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RFEYE TECHNOLOGY

MODERNIZING EMSO WITH PASSIVE RF TECHNOLOGY

The electromagnetic spectrum (EMS) is now a critical manoeuvre space in which Electronic Warfare (EW) is pervasive. Relying on exquisite capabilities and conducting platform-centric operations is a model that is inconsistent with the modern battlefield. All formations, down to small tactical units now require EMS awareness and EW capabilities—distributed sensor networks in which ‘every soldier is a sensor.’

Traditional EMSO	Modernized EMSO
Exquisite EW capabilities	Resilient, distributed EW architectures
Centralized, platform-centric EW	Distributed sensor networks deployed up to and inside kill zones
Specialized EW units	All arms with EW training
Reactive EW	Persistent sensing and spectrum monitoring
Linear kill chains	Kill webs enabled by distributed sensing
Slow F2T2EA	Accelerated Sensor-to-Shooter cycles
EW conducted in isolation	EW integrated into MDO
Human analysis	Reduced cognitive load with edge processing, advanced filtering techniques, AI, and ML

Modern operational realities require persistent EMS awareness & early RF threat detection

Reality of modern operational environments	EMSO modernization requirement	RFeye technology
Constant drone use	Persistent RF monitoring and geolocation are critical	Passive detection, identification, and geolocation of all UAS RF emissions, including control links, video downlinks, and telemetry signals
GNSS jamming prevalent	Need to detect jammers for targeting	Operate in GNSS-denied environments, and detect and geolocate GNSS jammers in real time for counter-jamming and targeting
Integrating EW speeds up kill chains	Must compress the Sensor-to-Shooter cycle by creating decentralized kill webs	RF data sent in real time to C2 and creation of kill-web architectures for faster decision-making and targeting cycles
Survivability matters	Distributed, mobile, and portable systems for mosaic warfare	Low-SWaP sensors deployed on unmanned and autonomous platforms
Adversaries have fully integrated EMSO	Address NATO capability gaps	COTS technology can be procured and deployed rapidly, and is interoperable with existing systems
Spectrum congestion and risk of fratricide	Spectrum management and AI-assisted detection necessary	Automated spectrum management software to detect red, blue, and green signals within congested spectrum environments while reducing operator workload
Signature management matters	EMCON saves lives	Operators can monitor and their own emissions

RFeye technology provides passive, wide-area RF sensing and is designed to detect, identify, and geolocate both known and unknown threats in real time. By detecting the signal rather than the platform, RFeye technology supports multi-target acquisition, including UAVs, jammers, communications systems, radars, and low-probability-of-intercept signals, providing early warning and greater situational awareness. RFeye software supports detection, capture, signal processing, analysis, and geolocation within a single platform.

Using passive RF technology, forces can detect and monitor RF activity without revealing their own position, supporting operations conducted under EMCON. Highly accurate detector-based 3D TDoA geolocation provides latitude, longitude, and altitude data over time for

targeting workflows. Unlike library-dependent systems, RFeye's detector-based architecture allows operators to build bespoke detectors tailored to specific drones, emitters, and threats.

RFeye Nodes can be deployed in distributed networks across fixed, mobile, dismantled, airborne, and unmanned platforms, enabling wide-area coverage and resilient sensing architectures. Open APIs allow RF data to integrate directly in real time into C2 systems and battle management software for faster decision cycles.

Sensing networks can support multiple missions simultaneously, including spectrum monitoring, border security, A2AD, c-UAS (detection), and Integrated Air and Missile Defense (IAMD).

Key enablers of modernized EMSO



Hardware

- Distributed RF sensors
- Passive sensing
- Edge processing



Deployment options

- Dismounted ESM
- Vehicle-mounted passive EW
- Low SWaP UxS SIGINT payloads



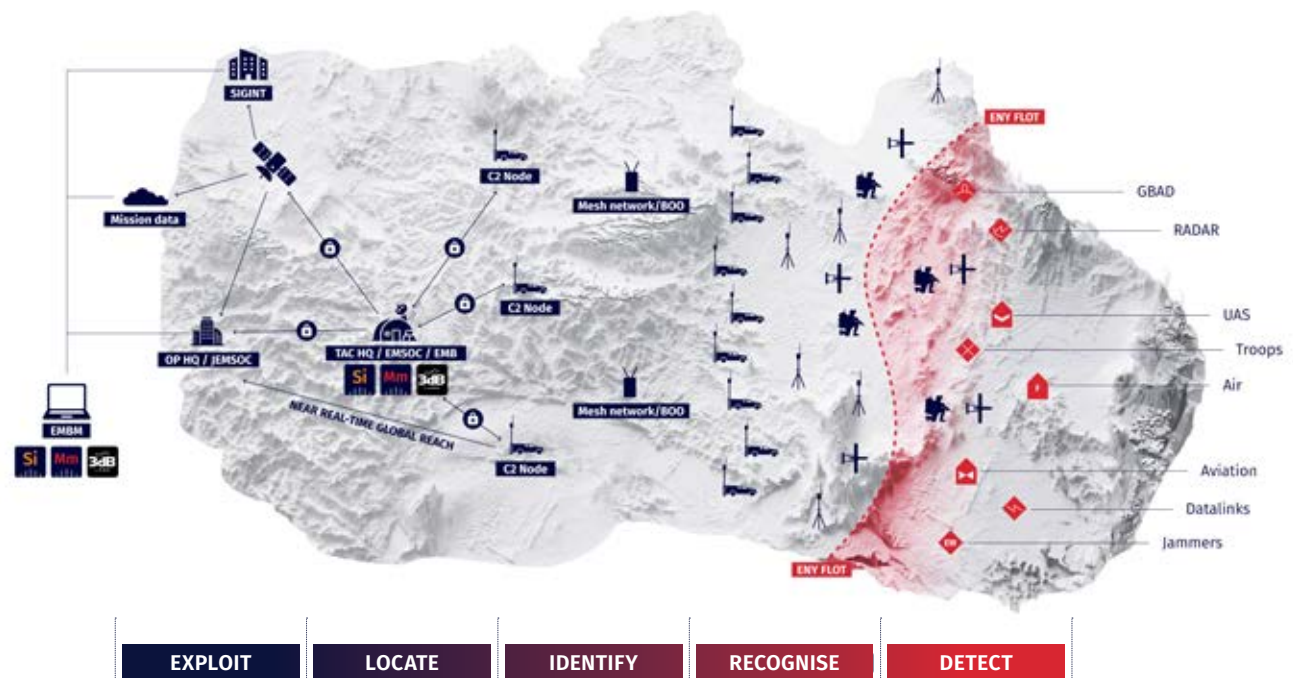
Software

- Advanced 3D TDoA geolocation software
- High fidelity signal classification
- Advanced signal filtering



Comms networks

- Tactical spectrum awareness
- MANET MIMO communications networks
- Self-forming, self-healing, and adaptive mesh networks



RFeye Node

Highly sensitive RF sensors with edge processing (up to 40GHz)



Fixed-wing UAV

Lightweight, low SWaP RF sensor for payload integration



Aerial Monitoring System

Tethered drone (100m mast in 60 seconds)



RFeye Ranger

Operator-portable, lightweight electromagnetic surveillance pack for dismounted EMSO operations



RFeye V-Track

Mobile ESM and C2 platforms

Example EMSO missions



Land operations

An Army section operates at the tactical edge as part of a distributed sensing network. Using portable RF sensors, manpack antennas, tactical radios, rugged devices, a small UAV and a concealed relay vehicle, the team detects, recognises, identifies, and locates enemy radios, UAS links, datalinks, jammers, radars, and command-node emissions. The section passes local intelligence into the wider mesh network, enabling higher headquarters to understand the electromagnetic battlespace and apply EW or operational effects to deny, deceive, disrupt, degrade and manipulate enemy systems before direct contact.



Autonomous collaborative platforms

An all-autonomous collaborative package conducts distributed EW sensing and electronic attack across a contested battlespace. ACPs detect, recognise, identify and locate hostile radars, GBAD systems, jammers, datalinks, UAS links, and command nodes. The force then uses resilient mesh networking, decoys, relay platforms and EW payloads to deny, deceive, disrupt, degrade and manipulate the enemy's electromagnetic systems, enabling commanders to understand, shape, and exploit the battlespace.



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