Contribution ID: **274** Type: **Paper Abstract (Closed Panels)**

Innovation and engineering at the front: the Ukrainian case of Unmanned Systems

Friday 27 June 2025 14:40 (20 minutes)

This paper aims to answer who has been at the centre of the development of Unmanned Systems in Ukraine following February 2022, and how these actors have become organised into constellations that enhance military adaptability. With private actors being central as funders, producers and suppliers of drones, Ukraine demonstrates the contemporary role of the state and the military in guiding and facilitating defence technological innovation. Using a case study approach, it provides an in-depth look at the Ukrainian efforts and challenges of rapidly scaling and localising the production of drones during the war, paying special attention to the role of engineer-soldier collaboration in facilitating continuous development.

The Ukrainian example highlights that much of the innovative power is found in start-ups and industries outside the traditional defence-industrial pipeline, necessitating new solutions to bridge the gap. Realising the value of these actors, however, has relied on novel collaboration patterns. Initially, bottom-up initiatives by NGOs and volunteers dominated. While these demonstrated the operational potential of Unmanned Systems, the ad hoc nature hindered scaling.

Gearing the bureaucratic infrastructure, including within the Armed Forces of Ukraine and the defence procurement agency, to sustain innovation required new defence industrial strategies and significant changes to processes and organisation, including the formation of the Unmanned Systems Force and industry-platforms like Brave1. This provides an example of large-scale and sustained military innovation in wartime. Studying these constellations of actors that have jointly contributed to the development and deployment of Unmanned Systems showcases concrete mechanisms for enhancing innovative capacity for defence purposes.

Based on this empirically grounded examination, I argue that in an unpredictable strategic environment, boosting military adaptability that leverages the potential for rapid development of software-based systems requires the establishment of conduits to ease access for private companies to military feedback and testing prior to tender-based procurement.

What discipline or branch of humanities or social sciences do you identify yourself with?

Strategic Studies

If you are submitting an Open Panel proposal, have you included all four abstracts in attachment?

No, I am submitting a Closed Panel abstract

Are you a PhD student or early-career researcher?

Yes

Author: BERTHELSEN, Emilie (Royal Danish Defence College & Technical University of Denmark)

Presenter: BERTHELSEN, Emilie (Royal Danish Defence College & Technical University of Denmark)

Session Classification: Political Economy, Technology and the Defence Industry

Track Classification: Closed Panels: Political Economy, Technology and the Defence Industry