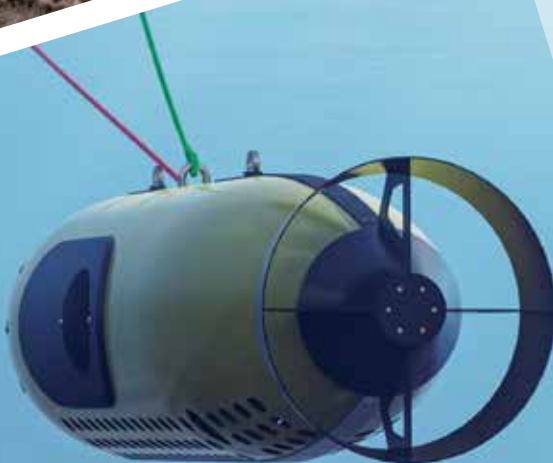
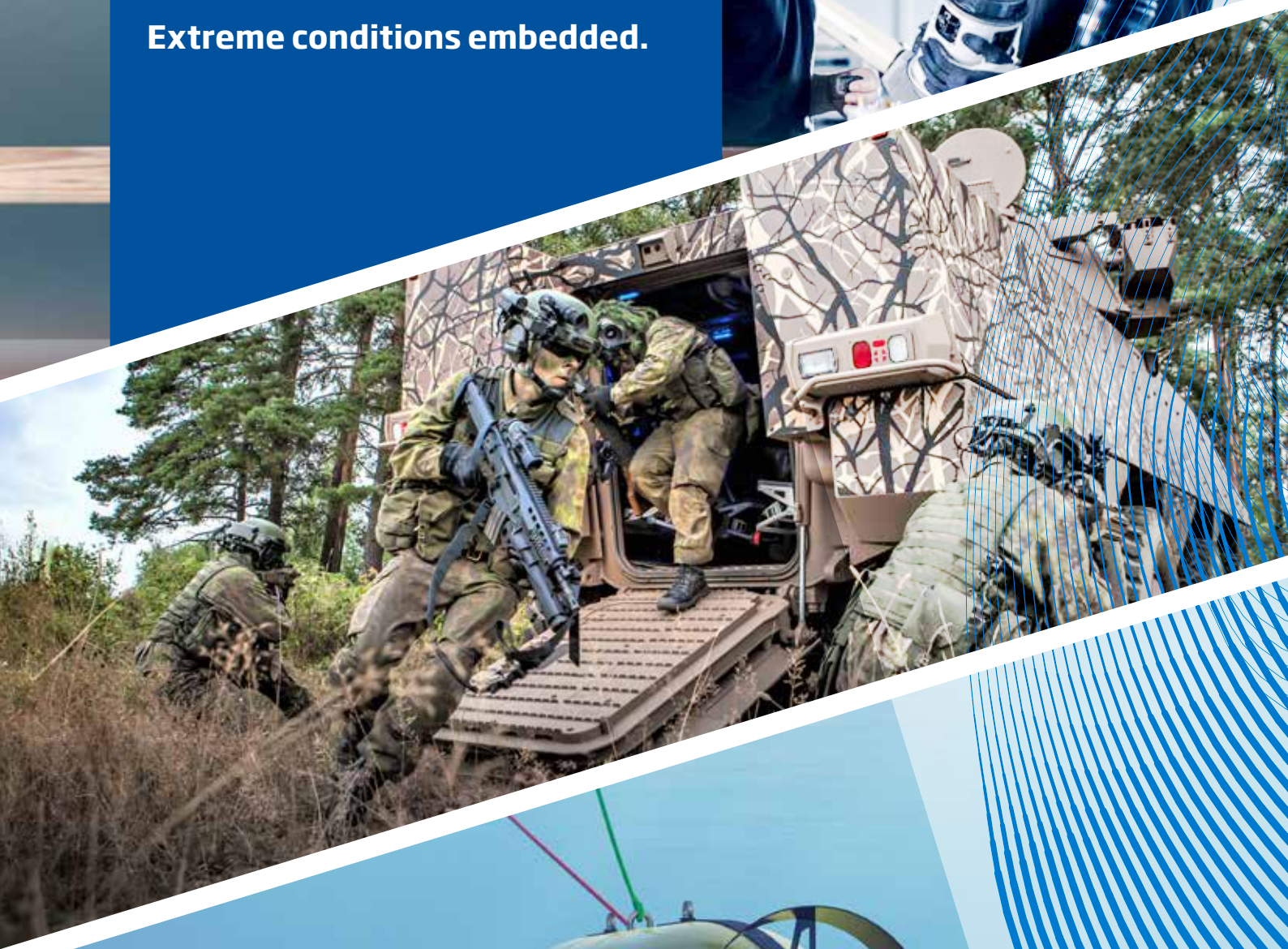


**Patria**

# Patria Offering

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**Extreme conditions embedded.**





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# Extreme survivability by Patria

Finland is known for high technology and extreme resilience. Our harsh nature and limited resources have pushed us to learn and innovate efficiently. Thorough preparation for the future is the backbone of our culture.

Patria is a modern and international defence and technology company with over 100 years of experience. We use resources wisely, create innovative solutions and build intelligent systems that provide extreme survivability in any conditions. We work with our customers throughout the entire lifecycle to ensure maximum value. Honest and straightforward co-operation is at the core of our work.

We build exceptional partnerships that last through critical operations. That's what it takes when you stand for your sovereignty. Trust us, we've been there.

**Patria - Extreme conditions embedded.**

# Strong basis for Patria's offering

Patria's wide offering is divided into three main branches - **Through life capability, Protected mobility and defence systems** and the third branch is **Battlefield and critical systems**. In this brochure you can find information about Patria's wide offering divided into these three branches.

## Customer-centricity

We work with our customers throughout the entire lifecycle to ensure maximum value. Honest and straightforward cooperation is at the core of our work. We build exceptional partnerships that last through critical operations.

Patria's offering is based on strong roots:  
a) Technologies, research and digitalization,  
b) Competencies, c) Values, d) Strategy and  
e) Strong local presence and true partnerships.

## Technologies, research, digitalization

We utilize the best available technologies, invest in research and development and build digital ecosystems.

## Competencies

The source of our quality is our personnel. We innovate, improve continuously and productize our capabilities.

## Values

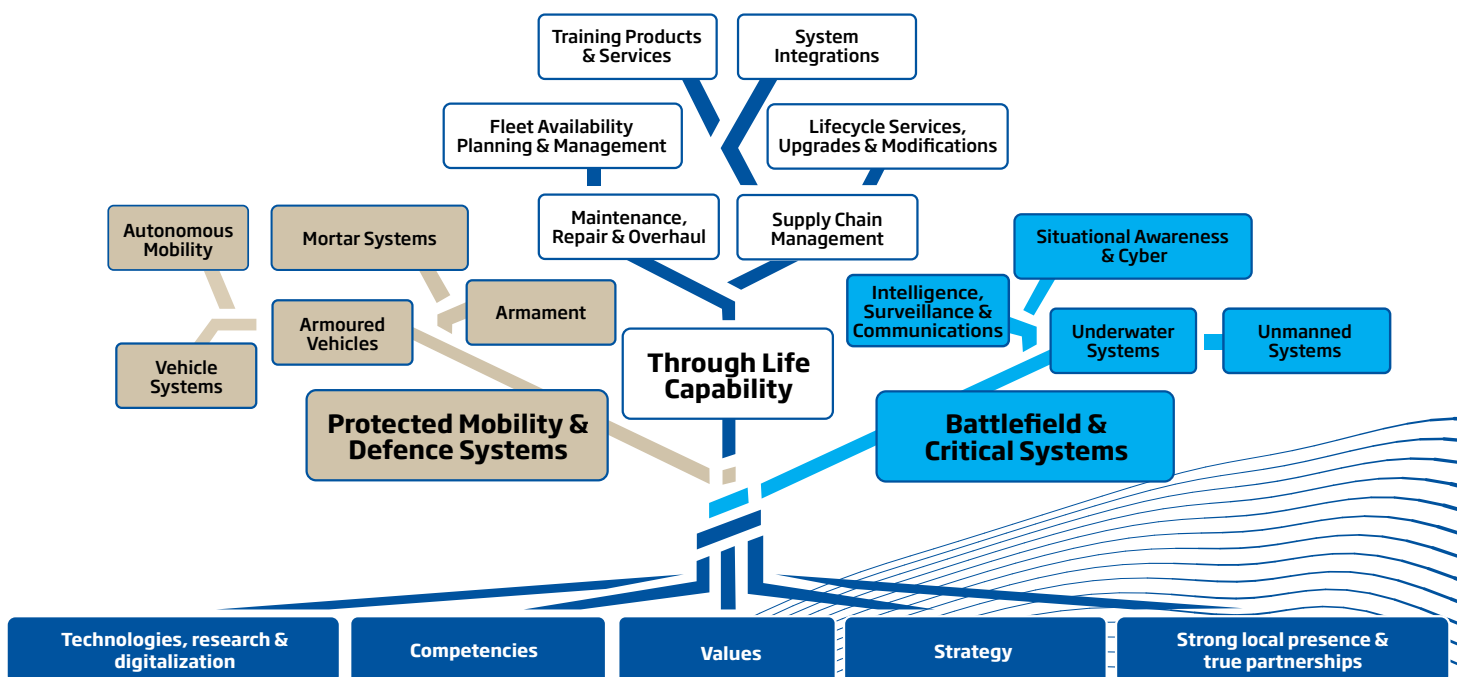
We create success together, according to the solid ethical rules and guidelines.

## Strategy

We believe growth equals better service and a world-class offering. We have unique expertise in combining commercial effectiveness with the requirements of the defence sector.

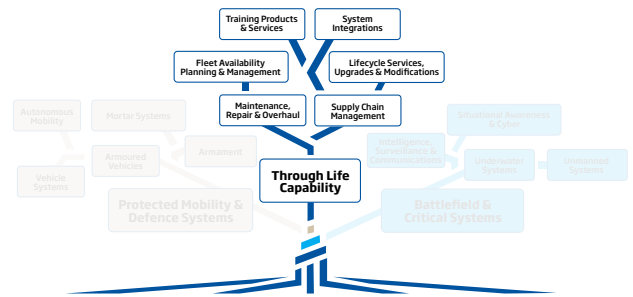
## Strong local presence and true partnerships

We work in close cooperation with our customers, and we have built an extensive network of international industrial partnerships to ensure the security of supply and guarantee competitive prices.





## Through Life Capability



# Ultimate Availability

Optimize and extend your fleet availability with our digital solutions and new advanced capabilities. We have the widest experience of the market from different platforms in all domains. Our commitment to your fleet on land, in the air and at sea means that we are with you throughout the entire lifecycle. We lead platform-independent, large-scale integration and upgrade programmes. Your personnel is always well-prepared with our systematic training. Seamless collaboration with your organization and partners creates the best price and quality ratio and ultimate fleet availability for you.

We know what is needed to keep your fleets fully optimized and operational.

**Patria - Extreme conditions embedded.**





## Through life capability offering in brief

**Patria OPTIME** is an unique and tailored digital data driven support solution for all assets in all domains. Patria OPTIME is not limited to specific OEMs. It includes five modules:

- fleet availability planning and management
- maintenance repair and overhaul services
- lifecycle services, upgrades and modifications
- supply chain management services
- training products and services

With the Patria OPTIME solution our customers' operational capability is improved when the focus is on essential field operations and the asset's availability is secured through Patria OPTIME.

**System integrations** - Patria is the national champion and leading systems integrator in the field of military systems, solutions and services. Patria provides also prime contractor and leading system integrator services to our customers.

**Spare parts and distributional sales** - Patria supplies spare parts for a large number of various fleets and fleet models.

**Professional Pilot Training** - Patria Pilot Training is one of the largest EASA approved training organizations (EASA-ATO) in Northern Europe.



# Patria OPTIME - The ultimate fleet availability and performance over the entire lifecycle

Are you looking for a broad range service concept that ensures your fleets are always ready for critical operations with optimal costs? Patria has developed a modular service concept called Patria OPTIME, which covers air, land and sea domains. It is tailored to the customer needs and requirements and it is set up in phases together with the customer.

Patria OPTIME covers a broad range of services and solutions impacting the fleet availability, such as fleet maintenance, upcoming modification projects and needed integrations in the later stages of the lifecycle as well as supply chain management and training services.

The new service concept combines engineering expertise with efficient data utilization in a unique way for the sustainment of military equipment. There is no comparable, comprehensive, manufacturer independent digital data-driven solution that can be deployed in all operating environments available from other market actors. In the centre of the concept is data collection from the fleet usage and maintenance. Even during a crisis, the customer can count on immediate support.

## How to keep your fleets operational for the entire lifecycle?

The lifecycle for military fleets is typically decades-long - and thus, in addition to ordinary maintenance, repairs and overhauls, the fleets must undergo major upgrades, repairs and system/structural modifications during the lifecycle to fulfil required capabilities. Patria has strong experience and expertise in all these demanding activities - for land vehicles, aircraft, helicopters and marine vessels.

Patria OPTIME also covers the management of fleet MRO supply chains, as required by the customer. Data analysis makes it possible to forecast the

future needs and optimize the supply chain management.

The concept of operations of high-performance assets is also an essential part of effective system usage. Patria can support this with years of experience in data collection from a range of fleets as part of mission support services. This brings exclusive offering for Patria's training services.

The specification of the Patria OPTIME solution begins with an assessment of the current state of the customer's operating environment, equipment and sustainment solution as well as the requirements set for them. After a successful feasibility study, there will be a more thorough value proposal phase together with the customer.

## Case - Air domain

Patria has a proven track record maintaining the Finnish NH90 helicopters. Patria OPTIME covers services for the entire lifecycle of the NH90 fleet, from scheduled and unscheduled maintenance to major upgrades and repairs, ensuring optimal availability and performance. Through efficient data utilization and comprehensive data-driven solutions, Patria optimizes the maintenance solution. As an example, Patria ensures the Finnish NH90 fleet availability for operations.

Patria Belgium Engine Center (PBEC) has a solid and extensive experience in the maintenance, repair, and overhaul of F100 engines. For almost 40 years many



Patria OPTIME ensures the performance of different kinds of fleets in all conditions over their entire lifecycle.



F-15 and F-16 Air Forces worldwide rely for their every-day missions on PBEC as the Center of Excellence such as a full D- I- and O-level support for the Air Forces operating Pratt & Whitney F100 jet engine powering F-15 & F-16 fighter aircraft.

### **Case - Land domain**

Patria's expertise in maintenance and sustainment extends to land vehicles, including armoured vehicles and infantry support vehicles. Through its subsidiaries, Patria has provided maintenance and repair services in multiple countries.

Additionally, Patria has extensive experience in maintaining vehicles in several international missions, like ISAF Afghanistan, UNIFIL Lebanon and KFOR Kosovo. Patria OPTIME covers all aspects of land vehicle sustainment, including maintenance, fleet service life extension, supply chain management, and data-driven solutions for optimal fleet performance.



### **Case - Sea domain**

Patria has also been a long-term service provider for Finnish Navy to provide lifecycle planning and MRO services. Patria has been maintaining various types of engines from the vessels as well as acting as an integrator in an extensive integration project for the certain Finnish Navy vessel fleets. With the data-driven approach, Patria OPTIME enables the proactive planning and optimization of supply chain management also for marine applications as Patria holds service dealer authorization for MTU engines.



**Through Life Capability**

# Large-scale system integrations on land, at sea and in the air

The lifespan of the military platforms is typically exceptionally long. During the lifetime most of the platforms will face Mid-Life Upgrades (MLU) to extend the lifecycle and Mid-Life Improvements (MLI) to add new capabilities, some platforms will find even new purposes of use. Patria has solid experience in various large-scale system integration projects on land, at sea and in the air to respond all these needs.

A Typical platform-oriented system integration project often combines an existing military platform with one or more new subsystems to be integrated into it to extend life cycle and improve fleet performance to meet the future requirements. In some cases, the company acting as a main integrator is not the OEM of the platform itself nor any of the new subsystems. In these cases, company's ability to respond to the diverse challenges of a system integration project plays a crucial role.

From Patria's perspective basic building blocks for successful large and complex integration project are professional project management and systematic engineering, both of which must be managed transparently and precisely. Building a professional project team and establishing an atmosphere of trust between the parties form the basis for a successful project.

As a prime contractor, Patria is responsible for the total turnkey delivery of the system integration project to the customer. The prime contractor leads the integration of different systems through design reviews, factory acceptance tests, commissioning and verification test campaigns into a complete system delivery to the customer. This work is supported by succeeding in special areas of expertise including project -, change -, configuration -, requirement - and risk management, system design and integration, as well as supply chain management and professional procurement.

## On land

Engineer vehicles based on Leopard 2 tank platform serve as an example of Patria's system integration expertise in the land domain. An international industrial project organization led by Patria produced the world's first Leopard 2 -based Bridge Laying Vehicles and Armoured Breaching Vehicles for the Finnish Defence Forces' Engineer Corps during the first decade of the 2000s. This exceptional achievement was enabled by Patria's background in modernising and modifying of tracked armoured fighting vehicles in the pre-Leopard era, as well as the decades of history in development and production of Patria's own line of armoured wheeled vehicles.





## At sea

The spearhead of integration services in Patria's naval business area have been the mid-life upgrade programs of existing Finnish Navy vessels, such as the Squadron 2000 (Hamina-class) mid-life upgrade (MLU) project, which is fast approaching its closure.

Starting from Patria's previous MLU program for the Finnish Navy's Rauma-class, during 2010-2014, Patria already achieved customer admiration, both in terms of schedule and budget. From the early steps of this program, Patria started to develop extensive naval integration service expertise, which can utilise all of Patria's know-how.

In 2018, the Finnish Defence Forces signed an agreement with Patria on the renovation of four Hamina-class missile boats belonging to the Finnish Navy's Squadron 2000, where Patria has acted as the prime contractor and main integrator with overall responsibility for the project. The complete program delivery has included several sensor, weapon and communication systems, system upgrades as well as ship technical modifications and renovations installed and integrated to extend the service life of the Hamina class vessels until the 2030s.



## In the air

Patria has renewed the Finnish Air Force's Hawk Mk.51 and Mk.66 fighter training fleet together with the Finnish Air Force and the Finnish Defence Forces Logistics Command. This was an extensive system integration project that ensured that the Hawk fleet would have enough flight hours until the 2030s. At the same time, the suitability of the Hawk fleet systems for the pilot training needs of the coming years was ensured.

The modernisation of the Hawks consisted of modernising the cockpit environment, integrating a datalink, weapon control system, structure monitoring and engine condition monitoring system, and updating the pilot training system. The former, mainly analog, instrument cluster was replaced with modern, computer-controlled avionics equipment that meets all modern requirements in terms of user interface. The avionics devices and displays in the cockpit are controlled by software developed by Patria, which Patria integrates as part of the aircraft's other systems in accordance with the Air Force's wishes.

The developed and implemented Hawk training system enables flight simulations, analysis of completed tasks and various training situations. Patria is able to develop and maintain the Hawk software, which enables the planning and implementation of system upgrades for the Hawk fleet in Finland as part of the strategic partnership between the Finnish Defence Forces and Patria. Other systems integrated with and supporting the Hawks can be further developed to meet the needs of the customer as the F-35 will replace the F/A-18 Hornet as the main aircraft of the Finnish Air Force in the future.



# Patria TADS - Contributing to joint mission success

Debriefing systems are critical tools for training. There is little added value in organising a complex and challenging training exercise if the tools used to draw the lessons are not up to the task. And in a world where concepts such as “joint exercises” and “multi-domain integration” have come to dominate doctrine, technology and theatres of operations, debriefing tools are more critical than ever.



Leveraging over a decade of experience building training and debriefing tools, Patria has developed the Tactical Debriefing System for Joint Forces - Patria TADS. Operational since 2010, the TADS benefits from years of feedback and experience to offer customers a tool that not only serves to learn from ourselves and our actions, but also from each other and our interactions. Platform agnostic, it is a critical tool for strengthening armed forces' skills and joint interaction.

## Training jointly

Today's military operations are carried out across multiple domains. From space to seabed, across physical - space, air, land and maritime - and non-physical - cyberspace, information environment and electromagnetic spectrum - domains, armed forces are now forced to look beyond their own operational environment to achieve joint, multi-domain operations.

Yet this is no easy feat. Each branch of the armed forces has its own doctrine, modus operandi and references. As such, operating jointly across domains can create misunderstandings, lead to mistakes and, ultimately, endanger the mission. That is why joint training is critical, and debriefing essential, to foster better understanding and coordination.

One of the key features of Patria TADS is its ability to facilitate such joint debriefing. TADS is a scalable system, which means it can provide feedback from single operator exercises all the way to large scale scenarios with multiple aircraft, ships and/or any other platform included in the exercise. In other words, TADS is platform agnostic.

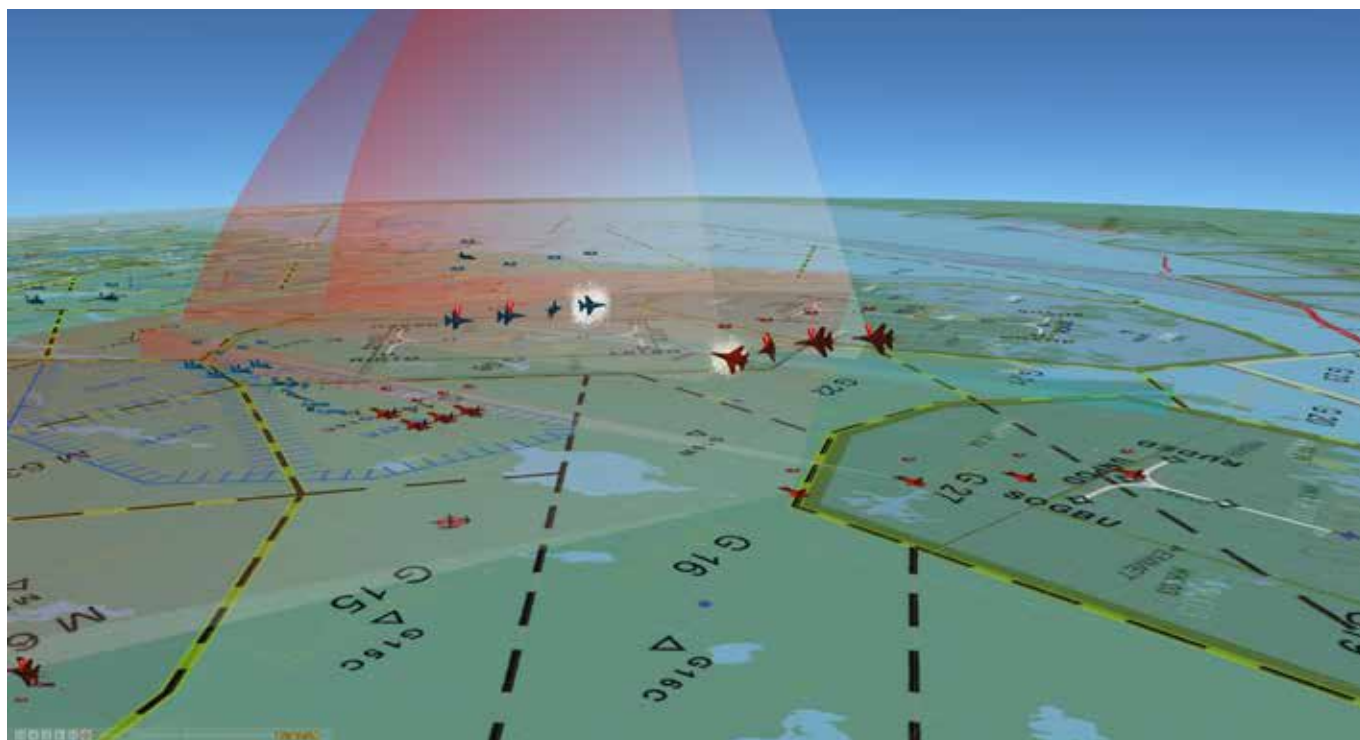
To start the debriefing, trainers just have to download data from all participating platforms and share it from a master workstation across the network of connected users all using the same software. Patria TADS supports multiple data formats and, should a new format be introduced in the exercise, Patria supports the integration of the new format as well. This means that TADS allows sharing both across different arms of the armed forces and across multiple locations.

Just as importantly, TADS allows trainers to import Joint Mission Planning (JMPS) overlay and threat order of battle files to ensure a comprehensive joint debrief against initial operational objectives.

## Training better

A mission can be a success on multiple fronts, but it does not necessarily mean that it achieved all its objectives. Where joint operations are concerned, in particular, the mission may have succeeded but the jointness of the mission may not have achieved





its full potential – which could lead to even better results.

Where joint training is concerned, a critical feature of the debriefing tool should be the ability to analyse each participant's actions from multiple angles. Patria TADS has been designed precisely for such purpose.

Featuring multiple displays, Patria TADS can project different types of information simultaneously to ensure a comprehensive debriefing. It can replay time-space position information combined with event data from multiple sources, so that air, land and sea platforms can get a better picture of their ability to position themselves around – and against, for red teams – each other. It can replay video files synchronised with recorded data to visually complement the time-space position information. Finally, it is able to analyse and visualise data from different perspectives in multiple views, leveraging onboard cameras to provide a full view of actions, positions and interactions.

TADS also allows trainers to run different scenarios through its 'what if' function. This facilitates a better understanding of the positive and negative consequences of various actions.

A successful debriefing session is a session that occurs directly after the training has taken place. Cognisant of such imperative, Patria has developed TADS to be easy to use and set-up. In only a few minutes, data is imported from data source and analysed, together with weapon simulation.

Finally, TADS has also been designed to connect to Live Virtual and Constructive (LVC) exercises systems allowing real-time monitoring.

## For today's and tomorrow's challenges

If the conflicts that have erupted in the past decade – e.g., Nagorno-Karabakh, Ukraine – have taught us anything it is that new technologies – such as unmanned systems – become ubiquitous to theatres of operations at unprecedented speed. It is evident, in such context, that training and debriefing tools should be designed to follow and quickly adapt.

Developed in 2010 for the Finnish armed forces, TADS benefits from a decade of crucial customer feedback that has enabled it to evolve throughout the years. Building on such strength, Patria has a solid and future-proof roadmap for TADS. It will include integration of a wider variety of platforms and will also introduce new AI-driven capabilities to train better operators in complex multi-domain battlefields.

Patria's goal is to support the armed forces in training excellent operators, both as single individuals and as part of joint operations, thus contributing to mission success – on all fronts.

# Patria LVC - Bridging real world and virtual training

Super- and hyper-sonic missiles, stealthier fighter jets, Unmanned Aerial Systems (UAV), advanced Electronic Warfare (EW) and Electronic Countermeasures (ECM)... the breadth, variety and speed of threats fighter jets now have to face are seemingly ever-increasing. Training, in such context, is not just critical, it is vital. Yet while some types of training exercises are meant as a show of force, others, aimed at being able to tackle certain threats and/or adversaries, should retain a certain level of confidentiality.

For Patria, this is critical, and it all begins with being able to integrate live, simulated and Computer-Generated Forces (CGF) training. It begins with Live, Virtual and Constructive (LVC) training, a system designed to allow fighter pilots to log multiple hours of training in both live and virtual environments. And it begins with being able to expand, shrink, diversify and complexify at will both the real world and threat training environment and, where necessary, away from prying eyes.

## Training across physical and virtual worlds

The increasing breadth, variety and speed of threats in the battlefield today requires fighter pilots to be highly trained. It is not just a matter of logging in hundreds of flight hours to develop and hone manoeuvring and tactical skills. It is also a matter of training to be able to take in the considerable cognitive load now placed on them by the presence of a multitude of sensors and screens. Because as threats develop so do sensors and information, and fighter pilots must be able to process such information and make decisions in fast-paced, high pressure situations.

Yet training for such levels of complexity can be resource intense, both in terms of fighter jets' and trainers' availability. That is why over the past decade Patria has been working closely with its customer,

the Finnish Airforce (FINAF), to develop the LVC training system.

Originally designed in 2010 as a synthetic training environment on two screens, the LVC has evolved to become a dome-like, fully networked experience. Since 2019 it provides fighter pilots with the look and feel of a real jet cockpit during their training without, however, the associated considerable drain on resources and platform operational availability.

Just as importantly, LVC can also function as a augmented reality training experience. By integrating live training fighter jets in a virtual environment, it allows pilots to simultaneously train together both onboard jets and at base. Capable of also including CGF in the synthetic environment, LVC creates the opportunity to develop multiple, complex scenarios reflecting real theatres of operations' challenges.

Patria's datalink products, such as the CANDL, enable the integration of live jets with the synthetic LVC environment via dedicated ground stations. In other words, what happens in the LVC shows on jets' screens and what happens in the air is reflected in the LVC.

## Now you see me, now you don't

Training is important, but so is the necessity to keep tactical development and manoeuvres hidden from prying eyes, especially an adversary's. Yet some





countries do not necessarily have a choice if they want to train within their own airspace. Geography can at times be very constraining.

The LVC training system allows customers to 'hide' into the synthetic environment. Away from the eyes and ears of a potential adversary, they can practice any number of scenarios, drills and manoeuvres. And even if the training also includes live fighter jets - e.g., blue forces - what appears on their screen and how they evade and/or shoot virtual and CGF red forces remains within the synthetic environment.

Additionally, the LVC allows countries with limited available airspace - whether due to geographical constraints or commercial traffic - to train as far and as wide as they wish in the synthetic environment.

### **Multi-domain and -platform training**

Complexity in a theatre of operations is not just about the amount of information one has to process in a very short period of time. In a world where multi-domain operations have come to dominate

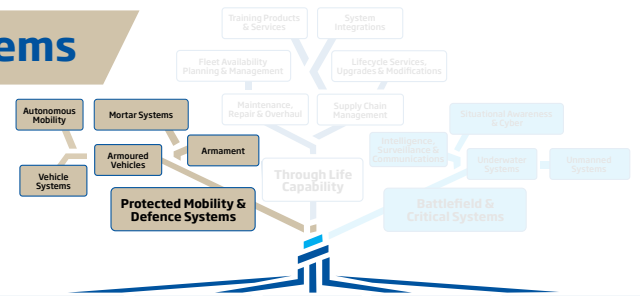
the warfighting narrative, being able to successfully work across armed services - and platforms - can present a challenge in and of itself.

Patria's LVC training system has been developed to facilitate training also in those contexts. All types of platforms - vehicles, ships, fighter jets - can be networked into the synthetic environment in order to create a realistic scenario of multi-domain operations.

Additionally, because LVC can be connected to Patria TADS, Tactical Debriefing System, for Joint forces, it allows armed services to review after action together, across multiple locations.

Finally, LVC has been designed to integrate UAVs. As such, it allows not only the training of UAV operators, but it also enables joint training across multiple platforms and sensors, thus enhancing Man-Unmanned Teaming (MUM-T) skills and operations.

## Protected Mobility and Defence Systems



# Superior Performance

Take your mission capabilities to new heights with Patria's future-proof vehicles, defence systems and armament.

At Patria we provide superior solutions to enhance operational capabilities in all conditions. Reliable performance, combined with the unique security of supply experience, makes us your trusted partner.

The best reward to us comes from those who have accomplished their missions in the toughest situations - thanks to the most combat-proven products.

We strengthen your mission capabilities in all conditions.

**Patria - Extreme conditions embedded.**





# Protected Mobility and Defence Systems offering in brief

## Patria AMV XP - Number 1 in the battlefield

- Patria AMV XP is a state-of-the-art modular, high-performance and robust armoured wheeled vehicle providing the superior fire power, protection and mobility.
- The combat proven AMV family has gained experience from various operations worldwide.

## Patria 6X6 - Focus on essentials

- Patria 6x6 is modular and high-performance, while simple, robust and affordable to provide tactical capability in larger fleet quantities.
- Robust and fully independent suspension, together with a high-performance drive line, ensures unforeseen mobility and crew comfort in the 6x6 category.

## Patria NEMO - 120 mm turreted mortar family

- Patria NEMO is a modern mortar system with capabilities such as direct fire, fire-on-the-move and MRSI.
- Patria NEMO Navy has the same performance factors but is tailored for naval applications.
- Patria NEMO Container is unique, independent mortar unit for various missions on various platforms.
- Patria has decades of experience with wheeled vehicles and mortars and their lifecycle support





# Patria AMV XP - Number 1 in the battlefield

Patria AMV XP 8x8 is an a state-of-the-art modular, and robust armoured wheeled vehicle providing superior fire power, protection, and mobility. The combat proven AMV family has gained experience from various operations and has become the trusted solution for protecting nations and soldiers.

Patria AMV XP provides the performance and features of a multi-role vehicle. Patria AMV XP has fully digitalized vehicle data and control systems. We offer large scale of AMV XP variants to meet the specific needs of our customers worldwide from hot deserts to arctic conditions. With AMV XP Patria provides ultimate security of supply via technology transfer program, localization and through-life support.

AMV XP is perfect for any operation in any environment where you need the best mobility, survivability and fire power.

## Superior survivability

Patria AMV XP is available with highest level modular ballistic protection and potential for state-of-the-art active defence systems. With Patria AMV XP troops can be protected against IED, NBC, and it has

modular, scalable ballistic protection for up to level K5+ and mine protection even beyond STANAG level 4a/4b. Patria AMV XP's optimized shape, low radar and thermal signature enable its superior stealth features.

## Unrivalled mobility

Patria AMV XP has state-of-the-art fully independent hydropneumatic suspension system and extremely strong chassis construction for high-speed off-road driving. It is easy to use and its unrivalled mobility is based on high performance drive line together with and the superior suspension. It is supported by large wheel size and CTIS for low ground pressure, Run Flat system and optional rear axle steering for enhanced manoeuvrability. Patria AMV XP is available with amphibious capability for water crossing and amphibious landing operations.



## Firepower

Patria AMV XP's platform characteristics enable the use of any weapon system needed for engaging targets rapidly and with pinpoint accuracy. It is ideal for integration of medium-calibre weapon systems, direct fire cannon systems up to 120 mm, Patria NEMO 120 mm turreted mortar system and anti-tank or anti-aircraft missile systems. The vehicle's high payload with large internal volume enables carrying all weapon systems, ammunition and the crew equipment according to your mission needs.

## Accomplish your mission: now and in the future

Together with networked inter-operability, open architecture and fully digitalized vehicle data ensure troops to have the best possible platform to meet their objectives. Patria AMV XP's electrical power generation is measured to match the future requirements for C4I, Battlefield Management and Situational Awareness Systems, Health and Usage Monitoring System (HUMS) together with the vehicle's digital backbone.



Diverse mission requirements and rapidly changing environment lead to the fact that it is crucial to engage continuous and efficient product development to keep the equipment always up to date. Patria AMV XP is the right choice for the coming decades. We guarantee reliable maintenance services that responds to future needs. Whatever your critical mission requirements for the equipment, with AMV XP you are ready today for tomorrow and the mission will be accomplished.

## Variants

Patria AMV XP 8x8 has been developed to provide optimal modularity of components and to be adaptable for a wide range of versions without changing basic vehicle systems. It is available in two different models:

Basic model provides the platform for following variants: armoured personnel carrier (APC), infantry fighting vehicle (IFV), command vehicle, ambulance, reconnaissance vehicle, anti-tank guided missile vehicle (ATGM), armoured repair and recovery vehicle (ARRV), fire-support vehicle with mobile cannons and finally, the 120 mm Patria Nemo mortar system.

High roof model provides extra height at the rear of the vehicle, which is ideal if the vehicle is used as a command, C4I, ambulance or workshop vehicle.

Both basic and high roof models are available both regular and extended wheelbase variants.



# Patria 6X6 - Focus on essentials

Patria 6x6 vehicle is built on the heritage of Patria's iconic armoured wheeled vehicles that has been used in various peacekeeping and crises management missions and transporting soldiers around the world through several decades.



Patria 6x6 is modular and high-performance, but at the same time simple, robust and affordable to provide tactical capability in larger fleet quantities. It provides modern protection and high mobility. Patria 6x6's modular design allows a wide variety of specific configurations for diverse missions. It is a perfect choice for any troop transportation and combat support roles. Patria provides ultimate security of supply via technology transfer, local manufacturing concept and through-life support.

## Optimized solution for protected troop transport

STANAG level 2 ballistic and mine protection is optimized solution for protected troop transport and combat support roles. High payload capacity ensures that there is enough payload even for optional enhanced STANAG level 4 ballistic and mine protection on various vehicle variants. High level of protection, unique mobility and the latest technology bring Patria 6x6 to deliver state-of-the-art protected



troop transport capabilities to face the highest demands.

### **All-wheel drive and amphibious capability**

Robust and fully independent suspension, which is similar to Patria AMV XP, together with high performance drive line, ensures unforeseen mobility and crew comfort in the 6x6 category. Patria 6x6 carries up to 10 soldiers in the rear plus a crew of two (driver and commander) in the front cabin; all their equipment being hosted inside the protected hull, and equipment being based on a 72-hour mission requirement. The vehicle has mobility optimised continuous all-wheel drive and steering by front two axles. Amphibious capability for water crossing and amphibious landing operations is available as an option.



### **Easy to use**

Patria 6x6 is primarily designed for troop transport role (APC), but is suitable to be configured for other combat support roles as well, such as company command vehicle, medical evacuation vehicle, heavy APC and finally, the 120 mm Patria Nemo mortar system.

An intuitive, truck-like user interface, good visibility and large internal volume make it easy to train and operate.

### **Affordable and highly reliable**

Affordability in procurement together with low through-life costs throughout the long-expected service life, more than 30 years, have been design guidelines for Patria 6x6. Vehicle maintenance, repair and system upgrades have been considered as design parameters. All this makes Patria 6x6 an affordable and highly reliable armoured wheeled vehicle.



# Patria's heavy unmanned ground vehicles development work yields results

Patria has developed its Heavy Unmanned Ground Vehicle (HUGV) system continuously for several years now and is a leading company in area of unmanned capabilities in its business segment.

The development work has reached a level where the Patria AMV 8x8 vehicles can be operated remotely beyond a visual line of sight utilizing commercial (WLAN, 5G and 4G) networks or tactical software defined radio (SDR) systems. This enables reliable operation of the vehicle even from longer distances. Patria's HUGV system provides the interface for artificial intelligence capabilities, like convoying or waypoint navigation.

Patria has already demonstrated HUGV capabilities numerous times. Last development was demonstrated in European Land Robotics Trials (ELROB) in June 2022. In ELROB Patria AMV XP 8x8 HUGV was demonstrated with its convoying capability with optional remote control. The demonstration utilized Patria's Remote Operating Desk (ROD), state-of-the-art user interface containing features, such as augmented reality and haptic feedbacks enabling more authentic remote driving experience. Patria's Local Situational Awareness System (PALSA) was also demonstrated in ELROB. PALSA combines several sensor types, including optional LiDAR and stereo camera systems.

Patria's unmanned solution can be integrated into Patria AMV XP 8x8, Patria 6x6 vehicles and to all already delivered AMV 8x8's without any major changes in the vehicle configuration. Patria's HUGV system can also be installed in other heavy vehicles and it quickly converts the legacy fleets of existing human-driven vehicles into unmanned systems.









# Patria NEMO - Accurate and fast even when fired from a moving platform

The Patria NEMO mortar system takes mortar mobility, firepower and protection to the next level both on land and at sea – it's also accurate on the move.



Although mortars are effective weapons for indirect fire, they are vulnerable on the modern battlefield. Survivability is key – and this calls for both optimal firepower and protection.

Patria's answer to these challenges is the Patria NEMO, a turreted 120 mm mortar system. This state-of-the-art solution takes mortar mobility, protection and firepower to the next level.

Patria NEMO Land is a mortar system designed to be integrated onto various platforms. The light and compact turret can be installed on a light, tracked chassis or wheeled armoured vehicles in the 6x6 and 8x8 class. Armour protects the crew from ballistic, and air-tight turret against NBC threats. The level of protection is tailored according to the customer's requirements.



Patria NEMO Navy is a mortar system designed for naval use. It can be integrated into high-speed patrol boats and coastal vessels, for instance. It features the same advanced weapon system as Patria NEMO Land - but the turret materials have been chosen with an eye on demanding marine conditions, such as salt water resistance.

## Mobile fire requires top expertise

A key strength of the Patria NEMO on land and sea is that it can also be fired accurately and fast on the move. No other manufacturer's weapon systems can boast a similar feature.

Fire-on-the-move capabilities significantly speed up fire mission preparation, weapon alignment and opening fire. A vehicle in constant motion also makes the Patria NEMO a difficult target for the enemy.

Mobile fire requires the turret to have an effective stabilization system that can compensate the platform movements on the terrain. Accurate fire also requires an advanced ballistic calculation system to determine continually changing fire values.

NEMO's ballistic calculator and the turret control system are based on Patria's state-of-the-art in-house software expertise. Thanks to this, Patria NEMO can be flexibly integrated into a variety of battlefield management systems (BMS) and fire control systems.

Patria NEMO's state-of-the-art weapon technology is built on the company's 80 years-plus experience of 120 mm mortar systems.

## Outstanding firepower and range

The Patria NEMO's barrel is about one meter longer than traditional mortar barrels. This results in higher muzzle velocities and a 1-2 km longer range compared to similar weapon systems.

It can also fire Multiple Rounds Simultaneous Impact (MRSI) missions. Using MRSI, a maximum of six shells can be launched on different trajectories so that they all hit the target at almost the same time.

In addition to indirect fire, the NEMO also has direct-fire capability with the aid of its own cameras and laser range finder. This feature can be employed in close-range fire support and urban warfare, for instance.



## Firepower, mobility and platform protection

All of these characteristics combined provide the Patria NEMO with a key edge in battlefield survivability.

The relative lightness of the weapon system ensures platform mobility. Safe transport of ammunition in the NEMO ammunition storage enhances crew protection.

Rapid opening of fire protects both the crew and supported troops. Constant movement while firing reduces the impact of counterfire. In addition, all protection capabilities of the platform can be fully harnessed (armour, NBC, stealth and mine protection). Furthermore, NEMO is hard to detect: it features weapon cooling for low thermal silhouette and has a low turret for small visible silhouette.

# Patria NEMO Container - A multi-purpose and standalone mortar system

Patria NEMO Container boasts all the benefits of a state-of-the-art turreted mortar system in a compact shipping container. This solution takes the versatile use of mortars to the next level.

In order to ensure survival on the modern battle-field, a mortar system must have excellent mobility, firepower, accuracy and protection. Patria NEMO Container combines these features - its best-of-breed 120 mm mortar system is integrated into an easy-to-move shipping container.

The container operates as a fully standalone mortar unit, as it includes all the necessary features: the weapon, ammunition and crew protection. The container generates its own electricity and compressed air and ventilation, which can be upgraded with NBC protection against combat gases, for instance. It has protected space for a three-person crew and hundred mortar shells. The ballistic protection of the container is tailored to the requirements of the customer.

## A mortar integrated into a container is easy to move

The key strength of the Patria NEMO Container is that it's easy and fast to move.

The external dimensions of the mortar system are equivalent to those of a 20-foot shipping container. All container hoists and transport platforms can be used to move NEMO Container on a truck, railway carriage or marine vessel, for instance.

Thanks to this, the mortar can be rapidly transported to the firing location by truck or ship. Integrated into the container, the mortar system can be deployed rapidly without modifications.







In test firing, the system has been successfully fired from a military transport vessel and off-road truck. Separate supports are not required to fire from a vehicle platform – thanks to this, the system can open fire fast.

Patria NEMO Container can also serve as a standalone mortar unit set up to protect a military base, for instance.

### **State-of-the-art mortar for guaranteed high performance**

The Patria NEMO Container features the same weapon system as the turreted Patria NEMO Land and Patria NEMO Navy mortar systems – their cutting-edge weapon technology is based on Patria's more than 80 years of experience in 120 mm mortar systems.

Thanks to the effective stabilization and ballistics calculation systems developed by Patria, the mortar system is capable of accurate fire even while on the move.

NEMO's competitive advantages also include high firepower and long firing range. The barrel is about one meter longer than traditional mortar barrels. This results in higher muzzle velocities and 1-2 km longer range compared to similar weapon systems.

NEMO is also able to fire Multiple Rounds Simultaneous Impact (MRSI) missions. Using MRSI, a maximum of six shells can be launched on different trajectories so that they all hit the target at almost the same time. In addition to indirect fire, the NEMO also has direct-fire capability with the aid of its own cameras and laser range finder.

The mortar system can also be flexibly integrated into battlefield management systems (BMS) and fire control systems.

# Technology transfer ensures security of supply

Patria's vehicle deliveries are based on technology transfer – local partners handle vehicle manufacturing in the target country. This safeguards security of supply long into the future.

In recent years, Patria has received orders for the delivery of armoured wheeled vehicles to Poland, Slovenia, Croatia, South Africa, Latvia and Slovakia. All vehicle deliveries apply the same operating model based on close industrial cooperation with local operators.

This is founded on technology transfer, in which production is moved to the customer's country either partly or in full. Local production of vehicles strengthens security of supply, as the capabilities to manufacture and maintain the equipment are available in one's own country. Local manufacturing

also creates expertise, jobs and tax revenue in the country. A vehicle project is always carried out in line with the customer's requirements. For instance, the customer might require that a certain percentage of manufacturing has to be carried out in that country, or that the project must provide the country with certain kinds of expertise.

In addition to the ordered products, Patria also provides its customers with long-term lifecycle service solutions, in which Patria and its partners take on responsibility for vehicle maintenance and repairs for an agreed period of time.





## **Patria has strict criteria in the selection of partners**

Technology transfer and success in projects call for capable partners that can get things done cost-effectively and on schedule while meeting Patria's high quality requirements.

Patria thoroughly assesses potential partner companies, analysing different aspects such as the expertise of their personnel, production facilities and corporate culture. Patria also requires its partners to comply with its ethical principles and the legislation of its business countries.

Depending on the project, Patria usually has a few main partners in the target country. However, a vehicle project can involve dozens of local companies when the main partners' subcontractors are included.

In projects, Patria handles the development and manufacture of the core technology of the vehicle platform in-house. These include, for example, the core components of the vehicle transmission and the dashboard, which includes the technology and software necessary for vehicle control.

## **The partner is provided with thorough orientation on production**

A delivery project usually begins with the production of a prototype series. In the case of vehicles, this is carried out at Patria's production plant in Hämeenlinna.

Personnel of the partners also take part in the manufacturing – they are trained to make the product and provided with orientation on Patria's operating models.

At the same time, the companies in the customer country that will be responsible for vehicle and sub-assembly manufacturing prepare to start up production. Project planning is an important phase – it involves reviewing the production processes, schedules and division of labour between the partners and Patria.

Another essential aspect of technology transfer is handing over the necessary manufacturing documentation to the local partner.

During the project preparation phase and the start-up of production, Patria's experts closely support the partner in technical questions concerning matters such as manufacturing or material procurements. If necessary, Patria will provide support later throughout the delivery project.

## **Long experience in technology transfer ensures success**

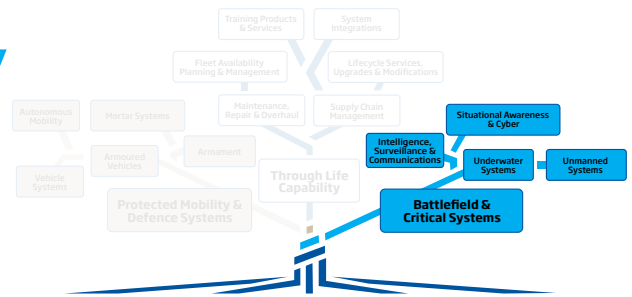
The Patria employees in charge of technology transfer have decades of experience in their own areas of expertise. They have in-depth knowledge of the product and its manufacturing, thanks to which partners can be provided with smooth orientation on production.

Once around five vehicles have been completed, the partner company is audited and it is ensured that it can move ahead independently to the serial production phase. After that, annual audits are carried out to ensure that operational quality remains at the agreed level.

Patria holds the main responsibility for production throughout the project, even as local partners carry out the manufacturing. Patria's technology transfer and local partnerships always set their sights on more than just single delivery projects. The aim is that when going forward, the partners can offer their products and services to a broader customer base as part of Patria's global supply chain. Patria's customers also benefit from this – an extensive cooperation network ensures security of supply and guarantees competitive prices.



## Battlefield and Critical Systems



# Total Control

Improve your critical security with our CSISTAR and cyber intelligence solutions. Patria's innovative data services, with insightful visualizations and analytics, ensure that you have real-time, comprehensive situational awareness and a powerful mission control. We create a seamless defence system for those who want to have the advantage in every situation.

Stay one step ahead in your decisions with our turnkey solutions and be in total control.

**Patria - Extreme conditions embedded.**





# Battlefield and critical systems offering in brief

## INTELLIGENCE, SURVEILLANCE &

**COMMUNICATIONS** - Patria offers solutions for situational awareness in the modern electromagnetic battlefield

**Patria ARIS** - The most advanced ELINT system mastering signal collection and analysis

**Patria ARIS-E** - The next generation ESM/ELINT surveillance system offering superior situational awareness

**Patria MUSCL** - The invisible air surveillance system - Passive radar revealing the smallest, stealthiest and lowest

**UNDERWATER SYSTEMS** - Excellence in underwater domain - mine warfare, anti-submarine warfare and surveillance

**Patria SONAC ACS** - High-end acoustic edge for mine sweeping

**Patria SONAC DTS** - Dual towed sonar system for anti-submarine operations

**Patria ASW Training Target** - For cost-effective and demanding anti-submarine warfare training

**Patria SIGMA and SIGMA Light** - Underwater measurement range for signature information supremacy

## SITUATIONAL AWARENESS AND CYBER

**Patria CANDL** - Networking airborne data link

**Patria CRAWLR** - Comprehensive ingestion and analysis for unstructured data

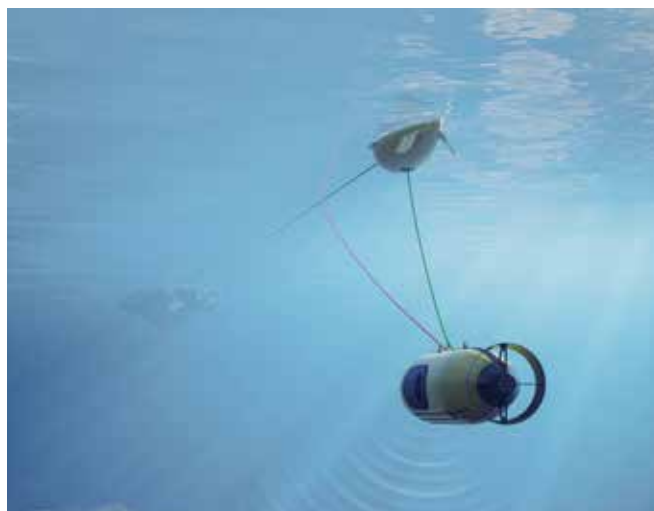
**Patria DOME** - Defence-oriented map engine

**Patria FIELD C2** - Holistic multi-authority field command and control system

**Cyber** - Professional cyber warfare and security services

**Data vaults and Analytics** - Solutions for processing, storing and analyzing different kind of data

**Research Services** - State-of-the-art research services in emerging technologies and topics



# **Patria ARIS and ARIS-E - Real-time situational awareness is decisive on the battlefield**

Patria ARIS and ARIS-E are powerful tools for electronic intelligence and electronic support measures, (ELINT and ESM), with real-time radar signal interception, recording and analysis capabilities as well as radar emitter identification, geolocation and tracking.

The ongoing race for technological dominance poses a great challenge in ELINT/ESM. Adversaries are constantly developing higher-performance radar systems that are increasingly difficult to detect – traditional receivers are not necessarily capable of detecting or analysing their faint and constantly changing signals.

Patria's response to this challenge is the ARIS product family, which provides effective tools for intelligence and surveillance – enabling real-time interception, recording and analysis of modern radar signals.

## **ARIS detects active radar systems effectively**

ARIS is a sensitive ELINT/ESM system capable of intercepting modern radar signals with high precision and probability. It can be used for geolocating radars, gathering strategic information on their operation, and revealing signal characteristics in different operating modes. ARIS is a so-called passive sensor. The enemy thus cannot detect the system or analyse its performance.

ARIS combines all ELINT functionalities: search spectrum, real-time spectrum analyser, real-time oscilloscope, pulse analyser, modulation analyser, direction finding and wideband recorder with playback and offline analysis capabilities.

These functionalities are bundled in a single system offering a smooth user experience. The system has been developed on the basis of feedback from users.

## **Real-time functionalities are decisive on the battlefield**

Patria ARIS detects all kinds of radar emitters: e.g., fixed surveillance radars as well as radar systems used on ships and aircrafts. Furthermore, the system can be used to search for a variety of weapon systems, such as target acquisition radars and active radar-homing missiles. Radars emit a distinctive signal in different situations. For instance, a fighter aircraft could be engaging in search operations or preparing to launch a missile – the operating mode can be identified on the basis of the signal emitted by the radar.

Real-time functionalities are vital in modern warfare. If a ship or fighter aircraft is targeted by a weapon system, it must be alerted immediately.

## **Computing power for heavy-duty analyses**

Patria ARIS system consists of high-precision antennas, a wideband digital receiver and a high-power server that handles real-time computing.

The system must have sufficient computing power – it generates a continuous flow of several gigabytes of data per second. All this data is stored and simultaneously processed to produce real-time analyses.

ARIS is a tool for building comprehensive signal database of detected transmitters. Such databases can then be used for effective identification of targets with, for example, the ARIS-E system.



## Remote use - the decisive edge provided by ARIS systems

A powerful feature of ARIS systems is that all their functionalities can be operated either locally at a sensor station or remotely from an operating centre. That is, even an entire sensor network can be operated centrally from a single location via secure connection. A sufficient number of skilled personnel can be stationed at this centre to analyse the signals – a task that calls for skilled professionals.

The software can be used manually for detailed signal analysis. It can also run predefined surveillance tasks autonomously to record signals for later analysis. The analysis results can be fed into an ELINT database.

## ARIS-E creates a real-time situational picture

ARIS-E system provides operators with a real-time tactical situational picture based on active identified and unidentified emitters within the operating area.

Patria ARIS-E is an ESM (Electronic Support Measures) system that utilises signal databases to automatically identify and geolocate radar signals. Its main task is to create a situational picture either independently or aided by the operator. The display map shows a continuously updated situational picture of the modern electromagnetic battlefield.



The features of ARIS-E enable the real-time tactical geolocation and tracking of transmitters. Advanced real-time tools make it also possible to analyse signals accurately and update the signal library.

## Full 4D situational awareness for the operator

ARIS-E features all the necessary functionalities from radar signal interception to visualisation of the situational picture. The system builds an illustrative 4D situational picture of the battlefield, visualising not only the location of emitters on the map, but also their temporal activity.

ARIS-E can be operated remotely and integrated flexibly into different command systems.

ARIS systems are based on long-term product development. Patria has developed related technologies since 2005. Patria's strength is managing the big picture. The ARIS system is precisely tailored to the needs of the customer – the package includes not only antennas, receiver and server, but also system software integration, deployment and training.



# **Patria MUSCL - Enhanced target situational picture to air defence**

Patria MUSCL is a novel passive radar system for air surveillance that enables detecting objects without allowing adversaries to detect it. The system can detect even small low-flying objects that are usually hard to detect.

Detections made with air surveillance radars are the basis of air defence situational awareness. However, the expected service life of active radars under crisis and exceptional circumstances is not long as they are easy to detect and therefore vulnerable to attacks from adversaries. Active radars also cannot detect all flying objects, and detecting low-flying objects is particularly difficult. Patria MUSCL passive radar system is a cost-effective solution that fills the gaps in air surveillance.

Patria MUSCL system comprises an antenna array, a receiver, and servers that process the received signals with advanced signal processing and target tracking algorithms to produce a target situation picture. The system has no transmitters of its own; instead, it takes advantage of FM radio broadcasting signals and digital television broadcasting (DVB-T/T2) signals and similar to form target situation picture. The system determines the location, speed and direction of flying objects by using signals that propagate directly from a transmitter to the antennas of the passive radar and very weak echoes reflected from the objects.

## **The new, cost-effective system that is hard to locate and provides high performance**

Patria MUSCL enables setting up cost-effective area or spot surveillance for different needs such as military air surveillance, border control, and protection of critical infrastructure. The passive system has no transmitters which means that it has no signal footprint. This makes Patria MUSCL system practically invisible to signal intelligence actions and anti-

radiation missiles. It also means that the system is safe to use in urban areas as well.

The system can be used both as a standalone and as a network of several MUSCL stations remotely. Depending on the object type with its characteristics Patria MUSCL provides sector surveillance up to 360-degrees to the distance of up to hundreds of kilometres. The system can simultaneously track more than one hundred objects, and the target situational picture it provides, is updated every second. Patria MUSCL detects small and large flying objects from drones and artillery projectiles to bombers. The system is set apart by its ability to extract type-specific data on flying objects for object classification and identification.

## **Also detects stealth aircraft**

The radio and television signals that the MUSCL system exploits are available actually everywhere and these transmitters produce a continuous stream of signals with high availability. The transmitter network has extensive geographic coverage.

Patria MUSCL detects stealth aircraft better than conventional radars. The coating solutions of stealth aircraft are designed to make the aircraft invisible to active radars that operate at higher frequencies. Stealth design is at its best in the bow of stealth aircraft because active monostatic radars view them from that direction. In other directions of the stealth aircraft, there are larger spots that produce radar reflexions. The broadcasting signal network that passive radar exploits provide the possibility to simultaneously illuminate the stealth aircraft from several geographical locations, making it possible



that one or some illumination directions will produce a so-called normal radar reflection from the stealth object.

### **Modular system easy to update**

Patria MUSCL is the result of more than a decade of tenacious research and development. The modular system uses commercial technologies to the extent possible. This enables updating the system flexibly according to technological advancements. The digital signal processing algorithms and the RF signal path from the antennas to signal digitisation are at the core of MUSCL's performance.

The system hardware is robust and designed for demanding military use. Its benefits include easy mobility and quick deployment. In addition to the mobile solution, Patria provides a fixed version of the system.



# Patria SONAC ACS - The sound of minesweeping

It only takes a few seconds. The smart mine detects that instant, seemingly imperceptible, shift in magnetic, acoustic, seismic and pressure signature, and chaos ensues. It does not have to cause significant damage to create disruption; in fact, it does not have to create damage at all.

The mere knowledge that smart mines lay on the seabed, capable of detecting, identifying and targeting specific vessels, is enough to deter passage and wreak havoc - be it for military or commercial vessels traffic.

Minesweeping, as opposed to mine hunting, is the only viable option against influence mines silently waiting in shallow waters. And minesweeping with advanced acoustic capabilities is critical for tackling the continuous development and spread of smart mines. That is why Patria built on decades of experience in developing both smart mines and acoustic minesweeping systems to offer its customers the SONAC ACS. Featuring an extremely high-power sound source technology, this advanced acoustic minesweeping system detonates smart mines to deliver peace of mind.

## Rocky road

Like many underwater warfare tactics, mine warfare was quickly forgotten in the aftermath of the Cold War. Lulled into a false sense of security, Western navies focused on removing old mines and shifted their main focus on other missions. And, like many underwater warfare tactics, mine warfare is making a strong comeback in naval strategy books, at industry level and in Research & Development (R&D) departments.

Perhaps more worrying still than the resurgence of this type of weapons. Today, industry leaders in the mine warfare domain are leveraging complex algorithms that can simultaneously process magnetic, acoustic, seismic and pressure signatures to identify their targets and trigger the explosion.

As such, in shallow water areas where the seabed can be rocky and where water conditions can adversely affect visibility smart mines are particularly disruptive. Pre-programmed to target certain types of military or commercial vessels, they can render entire port areas inhospitable or whole Sea Lanes of Communication (SLOC) inoperable.

## The sound of music

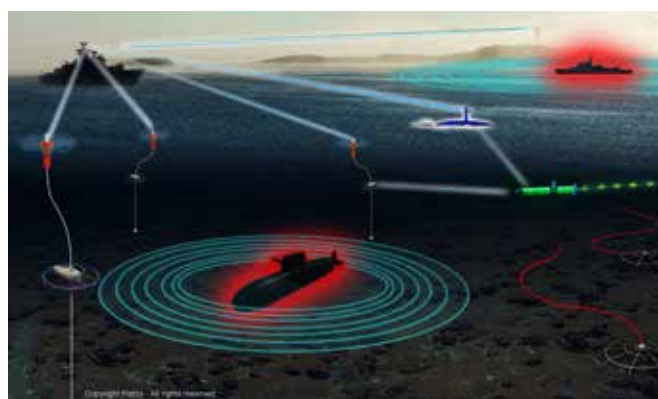
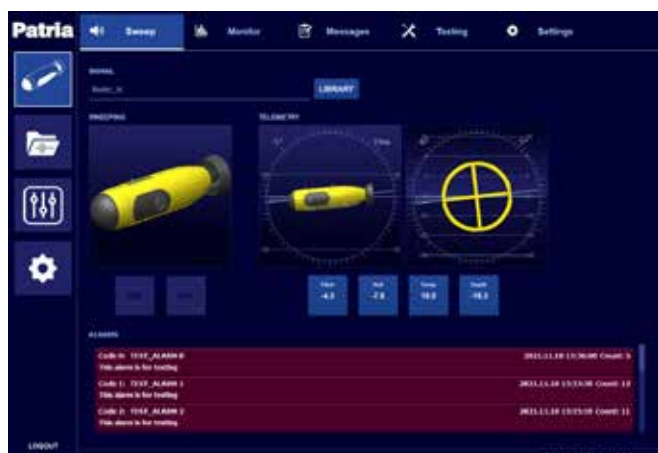
In complex environments such as shallow waters, minesweeping is the most appropriate solution for tackling smart influence mines. Using a combination of magnetic, electric and acoustic source systems towed by a small surface vessel, minesweeping is a system of systems that reproduces the signature of potential target vessels.

Acoustic sweeping systems are an important part of the whole integrated mine sweeping system because, acoustic signals travel very far in the water while magnetic and electric signals tend to decay quite fast in the same environment. As such, the smart mine will first detect the acoustic signal and, on that basis, will then start searching for, and measuring, magnetic and electric signals. If the combination of all three signals matches a target vessel's signature, the mine will detonate.

To provide its customers with the most advanced acoustic - and therefore minesweeping - system of systems, Patria leveraged decades of experience to offer two critical features in its SONAC ACS.

First, SONAC ACS utilises Patria's patented sound source technology. Using a simple, user-friendly interface, minesweeping operators can select the vessel noise they want to simulate from a Spotify-





like library. This option is typically used in Target Setting Mode, when intelligence about the smart mines is minimal and a crew is just looking to ensure its own vessel's safe transit in the area.

Should the sound not feature in the library yet, or should a crew work in mine setting mode - area intelligence offers specific information on the type of vessel being targeted - SONAC ACS also features a user-friendly tool to recreate the desired signal.

Second, Patria's SONAC ACS is designed to operate at various frequency ranges. Its sound transducers can operate from low to high frequency - from 7Hz to 70kHz - in order to replicate the symphony of frequencies that characterise a vessel's signature as accurately as possible. This feature renders the distinction between genuine vessel signals and SONAC ACS signals difficult for a mine to make.

## Back to the future

If current trends in mine hunting tell us anything, it is that mine warfare is inexorably becoming unmanned.

The increasing use of remotely controlled and autonomous systems is critical for keeping crew out of harm's way.

Fitting perfectly into this scenario, Patria's SONAC ACS has been designed to facilitate towing from an Unmanned Surface Vehicle (USV). The system weighs 200kg in water and is connected to the USV via a cable that features both power supply and data transfer capabilities. It can also be connected to a manned vehicle of course, although increasingly minesweeping systems are unmanned.

According to customers' specific needs and mission demands, the SONAC ACS can be towed using two different systems. It can be connected via a float, a device designed to float on the surface while the acoustic system is positioned at the required depth. Alternatively, it can be attached to a floating frame that automatically adjusts its operational depth according to the speed at which it is being towed.

Ultimately, mine warfare is back, but with all the added benefits of today's advanced technologies. In this back-to-the-future scenario, Patria has successfully leveraged decades of experience in both minesweeping and smart mine development to create the SONAC ACS. Capable of fooling the smartest mine algorithm with its unrivalled acoustics, it can safely detonate shallow water mines to deliver safety peace of mind.





# Patria CANDL - Efficient air-to-air and air-to-ground networking

Patria CANDL is an airborne datalink that ensures reliable and uninterrupted data transfer for demanding applications. This compact system is especially suitable for unmanned aerial vehicles.

The use of drones - unmanned aerial vehicles - in military operations is increasing at a rapid pace. However, their effective operation hinges on reliable, uninterrupted data transfer between the UAVs and command systems.

Patria's compact CANDL datalink enables efficient networking in both air-to-air and air-to-ground applications. The system establishes a secure 8 Mbps connection between the command system and UAVs. It also enables the efficient and uninterrupted transfer of sensor data from UAVs, for instance, to the command system.





## A compact datalink well-suited for drones

A CANDL network can have up to 24 simultaneous members (air, sea or land). The system operates as a closed network that is not connected to any public networks. Its secure connection can be used to transfer images, videos, digital speech and a wide range of other digital data – CANDL supports all Internet protocols. A separate protocol for data transfer is not required.

As a platform-independent device, the CANDL terminal can be used in the air, at sea and on land. Thanks to its small size, it is especially well-suited for use in aerial vehicles, particularly the data transfer requirements of unmanned systems such as drones. The CANDL terminal is compact. It measures 110 x 175 x 100 mm and weighs less than 2.5 kg. The datalink is easy to integrate into the customer's command systems. To facilitate integration, the CANDL terminal features the most common interfaces and buses.

## A reliable system for heavy-duty operations

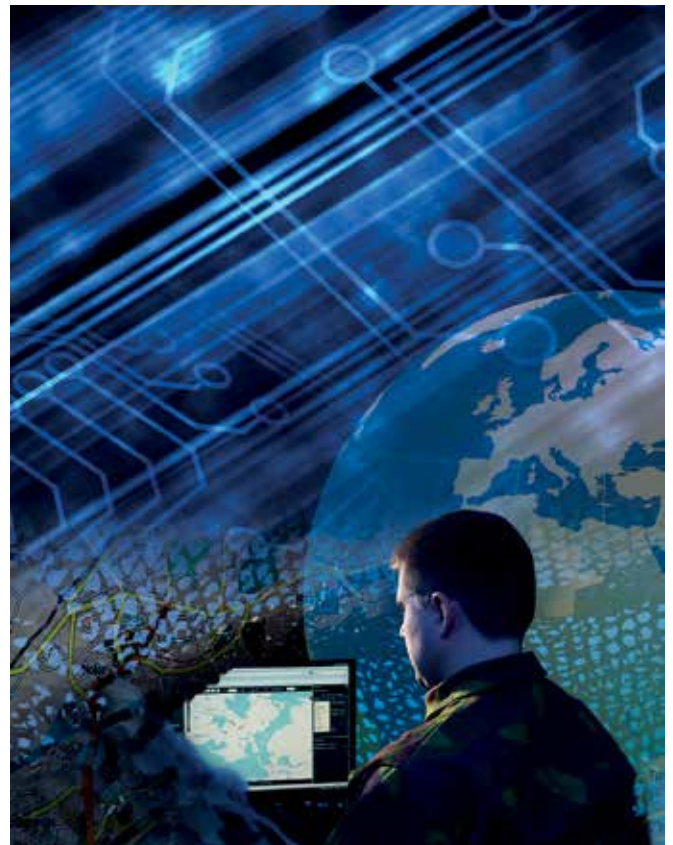
The CANDL system has a range of 150 km – which can be extended to 250 km with an external high-power amplifier (HPA), available as an accessory. Relays can be used to increase its range beyond the radio horizon. Thanks to these features, CANDL is also

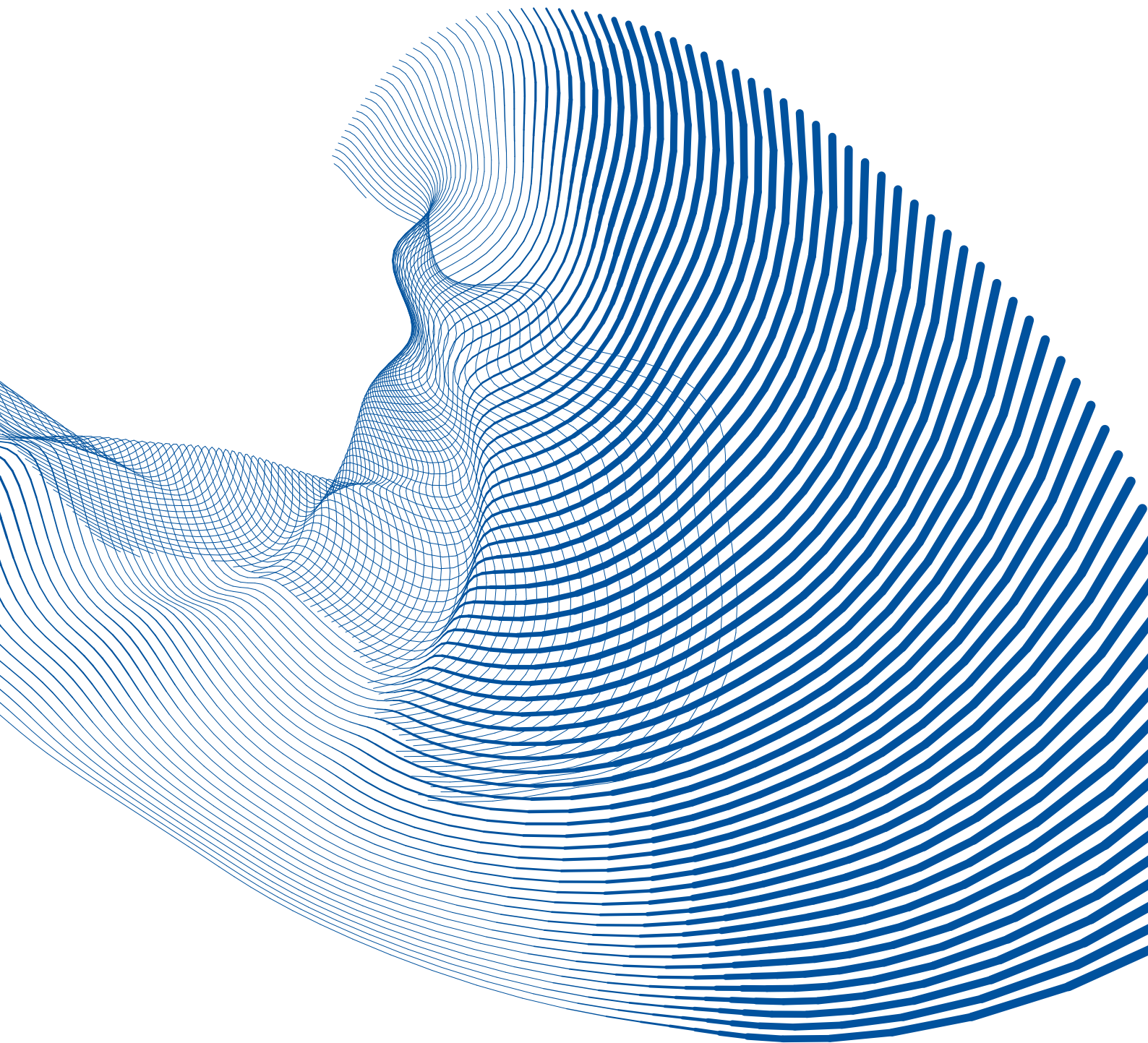
suited for applications such as MUM-T operations (Manned-Unmanned Teaming), that is, joint operations between manned and unmanned systems in different situations.

Furthermore, thanks to the dynamic management of network members, CANDL is an excellent option for use in LVC (Live, Virtual, Constructive) training that incorporates simulators.

Patria has been involved in the development of datalink systems for fighters and other aircraft since the 1980s. Based on this expertise, Patria is well poised to develop advanced telecommunications technology for unmanned vehicles as well.

Feedback from customers indicates that one of CANDL's great strengths is its reliability. Its closed network is guaranteed to remain up and running without interruptions that would hinder efficient operation. Disruptions are also reduced by the fact that CANDL uses frequency bands with ample spectrum resources.





**Patria - Extreme conditions embedded.**

**Patria**

When if is not an option.

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