# GAIA™ Artificial Intelligence Module
## for Automatic Classification of any Kind of Threats
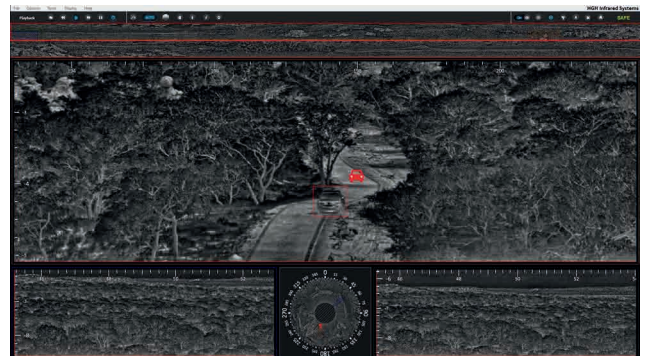
Classification: Human (0.70)

## IMPROVE DETECTION EFFECTIVENESS AND STREAMLINE SURVEILLANCE OPERATIONS

Integrated into the SPYNEL long-distance surveillance solutions, the newest GAIA™ Artificial Intelligence processing features unique capabilities in the market in terms of **automatic classification of objects within panoramic thermal images.** The AI module makes use of three patent-pending neuronal networks designed to recognize patterns for **maritime, land and air surveillance applications.** The automatic classification is operational at long-distance, on a very wide range of land and sea targets, from just a few pixels to very large objects.

The unique combination of GAIA™ Artificial Intelligence with Cyclope video analytics provides advanced detection, tracking and classification of any kind of threats. Whilst the use of Artificial Intelligence drastically **lowers false alarm rate** for wide area surveillance applications, it improves **human decision efficiency** and decreases the use of operational means.
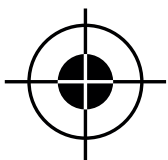
## KEY FEATURES

- Automatic classification performed on thermal panoramic videos
- Operational on a very wide range of threats, from just a few pixels to very large objects
- Detection of both stationnary and/or moving objects
- Maritime/Ground/Air intrusion classification capabilities
- Very low false alarm rate in complex conditions
- Scalable customizable on-demand neuronal networks trained for specific customer applications
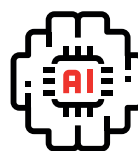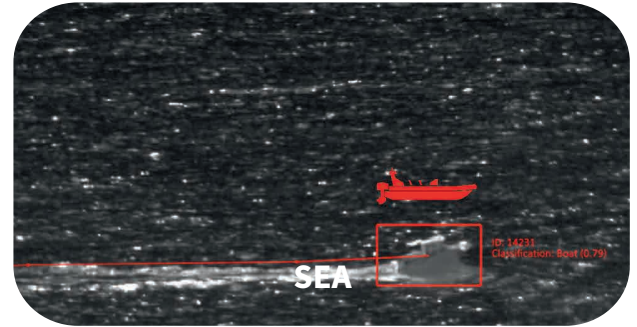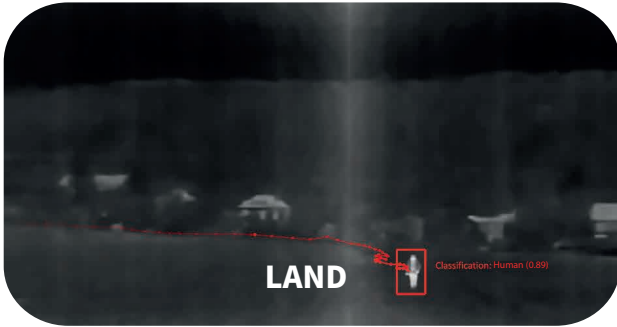
## HOW DOES IT WORK?

**1. DETECT**  >>>
**2. TRACK**  >>>
**3. ANALYZE**  >>>
**4. CLASSIFY**  >>>

hgh-infrared.com/gaia-artificial-intelligence/

## DETECT, TRACK AND CLASSIFY ANY KIND OF THREATS
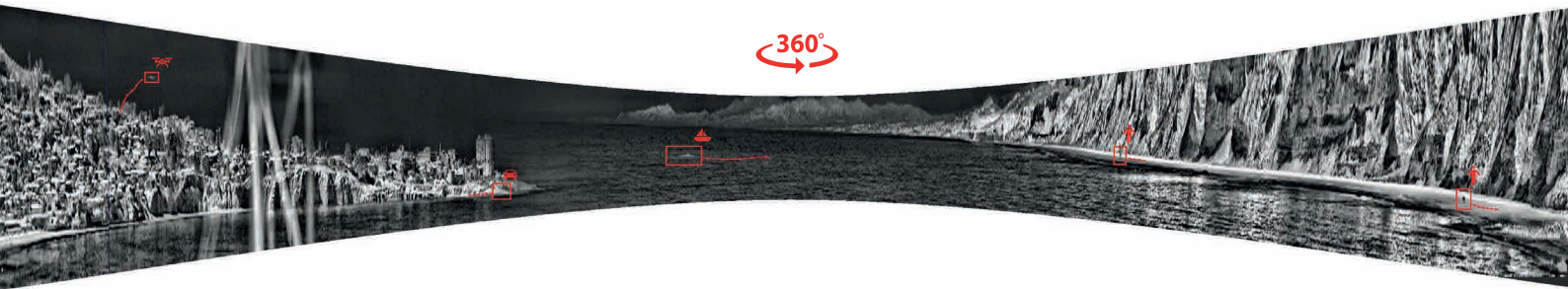

LAND


SEA

Ground Surveillance : Type of objects classified
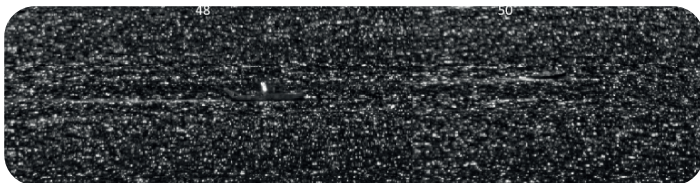- Human
- Car
- Truck
- Two wheels

Maritime Surveillance : Type of objects classified
- R.H.I.B
- Boat
- Sailing Boat
- Buoy
- Tanker


360°

## I²Q: IMAGE PROCESSING LIBRARY

GAIA™ Artificial Intelligence is boosted by the I²Q™ image processing library allowing to achieve superior day/night image quality whatever the environmental conditions. I²Q™ image processing includes multiple algorithms to improve user experience such as sun glint reduction, smart denoising, local contrast image enhancement and more.



Sun glints on the sea surface makes it impossible to detect any objects.



Image processed by artificial intelligence and sun glints reduction makes it possible to detect and classify ships.

# CYCLOPE
## Video Analytics Software Suite

## INTRUSION DETECTION, TRACKING and CLASSIFICATION OVER 360°

CYCLOPE is an advanced software suite processing thermal panoramic images captured by the SPYNEL® Wide Area Surveillance sensors in real-time. It consists of software modules (Server, Client, Hypervisor) enabling to process the SPYNEL panoramic videos for a wide range of ground based or embarked applications, for any type of temporary or permanent installations, and from the simplest up to the most complex network architectures.

Designed to automatically detect, track and classify an unlimited number of ground/air/maritime intruders simultaneously, including hardly detectable threats, such as crawling men, RHIBs, jet-skis, stealth or low altitude aircrafts (like UAVs), CYCLOPE provides advanced data analysis and classification based on Artifical Intelligence to guarantee a very low false alarm rate.

ONVIF compliant, CYCLOPE can also be fully integrated in a Third Party software (VMS, CMS, C2, PSIM platform…).



User-defined detection zones according to the missions and potential threats

Unlimited number of windows to display multiple intruders simultaneously

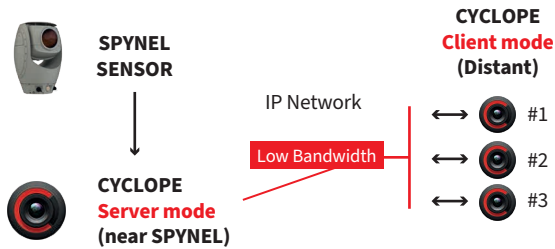Radar view with 2-D map overlay and geolocation of detected threats

The Graphical User Interface is fully customizable: preset or user-defined layouts of an unlimited number of zoom windows, panoramic, annular or radar views can be displayed on multiple screens.
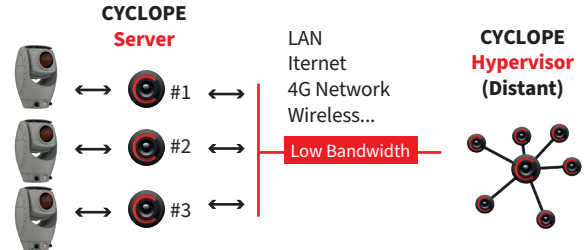
# CYCLOPE
## Video Analytics Software Suite

## SOFTWARE ARCHITECTURE BEYOND CYCLOPE SERVER

### CYCLOPE CLIENT/SERVER
**One Sensor - Multi Operator**

SPYNEL SENSOR

CYCLOPE
**Server mode**
(near SPYNEL)

IP Network

Low Bandwidth

CYCLOPE
**Client mode**
(Distant)

#1
#2
#3

Connected to the CYCLOPE Server, the CYCLOPE Client workstations enable to display the Spynel day/night videos and the alarms to multiple remote operators with unparalleled ease-of-use and low bandwidth.

### CYCLOPE HYPERVISOR
**Multi Sensor - Multi Operator**

CYCLOPE
**Server**

#1
#2
#3

LAN
Iternet
4G Network
Wireless...

Low Bandwidth

CYCLOPE
**Hypervisor**
(Distant)

CYCLOPE Hypervisor centralizes all data from security sensors over a common network to offer a global geolocation of all tracked events by multiple SPYNEL sensors located on one or several sites.

## CONTROL AND DISPLAY SOFTWARE

**Advanced video processing**
Artificial Intelligence, smart image enhancements, detection/classification algorithms for very low False Alarm Rate.

**Multi-layer display**
Real-time panoramic or zoom display, geolocation of threats, recording & replay of panoramic videos, timeshift function.

**High integration capabilities** ONVIF®
ONVIF, H264, XML, MIME, TCP/IP, Client/Server, fusion of thermal tracks with external devices (ARPA radars, AIS, ADS-B...), external PTZ camera video display with automatic slew-to-cue.
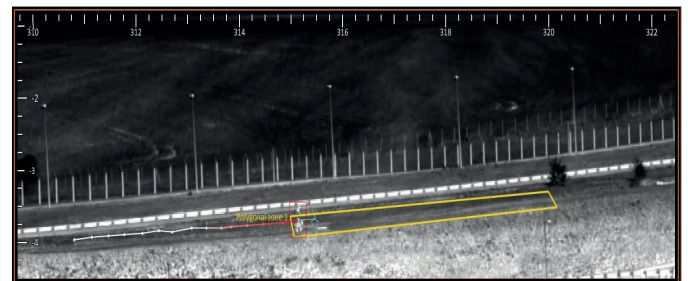
**Advanced Alarm Management**
Tracking of any ground/air/maritime threats, smart analysis to trigger alarms and customized security actions.

Automatic classification of maritime ships based on AI

Zones with smart alarm conditions for human intrusion detection and tracking

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