



## **Resolution 72/28**

# **The Role of Science and Technology in the context of International Security and Disarmament**

Kingdom of the Netherlands

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Netherlands' national view for the report of the Secretary-General on Resolution 72/28 on The Role of science and technology in the context of international security and disarmament

### **Introduction**

The Netherlands hereby presents its national view on Science and Technology and their potential impact on international security and disarmament efforts. To remain concise this view is limited in content and time. Timewise this view is confined to the next five years. This period is foreseeable while offering a realistic and meaningful glimpse into the future. In terms of content, this view focuses on possible threats as well as solutions thereof. This is most relevant in the context international security and disarmament. Within this framework, our national view highlights threats related to developments in: 1. Cyber; 2. Artificial Intelligence; 3. Convergence of Chemistry and Biology; 4. Genome editing. Before elaborating on the possible threats emanating from these developments, it is important to underline that the quelling of these threats should stem from existing international law. Guided by the purposes and principles as maintained by the UN Charter under article 1.1, most relevant sources include the Chemical and Biological Weapons convention and overarching (customary) International Humanitarian Law (and obligations such as 'distinction' and 'proportionality' in particular; as stipulated by Articles 48, 51(2), 51(5)(b) and 57(2)(a)(iii) of Additional Protocol I).

### **Cyber**

Cyber operations are attractive because of the large potential impact that can be realized through only relatively limited resources. In many cases, perpetrators of malicious cyber operations have a certain degree of plausible deniability.

These specific characteristics of cyberspace create the risk of proliferation of offensive cyber capacities and low barriers for their actual use. This creates risks and has a potential destabilizing effect on international relations. It may also impair open, free and secure nature of the internet, with detrimental consequences for the economic opportunities offered by digitization.

Technological change can also lead to an increase in attack surface. The rapid development of the made up of devices that contain vulnerabilities that are currently not patched through security updates is a case in point. An even greater potential risk, especially in terms of the potential impact that it can have, is the risk for nuclear C2 systems to be compromised.

The impact of all the aforementioned risks would be even more pronounced if the current consensus on the application of existing international law to cyberspace and on supplementary voluntary non-binding norms on responsible state behavior would not be sufficiently strengthened.

### **Artificial Intelligence**

Artificial intelligence is a collection of present and (near) future technologies, that has the potential to profoundly influence human civilization. It is expected to further change the role of, and relation between, man and machine. Besides opportunities, there are risks. The overarching risk related question is: How will humans remain to exercise meaningful human control over advanced systems with artificial intelligence? This applies not only to the – since 2013 much debated – autonomous weapon systems, but also to AI in transportation, finance business, healthcare, the judicial system and many other areas. The answer to this question is not simple and depends on many different factors. A thorough and deepened debate about meaningful human control is therefore necessary in all domains where AI is applied. That debate, and the forthcoming solutions, should not be limited to the operational phase of the AI-systems, but should incorporate already the phases of design, development and testing.

### **Convergence of Chemistry and Biology**

Increasingly chemicals are being produced using biologically mediated processes, for instance by microbial fermentation or by using enzymes as catalysts. Key enabling technologies have resulted in a rapidly expanding capability to redesign or manipulate organisms for specific purposes, and the ability to design and engineer improved enzymes. Although there are concerns that biotechnology could be applied to the production of new chemical weapons, the temporary working group (TWG) of the OPCW assessed in 2014 that potential applications to scheduled chemicals are currently limited. Creating a new biological process will continue to take a considerable investment of capital, resources and time; these considerations could reduce the likelihood of using such methods for large scale production of chemicals of concern, however, biomediated processes might still be effective for producing weaponisable quantities of toxins that are lethal to adult humans in microgram or lower dosage. The ongoing convergence of chemistry and biology present challenges for the CWC and the BTWC. This development presents issues that are of central relevance to both treaties and might warrant the question of which convention is best suited to cover a new substance. Thus far, this question has remained hypothetical, nonetheless it is a relevant issue that requires further attention. In answering this question, the response that best addresses the potential threat should be response of choice.

### **Genome editing**

A frequently raised point from a policy as well as scientific perspective is that advanced biotechnological techniques can pose a threat, because the required knowledge and equipment for targeted applications have become increasingly accessible in recent years. 'The threshold has been lowered' is a common qualification of this development. Advanced techniques within the field of biological engineering can indeed lead to applications that could pose a threat to society. However, a physical attack with a complex modified organism or products derived therefrom is currently unlikely as it requires very distinctive knowledge, extensive experience and advanced laboratory facilities.

At the present time and within the timeframe of five years considered for this national view, the chance of an attack with a biological weapon based on naturally occurring biological agents, or obtained through classical biotechnology, is greater than a biological weapon attack based on biological agents obtained through the new techniques discussed in this study.

Considering the expected development of genome editing and current threats posed by biological agents (not the product of genome editing) from the perspective of international security and disarmament efforts, full and effective implementation of the current bio regime is key: the Biological and Toxin

Weapons Convention (BTWC), UN Security Council Resolution 1540 and in a national context export control.

### **Conclusion**

Within five years groundbreaking developments are not expected in the field of genome editing or when it comes to the convergence of chemistry and biology. Notwithstanding, they both have the potential to create threats to international security in the future. In the field of cyber, current developments are creating great challenges. For these three areas, adherence to and strengthening of the existing disarmament and arms control frameworks are key in addressing current and future threats to international security and challenges to the framework itself. This also applies to developments in the field of Artificial Intelligence. In addition, a thorough discussion about human control is of the utmost importance in the field where AI is applied. In our view, existing international law should remain the basis for our efforts in all these fields.