Dr, Martin Lundmark, Swedish Defence University, Roland Hellberg, Demonstrator and prototype activities for boosting defence innovation

In recent years, stimulating defence innovation has become an increasingly prioritized objective, further amplified by Russia's full-scale invasion of Ukraine in February 2022. Many nations have launched initiatives aimed at accelerating the pace of defence innovation, with a particular emphasis on expanding the participation of Small and Medium-sized Enterprises (SMEs) within the defence innovation ecosystem. A key goal among stakeholders engaged in defence innovation and military capability development is to reduce the time from initial ideas to operational capabilities. The Ukrainian case demonstrates how accelerated innovation can yield immediate and impactful support for armed forces in active conflict. Where an ever-evolving threat landscape is continuously met with corresponding countermeasures. Across Europe, there is growing collaboration and coordination among armed forces, procurement agencies, academia, and industry. These actors aim to integrate their competencies, resources, and innovations to foster a more dynamic and synergistic innovation ecosystem. Notably, both the EU and NATO have introduced initiatives to promote cross-border collaboration and facilitate the exchange of technological expertise (e.g. DIANA).National efforts to foster innovation are often framed within the "Triple Helix" model, which emphasizes sustained cooperation among government, industry, and academia. After decades of low threat perception, many European defence structures had become "peace-optimized," characterized by limited readiness for rapid upscaling in defence innovation, acquisition, logistics, and capability development. The sudden increase in security threats following the 2022 invasion of Ukraine exposed the lack of "dynamic capabilities" (Teece, 2007) within both state institutions and the defence industry, capabilities that now need to be developed urgently. This study provides an overarching analysis of European initiatives, nationally and through EU and NATO frameworks, aimed at accelerating defence innovation and broadening industrial participation. It focuses on Sweden's approach, including the implementation of the Ministry of Defence's Defence Innovation Strategy and the Civil-Military Innovation Programme (CMIP), along with other related initiatives. Demonstrator and prototype programmes play a critical role in fostering inclusive, exploratory innovation and serve as key indicators of progress in dual-use defence innovation. This research involves the examination of strategic documents from supranational and Swedish sources, direct observation of CMIP activities, and interviews with key participants, primarily within Sweden. The study analyses the organization, implementation, and outcomes of these initiatives. The primary objective is to assess how dual-use defence innovation is structured and executed. Preliminary findings suggest that existing defence acquisition infrastructures still exhibit characteristics of "peace-optimization," resulting in inertia when attempting to mobilize multiple stakeholders effectively. Insights from this research are intended to inform political leaders, procurement authorities, armed forces, and innovation actors by offering a clearer understanding of the structural conditions required for a revitalized and resilient defence innovation ecosystem.

Keywords: dynamic capability; triple helix, defence innovation, prototypes and demonstrators, defence industry, co-creation, trust, innovation ecosystem, dual use.