

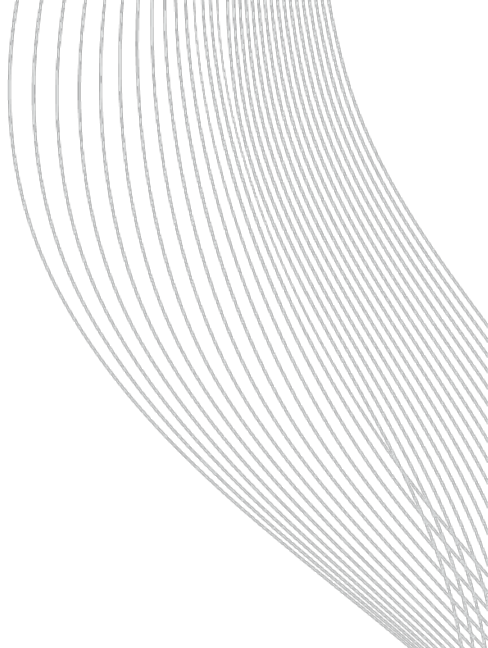


Remote Mine Detection System for tactical environment

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XPLORA Organization



Xplore the diversity of XPLORA's applications in three business units.

CIVIL & INFRASTRUCTURES

The Civil unit of XPLORA, utilizing advanced technologies originally developed for the defense sector, offers reliable and cutting-edge solutions tailored for EPC firms, multiutility companies, and the energy sector.

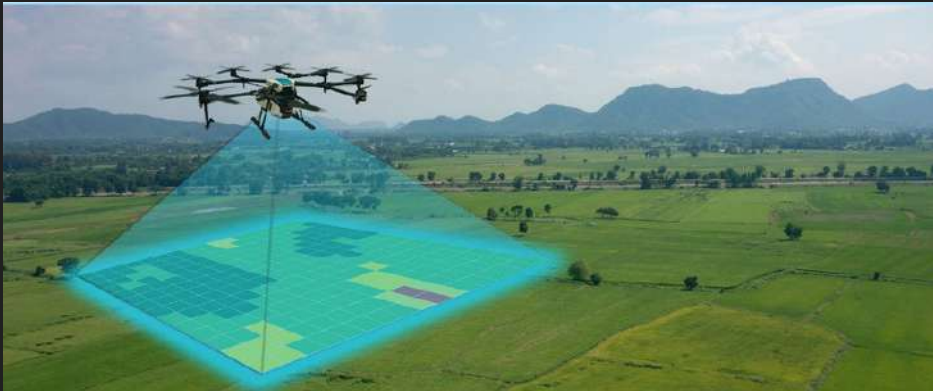
DEFENSE

The Defense Unit at XPLORA offers innovative situational awareness tools and threat detection systems.

INTEGRATED AERIAL SYSTEMS

This unit is dedicated to designing, engineering and assembling of drones equipped with integrated systems.

XPLORA at a glance



XPLORA specializes in creating software and tools based on artificial intelligence for the automatic detection of various targets and anomalies, aimed at survey and analysis of the subsurface and complex terrestrial assets with an objective and repeatable system. We provide innovative, non-invasive solutions that deliver speed, accuracy, and valuable insights.

The market segments are (but not limited to):



Environmental Knowledge:

- Subsoil analysis: Pipeline mapping, de-bombing activities, geothermal analysis.
- Smart Cities: Urban Census, Trafficability, Territorial Analysis.



Industrial Knowledge:

- Infrastructure and Asset Inspection and Analysis.



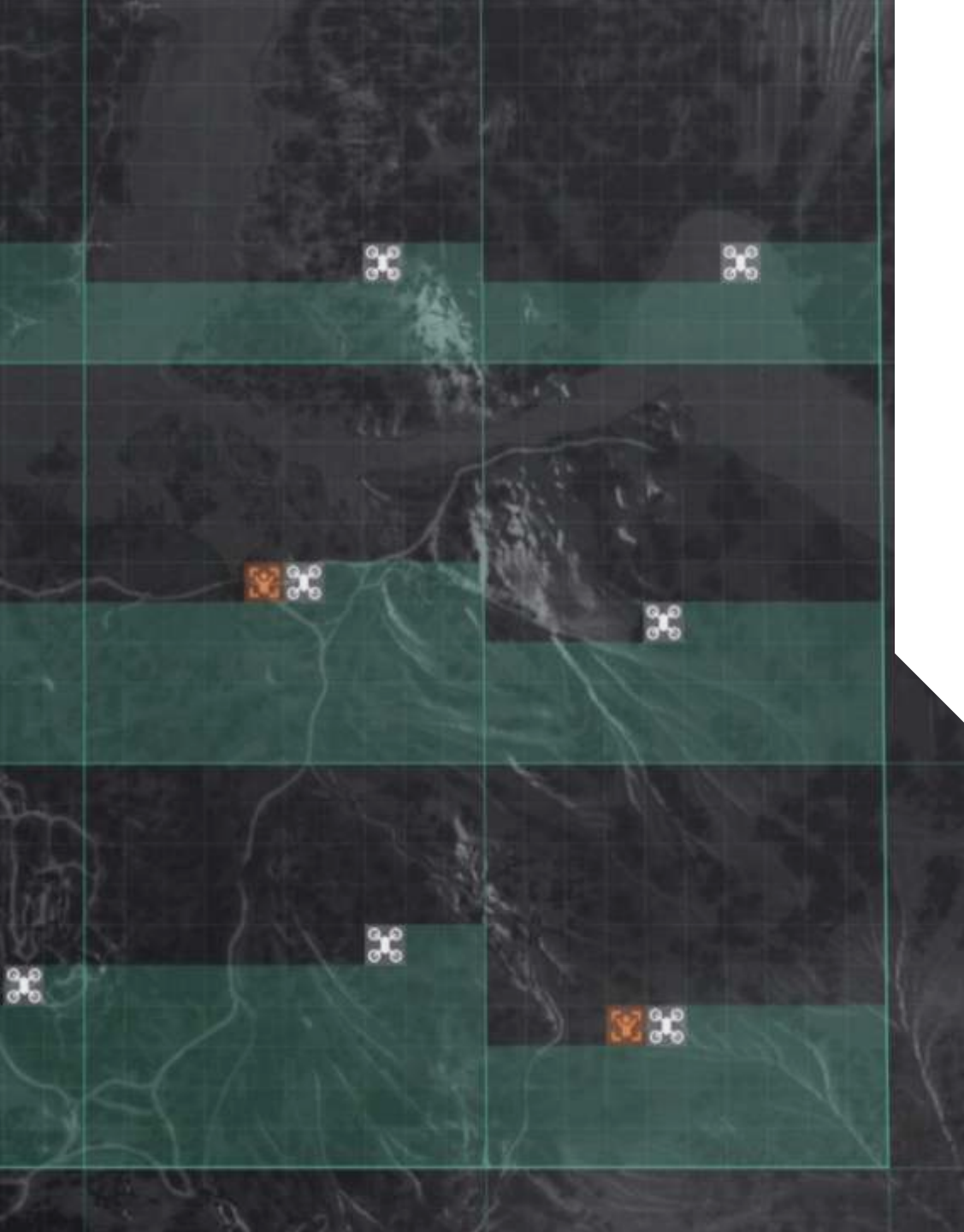
Defense & Homeland Security:

- Spatial and environmental analysis for battlefield awareness.
- Antiterrorism applications and real time threat analysis.



Integrated Aerial Systems:

- Design of Integrated Unmanned Aerial System for automatic inspection and target recognition



Remote Mine Detection System

RMDS Versions

UAS equipped with an on-board computer and proprietary on-board artificial intelligence algorithms for the detection and mapping of anti-personnel and anti-tank mines on the ground, underground, and concealed within vegetation

RMDS® UAS



High-performance integrated aerial system for the automatic and real-time detection of visible and non-visible mines (camouflaged and underground up to 30 centimeters deep).

RMDS® BLACK UNIT



Independent payload, compatible with any third-party drone, for the automatic real-time detection of both visible and hidden mines (camouflaged or underground up to 30 centimeters deep). It transforms any drone into a powerful tool for mine detection and mapping.

Type: Integrable payload for any multicopter drone

Weight: 2.5 kg

Dimensions: 20 x 10 x 15 cm

Working Duration: Up to 2 hours with one replaceable standard LiPo battery

Reliability for Mine Detection: > 98%

Scannable Surface: Up to 3 hectares per hour

Integration Time to a Standard Drone: 2 minutes

Battery Replacement Time: 1 minute

Features:

- Automatic soil and subsoil mine detection and mapping
- Real-time data processing and output deliverables
- User-friendly GUI for mine situational awareness
- Optimal detection and mapping capabilities at 15 meters flight altitude AGL (Above Ground Level)

RMDS[®] Black Unit

Key Features



Detectable Mines

We don't just manufacture drones; we create fully integrated systems capable of performing complex tasks, thanks to:

Metal Mines

Plastic Mines

Glass Mines

Mixed Material
Mines

Mines Partially
Camouflaged by
Vegetation

Buried Mines

RMDS Capabilities

Our Remote Mine Detection System enables the End User to get an overview of the situational awareness, thanks to the following capabilities

On board
computing and
data elaboration

Real Time threat
map sharing to
GUI

High level of
deployability

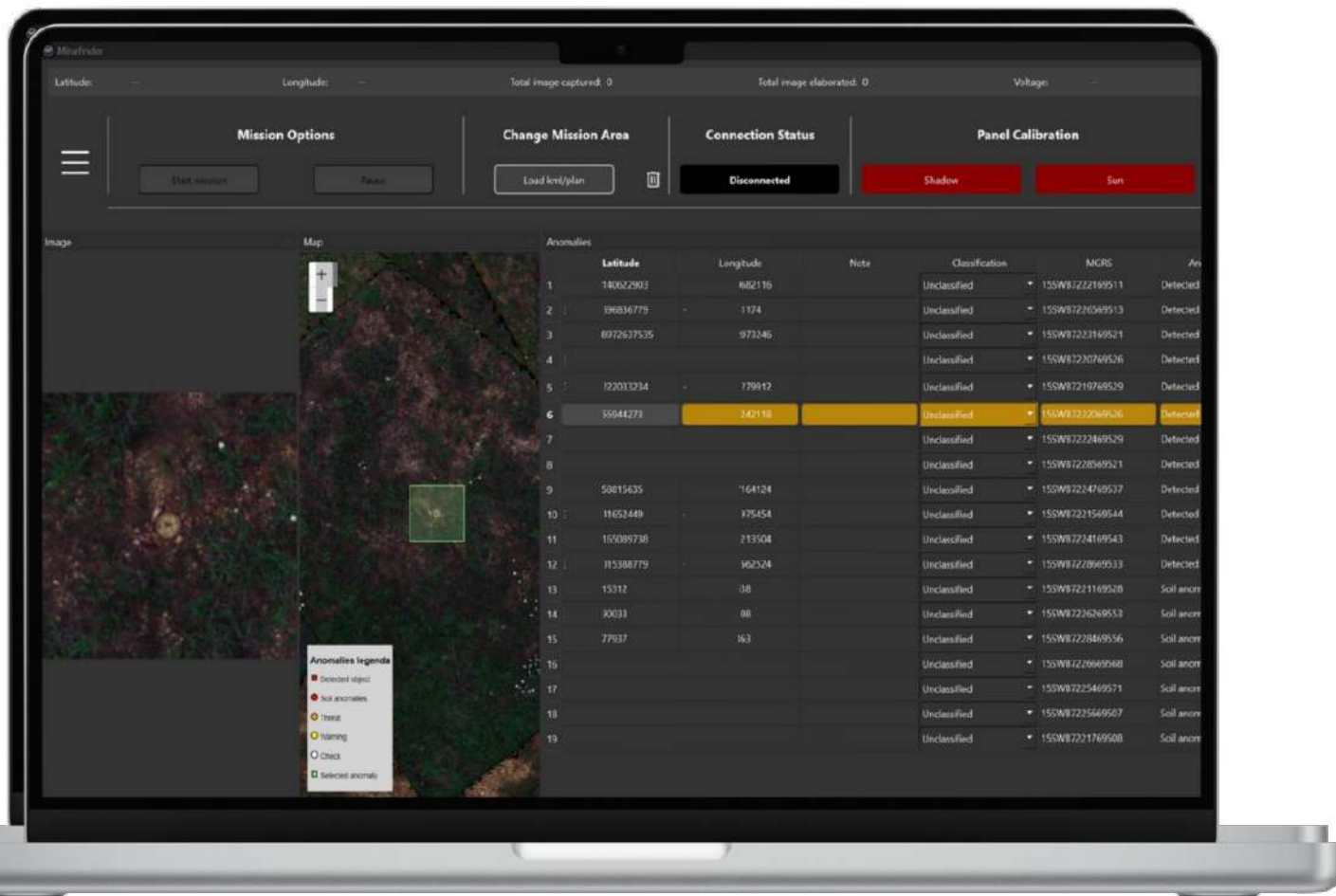
Turnkey and
ready-to-fly de-
mining system

Advanced Artificial
Intelligence
software

No environmental
a priori
information
needed



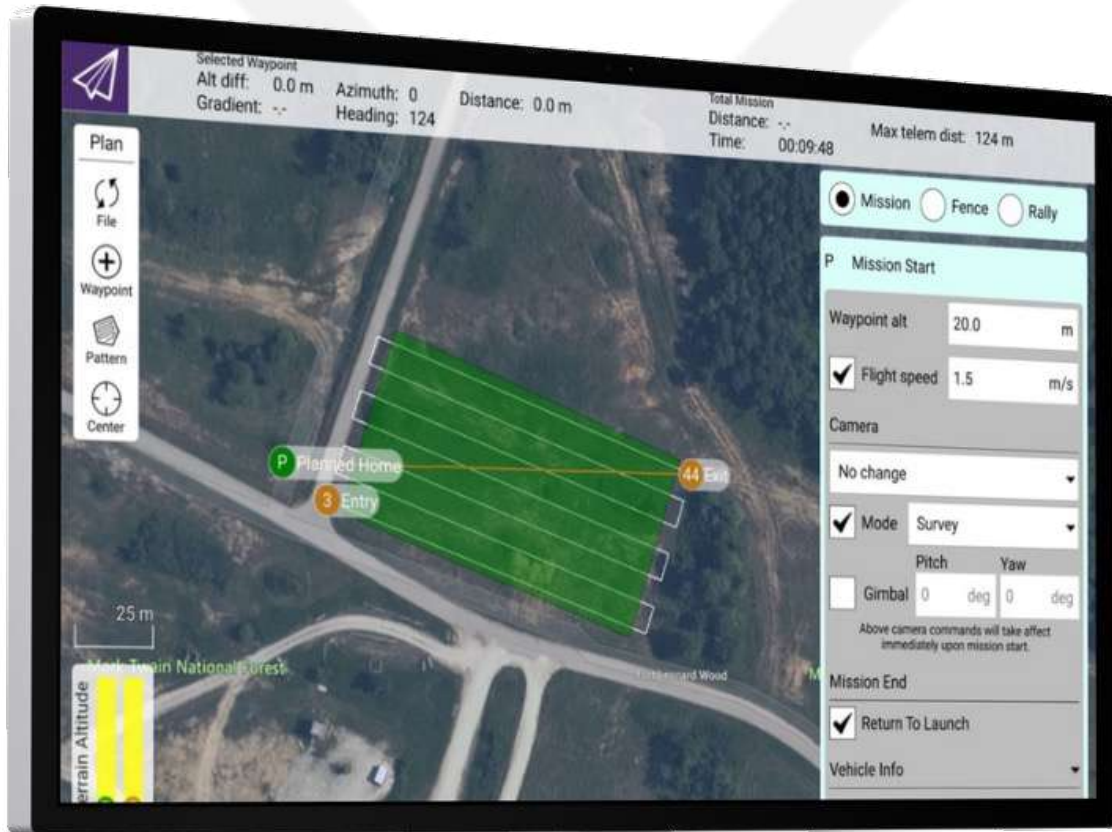
Terrain GUI Software



- ✓ Simple UX/UI design
- ✓ Near real-time data transmission
- ✓ Georeferenced anomalies on the map
- ✓ Supports WGS84 and MGRS coordinates
- ✓ Visual proof of anomalies
- ✓ Post-processing threat classification
- ✓ Add comments, notes, and orders
- ✓ Color-coded threat severity scale



Terrain GUI Software



Features:

- Automatic flight mission execution
- Autonomous, real-time, onboard data processing

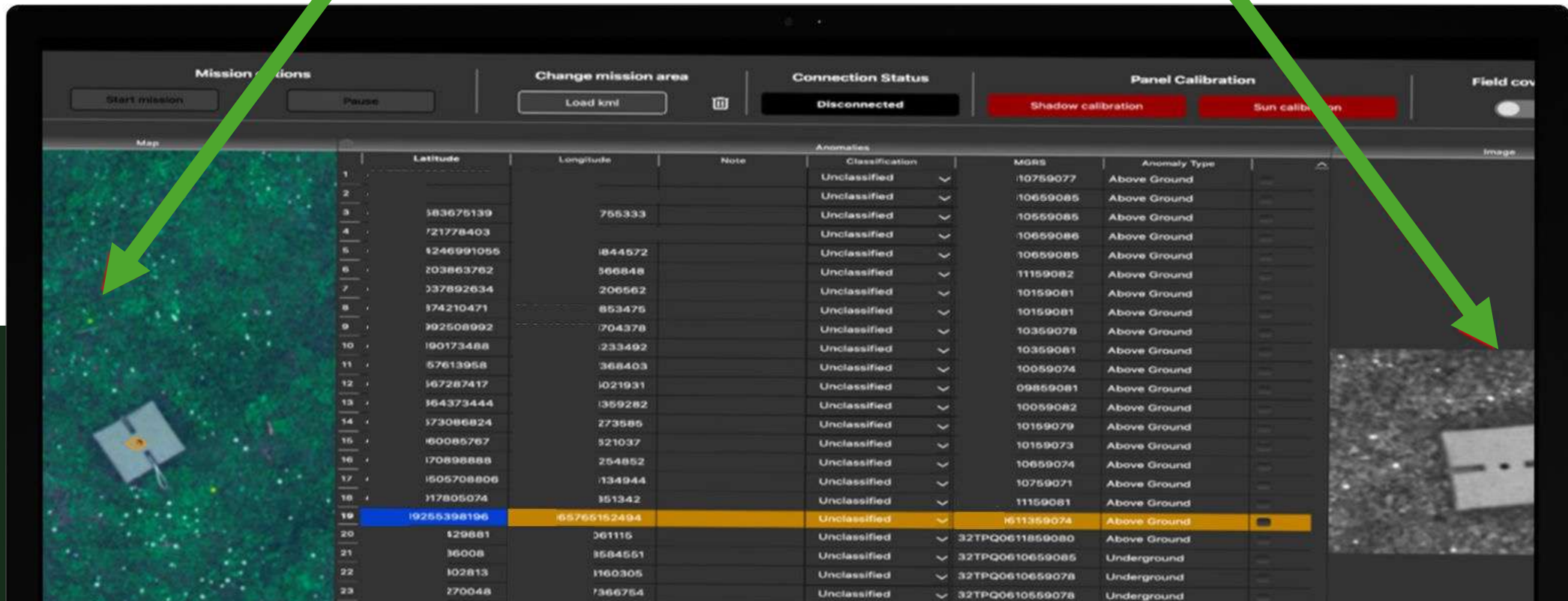
Operations:

- **Flight Height:** 12–25 meters AGL (Above Ground Level)
- **Flight Speed:** 1.5–3 meters per second
- **Coverage Time:** 20 minutes per hectare (at 12 m height, 2 m/s ground speed, 25% overlap)

Terrain GUI Software

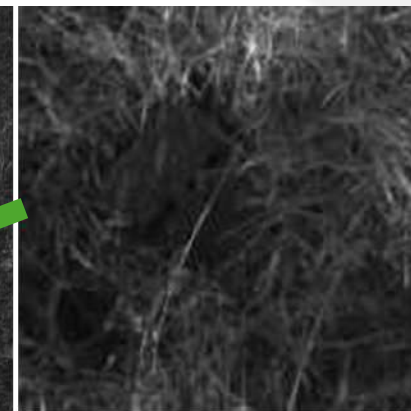
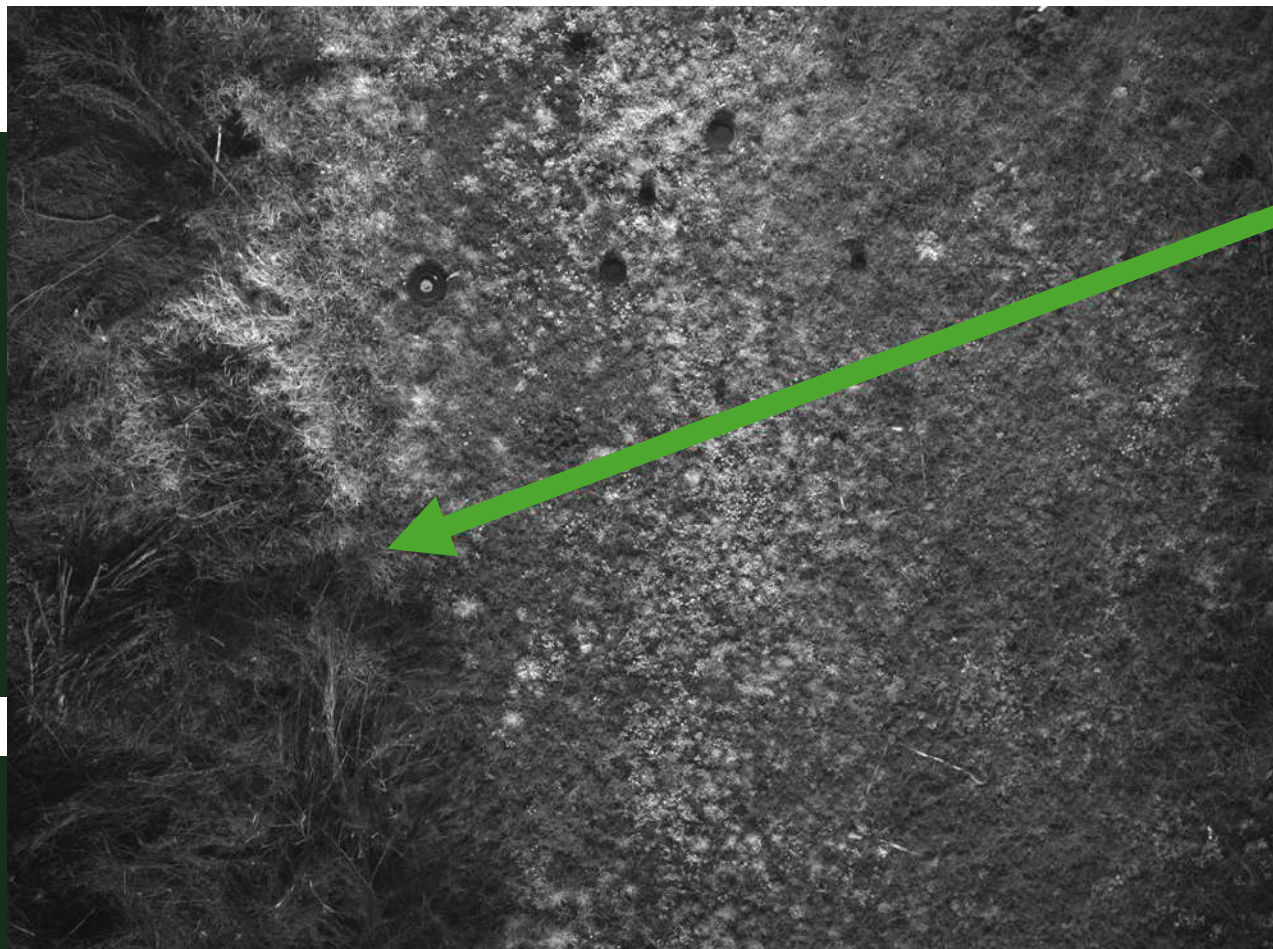
Zoom functionality on the map with color imagery enhances situational awareness and orientation.

Displays a portion of the raw image around the detected object for human assessment.



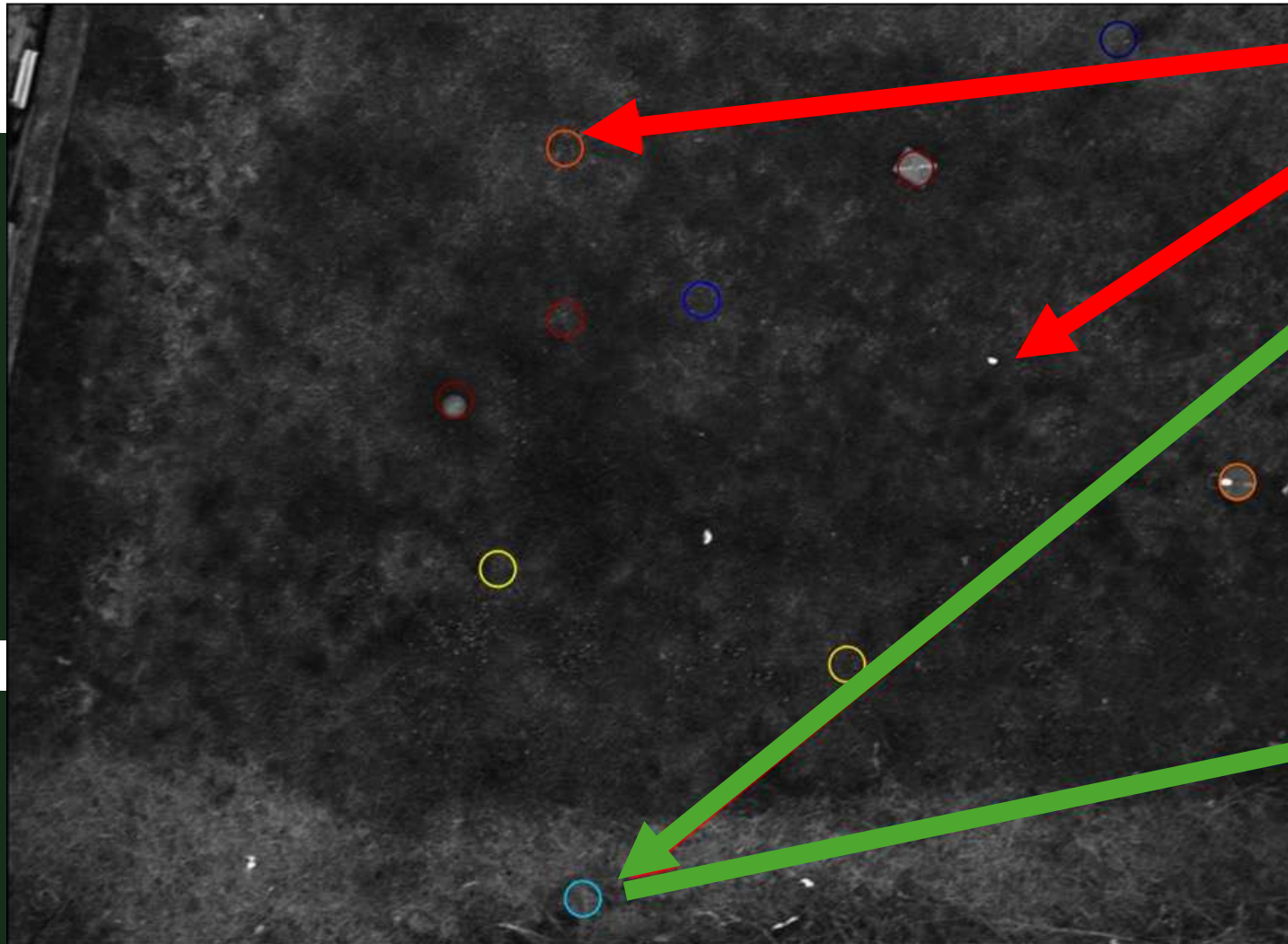
	Latitude	Longitude	Note	Classification	MGRS	Anomaly Type	Image
1				Unclassified	10759077	Above Ground	
2				Unclassified	10659085	Above Ground	
3	183675139	755333		Unclassified	10659085	Above Ground	
4	721778403			Unclassified	10659086	Above Ground	
5	1246991055	1844572		Unclassified	10659085	Above Ground	
6	203863762	366848		Unclassified	11159082	Above Ground	
7	337892634	206562		Unclassified	10159081	Above Ground	
8	174210471	853475		Unclassified	10159081	Above Ground	
9	102508992	1704378		Unclassified	10359078	Above Ground	
10	190173488	233492		Unclassified	10359081	Above Ground	
11	57613958	368403		Unclassified	10059074	Above Ground	
12	167287417	1021931		Unclassified	09859081	Above Ground	
13	164373444	1359282		Unclassified	10059082	Above Ground	
14	173086824	273585		Unclassified	10159079	Above Ground	
15	160085767	521037		Unclassified	10159073	Above Ground	
16	170898888	254852		Unclassified	10659074	Above Ground	
17	1505708806	1134944		Unclassified	10759071	Above Ground	
18	117805074	151342		Unclassified	11159081	Above Ground	
19	19255398196	165765152494		Unclassified	1611359074	Above Ground	
20	129881	361115		Unclassified	32TPQ0611859080	Above Ground	
21	36008	3584551		Unclassified	32TPQ0610659085	Underground	
22	102813	1160305		Unclassified	32TPQ0610659078	Underground	
23	270048	7366764		Unclassified	32TPQ0610659078	Underground	

Detection beyond visibility



Anti-tank mine partially concealed by tall grass, automatically detected.

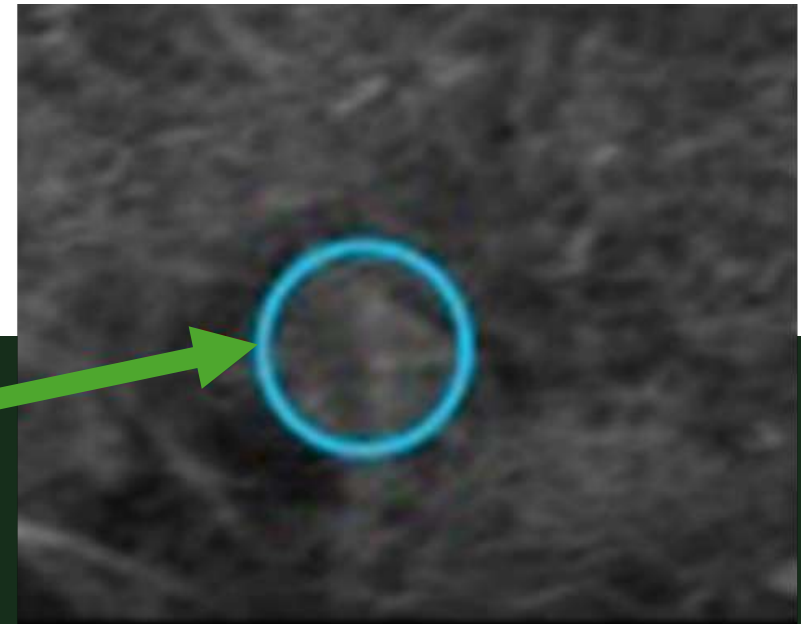
Detection beyond visibility



Excavated hole with buried object

Plastic debris disregarded

Anti-tank mine partially concealed by tall grass



Comparative Analysis

	OBJECTIVITY OF THE RESULT	RELIABILITY	SCANNED SURFACE PER HOUR	RISK FOR SOLDIERS	USABILITY
 RMDS®	Yes	> 98%	3 hectare	No	High, thanks to terrain-following capabilities, making it suitable for use on slopes.
STANDARD METAL DETECTOR	No	< 30% (no plastic mine detected)	0.05 hectare	High	Low
DRONE WITH RADAR GPR AND/OR MAGNETOMETER	No	< 50%	0.5 hectare	No	Very low (mandatory to fly at 1 meter altitude with high crash risk and unusable in the presence of vegetation or slopes)
DOG	No	< 15%	0.2 hectare	High	Medium

Use cases & Customers



ITALIAN ARMY

Field tests conducted on a minefield prepared by the Combat Engineer Unit and IED Center of Excellence of the Italian Army confirmed a detection reliability of 99% on 62 planted mines (surface, subsurface, and camouflaged).



PARTNERSHIP WITH SIERRA LOBO INC

Field tests conducted on a minefield prepared by the US Army during an official exercise on American soil confirmed a detection reliability of 98% on over 50 planted mines (surface, subsurface, and camouflaged).



INDUSTRIAL PROJECT

Real minefield test aimed at confirming the practical field usability of the RMDS UAS system.