




NGARO[®] FLARE


ADVANCED PLATFORM FOR DETECTION OF FLARES ON SPORTS EVENTS

BY MEANS OF INFRARED TECHNOLOGY

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1. INTRODUCING THE COMPANY

Ngaro Intelligent Solutions S.L. is a company specialized in the development and marketing of high-features electronic security and control systems, based on infrared vision, focused on protecting infrastructures, installations, processes and persons against terrorism, robbery, fire, accident or any other kind of generic or specific menace.

In Ngaro we are convinced about the technological superiority infrared vision holds over conventional vision when applied to any top-level surveillance and control system which may require morphological recognition of generic targets. We also understand that thermal-based surveillance and control systems require an automation of the processes of observation, analysis, detection, tracking and event management in order to obtain the best performance of this technology.

Our mission is to develop advanced surveillance and control solutions which satisfy the client's needs in an efficient way, in a wide range of operative contexts, and supply them to integrators and installers.

The products of Ngaro are the consequence of more than ten years of experience on the fields of telecommunications, integration of systems, analysis and control of infrared sensors, GIS and real-time software development. In Ngaro we design our solutions in close collaboration with national safety forces, private and industrial security companies, fire departments, entities for the preservation of nature reserves and public safety forces.


Our strategy for getting to the client acts through system integrators and installers. This way, Ngaro keeps a policy of development and maintenance of stable collaboration relationships with agents of consolidated position on the several markets in which we operate.

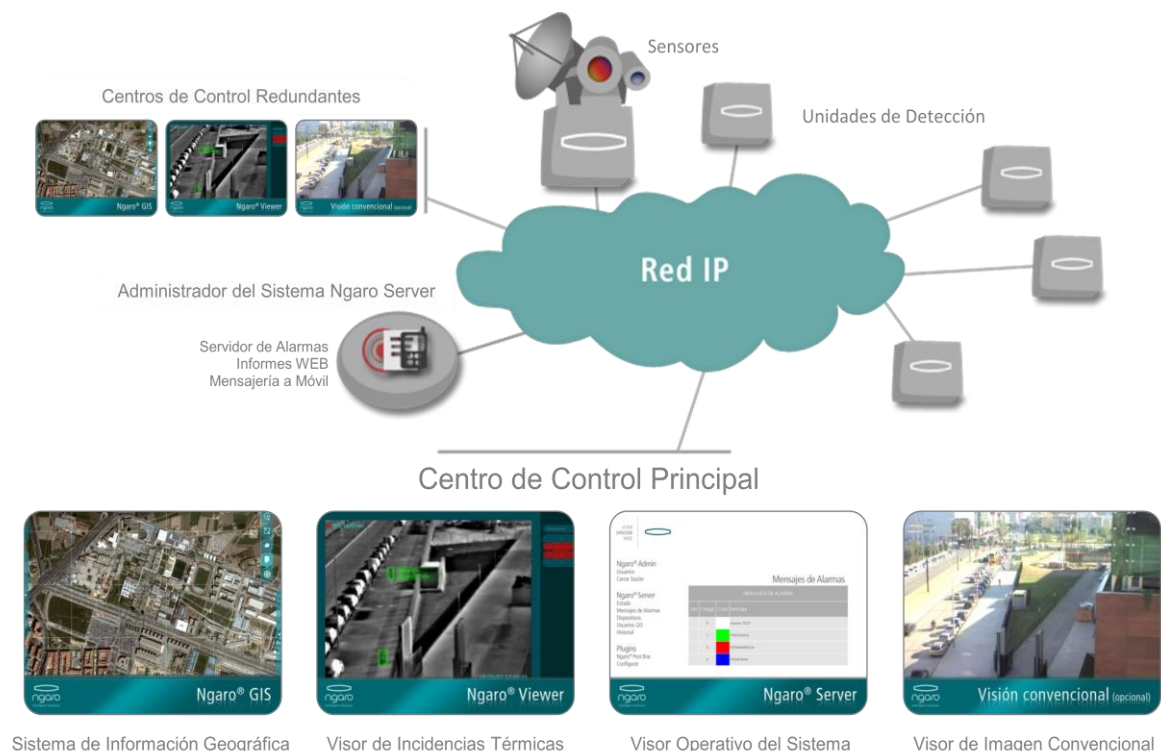
2. NGARO PLATAFORM

In Ngaro we develop intelligent platforms which allow real-time detection, geographic location, management and tracking of events featured by their thermal signature, providing to the operator an optimum knowledge about the security conditions of the environment. The Ngaro systems speed up the decision-making process, thus reducing the response time of national safety forces in conditions of crisis.

Our solutions have a shared architecture based on operative proprietary modules which allow thermal surveillance of the environment, generation and communication of alarms by user-defined operative parameters, compression and communication of thermal images, visualization, tracking and management of all this information from command and control centers, both mobile and fixed, as well as activation of pre-defined response automatisms. In addition, Ngaro platforms allow integration of surveillance subsystems based on complementary technologies depending on user request.

Ngaro platforms show a modular architecture, as well as scalable. They follow a structure of strong distributed intelligence networks and base their main features in two basic subsystems: The Detection Units and the Command and Control Centers.

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Ngaro Platforms are designed to simplify their integration within preexistent surveillance and control systems, both for improving the performance of its Command and Control Centers and for increasing its reliability by adding a thermal surveillance feature when required by the scenario.


MAIN FEATURES

- Real-time work philosophy. Minimization of the response time of security forces and activation of protection automatisms.
- Modular and scalable distributed intelligence systems.
- Integration of events over a digital model of the field. Operation through high-speed interfaces designed for handling large amounts of cartographic data.
- Autonomous operation in unattended mode.
- Main detection feature based on image analysis and fast performance video compression algorithms fitting the nature of thermal vision and requests of each market.
- Easy integration of surveillance subsystems working with complementary vision and sensing technologies.
- Easy modular integration within preexistent surveillance systems.
- 100% IP core-network; communication of operative modules through Ethernet networks, using standardized protocols – TCP/IP, UDP... – over unicast or multicast networks.
- User-friendly design; ease of configuration and operation by operators with no specific IT training.
- Minimum environmental invasion.
- Easy, quick and flexible installation by security technicians.
- Ease of adaptation to integrator-defined or client-defined operative needs.

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3. INFRARED VISION

Infrared thermal energy is an invisible range of light, because its wavelength is too high to be perceived by human eye. This part of the electromagnetic spectrum is the one perceived as heat.

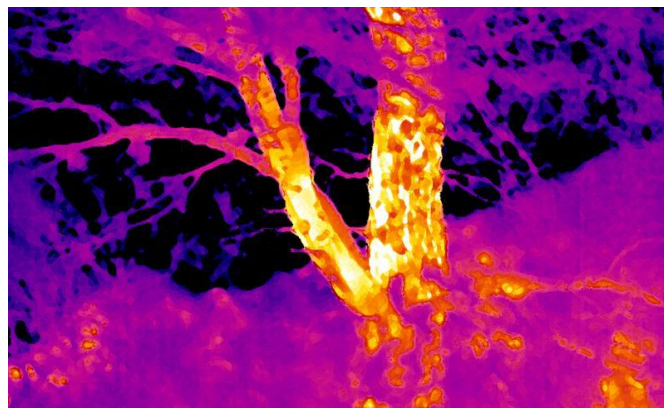
Unlike visible light, reflected by objects, this kind of radiation is emitted by any object with a temperature above -273 °C. The intensity of this radiation depends on two main factors: the temperature of the object and its emissivity, which is related with the kind of material it is made of.

A thermal camera is a device which detects infrared energy emitted by the elements of the scene and turns this data into an electronic signal, which is processed to obtain a TV or video image, without any kind of physical contact. Thus, thermal cameras are designed for detecting and playing in the form of an image the several thermal radiation levels a scene may show. Due to the nature of the signals it analyzes, a thermal camera allows operation in adverse conditions, where any other technology turns out to be useless or loses its precision of detection.

INFRARED VISION DETECTION'S DIFFERENTIAL VALUES

- Non-relying on lighting conditions. Optimum detection in complete absence of light.
- Keeps detection capacity in reduced or null visibility scenarios, such as smoke, floating dust or fog.
- Generic morphological classification; unrestricted location in public spaces.
- Long range detection capacity.
- Reduced labour required.


The following image shows a real-life example of the detection of a sleeping lightning bolt (invisible to human eye):



The Detection Units developed by Ngaro analyze the several levels of thermal radiation of a scene in real time and identify, differentiate and locate events, persons and objects, generating top-level info for supporting the decision-making process. Their operation is autonomous: don't require an operator. They are completely operative in the dark.

4. DETECTION UNITS

The Detection Units (DU or UD) analyze the thermal pattern of the environment in real time, automatically detect events according to user-defined operative parameters and transmit them to the


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Command and Control Center. The DU also code, compress and send a thermal video signal to the CCC enclosed with associate data and are able to integrate info from surveillance subsystems based on vision and sensing technologies by other manufacturers.

The Detection Units developed by Ngaro use image analysis algorithms designed specifically according to the nature of thermal radiation and operate over the configuration of the IR cameras in order to get their best.

MAIN FEATURES OF THE NGARO UD UNITS

- Ease of integration within preexistent security systems; easy integration of surveillance subsystems based on complementary vision or sensing technologies.
- Configuration and operation according to user request; no need of operator with specific IT training.
- Logic analysis philosophy adapted to the features of each market according to the thermal pattern of events to watch: Thermal threshold, prowling, presence, stay, frontier, target morphology and size, direction, growth, evolution...
- Real time recognition, differentiation, tracking and geographic location of targets.
- High-res detection: more than 50.000 simultaneous detection cells for common IR cameras.
- Able to distinguish and simultaneously analyze several security areas defined over the scene with separate detection profiles and according to time zones.
- Operation over IR cameras for adapting visualization to the thermal conditions of the environment and guarantee performance at high temperatures in case of accident.
- High-performance radiometric video compression (400:1), reduction of the bandwidth.
- IP and analog video communication.
- Auto and autonomous operation; remote configuration and maintenance.
- Activation of automatisms according to operator-defined events.
- Low energetic consume and bandwidth requirements. Easy setup in isolated positions.
- Passive systems, no electromagnetic alterations; no interference with other electronic systems.

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5. SYSTEM PERFORMANCE

The *NGARO® FLARE Detection Unit* continuously analyzes the environment, detects, identifies and differentiates the various events on the scene which are under surveillance. In order to eliminate dependency on thermometric cameras –which provide a measure of temperature, besides radiation levels- and thus making the implantation cost cheaper, specific thermal identification algorithms have been developed, which allow to work basing a gradient and pre-established behavior patterns, independent from the exact temperature of the scene.

Alarms generated by the system are configurable by the user. In the specific case of the basic Flare Detection application, based on the characteristics of the events to detect and the practical experience, the detection and tracking process is divided in 4 stages:


- Stage 1: A heat source is detected among the grandstands and is identified as a flare.
- Stage 2: A surveillance camera is automatically pointed to the bearer of the flare and its surroundings.
- Stage 3: The system locates and identifies the bearer of the flare over a map of the grandstand and tracks the trajectory of the flare.
- Stage 4: All video streams, both thermal and visible, are recorded from the control center.



The alarm delivery frequency, its persistence, the assignment of surveillance posts and levels of alarms to control centers and all the remaining features the system modules offer are configurable by the user.


The system generates its alarms automatically, so the operator is only warned when an event occurs, sparing him the need of permanently observing the system.

The system features an automated alarm firing process, therefore the operator is alerted only when an incident happens, thus sparing the operator the need to permanently monitor the system.

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REAL FIRE DETECTION BY NGARO® FLARE



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6. COMMAND AND CONTROL CENTER

Command and Control Centers (CCC) are a robust solution designed for guaranteeing to the operator the knowledge and real time management of the info provided by the Detection Units and complementary surveillance subsystems. Command and Control Centers designed by Ngaro allow the operator to perform an efficient supervision of any event and to check the status of the environment. They consist of four independent proprietary user subunits:

Ngaro® Server: alarm serving and global system management module.

- Gets, stores in a database and manages the generated alarms.
- Manages the subscription of clients and secondary control centers.
- Organizes the distribution and sending of alarms to each client and control center, according to user profiles, both to fixed and mobile units.
- Makes easier to look up the detected event history in local or remote mode, via web server.
- Activates or deactivates Detection Units or complementary surveillance subsystems without interfering on the performance of the system.
- Allows easy integration and management of surveillance subsystems based on other technologies through serial port or digital input.

Ngaro® GIS: status and surveillance system performance monitoring over digital cartography.


- Designed for handling large volumes of geographic info in real time. Photography movement with a precision of 25 cm in thousandths of a second.
- Supplies info about the status of the security system in a synchronous way.
- Shows the generated alarms over a map of the grandstand or over a map of the scenario, and allows visualization of the images corresponding the identified events.

Ngaro® Viewer: proprietary application for simultaneous visualization of thermal and CCTV video sequences with superimposed OSD indications of the events.

- Capacity for connecting with an unlimited number of Detection units.
- Visualizes the video stream from up to 32 cameras simultaneously.
- Configurable sequence of visualization and arrangement of the cameras.
- Displays both thermal and CCTV video for identifying purposes.
- Image enhancement filter.
- Acoustic alarm notice.
- Connection to the system through the internet.

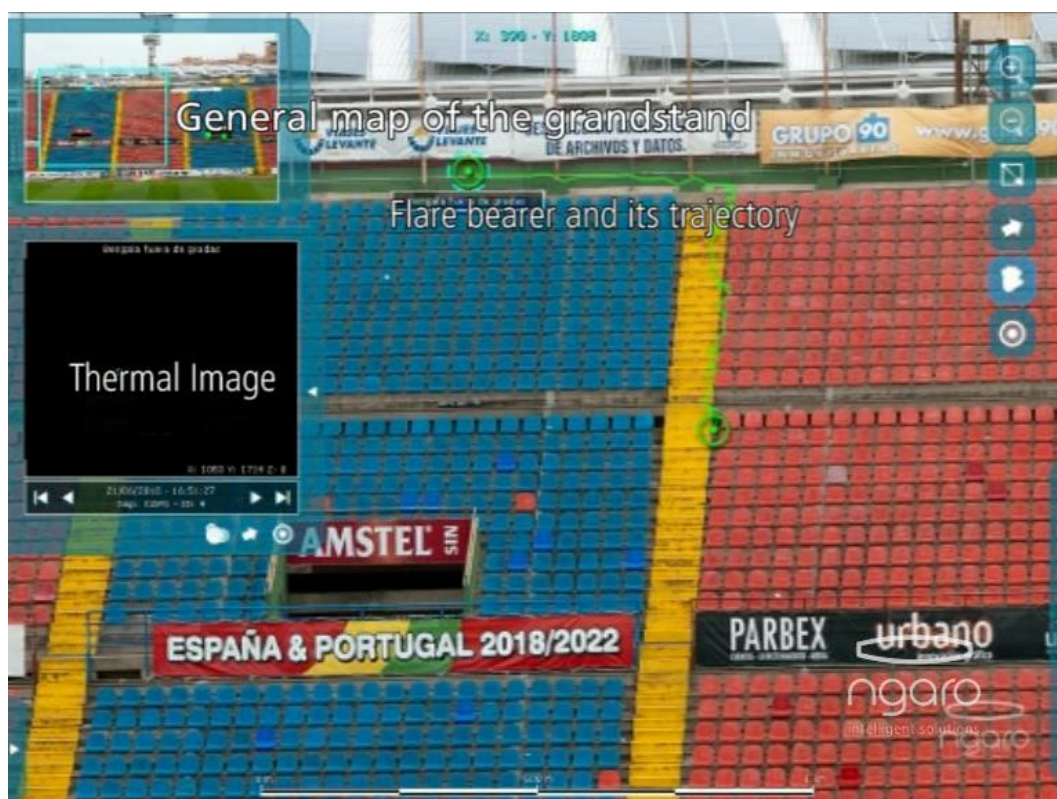
Ngaro® DU Manager: proprietary application for the remote configuration of the Detection Units through an IP network


- Management of the info
- DU activity report generation
- Configuration, startup and maintenance works.

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NGARO® GIS

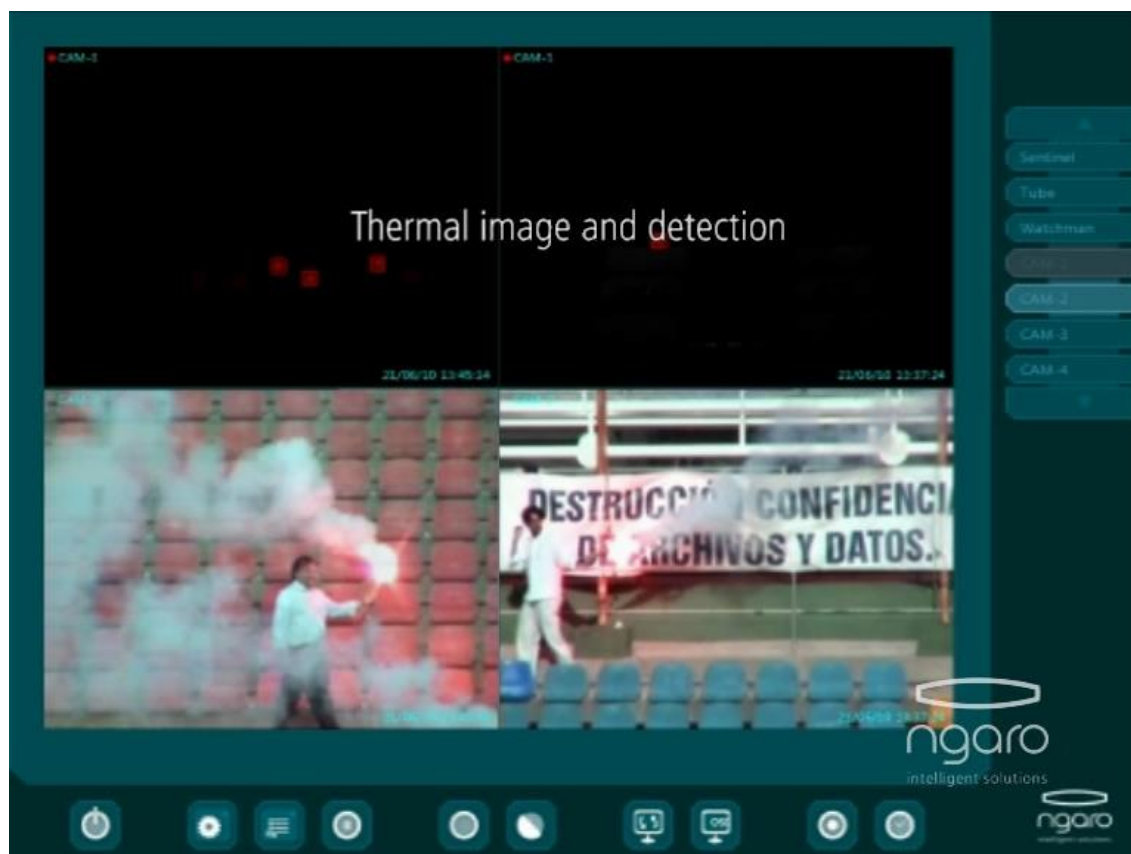
Real time geographic positioning and thermal image display.



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NGARO® VIEWER

Display of thermal cameras, alarms and CCTV.



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NGARO® SERVER

Report generation, management and response triggering.



CONSULTA AL HISTORIAL DE ALARMAS

Parámetros de búsqueda

Filtrado por Fecha o Número

☒ Por fecha y hora
 ☐ Por número de alarmas

Fecha Inicial: 08-09-2009
 Fecha Final: 08-09-2009
 Ver las 500 últimas alarmas

Hora Inicial: 00:00:00
 Hora Final: 23:59:59

Filtrado por Mensaje o Color

☐ Por color
 ☐ Por mensaje

Ver colores
 Mostrar todos

Otros criterios de filtrado

☐ Por Dispositivo
 ☐ Alarmas sin Imagen

Mostrar todos

Ver Alarmas
 Borrar

Cerrar Sesión

COMMAND AND CONTROL CENTER: MAIN FEATURES

- Exact real time location and tracking of alarms over a high performance 2D geographic info system with unlimited treatment of simultaneous alarms.
- Historic management and storage of alarms in a database.
- Easy integration of info from surveillance subsystems based on complementary vision or sensing technologies.
- Registry, user login and access levels management system.
- Alarm distribution per client to the control centers.
- Possibility of transmitting the info to any mobile device defined by the user.
- Operation from remote units through WAN, LAN or Internet.
- Modular design of functional units; ease of integration as a reinforcement in preexistent control centers.

7. INTEGRATION WITH OTHER SYSTEMS

NGARO® FLARE is an integration platform specifically designed for thermal cameras, although it supports other systems like conventional CCTV, RADAR, sensor cable and many other technologies used on the surveillance field. **This ability for integrating different technologies makes NGARO® FLARE the ideal platform for detection of thermal threats in crowded environments such as stadiums and sports events.**