



EU defence research *in* development

by Daniel Fiott

On the 14 November 2016 EU member states welcomed the presentation of the Implementation Plan on Security and Defence (SDIP) by the High Representative/Vice-President. The plan serves as a follow-up to the EU Global Strategy (EUGS) with a specific focus on security and defence, but, more than this, the SDIP presents ideas that are directed at turning the EU's vision on security and defence into action. With the presentation of the SDIP, and the European Commission's forthcoming European Defence Action Plan (EDAP), the focus will now turn to producing tangible results.

Ambition, innovation and investment

Europe's shifting and strained security landscape demands concrete action if the EU is to play a role in protecting the continent. In this sense, the SDIP is more than just a document and the plan should not be read in isolation from the EUGS or, indeed, the forthcoming EDAP. By endorsing elements of the SDIP in their conclusions of 14 November 2016, the member states acknowledge the need for action. And action has, however tentatively, already begun. Beyond the cacophony of untruths surrounding its efforts on defence (e.g. the 'EU Army'), the EU has started to quietly put its vision into practice.

For example, on 28 October 2016 the European Defence Agency (EDA) fired the starting gun on EU investments in defence research. With an initial investment of €1.4 million into three initial

pilot projects, the intention is to make good on the SDIP's desire to ensure that the European Technological and Industrial Base (EDTIB) 'can fully meet Europe's current and future security needs'. These pilot projects will not only play into the 'wider Innovation Initiative' called for in the SDIP, but, with a view to protecting the Union and its citizens, they signal that technological innovation and defence investment are truly vital parts of building Europe's strength and resilience.

Yet the small financial contribution is dwarfed by the political significance of the pilot project. This is the first time that the EU has ever funded defence research and it embodies a new working relationship between the EDA and European Commission. While the pilot project will run for three years from 2015 to 2018, it sets the groundwork for defence research to become a permanent feature of the EU's defence efforts. The pilot project could have a 'snowball effect'. If the initial €1.4 million pilot project proves successful then the EU can move on to a Preparatory Action (PA) on defence research worth some €90 million over 2017-2019. If the PA functions as planned, the EU can then launch a fully-fledged European Defence Research Programme (EDRP) with a potential budget of €3.5 billion over 2021-2027.

Robots, swarms and sensors

In line with the level of ambition set in the EUGS and the SDIP, drilling down into the details of the

pilot project highlights the EU's nascent approach to defence research. Following an initial call for proposals on 23 March 2016, and after 21 applications had been submitted by 83 participants from 20 countries, the EDA settled on three individual projects. Not only do the successful bids address the defence capability priority areas identified in the 2014 Capability Development Plan (CDP) – i.e. Remotely Piloted Aircraft Systems (RPAS) and strategic enablers – but they may also give a foretaste of what to expect in the forthcoming revision of the CDP that is due by the end of 2018. What, then, are the three pilot projects that will set the tone for the PA and any potential future EDRP?

First is the 'SPIDER' project on Inside Building Awareness and Navigation for Urban Warfare. This project will, by November 2017, provide a proof of concept on a sensor and surveillance system designed to improve the situational awareness of soldiers in close-quarter, urban combat environments. By utilising the €433,225 grant, the project aims to overcome the challenge of detecting individuals hiding inside buildings during conflict. This Portuguese-led project involving Spanish and Bulgarian partners aims to develop a dual sensor system that deploys radio frequency sensors on the *outside* of a building, and employs mobile robots capable of seeing *inside* buildings using sensors and video cameras.

Second is the 'TRAWA' project on the standardisation of 'detect and avoid' systems on RPAS. This project aims to ensure that different varieties of RPAS can coexist in a single airspace, both with other RPAS systems and with manned aircraft (what is known as 'non-segregated airspace'). By May 2018 the project aims to utilise the €433,292 grant to ensure that a usable on-board 'detect and avoid' system can be developed for RPAS. This Dutch-led project brings together partners from Germany, Italy and the UK to ensure that RPAS not only have operational freedom of movement in European airspace but that the RPAS sector can benefit from enhanced standardisation and certification.

The final project is named 'EuroSWARM' and it aims to demonstrate an unmanned heterogeneous swarm of sensor platforms through a UK-led consortium including partners from France, Greece and Sweden. Due by November 2017, this €434,000-funded project will see a live demonstration of how defence tasks (i.e. border control and surveillance) can be performed by an unmanned and autonomous 'swarm' system without any need for weaponry. Through a 'swarm' of unmanned aerial, ground and naval platforms, sensors, lasers,

jammers and smoke generators, the project aims to ensure that the same level of military effect can be achieved without the use of lethal equipment.

Industry, capabilities and coherence

Each of the three projects exists on the lower end of the technology readiness level (TRL), where technology priorities are easier to identify than when projects move up the TRL scale to the demonstrator and development phases. At the higher end of the TRL, military requirements and industrial interests make it challenging to agree on common, long-term, capability needs. Nevertheless, each of the pilot projects neatly addresses the land, air and naval domains and there is a good balance between research focused on present operational needs and future technology trends. The SPIDER project seeks to address some of the existing and future challenges associated with crisis management operations in urban environments. The TRAWA and EuroSWARM projects aim to make use of advances in sensors and autonomous systems to ensure a more flexible and responsive 'human-machine interface' during operations.

Second, the EU's logic of funding cross-border research collaboration between research institutes and small and medium-sized enterprises (SMEs) has guided the Union's foray into defence research. In seeking to foster collaboration between various research and industry communities, the pilot project may have already offered a tangible example of the European added-value of EU-funded defence research. Accordingly, the pilot project speaks to the SDIP's emphasis on Key Strategic Activities (KSA) related to technologies, skills and industrial manufacturing capacities. KSAs ensure a certain level of strategic autonomy and they are the lifeblood of defence innovation.

Finally, the pilot project symbolises a new institutional working method whereby the EDA manages defence research programmes on behalf of the European Commission. After delegating the pilot project to the Agency in November 2015, this will be a test case not only for the EU's ability to finance vital defence research but to also prove to the member states that the EU can add value to national efforts on defence research. Any future EDRP may even eventually alter the way the EU develops defence capabilities. This is crucially important given the SDIP's emphasis on having 'the right capabilities, tools and structures to deliver more security for its citizens'.

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