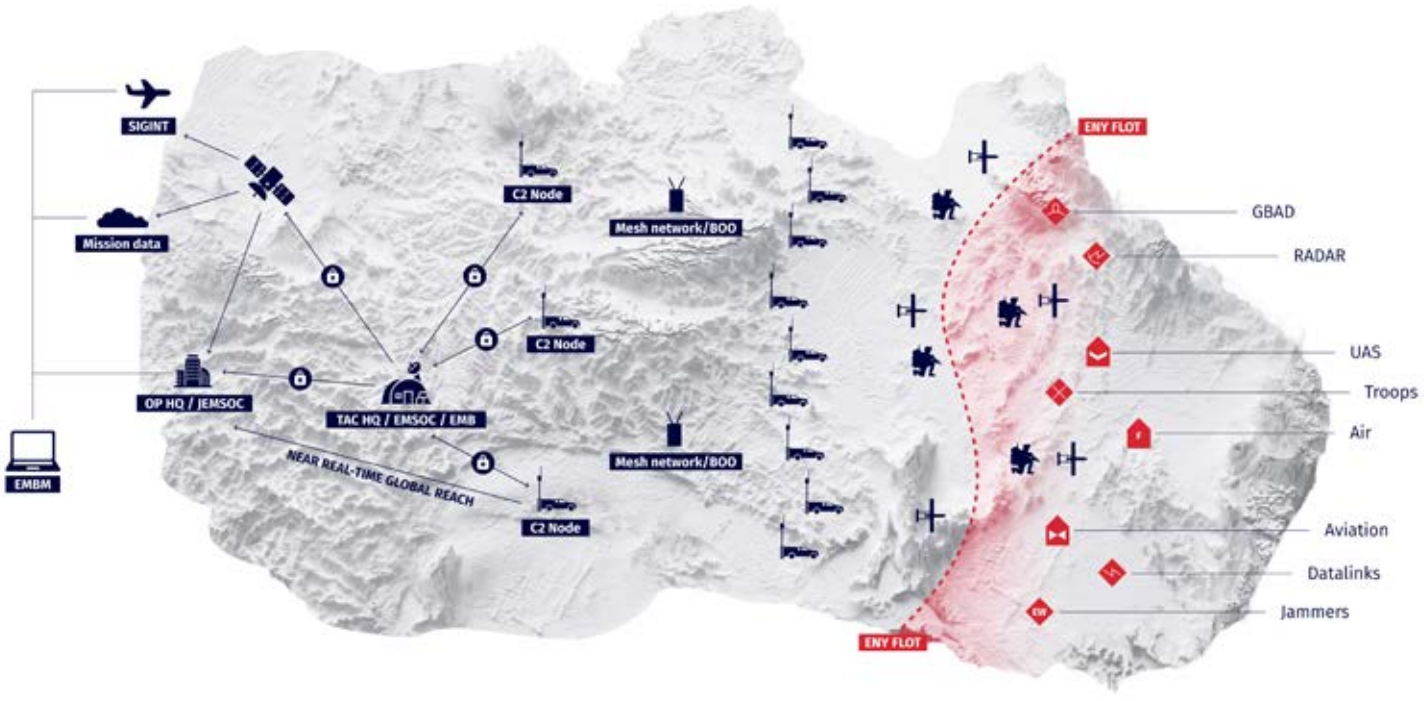
CRFS
a Motorola Solutions Company

EXTRAORDINARY
RF TECHNOLOGY

C4ISR OVERVIEW

INCREASE SITUATIONAL AWARENESS WITH EARLY WARNING RF THREAT DETECTION



Enabling technology

RFeye Node
Highly sensitive RF sensor up to 40GHz

Fixed-wing UAV
Lightweight RF sensor payload integration

RFeye Ranger
Operator-portable sensing for dismounted operations

RFeye V-Track
Mobile ESM and C2

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SIGINT as a foundational layer for modern C4ISR

Modern C4ISR architectures depend on the ability to generate persistent, multi-domain awareness across dynamic and complex operational environments.

RF emissions provide valuable indicators of presence, behaviour, intent, readiness, and operational activity. SIGINT enables commanders and operators to build a clear understanding of the battlespace by providing insights derived from adversary electromagnetic activity.

Distributed RF sensors and advanced software allow adversary electromagnetic activity to become a persistent data source within wider C4ISR ecosystems. SIGINT contributes directly to shared situational awareness by providing data for electronic warfare, cueing other sensors, air defence, counter-UAS operations, maritime domain awareness, and multidomain C2.

Overcoming C4ISR challenges with distributed RF sensing

C4ISR challenge	Distributed RF sensing
Insufficient data and intelligence sharing	Intelligence that can be shared rapidly across C4ISR networks
Difficulty sharing data across classification levels and coalition partners	Flexible network configurations enable RF intelligence to be disseminated across different classification domains and to different partners
Need for Digital Transformation	Integrate directly into software-defined operational environments
Requirement for effective multidomain operations at speed and scale	Distributed RF sensing contributes persistent electromagnetic awareness across land, sea, air, cyber, and unmanned domains.
Gaps in integrated air and missile defence (IAMD) awareness	Early warning, low-altitude surveillance, emitter detection, and tracking of low-signature airborne threats
Increasingly contested electromagnetic environment	Survivable situational awareness under EMCON and EW degradation
Data overload and ISR processing burden	Edge analytics and automated signal detection reduce operator workload
Need for resilient and distributed C4ISR architectures	Distributed sensors connected via resilient MANET create survivable sensing architectures
Requirement to improve operational readiness and decision advantage	Compresses decision cycles
Need to maintain NATO's competitive military edge against peer adversaries	Visibility of adversary electromagnetic activity, enabling earlier detection, improved targeting, and greater situational awareness
Vulnerability of centralised ISR assets and architectures	Scalable, survivable sensing across tactical formations and unmanned systems
Requirement for persistent surveillance and shared awareness	Persistent awareness of signals, UAVs and EW threats across the operational environment

Adding an RF sensor layer to augment NATO SIGINT and EW capabilities

- Distributed sensing architectures
- Edge ISR collection and resilient kill webs
- Decentralised sensing networks
- Every tactical sensor contributes operational data
- Low-cost, attritable mass to complement survivable sophistication

Detect and geolocate red, blue, and green signals of interest

Including low-power, intermittent, frequency-agile, or LPI/LPD signals

Military signals

- Gravestone
- Leer-3
- Flaplid
- R-168 AKVEDUK
- FARA-VR
- BigBird
- Krasukha-4
- Orlan-10
- R-187P1 AZART
- Ten jammer
- Class I/II drones

Civilian/open signals

- AIS Maritime
- DMR radios
- ADS-B
- Class I/II drones
- S-band RADAR
- TACAN
- WiFi
- LoRA
- LTE

NATO signals of interest

- Air defense RADAR
- Radios
- Link-16
- SIGCARS
- Class I/II drones
- CUAS Jammers
- P25 Radios

Enabling data-centric warfare and filling C4ISR capability gaps

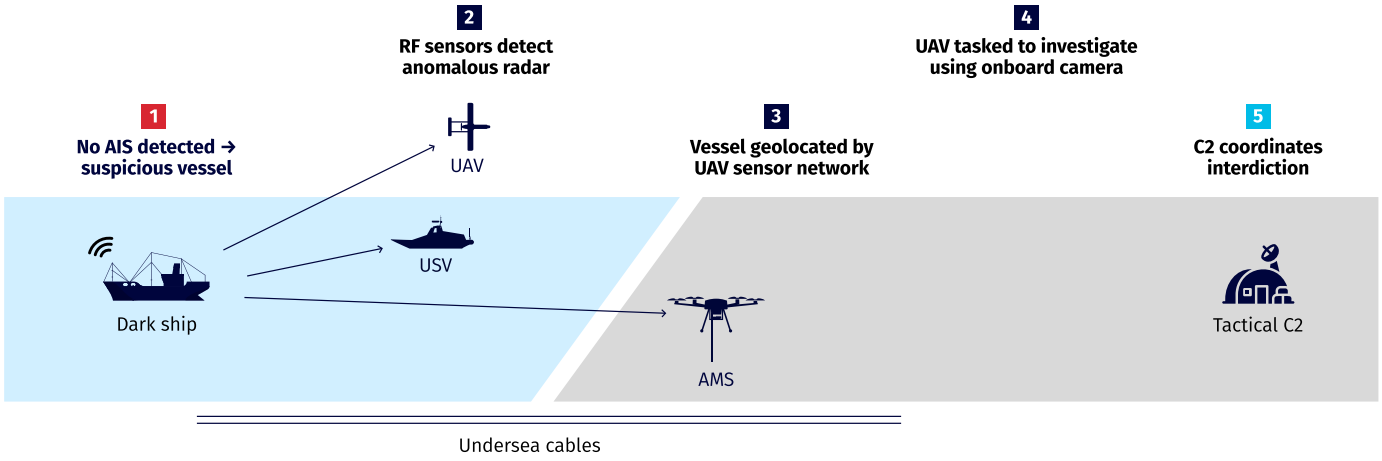
RF sensing software transforms distributed electromagnetic detections into real-time operational intelligence through open architectures, so the software can be seamlessly integrated into C2 systems.

Edge processing enhances efficiency by detecting, classifying, filtering, discovering, and geolocating RF activity at the sensor level before distributing only operationally relevant data across networks. This decreases bandwidth demands, reduces the cognitive load on the operator, improves resilience in degraded or denied environments, and accelerates F2T2EA.

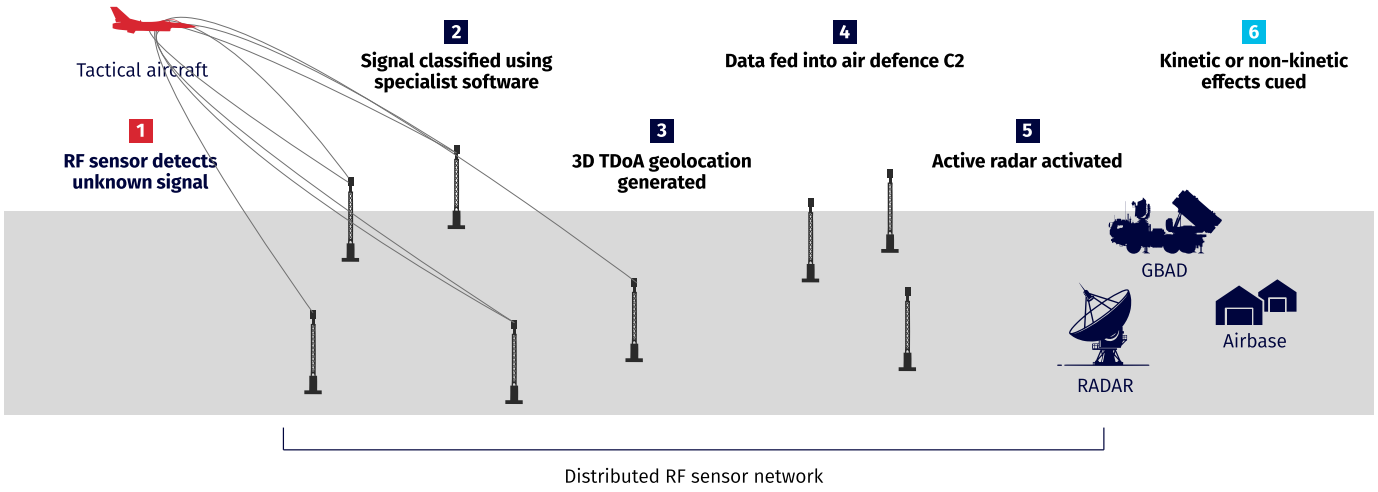
APIs and VITA-49 allow RF data to be shared seamlessly into Battlefield Management Systems and fused with data from other sensors for improved situational awareness, data-driven workflows, and speeds up decision-making.

Interoperable software enables RF sensing to function as an integrated data layer within modern C4ISR ecosystems—supporting data-centric warfare, resilient multidomain operations, and faster, higher-confidence operational decisions.

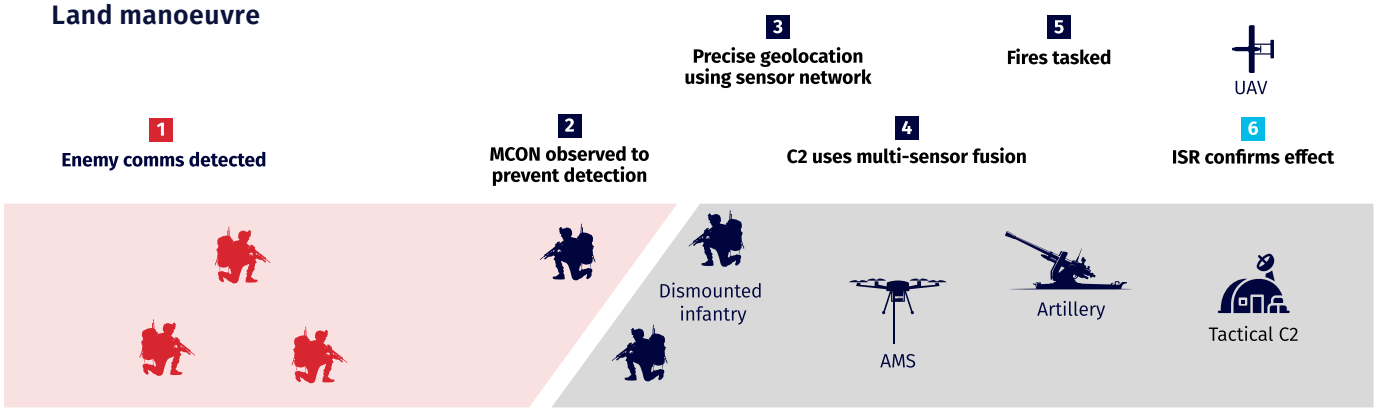
Maritime grey zone operation scenario



Air defense scenario



Land manoeuvre



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