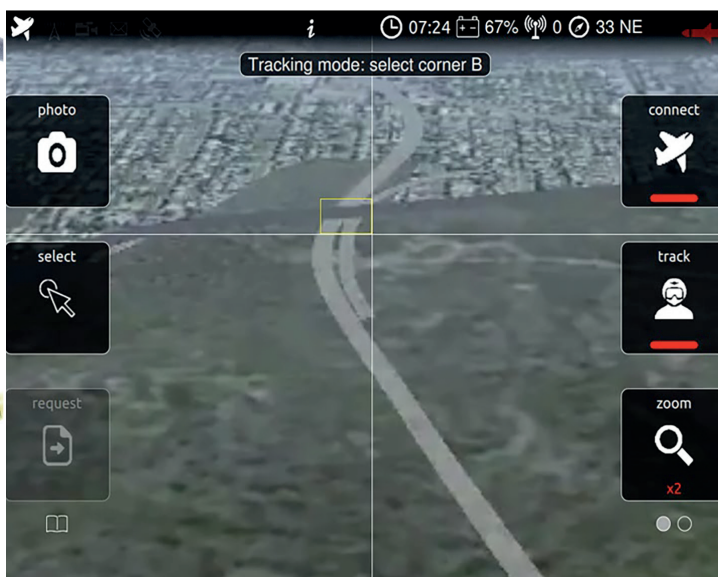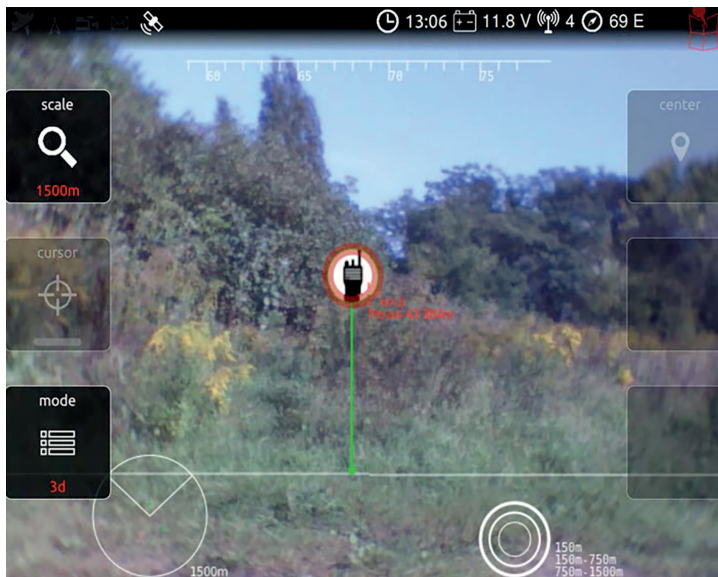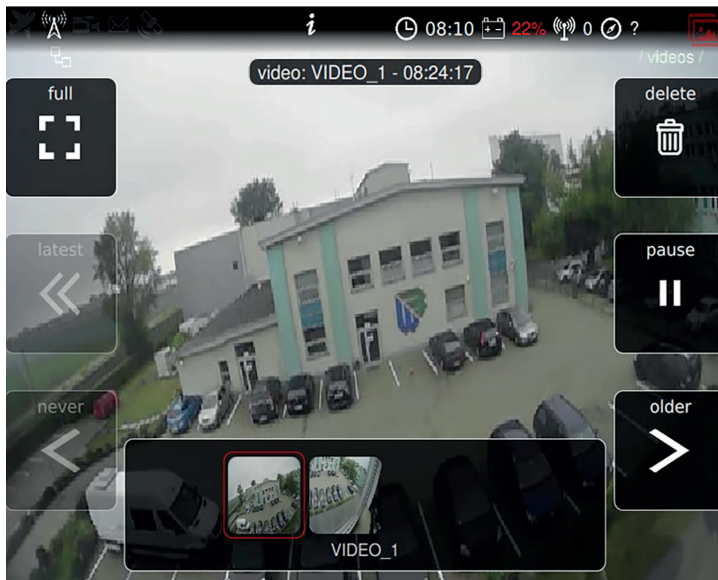**WB GROUP**

Dismounted
Observation & Command System
U-GATE

U-GATE is a C4ISR-E(xtended) system which enables Special Forces operatives to direct strikes from loitering munitions, such as the Warmate System, and analyse the battlefield. U-GATE includes a headset that uses Augmented Reality (AR) Technology providing Special Forces with the ability to visualize the battlefield and add information or markers that can instantly be viewed in both their and other operative's field of view. Further, U-GATE enables full control over nearby Unmanned Aerial Vehicles using a virtual ground control station (GCS) user interface displayed in front of the soldier.

The use of Augmented Reality is a new and exciting development for the modern battlefield, and WB Group is leading the way in providing the technology. Augmented reality will enable quick and efficient access to data for each soldier without the need to look away from the battlefield towards the screen on a handheld device. Also, AG will make it easier for soldiers to interpret commands and battlefield data to the surroundings, particularly when under pressure.

In addition to an Augmented Reality headset, the U-GATE System includes the wideband software defined radio, Perad, to allow for data transmission between different headsets and operators of loitering munitions, and a portable computer to process the acquired data. The headset which includes sensors, video cameras, and high-resolution displays has a mass of under 1.5 kg.

**The U-GATE system enables
a swift operation of loitering munitions:**

UAV selection on map background.

Live video stream displaying.
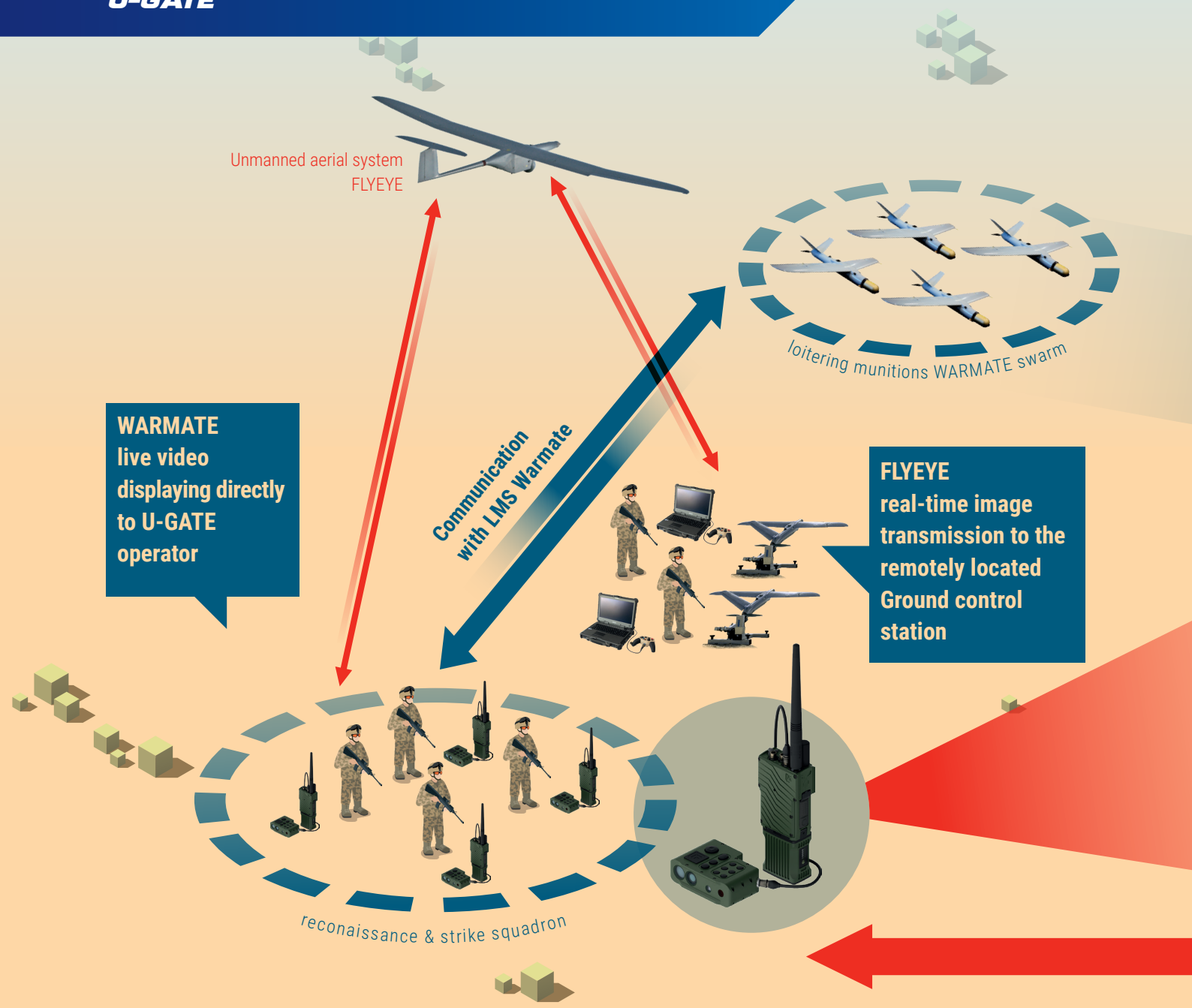
Manual control of heading and altitude.

Target designation on the still image.

Auto fly to selected image target.
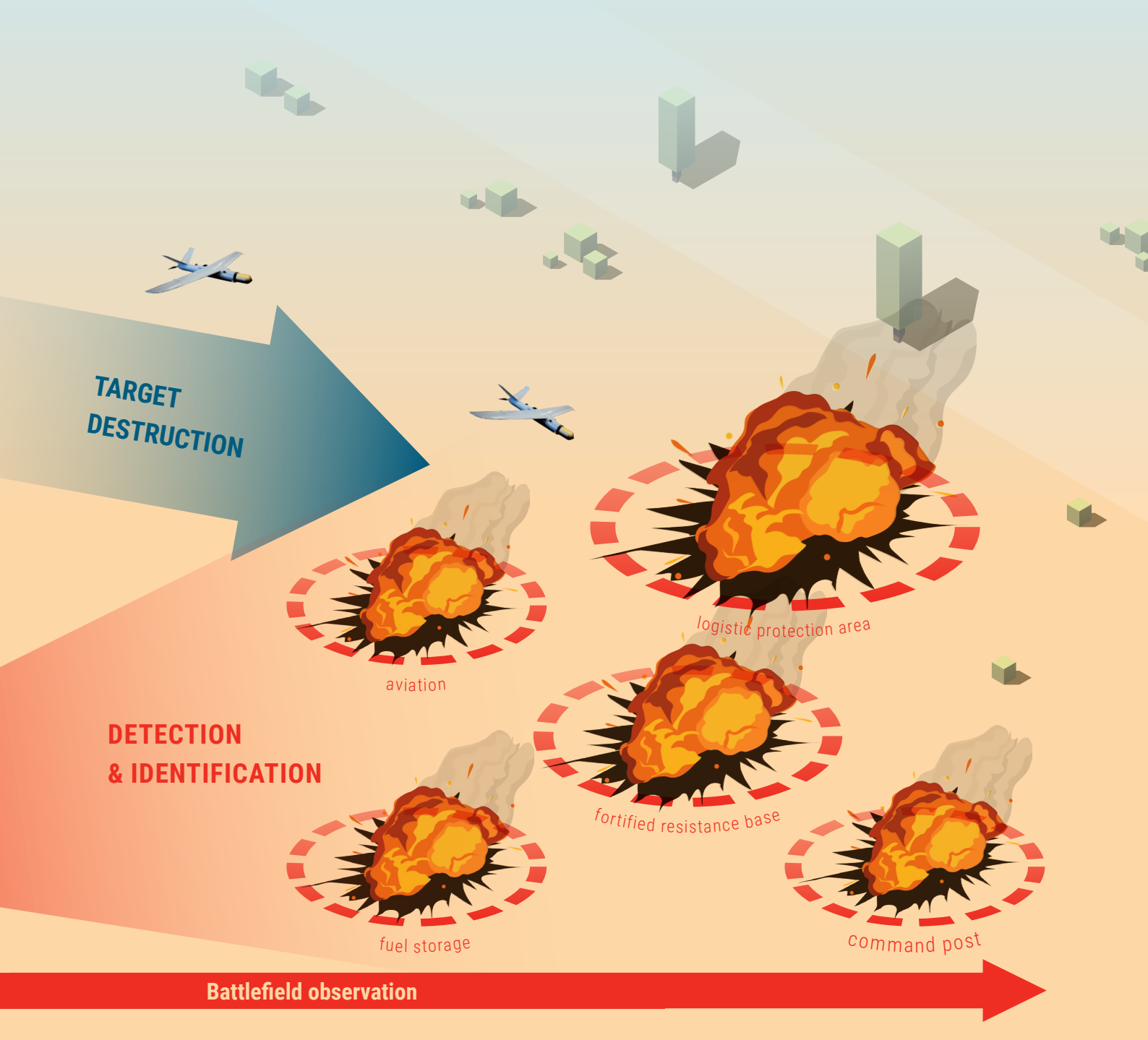
Auto fly to GPS location.

Warhead control.

Simple & easy GUI. No training required.

3

Unmanned aerial system
FLYEYE

loitering munitions WARMATE swarm

Communication
with LMS Warmate

WARMATE
live video
displaying directly
to U-GATE
operator

FLYEYE
real-time image
transmission to the
remotely located
Ground control
station

reconaissance & strike squadron

U-GATE system enables integration with other WB GROUP's systems:

Strike vehicle	communication with strike vehicle and remote access to its long-range communication assets with use of the Digital Communication Platform FONET
Reporting	real-time image transmission to a remotely located ground station with use of the unmanned aerial system FLYEYE equipped with video retransmitter
Reconnaissance	battlefield observation with use of the FLYEYE system's embedded camera, carried out from a safe distance
Pseudo-satellite communication	significantly enhance range within the squadron and tackle terrain obstacles such as hills or tall buildings with use of the radio-equipped FLYEYE system

Possibility of using the loitering munition system WARMATE to carry out the attack

The U-GATE system enables the OODA (Observe, Orient, Decide, Act) loop to be enacted by small groups of soldiers. The U-GATE system incorporates observation, analysis and strike abilities into one device and allows for full independence of Special Forces Units. Therefore, small combat groups can operate completely autonomously in difficult to access or isolated areas using the U-GATE system.

TARGET DESTRUCTION

DETECTION & IDENTIFICATION

aviation

logistic protection area

fortified resistance base

fuel storage

command post

Battlefield observation

The U-GATE system allows each soldier to observe the battlefield and simultaneously:

- See the location of their troops on a digital map, including terrain view, using the built-in camera;

- Identify opposing forces;

- Receive a live-stream video from each of the U-GATE headset's integrated video cameras;

- Send and receive emails with attached photos, archived/saved voice and video recordings;

- Receive information from a UAV and operate/control the loitering munition WARMATE;

- Receive voice and text commands;

- Transfer/forward data about detected targets to higher levels of command;

- Easily measure the distance and position of objects in their field of view.

Main features of the U-GATE system

Area observation with built-in wide angle or narrow angle (zoom) camera with low light condition sensitivity;

Area observation with external wireless or wired image sensors (ex. wifi, cvbs, usb);

Video post processing algorithms allows image stabilization, histogram equalization subtraction and others;

Augmented reality overlay correlates geolocated items with camera image;

Recording, playing and broadcasting video from any image source using radio network;

Making, viewing, editing and sharing pictures using radio network;

Sharing video streams in the network;

Editing, sending or forwarding text messages or predefined phrases with attached images;

Incoming message presentation;

Controlling radio channel, volume, ptt, waveforms and network status;

Night observation with built-in thermal camera;

Ability to connect with additional accessories with wireless or wired connections;

Voice synthesis from typed text or selected phrases and broadcasting over the radio network;

System events voice signalization;

Digital map presentation, with troops PLI;

Navigation with built-in compass, active heading stabilization system and GPS receiver

Desktop presentation with built-in near eye display, micro projector or external hdmi compatible displaying unit;

Combat UAVS GCS terminal;

One hand control with 7 key array, touch pad and context menu;

Easy user interface, no training required;

Power saving mechanism.

PERAD radio – high quality of the voice transmission, long operating time and a small size and minimum weight of the device.

- Adjustable frequency range in UHF or L-band

- Selectable waveforms:

    - MANET (1Mbit/s)

    - WideBand (4Mbit/s)

    - NarrowBand (75Kbit/s)E

- High sensitivity and LDPC algorithms allow to reach 4 Km range in open terrain with average 1W output power (universal WF)

- Up to 1 Km range in forest

- Range enhancement with MESH networking functionality up to tens of kilometers

- Embedded encryption

- IP networking

- Frequency hopping (700/s, all waveforms)

- Flexible interconnectivity by ethernet and usb ports

- Battery operation up to 10 hours

- Full duplex conferencing with high quality audio

- Low spectral density

- Anti-tamper protection

- Built-in GPS receiver

- Voice menu control system

- Over the air zeroing

- Low weight, rugged housing, water and fall prove.

# Communication with loitering munitions WARMATE
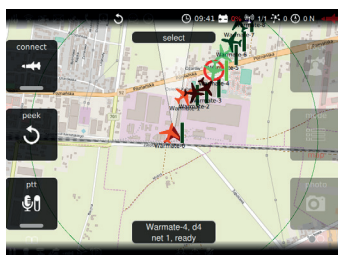
OPERATION OPTIONS

All available UAVs with their position and flight modes are displayed on the map. The operator can choose a platform depending on a payload (fragmentation or cumulative) and/or camera (daylight / IR) warhead according to mission's requirements.

CONNECTION

The selected unmanned platform delivers a video that enables the operator to execute a reconnaissance mission. The system allows for a manual control (left, right, up, down)
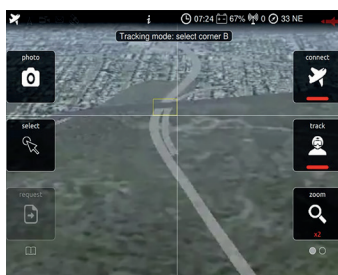
FLIGHT MODES

The operator can switch to one of the automated flight modes, such as:

– flight to a destination point on the map - the platform reaches the destination point and switches to loitering mode

– flight to a point designated in the video image which allows the platform to perform a precise strike against the target.


ADDITIONAL OPTIONS

The system allows the operator to take a photograph comprising the azimuth and position which can be sent to another U-GATE and send the video via PERAD radio.
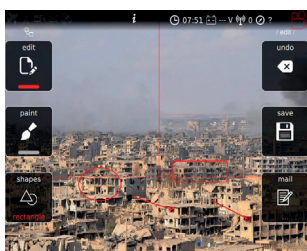
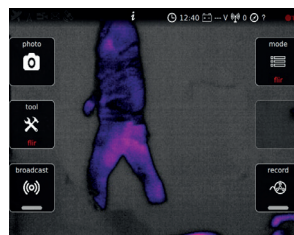

RADIOCOMMUNICATIONS:

Loitering munitions WARMATE is equipped with two radios, for:

1. Radio for ground communication

2. Mesh radio for operation and communication which does not require having the platform within reach.
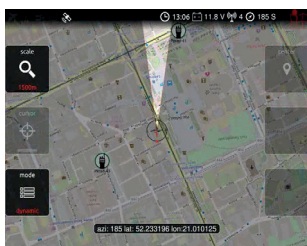
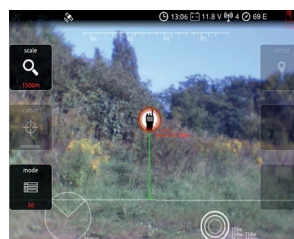**VISUALISATION OF THE SQUADRON ON THE MAP**

CAMERAS

IR camera for night vision

High zoom camera

Wide angle camera displaying map icons

The system allows for vieweing or sending the video online The camera can be placed in any place and share the image wirelessly