



IMPLEMENTING BORDER SURVEILLANCE

M-UGS® is a cutting-edge monitoring system. It is based on a set of ground sensors linking themselves into an ad hoc wireless network, and capable of sending alerts to a central monitoring station responsible for collecting and displaying information gathered in a geo-referenced map.

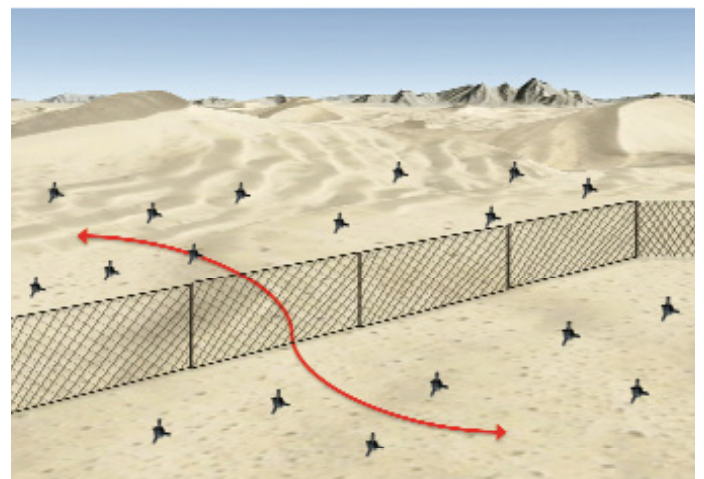
M-UGS® ground sensors are connected to each other by means of a meshed wireless network. Sensors can be combined as desired and include:

- Seismic sensors (MEMS accelerometers or geophones) to identify ground vibration caused by pedestrians or vehicles;
- Magnetic sensors (MEMS magnetometers) to monitor movement of metal objects such as vehicles;
- Acoustic sensors to detect targets by specific acoustic signatures (noise of engine, tracks, etc);
- X-Band Doppler radar sensors to detect movements of objects in a narrow field of view;
- GPS receivers for sensor geo-positioning, build into the above sensors.

M-UGS® is typically deployed in a combined network using a number of lines of sensors paralleling the border,

no-man-zone, harbor, or secured area and radar and CCTV systems. M-UGS® can be used to pre-trigger CCTV systems providing initial direction and heading in order to reduce time to track.

In order to ease operations the system is deployable by different means froge of the air deployment capability of M-UGS®.



M-UGS®

Previously deployed networks can be extended with additional sensors, which seamlessly integrate with the existing sensors ensuring continuous operation which takes into consideration the position of those nodes that are fading out.

Mobile equipment to interface M-UGS® in the deployment area is available and provides real-time support for task and engagement forces at operational theater level.

System lifetime depends on the type of environment and concentration border incursions. Equipment versions are available for a lifetime of six weeks right up to five years.

M-UGS® ADVANTAGES:

- Border and wide area protection (e.g. border security, nature reserve surveillance, trafficking, illegal immigration);
- Integrable with higher state sensor;
- Easily deployed;
- Once installed, the system is fail safe and can be left to operate;
- Nearly invisible;



TECHNICAL DATA

SYSTEM	M-UGS®
Water	Waterproof (IP 67)
Service	No maintenance needed
Temperature	-31°C - +85°C
Humidity	Up to condensation point
SEISMIC SENSOR	
Detection range	5 - 20 m (*)
Sensitivity	28.8 V/m/s (0.73 V/in/s)
Type	Geophone
GPS	
Channel	12 channel/satellite
Protocol	NMEA-0183
Technology	SiRF III technology
Baud rate	9.600 bps & 19.200 bps
NMEA rate	GGA, GSA, GSV, RMC, VTG
Message rate	1 second
Receiving altitude/speed	Up to 18.000 m/s up to 515 m/s
MAGNETIC	
Detection range	5 - 20 m (*)
Sensitivity	0.8 - 1.2 mV/Gauss
Bandwidth	DC - 5 MHz
Resolution @ 50Hz	120 µgauss

DOPPLER RADAR

Detection range	5 - 50 m (*)
Design	Proprietary-based security technology
Type	X-Band Doppler radar motion detector

ACOUSTIC

Detection range	25 - 100 m (*)
Sensitivity	-42 dB @ 1 kHz
Bandwidth	100 Hz - 800 Hz
Type	Omnidirectional MEMS microphone

COMMUNICATION

Type	Single chip transceiver for ISM and SRD frequency bands
Transmitter type	QPSK UHF transmitter/receiver
Tuning range	300 MHz - 2.4 GHz
Encryption	Communication amongst sensors and sensor network interface is encrypted
Type	Frequency hopping

(*) Depending on type of intrusion

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