FFI Norwegian Defence Research Establishment

FACT SHEET

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Next generation base defence system

How autonomy and new technology can improve safety at military bases and civilian facilities.

Protecting bases and camps is a demanding undertaking often requiring substantial guard force and significant fortifications. By leveraging open standards it is now possible to network sensors of different types to provide information to a unified user interface in an operations room. This network can present video that support situational awareness and display detections that indicate significant events that might constitute threats to the bases.

A base can be subjected to a wide range of attacks. The network of sensors must be tailored to detect most types of attacks, ranging from UAVs to sniper attacks and deliberate ground force attacks. Operating these sensor systems is laborious and tedious work. This is driving the development of artificial intelligence software that enables sensors to operate independently. Tirelessly scanning and registering they will only generate alarms as a recognized object is detected.

However the sensors also detect events that are not attacks. In fact the overwhelming number of detections will be harmless events. The guard force manning the operations room must however investigate all detections. Detections that cannot be investigated from static sensors directly will demand the reaction force to respond. A fleet of remotely operated semi-autonomous drones and vehicles are used to conduct investigations quickly without deploying the reaction force. In case the detection actually turns out to be a threat, own lives will be spared as the unmanned systems conduct the initial engagement with the threat. Effective weapon systems as well as systems for escalation of force will be integrated on to the unmanned systems.

How the system works

Operations room

When an alarm is set off, the guard force will gather more information from static sensors or semi-autonomous vehicles. If necessary they can fight back using remotely controlled weapon systems or deploy ground troops.

Autonomous vehicles

Drones, unmanned ground vehicles and unmanned boats (surface vehicles) can be programmed to patrol the perimeter of the base, or they can be deployed to gather more intelligence when an alarm is set off.

Sensors

A wide range of sensors can be connected to the network, providing information to the operations room, for example shot detection, seismic sensors, and infrared and other optical cameras.