

SIGN4L

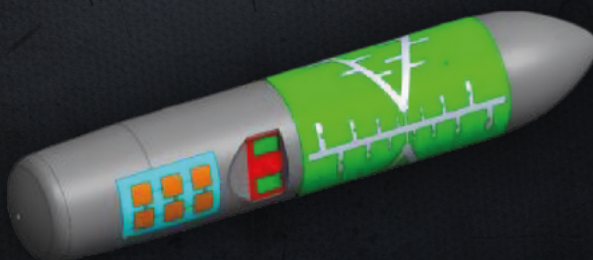


AIRBORNE SAR FOR SURFACE IMAGING

**R351 EXPLORER
AIRPLANE-BORNE
POD SYSTEM**



**R351 EXPLORER
DRONE-BORNE
POD SYSTEM**



WHAT ARE WE DOING



OUR PROJECT

- Drone-borne platform to acquire microwave images of structures on the soil and underground. It can operate day and night, penetrating clouds, fog, and canopy.
- High-resolution images provided in three different channels to reveal different features on the ground and underground.
- Applications: Tomography, environmental applications, agriculture, and security applications



OUR SOLUTION

TECHNICAL SPECIFICATIONS

- P band: 400 – 450 MHz
- L band: 1.2 – 1.35 GHz
- C band: 5.25 – 5.65 GHz
- EIRP: 20 dBm
- Flight segment GNSS Receiver Antenna
- Ground segment GNSS Receiver Antenna

BENEFITS

- Compact and light SAR system
- Millimetric resolution
- Underground SAR tomography
- Minimum training and low cost per flight
- Sovereign capability



CURRENT SYSTEM SPECIFICATIONS

PERFORMANCE PARAMETERS

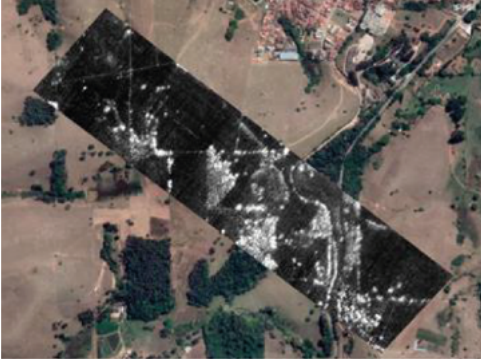
OPERATIONAL PARAMETERS	SPECIFICATIONS
Channels	P band: 400 – 450 MHz L band: 1.2 – 1.35 GHz C band: 5.25 – 5.65 GHz
Flight duration	15 minutes **
Flight altitude	120 m **
Speed survey	7 m/s
Covered area	linear flights: 20 hectares/flight ** helical flights: 1 hectare/flight **
Max distance from the ground station	1 km *
Max distance from the pilot	1.5 km *
Data processing	Offline, post-flight processing
Current Platform	<ul style="list-style-type: none">• ARRC Gryphon HX1600VX-S drone unit• Dimensions: 70 cm X 100cm X 10cm• Weight: 17 kg• Payload: 5.0 kg
Remote Controller	2.400 GHz to 2.483 GHz; 20 dBm EIRP

** Parameters dependent on the current platform

WHO WILL BENEFIT FROM OUR WORK



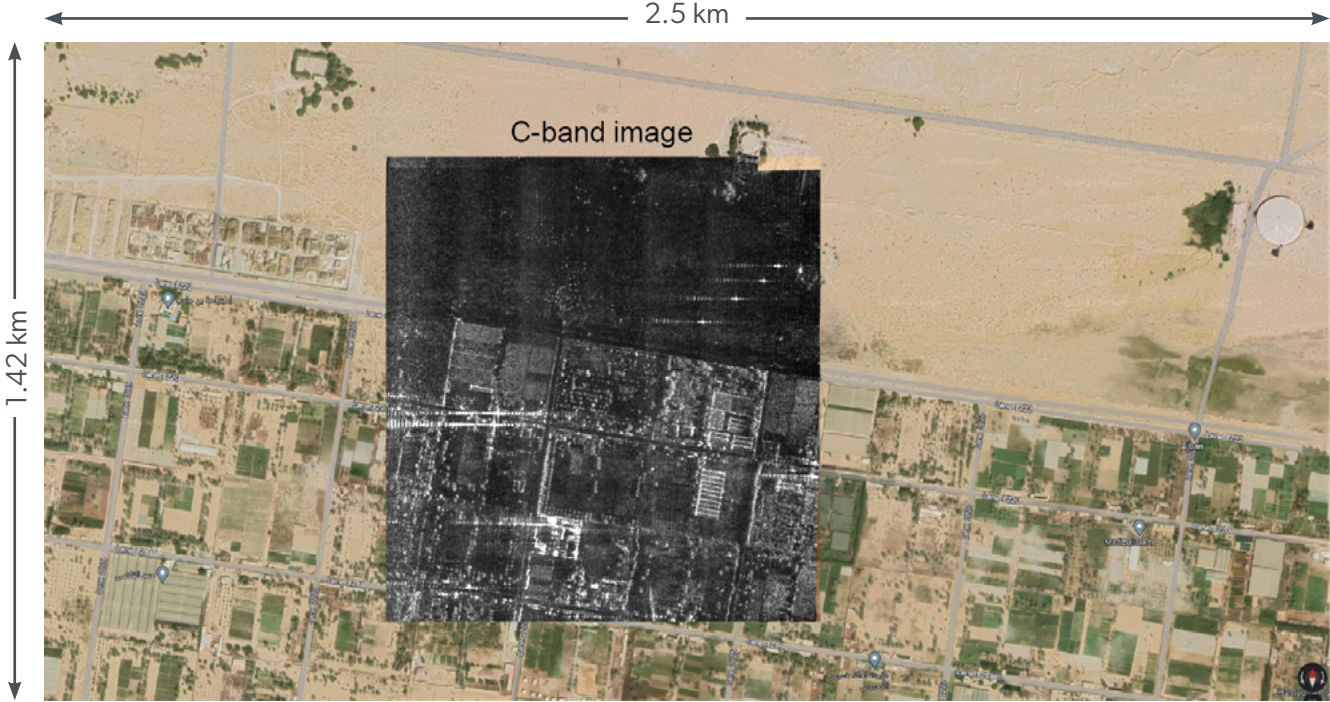
	NON-DESTRUCTIVE INSPECTION & MAPPING	ENVIRONMENTAL APPLICATIONS
USE CASES / APPLICATIONS	<ul style="list-style-type: none">• Underground tomography (tunnels)• Intelligence gathering and reconnaissance• Detection of people and manmade structures under canopy forest• Precision cartography• Water/oil leakage detection• Moving targets detection	<ul style="list-style-type: none">• Monitoring of soil erosion• Monitoring of soil subsidence• Forest monitoring
END USERS	<ul style="list-style-type: none">• Military / Defense• Border protection• Oil & Gas Industry	<ul style="list-style-type: none">• Geology• Natural resources



LATEST HIGHLIGHTS OF OUR WORK

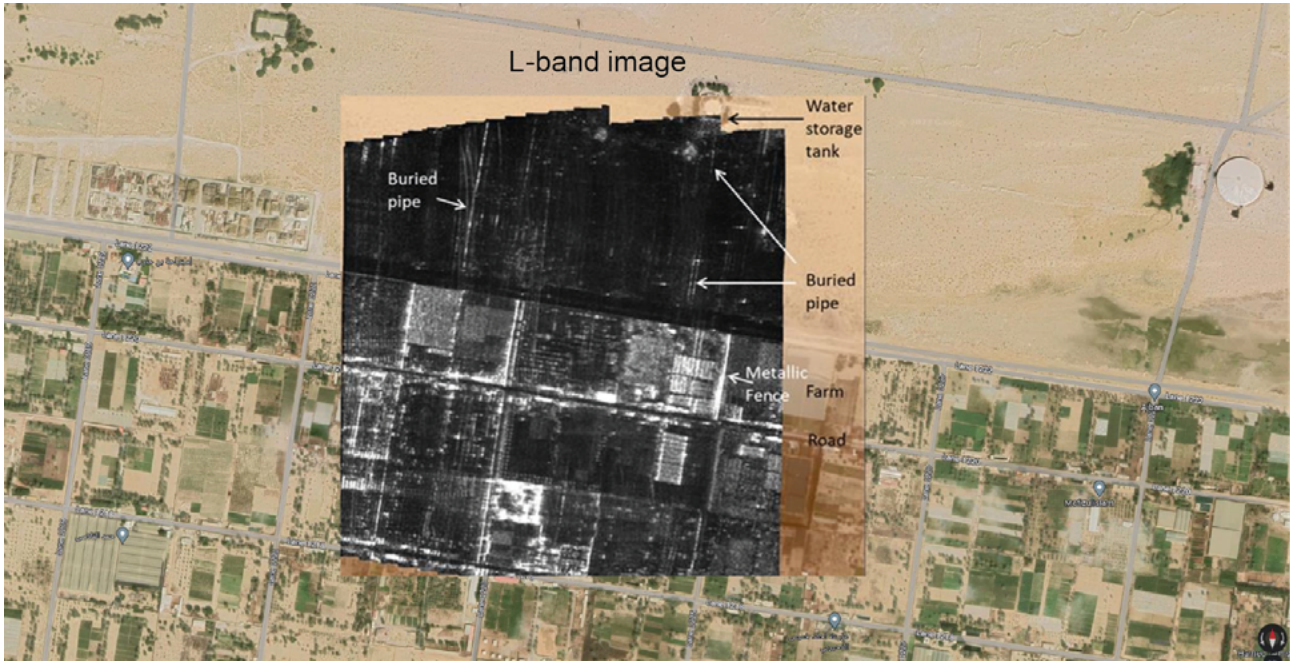


SURFACE MICROWAVE IMAGERY IN C BAND



C-band SAR surface image - location: Ajban Farms - Muwaylih - Abu Dhabi/UAE

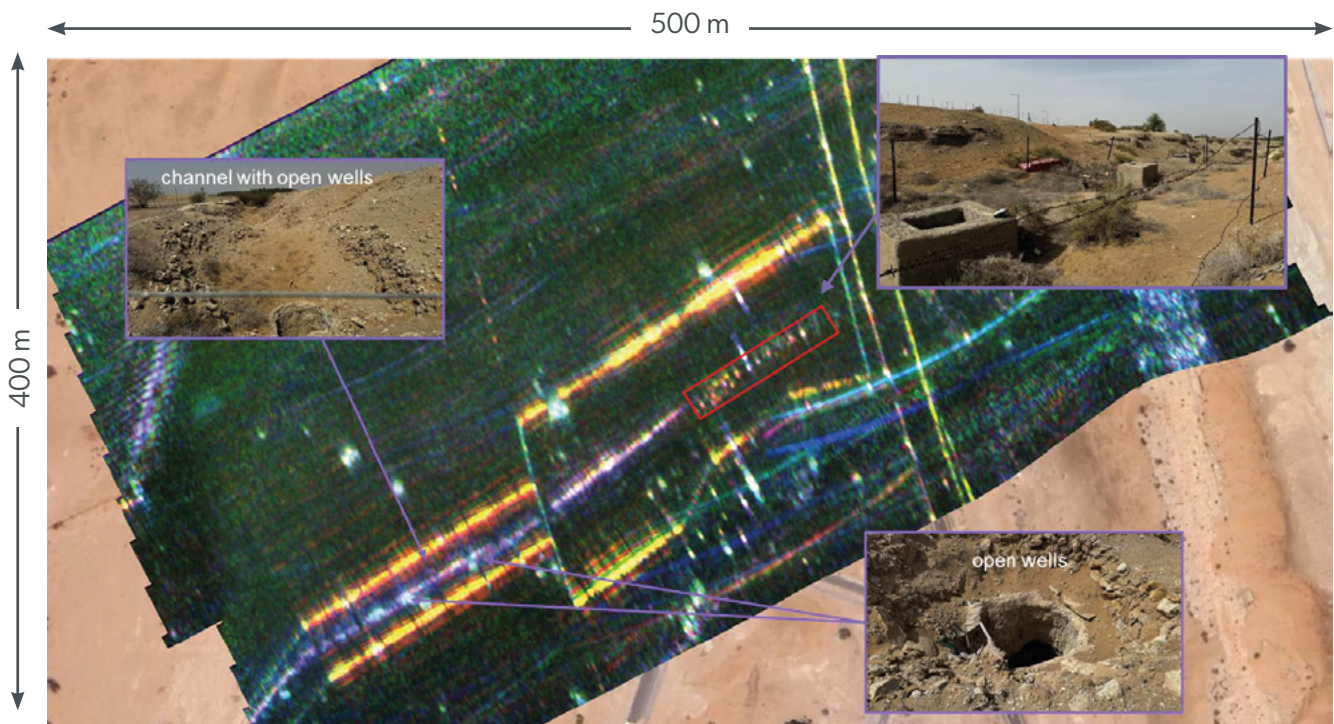
SURFACE MICROWAVE IMAGERY IN L BAND



L-band SAR surface image - location: Ajbán Farms - Muwaylih - Abu Dhabi/UAE

SURFACE MICROWAVE IMAGERY IN L BAND

WELLS DETECTION

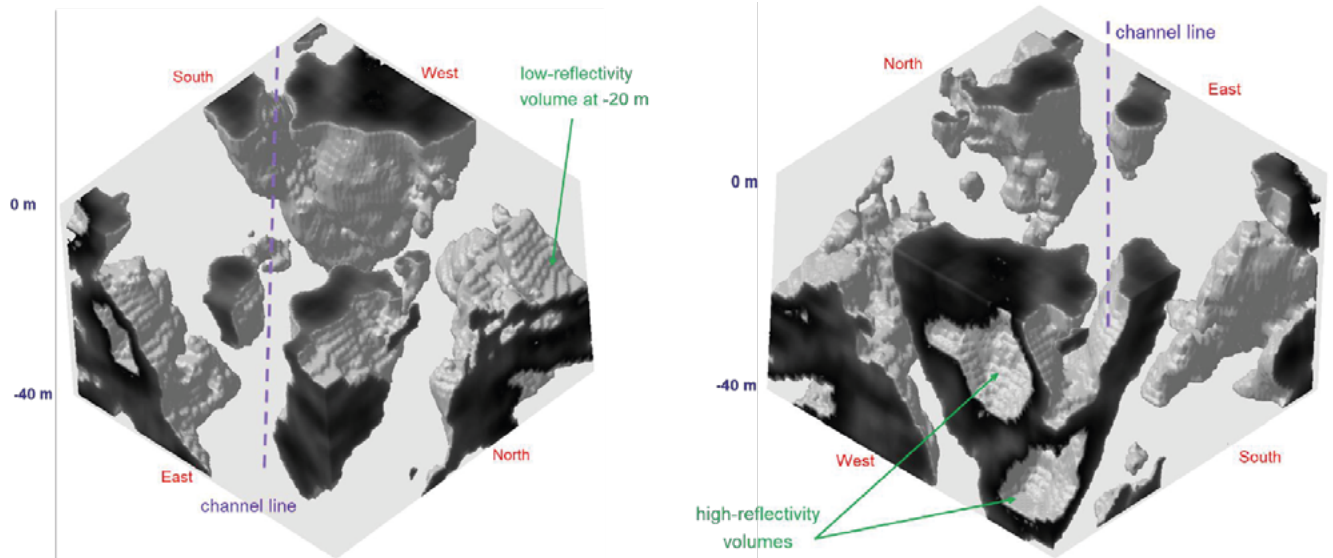


L-band SAR surface image - location: Al Ain - Abu Dhabi/UAE

P-BAND SAR TOMOGRAPHY

DETECTION OF UNDERGROUND CAVITIES

It was possible to capture images of underground cavities up to 40 meters deep using P-band SAR

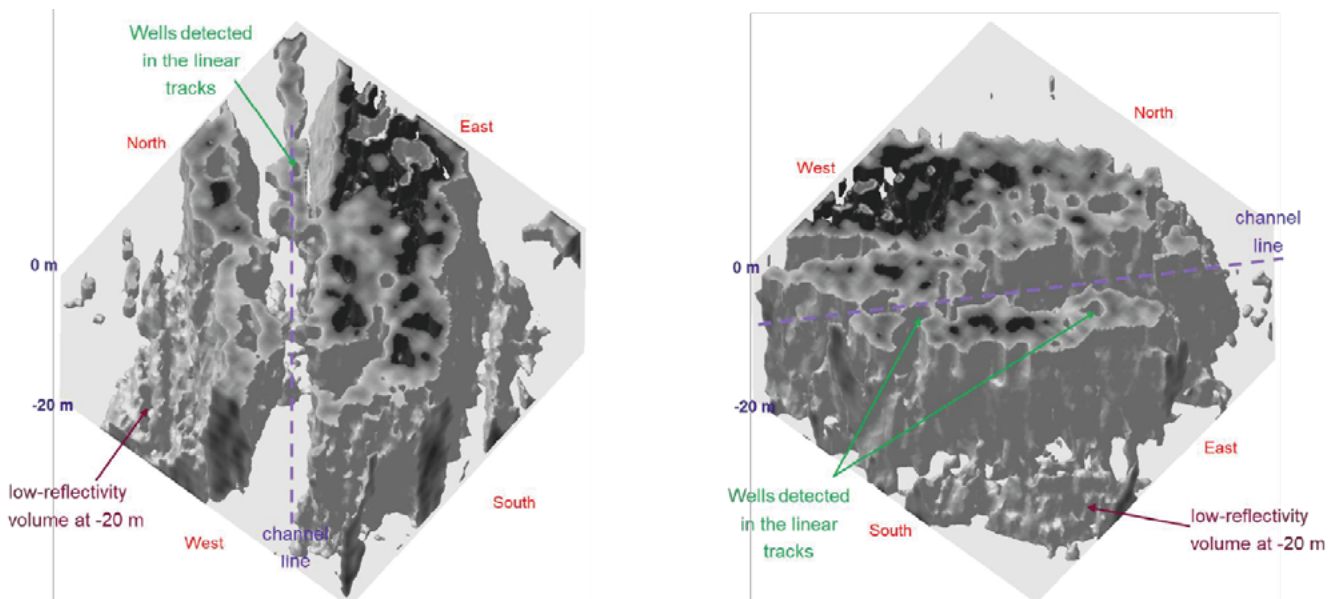


P-band SAR subsurface image - location: Al Ain - Abu Dhabi/UAE

P-BAND SAR TOMOGRAPHY

DETECTION OF WELLS AND UNDERGROUND CAVITIES

L-band SAR confirms the detections of cavers/cavities detected by P-band SAR and detects well



L-band SAR subsurface image - location: Al Ain - Abu Dhabi/UAE



Connecti

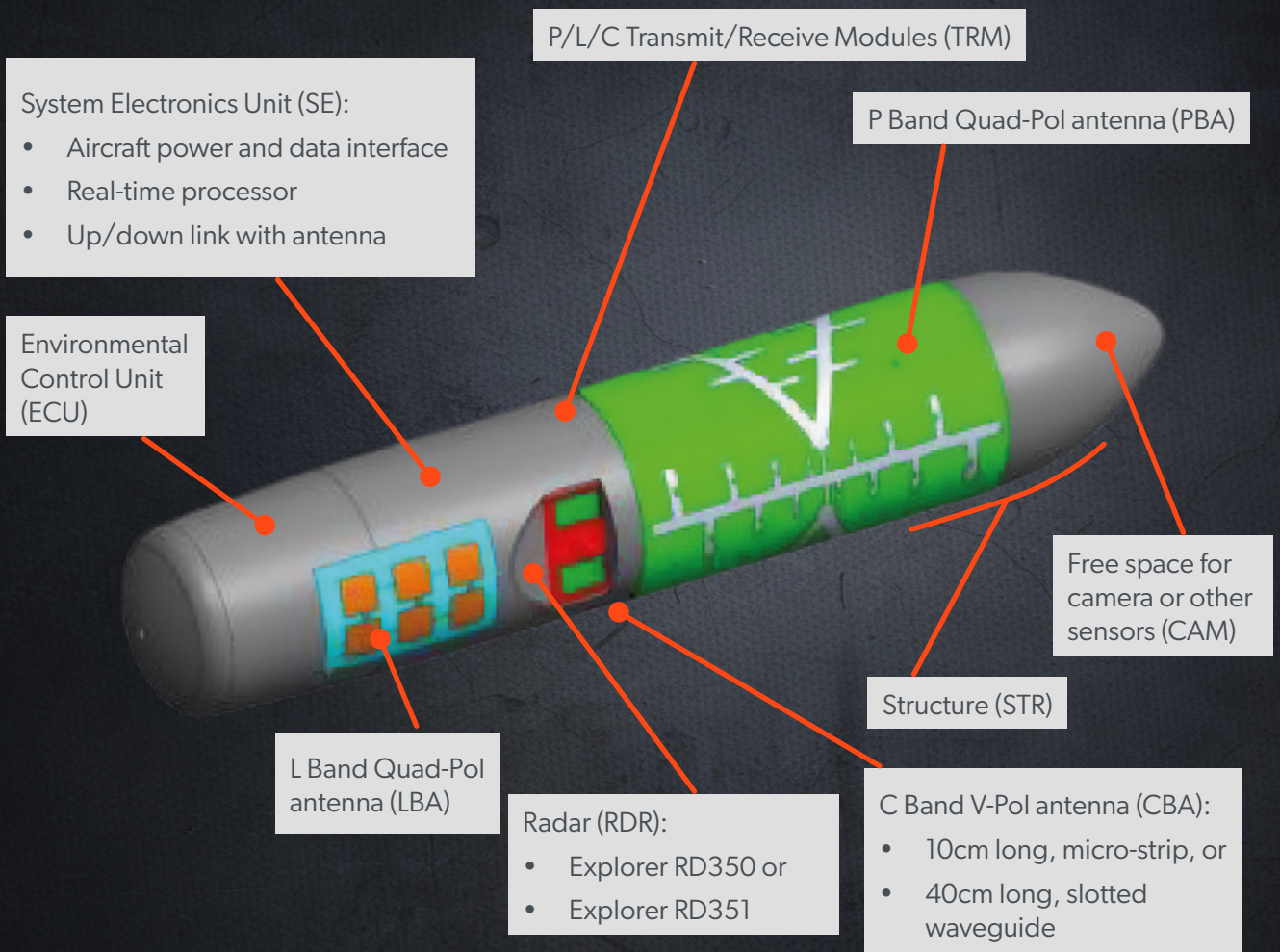
FUTURE SYSTEM

INTEGRATED POD SAR FOR HIGH-SPEED PLATFORMS

- Wireless downlink data transmission
- Down-link real-time simultaneously processing P, L, or C-band data
- Real-time change detection
- Real-time tomography

RD351 EXPLORER

DRONE-BORNE POD SYSTEM



KEY FEATURES

- 3-band SAR system install in a POD
- P/L/C band SAR
- survey speed up to 100 km/h
- survey height up to 500 m

PERFORMANCE PARAMETERS

OPERATIONAL PARAMETERS	SPECIFICATIONS
Channels	P band: 400 – 450 MHz L band: 1.2 – 1.35 GHz C band: 5.25 – 5.65 GHz
Flight duration	Platform Dependent
Flight altitude	500 m
Speed survey	100 km/h (28 m/s)
Covered area	helical flights: 100 hectare/flight
Max distance from the ground station	Platform Dependent
Max distance from the pilot	Platform Dependent
Data processing	Online, real-time flight processing
Platform	Fixed-wing UAV, for example

RD351 EXPLORER

AIRPLANE-BORNE POD SYSTEM



KEY FEATURES

- 3-band SAR system install in a POD
- P/L/C band SAR
- survey speed up to 400 km/h
- survey height up to 4.5 km

PERFORMANCE PARAMETERS

OPERATIONAL PARAMETERS	SPECIFICATIONS
Channels	P band: 400 – 450 MHz L band: 1.2 – 1.35 GHz C band: 5.25 – 5.65 GHz
Flight duration	Platform Dependent
Flight altitude	4.5 km
Speed survey	400 km/h (110 m/s)
Covered area	Linear flights: 270.000 hectares/flight
Data processing	Online, real-time flight processing
Platform	Aircraft





ABOUT SIGN4L

Electronic warfare (EW) systems have become an essential element of the modern battlefield, and SIGN4L is pioneering advanced technologies to secure the electromagnetic spectrum and is developing disruptive solutions to outpace adversaries.

Based in Abu Dhabi, SIGN4L is the leading provider of EW solutions in the UAE and one of only a few in the region with such capabilities.

SIGN4L is part of the Electronic Warfare & Cyber Technologies cluster at EDGE Group.

OUR CAPABILITIES



Electronic warfare
deception and
concealment



Electronic warfare
protection



Electronic and
communication
intelligence



Electronic warfare
support measures



Intelligence, surveillance,
target acquisition and
reconnaissance (ISTAR)
sensors

A person in a military uniform is shown from the chest up, looking at a laptop screen. The background is a blurred outdoor setting with green foliage. The person's hands are visible on the laptop keyboard.

EDGE

ABOUT EDGE

We live in an accelerating world. Characterised by uncharted frontiers, the future is empowered by advanced technology that is galvanising a new breed of players. At the edge of these frontiers exist no limits – where boundless opportunities await.

Transforming how we live, and ensuring a more secure future, is what we do. We are EDGE; and our mission is simple. To disrupt complacency. To move with speed. And to counter threats.

We will not only revolutionise the defence industry, but we will change its fundamentals. We are the vanguard of the next-generation, of a reimagined sector. We prioritise technology in a non-binary world and seek universal solutions. We work with everyone: big or small, start-up or established, local or global.

We are EDGE. We enable a secure future.

SIGN4L

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