Forum: Security Council

Issue: The threat of illicit international production and distribution of 3D printed weapons

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INTRODUCTION

As technology evolves in a vastly changing world, subsequent advancements in arms and weaponry are also observed. More specifically, a new wave of easy-to-produce, and easy to distribute weaponry and ammunition has grown to be a legitimate threat to international peace and security. Three Dimensional (3D) printed weapons are any form of weapon that are either partly, mostly, or entirely made up of raw plastic material that was printed into three-dimensional parts. These are either manufactured entirely by designated firms, or can be partly homemade, by individuals. 3D printed guns or weapons were first developed in 2013, but have now grown into a massive industry, whose legality is widely contested.

3D weapons can act as massive threats due to a number of reasons. Firstly, the lack of serial numbers on them. 3D printed guns are also referred to as “Ghost Guns”, since they are made up of parts that do not need background checks to be bought. Additionally, they are produced outside of regulated firearms manufacturing lines and industries, making the tracking and tracing of the weapons, the placement of serial numbers, and controlled distribution almost utopic. Secondly, a topic of concern is the distribution of the blueprints used to print out the part of the firearms. The publishing or posting of instructions and/or blueprints on online platforms instantaneously make the creation of a part of a firearm, or a firearm as a whole, accessible to anyone who is able to print plastic and/or metal through a 3D printer. Thirdly, due to the constantly changing and development of 3D printing, the potential extent that the creation of these weapons can take remains unknown. Therefore, international protection mechanisms are ambiguous, and it must remain updated to accommodate for potential changes and advancements.

There have been numerous instances of 3D printed weapons being used in illegal ways worldwide. From homemade weapons used in shootings, to terrorist or extremist organizations, 3D printed firearms have officially become a threat to international peace and security. Specific questions arise on whether the threat of 3D printed weapons can be tackled, at least on an international level. Legality of production and distribution differs from country to country; the very nature of the guns make them difficult to trace and their rapid advancement leads to unknown circumstances that would allow for the necessary provisions to be taken.

Thus, international organizations must take the necessary provisions to mitigate the effects of illegally produced and distributed 3D printed weapons. That can be achieved through comprehensive legal frameworks, data and information sharing, and most importantly

cooperation. This study guide will help you learn about the nature of 3D printed weapons, it will discuss their legality and it will help guide you to past, current and possible attempts to solve the issue.

DEFINITION OF KEY-TERMS

Additive Manufacturing

Additive manufacturing is "the process of creating an object by building it one layer at a time. It is the opposite of subtractive manufacturing, in which an object is created by cutting away a solid block of material until the final product is complete. Technically, additive manufacturing can refer to any process where a product is created by building something up, such as molding, but it typically refers to 3-D printing."[1]

Firearm[2]

A firearm is any small arms weapon, easily portable, from which a shot is discharged by gunpowder.

Computer Assisted Design (CAD)- Computer Assisted Manufacturing (CAM)

Computer Assisted, or aided, design (CAD) is the use of computer-based software used to create 2D or 3D designs. CAM is the use of computer-based software used to control machines responsible for manufacturing. For the purpose of the context of this study guide, CAD and CAM will be used to refer to the software used to model 3D printed weapons.

3D printing

3D printing is defined as "the manufacturing of solid objects by the deposition of layers of material (such as plastic) in accordance with specifications that are stored and displayed in electronic form as a digital mode"[3].

Weapon Distribution

"The dispense, selling or transferring or possession with intent to dispense, selling or transferring of a deadly weapon"[4].

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[1] "Additive Manufacturing, Explained | MIT Sloan." *MIT Sloan*, 7 Dec. 2017, www.mitsloan.mit.edu/ideas-made-to-matter/additive-manufacturing-explained.

[2] "Firearm." *Merriam-Webster Dictionary*, 8 July 2024, www.merriam-webster.com/dictionary/firearm.

[3] "3D printing." Merriam-Webster.com Dictionary, Merriam-Webster, https://www.merriamwebster.com/dictionary/3D%20printing.

[4] "Weapon Distribution Definition | Law Insider." *Law Insider*, www.lawinsider.com/dictionary/weapon-distribution.

Caliber

A caliber is “the diameter of a bore of a gun usually expressed in hundredths or thousandths of an inch and typically written as a decimal fraction”[5].

BACKGROUND INFORMATION

Production of 3D Printed Weapons

3D printed weapons fall under the category of “small arms and light weaponry”, in legal contexts. The most common form of 3D printed weapons today are “hybrid weapons”, which are comprised of 3D printed parts and metal ones that can be acquired without the need of licensing and can be produced without serial tracking, or numbers. The manufacturing and production, distribution and legality of 3D printed weapons will be analyzed below, as well as their position as a threat to international peace and security.

Manufacturing of the first 3D Printed Weapons

In 2012 Cody Wilson founded “Defense Distributed”, a platform that aimed to defend civil liberty of popular access to arms, in Texas, United States of America (USA). In May 2013 the first 3D printed gun was fired by Wilson. This action was then followed by the publishing of the design drawing of the firearm online, for free. The gun was called “The Liberator”, a name derived from the 2nd amendment of the US constitution, for the right to bear arms.[6]

The “Liberator” is made out of 15 different parts, and takes around 20 hours to print, needing only a single metal part to be complete. Wilson, after his successful creation of the “Liberator”, published the blueprints for the firearm on “Defense Distributed”, his free blueprint sharing platform. The blueprints were downloaded over 100.000 times over the span of 48 hours.[7] As understood, the “Liberator” pistol, and the publication of its blueprint sparked controversy. Weapons such as the “Liberator” are unregistered and untraceable. Its immediate accessibility proved to be of concern to the United States of America Department of State. Only after 2 days of the blueprints being online the Department of State removed them from the platform, on account of violating the “International Traffic in Arms Regulations” (ITAR) of the USA.

The possibility of printing metal parts, for the production of weapons, is rare but not impossible. In the end of 2013 Solid Concepts Inc., a manufacturing company based in the USA,

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[5] “Caliber.” *Merriam-Webster Dictionary*, 9 July 2024, www.merriam-webster.com/dictionary/caliber.

[6] *U.S. Constitution - Second Amendment | Resources | Constitution Annotated | Congress.Gov | Library of Congress*, www.constitution.congress.gov/constitution/amendment-2/.

[7] Daly, Angela, et al. ‘3D Printing, Policing and Crime’. *Policing & Society*, vol. 31, no. 1, Informa UK Limited, Jan. 2021, pp. 37–51, https://doi.org10.1080/10439463.2020.1730835.

created the first weapon of AM, with metal parts the “1911 DMLS”. This particular weapon showcased that the creation of 3D printed weapons, but with metal components and not plastic is possible, but they are not yet able to be produced by home-based printers and technologies or are commercially viable.

Image 1: 22-caliber gun manufactured partly by 3D printed plastics[8]

Over the past few years, the production of at-home 3D weapons has increased. Continuous instances, especially in Europe, of the production of 3D printed weapons at home have been noticed, and their intent to be used by extremists. The threat of this production will be analyzed below.

Legal Aspects of the Production of 3D Printed Weapons

The Legality of production of 3D printed weapons is widely decentralized. This means that different countries, or even provinces (within a single nation) may have conflicted legislation on the topic. In the United States of America (USA) the right to bear arms is a constitutional right, protected by the 2nd Amendment. Despite that, legislation differs on a state basis. States like California and New York require specific licenses for manufacturing, while Texas does not. States like Rhode Island have completely banned the production of guns. Nevertheless, it is crucial to note that Federal US law prohibits the creation of any weapon that cannot be detected by metal detectors.

Most European states do not have similar legislation though; the carrying, and especially the production of any weapon is heavily monitored and forbidden. The manufacturing of homemade firearms, including 3D printed weapons, is prohibited by the European Union (EU), specific regulations and penalties vary from country to country. Notably, the European Firearms Directive (see: Previous Attempts to Solve the Issue) mandates that member states regulate the manufacturing and trade of firearms, including those produced through 3D printing. Recent cases highlight the threat posed by these weapons: In Germany, a perpetrator used a 3D printed gun to commit a double homicide in 2019. Similarly, Spanish authorities dismantled an illegal workshop

[8] Lipson, Hod et Melba Kurman. *Fabricated the new world of 3D printing*. 1st edition. Indianapolis, Ind : John Wiley and Sons. 2013.

producing 3D printed weapons in the Canary Islands in 2021. While these cases may not pose a threat internationally, the distribution of weapons and the proliferation of blueprints and techniques used to make them can quickly develop to be proven dangerous.

Distribution of 3D printed Weapons

Distribution of Blueprints and their Legality

Due to the very recent and uncertain nature of 3D printed weapons and firearms there are no clear and universal regulations on the sharing of blueprints online. The FGC-9 is a mostly 3D printed gun, which only requires a few easy to access pieces to be complete, and deadly. It originated in Germany in 2020 and its blueprints have been widely accessed all over Europe; Detailed instructions for the printing and construction of the weapon are available online, making it accessible to even those without technical skills. The cost to build one is significantly lower than purchasing a commercially available rifle. This specific weapon has gained popularity to its availability on the internet and has subsequently been used heavily and illicitly by extremist individuals, mainly in Europe.

In the United States, the topic is heavily conflicted. While the sharing of anything online is protected under free speech, in the case of the Liberator in 2013 the blueprints were considered a danger to national security. This led to the Department of State of the US suing Defense Distributed for the publishing of blueprints: The Defense Distributed vs. Department of State case centered on the legality of sharing 3D-printed gun files online. Defense Distributed, a company advocating for open-source gun designs, was prohibited by the U.S. Department of State from posting blueprints, arguing it violated export control laws under the International Traffic in Arms Regulations (ITAR). Defense Distributed claimed this restriction infringed on First Amendment rights. After several legal battles, a 2018 settlement initially allowed the files to be shared, but subsequent state lawsuits and court orders blocked this, keeping the issue contentious and unresolved in terms of broad public distribution.

As understood, the topic is unclear and the legality of the sharing of blueprints is conflicted. While the production may be prohibited, in the EU for example, there are no clear legislations on blueprints, creating a big gap in regulation mechanisms.

Legal Aspects of the Distribution of 3D Printed Weapons

According to the European Union Firearms Directive, "Member States shall ensure that any such firearm, or any essential component, placed on the market has been: provided with a clear, permanent and unique marking without delay after manufacture and at the latest before its placement on the market, or without delay after importation into the Union; and registered in compliance with this Directive without delay after manufacture and at the latest before its placement on the market, or without delay after importation into the Union.".[9] As understood,

[9] "Directive - 2021/555 - En - EUR-Lex." *EUR*, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32021L0555. Accessed 28 July 2024.

member states of the EU have to thus shape policies following this directive; directly prohibiting the distribution of non-traceable firearms (such as 3D printed weapons). It is important to mention that the Firearms Directive includes, under all its legal authority, small arms and light weaponry, which includes 3D printed weapons, or any home-made type of weapon.

As understood, the EU sets the basic legal basis for member states to adjust legislation on the manufacturing of 3D printed weapons. While manufacturing is strictly forbidden in non-factory, non-traceable settings. distribution of any type of firearm within EU countries must be heavily controlled.

The legality of distribution is not as clearly defined in other parts of the world. 3D printed weapons, and their "ghost gun" nature make modern mechanisms of controlling trade impossible. With ready to produce blueprints readily available on the web anyone is able to manufacture a weapon and potentially sell it either with borders, or externally, since they are also undetectable by metal detectors and standard scanning mechanisms.

Threats to Peace and Security

National Level

In October 2018 a 27-year-old nationalist killed two people using homemade weapons, parts of which were printed from an at-home 3D printer, in Germany. Similar instances, where individuals were arrested for attempting, or succeeding at producing homemade weapons, either entirely or mostly made up of 3D printed components, were uncovered by national law enforcement in the UK, in Spain, in Australia, in Sweden and the list goes on.

The ability to have access to any lethal weapon in a check-free manner has proven to be a massive threat to national security. Unlike traditional firearms, which are subject to strict controls, these weapons can be manufactured by individuals at home using relatively inexpensive 3D printers and readily available materials. This evasion of conventional arms control measures undermines efforts to prevent unauthorized access to firearms, including by extremists with intents to harm minorities.

In most cases with arms, and in most states, weapons are produced in controlled factories, which place serial numbers (identification numbers) on parts/ weapons. The serial numbers help law enforcement with crime solving (knowing how many weapons have been sold and to whom), as well as with the distribution of weapons. In 3D printed weapons a scenario like that is almost utopic. As major components are made at-home 3D printers, and necessary parts that are bought are the ones that do not require background checking and tracking of purchase.

Moreover, in 2019, European authorities discovered an underground workshop in Spain equipped with 3D printers producing functional weapons, revealing the potential for clandestine arms manufacturing. The security risks associated with 3D-printed firearms are highlighted by their undetectability by metal detectors. This characteristic poses challenges in sensitive locations such as airports and government buildings, where traditional security measures rely on detecting

metal components, which some 3D printed weapons inevitably do not contain. The decentralized nature of 3D printing technology makes it difficult for authorities to monitor and control the distribution of firearm blueprints.

The ability to produce untraceable and easily concealable weapons empowers individuals with malicious intent, from individuals to organized criminal networks, significantly heightening the risk of armed violence. Instances of 3D-printed firearms being used in crimes are likely to increase as the technology becomes more sophisticated and accessible. Law enforcement agencies face an uphill battle in addressing this unregulated proliferation of firearms. It complicates arms control initiatives and increases the potential for armed violence, posing a profound threat to both national and global security. Furthermore, regulatory measures in one country can be easily bypassed by accessing files hosted in jurisdictions with less strict laws.

International Level

The illicit trade of homemade weapons, including 3D printed weapons, can act as a huge threat to international peace and security. Even though these weapons, mostly in the form of hybrid weapons, highly concern domestic security, their proliferation and technological advancement can easily lead them to posing much bigger threats. Accessing untraceable weapons, and their non-controlled trade directly opens the possibility for their use by terrorist organizations that could exploit the anonymity and accessibility of 3D-printed guns to carry out attacks. The difficulty in tracking these weapons poses a significant challenge for counterterrorism and international security efforts. 3D Printed weapons can be obtained and manufactured in large-scale quantities with a very low cost. This has the capacity to catalyze international conflicts. It is also important to note that international arms embargoes have no effect on such weaponry; they can still be distributed and moved through markets with no required control, allowing for extremist groups to acquire them.

MAJOR COUNTRIES AND ORGANIZATIONS INVOLVED

United States of America (USA)

The USA is one of the most involved actors in this issue. The first 3D printed weapons were produced and used in the USA, and it has acted as a major state in the producing and distribution of weapons. In the US, legality of production varies from state to state, and citizens are legally allowed, under the 2nd Amendment of the Constitution, to carry arms. The first amendment also protects the sharing of blueprints, under the protection of free speech. As understood, the topic can pose major threats to the American people, if the necessary provisions by the state and Intergovernmental Organizations (IGOs) are not taken. The carrying of non-traceable weapons, and their possible distribution can pose major threats to national and international security.

United Kingdom (UK)

The United Kingdom has been leading major changes in the global operational aspect toward the threat of illicit weapons 3-D printed, combining efforts in legislations, law enforcement

capacity building, and international cooperation. The UK enacted the Offensive Weapons Act in 2019, thereby creating a potent legal framework against the development, manufacture, possession, and supply of 3-D-printed firearms. Where the UK has become more active is seeking to build global cooperation. The UK collaborates with global agencies like Interpol and the United Nations in sharing intelligence and expertise to come up with a unified front that would prevent the spread of 3-D printed arms. The UK also was active in conducting public awareness programs and engaging the tech industry to monitor and regulate online distribution of 3-D printed gun digital blueprints. Adoption of these measures means that the UK is not only fortifying its own national security but is also playing a significant role at the global level in efforts to quash this technology that allows the making of untraceable, possibly lethal 3D printed guns.

Myanmar

The ethnic armed conflict going on currently in Myanmar is the first conflict in which the use of 3D printed weapons outside personal use was observed. An affordable and easy to manufacture weapon, the "FGC-9", has been used by rebel group People's Defense Forces in conflict with the current military junta that governs the country. Rebels in Myanmar have been manufacturing relatively large numbers of variants of the FGC-9, for training purposes and for use in guerrilla or urban warfare. This first sign of use in civil wars and armed conflict showcases how 3D printed weapons can eventually develop to pose threats to international security.

European Union Agency for Law Enforcement Cooperation (EUROPOL)

EUROPOL is the foremost law enforcement agency of the European Union. It collaborates closely with national authorities across EU member states. Their joint efforts focus on monitoring developments related to 3D printed firearms. By sharing intelligence and coordinating actions, they aim to disrupt the production, sale, and possession of these weapons. They have also proposed some of the foremost initiatives on discussion on 3D weapons, such as the International Conference on 3D Printed Firearms. As a major multinational law enforcement agency EUROPOL is tasked with updating existing protection mechanisms and ensuring the well-functioning of regulatory measures, adapted to the growing threats of 3D printed weapons.

United Nations Office for Drugs and Crime (UNODC)

The United Nations Office for Drugs and Crime (UNODC) addresses the emerging threat of 3D-printed weapons through its initiatives on firearms trafficking and crime prevention. The UNODC works to raise awareness, build capacity, and support legislative measures among member states to counter this threat. This involves providing technical assistance, promoting international cooperation, and encouraging the development of comprehensive regulations to control the proliferation of such weapons. By doing so, the UNODC aims to mitigate the risks associated with the illicit manufacturing and distribution of 3D-printed firearms.

TIMELINE OF EVENTS

DATE	DESCRIPTION OF EVENT
May 2013	The first Liberator firearm is produced. Its blueprints become available to the public by "Defense Distributed".
2014	"Defense Distributed" is sued by the US Department of State. The legality of the distribution of (the blueprints) of 3D weapons is brought up.
2015	The first gun made out of 3D printed metal parts is made by Solid Concepts Inc.
2015	Second Open-ended Meeting of Governmental Experts (MGE2).
July 2018	Defense Distributed reaches a settlement with the U.S. government, allowing the publication of 3D printed gun blueprints online.
October 2019	Two people are killed in German Synagogue, as a result of neo-nazism and the use of 3D printed weapons.
May 2022	The International Conference on 3D Printed Firearms is held by EUROPOL.
July 2023	Far Right Extremists are arrested in Finland, after producing numerous 3D printed firearms.
September 2023	Statement by the Security Council S/PRST/2023/6.

RELEVANT UN RESOLUTIONS, TREATIES AND EVENTS

Statement by the Security Council S/PRST/2023/6

This statement made and affirmed by the President of the Security Council in December 2023 recognizes the Council's primary responsibility for maintaining international peace and security, acknowledging the threats posed by transnational organized crime and terrorism. International conventions and protocols are recalled, emphasizing that the combat against these crimes and the securing of borders are primarily the responsibilities of states. Commitment to the principles of the UN Charter, including sovereign equality, territorial integrity, and political independence, is reaffirmed. The importance of international cooperation, involving various UN agencies and regional organizations, to provide technical assistance and capacity-building is stressed. The role of civil society and other stakeholders in raising awareness and supporting efforts to counter organized crime and terrorism is also recognized.

In relevance to the topic in question, the UNODC and the UNOTC are recalled, both of which include in their respective frameworks for counterterrorism and the illicit trade of weapons 3D printed weapons.

Second Open-ended Meeting of Governmental Experts (2015)[10]

The Programme of Action on Small Arms and Light Weapons; Second Open-ended Meeting of Governmental Experts 2015 (MGE2) was a meeting of Governmental experts hosted by the United Nations Office for Disarmament Affairs (UNODA). The discussion held surrounded small arms and light weapons, the category most 3D printed weapons fall under. The MGE2 was one of the foremost international discussions on disarmament that included the threat of 3D printed weapons and firearms. Members of the discussions recognized the possibility of smuggling of the weapons, and the non-possibility for screening past traditional controlling mechanisms. Domestic pre-existing regulations were discussed, such as domestic laws that prohibit the online distribution of blueprints, national awareness programs for 3D printer manufacturers about the potential risks and ensuring export licenses for 3D printers. The need to monitor the resale of weapons and printers was also discussed, with the aim of potential regulatory mechanisms.

While the meeting did not hold any legally binding significance to it, the recognition of the threat of 3D printed weapons by major political actors, and the willingness of states to discuss and act on the matter are of major importance.

United Nations Firearms Protocol (2001)

The UN Firearms Protocol is the first international framework that aims to control the illegal manufacturing and trafficking of firearms, their parts, and ammunition. It establishes international standards for licensing and marking of weapons in order to promote traceability. The development of 3D printed weapons has been proven as a challenge to the Protocol, making the following of its frameworks on regulation harder, due to the untraceable and non-regulation nature of 3D

[10] "Programme of Action on Small Arms and Light Weapons Second Open-ended Meeting of Governmental Experts 2015 Chair's Summary." *Chair's Summary*, 2015, www.s3.amazonaws.com/unoda-web/wp-content/uploads/2015/03/2015-06-17-Chairs_Summary-MGE2.pdf.

printed production. The technology thus undermines international efforts to control illicit firearms. Necessary amendments and updates must be made in order to create adequate provisions for the new technologies that can act as a threat to international peace and security.

United Nations Programme of Action on small arms and light weapons (UN PoA)

The United Nations Programme of Action on Small Arms and Light Weapons (PoA) is a global initiative adopted in 2001 to address the proliferation and misuse of small arms and light weapons. It aims to enhance international cooperation and national efforts in controlling these weapons, which contribute to conflict, crime, and instability. The PoA emphasizes measures such as improving stockpile management, strengthening border controls, and supporting disarmament and destruction programs. It also encourages the development of national legislation and policies, and promotes information sharing and best practices among member states to combat the illicit trade and proliferation of small arms and light weapons. While signed in 2001, its legislations can be widely applied on 3D printed weapons, as far as manufacturing measures are concerned.

PREVIOUS ATTEMPTS TO SOLVE THE ISSUE

3D Printed Gun Safety Act of 2023- USA

Introduced in June 2023 the 3D oriented Gun Safety Act aims “to amend chapter 44 of title 18, United States Code, to prohibit the distribution of 3D printer plans for the printing of firearms, and for other purposes”[11]. The Act, even though it has not yet been brought to the Senate, recognizes the security risks that the distribution of 3D printed weapon blueprints could provoke. It also recognizes the untraceable nature of guns. It thus aims to make it unlawful to intentionally distribute digital instructions over the internet that can program a 3D printer to produce a firearm or complete a firearm from an unfinished frame or receiver. Even though no legal action on the Act has been taken yet, and it hasn't been voted into action, major states (such as the USA), that are specifically impacted by the threat of 3D printed weapons taking steps into controlling and tracking them is of crucial importance.

The International Conference on 3D Printed Firearms 2022- EUROPOL

The 2-day conference that was held in May 2022 by EUROPOL and the Dutch police in The Hague, the Netherlands was one of the most targeted approaches to international cooperation for 3D printed weapons to date. Law enforcement professionals, ballistic experts, forensic scientists, policy makers and academia experts discussed the threats of 3D printed Weapons and Firearms and came to the following conclusions, which can act as the first cohesive European step towards comparing the aforementioned threats: connection and cooperation between law enforcement and the industry/private sector; the creation of an international network of experts on 3D printed firearms, tasked with keeping law enforcement agencies abreast of

[11] *S.1819 - 3D Printed Gun Safety Act of 2023 118th ...*, 6 June 2023, www.congress.gov/bill/118th-congress/senate-bill/1819/text.

developments in 3D printed firearms; policy recommendations of participants and other developments around 3D printed firearms will be put into a factsheet, which will be distributed to partners and policymakers worldwide.[12]

European Union (EU) Firearms Directive 2021/555[13]

The European Union Firearms Directive is the key document outlining European legislation on the possession and acquisition of firearms of EU citizens, as well as basic common legislation in regard to the transfer of firearms from one EU country to another. Under the Firearms Directive also falls the category of small arms and light weaponry, which includes 3D printed weapons. It covers the same legal basis in manufacturing, weapons can only be manufactured by licensed dealers, and are subject to restrictions, such as authorization before private acquisition. It also includes some provisions on the import of non- tracked parts that can be used for the creation of hybrid weapons and suggests additional measures that could be taken to monitor their import and use.

POSSIBLE SOLUTIONS

Comprehensive and Universal Legal Regulations

The very nature of the untraceable "ghost guns" automatically makes regulations for control of manufacturing and production difficult. National legislation on the distribution and the legality of the distribution varies from country to country. Though, the creation of universal legal regulations for the sharing of blueprints and the distributions of weapons is a viable solution to somewhat contain the threat of 3D printed weapons in international peace and security. Despite strict national legislations, the international community could impose frameworks for the protected and controlled sharing of blueprints and information. Additionally, comprehensive regulations would allow for the development of training programs for law enforcement, both national and international, through the development of mechanisms to track, identify and intercept illegal firearms.

International cooperation is essential for the implementation of these regulations. Enforcement strategies, information exchange and resources and the harmonization of legislations are essential for the protection of security, on an international level.

Information Sharing

Information sharing, the exchange of data across states, organizations, industries, can be of crucial importance, as far as the distribution of 3D weapons is concerned. Through increased

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[12] "Printing Insecurity: Tackling the Threat of 3D Printed Guns in Europe | Europol." *Europol*, www.europol.europa.eu/media-press/newsroom/news/printing-insecurity-tackling-threat-of-3d-printed-guns-in-europe.

[13] "EU Legislation on Civilian Firearms." *Migration and Home Affairs*, https://home-affairs.ec.europa.eu/policies/internal-security/organised-crime-and-human-trafficking/trafficking-firearms/eu-legislation-civilian-firearms_en. Accessed 29 July 2024.

border control, as far as communication for thorough checking across borders goes (e.g. in airports) the distribution of 3D weapons can be monitored, to some extent. In addition, creating and maintaining databases that compile information on 3D printed weapon designs, incidents of use, and known distributors can help law enforcement agencies identify patterns and predict future threats. These databases can be hosted by UN servers and monitored by the UNODA, or other UN bodies, as to increase international cooperation. The subsequent rapid sharing of data and information can lead to development strategies, combating mechanisms and training programs. By the continuous sharing of data, countries can improve their response mechanisms and deal with emerging threats, ensuring that law enforcement have the necessary data to combat possible threats posed by 3D printed weapons.

Collaboration between the Public and the Private Sector

While difficult to control from an international point of view, collaboration between manufacturing corporations and governments could prove useful to mitigate the threat of 3D-printed weapons. Control over authorization for the purchase of 3D printers, as a machine, as well as controlled access to platforms with blueprints, could be achieved through public-private sector cooperation. Additionally, the continuous update of information platforms—where private companies advance their technologies, and the public sector stays informed—would help adapt security measures and controlling mechanisms. This joint effort would enhance the ability to monitor and regulate the production and distribution of 3D-printed firearms on both a state and international level, fostering a more robust defense against illicit use.

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