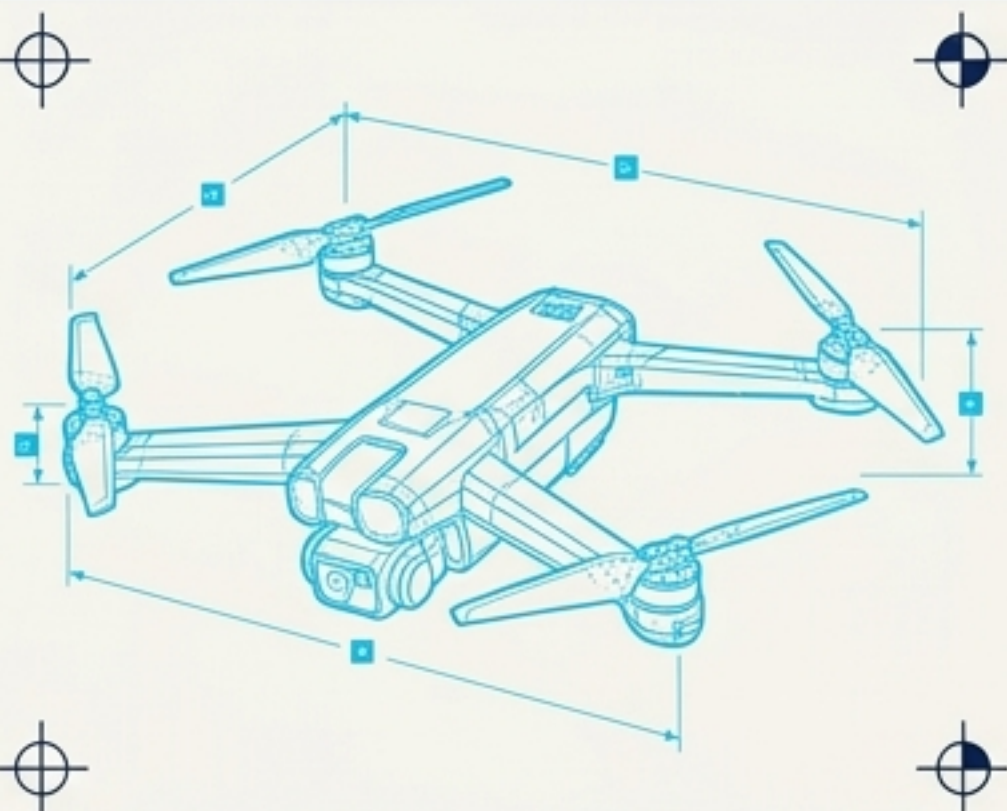
THE WATERLINE (Public Visibility)



Key Insight: The operational bottlenecks aren't the technology; they are the paperwork, integrations, and procedures.

THE ARSENAL: DFR HARDWARE ECOSYSTEM

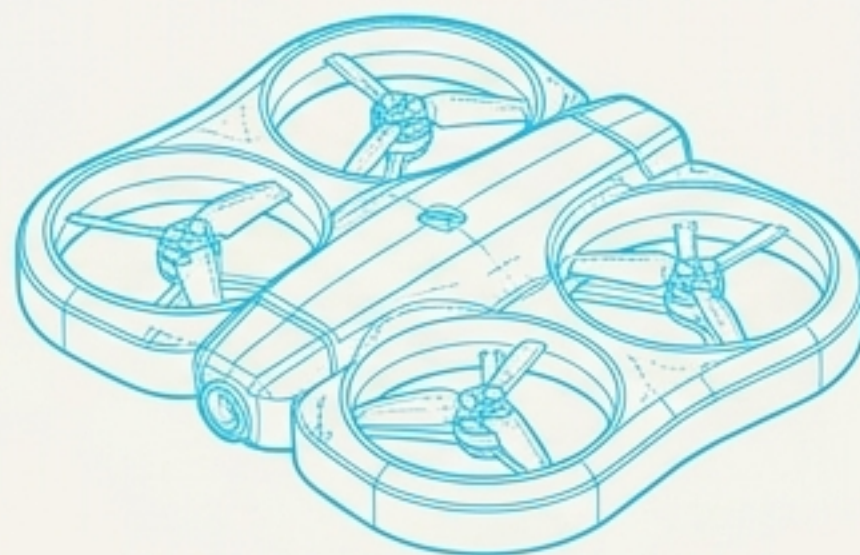
Outdoor Rapid Response



Skydio X10

- Teledyne FLIR Boson+ (30 millikelvin sensitivity)
- NightSense autonomy
- 40-minute max flight time
- 4 attachment bays

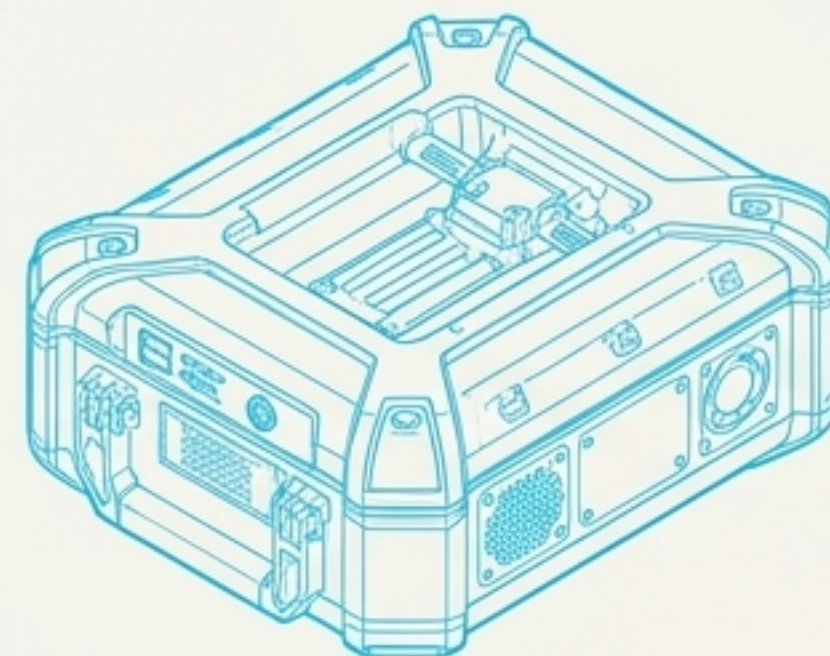
Indoor / Patrol Deployment



Skydio R10

- Launched directly from patrol vehicles
- Designed for indoor clearing
- Navigates tight environments without GPS

The Hive Infrastructure



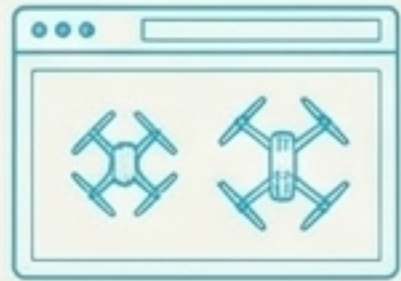
Skydio Dock

- Ruggedized and temperature-controlled
- Positioned based on historical Calls For Service (CFS) data
- Automated recharging and data offload

SOFTWARE & AUTOMATION: DFR COMMAND

Browser-Based Operations

Remote flight of both docked (X10) and patrol (R10) drones executed entirely from a single web browser interface.



Axon Ecosystem Integration



Real-time locations of body-worn cameras and fleet vehicles are plotted directly on the map.

One-click automatic media transfer pushes evidence to Axon.



Live Overwatch (ReadyLink)

Streaming pushes live, low-latency video directly to responding officers on their mobile devices and the central Real-Time Crime Center (RTCC).



DISPATCH INTEGRATION REALITY

MANUAL LAUNCH

911 Call Received

Dispatcher Radios Officer

Officer Requests Drone

Operator Opens Separate App

Manually Inputs Coordinates

Drone Launches

Result: Misses the 30-80 second response goal.

CAD-TRIGGERED LAUNCH

911/NG911 Call Received

Computer-Aided Dispatch (CAD)
Automatically Populates Map

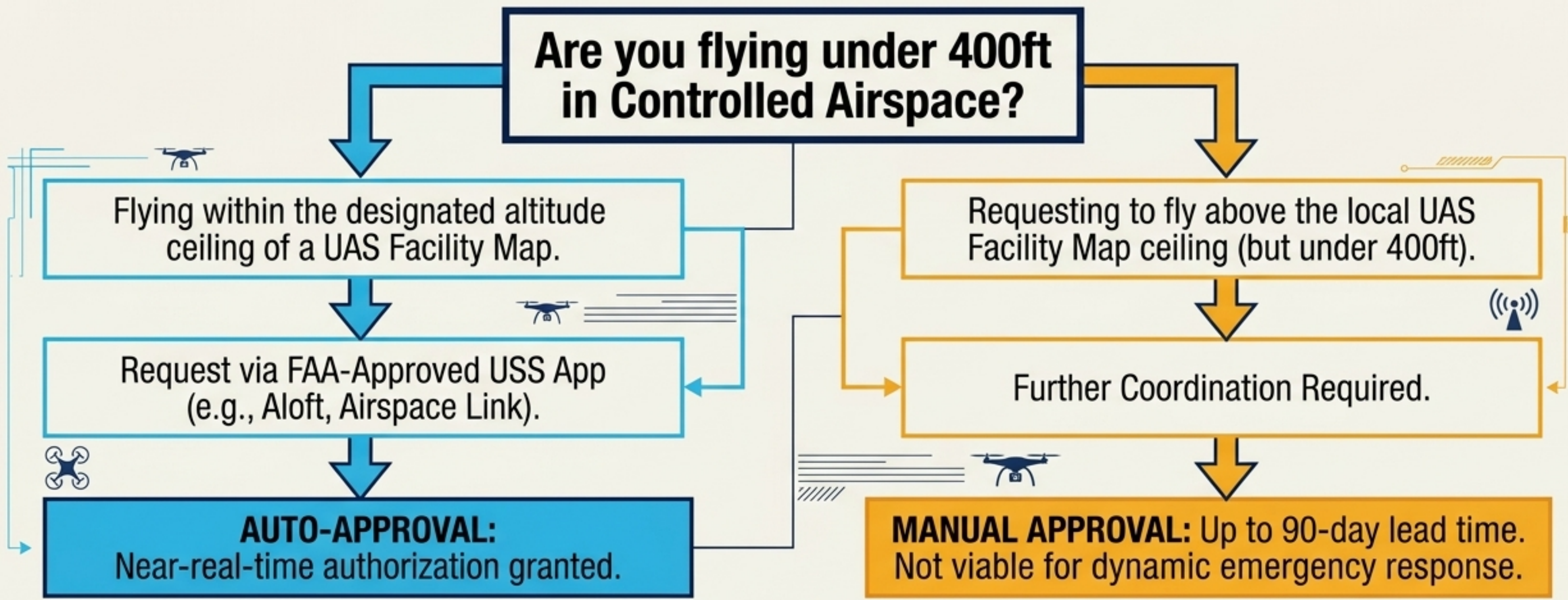
One-Click Confirmation by Operator

Drone Launches

Result: Sub-60 second deployment.

Seamless system triggers dictate response time, not the drone's top speed.

DEMYSTIFYING LAANC (Low Altitude Authorization and Notification Capability)

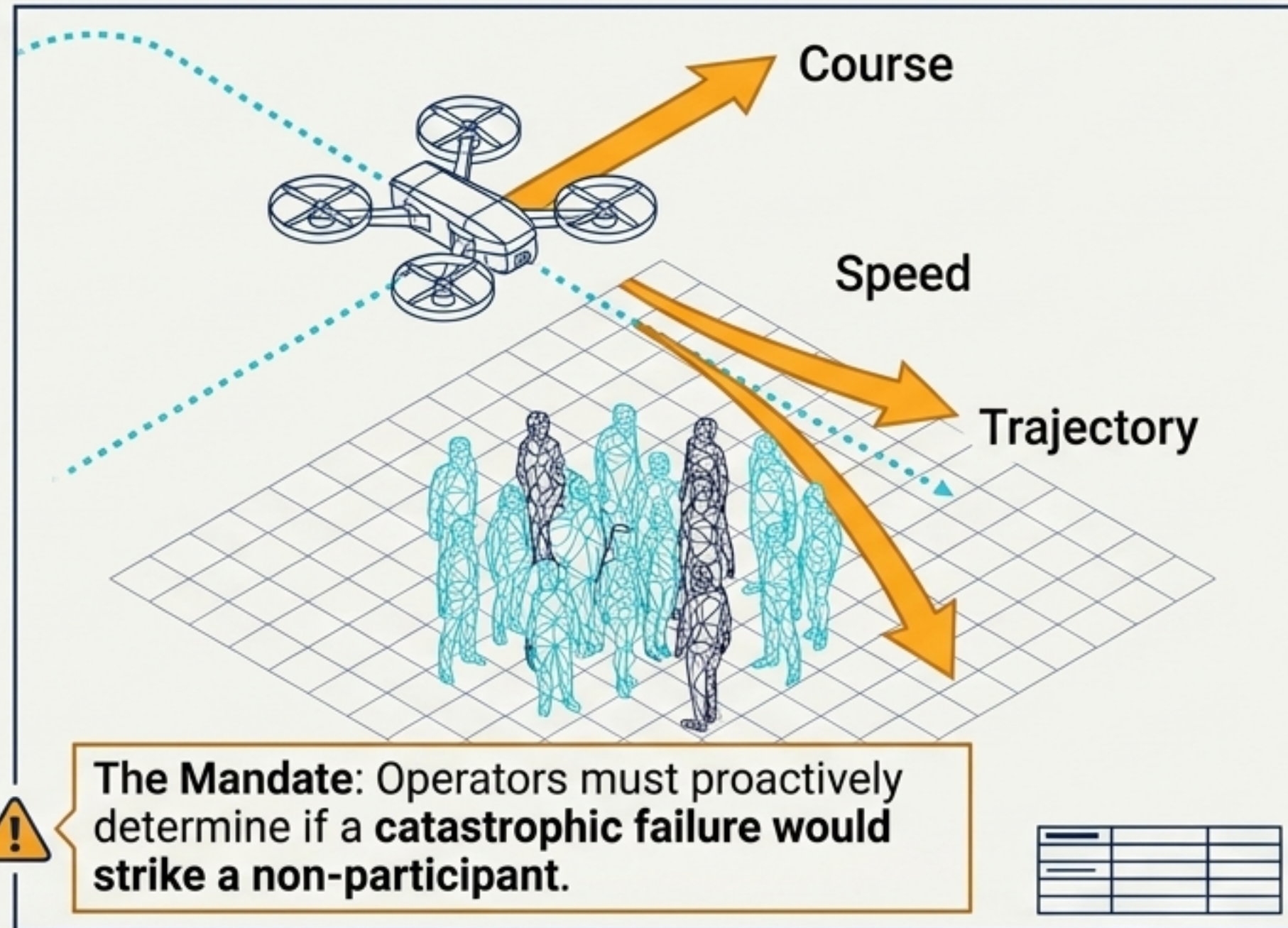


LAANC provides airspace authorization only. Pilots must still manually check NOTAMs, TFRs, and local weather before launch.

THE REGULATORY MARATHON: PART 107 WAIVERS EXPLAINED

| The Barrier (Regulation) | The DFR Need | The Waiver Required | The Solution / Mitigation |
|---|--|-----------------------------------|---|
| § 107.31 Visual Line of Sight | Flying drones miles away from the operator. | ⚠ BVLOS | ✓ Shielded operations, ADS-B integration, visual observer networks. |
| § 107.29 Operation at Night | 24/7 Response capability. | Night Ops | ✓ Anti-collision lighting visible for 3 statute miles + updated pilot training. |
| § 107.39 Operation over human beings | Flying over urban campuses and dense cities. | OOP ⚠ (Operations Over People) | ✓ Category compliance, parachute recovery systems, specific risk assessments. |

OPERATIONS OVER PEOPLE (OOP) - THE MANDATE



Required Mitigation Checklist

- Ensure no operation occurs over non-participants unless they are under a covered structure or inside a stationary vehicle.
- Pose no undue hazard to aircraft, people, or property in the event of a total loss of control (§ 107.19).
- Avoid careless or reckless operations (§ 107.23).

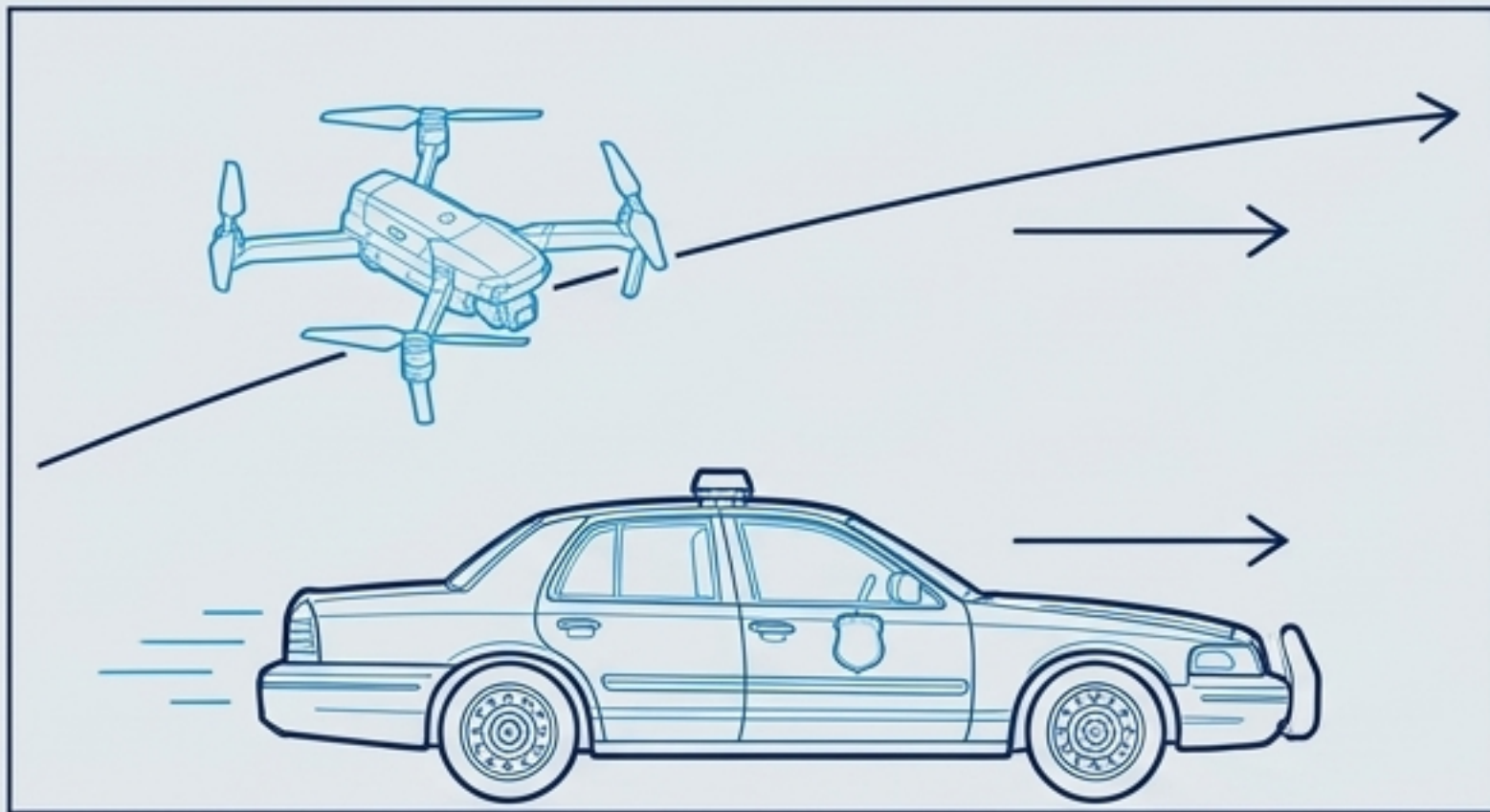
ACTION RULE: If remote pilots cannot guarantee these three conditions, the flight must not launch, or must be immediately terminated.

THE OOP CATEGORY MATRIX

| Category 1 | Category 2 | Category 3 | Category 4 |
|---|---|--|---|
| <p>Weight: ≤ 0.55 lbs total.</p> <p>Laceration Risk: No exposed rotating parts.</p> <p>Open-Air Assemblies: Allowed only with Remote ID.</p> | <p>Weight: > 0.55 lbs allowed.</p> <p>Requirement: Performance-based eligibility.</p> <p>Open-Air Assemblies: Sustained flight prohibited without Remote ID.</p> | <p>Weight: > 0.55 lbs allowed.</p> <p>Requirement: Performance-based eligibility.</p> <p>Open-Air Assemblies: NEVER allowed. Must be a restricted-access site OR no sustained flight over non-participants.</p> | <p>Requirement: Possesses a Part 21 Airworthiness Certificate.</p> <p>Operations: Must adhere strictly to approved Flight Manual limitations.</p> |

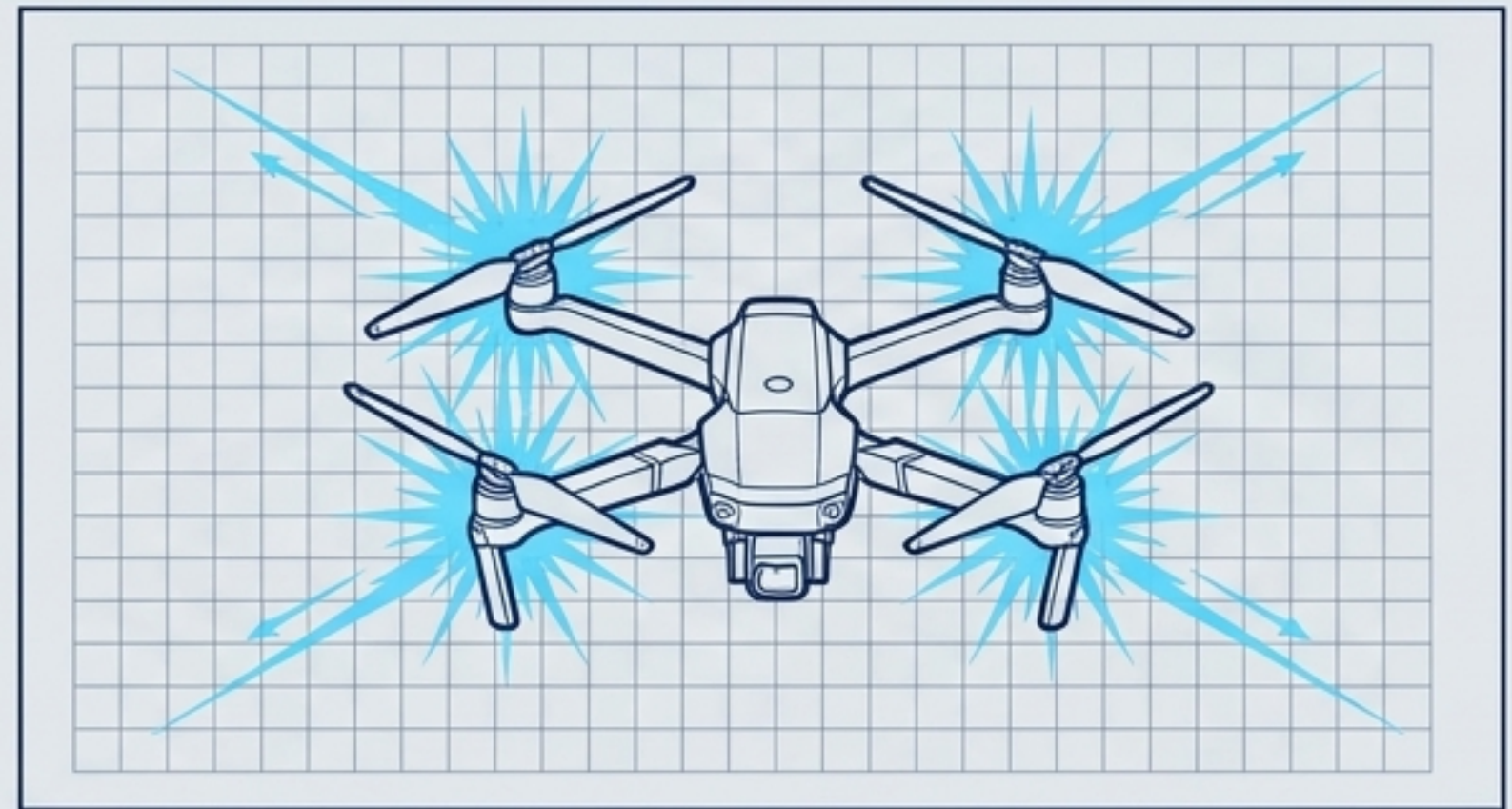
DEFINITION: "Sustained Flight" = Hovering, flying back and forth, or circling above heads. Brief, incidental transiting is exempt.

OPERATIONAL EDGE CASES: MOVING VEHICLES & NIGHT OPS



Rules for Moving Vehicles

- Must meet Category 1, 2, or 3 requirements.
- **Condition A: Confined to a closed/restricted site** where all people inside vehicles are on notice.
OR
- **Condition B: The drone does NOT maintain sustained flight** over the moving vehicles.



Rules for Night Operations

- **Routine night ops allowed without waivers** IF two conditions are met:
 1. Pilot **completed updated initial knowledge test or online recurrent training.**
 2. Drone is equipped with **lighted anti-collision lighting visible for at least 3 statute miles** with a sufficient flash rate.

BUILDING THE SAFETY EXPLANATION

Operational Details

Exact latitude/longitude, max altitude AGL, airspace classifications within 5 miles, and population density mapping.

UAS Details

Power source, max speed/range, geo-fencing containment methods, flight termination switches, and payload security (e.g., parachutes).

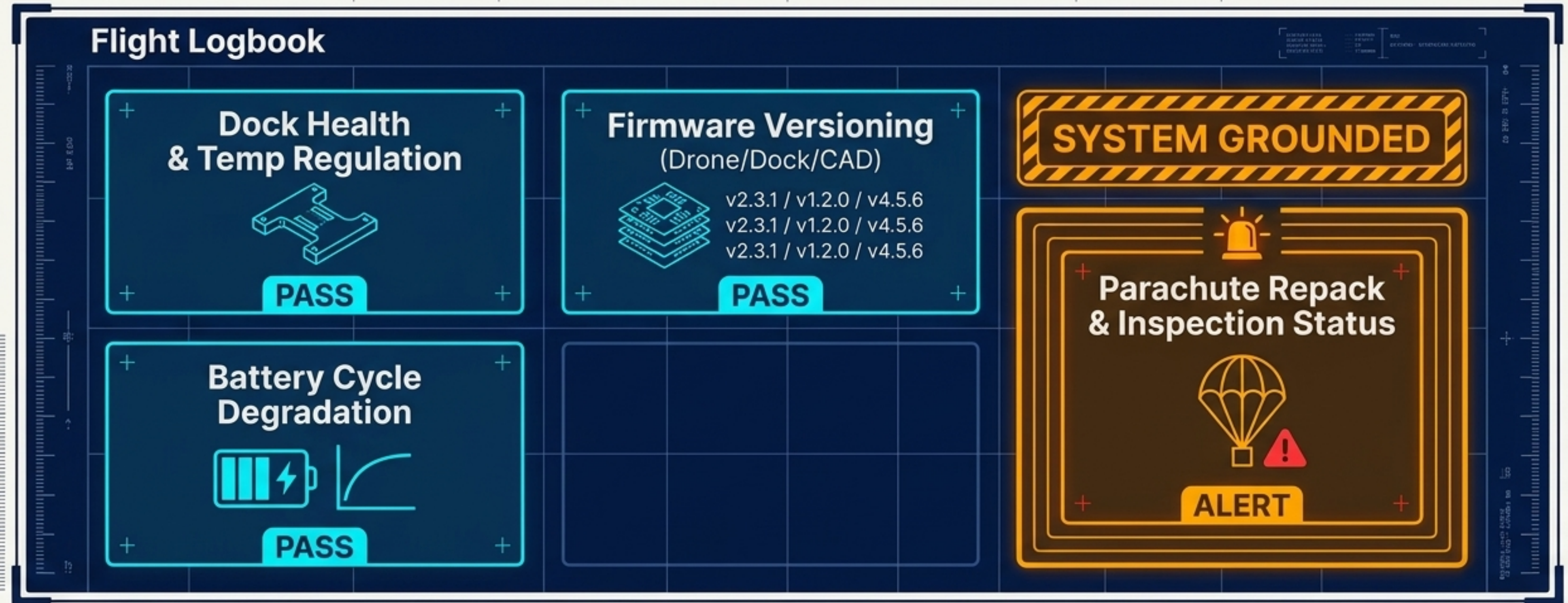
Personnel Details

Remote PIC experience minimums, visual observer training protocols, recurrent testing, and competence verification.

Approved Waiver

Key Insight: The FAA needs proactive risk identification paired with ironclad mitigations, not just a request.

ONGOING OPERATIONS: THE MAINTENANCE TRAP



REALITY CHECK

The Daily Grind: One airspace violation or one missed maintenance entry in the logs grounds the entire multi-million dollar program. DFR is an aviation operation, not an IT deployment.

GOVERNANCE: PUBLIC TRUST & PRIVACY

The Campus Complexity: Campuses are denser, younger, and more skeptical of continuous surveillance than municipal city grids.

Tactical Capability



- **Thermal imaging** deployment.



- **30-second** automated response.



- **Over-the-horizon** remote viewing.



Public Transparency



- **Defined Use Cases:** Emergency response and search only. Explicitly NO routine surveillance.



- **Event-Tied Flights:** Every flight must be documented and tied to a specific public safety need or CAD event.

The Unanswered Questions

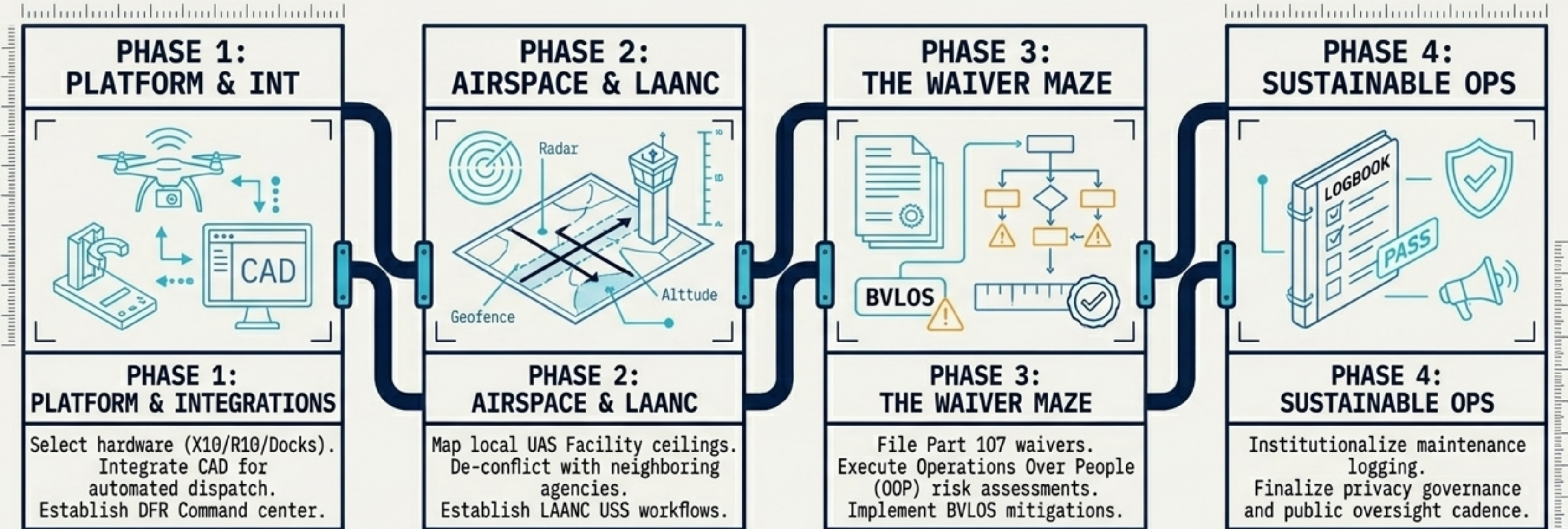
Who reviews the logs?

What is the review cadence?

Does the community have visibility into the oversight architecture?

Documenting is the floor; transparent auditing is the ceiling.

THE DFR MATURITY BLUEPRINT



DFR IS AN AVIATION OPERATION. THE WINNERS ARE THE AGENCIES THAT TREAT IT LIKE ONE.