



LYNRED

See beyond horizons

**MEDIA KIT
2025**

EUROPE'S # 1 PLAYER IN INFRARED SENSORS RANKED # 2 WORLDWIDE



LYNRED, alongside its subsidiaries, NIT, LYNRED USA, LYNRED Asia-Pacific and NIT, is a global leader in designing and manufacturing high quality infrared technologies (IR) for space, defense and commercial markets. With nearly 1,000 highly qualified employees, it is one of the ten largest employers in the Grenoble region.

LYNRED's **vast portfolio of IR detectors** covers the entire electromagnetic spectrum from near (SWIR) and mid-wave (MWIR) to long-wave (LWIR) and very far infrared (VLWIR).

Its products are at the heart of many sovereign, military and space programmes and applications, including the Rafale fighter jet, meteorological and earth observation satellites, gimbals for tactical drones, tactical binoculars and sights for armoured vehicles. Its products are **key components in many top brands** in commercial thermal imaging equipment used for fire fighting, machine vision and hazardous gas detection, among others. The company has sales across Europe, Asia and North America.



New LYNRED Campus, located near Grenoble, France, extends industrial footprint

LYNRED is the European leader in this sovereign and strategic field.



LYNRED: A SUCCESS STORY OF FOUR DECADES OF INDUSTRIAL GROWTH



French Directorate General of Armament (DGA) & CEA Leti create a laboratory dedicated to infrared technology, positioning France as a key player in nascent IR market. Cooled IR detectors

Creation of ULIS (FR subsidiary) Uncooled IR detectors

Acquisition of a new, forward-looking technology based on "III-V" materials

Opening of LYNRED Asia-Pacific subsidiary for cooled and uncooled technologies

Inauguration of new 8.200m² production site

1978

1986

2002

2008

2012

2019

2021

2024

2025

Creation of Sofradir, a spinout of DGA/CEA Leti lab, to produce IR components at industrial scale

Creation of US subsidiary, 100% owned Cooled and Uncooled US distributor, product engineering

Sofradir and ULIS merge to form LYNRED

Acquisition of New Imaging Technologies (NIT), expert in large format SWIR sensors

KEY FIGURES: OVER 2 MILLION SENSORS SHIPPED SINCE 1986



The design and manufacture of infrared detectors requires a **highly-skilled workforce with expertise** across **many disciplines**: metallurgy, semiconductor materials, microelectronics, optoelectronics, micromechanics, cryogenics and other specialty areas in physics and chemistry.

Partners:
CEA Leti,
Onera, III-V
Lab

50/50 equally
owned by
Safran and
Thalès

15% annual
revenue
invested in
R&D

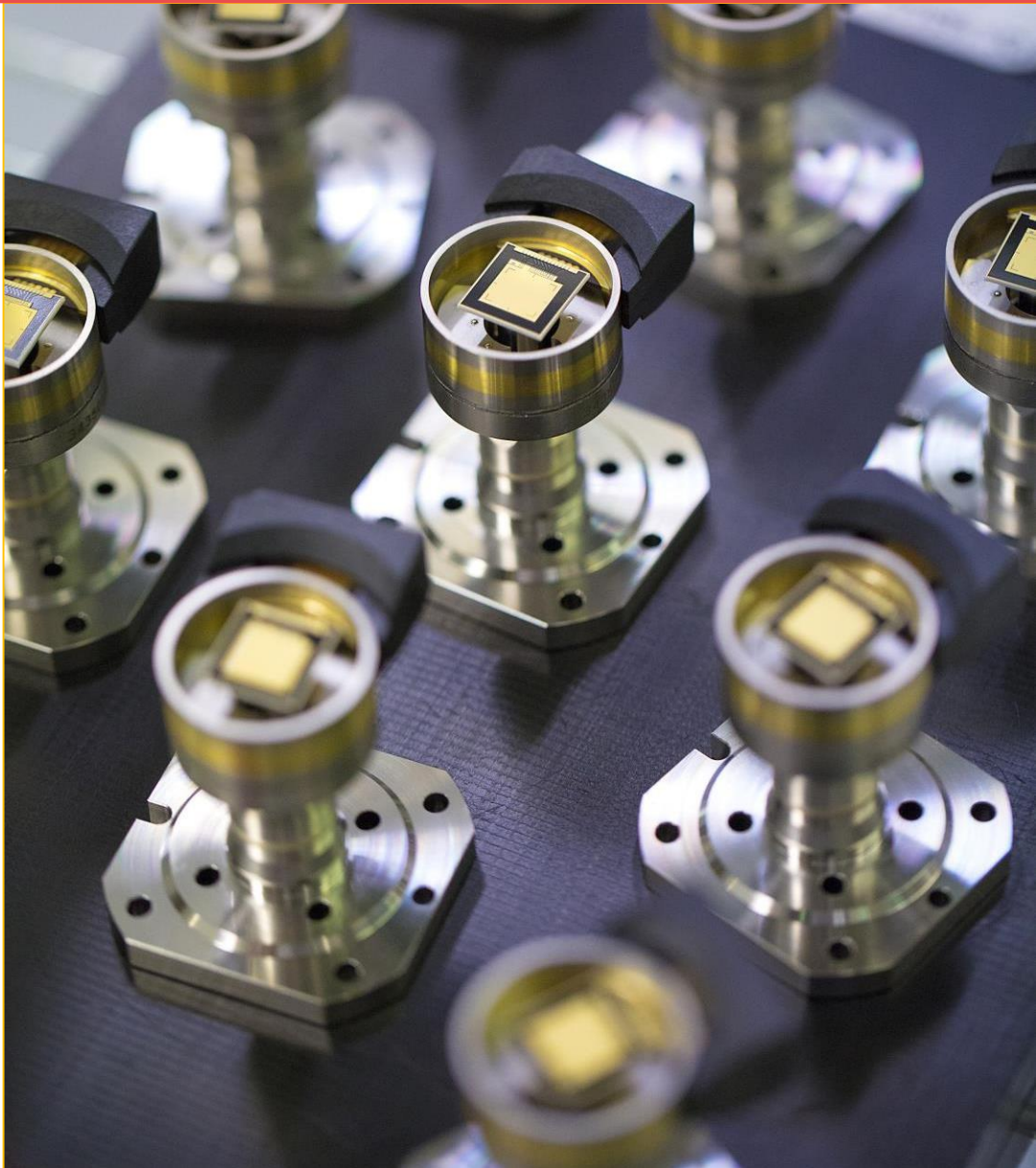
Invested
€85M in new
production
plant:
CAMPUS

40 years of
industrial
experience

80% export

€200 million
revenue in
2024

1 000
employees



**NEW LEADERSHIP:
EMPOWERED FOR
BIG CHALLENGES**



"Through Campus – our biggest undertaking since our creation in 1986 - we're determined to move into new markets on a massive scale, with a fairly ambitious roadmap, backed by a desire for external growth."

Hervé Bouaziz joined LYNRED as executive president in December 2023 from Europrop International, where he served as CEO for four years. He has 30 years' aerospace, defense and security experience, having worked for a decade at Safran in various executive and strategic roles in electronics and defense. It includes a 20-year career at the French defense procurement agency DGA, where he first started as a test engineer in 1994.

Mr. Bouaziz holds degrees from the Ecole Polytechnique (1988) and Sup'Aero (1993) engineering schools, as well as the Industrial College of the Armed Forces in the United States (2005). He also earned his air force pilot wings in 1994.



Hervé Bouaziz
Executive President at LYNRED



Xavier Caillouet
CEO at LYNRED

"LYNRED is strengthening its market positioning, beyond historical market applications, to pursue opportunities in fast growing areas, such as gas detection and the car market - these are industries where evolving governmental regulations for increased safety will be a game-changer."

Xavier Caillouet joined LYNRED as CEO in December 2023 following a 30-year career in international roles within various Thales divisions. Previously, Mr. Caillouet was VP of radiology at Thales and CEO of Trixell, a position he held for five years. Prior to that, he served as VP of operations in airlines support for Thales Avionics, where he oversaw operations in four countries, including the US and China. Mr. Caillouet has executive management and strategy and product policy experience. He spent the first 10 years of his career in managerial roles within Thales.

He holds a degree in engineering (1983) from Sup'Aero, a leading French institution for aerospace.



NEW HIGH PERFORMING FACILITIES



LYNRED's Campus Project

The three-year project Campus launched in 2022 and financed at €85M will boost production capacity of LYNRED's IR components.

The new industrial site, which includes 8,200m² of state-of-the-art clean rooms, gives LYNRED access to advanced CMOS packaging technologies, a key approach for increasing performance capabilities of IR detectors, while reducing power consumption and cost. This will allow the development of large form factor IR detectors with small pixel pitch.

Overall, these innovative facilities will help bolster France's industrial and technological sovereignty.

**LYNRED will double current cleanroom footprint
Totaling 8,200 m²**

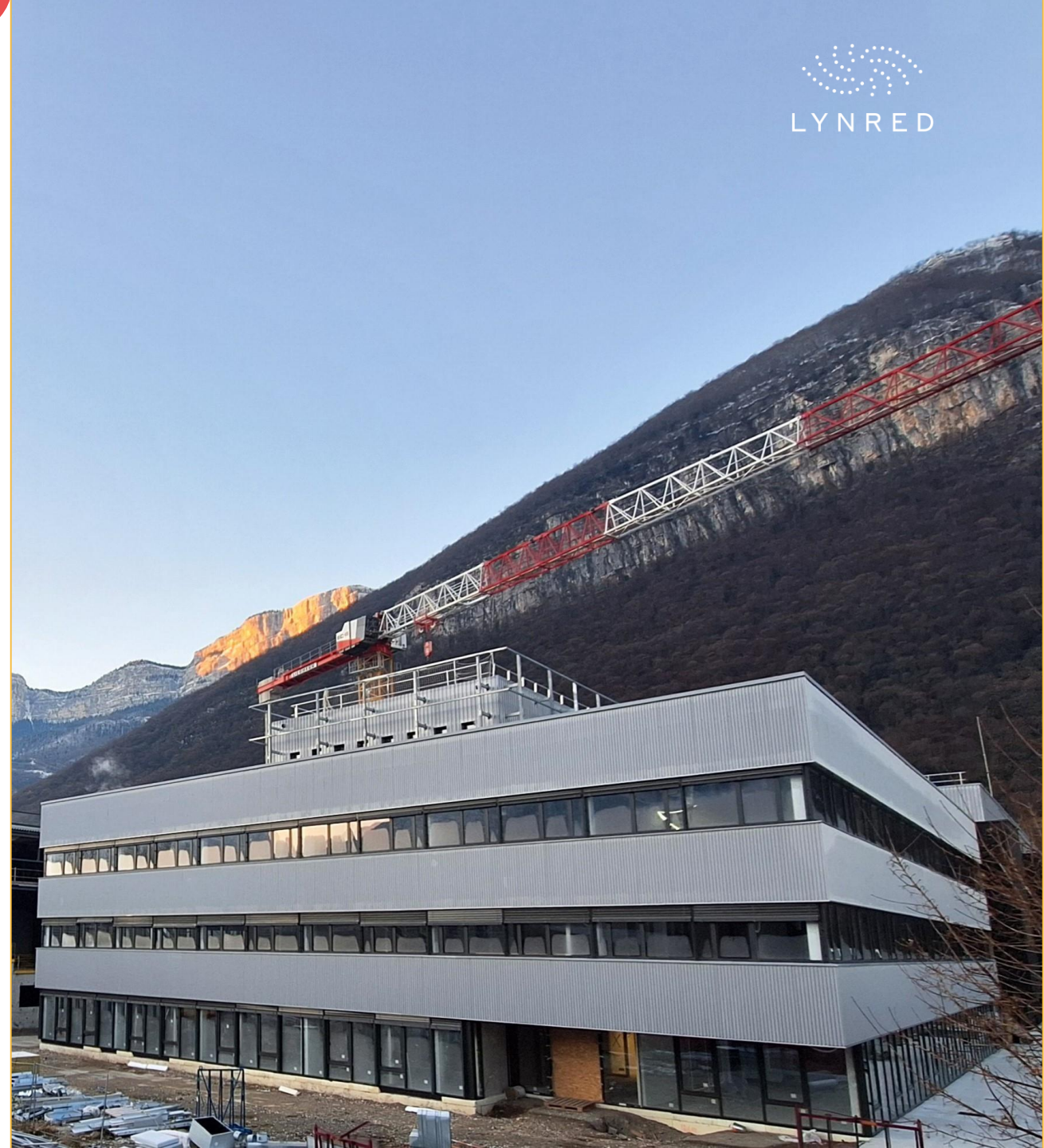
✧ Cooled detectors:
revamping of equipment
and operations

✧ Microbolometers:
production capacity
increase



**€85 MILLION
INVESTMENT**

FULLY OPERATIONAL MID-2025



LYNRED ON INFRARED GROWPATH



LYNRED enters the automotive market

A key driver behind LYNRED's investment in the new industrial site is the ever-growing prospect for **large-scale adoption of infrared sensors** in the automobile industry.

A recent introduction of new highway traffic safety regulations in the US will require Automatic Emergency Braking (AEB) systems to be mandatory in all light vehicles by 2029.

Tougher rules for the road safety at night call for effective solutions, such as thermal imaging technologies- thermal imaging provides the performance needed to the right price.



LYNRED celebrates closing its deal with New Imaging Technologies

LYNRED acquires New Imaging Technologies

In October 2024, LYNRED acquired Paris-based New Imaging Technologies (NIT), a shortwave infrared (SWIR) imaging modules and sensors provider, in a strategic move to **consolidate LYNRED's leadership** in infrared sensors. LYNRED gains a vast portfolio of large format SWIR products with advanced capabilities for applications in markets where **AI, deep learning and multispectral imaging** are driving growth.

LYNRED strengthens its SWIR product range in industrial vision - machine vision - detecting defects in materials for quality and industrial control.

MADE IN GRENOBLE: INFRARED SENSORS AND MODULES

LYNRED is a supplier of infrared detectors and modules, only. The IR detector or thermal image sensor is one of the highest value components.

Module or Advanced Thermal Imager (ATI)

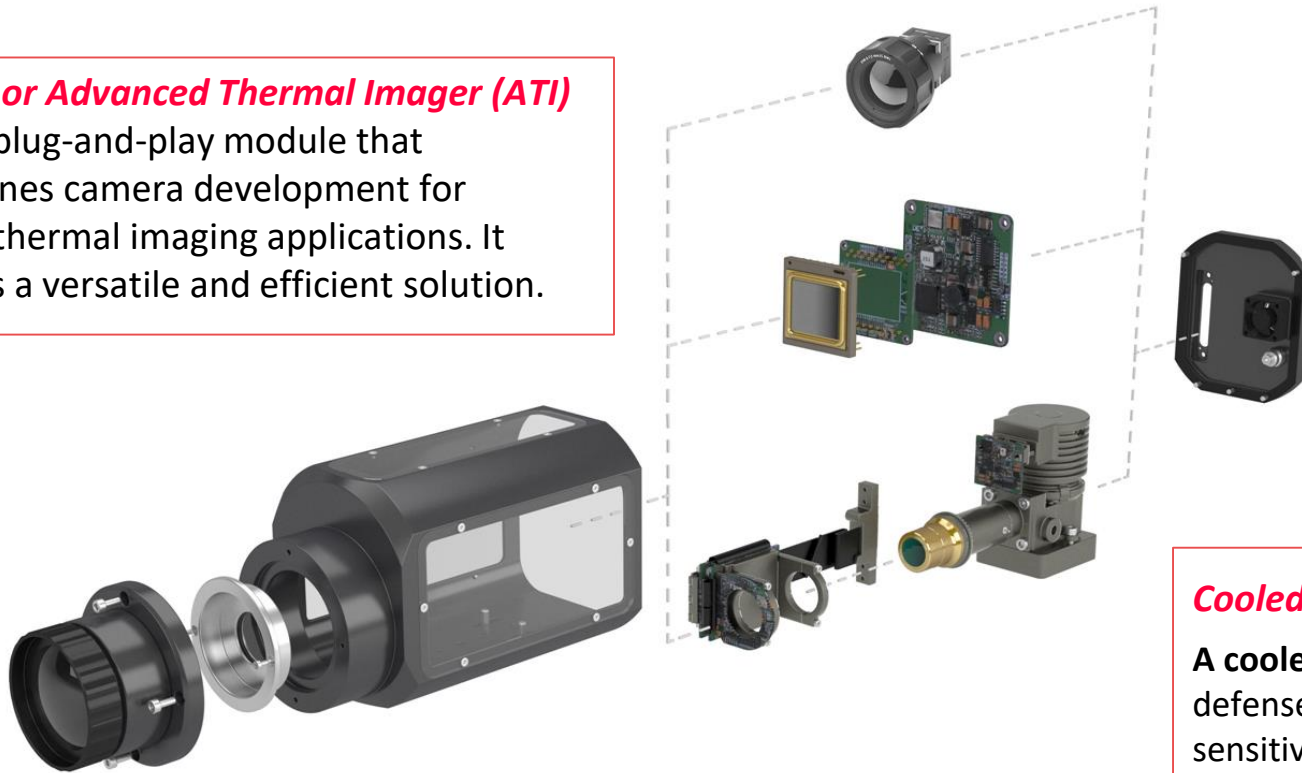
ATI is a plug-and-play module that streamlines camera development for various thermal imaging applications. It provides a versatile and efficient solution.

Uncooled IR detector

An uncooled IR detector, also called a microbolometer or thermal image sensor. Microbolometers are suitable for commercial applications due to their capacity for high-volume production.

Cooled IR detector

A cooled IR detector is ideal for high-end applications in defense, security and space, where high resolution, high sensitivity, low input power consumption and high image quality are paramount.



LYNRED's IR products range from small pixel pitch $8.5\mu\text{m}$ to large pixel pitch $17\mu\text{m}$. The size of the pixel pitch influences image resolution (level of detail), image quality and thermal imager sensitivity. **The higher the pixel density the better the resolution.**

WHAT IS IR DETECTION/THERMAL IMAGING ?

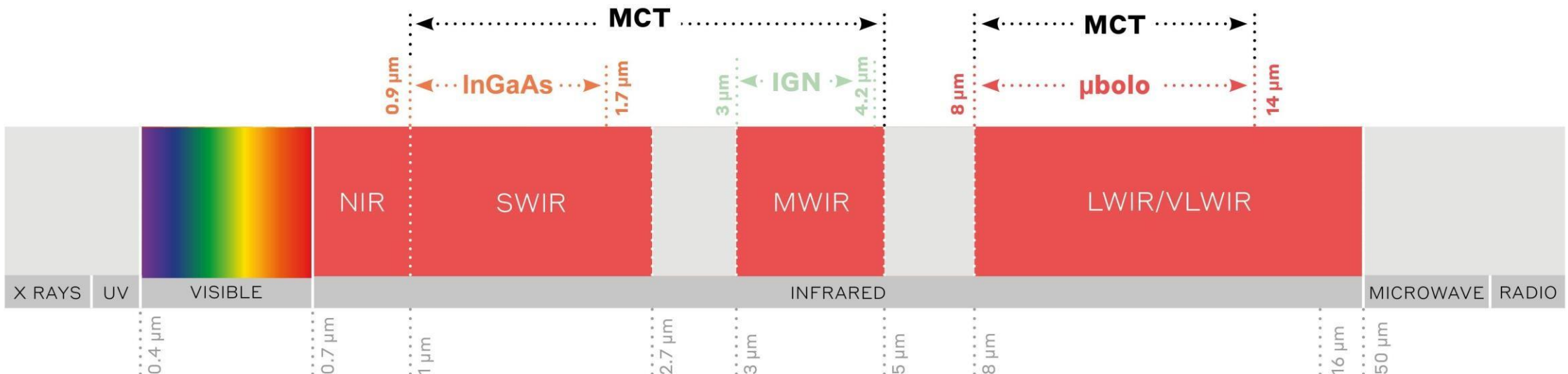
Electromagnetic spectrum

Similarly to visible light, infrared light is part of the electromagnetic spectrum. It has long wavelengths – beyond the visible spectrum – which makes infrared invisible to the eye, but we can detect it as heat.

All everyday objects emit thermal energy

Every object emits thermal energy—even ice cubes! The hotter an object is, the more thermal energy it emits. The energy emitted by an object is referred to as the object's thermal or heat signature.

LYNRED designs and manufactures infrared sensors using uncooled IR technologies and cooled IR technologies (mercury cadmium telluride (HgCdTe or MCT) , Indium Gallium Arsenide (InGaAs) and Improved Gap eNgeineered (IGN).

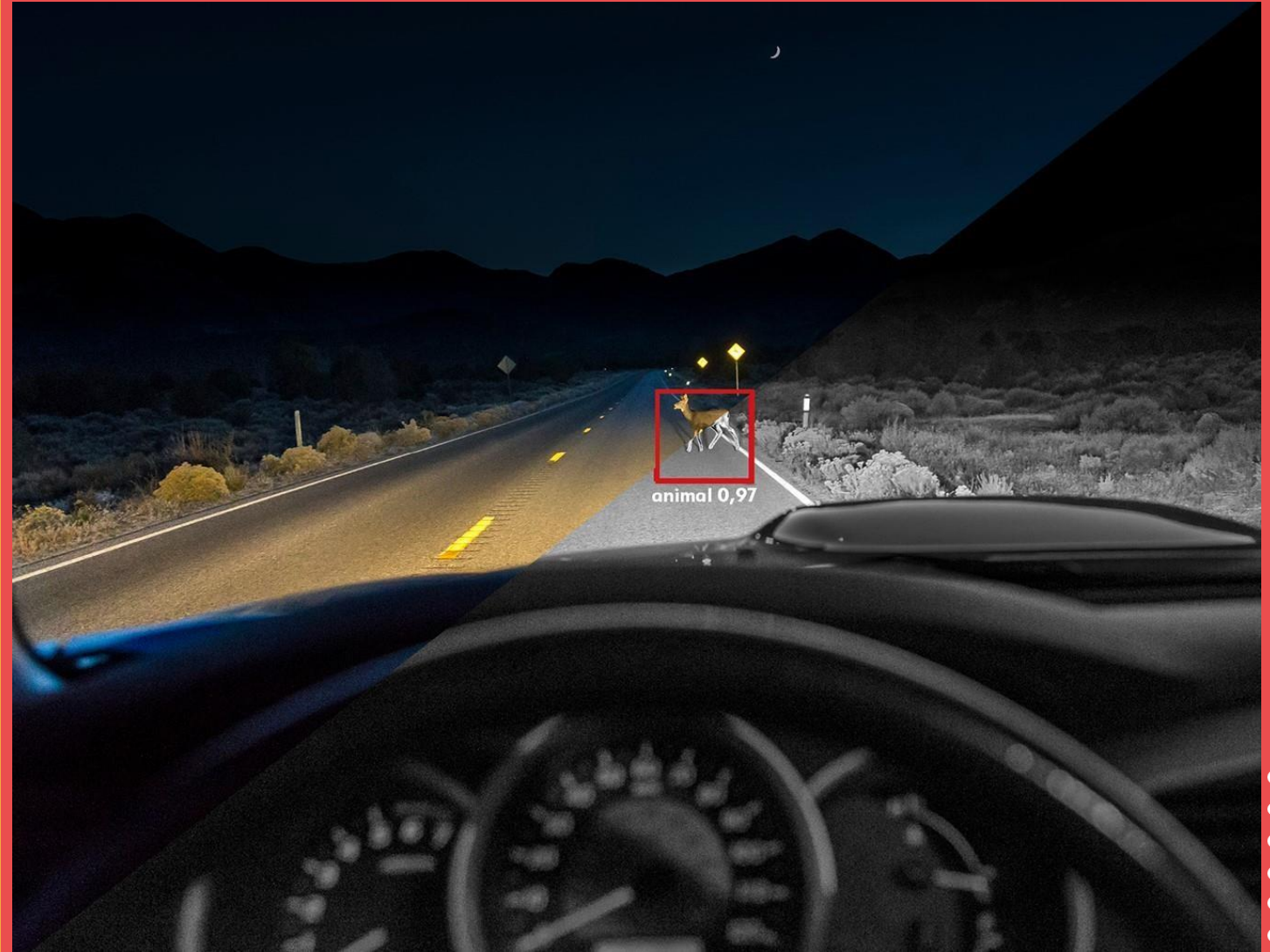


MCT: Mercury Cadmium Telluride / **InGaAs:** Indium Gallium Arsenide / **IGN:** Improved Gap eNgeineered / **μbolo:** Microbolometer
NIR: Near Infrared / **SWIR/MWIR:** Short or Medium wave infrared / **LWIR/VLWIR:** Long or Very long wave infrared

LYNRED converts thermal heat signatures into images

Infrared detectors make it possible to “see” in the dark by converting heat emitted naturally by any object above absolute zero into an electronic signal, which is then used to generate an image.

Infrared detectors are used to **identify and classify** static and moving objects in **obscure lighting conditions**, including nighttime, fog and sun glare, as well as atmospheric gases.



Thermal imaging application in emergency braking systems to prevent collision with obstacles, pedestrians, cyclists or animals, especially at night or in poor weather conditions

MARKET ACTIVITIES



LYNRED

IR sensor market trends

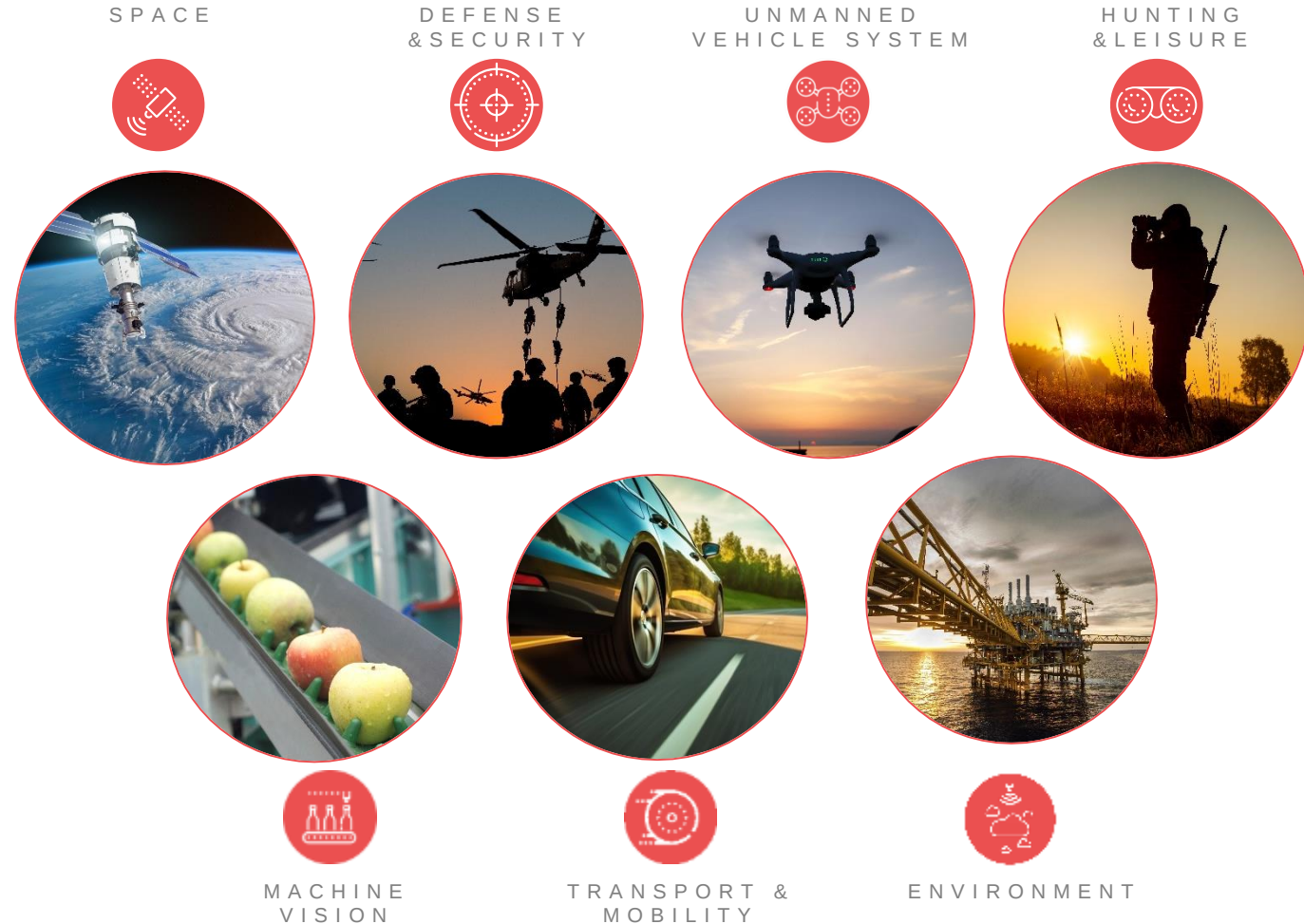
- Global IR market growing at CAGR of 8.8%
- IR sensor market projected to grow from USD 17 billion in 2023 to USD 28 billion by 2029*
- Market drivers: rising demand for enhanced security and surveillance, tactical drone market projected to grow at a CAGR of 13% by 2029
- Technological drive towards smaller pixel pitch IR detectors, particularly suitable for the automotive market

Sources :

- The World Market for Military Infrared Imaging Detectors and systems / Maxtech International report 2025 edition
- The World Market for Commercial and Dual Use Infrared Imaging and Infrared Thermometry Equipment / Maxtech report 2024 edition



A wide range of market applications



TRADITIONAL MARKETS

The development of new product ranges for traditional market applications is ongoing at LYNRED, covering aircraft for drone surveillance and tanks, as well as a whole segment of portable optronics for infantrymen, such as binoculars, which LYNRED is developing in volume.



DEFENSE



- High image quality infrared detectors combat-proven for **army, navy, and air** force applications worldwide
- Long-range detection, extremely robust and reliable

- GROUND VEHICLES
- SOLDIERS
- UAV
- AIRBORNE
- NAVAL

SECURITY, SURVEILLANCE & SAFETY



- **Widest range** of infrared detectors on the market
- Stationary and mobile surveillance, observation, and detection at **all distances** and **in all weather** conditions
- Low power consumption, early detection
 - PERIMETER / FENCE PROTECTION
 - HUMAN INTRUSION
 - BORDER CONTROL
 - URBAN SURVEILLANCE
 - TRAFFIC MANAGEMENT
 - AIRBORNE
 - UAV
 - FIREFIGHTING
 - LAW ENFORCEMENT

SPACE



- **Europe's only manufacturer** of **space-grade** infrared detectors.
- Over **30 years'** experience in space missions
- Over **50 Flight** models currently **orbiting the Earth** or **exploring the solar system.**
 - METEOROLOGY
 - ENVIRONMENT
 - SCIENCE
 - DEFENSE

COMMERCIAL MARKETS

Built on proven technology, our sensors are designed to meet the growing demand for fixed and mobile surveillance equipment. The use of short-wave infrared (SWIR) offers significant advantages for many industrial applications. LYNRED's InGaAs technology provides the sensitivity, noise and operability to meet these needs.



MACHINE VISION



- Detects defects in production processing
- Visible-like qualities
- Accurate detection

- IN-LINE INSPECTION
- SORTING
- QUALITY CONTROL
- MEDICAL & SCIENCE

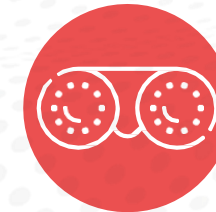
UNMANNED VEHICLE SYSTEMS



- High image quality
- Optimized power consumption
- Longer range
- SWAP*

- IN-LINE INSPECTION
- TEMPERATURE MEASUREMENT
- PRECISION AGRICULTURE
- GASES DETECTION

HUNTING & LEISURE



- Lightweight,
- Low power consumption

- HUNTING
- WILDLIFE OBSERVATION
- SPORT & LEISURE

**SWaP: small size, low weight, low consumption*

NEW MARKETS

The market for greenhouse gas detection is growing. Equipment and system manufacturers are using this method to monitor emissions from certain industrial sites.

Infrared detection/thermal imaging is able to improve the performance of Automatic Emergency Braking systems in low-light conditions, providing additional safety measures to the visible and radar sensors already in use.



ENVIRONMENT



- Infrared frequencies can be used to detect **hazardous gas leaks**

- METHANE (CH₄)
- SULFUR HEXAFLUORIDE (SF₆)
- REFRIGERANTS

TRANSPORT & MOBILITY



- Vulnerable road user (pedestrians, cyclists, animals) detection in all-weather conditions, day and night
- Early detection, range 300m
- TRAFFIC MANAGEMENT
- ACTIVE EMERGENCY BRAKING (AEB)
- ADVANCED DRIVER ASSISTANCE SYSTEMS (ADAS)

LYNRED: A EUROPEAN DECISIVE ASSET



LYNRED is a world-leading reference in infrared technologies, entrusted as pilot for many high-profile projects and to deliver key enabling technologies for European and large-scale, research and development programs.



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