

<b>Forum:</b>	Disarmament and International Security Council (GA1)
<b>Issue:</b>	The role of Emerging technologies in International Security and Disarmament
<b>Student Officer:</b>	Fani Kantzavelos
<b>Position:</b>	Co-Chair

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## PERSONAL INTRODUCTION

Dear Delegates,

My name is Fani Kantzavelos, and I am in the 10th grade at Athens College - HAEF. I am honored to be serving as one of the Co-Chairs of the Disarmament and International Security Committee at PSMUN 2022.

I would firstly like to welcome you all to this year's PSMUN. During the conference you will be able to debate, collaborate with your fellow delegates, come up with solutions for global problems, and form friendships.

The third topic of this committee focuses on explaining and defining the role of emerging technologies in international security and disarmament. This study guide should equip you with the necessary information to understand the topic and form constructive resolutions. However, you are highly encouraged to research the topic independently as well, since you will be able to have a better grasp on the topic and your delegation's stance. The bibliography at the end of the study guide can be a first step in that direction. Should you have any questions, please do not hesitate to contact me via email: [fkantzavelos@athenscollege.edu.gr](mailto:fkantzavelos@athenscollege.edu.gr).

I look forward to meeting you all!

Sincerely,

Fani Kantzavelos

## TOPIC INTRODUCTION

The 21<sup>st</sup> century is characterized by its technological advancements. Emerging and disruptive technologies (EDTs) have created worries in the scene of international security and disarmament. In 2020, the UN's Secretary General stated that "Technological advances are moving faster than our ability to respond to – or even comprehend – them. Despite enormous benefits, new technologies are being abused to commit crimes, incite hate, spread false information, oppress and exploit people

and invade privacy”.<sup>1</sup> EDTs are a vast array of weapons, that can range from nuclear weapons to chemical agents. Bioterrorism, nuclear proliferation, and illegal drone surveillance are all problems which EDTs have introduced to the scene of international security. Member states have different laws and frameworks in place for technologies, led by what they deem acceptable, resulting in an ambiguity, harmful to national sovereignty and global disarmament. Artificial Intelligence (AI) for example, is an ambiguous development in technology, due to its widespread use in manufacturing, but also in military technologies, constituting it a threat but also a powerful tool in everyday tasks.

Since the nuclear arms race, tension has arisen concerning the evolution of technologies, and how they will affect international security, stability, and disarmament. The reign of a crisis stability was evident during the Cold War, and increasing conflicts were on the brink of endangering whatever sense of security there was. Thankfully, the Non-Proliferation Treaty (NPT) and the Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and Under Water were the first steps in approaching nuclear deterrence. However, states such as North Korea who have not signed the NPT, launch missiles with emerging technology systems that have a range that poses grave threats to many member states, such as Japan, or even the US. Many have affirmed that emerging technologies contradict the foundations of structural stability and nuclear deterrence.<sup>2</sup> This leads to the disruption of the fragile stability which is presumed today.

When it comes to bioterrorism, many emerging technologies are easily implantable. Their implantation can create the ethical issue of human control, and human capability. Although neural implantable devices are capable of improving multiple patients’ day-to-day life, their exploitation through these devices is extremely dangerous.<sup>3</sup> It is not even the expansion of emerging technologies being able to be inserted into the human body that is concerning. It is the emerging technologies which can edit human genes that are even more concerning. Increasing accessibility.<sup>4</sup> Bioterrorism is an increasingly expanding phenomenon, which can be greatly fueled by emerging technologies.

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<sup>1</sup> Guterres, António. “Remarks to the General Assembly on the Secretary-General's Priorities for 2020 Secretary-General.” *United Nations*, United Nations, 22 Jan. 2020, [www.un.org/sg/en/content/sg/speeches/2020-01-22/remarks-general-assembly-priorities-for-2020](http://www.un.org/sg/en/content/sg/speeches/2020-01-22/remarks-general-assembly-priorities-for-2020).

<sup>2</sup> Zutt, Madeline, and Michal Onderco. “Emerging Technology and Nuclear Security: What Does the Wisdom of the Crowd Tell Us?” *Taylor & Francis Online*, 23 May 2021, [www.tandfonline.com/doi/full/10.1080/13523260.2021.1928963](http://www.tandfonline.com/doi/full/10.1080/13523260.2021.1928963).

<sup>3</sup> “Disruptive Technologies Push Bioterrorism to a Whole New Level.” *The Medical Futurist*, 21 Sept. 2016, [medicalfuturist.com/disruptive-technologies-bioterrorism/](http://medicalfuturist.com/disruptive-technologies-bioterrorism/).

<sup>4</sup> Pavel, Barry, and Vikram Venkatram. “Facing the Future of Bioterrorism.” *Atlantic Council*, 7 Sept. 2021, [www.atlanticcouncil.org/commentary/article/facing-the-future-of-bioterrorism/](http://www.atlanticcouncil.org/commentary/article/facing-the-future-of-bioterrorism/).

All in all, emerging technologies constitute a wide range of issues to international security and disarmament. “The ability of a state to develop and deploy a technology with sufficient salience to alter strategic stability depends on factors that go beyond the readiness and scope of the technology”.<sup>5</sup> If emerging technologies continue to disrupt the forefront of multilateral functions and relations, there will surely be a power imbalance, with the states that can produce and trade EDTs having an important say in international security and disarmament.

## DEFINITION OF KEY TERMS

### Artificial Intelligence (AI)

“The ability of a digital computer or computer-controlled robot to perform tasks commonly associated with intelligent beings. The term is frequently applied to the project of developing systems endowed with the intellectual processes characteristic of humans”.<sup>6</sup>

### Crisis stability

“Crisis stability means that even in a crisis, states do not escalate to nuclear weapons use”.<sup>7</sup> This means that states are not led to using nuclear force either in a crisis or not. Instead, states realize that any show of nuclear power can lead to destructive nuclear retaliation. This can be seen during the Cold War, in examples of proxy warfare. Wars were not waged directly between the US and the Soviet Union, but instead between other states, such as the Viet Cong and Vietnam, in order to reduce the increased chances of large devastation. The same applies to crisis stability, where the effects of nuclear weapons can be deadly in first use, and “vengeance” can create even worse situations. In short, states realize that they should refrain from leaning to nuclear weapons and aim for diplomatic means of resolution of conflict.

### Disarmament

“The act of taking away or giving up weapons”.<sup>8</sup>

### Emerging Technologies (EDTs)

“The term commonly refers to technologies that are currently developing, or that are expected to be available within the next five to ten years, and is usually reserved for technologies that are creating, or are expected to create, significant social or

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<sup>5</sup> Chyba, Christopher F. “New Technologies & Strategic Stability.” *Daedalus*, MIT Press, 1 Apr. 2020, [direct.mit.edu/daed/article/149/2/150/27321/New-Technologies-amp-Strategic-Stability](https://direct.mit.edu/daed/article/149/2/150/27321/New-Technologies-amp-Strategic-Stability).

<sup>6</sup> “Artificial Intelligence.” *Encyclopædia Britannica*, Encyclopædia Britannica, Inc., [www.britannica.com/technology/artificial-intelligence](https://www.britannica.com/technology/artificial-intelligence).

<sup>7</sup> Chyba, Christopher F. “New Technologies & Strategic Stability.” *Daedalus*, MIT Press, 1 Apr. 2020, [direct.mit.edu/daed/article/149/2/150/27321/New-Technologies-amp-Strategic-Stability](https://direct.mit.edu/daed/article/149/2/150/27321/New-Technologies-amp-Strategic-Stability).

<sup>8</sup> “Disarmament.” *Cambridge Dictionary*, <https://dictionary.cambridge.org/dictionary/english/disarmament>.

economic effects”.<sup>9</sup> Emerging technologies can be known as disruptive technologies, hence the acronym EDTs. “Emerging technologies might lead to disrupting certain aspects of an industry, business model, or customer segment while not impacting others”.<sup>10</sup> However, all disruptive technologies are also classified as emerging, since they are ground-breaking in the sector they “emerge” in. An example would be drones, which have been used recreationally, but also in means of shipping and military exercises. Drones have been developed to a surprising extent, but they are still emerging, since they are under experimentation for their lethal capabilities, such as being the interim agent for chemical substances/chemical weapons.

### Espionage

“The discovering of secrets, especially political or military information of another country or the industrial information of a business”.<sup>11</sup>

### HGV

“A hypersonic glide vehicle (HGV) is a hypersonic missile delivery system for precise targeting and rapid delivery of weapons, currently being developed by various countries”.<sup>12</sup> An example of an HGV is the Boeing X-51, which is a scramjet experimental aircraft developed by the US Air Force, NASA, Boeing, DARPA, and Pratt & Whitney Rocketdyne.<sup>13</sup>

### Hypersonic weapons

“Fast, low-flying, and highly maneuverable weapons designed to be too quick and agile for traditional missile defense systems to detect in time. Unlike ballistic missiles, hypersonic weapons don’t follow a predetermined, arched trajectory and can maneuver on the way to their destination”.<sup>14</sup>

### Nerve agents

Nerve agents “are highly toxic chemicals that prevent the nervous system from working properly, and can be fatal”.<sup>15</sup> They are split into three categories: The V-

<sup>9</sup> “What Is the Definition of Emerging Technology?: Winston & Strawn Legal Glossary.” *Winston & Strawn*, [www.winston.com/en/legal-glossary/emerging-technology.html](http://www.winston.com/en/legal-glossary/emerging-technology.html).

<sup>10</sup> Curran, Chris. “Emerging Technology and Disruptive Technology: What’s the Difference?” *Architecture & Governance Magazine*, 15 Feb. 2014, [www.architectureandgovernance.com/digital-transformation/emerging-technology-disruptive-technology-whats-difference/](http://www.architectureandgovernance.com/digital-transformation/emerging-technology-disruptive-technology-whats-difference/).

<sup>11</sup> “Espionage.” *Cambridge Dictionary*, [dictionary.cambridge.org/dictionary/english/espionage](http://dictionary.cambridge.org/dictionary/english/espionage).

<sup>12</sup> “HGV: Meaning & Definition for UK English.” Lexico Dictionaries | English, Lexico Dictionaries, [www.lexico.com/definition/HGV](http://www.lexico.com/definition/HGV). “Hypersonic Glide Vehicle Definition.” *Encyclo.co.uk*, [www.encyclo.co.uk/meaning-of-Hypersonic\\_glide\\_vehicle](http://www.encyclo.co.uk/meaning-of-Hypersonic_glide_vehicle).

<sup>13</sup> “Boeing X-51 Waverider.” *Wikipedia*, Wikimedia Foundation, 3 Jan. 2022, [en.wikipedia.org/wiki/Boeing\\_X-51\\_Waverider#Applications\\_for\\_hypersonic\\_technology](https://en.wikipedia.org/wiki/Boeing_X-51_Waverider#Applications_for_hypersonic_technology).

<sup>14</sup> Tiron, Roxana. “Hypersonic Weapons: Who Has Them and Why It Matters.” *Bloomberg.com*, Bloomberg, 28 Oct. 2021, [www.bloomberg.com/news/articles/2021-10-27/hypersonic-weapons-who-has-them-and-why-it-matters-quicktake](http://www.bloomberg.com/news/articles/2021-10-27/hypersonic-weapons-who-has-them-and-why-it-matters-quicktake).

<sup>15</sup> Therrien, Alex Therrien, and Philippa Roxby. “Russian Spy: What Are Nerve Agents and What Do They Do?” *BBC News*, BBC, 12 Mar. 2018, [www.bbc.co.uk/news/health-43328976](http://www.bbc.co.uk/news/health-43328976).

agents which are comprised of the chemical VX, the G-agents which are made of sarin, and the Novichok agents.

### Non-state actor

“The term “non-state actor” means a non-sovereign entity that— (A) exercises significant political power and territorial control; (B) is outside the control of a sovereign government; and (C) often employs violence in pursuit of its objectives”.<sup>16</sup>

### Nuclear deterrence

“The military doctrine according to which the possibility that a country will use the nuclear weapons it possesses in retaliation will deter an enemy from attacking”.<sup>17</sup> Nuclear deterrence is an issue to international security, since when it is enforced by the receiving country, it is in bigger force than the aggressor, in mutual assured destruction (“MAD”).<sup>18</sup> Contrary to the term of *crisis stability*, the country who has incited a nuclear attack on another state, will receive a nuclear attack of a larger scale, known as “MAD”.

### Unmanned Aerial Vehicle (UAV)

“Military aircraft that is guided autonomously, by remote control, or both and that carries sensors, target designators, offensive ordnance, or electronic transmitters designed to interfere with or destroy enemy targets”.<sup>19</sup>

### Proliferation

“The fact of something increasing a lot and suddenly in number or amount”.<sup>20</sup> In international security and disarmament, proliferation refers to nuclear weapons. The 7 nuclear states, China, France, India, North Korea, Pakistan, Russia, the United Kingdom, and the United States, possess nuclear weapons, or even manufacture them, causing their amount to increase rapidly and pose grave threats to international disarmament and security.

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<sup>16</sup> “Definition: Non-State Actor from 22 USC § 6402(11) | LII / Legal Information Institute.” *Legal Information Institute*, Legal Information Institute, [www.law.cornell.edu/definitions/uscode.php?width=840&height=800&iframe=true&def\\_id=22-USC-1357447846-657893730&term\\_occur=999&term\\_src=title%3A22%3Achapter%3A73%3Asection%3A6402](http://www.law.cornell.edu/definitions/uscode.php?width=840&height=800&iframe=true&def_id=22-USC-1357447846-657893730&term_occur=999&term_src=title%3A22%3Achapter%3A73%3Asection%3A6402).

<sup>17</sup> “Nuclear Deterrence: Meaning & Definition for UK English.” *Lexico Dictionaries | English*, Lexico Dictionaries, [www.lexico.com/definition/nuclear\\_deterrence](http://www.lexico.com/definition/nuclear_deterrence).

<sup>18</sup> “Nuclear Deterrence.” *RAND Corporation*, [www.rand.org/topics/nuclear-deterrence.html](http://www.rand.org/topics/nuclear-deterrence.html).

<sup>19</sup> “Unmanned Aerial Vehicle.” *Encyclopædia Britannica*, Encyclopædia Britannica, Inc., [www.britannica.com/technology/unmanned-aerial-vehicle](http://www.britannica.com/technology/unmanned-aerial-vehicle).

<sup>20</sup> “Proliferation.” *Cambridge Dictionary*, [dictionary.cambridge.org/dictionary/english/proliferation](http://dictionary.cambridge.org/dictionary/english/proliferation).

## Proxy war

“A war fought between groups or smaller countries that each represent the interests of other larger powers, and may have help and support from these”.<sup>21</sup>

## BACKGROUND INFORMATION

### Historical Background

EDTs that are of interest in international security fall under the categories of chemical-biological, hypersonic, AI, transport, and military. In terms of transport, UAVs and HGVs are the focus when it comes to EDTs. As defined above, emerging technologies are classified as developed technologies in the span of 5-10 years. EDTs firstly emerged around the mid 1930s, on the brink of World War II (WWII). Chemical weapons, gas chambers, and gas masks were all EDTs of the time, which changed global perception of weaponry forever. The aftermath of WWII led to the exploration of chemical weapons, and their possible use in espionage, assassinations, and proxy warfare.

The second “emergence” of EDTs happened during the Cold War. The UN had been founded, but tensions were increasing between the Union of Soviet Socialist Republics (USSR) and the United States (US). The outcome was the USSR rushing to dominate space and the nuclear arms race. The US had previously managed to create the atomic bomb and exemplified its devastating effects in Japan. Nerve agents were also advanced during the Cold War. The Novichok agents were developed in the Soviet Union during the 70s and the 80s. The back-and-forth competition, the uncountable vetoes, and the proxy warfare between other states for their political influence involved the use of emerging technologies which devastated the international community. Unfortunately, the espionage and the constant fear of a full-scale attack established a pretense of crisis stability. The employment of them “demonstrates that the destabilizing effects of a new technology can in fact be exacerbated or mitigated by deployment and doctrinal choices”<sup>22</sup>, especially as seen in the Cold War.

### Causes and Effects

The causes of the use of EDTs lead to the objective and incentive of countries during their establishment: dominance. Having an advantage in a sector which is still being discovered gives power and higher negotiability in favour of the holder of them. The most notable weapons of this time are missiles, since they supersede any weapon seen before. The mere consideration of substituting nuclear weapons with new, expansive technologies is not as popular as it once was, seeing as it doesn't serve the

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<sup>21</sup> “Proxy War.” *Cambridge Dictionary*, [dictionary.cambridge.org/dictionary/english/proxy-war](https://dictionary.cambridge.org/dictionary/english/proxy-war).

<sup>22</sup> Chyba, Christopher F. “New Technologies & Strategic Stability.” *Daedalus*, MIT Press, 1 Apr. 2020, [direct.mit.edu/daed/article/149/2/150/27321/New-Technologies-amp-Strategic-Stability](https://direct.mit.edu/daed/article/149/2/150/27321/New-Technologies-amp-Strategic-Stability).

desired utility in establishing a strategy which simultaneously maintains international security, disarmament, and nuclear deterrence.<sup>23</sup>

Hypersonic weapons, specifically missiles, have the ability to travel at a speed 5 times greater than speed of sound. As revolutionary as that may sound, hypersonic missiles have a larger spread effect, and a more precise target. Countries such as the US, Russia, China, and the DPRK have these weapons in their possession. They pose such a large threat, since the existing military defenses cannot react successfully against them. Although the missiles in use that have been fired and tested extensively are not of hypersonic nature, they certainly had accuracy and easily caused damages to the targeted state. In Iran's missile attack to US bases in Iraq, there were more damages done than initially revealed. "It now also seems clear that Iran did not "aim to miss" or select structures unlikely to contain U.S. personnel".<sup>24</sup> Many bases were "paralyzed" and provoked some initial difficulty in bouncing back to military activities. Nonetheless, missiles "could be developed to carry either conventional or nuclear warheads, and would be both very fast and, because of their maneuverability, possibly very accurate".<sup>25</sup> This is a large threat to international security and disarmament, seeing as their exploration is growing larger and larger.

UAVs, specifically drones, are also a major EDT, which affect international security. Since drones are used in transporting smaller goods, they have a depth and camera perception, which allow them to survey. "In recent years there has been growing interest within the international community in confronting issues posed by the increasing use of armed UAVs to conduct targeted strikes, particularly in areas outside of 'active hostilities'".<sup>26</sup> In many ways, they can be used illicitly to look over a country, which in turn steps over its sovereignty. But drones aren't completely considered to be illegal. Unfortunately, the influence of drones is slowly expanding in the use of armed force. The qualities that define them and attract military forces, can also lead to serious mistakes, which can harm international disarmament.<sup>27</sup> Their duality causes them to be misinterpreted as harmless or harmful. As a result, many countries can be

<sup>23</sup> Colby, Elbridge, and Ford. "Guest Blog: Elbridge Colby on 'The Substitution Fallacy.'" *The Hon. Christopher A. Ford*, 24 Dec. 2010, [www.newparadigmsforum.com/p645](http://www.newparadigmsforum.com/p645).

<sup>24</sup> Williams, Ian. "Uncomfortable Lessons: Reassessing Iran's Missile Attack." *Uncomfortable Lessons: Reassessing Iran's Missile Attack | Center for Strategic and International Studies*, Center for Strategic and International Studies, 6 Feb. 2020, [www.csis.org/analysis/uncomfortable-lessons-reassessing-irans-missile-attack](http://www.csis.org/analysis/uncomfortable-lessons-reassessing-irans-missile-attack).

<sup>25</sup> Chyba, Christopher F. "New Technologies & Strategic Stability." *Daedalus*, MIT Press, 1 Apr. 2020, [direct.mit.edu/daed/article/149/2/150/27321/New-Technologies-amp-Strategic-Stability](http://direct.mit.edu/daed/article/149/2/150/27321/New-Technologies-amp-Strategic-Stability).

<sup>26</sup> Borrie, John, et al. "Increasing Transparency, Oversight and Accountability of Armed Unmanned Aerial Vehicles." *UNIDIR | United Nations Institute for Disarmament Research*, 12 Jan. 2017, [www.unidir.org/files/publications/pdfs/increasing-transparency-oversight-and-accountability-of-armed-unmanned-aerial-vehicles-en-692.pdf](http://www.unidir.org/files/publications/pdfs/increasing-transparency-oversight-and-accountability-of-armed-unmanned-aerial-vehicles-en-692.pdf).

<sup>27</sup> Borrie, John, et al. "Increasing Transparency, Oversight and Accountability of Armed Unmanned Aerial Vehicles." *UNIDIR | United Nations Institute for Disarmament Research*, 12 Jan. 2017, [www.unidir.org/files/publications/pdfs/increasing-transparency-oversight-and-accountability-of-armed-unmanned-aerial-vehicles-en-692.pdf](http://www.unidir.org/files/publications/pdfs/increasing-transparency-oversight-and-accountability-of-armed-unmanned-aerial-vehicles-en-692.pdf).

in danger because of their ambiguity in international security and disarmament. A devastating event where the use of drones was lethal, was in 2006. The Israeli military carried out a drone strike in the south of Beirut, which led to the death of 6 people and the wounding of 16 people. Later on, Israeli Prime Minister Ehud Olmert accepted an emerging Mideast cease-fire deal and informed the United States of his decision. However, the consequences of this show that military force certainly heightened tensions in the area and disrupted international security to an alarming extent.

Finally, bioterrorism has seen an increasing rate in interest by many countries. Nuclear weapons, missiles, drones (UAVs), and AI are all technologies which are somewhat detectable, and can cause extreme damage, especially if used purposely. Biological and chemical weapons have a different capability in weaponry. They are “silent” agents, and extremely lethal. Nerve agents, such as Novichok, have seen increasing popularity among states, especially Russia since the Cold War. When it comes to genetic data, it also poses a serious threat to humankind. Storing genetic data has been seen as a practice in Estonia, and it isn’t perceived as abnormal by its population. However, genetic data can be weaponized, and can gravely disrupt international security and disarmament. The Chemical Weapons Convention is in place, however not all countries abide by it. “All States Parties have agreed to chemically disarm by destroying any stockpiles of chemical weapons they may hold and any facilities which produced them, as well as any chemical weapons they abandoned on the territory of other States Parties in the past”.<sup>28</sup> However, the recent displays of the use of Novichok and VX agents do not show that this treaty is utterly effective. As much as chemical and biological weapons are EDTs today, genetic data can also pose a threat to a nation’s sovereignty. If big parts of that data were to fall into the hands of another member state, it would be dangerously capable of thwarting it in ways never-seen-before. Biological/chemical leverage is devastating to the international community when it comes to keeping it safe.

### Consequences and Dangerous Uses of Emerging Technologies

Since EDTs are extremely ambiguous, exploitable, and dangerous, there are many consequences that arise from them. Primarily, there isn’t transparency among member states. Even if countries do declare their “interests” in the emerging and disruptive technology sector, there are new advancements that are later sought after. For example, in 2003, China allegedly said that it had put rules in place concerning exports of missile, nuclear and biological technologies that can be used to make or deliver weapons of mass destruction. The limited transparency around EDTs, and the lack of member states who openly address them is certainly a threat in maintaining the veil of international security and disarmament.

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<sup>28</sup> “Chemical Weapons Convention.” *OPCW*, [www.opcw.org/chemical-weapons-convention](http://www.opcw.org/chemical-weapons-convention).

Secondly, the legal framework around EDTs is almost non-existent. Of course, member states who have assimilated technology in their everyday life functions, such as banking, healthcare, voting, etc., have protection laws in place in order to protect their civilians to some extent. As seen in China, the laws around AI for example, are strict and do not allow for major loopholes to occur. Unfortunately, this is only seen on a national level. On a global scale, laws do not cover EDTs use, their functions, or any code of conduct. “Armed UAVs have many lawful uses and an outright prohibition on this technology is not in prospect”.<sup>29</sup> However, extending law doctrines, or even creating new laws would help to eliminate this issue. This is a turbulent consequence in the international scene, since the legal aspect of EDTs is sparse, and almost non-existent.

Last but not least, the consequence that has to do with the world population: lack of information, or even misinformation. Even if articles are published, and campaigns are made to inform the public, it is not enough for the public to comprehend the importance of EDTs in their everyday life. The absence of adequate facts available to the public will not allow them to fathom any possible attacks of EDTs, seeing as they are not aware of how to protect themselves against them.

## Conclusion

EDTs are an extremely sensitive factor to international security and disarmament. Given that they are not subject to many treaties, and they are still being explored, developed, and fine-tuned, the future of international security and disarmament is at risk. Although the NPT and the Arms Trade Treaty cover aspects of nuclear weapons and conventional weapons, on an important international scale, they do not cover the range of EDTs, like hypersonic missiles, AI, genetic technology, and chemical and biological weapons. All in all, international security and disarmament can be upheld if there is a commonly agreed standard, which all member states are held accountable for, regardless of their military arsenal and aptitudes.

## MAJOR COUNTRIES AND ORGANIZATIONS INVOLVED

### China

China is a state which has risen in the international community, especially when it comes to emerging technologies. China is known for introducing new technological methods in many of its sectors, notably in manufacturing. Regarding international security, China is rumoured to have developed a military technology of “super soldiers”. “China’s institutions have emerged as ‘major centers for research in gene

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<sup>29</sup> “Increasing Transparency, Oversight and Accountability of Armed Unmanned Aerial Vehicles.” *UNIDIR*, 2017, [unidir.org/publication/increasing-transparency-oversight-and-accountability-armed-unmanned-aerial-vehicles](http://unidir.org/publication/increasing-transparency-oversight-and-accountability-armed-unmanned-aerial-vehicles).

editing and other new frontiers of military medicine and biotechnology”<sup>30</sup>. This was mere hearsay in the press, and an attempt of stirring international relations. However, it poses the question of a mass military advantage, more so than that of nuclear possession and chemical/biological weaponry. It connects emerging technologies, leading to the creation of a new threat to global disarmament and security. In 2003, China allegedly pledged that it had laid measures in place to prevent the miscarrying of weapons (e.g., biological) which are capable of mass destruction. Furthermore, AI has seen major development in China. China, being one of the most prominent economies of the East, is dominating today’s technological market, which has affected governance and the “safe-keeping” of technology. According to the National Bureau of Asian Research (NBR), China wishes to expand itself in AI and data analytics technologies. “This strategy has the dual objectives of accelerating the transformation of China’s own economy and building the nation into a cyber power”<sup>31</sup>.

### Democratic People’s Republic of Korea (DPRK)

North Korea has been testing missiles and other emerging technologies as a sign of “strength” in the international community, which in turn has caused them to breach multiple resolutions on weapon testing. Since its establishment as a country, military empowerment and associated testing has been a clear set goal of the government in charge. From its socialist ideals to the so-called foundations of “Kimjongunism”, the main missile testing has expanded to hypersonic weapons, as of 2021. These hypersonic weapons have a target range that can reach continents far away. Let it be known that North Korea is still a nuclear state, which poses a threat to nuclear disarmament, deterrence, and in general, international security. Chemical/biological weapons have also been used, which are the reason of Kim Jong-Nam’s death, the brother of Kim Jong-Un. The chemical agent VX was used in assassinating him, but all allegations were denied by the dictatorship. Regardless, the DPRK is involved in the use of emerging technologies, the experimentation of which creates multiple security threats, especially to the countries in their range.

### Estonia

Estonia is a highly developed nation when it comes to technology. Many aspects of Estonian day-to-day activities have been digitised. Most impressive of all, is Estonia’s biobank. “In Estonia, around 70% of the adult population have joined the Estonian Biobank where their DNA is analysed, both for general research and also for a personal

<sup>30</sup> Keown, Alex. “Is China Using CRISPR to Create Super Soldiers?” *BioSpace*, BioSpace, 4 Dec. 2020, [www.biospace.com/article/is-china-using-crispr-to-create-super-soldiers/](http://www.biospace.com/article/is-china-using-crispr-to-create-super-soldiers/).

<sup>31</sup> Gorman, Lindsay. “China’s Data Ambitions: Strategy, Emerging Technologies, and Implications for Democracies.” *The National Bureau of Asian Research (NBR)*, 14 Aug. 2021, [www.nbr.org/publication/chinas-data-ambitions-strategy-emerging-technologies-and-implications-for-democracies/](http://www.nbr.org/publication/chinas-data-ambitions-strategy-emerging-technologies-and-implications-for-democracies/).

treatment”.<sup>32</sup> Genetic data certainly sparks ethical and legal questions, since this data can be used to impugn a nation’s sovereignty. This, however, is a common practice among Estonian citizens. It is not only the biological aspect that Estonia has covered, but a legislative one as well. Robots have been used to judge fairly and objectively in small courts, where the coding and programming does not preface any problems to the judiciary process. This may not seem like an emerging technology of importance, but it plays a key role in seeing how AI will be used in the future. Estonia is developing a model of a technologically driven society, which has adopted many emerging technologies along the way. The use of bio data and AI in a nation’s functions can be positive, but also a steppingstone for the exploitation of such foundations in a way that is harmful to international security and disarmament.

### Russia

Russia has been a key player in emerging technologies. Since the beginning of the Cold War, it has shown technological power in the fields of espionage and military. During the days where its successor state, the Soviet Union, was keeping up an Eastern front, spies moving back and forth between the US and itself, from both sides, had to face wiretapping, surveillance, and the use of covert means of transportation, such as HGVs. In the military, nuclear weapons had been developed, creating this crisis stability between the US and the USSR, although there were not only such weapons in play. Testing of chemical/biological weapons had been expanded after the tragedy of WWII. Agents, specifically anthrax, were of importance, since they could be used to eliminate spies, or individuals which interfered in the general plans of either of the two countries. This had a devastating effect on countries exploited through proxy warfare, which allowed the US and the USSR to test such emerging technologies in a surprising manner. Today, Russia has held a threshold over chemical/biological weapons. An example of such would be Alexei Navalny’s Novichok poisoning, which has been denied to derive from Russian officials. As of May 24<sup>th</sup>, 2018, Russia has invested in multiple nuclear technologies, such as the nuclear reactor, which of course exemplifies the nuclear power it seeks after.

### United States (US)

The US is also a prominent figure in emerging technologies, but also in the disruption of international disarmament. With similar actions to the USSR, the US funded an almost absolute imperialist agenda, using emerging technologies and espionage techniques that affected many lives, in and out of its borders. One of its distinguishable accomplishments was former US President Jimmy Carter’s visit to the DPRK in 1994. He managed to avoid a potential conflict and secured an aid-for-disarmament agreement that lasted nearly 10 years. However, its recent incitement

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<sup>32</sup> Fintechnews Baltic. “How Emerging Technologies Are Boosting E-Governance in Estonia.” *Fintech Baltic*, Fintech Nordics, 20 Sept. 2021, [fintechbaltic.com/5211/fintechestonia/how-emerging-technologies-are-boosting-e-governance-in-estonia/](https://fintechbaltic.com/5211/fintechestonia/how-emerging-technologies-are-boosting-e-governance-in-estonia/).

of the Iraqi war in the beginning of the 21<sup>st</sup> century caused many issues to international security. The Iraqi war lasted for 8 years, killing many innocent Iraqi civilians along the way, aside from roughly 40,000 US troops. The war begun by former US President George Bush’s initiative to tie Iraq down to its responsibilities of disarmament. In 2004, the estimation of the nuclear and chemical weaponry stockpile was completely off, making the Bush administration withdraw “its prewar arguments about extensive stockpiles of chemical, biological, and even nuclear weaponry in Saddam Hussein’s Iraq”.<sup>33</sup> The war was concluded in 2011, after the slaughtering of many UN officials, Iraqi citizens, Al Qaeda militants, Iraqi soldiers, and US troops, which all suffered a great deal of instability. The US has shown its power over regulating the aforementioned weapons, however the torture coming from such regulation has threatened international security and disarmament on many occasions.

### European Union (EU)

The European Union has launched a mission by the name of Future and Emerging Technologies (FET), which aims to “help Europe grasp leadership early on in those promising future technology areas able to renew the basis for future European competitiveness and growth, and that can make a difference for society in the decades to come”.<sup>34</sup> The FET is split into three categories, FET Open, FET Proactive, and FET Flagships, which combine different methods to have the most efficient possible outcome in the emergence of technologies. Additionally, the EU has partnered with countries which aren’t its member states, in order to have control over technology, its uses, and its trade. Specifically, the EU has established a partnership with China as of 2018, in hopes of combatting the issue of technology policy and the perception of emerging technology, in response to US threats of import controls.

### North Atlantic Treaty Organization (NATO)

NATO has shown involvement in emerging technologies. According to NATO, the organization has been working on developing, understanding, and adopting new technologies, all while maintaining a technological prestige. In 2019, it designed an Emerging and Disruptive Technology Implementation Roadmap. The technologies it covers are AI, data and computing, autonomy, quantum-enabled technologies, biotechnology and human enhancements, hypersonic technologies, and space. The roadmap pinpoints the technological focus of the Allies, within the mandate of the Alliance. “Emerging and disruptive technologies are also a key facet of the NATO 2030 initiative, an initiative to strengthen the Alliance militarily, make it stronger politically and adopt a more global approach. Promoting transatlantic cooperation on critical

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<sup>33</sup> “The Iraq War.” *Timeline*, Council on Foreign Relations, [www.cfr.org/timeline/iraq-war](http://www.cfr.org/timeline/iraq-war).

<sup>34</sup> Gillmar. “Future and Emerging Technologies.” *Horizon 2020 - European Commission*, 21 Feb. 2020, [ec.europa.eu/programmes/horizon2020/en/h2020-section/future-and-emerging-technologies](http://ec.europa.eu/programmes/horizon2020/en/h2020-section/future-and-emerging-technologies).

technologies is a vital component of that work”.<sup>35</sup> Finally, it works alongside the EU and the UN to address and tackle the question of emerging technologies in international security and disarmament.

## TIMELINE OF EVENTS

Date of Event	Description of event
Jan. 13, 1992	George H.W. Bush and other world leaders attended an unprecedented U.N. Security Council summit to coordinate policy on peacekeeping, disarmament, and quelling aggression
Jan. 15, 1993	125 countries signed a treaty banning chemical weapons in Paris.
Jun. 16, 1994	Former US president Jimmy Carter was the first president to visit the DPRK.
May 11, 1995	The NPT was extended indefinitely, after its original 25-year duration.
Dec. 3, 1998	33 nations signed a treaty agreeing to limiting the trade of arms in Vienna, Russia refused to sign and continued to sell arms.
May 20, 2000	The 5 nuclear powers of the UN Security Council agreed to eliminate their nuclear arsenals over time as part of a new disarmament agenda approved by 187 countries”. <sup>36</sup>
Nov. 6, 2002	A US draft resolution led to new weapon inspections in Iraq, which were backed by threats if Saddam Hussein further neglected his responsibilities of disarmament.
Dec. 19, 2003	China alleged that it has put rules in place concerning exports of missile, nuclear and biological technologies that can be used to make or deliver weapons of mass destruction.
Jun. 23, 2005	North and South Korea finalized an agreement on resuming diplomatic discourse on finding a peaceful resolution to the international standoff over the North's nuclear program, but there was no set date, resulting in no further communication.
Aug. 11, 2006	“Israeli airstrikes pounded south Beirut and border crossings to Syria, killing at least 14 people across Lebanon as ground fighting picked up intensity in the south”. <sup>37</sup>
Feb. 13, 2007	In Geneva, the US disagreed with China and Russia, in a disarmament debate on how to deter an arms race in outer space, with the last two condemning the “one state” not willing to consider an according treaty.

<sup>35</sup> “Emerging and Disruptive Technologies.” *NATO*, 22 Oct. 2021, [www.nato.int/cps/en/natohq/topics\\_184303.htm](http://www.nato.int/cps/en/natohq/topics_184303.htm).

<sup>36</sup> “Emerging Technologies.” *TIMELINES*, [www.timelinesdb.com/listevents.php](http://www.timelinesdb.com/listevents.php).

<sup>37</sup> “Emerging Technologies.” *TIMELINES*, [www.timelinesdb.com/listevents.php](http://www.timelinesdb.com/listevents.php).

April 2017	UN reports show that the Syrian government used the nerve agent sarin in Khan Sheikoun, killing many civilians. <sup>38</sup>
May 24, 2018	“US Deputy Secretary of Energy Dan Brouillette launched an initiative with several other governments to promote nuclear power and encourage investment in new nuclear technologies. The partners included Japan, Canada, Russia, South Africa, the United Arab Emirates, Poland, Argentina and Romania”. <sup>39</sup>
Jun. 25, 2018	China and the EU came to an agreement in creating a group that will work to update international trade rules to address technology policy, subsidies and other emerging technologies and preserve support for international trade in the light of US threats of import controls.
Jan. 21, 2020	Geneva held a UN-supported disarmament conference. The United States urged China to join trilateral nuclear arms talks with Moscow, calling Beijing's secrecy around growing stockpiles a "serious threat to strategic stability".

## PREVIOUS ATTEMPTS TO SOLVE THE ISSUE

### S/RES/1540

This security council resolution refers to chemical, biological, and nuclear weapons. It requires States, inter alia, not to support non-State actors who develop, obtain, manufacture, possess, transport, transfer, or use nuclear, chemical, or biological weapons and their means of delivery. It further decides that States shall support the signing and ratification of treaties in support of eradicating or reducing the exploitative and wrongful use of the above weapons. It was signed on April 28<sup>th</sup>, 2004, and its adoption sparked the creation of a committee, the 1540 Committee, complacent to assuring that States abide and enforce to its clauses.<sup>40</sup> Unfortunately, there are still nuclear states to date, which threaten international security. Even the recent cases of chemical poisoning, as seen with the Novichok poisoning of Alexei Navalny, are proof of this resolution not successfully combatting the issue.

<sup>38</sup> Therrien, Alex Therrien, and Philippa Roxby. “Russian Spy: What Are Nerve Agents and What Do They Do?” *BBC News*, BBC, 12 Mar. 2018, [www.bbc.co.uk/news/health-43328976](http://www.bbc.co.uk/news/health-43328976).

<sup>39</sup> “Emerging Technologies.” *TIMELINES*, [www.timelinesdb.com/listevents.php](http://www.timelinesdb.com/listevents.php).

<sup>40</sup> “UN Security Council Resolution 1540 (2004) – UNODA.” *United Nations*, United Nations, [www.un.org/disarmament/wmd/sc1540/](http://www.un.org/disarmament/wmd/sc1540/).

### Conference on Disarmament (10/18/2016)

On October 6, 2016, the UNODA, along with the United Nations Institute for Disarmament Research (UNIDIR), the James Martin Center for Non-proliferation Studies (CNS), and the Permanent Mission of Switzerland, participated in a discussion on 3D printing, synthetic biology, and autonomous systems in relation to world security, including disarmament, non-proliferation, and international law. The conference discussed the increasing autonomy of AI and emerging technologies, and how policy and regulations in multilateral trade can affect their widespread. The conference managed to focus on means of protecting international disarmament and security with the predominant role of emerging technologies. However, since 2016, there have been increased missile experiments, and even missile attacks, like the Iranian missile firings in 2020, which have threatened nations' sovereignty.

### The FET mission

According to the EU, "FET actions are expected to initiate radically new lines of technology through unexplored collaborations between advanced multidisciplinary science and cutting-edge engineering".<sup>41</sup> The three parts of this mission are intuitive and close to their name. The FET Open has to do with funding the innovation and establishment of new, radical technologies. The FET Proactive keeps up with themes that have been in emergence when it comes to technologies. The FET Flagships is the most serious "sub-unit" of them all, since it is a 10 year, 1 billion-dollar plan that supports and funds European researcher devoted to EDTs. This is an encouraging attempt to assimilate EDTs into the EU. However, this programme has not contributed in becoming more transparent when it comes to EDTs. Surely, it funds and allows the development of EDTs, but it doesn't ease member states into accepting them and legislating for EDTs. All in all, it is a commendable initiative, but it is more creatively-sided than transparent.

### The Arms Trade Treaty (ATT)

The ATT is a treaty aims to establish "the highest common international standards for regulating the trade in conventional arms and eradicating illicit trade and diversion in order to contribute to international peace and security, reduce human suffering, and promote cooperation".<sup>42</sup> The 2016 ATT conference recommended and established a separate branch for UAVS (drones). The ATT has adequately managed to address the issue of weapons trade, which seeps into the trade of EDTs. Since it refers to international trade of conventional arms, it should include EDTs, since they are a big

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<sup>41</sup> Gillmar. "Future and Emerging Technologies." *Horizon 2020 - European Commission*, 21 Feb. 2020, ec.europa.eu/programmes/horizon2020/en/h2020-section/future-and-emerging-technologies.

<sup>42</sup> "Increasing Transparency, Oversight and Accountability of Armed Unmanned Aerial Vehicles." *UNIDIR*, 2017, unidir.org/publication/increasing-transparency-oversight-and-accountability-armed-unmanned-aerial-vehicles.

part of today's technological domain, mostly in weapons, which do threaten international security and disarmament.

## POSSIBLE SOLUTIONS

### The NPT

#### The signing and ratification by all member states with possession of nuclear weapons

The NPT aims to eradicate nuclear weapon proliferation. Unfortunately, not all 193 member states have signed this treaty. The 8 states which possess a nuclear arsenal still develop and add weapons to their nuclear arsenal, which adhere to the definition of emerging technologies. If all nuclear states sign and ratify the NPT, it is possible to create a stability not based on crisis pretenses. For example, the Kashmir situation between India and Pakistan creates a crisis stability, which can put even more civilians at risk. If the NPT is signed by both parties, there will be more chances of them reaching an agreement, or at least engaging in diplomatic discussion.

#### The update of the NPT

The NPT has many loopholes, considerably the article which allows member states to create and use nuclear energy peacefully. Unfortunately, the process of creating nuclear energy is similar to that of creating nuclear weapons. This can be exploited by the member states which have a nuclear arsenal and wish to create nuclear weapons in an underground way. "The problem here though, is that there's nothing much the rest of the treaty's signatories can do about this violation. The NPT in general has no enforcement clause".<sup>43</sup> If these loopholes are eliminated, hence updated, then it will be easier to regulate the use of emerging technologies which harness nuclear power.

#### The extension of the NPT to emerging technologies

During the time of the NPT's creation, the nuclear arms race was taking over the globe. The middle of the 20<sup>th</sup> century had nuclear weapons as its main EDT, meaning that the proliferation of weapons would surely regard them. However, modern proliferation has to do with EDTs of chemical, biological, and cyber nature. Extending the NPT to emerging technologies would legally bind member states to regulate the development of EDTs and their trade. "Emerging technologies are an unavoidable reality in nuclear weapons policy bringing both risks and opportunities to all three pillars of the NPT. Numerous experts have pointed to the potential for 3D-printing, or additive manufacturing, to facilitate the production of items prohibited under the NPT".<sup>44</sup> This

<sup>43</sup> Kaplan, Fred. "How Bad Is the Non-Proliferation Treaty?" *Slate Magazine*, Slate, 3 May 2005, [slate.com/news-and-politics/2005/05/how-bad-is-the-non-proliferation-treaty.html](https://www.slate.com/news-and-politics/2005/05/how-bad-is-the-non-proliferation-treaty.html).

<sup>44</sup> Williams, Heather. "Remaining Relevant: Why the NPT Must Address Emerging Technologies." *Center for Science & Security Studies*, King's College London, Aug. 2020, [www.kcl.ac.uk/csss/assets/remaining-relevant-new-technologies.pdf](http://www.kcl.ac.uk/csss/assets/remaining-relevant-new-technologies.pdf).

extension, or even sub/adjacent treaty should classify them, their role, their use, and rules that states should abide by when considering their application in military and security fields.

### Transparency over AI, UAVs, and cyber technologies

The dual use of AI, UAVs, and cyber technologies poses a grave threat to all member states' sovereignty. Since they can be "deemed" as transportation vehicles, means of transporting goods, or even legal surveillance of sorts, they can thwart a nation in an unprecedented manner. To prevent such usage of the aforementioned EDTs, it is necessary that they run through inspection that abides to each member state's laws. This can extend to drones for example, which in Nigeria, are required to be registered over 250 grams, and in general must abide by the national legislation regarding them.<sup>45</sup> Similar frameworks can be established and adopted on a national level, which can contribute to international disarmament and security through a united front.

### International database of EDTs

EDTs are increasing rapidly with the technological advancements of today. Since their categories are numerous, they should be catalogued by the Disarmament and International Security Committee, in collaboration with the UNODA. Taking after NATO and its Emerging and Disruptive Technology Implementation Roadmap, the UN can create a categorized list of EDTs. This list would be created with the contribution of all member states. They would have access to this list through a specific protocol, in order to ensure that this information is not being handled exploitatively.

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<sup>45</sup> Merlin. "Drone Laws in Nigeria ." *Drone Laws*, Drone Laws, 14 Oct. 2021, [drone-laws.com/drone-laws-in-nigeria/](https://drone-laws.com/drone-laws-in-nigeria/).

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