



SECURITY

PROTECTING THE FORCE : BORDER AND CRITICAL INFRASTRUCTURE PROTECTION – SOLUTIONS FROM KELVIN HUGHES LTD

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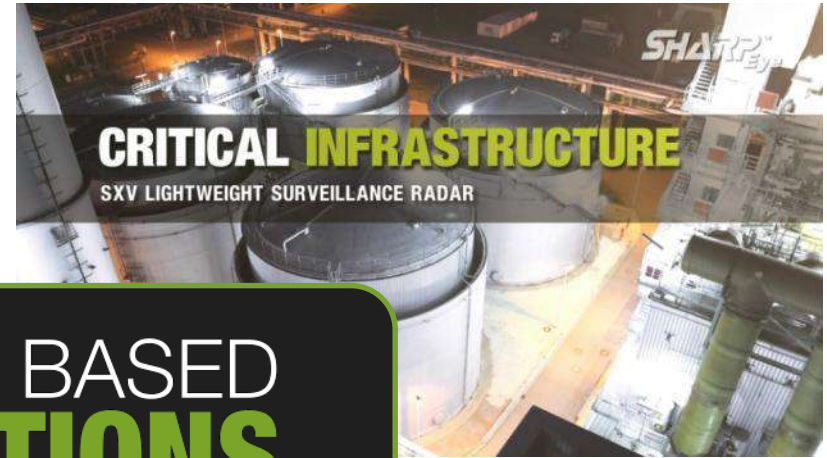
SITUATIONAL INTELLIGENCE, THE WORLD OVER

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SECURITY

RADAR BASED SOLUTIONS



RADAR BASED SOLUTIONS



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WHY IS IT SO IMPORTANT ?

SHARP[™]
Eye



- **BORDERS – people, weapons, drugs**
- **CRITICAL NATIONAL INFRASTRUCTURE – terrorism, damage, accidents**
- **PERIMETERS / COMPOUNDS / CAMPS – terrorism, robbery, accidental damage**
- **“FOREWARNED IS FOREARMED”**

EARLY WARNING

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EARLY WARNING – WHAT CAN HAPPEN IF THERE IS NONE

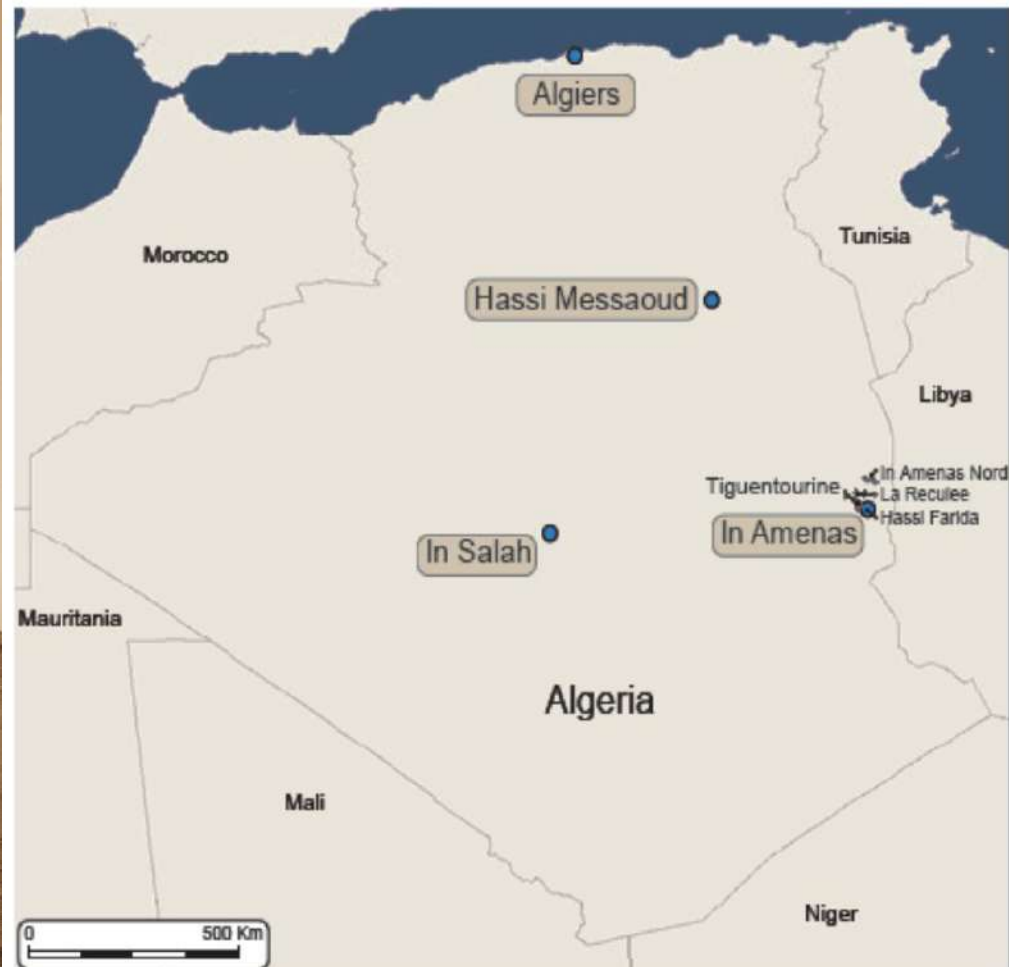
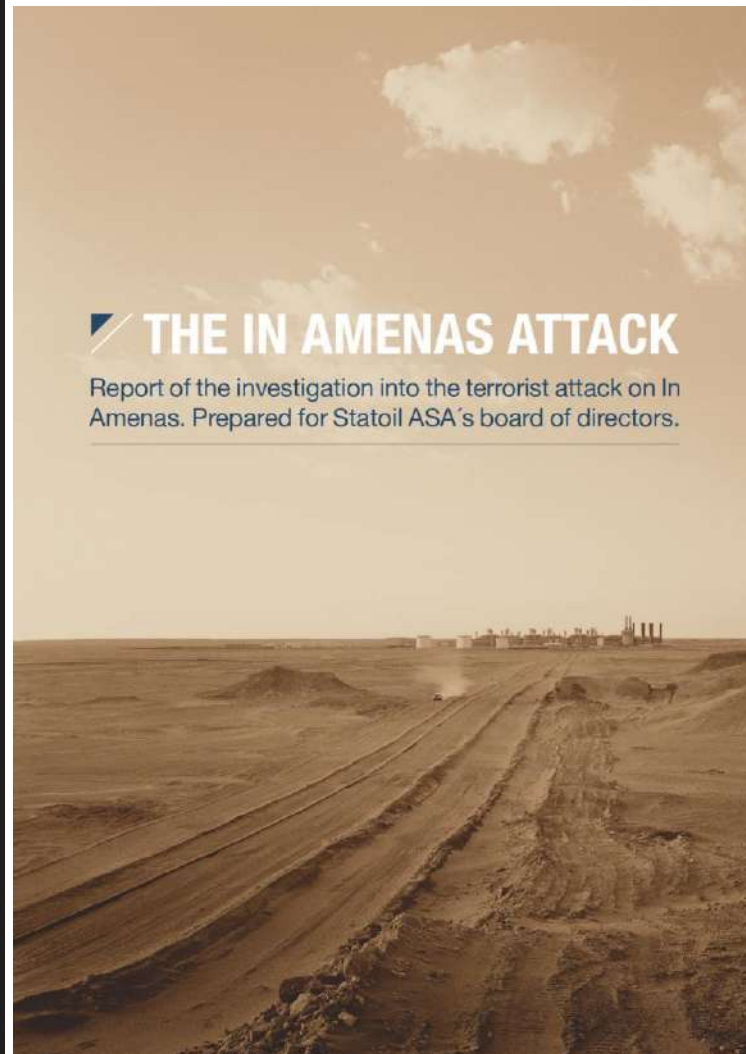


Figure 1.1 Map of Algeria.

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EARLY WARNING – WHAT CAN HAPPEN IF THERE IS NONE

- 69 fatalities :
40 Workers, 29 Terrorists
- Extensive damage
- Fear and trepidation
- Expensive repairs
- Why...???
- Many causes, but
- **No Early Warning**



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MOBILE SITUATIONAL AWARENESS

**SHARP™
Eye SxV**
MOBILE SURVEILLANCE



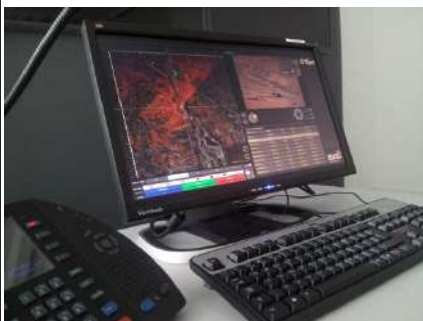
- SOLID-STATE X-BAND RADAR
- LIGHTWEIGHT – 20kg
- 360° CONSTANT LONG AND SHORT RANGE DETECTION
- AUTOMATIC SURFACE AND AIR TARGET ACQUISITION
- MOVING TARGET DETECTION
- DETECTION RANGE: MED VEHICLE - 15km, PAX - 5km
- DAY / NIGHT / ALL WEATHERS
- VERSATILE MOUNTING OPTIONS MASTS, VEHICLES, BUILDINGS

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VERSATILE AND SEAMLESS SOFTWARE INTEGRATION



CxEyeTM



- MULTIPLE RADAR AND CAMERA INPUTS
- DRAW ALARM AREAS DIRECTLY ONTO MAP DISPLAY
- CAMERA LOCATIONS SELECTABLE ON MAP DISPLAY
- PICTURE-IN-PICTURE FROM DUAL-HEAD CAMERAS
- TRACK FUSION FROM MULTIPLE LOCAL AND REMOTE SOURCES
- SLEW-TO-CUE CAMERAS ONTO RADAR TRACK TARGET
- HIGH VALUE TARGETS PRIORITISED BY USER-DEFINED THREATS

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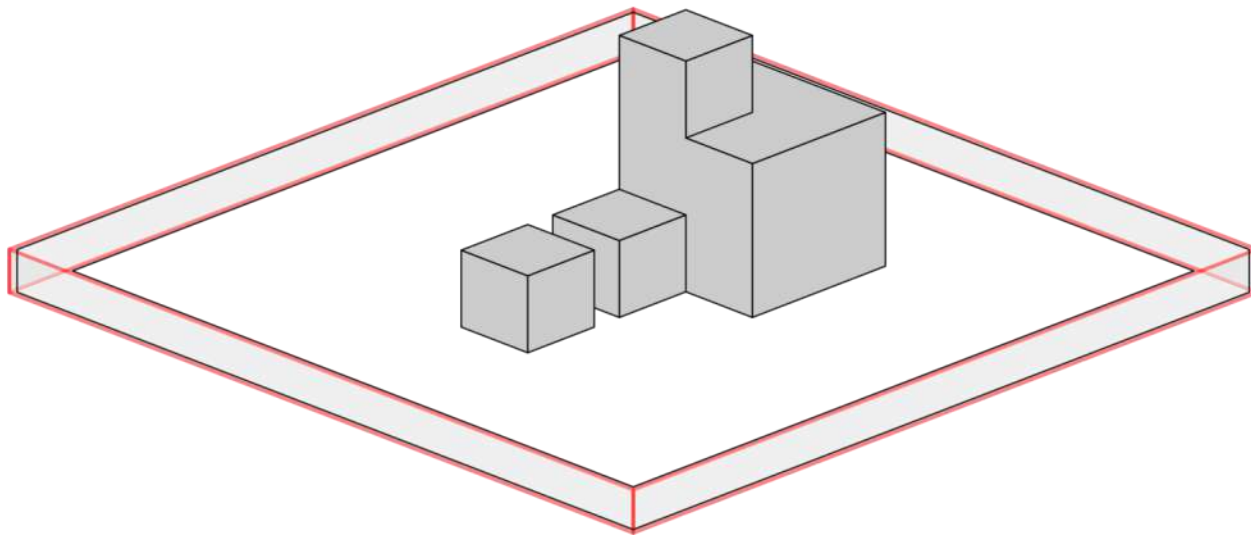
COMPLETE CONTROL AND DISPLAY SOLUTION

The screenshot displays the CxEye security software interface, which is divided into several functional panels:

- TARGET & TRACK DISPLAY:** A large map view on the left showing a target (TRUCK_3) with a red box and a green track line. The map includes various polygons labeled 'ATI-Poly' and 'Alarm-Poly'. A ruler at the bottom left shows a distance of 9340 m at 0.92°.
- VIDEO DISPLAY:** A central panel showing a live video feed from 'CAMERA_0' of a desert landscape with a road.
- CAMERA CONTROLS:** A panel on the right side of the video display, featuring a 'CxEye' logo, version 'V1.60', and a timestamp '13 Nov 2013 10:40:43 TRUCK_14'. Below the logo are three small video thumbnails with their respective timestamps.
- TARGET LIST:** A table at the bottom right of the interface listing target information. The table has columns for NAME / NO., RANGE, BRG, TYPE, and LEVEL. The visible entries are TRUCK_3, CAS_1, ARMVEH_2, and ARMVEH_1.
- TARGET & TRACK DISPLAY CONTROLS:** A panel at the bottom left of the map view, containing a 'RULER' and a 'RANGE (km)' scale with markers at 50, 20, 15, 10, and 5. There are also 'MAP' and 'FILTER' buttons.
- TARGET EDITING CONTROLS:** A panel at the bottom right of the map view, containing a 'MAP' button and several small icons for editing or viewing.
- SNAPSHOT HISTORY:** A vertical panel on the far right edge of the interface, labeled 'SNAPSHOT HISTORY'.
- KELVIN HUGHES surveillance:** The company logo is located in the bottom right corner of the overall image.

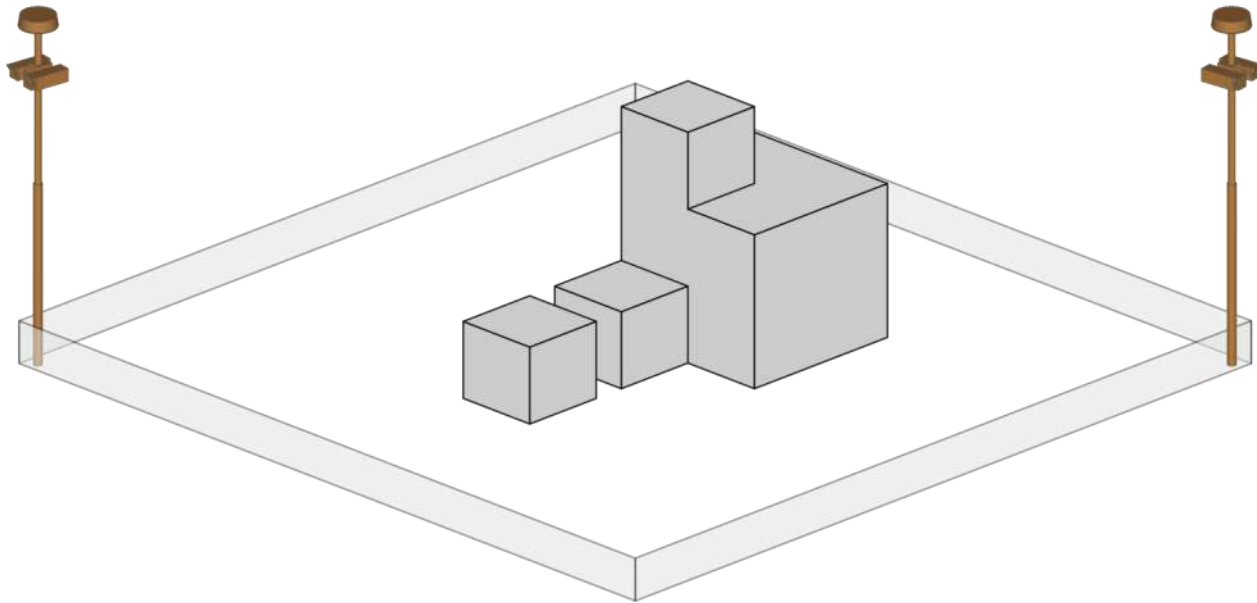
SECURITY | RADAR BASED SOLUTIONS OPERATIONAL REQUIREMENTS

EXTEND THE PERIMETER



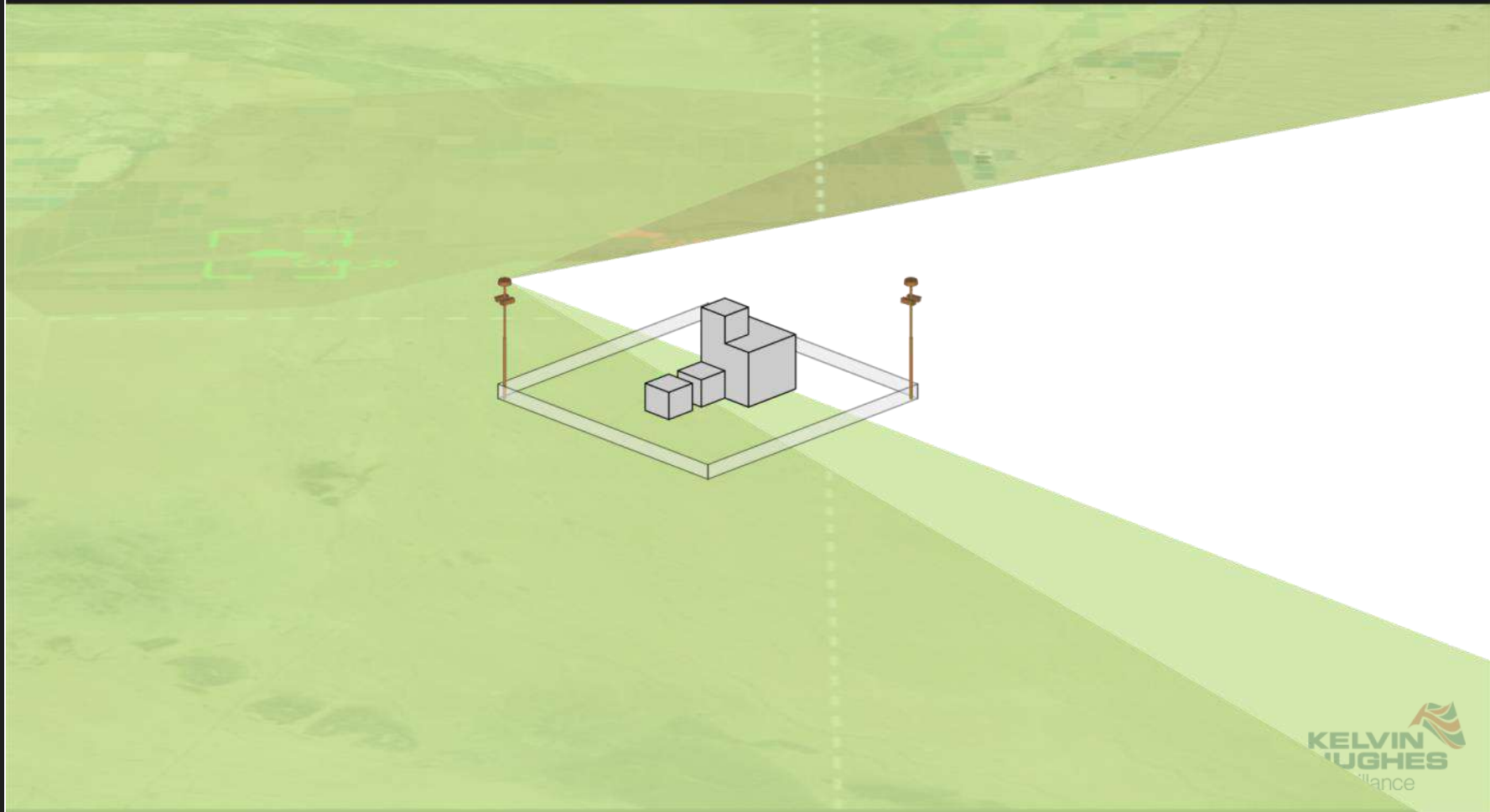
SECURITY | RADAR BASED SOLUTIONS OPERATIONAL REQUIREMENTS

EXTEND THE PERIMETER



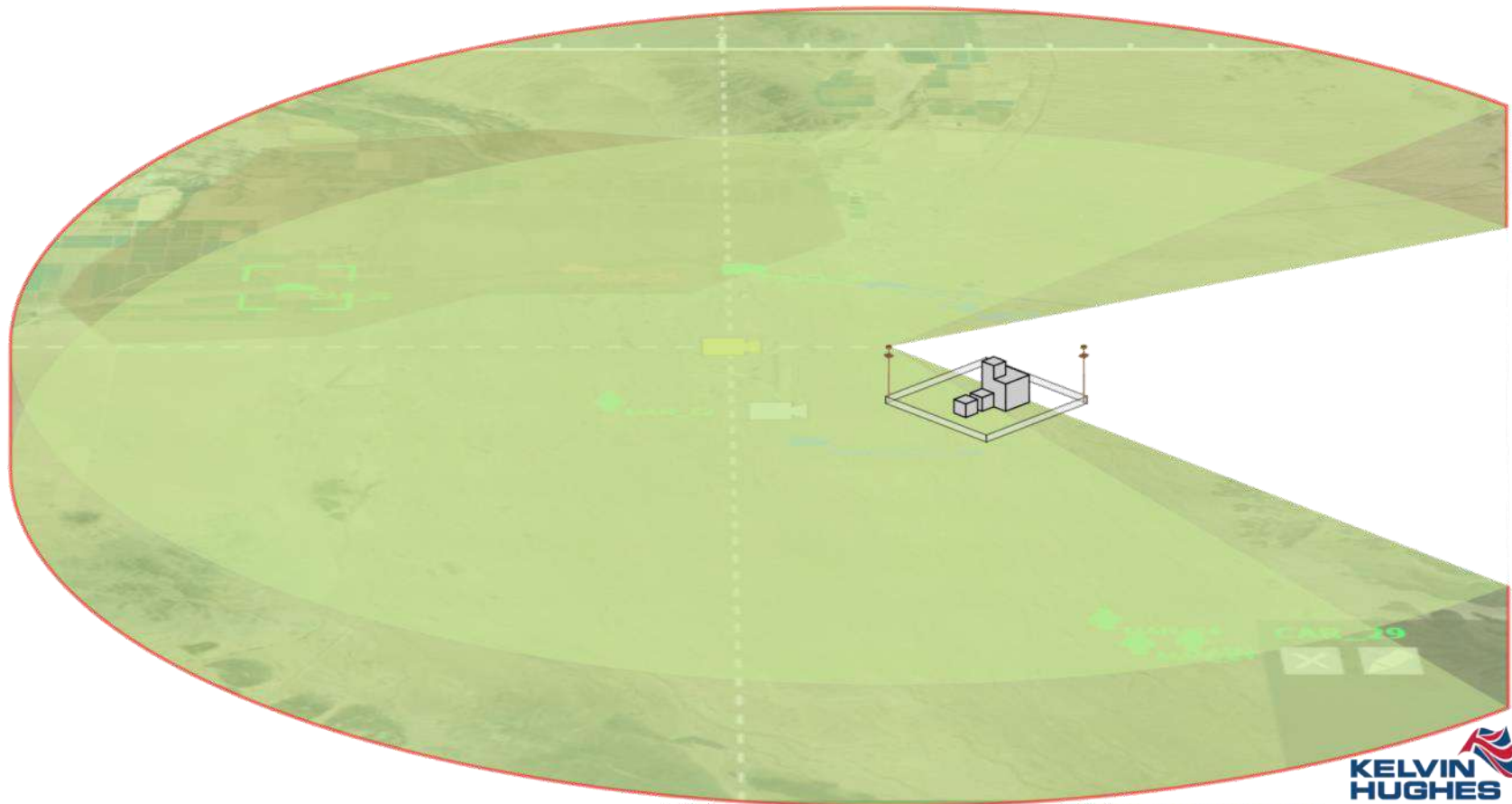
SECURITY | RADAR BASED SOLUTIONS OPERATIONAL REQUIREMENTS

EXTEND THE PERIMETER



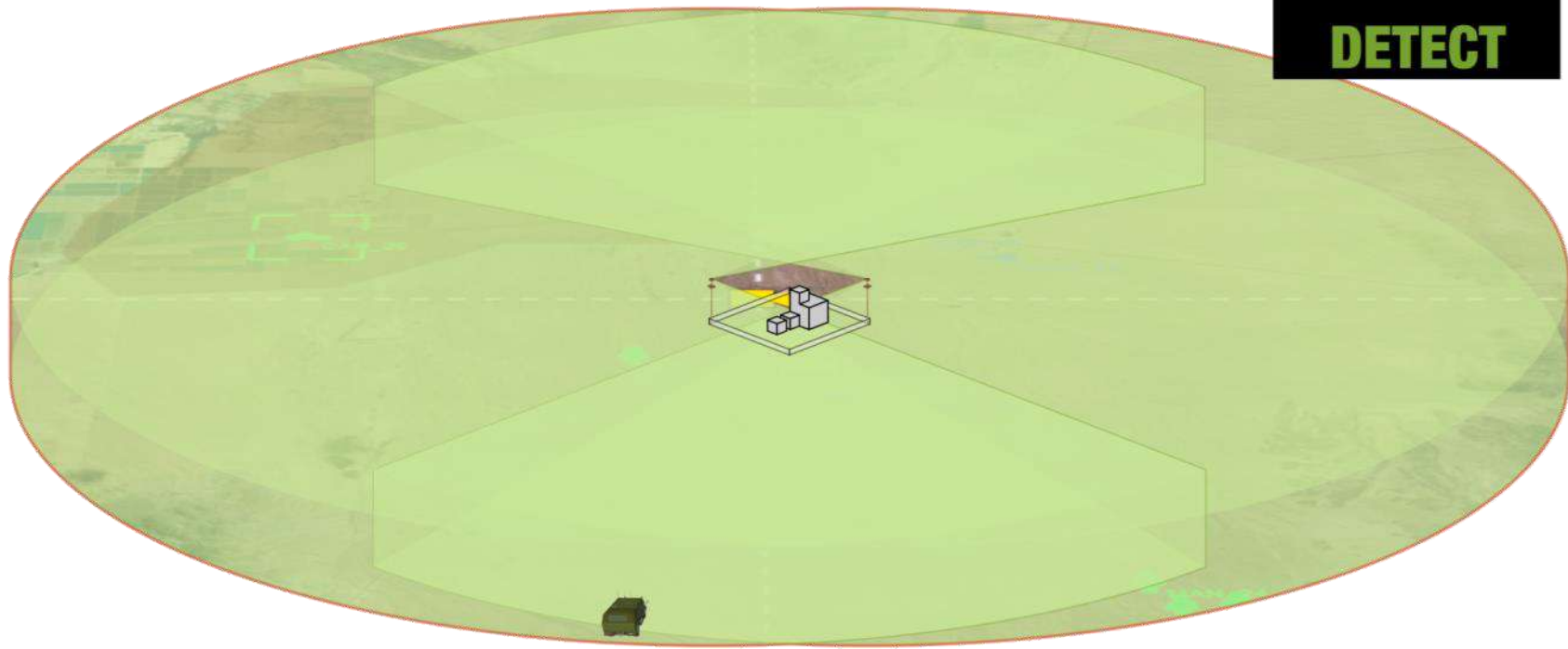
SECURITY | RADAR BASED SOLUTIONS OPERATIONAL REQUIREMENTS

EXTEND THE PERIMETER



SECURITY | RADAR BASED SOLUTIONS OPERATIONAL REQUIREMENTS

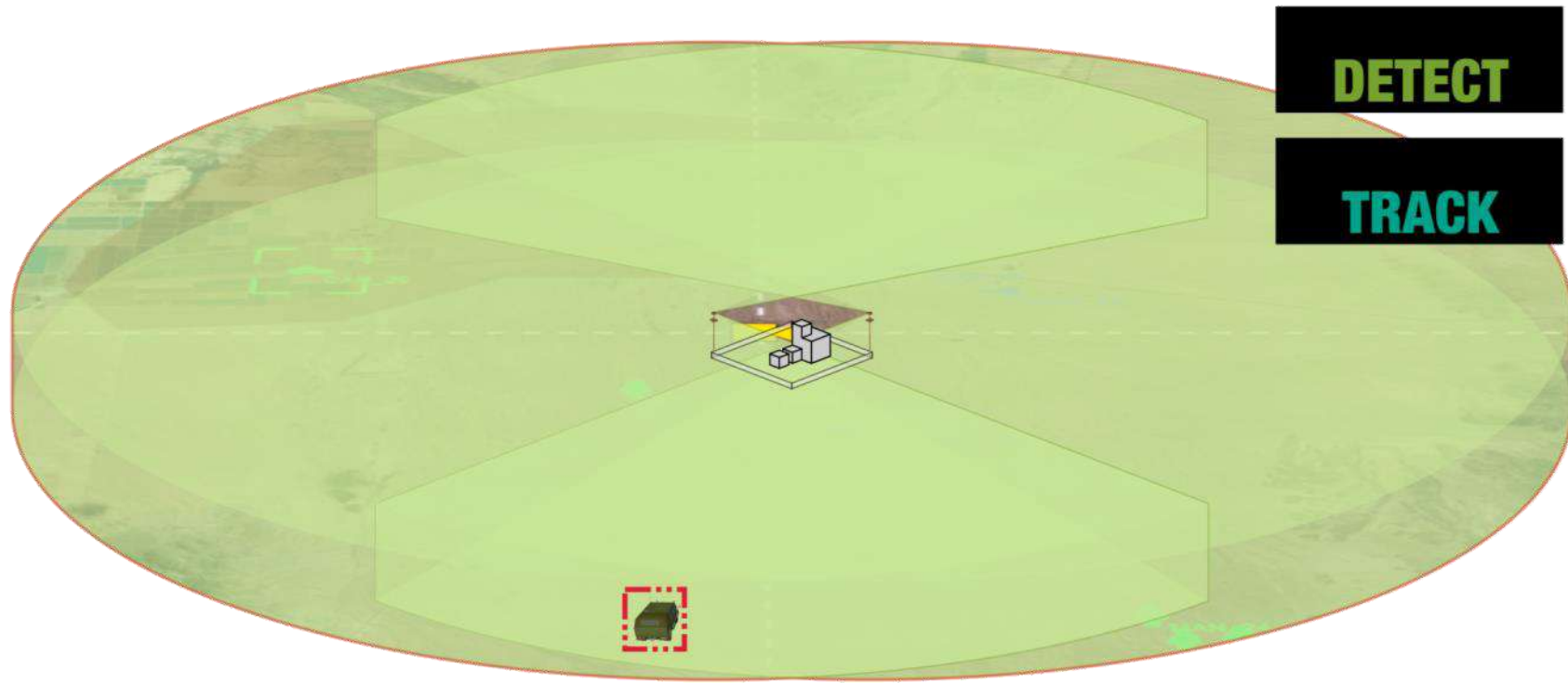
EXTEND THE PERIMETER



DETECT

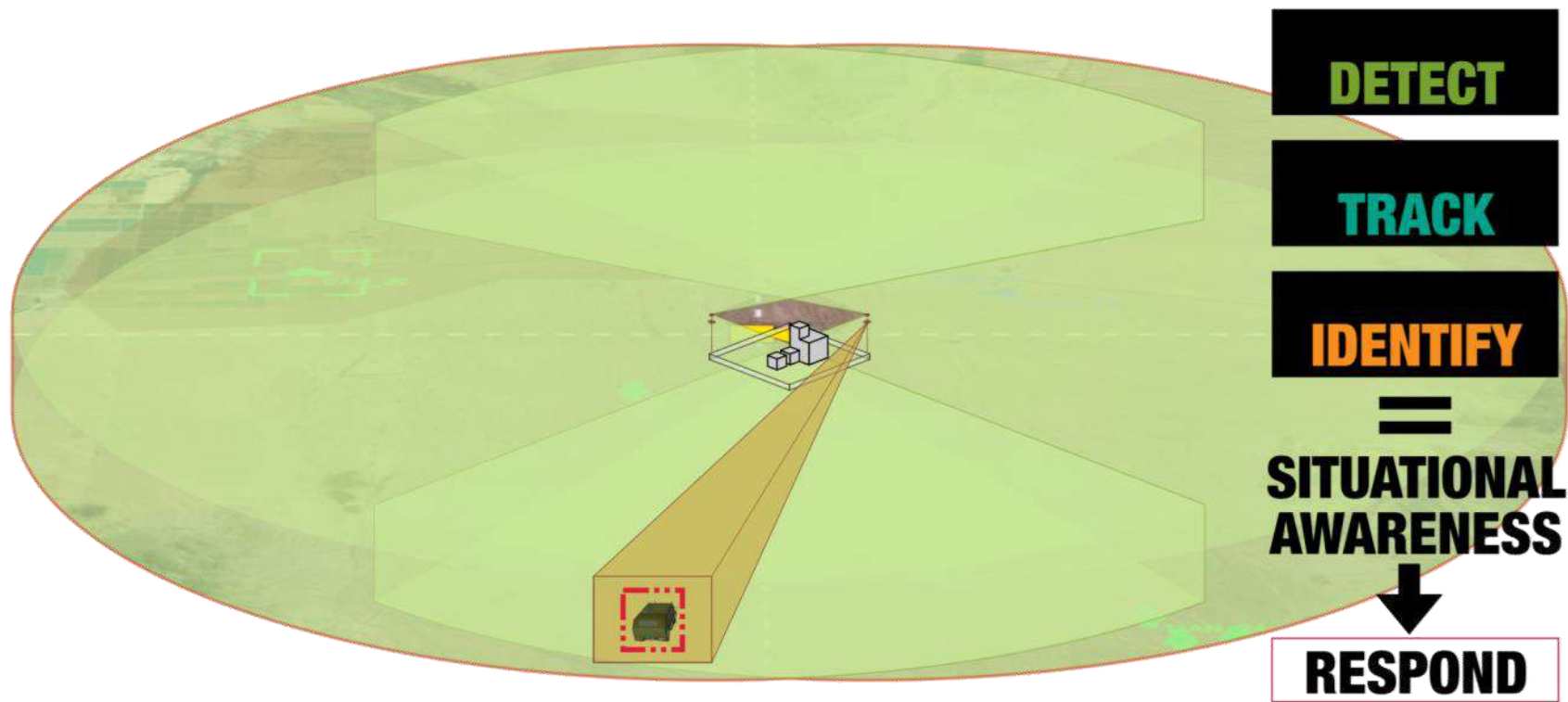
SECURITY | RADAR BASED SOLUTIONS OPERATIONAL REQUIREMENTS

EXTEND THE PERIMETER



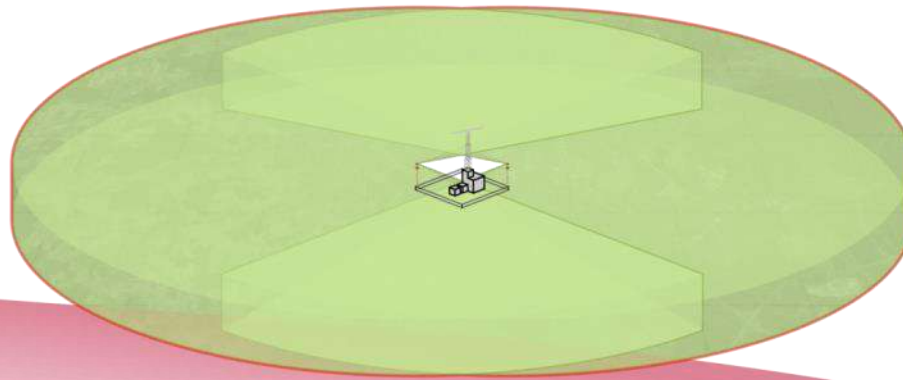
SECURITY | RADAR BASED SOLUTIONS OPERATIONAL REQUIREMENTS

EXTEND THE PERIMETER



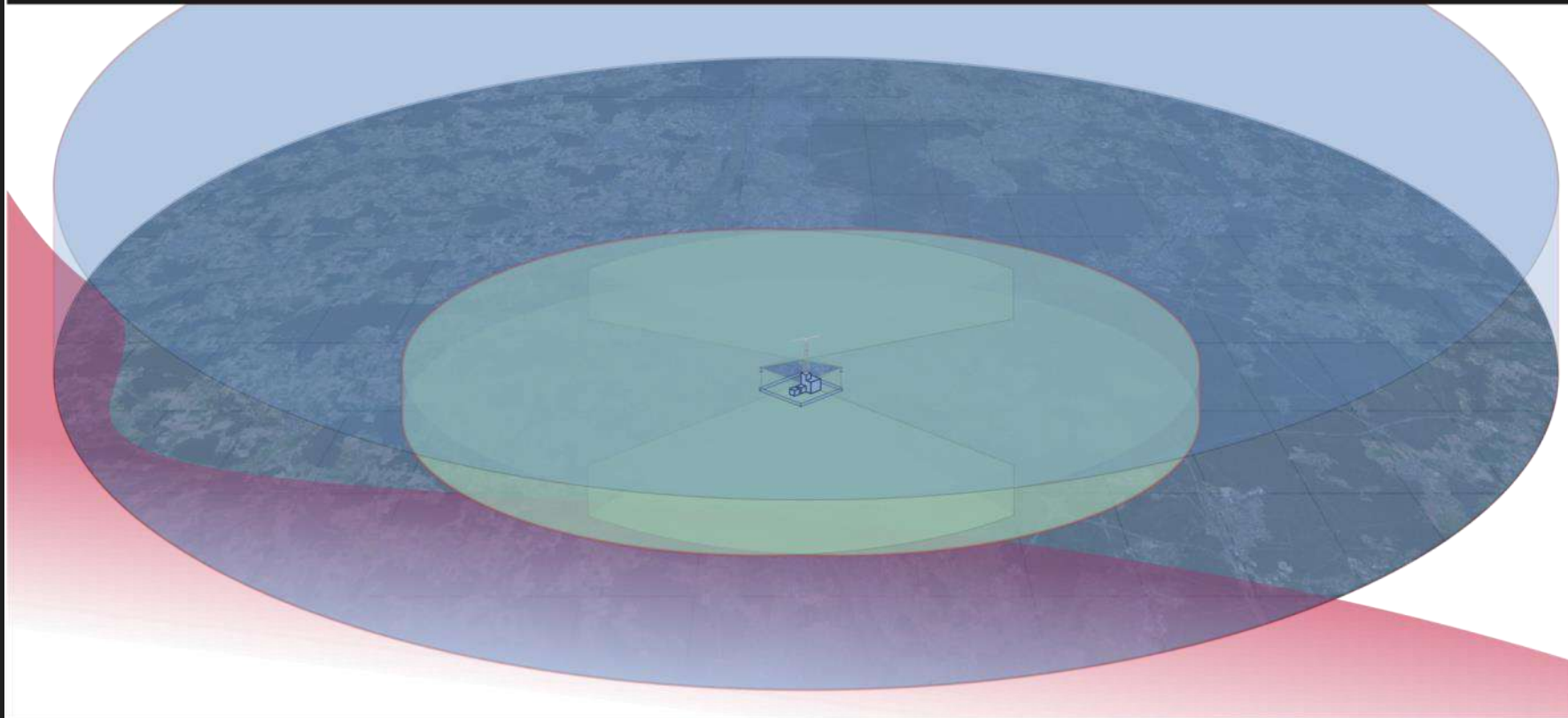
SECURITY | RADAR BASED SOLUTIONS OPERATIONAL REQUIREMENTS

PROTECT THE BORDER



SECURITY | RADAR BASED SOLUTIONS OPERATIONAL REQUIREMENTS – LONG RANGE

PROTECT THE BORDER



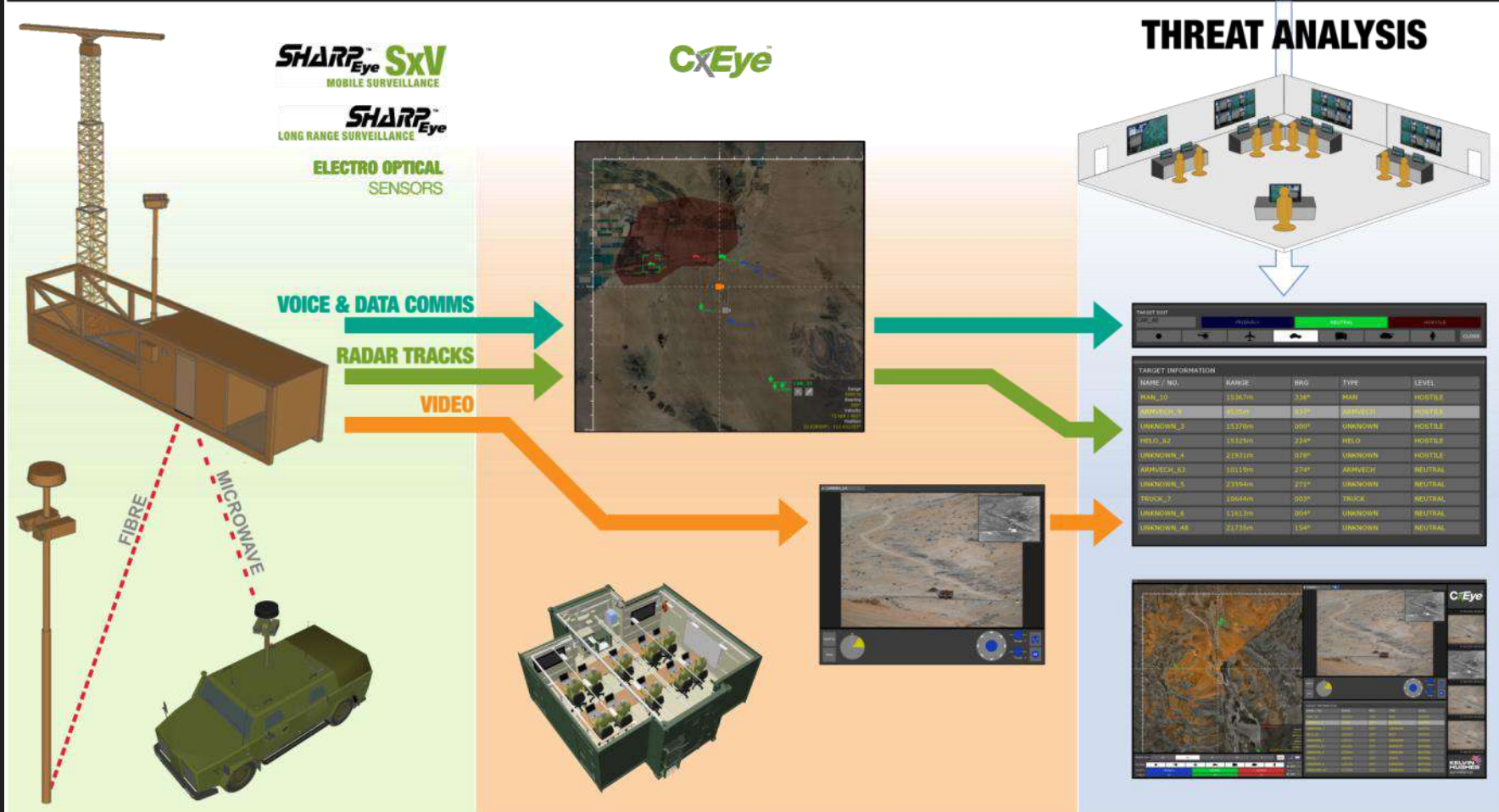
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BUILDING THE SURVEILLANCE PICTURE

LOCAL DETECT TRACK IDENTIFY

REGIONAL TRACK FUSION / DATA COMPILATION

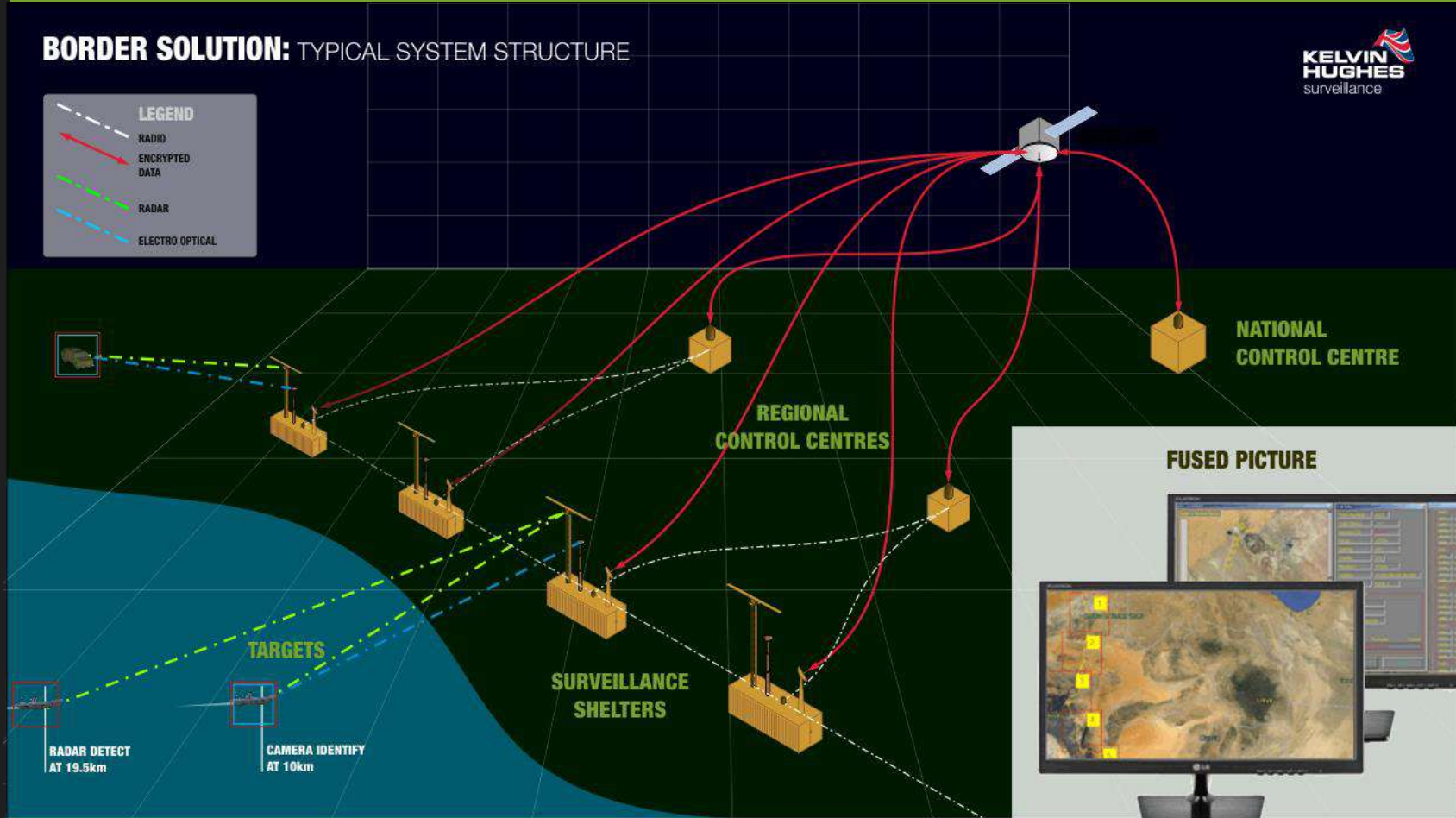
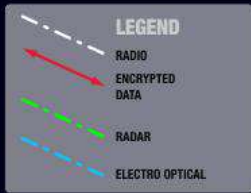
NATIONAL COMMAND & CONTROL



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TYPICAL SYSTEM ARCHITECTURE

BORDER SOLUTION: TYPICAL SYSTEM STRUCTURE



SITUATIONAL INTELLIGENCE, THE WORLD OVER



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SharpEye™ SxV



SxV OFFERS SIGNIFICANT PERFORMANCE ADVANTAGES OVER ALTERNATIVE RADAR SYSTEMS:

- Solid state lightweight radar system operating in X-band
- Unaffected by bad climatic conditions such as heavy precipitation or sandstorms
- Solid state reliability: MTBF > 50,000 hrs
- Pulsed transmissions & Doppler processing for unrivalled small target detection in heavy clutter
- 360° coverage with sector screen and sector acquisition

SxV is not only the best-performing sensor for wide area surveillance;

it is also most cost-effective sensor available for short to medium range detection.

SECURITY | RADAR BASED SOLUTIONS

SharpEye™ SxV – BATTLEFIELD SURVEILLANCE (BSR)



INTO ACTION :

- Soldier loads :
 - Radar – 20 kg
 - Tripod – 5 kg
 - Cables/power – 4 kg
 - Rugged PC – 6 kg
- Into Action time – less than 15 minutes
- Software startup – 30 secs
- Radar will operate from under camouflage netting
- Operator / FOO Party can be remoted from Radar by up to 100m

SHARP_{Eye} **SxV**
LIGHTWEIGHT RADAR

SECURITY | RADAR BASED SOLUTIONS

SharpEye™ SxV – BATTLEFIELD SURVEILLANCE (BSR)



IN ACTION :

- Lightweight X-band Radar
- Unaffected by bad climatic conditions such as heavy rain or sand/duststorms
- Reliability: MTBF > 50,000 hrs (5.8 years)
- 360° coverage with sector blanking capability, to concentrate force outwards
- Doppler processing gives outstanding small target detection in heavy clutter

SHARP SxV
LIGHTWEIGHT RADAR

SECURITY | RADAR BASED SOLUTIONS

SharpEye™ SxV – BATTLEFIELD SURVEILLANCE (BSR)



PERSISTENT / LONG TERM OPERATIONS :

- Soldier Training Courses :
 - Radar Set-Up and Operation – 3 days
 - Maintenance – 1 or 2 days
 - Software Admin and Management – 2 days
- Simple touch-screen software designed for the iPad generation
- Simple to use and retain – No skill fade
- Interface to Fire Control System

SHARP **SxV**
LIGHTWEIGHT RADAR

SECURITY | SINGLE MAST SOLUTION CONCLUSION



- **Early Warning**
- **Lightweight**
- **Modular / Flexible**
and Interoperable
- **Cost Effective**
- **Reliable**