



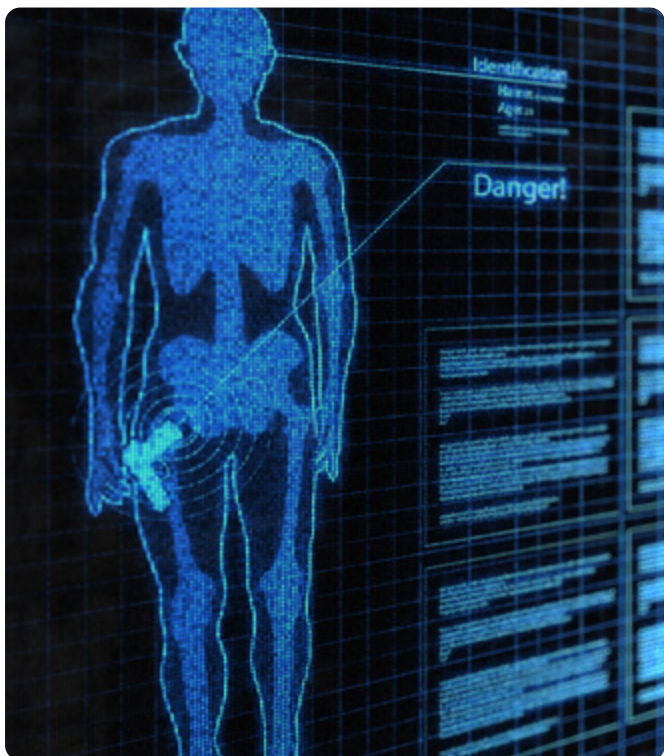
NATO Science for Peace and Security (SPS) Programme

DEXTER - Detection of EXplosives and firearms to counter TERrorism

CONTEXT

Subway stations, airports, and other mass transit and gathering venues across the world have been targeted by terrorist attacks, leading to significant loss of life and damage to infrastructure. The on-site prevention of these events depends primarily on random searches on passengers or checkpoints, but technological advancements are providing more thorough, accurate and reliable solutions, which can also reduce the impact of the current security measures on the public.

DEXTER (Detection of Explosives and firearms to counter TERrorism) is a flagship initiative of the NATO Science for Peace and Security (SPS) Programme that will seek a solution to this challenge, by developing a system at the crossroads between counter-terrorism and advanced technologies that can identify the carriers of explosives and firearms in crowds without disrupting the flow of pedestrians.



GOALS

- DEXTER will allow the identification of carriers of firearms and explosives among moving pedestrians, remotely and in real time.
- It will detect these threats discretely, without requiring random checks on moving passengers or checkpoints in crowded venues and mass transit scenarios.
- It will integrate multiple technologies into an infrastructure capable of incorporating new and upgraded detection systems in the future, thus has the potential of keeping up with evolving threats.



HOW IT WORKS

DEXTER integrates into one prototype the technological solutions developed by three NATO SPS research and development projects:

- 1 MIC (Microwave Imaging Curtain)** aims at designing a radar-based imaging device capable of generating 2D and 3D images in real time, enabling the detection of explosives and firearms without the need for checkpoints; MIC makes use of machine learning algorithms to elaborate the images and automatically identify and characterize potential threats.
- 2 EXTRAS (EXplosives TRAce detection Sensor)** will use spectroscopy techniques to allow the detection of proximal traces of explosives and their precursors on surfaces (like potential attacker's hands, body and luggage).
- 3 INSTEAD (INtegrated Systems for ThrEats early Detection)** aims at delivering a fusion system for the centralized management of multiple sensors and cameras, which will improve the capacity to detect person-borne explosives and firearms in moving crowds.

11 institutions from 4 NATO countries and 4 NATO partner nations will be involved in the development of these projects, which will be integrated and demonstrated in a real-life scenario.



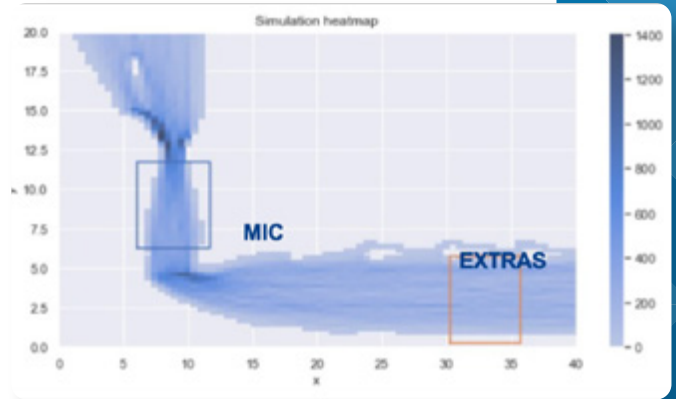
11
Institutions



4
NATO Countries



4
NATO Partner Nations



IMPACT

DEXTER will help increasing the safety of mass transit and gathering venues by delivering a solution at the crossroads between counter-terrorism and advanced technologies. In doing this, it will contribute to NATO's Action Plan on enhancing NATO's role in the international community's fight against terrorism by helping to prevent, protect and respond to terrorist threats.

Additionally, by making use of the most recent advancements on sensors, detection and artificial intelligence, DEXTER represents a perfect example of NATO's agenda in the field of Emerging and Disruptive Technologies.

The NATO Science For Peace And Security Programme

The NATO Science for Peace and Security (SPS) Programme develops and implements practical cooperation and enhances dialogue between NATO nations and partner countries through capacity-building and security-related civil science technology and innovation.



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