

Multi-domain operations: how the information age is reshaping the battlefield



INTERVIEW

Alberto Gutiérrez

President of the Spanish Association of Defence,
Security, Aeronautics, and Space Technology
Companies (TEDAE)





NATO Edge 2026

GMV will be a Bronze sponsor at NATO Edge 2026, organised by the NATO Communications and Information Agency (NCIA) and taking place in Izmir, Türkiye, from 17 to 19 November.

Under the theme “Build for readiness. Driven by delivery,” the event will bring together key players from across the defence and security ecosystem. GMV will showcase its capabilities and solutions for critical environments at Stand 150. Autek, a GMV company, will co-exhibit at the National Cryptologic Centre (CCN) stand (Stand 141), showcasing its cross-domain solutions for the secure exchange of information.

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Letter from the president

After two world wars, European countries launched a cooperation initiative to consolidate peace, which eventually gave rise to the European Union. For eight decades, this initiative has helped maintain peace among its member states. Preserving that achievement and strengthening cooperation remains a shared responsibility.

Europe is a special place where the shared values of freedom, democracy, equality, and human rights are the cornerstones of coexistence among different languages, cultures, and perspectives. This diversity enriches our culture and sparks ideas, promotes tolerance, and opens up opportunities to learn, work together, and innovate. Europe must protect its communities and uniting values, and it can contribute to international stability through dialogue, cooperation, and respect for international law.

Over the past decade, the geopolitical landscape has changed significantly.

Russia's invasion of Ukraine has brought high-intensity warfare back to the forefront of European security concerns. At the same time, EU countries are facing cyberattacks, sabotage, misinformation campaigns, and interference targeting critical infrastructure. These are threats that can combine military and non-military operations and affect several countries at once.

European defence requires two complementary efforts: coordinating capabilities across the land, maritime, air, space, and cyberspace domains through a multi-domain approach, and strengthening cooperation among countries. At GMV, we're working alongside the Spanish Armed Forces and European institutions and partners to develop interoperable systems that support informed decision-making and facilitate the secure exchange of information. Because only by working together can we protect what we have built and help create a safer world where peace and freedom can thrive.

Mónica Martínez

Published
GMV

Editorship–Coordination
Marta Jimeno, Marta del Pozo.

Area Heads
Luis Mariano González, Mariella Graziano, Carlos González, Juan Ramón Martín Piedelobo, Miguel Ángel Molina, José Prieto, Enrique Rivero, Javier Zubieta.

Writing
Marta Alonso, Belén Andrino, Clara Argüello, Amaya Atencia, Vicente de Ayala, Elisa Benedetti, Mariano J. Benito, Antonio Blanco, María José Brazal, Carlos Busnadiago, Elliot Capell, Javier Castanedo, Maole Cerezo, Cristian Chitu, Sofia Cilla, Luis Manuel Cuesta, José Luis Delgado, Jímena Fernández, Raquel Fernández, Javier Ferrero, Enrique Fraga, Augusto Gómez, Luis Mariano González, Mario González, Alba Gutiérrez, Ana Herrera, Michael Hutchinson, Ángel Lázaro, Iván Llamas, José Miguel Lozano, Juan Ramón Martín, José María Martínez, Laura Méndez, David Merino, Miguel Ángel Molina, Rosa Muñoz, Cristina de Negueruela, Cristina París, Michael Pattinson, Juan Antonio Pérez, María Ángeles Pérez, Marcelino Pérez, Patricia Pérez, Eric Polvorosa, Víctor Pozo, Marta del Pozo, José Prieto, Julio Ramírez, Isabel del Rey, Begoña Rojo, Gonzalo Roy, Marta Saburit, Ricardo Sáenz, Ana Saínz, Juan Suárez, Tatiana Teresa, Guillermo Tobias, Inma Zamora.

Article
Héctor Naranjo, José Prieto, Begoña Rojo.

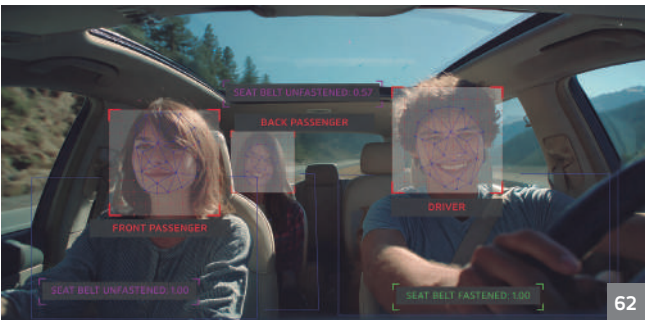
Art, design and layout
Paloma Casero, Verónica Arribas.

DIGITAL VERSION SUBSCRIPTION



MORE INFORMATION
marketing@gmv.com
+34 91 807 21 00

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Multi-domain operations: how the information age is reshaping the battlefield

For decades, armed conflicts followed a clear division of responsibilities among land, naval, and air forces. When these three branches worked together, it was known as “joint operations.” Cooperation was largely seen as the sum of each branch’s individual contributions. But the 21st century has fundamentally changed that equation. The emergence of hyperconnected digital sensors, the growing importance of space-based systems, the constant threat of cyberattacks, and the rapid spread of drones have made one thing clear: no single branch can ensure security on its own. The traditional model, in which each branch played its part under the coordination of a joint command, is no longer fit for purpose.

The past decade has seen the advent of new, interconnected operational environments—including space, cyberspace, the electromagnetic spectrum, and the information domain—that operate differently from traditional domains of warfare. You can’t occupy them with troops or mark out their boundaries on a map. Yet they can be used to bring a country to a standstill, spread disinformation among its population, or blind its radar systems without firing a single shot. The multi-domain approach isn’t simply about expanding the battlefield into new domains. It’s about connecting the dots: understanding how these domains interact and influence one another, and coordinating them as parts of a single, interconnected system.

This is where multi-domain operations (MDO) come into play. The concept goes far beyond exchanging information through standardized protocols. It involves integrating and coordinating actions across the five internationally recognized domains of warfare—land, sea, air, space, and cyberspace—in real time, simultaneously producing effects in and from any of these domains.

Alongside these five physical and digital domains are two critical dimensions that cut across them all: the electromagnetic spectrum and the cognitive and information environment. Under Spanish military doctrine, the latter is recognized as a new operational and strategic domain focused on how people perceive the truth, how commanders make decisions, and how disinformation can be countered.

To illustrate the impact of multi-domain operations, military doctrine draws on the shift from a linear kill chain to an interconnected network known as a kill web. In a traditional kill chain, a sensor detects a target and sends the information to a command center, which then directs a specific weapon system to neutralize it. In a kill web, by contrast, any available sensor—whether a satellite in space, a drone in the air, or a soldier on the ground—can feed information in real time to whichever unit or system is best positioned to respond. The ultimate goal is to accelerate the observe, orient, decide, and act (OODA) loop. The faster a military force can complete this decision-making cycle relative to its adversary, the better its chances of seizing the strategic initiative.

A new paradigm for the European Union and NATO

There’s no one-size-fits-all approach to multi-domain operations. Each major power has adapted the concept to its own military doctrine, strategic priorities, and technological capabilities.

The United States has spearheaded the development of Joint All-Domain Command and Control (JADC2), an operational concept designed to connect every sensor across the U.S. military with any unit or weapon system, anywhere in the world. Its primary aim is to overcome what are known as anti-access/area denial (A2/AD) defences: sophisticated defensive bubbles made up of long-range missiles and radar systems that adversaries use to restrict allied forces’ access to conflict zones and limit their freedom of action once there.

NATO formally adopted its multi-domain operations concept in May 2023. The European and allied approach goes beyond military power alone, emphasizing the coordination of operations across all five domains with nonmilitary efforts by civilian organizations and diplomatic and economic actors. The goal is to deter hybrid threats and protect critical infrastructure.

Spain’s approach: from network-centric warfare to data-centric operations

Spain, meanwhile, is developing its own approach to multi-domain operations, tailored to the structure and capabilities of its armed forces and aligned with its NATO and European Union commitments. Spanish military doctrine emphasizes mission command, giving subordinate units greater freedom to take the initiative and seize operational opportunities as they arise, while remaining within the commander’s intent and established directives. At the same time, it places particular emphasis on interoperability with NATO and the European Union and on integrating capabilities across the different domains.

Digital transformation is a key enabler of this approach. Spain is moving toward an increasingly data-centric command and control (C2) model, supported by secure communications networks, artificial intelligence (AI), communications and

information systems (CIS), and a combat cloud. Together, these technologies enable information to be shared and processed across different levels of command and operational domains. Another distinctive feature of Spain’s approach is its recognition of the cognitive domain in military doctrine, encompassing perceptions, information, and their influence on decision-making.

Technological challenges

By its very nature, a multi-domain approach dramatically increases the number of sensors, information sources, and types of data that must be collected, processed, and made available to decision-makers. And all of this needs to happen much faster than ever before.

Putting multi-domain operations into practice poses major technical, doctrinal, and organizational difficulties. Three technological challenges stand out:

- Today’s battlefields are filled with drones, radars, and sensors of all kinds, forming what is known as the Internet of Military Things (IoMT). Together, they generate vast amounts of data. If all this data reached decision-makers without first being processed, the sheer volume could overwhelm them and paralyze decision-making. Artificial intelligence and big data analytics are therefore essential for analyzing, filtering, and classifying data and reports in real time, ensuring that commanders receive only the critical information they need, when and where they need it, and in a format they can act on.
- In high-intensity combat, satellite signals and communications networks are prime targets for electronic jamming. Armed forces must be able to make decisions even when their links to command posts are disrupted. This is where the combat cloud comes in, allowing systems onboard deployed vehicles and equipment used by units in the field to process data



locally without relying on remote systems or network connectivity.

- In multinational operations, participating countries do not always have access to the same information or operate at the same security classification levels. Sharing operational intelligence in real time without compromising security requires technologies such as Cross-Domain Solutions and Zero Trust architectures. Together, these enable secure information exchange between networks across different domains while ensuring that only authorized personnel can access the information they need for their missions.

Traditionally, military decision-making has been centralized at the highest levels of command, with units in the field responsible for carrying out orders. Multi-domain operations are pushing in the opposite direction, toward more distributed command structures that give tactical units greater autonomy to make

decisions previously reserved for senior commanders. These units, after all, are the ones in direct, almost instantaneous contact with emerging threats. However, this approach can only work with clear directives, reliable connectivity among all those involved, and a secure flow of information protected against electronic interference and cyberattacks.

Beyond the battlefield

Although multi-domain operations are a military concept, some of the capabilities they rely on are also relevant to protecting civilian infrastructure, power grids, telecommunications systems, satellite navigation systems, and supply chains. Today’s hybrid threats rarely stop at the battlefield. They combine disinformation on social media, cyber intrusions into civilian systems and, as a last resort, the use of military force. Understanding multi-domain operations therefore helps explain why national security is no longer just about military capabilities. It also depends on the

technological, industrial, and social resilience needed to withstand threats of all kinds.

This approach is particularly relevant to the work of organizations such as Spain’s Military Emergency Unit and National Security Department.

In a crisis, the Military Emergency Unit must respond quickly and coordinate its efforts when emergencies affect critical infrastructure, including power grids, telecommunications networks, and essential supplies. Meanwhile, the National Security Department needs a comprehensive picture of threats ranging from natural disasters and technological incidents to hybrid threats, enabling it to support decision-making at the highest levels. Both organizations face the same fundamental challenge as multi-domain operations: bringing together data from multiple sources and delivering the right information to decision-makers securely and in time to act. Platforms such as PI-SSN, discussed later in this article, are designed to meet this need.

GMV: technology and innovation driving multi-domain operations

Meeting these challenges calls for a strong European technology industry, which plays a vital role in ensuring the strategic autonomy and interoperability of allied forces. GMV has proven itself an international leader in developing command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR) solutions for NATO, the European Defence Agency (EDA), the European External Action Service (EEAS), and defence ministries

in European and other NATO member countries.

GMV's contribution to the multi-domain ecosystem rests on three key technological pillars:

- C4ISR systems: GMV is a leading provider of command and control (C2) and joint intelligence, surveillance, and reconnaissance (JISR) systems for the Spanish Ministry of Defence, NATO, and international organizations. The company develops advanced solutions for planning, directing, and coordinating military operations, including **Talos**, a fire

support command and control system; **SISCAP**, designed for dismounted soldiers; and **SCE**, for amphibious operations. In the JISR field, GMV has developed the **SAPIEM** suite, which covers the entire intelligence cycle, from collection planning to information exploitation and dissemination. Its **CSD-SIERRA** solution, based on NATO Standardization Agreement (STANAG) 4559, is deployed in NATO environments and nine allied countries. These capabilities are complemented by multi-domain command and control solutions, interoperability technologies, and artificial intelligence tools that

enhance situational awareness and speed up operational decision-making.

- Unmanned platform management: GMV's IRIS solution integrates unmanned aerial vehicles (UAVs), unmanned ground vehicles (UGVs), and unmanned surface vehicles (USVs), along with their sensors, into command and control networks. It enables images, video, and other sensor data to be received, standardized, and distributed in accordance with NATO standards, while ARGUS provides command and control capabilities for coordinating swarms of unmanned systems.

- Digitalizing crisis management: GMV leads the development of PI-SSN, a data intelligence platform for Spain's National Security Department, and deploys AI-powered large language models (LLMs) in completely isolated (air-gapped) environments

to strengthen the security of classified data. Working with its subsidiary Autek, GMV also deploys **PSTcsd** security gateways, which automatically filter sensitive information as it moves between networks with different security classification levels.

Multi-domain operations are far more than a theoretical concept. They represent a critical organizational and technological response to the need to strengthen deterrence and preserve peace in the turbulent international landscape of the 21st century. The ability to integrate land, sea, air, space, and cyberspace into a single, seamlessly connected ecosystem will be crucial to maintaining the operational superiority of allied nations.

The success of this transformation will depend on three fundamental principles: establishing common communications standards across allied nations, strengthening European industrial and technological sovereignty to secure supply chains, and keeping people at the heart of strategic decision-making.

As the experience of companies like GMV demonstrates, European technology is ready to bridge the gap between military doctrine and operational reality. By combining artificial intelligence, advanced command and control, and cyber defence capabilities, Europe and NATO are strengthening their ability to protect their citizens and respond swiftly to the challenges of an interconnected world.



Alberto Gutiérrez

President of the Spanish Association of Defence, Security, Aeronautics, and Space Technology Companies (TEDAE)

Alberto Gutiérrez holds a degree in Telecommunications Engineering from the Polytechnic University of Madrid and has served as president of the Spanish Association of Defence, Security, Aeronautics, and Space Technology Companies (TEDAE) since July 2026. His career, spanning nearly four decades, has been closely intertwined with the evolution of CASA and Airbus and the development of major civilian and military aerospace programs.

He started out in 1985 as an engineer at CASA's Getafe plant. After holding various positions in program management and production, he played a key role in the industrialization of the Eurofighter. From 2000 to 2004, he served as the program's production director before going on to oversee military production, industrial operations, and the global supply chain for Airbus Military Transport Aircraft.

From 2013 to 2016, he was CEO of Germany-based Eurofighter GmbH. He subsequently held several senior positions at Airbus Defence and Space, including head of Military Aircraft and president of Airbus Spain. He also served as COO of the Airbus Group in Toulouse. During this period, he was involved in programs such as the A400M, A330 MRTT, C295, and CN235. In January 2024, he became executive vice president of Special Industrial Projects and a member of the Airbus Executive Committee, holding both positions until the end of that year.

As president of TEDAE, Gutiérrez represents Spanish companies in the defence, security, aeronautics, and space industries. His experience with international programs and industrial operations management brings a broad, cross-functional perspective to his new role.

You became president of TEDAE in July 2026, at a time of profound change in European defence. What are your priorities as head of the association?

My priorities are to strengthen TEDAE's position as the voice of Spain's defence, security, aeronautics, and space industries and foster greater cohesion across the country's industrial ecosystem. I also want to encourage collaboration between companies to make the most of our industries' capabilities, and work with government bodies and regional clusters to capitalize on opportunities across Spain and boost the sector's competitiveness.

At the European level, I want to promote closer industrial cooperation and increase the involvement of Spanish companies in major programs. To achieve this, the association needs a stronger voice and greater influence in Brussels, working alongside other industry associations and European institutions.

The overarching goal is to use the current investment cycle to transform our industry, enhance its capabilities and competitiveness, and move toward greater strategic autonomy for Spain and Europe. We must also continue raising public awareness of the value of these industries and their contributions to innovation, employment, and security.

Space is growing in importance across multiple domains. What capabilities does Europe need to remain competitive and what role can Spanish industry play?

Space is becoming an increasingly vital part of our strategic infrastructure, underpinning many aspects of everyday life through services such as Earth observation, positioning, and weather forecasting. Spain has innovative companies, including SMEs and startups, working in fields ranging from satellites and

launch vehicles to ground segments. Against this backdrop, Europe needs to strengthen its industrial and technological capabilities, not only to design and manufacture sophisticated satellites but also to develop reusable launch capabilities. The projection that U.S. infrastructure could support around 1,000 launches a year by 2030 illustrates the scale of the challenge.

“It is important for TEDAE to have a greater capacity for dialogue and influence in Brussels, in coordination with other associations and the European institutions”

TEDAE represents the defence, security, aeronautics, and space industries, whose capabilities are more interconnected than ever. How can the association highlight these cross-sector connections, including the role of space and cybersecurity in defence, and ensure that companies of all sizes have a voice throughout the industrial supply chain?

TEDAE must help ensure that our industries are seen not as silos but as parts of a single industrial and technological ecosystem. Their capabilities complement one another. The space industry, for example, provides satellites and ground systems for collecting and processing information, while technologies such as software, secure communications, and counter-drone systems demonstrate how innovation across different fields contributes to security and defence. Our role is to highlight these connections and their contribution to the strategic autonomy of Spain and Europe.

This cross-sector approach must encompass the entire industrial supply chain. We cannot focus solely on major industry players. SMEs, which account for 70% of our member companies, bring specialized expertise, innovation, and agility, and are essential to creating value. We need to encourage their collaboration with larger companies, facilitate their involvement in major programs, and enable each company to contribute what it does best.

“We cannot focus solely on expanding industrial activity and capacity; we must also ensure that we have the people and skills needed to sustain that growth”

Europe is seeking to strengthen its strategic autonomy and defence industrial base. What capabilities can Spanish industry bring to this effort and how can it play a greater role in European cooperation programs?

Spain has the industrial and technological capabilities to help build a more robust European defence industrial base and compete internationally. Experience with European programs shows that long-term cooperation can fortify Spain's industrial structure, stimulate new capabilities, and elevate the international profile of our companies. The goal is to capitalize on our industry's areas of expertise, with each company and country contributing what it does best to develop complementary capabilities and advance European strategic autonomy.

To play a greater role in cooperation programs, Spain must be involved from the earliest design stages, with active participation from its companies and a long-term vision. We need programs backed by strong governance, sustained funding, and agreements that ensure continuity beyond individual terms of government.

Defence investment is growing, but turning that investment into operational capabilities takes time and planning. What is needed to ensure that these additional resources lead to sustainable programs, increased production, and robust supply chains?

First and foremost, we need budget stability, predictability, and long-term planning. It's not just about how much we invest, but how we invest it and what capabilities we can develop. Aircraft, frigates, and satellites have industrial life cycles that extend far beyond a single term of government, so we need sustained funding and cross-party agreements to ensure program continuity. Stability costs nothing, but it makes every dollar invested go further.

We also need to adapt procurement procedures to keep pace with

innovation, so that delays between identifying a need and awarding a contract don't cause us to lose out on technological and industrial opportunities.

Growth must also extend throughout the supply chain. SMEs account for a substantial share of value creation, bringing specialized expertise, innovation, and adaptability. We need to help them take part in major programs and provide the predictability and resources they need to invest, expand, and develop new capabilities. We must use this investment cycle to strengthen the entire ecosystem, create skilled jobs, and build a more competitive Spanish industry with greater strategic autonomy.

You have identified the shortage of talent as a potential bottleneck for the sector, and estimates suggest that the industry will need to fill around 25,000 positions next year. What profiles are needed and how can companies, government bodies, and educational institutions work together to attract and train them?

Talent is one of the key factors determining the growth of our industries. To meet workforce demands, we need professionals with vocational training and university qualifications who can support the expansion of the sectors represented by TEDAE. We cannot focus solely on expanding industrial activity and capacity; we must also ensure that we have the people and skills needed to sustain that growth.

To achieve this, closer collaboration between companies, government bodies, universities, vocational training institutions, and technology centers is essential. We need to introduce young people to these industries; encourage them to pursue careers in science, technology, and industry; and build stronger links between education and the actual needs of businesses. Having access to the right talent is essential if we are to turn the current wave of investment into sustainable industrial capacity and long-term competitiveness.



Your experience with the industrialization of the Eurofighter and combat aircraft programs has given you firsthand insight into European industrial cooperation. What lessons from that experience do you consider most valuable for future defence programs?

Eurofighter has been, and continues to be, a successful program that has helped Spain establish a voice of its own in Europe and build an industrial base capable of competing globally. It's also an export success story, offering valuable lessons for future European programs.

The main lesson is that programs of this scale require sustained investment over decades, robust contractual agreements, stable structures, and firm commitments from participating countries to ensure continuity despite political changes and any challenges that may arise. When these conditions are in place, European cooperation can bolster domestic industry and its international competitiveness.

The report Economic and Social Impact of the Defence, Security, Aeronautics, and Space Industries, featuring figures for 2025, was recently released. What are its main findings for the defence sector?

The report's main finding is that the industries represented by TEDAE have strengthened their position as strategic sectors of the Spanish economy. In 2025, the combined revenue of these four industries reached €18.034 billion, an increase of 11.6% over 2024. Their contribution to GDP totaled €24.425 billion, equivalent to 1.45% of Spain's GDP and 13.7% of its industrial GDP. This means that for every euro of direct GDP generated by TEDAE-related activities, more than €2.30 is generated across the economy as a whole.

The report also highlights the industries' significant contribution to employment and economic activity throughout Spain. In 2025, they supported 289,938 jobs, including direct, indirect, and induced employment. That's more than the population of the city of Granada. This represented 1.3%

of total employment in Spain and 12.1% of industrial employment. Furthermore, seven out of every ten jobs associated with these industries are found outside TEDAE member companies, in businesses such as suppliers, engineering firms, transportation companies, and workshops, highlighting their extensive links to the wider economy.

Another key finding is the industries' technological strength and international competitiveness. Over the past four years, these industries have doubled their exports, reaching €10.821 billion in 2025, equivalent to 60% of their consolidated revenue. They also stand out for their commitment to innovation. Nearly €9 of every €100 in revenue is invested in research, development, and innovation. That's six times the average for Spanish industry as a whole. Together, these findings underscore their strategic importance and their ability to drive growth, create jobs, foster innovation, develop technological capabilities, and strengthen the autonomy of Spain and Europe.

GMV presents its latest unmanned systems solutions at UNVEX

■ UNVEX held its tenth edition on September 16 and 17 at the former San Javier Civil Airport in Murcia, where it brought together companies, government agencies, armed forces, technology centers, and experts to explore new developments and challenges in the unmanned aerial vehicle (UAV) space.

GMV took part as an Extreme Sponsor, showcasing its leading technology solutions for unmanned systems designed to meet the needs of increasingly autonomous, connected, and demanding operational environments.

New solutions on display included **Nerva**, a resilient navigation system for unmanned aircraft systems (UAS) developed specifically for SIRTAP; ARGUS, a command and control suite

for unmanned vehicles; and a capability integrating fixed-wing UAS with the **Talos** artillery system and Dual-EIMOS mortars.

The event once again proved to be a key gathering for the European UAV sector, with a program of professional conferences, an exhibition area, and live demonstrations covering fields such as defence and security, emergency response, critical operations, artificial intelligence, autonomy, and counter-drone technologies.

At its stand in the exhibition area, GMV welcomed a number of senior officials interested in learning more about its technology, including Fernando López Miras, President of the Region of Murcia; Admiral Aniceto Rosique Nieto,

Director General of DGAM; Lieutenant General Miguel Ivorra Ruiz, Director General of DIGEID; Brigadier General Vicente Torres, Deputy Director General for Defence Industrial Strategy; Héctor Casado López, Deputy to the Director General of DIGEID; Major General Miguel Ángel Orduña Rodríguez, Head of the Plans Division of the Spanish Air and Space Force; and Major General Luis Sanz Muñoz, Director of Procurement at DIAD-MALE.

GMV addressed the challenges associated with the evolution of unmanned systems through solutions focused on three key capabilities: range, resilient navigation, and command and control, with applications in defence, security, and critical operations.



The Seeker UAS is integrated into the Spanish Armed Forces' *Talos* Dual-EIMOS ecosystem

The introduction of the Seeker UAS will provide the Armed Forces with advanced unmanned surveillance capabilities and support for indirect fire correction



GMV and Aurea Avionics are integrating the Seeker UAS unmanned aerial system into the ecosystem comprising GMV's **Talos** command and control system and the Spanish Armed Forces' Dual-EIMOS mortar systems. The integration of the Seeker UAS will provide these systems with advanced unmanned surveillance capabilities and support for advanced indirect fire correction.

The Seeker UAS, designed and manufactured in Spain by Aurea Avionics and supplied by GMV, will therefore be integrated into an already operational architecture based on **Talos** and Dual-EIMOS. Deliveries will be made throughout 2026 and 2027 and will include unmanned aerial vehicles,

ground control systems, and training for Spanish Armed Forces personnel.

The Seeker UAS is a tactical, rapid-deployment unmanned aerial system that provides intelligence, surveillance, and reconnaissance (ISR) capabilities. Weighing 3.6 kg and offering more than two hours of battery life, it combines a dual EO/IR payload with autonomous target tracking and native integration into the fire control chain.

The integration of the Seeker allows the UAS to be incorporated into the fire support architecture as an "aerial sensor." This architecture is built around **Talos**, GMV's fire support command and control system, which provides advanced, distributed, and interoperable management for indirect

fire support. Accordingly, the data collected by Seeker will be shared with and utilized by the Dual-EIMOS mortar systems.

The integration of Seeker into the **Talos** and Dual-EIMOS ecosystem represents a step forward in connecting sensors, effectors, and command-and-control systems by enabling a more agile exchange of information and more effective coordination among the various elements of the system.

The program brings together national technological capabilities by combining Aurea Avionics' Seeker UAS—designed and manufactured entirely in Spain—with GMV's **Talos** fire support system and the Dual-EIMOS mortar.



GMV leads ARGUS to enhance Europe's spectrum and space domain awareness capabilities

The project paves the way for future government services under IRIS², the EU program to deploy a secure satellite communications network

The European Space Astronomy Centre (ESAC), located in Villanueva de la Cañada, Madrid, hosted on September 17 the official launch event and contract-signing ceremony for the consolidation phase of the IRIS² Low-LEO Pre-Operational and De-Risk Activities under the European Space Agency's (ESA) Programme Related to EU Secure Connectivity. In this context, Enrique Fraga, GMV's General Manager of Space Systems, signed the agreement, reaffirming GMV's leadership in the ARGUS project.

ARGUS addresses Europe's swelling need for sovereign capabilities on radio-frequency spectrum,

detect and characterize interference, safeguard critical space services and infrastructure, and improve awareness of today's increasingly congested orbital environment.

The pre-operational mission concept envisages a constellation of up to five 16U CubeSats equipped with spectrum awareness payloads and optical observation capabilities based on advanced star trackers.

One of ARGUS's key differentiators is its federated architecture. Data collected by the different satellites would be combined on the ground using advanced data processing and fusion techniques, enabling the generation of higher-value products for users. The architecture is also designed to accommodate additional sensors in the future, including hosted payloads on other satellites and external data sources. This would facilitate a gradual evolution toward a scalable and interoperable European space surveillance infrastructure compatible with IRIS².

ARGUS also adopts an approach focused on rapid deployment and risk reduction, based on the reuse of flight-proven technologies, operational infrastructure,

and previously validated engineering assets. The concept builds on GMV's and Alén Space's experience in fast-paced missions, demonstrating their ability to develop, launch, and bring systems into orbital operation within short time frames.

At this consolidation stage, GMV is leading ARGUS through its subsidiaries in Spain and Portugal, with the participation of Alén Space, also part of the GMV Group, and arcsec. The team brings together capabilities in space-based surveillance, SST/STM, spectrum awareness and geolocation, software-defined radio technologies, agile small-satellite development, mission operations, and optical surveillance systems.

Through ARGUS, the consortium aims to demonstrate the potential of combining a distributed constellation of small satellites, advanced data processing, and a service-oriented architecture to strengthen Europe's capabilities in interference detection, and spectrum and space domain awareness. The concept thus lays the groundwork for a potential evolution toward operational European services capable of integrating into the future IRIS² ecosystem.



GMV addresses challenges of securing space operations in Paris

On September 9 and 10, Paris hosted the International Space Summit 2026, bringing together policymakers, representatives of international organizations, space agencies, companies, and other key industry stakeholders to discuss the main challenges facing the space sector and the opportunities ahead.

The program featured panels and presentations covering international cooperation, the sustainability and security of space activities, governance, innovation, and the strategic role of space in tackling major global challenges. Together, these activities helped build a shared vision for the sector and explore new avenues for collaboration.

GMV was represented by Enrique Fraga, General Manager of Space Systems at GMV, who took part in the panel “SSA & STM – Securing Space Operations,” as part of the “Addressing Global Space Economy Challenges through International Cooperation” track. His contribution focused on the challenges surrounding space situational awareness (SSA), space traffic management (STM), and the need for stronger international cooperation to ensure safer, more sustainable space operations.

The summit gave GMV an opportunity to share its expertise in developing SSA and STM solutions, while exchanging perspectives on the challenges set to shape the industry's evolution in the coming years.

GMV plays a key role in ESA's Poseidon project



■ Poseidon was another of the projects launched on September 17 as part of ESA's IRIS² pre-operational and risk-reduction activities for low Earth orbit (Low-LEO). Focused on developing innovative satellite services for maritime surveillance, safety and resilience, the project features significant participation from GMV.

Led by OHB Italia, Poseidon combines vessel tracking and communications through the VHF Data Exchange System (VDES), visible and thermal observation, and radio-frequency awareness. The project is designed to use secure IRIS² connectivity as a Space Data Relay Service, reducing data delivery times and enabling satellites to receive new tasking instructions more rapidly.

GMV plays a key role in defining the mission concept and demonstration activities. The company is responsible for the ground segment of the initial minimum viable infrastructure, as well as the final system design and

verification strategy. GMV will also provide the MICE mechanical interface for the flight segment and the PSA-Kit for in-orbit optical and radio-frequency situational awareness.

In addition, GMV will ensure compatibility with the future EU IRIS² system, including its security requirements, and define the roadmap towards operational IRIS² services.

The GMV company, Alén Space, will also contribute key on-board technologies and systems-engineering expertise.

Poseidon is intended to provide near-real-time maritime situational awareness across the Euro-Mediterranean region and adjacent waters. Its potential applications include the detection of unidentified vessels, illegal, unreported and unregulated fishing, maritime border surveillance, search and rescue, environmental monitoring and the protection of critical offshore infrastructure.

Arabsat and GMV collaborate to build a next-generation Mission Control Center

The new center will operate Arabsat-7A, Arabsat's upcoming flexible, software-defined satellite

GMV has secured a new contract from Arabsat for the provision of a next-generation Mission

Control Center (MCC) designed to manage Arabsat's upcoming fleet of flexible, software-defined satellites.

The new MCC will provide Arabsat with a versatile, scalable and future-ready system capable of supporting advanced payload operations and evolving service requirements. It will enable efficient planning, configuration and control of digital satellite payloads, while ensuring high performance, availability and operational reliability.

At the heart of the new MCC is GMV's **Smartpayload** product suite, which brings together the tools required to plan services, configure payloads, control satellite interfaces and monitor traffic and resources across multiple satellites. These capabilities will be supported by advanced External Planning Tools, including a Payload Mission Manager designed to optimize the interaction between satellite and ground configurations.

The system will also integrate algorithms and analytics capabilities to support traffic prediction, resource optimization and dynamic responses to changing operational conditions. Its cloud-ready architecture, open interfaces and application programming interfaces (APIs) will facilitate interoperability with

third-party systems and enable the MCC to evolve in line with future technological developments.

The project also introduces advanced optimization and analysis capabilities that will help Arabsat anticipate operational needs and make more informed decisions. AI/ML-based tools will support the efficient use of satellite and ground resources, while Digital Twin functionalities will enable performance evaluation and what-if analysis before changes are implemented. By bringing space- and ground-segment operations together and automating complex tasks, the system will simplify day-to-day operations and improve user operability.

The partnership has also been a driver of operational innovation. Through the AutoFleet project, Arabsat pioneered a highly automated approach to satellite fleet operations, working with GMV to integrate planning,

procedure execution and fleet-wide situational awareness into a unified operational concept. This experience provides a strong foundation for the advanced automation capabilities of the new MCC.

GMV is also currently working with Arabsat on the Arabsat 7A program, a fully flexible software-defined satellite designed to enable in-orbit reconfiguration of missions and services, further extending the partnership into the operator's next generation of satellite operations.

The contract builds on a long-standing strategic relationship between GMV and Arabsat spanning more than two decades. Since 2004, GMV has provided ground-segment systems and control solutions for multiple generations of Arabsat satellites, evolving its technology alongside the operator's needs. GMV technology currently supports the operation of Arabsat's entire satellite fleet.



GMV wins a contract to maintain and evolve SIRIUS



■ The French Space Agency (CNES) has awarded GMV a major contract to maintain and further develop SIRIUS, the flight dynamics infrastructure underpinning its operational control centers. The award reinforces GMV's long-standing support role in one of Europe's most advanced flight dynamics environments.

Working within a consortium led by Capgemini, GMV will maintain and evolve the system's flight dynamics

computational layer, covering orbit propagation, maneuver planning and optimization, orbit determination, and guidance and programming algorithms. These capabilities are essential to accurately monitor, navigate, and control spacecraft throughout their missions.

Beyond maintaining the core computational framework, GMV's remit will now also include delivering and integrating complete flight dynamics system (FDS) products for key CNES scientific missions, among them SWOT, the joint NASA-CNES mission to monitor Earth's surface waters, and MICROCARB, France's mission to track global carbon sources and sinks.

The award builds on GMV's earlier work on SIRIUS, where it developed the computational layer between 2014 and 2021. This new contract marks a natural next step, expanding the company's role from software development to the

delivery of integrated flight dynamics solutions for operational missions.

The project will run on Agile methodologies supported by modern DevOps practices, enabling new capabilities to be deployed quickly, operational issues to be resolved efficiently, and mission controllers and engineers to stay closely involved as the system evolves alongside their needs.

Set to run until the end of 2028, with an option for a two-year extension, the contract marks another milestone in GMV's long-standing partnership with CNES.

For GMV, the award carries particular weight. Flight dynamics has been core to the company's expertise since its founding, and this new mandate builds on that legacy, cementing GMV's position as a strategic partner in developing next-generation flight dynamics systems for CNES's future Earth observation and space exploration missions.

Priming the development of Pulse for ESA

■ GMV has been selected by ESA's European Space Operations Centre (ESOC) to lead Pulse Phase 1, covering the evolution of ESOC's next-generation Mission Control System based on EGS-CC (European Ground System-Common Core).

Pulse is the new name of ESOC's Mission Control System infrastructure, built on EGS-CC and reusable Mission Control System components. Phase 1 will consolidate and evolve the system, improving its operational readiness, maintainability and quality while preparing it for use by current and future ESA missions.

As prime contractor, GMV will lead a consortium bringing together the full range of expertise developed through previous MCS-CC (Mission Control System-Common Core, a prior name for Pulse MCS) and EGS-CC activities.

The technical work covers EGS-CC improvements and archive evolution required for ESA's mission operations use-case; the consolidation of standard multi-mission capabilities, including the Activity Stack, On-board Software Management, PUS Service Model support; automated testing; and the development of a web-based user interface. The project will also support the migration of Swarm (ESA's three-satellite constellation dedicated to studying Earth's magnetic field) to an operational Pulse MCS system and begin preparations for a science-mission configuration, demonstrated with Euclid (ESA's astronomy mission to explore the dark Universe), for an initial system validation campaign.

A strong focus will be placed on agile delivery, continuous integration, requirements traceability, test automation and software quality. The work may also explore AI-based tools to

streamline selected software-engineering activities, particularly unit-test development.

Reusable MCS components will also be prepared for release under an ESA community software licence, supporting collaboration and long-term maintainability across missions. The project will run through 2026, with major intermediate software releases and an End-of-Phase Review in the final quarter. Its objectives include providing inputs to the teams working on the EGS-CC framework with the aim of preparing it for routine maintenance in future and enabling a smooth handover of Pulse activities into Phases 2 and 3 of the project.

This award reinforces GMV's commitment to ESA and to delivering robust, reusable and mission-ready solutions for future European space operations.

GMV and SATLANTIS unite space industry at 5th SmallSats Conference

On July 2 and 3, GMV and SATLANTIS jointly hosted the 5th SmallSats Conference in Santander, Spain, as part of the summer courses at Menéndez Pelayo International University (UIMP). Held under the theme "The Boom of the Space Economy," the event brought together representatives from institutions, space agencies, and industry to discuss the challenges and opportunities of a rapidly evolving space economy and its impact on technological development, defence, and security.

The conference was co-chaired by Miguel Ángel Molina, President of the Space Council and Deputy General Manager

of Space Systems at GMV, and Juan Tomás Hernani, CEO of SATLANTIS and President of YEESS.

Jean-Jacques Dordain, President of SATLANTIS and former Director General of the European Space Agency (ESA), opened the event before welcoming a distinguished lineup of speakers, including Juan Carlos Cortés, Director of the Spanish Space Agency (AEE) and Chair of the ESA Council; Miguel Ivorra, Lieutenant General and Director of DiGEID; and Teresa Riesgo, Secretary General for Innovation at Spain's Ministry of Science, Innovation, and Universities.

The event featured presentations and panel discussions offering a multidisciplinary perspective on the space economy. These explored its growing role in the global economy, the industrialization of space, and the new opportunities it is creating for innovation, investment, and competitiveness across the space industry.

Speakers provided strategic and technical insights into the industry's evolution, emphasizing the importance of public-private collaboration and knowledge sharing in Europe.



Space security takes center stage at Space Defence & Security Summit 2026

The third Space Defence & Security Summit (SDSS) took place in Paris on September 15 and 16, once again bringing together representatives from industry, institutions, and international organizations to address key challenges and opportunities across defence, security, and space.

Now firmly established as a leading forum for knowledge sharing and international cooperation, SDSS 2026 featured GMV in one of its panel discussions. Miguel Ángel Molina, Deputy CEO of GMV's EST Space Systems, spoke on the panel "Space Domain Awareness in the Era of Mega-Constellations" on the first day of the summit, where industry experts discussed the evolving space security landscape as mega-constellations continue to be deployed.

The summit drew more than 480 attendees from 30 countries, providing an opportunity to exchange new perspectives on space security and defence. Over the two days, space and defence professionals exchanged views on the emergence of space as a key operational domain for sovereignty, as well as the need to develop new models of cooperation and increase investment in both technology and human capital.

GMV takes part in World Space Business Week and hosts clients in Paris



■ GMV took part in World Space Business Week (WSBW) 2026, one of the space industry's premier international gatherings, held September 14-17 at the Hôtel du Collectionneur in Paris. Organized by Novaspace, the event brought together representatives from across the space value chain, including satellite operators, manufacturers, investors, space agencies, government bodies, service providers, and technology companies.

In addition to sponsoring the conference, GMV exhibited at a booth showcasing its space-sector capabilities and solutions, underscoring its commitment to innovation and to developing technologies for a safer, more efficient, and more sustainable industry. Enrique Fraga, General Manager of Space Systems EST at GMV, spoke on the panel "Managing Critical Ground Infrastructure in Contested Environments", which examined the challenges of protecting and managing critical ground infrastructure in increasingly

complex and demanding operating environments.

Miguel Ángel Molina, Deputy General Manager of Space Systems EST at GMV, also joined the roundtable "Space Domain Awareness in the Era of Mega-constellation", part of the dedicated defense and security sessions held during WSBW. Among other topics, he stressed the need for greater interoperability across systems and for shorter development timelines for mission-critical defense and security systems.

Beyond its role in the program, GMV used its presence at WSBW to bring together clients and industry professionals at a cocktail reception. The relaxed setting offered a chance to share perspectives on where the space industry is headed, exchange ideas, and deepen ties with the company's clients and partners, reinforcing relationships that help open the door to new opportunities for collaboration.

CyberCUBE, the mission to strengthen the cybersecurity of space systems, successfully launched

Led by GMV for the European Space Agency, the mission will serve as an in-orbit laboratory to validate cutting-edge space cybersecurity technologies

On 7 July, the European Space Agency's (ESA) CyberCUBE mission was successfully launched aboard a Falcon 9 rocket from Vandenberg Space Force Base in California. The mission, led by the multinational technology company GMV through its teams in Romania and Spain, also involves Alén Space, a pioneering New Space company that has been part of GMV since 2023.

The successful launch of the satellite into orbit marks the start of a pioneering mission designed to validate cutting-edge cybersecurity technologies and capabilities applied to the space environment under real-world conditions. CyberCUBE is part of the Cyber Evolutions activities of ESA's Cybersecurity Operations Center (CSOC) within the framework of the Cyber Security Resilience programme, a cross-cutting initiative led by the Agency's Security Office to strengthen the protection of both its corporate systems and its space missions.

CyberCUBE was designed as an in-orbit experimentation platform capable of providing ESA with a secure, flexible, and reconfigurable environment for demonstrating new cybersecurity technologies before they are incorporated into future European missions. The mission's main goal is to validate the CSOC's data monitoring and analysis capabilities using actual

space assets. At the same time, it will make it possible to test new onboard cyber capabilities and collect critical information to improve the resilience of space systems against emerging threats.

The GMV team in Romania is responsible for the mission's entire life cycle, from the initial design and development phases through launch, initial in-orbit operations, the commissioning phase, and the handover of operational control to ESA. For Romania, the mission represents a major milestone. CyberCUBE is the first ESA mission to be led end-to-end by GMV in Romania, marking the first time a company based in Romania has taken responsibility for an ESA mission throughout its entire lifecycle. This achievement demonstrates the country's growing capabilities in the design, development and delivery of complex space missions.

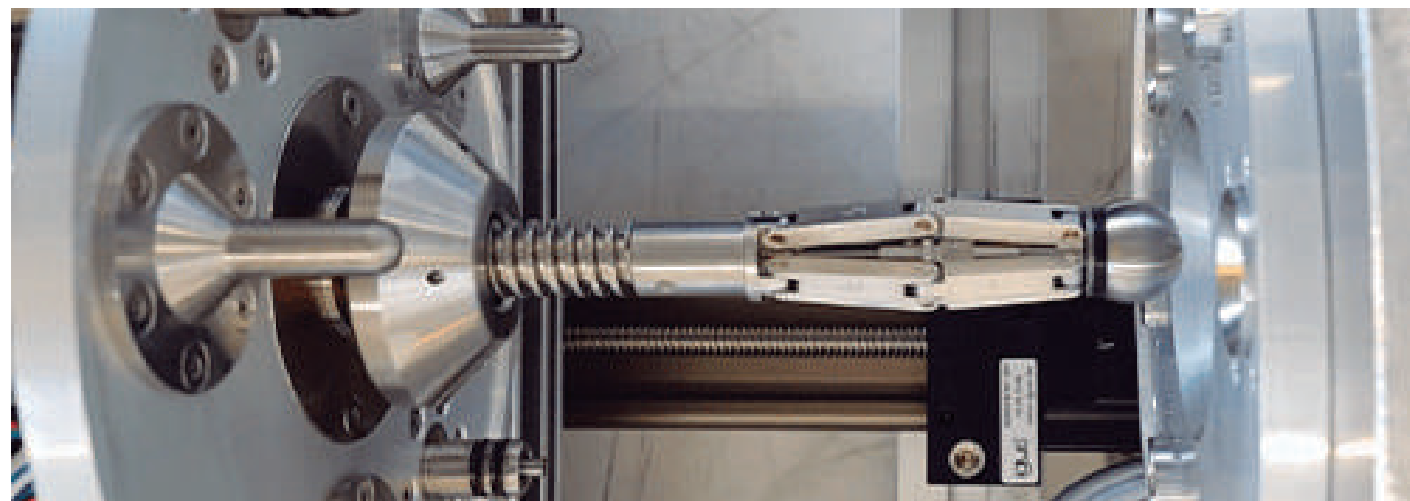
The flight segment is based on a 3U CubeSat developed by Alén Space, equipped with cutting-edge reprogrammable processing capabilities

and a payload specifically designed for cybersecurity monitoring. During its time in orbit, the platform will collect essential data on vulnerabilities, threats, and protection mechanisms applicable to future space systems.

In addition to the space segment, the GMV team in Spain has developed key components of the ground segment, including the Alén Space mission control center—built on GMV's commercial **FocusSuite**® solution—as well as a representative flatsat together with the Romanian team that will make it possible to simulate and validate various operational scenarios. Meanwhile, ESA's CSOC will serve as the primary user segment, managing mission requests and processing the information obtained for cybersecurity analysis.

After successfully completing the launch and early orbit phase (LEOP) and the commissioning phase, the GMV Romanian team will transfer operational control of CyberCUBE to ESA for nominal operations.

ASTRALIS project launched to build Europe's autonomous capabilities for in-orbit service



■ GMV is contributing to ASTRALIS, a Horizon Europe project that brings together 15 partners from 8 European countries to lay the foundations for Europe's future in-space logistics infrastructure and strengthen the continent's autonomous capabilities for in-orbit servicing.

The project supports the European Commission's ISOS4I (In-Space Operations and Services for Europe) Pilot Mission, an ambitious initiative that represents the first step in the rollout of a European in-orbit servicing and refuelling infrastructure by 2030. By developing the technologies and operational concepts required for autonomous in-orbit servicing, ISOS4I is laying the foundations for sustainable commercial and institutional in-space services while reinforcing Europe's strategic autonomy and resilience in space.

Within this framework, ASTRALIS is developing the Logistics Component (LC), a reusable and modular spacecraft designed to transport servicing satellites, satellite applications and propellant between launch vehicles

and spacecraft in orbit. The vehicle will also enable key capabilities such as in-orbit refuelling, servicing and disposal, while promoting interoperability across mission elements and validating critical technologies up to Technology Readiness Level (TRL) 6.

GMV brings to the project extensive expertise in in-orbit servicing technologies, built through programs with the European Union, ESA, CNES and UKSA, covering areas such as active debris removal, satellite inspection, refuelling and in-orbit systems.

As part of ASTRALIS, GMV is contributing to the development of the refuelling interface through its ASSIST technology, as well as supporting avionics, system engineering and testing activities. ASSIST is Europe's most advanced initiative for a standardised satellite refuelling interface, designed as an interoperable, non-proprietary docking and refuelling system compatible with both gaseous and liquid storable propellants. By enabling future spacecraft to refuel and exchange resources in orbit, ASSIST represents a key enabling technology for sustainable

space logistics and satellite life extension.

By supporting the development of interoperable in-space logistics technologies, ASTRALIS will help create the infrastructure needed for future commercial and institutional servicing missions, reducing Europe's dependence on non-European capabilities and fostering a competitive and sustainable space ecosystem.

The ASTRALIS project was officially launched on 25 June at the consortium's kick-off meeting, hosted by Ariane Group in Bremen, Germany.



ASTRALIS

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MTG-I2 joins Meteosat constellation to enhance weather forecasting in Europe

■ The Meteosat Third Generation Imager 2 (MTG-I2) satellite is now in orbit following its successful launch on August 27 aboard an Ariane 6 rocket from Europe's Spaceport in French Guiana. MTG-I2 now joins the MTG constellation, an EUMETSAT program developed in collaboration with the European Space Agency (ESA) that will enhance Europe's weather observation capabilities with high-resolution imagery and data to improve extreme weather forecasting and climate monitoring. GMV contributed to this milestone by delivering critical ground segment systems that enable mission control and operations.

As part of the MTG program, GMV developed the mission operations facility (MOF), which integrates the core ground segment systems responsible for commanding and controlling the new generation of geostationary satellites. These include the mission control system (MCS), mission planning system (MPS), flight dynamics system (FDS), and operations preparation system (OPRE).

In addition, GMV is involved in payload processing activities. In the initial phase, the company was responsible for developing processing prototypes and instrument simulators (instrument quality tools, or IQTs), and later developed a significant portion of the operational processing chain (instrument data processing facility, or IDPF). These developments are complemented by tools for operations automation, mission preparation, and configuration management, further strengthening GMV's contribution to one of Europe's most advanced meteorological infrastructures.

MTG-I2 carries two state-of-the-art instruments: the Lightning Imager, which continuously monitors lightning

activity in storms from geostationary orbit, and the Flexible Combined Imager, designed to capture images of rapidly evolving weather systems at frequent intervals. These capabilities are particularly valuable for issuing early weather warnings and supporting critical applications such as air traffic safety.

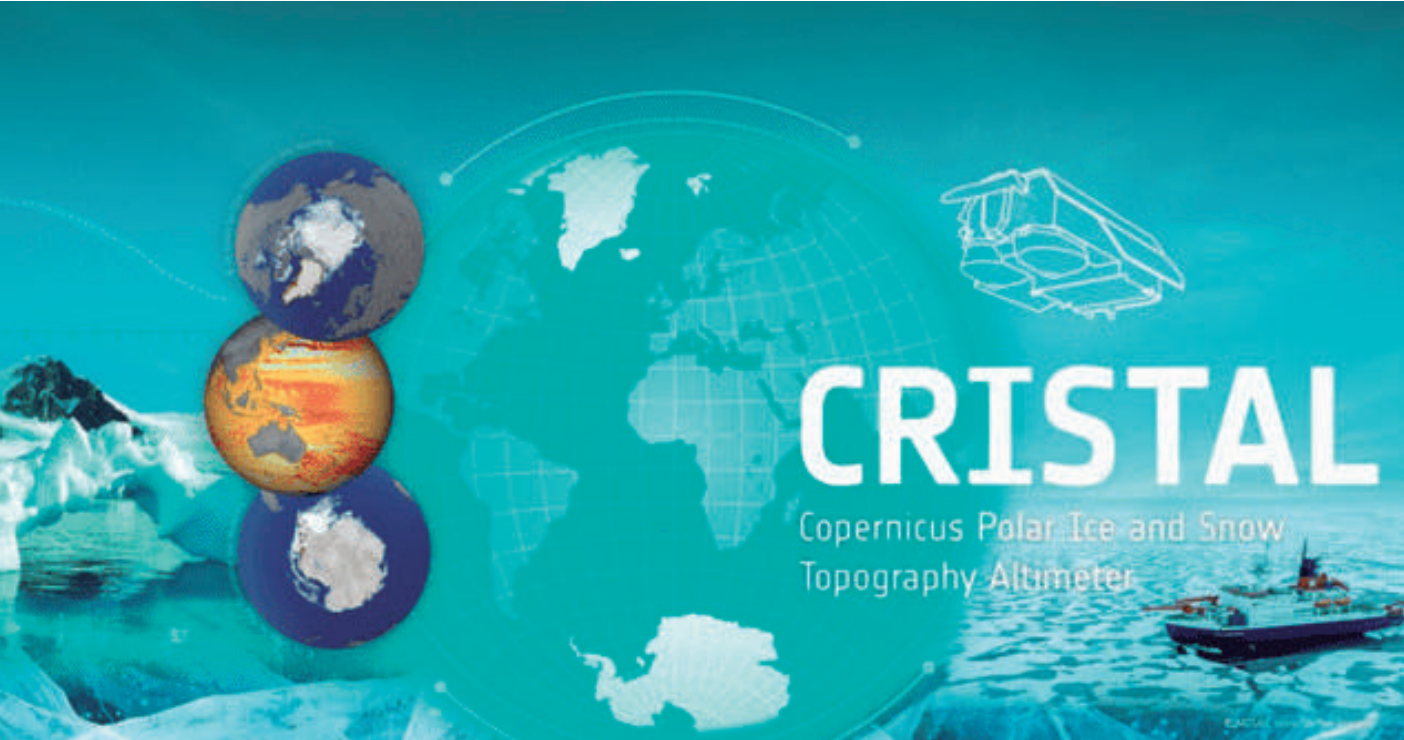
With the addition of MTG-I2, the Meteosat Third Generation constellation

now has three satellites in service, alongside the first MTG-Imager and the MTG-Sounder. The new satellite will provide an unprecedented level of detail.

Once fully operational, the MTG constellation is expected to generate at least 50 times more data than the previous Meteosat Second Generation (MSG) satellites.



GMV expands its role in ESA's CRISTAL mission



■ GMV has been awarded a new contract by the European Space Agency (ESA) to lead the development of the Level-2 Hydro-Cryo Operational Processors for the Copernicus CRISTAL (Copernicus Polar Ice and Snow Topography Altimeter) mission, reinforcing its position as a leading industrial partner in Europe's Earth Observation Programme.

CRISTAL is one of the European Union's Copernicus Expansion Missions and will play a key role in improving our understanding of the Earth's climate system. As primary objective, the mission will monitor the cryosphere by delivering accurate measurements of sea ice thickness, snow depth and land ice elevation change, providing essential data to support climate research, improve climate models, and contribute to the implementation of the EU Climate Strategy and the objectives of the Paris Agreement.

The mission carries two complementary instruments: the Interferometric Radar Altimeter for

Ice and Snow (IRIS), operating in Ku and Ka bands, and a Microwave Radiometer, namely AMR-CR, that provides atmospheric corrections to ensure highly accurate topography measurements.

Under the new contract, GMV, as prime contractor, together with CLS, will define the ESA Level-2 data products for the cryosphere and hydrology domains and develop the associated open-source processors to be operated within ESA's Earth Observation Missions, Data and Operations Management Framework for the Copernicus Space Component (EOF-CSC). The activity also covers pre-launch processor validation, support to operational deployment, and maintenance through the commissioning phase of the first CRISTAL satellite.

The contract represents a major milestone for GMV. The company is already leading the development of the ESA mission's Level-0 and Level-1 operational processors within

the European Earth Observation Processing Framework (EOPF). Building on this experience, GMV will now be responsible for the development of the entire ESA operational processing chain of the CRISTAL mission, from Level-0 to Level-2. By extending its responsibility to Level-2 processing, GMV will ensure seamless integration between processing levels, consistent data quality, and a unified operational system for operators and end users.

This achievement further strengthens GMV's leadership in operational ground segment processing and its commitment to enabling Europe's next generation of Copernicus missions.

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ESA launches the Sentinel-3C and FLEX Satellites into Orbit to Improve Earth Observation

■ The European Space Agency (ESA) successfully launched the Sentinel-3C and FLEX satellites aboard a Vega-C rocket from the Kourou Spaceport in French Guiana in the early morning hours of September 15 at 3:21 a.m. CEST. Both missions will help expand our knowledge of and monitoring of Earth, ranging from the observation of oceans and land masses to the study of vegetation health.

GMV has contributed to various phases of both missions, ranging from initial studies and system validation to satellite control, data processing, and in-orbit operations.

In Sentinel-3C mission, third satellite in the Copernicus Sentinel-3, GMV has developed the control center located at ESA's European Space Operations Center

(ESOC), from where the satellite will be monitored and managed throughout its entire operational life. The company is also responsible for the mission planning and orbital control systems, as well as the Sentinel-3C operational simulator for ESOC and the European Organization for the Exploitation of Meteorological Satellites (EUMETSAT).

In addition, GMV has developed the onboard software for the OLCI instrument control module, designed to observe the color of the oceans and land surfaces. The company maintains the control centers and auxiliary systems for the Copernicus satellites and provides precise orbit determination services for the processing and exploitation of data from the Sentinel missions. In addition, during the launch, GMV teams provided on-site software support at ESOC.

In FLEX mission, part of ESA's Earth Explorer program, GMV has participated in mission analysis studies and developed the end-to-end performance simulator, which replicates the entire data acquisition and processing chain and enables verification of the mission's scientific objectives. It has also conducted independent software verification and validation and developed essential ground segment components, such as the facilities for the initial processing of scientific data and auxiliary information.

The company has also developed the FLEX control center for ESOC, from which telemetry, telecommands, and satellite operations will be managed, and provided software support during the launch.



GMV to lead consortium designing a sustainable Earth observation mission for Africa



■ GMV will coordinate the EURAFREO consortium in defining and carrying out the preliminary design of an Earth observation mission intended to support decision-making in areas such as agriculture, water resource management, land use planning and climate resilience across Africa.

The New Space Partnership for Earth Observation (EO) Mission is funded by the European Commission's

Directorate-General for International Partnerships (DG INTPA), managed by the European Space Agency (ESA), and implemented with the support of the African Space Agency (AfSA). The initiative is part of the Africa-Europe Space Partnership Programme (AESPP), a collaboration between the African Union and the European Union aimed at strengthening space cooperation between the two continents. The AESPP supports the development of Africa's space

capabilities and drives innovative Earth observation and New Space technology-based solutions to advance climate resilience, sustainable development, innovation and economic growth.

The EURAFREO consortium brings together GMV and its Spanish subsidiary Alén Space, together with Astrofica Technologies (South Africa), Space in Africa (Nigeria), and LocateIT (Kenya). As consortium coordinator, GMV will lead a team that combines complementary expertise in Earth observation, New Space technologies, mission development, and innovation to design a scalable mission tailored to Africa's needs and capable of delivering tangible socioeconomic benefits.

In addition to developing a new Earth observation capability, the project will help strengthen Africa's space industry by fostering innovation, promoting knowledge transfer, and developing technical expertise. It will also support the growth of a sustainable space ecosystem while enhancing the ability of African organizations to develop and operate future space missions.

GMV showcases CopPhil capabilities at Philippine Space Week 2026

Following the success of previous years, Philippine Space Week returned from August 8 to 14 in Quezon City under the theme "Navigating Tomorrow." Led by the Philippine Space Agency (PhilSA), the event once again brought together companies, government authorities, and space agencies for discussions on the space sector, with a particular focus on space awareness.

GMV took part in the event through CopPhil, a European-Philippine cooperation

initiative working to ensure that the Philippines can freely access and use data from Copernicus, the European Union's Earth observation program. Through its involvement in CopPhil, GMV is encouraging resource uptake in areas such as environmental protection, disaster risk reduction, and climate resilience.

During the event, the company delivered several training sessions on the forest monitoring products developed under

CopPhil, drawing on the capabilities of **eoForest**, GMV's forest geoinformation solution. The sessions explored how satellite data can support forest mapping and monitoring, providing valuable insights for better decision-making.

GMV also took part in the Philippine Space Week exhibition at the CopPhil stand, where it showcased the work carried out under the project and the developed solutions.

GMV to develop the End-to-End Performance Simulator for the ERS-EO Programme



■ GMV has been awarded a contract by the European Space Agency (ESA) to develop the End-to-End Performance Simulator for ERS-EO, a key capability that will support the definition and evolution of a future federated system-of-systems for Earth Observation in Europe.

The European Resilience from Space for Earth Observation (ERS-EO) programme is a joint initiative of ESA and the European Commission aimed at enabling a new generation of Earth Observation Governmental Services by bringing together institutional and commercial space assets into a coordinated operational framework. Assessing how these heterogeneous resources can work together efficiently requires the ability to evaluate

different concepts before they are implemented.

The simulator, to be developed by the GMV teams in Spain and Poland, will provide ESA with a virtual environment where alternative system architecture configurations, operational concepts and planning strategies can be analysed and compared under realistic conditions. By reproducing the complete service chain - from observation requests to product delivery - it will help assess system performance, identify potential bottlenecks and understand the impact of different architectural and operational choices.

The software will be delivered incrementally over the course of

the project, allowing ESA to use progressively more capable versions in support of the ERS-EO architecture and definition activities. As the simulator evolves, it will provide increasingly advanced capabilities to explore future system configurations, analyse expected service performance and support informed engineering decisions.

For GMV, the contract represents a significant strategic milestone. Being entrusted with the development of the programme's first end-to-end simulator places the company at the centre of the ERS-EO definition activities and reinforces its position in the development of advanced simulation and decision-support solutions for future European space programmes.

GMV tightens collaboration with EUMETSAT

■ GMV took part in the EUMETSAT Meteorological Satellite Conference 2026, held from September 21 to 25 in Darmstadt, Germany. This year’s conference coincided with the 40th anniversary of EUMETSAT, the European organization responsible for operating meteorological satellites.

The five-day program featured presentations, technical sessions, workshops, poster sessions, and networking activities. In addition to its exhibition space, GMV featured prominently in the coffee break and session areas on one of the conference days, further strengthening its presence at one of Europe’s landmark gatherings for satellite meteorology.

GMV’s participation highlights the longstanding relationship between the two organizations. As one of EUMETSAT’s key technology partners, the company develops critical software for ground segment systems and meteorological satellite operations, including flight dynamics, mission control and planning,



and data processing. This work spans programs such as Copernicus, Meteosat Third Generation (MTG), and Metop-SG.

The conference brought together representatives from space agencies, the scientific community, and industry to share the latest developments in

Earth observation, weather forecasting, and climate monitoring. Topics included the use of data from new generations of satellites, their application to climate services, and the upgrading of technologies for future missions and ground segments—all areas in which GMV has extensive expertise.

GMV takes part in AMOS Conference on space surveillance

GMV participated in the 27th edition of the Advanced Maui Optical and Space Surveillance Technologies (AMOS) Conference, held September 15-18 in Maui, Hawaii, United States. Organized by the Maui Economic Development Board (MEDB), AMOS is widely regarded as the premier technical conference in the United States dedicated to space situational awareness (SSA) and space domain awareness (SDA).

The conference brought together representatives from industry, government agencies, the military, research centers, and universities from around the

world. The program featured keynote presentations, space policy forums, technical sessions, short courses, and an exhibit hall, addressing technological advances and challenges in space surveillance, the sustainability of the orbital environment, and the safety of space operations.

During the event, GMV had a stand in the exhibit hall and presented two technical papers highlighting different areas of the company’s work in space surveillance and security. Alejandro Pastor Rodríguez, SST and STM Lead at GMV Germany, presented a paper on improving the cataloging of low

Earth orbit (LEO) objects in the face of uncertainties driven by space weather. Jack McHugh, SST and Flight Dynamics Engineer at GMV UK, presented a paper on the near-real-time detection and characterization of non-cooperative launches using optimized sensor networks and boost-phase trajectory estimation.

The GMV team also met with space agencies, government organizations, companies, and research institutions to strengthen international collaboration and explore new opportunities in the space sector.

Alén Space strengthens its role in the Low-LEO layer of IRIS² programme

■ Alén Space continues to strengthen its position as a trusted technology partner in the small satellite sector by participating in three major projects (ARGUS, Poseidon and LYRA) within the Consolidation Phase of the European Space Agency’s (ESA) IRIS² Low-LEO Pre-Operational and De-Risk Activities, under the Agency’s Programme Related to EU Secure Connectivity. Across these initiatives, the company provides engineering capabilities, specialised hardware and mission integration expertise.

In addition to its contribution to ARGUS and Poseidon, both involving GMV in their respective consortia, Alén Space also participates in LYRA, a project coordinated by SpaceLocker and involving WiRan and Leaf Space. The project aims to define a

solution to provide greater connectivity to end users operating existing or planned LEO satellites, including both governmental and commercial operators.

The LYRA concept is based on a relay payload that would act, from the perspective of user mission-control systems, as an additional space-based ground station. This approach is intended to integrate with existing contact prediction, booking and operations workflows, providing additional secure and low-latency contact opportunities beyond the visibility of terrestrial ground stations.

Within LYRA, Alén Space leads a work package focused on defining the RF architecture of the payload and confirming the interfaces and compatibility with

end-user satellites. The company also supports the wider consortium in other work packages.

Alén Space’s involvement in the ESA’s Low-LEO Consolidation phase highlights the company’s technical flexibility and readiness to tackle complex mission requirements in LEO.

“Participating in these three projects is an important opportunity to contribute our experience to initiatives closely aligned with Europe’s future space infrastructure,” said Guillermo Lamelas, CEO of Alén Space. “Poseidon, ARGUS and LYRA address different mission needs, but they share a common goal: advancing reliable, resilient and scalable capabilities for Low Earth Orbit.”

“New Space España” closes its fourth edition

■ In September, the fourth edition of New Space España brought together more than 280 professionals, 130 companies and 45 speakers from the Spanish space industry in Vigo. Over two days, the event organised by Alén Space explored the challenges and opportunities that will shape the sector’s evolution.

Strategic sovereignty, technological autonomy, the connection between research and industry, public-private collaboration, the development of industrial capabilities in a dual-use environment, and security and defence challenges were among the main themes of a programme that brought together representatives from companies, public administrations, agencies, technology centres and universities.

GMV took an active role in several sessions throughout the event. Miguel Ángel Molina, Deputy General Manager of Space Systems at GMV, delivered the conference “Operating in space: Key challenges that will shape leadership

in the coming years”, focused on the growing complexity of operating and protecting space assets. José Antonio Viceira Martín, Director of Space Missions Domain at GMV, took part in the round table “Sovereignty and autonomy: the industry’s perspective”, while Amaya Atencia, Director of Strategy and Business Development for Earth Observation at GMV, moderated the panel “Sovereignty and autonomy: the challenges facing Spain and Europe.”

Alén Space was also represented by its CEO, Guillermo Lamelas, who welcomed participants with an address focused on the current challenges facing the space industry and the need to turn Europe’s existing investment and capabilities into greater competitiveness. Isolina Pérez Donnelly, Commercial Director at Alén Space, moderated the round table “The value of data: downstream solutions”, while Antonio Vázquez, Head of Business Development at Alén Space, took part in the closing session.

The fourth edition further consolidated New Space España as a meeting and

discussion forum for key players across the Spanish and European space ecosystem.



ARGOS shapes the future of European ground segments with its first demonstrations

The GMV-led ARGOS project has successfully completed its first demonstrations, paving the way for a new generation of European ground segments built on resilient, secure, and intelligent infrastructure



Following a successful project kickoff, the GMV-led industrial consortium behind ARGOS has completed its first round of demonstrations, marking a major milestone in the development of the new platform concepts the project has put forward for the next generation of European ground segments.

Held this past summer to validate the technical concept proposed for the evolution of ground segment infrastructure, the demonstrations brought together experts from the industrial consortium and representatives

of ESA, EUSPA, and the European Commission (EC).

Led by GMV, ARGOS aims to define a resilient, service-oriented platform concept designed to modernize ground segment operations through cloud-native technologies, DevSecOps practices, and advanced cybersecurity and artificial intelligence capabilities. The project seeks to lay the technological foundations for a new generation of infrastructure that can evolve continuously while improving operational resilience, process automation, and security.

Rather than focusing on individual technologies in isolation, the demonstrations showed how cloud-native infrastructure, DevSecOps practices, cybersecurity, and artificial intelligence can come together in a single ecosystem to support the evolution of future ground segment infrastructure.

During the sessions, the consortium presented the platform's initial architecture, the collaborative engineering environment, the agile development approach, and the first operational concepts, which will be

rolled out progressively over the course of the project. The demonstrations also highlighted how modern platform-as-a-service technologies, built-in cybersecurity services, and AI-assisted operations can simplify the management of increasingly complex ground segment infrastructure while enabling continuous evolution with minimal operational impact.

The demonstrations sparked a technical discussion between the participating organizations and the industrial consortium, making it possible to validate the proposed concepts and

gather valuable feedback to guide the next phases of development. This collaborative approach is one of the project's cornerstones, as it ensures that future demonstrations move progressively toward sufficiently representative operational scenarios.

The GMV-led consortium includes key partners T-Systems, ImmedialT, Two Impulse, and Wiser Technology, combining expertise in sovereign cloud platforms, DevSecOps, artificial intelligence, cybersecurity, and satellite ground segment technologies.

With these first demonstrations successfully completed, the project continues to advance toward its goal of defining and validating a resilient, secure, and intelligent platform concept to support the future evolution of European ground segments.

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This project is funded by the EU under Horizon Europe activity HE-ESA-034, "Advanced Platform-Oriented Ground Infrastructure". The views expressed in this article are solely those of the author and do not necessarily reflect those of the European Commission, EUSPA, or ESA, which cannot be held responsible for any use that may be made of the information contained herein.

GMV ramps up Galileo cybersecurity



■ GMV has reached a new milestone in its Galileo cybersecurity activities, completing the operational deployment of the Vulnerability Management Tool (VMT) at the security monitoring centers in Spain (GSMC-ES) and France (GSMC-FR). This deployment paves the way for the operational validation process led by the European Union Agency for the Space Programme (EUSPA), which is responsible for operating this capability within the Galileo program.

The milestone marks the culmination of an intensive development, qualification, and deployment process carried out by GMV over recent months. The project involved

multiple software development cycles, testing campaigns, validation activities, and technical and operational workshops, as well as close collaboration with teams from EUSPA and the European Space Agency (ESA) to ensure that the solution meets Galileo's stringent operational and security requirements.

As a result of these joint efforts, EUSPA has authorized the formal start of VMT service validation, a key step before the tool becomes fully operational.

VMT is designed to provide consistent, centralized management of cybersecurity vulnerabilities across Galileo's various

segments and infrastructures. This capability will give EUSPA a more comprehensive view of the system's security posture, facilitating coordination between organizations, vulnerability lifecycle tracking, and the consistent management of mitigation and patching activities.

This achievement further strengthens GMV's position as a leading technology partner in the evolution of Galileo's cybersecurity capabilities and represents a significant step toward more coordinated, efficient, and resilient vulnerability management across the European satellite navigation program.

GMV showcases its positioning solutions at ION GNSS+ 2026

GMV took part in ION GNSS+ 2026, one of the foremost international events dedicated to global navigation satellite system (GNSS) technologies and positioning, navigation, and timing (PNT) solutions, held from September 14 to 18 in Orlando, Florida.

The company had its own exhibition space, where it showcased its capabilities in high-precision positioning, resilient navigation, and PNT technologies based on low Earth orbit (LEO) satellites.

Solutions on display included **GMV GSharp®**, a high-precision GNSS positioning service with potential uses ranging from LEO satellite missions and vehicle systems to precision agriculture, robotics, and the maritime sector. GMV also presented its Galileo PRS capabilities, which leverage Europe's encrypted navigation service for authorized government users and sensitive applications.

Another highlight was Celeste IoD, a European Space Agency (ESA) demonstration mission exploring the

use of a complementary layer of LEO satellites to enhance Galileo's capabilities. GMV is leading one of the mission's industrial developments and has built one of its first demonstration satellites.

Beyond the exhibition area, GMV contributed to more than a dozen papers, presentations, and sessions in the conference's technical program. These covered the evolution of Galileo, signal integrity and authentication, AI-based interference detection and mitigation, LEO-PNT technologies, and high-precision positioning.

Galileo Control System advances toward second generation

■ GMV has successfully completed the first deployment of the new Galileo Second Generation (G2G) Ground Control Segment (GCS 4.0) at the Galileo Control Center in Germany (GCC-D). This milestone marks another step in preparing the infrastructure that will enable ground-based control and operations for the future second-generation satellites of Europe's Galileo satellite navigation program.

Following the deployment, GMV worked alongside the Galileo operator and the European Space Agency (ESA) to conduct the first system compatibility test campaign (SCTC) from the German control center, communicating with the second-generation satellite platform developed by Thales Alenia Space Italia (TAS-I). The tests verified initial connectivity between the control center and the satellite, including the exchange of commands and their correct interpretation and execution, as well as the reception and decoding of

telemetry—all key elements identified in previous SCTC.

The campaign also included cryptographic testing, building on work carried out by ESA, GMV, TAS-I, and the final operator to validate new G2G security algorithms. These tests are a fundamental part of the GCS-satellite integration campaigns, designed to ensure that the satellite correctly interprets commands and that the ground segment effectively processes the telemetry it receives.

This success adds to the milestones already achieved in compatibility campaigns involving satellites from Thales Alenia Space and Airbus, further demonstrating the robustness of GMV's G2G GCS solution.

With this deployment, GMV continues to advance the operational readiness of the new generation of Galileo while solidifying its role as a key technology partner in the evolution of Europe's satellite navigation system.



GMV completes operational deployment of Galileo Ground Control Segment version 3.1 at the Italian control center

■ GMV has successfully completed the deployment of the new version 3.1 of the Galileo First Generation (G1G) Ground Control Segment (GCS) on the operational chain of the Italian control center in Fucino. With these activities complete, the new system version has been handed over to the operations teams, clearing the way for an equivalent deployment at the German control center.

The newly deployed version is the culmination of an incremental development process designed to ensure the continuity, robustness, and security of the Galileo service.

GMV had previously deployed version 3.1 on the validation chains at the German and Italian control centers. This was followed by a three-month operational validation period, carried out in close collaboration with the Galileo operator and supervised by EUSPA, to ensure that testing was performed correctly and that issues and anomalies were resolved. Operational validation was an essential prerequisite for deploying the new version on the final operational chain.

GCS 3.1 is the most advanced release of the system's first generation. It delivers a range of operational improvements, anomaly fixes, enhanced security

capabilities, renewed cryptographic components, and the resolution of technology obsolescence in the Fucino infrastructure. It also introduces features that enable phased deployment of the ground segment in line with the operational needs of the Galileo program.

Deployment of GCS 3.1 on the German operational chain will take place over the coming weeks, completing the modernization of the Galileo ground segment and reinforcing GMV's role as a key technology partner in the evolution of European satellite navigation systems.

GMV to lead HYENA project to improve positioning accuracy in challenging environments

■ GMV has recently been awarded the HYENA (Hybrid Black-White-Modelling Estimation and Machine Learning Algorithms for PNT Engines) project through the ESA NAVISP-EL1 program. The objective of HYENA is to design, implement, and validate hybrid white-box/black-box estimation algorithms for PNT engines, combining traditional optimal estimation techniques with machine-learning-based methods.

Traditional white-box estimation algorithms, such as Least Squares and Kalman Filters, are computationally efficient and provide confidence metrics and integrity transparently for safety-critical applications. However, their performance degrades in challenging tracking environments, such as urban canyons, where assumption of Gaussian noise breaks down. Black-box algorithms, on the other hand, offer performance improvements in these challenging environments through the use of machine learning, but they are more computationally intensive and more difficult to verify and certify as safe. HYENA aims to achieve an optimal real-time solution that combines the best

aspects of white-box and black-box models through the design of two novel functions: the “Smart Oversight Controller” (SOC) and the “Safety Oversight Mechanism” (SOM). The purpose of these functions is to combine the white-box and black-box models so as to:

- Achieve improved accuracy in challenging propagation conditions while maintaining optimal performance in nominal environments.
- Minimize resource usage in terms of computational complexity and

memory footprint, making the solution suitable for embedded receiver platforms.

- Ensure the verifiability and interpretability of the developed solutions, in line with the requirements of safety-critical applications.

Following development of the algorithms and a real-time demonstrator system, field trials using commercial off-the-shelf (COTS) GNSS and IMU equipment will be conducted in an automotive environment to validate the results.



GMV showcases geoinformation and navigation capabilities at INTERGEO 2026

GMV exhibited at INTERGEO 2026, held September 15-17 at Messe München in Munich, Germany. The trade fair and conference drew professionals and companies from a wide range of sectors, including civil engineering, drones, robotics, and precision agriculture.

INTERGEO is regarded as one of the leading international events for the geospatial industry. This year's edition covered the latest trends in geospatial technology, geodata, geographic

information systems (GIS), surveying, BIM, drones, smart cities, and digital transformation. The program paired an extensive exhibition floor with conferences and technical sessions on the challenges and opportunities facing the industry.

At the event, GMV presented its solutions and capabilities in safe, precise navigation. Its participation highlighted the company's expertise in developing data-driven systems and high-precision

positioning services for a broad range of applications.

A standout among the solutions on display was **GMV GSharp®**, GMV's high-precision GNSS positioning service. This solution supports applications in LEO satellite missions, automotive, precision agriculture, robotics, and the maritime sector. The technology is already deployed in BMW autonomous vehicles, including the model showcased at the booth and shown in the photo.

VAIPOSA advances verifiable AI for resilient PNT

■ The VAIPOSA (Verifiable AI Positioning Applications) project successfully concluded in June, marking an important step in exploring the use of Artificial Intelligence techniques to improve the robustness and reliability of Positioning, Navigation, and Timing (PNT) solutions. Funded by the European Space Agency (ESA) through its NAVISP programme, VAIPOSA has been led by FBK (Fondazione Bruno Kessler), with the participation of GMV.

The project investigated how AI-based navigation methods can be applied while maintaining the reliability, traceability and safety awareness required for safety-critical applications. VAIPOSA demonstrated that combining GNSS (Global Navigation Satellite System) and SLAM (Simultaneous Localization and Mapping) through a safety-supervised framework can improve robustness compared with standalone navigation solutions, particularly in challenging environments. GMV contributed to the

navigation architecture by integrating a virtual, high-fidelity GNSS PPP receiver into the open-source CARLA autonomous driving simulator, enabling GNSS-based positioning to be exploited with AI-based SLAM techniques.

The experimentation campaign carried out as part of the project involved autonomous driving simulations covering different types of urban environments, as well as varying weather and visibility conditions. A central outcome was the development and assessment of the so called Safety Cage concept, which monitors the behaviour of the navigation components, assigns reliability weights and supports mitigation actions when anomalous behaviour is detected.

Important challenges remain, including the integration of additional sensors, such as IMUs (Inertial Measurement Units), and the need

to further investigate integrity in multi-sensor navigation systems. When GNSS, SLAM and other sources of positioning information are fused together, it is not sufficient to assess each component independently: it is necessary to understand how their individual uncertainty, confidence and integrity information should be combined and propagated at system level. Defining such a unified multi-sensor uncertainty and integrity framework remains a relevant open point for future investigation.

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GMV supports Malaysia in defining its future Satellite-Based Augmentation System (SBAS)



■ GMV has completed a strategic and technical workshop for the Malaysian Space Agency (MYSA), supporting the early definition of a national Satellite-Based Augmentation System (SBAS) program. Held in Putrajaya, the three-day workshop brought together Malaysian stakeholders to discuss the technical, operational, and regulatory foundations required for the future deployment of SBAS services in the country.

Throughout the workshop, GMV shared its extensive experience developing and operating SBAS systems, covering

key topics such as governance, system architecture, performance, certification, implementation roadmaps, and candidate user markets. Special attention was given to the challenges of implementing SBAS in equatorial regions, including ionospheric characterization, integrity performance, and the evolution towards Dual-Frequency Multi-Constellation (DFMC) SBAS, the next generation of satellite augmentation systems.

The sessions also addressed strategic aspects of an SBAS program, including stakeholder engagement, financing

models, international regulatory frameworks, and the role of SBAS testbeds in validating technologies and demonstrating their benefits to future users. Drawing on GMV's experience with programs such as EGNOS and SouthPAN, the workshop offered recommendations on implementation strategies, governance models, and the preparatory work required before launching a national SBAS initiative.

The workshop concluded with a roadmap of recommended next steps, including establishing an SBAS governance structure, conducting early ionospheric studies, coordinating with stakeholders, and evaluating long-term implementation options. By sharing its expertise in satellite navigation and augmentation systems, GMV reinforces its position as a trusted international partner, helping countries worldwide develop next-generation SBAS infrastructure and services.

GMV shares its expertise in strategic space programs at European Space Forum

The 6th European Space Forum was held from June 30 to July 1, bringing together European institutional leaders, space agencies, industry executives, and international experts to discuss the strategic priorities that will shape the future of Europe's space sector. This year's event was held under the theme "Urgency and Ambition: Europe at a Crossroads" and focused on how Europe can turn political ambition into real-world operational capabilities.

Over the two-day event, talks and presentations addressed a range of topics, including the future European Union (EU) Space Act, industrial

competitiveness, and strategic autonomy.

GMV participated in the European Space Forum as a platinum sponsor and also contributed to the program with two speaking engagements. Miguel Romay, General Manager of Satellite Navigation Systems at GMV, took part in the panel discussion "Galileo and Europe's PNT Network – Securing Critical Capabilities," where he discussed how Galileo and its complementary services are evolving to meet growing operational and security demands, as well as how Europe can protect PNT services, which are essential to society, against today's threats.

Meanwhile, Álvaro Manchado, Head of the GOVSATCOM Hub Program at GMV, joined the panel discussion "Secure Connectivity in Europe – Delivering a Sovereign Multi-Orbit Backbone," alongside other industry experts. The discussion examined the role of European programs such as Galileo, GOVSATCOM, and IRIS² in strengthening Europe's space capabilities, as well as the future development of secure, reliable, and resilient satellite communications capable of operating in hostile environments, together with the challenges and risks associated with their deployment.

GMV joins effort to develop new European standard for mass-producing space hardware



■ GMV has joined the working group developing ECSS-I (Industrialisation) a new branch of the ECSS standards being created by Europe's space industry in partnership with the European Space Agency (ESA). ECSS—short for European Cooperation for Space Standardization—is the benchmark set of standards used for European space projects.

ECSS lays out a common set of technical, engineering, management, and quality-assurance standards that ESA promotes to keep European space projects consistent, interoperable, and efficient. The new ECSS-I branch extends that framework with standards geared specifically toward industrializing and mass-producing space hardware—a need that's

becoming harder to ignore as satellite constellations grow larger and the sector moves toward more scalable manufacturing.

ECSS-I is expected to be particularly relevant for constellation-based programs like Celeste, where industrialization is central to meeting the volume, quality, and competitiveness the sector now demands. To get there, the initiative borrows manufacturing approaches already proven in industries like automotive and rail, bringing mass-production best practices into the world of space systems.

Within this effort, GMV is working alongside ESA and other major

European space companies in the ECSS I-10 Industrialisation group, one of three groups that make up the new ECSS-I branch. Its job is to adapt existing standards to industrialized production processes, cutting down on overlap and making the standards easier to apply on production lines.

The initiative should also help shore up the European space industry's supply chain, making it easier for small and medium-sized enterprises and new suppliers to get involved. With a clearer framework in place, industry players will be able to spell out exactly what they need from industrial solutions, and suppliers will have an easier time putting together proposals and delivering the work.

European defence industry takes center stage at UCM Summer Courses with GMV

From July 8 to 10, San Lorenzo de El Escorial hosted the UCM Summer Course "The Imperative of Security and Defence in the European Union," organized by the UCM General Foundation. The course aimed to engage a diverse group of participants, including researchers, journalists, academics, policymakers, and members of Spain's law enforcement agencies interested in examining how Europe should respond to its deteriorating security environment and the importance of developing a more autonomous defence capability.

Over the three days, presentations and panel discussions explored topics including the new geopolitical landscape and competition among global powers, the EU's role in relation to the United States and NATO, and the need for political consensus among Member States on security and defence.

Begoña Rojo, GMV's Director of Institutional Relations and European Defence and Security Programs, joined the course as a speaker for the July 9 session "Advances in the European Defence Industry." Together with other industry experts, she explored the development of Europe's industrial capabilities and effective defence cooperation from the perspectives of industry, academia, and the Armed Forces.



GMV selected by NATO to join Cyber Security Dynamic Marketplace framework

The company will bring its extensive experience in delivering cybersecurity solutions for European and international governmental organizations

GMV has been selected by the NATO Communications and Information Agency (NCIA) as one of the contractors awarded a place in the Cyber Security Dynamic Marketplace (CSDM) framework, a long-term contracting vehicle that gives NATO agile access to specialized cybersecurity capabilities, technologies, and services. The selection reinforces GMV's position as a trusted provider of advanced cyber defence and security solutions for NATO and Allied nations.

Through this framework, the NCIA will be able to procure a broad range of capabilities and services under future specific contracts to address the Alliance's operational cybersecurity requirements. The CSDM is designed to provide rapid, flexible access to specialized technologies and expertise, supporting NATO's digital transformation and cyber resilience objectives.

Under the framework, GMV has been qualified to compete for future task

orders in multiple cybersecurity capability areas, including:

- Identity, Credential and Access Management (ICAM).
- Network and Perimeter Security.
- Cloud Security.
- Threat Detection and Analytics Platforms.
- Vulnerability and Exposure Management.
- Digital Forensics and Evidence Platforms.

These capability areas encompass technologies and services ranging from secure identity management and Zero Trust architectures to cyber monitoring, threat detection, secure cloud environments, vulnerability management, digital forensics capabilities, and others. In this role, GMV will draw on its extensive experience delivering cybersecurity solutions to European and international government organizations, including programs supporting secure government communications, critical infrastructures, cloud security, cyber

monitoring, identity management and mission-critical defence systems. The company has successfully implemented advanced cybersecurity capabilities for organizations such as EUSPA, ESA, Red.es, the Spanish National Security Department, and more.

Cybersecurity is one of GMV's strategic areas of expertise within its Defence and Security business. The company combines extensive experience in secure communications, cyber defence, multidomain command and control, critical infrastructure, secure cloud environments, identity management, and artificial intelligence, supporting national ministries of defence, European institutions, and international organizations in addressing increasingly sophisticated cyber threats. This award further reinforces GMV's role as one of Europe's leading technology companies in defence and security, with a strong track record of participation in collaborative European defence programs and NATO-related initiatives.

CONVOY advances the development of technologies to detect mines and IEDs



■ GMV has taken part in CONVOY's third evaluation campaign. The intelligent cloud-based explosive detection system combines multiple technologies to identify hidden threats such as improvised explosive devices (IEDs) and landmines. The European project, coordinated by GMV and funded by the European Defence Fund, conducted the campaign in September at the facilities of the Swedish Defence Research Agency (FOI) in Grindsjön, Sweden. The campaign formed part of the European technology challenge for hidden threat detection, involving four consortia: AIDEDex, CONVOY, Determine, and TICHE.

CONVOY combines detection technologies with unmanned ground and aerial platforms, using artificial intelligence to fuse sensor data and a tactical cloud to integrate the system's various components and services. The aim is to improve threat detection and recognition. During this third campaign, work focused on improving performance in route clearance and the detection and classification of hidden threats such as landmines and IEDs.

The campaign also introduced an urban scenario, in contrast to the rural environments used in previous evaluations. Participants

conducted preliminary tests in this new environment in preparation for subsequent project activities. The evaluation also aimed to validate progress, collect data, and continue training the system and its artificial intelligence algorithms.

The results and lessons learned from this third campaign will help guide the next stages of development as the project enters its final year and moves toward the final evaluation. Under the CONVOY project plan, this final campaign will take place in Spain and combine rural and urban scenarios to demonstrate the system's capabilities and validate its results.

European defence experts gather at GMV for the 57th GNC CapTech meeting

■ On June 30 and July 1, GMV hosted the 57th meeting of the GNC CapTech, bringing together leading figures in European defence to advance the European Defence Agency's Strategic Research Agenda on GNC topics. The sessions centered on updating this key document,

which lays out the innovation roadmap guiding the European Defence Agency's priorities in the years ahead and is developed in close coordination with the various national Ministries of Defence. The meeting was supported by the Spanish Ministry of Defence.

GMV took part in this effort as an active member of the GNC Alliance, a consortium led by Safran and including Thales, ONERA, and MBDA. Through this collaboration, GMV contributed its expertise in Guidance, Navigation, and Control to help shape the technological direction of European defence.

GMV wins contract to supply deployable nodes for the Ministry of Defence's SC2N agreement

■ GMV has been awarded Lot 1 of the framework agreement launched by the Spanish Ministry of Defence for the supply and deployment of deployable nodes for the National Command and Control System (SC2N), a strategic contract aimed at strengthening the Armed Forces' CIS/ICT capabilities.

The agreement, led by the Directorate General for Infrastructure and the Information and Communications Systems and Technologies Center (CESTIC), aims to equip the Armed Forces with advanced technological infrastructure for the rapid, secure, and efficient deployment of command and control capabilities in operational environments. Lot 1, awarded to GMV, covers the supply of hardware and

software, along with services for design, installation, configuration and secure parameterization, commissioning, testing, and training.

The technical scope of the contract includes the implementation of deployable nodes integrated into the Protected Core Central Infrastructure, providing distributed computing, virtualization, and secure communications capabilities. These solutions will help enhance the automation and resilience of command and control systems, which are essential to operations both within Spain and in operational theaters.

Lot 1 has a budget of more than €48 million within an overall framework

agreement worth over €57 million, with an initial four-year term that may be extended. This contracting arrangement will allow the Ministry of Defence to award specific contracts without launching new tender procedures, enabling faster implementation.

For GMV, the award further strengthens its position as a leading technology provider in the defence and security sector and solidifies its role in the Armed Forces' digital transformation and modernization programs. It also provides an opportunity to continue developing advanced solutions in tactical deployment, infrastructure, cybersecurity, and mission systems—all key areas in today's defence landscape.

GMV participates in NATO Summit 2026 as part of the Spanish delegation

■ On 7 July, the city of Ankara, Turkey hosted the NATO Summit Defence Industry Forum (NSDIF26), NATO's leading event for transatlantic defence production, investment, and innovation. The forum, which was an essential part of the 2026 NATO Summit, brought together allied nations, partners, and industry leaders with the goal of strengthening NATO's capabilities, driving technological innovation, and reinforcing the defence industrial base.

The agenda for this year's NSDIF included special private and public sessions, with the latter broadcast live. In addition, for the first time in its history, the forum announced national and multinational agreements, outcomes, and initiatives in areas such as space surveillance, air defence, and strike capabilities.

GMV attended the meeting as part of the Spanish delegation accompanying



Secretary of State for Defence Amparo Valcarce. By participating alongside representatives from the Ministry of Defence, GMV's general manager Jesús B. Serrano reaffirmed the company's commitment to developing cutting-edge technologies in areas such

as space, multi-domain command and control, resilient navigation systems, secure communications, and cybersecurity—critical capabilities that contribute to a stronger, more interoperable, and more effective NATO.

Spain's defense industry, key to European strategic autonomy

On September 17, Ricardo Sáenz, GMV's Director General of Defense and Security, participated in the third edition of the Diálogos para la Seguridad Forum, organized by the newspaper El País and held at the Spanish National Defense Studies Center (CESEDEN) in Madrid, Spain.

The event, titled "European Defense in a World in Crisis", brought together Amparo Valcarce, Secretary of State for Defense; Margarita Robles, Minister of Defense; and José Manuel Albares, Minister of Foreign Affairs, European Union and Cooperation of the Government of Spain, along with national and international institutional representatives, key players from the industrial sector, and industry experts.

Ricardo Sáenz took part in the panel devoted to Spain's defense industry, which focused on the key factors needed to strengthen the sector's technological competitiveness and international reach. The Forum also addressed Spain's National Security Strategy, European strategic autonomy, and the role of the European Defence Agency, among other issues.

At a time when security and defense are at the center of the European political debate, GMV is consolidating its position as a strategic provider. Its solutions contribute to the development of interoperable capabilities and to strengthening European strategic autonomy, particularly in areas such as multidomain command, control and intelligence, space surveillance, and maritime surveillance.

GMV completes validation of command-and-control system for CENAD's uncrewed platforms

■ GMV has successfully completed the development, delivery, and validation of a new integrated command and control system for unmanned platforms at the San Gregorio National Training Center (CENAD) in Zaragoza.

The project is part of CENAD's technology modernization initiative, which is adding advanced capabilities to its private 5G standalone (5G SA) infrastructure under the Sectoral 5G component of the UNICO Program and Spain's Recovery, Transformation and Resilience Plan.

The solution developed by GMV enables centralized, coordinated management of different types of unmanned platforms and a wide range of sensors. It also provides capabilities for mission planning and monitoring, platform control, video and sensor data exploitation, and operational situation visualization.

The system features a modular, scalable architecture based on open standards, facilitating the future integration of new platforms and capabilities. It also relies

on artificial intelligence technologies for image and video processing, detection and tracking of elements of interest, and decision support.

Interoperability is another key feature of the system, which incorporates NATO standards for information exchange; intelligence, surveillance and reconnaissance (ISR) products; and unmanned platform control. The system also includes operator workstations, deployable ground stations, and mobile devices, all connected through CENAD's 5G network.

The successful completion of validation testing at San Gregorio brings the project to a close and demonstrates the solution's ability to integrate 5G communications, command and control, autonomy, artificial intelligence, and interoperability in an operational environment.

The project further expands GMV's experience in developing command and control systems for the coordinated operation of unmanned platforms.



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GMV strengthens NATO JISR capabilities with CSD Sierra deployment in Poland

■ The Polish Ministry of National Defence has selected TELDAT to deploy a solution based on **CSD Sierra**, developed by Spanish technology multinational GMV, reinforcing Poland's ability to share intelligence securely and interoperably with allied forces. The contract includes software licences, deployment and installation services, user training, engineering support and three years of maintenance.

The programme will provide the Polish Ministry of National Defence with a NATO-standard capability for storing, exploiting, sharing and disseminating intelligence, surveillance and reconnaissance information across multinational operational environments.

CSD Sierra is GMV's Coalition Shared Database solution, a NATO-standard interoperable capability that enables the storage, exploitation, sharing and dissemination of intelligence, surveillance and reconnaissance (ISR) information and products among multiple operational centres and users. The system implements STANAG 4559 standards and supports the exchange of imagery, video, GMTI and intelligence products across Joint Intelligence, Surveillance and Reconnaissance (JISR) networks.

The award further consolidates GMV's position as one of Europe's and NATO's leading providers of JISR solutions. The company has played a key role in the development of NATO and multinational intelligence-sharing capabilities for more than a decade. **CSD Sierra** is currently deployed in NATO environments and has been delivered to organizations including NCS (NATO Command Structure) and NFS (NATO Force Structure) integrating data from NISRF as well as other multinational MoD, supporting operational intelligence workflows across allied nations.



In today's security environment, the ability to rapidly share intelligence and maintain a common operational picture across allied forces is becoming increasingly critical. Interoperable JISR architectures are a key enabler of multi-domain operations, allowing commanders and analysts to access, exploit and distribute information in near real time.

The deployment of **CSD Sierra** in Poland represents another step towards a more connected and interoperable European defence ecosystem, supporting the objectives of both NATO and the European Union to strengthen collective security and operational effectiveness.

On the occasion of the MSPO, the 34th International Defence Industry Exhibition, in Poland, GMV and TELDAT also signed a Memorandum of Understanding (MoU), establishing a framework for cooperation between the two companies in the defense and security sector, with a particular focus on interoperable intelligence-sharing capabilities.

With this award, GMV continues to expand its international footprint in defence and security while reinforcing its commitment to delivering advanced technologies that enhance operational effectiveness, interoperability and information superiority for allied forces.

Opinion

From innovation to production: Europe's new defence industry strategy

“Europe has shifted from asking what technology to develop to how to produce it at scale and in a collaborative manner”

For years, the European debate on defense revolved around the question of how much to spend. Today, the issue is different. The focus is on whether Europe can produce, maintain, and replenish the capabilities needed to ensure its own security. This shift in perspective is transforming European industrial policy.

Between 2019 and 2021, through the European Defense Fund (EDF) and its precursors—the Preparatory Action on Defense Research (PADR) and the European Defense Industrial Development Program (EDIDP)—the European Union (EU) began funding collaborative research and development projects in defense technologies for the first time. The message was clear: technological autonomy required investment in innovation. Four years later, innovation remains essential, but it is no longer enough. Today, the priority is to ensure that technologies and their associated systems can be manufactured in Europe, on a large scale and whenever necessary. That is the *raison d'être* of the new European Defense Industry Program (EDIP).

The EDF supported research projects in areas such as sensors, command and control, avionics, artificial intelligence (AI), unmanned systems, space, communications, and electronic warfare. It sought to generate knowledge, reduce risks, and foster cooperation within the European Defense Technological and Industrial Base (EDTIB), but a prototype raises crucial questions: Who

manufactures it, with which suppliers, and at what pace? EDIP fills that gap: it focuses on industrialization and on faster, more coordinated, and more resilient production.

In a sense, Europe has shifted from asking what technology to develop to how to produce it at scale and in a collaborative manner. This represents a profound evolution of its defense industrial policy. Today, official EU documents frequently reference concepts such as “industrial ramp-up,” “security of supply,” “supply chain resilience,” and “reducing strategic dependencies.” It is no longer enough to simply develop technology; we must also be able to deliver it on time and in sufficient quantities.

To achieve this, EDIP will support the expansion of production lines, joint procurement, critical suppliers, and

industrial cooperation. All of these efforts are aimed at a single goal: strengthening Europe's industrial capacity so that it can provide a coordinated response to the continent's security and defence needs.

FIVE KEY INITIATIVES TO BUILD JOINT CAPABILITIES

But producing more isn't the only goal. Europe is also determining its priority capabilities in order to better focus this industry work.

The “Defense Readiness 2030” roadmap identifies priority strategic capabilities. As part of this strategy, the European Commission has presented five “European Defense Projects of Common Interest” (EDPCI), designed to accelerate cooperation among member states, concentrate investments in critical capabilities, and strengthen the EDTIB.

Unlike traditional R&D programs, the EDPCI aim to industrialize, acquire, and deploy common capabilities through projects of interest to multiple member states.

The first of these projects focuses on air and missile defense, conceived as an integrated architecture of radars, sensors, satellites, command and control, and interceptors working in a coordinated manner.

The second addresses anti-drone systems. Europe aims to promote not only the production of unmanned platforms but also the associated ecosystem of artificial intelligence, navigation, sensors, electronic warfare, and swarm detection.

The third project focuses on the space domain. Capabilities such as Galileo, IRIS², and Copernicus are part of Europe's

critical infrastructure. The strategy seeks to strengthen surveillance, secure communications, and the protection of space assets.

The fourth project focuses on the maritime domain and critical underwater infrastructure, and aims to improve surveillance, anti-submarine warfare, and enhance the ability to operate in a coordinated manner in areas of strategic interest such as the Baltic Sea, the Mediterranean, and the Atlantic.

The fifth project, called Eastern Flank Watch, is designed to strengthen surveillance and response capabilities along the EU's eastern border. It combines ground-based, airborne, and space-based sensors, drones, and anti-drone systems, as well as electronic warfare capabilities, to provide a common operational picture.



Begoña Rojo,
Director of Institutional Relations and European
Defense and Security Programs at GMV

MUCH MORE THAN JUST A NEW PROGRAM

In the big picture, EDIP is the missing link connecting research, innovation, industry, and capacity building.

For companies like GMV, this change is particularly significant, as its expertise in multi-domain command and control, navigation, avionics, space, border protection, and ISR systems is fully aligned with the capabilities that the European Commission considers a priority.

The real challenge is to build a strong, resilient, and integrated European technological and industrial base. It will no longer be measured solely by the ideas that are generated, but by the ability to turn them into real capabilities when Europe needs them.

GMV contributes its expertise on building a more cyber-resilient supply chain



■ Digitalization is transforming the logistics industry. Transportation management platforms, automated warehouses, Internet of Things (IoT) devices, real-time tracking systems, and cloud services are allowing companies to operate more efficiently. At the same time, this connectivity widens the attack surface and creates new risks for organizations.

To assess how prepared companies are and identify the challenges they share, in September Zaragoza Logistics Center (ZLC) and the Spanish Logistics Center (Centro Español de Logística, CEL) published a report titled “First Study: Cybersecurity in the supply chain. Resilience as a collective property of the logistics ecosystem”. As a cybersecurity

specialist, GMV contributed its knowledge and experience in protecting operations and supply chains.

The study highlights a reality that affects the economy as a whole: an organization's cybersecurity depends not only on its own capabilities, but also on the maturity and behavior of its suppliers, partners, and customers. This is especially relevant in logistics. Logistics companies must protect their own operations while also ensuring business continuity for organizations in other industries. This dual role makes them a critical link in the resilience of the broader ecosystem.

Against this backdrop, cybersecurity and cyber resilience must be built into

corporate culture and strategy. That means factoring risk into decision-making, strengthening prevention, detection, and response, and extending awareness from operations all the way up to senior leadership. It also requires working with specialized providers committed to the security of the entire supply chain.

The European regulatory framework, including NIS2, the Critical Entities Resilience (CER) Directive, and the Cybersecurity Act, will help accelerate this process. GMV hopes the study will raise awareness of the challenges facing the industry and help establish resilience as a collective property of the logistics ecosystem.

Opinion

EU Cybersecurity Reserve: Shared capabilities against common threats

As a major player in global geopolitics and an attractive target for many cybercriminals, the European Union knows that its citizens, businesses, and governments are in the crosshairs.

Yet not every member state is equally prepared to withstand and respond to these threats. Member states differ significantly in technological maturity, cyberdefence capabilities, access to specialized talent, and the level of protection in place for their public and private organizations. Some countries, such as Spain, have advanced cybersecurity ecosystems, well-established national structures, and more than 300 cyber incident response centers, with GMV's CERT among the most highly qualified. Other member states face greater technical and organizational constraints in this field, in both relative and absolute terms.

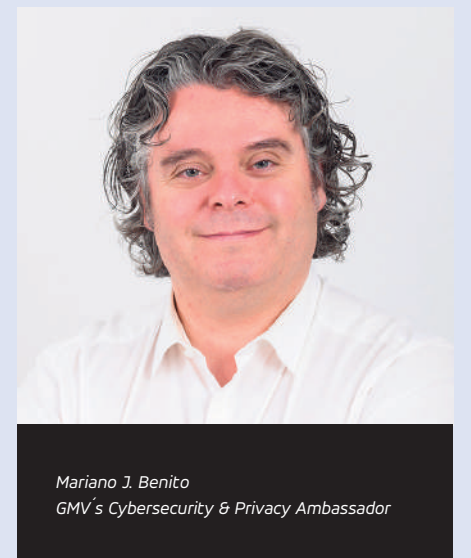
The European Commission is fully aware of this gap and is working to strengthen Europe's digital resilience through a range of legislation. One example is the Cyber Solidarity Act. It aims to deepen cooperation among member states and accelerate the collective maturity of their cybersecurity capabilities, particularly those of the least advanced, so that they can mount a joint, coordinated response to large-scale cyber crises.

To that end, the Cyber Solidarity Act establishes the EU Cybersecurity

Reserve, a common mechanism coordinated by the European Union Agency for Cybersecurity (ENISA). The reserve allows specialized cybersecurity providers to support member states with advanced technical, organizational, and strategic resources, assisting the country, its businesses, or its infrastructure whenever the need arises. Through the reserve, member states with more limited capabilities will gain rapid access to advanced threat monitoring, incident response, forensic analysis, and system recovery services.

The cybersecurity reserve is made up of a small group of providers, each accredited after a rigorous technical and operational assessment. GMV is one of them. It brings more than three decades of cybersecurity and cyberdefence experience, as shown by its participation in the Cyber Europe exercise in June 2026 and in the response to several incidents that required activation of the European cybersecurity reserve.

Threats are constantly evolving and crossing national borders. In response, Europe is moving toward a model of digital defence built on cooperation, shared resilience, and specialized expertise. This model draws on both the reserve and private-sector capabilities, tailoring the response to each incident based on the type of threat actor, the objectives of the attack, and the response strategy required.



Mariano J. Benito
GMV's Cybersecurity & Privacy Ambassador

After all, shared threats demand a transnational, public-private response, one backed by the best available capabilities to ensure the most effective outcome.

Europe is better prepared today than it was yesterday, but not as prepared as it will be tomorrow.



GMV examines the role of dual-use technologies in cybersecurity and cyberdefence



■ Cybersecurity is no longer purely a technology discipline. It has become a strategic capability with economic, industrial, geopolitical, and defence implications. In this context, dual-use technologies, meaning those that can serve both civilian and military purposes, are becoming increasingly important.

This was one of the key themes raised by Luis Fernando Álvarez-Gascón, General Manager of Secure e-Solutions at GMV, during the University of Málaga Summer

Courses. In his talk, “Dual-use technologies in cyberdefence and cybersecurity: Strategies, innovation, and market outlook”, he examined how these capabilities are evolving and how they are shaping industrial and investment policy.

The presentation also explored the relationship between cybersecurity and cyberdefence. The two share much of the same technology, but cyberdefence adds elements specific to national security. These include deterrence, threat response, and the

link between cyberspace and other operational domains such as land, sea, air, space, and electronic warfare.

Key trends discussed included the use of artificial intelligence (AI) in both offense and defence, the protection of AI systems, post-quantum cryptography, quantum key distribution, supply chain security, and the development of more resilient positioning, navigation, and timing systems.

In these areas, GMV brings capabilities in satellite navigation, navigation warfare (NAVWAR) technologies, protection of critical environments, cryptographic key management, and quantum-safe communications. Achieving European strategic autonomy will require connecting industry, universities, technology centers, government agencies, and businesses to develop capabilities and build a trusted, innovative, and competitive industrial base.

Cybersecurity and space: Building resilient systems for the digital age

GMV took part in the European Space & Defence Forum, held in Brussels on July 2. The forum brought together representatives of the EU institutions, industry, and the wider space community to discuss Europe's priorities in space, security, and defence.

Silvia Calle, Program Manager for Cybersecurity at GMV's Secure e-Solutions division, spoke at the session “Cybersecurity and space: Building resilient systems for the digital age”. She shared GMV's experience in protecting complex space systems and focused on

the practical challenges of integrating cybersecurity into critical environments.

Space systems are becoming more connected, more software-dependent, and more operationally complex. As a result, cybersecurity is no longer just a compliance issue. It has become an engineering challenge. How well cybersecurity is integrated directly affects resilience, mission continuity, and trust in space infrastructure.

The panel addressed issues of growing importance to the sector. These included

the evolving cyber threat landscape, vulnerability management across the entire system lifecycle, and the security implications of commercial off-the-shelf (COTS) components. Speakers also discussed protecting legacy systems and applying security by design in practice, in both engineering and operations. The discussion also highlighted the need to design architectures and response mechanisms that can ensure the resilience and operational continuity of Europe's space infrastructure.

Opinion

Identity is no longer just verified. It's managed

For more than two decades, identity verification has been one of the cornerstones of digital transformation. Remote onboarding, strong authentication, and electronic signatures have made it possible to digitize processes while maintaining high levels of security and regulatory compliance. That model, however, is no longer enough.

The rise of deepfakes, synthetic identities, and generative artificial intelligence (AI) has changed the rules of the game. Today, a voice, a face, or behavioral patterns can be replicated with remarkable accuracy. As a result, correctly verifying an identity at a single point in time no longer guarantees the legitimacy of the transactions that follow.

The question is no longer just who is accessing a service. It is also whether the person, device, or agent using that identity is still legitimate and authorized to perform a specific action.

This shift coincides with the phased implementation of the European eIDAS 2.0 framework and the rollout of the European Digital Identity Wallet (EUDI Wallet), which will enable the use of interoperable verifiable credentials across the European Union. Users will be able to control reusable credentials and disclose only the attributes required for each transaction, preserving their privacy.

Even so, verifiable credentials do not eliminate risk. An identity can be compromised, a privileged account can be hijacked, and an AI agent can act without proper authorization. Trust must therefore be maintained

dynamically throughout the entire identity lifecycle.

This is bringing together disciplines such as identity and access management (IAM), fraud prevention, biometrics, behavioral analytics, threat intelligence, and privacy protection. Identity is thus becoming the backbone of cybersecurity.

This is the direction GMV is taking. The company is integrating sovereign digital identity, verifiable credentials, IAM, fraud prevention, privacy-enhancing technologies, and continuous cybersecurity operations. The goal is to sustain trust for the entire lifespan of an identity, regardless of channel, device, or service.

On top of this comes another challenge: the transition to post-quantum cryptography. Organizations will need to identify the assets that require long-term protection and build in crypto-agility, so they can adapt their cryptographic mechanisms without compromising operational resilience.

As Europe places growing emphasis on technological sovereignty, the challenge



Marcelino Pérez Zamarrón
Financial Sector Business Partner at GMV
Secure e-Solutions

will not simply be complying with eIDAS 2.0. It will be building an architecture that brings together identity, privacy, cybersecurity, fraud prevention, and artificial intelligence.

Organizations that understand this transformation will be able to turn a regulatory requirement into a competitive advantage. Identity will stop being a mere formality and become the infrastructure on which digital trust is built.



From validation to continuous oversight of healthcare AI

Validating a model before it goes live is essential. But once artificial intelligence (AI) becomes part of healthcare processes, validation alone is not enough. The environment can change, the data can evolve, and a solution's behavior may call for new checks.

ESPINETTE, a project developed by GMV for AI governance and management in healthcare, makes it possible to examine this challenge through a real-world case. The scenario involves a model that helps primary care physicians decide which patients should be referred to rheumatology.

At one point, the share of patients aged 18 to 35 rose from 3% to 30% of the cases analyzed. Following this shift, the model's results changed. There was an increase in cases where it did not recommend referral for young patients

who might have needed specialist care. The system itself had not changed. What had changed was the context in which it was operating.

Continuous monitoring made it possible to detect a rise in false negatives and link it to the new case mix. Age was not used directly as a variable, but this patient profile may have been underrepresented in the training data.

Monitoring goes beyond checking whether the model gets it right. It also makes it possible to analyze performance, detect potential drift, review the fairness of the model's outputs, and assess how clinicians interact with its recommendations. Taken together, these elements help determine when a solution is still responding appropriately to its environment and when it needs to be reviewed or adjusted.

A joint investigation by the technical and clinical teams uncovered the source of the change and defined the actions needed. These included reviewing cases that might require further assessment, informing primary care physicians, and rebalancing the model.

ESPINETTE brings together information on use cases, models, risks, and controls in a single environment. It also makes it easier to document incidents, add new scenarios to the risk catalog, and establish targeted monitoring for the groups or situations that require it.

The experience shows that deploying a model marks the start of a new phase. Healthcare AI needs a continuous cycle of development, validation, deployment, monitoring, and reassessment to keep pace with the evolving clinical environment.

GMV takes part in SEIS's 2nd Artificial Intelligence Forum for the Health System



The Spanish Health Informatics Society (Sociedad Española de Informática de la Salud, SEIS) held its 2nd Artificial Intelligence Forum for the Health System in A Coruña on September 23-24. The event examined

the key challenges facing artificial intelligence (AI) in healthcare.

GMV was represented on the roundtable "A Scientific Perspective on AI in Health" by Juan Carlos Sánchez Rosado, Health Business Executive at GMV's Secure e-Solutions division. The discussion took stock of where these technologies stand today and the main challenges ahead.

Sánchez Rosado emphasized that validating a model is necessary but not sufficient. Once it is deployed, its quality, performance, drift, fairness, and explainability must be monitored continuously, along with

how clinicians interact with it and the value it delivers to the health system. He also shared GMV's experience with an AI governance and management project developed for a regional health authority, which includes clinical use cases such as decision support for specialist referrals.

The discussion highlighted the need to move from a linear sequence of develop, validate, and deploy to a continuous cycle of monitoring and reassessment. From this perspective, going into production is not the end of research. It is a new phase involving real-world data and real users.

Artificial intelligence for improved analysis of interstitial lung disease

GMV has developed *ILDeasy*, an AI-based solution that automatically analyzes HRCT scans and extracts quantitative data on lung abnormalities

Interstitial lung diseases (ILDs) are a group of disorders that affect the lung tissue and can vary widely in presentation and progression. Diagnosing and monitoring them requires combining high-resolution computed tomography (HRCT) imaging with clinical information and pulmonary function tests. Because the patterns are so diverse, objective data for assessing the disease are especially valuable.

To support healthcare professionals in this process, GMV has developed *ILDeasy*, an artificial intelligence (AI)-based solution that automatically analyzes HRCT scans and extracts quantitative data on lung abnormalities.

The tool uses AI models that identify and segment affected regions and calculate their extent and volume. Findings it can detect include ground-glass opacities, fibrosis-related changes, small cystic spaces, emphysema, and bronchial abnormalities. The results are overlaid on the images, so specialists can review them and make corrections when needed.

This makes it possible to move from visual assessment to a quantitative description of what is happening in the lung. *ILDeasy* reports the amount and distribution of affected tissue and analyzes lesion patterns to help distinguish fibrotic from non-fibrotic forms of the disease. This gives clinicians a more objective basis for comparing scans

and tracking the patient's progression over time.

ILDeasy is designed to fit into the workflow of radiologists and pulmonologists. Its output can be combined with other clinical data, such as pulmonary function test results and the findings in radiology and pulmonology reports, to give a more complete picture of each patient.

The solution was developed and validated together with healthcare professionals as part of the SEPI-IA project, with the participation of Hospital Universitario La Paz and Hospital Universitari de Bellvitge. La

Paz contributed to development and clinical evaluation. Bellvitge deployed the prototype in its clinical setting to validate its functionality.

Work with Bellvitge's Interstitial Lung Disease Unit, using anonymized HRCT scans and clinical data, made it possible to evaluate the tool under conditions close to real-world clinical practice.

With *ILDeasy*, lung images become information that can be measured, characterized, and compared, not just viewed. This offers a new way of analyzing the lung and provides insights into how these complex diseases progress.



GMV discusses how to advance safe, innovative AI in healthcare at Farmaforum



■ How can AI applications be made safe and compliant without limiting their capacity for innovation? GMV explored this question at Farmaforum 2026, the Pharmaceutical, Biopharmaceutical, and Laboratory Technology Industry Forum, held September 22–23.

At the Medical Devices Forum, a conference held as part of Farmaforum, Juan Carlos Sánchez Rosado, Health Business Executive

at GMV’s Secure e-Solutions division, took part in the panel “From AI to CE: Regulation in the age of AI. How to ensure safety and compliance without stifling innovation”. The session brought together experts in artificial intelligence, medical devices, and regulation to discuss one of the biggest challenges in health technology: driving innovation while ensuring product safety, quality, and conformity.

AI is opening up new opportunities in healthcare to improve diagnosis, support clinical decision-making, and make patient care more efficient. However, it also raises specific challenges, especially when systems incorporate models that can evolve or behave in more complex ways than conventional software.

During the discussion, Sánchez Rosado shared GMV’s experience in developing intelligent health technologies. He stressed the importance of building in regulatory and safety requirements from the earliest stages of the process. In this regard, the expert emphasized that “it is not enough to demonstrate that an algorithm is safe on the day it receives the CE marking; we must demonstrate every day thereafter that it remains safe.”“It’s not enough to show that an algorithm is safe on the day it gets its CE mark,” he emphasized. “We have to show, every single day, that it still is. AI needs algorithmovigilance to prevent AI-trogenesis.”

GMV showcases AI’s potential to support ILD diagnosis at ERS Congress

GMV took part in the ERS Congress 2026, held from September 5 to 9 in Barcelona. As part of the program, the company hosted the Skills Lab “Improving Recognition of ILD: Combining Clinical Expertise and Artificial Intelligence.”

Presented by Carlos Illana, product manager at GMV, the session featured Dr. María Molina of Bellvitge University Hospital and Dr. Emilio Cuesta of La Paz University Hospital. The two specialists discussed the complex task

of identifying interstitial lung diseases (ILDs). During the session, they demonstrated how **uSteer**, GMV’s artificial intelligence-based solution, can assist healthcare professionals in analyzing medical images and streamline the diagnostic process. The Skills Lab offered a hands-on experience. Nearly 150 attendees tried **uSteer** at three stations, explored its

features, and shared their first impressions with the team. The demonstrations provided an opportunity to explore its ability to detect findings and aid healthcare professionals when dealing with conditions that are difficult to diagnose. Through this initiative, GMV demonstrated the practical potential of AI in clinical settings, combining medical expertise and technology to overcome challenges in respiratory medicine.

Opinion

AI built for a changing world

There is one characteristic of artificial intelligence (AI) that we sometimes forget: it learns from the past but has to perform in the present.

An AI model is a system that learns from large amounts of data to recognize patterns and make predictions or recommendations. Even if it performed well during development and validation, it can lose effectiveness over time. This isn’t necessarily because its algorithm has stopped working. It’s because the world around it has changed: the patients, the treatments, the equipment, the care protocols, or the available data.

In healthcare, this can have serious consequences. Consider a tool that helps identify patients at risk of hospitalization. If the patient population, the available treatments, or the criteria for admission change, the patterns the system learned may no longer accurately reflect reality.

Or consider an AI tool that analyzes medical images. If a new scanner is introduced, the acquisition protocol changes, or the system starts being used on a population different from the one it was trained on, its performance may shift.

THE ALGORITHM HASN’T CHANGED. THE WORLD HAS This is known as data drift: a change in the characteristics and distribution of

the data a system receives compared with the data it was developed on. In healthcare, it can stem from changes in patient populations, acquisition systems, clinical practice, or the way information is recorded. Detecting these changes and assessing how they affect performance is key to keeping medical AI safe and effective.

But the very reality we are trying to predict can change, too. A new treatment can alter a patient’s risk of hospitalization, and new clinical guidelines can change referral decisions. The system keeps running, but what it learned no longer accurately describes reality.

That is why AI in healthcare should be treated as critical infrastructure, requiring oversight while it is in operation.

The answer lies in systematic surveillance. That means monitoring performance, detecting deviations, checking whether they affect certain patient groups differently, and putting mechanisms in place to act when needed. Updating a system, revalidating it, or, if it comes to that, retiring it are also part of managing it.

This is where governance stops being an abstract concept. It means knowing how an AI system was developed and with what data, who is accountable for it, how its performance is monitored, and what happens when the conditions it was designed for change.



Maole Cerezo, Communications Advisor at GMV Secure e-Solutions

In April 2026, GMV earned ISO 42001:2024 international certification from AENOR. The certification applies to the development of AI systems built into the company’s own products and to the solutions it implements for clients. It attests to responsible management of the risks and opportunities associated with AI throughout its lifecycle.

The challenge is to develop AI that can adapt to a changing world, along with the mechanisms needed to know when it should.

In healthcare, this ability ensures that AI doesn’t cling to patterns that no longer reflect clinical reality, and that it remains useful and safe as patients, contexts, and needs evolve.

GMV unveils new **SAE-R®** capabilities at InnoTrans 2026

■ InnoTrans 2026 took place September 22–25 at the Messe Berlin exhibition grounds in Germany, once again cementing its position as one of the world's leading transportation technology events. The show brought together key players from the rail, public transportation, mobility, and infrastructure sectors.

Attendees from rail companies, public transportation operators, government agencies, and technology providers took part in an event whose agenda addressed the industry's most pressing challenges. The program centered on technologies designed to improve operational efficiency, safety, connectivity, and the passenger experience.

At this year's edition, GMV showcased its capabilities in intelligent rail operations management. At its stand, the company presented **SAE-R®**, a multi-application platform that meets operators' needs across service planning, real-time fleet monitoring and



management, passenger information, and statistical analysis of recorded data.

GMV also took part in the MAFEX Innovation Tour, organized by the Spanish Railway Industry Association (Mafex). During the tour, the company welcomed a visit from Óscar Puente, Spain's Minister of Transport and Sustainable Mobility, and presented the

new features and redesigned interface of **SAE-R®**, including its AI-powered capabilities.

GMV's presence at InnoTrans 2026 gave the company an opportunity to demonstrate how its digital solutions help rail operators plan and manage their services, enhance passenger information, and make data-driven decisions.

GMV showcases smart mobility solutions at ATUC's 32nd National Transport Congress



■ On July 2 and 3, Las Palmas de Gran Canaria hosted the 32nd National

Congress on Urban and Metropolitan Transport, organized by the Association of Urban and Metropolitan Public Transport (ATUC). The event brought together leading transport operators, public authorities, technology providers, and urban and metropolitan mobility experts from across Spain to discuss the trends shaping a smarter, more efficient public transportation system capable of meeting today's and tomorrow's challenges.

The congress featured a program of presentations and panel discussions covering topics such as the current status of the Sustainable Mobility

Act, the key role of talent in transforming the mobility sector, and the importance of transportation as a hallmark of urban identity.

GMV took part in the event with an exhibition stand, where it showcased some of its most innovative solutions for smarter, more connected, and more sustainable transportation and mobility. Among the highlights were the **TV100** ticket validator and the **DTD200** ticket vending machine, both designed and manufactured by GMV specifically for public transportation systems. The company also participated as a gold sponsor of the event.

Avanza chooses GMV to carry out the digital transformation of its bus fleet in Málaga and Marbella

GMV will supply more than 200 **DTD205** onboard units featuring the **Deepsy** platform

GMV and Avanza have signed an agreement for GMV to supply the new generation of **DTD205** onboard equipment for buses in Málaga and Marbella. The project will strengthen the collaboration between the two companies and bolster Avanza's commitment to incorporating cutting-edge technologies to improve public transportation operations and prepare its vehicles for the mobility challenges of the future.

The solution involves the deployment of more than 200 **DTD205** units, a multifunction onboard platform developed by GMV that offers a single device for various functions traditionally distributed among several separate units, such as the driver's console for ticketing, the computer-aided dispatch / automatic vehicle location (CAD/AVL) system, passenger information services, and integration with the vehicle's systems.

In addition to supplying the hardware, the project incorporates **Deepsy**, GMV's Linux LTS-based software platform, designed to decouple applications from the hardware and facilitate the development and maintenance of embedded solutions. Thanks to its open architecture and set of APIs, **Deepsy** enables the development of new features independent of the physical equipment, supporting the technological evolution of the fleet, reducing obsolescence, and protecting

the operator's investment in the long term.

The new devices feature 5G connectivity and advanced positioning capabilities through GNSS with dead reckoning, providing a platform ready to support the next generation of digital services. The native integration of 5G connectivity will also make it possible to adapt to evolving communications infrastructure without having to replace the onboard hardware in the future, while the positioning system will improve the continuity and accuracy of location tracking, even in complex urban environments.

Beyond the scope of the project, both companies see this initiative as a model for technological collaboration based on an open, scalable, and reusable platform. This approach will enable the incorporation of new features and applications throughout the vehicles' lifecycle and will facilitate the rollout of this model to

other Avanza operations, accelerating the technological standardization of its onboard systems and simplifying their future evolution.

For GMV, this agreement provides significant support for the company's strategy of offering integrated technology platforms for public transportation, combining high-performance onboard hardware with software infrastructure designed to meet operators' current and future needs. For Avanza, the project represents a commitment to technology architecture designed to evolve in step with the digitalization of public transportation, maximizing return on investment and the ability to adapt to new services.

The new equipment will be rolled out gradually across the fleets in Málaga and Marbella and will serve as the first example of a technology model designed to be scalable and replicable, as needed, in the group's other operations.



GMV expands its presence in Morocco with 126 new ticket validators in Rabat's bus network



■ GMV will supply 126 new ticket validators to increase the capacity of the electronic fare collection system in Rabat's bus network. The new equipment will be integrated into the existing infrastructure, building on the technology modernization project that GMV has been carrying out for the Moroccan capital's public transportation system since 2018.

The expansion has been designed to ensure compatibility with the bus network's current operating environment and meet the requirements established by the transit authority. Maintaining technological continuity will streamline the integration of the new validators, reduce integration risks, and guarantee

consistency with the present collection system.

The new equipment is expected to be supplied within 20 weeks of the order being formalized and will be covered by a two-year warranty from the delivery date of each batch.

The expansion builds on GMV's previous work to modernize an initial fleet of 350 buses in Rabat. As part of the original project, the company deployed a range of intelligent transportation systems, including electronic fare collection, computer-aided dispatch / automatic vehicle location (CAD/AVL), and passenger information systems.

The latest rollout strengthens GMV's presence in the Moroccan market and reflects continued confidence in its technology, which has supported the day-to-day operation of Rabat's public transportation network for several years.

GMV drives digital transformation of passenger transportation at FIAA 2026

The International Bus and Coach Trade Fair (FIAA) took place at IFEMA Madrid from September 22 to 24, bringing together manufacturers, operators, public authorities, and technology providers to showcase the latest innovations in mobility, digitalization, and sustainable transportation.

Attendees included professionals from transit operators, government agencies, manufacturers, and companies specializing in technology solutions for the sector. The program addressed the main challenges facing passenger transportation, with a particular focus on technologies designed to improve operational efficiency, safety,

connectivity, and the passenger experience.

GMV presented its capabilities in intelligent public transportation management, fleet optimization, passenger information, and connected mobility. At its stand, visitors learned about **ITS Suite**, its advanced, open, and interoperable platform that serves as the backbone for intelligent transportation systems.

GMV also showcased some of its key onboard equipment, including the **DTD200**, an all-in-one solution for onboard systems; the **TV100** ticket validator, deployed across most

concessions operated under the Madrid Regional Transport Consortium (CRTM); and the **EP200**, an onboard computer integrated into the multi-fleet system of Barcelona's Metropolitan Transport Authority (ATM).

In addition, the company took part in the session "The Connected Future of Transport: Technology, Connectivity and Artificial Intelligence" on September 24. Beatriz García Navarro, Head of the Tier-1 Division in GMV's Automotive Business Unit, joined the panel discussion, which explored the use of artificial intelligence in fleet management, advanced connectivity, advanced driver assistance systems (ADAS), and cybersecurity.

GMV to expand Granada's urban transport validation system with 258 new devices

■ GMV has once again been selected by Transportes Rober, S.A. (ALSA Group), the operator of Granada's urban bus network, to expand the onboard ticket validation system across its fleet, with the support of Granada City Council. The contract builds on a partnership that began in 2021 with the deployment of GMV's ticketing and computer-aided dispatch / automatic vehicle location (CAD/AVL) systems.

The expansion follows the successful implementation of the solution introduced by GMV, which has been

in operation since 2022. The ticketing system currently enables fare validation at the front-door validators using Granada Transport Consortium cards, Granada City Council transit cards, QR codes generated through ALSA's mobile app, and EMV payment methods.

Under the new contract, GMV will install an additional 258 **TV100** validators at the middle and rear doors of the buses. This will allow passengers to board through any door, speeding up boarding and improving the overall efficiency of the service.

Designed, developed, and manufactured entirely by GMV, the **TV100** is one of the project's core technological components. The device combines robustness with versatility, supporting both fare validation and payment using physical or digital bank cards, as well as mobile phones.

The new validators are already in operation on Line 4 (Chana-Zaidín). The rollout will continue across the rest of Granada's urban bus fleet, with full deployment scheduled for completion by mid-2027.



Opinion

How can in-cabin systems improve public transportation safety?

“By integrating *in-cabin* systems with fleet management platforms, the industry is not just evolving technologically, but ushering in a complete paradigm shift”

The integration of in-cabin monitoring technologies with fleet management systems is ushering in a new era of safety in public transportation. These solutions make it possible to detect risks in real time, understand the context in which they arise, and respond more effectively, improving both safety and operational efficiency.

PUBLIC TRANSPORTATION SAFETY: AN INCREASINGLY COMPLEX CHALLENGE
In road-based public transportation, safety depends on more than just vehicle condition or road infrastructure. Human factors, particularly the driver’s condition, play a pivotal role. Fatigue,

distraction, and cognitive overload can directly affect reaction times and increase the risk of accidents. This raises a key question: how can these risks be anticipated and managed effectively?

The answer lies in the combination of new technologies and a more integrated approach to operations.

WHAT ARE IN-CABIN SYSTEMS?
In-cabin systems encompass technologies installed inside the vehicle that analyze what is happening within it. Using sensors such as cameras and radar, they gather information about the driver’s condition and behavior, passenger activity, and operating conditions inside the vehicle.

Thanks to artificial intelligence (AI) and onboard processing, these systems can identify situations such as drowsiness or fatigue, distractions such as cellphone use or looking away from the road, and unusual behavior.

These solutions are already part of driver monitoring systems (DMS), whose adoption is also being driven by European regulations requiring features such as drowsiness and distraction detection in new vehicles.

BEYOND DETECTION: THE VALUE OF INTEGRATION
Driver distraction detection is helpful, but not enough on its own. Its value is realized when this information is combined with other vehicle and operational data.

This is where integration with fleet management systems comes into play. These systems already monitor aspects such as harsh braking, acceleration, speed and vehicle location. By combining these two sources of information, operators can move from isolated events to a comprehensive view of risk.

For example, was a harsh braking event caused by driver distraction? Or was it a defensive maneuver in response to an external hazard? This approach makes it possible to place events in context and make decisions based on evidence rather than isolated data points.

FROM DATA TO ACTION: A NEW MANAGEMENT MODEL
The integration of in-cabin and fleet management systems enables a complete continuous improvement cycle:
Detect - contextualize - intervene - train - measure

- This approach delivers clear benefits:
- Real-time safety: immediate alerts can be triggered when risk situations such as prolonged distraction or signs of driver fatigue are detected.
 - Improved driving performance: by correlating driver behavior with vehicle events, organizations can identify patterns and promote safer driving habits.
 - Bespoke training: data can be used to design tailored coaching programs for individual drivers based on real-world situations.
 - Operational optimization: routes, schedules, and working conditions can be adjusted according to detected levels of fatigue or risk.

A CRITICAL BALANCE: TECHNOLOGY, REGULATION AND PRIVACY
Deploying these solutions is not without its challenges. One of the most significant is regulatory compliance.

European regulations set clear requirements: refrain from using

biometric data to identify individuals, minimize data collection and storage, and ensure privacy by design. In addition, regulations such as the AI Act and NIS2 introduce new requirements related to artificial intelligence and cybersecurity. This means that solutions must be designed not only to be effective, but also ethical, secure, and transparent.

TECHNOLOGICAL CHALLENGES: TOWARD MORE ROBUST SYSTEMS
Although the technology has advanced significantly, important challenges remain, including reliability under real-world conditions (lighting, occlusions, and vibrations), the need to reduce false positives, adaptation to different driver profiles, and the computing constraints of onboard systems. To address these challenges, the industry is moving toward sensor fusion (combining cameras and radar), AI models optimized for edge computing, and more integrated, scalable architectures.

AN OPPORTUNITY TO TRANSFORM PUBLIC TRANSPORTATION
By integrating in-cabin systems with fleet management platforms, the industry is not just evolving technologically, but ushering in a complete paradigm shift. What was once reactive is now proactive and data-driven, connecting safety, efficiency, and the user experience.

In this context, companies such as GMV bring together expertise in transportation,



Carlos Busnadiego,
Head of Automotive Products and Processes at GMV

AI, and onboard systems to develop solutions that improve road safety, reduce operating costs, optimize the passenger experience, and support more sustainable mobility.

Public transportation safety is entering a new era, with technology providing greater insight into what is happening inside our vehicles so that we can respond accordingly.

The key is no longer simply to detect risks, but to understand them in context and turn that understanding into meaningful action.



GMV presents industrial anomaly detection with *GMV PitIA*® at TDWI Conference Munich

From 23 to 25 June, GMV participated in the TDWI Conference Munich, one of Europe's leading events focused on data, analytics, and artificial intelligence. During the conference, Miguel Tejedor and Fernando López delivered the presentation "Explainable Unsupervised Anomaly Detection for Telemetry", which explored how to bring artificial intelligence from the laboratory into the day-to-day operation of complex industrial systems.

During the session, GMV's experts showcased the capabilities of *GMV PitIA*®, a solution designed to transform large volumes of industrial telemetry data into actionable insights for operational decision-making. The approach is based on a unified model capable of learning the normal behaviour of processes from latent multivariate representations of correlated signals, enabling multiple use cases to be addressed within a single technological framework.

Among the capabilities presented were process variable prediction through virtual sensors, unsupervised anomaly detection without the need for previously labelled data, event-based operational monitoring, and the identification of the variables responsible for each detected deviation, facilitating root cause analysis and helping operators better interpret results. The system also incorporates continuous adaptation mechanisms that keep the models aligned with the ongoing evolution of industrial processes.

AML intelligence: Getting ahead of risk with advanced technology

■ Regulatory pressure on European financial institutions continues to mount. In Spain, penalties related to anti-money laundering rose by more than 85% between 2022 and 2024. In addition, the Authority for Anti-Money Laundering and Countering the Financing of Terrorism (AMLA) will begin directly supervising the largest cross-border banking groups in 2028. Meanwhile, Spain's mutual evaluation by the Financial Action Task Force (FATF) is scheduled for 2026.

Against this backdrop, the EU Anti-Money Laundering Regulation, Regulation (EU) 2024/1624, requires institutions to assess the risks of new products and channels before launch. It also sets a maximum review period of one year for high-risk customers. The challenge is no longer just having controls in place. It is demonstrating that they work effectively in practice.

Most banks have a customer risk score that is calculated at onboarding and reviewed periodically. However, this approach is usually applied uniformly, without taking into account the product the customer holds or the channel used.

To address this gap, GMV has developed its AML Intelligence Service. It is built on a dynamic inherent-risk model that integrates four dimensions: customer type, geography, product and channel, and operational risk. These variables work together as a single, interconnected system.

Among other factors, the model analyzes the customer's actual activity and international transfer patterns. It also checks whether the know your customer (KYC) information matches the customer's behavior, and looks for possible links to higher-risk countries, products, or devices. This allows it to identify situations that traditional scoring models may miss.

Verifying the source of funds is another essential component. GMV's approach includes automated customer profiles, cross-checks against independent external sources, and digital due diligence files. These files document the entire verification process and enable a rapid response to regulatory inspections.

GMV's AML Intelligence Service brings advanced software engineering and analytics capabilities to the field. These include machine learning-based detection models, graph analytics to uncover networks, and natural language processing for unstructured data. Most offerings in this space, by contrast, are generic compliance tools or manual processes presented as technology.

With this service, GMV helps financial institutions turn their data into more accurate risk decisions, more effective controls, and robust evidence for supervisors. Technology, specialist expertise, and collaboration, so banks know their risk before the regulator does.



Opinion

Robots that understand their surroundings: The next leap in autonomous mobility

Mobility automation is entering a new phase. In recent years, the focus has been on giving vehicles and robots the ability to move autonomously. The next big leap is enabling them to understand the environment they operate in and make intelligent, context-aware decisions.

This shift matters in sectors such as logistics, manufacturing, energy, and critical infrastructure. In these sectors, autonomous mobile robots are used for inspection, surveillance, materials transport, and asset monitoring. In these settings, navigating safely is no longer enough. Robots need to interpret what is happening around them in order to optimize operations and adapt to changing conditions.

Traditionally, autonomous navigation has relied on geometric information such as maps, obstacles, distances, and trajectories. However, advances in artificial intelligence are driving a different paradigm: semantic navigation. This approach lets robots identify not only whether an area is traversable, but also what it represents within the operational environment.

Using advanced visual perception and AI models, they can tell the difference between a road, a sidewalk, a restricted zone, or an industrial area. They then use that information to choose the most suitable route for



Ángel C. Lázaro
Head of Robotics and Automation for the
Industrial Sector at GMV Secure e-Solutions



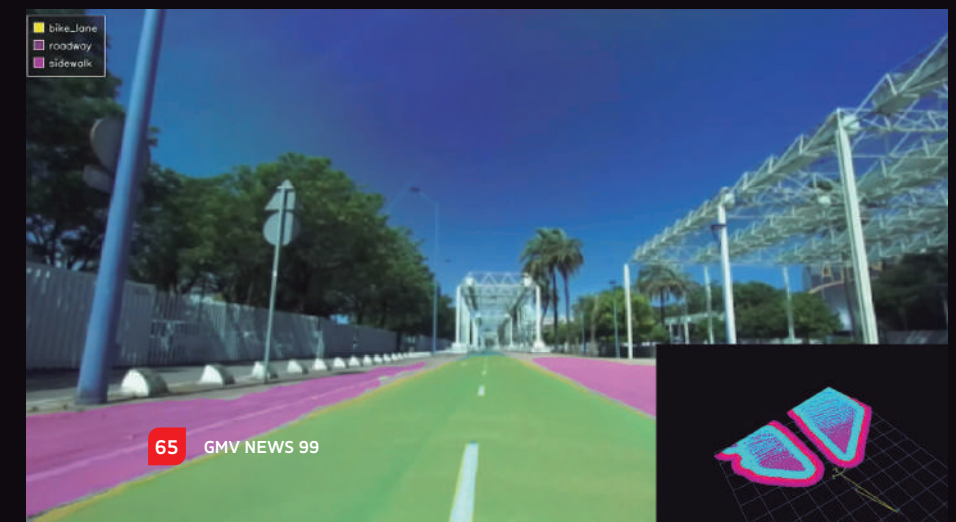
Eric Polvorosa
Marketing and Communications at GMV
Secure e-Solutions

each mission. Decisions therefore take operational and contextual criteria into account, going beyond the geometry of the environment.

GMV is developing these capabilities as part of *uPathWay*®, its intelligent platform for managing and operating heterogeneous fleets of autonomous robots. Adding semantic navigation makes it possible to build more robust systems that can handle complex,

dynamic environments with greater autonomy.

The mobility of the future will depend not only on autonomous vehicles, but also on systems that can interpret the world around them. The combination of mobile robotics and artificial intelligence opens the door to solutions that will improve the efficiency, safety, and sustainability of strategic operations.



40 years driving Spain's social and economic growth



■ From August 31 to September 2, GMV attended the 40th anniversary edition of the Digital Economy and Telecommunications Meeting. The event was organized by AMETIC together with Banco Santander España and Universidad Internacional Menéndez Pelayo under the theme “40 Years Driving Spain's Social and Economic Growth”.

GMV took part in several sessions on the program, reaffirming its commitment to advancing technological innovation and fostering collaboration among industry, government, and the digital ecosystem.

The panel “Ecosystem: Innovating to protect. The industry driving strategic autonomy” addressed the need to strengthen Spain's defence capabilities and strategic autonomy in today's geopolitical climate. The panel was moderated by Luis Fernando Álvarez-Gascón, General Manager of GMV's Secure e-Solutions division and Chair of AMETIC's Dual-Use Technologies for Defence Committee. Speakers stressed the importance of a homegrown, innovative technological and industrial base backed by trusted partners, as well as the need to drive investment and growth among companies in the sector. Participants agreed on the need to consolidate an industrial ecosystem built on collaboration and trust. They called for a greater role for SMEs, more agile public procurement, a clear international focus, and an effective talent management strategy.

Carlos Royo, GMV's Director of Health Strategy and Vice Chair of AMETIC's Digital Health Committee, moderated the panel “Digitalization in Healthcare”. The session examined how technology is transforming the health system and the challenges this transformation still poses.

Participants agreed that Spain is starting from an advanced position. They anticipate that the healthcare of the future will be more preventive, predictive, and personalized, but that it will require open ecosystems in which hospitals, government agencies, technology companies, and the pharmaceutical industry work together.

GMV's participation in the program concluded with Héctor Naranjo, GMV's Director of Multi-Domain Defence and Security Programs. He spoke at the session “Industry Perspective: Gaining Traction and Accelerating Industrial Capabilities”, which focused on industry's role in developing and accelerating strategic capabilities. Naranjo emphasized the importance of leveraging all available technology to meet the needs of the Armed Forces. He also stressed the value of delivering complete, functional systems that enable ever-greater strategic autonomy. Given challenges such as the shifting geopolitical landscape and the risk of obsolescence, he highlighted two key goals for the defence and security sector: increasing multi-domain cooperation and shortening and streamlining decision cycles.

GMV strengthens its position in Latin America at ANDICOM 2026

GMV took part in ANDICOM 2026, held September 1-4 in Cartagena de Indias, Colombia. ANDICOM is one of Latin America's leading business and technology conferences.

Each year, the event brings together key players in the ICT ecosystem to drive innovation, digital transformation, and new business opportunities across the region.

This year, ICEX, together with the Economic and Commercial Office of Spain in Bogotá, organized a trade mission of Spanish companies specializing in digitalization services. The aim was to strengthen the presence of Spanish technology in one of Latin America's highest-growth markets.

As a company with a well-established presence in Colombia and the Andean region, GMV shared its experience in

developing and deploying innovative technology solutions in strategic sectors.

Taking part in the forum gave GMV an opportunity to strengthen its position in the Latin American market. It was also a chance to forge new strategic alliances with operators, technology partners, clients, and public institutions, and to contribute to initiatives that advance the region's digitalization and competitiveness.

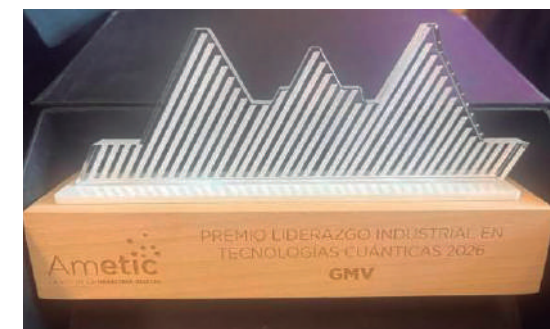
GMV receives AMETIC's Industrial Quantum Leadership Award

■ At the 40th anniversary edition of the Digital Economy and Telecommunications Meeting, AMETIC presented GMV with its Industrial Quantum Leadership Award. The award recognizes the company's contribution to developing and consolidating Spain's quantum ecosystem.

Quantum technology is set to play a strategic role in Spain's competitiveness and technological autonomy. For GMV, the award is an incentive to keep driving initiatives in this field, strengthen collaboration with the ecosystem's stakeholders,

and turn the potential of these technologies into concrete capabilities and solutions with real impact.

Luis Fernando Álvarez-Gascón, General Manager of GMV's Secure e-Solutions division, accepted the award during the session on value chains in strategic technologies. He thanked AMETIC for the recognition and said that the achievement reflects years of excellent, persistent work by the GMV team. He added that it also reflects the collaboration of the scientific, technology, and business partners who have contributed to the project. He also acknowledged the support of



public authorities. He emphasized that cooperation among all stakeholders is essential to advancing technological and industrial development, which he described as the pillars of technological sovereignty.

GMV showcases the potential of autonomous mobile robotics to strengthen logistics in degraded environments

■ Crises, disasters, and conflicts pose complex logistics challenges: damaged infrastructure, limited communications, hard-to-reach areas, and difficulty obtaining reliable information. In these scenarios, technological innovation is key to strengthening resilience and keeping operations running.

At the “Defence and Disaster Management Logistics” event organized by the Spanish Logistics Center (Centro Español de Logística, CEL), GMV demonstrated how autonomous mobile robotics can help address these challenges. Miguel Hormigo, director of the Industrial Sector at GMV's Secure e-Solutions division, explained how these technologies can improve mobility, optimize the supply of critical resources, and deliver real-time information to support decision-making.

Autonomy should not be understood solely as a robot's ability to carry out a mission independently. In dynamic environments, it is essential to intelligently coordinate



heterogeneous fleets of ground vehicles, sensors, and other autonomous systems, bringing together mobility, supply, and information.

In this context, GMV presented **uPathWay®**, its intelligent platform for planning, deploying, monitoring, and coordinating missions with robots and autonomous vehicles from a single, unified environment. This capability enables transport, supply, inspection, surveillance, and reconnaissance tasks. It reduces



people's exposure to dangerous situations and helps sustain operations under adverse conditions.

The event highlighted how defence and disaster management logistics are evolving toward models supported by robotics, artificial intelligence, automation, and data analytics. GMV contributes to this trend by developing solutions that combine autonomy, intelligence, and supervision to build more resilient, safe, and adaptable logistics capabilities.

GMV takes part in EMT webinar on mobility data spaces



■ The digital transformation of mobility requires more than just collecting data. Building efficient, connected, and sustainable services means sharing data securely, interoperably, and under clear rules, while organizations that generate the data keep control over it.

In this context, GMV, as EMT Madrid's technology partner, took part on July 30 in the webinar "Standardized Data Spaces for Urban Multimodal Mobility", organized by the municipal transit company. Rosalia Leonor Esquivel Méndez, Data Governance and Quality Consultant at GMV's Secure e-Solutions division,

presented GMV's perspective on how data spaces are evolving and the challenges involved in sharing information.

She stressed the importance of ensuring data sovereignty: each organization must retain control over who accesses its data, for what purpose, and under what conditions, while still enabling collaborative use that generates value. She also shared lessons GMV has learned from projects involving these ecosystems.

The webinar introduced the Mobility Data Space launched by EMT Madrid. This initiative complements the

company's open data platforms with a governed data-sharing layer designed for use cases that require stronger guarantees of security, traceability, and access control.

The project brings together a governance model, a secure and interoperable technical architecture, a platform for publishing and consuming data, and a methodology for developing use cases. Access is initially available to research projects. However, the project roadmap includes onboarding transport operators, opening up commercial access, and connecting to other European data spaces.

GMV presents its AML Intelligence Service at Money20/20

From June 2 to 4, GMV took part in this year's Money20/20 Europe in Amsterdam, which brought together the leading players in Europe's fintech ecosystem. The event is considered one of the leading gatherings for financial innovation. It focused on the evolution of digital payments and the application of new technologies to banking.

GMV was part of the Spain Pavilion, organized by ICEX and the Economic and Commercial Office of Spain in The Hague. It exhibited alongside

other Spanish companies presenting advanced solutions to some of the financial industry's biggest challenges. These included technologies for instant payments, AI-powered fraud detection, certified electronic notifications, institutional digital asset custody, and high-performance banking automation.

GMV presented its AML Intelligence Service, designed to help organizations stay ahead of threats and respond to growing regulatory demands. The solution combines advanced data

analytics and artificial intelligence to turn available information into more accurate risk decisions, more effective controls, and robust evidence for supervisors.

With this offering, GMV puts its technology experience and specialist expertise at the service of financial institutions, enabling more dynamic, intelligent, and efficient risk management. The goal: to help banks understand and control their risks before the regulator does.

GMV recognized by HPE as the best service provider in the LASER Region

The award recognizes GMV's ability to integrate and deploy advanced solutions built on HPE technologies in highly complex projects with demanding operational requirements

Hewlett Packard Enterprise (HPE) honored GMV as its HPE Service Provider of the Year 2026 for the LASER

(Latin America, Southern Europe, and Israel) region. This award recognizes partners who have made outstanding contributions to their clients' transformation through innovation, expertise, and the delivery of tangible results.

The annual HPE Partner of the Year Awards celebrate partners who stand out for their contribution to client success and their ability to turn technology into business value. These companies tackle complex challenges and accelerate digital

transformation by combining technical expertise, innovation, and strategic implementation.

The award was announced at HPE Discover 2026 and presented at the HPE Partner Growth Summit on 15 June in Las Vegas. José María Martínez Fadrique, GMV's head of Supply Chain and Digital Business Strategy, accepted the award on behalf of the company.

GMV has now been recognized as the top HPE service provider in its region four times since the start of its strategic relationship with HPE over a decade ago, a true testament to the strength of this partnership. The award highlights GMV's ability

to integrate and deploy cutting-edge solutions based on HPE technologies in highly complex projects with demanding operational requirements, particularly in sectors such as space, defence, telecommunications, public administration, and cybersecurity.

The partnership between GMV and HPE has led to the implementation of numerous landmark technology projects in which HPE's computing, storage, and networking solutions play a key role in ensuring high levels of performance, availability, and security. Examples include major international space initiatives, such as the Galileo Ground Control Segment and various satellite control and operations systems.



GMV attends Spain–France Trade and Investment Forum



■ Mónica Martínez Walter, president of GMV, attended the Spain–France Trade and Investment Forum, held in Madrid on September 30 during the state visit to Spain by French President Emmanuel Macron.

GMV was one of the companies invited to the event, which was co-chaired by His Majesty King Felipe VI and

Emmanuel Macron. The forum aimed to foster new opportunities for collaboration and strengthen ties between the industrial sectors of both countries.

The multisectoral event also featured Spain's First Vice President and Minister for Economy, Trade and Business, Carlos Cuerpo. Discussions

addressed key issues including strategic autonomy, industrial and technological sovereignty, innovation, the energy and digital transitions, and industrial transformation.

GMV's presence at the forum reflects the company's commitment to technological innovation and business cooperation between Spain and France.

GMV receives Technological Innovation Award at this year's Bueyecillo Awards



■ GMV has received the Technological Innovation Award at the 10th Bueyecillo Awards. The Boecillo Town Council, in the province of Valladolid,

presents these biennial awards to recognize the track record and contributions of companies, organizations, and individuals to the town's development.

The jury recognized GMV's capacity for innovation and its contribution to scientific, technological, and digital progress from its facility in the town's Technology Park, where the company has been based since 1996.

Over the past three decades, GMV has achieved sustained growth. This growth has helped strengthen

the region's industrial base, create skilled jobs, and develop local talent, while also raising Boecillo's profile nationally and internationally.

Today, GMV's Boecillo facility provides cybersecurity services worldwide and develops intelligent transportation solutions, taking part in technology projects of international scope.

Ignacio Ramos, GMV's Corporate Director of People Strategy and Infrastructure, accepted the award at the ceremony held on July 9 at the Boecillo Municipal Theater.

GMV climbs to 23rd place in the ranking of the 100 Best Companies to Work For

■ GMV is once again included in Actualidad Económica's ranking of the 100 Best Companies to Work For, improving its position to 23rd place in the 2026 edition.

This recognition reflects GMV's commitment to its people and highlights a culture that promotes respect and inclusion, flexibility and work-life balance, professional development and training, as well as sustainability and social responsibility.

This achievement reflects the talent of GMV's people and their ability to work together towards a shared vision and mission.



GMV and El Economista explore the future of talent management

■ The latest El Economista Business Conference took place in Madrid on 9 July, focusing on the theme of "Talent, Data, and AI: Keys to New Trends and Challenges in HR in Spanish medium-

sized businesses." Companies, institutions, and professionals in the fields of human resources and technology came together to discuss how to address the new challenges of

talent management at a time of change and technological transformation.

María José Germán, head of GMV's People division, participated in the conference alongside other industry experts and shared GMV's perspective on the impact of data and artificial intelligence on people management. In her remarks, she emphasized that the main challenge is not only keeping professionals' skills up to date, but also recruiting candidates with a solid knowledge base, learning skills, resilience, and adaptability—people who are prepared to meet the current and future needs of organizations.

Throughout the event, participants agreed on the need to develop talent management models that combine technological innovation with personal development. They also stressed the importance of creating more flexible, robust, sustainable, and change-ready organizations that can truly center people in their strategies.



Beyond the Uniform



What comes to mind when you think about working in defense and security? This is probably just a small part of everything that actually happens in this sector. However, one need only take a closer look at the work of GMV's more than 450 professionals in this field to discover a sector that is far more diverse, technologically advanced, and surprising than it may seem at first glance.

In linguistics, a semantic field consists of words that are related because they belong to the same semantic domain. When we think about the semantic field of defense and security, the first terms that probably come to mind are army, armed forces, missions, military exercises, and weaponry. However, if you take a closer look at this sector, you'll see that its vocabulary is much more expansive: innovation, research, artificial intelligence, cybersecurity, communications, precision, reliability, and autonomous systems are also part of it. This broad range of technologies translates into a wide variety of projects and professional profiles, which combine expertise and disciplines to address some of the most complex technological challenges. This ecosystem combines engineering, knowledge, and innovation. Its technologies, moreover, often extend beyond the realm of defense and security to find all kinds of applications in our daily lives.

Mario González has been with GMV for 13 years and is currently a project manager in cyber defense. He explained it like this: "From the outside, we tend to see the final product: an airplane, a vehicle, a satellite... From the inside, you learn about everything that has to happen for that entire system to work: systems engineering, hardware, software, simulation, communications, sensors, cybersecurity, artificial intelligence...". His colleague, Rosa Muñoz, an aircraft design engineer, added: "Working in defense means being part of complex projects involving emerging technologies, characterized by high standards and a great deal of responsibility, with critical objectives such as protecting people, infrastructure, and our country's strategic capabilities."

In most cases, this ambitious goal is achieved by carrying out projects based on the integration of multiple technologies and processes. "Defense systems employ a wide variety of technologies and, moreover,

must be capable of operating in extreme environments and under very demanding conditions. In fact, that requirement can also help certain technologies mature and, subsequently, find applications outside the defense sector," stated Vicente de Ayala, head of Integrated Land Systems.

GMV has been a leading player in the development of defense and security technologies practically since its inception more than 40 years ago, and its professionals are well versed in the potential of so-called dual-use technologies—"those that can be applied in both civilian and military contexts," explained Vicente de Ayala. "A very current example is autonomous systems. We are devoting increasing effort to improving precise positioning systems that can operate even in degraded environments. All of these technologies have applications in many civilian fields: autonomous vehicles, logistics, transportation, industry, emergency response..."

Mario González singled out drones as another clear example of that duality: "The same technological platform can be used to inspect infrastructure, search for people during an emergency, or carry out a reconnaissance mission." In addition to these examples, there are others related to artificial intelligence, GPS-free navigation, cybersecurity, and new sensor systems. "The most interesting thing is that some of the technologies that seem very specific today will likely end up becoming part of our everyday lives," Mario González asserted.

From the outside, the defense and security sector may still be viewed through a stereotypical and, to some extent, narrow lens. But it all changes once the observer gets a closer look at this industry. As Jimena Fernández, Project Management Officer in the Aeronautics Programs Unit, explained based on her own experience, "Before entering the sector, I thought of defense and automatically associated it with the military and traditional defense systems. Once inside, I was able to see the amount

of engineering, innovation, and management that goes into these projects and, above all, the scale and complexity of some of them." her colleague Rosa Muñoz said it succinctly: "I don't work for war. I work for security and to develop technologies that help anticipate risks, defend strategic capabilities, and contribute to a better-prepared society. In short, I work to ensure that technology helps build a society that is better prepared and capable of responding to complex situations."

Rosa Muñoz
Aircraft Design Engineer

Jimena Fernández
Project Management Officer at the Aeronautical Programs Unit

Vicente de Ayala
Head of Integrated Ground Systems

Mario González
Cyber Defence Project Manager





“We're looking for people who are curious about technology, capable of tackling complex problems, and eager to keep learning”

The defense and security industry is growing at a rapid pace, and this trend is expected to continue in the coming years, both in terms of revenue and the number of professionals. In this context, attracting the best talent has become a priority for GMV. One of the people in charge of this work is Estefanía Jaramillo, People Business Partner at GMV, who stated that, beyond a specific profile, “what we’re looking for are people with a curiosity about technology, the ability to tackle complex problems, and a desire to learn continuously. People who enjoy working as part of a team and in multidisciplinary environments, who share their knowledge and help

maintain the positive atmosphere that all of us at GMV value so much.”

The wide variety of disciplines and technologies used in the many projects undertaken by GMV through its Security and Defense division means that the range of professional profiles in demand is very broad and diverse. “On a technical level, we could say that the disciplines in highest demand are software engineering, systems engineering, telecommunications engineering, electronics engineering, industrial engineering, and aerospace engineering—especially in areas related to embedded systems and navigation. There is also significant demand for professionals

specializing in cybersecurity, artificial intelligence and algorithms, data science, as well as validation and verification.”



ESTEFANÍA JARAMILLO
People Business Partner at GMV

**ACROSS
ALL
DOMAINS**

gmv
INNOVATING SOLUTIONS

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-  **SPACE SYSTEMS**



SPAIN Headquarters

Isaac Newton 11 PT.M. Tres Cantos – 28760 Madrid
Tel.: +34 91 807 21 00 Fax: +34 91 807 21 99

Santiago Grisolia, 4 PT.M. Tres Cantos – 28760 Madrid
Tel.: 91 807 21 00 Fax: 91 807 21 99

Juan de Herrera No. 17 PT.Boecillo – 47151 Valladolid
Tel.: +34 983 54 65 54 Fax: +34 983 54 65 53

Andrés Laguna, n.º 9-11. PT.B. – 47151 Boecillo, Valladolid
Tel.: 98 354 65 54 Fax: 98 354 65 53

Albert Einstein, s/n 5ª Planta, Módulo 2 Edificio Insur Cartuja – 41092 Seville
Tel.: +34 95 408 80 60 Fax: +34 95 408 12 33

Edificio Nova Gran Via, Avda. de la Granvia 16-20, 2ª planta
Hospitalet de Llobregat, 08902 Barcelona
Tel.: +34 932 721 848 Fax: +34 932 156 187

Mas Dorca 13, Nave 5 Pol. Ind. L'Ametlla Park
L'Ametlla del Vallés – 08480 Barcelona
Tel.: +34 93 845 79 00 – +34 93 845 79 10 Fax: + 34 93 781 16 61

Edificio Sorolla Center, Nivel 1 Local 7, Av. Cortes
Valencianas, 58 – 46015 Valencia
Tel.: +34 963 323 900 Fax: +34 963 323 901

Parque Empresarial Dinamiza. Avda. Ranillas, 1D – Edificio Dinamiza 1D,
planta 3ª, oficinas B y C – 50018 Zaragoza
Tel.: +34 976 50 68 08 Fax: +34 976 74 08 09

Edificio Tecnológico Aeroespacial, Rúa das Pontes 6, Oficina 2.05
36350 Nigrán (Pontevedra, Spain)
Tel. +34 986 119 366

GERMANY

Zeppelinstraße, 16 82205 Gilching
Tel.: +49 (0) 8105 77 670 150 Fax: +49 (0) 8105 77 670 298

Europaplatz 2, 5 OG D-64293 Darmstadt
Tel.: +49 (0) 6151 3972970 Fax: +49 (0) 6151 8609415

BELGIUM

Rue Belliard, 40 Bureau no. 117 1040 Brussels
Ph.: +32 278632 25

COLOMBIA

Carrera 7 #99-21 Oficinas 1802-1803 110221 Bogotá
Ph.: +57 (1) 6467399 Fax: +57 (1) 6461101

USA

2400 Research Blvd, Ste 390 Rockville, MD 20850
Ph.: +1 (240) 252-2320 Fax: +1 (240) 252-2321

700 South Flower Street, Suite 470 Los Angeles, CA 90017
Ph.: +1 (310) 728-6997 Fax: +1 (310) 734-6831

15503 W. Hardy Road Houston, TX 77060

FRANCE

17, rue Hermès – 31520 Ramonville St. Agne. Toulouse
Ph.: +33 (0) 534314261 Fax: +33 (0) 562067963

MALAYSIA

Level 18, Equatorial Plaza Jalan Sultan Ismail. 50250 Kuala Lumpur
Ph.: (+603) 9205 8440 Fax: (+603) 9205 7788

THE NETHERLANDS

Joop Geesinkweg 901, 1114AB Amsterdam-Duivendrecht

POLAND

Ul. Hrubieszowska 2, 01-209 Warsaw
Ph.: +48 22 395 51 65 Fax: +48 22 395 51 67

PORTUGAL

Alameda dos Oceanos, 115, 1990-392 Lisbon
Ph.: +351 21 382 93 66 Fax: +351 21 386 64 93

UNITED KINGDOM

Airspeed 2, Eight Street, Harwell Science and Innovation
Campus, Didcot, Oxfordshire OX11 0RL

Enterprise Centre. Innovation Park, Triumph Road
Nottingham NG7 2TU
Ph.: +44 (0) 1156667200 Fax: +44 (0) 1159682961

ROMANIA

SkyTower, 246C Calea Floreasca, 32nd Floor, District 1, postal code 014476,
Bucharest
Ph.: +40 318 242 800 Fax: +40 318 242 801