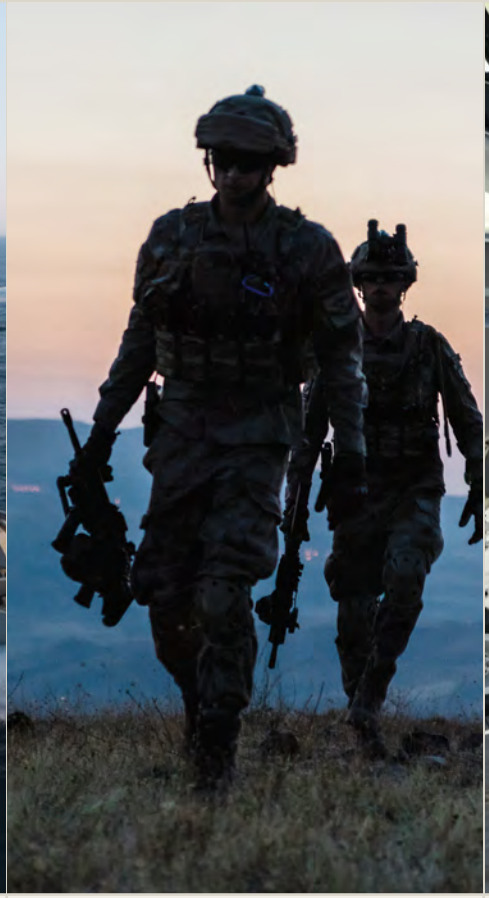
# FLEET MANAGEMENT & COMBAT SUSTAINMENT

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5th Gen software for new-generation warfighting and mission-driven logistics.

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# Executive Summary

In an era of rapid technological advancement and evolving global threats, military logistics face unprecedented challenges that demand innovative solutions. As conflicts increasingly unfold in complex and contested environments, the need for effective logistical support becomes more critical than ever. This paper explores the unique challenges of operating in these dynamic theaters, emphasizing the importance of resilient logistics in ensuring mission success.

We also explore the complexities of deploying military-capable Enterprise Resource Planning (ERP) systems to streamline logistics and sustainment operations. Next, we introduce the ILIAS Defense Platform and its core capabilities, explaining how as a comprehensive solution it enhances operational efficiency, improves decision-making, and ensures mission readiness. By examining these elements, we aim to shed light on the path forward for military organizations striving to optimize their logistics and enhance their effectives in the face of modern warfare.

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# Navigating the Challenges of Resilient Logistics in a Contested Environment

As military operations increasingly take place across multi-domain landscapes, navigating logistical challenges becomes even more complex. While executing operations across air, sea, and land presents one set of difficulties, the stakes escalate in contested environments. Here, missions often encounter threats to their supply chains, reduced mobility, and limited resources. Ensuring that logistical support remains uninterrupted and effective under hostile conditions is reshaping military strategy and operations. Mastering resilient logistics within these environments is essential for mission success now and in the future.

Although contested environments may vary from one theater to another, the core issue remains the same. Do military commanders receive complete, accurate, and up-to-date information for them to make faster threat assessments, shortening the decision cycle time? As retired U.S. Army Maj. Gen. Clark LeMasters notes, “Visualizing the supporting supply chain from the factory forward, assessing risks, and the ability to redirect sustainment material in motion to support operational decisions are critical to success.” [(1)]

Ultimately, contested environments amplify the intricate web of planning, coordination, and execution involved in logistics. What does this mean in reality? Building resilient logistics relies on greater precision in inventory requirements, increased visibility of transportation needs and capabilities, along with real-time tracking of supplies and maintenance status. Resilient logistics is essential for creating a solid foundation that supports combat readiness and elevates military effectives at the sustainment edge.

## Military-Capable ERP Systems: Bridging the Gap

Enterprise resource planning (ERP) systems transformed how large organizations operate, allowing them to streamline their processes, standardize workflows and improve visibility to business data to help managers make informed decisions quickly. Just as ERPs are the backbone of major corporations, they are vital for military operations and logistics, providing visibility of equipment status within the supply pipeline and simplifying the reporting of readiness and budget information through the command structure.

However, deploying ERPs in the military comes with unique challenges. Unlike their commercial counterparts, which strive for profit, military operations focus on specific missions. The custom nature of defense products, combined with stringent quality, security, and regulatory requirements, creates complexities that require ERP systems to be adaptable to unique Bill of Materials (BOM) structures.

Unique operational requirements and strategic objectives also impact training methods, change management, and long-term planning. While some forces have opted for commercial off the shelf (COTS) solutions with modular design, some believe that it is better to develop their own proprietary military-grade ERP. Whereas COTS solutions are built with an open, secure architecture that facilitates data consolidation, there is a risk that the home-grown locally developed solutions remain siloed.

## Civilian-Designed Software Constraints: Lessons Learned

Although some COTS ERP solutions are designed with military requirements in mind, others are not. Let's take a look at couple of examples of the impact when civilian software is adapted for military use?

The U.S. Global Combat Support System-Army (GCSS-Army) provides a clear example. Based on civilian off-the-shelf software, the system required extensive modifications to align with military requirements, presenting application problems and resistance to change.[2] Its limitations include an inability to function effectively in disconnected or low-bandwidth environments [3], requiring fallback to paper-based systems that severely constrain effectiveness.

The U.S. Air Force faced similar challenges with its Expeditionary Combat Support System (ECSS). Why did it fail? Essentially, the gap between civilian business and military operational requirements was too wide. Civilian commercial systems often demand extensive customizations and can encounter data synchronization problems, both of which inflate the cost of implementation. The ECSS implementation reached such an impasse that the Air Force canceled the project after almost $5 billion in expenditure.[4]

## Meeting Military-Specific Criteria: What's Needed?

Military leaders have recognized several ERP platform improvements needed to augment sustainment and logistics capabilities while providing enhanced support to the modern warfighter. Primary among these is total asset visibility.

## Total Asset Visibility: The Holy Grail

Why is total asset visibility so crucial? It has long been a goal of defense departments and individual branches of the military. Not only is maintaining multiple disparate systems costly and inefficient, but in today's multi-domain defense environment consolidating information from all those systems to provide the necessary guidance across different military forces or as input for a joint international cooperation, is essential for developing integrated resilient logistics in a contested environment. Let's take a look at three examples of what is happening to achieve that long standing goal.

Firstly, there is the U.S. Department of Defense's (DoD) Strategy for Improving DOD Asset Visibility. Their aim is to integrate and improve the visibility of military assets across all services.[5] They're not the only ones. Next, we have the Marine Corps Platform Integration Center (MCPIC) champions enhanced asset visibility through real-time data access, ensuring commanders have the information they need to make informed decisions.[6] Finally, the Naval Operational Business Logistics Enterprise (NOBLE) family of systems aims to consolidate numerous standalone application systems to provide comprehensive asset tracking and enhance the visibility of naval assets, supporting better logistical and operational decision-making.[7]

The United States Government Accountability Office (GAO) included total asset visibility in its high-risk list, highlighting agencies or program areas subject to vulnerabilities or needing transformation. Its defense logistics report, GAO-15-148, found "...that limitations in asset visibility—including the visibility of assets in transit—make it difficult to obtain timely and accurate information about the

assets ... present in the theater of operations." [8] The report specifically emphasized the need to understand the status of assets, and the need for "end-to-end visibility of its assets from acquisition to disposal and all points in between."

## Advanced Combat Technology: A Double Edge Sword

The arrival of 5th-generation combat assets and a shift in military doctrine further compound the ERP modernization dilemma facing NATO allies. An example of a 5th-generation combat asset is the F-35 multi-role stealth fighter aircraft, which is less defined by its aerodynamic capabilities than its ability to collect, fuse, and disseminate data while integrating seamlessly with legacy aircraft and ground-based assets. Such a generational leap in combat technology also comes with a fully integrated logistics support capability. Yet, with the drive for joint warfighting, defense forces are now faced with having to integrate this platform and therefore the platform's support system into their wider architecture.

Today's reality is that what needs to be managed is a defense capability, it's beyond managing a F-35 fleet, or an air combat fleet, or even an air force fleet. It's about having the ability to consolidate information across all assets required in the theatre. Yet, there is still a requirement to support the individual fleet managers. For instance, the F-35 Fleet Manager within the force who takes care specifically and solely about that particular fleet. How can that be achieved? The ideal solution is being able to manage multiple military platforms according to military standards, sourcing data from embedded systems, enabling fleet management in a consistent way, while also provisioning data to the central commercial based ERP for full organizational and financial control.

## Forward looking capabilities

The good news is that Air Force Doctrine Note 1-21[9] has recognized this challenge, calling for sustainment systems to move away from legacy "pull systems" optimized for efficient operations toward modern "push systems" utilizing predictive and prescriptive technologies optimized for mission-driven logistics. Such a move provides the basis for building resilient logistics which is essential to support combat readiness in contested environments. Let's look at two examples which underscore this need.

### 1. Depot Level Maintenance: Keeping the Fleet Ready

As weapons and equipment become more complex, defense departments struggle to maintain, overhaul, upgrade, and rebuild the increasingly sophisticated assets. What impact does this have on their readiness? Quite a significant one. Long downtimes directly impact the available combat fleet.

Complex predictions have to be made for Long Term Depot Flow plans, to decide where to build which capacity, involving heavy investments in tooling, infrastructure and the highest level of skills. Getting this right is paramount. Moreover, once an asset arrives at the specialized facility, the planning, scheduling and execution also has to be absolutely on the mark as well. Unfortunately, it often isn't.

Why not? Contributing factors are myriad but include a lack of access to technical data, lack of control over software sustainment, and poor insight into the supply chain - including knowing when parts are ordered, their current status, and when they are scheduled to arrive.

The depot is the linchpin for combat readiness as the work performed there enhances the capabilities and/or extends the life cycle of a platform. Downtime because of depot work takes capacity from the war fighter, disturbances during depot visits directly and negatively impacts force readiness. Whether it is system or manpower related, depot level maintenance has to be a seamless process. Technicians should turn spanners, not wait on information, tools or material. Therefore, it has to be managed holistically with predictive capabilities. Knowing exactly when which human, material, tool and infrastructure capacity is needed minimizes downtime and optimizes the force's capability.

## 2. Sustaining Expeditionary Operations: Adapting to New Realities

With military forces operating across multiple domains, they must contend with diverse threats that vary from one theater to another. Successfully executing sustained expeditionary operations in today's evolving contested environments presents a complex challenge, with logistics playing a central role.

As Army Lt. Gen. Mark Simerly notes, "Logistics is being targeted and will continue to be targeted in different ways than it ever has been in any other conflict previously."[10] Being able to execute logistics operations seamlessly in hostile environments grants a strategic advantage, allowing military forces to sustain prolonged engagements and outmaneuver adversaries. It is only with resilient logistics that sustained expeditionary operations ensure that that armed forces have the necessary resources and supplies to maintain combat readiness and morale.

However, the challenge lies not only in maintaining supply chains under threat but also in ensuring that logistics operations can adapt swiftly to changes on the battlefield. The ability to provide accurate and timely information is crucial for commanders who must make decisions in environments where adversaries actively seek to disrupt operations at every level of war. This supports Lt. Gen. Scott McKean observation for the need of modernized processes that equip leaders with "tools that provide predictable and proactive adjustments during competition, crisis, and conflict."[11]

By integrating advanced technologies and predictive analytics across the combat fleet, military planners can optimize supply routes and enhance resilience. Ultimately, this ensures that troops receive the necessary support to sustain prolonged engagements, maintain combat readiness, and secure victory on the battlefield. In today's modern warfare, logistics, often seen as a behind-the-scenes function, is moving front and center. When implemented well resilient logistics can decisively influence the outcome of the war. Looking at it in this context, logistics now becomes a strategic asset.

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## A State-Of-The-Art Mission-Driven Military ERP: The Future is Here

NATO member countries and OEMs, including Lockheed Martin, Damen Naval and Patria have seen the future of military ERP platforms in a mature, vertically integrated solution designed by military personnel to meet the complexities of new-generation warfighting and answer military leaders' modernization and integration concerns.

## ILIAS Defense Platform: The Ultimate Solution


The ILIAS Defense Platform is a 5th-generation software suite coded from the ground up to cater to defense needs, and it works out of the box. It's the product of military personnel with backgrounds in operations and sustainment working with modern software designers producing state-of-the-art code. ILIAS is an emphatic response to the military's call for mission-driven logistics by promoting total real-time asset visibility for an entire operation.

ILIAS is coded to be vertically integrated, removing the need to unite multiple software solutions for managing assets, operations, logistics, and maintenance. The compact digital science platform seamlessly links strategic, tactical, and operational data, allowing defense leaders to gain real-time insight into each asset's condition and configuration by highlighting its mission and warfighting capabilities. The ILIAS Defense Platform fuses four distinct competencies.

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# DEPOT

## Depot Level Maintenance: A Proven Track Record

For over a decade, ILIAS has provided comprehensive and complex depot-level maintenance solutions to military and OEM clients. These solutions are differentiated by unique features and capabilities that offer an outstanding value proposition. But what makes them so effective?

ILIAS Depot Level Maintenance (DLM) helps clients organize for success by providing detailed options for program specification and monitoring. The resulting authoritative data source links all stakeholders with a secure, consolidated, and common operating picture. How does this benefit the users?

Data aggregation enhances modification program management by providing insight into resource management, availability, and workforce currency while integrating the supply chain. Additionally, it optimizes data integrity by removing duplicated and redundant tasks to streamline depot workflows. Budget holders and maintenance personnel remain informed, making proactive decisions on budget impacts, facility, and resource needs while gaining real-time visibility into how the changing aircraft configuration status might affect planned depot-level maintenance. Scope management and commitment approval are simplified, with complete transparency for all users, from set-up to execution.

Maintenance becomes more efficient, offering data granularity for technicians executing complex MRO tasks or sophisticated modifications. Meanwhile, advanced algorithms automatically generate work orders and parts requisitions to address asset serviceability, track spares, and schedule tools and resources.

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# FLEET

## Fleet Management: Maximizing Operational Readiness

Fleet management definitions vary by client due to diverse perspectives, goals, and operational focus. Where OEMs may emphasize supporting aircraft production, delivery, and sustainment, end-users might prioritize short- and long-term planning and their fleet's assured operational readiness. So, how does ILIAS Fleet Management cater to these diverse needs?

ILIAS Fleet Management recognizes that complex, technologically advanced assets require more than shallow, one-dimensional solutions. It provides a solution that transects all organizational levels to provide client-specific strategic, tactical, or operational insight, allowing optimized fleet readiness, enhanced operational effectiveness, and increased mission success.

Offering holistic enterprise integration, ILIAS Fleet Management provides a unified, organization-wide perspective, breaking down silos and enabling more effective collaboration and decision-making. It captures, centralizes, and aggregates data relevant to an asset's operational capability, from operations to maintenance and supply, enabling and enhancing planning and scheduling decisions.

ILIAS responds to real-time changes in asset capability, supporting informed decision-making by providing insights into operational readiness. It eliminates wasteful manual systems, becoming the sole version of truth from which decision-makers can project and plan future activities, modifications, and maintenance.

For audit and research, the robust and secure database provides improved data integrity, forming a secure, searchable archive of all critical documentation regarding an asset. All modifications, specification upgrades, operational incidents, and maintenance tasks provide traceability from the asset's original baseline specification.

ILIAS Fleet Management enables warfighters to assess a fleet using a single source of truth, providing commanders and managers with a comprehensive and secure 360-degree view of fleet status, allowing them to identify inconsistent data, minimize operational disruptions, and maximize asset readiness.

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# MISSION

## Expeditionary Deployment Operations: Ready for Any Environment

The ILIAS team draws on three decades of defense knowledge to tailor features that support missions operating in constrained and austere environments. How does ILIAS ensure mission success in such challenging conditions? ILIAS uses one data instance for each mission to cover planning, pre-deployment, deployment, re-deployment, and post-deployment phases, allowing leaders to plan and execute effective, efficient, and accurate missions. The ability to copy and amend deployment scenarios fast-tracks pre-deployment planning, maintaining accuracy and consistency by reducing errors. Moreover, it captures and continuously improves knowledge easing fast growth of the organization.

ILIAS Defense Platform is flexible and adaptable. It provides real-time situational awareness, integrates with other platforms, fosters seamless collaboration, and maintains operational integrity even in challenging conditions. When a mission needs to maintain high operational standards in the most challenging environments, the ILIAS solution:

- Enhances efficiency with a single source of truth, streamlining operations, reducing downtime, and enhancing mission effectiveness.
- Improves coordination with real-time access to critical information for faster response times.
- Reduces logistical bottlenecks by optimizing resource use with comprehensive asset visibility.

ILIAS offers a robust platform tailored to support expeditionary deployed operations. It ensures seamless mission execution and real-time situational awareness, addressing the unique challenges defense organizations operating in remote, austere environments face.
Capable of deployment with warfighters without connectivity, ILIAS manages formation locations, unit composition, equipment inventory, and arms availability to ensure efficient and appropriate resource allocation. Whether through days or months of disconnection, ILIAS will synchronize all data once a connection becomes available, ensuring data security and integrity.

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# FORCE

## Total Asset Visibility: Seeing the Whole Picture

True asset visibility demands real-time interconnection of strategic, tactical, and operational capabilities, including secure integration with third-party, OEM, and client systems. How does ILIAS Defense Platform achieve this? By providing clarity and insight by combining sustainment and operational data.

To meet the U.S. Government Accountability Office's demands for end-to-end visibility of assets from acquisition to disposal, ILIAS supports the comprehensive analysis and audit of granular data in real-time, supporting commanders and managers with timely and accurate information to enable informed and optimal decisions. Leaders can see in one view what assets are mission capable. ILIAS highlights the most suitable asset for each mission by considering all asset characteristics, including localization, operational configuration, serviceability status, and remaining potential. It also helps to define and optimize the consolidated planning that supports all missions.

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# Enabling commercial ERP in a Defense Environment

ILIAS is not an ERP solution, it is a Logistics Management System designed for Defense. To manage a force, more is needed. However, due to its open architecture ILIAS is perfectly suited to complement ERP solutions to cover core defense requirements, minimizing the need for bespoke development. As such, it is the Force Multiplier, bridging the gap not only between commercial designed ERPs and military requirements but also between OEM delivered, embedded platform sustainment systems and the wider ERP landscape a Defense Force has employed. What is ILIAS? It's simple. It is the answer to the exam question: how to manage a combat capability and/or multiple fleets in a sustainable manner from an IT standpoint, while minimizing total cost of ownership.

What's more, given the flexible deployment options ILIAS provides a symbiotic relationship both from a systems and user point of view. Let's look at three implementation approaches. For instance, ILIAS can be used on its own to provide a military force with a resilient logistics management capability. Alternatively, ILIAS can augment expert solutions already deployed in the network. What is meant by augmenting? By integrating the existing expert systems with ILIAS, all data is consolidated into a single source of truth and enriched. That even includes a fleet which is supported by a disparate expert system that would otherwise be on an island of disconnected data, is now embedded in the total force picture.

For example, the F-35 embedded logistics management system, ODIN, generates aircraft fault codes. By integrating ODIN data into ILIAS for F-35 Fleet Management, mission capabilities can be seen at a glance as ILIAS maps the fault codes to mission requirements. This is a standard ILIAS capability that can integrate data from numerous systems, enriching it to accurately show whether the aircraft, tank or ship, is full mission capable (FMC), not mission capable (NMC), or partial mission capable (PMC). These ILIAS PMC data driven insights can extend the expeditionary operations by knowing exactly what missions are possible by providing total asset visibility. In other words, what is the predicted sustainability of a mission can now be seen by the commander.

As a third implementation approach, ILIAS can complete a generic ERP where it has shortfalls for specific military requirements. For example, with IBM we have created the ILIAS to SAP connector which is a productized interface that many defense forces can leverage. It's not only the defense forces that benefit from the ILIAS completion approach. Typically, defense is not an ERP vendor's largest market, and on top of that defense requires very specific and singular functional and technical capabilities. With ILIAS, the burden on the ERP vendor's development capacity goes down as does the risk for delivery. They still retain all the information their systems generate and it's even possible to enrich that return data using the end-to-end system visibility that ILIAS provides.

Given that sourcing and building up a skilled workforce is one of the limiting factors which many defense forces face, implementing a management information system should be non-disruptive. ILIAS has been implemented successfully twice in a contested environment. The only reason this could be achieved is through the nature of it, designed by and for defense.

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## ILIAS Solutions: The Company Behind the Platform

With 30 years of dedicated service to the defense sector, ILIAS Solutions is an established leader in providing advanced software solutions tailored specifically for military needs. What sets ILIAS apart? The unique fusion of industry-leading IT specialists with military subject matter experts has generated a product designed from the ground up to meet the rigorous demands of defense organizations. It integrates seamlessly with or replaces existing systems to enhance logistics, maintenance, and operational readiness.

Military commanders gain comprehensive tools for managing complex and sensitive assets, ensuring mission success with reduced costs and increased efficiency. Defense forces globally use ILIAS to maintain a high state of readiness with cutting-edge technology and agile capability delivery. Trusted by numerous OEM and defense organizations for decades, ILIAS continues to innovate and deliver superior value, fostering enduring alliances and making us a reliable, long-term defense logistics and management partner.

## In Conclusion: The Path Forward

The challenges faced by defense organizations in modernizing their logistics and sustainment capabilities vary from navigating hostile environments to the limitations presented by some traditional commercial ERP systems that often don't cater to the specific needs of military operations. The ILIAS Defense Platform is designed to tackle these challenges head-on, providing enhanced inventory precision, improved visibility of transportation capabilities, and real-time tracking of supplies and maintenance status.

By providing real-time asset visibility, enhancing operational efficiency, and supporting decision-making through data-centric approaches, the ILIAS Defense Platform ensure that defense organizations can maintain readiness and effectiveness in an increasingly complex and dynamic environment. Its ability to integrate seamlessly with existing systems and adapt to the specific needs of military operations makes it an invaluable solution for modern warfighting and logistics.

What truly distinguishes the ILIAS Defense Platform is not only its advanced capabilities but also the strength of ILIAS as a company. With years of dedicated service in the defense industry, ILIAS is built on a foundation of military expertise, and its products have been designed by military professional for military professionals. This deep understanding of strategic, tactical and operational requirements ensures that the ILIAS Defense Platform meets the unique demands of modern military logistics.
By choosing the ILIAS Defense Platform, defense organizations not only gain a critical asset for optimizing their logistics and sustainment operations but also partner with a company committed to supporting combat readiness and military effectiveness by leveraging cutting-edge technology and innovative, reliable solutions. As defense forces continue to evolve and adapt to new threats and operational demands, the ILIAS Defense Platform will be a critical enabler of mission success, ensuring that military leaders have the tools they need to make informed, strategic decisions.

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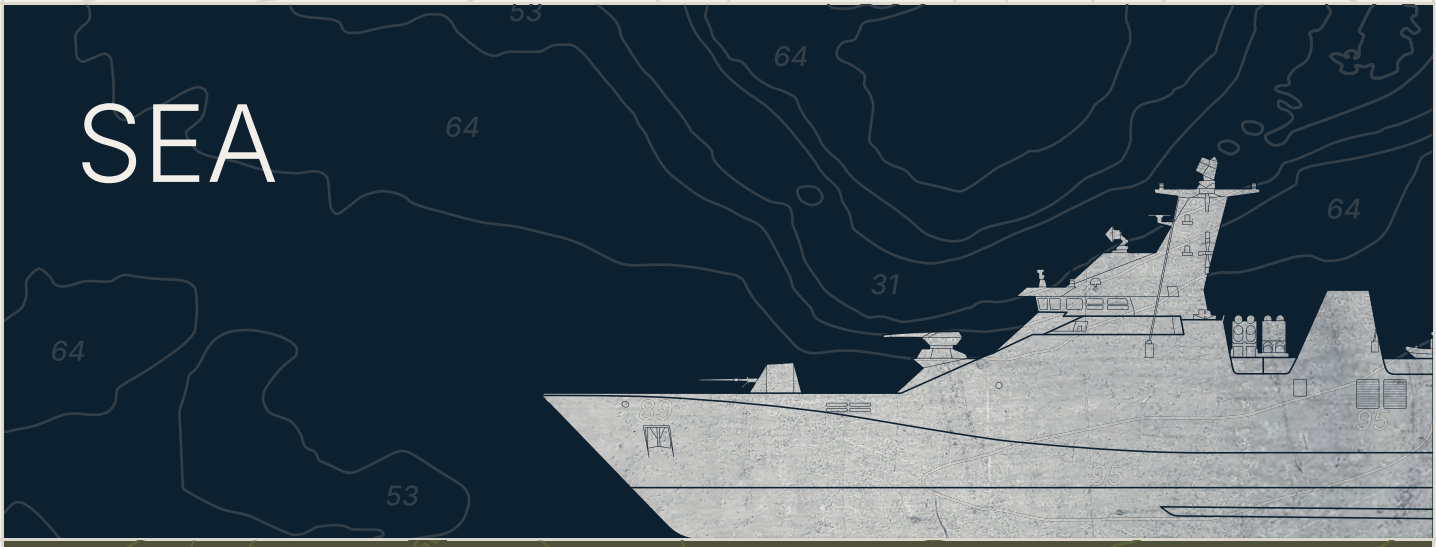


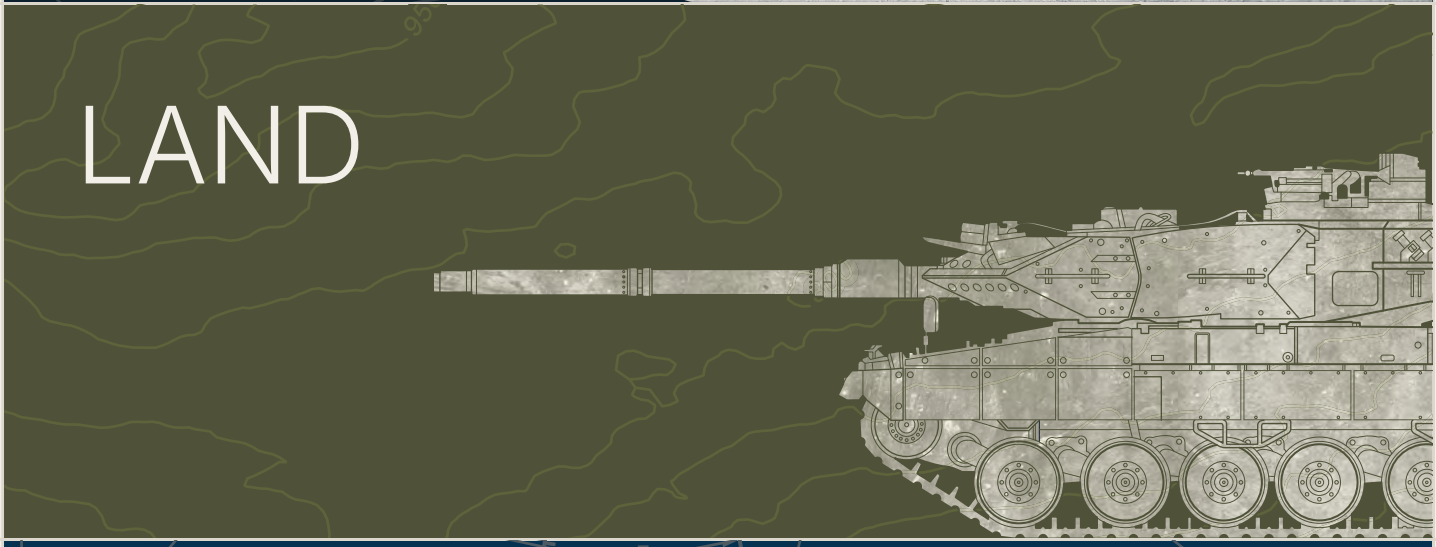


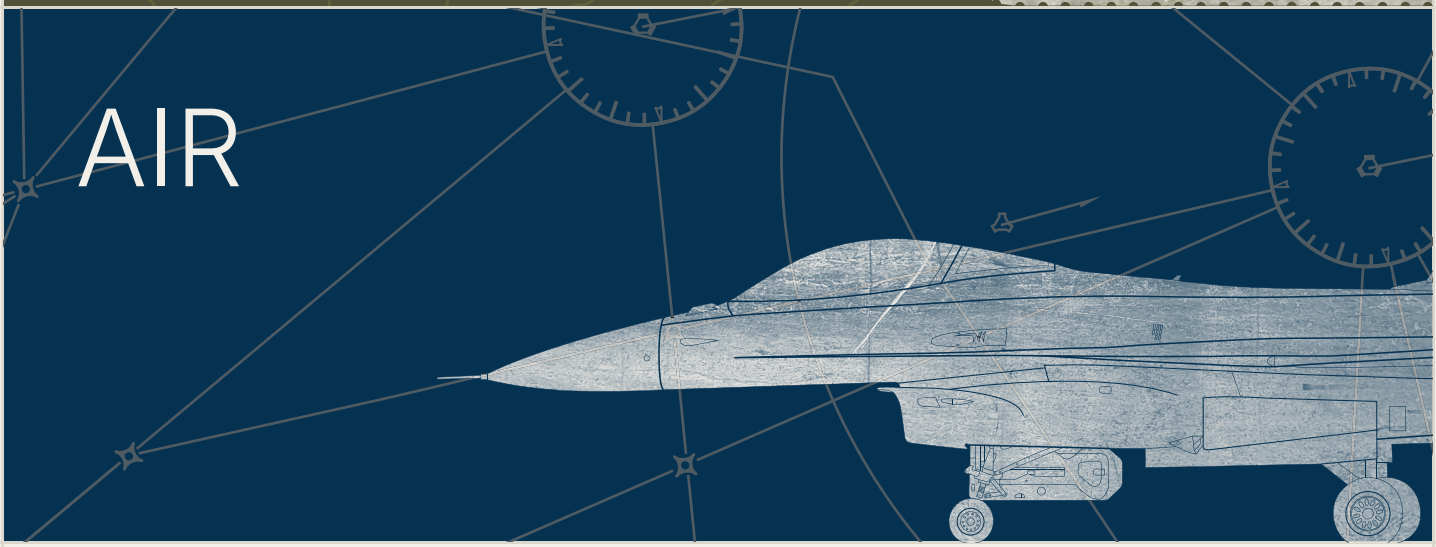


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