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Naval Magazine

Multi-Domain Operations
Act across the five operational domains

Revolutionising Naval Training
Shaping the future of maritime training

Seabed Operations
A multitude of actions must be taken

Content

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Saab's Naval Expertise

With over 80 years of industry experience, Saab has renowned expertise in delivering platforms, combat systems and sub-systems to the entire domain. All naval products and services in the Saab family have originated in the context of a contested sea. A highly demanding setting with a high-clutter environment and military geography that generates large variations and highly compressed tactical situations and constant challenges. From the littorals, Saab has reached the blue oceans with customer navies from different continents.

Saab is a recognised global player, equipping many navies around the world, including the US Navy, the Royal Navy (UK) and the French Navy. Thanks to the two shipyards, Kockums and Docksta, Saab is one of the few European suppliers that can build submarines and surface ships like corvettes, combat boats and Mine Countermeasures ships (MCM). Saab is also capable of integrating its wide range of products, such as communications systems or combat systems, with other manufacturers' vessels. At the same time, Saab is a world leader in the Remotely Operated Vehicle (ROV) sector.

SAAB TECHNOLOGIES

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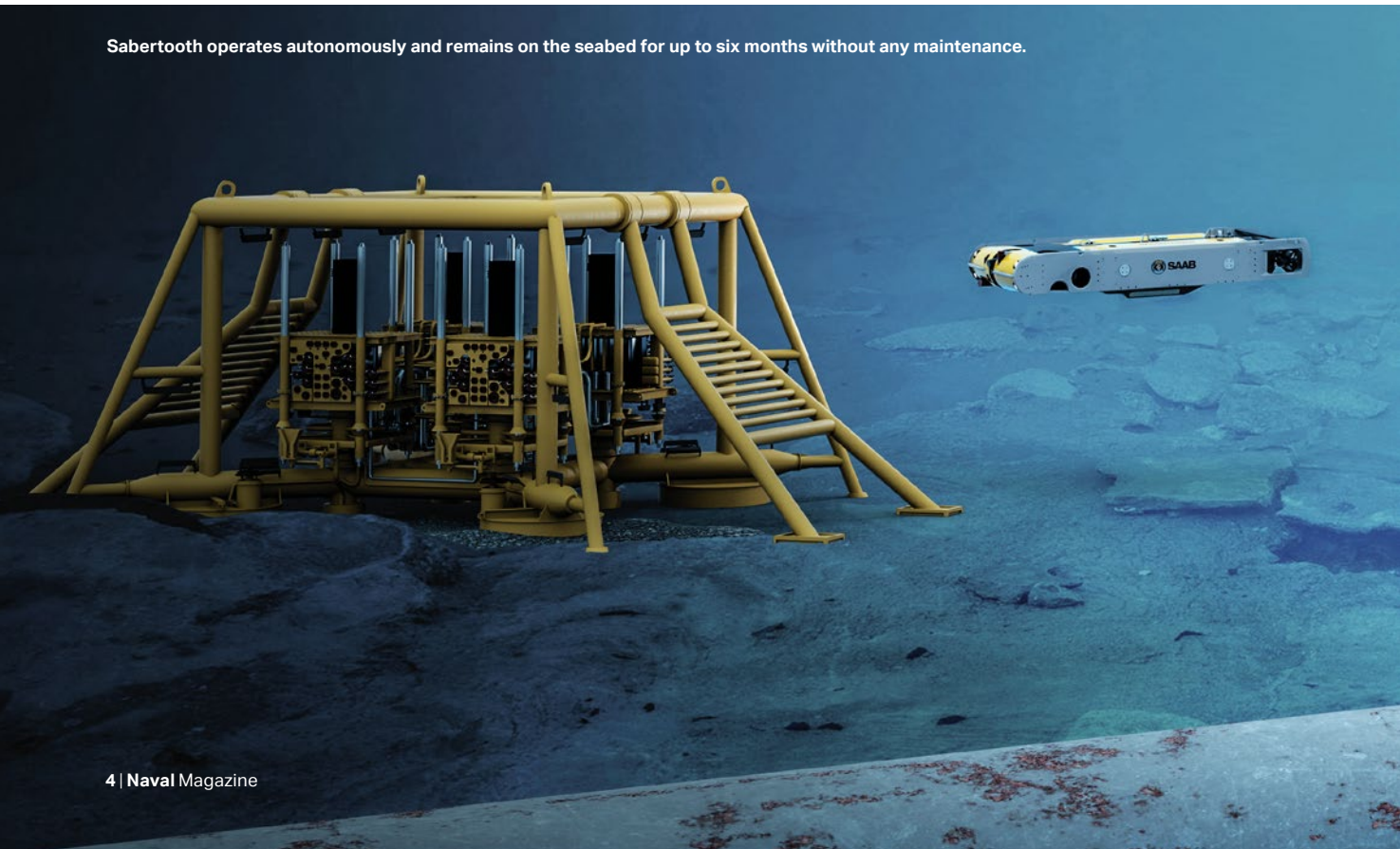
The strategic importance of **Seabed Operations**

As far back as 2020, the report 'High Value of the North Sea' from The Hague Centre of Strategic Studies highlighted the economic significance and vulnerabilities of Critical Undersea Infrastructure (CUI). Incidents, particularly in the Baltic Sea, confirm these vulnerabilities. Sabotage operations aim to undermine Western support for Ukraine, NATO membership for Finland and Sweden, and disrupt the Baltic States' energy independence efforts.



Sabertooth operates autonomously and remains on the seabed for up to six months without any maintenance.

Sabotage of critical undersea infrastructure impacting energy security, or an increased focus on targeting CUI beyond the Baltic Sea region, such as the Barents Sea or the North Sea, should be considered as potential options for further escalation in the hybrid conflict. Investments in deep-water capacities are more necessary than ever to address these threats today and tomorrow.

In the Baltic Sea, where up to 15% of global cargo traffic is handled, the described scenarios pose a significant threat to national security and hinder investments in offshore economic activities, such as sea-based windfarms, which are crucial for achieving energy transition goals. Western countries bordering the North Sea are being forced to take a robust deterrent stance and develop capabilities to defend against acts of sabotage. No easy task, because hardly any other place has more complex demands on high-tech surveillance and protection systems than the sea.

Underwater operations are confronted with a multitude of challenges, be it strong currents, temperature and pressure in the deep sea or limited visibility. For a mission to be successful, it therefore requires powerful, robust and high-tech solutions that, in the best case, fulfil multi-purpose functions and act autonomously to minimise the risk to personnel and reduce costs. France, the United Kingdom, Germany, Norway and Sweden are just a few of the countries that have revised their strategies for fighting on the seabed in recent years and are now investing in state-of-the-art equipment.

A multitude of actions must be taken

When it comes to hostile attacks below the surface of the water, there is not just one measure that needs to be taken. Seabed warfare consists of many disciplines, and only their coherent deployment will lead to the desired effect: first, physical protection by improved cable and pipeline design, such as the use of strong materials and protective layers, and/or deep burial in the seabed is needed to prevent damage from anchors and trawls. Secondly, continuous monitoring by underwater drones and sensors that can also conduct damage analysis, supported by surface surveillance from existing sensors such as radar, AIS and satellite imaging in order to track suspicious surface vessel movements. Suspicious underwater activities, such as drones or trawling can be detected by sonar and acoustic sensors, and GPS trackers warn of unwanted movements nearby. Thirdly, the near-real-time data provided by all these means must be fused into a situational awareness picture and tagged with intelligence information. The data must then be analyed and correlated for any anomalies, irregularities and suspicious behaviour, ideally with the support of

AI for real-time reporting systems to give instant warnings of potential threats. This may lead to rapid communication and action in case of sabotage or damage, such as emergency response teams being deployed to intervene directly. Fourth, underwater drones and sabotage protection must be used and further developed, for example electromagnetic jamming or sonar pulses to disable hostile drones or automatic interception drones to neutralise suspicious objects. And finally, geofencing around infrastructure and cables can create virtual zones in which unauthorised objects are detected and blocked. This list alone shows the complexity and diversity of the task.

Saab follows a comprehensive approach to critical undersea infrastructure with a broad portfolio of different sensors, manned and unmanned platforms - below and above the surface.

International regulation and cooperation

One nation alone cannot secure and protect the Baltic Sea. Therefore, the Western nations must cooperate in protecting cables and pipelines. They must share information on risk areas and introduce regulations that prohibit anchoring in high-risk areas and that keep shipping lanes clear of cables, especially alongside mandatory shipping routes, to minimize the risk of damage. Additionally, societies must enhance their resilience to the disruptive consequences of such damage. And there must also be clear responsibilities. Currently, many authorities at regional, national and international level are involved in protecting critical undersea infrastructure, such as coast guards, the navy, the police, maritime law enforcement right through to telecom organisations. This makes it more difficult to implement a clear strategy. Stronger cooperation between nations, organisations and the industry would be a major step forward in dividing up complex tasks and ensuring that we take action. In 2024, Norway and Germany launched a joint initiative to strengthen NATO's role in protecting critical undersea infrastructure. Both countries proposed the creation of regional CUI hubs for different maritime areas in NATO's scope of responsibility such as the North Sea, the Baltic Sea, the Atlantic Ocean and others. The idea is that these hubs can then be provided by one or a group of allies.

A question of precision

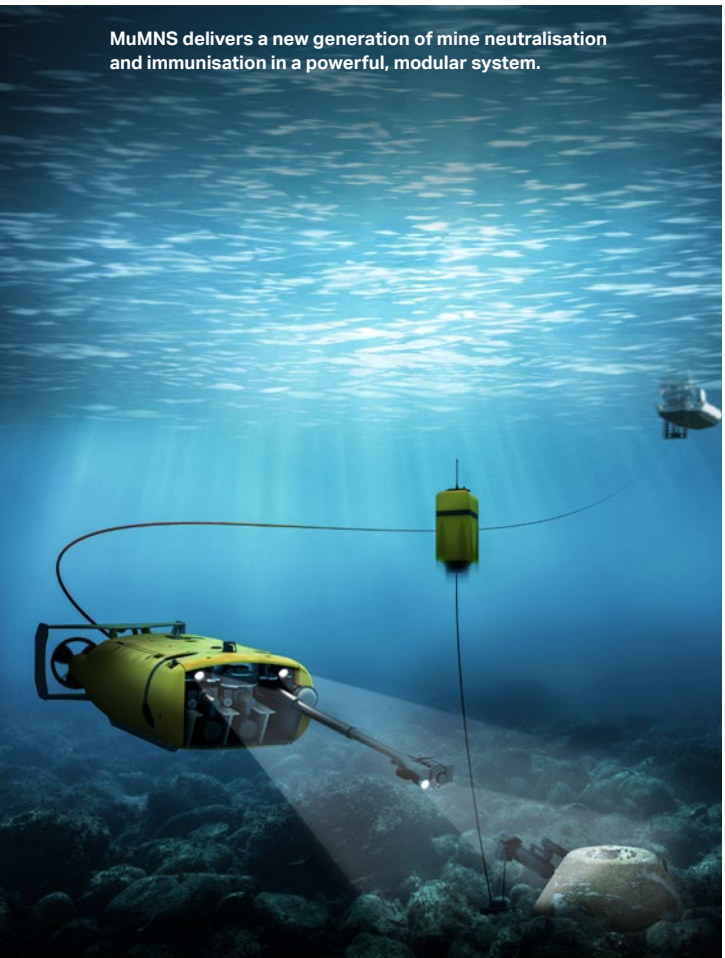
Having delivered over 900 vehicle systems worldwide – from work class Remotely Operated Vehicles (ROVs), inspection and observation ROVs, survey ROVs, Autonomous Underwater Vehicles (AUVs), ROV tooling –, Saab is one of the leading suppliers for both commercial and military applications. Through constant innovations, the company is entrusted with handling complex tasks in some of the world's most challenging environments. In coastal areas, the Double Eagle family system, which is in service with naval forces around the world, is suitable for countering a wide variety of threats below the surface. The vehicles – Double Eagle MDS, SAROV and MuMNS – can be launched from any type of ship, from the shore or from a suitable vehicle and ensure safe, cost-efficient and reliable Mine Countermeasures (MCM) at operational depths of up to 500 metres. While the Double Eagle Mine Disposal System (MDS) is the market-leading solution for the disposal of unexploded mines, the versatile hybrid system Semi-Autonomous Remotely Operated Vehicle (SAROV) can be used both autonomously for detection, classification and identification, and remotely for mine-clearance. SAROV's robust design and modularity ensure exceptional performance and provide significant range and endurance. The Multi-shot Mine Neutralisation System (MuMNS) offers a new generation of mine neutralisation and immunisation. The ROV is highly effective and manoeuvrable with six degrees of freedom and is equipped with advanced sensors for accurate mine identification. MuMNS improves the pace of operations and thus simultaneously reduces the costs of MCM operations. Also highly effective in localising, identifying and neutralising IEDs, especially in confined areas and challenging conditions like strong current, ports and harbours is Saab's Sea Wasp. Designed to be operated by as few as two people, the system can easily be configured to meet the requirements of any mission and includes a vehicle, generator, pilot station, winch and power supply unit. It can be piloted

SAROV can be used both as an AUV for detection, classification and identification, and as a ROV for mine disposal.

from the surface using a control console located onboard a support vessel or from a vehicle, on dock. Sea Wasp's onboard Doppler Velocity Log (DVL) and Internal Measurement Unit (IMU) deliver navigational capability, allowing it to record and transmit specific waypoints. The vehicle itself incorporates Saab's unique iCON intelligent control system for exceptional maneuverability.

If an attack cannot be prevented, the resulting damage must be repaired as soon as possible. Maintenance and servicing work on critical undersea infrastructure is also constantly required. Sabertooth is a powerful yet lightweight platform that is available in both single- and dual-hull versions. For this purpose, Saab has combined military and commercial ROV/AUV technology. Thanks to its small size, wireless operation and manoeuvrability, Sabertooth ensures easy and safe access inside and around complex structures – ideal for offshore surveying and the autonomous inspection, maintenance and repair (IMR) of underwater installations and tunnels. Sabertooth can swim autonomously to the docking unit and remain there for up to 24 hours. When using a 'garage' on the seabed, it can even go without maintenance for up to six months, thus eliminating the costs of surface vessels. This floating deep-water hybrid AUV/ROV benefits from 360-degree manoeuvrability with six degrees of freedom and interfaces for sensors and additional equipment.

With a high degree of operational autonomy, Sea Wasp takes vessels and operators out of harm's way, providing a safer underwater solution to ordnance disposal.



MuMNS delivers a new generation of mine neutralisation and immunisation in a powerful, modular system.

The urgency is growing

The European Union and NATO launched a joint task force on resilience and critical infrastructure protection in 2023 to further develop and coordinate capabilities in the Baltic Sea. This is a clear commitment to ensuring maritime security and protecting critical infrastructure, while also underlining the urgency and importance of these issues at an international level. However, time is running out and a harmonised and coordinated approach as soon as possible is absolutely crucial. The cooperation between allies, as well as the combination of technical, operational and legal countermeasures, can significantly reduce the vulnerability of seabed cables and pipelines in the Baltic Sea and other risk areas. Detecting and countering threats to critical underwater infrastructure requires joint operations and a comprehensive defence and security capability. Such a capability must ensure effective, efficient and affordable protection through the integration of technical systems, coordinated procedures and strategic foresight. A strong collaboration with the industry is also essential for the protection of communication, energy and internet infrastructure.

Advancing Maritime **Unmanned Systems**

In September 2024, Saab participated in REPMUS NATO, the Robotic Experimentation and Prototyping Maritime Unmanned Systems exercise organised by the Portuguese Navy.

The event brought together naval and defence industry leaders to explore cutting-edge technologies in maritime robotics. Saab contributed by deploying two configurations of the AUV62 advanced autonomous underwater vehicle – specifically, the AUV62-AT (Acoustic Target) and AUV62-MR (Mine Reconnaissance) – along with five small unmanned Piraya development platforms.

The AUV62-AT, designed as a training target for Anti-Submarine Warfare (ASW), is currently utilised by numerous navies worldwide. During REPMUS 2024, it demonstrated its vital role in enhancing underwater defence capabilities.

Meanwhile, the AUV62-MR played a pivotal role in Mine Counter Measures (MCM). Equipped with an advanced Synthetic Aperture Sonar, the AUV62-MR was able to scan the seabed with exceptional resolution, coverage rate and navigation. In fact, it was recognised as the highest coverage rate at REPMUS, particularly excelling in shallow and challenging water conditions.

Saab's Piraya development platforms were another highlight of the exercise. These autonomous surface vessels, along with their management systems, performed well. During the exercise, the Piraya team also conducted a test operation for the European Defence Agency (EDA) to evaluate how well autonomous systems can navigate maritime regulations. These tests will continue in Sweden, further enhancing the development of autonomous maritime systems.

REPMUS 2024 was a great success, demonstrating not only the performance and innovation of Saab's unmanned systems, but also the importance of cooperation and shared knowledge within NATO.

Anti-submarine warfare training

In autumn 2023, Saab's underwater systems Seaeye Falcon ROV and the AUV62-AT anti-submarine warfare training target supported elements of two 'operational experimentation exercises' involving over 2,000 civilian and military personnel from 15 NATO nations, Ireland and Sweden.

Effective training against submarine threats

Training for Anti-Submarine Warfare (ASW) missions can be costly and inefficient because real submarines are expensive assets that are often unavailable due to operational commitments. Using them as targets consumes valuable resources and limits training opportunities.

Saab's AUV62-AT provides a highly effective and cost-efficient alternative by replicating the acoustic signatures of various submarines. Easily launched from surface vessels, it supports live ASW training from basic to advanced levels.

Train as you fight

The AUV62-AT has a multi-platform capability, allowing simultaneous interaction with multiple ASW assets and enabling training with a complete taskforce. Its acoustic transducer tail extends up to 75m, delivering a high-fidelity acoustic signature that appears to operators as a real submarine.

A key feature of the system is its sophisticated behaviour. It can undertake evasive actions if it senses detection, such as increasing speed or changing its acoustic signatures. After exercises, the data collected can be downloaded and analysed, giving crews immediate feedback to improve their performance in future sessions.

According to experts, there is a clear trend using unmanned underwater vehicles and also unmanned surface vehicles to complement and enhance the way ASW is performed today and in the future. With the AUV62-AT, Saab is well positioned for the future needs of underwater training.

Emerging new technologies **Multi-Domain Operations**

The European security order has dramatically changed over the last couple of years with a full-scale war in Ukraine and with the new members of NATO: Finland and Sweden. Russia is seemingly determined to challenge the entire European security order and appears to have two closely related goals: to strengthen Russia's influence in the former Soviet republics (like in Ukraine) and to strengthen the country's importance and position in world politics.

The importance of these two goals varies over time, and both can be achieved through diplomacy and trade but also through more subversive means such as border provocations, propaganda, IT attacks, physical sabotage and direct military interventions. This is what we call "hybrid warfare" today, which blurs the boundaries between war and peace. All physical and non-physical domains and the whole of society are involved, with the aim of creating uncertainty and unrest and polarising people and countries. These attacks are normally implemented in small, often harmless steps at first and they can be very difficult to detect and trace.

One consequence is that it is difficult to assign blame to a country or a particular organisation for an attack. Hybrid warfare has, of course, always been around to some extent but has increased significantly due to today's more vulnerable, complex and uncertain world, which is more interdependent and interconnected through social media, for example. This implies that attacks on a single node can result in huge cascading effects. Hybrid warfare is of great concern for society as a whole, including the military community. To challenge and resist hybrid warfare, new methods must be developed in parallel with the traditional tools and concepts already in place.

Time as the most critical parameter

Together with hybrid warfare, a new generation of warfighting, such as distributed operations, is emerging to create and sustain a Common Operating Picture (COP) and to manage sophisticated networks. A variety of sensors and effectors distributed on different platforms can track and manage numerous hostile targets simultaneously, such as swarms of unmanned systems in all physical domains (underwater, on the surface and in the air). By extension, this complex environment also includes Information and Cyber Warfare in all of its various forms.

In order to survive, prevail and win in such an environment, rapid adaptation within a highly dynamic environment is necessary, including full control over the electromagnetic spectrum (EM). Because all of our modern sensors, communication systems and effectors are dependent on the EM spectrum, having full control over the electromagnetic spectrum can be regarded as the central tool for warfighting. For the warfighter, it is fundamental to be ahead of an opponent's OODA loop (Observe, Orient, Decide and Act), so that "time" (meaning speed of decision-making and action) becomes the most critical parameter. Even the most perfect decision will result in failure if not made at the right time. We should therefore assume that all domains (including cyber) are contested and that both civilian and military operations will be conducted across a full spectrum of conflicts and domains. New and multiple threats demand new ways of sensing, control, action, and coordination. This implies that resources in all domains must be coordinated in order to work together. A temporary advantage in one domain will enable effects in others.

Multi-Domain Operations are key

Multi-Domain Operations (MDO) are crucial in modern warfare, and require building an adequate and appropriate infrastructure and determining a suitable "modus operandi". For example, we need to leverage networks for distributed sensing and real-time control of weapons. Traditional stove-piped capabilities must now work together, and it is necessary to reduce friction by bringing all these capabilities together. Doctrines must be flexible and adaptable; education and training must be revised and we need to take advantage of emerging new technologies. To merge big data from all current domains together and create something useful, we need a new way of thinking about Command and Control (C2).

The most obvious MDO concern is system integration networks on platforms that previously had no need to exchange multi domain data. Today, all systems, effectors and fire control systems must be integrated on one platform, and that information must be interchangeable with platforms of allies and partners. This is harder than it seems. Not only might hardware be incompatible, but the nomenclatures and formats for the same data may be expressed in very different ways.

Classification boundaries between warfare communities can vary and become a serious obstacle. Likewise, bureaucratic organisations with different command and control structures, decision levels and technical language can be a barrier for efficient MDO. Within recent years, information assurance has risen to become a paramount concern – do we trust the information that emerges from other networks or a different domain? We have two fairly new domains in MDO, space and cyberspace, which will create new possibilities for the warfighter, but also new risks, depending on the situation at hand on the battlefield.

Act across the five operational domains

The core of MDO in the maritime domain is a well-adapted Command-and-Control system together with communications. The major segments of the C2 system include the Combat Management System (CMS), a software-intensive system designed to operate in complex battlefield environments. The CMS manages information received from various subsystems and displays it, and efficiently detects, tracks, assesses and engages threats utilising the available effectors, such as weapons and countermeasures.

Future operating environments will produce high quantities of information that far exceed the ability of current C2 capabilities. Adversaries will strive to deny, obfuscate, imitate, and degrade the information that commanders require to make the right decision at the right time, and seek to prevent those decisions from being carried out. In the past, successful operations were achieved through a single unified command that delegated authority through a hierarchy of subordinates. Traditionally, a hierarchical C2 structure has been regarded as the optimal approach to C2. However, the future operational environment will limit the ability of such systems to achieve the goals for which they were designed. Recent conflicts have increasingly shown that centralised C2 structures are less resilient to attacks. Rapidly responding to changing conditions and the ability to command across the five operational domains in all operating environments and dimensions is imperative. In future scenarios, it will not be feasible to have a constant command oversight. Instead, senior commanders will have to conduct their functions by effectively communicating intent, priorities and restrictions, such that subordinate commanders are trusted to make decisions based on the information available to them.

Secure communications with effective C2 systems

Optimising a C2 system for MDO requires minimising the time for decision-making (the OODA loop). One way of doing this is to look into human factors and investigate how our brains struggle to process information. It is a fact that we see the world in 3D and we process information most effectively in three dimensions. However, most information relevant to command and control is delivered as 2D, via graphs, charts and other data delivery formats. We cannot alter the way our brains work, but we can change the way information is delivered to us. Dramatic advances in data visualisation – such as virtual reality – gives us the power to present information three-dimensionally. New advanced data analytics and autonomous capabilities, aided by Artificial Intelligence (AI), can also be effectively integrated into command networks. However, this is a dual edged sword. All new technological capabilities will impose both new opportunities as well as challenges.

For example, AI can process huge amounts of data and make predictions based on patterns in that data. This enables better and faster decision-making, reduces uncertainties, and can reveal an opponent's intentions and capabilities. Machine Learning (ML) is a subset in artificial intelligence concerned with the development and study of statistical algorithms that can learn from data and generalise unseen data and thus perform tasks without explicit instructions. ML will increasingly influence how political and military leaders perceive the strategic environment, weigh risks and options and judge their adversaries. However, relying on AI, decision-makers will also introduce a new source of uncertainties. If the AI systems are insecure, inadequately trained or applied to the wrong types of problem, they could inject bad information into the decision-making processes and lead to an inadvertent escalation with perhaps catastrophic consequences.

GlobalEye has a mix of modern active and passive sensors, providing long-range detection of objects in the air, at sea and over land.

C2 system effectiveness is based on safe and reliable communications. We can assume that all communications will be contested in future conflicts, presenting complex challenges for the whole communication architecture. Remote sensing, monitoring, quantum encryption and diagnostic technologies, plus the advent of new communication channels, like social media have given us new tools to disseminate information. Advances in high-bandwidth, low-latency data transmission (5G and soon 6G) mean that the information flood gates are about to open. Mobile ad-hoc networks can be rapidly implemented to provide secure communica-

tion when normal communication networks are compromised or there is a lack of communication infrastructure.

Holistic platforms for multi-domain operations

As mentioned earlier, AI is fundamental in protecting the integrity of the data, and in protecting and defending information and information systems by ensuring their availability, authentication and confidentiality. Likewise, cybersecurity must be practised to protect systems, networks and programs from digital attacks aimed at accessing, corrupting or destroying sensitive information. Implementing effective cybersecurity measures is particularly challenging today because the number of devices has exploded and attackers are becoming more innovative.

The key to staying ahead of the threat is to innovate, but both armed forces and industry are hampered in their ability to innovate quickly enough to stay ahead of an opponent's operational concepts and technological developments. Interconnectedness of commercial and military technologies must be utilised in a better way, and we need to embrace new technologies and use them where it suits us best.

> **It is fundamental to work together between industry, defence forces, acquisition agencies and research communities.**

With many years of experience in developing cutting-edge and battle-tested C2 systems for all relevant domains, Saab has consistently emphasised human factors and the fusion of sensor data to present an unambiguous COP for the warfighter. This enables accurate targeting for weapons when required, even in highly complex and hostile environments. Saab has embraced all the new trends. Requirements and technologies for future C2 systems will gradually be able to offer our warfighters the necessary C2 tools to conduct effective multi-domain operations.

The complex environment in the Baltic Sea

Saab has developed larger holistic platforms where sensors, communication and Command and Control are fully integrated and can act as a node for MDO. A good example is the GlobalEye, an airborne platform which supports cross-domain exchange of information to both civilian and military authorities (coast guard, police, customs, joint military headquarters etc.) by using, for example a national security cloud computing service.

The 9LV Combat System delivers a comprehensive C4I solution for naval forces, supporting all types of mission.

The same situation can be described with the Visby corvette system operating on the surface and the new A26 submarine under the surface. Acting together, these three platforms in their different domains can improve overall situational awareness in a hostile and complex environment, but also create a temporary advantage in one domain to enable effects in others.

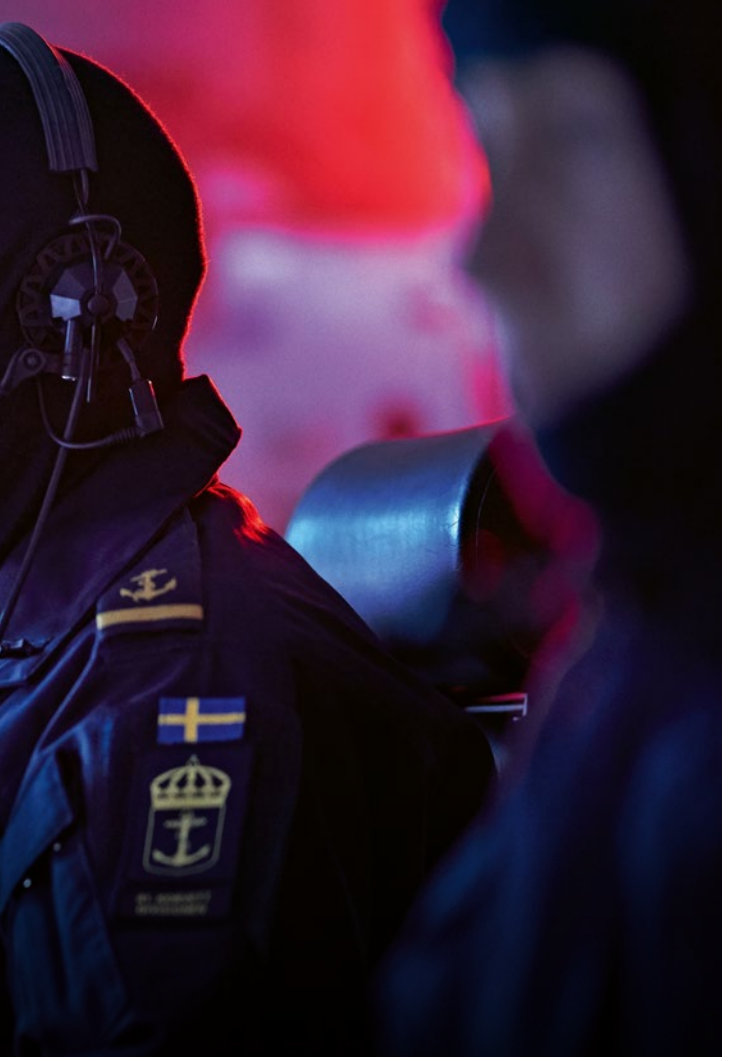
The Baltic Sea is a good example of where MDO will be of utmost importance in the years to come. The Baltic Sea is a cul-de-sac and a littoral sea. This implies that it is a very complex environment where it is easy to hide but also difficult to detect an adversary. The space to manoeuvre and act is limited, which means very short reaction times.

Finally, MDO will have to adapt and develop in order to cope with military tasks of the future and to survive. To succeed, both governments and industry must work together, and commercial and military technologies have to be interconnected. This will enable our warfighters to prevail and survive in an increasingly sophisticated combat situation.

9LV Naval Combat System

Striking performance for modern navies

The 9LV Combat System equips naval forces with exceptional operational capabilities. It supports all mission types – from littoral to open-ocean operations – and delivers a complete C4I solution for every class of naval platform. Saab's 9LV offering ranges from full combat system deliveries to tailored integration of sub-systems, components and related services. It integrates some of the world's most advanced technologies, including cutting-edge weapons and sensors. Operationally proven, reliable and future-ready, 9LV is designed for versatility across diverse platforms, while maintaining exceptionally low lifecycle costs.



The Naval Combat Management System connects naval ship sensors, weapons, data systems and other equipment, providing an integrated operating system.

A high-performance Combat Management System is crucial for a navy to fight and win at sea. The core of the warship's fighting capability, the CMS integrates sensor data and provides situational awareness, faster reaction times and a responsive power. The technology must be flexible and adaptable so that new technologies can be integrated to mitigate evolving threats from today's environment. The 9LV CMS architecture and design allow the ship's local area network and associated hardware, software and services to extend to all computer equipment on board. This reduces cost and waste, as system capabilities can be shared between sub-systems.

There are more than 200 warships operating with a 9LV on board. More than 20 navies across the world operate 9LV, and the number is growing. Saab has customers on every continent and is proud to provide local technical and engineering support to users from Sweden, Finland, Norway, Canada and Australia.

The 9LV Combat Management System (CMS) ensures unfailing readiness and delivers the striking performance necessary for empowering naval platforms and maritime missions.

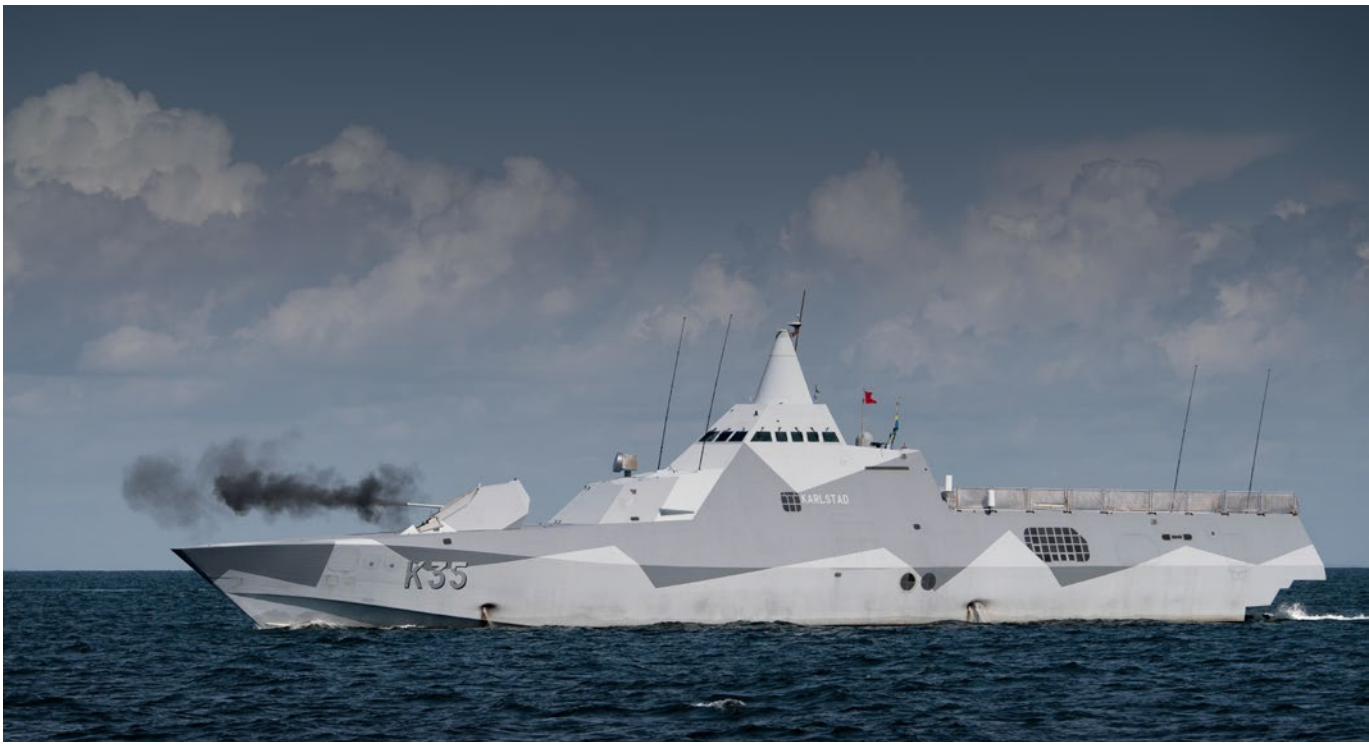
- **Anti-Access / Area Denial (AA/AD) operations**
- **Protection and escort**
- **Maritime patrol and response**
- **Border control and interdiction**
- **Peace support operations**
- **Anti-piracy**
- **Search and rescue**
- **Environmental control**

Colombian Navy's new frigate

In 2025, Saab has signed a contract with the Dutch shipbuilder Damen Naval to deliver the combat system for the Colombian Navy's new Plataforma Estratégica de Superficie (PES). The order includes the 9LV Combat Management and 9LV Fire Control System, Ceros 200 radar and optronic tracking fire control director, EOS 500 electro-optical fire control director, Sea Giraffe 4A radars and other Saab systems.

9LV CMS on German Navy's F123 frigates

In 2021, Saab signed a contract with the German Federal Office of Bundeswehr Equipment, Information Technology and In-Service Support (BAAINBw) and has received an order to deliver and integrate fire control directors and new naval radars for and in the German Navy's frigates of the Brandenburg-Class (F123). The contract includes a new Combat Management System in order to completely overhaul the system currently in use on the F123, allowing low-risk integration of the new naval radars and fire control capabilities.



Finnish Squadron 2020

In 2019, Saab signed a contract with the Finnish Defence Forces Logistics Command and received an order to provide and integrate the combat system for the Finnish Navy's new Pohjanmaa-class corvettes within the Squadron 2020 programme. The corvettes will be fully operational by 2028. The contract includes, but is not limited to, Saab's 9LV Combat Management System and Saab's Sea Giraffe 4A Fixed Face and Sea Giraffe 1X radars. The communication system TactiCall and the remote weapon station Trackfire are also included in the contract.

9LV CMS configurations

The flexibility of the 9LV system makes it possible for you to pick and choose the exact configuration best suited to the vessel. Saab has also created pre-packaged configurations for your convenience. However, these are not stovepipe solutions, and Saab will customise the system to the relevant requirements.

9LV technology is able to interface many subsystems and its architecture readily scales to corvettes, frigates or destroyer-type vessels. These solutions will typically support a large number of Multi-Function Consoles (MFCs). They meet the demanding needs of battle resilience through extensive redundancy and physical separation of critical assets.

Medium-sized configurations often focus on one type of mission, such as anti-submarine warfare (ASW) or anti-surface warfare (ASuW) using surface-to-surface missiles (SSM). Larger configurations provide a wide range of capabilities and typically include multiple tactical data links and highly automated tactical responses to a range of simultaneous threats, above and below the surface. They also integrate with command support systems to provide the ship with complete C4I capability.

Patrol vessels

The patrol vessel configuration combines full capability with a small footprint. The mix of Multi-Function Consoles (MFCs) and smaller interactive devices is based on the ship's size and operational needs. The communication suite links the ship to any manned or unmanned asset and the recording capabilities are extended to handle the data collected by the ship's sensors. The 9LV's core functionality has also been extended to include fire control capabilities. A typical set-up, depending on the size of the vessel, is a small or medium-calibre gun integrated with the 9LV. It can be controlled remotely and utilised for both air and surface targets.

Coast guard, auxiliaries & inshore units

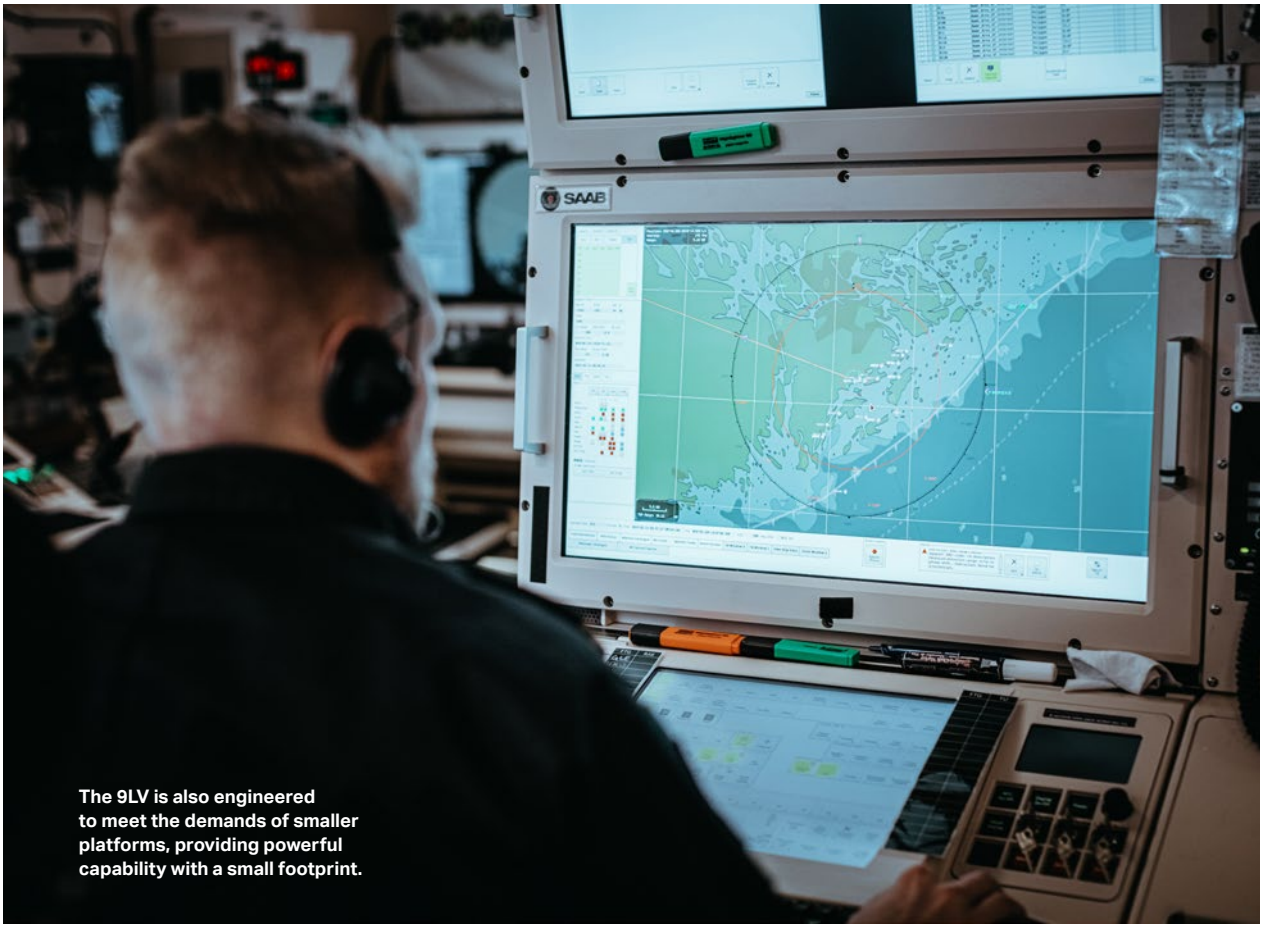
The 9LV is also engineered to meet the demands of smaller platforms, providing powerful capability with a small footprint. It delivers fully integrated situational awareness along with weapon control and C2 capabilities normally restricted to larger, more expensive systems. For the benefit of smaller vessels, Saab has introduced new hardware for operator interaction and a system infrastructure that can be adapted to the available space, without loss of capability. It is low weight, easy to integrate and cost-efficient throughout its lifecycle. At its core, 9LV CMS contains hardware that provides the functionality needed for maritime security missions, while it is also uniquely scalable due to full compatibility with all 9LV technology. Communication solutions, video surveillance and designation of threats to a remote weapon station are a few examples of mission requirements.

The 9LV Fire Control System provides rapid, reliable engagement against any target in any environment.

9LV Fire Control System

The high performance 9LV Fire Control System (FCS) provides rapid, reliable engagement against any target in any environment, ranging from asymmetric surface threats to advanced sea-skimming missiles. In 2019 Saab received an order from Vard Group A/S for delivery of the 9LV Fire Control System, including the Fire Control Director Ceros 200, to the Norwegian coast guard's new Jan Mayen class vessels.

The 9LV Fire Control System can be provided as an integral part of the 9LV CMS or as a stand-alone fire control solution to be integrated with a third-party Combat Management System. The FCS is based on a modular and open architecture that makes the addition of third-party systems efficient and reliable and enables easy integration of 9LV FCS into any naval vessel. It will suit any new-build or midlife upgrade. The ability to deal with the demands of multiple incoming targets and tight time constraints sets the 9LV FCS apart from the competition. 9LV FCS is a proven solution suitable for all platforms, including patrol vessels, frigates and larger ships.



The 9LV is also engineered to meet the demands of smaller platforms, providing powerful capability with a small footprint.

Multi-role ships with surface to air missile systems benefit from the 9LV architecture allowing tracking data from all available sensors or links. Decoys, guns and missiles will be utilised together based on the best probability of effect and advanced automatic defence functionality is provided and integrated with the ESM and ECM capabilities of the ship.

The 9LV Weapon Control System is capable of handling short-range Surface-to-Air (SAM) missile systems together with longer range area defence SAMs, all of which are supervised and controlled by the 9LV, optimising the engagements for the tasks at hand.

9LV FCS provides the defence of a vessel with the following features:

- **Minimising time of engagement**
- **Optimising weapon and sensor usage against multiple threats**
- **Enabling rapid designation, search and acquisition phases**
- **Reducing operator workload in critical conditions**
- **The available weapons such as a SAM or a gun**

TRAIN AS YOU FIGHT

Maritime Live Training to Netherlands Navy

Netherlands Navy has selected Saab to deliver cutting-edge tactical training equipment for its Maritime Live Training. This innovative solution will enable commanders and gunners aboard vessels to hone their skills in realistic live-fire exercises against real-life threats, such as fast-attack craft like Rigid Inflatable Boats (RHIBs). With navies and coast guards facing unprecedented threats, Saab's new Maritime Live Training offering is helping ship and small-boat crews to train as they fight.

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SAAB TECHNOLOGIES

SAAB

Ceros 200 is a radar and optronic tracking fire control director designed for use on naval ships.

Ceros 200 & EOS 500

Ceros 200 and EOS 500 are combat-proven and renowned for being outstandingly accurate. Optimised together with the other parts of the system, they provide a sensor-to-shooter cycle that is extremely fast and accurate. Enabling rapid reaction times, automated responses and high precision engagements, Saab provides naval ships with their entire critical self-defence chain.

The Saab EOS 500 Electro-Optical Director with a 30–40 mm naval gun is an ideal solution for surveying a threat environment. The director is used for surveillance, classification and identification purposes, as well as for high-precision tracking of surface threats, local aircraft and UAVs. EOS 500 is a lightweight high-accuracy stabilised optronic 3D tracking system designed for use on all naval ships. EOS 500 includes a gyro-stabilised platform with three electro-optical sensors. The high-quality stabilisation and advanced TV & IR cameras and laser rangefinder provide operators with an efficient solution for observation, target identification and fire control. Saab's advanced video tracker uses simultaneous input from the TV and the IR camera in a data fusion process. Its accuracy and ability to deal with the demands of multiple incoming targets and tight time constraints is what sets the system apart from the competition.

The next configuration uses the Ceros 200 Radar and Electro-Optical Director to control a 57 mm or 76 mm naval gun. Ceros 200 is a radar and optronic tracking fire control director designed for use on naval ships. Ceros 200 is a world-class performer in terms of automatic target detection and lock-on. It offers high acquisition speed and great precision, together with the ability to track any target in any weather situation, while enabling fast target switching. The proximity-fused ammunition of the guns, in combination with the unique precision of the Saab Fire Control System, provides optimum self-defence capabilities, even against incoming sea-skimming missiles. The Ceros 200 incorporates CHASE, a patented method for processing complex radar target return signals from low flying targets – such as sea skimming missiles – to eliminate multipath effects. For larger ships, it is common to fit more than one director and gun to achieve coverage from all directions. Ceros 200 is available in a Continuous Wave Illuminator (CWI) configuration providing an additional x-band channel for target illumination and control of semi-active missiles. Combined with Saab's gun fire control, Ceros 200 provides unparalleled accuracy for gun engagements.

Depending on the clutter situation and Electronic Countermeasures (ECM) threat, the radar selects its frequency agility pattern between 32-pulse bursts and pulse doppler-signal processing, 4-pulse bursts and moving target indication processing, or pulse-to-pulse agility. The pulse repetitive frequency and pulse width are selected depending on the proximity of the target. The digital receiver, in combination with the improved signal processing, enables a higher degree of flexibility of pulse length and waveform, e.g. for adapting to new threats. The transmitted pulses are frequency coded and pulse compression in the receiver ensures a high range resolution in all modes.

Electronic Counter-Countermeasure features

- **Very low antenna side-lobes**
- **Very wide bandwidth**
- **A large number of transmission frequencies**
- **Random selection of frequency**
- **Lock-on jam, track-on jam**

GlobalEye – a strategic national asset

Today's threats are often multi-domain, which usually require coordinated efforts from several different arms, sometimes even with units from other countries, or in a mix of civilian and military resources.

In critical situations, you need to be able to control all dimensions of the threat and quickly create optimal situational awareness and decision support. To do so, you need the ability to exchange real-time information between all of your own forces involved. The core of GlobalEye and the basis of its ability to provide cross-domain exchange and connectivity is founded primarily on two things. The first is a powerful command and control system for multi-domain surveillance and real-time information. The second is a range of both active and passive sensors capable of handling all threats, in every domain – anything from electronic warfare threats to hypersonic missiles, stealth fighters and small, slow and low flying objects.

As a command centre, the true strength of GlobalEye becomes evident when all multi-domain-produced information is uploaded, combined and fused. The massive amount of data managed by GlobalEye needs to be processed quickly and efficiently to enable instant identification of patterns and deviations that may affect the course of events. AI-functionality and machine learning allow for powerful real-time data analysis and constitute a strong complement to the intelligence that is built into the command-and-control system.

Collaboration is key

GlobalEye is adapted to the specific needs of every customer, with individual requirements considered during the design and project planning phases. Saab's engineers and technicians work closely with each customer's team to provide full transparency at all stages of the manufacturing process. This collaborative approach helps reduce any potential future issues with GlobalEye, as service teams on both sides are familiar with the inner workings of the product, reducing any downtime.

Furthermore, collaboration between Saab and its customers ensures all agreed features are implemented in accordance with the customer's confidentiality requirements. The customer is able to check and sign off work at all stages, decreasing the need for re-work at a later stage. This helps speed up the production process, allowing GlobalEye to be completed, delivered and in the air within a very attractive timeframe.

As well as collaborating with customers, Saab's internal teams – from sales and design to manufacturing and training – work effectively together to ensure a seamless production process. Furthermore, they work closely with trusted third-party suppliers to get what's needed, when it's needed, avoiding additional time being added to project timelines.

Airborne ultra-long range sensor system

The connectivity of GlobalEye across all the domains creates unique tactical, operational and strategic benefits, providing commanders with powerful decision support and enabling them to establish and share a trusted, consistent and real-time recognised situational picture. At an operational altitude of more than 35,000 feet, the airborne multi-domain solution can detect, identify and track very large amounts of different objects and signals at distances of up 650 km. As an airborne ultra-long range sensor system, GlobalEye can warn and command other sensors in the network and, through this, extend the time for planning and implementation of countermeasures.

Protecting national and territorial integrity

GlobalEye is designed to carry out both civilian and military tasks, including joint operation scenarios. It goes without saying that it is more effective to gather all these capabilities in one and the same solution to meet security challenges in a world where threat scenarios are continuously changing and the line between military and civilian challenges and threats is no longer as clear.

Regardless of operating during peacetime, in crisis or maybe even at full conflict – having Saab's Airborne Early Warning & Control (AEW&C) solution GlobalEye is key to success since it provides a great advantage to any nation protecting its national and territorial integrity. GlobalEye can work alone or be easily integrated with other national assets.

Silent guardians

Closing the tactical gap in electronic warfare

The increasing use of electronic warfare and the massive investment in technology has led to more and more near-peer conflicts where enemies are fighting with the same types of weapons. As a result, information and data are becoming more important in tactical warfare. Obtaining this data at an early stage without the knowledge of the enemy is a fine art and a skill that will play a key role in deciding the outcome of future warfare.

Sirius Compact can be operated independently or as part of a network. The exact position of a signal is determined by triangulation through the platform's own movement or coupling with several sensors.

Detecting and analysing radar and communication signals is one of the most important tasks of today's armed forces. High-tech equipment is needed across all domains to gather as much information as possible about enemy activities and potential threats. A high level of situational awareness and a clear picture of the situation are the basis for making the right strategic and tactical decisions and ultimately protecting as many lives as possible. The rapid pace of technological change is a major challenge here. More and more signals are being produced and more and more technology is trying to hide, detect or deliberately manipulate these signals. The fact is: only those who can quietly collect as much data as possible and classify or analyse it in a very short time will be ahead of the enemy.

A central problem in the procurement of data is your own visibility. "Anyone who uses radars to detect targets also reveals their own location, but, with passive sensors, you can observe the enemy's signals without emitting them yourself. And it is precisely this capability that is becoming increasingly relevant in electronic warfare", explains Mathew Willmot, Sales Director for Sirius Compact at the Swedish defence company Saab. For decades, the company has been developing and producing complex systems of passive sensors for ships, vehicles and aircraft. Today, Saab is regarded as a one of the market leaders in the field of Signals Intelligence (SIGINT) and Electronic Support Measures (ESM). Therefore, it is no surprise that the latest achievement in the field of passive sensors also comes from Saab: Sirius Compact is the modular and scalable, lightweight passive Electronic Warfare (EW) sensor that has been on the market for just under two years and is already in series production. The sensor is an answer to the increasing challenges of surveillance at all levels of tactical operations and can be used stand-alone, in a sensor network or as a supplement to existing sensors. Compared to larger static solutions, Sirius Compact can be placed anywhere by an operator and its range is scalable depending on the situation.

A lightweight contender with a 360° view

Sirius Compact is available in a number of configurations depending on the application. The smallest variant is just 35 cm high, has a diameter of 15 cm and weighs no more than three kilograms. The system therefore fits in any backpack and is easy to transport. The system has an integrated IMU/GNSS sensor to provide positional data and has a power requirement of less than 60W – it is powered by batteries carried by the soldier or via the host platform. Mounted on a tripod, Sirius Compact can be positioned virtually anywhere on the ground, but the sensor can also be integrated on drones, vehicles or smaller boats such as Saa's Combat Boat 90 (CB90) or an Unmanned Surface Vessel (USV).

Only those who can quietly collect as much data as possible, classify and analyse it in a very short time will be ahead of the enemy.

Sirius Compact provides individuals and small units with instant situational awareness - where and when you need it. "The move towards portable systems that are intuitive to use and do not require years of specialist training is a response to the need for mobile and flexible real-time intelligence-gathering capabilities and new possibilities in tactical electronic warfare", explains Willmot. The existing expertise from more complex systems has been incorporated into the development of Sirius Compact. With 360° azimuth coverage, radar and data link emissions in the 1-18 GHz frequency range can be instantaneously detected from any direction. The platform and data link independence is also particularly relevant for armed forces: the sensor can be easily integrated into existing networks and platforms.

Magic triangle enables precise geolocation

Even a single sensor improves the situational awareness of troops: with three or more sensors, precise geolocation through triangulation is possible with a bearing accuracy of less than 2° rms (root mean square). It is important that the sensors are positioned at an appropriate distance and that height differences in the terrain are also taken into account. Since the product came onto the market almost two years ago, Saab has carried out a large number of tests and customer demonstrations that show the impressive performance of the compact sensors - even in extreme wind and weather conditions. For example, an aircraft taking off 200 kilometres away could be detected at a distance of 190 kilometres – as soon as it appeared over the radio horizon – with very accurate Direction Finding (DF). During the entire detection and analysis process, the potentially hostile aircraft did not receive a single signal from the sensor, so the enemy does not know that it has been detected.

Sirius Compact was also shown to perform reliably on a fast-manoeuvering combat boat in challenging weather conditions. The performance and ease of use of the TRS Lite (Tasking & Reporting System) software have not only been confirmed by Saab itself. The sensors were put through their paces in an independent test by major military organisations. After a brief introduction, the infantry troops were able to set up the sensor themselves in just a few minutes and were impressed by its immediate operational capability and simple operation. "The product naturally benefits from our expertise in the field of signals intelligence. The challenge is not only making highly technological devices as small and mobile as possible, but also ensuring that the performance is not limited", explains Mathew Willmot, Sales Director for Sirius Compact.

Sirius Compact passive sensors can be installed almost anywhere in the field and integrated into a wide range of platforms.

The increasingly complex requirements and threats require efficient and precise early warning systems.

Sirius Compact is a modular and scalable passive sensor network for electronic warfare.

Managing the threat situation

Detecting signals is the first step in obtaining situational awareness. In a second step, the identified signals must be analysed and classified. The threat libraries of armed forces contain enormous amounts of data, which are constantly being contributed to sensors such as Sirius Compact. This wealth of knowledge must be protected accordingly. Saab therefore does not store any sensitive data from the threat library in the sensor but forwards the signals directly. If you want to use the sensor on a drone for an intelligence-gathering flight without being detected, the sensor can be operated without a network connection as well. Although the data is then temporarily stored in the sensor, it is useless without the software and an associated threat library. Sirius Compact is controlled by the TRS Lite software. With it, the sensors can be controlled via a tablet and therefore supports tactical operability. Up to five sensors can be easily managed per soldier. These five sensors can in turn be grouped and controlled as bundles in the more complex version called TRS 9EW." Using these associated software systems, users can automatically generate reports, assign tasks to other sensors or even record new signals and thus expand their own threat library", explains Mathew Willmot. They are the perfect addition to any network.

Portable passive sensors are suitable for a wide range of applications and are an ideal asset for electronic support measures. They complement more complex systems and act in particular as an early warning system, for example for ground-based air defence (GBAD). Due to its size, the sensor can be mounted almost anywhere - even on civilian infrastructure. These sensors also bring advantages for alliance partners such as NATO, as the information obtained can be shared within the framework of Cooperative Electronic Support Measures Operations (CESMO) and thus benefits all coalition partners. The uniform DNA of all products from Saab's Sirius family also ensures high precision and expertise from decades of research and development in the new, compact model. The entire product range is constantly being further developed.

Precise early warning system indispensable

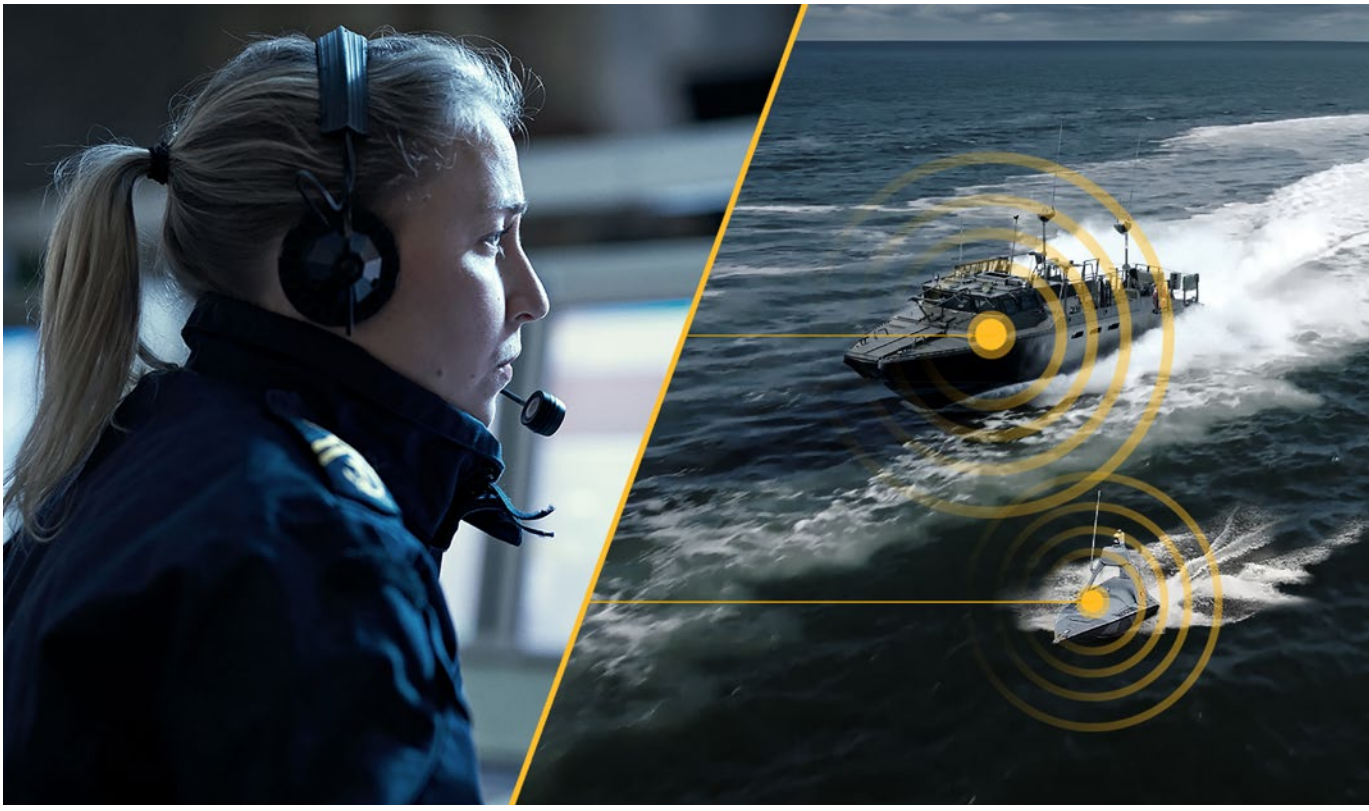
The increasingly complex requirements and threats facing armed forces require efficient and precise early warning systems. While radars are looking, passive sensors are listening, making them the ears of tomorrow's modern battlefield. They provide a detailed picture of enemy activities without making an appearance themselves. Mobile systems are more than just a technological achievement; they are a strategic necessity in modern warfare, says Mathew Willmot. "Sirius Compact is a clear product of our time. More than ever, critical information needs to be provided without compromising one's position. In a world where electronic warfare and information dominance increasingly determine the outcome of conflicts, these systems are indispensable." Passive sensors such as Sirius Compact enable a new dimension of tactical planning and decision-making. They are the silent guardians and protectors of our armed forces and will increasingly play a key role in the cat and mouse game of electronic warfare.

Saab Lightweight **Torpedo**

The Baltic Sea is one of the most demanding marine environments on the planet. Just 70 metres deep on average, its brackish waters are crowded with rocks, islands, and small caves that make naval operations arduous and extremely challenging.

Recently, Saab received an order from the Swedish Defence Materiel Administration (FMV) for the delivery of Saab Lightweight Torpedoes (SLWT) and torpedo tubes. The Lightweight Torpedo, named Torped 47 by the Swedish Armed Forces, is Sweden's new light torpedo system aimed at strengthening Sweden's naval defence capabilities. The torpedo is intended primarily to be used from submarines and surface ships, but it is also prepared for integration on helicopters.

The torpedo has been specially developed for the environment in the Baltic Sea region with its shallow water and a complex topography and seabed. These place high demands on the locating and identification of submarines, as well as on navigation and communication by the torpedo.



Unleash the power of autonomy Autonomous Ocean Core

Autonomous Ocean Core is a vessel-agnostic, open-architecture control system designed to enable autonomous operations across a wide range of maritime platforms, enhancing mission effectiveness and operational success at sea.

The Autonomous Ocean Core control system equips small and medium-sized naval platforms with advanced autonomy for both military and civilian missions. Operators can easily enable un-crewed operation by inputting the vessel's parameters into the motion control function.

The system offers advanced obstacle and traffic detection, which not only increases the autonomy of the ship, but also ensures safety during operations in busy or dangerous waters. In addition, the control system manages vital ship systems such as pumps, rudders and lighting, and automates the response to emergency situations. For example, if water enters the hull, this is automatically detected and the pumps are activated, while fuel levels and fire safety are continuously monitored.

The control system of the Autonomous Ocean Core uses three different sources for location determination, which makes it possible to operate without GPS. This enables the vessels to operate in areas where GPS signals are disrupted. The system continuously calculates the optimal route and checks whether the vessel is following the planned course.

In addition, the system uses a fleet management function that allows multiple vessels to be managed and monitored simultaneously. The open and modular architecture of the Autonomous Ocean Core offers the flexibility to easily integrate new technologies and sub-systems, so that the system can continue to respond to technological developments in the future.

Autonomous Ocean Core on CB90

The CB90 has proven to be reliable in recent decades. The fast attack boat no longer holds any secrets for Saab's designers, it is also an easy-to-understand ship, with systems that are not too complex. In addition, the vessel offers sufficient space for placing weapons, sensor systems and being able to take drones. This means that Saab also sees the CB90 as an ideal platform to realise its plans for unmanned systems. Under the name Enforcer 3, Saab has a test and development platform for unmanned systems, based on the CB90. Saab expects that naval and amphibious operations in the future will be carried out by cooperating manned and unmanned vessels. The Enforcer 3 can be deployed both manned and unmanned.

Exploiting the benefits of unmanned systems

More and more tasks can be performed both manned and unmanned. Especially routine tasks or missions that are potentially dangerous, such as operations in bad weather conditions or in a conflict zone, are ideally suited for unmanned vessels. They can then minimise the risks for the crew. The Enforcer enables flexible integration of crewed and autonomous units operating together in coordinated swarms. These interconnected units provide a more complete tactical overview while reducing manpower require-

ments. During tests, Saab equipped the unmanned vessels with jammers to attract attention, allowing crewed units to remain undetected. This adaptable approach offers a safe, effective and scalable solution for a wide range of maritime operational challenges.

Modular with open architecture

One of the Enforcer's greatest advantages is its versatility, which comes from the open architecture of the Autonomous Ocean Core. This system is designed with flexibility in mind, allowing not only Saab itself but also third-party manufacturers to easily develop and integrate new systems. This approach promotes the ship's adaptability, allowing it to quickly respond to technological developments.

Saab also offers a wide range of systems to further expand the Enforcer's capabilities. For example, the Saab Sea Giraffe 1X radar was added to one of the Enforcer 2 models, and an electro-optical infrared camera was installed in the mast. The plug-and-play design ensured a smooth integration process. In addition to these features, other options are also available, such as the Sirius Compact, a passive sensor for detecting radars, and the Trackfire Remote Weapon System.

The Autonomous Ocean Core is the future heart of unmanned operations for the Enforcer 3 and other vessels.

Unmanned monitoring of maritime areas

The missions for which the Enforcer has been developed are diverse and cover a wide range of operational tasks. One of the most promising applications is carrying out long-term intelligence and reconnaissance missions beyond the horizon. The Enforcer can be used to detect so-called dark vessels, ships that have switched off their AIS signals. In addition, the unmanned ship is ideal for monitoring critical infrastructure, such as wind farms, where continuous surveillance is required.

Thanks to its autonomous capabilities, the Enforcer can independently navigate to such locations, accurately map the situation and then immediately move on to the next mission, without human intervention. This makes the vessel particularly suitable for long-term operations at great distances. The Enforcer 3, like the CB90, can reach high speeds, which enables fast response times when necessary.

Revolutionising **Naval Training**

From swarms of drones to improvised attack vessels – threats in the maritime domain are rapidly evolving, which makes realistic training for naval forces more essential than ever. With its highly effective GAMER live training system, initially designed for land-based operations, Saab is introducing a solution that is made for the high demands of maritime environments. By the end of 2025, the system is expected to be fully operational, offering significant advantages for modern naval training.

For more than 30 years, Saab has been developing its training system continuously to meet new challenge, always with a focus on those factors that are crucial for truly effective training: realism, scalability, deployability, standardisation and interoperability. The GAMER system which is currently used by more than 35 nations in Europe and North America, including numerous NATO member states, relies on a combination of laser-based simulators, sophisticated ballistic modelling and geometric coupling technology to modelling highly realistic combat scenarios. It provides a safe training environment without using live ammunition, enabling naval forces to simulate complex engagements effectively. However, transitioning the system from land to sea involves evaluating how it will adapt to the unique maritime environment, such as saltwater exposure and potential maintenance needs. A dedicated community of GAMER nations – the 'Interoperability User Community' (IUC) – with its current 16 actively participating nations is also working on common requirements and standards that are incorporated into the development of new technologies in order to continuously develop cooperation within the alliance.

Accessibility

One of the key benefits of the Maritime Live Training system is its ability to conduct exercises close to port, eliminating the need for long-distance travel or airspace clearances to train forces and develop new tactics. By utilising laser systems, which require far fewer safety restrictions than live ammunition, naval forces can train conveniently near harbours, significantly increasing the frequency and accessibility of exercises. GAMER – for land as well as for sea – features a range of interoperable software tools to support the entire training lifecycle: from planning and preparation to execution, control and evaluation. Components of the system include firing systems, target systems, communications infrastructure and Exercise Control systems (EXCON), all integrated to ensure seamless and realistic training experiences.

Laser technology for realistic combat scenarios

The heart of Saab's Maritime Live Training is the innovative use of laser technology. While many live training systems use a single-path laser to simulate the firing of ammunition, Saab relies on the BT46 two-way laser technology which precisely models the speed, flight time and flight path of the ammunition and is currently the most accurate and realistic laser-based simulator system in the world. Each laser shot carries encoded data, including information about the ammunition type, calibre and impact characteristics, following the NATO-standard U-LEIS protocol. This detailed information ensures accurate simulations that mirror real-world combat conditions. The system integrates seamlessly with the ship's fire control systems, providing operators with identical feedback to what they would receive from real ammunition, making the training process extraordinarily realistic.

Multiple threat simulation

The Maritime Live Training system is particularly beneficial for preparing naval forces to face newer threats and challenges, such as drone swarms. By equipping both weapons and drones with laser detectors, naval forces can simulate drone attacks and assess the performance of their combat systems. This allows crews to refine anti-drone tactics, identify the best ammunition types and determine optimal engagement ranges. Moreover, the system is capable of simulating a wide range of threats, from small surface vessels to aerial drones as small as 50 centimeters in wingspan. With clever programming, a single drone can simulate multiple threats, enabling navies to conduct complex scenarios without needing to deploy a large number of physical assets. Saab's system extends beyond ship-based weapons, creating a complete training environment. Boarding teams, for example, can be equipped with personal laser detectors and small arms transmitters, with their locations tracked via GPS. This real-time tracking allows exercise controllers to monitor every participant's position during operations like boarding suspicious vessels, adding another layer of realism. For larger vessels, such as frigates, laser detectors can be strategically placed to protect vulnerable areas like the bridge, engine room or ammunition storage compartments. This simulates realistic vulnerability models, training crews to target enemy weak points while safeguarding their own.

A global solution for modern training needs

Building on the success of its land-based technology, Saab is finally bringing its advanced systems to the maritime sector. The U.S. Marine Corps has already adopted Saab's training technology, awarding a $37 million contract modification to expand their Marine Corps Training Instrumentation Systems (MCTIS). These will enhance the realism of training exercises for Marines, helping improve their battlefield performance and survivability. In addition, every GAMER system comes with the option of a comprehensive support package, to ensure that armed forces can concentrate on the essentials during these exercises. From the provision of spare parts, to the implementation of repairs and the management of resources, the entire exercise can be coordinated and controlled by Saab experts.

In the near future, Saab is planning to incorporate artificial intelligence and data analytic tools to enhance after-action reviews. As naval forces around the world face increasingly complex and unpredictable threats, Saab's new Maritime Live Training solution provides an invaluable tool to develop both tactical expertise and doctrinal approaches required for modern maritime warfare. This cutting-edge training system ensures that navies are better prepared to meet the challenges of tomorrow's combat environments.

TactiCall ICS
Integrated Multi-Level Communication Solution

Multinational force operations are increasing, and with them the complexity of the chain of command. Sometimes it is a matter of optimising internal procedures in the area of communication in such a way that external as well as internal and red as well as black networks can be integrated into an easy-to-use and technically secure communication platform. This supports vessels in their complex management tasks. Missions today require efficient coordination and cooperation between the individual actors, a wide range of communication channels and the interaction of different classification levels.

Saab's TactiCall Integrated Communications System ICS is the result of more than 30 years of experience in designing naval communication solutions. It is an operationally proven communications system in service today on board 20 different vessel classes in the navies of nine different countries.

TactiCall ICS is a fully software-based integrated communication solution that interconnects all communication technologies, regardless of radio band, frequency or hardware. It enables fast and centralised control of both internal and external communications through a single, intuitive user interface. Operators can efficiently access multiple communication channels across various classification levels, enhancing mission effectiveness.

Based on a modular, COTS/MOTS building-block design, TactiCall ICS can be tailored to fit any vessel type, from small boats to frigates, submarines, and larger ships like destroyers. The system supports seamless voice and data communications and easily integrates with both legacy and third-party systems, ensuring future flexibility while protecting prior investments.

Certified for multi-level security

TactiCall ICS is designed for naval operations and is certified to EAL5+, supporting secure communications up to NATO Secret. It enables command teams aboard ships and submarines to manage internal and external communications across multiple security domains, such as unclassified, restricted, NATO Secret, and national Secret, using a single, intuitive operator terminal. Crew members can simultaneously monitor and communicate on both secure and non-secure channels, streamlining situational awareness and decision-making across all levels of the maritime chain of command.

Centralised management system

TactiCall management system is a modular user- and role-based interface allowing users to easily maintain and control all communication equipment. Furthermore, TactiCall Management provides Emission Control Management in order to invoke different silence levels, and provides optional frequency and antenna management as well as military SATCOM. TactiCall Management system provides Communication Plans with an overview of the equipment included in each chain. It also provides an overall overview status for the communication and allows an operator to test the setup prior to use, ensuring an effective mission configuration.

Framework agreement with Danish Armed Forces

In 2025, Saab has signed a 12-year framework agreement for the delivery, operation and support of four systems to the Danish Armed Forces. The framework agreement includes delivery, operation and support of the Danish Armed Forces' integrated communication system ICS and voice communication system (VCS), C-FLEX multi-function consoles, Mine Counter Measures (MCM) systems and the acquisition of upgraded maritime communication equipment.

The ICS and VCS facilitates the chain of command by giving naval teams access to a variety of communication channels of different security levels from the same user terminal. With communication systems, users can listen to a mix of both secure and unclassified communication and simultaneously be able to talk in both.

The upgraded maritime communication equipment will provide the Royal Danish Navy with enhanced connectivity and interoperability, facilitating seamless communication and data sharing across its fleet. This will enable faster response times and improved coordination during critical missions.

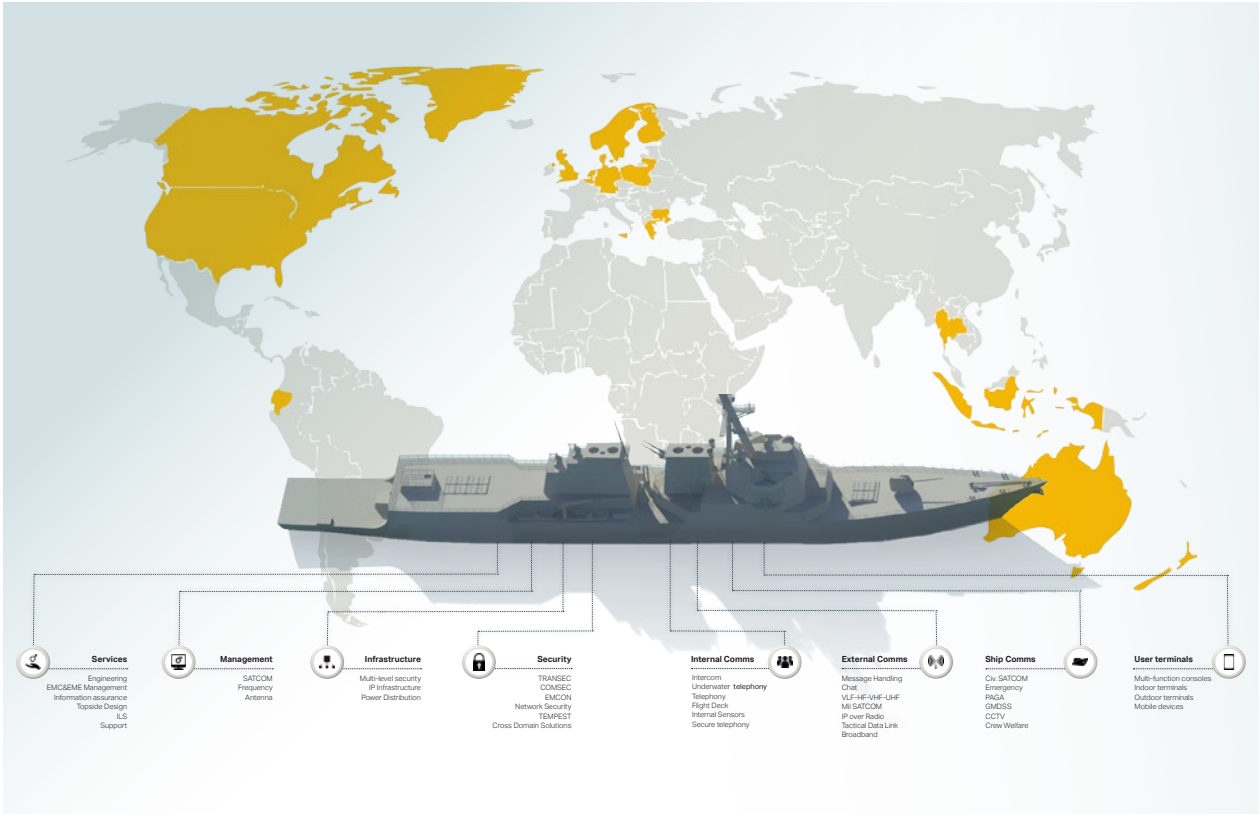
Operational on more than 40 classes of ship

To date, more than 40 classes of ship worldwide are equipped with TactiCall ICS. The Norwegian Defence Material Agency (NDMA) has selected TactiCall ICS to replace the existing communication system for both internal and external use on board, including multi-level secure communication – unclassified, restricted NATO secret and national secret communication channels. TactiCall will be integrated on the following ship classes: Mine Countermeasure Vessels (MCM), the Skjold-class Corvettes and the Coast Guard Vessel (CGV) Svalbard.

Close collaboration with customers

Close collaboration with customers in a spiral development process where the system is improved through small and continuous evolutionary steps to meet the equally evolving needs and requirements of customers. The navies need to conduct an increased variety of missions – using multi-role ships. But at the same time, the number of crew members is actually reduced in some navies. This emphasises the importance of a system that can be integrated and operated in a wide range of vessels, which in turn has positive implications for the training of the relevant staff and also for costs. The Danish mid-life update program is a testament to the ongoing commitment to enhancing naval capabilities. Additionally, Saab's good cooperation with the German Navy on the F123 program further underscores the global reach and reliability.

Complex communication networks are an integral part of today's globally operating, multinational task forces. A robust, mission-proven and highly survivable communications system can reduce the complexity of chains of command. Intuitive and modern user interfaces enable rapid and efficient action in all missions and operational environments. With the seamless integration of devices from a wide range of users and providers, nothing fundamentally changes in the hardware environment with the use of TactiCall. This simplification not only has a positive effect on operations, but also on operating costs.



ESM & ELINT SYSTEMS

Delivering operational advantages

Electronic Support Measures ESM and Electronic Intelligence ELINT systems for surface vessels SME and submarines (UME) give the user the operational advantage, even in the densest signal environments.

The UME family comprises compact, high-performance tactical ESM and ELINT systems. Fine-grain analysis mode enables viewing and recording of key parameters, including intra-pulse and scan pattern analysis.

Advanced multi-path cancellation and broadband CW immunity ensure superior detection, while high-speed automatic classification is driven by optimised algorithms and integrated library management. Together with its support products, the SME and UME systems provide full control of the EW management process, from detection to post-mission analysis and database maintenance.

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Electronic Warfare Outsmarting threats for a safer world

In the world of warfare, where every second counts, gaining the upper hand in information is the key to victory. Saab, with over five decades of expertise in electronic warfare, stands at the forefront of this innovation. Saab's electronic warfare solutions include protection for naval vessels and submarines, as well as signals intelligence systems for passive interception and analysis of radar and communication signals, providing situational awareness for naval platforms.

Amidst the vast expanse of the sea, a new tool is emerging to give naval forces the edge they need: the Naval Laser Warning System (NLWS). The state-of-the-art NLWS is poised to contribute significantly to the frigate's situational awareness and self-protection capabilities. With rapid threat warning and threat classification, it enables the combat management system to employ effective countermeasures against the laser threats, contributing to our shared mission of keeping people and society safe.

In a fraction of a second

In mere milliseconds, the NLWS swiftly detects radar or laser signals, serving both to locate adversaries and protect our own forces and platforms. The system can identify various types of lasers – including beam lasers, designation lasers, rangefinders and powerful blinding lasers, comparing them with its extensive signature database. Additionally, new signals can seamlessly integrate into this database upon request.

While the mechanics of laser warning systems are intricate, their operation is straightforward: when a laser beam targets a platform, the system rapidly recognises the threat, providing critical data about the emitter almost instantaneously. Not only does it determine the type and origin of the signal, but it also calculates the direction from which it originates. Currently boasting an accuracy of 7.5 degrees, with ongoing efforts to achieve a remarkable 1-degree prediction, the system is continuously evolving. With the ability to process up to eight laser signals simultaneously, the NLWS is remarkably robust, experiencing only one known failure despite years of operation.

Naval Laser Warning Systems for Spanish Navy

In 2024, Saab secured a contract to supply the Spanish Navy with Naval Laser Warning Systems. The contract marks an important milestone for Saab because this is a new customer, on a state-of-the-art vessel, for our latest laser warning technology. Under the terms of the contract, Saab will deliver the first Naval Laser Warning System in 2026, with ongoing annual deliveries thereafter. Notably, Saab will collaborate closely with Navantia, the esteemed international naval shipyard responsible for the construction of the F110 frigates, to ensure seamless integration of NLWS sensors onto the frigates' superstructure. The F110-class, the new multi-purpose frigate of the Spanish Navy will integrate industry 4.0 technologies and be the first Spanish naval programme designed to have a Digital Twin.

Deception and defensive measures

The integration of NLWS with other interfaces enables automatic deception and countermeasures once an enemy signal is detected. For instance, the system can emit a massive cloud of smoke to obscure the view of the platform from guided missiles. Remarkably, most guided weapons self-destruct when unable to identify a target. Therefore, this deceptive manoeuvre not only evades the attack but also renders the attacker's weapons harmless.

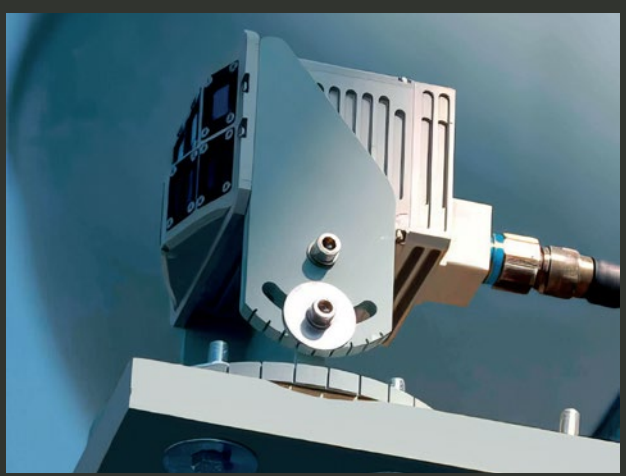
Enhancing situational awareness

Laser warning systems provide a critical advantage in situational awareness. Equipped with 16 sensors, the system offers comprehensive coverage. Even on a combat ship spanning 140 metres, only eight to ten sensors are required to achieve 360-degree observation. The compactness of the system is truly remarkable, fitting into just two suitcases. This portability allows for easy transport, installation and live demonstrations, making it exceptionally user-friendly, especially for military personnel unfamiliar with the system. Furthermore, this simplicity extends to training, as users can grasp all key functions within three days without any prerequisite knowledge. Moreover, the feedback from customers continuously informs the system's development, ensuring its effectiveness and adaptability in diverse operational scenarios.

Insights from other domains

As the threat landscape evolves, so too must the technology that counters it. Saab draws on its cross-domain expertise to enhance the performance of the Naval Laser Warning System. With each advancement, the system becomes even more indispensable to naval operations. Looking ahead, Saab envisions greater speed and efficiency in signal detection, ensuring that naval forces stay one step ahead of their adversaries. In an era where danger can emerge from any direction, a reliable 360-degree warning system is not just an asset – it is a necessity.

Saab also places strong emphasis on customer feedback and the unique operational challenges they face. A system is only as effective as its ability to meet the user's needs. In the vast expanse of the sea, where threats may arise from the shadows, the Naval Laser Warning System stands as a beacon of safety, guiding naval forces through the fog of war.



Navigate with integrity and precision

The developments in the Baltic Sea, in the Barents Sea and the Gulf of Finland close to Russia has seen a significant increase in GNSS spoofing and jamming incidents. This causes malfunctions in vessels' navigation and AIS systems, leading to navigation errors and an increased risk of accidents. It impacts the safety of maritime navigation and disrupts vessel operations in poor visibility conditions, such as darkness, rain, fog and blizzards, when traditional navigation aids and other vessels can be hard to see.

The challenging navigational environments in the Finnish waters are especially vulnerable to these threats, which may lead to temporary interruptions in the vessel traffic. Thus, there is a heightened risk of interruptions in vessel traffic operating to and from major ports in Southern Finland in bad visibility. To combat these threats, new technologies such as multi-frequency, multi-system, signal processing, Inertial Measurement Units (IMUs), and other solutions enhancing GNSS systems' robustness and reliability are crucial.

Enhanced jamming resistance

Traditional GPS receivers rely on a single frequency band (L1), making them easy targets. Multi-frequency receivers use multiple bands (like L1, L2, and L5 for GPS), which makes it harder for external sources to interfere with the signal. If a certain frequency is jammed, the receiver can switch to another frequency and is therefore resistant against interference and can ensure continuous operation. A better signal integrity is achieved by comparing different frequencies, allowing the system to detect inconsistencies and identify potentially spoofed signals.

In addition to GPS, other GNSS systems like GLONASS (Russia), Galileo (Europe) and BeiDou (China) provide complementary signals. Using a receiver that integrates signals from these systems offers several benefits. More satellite signals mean better accuracy and reliable positioning, even if one system is compromised. More effective data processing with multiple systems can improve positioning accuracy.

Better resilience and spoofing detection

By combining multi-frequency and multi-system receivers, synergies can be optimally utilised and a maximum level of resilience is guaranteed. At the same time, these technologies ensure that the system continues to function even with threats such as spoofing and jamming.

Advanced signal identification and advanced techniques enable spoofing signals to be recognised and ideally prevented. Important signal characteristics, such as frequency, strength and modulation, will be checked to detect anomalies. Algorithms search for phase shifts, timing issues or discrepancies that indicate a spoofing attack. At the same time, signals from multiple sources are cross-referenced to detect inconsistencies. This all provides an extra layer of protection.

Digital filters in SDR GNSS receivers

Software-defined radio (SDR) GNSS receivers use digital filters to enhance signal processing in interference-prone environments. The filters isolate legitimate GNSS signals and suppress noise and interference. At the same time, they clean up signals, improve accuracy and reduce errors caused by multipath interference.

Ultra-precise sensors for ship movements

Combining an onboard Real-Time Kinematic (RTK) positioning system with centimetre accuracy with an Inertial Measurement Unit (IMU) improves accuracy and robustness in complex or maritime environments prone to jamming by calculating and maintaining a position using data from the ship's movements.

Using RTK positioning, the navigation base provides real-time corrections to the rover, enabling very high-precision heading and speed. The fixed relative position between the base and the rover also helps to detect falsified position signals. At the same time, IMUs track movement, orientation and speed. If the GNSS signals are disrupted, the IMU can continue to estimate position and thus ensure uninterrupted navigation.

Protection against jamming with CRPA antennas

Controlled Reception Pattern Antennas (CRPAs) enhance the resilience of the GNSS system by focusing on valid satellite signals and rejecting interference from jammers or spoofers. The CRPAs prioritise satellite signals from specific directions and reduce the impact of jamming. In addition, these antennas can dynamically adjust their reception patterns to minimise interference and optimise the signal-to-noise ratio for better signal quality.

Finnish maritime operations

As GNSS is a critical part of maritime infrastructure, it is essential to ensure its resilience against spoofing and jamming, especially in a Finnish context. Finland is highly dependent on secure and functional maritime operations to ensure both national economy and supply.

By integrating multi-frequency, multi-system receivers, signal identification, CRPA antennas, digital filters, and advanced techniques like RTK with IMU, GNSS systems become significantly more resilient. These technologies not only protect against threats but also improve accuracy and reliability, making maritime navigation safer and more robust.

A new generation of GNSS receivers that are approved by SOLAS (International Convention for the Safety of Life at Sea) and are based on these technologies was released during 2024: an example is the R6 NAV sensor and R6 NEO NAV sensor from Saab TransponderTech. Saab's R6 NAV NEO is a versatile solution for open seas, ports and other busy waters, designed to meet the increasing demand for high-precision navigation sensors. Saab TransponderTech is also involved in the development of the next generation AIS, VDES, where trials for coast stations and vessels together with satellite VDES is in progress, in close collaboration with maritime authorities around the world.

The new R6 NAV PRO Compass gives access to high precision positioning and orientation, as well as protection against jamming and spoofing.

Sea Giraffe 1X makes maritime platforms more capable and better prepared to execute missions in the world's littorals.

Sea Giraffe
Multi-Sensor Solution

A naval warship is a powerful asset. But without the right means to detect, classify and counter today's advanced threats, even the most powerful surface combatant will be vulnerable. Saab's Sea Giraffe Multi-Sensor Solution provides unrivalled powerful radar performance in a compact format, suitable even for smaller vessels.

Unlike other solutions on the market, the Sea Giraffe Multi-Sensor Solution has a compact design and low weight, which allows the sensors to be placed in an optimal location to achieve the best possible range and performance. Depending on the user's operational needs and ship designs, the Sea Giraffe Multi-Sensor Solution can be configured as a rotating solution comprising the Sea Giraffe 4A and Sea Giraffe 1X, or as a fixed face solution with the Sea Giraffe 4A Fixed Face (FF) and the Sea Giraffe 1X. This combination of sensors provides simultaneous medium-to-long range air surveillance and short-range air and surface surveillance, and it provides naval forces with the ability to detect threats regardless of size, speed, shape and sophistication.

Addressing hypersonic threats

In the modern naval combat environment, naval forces may have to face threats travelling at several times the speed of sound – hypersonic missiles. Relying on traditional radars can place them in harm's way, because traditional radar systems lack the high update rate required for detecting and tracking such threats. And when the radar finally identifies them, it is too late: leaving no time to act before the missiles reach their targets. In such a situation, you need a radar that is able to start tracking targets not within seconds, but within a fraction of a second. The Sea Giraffe Multi-Sensor Solution has that capability because it is empowered with Saab's Hypersonic Detection Mode.

The Hypersonic Detection Mode is based on Saab's next generation track-while-scan technology. The extremely quick track formation time and high update rate makes it possible to track any number of targets, including stealthy ones, in all types of conditions. The Hypersonic Detection Mode is optimizsed for the Sea Giraffe 4A FF configuration that belongs to Saab's multi-functional family of S-band AESA radar systems.

Why compromise ship survival?

Super- and hypersonic speed, stealth design, small, slow and low observable drones, advanced rocket, artillery and mortar systems are all growing concerns for anyone operating in the naval combat environment. Why? Because most traditional sensor systems are not up to the challenge. Traditional systems cannot provide simultaneous medium-to-long range air surveillance and short-range air and surface surveillance in a single solution, but Saab's Sea Giraffe Multi-Sensor Solution can. It has the ability to detect and track anything from small and slow targets to hypersonic ones, and to do it simultaneously. Having two independent radars also means the user gets full redundancy in their self-defence capability, allowing them to secure ship survival. A combination of different frequency bands offers a unique possibility to operate with optimised performance in all conditions such as weather variations or jamming.

Prepared and ready

The technological evolution is an ongoing challenge. With new threats continuously advancing, naval assets previously considered safe can now be at risk. With the Sea Giraffe Multi-Sensor Solution, Saab supports its customers in being prepared and ready to deploy the multi-functional advantage, today. Born and raised in one of the world's most demanding maritime environments, the Sea Giraffe radar range is designed to meet any challenge in the extreme littorals.

Sea Giraffe 1X – lightweight multi-mission radar

Based on over 60 years of radar development, this multi-purpose, lightweight 3D AESA radar system operates on the X-band and offers outstanding performance. Sea Giraffe 1X makes maritime platforms more capable and better prepared to execute missions in the world's littorals, ruling your domain. It is the perfect choice for navies, amphibious forces and coast guards looking for a system with higher performance and an extremely low footprint.

Sea Giraffe 1X gives you the multi-role advantage, providing quick and reliable simultaneous detection of surface and air targets including sea-skimming missiles with very small radar cross-sections. Covering the entire search volume every second, Sea Giraffe 1X provides accurate 3D data for all air targets in the search volume. The automatic tracking functionality provides quick and reliable feedback to the operator. The radar is capable of distinguishing between fixed wing, rotary wing and surface targets. The total system weight is less than 150 kg and the topside weight is 100 kg. This low system weight, together with its very low power consumption, makes Sea Giraffe 1X suitable for use not only on smaller vessels and highly manoeuvrable forces, but also as a radar complement on larger ships.

Sea Giraffe 1X for Swedish Navy

At the end of 2024, Saab received an order from the Swedish Defence Materiel Administration (FMV) for the Sea Giraffe 1X radar system to the Swedish Navy. Saab will deliver the Sea Giraffe 1X radar system to the Swedish Navy between 2024 and 2026. Sea Giraffe will help protect coastal and littoral areas and strengthen the naval units with advanced capabilities to detect, track and classify threats in the air and on the surface. The order includes Saab's Sea Giraffe 1X naval radar system in different configurations for training as well as installation on surface ships.


With a higher level of awareness in multiple domains including small targets, have more time to manage any threats in any waters.

Sea Giraffe 4A – long-range multifunction radar

The Sea Giraffe 4A combines long-range air surveillance and defence with full horizon coverage on surface targets and is the ultimate sensor for mission success and survivability throughout the whole scale of conflict in any naval environment.

With Sea Giraffe 4A, the commanding officer will access very high situational awareness through simultaneous air and surface surveillance together with uncompromised self-defence capabilities. This new radar offers exceptional range, performance and multi-functionality in a single compact solution.

The Sea Giraffe 4A scans the total 360-degree search volume up to 70 degrees at 60 rpm and provides an unparalleled 3D target update rate, along with high altitude coverage and accuracy. The radar provides simultaneous all-weather coverage against air and surface targets from low, slow and small targets (UAVs), to fast-moving missiles and fighters, RAM target and jammer strobes, at all altitudes and in severe clutter. The surface channel offers a high probability of detecting very small targets in close proximity to the surface, for example rigid inflatable boats. The surface channel is also equipped with a high-resolution surface surveillance capability specifically designed to detect gun fire splashes in order to provide data for gun fire corrections (for example support pre- and in-action calibration).

The Sea Giraffe 4A Fixed Face is designed for continuous upgrades to meet tomorrow's requirements and future threats. The high reliability provided by Sea Giraffe 4A will greatly reduce the required investment in on-board and depot spares. The user-friendly design leads to reduced operator and maintenance training, which will significantly contribute to reducing the total cost of ownership.

Sea Giraffe AMB – medium-range radar

The Sea Giraffe AMB is designed to be an efficient medium-range radar which offers outstanding performance in both littoral regions and blue waters. The solution is powerful but still compact and lightweight. Sea Giraffe AMB allows for standard or customised data link integration and provides naval commanders the capabilities needed for maintaining continuous and accurate air and surface situational awareness to maximise response time for managing any threats in any waters.

Sea Giraffe AMB provides superior overall performance compared to other naval 3D radars in the same class. It provides the most comprehensive Electronic Counter-Countermeasure (ECCM) capabilities currently available, including ultra-low antenna side-lobes. Sea Giraffe AMB operates at the C-band and offers outstanding performance in both littoral regions and blue waters with 360° monitoring, a high update rate and a 1-second target revisit time.

Sea Giraffe capabilities

- **Simultaneous air and surface surveillance**
- **Multi-role capabilities**
- **C-UAS through ELSS classification**
- **Sense and Warn**
- **Excellent small target detection**
- **Fast reaction time for all targets**
- **Extensive Electronic Counter-Countermeasures**
- **Small physical footprint and light weight**

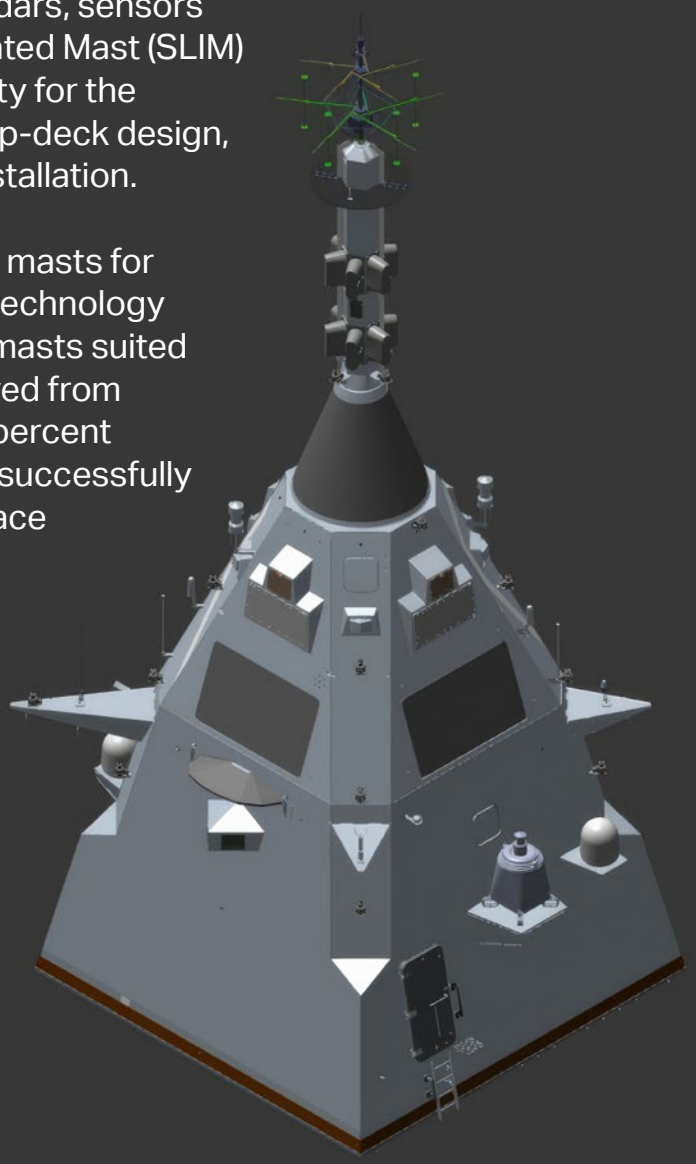
In order to facilitate operator interaction, Sea Giraffe AMB provides fully automatic operation for both air and surface targets, supported by a variety of different clutter maps and Doppler processing capabilities to eliminate both land and weather-driven clutter. Sea Giraffe AMB classifies and tracks fixed wing, helicopter (both moving and hovering), small UAVs, jammer and ballistic targets. The surface channel gives rigid inflatable boats a high probability of detecting very small targets in close proximity to the surface, for example rigid inflatable boats and periscopes.

The radar has been proven in all kinds of environments, including regions with extensive ducting conditions to master the littorals. It is the result of Saab's expertise and long experience in the field. Saab has supplied over 30 countries across the world with radars, and continues to push performance boundaries.

SLIM – Saab Lightweight Integrated Mast

A multi-capability top-deck mast for the naval domain that accommodates housing for all major radars, sensors and antennas. Saab Lightweight Integrated Mast (SLIM) means that we take holistic responsibility for the sensor performance and integration, top-deck design, structural tolerances, interfaces and installation.

Saab has designed and built composite masts for decades. Now, we have developed the technology into fully equipped, tested and verified masts suited for the prime contractor shipyard. Derived from the stealth Visby-class corvette's 100-percent carbon fibre hull construction, we have successfully introduced SLIM on the market for surface combatants.



Naval Domain

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AIRBORNE EARLY WARNING & CONTROL

Multi-domain surveillance from a single platform

GlobalEye, the most modern and capable airborne surveillance solution available on the market today provides unparalleled situational awareness by seamlessly integrating data from its array of active and passive sensors. This fusion of information creates a comprehensive picture of the air, sea, and land domains, empowering forces with a critical advantage by providing them with the knowledge they need to make rapid and informed decisions, extending a nation's surveillance reach and command and control capabilities, enabling proactive defence and effective response to a wide range of threats.

Saab's and GlobalEye's track record in industrial cooperation can facilitate the implementation of a resilient and sustainable European industry chain that can benefit other markets and NATO countries.

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