Airborne C-UAS Solutions

# DETECT.
# DECIDE.
# DEFEAT.

Proven airborne sensor and interceptor systems deliver persistent counter-UAS capability beyond the reach of ground-based systems.

ALPINE EAGLE

# Why Airbone Counter-UAS?

Ground-based C-UAS radar systems are inherently constrained by line-of-sight limitations shaped by terrain geometry. In complex terrain, variations in elevation, obstacles, and surface contours introduce coverage gaps, creating blind zones where drone threats can approach undetected.

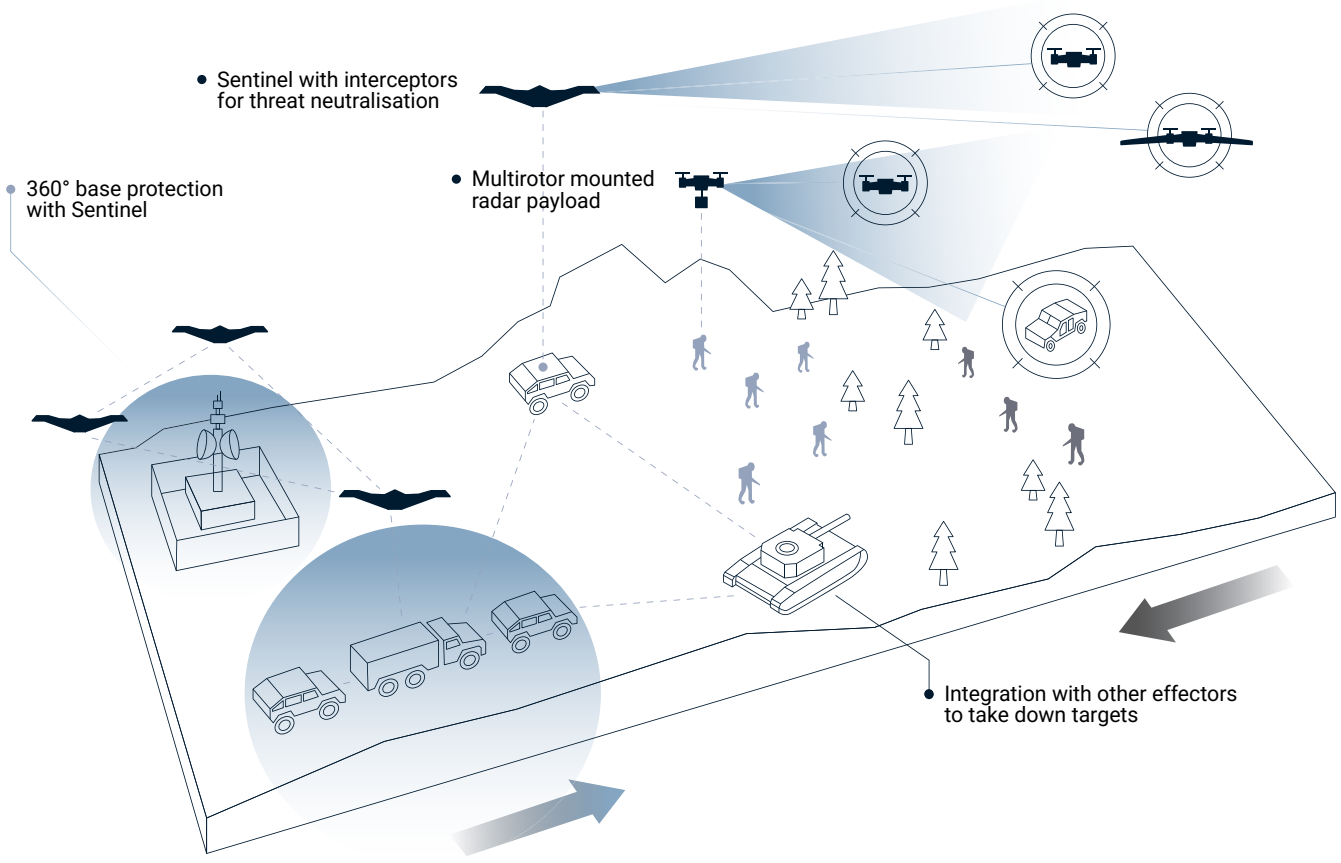
**Ground-Based Limitations**

- Limited line-of-sight in complex terrain; cannot detect drones in terrain-masked corridors at low altitude
- Insufficient mobility for rapid force movements; fixed positions create predictable defensive gaps
- Vulnerable to swarm tactics and electronic warfare

**The Alpine Eagle Solution**

- Eliminates terrain masking through altitude advantage, providing beyond-line-of-sight (BLOS) detection
- Rapid deployment: <2 minutes from flight case to combat by a single soldier
- Operates in GNSS-denied and EW-contested environments
- Repositionable ahead of the FLOT on demand

**Without airborne capability, ground-based radar cannot detect drones operating beyond terrain geometry limitations that traditional systems have. Alpine Eagle extends defensive coverage into previously blind zones and grants detection access ahead ofthe FLOT (Forward Line Of Troops).**



# The Sentinel Family

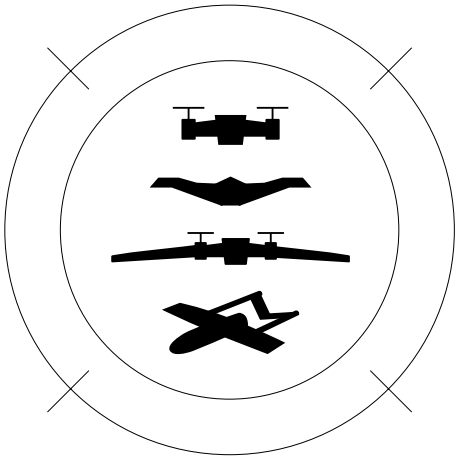
A modular airborne C-UAS ecosystem operating under unified command via Sentinel-OS with SAPIENT compliance for seamless NATO integration.

**Introducing Sentinel – A Unified C-UAS Ecosystem**

- Field-proven modular architecture that scales from a single soldier-deployed node to a full swarm
- Powered by Sentinel-OS, an intelligent software backbone that is hardware agnostic and future-proof.
- Not a single product; it is an infrastructure of interchangeable building blocks; each tailored to mission requirements.

**Scale Up Defense: Modular, Smart, Proven Swarms**

- Swarm operation by a single operator
- Ability to navigate and communicate in denied environments via INS and VNSS capabilities
- AI tactics trained based on data collection in operation



- Sensor fusion using AI
- Sensor Processing on the Edge, GPU onboard
- Semi-autonomous execution of counter-drone missions
- Fixed wing and multirotor networked variants for different mission profiles

| PLATFORM | TYPE | ENDURANCE | DETECTION | KEY CAPABILITY |
|---|---|---|---|---|
| **Sentinel Sentry** | Multirotor | 70 min | 1–2 km | Rapid deploy, Fiber-optic and Kamikaze drone detection, for the ground-air littoral |
| **Sentinel** | VTOL Fixed-Wing | 2.5 hours | 1–2.5 km | Rapid deploy, Long endurance, swapable payloads, 108 km range, 4,000m ASL |
| **Sparrowhawk** | Air-Launched Interceptor | 10 min | 500+ m | 60 m/s, visual homing, proportional navigation, remote abort |

**System Integration**

- Mesh SDR radios: self-healing network supporting multiple nodes with dynamic frequency hopping and dual-band capability (S, S+L, or S+C band)
- Sentinel-OS: single-operator, single-screen control for multi-platform swarms with drag-and-drop mission planning
- SAPIENT-compliant messaging natively integrates with (A)TAK, Sitaware, Delta, and other third-party C2 and BMS platforms
- Modular payloads interchange without airframe modification; field swapable for rapid mission adaptation

# Sentinel Sentry — Multirotor Platform

| PARAMETER | SPECIFICATION |
|---|---|
| **Type** | Multirotor |
| **Maximum Takeoff Weight** | 12 kg |
| **Flight Time** | 70+ minutes with payload |
| **Maximum Speed** | 20 m/s |
| **Wind Resistance** | 11 m/s continuous |
| **Operating Range** | Minimum 10 km; extendable to 30km with antenna config |
| **Operating Temperature** | -20°C to +55°C |
| **Flight Control** | Pixhawk v6+ compatible autopilot |
| **Companion Computer** | NVIDIA Jetson Orin NX (100+ TOPS AI, 16GB RAM) |
| **Radar Payload** | Alpine Eagle K-band radar |
| **Communications** | Silvus StreamCaster 5200 (S, S+L, or S+C band) |
| **Navigation** | Dual-redundant GPS with Day VINS (Visual Inertial Navigation System) option |
| **Altitude Sensor** | 1D LiDAR |

# Sentinel
# — VTOL Fixed-Wing Platform

| PARAMETER | SPECIFICATION |
|---|---|
| **Type** | VTOL Fixed-Wing |
| **Wingspan** | 269 cm |
| **Flight Time** | Up to 2.5 hours; 90 minutes on mission time |
| **Cruise Speed** | 20 m/s |
| **Maximum Altitude** | 4000m ASL; Recommended operation up to 2500m ASL |
| **Wind Resistance** | 10 m/s |
| **Operational Range** | 108 km |
| **Payload Options** | Radar, EO/IR, Interceptor |
| **Environmental Rating** | Light rain and snow (drizzle); -20°C to +45°C |
| **Communications** | Silvus mesh network integration |

# Sparrowhawk — Air-Launched Interceptor


| PARAMETER | SPECIFICATION |
|---|---|
| **Airframe** | Air-launched |
| **Maximum Velocity** | 60 m/s |
| **Operational Velocity** | 45-60 m/s (intercept range) |
| **Maximum Flight Time** | 10 minutes |
| **Launch Method** | Interceptor Deployment Payload for Sentinel |
| **Detection Range** | 500+ meters (optimal conditions) |
| **Guidance** | Radar handoff + proportional navigation + visual homing |
| **Terminal Phase** | Within 500 meters (visual acquisition to intercept) |
| **Engagement** | Impact detonation with optional remote abort |
| **Telemetry** | Telemetry Link |
| **Failsafe** | Disarm, abort, and/or self detonation mechanisms: Fighter on the loop design |

# Sensor Payloads

**K-Band Radar**

- 120° azimuth × 80° elevation; software-defined beam steering; 10 Hz update rate
- CNN-based UAV detector with proprietary ground clutter filtering, processed on-edge

**NextVision Raptor 360 EO/IR**

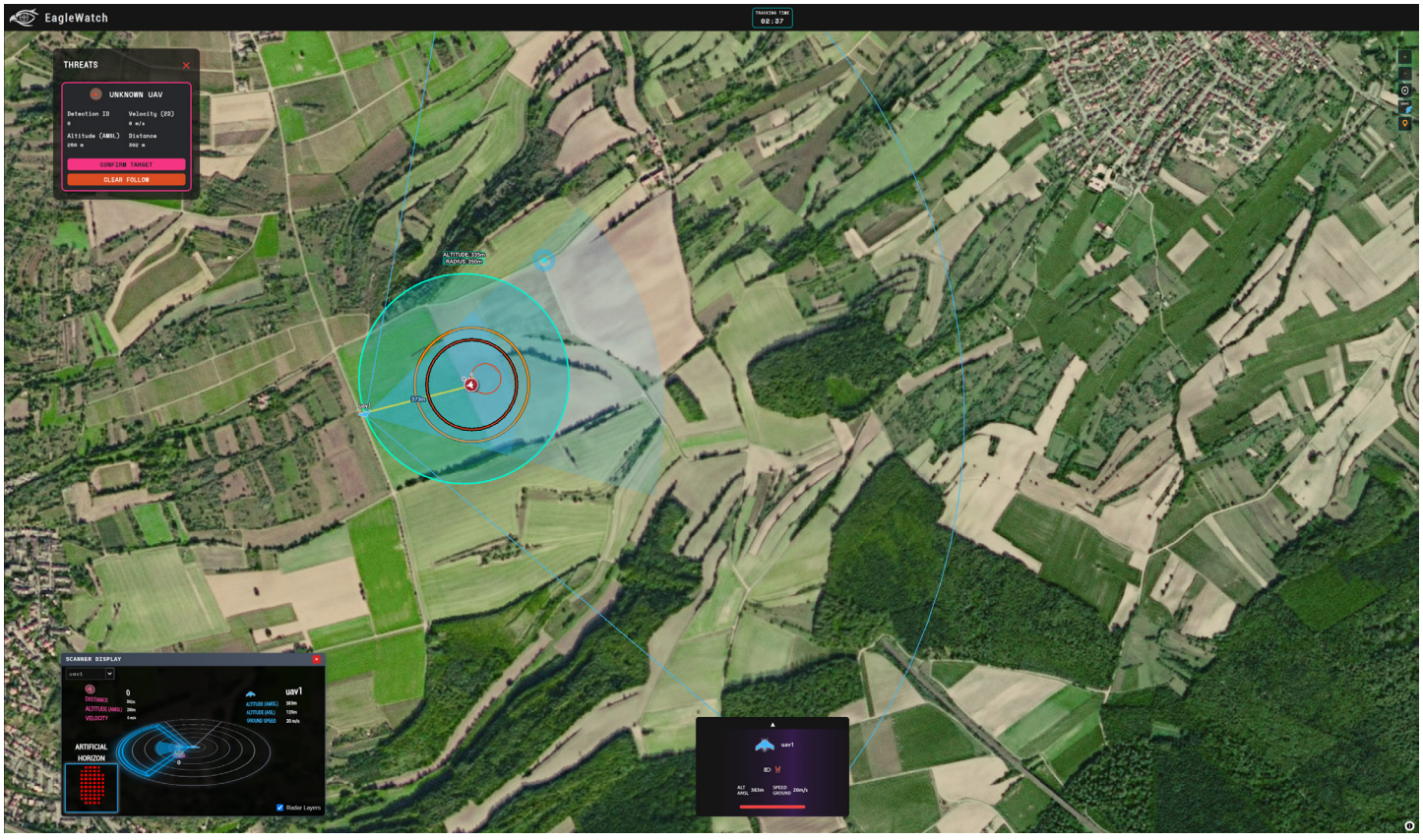
- 1920x1080p 80× zoom (40× optical + 2× digital); 1280×720p thermal; 360° continuous rotation
- Day/night operations for visual ID, battle damage assessment, persistent surveillance

# Sentinel OS

Sentinel OS is the unifying software suite powering every product and sensor in the Sentinel c-UAS network, processing on the edge, amplifying every mission, and ensuring the operator always has the decisive edge via the Eagle Watch UX.

**Eagle Watch UX**

- Single-operator swarm C2 with drag-and-drop mission planning and real-time radar overlay
- Autonomous threat detection with human-in-the-loop engagement authority
- Rugged laptop and body-worn GCS variants; Windows 10/11 and Linux compatible



# Military Impact

- **Earlier FPV detection:** 1–2.5 km fused range extending into terrain-masked corridors invisible to ground-based systems
- **Multi-source track confidence:** ground radar cueing + airborne radar refinement + EO/IR visual confirmation
- **Scalable response:** supports simultaneous operation of multiple carrier platforms, with expandable deployments that increase coverage area and enable detection of multiple concurrent drone threats.
- **NATO interoperability:** SAPIENT-native, no special middleware required for multi-national employment
- **Contested environment:** self-healing mesh, GNSS-denied navigation via proprietay Inertial+VNSS, encrypted comms with dynamic frequency hopping

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