



Developing Practical Cooperation through Science

Israel has been actively engaged within the framework of the NATO Science for Peace and Security (SPS) Programme since 1996.

The NATO SPS Programme enables close collaboration on issues of common interest to enhance the security of NATO and partner nations by facilitating international efforts to meet emerging security challenges, supporting NATO-led operations and missions, and advancing early warning and forecasting for the prevention of disasters and crises.

The current SPS Key Priorities include:

- Counter-Terrorism;
- Energy Security;
- Cyber Defence;
- Defence against CBRN Agents;
- Environmental Security;
- Security-related Advanced Technology;
- Border and Port Security;
- Human and Social Aspects of Security.

Additionally, the SPS Programme helps to promote *regional security* through scientific cooperation among partners. The Programme also helps to *prepare* interested eligible nations for NATO membership. SPS activities often have a high *public diplomacy* value.

ISRAEL

Israel is an active partner in the SPS Programme with a number of ongoing activities. At present, the leading areas for cooperation include **Advanced Technology, Counter-Terrorism, Cyber Defence and CBRN Defence**. Below are some examples of ongoing and completed activities led by scientists and experts from Israel and NATO countries in the framework of the NATO SPS Programme.

Cooperative Activities

ANALYSIS, DESIGN AND IMPLEMENTATION OF AN END-TO-END 400KM QKD LINK

The main goal of this ongoing Multi-Year Project (MYP) is to develop new methods of secure long-distance communication to allow military personnel to connect and communicate safely in protected cyber-space. The project focuses on carefully analysing every aspect of the practical implementation of a long range Quantum Key Distribution (QKD) link with trusted nodes to achieve the highest possible secret-key rate generation within the security and system level constraints. To this purpose, a long range QKD link with trusted nodes will be used as a test benchmark. The project aims to assess and improve the resilience of military systems to communications hacking. *This project is led by experts from Israel and the United States, with support from Italy and Pakistan.* [ref. G5263].

CYBER DEFENCE SUMMER SCHOOL

This SPS Advanced Study Institute (ASI) engaged young researchers from NATO and partner nations, comprising lectures on the latest developments in cyber defence. The advanced-level audience received training in cyber terrorism counter-measures with methods and techniques of theoretical computer science. The ASI, held in Marktoberdorf, Germany, is a yearly networking hub that helps to establish

an international community of competent young researchers in the field of cyber defence. Editions of the Summer School supported by the SPS Programme were held in 2017, 2016 and 2014. *This Advanced Study Institute was led by Israel and Germany.* [ref. 5315].



CLOUD-BASED ARCHITECTURE FOR BORDER SURVEILLANCE SYSTEMS

The project ‘Dynamic Architecture based on UAVs mOnitoring for border Security and Safety’ (DAVOSS) was launched in April 2018 to develop a cloud-based architecture aimed at enhancing capabilities for border surveillance. The system will be based on an innovative sensors-network model, which better fits the need to protect large areas and is capable of integrating a large number of different sensors (cameras, thermal and noise sensors, unmanned systems, etc.). *This project is led by experts from Israel and Italy.* [ref. G5428].

DEVELOPMENT OF NEW CHEMICAL SENSORS AND OPTICAL TECHNOLOGIES FOR FAST AND SENSITIVE DETECTION OF IMPROVISED EXPLOSIVE DEVICES

The objective of this project, launched in September 2018, is to develop a compact, portable system for the detection of explosives to be used by police and security officers. It will combine two independent sensor technologies: a chemical sensor and Multiphoton Electron Extraction Spectroscopy (MEES). The system will be able to take measurements from the same sample simultaneously, and provide a robust detection sensitivity while limiting false

positive events. *This project is led by Israel and Spain.* [ref. G5536].

AUTONOMOUS PLATFORM FOR SECURING MARINE INFRASTRUCTURES

This MYP aims to develop an underwater unmanned system to secure marine infrastructures from the threat of diving intruders and submerged mines. Researchers will investigate key aspects for the successful operation of autonomous underwater observation systems, i.e. object detection, positioning, and classification. They intend to develop practical system architectures and signal processing algorithms, and to deploy them using a marine platform on-board of an autonomous underwater vehicle (AUV). The platform will provide detection through an acoustic array, while the AUV will use its sonar system to enable detection verification of submerged mines. *This project is led by experts from Israel, Spain and Canada.* [ref. G5293].

COUNTERING TRAFFICKING OF WMD AND CBRN MATERIALS IN A MARITIME ENVIRONMENT

This workshop presented the latest developments in technological, legal, strategic and tactical aspects relevant to CBRN/WMD proliferation in a maritime environment. Held at the NATO Maritime Interdiction Operational training Centre in May 2018, it improved cooperation and fostered the exchange of views, expertise and awareness between NATO and partner nations on various aspects of the issue. *This event was led by Israel and Greece.* [ref. 5469].



The NATO Science for Peace
and Security Programme

www.nato.int/science