



# Research Program 7 Technology Foresight

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**The aim of the Technology Foresight research program is to identify disruptive technology trends. It will assess their implications within a military context and indicate possible consequences for the Swiss Armed Forces. armasuisse Science and Technology is contributing to the identification of future technologies that may significantly change the military environment. Identifying potentially disruptive technology trends in good time will allow risks affecting developments and planning for the armed forces to be addressed in a timely manner. This requires the continuous pursuit and evaluation of research activities across a variety of technology areas.**

The extensive interconnectedness of the contemporary world facilitates the unhindered global dissemination of technological knowledge. This has implications for other areas. In both the civilian and military contexts, it is important to avoid being surprised by technological developments, and to identify early enough the opportunities and risks which new technologies present. An effective technology forecasting must draw attention to new technologies and relevant technology developments that will impact the security forces. Using technology monitoring, which has a slightly closer time horizon than technology forecasting, security forces can be advised whether they can rely on a new technology or not, if they have to adopt it (ex. replacement of a technology) and when the right time is to do it. On one hand it guarantees to invest only in mature technologies and on the other hand, it makes sure not to miss any emerging technological advances. Only this way can financial resources be efficiently invested in appropriate technologies.

5 different categories have been created to categorize the wide range of technologies. These will permit struc-

tured analysis of scientific and industrial activities.

The following four clusters have been defined:

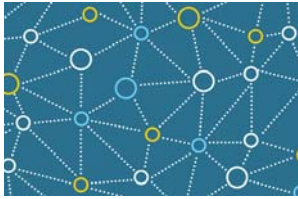
- Information and communication
- Energy
- Nanotechnologies and materials
- Biosciences and
- Systems

The work of the Technology Foresight research program includes:

- developing methods and tools to record technological trends with disruptive potential
- building up a network of Swiss and international experts
- establishing procedures for evaluation in a military context
- transferring knowledge and findings for use by armed forces decision makers



# Areas of expertise



## Expert network and information sources

Identifying, developing and monitoring a national and international network drawn from scientific experts and centers of technological excellence. Integrating and analysing the relevant digital data streams which exist within a particular area of technology together with the development stage which that area has reached (patents, publications, internet, etc.). Building up a network of experts and a shared information platform.



## Information management, identifying and anticipating trends

Capturing, recording, storing and processing large volumes of data in a variety of forms. Automating the various procedures and information analysis (deep learning). Producing indicators allowing a technology area and its development dynamic to be rapidly understood. Creating links between the technologies, industry and the operational capabilities of the armed forces.



## Presentation and dissemination of specialist knowledge

The methodology and tools for conducting thematic workshops. A platform for visualizing technologies and their links to military capabilities, industry and products. Development of future projections (scenarios, animations, etc.) to evaluate potential use. Producing structured documents that provide information that can be read quickly and absorbed rapidly.

# Technology demonstrators



## Collaborative platform for technological intelligence

Keeping track of the entire spectrum of technological developments is an extremely wide-ranging and challenging undertaking that will be virtually impossible for individual organizations to tackle on their own. Consequently, armasuisse S+T's Technology Foresight research program is pursuing a crowd sourcing approach involving scientific institutions, industry and SMEs. By using an open source platform ([www.technology-horizon.org](http://www.technology-horizon.org)), information about technologies and their development can be collected in full, evaluated as regards their maturity level and presented in an easily understandable form.

# Networks

The requisite professional skills build on a broad network of partners from business, universities (including universities of applied science) and other research units in Switzerland and abroad. To ensure that these skills are properly developed, there is close contact and an ongoing exchange of information with users and with planning, procurement and testing units within the DDPS.

### State partners / federal government

- Armed Forces
- Swissnex, Bern
- Secretariat for Education, Research and Innovation, SERI, Bern
- armasuisse, Bern
- Swiss Federal Department of Foreign Affairs, Bern
- NATO/PfP
- EDA

### Universities, universities of applied sciences/industry

- EPFL, Lausanne
- ETHZ, Zurich
- Envisioning Ltd, San Paolo, BR
- Centredoc SA, Neuchâtel
- Quantinum AG, Bern
- Institute for the Future, Palo Alto, USA
- RAND Europe, Cambridge, UK
- Swiss Academy of Technical Sciences (SATW), Zurich
- Scenario Management International, Paderborn, DE