HGH Infrared Systems

Infrared panoramic surveillance

with SPYNEL

www.HGH.fr

Typical challenges for Wide Area Security

- Maximum coverage with reduced budget.
- Early warning before intrusion
- Automatic & real time intrusion detection
- True Day & Night recognition, even in total darkness.
- Tracking & location of multiple intruders for security forces.

Typical challenges for Wide Area Security

- **Track all types of intrusions:** humans, vehicles, but also approaching swimmers, crawling men, RIBs, skiffs, jet-skis, aircrafts, UAVs
- **Withstand harsh conditions:** heat, cold, wind, rain, sand, maritime environment
- **Fast deployment, with limited infrastructure**
- **Passive:** no electromagnetic radiation
- **Easy integration into current security systems**
- **Need for stored video and forensics analysis**
- **Easy situation awareness on one single workstation**

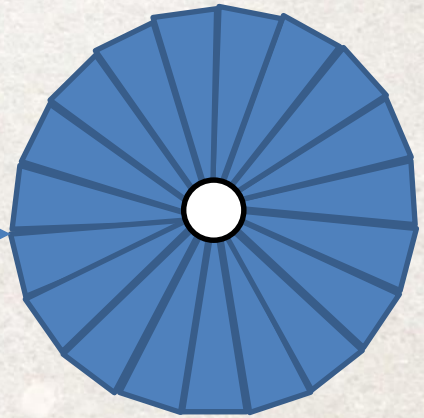




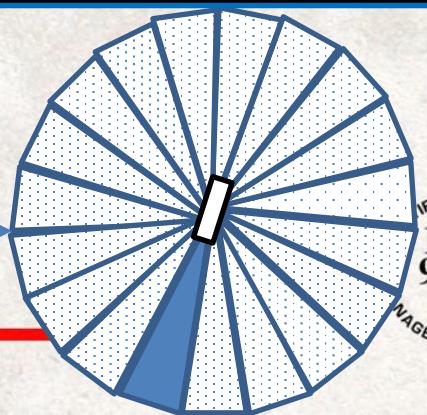
Solution for Wide Area Security

The SPYNEL concept

What Spynel sees



What a Pan&Tilt camera sees



Solution for Wide Area Security

The SPYNEL series

M

U

C

S

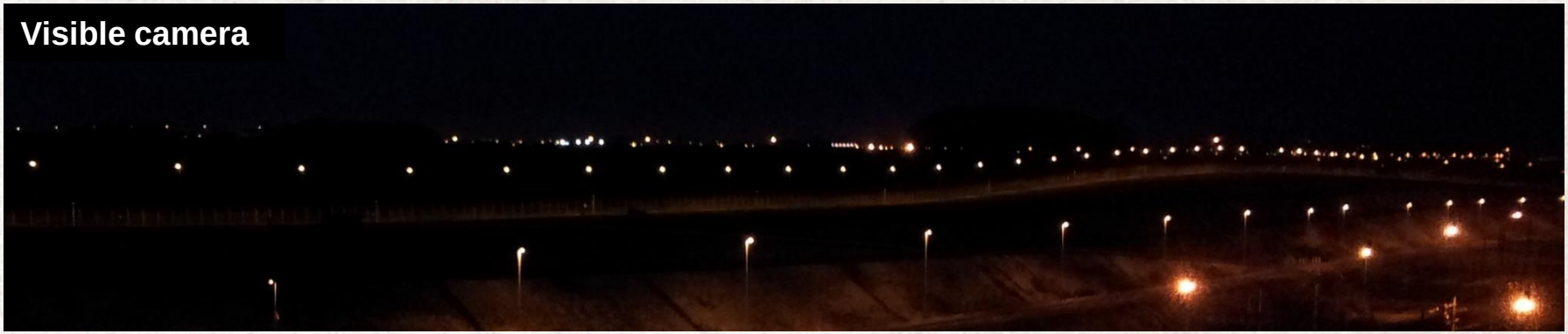
X

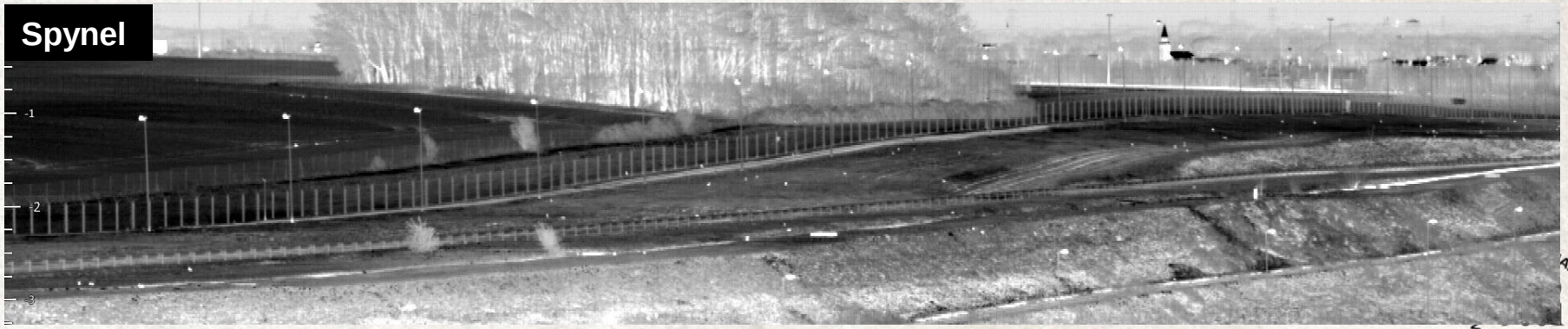
Solution for Wide Area Security

- **Unique designs for 360° thermal cameras:**
  - ✓One real time panoramic 360° image with fast frame rate
    - » Cost-effective wide area surveillance system
    - » No event missed for real time video analysis
  - ✓Thermal infrared with high thermal sensitivity
    - » Day & Night real operation, all weather conditions
    - » No electro-magnetic disturbance
  - ✓High spatial resolution: up to 120 millions pixels in the 360° image
    - » Intruders identification in zoom windows
    - » Forensic capabilities

Solution for Wide Area Security

- **Thermal imaging: the invisible revealed**



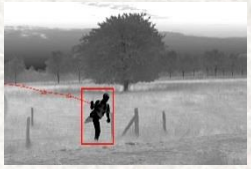
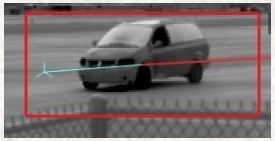
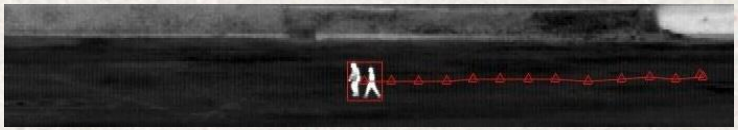


Solution for Wide Area Security

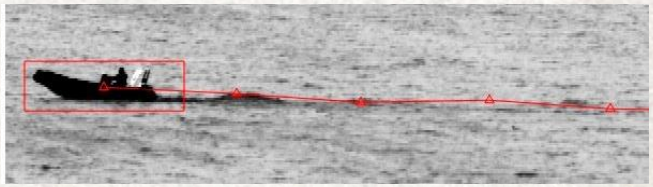
- **15 Spynel models available for human detection range from 0m up to 8 000m**
  - » For short, medium or long range requirements
  - » Multiple possible Spynel configurations for one single security project
  - » Less cameras and infrastructures required for surveillance of wide areas

Solution for Wide Area Security

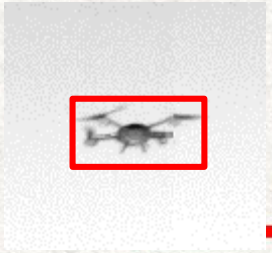
- **Thermal imaging : to detect any kind of intrusions**
  - ✓Ground

  - ✓Maritime


  - ✓Air




Solution for Wide Area Security

- **Various vertical Fields Of View (FOV) available**
  - » Wide range of 15 products for all specific requirements and applications
- **Line of sight adjustment**
  - » Adaptation to specific surroundings and topography

- **Field proven in very harsh environmental conditions**
  - » Worldwide installations & references

Solution for Wide Area Security

- **Real time & Recorded panoramic video**
  - » Multiple target tracking&recognition capability
  - » No missed event for forensics analysis
- **Compact and transportable systems**
  - » Easy & fast deployment (<5 min. for 1 man)
- **IP connection**
  - » Easy and fast integration
- **Passive:**
  - » Undetectable unlike radars & no jamming
  - » No disturbance with other existing devices
  - » No radiation for on-site personnel or for EM sensitive materials

HGH Infrared Systems

Spynel comparison table

	Spynel-M	Spynel-U	Spynel-C	Spynel-S	Spynel-X
Horizontal FOV	360°(1)	360°	360°	360°	360°
Vertical FOV	36° or 18°	18° or 9°	20°, 10° or 5°	20°, 10° or 5°	20°, 10° or 5°
Sensor head rotation	Fixed	Continuous	Continuous	Continuous/Staring(2)	Continuous/Staring(2)
Line of sight range	-18°/+18°	Fixed	-20° / +45°	-45° / +45°	-45° / +45°
Frame rate	Up to 1Hz(*)	Up to 0.5Hz	Up to 2Hz	Up to 2Hz	Up to 2Hz
Spectral bandwidth	LWIR (8-12µm)	LWIR (8-12µm)	LWIR (8-12µm)	MWIR (3-5µm)	MWIR (3-5µm)
IR technology	Uncooled IR	Uncooled	Cooled	Cooled	Cooled
Detector format	336x256 or 640x512	640x512	288x4	640x512	Megapixels
360° image resolution	Up to 5Mpxs	Up to 9 Mpxs	Up to 12 Mpxs	Up to 30 Mpxs	Up to 120 Mpxs
Weight	1,8kg	22kg	28kg	38kg	38kg
Operating Temp.	-40°C to +55°C	-40°C to +71°C	-40°C to +71°C	-40°C to +71°C	-40°C to +71°C
Human detection	Up to 700m	Up to 2 000m	Up to 3 000m	Up to 6 000m	Up to 8 000m
Vehicle detection	Up to 1 400m	Up to 4 000m	Up to 6 000m	Up to 12 000m	Up to 15 000m
RIB detection	Up to 1 400m	Up to 4 000m	Up to 6 000m	Up to 12 000m	Up to 15 000m

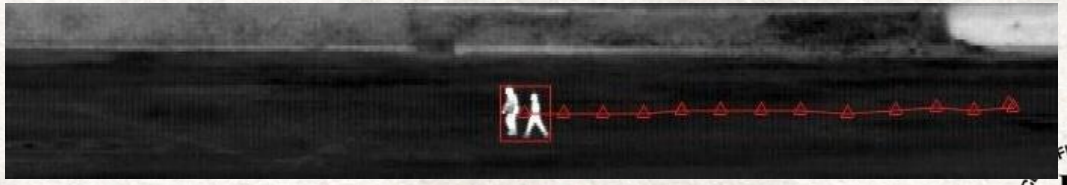
(1) *: sector scan capability and staring mode at higher frame rate*

(2) *: optional integrated visible full HD camera and/or Laser Range Finder available in staring mode*

The Spynel solution – CYCLOPE™ Software

The Spynel solution – CYCLOPE™ Software

- **Automatic Detection & Tracking of multiple intrusions over 360 degrees (ground/air/maritime)**
- **Visualisation of simultaneous intruders in different directions**
- **360° Recording & Playback for Forensics analysis**



The Spynel solution – CYCLOPE™ Software

General Block Diagram

IP communication link

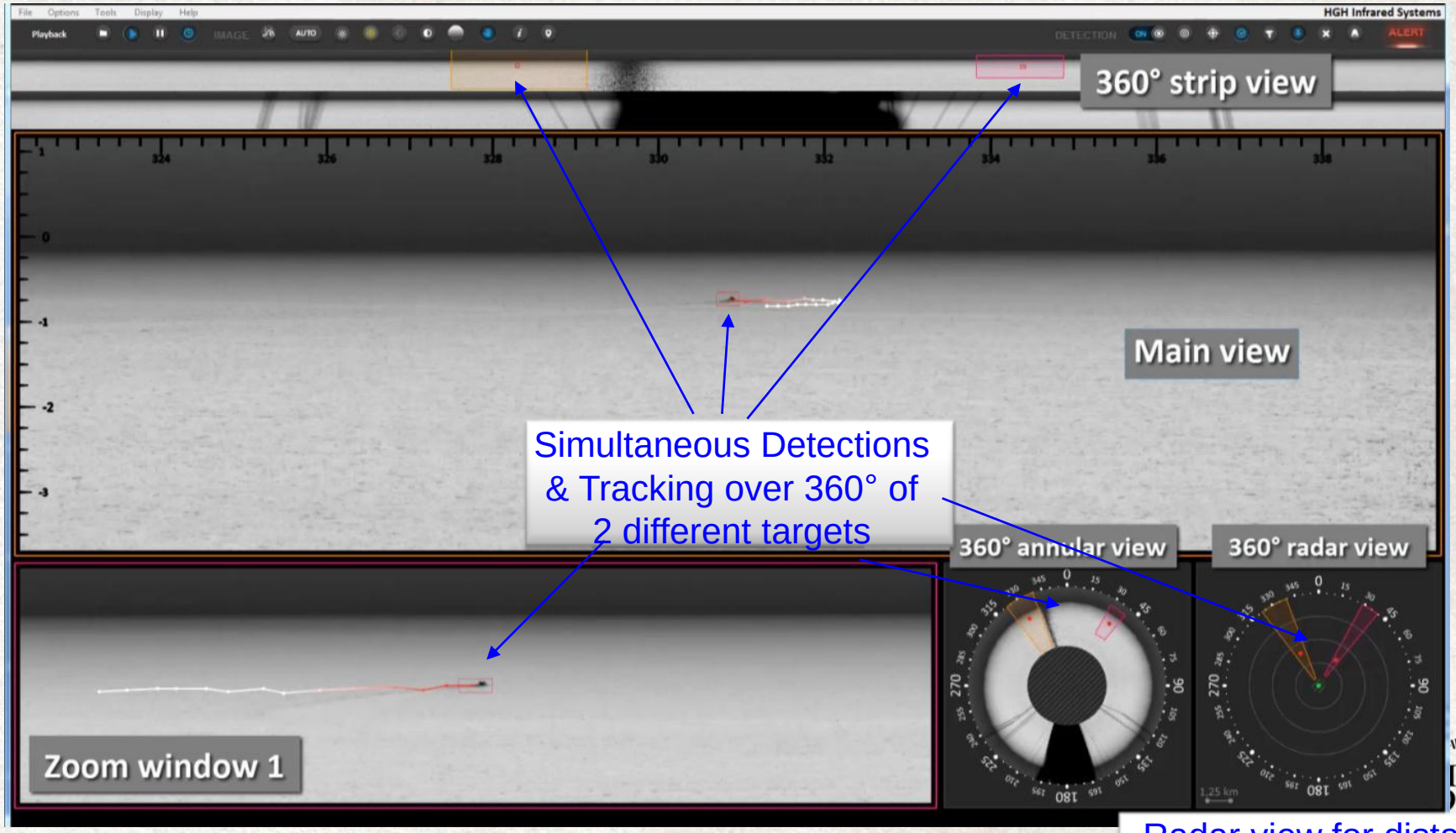
Power supply

Data processing system* running **Cyclope** sofware for :

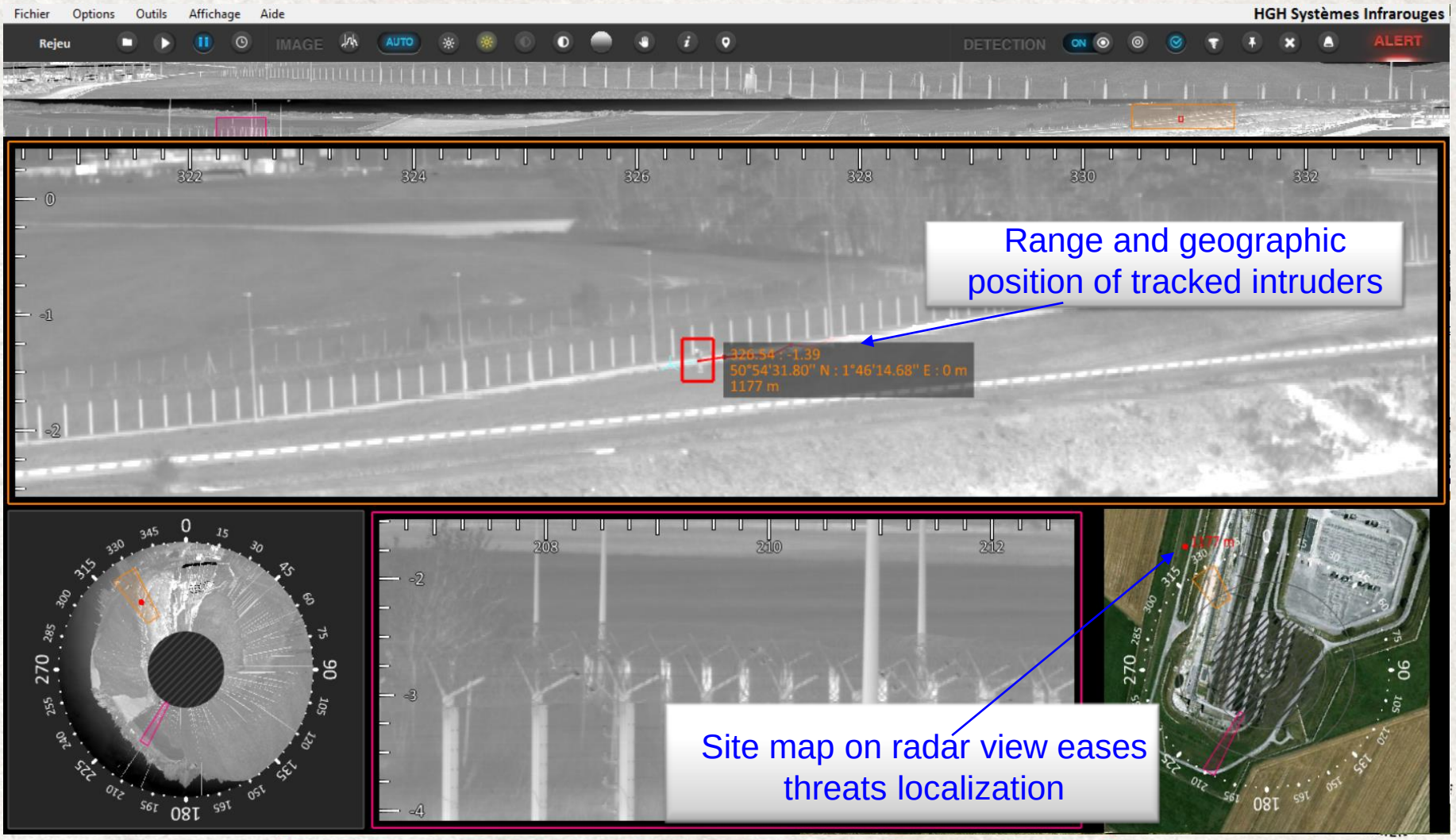
- Visualisation
- Detection & tracking
- Recording & playback

(*) Windows Desktop PC or Laptop PC

User-Friendly « Cyclope » Software



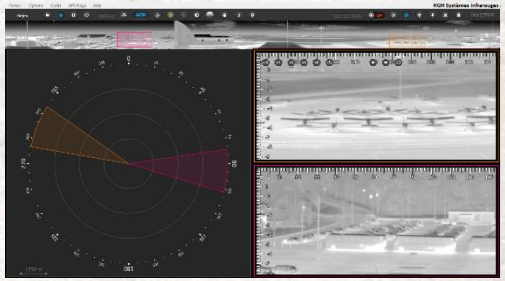
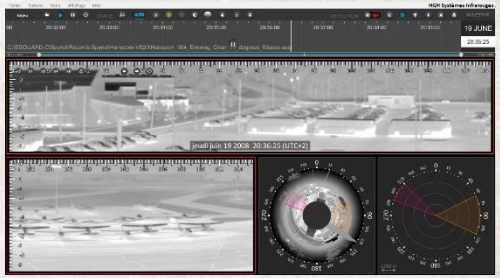
User-Friendly « Cyclope » Software

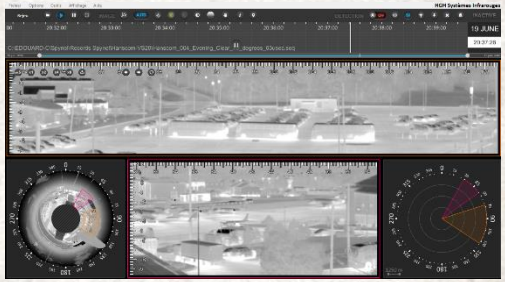
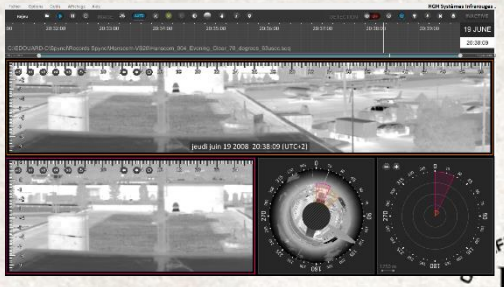


User-Friendly « Cyclope » software – Flexible GUI





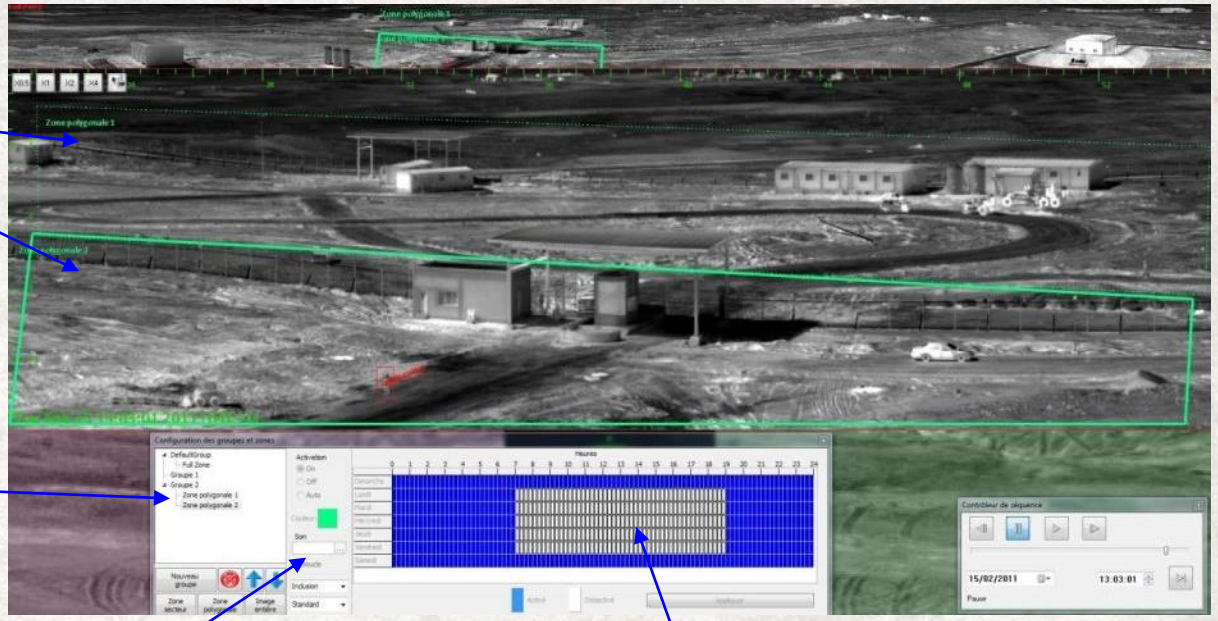



User-Friendly « Cyclope » Software

- **Easy creation of detection zones**

Detection OFF
Detection ON
depending on zone & date/time

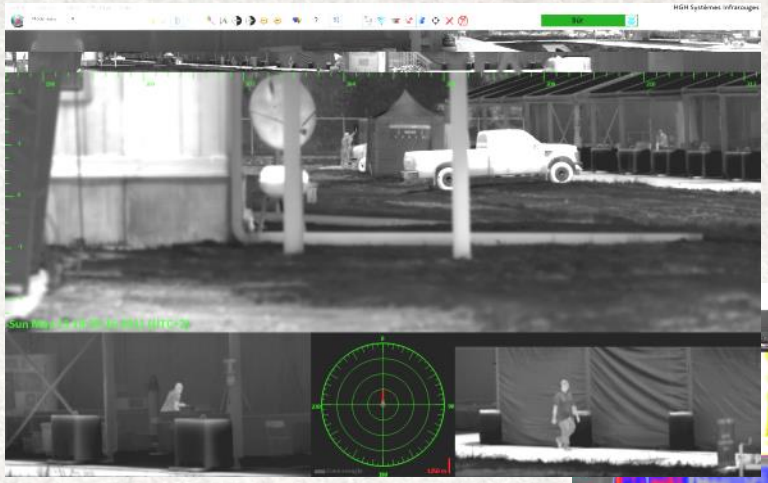


Groups of zones for alarm classification

Sound and visual alarm output

Alarm activation according to date/time

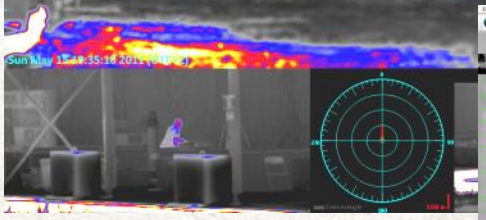
Zoom and colour palette for recognition



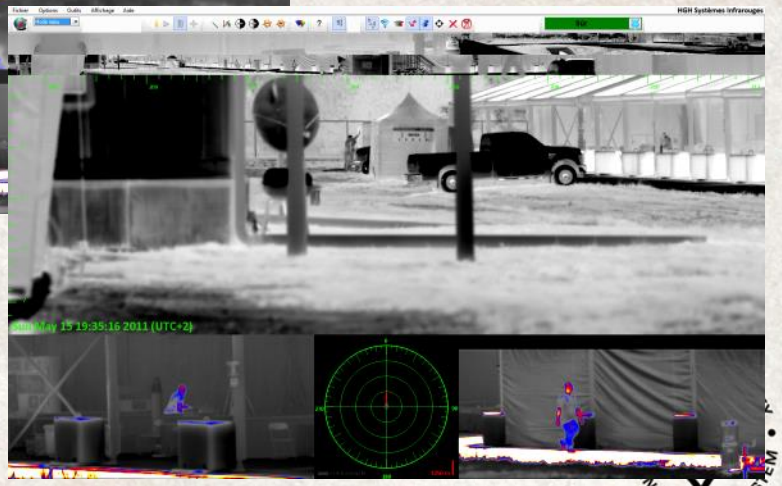
White hot

New zoom window

Black hot

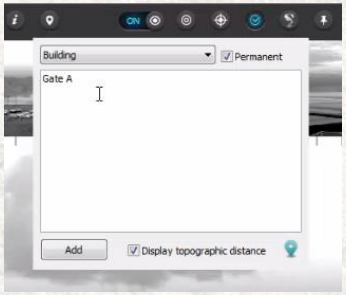


Color highlight

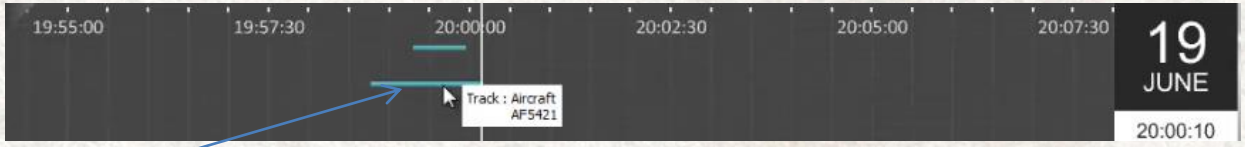


User-Friendly « Cyclope » Software

- **Bookmarks can be easily added to quickly localize events, in space and time with target classification and comments**



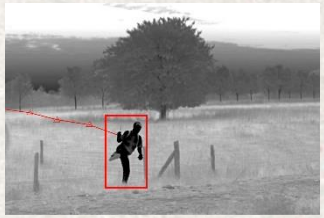
- **The timeline gives a quick overview of events for forensics analysis**



APPLICATIONS

- **Perimeter Security :**
  - **Energy : nuclear plants, dams, power stations, solar/wind farms**
  - **Official buildings : prisons, embassies**
  - **Private properties: palaces, golf, ranches**
  - **Large sites: logistic warehouses, parking lots**

References : France, Mexico, USA, Japan, UAE, Saudi Arabia



- **Seaport/airport security:**

References : USA, Canada, UAE, Saudi Arabia, Argentina, Benin, Singapore

- **Wide area surveillance:**
  - **Coastal and Border Passive Surveillance**
  - **Border Patrol**

References : Malaysia, France (Eurotunnel), Colombia, USA, South Korea

APPLICATIONS

- **Oil & Gas industry :**
  - Onshore : refineries, exploration sites, terminals
  - Offshore : Oil rigs (FPSO, CPF, FLNG…)

References : INPEX, TOTAL, SHELL, ENI, NCOC

- **Air surveillance:**
  - Counter UAV systems
  - Air traffic monitoring
  - Short range air defence systems

References : France (Ministry of Interior, MBDA), Canada, Japan, Mexico

- **Others :**
  - Fire detection
  - Ecology & Wild life protection
  - Merchant Navy and Yachts : anti-piracy, navigation assistance, search and rescue, anti-collision (interface with AIS & Radar)

APPLICATIONS

- **Defence:**

LAND

- Site protection : air/naval bases, camps, FOB
- Short range air defense systems
- Special Operation Forces

References: US Army, French Army, French Special Forces (GIGN), MODs (UK, Nigeria, Singapore, India, UAE)

NAVAL

- Asymmetric threats detection (InfraRed Search&Track)
- Fight against piracy, navigation assistance
- USV

References: US Navy, French Navy, MODs (UK, South Africa)

Typical installations - Fixed

Typical installations - Fixed

Typical installations – Fast deployment (tripod or telescopic mast)

Typical installations – Fast deployment (tripod or telescopic mast)

Typical installation : Special Operation Forces

Spynel-M : ultra-light & fast deployable surveillance system

Typical installation : vehicle mounted

Situational Awareness for temporary surveillance

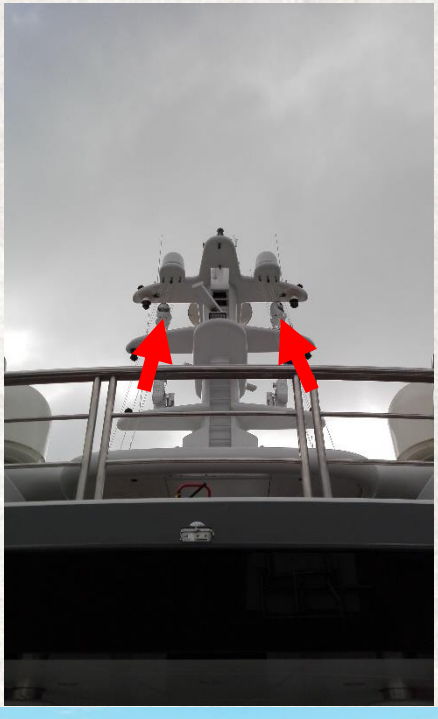
Typical installation : shipborne

Stabilized Platform Specifications:

- Roll motion: ± 20°
- Pitch motion: ± 20°
- Stabilization accuracy: 0.1°
- Weight : 48kg
- Dimensions: 450 mm (dia.) x 490 mm (H).
- Environmental protection level: IP66
- Compatible with Spynel–U/-C/-S/-X

Gyro-stabilized platform

Typical installation : shipborne



Typical installation : shipborne for USV

for anti-collision or remote control

Stabilized Platform Specifications:

- Roll motion: ± 15.5°
- Pitch motion: ± 15.5°
- Stabilization accuracy: 0.2°
- Weight : 7kg
- Dimensions: 350 mm (dia.) x 150 mm (H).
- Environmental protection level: IP67
- Compatible with Spynel–M

Spynel-M with Gyro-stabilized platform

Product awards

SPYNEL : To keep in mind

- Cost effective for wide area/perimeter surveillance
- Automatic Detection & Tracking capabilities
- Recognition of multiple intruders simultaneously
- UAV, RIB & human detection capabilities
- Proven and COTS technology
- Passive detection (undetectable, no EM disturbance)
- Automatic tracking before and after intrusion
- Fast & easy deployment (mobile/temporary surveillance)
- Insurance to record all intrusions (360° video recorded)