

Secure Beyond-Line-of-Sight SATCOM for UAV Swarm Operations

Extending secure command, telemetry, imagery and video beyond line-of-sight —
for autonomous UAV missions.

Modern tactical UAV missions increasingly operate beyond the range of traditional line-of-sight radio links. Operators require resilient command-and-control, telemetry and mission-data connectivity throughout every phase of flight — while minimising payload weight, power consumption and satellite bandwidth.



THE CHALLENGE

Line-of-sight ends before the mission does

- ▶ LOS radio limits operational range and mission flexibility.
- ▶ Conventional airborne SATCOM terminals are often too large, heavy and power-hungry for tactical UAVs.
- ▶ Managing multiple UAVs simultaneously consumes significant communications resources.
- ▶ Mission phases require different communications profiles — from low-rate telemetry to high-rate imagery and video.

The HiSKY solution

HiSKY integrates a compact low-SWaP Ku/Ka-band satellite terminal directly into tactical UAV platforms, enabling secure beyond-line-of-sight communications over commercial GEO satellites. Multiple UAVs share a common TDMA satellite resource for command-and-control and telemetry. When a platform requires imagery or live video, Space Control dynamically allocates a dedicated satellite channel — and automatically returns the UAV to the shared pool afterwards. Maximum satellite efficiency, scalable swarm operations, over a private, sovereign network.

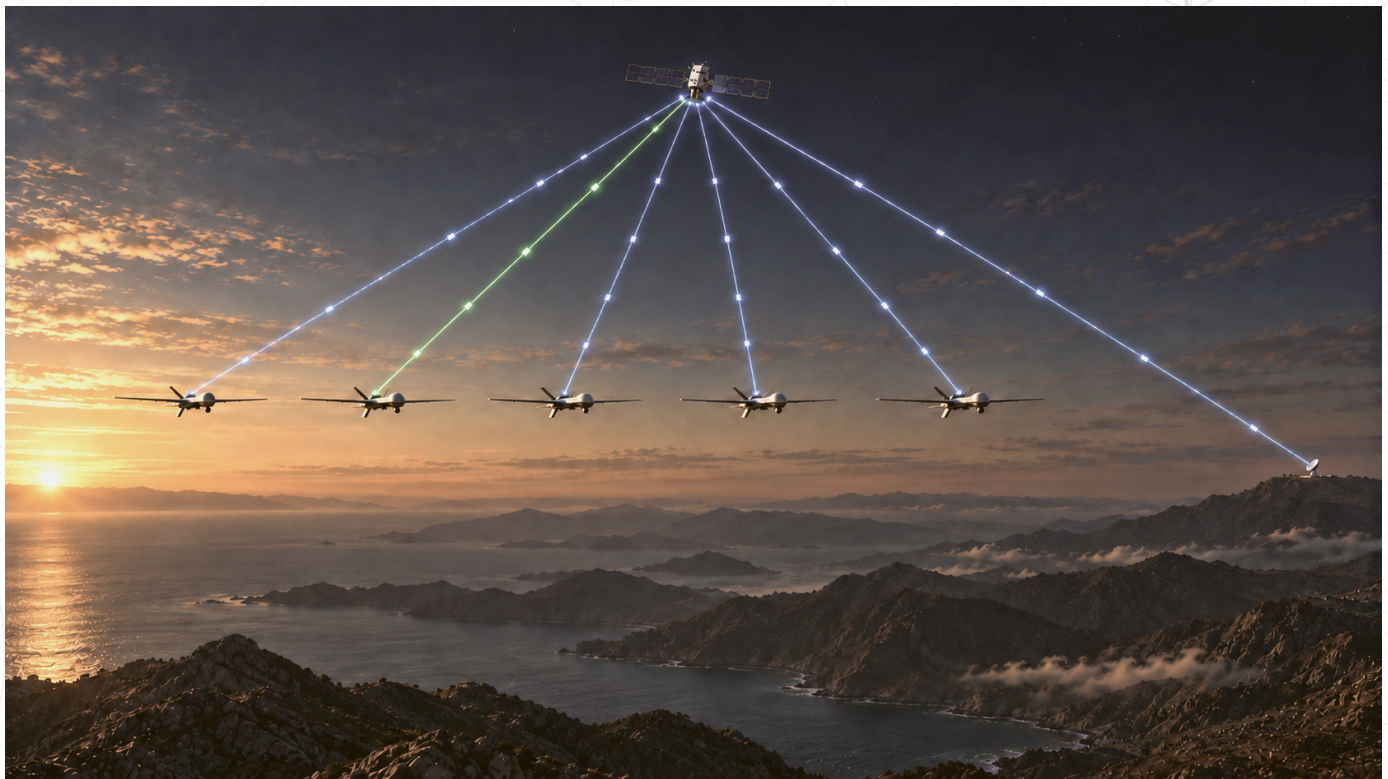
Terminal — Dynamic Ka/Ku terminal

Service tier — Ka/Ku-band; Layer-3/2 IP service

Deployment — Embedded onboard tactical UAV

SYSTEM ARCHITECTURE

One satellite resource, shared by the whole swarm



How it works — each UAV carries an embedded low-SWaP Ka/Ku terminal. Command-and-control and telemetry ride a shared TDMA pool over the GEO satellite; when a platform needs imagery or live video, Space Control (NMS) allocates it a dedicated channel and returns it to the pool afterwards. Everything lands at the HiSKY HUB on the customer's private network.

WHY HiSKY

Built for the swarm, not the single aircraft

► Low-SWaP satellite terminal

Optimised for tactical UAV platforms — payload weight and power stay within the airframe's budget.

► Efficient swarm management

Multiple UAVs on one shared TDMA satellite resource, coordinated centrally.

► Integrated Space Control (NMS)

Mission and network management in one system, from channel allocation to terminal health.

► Dynamic bandwidth allocation

Capacity follows the mission phase: a shared pool for C2 and telemetry, a dedicated channel for imagery and live video.

► Secure private satellite network

Fully controlled by the customer — sovereign, not a shared commercial service.

► Selected over LOS radio and relay platforms

LOS solutions restricted range; conventional SATCOM could not combine low SWaP, swarm management and dynamic bandwidth allocation.

RESULTS & VALUE DELIVERED

Before and after HiSKY

CATEGORY	BEFORE HiSKY	AFTER HiSKY
Connectivity	LOS-limited	Persistent BLOS satellite connectivity
UAV management	Independent links	Centralised swarm management
Bandwidth	Static allocation	Dynamic mission-based allocation
Mission data	Limited imagery/video	Telemetry, imagery and live video
Business outcome	Restricted mission reach	Extended operational range and resilient C2

WHY HiSKY — COMPETITIVE CONTEXT

Selection criteria

The customer evaluated LOS radio systems, airborne relay platforms and conventional SATCOM terminals. LOS solutions restricted operational range, while traditional SATCOM systems could not provide the required combination of low SWaP, swarm management and dynamic bandwidth allocation. HiSKY was selected for its integrated end-to-end architecture, private satellite network and operational flexibility.

CRITERION	WEIGHTING	HiSKY SCORE
Low SWaP	High	★★★★★
BLOS connectivity	High	★★★★★
Swarm management	High	★★★★★
Dynamic bandwidth allocation	High	★★★★★
Private network	High	★★★★★

DEPLOYMENT SNAPSHOT

What is fielded

SITES / TERMINALS

Multiple tactical UAVs with embedded Dynamic Ku/Ka terminals

CONNECTIVITY

GEO satellite

INSTALLATION / INTEGRATION

Mechanical integration, flight computer, EO/IR payload, mission computer, inertial system and AI processors

MANAGEMENT

Space Control (NMS)

REFERENCE STATUS

Restricted

PRODUCTS

HiSKY Dynamic Ka/Ku terminal, HiSKY HUB, Space Control (NMS)

REPLICATION POTENTIAL

Addressable prospect profile

Applicable to military UAV operators, special forces, border-security agencies and autonomous ISR programmes requiring secure beyond-line-of-sight communications for command-and-control, telemetry, imagery and video over a private satellite network.

HISKY PRODUCTS IN THIS USE CASE

One sovereign system

TERMINAL

Dynamic Ka/Ku terminal



HUB SYSTEM

HiSKY HUB modem + packet processor



NMS

Space Control Standard / Premium



Full network sovereignty and mission-grade redundancy.