EDRIN

European Defence
Research and Innovation Network

Towards a Stronger European Defence Innovation Ecosystem

RTOs insights on supporting European Defence Industrial Strategy (EDIS)

ABOUT EDRIN

The European Defence Research and Innovation Network (EDRIN) is the group of independent solution-driven not-for profit European applied research and technology organizations (RTOs) with a substantial role in defence research and development (R&D) within a broader innovation portfolio.

OUR MISSION

- Act as a coordinated voice of RTOs in defence R&D and cooperation
- Offer a one-stop-shop for political and industrial stakeholders to access defence R&D expertise thanks to our key role in the innovation ecosystem, in-depth experience in national, bilateral and multinational collaborative projects, large networks of excellent researchers and unique test facilities
- Provide strategic guidance and consolidated long-term roadmaps for key defence R&D priorities
- Act as the bridging link between academia, applied research, small and medium enterprises (SMEs), industry, and end-users in both traditional defence domains as well as an interface to civilian technologies and applications

OUR OFFER

EDRIN is the pivot in the value chain of European defence R&D and cooperation. Its members bring decades of experience in working for Ministries of Defence, Armed Forces, and multinational defence organisations such as EDA and NATO. EDRIN members connect academia, applied research, SMEs, industry, and end-users, including non-traditional defence industries.

OUR ADDED VALUE

EDRIN proactively engages with all relevant stakeholders to foster the competitiveness and innovation capacity of the European defence technological and industrial base (EDTIB), including though maximizing the successful implementation of the European Defence Fund (EDF).

WHO WE ARE

As of 2024, EDRIN has nine members from eight countries:

- Commissariat à l'énergie atomique et aux énergies alternatives (CEA), France
- Fraunhofer-Gesellschaft, Germany
- Baltijos pažangių technologijų institutą (BPTI), Lithuania
- Totalförsvarets forskningsinstitut (FOI), Sweden
- Instituto de Engenharia de Sistemas e Computadores Inovação (INOV), Portugal
- Ινστιτούτο Τεχνολογιών Πληροφορικής και Επικοινωνιών (ITI), Greece
- Office national d'études et de recherches aérospatiales (ONERA), France
- Nederlandse Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek (TNO), The Netherlands
- Teknologian tutkimuskeskus (VTT), Finland

The following white paper presents EDRIN's contribution to inform the European Defence Industrial Strategy (EDIS)[1]. EDRIN puts forward four key messages to foster a stronger, more competitive EDTIB that can anticipate and quickly adapt to the fast evolving security environment based on outstanding R&D across Europe.

TARGET THE MOST CRITICAL R&D PRIORITIES

An overarching priority is to avoid unnecessary duplication and fragmentation of defence R&D efforts. Various actions have been carried out to identify R&D priorities such as those addressed by the Capability Development Plan (CDP), Overarching Strategic Research Agenda (OSRA), and the Observatory of Critical Technologies (OCT). An analysis with a broader focus on defence investment gaps proposed several actions in support of defence cooperation, including in the field of defence R&D.[2] Yet, despite continued efforts to address the issue, numerous gaps persist thus contributing to a fragmented landscape, which have to be addressed urgently.

EDRIN proposes three actions to target the most critical R&D priorities:

1. Use EDA's Technology Building Blocks (TBB) and OCT's findings as a baseline to prioritize overlooked R&D areas with a high degree of duplication.
2. Identify programmes outside of defence R&D that can contribute to addressing those areas. Establishing a dual-technology approach to R&D can be beneficial in closing the identified gaps.[3]
3. Draw added value from RTO's extensive expertise in closing defence gaps through innovative solutions, to the benefit of all relevant stakeholders.

ESTABLISH DEFENCE INNOVATION & TECHNOLOGY HUBS

To foster a stronger, more competitive EDTIB and support defence R&D and its uptake, EDRIN proposes the establishment of defence innovation and technology hubs.

Defence innovation and technology hubs can foster a shared environment where RTOs, SMEs, industry, and end-users work together to address defence priorities and pools resources to bridge the gap between research, development, and production of innovative and interoperable products and technologies. Defence innovation hubs can build, for example, on the experience gained through the Chips Joint Undertaking, where appropriate.

To speed up the life cycles of defence products, there's a need to easily absorb new technologies and measure their impact effectively. Defence innovation hubs can enable innovators to test their solutions and integrators to evaluate them at reasonable costs, for example through utilizing digital

[1] Consultation on the European Defence Industrial Strategy: https://defence-industry-space.ec.europa.eu/consultations-0/consultation-new-european-defence-industrial-strategy_en
[2] Defence Investment Gaps Analysis and Way Forward, published in May 2022: https://commission.europa.eu/publications/defence-investment-gaps-and-measures-address-them_en
[3] In January 2024, the European Commission proposed a series of initiatives to strengthen economic security, including a white paper outlining options for enhanced support for R&D involving technologies with dual-use potential: https://research-and-innovation.ec.europa.eu/system/files/2024-01/ec_rtd_white-paper-dual-use-potential.pdf

twins or Hardware in the loop solutions. This can also allow industrials and end user to assess the potential impact of the innovation.

Furthermore, these hubs should rely on already existing high-level facilities developed through EU programs, such as Testing and Experimenting Facilities (TEFs) networks or other piloting and demonstration facilities. With just a customization of them to fulfil defence applications requirements, it could allow to foster dual and defence R&D.

The main outcome of defence innovation hubs will be tailor-made solutions following a first-of-a-kind approach in addressing defence priorities. Rather than proliferating a fragmented environment by developing multiple demonstrators, defence innovation hubs can give rise to modular demonstrators designed to reflect differences in needs and capabilities. With a common base co-funded by the EU, stakeholders can further develop solutions and products for commercialization thereby reducing costs for member states and industry.

New type of EDF call

Nevertheless, EDRIN notes that a support for ramping up this spin in dual approach and take fully advantage of these hubs is still missing in the EDF typology. Therefore, EDRIN proposes that a new type of EDF call could be issued with the aim of targeting demonstration and maturation of technologies, associated with relevant use and business cases, promoting and using of the technological infrastructures and testing facilities. Within these calls, RTOs could fully support research organizations as well as private companies (large and SMEs) to jointly develop new R&D, technologies and processes, and prepare the uptake of the results of R&T&I with both, industrial and operational environments, closer to market and military applications.

This new type of spin-in calls can help foster synergies, especially where technologies with a dual potential and stronger links between RTOs and industry are concerned.

EDRIN proposes that the European Commission consider identifying a first pilot defence innovation and technology hub, and launching an associated first EDF call as an experiment before the end of the ongoing framework. The pilot call could address strategic technologies that reflect defence priorities.

One of RTOs' core missions is to transform scientific knowledge into technology and to enable its transfer to industry. Consequently, RTOs can play a key role in the establishment and implementation of defence innovation hubs as a bridging link between academia, SMEs, and industry.

STRENGTHEN DEFENCE INNOVATION FOR OPEN STRATEGIC AUTONOMY

EDRIN puts forward three guiding principles for a thriving defence innovation ecosystem and its continuous contribution to open strategic autonomy in Europe.

Critical technologies require critical resources:

- **Prioritizing education and skills**: Promoting education and skills for emerging and disruptive technologies is a key driver for open strategic autonomy in general. In the defence domain specifically, substantial effort is needed to attract young talents and keep them in the EU. In

this regard, the increasing social acceptance for defence technologies, and fostering synergies between defence and civilian domains, are of upmost importance.

- Promoting education and skills for emerging and disruptive technologies is a key driver for open strategic autonomy in general. In the defence domain specifically, substantial effort is needed to attract young talents and increase social acceptance, including through fostering synergies between defence and civilian technologies and applications.

- **Ensuring access to critical raw and advanced materials**: The lack of materials and components can have grave consequences for industry, potentially halting supply chains in their entirety. Therefore, open strategic autonomy means increasing the security of defence supply chains, including through reduced dependencies. EDRIN proposes to reinforce a circular economy approach for a secure access to critical raw and advanced materials in the defence sector, and to promote substitution through R&D efforts.

- **Keeping intellectual property in Europe**: EDRIN proposes the establishment of general principles for an effective protection of intellectual property rights (IPR) and calls for vigilance in funding critical technologies through EU programs. For example, reliance on private companies for the development of key technologies, which might be integrated in high-risk non-EU markets at a later stage should be avoided. EDRIN recalls that RTOs offer the benefit of keeping IPR in Europe, while realizing one of their core missions – to enable technology transfer to industry.

FOSTER THE INTEGRATION OF THE UKRANIAN R&D COMMUNITY INTO A MORE COMPETITIVE EDTIB

EDRIN proposes the establishment of research calls dedicated to bringing together Ukrainian and European stakeholders spanning the entire value chain (academia, RTOs, SMEs, and industry). Such calls can foster the exchange of R&D expertise between Ukraine and the EU, while drawing added value from lessons learned for the entire EDTIB. In the medium and long term, such calls can contribute to ramping up the Ukrainian defence industry.

EDRIN proposes that RTOs coordinate and support projects under those dedicated calls.

FINAL REMARKS

EDRIN strongly underlines the need to not only strengthen the EDTIB by supporting primes, but to also give due consideration to the ways RTOs can contribute in the quickly evolving security environment. RTOs are indeed a key driver for innovation. We identify, research, and mature emerging and disruptive technologies ready for uptake and further development by industry. RTOs' pledge is to support the EU industry's sovereignty, and to offer to all sizes of companies the mean to develop their solutions for a better and safer society. The multitude of ongoing consultations regarding various initiatives in the defence domain only highlights the urgent need for targeted support for the entire value chain: from academia to RTOs, SMEs, midcaps, start-ups, and industry.

EDRIN is ready to support the European Commission in anchoring defence R&D in the European Defence Industrial Strategy and its subsequent implementation.

EDITORIAL NOTE

This white paper has been approved by all EDRIN member organizations. The main authors are:

- Jean-Xavier Chabane, CEA / Co-Chair
- Caroline Schweitzer, Fraunhofer VVS / Co-Chair

With contributions by:

- Tina Stefanova (Fraunhofer)
- Eelko Steenhuis (TNO)
- Erik Berglund (FOI)
- Anna-Mari Heikkilä (VTT)
- Marième Albertini (ONERA)
- Luís Carvalho (INOV)
- Spyros Kintzios (CERTH)
- Tomas Žalandauskas (BPTI)

Published: March 14, 2024