The NATO Science for Peace and Security Programme

Science for Peace and Security (SPS) Programme

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History of Science at NATO

60 70 80 90 00 10 18

Science Committee

SPS

Committee on the Challenges of Modern Society

Intra-NATO Cooperation

Partnership

ESC Division

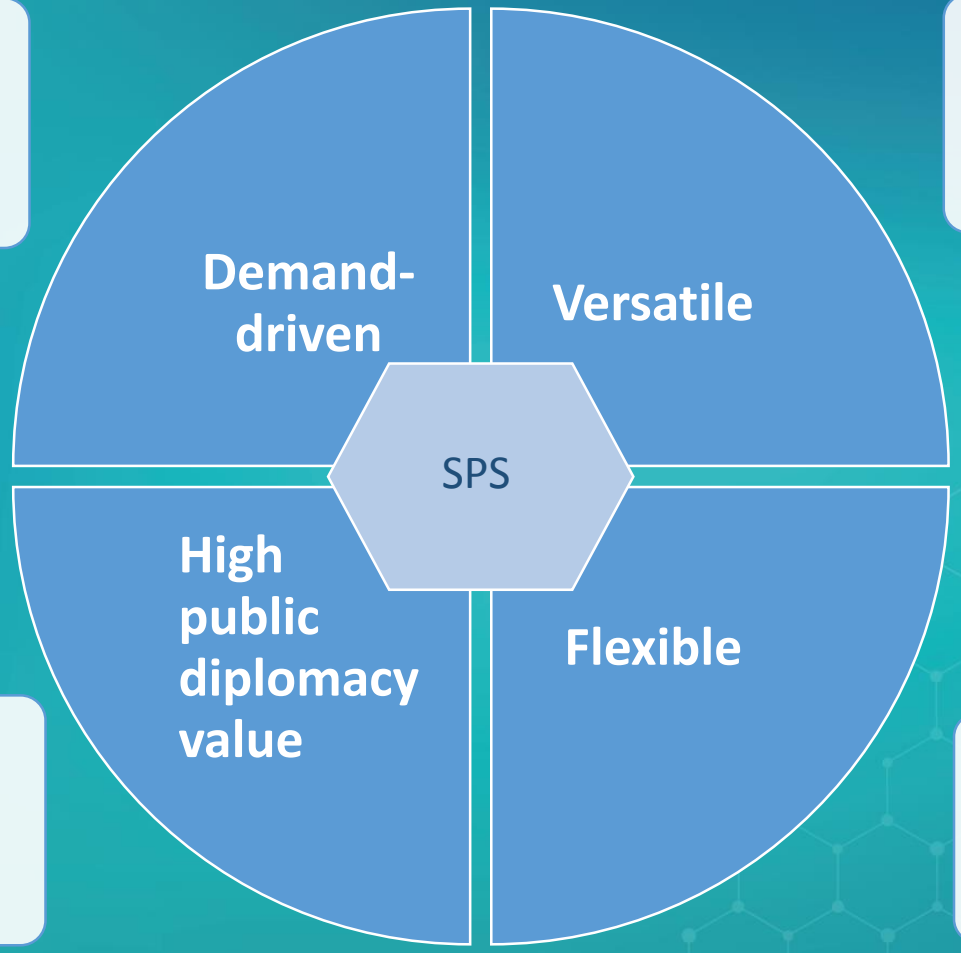
Building Scientific Communities

Security

The Science for Peace and Security (SPS) Programme is…

Partnership priorities

Science



Security relevant

and beyond…

…in close cooperation with other NATO Divisions & Bodies

Key Priorities of the SPS Programme

EMERGING SECURITY CHALLENGES

- Counter-terrorism
- Energy security
- Cyber defence
- Defence against CBRN agents
- Environmental security

SUPPORT FOR NATO-LED OPERATIONS & MISSIONS

NEW DEVELOPMENTS AND CRISIS PREVENTION

- Security-related advanced technology
- Border and port security
- Mine and UXO detection and clearance
- Human and social aspects of security

OTHER DIRECTLY SECURITY-RELATED TOPICS

Euro-Atlantic Partnership (EAPC)

Armenia, Austria, Azerbaijan, Belarus, Bosnia and Herzegovina, Finland, Georgia , Ireland, Kazakhstan, Kyrgyz Republic, Malta, Republic of Moldova, Montenegro, Serbia, Sweden, Switzerland, Tajikistan, Turkmenistan, Republic of North Macedonia, Ukraine, Uzbekistan

Partners around the Globe (PaG)

Afghanistan, Australia, Colombia, Iraq, Japan, Mongolia, New Zealand, Republic of Korea, Pakistan

SPS COOPERATION

Mediterrean Dialogue (MD)

Algeria, Egypt, Israel, Jordan, Mauritania, Morocco, Tunisia

Istanbul Cooperation Initiative (ICI)

Bahrain, Kuwait, Qatar, United Arab Emirates

SPS Grant Mechanisms

Multi-Year Projects (MYPs)

R&D projects;
Purchase of equipment;
Reimburse travel expenses;
Training for young scientists

Advanced Study Institutes (ASIs)

High-level tutorial courses;
Latest developments;
Young scientists at post-doctoral level.

Advanced Training Courses (ATCs)

Specialists in NATO countries share security-related expertise with trainees from partner countries

Advanced Research Workshops (ARWs)

Expert workshops aimed at finding solutions to today's security challenges.

A. Projects

B. Training

C. Workshops

Success Stories

NATO SPS Partnership Prize to 3 multi-year projects in the following SPS Key priorities:

- **Advanced Technologies**
- **Cyber Defence**
- **CBRN Defence**

Compact Sensor for Unmanned Aerial Vehicles

Secure Implementation of Post-Quantum Cryptography

The Anthrax MntABC Transporter: Structure, Dynamics, and Drug Discovery

Prof. Otokar Grošek, SPS co-director

Slovak Scientist of the Year in the category "Figure of International Cooperation".

High Public Diplomacy Value

- **SPS Website**: SPS activities are featured online in news stories and videos
- **Social Media**: Photos, announcements and updates on SPS activities are shared on the **SPS Twitter Account @NATO_SPS**
- SPS activities have been featured in **mainstream media** such as the New York Times, Bloomberg Business, Politico, Washington Post, local media and journals
- Publication of ARW, ASI and ATC proceedings in the **NATO Science Series**
- **SPS Information Days** in NATO and partner nations

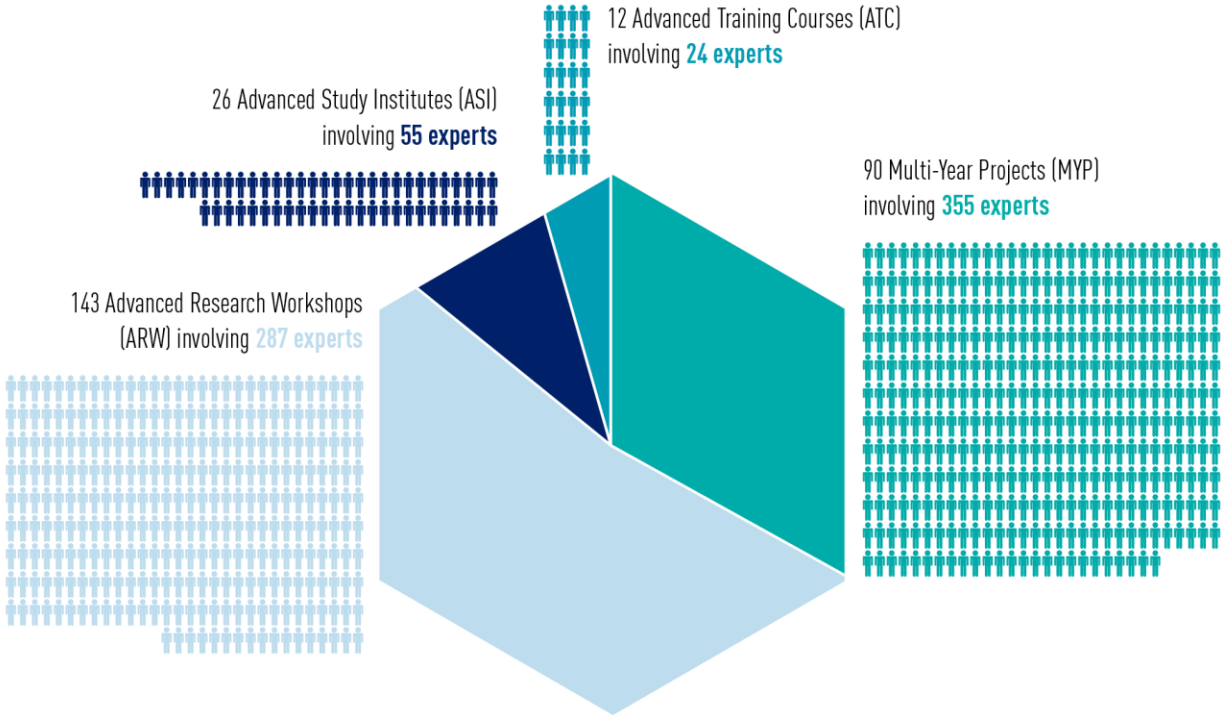
SPS Cooperation with Ukraine: Facts and Figures

NATO OTAN

The NATO Science for Peace and Security Programme

Practical Cooperation with Ukraine - Facts and Figures 2019

Since 1991, more than **721 experts** from Ukraine have participated in the SPS activities as follows:



Over the past 28 years the SPS Programme has facilitated the exchange of more than **945 young scientists.**

83 publications

Thanks to the SPS Programme more than **146 experts** from NATO countries have visited scientific establishments from Ukraine with the aim of knowledge sharing and exchange of good practices.

The SPS Programme also supported **44 Ukrainian young scientists** who studied abroad to continue their research in Ukraine.

Cooperation with a wide range of NATO and partner countries:

- Belgium
- Bulgaria
- Canada
- Croatia
- Czech Republic
- Denmark
- Estonia
- France
- Germany
- Greece
- Hungary
- Italy
- Latvia
- Lithuania
- Netherlands
- Norway
- Poland
- Portugal
- Romania
- Slovakia
- Slovenia
- Spain
- Turkey
- United Kingdom
- United States
- Armenia
- Australia
- Azerbaijan
- Belarus
- Egypt
- Finland
- Georgia
- Israel
- Japan
- Kazakhstan
- Mauritania
- Morocco
- Republic of Korea
- Serbia
- Sweden
- Tunisia
- Uzbekistan

Examples of SPS Activities in Cooperation with Ukraine

Contribution to Comprehensive Assistance Package

Key Flagship Activities

Durable impact

Comprehensive Assistance Package (CAP) for Ukraine

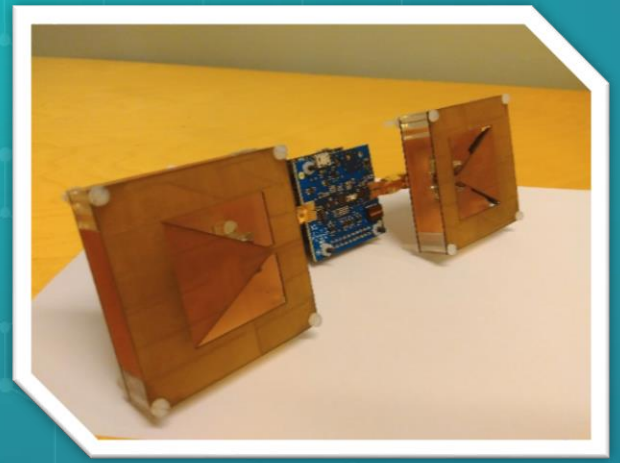
3 SPS MYPs completed:

G4748 - "Multinational Telemedicine System"

- To improve access to medical expertise and increase survival rates in emergency situations, including in remote areas.

G5024 - "Support to Humanitarian Demining in Ukraine"

- Equipment and training for the State Emergency Service of Ukraine (SESU) in Donetsk and Luhansk regions.
- Also enabled clearance by Ukrainian demining teams in Balaklia and nine nearby settlements, following the March 2017 incident.



G5217 - "Development of a Mine and IED Recognition System based on Ultrawideband Technology"

- Enhanced the detection of dangerous targets, allowing for faster, cheaper and safer clearance of former conflict zones.

DEXTER: Detection of EXplosives and firearms to counter TERrorism

Objective: Develop an integrated system to detect explosives and firearms in public places, remotely and in real time, without disrupting the flow of pedestrians.

The DEXTER Consortium includes:

- **11** institutions from NATO (France, Italy, Germany, Netherlands) and Partner nations (Ukraine, Republic of Korea, Republic of Serbia, Finland).

- **3** SPS MYPs:
  - G5395 – "Microwave image curtain (MIC)"
  - G5526 – "EXplosive TRAce detection for Standex (EXTRAS)"
  - G5605 – "INtegrated System for Threats EArly Detection (INSTEAD)"

- **5** additional contributing nations

Redefined Chernobyl Confinement Model

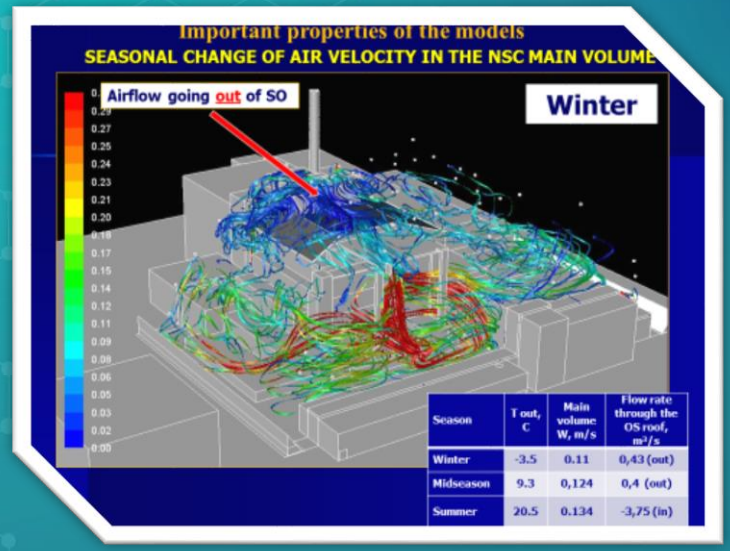
G4906 - MYP led by Germany and Ukraine
Implemented between January 2015 and May 2019

Objectives

- To assist Ukraine in managing radioactive dust disturbances and leaks.
- To develop a 3-D computer model for the distribution and movement of highly radioactive dust and aerosols of the destroyed Chernobyl reactor unit 4.

Outcomes

- ✓ Model transferred to end-users, who can use it to predict dose loads and select protection measures for the personnel who are dismantling the destroyed reactor.
- ✓ The work is being done under the New Safe Confinement (NSC) built to cover the destroyed unit 4.



End-users

- State Specialized Enterprise “Chernobyl Nuclear Power Plant” (ChNPP)
- The State Agency for the Management of the Exclusion Zone
- Ukrainian authorities responsible for the safety of the Chernobyl personnel
- NOVARKA consortium that built the New Safe Confinement

New Phytotechnology for Cleaning Contaminated Military Sites

- **G4687 - MYP** led by **Czech Republic** and **Ukraine, with experts** from **Kazakhstan and Slovakia**
- Kicked-off in **April 2016** – still ongoing

Goals:

✓ Develop methods for producing **biomass** from **grass hybrid**, grown on contaminated military sites, in order to **decontaminate soil**.

✓ Focus on how to produce **second generation biofuels** from the biomass

Outputs:

✓ **New phytoremediation technology as an** alternative approach to the rehabilitation of military sites.

✓ **Biomass production** as a possibility for the defence research and development community to advance **biofuel production.**

✓ Publication of a **guideline book** that will enable relevant authorities to use the **method** for commercial production of this grass hybrid on contaminated soil.

Flood Monitoring and Forecast in the Pripyat River Basin

MYP led by Belarus, Ukraine, and Slovakia

Kicked-off in November 2009 and concluded in November 2011

End users:

- ✓ Hydrometeorological Centres at Brest Oblast (Belarus) and Volyn Oblast (Ukraine)
- ✓ Ministry of Natural Resources and Environmental Protection (Belarus)
- ✓ Central Research Institute for Complex Water Resources (Belarus)
- ✓ Nuclear Power Station at Rivne, Ukraine.

Outcomes:

- ✓ Riverbed and floodplain cross-sections of the Pripyat river basin as a basis for **river-monitoring design** and **hydraulic modeling**;
- ✓ Installation of a **network of seven river monitoring stations** at the Pripyat river estuary (five upstream in Ukraine and two in Belarus);
- ✓ **Online public data sharing** of water level, current, precipitation, flood forecast and warning;
- ✓ **Knowledge transfer** to end-users.

New Electron Storage Ring (NESTOR)

Project led by the Netherlands, Ukraine and Germany

Longest running SPS project: 2003-2012

Outcome:

- ✓ A unique machine that produces high energy X-rays for high resolution image detection systems.
- ✓ Smaller and much less expensive than previous models.
- ✓ Used in medicine, detection of illicit trafficking and explosives, forensic detection and environmental security.

Impact:

- ✓ Located in National Science Centre's Kharkiv Institute of Physics and Technology
- ✓ **18** out of 42 project team members were **young scientists**
- ✓ Built capacity and helped retain young talents in Ukraine

Now open: Special Calls for Proposals

- Building on recommendations from SPS Cluster Workshops held in 2018 and 2019
- Aligned with current and future trends
- Details and application material available on the SPS website under "How to Apply"
- Deadline: 15 February 2020

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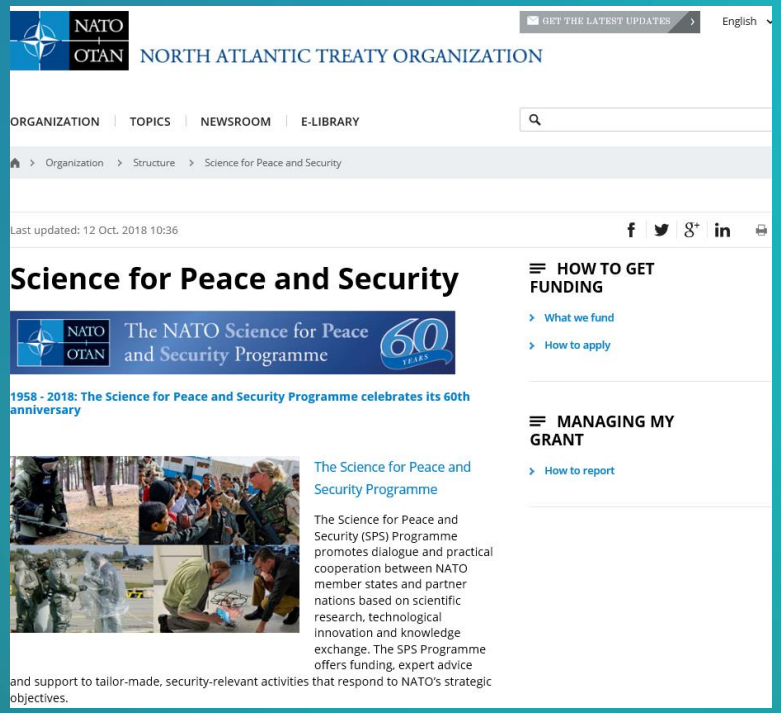

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