



PROJECT KICK-OFF
OSCARSBORG FORTRESS, NORWAY - JUNE 2024

Editorial

One year into its journey, ARMETISS reaches a turning point. After months of groundwork laying, exploration, from literature review to hands-on end-users workshops, the project now turns toward the concrete development of its modular textile-based solutions, built to meet real operational needs.

This milestone is not only technical. It also reflects the strength of the team developed along the way: a European network of experts in defence, advanced textiles, and innovation. Beyond technologies, ARMETISS has assembled a committed team, united by a shared vision: to design soldier systems that are efficient, user-focused, and aware of the realities on the battlefield.

As the broader conversation around European defence regains momentum, key priorities emerge more clearly than ever: data protection, technological sovereignty, and the need to innovate without adding to the burden of operational environments. ARMETISS moves forward with these priorities at heart.

The coming years aim to transform joint thinking into concrete results — from modular concepts to real, field-ready systems.



Joanna Lejk

ARMETISS project coordinator - NFM Group

ABOUT ARMETISS

Harnessing the potential of smart textile to enhance soldier systems

ARMETISS is a European project with the ambition to identify, integrate and optimise state-of-the-art smart textile technologies across Europe, in an effort to build the modular soldier protection gear of the future.

Financed by the European Union and managed by the European Defence Agency, ARMETISS gathers 18 partners from 8 European countries around 6 key technological smart textile modules:

Assembling 6 functional modules to meet tomorrow's soldier protection challenges



THERMOREGULATION



ENERGY CONVERSION
AND DISTRIBUTION



HEALTH MONITORING



HUMAN-MACHINE
INTERFACES



BODY ARMOUR
MONITORING



GEOPOSITIONING



ARMETISS PARTNERS

A European value chain, built for impact

The ARMETISS consortium brings together 18 partners from 8 European countries, selected for their complementary expertise across the entire development chain of modular, textile-based soldier systems.



DEFENCE AND SOLDIER SYSTEMS INTEGRATION KEY PLAYERS

At the heart of the project are leading defence and system integration companies, including NFM Group, Rheinmetall Electronics, Rheinmetall Protection Systems (RPS), Safran Electronics & Defense, and Larimart (part of the Leonardo group). These actors ensure that the solutions developed are not only technically advanced but also aligned with real operational requirements and integration constraints.



RESEARCH AND TECHNOLOGY ORGANISATIONS AT THE FOREFRONT OF TECHNICAL EXCELLENCE

A robust cluster of research and technology organisations (RTOs) reinforces the scientific and technical foundations of the project. Fraunhofer IZM, SINTEF, FFI, INEGI, AITEX, ENSAIT and CITEVE contribute cutting-edge knowledge in textile integration, physiological monitoring, data systems, and performance testing — anchoring ARMETISS in both scientific rigour and applied know-how.



SPECIALISED SMEs WITH ELECTRONICS CAPABILITIES

The project's success also relies on the expertise of specialist SMEs and tech developers. Applycon and Mokka bring advanced capabilities in electronics, connectors, data and software engineering.



TEXTILE INNOVATORS

Finally, key contributions come from textile innovation leaders such as Chamatex, whose experience with technical fabrics and performance materials helps ensure comfort, durability, and protection in demanding environments. Clim8 offers its pioneering thermoregulating textile platform, while Jonathan & Fletcher adds a unique skillset in the design and integration of complete textile garments. Techtera, the French innovation cluster for textiles, supports the cohesion, visibility and long-term impact of the consortium.



Together, these partners form a uniquely integrated and balanced European ecosystem — one that combines industrial strength, academic excellence and agile innovation to address the complex challenges of modern soldier protection.

It opens up pathways for knowledge transfer, intellectual property generation, cross-sector applications, and reinforced positioning in both defence and adjacent markets.

The project is also a space for trust-building — enabling companies and institutions to test future standards, share perspectives, and shape the next generation of European soldier systems.



Co-funded by
the European Union



EUROPEAN
DEFENCE
AGENCY

CO-FUNDED BY THE EUROPEAN UNION, MANAGED BY THE EUROPEAN DEFENCE AGENCY

The ARMETISS project is co-funded by the European Union through the European Defence Fund (EDF) — a strategic funding instrument aimed at reinforcing the EU's defence industrial and technological base.

The project is managed by the European Defence Agency (EDA), which plays a key role in ensuring its coherence with European defence priorities. This support highlights the strategic importance of the challenges addressed by ARMETISS: technological sovereignty, interoperability, and innovation. It also enables meaningful collaboration across Member States and Norway, industry, and research organisations at European scale.

ONE YEAR INTO ARMETISS

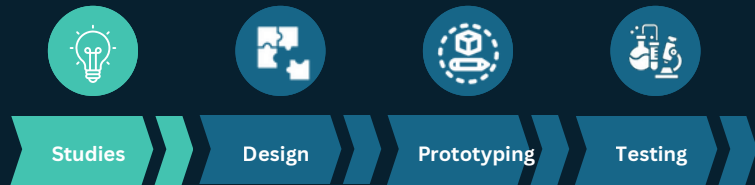
Building the foundations for modules designing

The methodology of ARMETISS is based on a V-cycle approach.

The first year of ARMETISS

focused on completing the studies

necessary to lay the foundations for the project: exploring available technologies while grounding the project into end-user needs, so as to develop a relevant overall soldier system architecture, enabling the integration of all six modules into a coherent framework.



Completed activities



SYSTEM REQUIREMENTS

LED BY SAFRAN



This activity was dedicated to capturing the needs of the end-users and translating them into a comprehensive and validated set of system requirements for a smart, multifunctional textile-based soldier system. This foundational work established the framework for all subsequent design, prototyping, and testing activities in ARMETISS.

KEY OBJECTIVES :

- Provide a holistic description of the future dismounted soldier system, including clothing, protective gear, wearable equipment, and load carriage.
- Capture and harmonize operational and functional requirements of armed forces from different EU countries and Norway, ensuring a shared reference across partners.
- Define technical requirements for the integration of textile-based multifunctional modules (e.g., connectors, monitoring systems, protective elements).
- Consider user experience (UX) aspects such as comfort, ergonomics, style, and aesthetics, which are critical for clothing and wearable equipment.
- Address transversal constraints, including eco-design orientations, durability and washability, as well as compliance with EU regulations and forthcoming standards.



**REQUIREMENTS DEFINITION
WORKSHOP #1
SAFRAN HEADQUARTERS,
PARIS, OCTOBER 2024**

4 WORKSHOPS FOR A USER-CENTRIC PROCESS

To support this work and ensure an end-user-centric process, the ARMETISS consortium held a series of dedicated workshops, providing opportunities to validate assumptions, gather feedback, and align system requirements with operational realities.

WORKSHOP #1 **SAFRAN ELECTRONICS & DEFENSE (SED) HEADQUARTERS** – PARIS, FRANCE, OCTOBER 2024

Safran held the first workshop for two days in Paris, focused on aligning identified functionalities with operational realities. Participants, including national MoDs and project partners, examined ARMETISS objectives through the lens of operational scenarios, textile integration, ergonomics, compliance, and eco-design principles — setting a solid foundation for system requirements.



WORKSHOP #2 **JONATHAN & FLETCHER HEADQUARTERS** – ANNECY, FRANCE, FEBRUARY 2025

Ministries of Defence and project partners convened to refine user requirements defined in Paris, focusing on field-ready solutions. Discussions targeted advanced capabilities such as enhanced body armour, physiological monitoring, thermoregulation, energy management, and geopositioning. The workshop included an on-site visit to Jonathan & Fletcher's innovative clothing design facilities.

WORKSHOP #3

NFM GROUP – NORWAY, MARCH 2025

Organised by Jonathan & Fletcher and AQ-Tech, with the support of NFM and the Norwegian Defence Materiel Agency, this workshop gathered representatives from military training and research centers for a series of in-depth interviews. The main focus was user experience for ARMETISS technological modules. Based on the results, a questionnaire was developed and shared to end-users in all the Member States and in Norway, where different roles, genders and operative background were taken into consideration. This work resulted in system requirements, technical requirements and design considerations.



SAFRAN ELECTRONICS & DEFENSE (SED) HEADQUARTERS – PARIS, MAY 2025

The final workshop presented the system-level requirements proposition for ARMETISS, consolidating inputs from European MoDs and the consortium and validating a final proposition. The outcome: 104 validated requirements, forming a robust, interoperable framework for energy and data distribution, ergonomics, sustainability, and logistics, ready to guide the next phase of modular prototype development.

By the end of the first year, the completion of the system requirements activity delivered a robust knowledge base and system framework. This enabled ARMETISS to move forward with confidence into the next phases—studies, design, prototyping, and testing—equipped with a validated set of requirements ensuring usability, integration, and mission relevance.



citeve
TEXTILE TECHNOLOGY

STUDY OF ENABLING TECHNOLOGIES

LED BY CITEVE

This activity laid the technical foundations for ARMETISS by exploring how smart textiles can enhance dismounted soldier systems by addressing functional requirements.

The work focused on consolidating state-of-the-art research in smart textiles for dismounted soldier systems, assessing materials, technologies, integration methods, and durability and producing feasibility studies.

Specific research areas for each technological module enabled to provide inputs to the design & prototyping activities, and to select technologies meeting military needs as well as withstanding upscaling for manufacturing.

CHALLENGES ADDRESSED:

- Compatibility with soldier equipment
- Comfort, freedom of movement, ergonomics (garments and layer system)
- Weight, volume and energy needs
- Systems reliability, washability, cleaning
- Smart textiles durability in the military environment
- Security, health, fail-safe related safety issues
- Recyclability, circular economy, eco-design
- Materials compatibility and certification



“Exploring smart thermoregulation solutions for defence applications”

INEGI publishes book chapter publication and presents abstract at conference

For the 2025 edition, INEGI, leading Portuguese RTO and ARMETISS partner, presented the abstract of their upcoming book chapter, to be published in “Occupational and Environmental Safety and Health VI” (Springer, 2025):

“Smart textiles for body thermo-regulation: A brief systematic review for defence applications.”

This review highlights how smart textiles can be leveraged in soldiers' combat garments to enhance both comfort and camouflage with innovative thermal management functionalities.

Next activities: designing the system & modules

With the finalisation of the Studies phase, ARMETISS progresses towards the Design stage, which represents a crucial transition from analysis to concrete development. The focus now shifts from capturing and consolidating requirements to translating them into technical solutions. This stage is articulated around two complementary activities.



OVERALL SYSTEM DESIGN

LED BY RHEINMETALL



First, the project will establish an overall system design, drawing on both the outcomes of the feasibility studies and the lessons learned from previous European programmes. The new soldier system architecture will serve as a guiding framework, ensuring the coherent integration of smart and multifunctional textiles. It will define how the different modules are combined into demonstrators and interconnected through data and power infrastructures, guaranteeing both functionality and interoperability.



MODULES DESIGN

LED BY NFM GROUP



Second, specific design activities will target the development of individual modules. Each module design is managed by a designated partner: Safran Electronics & Defense, Rheinmetall, Rheinmetall Protection Systems and Clim8. These will include textile-based functional modules as well as additional elements to be integrated into the soldier system. The aim is to deliver multifunctional solutions that are not only technologically advanced but also operationally relevant, considering constraints such as weight, bulk, ergonomics and cognitive load. Special attention will be given to functionalities that enhance operational effectiveness, including physiological and environmental monitoring, localisation, communication and energy management.

UNLEASHING COLLABORATIVE INNOVATION WITH CREATIVITY SESSIONS

Following the modules design activity kick-off, a series of creativity sessions were organised in Brussels in July 2025, bringing together more than 40 participants from the consortium. Organised by Techtera, these workshops provided a collaborative space to exchange perspectives, explore innovative ideas, and refine the project's approach in close alignment with operational needs.



NFM Group on Building European Strength with ARMETISS

Runar Kvamme, Chief Business Officer - NFM Group



How does the ARMETISS project align with your company's strategic goals or R&D roadmap?

At NFM Group, our vision is clear: to protect individuals from both man-made and natural threats, regardless of location or climate. This principle is the foundation of every innovation we pursue and aligns directly with the ambition of the ARMETISS Project.

By taking part in ARMETISS, we are reinforcing our long-term commitment to advancing soldier protection through innovative textile technologies. The project supports our ongoing R&D efforts to push the boundaries of what is possible in combat clothing systems.

“NFM is proud to be part of the ARMETISS Project and to lead this important initiative. The project highlights our position as forerunners in military textile technology development, underlining our commitment to innovation on the modern battlefield and to enhancing soldier safety.”

- Runar Kvamme, Chief Business Officer NFM Group

What has been your most significant contribution to the project so far?

With nearly 30 years of experience in the defence industry, we bring valuable insights and specialised knowledge to the ARMETISS project. Innovation and technology drive our competitive edge, made possible by our centres of excellence across Europe. Through our modern production facilities — equipped with cutting-edge laboratories and advanced technologies — we design, develop, and manufacture combat clothing, load bearing and hard and soft ballistic protection systems.

This includes our high-performance GARM™ series, a modular combat clothing system where each layer is tailored to the full spectrum of operational requirements. This principle of layering is central to the ARMETISS project, which aims to unlock the potential of smart textiles in personal protective equipment by integrating them into next-generation soldier systems.

We maintain close cooperation with Armed Forces and law enforcement across Europe, providing us with privileged access to end-user feedback. Many of our employees have operational backgrounds from the military and police. This unique blend of technological knowledge and operational experience ensures we stay grounded in the practical needs of the end user.

What's your favourite aspect of working with the ARMETISS team?

The world is changing, and so is the modern battlefield. At NFM Group, more than 1,000 dedicated employees go to work each day with our vision of protecting the modern operators in mind.

We believe our vision can only be achieved through strong European partnerships and strategic collaboration. Now more than ever, the importance of building and sustaining European industrial capacity is critical.

Being part of the ARMETISS project provides us with a unique platform to contribute our expertise and strengthen European defence capabilities.

“Within our area of expertise, NFM is committed to doing our part in protecting those who protect us. We are proud to contribute to protecting the modern soldier on today's battlefield, and to building the future of European defence.”

- Runar Kvamme, Chief Business Officer NFM Group

DISSEMINATING ARMETISS PROJECT

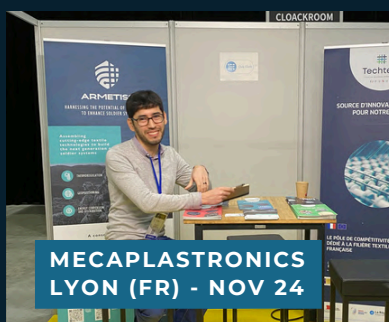
Key highlights from major industry events

From the outset, ARMETISS has placed dissemination at the heart of its strategy — not as a final step, but as a continuous effort to build presence, generate interest, and foster strategic connections across Europe.

At each stage of the project, partners have actively engaged with both the European defence ecosystem and the textile innovation landscape, ensuring visibility and dialogue with stakeholders who will shape — and benefit from — the solutions developed. This effort serves not only to promote ARMETISS, but to inspire dual-use perspectives and anticipate future applications.

In its first year alone, ARMETISS has been presented at 14 major events, across France, Portugal, Germany, the Netherlands and Turkey, with half of them having international scope.

ARMETISS has been prominently showcased across major European and international platforms focused on defence, advanced textiles, and protective equipment (EPI). The project engaged diverse target groups including military and civil industry stakeholders, textile technology experts, and policy makers.





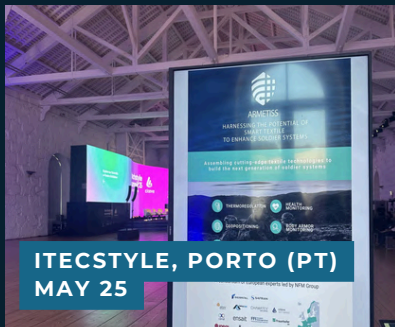
SOFINS, BORDEAUX (FR)
APR 25



SHO 2025, PORTO (PT)
APR 25



ECPC, KUSADASI (TR)
MAY 25



ITECSTYLE, PORTO (PT)
MAY 25



**SPECIAL OPERATIONS
SNIPER SEMINAR
LAMEGO (PT) - JUN 25**

KEY HIGHLIGHTS INCLUDE:



Presentations and visibility at high-profile events such as the E-textiles International Conference (chaired by Fraunhofer) and Techblck Electronics Reshaped in Berlin.



Meaningful exchanges with key actors across Europe and beyond, underscoring the strategic defence applications of ARMETISS innovations.



Participation at national defence forums like Forum IDEES in Lyon, attracting over 350 participants including 40 units from the French Ministry of Defence.



COMING SOON

From November 12th to 14th, ARMETISS partner ENSAIT will host the E-textiles conference, further embedding the project in European innovation networks.

[LEARN MORE](#)

This multi-channel presence highlights ARMETISS's commitment to sustainable industrialization of electronic textiles where real market benefits — especially in medical, protective, and defence sectors — can be realized.

Each representation reflects the networks and strengths of the consortium, drawing on both academic and industrial expertise. These outreach efforts pave the way for future collaborations and position ARMETISS as a key project to shape the next generation of European defence technologies.



ARMETISS



armetiss.nfmgroup.org



[/armetiss-project](https://www.linkedin.com/company/armetiss-project)

CONTACT

Joanna Lejk

Project coordinator

joanna@nfm.no

Valentin Jacoutot

Project dissemination manager

vjacoutot@techtera.org

A EUROPEAN PROJECT SUPPORTED BY



Co-funded by
the European Union



EUROPEAN
DEFENCE
AGENCY

Co-funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Defence Agency. Neither the European Union nor the granting authority can be held responsible for them.