

Keeping Control

European positions on lethal autonomous weapon systems

Colophon

October 2017

ISBN: 978-94-92487-23-0

NUR: 689

PAX serial number: PAX/2017/15

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Cover photo: Europe circuit board (Silver Tiger)

Graphic design: Het IJzeren Gordijn

PAX would like to thank for their invaluable input: the European states that responded to our written questions, Frank Slijper, Hugo van Halder, Jacquelyn Kantack, Mary Wareham, Miriam Struyk, and Reaching Critical Will.

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About PAX

PAX works with committed citizens and partners to protect civilians against acts of war, to end armed violence and to build peace. PAX operates independently of political interests.

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1. Introduction

Lethal autonomous weapon systems (LAWS) have been on the agenda of the United Nations Convention on Certain Conventional Weapons (CCW) since 2013.¹ The goal of the CCW is to prohibit or restrict the use of certain conventional weapons which may be deemed to be excessively injurious or to have indiscriminate effects. An example is Protocol IV prohibiting the use and transfer of blinding laser weapons, which was adopted in 1995.²

After having been discussed in the Human Rights Council, the 2013 Meeting of High Contracting Parties to the CCW decided to convene a four-day informal meeting of experts in 2014 to discuss questions related to emerging technologies in the area of LAWS. Since then three informal meetings of experts have taken place at the CCW to discuss LAWS (2014, 2015 and 2016). To date, more than 70 states have expressed their views on autonomous weapon systems, and 19 states have called for an international ban.³ In December 2016 states decided to formalise their deliberations by forming a Group of Governmental Experts (GGE) to “explore and agree on possible recommendations on options related to emerging technologies in the area of LAWS, in the context of the objectives and purposes of the Convention.”⁴

A report by the Swedish International Peace Research Institute (SIPRI), published in 2016, stated that “it would be in the interest of the EU to help their member states in their efforts to get a clear picture of the debate, as this would help them to formulate policy.”⁵ With that in mind, PAX has compiled an overview of the positions of European states. PAX has done this by analysing statements given at the CCW and other forums, in working papers, national policies and other publicly available information. PAX also used information provided by Ministries of Foreign Affairs in response to written questions.⁶ The states included in this report are European Union (EU) Member states, EFTA states and the Holy See.⁷ They will be referred to in this paper as the European states. All are High Contracting Parties to the CCW and have attended the CCW meetings. PAX has used the information available up to August 2017. Statements at the 2017 UN General Assembly First Committee have not been included. It is important to keep in mind that states use different definitions when speaking of LAWS and (fully) autonomous weapons. It is important to realize that positions can change over time.

European states have been active participants in the CCW expert meetings on LAWS and various EU institutions have contributed to the discussions on the issue. In 2014 the European Parliament passed a motion calling on the High Representative of the Union for Foreign Affairs and Security Policy, the Member States, and the Council to ban “the development, production and use of fully autonomous weapons which enable strikes to be carried out without human intervention.”⁸ More recently a 2017 report by the European Economic and Social Committee called for a human-in-command approach to Artificial Intelligence (AI) and supported the call for a ban on autonomous weapon systems.⁹

Originally two GGE meetings were planned for 2017. However, the first meeting scheduled for August was cancelled due to financial issues. Now states have one designated CCW week in November to make progress on the issue. But while technology is moving at a rapid pace, diplomacy has the tendency to be slow. Therefore in our view it is crucial that states decide as soon as possible on where to draw the line of what is acceptable and what is unacceptable regarding autonomy in weapon systems. This includes deciding what actions and decisions need to remain under human control and deciding how this human control can be implemented in a way to ensure it is meaningful, adequate and appropriate.

We hope this paper will contribute to this discussion and will increase understanding of where there are converging and where there are diverging positions of European states. ♦

2. What definitions do states use?

There are different ways European states define lethal autonomous weapon systems, automated weapon systems and (fully) autonomous weapon systems. This can lead to misinterpretations. Therefore it is important to be mindful of the definition a state uses when analysing its position.

The UK has a national policy based, amongst others, on two publications, namely the 2011 '*Joint Doctrine Note 2/11*'¹⁰ and the 2017 '*Joint Doctrine Publication 0-30.2*'¹¹ The UK distinguishes between automated and autonomous systems. The 2011 doctrine posits that "autonomous systems will, in effect, be self-aware and their response to inputs indistinguishable from, or even superior to, that of a manned aircraft. As such, they must be capable of achieving the same level of situational understanding as a human. [...] as long as it can be shown that the system logically follows a set of rules or instructions and is not capable of human levels of situational understanding, then they should only be considered to be automated."¹² In its new 2017 doctrine the UK states: "An autonomous system is capable of understanding higher-level intent and direction. From this understanding and its perception of its environment, such a system is able to take appropriate action to bring about a desired state. It is capable of deciding a course of action, from a number of alternatives, without depending on human oversight and control, although these may be present. Although the overall activity of an autonomous unmanned aircraft will be predictable, individual actions may not be."¹³ It distinguishes these from automated or automatic systems that "in response to inputs from one or more sensors, is programmed to logically follow a predefined set of rules in order to provide an outcome. Knowing the set of rules under which it is operating means that its output is predictable."¹⁴ Based on these definitions "the UK believes that LAWS do not, and may never, exist," adding "the UK considers that existing highly automated weapons are not, and should not, be part of this discussion."¹⁵

In its paper 'Characterization of a LAWS', France states that "remotely operated weapons systems and supervised weapons systems should not be regarded as LAWS since a human operator remains involved, in particular during the targeting and firing phases. Existing automatic systems are not LAWS either." It then goes on to define LAWS as "implying a total absence of human supervision, meaning there is absolutely no link (communication or control) with the military chain of command" and adding that "The delivery platform of a LAWS would be capable of moving, adapting to its land, marine or aerial environments and targeting and firing a lethal effector (bullet, missile, bomb, etc.) without any kind of human intervention or validation."¹⁶ France adds that "given the complexity and diversity of environments [...] and the difficulty of building value-laden algorithms [...] a LAWS would most likely possess self-learning capabilities." It would be "capable of selecting a target independently from the criteria that have been predefined during the programming phase, in full compliance with IHL requirements."¹⁷

Norway stated it had not yet concluded a specific legal definition of the term “fully autonomous weapons”. It said: “Generally speaking, however, in using this term, we refer to weapons that would search for, identify and attack targets, including human beings, using lethal force without any human operator intervening. These must be distinguished from weapons systems already in use that are highly automatic, but which operate within such tightly constrained spatial and temporal limits that they fall outside the category of fully autonomous weapons.”¹⁸

Austria defined LAWS as “weapons that in contrast to traditional inert arms, are capable of functioning with a lesser degree of human manipulation and control, or none at all.”¹⁹ Spain distinguished between different levels of automation, separating offensive and defensive weapons and emphasizing the need to separate those that do not project lethal force.²⁰ Finland stressed the complexity of the issue as it concerns the “characteristics of a system instead of a particular clearly defined weapon. [...] When thinking about LAWS we are in fact discussing whether autonomy may be used within a specific task namely using lethal force.”²¹

Italy distinguishes between highly automated systems and LAWS. The first act based on “criteria pre-programmed by human operators” determining the type of target, geographical area and amount of time. These systems could have “high degrees of autonomy in several functions, even some critical ones, but their behaviour and actions can still be attributed to the human operator, who remains accountable.”²² LAWS are systems with “autonomous decisions based on their own learning and rules, and that can adapt to changing environments independently of any pre-programming” and could “select targets and decide when to use force, would be entirely beyond human control,” adding, “We are aware that the degree of human control on a weapons system is a variable moving along a continuous scale, which makes it difficult to establish clear-cut categories on the basis of this criterion. At the same time, we believe that we can group weapons systems based on their degree of autonomy.”²³

Switzerland in its working paper “Towards a Compliance Based Approach to LAWS”, defines autonomous weapons systems (AWS) as “weapons systems that are capable of carrying out tasks governed by IHL in partial or full replacement of a human in the use of force, notably in the targeting cycle.”²⁴ This definition was then presented at the CCW meeting on LAWS in 2016, where the Swiss representative elaborated on the reasons for choosing such definition and also stated: “While there seems to be widespread agreement that the interplay between engagement-related functions and human-machine interaction should take centre stage, discussions about what critical functions are and what constitutes an appropriate degree of control are ongoing and complex.”²⁵ Switzerland called to broaden the discussion to also include non-lethal weapon systems that cause: “(1) physical injury short of death, (2) physical destruction of objects, or (3) non-kinetic effects such as through cyber operations.”²⁶

The Holy See stated: “An autonomous weapon system is a weapon system capable of identifying, selecting and triggering action on a target without human supervision. Among these types of systems, we can distinguish different levels of autonomy. [...] We can characterize armed autonomous robots using these three points: (1) the degree and duration of [human] supervision, (2) the predictability of the behavior of the robot, (3) and the characteristics of the environment in which it operates.” The predictability is influenced by algorithms enabling learning and reprogramming. The characteristics of the environment include its geographical boundaries, its contents of persons and goods, and likely events.²⁷

The Netherlands has a national policy which is based on an advisory report written by two advisory councils, at the request of the government.²⁸ The report distinguishes between autonomous weapons and fully autonomous weapons. It defines autonomous weapons as “a weapon that, without human intervention, selects and attacks targets matching certain predefined characteristics, following a human decision to deploy the weapon on the understanding that an attack, once launched, cannot be stopped by human intervention.”²⁹ It goes on to explain: “The person operating the weapon does not know which specific target will be attacked, but the type of target is pre-programmed. A weapon is only autonomous if the critical functions for using potentially lethal force – namely ‘target selection’ and ‘target engagement’ – are performed autonomously, keeping humans out of the loop.”³⁰ In a statement the Netherlands added “humans do exercise control over these weapons in the wider loop of the targeting cycle [...] they do play a prominent role in programming the characteristics of the targets that are to be engaged and in the decision to deploy the weapon.”³¹ The Netherlands sees existing systems such as the Harpy as autonomous weapons. The Netherlands defines *fully* autonomous weapons as “a weapon system that has the capacity to learn, formulate its own rules of conduct and independently adjust to changes in its environment [...]. Such ‘self-aware’ systems, which do not exist at present, would effectively be beyond human control. [...] these weapons would be programmed to perform the entire targeting process autonomously, from formulating the military objective to determining the time and place of deployment.”³² The Netherlands deems it unlikely these weapons “will be developed within the next few decades.”³³ ♦

PAX defines lethal autonomous weapon systems (LAWS) as fully autonomous weapons that can select and attack targets without meaningful human control over individual attacks.

3. Questions and concerns

European states have raised several questions and concerns regarding LAWS. These can be divided into three categories: legal, ethical and security issues. Besides these questions and concerns, a number of states stressed there could also be advantages in deploying LAWS.

For example the Czech Republic stated: “There are obvious risks associated with introduction of weapons with autonomous capabilities, but as with any other weapon there are undoubtedly certain benefits as well.”³⁴ The Netherlands remarked: “There may be key military advantages to autonomous weapon systems, as long as there is meaningful human control in the wider loop of the decision-making process. For example, computers often respond faster and more accurately than humans, which may reduce the risk to friendly units and the civilian population. These systems are often also able to operate in environments that are dangerous to humans, or difficult to reach.”³⁵

3.1 Legal questions and concerns

Regarding legal questions and concerns, two main points can be distinguished. The first is the question whether LAWS would be able to comply with International Humanitarian Law (IHL). The second is the issue of ascertaining responsibility and accountability for actions carried out by an autonomous weapon system.

INTERNATIONAL HUMANITARIAN LAW

Within the discussions that took place at the CCW there has been a common understanding that “as with all weapon systems, the rules of IHL are fully applicable to LAWS. However, many delegations questioned whether weapons systems that select and attack targets autonomously would be able to comply with these rules.”³⁶ Contention emerged around the ability of LAWS to comply with international law, particularly IHL. Prominently, three principles of IHL – distinction, proportionality and military necessity – were cited as difficult aspects to implement into a technical system that would lack human judgement.

Most European states raised the issue of IHL in relation to LAWS. Many states stressed that IHL forms the fundamental basis for the assessment of the legality of any new weapon system.

Among others Austria, Croatia, Germany, Norway, Poland, Sweden and Switzerland have raised concerns and questions on whether LAWS would be able to comply with IHL. Austria said: “Strong doubts remain about the possibility of LAWS's compliance with international

law.”³⁷ Germany asked: “But would a lethal autonomous weapon system be able to discriminate between combatants as legitimate targets and non-combatants? Would a lethal autonomous weapon system ever be able to apply the principle of proportionality in order to assess whether the possible collateral damages of a military attack are justified by the achievable military advantage? Many experts and scientists express serious doubts whether a computer will ever be able to make such qualitative evaluations.”³⁸ Norway said a main concern is “whether such weapons could be programmed to operate within the limitations set by international humanitarian law,” specifically regarding fundamental rules of distinction and proportionality. “Could a fully autonomous weapon system be designed to tell if a soldier is trying to surrender, or to distinguish between a combatant and a civilian?”³⁹

Poland stated: “Compliance with the fundamental rules and principles of international humanitarian law in the conduct of hostilities, that is distinction, proportionality and precautions in attack, poses formidable challenges, especially as future weapons with autonomy in their critical functions will be assigned more complex tasks and deployed in more dynamic environments than has been the case until now.”⁴⁰ Switzerland said: “Applying these requirements of lawful use to autonomous weapons systems is not without complexity [...] many pivotal rules of IHL presume the application of evaluative decisions and value judgements.”⁴¹

Some states said it is impossible to know how technology will develop and whether future systems could comply with IHL.

Finland stressed the importance of IHL, but said that, as we do not know how technology will evolve, it was impossible to say whether “future systems could fully comply with IHL.”⁴² French and UK positions also stated that it was impossible to make a judgement about LAWS complying with IHL given the state of technology today, but that this might change in the future.

France stressed that the “fact itself that a machine, not a human being, selects the target, decides to open fire, or carries out an attack does not necessarily entail a violation of international humanitarian law.”⁴³ The Netherlands stated that there was no reason to assume that autonomous weapons by definition fall under a category of prohibited weapons under IHL. This would have to be assessed on a case-by-case basis.⁴⁴ Greece remarked: “To argue that LAWs comply or do not comply with IHL at this stage would amount to an oracle of Delphi.”⁴⁵

The Czech Republic argued that autonomous machines could fare better than human beings in the application of IHL principles. A Czech representative stated that most new military technologies have proven themselves to increase precision and to reduce collateral damage, adding that “many military experts are convinced that the advances on the field of artificial intelligence will enable to solve a wide range of problems linked with combat activities, including the rules of engagement in the behavior of the robots with the level of success that exceeds the human abilities.”⁴⁶

A number of states mentioned the need for human control in relation to IHL. This will be discussed in chapter 5. A number of states also mentioned Article 36 reviews in relation to the compliance of new weapon systems with IHL. This will be discussed separately in chapter 6.

ACCOUNTABILITY AND RESPONSIBILITY

In the report of the 2016 meeting on LAWS, ambassador Michael Biontino of Germany wrote: “The issue of responsibility and accountability with respect to LAWS was raised by a number of delegations. There was a widely shared understanding that the responsibility for the development, production and deployment of LAWS rests with the operating State. Some delegations noted that individuals could be held responsible under the relevant bodies of international law. The importance of ensuring an unequivocal accountability chain in the deployment of a weapon system was underlined.”⁴⁷ Several European states mentioned the issues of responsibility and accountability.

Norway expressed concern that “fully autonomous weapons [...] could blur lines of responsibility and accountability,” and could lead to a possible accountability gap with “very serious consequences.” Norway stated that because of “the very limited role played by humans in operating these systems, it is possible to foresee situations in which no one could be held responsible.”⁴⁸

Germany raised a number of questions: “Is our current legal system adapted to receive machines as actors? Do existing laws on the national and international level apply? Who will be held accountable in cases of mistakes and malfunctions? Do we really need a human being to be held accountable?”⁴⁹

Poland said it was “of utmost importance to make sure that human beings remain accountable for use of their crucial functions,” adding: “What about the responsibility for violations of international law, especially if an autonomous weapon system will have complex programming and the interaction of an autonomous weapon systems with the environment will not always be predictable to effectively control their actions in battlefield in changing circumstances and prevent their attacks on civilians?”⁵⁰ It also said: “A state should always be held accountable for what it does, especially for the responsible use of weapons which is delegated to the armed forces. The same goes also for LAWS. The responsibility of states for such weapons should also be extended to their development, production, acquisition, handling, storage or international transfers.”⁵¹

France stated that at this stage it is not possible to define with certainty the outlines of the responsibility of each actor, as this will depend on their role in the use of lethal autonomous weapon systems. The possibility of identifying a responsible actor is crucial to know whether existing principles of international humanitarian law remain sufficient or not.⁵²

Austria raised the problem of legal responsibility when “the autonomous decision of a machine is at the root of the crime.”⁵³

The Holy See also expressed concern about an “accountability vacuum.”⁵⁴ This could lead to “diluting or concealing true responsibilities in case of collateral damage,” making it “easy and tempting, on the part of those who use them, to invoke technical malfunctions rather than face their responsibility,” which could lead to some being less conservative regarding collateral damage.⁵⁵

Italy, referring to what it calls highly automated systems, stated that these systems could have “high degrees of autonomy in several functions, even some critical ones, but their behavior and actions can still be attributed to the human operator, who remains accountable.”⁵⁶

Switzerland provided the most extensive analysis of accountability and autonomous weapons, stating: “Given that AWS possess no agency or legal personality of their own, the question

of individual criminal responsibility focuses entirely on the responsibility of humans that are involved as operators, commanding officers, programmers, engineers, technicians or in other relevant functions. [...] Strictly speaking, therefore, a commander's failure to duly control AWS operating under his command is not a case of command responsibility within the contemporary understanding of this concept, but may constitute a direct violation of the duties of precaution, distinction, proportionality or any other obligation imposed by IHL. This does not exclude that, as the functions of human soldiers are increasingly 'delegated' to AWS, it may become appropriate *de lege ferenda* to extend the commander's supervisory duty, *mutatis mutandis* and by analogy, also to AWS operating under his direct command and control. [...] Overall, under current international law, whether or not there is an 'accountability gap' for operators, commanders and other humans involved in the operation of AWS depends on the applicable *mens rea* standard." Switzerland emphasized that "States remain legally responsible for unlawful acts and resulting harm caused by AWS they employ, including due to malfunction or other undesired or unexpected outcomes."⁵⁷

A few countries foresee no problems with accountability. The UK was less concerned about accountability stating "current UK policy is that the operation of our weapons will always be under human control as an absolute guarantee of human oversight and authority and of accountability for weapon usage."⁵⁸ In another statement it said "there must always be human oversight and control in the decision to deploy weapons. It is in this person or with these people that responsibility must initially be vested."⁵⁹

The Netherlands shares this opinion. Its advisory report states: "There is no accountability gap as regards the deployment of autonomous weapons, as long as the decision to deploy, taken in the framework of the targeting process, remains with humans. [...] Likewise, there are no gaps in state responsibility as regards the deployment of autonomous weapons." However "there is a shift in accountability in the case of autonomous weapons. This is because the deployment of autonomous weapons does not involve a decision to attack a specific target; rather, that decision is implicit in the decisions to deploy and activate them. As a result, accountability lies primarily with the commander who decides to deploy the weapon and the soldier who activates it, as opposed to a soldier who selects and attacks specific targets."⁶⁰

3.2 Ethical questions and concerns

In his report of the 2016 meeting of experts on LAWS, ambassador Biontino wrote: "Ethical concerns took a prominent place in the debate and there was a common understanding that whether or not LAWS are morally acceptable is a critical question to be addressed. It emerged as an area of common understanding that delegating the decision over life and death of a human being to a machine would be unacceptable. It was noted, for example, that machines cannot die and should therefore not decide over the life and death of humans."⁶¹ A number of European states raised ethical concerns related to LAWS. The majority of these were related to delegating decisions over life and death to a machine. Finland declared that "[we will] have to address the fundamental questions on whether we want an autonomous weapon to become a reality or not." Adding: "The question is really whether we foresee that human kind will cause less harm to itself and coming generations by relying on machines or relying on humans and their judgment."⁶² Norway stated that "The possible development of such 'fully autonomous weapons' raises a number of ethical and legal questions."⁶³

Switzerland mentioned: “It seems obvious that the development and employment of lethal autonomous weapon systems, that are able to select and attack targets without meaningful human control, raise important ethical concerns.”⁶⁴

For Croatia, the right to life and dignity entailed the need for human control over lethal decision making. As stated by its representative: “This conviction is not exclusively attached to any specific nation or international stakeholder; rather it is a question of firm belief that even in times of war humanity should preserve those rights that are deeply rooted in our common being – the right to life and the right to dignity.”⁶⁵ The following year, Croatia added: “It is not acceptable that fundamental moral judgments over life and death fall into hands of automated technical systems because such scenario would mark the end of humanity as such.”⁶⁶

Ireland stated: “The decisive questions may well be whether such weapons are acceptable under the principles of humanity, and if so, under what conditions.”⁶⁷

The Holy See voiced the strongest ethical reservations, arguing that human suffering was likely to increase due to the dehumanisation of warfare caused by deploying LAWS. It expressed “grave ethical concerns” with autonomous weapons and said that the most critical aspect was “the lack of ability for pre-programmed, automated technical systems to make moral judgments over life and death, to respect human rights, and to comply with the principle of humanity.”⁶⁸ In 2014 the Holy See stated: “Taking humans ‘out of the loop’ presents significant ethical questions, continuing that even if a system can technically comply with the law of war “The fundamental problem still exists: a lack of humanity, a lack of meaningful involvement by human beings in decisions over the life and death of other human beings.”⁶⁹

3.3 Security questions and concerns

Some European states raised international security concerns with regards to LAWS. Austria put forward that “the potential of such weapon systems for lowering the threshold to resort to force, for proliferation to irresponsible users, and for the instigation for new arms race, pose a risk for international peace and stability.”⁷⁰

Germany also raised the concern whether states would be “more willing to start wars.”⁷¹ Ireland raised the issue of LAWS proliferating “outside of traditional combat situations, for example in law enforcement.”⁷²

The Holy See said: “The inevitable widespread proliferation of these weapon systems will fundamentally alter the nature of warfare for the whole human family.”⁷³ Adding a year later that it “will induce and stimulate an arms race, with its attendant costs and risks of reinforcing oppositions between nations.”⁷⁴ Earlier, it also stressed that the fact that these weapons would reduce the “domestic political cost of waging war,” can lead to “to overly-hastened military action.”⁷⁵

Finally, Switzerland said that “the legal review of LAWS should aim to ensure that LAWS cannot continue to function and cause unintended harm in case of a system malfunction or unintended loss of control. With a view to avoiding unwanted loss of control or unfriendly takeover, the resilience of a system to cyber-attacks, as well as to programming and deployment errors should also be assessed.”⁷⁶ Switzerland also stated that the introduction of LAWS onto the battlefield could decrease the barrier to conflict.⁷⁷ ♦

PAX has serious concerns about weapon systems that can select and engage targets without meaningful human control.

Ethical concern

1. A machine should never be allowed to make the decision over life and death. This goes against the principles of human dignity and the right to life. This decision cannot be reduced to an algorithm. Outsourcing this decision would mean outsourcing morality.

Legal concerns

2. LAWS are unlikely to be able to adhere to International Humanitarian Law. It is unlikely that they will be able to properly distinguish between civilians and combatants, or to make a proportionality assessment.
3. LAWS create an accountability vacuum regarding who is responsible for an unlawful act. Who would be responsible: the robot, the developer or the military commander?

Security concerns

4. While the deployment of LAWS might reduce military casualties, it could lower the threshold for the use of force. It also reduces the incentive to find political solutions to end conflicts.
5. This new technology could lead to a new international arms race, which would have destabilising effects and threaten international peace and security.
6. These weapons could lead to accidental and rapid escalation of conflict as LAWS react and interact with each other at speeds beyond human control.
7. In contrast to for example nuclear weapons, the technology is likely to be relatively cheap and simple to copy. This would increase proliferation risks and thus enable dictators, non-state armed actors or terrorists to acquire LAWS.
8. Because of their nature these weapons could be highly unpredictable, especially in their interaction with other autonomous systems and if they are capable of self-learning.
9. Only a small number of people are needed to deploy a large number of LAWS, raising concerns about prevention, oversight and control.
10. As with armed drones, deploying LAWS instead of human soldiers may incense the population of the targeted state, potentially working against the interests of the attacking state.

4. The need for regulation or prohibition

Many European states stress that IHL forms the fundamental basis for the assessment of the legality of any new weapon system. All European states supported the decision to formalise talks on LAWS at the CCW, by establishing an open-ended Group of Governmental Experts. However, views diverge on the desirability of a ban on, or regulation of LAWS. Some states see existing IHL as sufficient to regulate lethal autonomous weapons, while other states leave the option for regulation open. The Holy See is the only European high contracting party calling for a ban.

Several states favour some form of regulation or leave the option open. Germany supports the “interdiction of weapon systems that operate beyond human control,” and mentions several options for addressing LAWS in the short and medium term: a “political declaration or a code of conduct,” and for the long term a “moratorium or prohibition.”⁷⁸ Germany is of the opinion that “given the actual state of the art of artificial intelligence and other important components of LAWS, a legal weapons review for the time being inevitably would lead to the result of LAWS being illegal, as they are not able to meet the requirements set out by Article 36 AP 1.”⁷⁹

Austria stated: “We risk crossing a very dangerous threshold. We should be very careful to make sure that the use of such weapon systems is consistent with ethical, political and legal imperatives.”⁸⁰ Austria calls on countries to “raise the bar”.⁸¹ In 2016 Austria urged: “In order not to create undesirable *faits accomplis*, States should decide immediately refrain from, or suspend, activities which risk to prejudice the outcome of the international political discussion on LAWS.”⁸²

Croatia says that the “idea of developing an international prohibition of weapon systems operating without meaningful human control” should not be unthinkable, and the possibility of regulating LAWS with an international legal instrument should not be ruled out.⁸³

The Czech Republic stated that it “is fully aware of the implications that introduction of weapons with autonomous capabilities might bring about and we are ready to work on provisions of the future regime that would help minimize unintended and unacceptable engagements.”⁸⁴ It also said: “We should be mindful of all the pros and cons and should not jump to premature conclusions such as that the development, production and use of these weapons should be absolutely and pre-emptively prohibited,” from a “humanitarian point of view it might be more reasonable to concentrate on certain critical autonomous features of weapons that could be

regulated or prohibited, rather than pursue absolute ban of these weapons.”⁸⁵

Finland said: “As High Contracting Parties to the CCW, it is our responsibility and obligation to protect current and future generations from excessive harm. But whether this is best done by banning or by allowing the development of LAWS is not a simple question. [...] The question is really whether we foresee that human kind will cause less harm to itself and coming generations by relying on machines or relying on humans and their judgment.”⁸⁶ In response to written questions by PAX in 2017, Finland writes: “The need to regulate lethal autonomous weapons systems (LAWS) requires broad deliberations.” It adds that Finland considers “that there is a need to retain appropriate human involvement over weapons systems. International humanitarian and human rights law also needs to be respected in all situations and when considering new weapon systems.”⁸⁷

In a letter to PAX, Switzerland states that it is “sceptical about a generic preventative prohibition of AWS under international law. Nevertheless Switzerland is assessing [...] the need for, and possibilities of, further regulatory responses as may be deemed required.”⁸⁸ Switzerland “considers that existing international law must be at the centre of our consideration and efforts,” and is convinced this “sets a very high requirement for any potential AWS,” adding that “given the current status of robotics and artificial intelligence, it is difficult today to conceive of an AWS that would be capable of reliably operating in full compliance with all obligations from existing international humanitarian law without any human control in the use of force.”⁸⁹ In a statement in 2015 Switzerland raised the question: “Do we have the technical and experimental resources to perform adequate tests, which provide us with the necessary confidence that a system acts predictably, as designed and in compliance with existing international law? [...] If we lack the capability to reliably assess this, the system should not be fielded.”⁹⁰

In a letter to PAX, Poland underlines “the crucial role of states in ensuring compliance of the potential development and use of LAWS with international law,” in particular IHL. Adding that legal reviews are the “most appropriate mechanism to verify whether a given system can comply with the rules relating to the conduct of hostilities,”⁹¹ In a statement Poland mentions: “The importance of introducing some form of control over international transfers of LAWS as entire systems, as well as their elements and technology may therefore gradually increase over time. At the present stage it would seem at least advisable to be able to prevent transfers of such systems and their components to undesirable end-users, whether states or non-state actors;” it is therefore calling for “best practices” for export control as a complimentary tool.⁹²

In a statement in 2014 Spain said that any future regulation would inevitably need a phase of reflection and defining, which in respect to emerging technologies, would involve special difficulties. For the same reason, Spain sees any proposed moratorium, without first collectively defining what would be the scope of application, as premature.⁹³ Spain mentions in a letter to PAX in 2017 “there is a general concern about the possible future use of robotics and artificial intelligence in armed conflicts. Therefore, we must reach consensus on a definition of the concept of LAWS, and regulate the matter appropriately.”⁹⁴

A number of countries do not see the need for a ban or extra regulation, stating that IHL gives sufficient guidance to deal with LAWS. France states that a pre-emptive ban is premature, instead stating that an Article 36 review “constitutes an essential basis for meeting the challenges posed by emerging technologies.”⁹⁵ “The fact itself that a machine, not a human

being, selects the target, decides to open fire, or carries out an attack does not necessarily entail a violation of international humanitarian law,” and that “it would be a mistake to conclude categorically that such autonomous weapons systems cannot be designed and used so as to comply with the general principles of the law governing the use of weapons in armed conflict.”⁹⁶

Greece sees no justification for banning or prohibiting LAWS as it is impossible to know at this time if these weapon could comply with IHL, adding: “What is left then is basically an ethical question, not a legal one. It boils down to the fundamental question of whether humans should delegate life and death decisions to machines and definitely Greece, like others, does not feel comfortable with such a prospect. [...] The question which then arises is how does one operationalize this ethical concern into a legal provision. The only legal principle which comes to mind is the Martens Clause, given its dependence on the dictates of public conscience. Does though such a general principle suffice to lead to the codification in the future of a new set of legally binding rules? We have our doubts.” Greece goes on to state that “thorough and systematic weapons review is the only practical solution, at least at the present stage, to address the issue of LAWS from a legal angle.”⁹⁷

Italy also states: “At this stage we believe that the adoption of a total ban or other kinds of general limitations on fully autonomous technologies would be premature, given that the field is in constant, dynamic evolution and that such restrictions would hinder the development of technologies with very useful civilian applications.”⁹⁸ Italy sees existing IHL as sufficient to deal with highly automated weapons that act based on criteria pre-programmed by human operators on a case-by-case basis.⁹⁹ Regarding systems “entirely beyond human control” that make autonomous decisions based on their own learning and rules, Italy states: “We cannot exclude that those systems – in particular offensive ones – may pose issues of compliance with IHL and raise ethical dilemmas. However, we believe that existing IHL rules already provide relevant parameters to assess the legality also of this second group of weapons.”¹⁰⁰

The United Kingdom says that it does “not believe that a pre-emptive ban on LAWS is necessary for two reasons: Firstly, existing international humanitarian law is sufficient to assess whether any future weapon system, including LAWS, would be capable of legal use. And secondly, we believe strongly that there could be legitimate non-lethal advantages to increasingly autonomous technology in the future, for example, in the field of logistics. To legislate now, without a clear understanding of the potential opportunities as well as dangers of a technology that we cannot fully appreciate, would risk leading to the use of generalised and unclear language which would be counter-productive.”¹⁰¹ In another statement it added: “The UK’s clear position is that IHL is the applicable legal framework for the assessment and use of all weapons systems in armed conflict.”¹⁰² Adding in another statement: “The requirement for Article 36 Reviews is already prescribed in International Humanitarian Law. So we do not see the need for additional legislation, in the form of a pre-emptive ban. Instead, we would like to see greater compliance with existing IHL.”¹⁰³ It also stated: “Any pre-emptive ban could stifle this research [into non-lethal autonomous technology] depriving the UK of the benefits of significant developments in areas such as logistics, surveillance, communications and data management.”¹⁰⁴

The Netherlands firmly rejects *fully* autonomous weapon systems (“in which humans are beyond the wider loop and human control no longer plays any role,”)¹⁰⁵ but does “not support a moratorium on the development of fully autonomous weapon systems for practical reasons. Such a moratorium would be inexpedient and unfeasible, mainly due to the fact that most

Artificial intelligence technology comes from civilian developments, e.g. autonomous car developments. That technology progress should not suffer from a moratorium, especially when the effectiveness of such a moratorium is very doubtful at the least.”¹⁰⁶ The Netherlands believes that there is no reason to assume that autonomous weapons (a weapon that, without human intervention, selects and attacks targets matching certain predefined characteristics) “by definition fall under a category of prohibited weapons under International Humanitarian Law.” Such weapons have to be assessed on a case-by-case basis. The current legal frameworks are sufficient to regulate autonomous weapons. The Netherlands sees meaningful human control as a crucial concept for assessing the legality of a weapon system.¹⁰⁷ The Netherlands believes that autonomous weapons already exist, like the “Goalkeeper and the Patriot are operating without raising any legal or moral question.”¹⁰⁸

The Holy See is the only European High Contracting Party that calls for a prohibition. In a letter to PAX the Holy See states that “prevention and prohibition are the best option to avoid LAWS from becoming the reality of tomorrow’s warfare. In this perspective, the Holy See called for the CCW to make a courageous decision prohibiting lethal autonomous weapons, as it did in the past with other types of weapons.”¹⁰⁹ In 2014 the Holy See said: “it is imperative to act before the technology for autonomous weapon systems progresses and proliferates, before such weapons fundamentally alter warfare into an even less humane, less human, affair.”¹¹⁰ In a 2015 statement it outlined three reasons for a prohibition: 1) “deresponsabilization [...] obscuring of where true responsibility lies;” 2) “aggravation of the dehumanization process. [...] The eviction of man by the machine prevents the appearance of behaviour characterized by compassion, reconciliation, respect, which are essential to the achievement of a true peace;” and 3) The risk of depolitisation, “through their speed and their capacity, to dictate important military action policies.” Therefore “it is suitable to prohibit the systems which possess lethal capacity and are at the same time capable of escaping effective control by human beings.”¹¹¹ ♦

PAX believes that a pre-emptive ban is the only effective means of addressing all concerns about the morality, legality, and international security of lethal autonomous weapon systems. To achieve this end, PAX advocates the adoption of an international, legally binding instrument that will prevent the development and deployment of lethal autonomous weapon systems.

5. The need for human control

With increasing autonomy of weapon systems, humans delegate certain activities and decisions to machines. Therefore it is not surprising that the question of what is acceptable and what is unacceptable has been very central in the CCW discussions on LAWS. Which activities and decisions can be made by a machine and which must be retained by a human? And how do we ensure that this control is appropriate or meaningful? In his report on the 2016 informal meeting of experts at the CCW, Ambassador Biontino wrote: "A central element of the discussion was the relationship between the human operator and the machine regarding the level of human involvement in the use of force. A number of delegations proposed that human control must be maintained over weapon systems, regardless of whether this should be considered as appropriate, meaningful or effective. 'Meaningful human control' was proposed as a framework to help advance an understanding around a threshold delineating acceptable or necessary levels of human control from those that are insufficient. Others were sceptical towards this approach as they argued it was too subjective and difficult to identify. An alternative suggestion was the 'appropriate level of human judgment' required to ensure that a weapon functions as expected."¹¹²

Of the European states that elaborated their views on LAWS, the vast majority mention a form of human control.¹¹³ Different terminology is used when describing this, with most using the term 'meaningful human control'.¹¹⁴

Denmark states that "meaningful human control [...] is at the very core of our discussions." Croatia mentions: "The principle of 'meaningful human control' is of pivotal importance because we believe that the ultimate responsibility should lay in human hands."¹¹⁵ Ireland states "all weapons should remain under meaningful human control."¹¹⁶ Adding in a letter, "This principle is critical to the international community's consideration of the questions arising from the development of LAWS."¹¹⁷

Italy says: "We are inclined to retain the notion of 'meaningful human control' as an important element of our debate, that could help us to further advance our understanding."¹¹⁸ Sweden says it "would support the principle of applying Meaningful Human Control which has already been put forward by many parties."¹¹⁹ The Netherlands states that "the concept of meaningful human control [can help states] to decide about which weapon systems are in principle acceptable and which are not."¹²⁰

Even though meaningful human control is the most commonly used term, some countries remain sceptical of the concept. France calls meaningful a "vague concept", saying: "This new concept contradicts the very notion of full autonomy and lacks the precision and technical

accuracy needed to discuss complex prospective systems.”¹²¹ In 2016 the United Kingdom stated the “concept of meaningful human control is too subjective and ambiguous, instead favouring what it terms “intelligent partnership.”¹²² However in 2017 the United Kingdom did mention meaningful human control as a “key concept” that needed to be defined. Other concepts used by European states are meaningful human involvement and intervention, human oversight or human judgement and effective or adequate human control. Finland stated “that there is a need to retain appropriate human involvement over weapons systems.”¹²³ Poland also added the term “meaningful state control” as the institutional extension of meaningful human control.¹²⁴

Human control is mentioned by states in relation to issues such as International Humanitarian Law, the use of force and the decision to take a human life.

Human control and International Humanitarian Law

A number of states have linked the concept of human control to International Humanitarian Law. Some states see human control as an essential part of IHL, while others see the need for human judgement when making IHL assessments.

Germany for example stated that the “principle of human control is the foundation of the entire international humanitarian law,” adding that “we should also talk about what we as an international community understand as meaningful human control and declare it an indispensable principle of international humanitarian law.”¹²⁵

Austria said in a statement that “weapons systems without meaningful human control are in contravention to international humanitarian law.” Adding the concept should “not be seen as introducing a new legal norm, but as evaluating LAWS on the basis of the existing standards in international humanitarian law.”¹²⁶

Croatia said: “The principle of meaningful human control should be seen as a fundamental part of the international humanitarian law.”¹²⁷

Switzerland stated: “At the heart of the issue is the question: what is the right quality of the human-machine interaction to ensure and facilitate compliance with IHL?”¹²⁸

States also stress the role of human judgement in making IHL assessments. Switzerland raises this point extensively: “The Geneva Conventions [...] were undoubtedly conceived with States and individual humans as agents for the exercise and implementation of the resulting rights and obligations in mind. In addition, many pivotal rules of IHL presume the application of evaluative decisions and value judgements [...] The principle of precaution even expressly refers to ‘those who plan or decide upon’ an attack, and the provisions establishing criminal responsibility for serious violations of IHL also are based on a manifest presumption of human agency.”¹²⁹

The Holy See stated: “Respect for international law, for human rights law and IHL is not optional. [...] to comply, these systems would require human qualities they inherently lack,”¹³⁰ adding a year later: “These tasks require the interpretation and understanding of the context and of situations which are not really programmable.”¹³¹ In 2016 it stressed: “Prudence and respect for the law sometimes require going beyond the ‘letter’ of the law and so as to interpret it according to the context to preserve the ‘spirit’. This ability of interpretation and going beyond the rules is not programmable.”¹³²

Sweden argued: “Targeting decisions and other critical functions, including careful balancing of the principles of IHL, must therefore continue to be made by humans.”¹³³

Norway similarly stated that “many of the core rules of IHL presume the application of human judgement in the decision-making process.”¹³⁴

Poland mentioned that due to the challenges with LAWS complying with IHL, “there should be always a human being involved in the targeting process to recognize situations of doubt that would cause a human being to hesitate before attacking. In such circumstances States are obliged to refrain from attacking objects and persons.”¹³⁵

The United Kingdom used less strong wording, stating that the principles of IHL “are best assessed and applied by a human.”¹³⁶ France stated that the term “meaningful” presence of a human operator “would not grant a solid legal basis,”¹³⁷ and also that “the fact itself that a machine, not a human being, selects the target, decides to open fire, or carries out an attack does not necessarily entail a violation of international humanitarian law.”¹³⁸

Human control over the use of force

Various states mention the need for human control over the use of force. In this respect Germany stated there was a “common understanding regarding the necessity to exercise appropriate levels of human control over the use of force.”¹³⁹

Switzerland said: “Given the current state of robotics and artificial intelligence, it is difficult today to conceive of an autonomous weapons systems that would be capable of reliably operating in full compliance with all the obligations arising from existing IHL without any human control in the use of force, notably in the targeting cycle.”¹⁴⁰

Croatia mentioned: “While there is recognition that humans must retain ultimate control, more detailed deliberation is needed about what constitutes adequate, meaningful, or appropriate human control over the use of force.”¹⁴¹

Denmark mentioned: “All use of force must remain under ‘meaningful human control’.”¹⁴² In its statement Ireland referred to the call by the ICRC on the importance of “human control over the use of force.”¹⁴³

Sweden stated: “Targeting decisions and other critical functions, including careful balancing of the principles of IHL, must therefore continue to be made by humans.”¹⁴⁴

For the Netherlands meaningful human control over the selecting and attacking a target is not necessary, but can take place in the broader targeting cycle (pre-deployment) in what they call “the wider loop.”¹⁴⁵

The UK has stated that the “operation of our weapons will always be under human control as an absolute guarantee of human oversight and authority and of accountability for weapon usage.”¹⁴⁶ In an answer to a written parliamentary question, the UK government stated that in its operations “every target is assessed by a human, and every release of weapons is authorised by a human; other than in a very small number of instances, all targets are also acquired by a human,”¹⁴⁷ and “no planned offensive systems are to have the capability to prosecute targets without involving a human.”¹⁴⁸

Human control over life-and-death decisions

A large number of European states mention human control in relation to making life-and-death decisions. Some states see the need for human control over lethal decisions as a part of International Humanitarian Law, while others see it as an ethical obligation.

The Holy See raises this point most extensively: “Humans must not be taken out of the loop

over decisions regarding life and death for other human beings. Meaningful human intervention over such decisions must always be present. Decisions over life and death inherently call for human qualities, such as compassion and insight, to be present. [...] The human capacity for moral reasoning and ethical decision-making is more than simply a collection of algorithms. The human factor in decisions over life and death can never be replaced.”¹⁴⁹

Germany states “that it is indispensable to maintain human control over the decision to kill another human being.”¹⁵⁰ Germany calls this a “red line” that should not be crossed.¹⁵¹

Croatia and the Czech Republic see the human decision on life and death as part of IHL, with the Czech Republic stating “that the ultimate decision to end somebody’s life must remain under meaningful human control,” adding that this principle is “already implicitly inherent to international humanitarian law.”¹⁵²

Greece and Ireland call delegating this decision to a machine a fundamental ethical question.^{153 154}

Finland said on behalf of Denmark, Iceland, Sweden and Norway: “We believe that humans should always bear the ultimate responsibility when dealing with questions of life and death.”¹⁵⁵

Poland argues that humans must maintain control over the ability to kill.¹⁵⁶

Sweden states that in “decisions on the use of force against persons, humans should never be ‘out of the loop’.”¹⁵⁷

DEFINING HUMAN CONTROL

In order to apply the concept of human control to weapon systems it is crucial to define what is meant by the term. Also it is crucial to make explicit over what actions and decisions there should be human control and how this should be implemented in a way to ensure it is meaningful, adequate or appropriate. Several states mention the need for definitions and clarification.

Switzerland stated: “Given the current state of robotics and artificial intelligence – the relevant question is not whether a certain level of human control is called for, but what kind and level of human involvement in each of the different phases ranging from conceptualization, development and testing, to operational programming, employment and target engagement.”¹⁵⁸ Switzerland also mentions various means of control: real-time supervision, and an autonomous or human-operated override mechanism.¹⁵⁹

The Czech Republic said: “The challenging part is to establish what precisely ‘meaningful human control’ would entail.”¹⁶⁰ Croatia makes the point that “while there is recognition that humans must retain ultimate control, more detailed deliberation is needed about what constitutes adequate, meaningful, or appropriate human control over the use of force.”¹⁶¹

Ireland stated: “The definition of control, of course, is important in itself, in the context of ensuring that control is effective and not merely nominal.”¹⁶²

Germany advocates appropriate control over the use of force but stated that “determining the specific thresholds for the required extent and quality of human involvement is complex and has to be the result of a comprehensive process.”¹⁶³

The Netherlands mentions that we should “increase our understanding of the level of human control or human judgment [that] is required. That insight will help to better formulate how much and what kind of increase of autonomy is acceptable.”¹⁶⁴

Poland said it is “difficult at this stage to prejudge what should be the scope of ‘meaningful human control’.”¹⁶⁵

Norway implicitly refers to certain aspects necessary for meaningful human control, stating that certain highly automatic systems “operate within such tightly constrained spatial and temporal limits that meaningful human control is ensured.”¹⁶⁶

Italy stated: “We are aware that the degree of human control on a weapons system is a variable moving along a continuous scale, which makes it difficult to establish clear-cut categories on the basis of this criterion. At the same time, we believe that we can group weapons systems based on their degree of autonomy.”¹⁶⁷

Sweden said that “the necessary level of human control would depend on the particular situation and the requirements of international law in each case.”¹⁶⁸

The Holy See uses the most comprehensive description of what sufficient human control would entail: “The ‘human control’ of a robot with a certain degree of autonomy [...] can be in fact ‘significant’,” if there is 1) “a human supervision allowing in any time to disable the autonomous mode of operation,” 2) “if the environment in which the robot is perfectly circumscribed and known” and “we know all the parameters: objects and persons therein and events that can occur there,” and 3) “if all behaviours [of the robot] are well known,” which would not be the case with “algorithms enabling learning and reprogramming.”¹⁶⁹ ♦

PAX sees meaningful human control as an essential concept within the debate on lethal autonomous weapon systems. It believes that weapon systems that do not have meaningful human control over the critical functions (selecting and attacking targets) should be banned, as they would not be able to comply with IHL, would create an accountability gap and would go against ethical principles such as the right to life and human dignity.

The concept of meaningful human control should be key in discussions on the issue, and states should clearly answer the question: how much autonomy do we want to give weapon systems, and how do we retain human control? In other words, which minimum level of control or human intervention is necessary to make a weapon system legally and ethically acceptable?

Human control is not necessary for every function of a weapon system. Independent refuelling, take-off and landing are functions that may not need human control. However, PAX deems human control for target selection and engagement essential.

The human operator must be able to make a carefully considered decision about issues such as proportionality and the distinction between combatants and non-combatants. The person who makes these decisions must have sufficient information about the situation on the ground and have enough time to make a well-considered, informed decision.

6. Article 36 reviews

In the discussions at the CCW, various states have mentioned Article 36 reviews in relation to the issue of lethal autonomous weapon systems. A number of European states declared that they have procedures in place and some states described their review system.

Article 36 of the 1977 Additional Protocol 1 to the 1949 Geneva Conventions states that: “In the study, development, acquisition or adoption of a new weapon, means or method of warfare, a High Contracting Party is under an obligation to determine whether its employment would, in some or all circumstances, be prohibited by this protocol or by any other rule of international law applicable to the High Contracting Party.”

In his report on the 2016 informal meeting of experts at the CCW, Ambassador Biontino wrote: “A number of delegations emphasized the importance of legal weapons review processes to ensure compliance with IHL. In response, some delegations argued that existing legal weapons reviews are incapable of addressing the potential challenges posed by LAWS.”¹⁷⁰

Eleven European states mention Article 36 reviews in relation to autonomous weapon systems. Some state these reviews could be an instrument to assess the legality of lethal autonomous weapon systems and their compliance with International Law, specifically International Humanitarian Law.

Austria stated: “The basis for the lawfulness of new weapons can be found in Article 36,” adding that “new weapons need to comply inter alia with the following three fundamental IHL principles, namely the principle of proportionality, distinction and precaution.”¹⁷¹

Germany said that “in order to verify compliance with international law, a State intending to field a new weapon or weapon system must conduct a thorough legal review under Article 36 of Additional Protocol I to the Geneva Conventions.”¹⁷²

Sweden has mentioned that “states have an obligation to assess the legality of new weapons,”¹⁷³ adding in another statement that “at the bottom of the issue lies the fact that a legal review of new weapons, means and methods of warfare is crucial.”¹⁷⁴

Switzerland discusses the reviews stating: “While the process of national legal reviews may require procedural and technical adaptations to fully capture the complexity of AWS, if rigorously implemented, it holds the potential of ensuring that all new weapons, means and methods of warfare are developed and acquired in compliance with international law.”¹⁷⁵

The Czech Republic believes that “the risks would be mitigated by the obligation of states to review these new weapons against the requirements of international humanitarian law or any rule of international law applicable to the reviewing party to acceptable level. The Czech Republic remains convinced that there is already an obligation of High Contracting Parties of the Additional Protocol I to the Geneva Conventions to review whether new weapon, means or method of warfare would comply with international humanitarian law or not.”¹⁷⁶

Finland stated: “We further underline, that each and every state has the ultimate responsibility in every situation where norms of international humanitarian or human rights law are breached. This includes the provisions of the Geneva conventions first additional protocol on the review of the legality of new weapons systems.”¹⁷⁷ Finland also said it will “review the national implementation of article 36 during this year and we are also discussing the possibility of creating international standards for the implementation of this norm.”¹⁷⁸

Greece said “thorough and systematic weapons review is the only practical solution, at least at the present stage, to address the issue of LAWS from a legal angle.”¹⁷⁹ Poland stressed the crucial importance of carrying out legal reviews.¹⁸⁰

The United Kingdom stated: “Article 36 Weapons Reviews are the correct means to assess a weapon, means, or method of warfare and its use, as required by Additional Protocol 1 to the Geneva Convention.”¹⁸¹

EXAMPLES OF PROCEDURES

A number of European states described their review process at the CCW, including Germany, Sweden, the United Kingdom, Belgium and Switzerland.

Germany explained it had a permanent Steering Group that falls under the Directorate-General of Legal Affairs and consists of representatives of all other Directorate-General of the Ministry of Defence to “synergise the in-house knowledge of all experts, ranging from political tot technical or operational expertise.”¹⁸² This group can ask for additional expertise from inside or outside the Ministry of Defence. The Steering Group’s assessment is a recommendation, not a final decision. Sweden outlined that “the Swedish Delegation for International Humanitarian Law Monitoring of Arms Projects (the Delegation) was established in 1974. The Delegation is an independent authority and not part of the Government or the Swedish Armed Forces. [...] The Delegation has adopted a multi disciplinary approach and its eight members, elected by the Government, consist of experts in international and national law, military and medical experts and experts in arms technology.”¹⁸³

Switzerland remarked that their “legal reviews of weapons are based on an ordinance by the Ministry of Defence, enshrining the requirement to legally review weapons before acquisition, as well as on a directive of the Chief of Defence, regulating the process. The latter mandates the Law of Armed Conflict Section within the Ministry of Defence with the reviews. [...] Besides the legal review of weapons, we also perform reviews of doctrine and other relevant regulations to ensure IHL compliance of means and methods. Switzerland is currently reviewing its legal review process and will in particular include a definition of the weapons, which will clearly identify the subject of the review.”¹⁸⁴

Belgium mentioned: “The Belgian Commission for the Legal Review of New Weapons was established by the General Order-J/836 issued by the Chief of Defence on 18th July 2002. [...] The Belgian Commission is a permanent advisory body that reports to the Chief of Defence. Its task is to advise the Chief of Defence about the legality of any new weapon, means or method of warfare that is under study or which is being developed by the Armed Forces or that the Armed Forces plan to acquire.”¹⁸⁵

The United Kingdom stated that its “Article 36 reviews are conducted by a team of military lawyers from all three Armed Services who work closely with the equipment project teams.”¹⁸⁶ The review takes place in three stages: “MOD’s decision to commit funds to developing a specific capability (known as ‘Initial Gate’); MOD’s decision to commit fully to the procurement of a particular piece of equipment or weapon (known as ‘Main Gate’); and at the date the finalised equipment enters service.”¹⁸⁷ These stages “ensure that a legal review is provided prior to major decisions being made about progress and spending, so that IHL requirements are part of the decision making process.”¹⁸⁸

DIFFICULTIES WITH REVIEWS

Switzerland mentioned some challenges regarding reviewing autonomous weapons. “The legal review of AWS may present a number of challenges distinct from traditional weapons reviews. Specifically, the question is how such systems and their specific characteristics can be meaningfully tested. Beyond the purely technical challenge of assessing IHL compliance of an AWS, there is also a conceptual challenge related to the fact that an autonomous system will assume an increasing number of determinations in the targeting cycle which traditionally are being taken care of by a human operator. For example [...] if an AWS is expected to perform this proportionality assessment by itself, that aspect will need to be added to legal reviews of these systems. New evaluation and testing procedures may need to be conceptualized and developed to meet this particular challenge.”¹⁸⁹ In 2015 Switzerland said “any legal review process concerned with such systems would have to assess [...] their capability to reliably implement the targeting principles of distinction, precaution and proportionality without human intervention.”¹⁹⁰ Switzerland then also asked: “Do we have the technical and experimental resources to perform adequate tests, which provide us with the necessary confidence that a system acts predictably, as designed and in compliance with existing international law? [...] If we lack the capability to reliably assess this, the system should not be fielded.”¹⁹¹

Belgium stated: “Regarding LAWS, the used technology would be so advanced and so highly complex that the members of the Commission would, first of all, have to be particularly aware of the specificities of the weapon and its functioning before being able to legally review it. In order to fulfil its duty, the Commission might be forced to rely more and more on experts. But not all the States would have the internal resources to develop such an expertise. States would therefore most probably have to rely on information emanating from the industry, with all the legitimate questions that might arise from this situation. The very question of the legal review itself then comes in mind. Regarding their particularities, LAWS might indeed require legal review commissions to consider with new eyes several international law principles, notably the principle of proportionality and the principle of accountability. The Martens clause, which is already taken into consideration in regard to more conventional weapons, would probably also be put in a new light.”¹⁹²

WAY FORWARD

Germany “sees merit in elaborating further on the idea to share national regulations in this regard, to look for common standards and to discuss specific procedures for detecting transgressions in the direction of LAWS.”¹⁹³ Germany remarks that states use different methods of examination for the Article 36 review and states “international trust and confidence-building could be furthered by increasing transparency regarding these review mechanisms. A first step could be to make public the national procedures. [...] Germany is ready to help build consensus among states thus opening the way for a transparency instrument for the national procedures.”¹⁹⁴

The Netherlands advocates for “greater transparency at the international level concerning the national article 36 procedures and encourages more information sharing on procedures, best practices and outcomes of article 36 reviews. Therefore the Netherlands calls for the formulation of an interpretative guide that clarifies the current legal landscape with regard to the deployment of weapons with autonomous functions. Such a document could list best practices on issues such as the role of meaningful human control within the article 36 procedure and the role of meaningful human control in relation to the deployment of autonomous weapons.”¹⁹⁵ Such a guide could be written by an “independent small group of internationally highly respected experts.”¹⁹⁶

Sweden said: “We see that one promising issue for exploring in a GGE could well be the implementation of weapons review processes, including identification of best practices or benchmarks for such reviews,”¹⁹⁷ adding “it would be worthwhile developing some of the measures proposed, such as establishing points of contact and exchanging information on procedures and best practices on weapons reviews.”¹⁹⁸

In 2016 Switzerland mentioned a “number of further measures could be recommended for incorporation into national review procedures. For example, one could imagine recommending that in some cases, particular safeguards against malfunction, such as the possibility of a human override, are built into AWS. Proper understanding of a system’s predictability, especially when it comes to interaction with other autonomous systems, could also be named as example.”¹⁹⁹ In 2015 Switzerland said “the legal review of LAWS should aim to ensure that LAWS cannot continue to function and cause unintended harm in case of a system malfunction or unintended loss of control. With a view to avoiding unwanted loss of control or unfriendly takeover, the resilience of a system to cyber-attacks, as well as to programming and deployment errors should also be assessed.”²⁰⁰ Switzerland also suggested that states should “assess existing AWS and existing systems with limited autonomy in the targeting cycle,”²⁰¹ and use the knowledge gained for assessing future weapons with higher degree of autonomy.²⁰²

The United Kingdom “is aware that despite the large numbers of States being signatories to the first Protocol, not all formally conduct legal weapons reviews. [...] We hope that sharing our approach may encourage other states to publish theirs, or begin implementing such reviews if they don’t do so already. [...] The UK welcomes engagement and comments on its process. [...] To this end, the UK hosted a Weapons Review Forum in 2015 and 2016.”²⁰³

Finally, Belgium remarked: “Numerous States have called for the sharing of information on legal review and good practices. Belgium shares this point of view and takes part, to this end, in the initiative led by the United Kingdom.”²⁰⁴ ♦

PAX sees Article 36 reviews as an important mechanism for states to assess the compliance of a new weapon system with International (Humanitarian) Law. However these reviews cannot be seen as an effective instrument to deal with the issue of LAWS as such. The reviews are currently not functioning optimally and even if this were the case it is questionable whether LAWS could be adequately reviewed. The reviews only look at legal aspects, while the debate about LAWS includes crucial ethical, policy and security concerns. Furthermore the reviews take place at the national level, without any agreed standards or international oversight and therefore cannot be a substitute for an international legally binding protocol.

Concerns with Article 36 reviews

- ◆ Only a limited number of states have a national review system in place.
- ◆ The states that do have weapons review procedures in place often conduct those reviews internally, usually under the auspices of military rather than civilian experts, raising questions of objectivity and conflict of interest.
- ◆ Weapons reviews are of a non-binding nature and function mostly as a recommendation to governments.
- ◆ The outcomes of the reviews themselves are mostly confidential, and because of its classified military nature the process of testing is non-transparent.
- ◆ There is no international standard for the review process. Given the national security sensitivities of new weapon technologies, each country has its own methods and procedures of weapon evaluation.
- ◆ There is no international oversight over these reviews.
- ◆ In the past certain weapons, for example cluster munitions, have passed Article 36 reviews, only to be banned when their use demonstrated high levels of civilian harm.

Concerns with reviewing LAWS

- ◆ Creating a realistic testing environment for autonomous systems involves many, most likely insurmountable, challenges.
- ◆ The programming code of a LAWS would consist of thousands of lines of code, making it difficult to review such a system's functioning.
- ◆ As autonomous systems react and interact with their environment, reviewing how a system will operate in a new and unstructured environment can create unforeseen outcomes. It is impossible to test each possible environment.
- ◆ It would be very difficult, if not impossible, to develop tests to sufficiently review LAWS capable of machine learning or systems of systems.

7. European Union

Delegations of the European Union have been present at various international forums that deal with questions of autonomous weapons. As early as 2013 when the issue of LAWS was first being debated, the EU spoke on the issue. At the UN Human Rights Council on 30 May 2013, the EU representative took note of the widely circulated letter by Special Rapporteur Christof Heyns on extrajudicial killings, and agreed with his conclusion that also weapons that “select targets without a human in the loop” are governed by international law.²⁰⁵

The EU delegation urged the discussion on LAWS to continue in relevant international forums, particularly UN arms control bodies. The EU spoke on the issue later that year at the CCW, voicing support for the continuation of discussions at that forum.²⁰⁶ In April 2015, speaking on the issue again, the EU representative stated that the EU highly values the discussions at the CCW, and welcomed “the active support of civil society to this important discussion.”²⁰⁷ The EU further voiced support for the CCW-discussions during a statement made at the UN General Assembly’s First Committee in October 2015.²⁰⁸ In 2016, at the CCW review conference, the EU urged states to move forward with the discussion in the form of convening a Group of Governmental Experts to debate the issue in 2017. The EU representative said that the EU wants the GGE to focus on the “identification of characteristics and elaboration of a working definition of LAWS”, and the application of, and compliance with relevant international law provisions related to such systems, hoping the meeting would “pave the way for identifying possible best practices and policy guidelines that will strengthen compliance with International Law, including in the area of legal weapon reviews.”²⁰⁹ The representative further stated that the GGE “should focus in particular on emerging and not on existing weapons systems and it should not hamper or impede research and development in robotics or other related areas in the civilian sector.”²¹⁰

The EU, through its consultative bodies, has supported the publication of several studies that relate to autonomous weapons. The earliest example is a study requested by the EP’s Subcommittee on Human Rights commissioned by the Directorate-General for External Policies of The Union and titled “Human Rights Implications of the Usage of Drones and Unmanned Robots in Warfare.”²¹¹ Published in May 2013, the report takes an in-depth look at autonomous weapons and their legal implication. The report surveys the emerging debate surrounding the issue of unmanned drones with increasing amounts of autonomy in their functions, and looks at various systems in place today as well as their modes of deployment.²¹² Its author, Dr Nils Melzer, currently the UN Special Rapporteur on Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment, warned that the “resulting uncertainty as to the applicable legal standards [to robotic weapons], in conjunction with the rapid development and proliferation of drone and robotic technology and the perceived lack of transparency and accountability in current policies, has the potential of polarizing the international community, undermining the rule of law and, ultimately, of destabilizing the international security environment as a whole.”²¹³ Stating the difficulty any legal body faces when establishing individual criminal responsibility for any acts carried out by ‘robotic weapons’, Melzer maintains that there is a “continued *legal*

responsibility of States both for the use of these weapons and for any internationally wrongful damage they may cause,”²¹⁴ regardless of the acts of individual state agents. The report recommends that EU member states be subject to policies of transparency and accountability – urges independent oversight over national policies related to unmanned systems; recommends launching an intergovernmental policy dialogue over legal standards and constraints; and finally recommends an “adoption of a binding international agreement, or a nonbinding code of conduct, aiming to restrict the development, proliferation and/or use of certain unmanned weapon systems in line with the legal consensus achieved.”²¹⁵

In 2014 the European Parliament resolution on the use of armed drones calls on member states to “ban the development, production and use of fully autonomous weapons which enable strikes to be carried out without human intervention.”²¹⁶

In May 2017, Cateljne Muller from the European Economic and Social Committee (EESC), a consultative body to the EU, published an own-initiative opinion on AI, titled “Artificial intelligence – the consequences of artificial intelligence on the (digital) single market, production, consumption, employment and society.”²¹⁷ In the paper, Mrs Muller looks over several issues and opportunities presented by the advancement of artificial intelligence, elaborating on the social challenges that AI will have on of social life, including that of the military and super-intelligent AI systems. Importantly, the EESC endorses the call by Human Rights Watch and other NGOs to call for a “ban on autonomous weapon systems. The EESC believes that such a ban should be seriously analysed and considered.”²¹⁸ Stipulating a parallel to meaningful human control, “the EESC calls for a human-in-command approach including the precondition that the development and application of AI be responsible and safe, where machines remain machines and people will be able to retain control over these machines at all times.”²¹⁹ Such a call is in line with the demands of NGOs and campaigners aiming to prevent the development and deployment of autonomous machines that operate outside of meaningful human control. In the report, the EESC raises several other key issues, including the difficulty in being able to control and assess the decision-making processes of self-learning neural network systems. It also mentions that “the development of AI is currently taking place within a homogenous environment principally consisting of young, white men, with the result that (whether intentionally or unintentionally) cultural and gender disparities are being embedded in AI, among other things because AI systems learn from training data. [...] Data is easy to manipulate, may be biased, may reflect cultural, gender and other prejudices and preferences and may contain errors.”²²⁰ In light of its findings, the EESC paper calls for several regulatory safeguards for AI development; a code of ethics for AI development and utilization, a standardisation system for evaluation of AI systems, and the building of a European AI infrastructure for responsible AI.²²¹ ♦

8. Summary and recommendations

8.1 Summary

WHAT DEFINITIONS DO STATES USE?

European states use different definitions for similar terms or use the same definition for different terms. Terms used are LAWS, (fully) autonomous systems, automatic systems and automated systems. Broadly speaking the definitions can be divided into three groups. The first are existing static defensive systems that operate in a relatively structured operating environment with (the possibility for) more direct human control. The second group are weapon systems without meaningful or appropriate human control over the selection and attack of individual targets. With these systems the human control takes place pre-deployment in the programming of parameters. The third group are relatively future oriented systems that would be beyond human control, have self-learning capabilities and would be capable of adapting to new environments independently from the pre-programmed criteria. Some states add that these systems would be self-aware or have an understanding of intent and the environment.

QUESTIONS AND CONCERNS

European states have raised various legal, ethical and security issues regarding LAWS. Some states mention advantages of LAWS, namely that they react faster than humans and can operate in certain environments where humans cannot. Regarding legal issues states mention compliance with IHL and accountability. A number of states question whether LAWS will be able to comply with IHL, specifically the principles of distinction and proportionality, since this would require understanding of context and qualitative understanding which robots lack. Other states mention it is impossible to know how technology will develop and therefore doubt that LAWS by definition would be unable to comply. This would need to be assessed on a case-by-case basis. Regarding accountability a number of states are concerned that LAWS would create an accountability gap. If the human role decreases it will be difficult to hold a human accountable for any malfunctioning of the machine. LAWS could also make it easier to deny responsibility by blaming malfunction of the machine. A number of other states see little problems with accountability. The commander who deploys the weapon system would be accountable for the actions of the weapon system. The ethical concern which was raised most often by European states is related to delegating decisions over life and death to a machine. Regarding security issues a number of European states mention that LAWS would lower the threshold to go to war and that proliferation of these systems would have destabilizing effects.

POSITIONS REGARDING THE NEED FOR REGULATION OR PROHIBITION

All European states agree that the basis to assess the legality of new weapon systems lies in IHL. Furthermore they all agree there is a line that marks what is acceptable and what is

unacceptable in the increasing autonomy in weapons systems. Where states draw that line however differs. Some draw it with relatively futuristic systems beyond human control with (near) general intelligence. They see fewer problems with pre-programmed systems that have autonomy in the critical functions. According to these states existing IHL would be sufficient to prevent unwanted systems from being deployed, therefore there would be no need for new regulations. Other states do see concerns with weapon systems with autonomy in the critical functions, especially when this includes life and death decisions. They raise concerns regarding compliance with IHL, but also see ethical and security concerns that could warrant regulation or a prohibition.

THE NEED FOR HUMAN CONTROL

All European states see the need for human control, but have different positions regarding what this control should entail. Most European states use the term 'meaningful human control', but states also use appropriate, effective or adequate human control, involvement or intervention. Human control is often mentioned in relation to IHL. A number of states see human control as an inherent part of IHL and stress that IHL assessments require human judgement. Other states are of the opinion that it is impossible to know how technology will develop and that future systems might be capable of IHL assessments. Many states have concerns over weapon systems making life-and-death decisions without human control. A number of them also express this concern over the use of force. A large number of European states see the need to further define the concept of human control and ensure it is appropriate, adequate or meaningful.

ARTICLE 36 REVIEWS

A number of European states argue that legal reviews could be an instrument to assess the legality of LAWS and their compliance with International Law. Others have stated that existing legal reviews might be incapable of addressing the challenges posed by LAWS. Some raise the issue that it would be difficult to adequately test LAWS. Others mention that legal reviews do not take into account the ethical and security concerns. A number of states have suggested more transparency, information sharing and establishing common standards in order to improve article 36 reviews.

EUROPEAN UNION

The official representative delegations of the European Union have been present at various international forums that deal with questions of autonomous weapons. Several statements were made in support of the diplomatic process within the CCW. European consultative bodies have published several studies that relate to autonomous weapons. A 2013 report by the Directorate-General for External Policies of the EU raised several concerns and called for the "adoption of a binding international agreement, or a nonbinding code of conduct, aiming to restrict the development, proliferation and/or use of certain unmanned weapon systems in line with the legal consensus achieved." In 2014 the European Parliament called for a ban. The European Economic and Social Committee also supported a ban on autonomous weapons and called for a "human-in-command approach."

8.2 Recommendations

Technology continues to develop at a rapid pace. Therefore it is crucial that states decide where to draw the line and to swiftly implement adequate measures that deal with the issue of LAWS.

In order to achieve substantial progress and move the discussion forward states should:

1. Establish common understanding and working definitions on key concepts
 - a. Types of autonomous systems
 - b. Human control
2. Make explicit where they draw the line regarding acceptability of autonomy in weapon systems and how this should be implemented in regulations.

1. ESTABLISH COMMON UNDERSTANDING AND WORKING DEFINITIONS ON KEY CONCEPTS

A. Types of autonomous systems

European states use different definitions for similar terms or use the same definition for different terms. This can lead to confusion in the debate. It is common to agree upon a final legal definition at the end of a treaty negotiation process, but for the ongoing discussions it can be useful to have working definitions to separate the different types of systems. A way forward could be to not define LAWS directly, but first identify different groupings of systems used by states. As discussed European states mention three categories of weapons systems: 1) existing static defensive systems that operate in a relatively structured operating environment with (the possibility for) more direct human control, 2) weapon systems without meaningful or appropriate human control over the selection and attack of individual targets. These systems act on criteria programmed before deployment, 3) systems that would be beyond human control, have self-learning capabilities and would be capable of adapting to new environments independently from the pre-programmed criteria. Further developing the definitions of these groupings and adding new ones if deemed appropriate, could then lead to discussions on concerns related to each grouping and deciding which systems are acceptable or not.

B. Human control

Most European states agree that human control is an essential concept and support further discussions on the concept. In order to apply the concept of human control to weapon systems it is crucial to define what is meant by the term. Also it is crucial to make explicit over what actions and decisions there should be human control. To move the discussion further states could make their position explicit on three questions:

- ◆ Over what functions (actions and decisions) should there be human control (the critical functions, the use of force, life-and-death decisions, IHL assessments)?
- ◆ At what stages should human control take place (pre-deployment, during deployment, for each individual attack)?
- ◆ How should this human control be implemented in a way that ensures it is meaningful, adequate or appropriate?

2. DRAWING THE LINE

From the above it should become clear what states see as acceptable or unacceptable regarding autonomy in weapon systems. Also it could lead to a better understanding of how human control could be implemented to ensure compliance with international law and address the ethical and security concerns.

9. Annex: Overview of European positions

This annex contains short descriptions of European states and their positions on lethal autonomous weapon systems (LAWS), largely based on statements given at the CCW meetings of experts, the UN General Assembly First Committee and other international forums. Also, we used information we received in response to written questions regarding countries' positions. The overviews below include the information that we see as most relevant. However, for a complete picture of a country's position, we refer to the original statements. It is also important to note that not all statements are publicly available and also that positions can logically change and develop over time.

AUSTRIA

In 2015 Austria stated: "We risk crossing a very dangerous threshold. We should be very careful to make sure that the use of such weapon systems is consistent with ethical, political and legal imperatives."²²² In 2016 Austria called on countries to "raise the bar" and "deepen and intensify international debate on the issue," and added: "In order not to create undesirable *faits accomplis*, States should decide immediately refrain from, or suspend, activities which risk to prejudice the outcome of the international political discussion on LAWS."²²³ Austria has expressed strong concern regarding a possible LAWS-triggered arms race. Meaningful human control has been a key issue for Austria from the onset, e.g. saying in 2014 that "weapons systems without meaningful human control are in contravention to international humanitarian law".²²⁴ In 2015 Austria issued a working paper on that concept, stating that meaningful human control should be seen as "evaluating LAWS on the basis of existing standards in international humanitarian law [...] from which the necessity of a certain 'human control' can be derived."²²⁵ Austria questions whether LAWS would comply with IHL, particularly with regards to the principles of proportionality, distinction and precaution, stressing the need for "human judgement".²²⁶ It also raises the problem of legal responsibility when "the autonomous decision of a machine is at the root of the crime."²²⁷

BELGIUM

In 2016 Belgium gave an overview of its Article 36 review process stating that, in the context of LAWS, one of the "main challenges would certainly be the technical assessment of those weapons. [...] LAWS might indeed require legal review commissions to consider with new eyes several international law principles, notably the principle of proportionality and the principle of accountability. The Martens clause, which is already taken into consideration in regard to more conventional weapons, would probably also be put in a new light. Finally, the re-assessment of

LAWS when new information that might cast doubt on their legality would be made available would also be challenging because of the ethical issues raised by such weapons.”²²⁸

BULGARIA

Bulgaria first addressed the issue of LAWS in 2014, stating that it sees “great merit” in the CCW informal meetings of experts as the Convention and its Protocols “provide an effective multilateral platform for responding to present and future developments of weapons technology.”²²⁹ In a statement during the CCW Review Conference in 2016, Bulgaria supported the recommendations and the establishment of a Group of Governmental Experts, adding: “The experts’ discussions addressed important legal, technical, military and ethical aspects of this issue.”²³⁰

CROATIA

Croatia said in 2015 that the “idea of developing an international prohibition of weapon systems operating without meaningful human control should not be something unthinkable.” In the same statement it also mentioned that “we as the mankind are ethically obliged to ensure meaningful human control with regard to the use of lethal force. It is not acceptable that fundamental moral judgments over life and death fall into hands of automated technical systems because such scenario would mark the end of humanity as such.”²³¹ In 2016 Croatia stated that “the principle of ‘meaningful human control’ is of pivotal importance because we believe that the ultimate responsibility should lay in human hands.”²³² In a 2014 statement Croatia also declared that “the principle of meaningful human control should be seen as a fundamental part of the international humanitarian law.”²³³ It further stated that it is “vital to maintain human control over the decision to kill another human being,” based on the “firm belief that even in times of war humanity should preserve those rights that are deeply rooted in our common being – the right to life and the right to dignity.”²³⁴

CYPRUS

Cyprus has not made its position clear regarding LAWS.

CZECH REPUBLIC

The Czech Republic stated in 2015: “We should be mindful of all the pros and cons and should not jump to premature conclusions such as that the development, production and use of these weapons should be absolutely and pre-emptively prohibited,” adding that from a “humanitarian point of view it might be more reasonable to concentrate on certain critical autonomous features of weapons that could be regulated or prohibited, rather than pursue absolute ban of these weapons.”²³⁵ It also put forward that “benefits of these weapons could be increased by developing autonomous capabilities that can lead to better protection of non-combatants lives.”²³⁶ The Czech Republic further stated that the “ultimate decision to end somebody’s life must remain under meaningful human control,” and that this principle is “already implicitly inherent to international humanitarian law. The challenging part is to establish what precisely meaningful human control would entail.”²³⁷ The Czech representative also mentioned the obligation under Article 36 for all states to review new weapons.²³⁸

DENMARK

Denmark stated that no LAWS had been deployed yet. “This should not, however, induce in us a sense of complacency [...] We warmly welcome that the international community strives to meet future technological possibilities with adequate answers.”²³⁹ Denmark stated that “meaningful human control [...] is at the very core of our discussions. And we must be guided by

these two principles: All use of force – including the use of autonomous weapon systems – must be in compliance with International humanitarian law, i.e. the fundamental rules of distinction, proportionality and precautions in attack. And all use of force must remain under ‘meaningful human control’.”²⁴⁰

ESTONIA

At the 2016 CCW Review Conference Estonia spoke out in support of the establishment of a GGE on LAWS.²⁴¹

FINLAND

Finland stresses the complexity of the issue as it concerns the “characteristics of a system instead of a particular clearly defined weapon. [...] When thinking about LAWS we are in fact discussing whether autonomy may be used within a specific task namely using lethal force.”²⁴² As these systems have “not yet been developed we are inevitably facing a situation where speculation still plays a major role.”²⁴³ Finland stresses the importance of IHL, but also says that as we do not know how technology will evolve it is impossible to say whether “future systems could fully comply with IHL.”²⁴⁴ It added that “we will rather have to address the fundamental questions on whether we want an autonomous weapon to become a reality or not,” and stated: “the question is really whether we foresee that human kind will cause less harm to itself and coming generations by relying on machines or relying on humans and their judgment.”²⁴⁵ Finland said on behalf of the Nordic States in 2015 that they “believe that humans should always bear the ultimate responsibility when dealing with questions of life and death. As States we have an obligation to assess the legality of new weapons.”²⁴⁶ In 2016 Finland stated that it will “review the national implementation of article 36 during this year and we are also discussing the possibility of creating international standards for the implementation of this norm.”²⁴⁷ Furthermore Finland believes “there is a need to retain appropriate human involvement over weapons systems”.²⁴⁸ Finland supported the joint Swiss statement in 2016 urging the establishment of a working definition of LAWS, spelling out relevant IHL provisions related to LAWS, and the sharing of best practices related to technological development of new weaponry.²⁴⁹

FRANCE

In 2013 France put forward its belief that “the role of human beings in the decision to open fire must be preserved.”²⁵⁰ Ambassador Simon-Michel served as president of the annual CCW meeting of high contracting parties in 2013, where it was decided to establish the first informal meeting of experts in 2014.²⁵¹ In 2016 France raised concerns over dual-use technology, stating that research on autonomous technologies for peaceful purposes should not be limited.²⁵² France reaffirmed the “central importance of respect for international humanitarian law in the development of new systems.”²⁵³ In a non-paper in 2016 France stated: “The fact itself that a machine, not a human being, selects the target, decides to open fire, or carries out an attack does not necessarily entail a violation of international humanitarian law.”²⁵⁴ The paper continues mentioning certain doubts with IHL compliance, adding: “Yet it would be a mistake to conclude categorically that such autonomous weapons systems cannot be designed and used so as to comply with the general principles of the law governing the use of weapons in armed conflict.”²⁵⁵ Regarding definitions, another French non-paper defined LAWS as “implying a total absence of human supervision, meaning there is absolutely no link (communication or control) with the military chain of command. [...] The delivery platform of a LAWS would be capable of moving, adapting to its land, marine or aerial environments and targeting and firing a lethal effector

(bullet, missile, bomb, etc.) without any kind of human intervention or validation.”²⁵⁶ France adds: “Given the complexity and diversity of environments [...] and the difficulty of building value-laden algorithms [...] a LAWS would most likely possess self-learning capabilities”. It would be “capable of selecting a target independently from the criteria that have been predefined during the programming phase, in full compliance with IHL requirements.” France sees “meaningful” presence of human operators as a vague concept, that “contradicts the very notion of fully autonomy and lacks the precision and technical accuracy needed to discuss complex prospective systems,” adding it “would not grant a solid legal basis either.”²⁵⁷

GERMANY

In 2015 and 2016 German Ambassador Biontino chaired the informal meetings of experts at the CCW, leading in 2016 to the decision to install a Group of Governmental Experts. Germany supports the “interdiction of weapon systems that operate beyond human control.”²⁵⁸ Germany mentioned several options for addressing LAWS in the short and medium term, including a “political declaration or a code of conduct” and for the long term a “moratorium or prohibition”.²⁵⁹ In 2015 Germany stated its “fundamental convictions for the discussion on LAWS, being the unconditional respect for International Humanitarian Law and the necessity to exercise appropriate levels of human control over the use of force.”²⁶⁰ In 2015 Germany also raised questions regarding compliance with IHL, accountability and whether states would be “more willing to start wars.”²⁶¹ It also said that autonomous decisions over life and death without the possibility for human intervention are a “red line.”²⁶² In 2014 it said that there “should be a common understanding in the international community that it is indispensable to maintain human control over the decision to kill another human being.”²⁶³ For Germany “human control is the foundation of the entire international humanitarian law. It is based on the right to life, on the one hand, and on the right to dignity, on the other. [...] we should also talk about what we as an international community understand as meaningful human control and declare it an indispensable principle of international humanitarian law.”²⁶⁴ At the same time Germany states that “determining the specific thresholds for the required extent and quality of human involvement is complex and has to be the result of a comprehensive process.”²⁶⁵ Germany is of the opinion that “given the actual state of the art of artificial intelligence and other important components of LAWS, a legal weapons review for the time being inevitably would lead to the result of LAWS being illegal, as they are not able to meet the requirements set out by Article 36 AP 1.”²⁶⁶ The 2014 annual disarmament report of the government issued by the Ministry of Foreign Affairs stated that “as agreed in the coalition agreement, Germany advocates international law outlawing fully autonomous weapons systems.”²⁶⁷

GREECE

Greece sees no justification for banning or prohibiting LAWS, as it is impossible to know at this time if these weapons could comply with IHL, saying: “What is left then is basically an ethical question, not a legal one. It boils down to the fundamental question of whether humans should delegate life and death decisions to machines and definitely Greece, like others, does not feel comfortable with such a prospect. [...] The question which then arises is how does one operationalize this ethical concern into a legal provision. The only legal principle which comes to mind is the Martens Clause, given its dependence on the dictates of public conscience. Does though such a general principle suffice to lead to the codification in the future of a new set of legally binding rules? We have our doubts.”²⁶⁸ Greece goes on to state that “thorough and systematic weapons review is the only practical solution, at least at the present stage, to address the issue of LAWS from a legal angle.”²⁶⁹

HOLY SEE

“An autonomous weapon system is a weapon system capable of identifying, selecting and triggering action on a target without human supervision”, according to The Holy See.²⁷⁰ It advocates a pre-emptive ban specifying three reasons: Firstly it mentions “deresponsabilization [...] obscuring of where true responsibility lies.” Secondly it names “aggravation of the dehumanization process. [...] The eviction of man by the machine prevents the appearance of behaviour characterized by compassion, reconciliation, respect, which are essential to the achievement of a true peace.”

Thirdly it mentions the risk of “depolitization”, “through their speed and their capacity, to dictate important military action policies.”²⁷¹ The Holy See is a strong advocate of human control for ethical, legal and security reasons. It stated: The “human control” of a robot, can be in fact “significant” if there is a human supervision (allowing in any time to disable the autonomous mode of operation), if the environment in which the robot is perfectly circumscribed and known and finally, if all behaviors are well known.²⁷²

The Holy See has also said: “Respect for international law, for human rights law and IHL is not optional. [...] to comply, these systems would require human qualities they inherently lack”.²⁷³ Previously it also said: “these tasks require the interpretation and understanding of the context and of situations which are not really programmable.”²⁷⁴ In 2014 the Holy See stated: “Taking humans ‘out of the loop’ presents significant ethical questions, primarily because of the absence of meaningful human involvement in lethal decision-making.”²⁷⁵ Even if weapon systems can “technically comply with the law of war” it is not sufficient: “The fundamental problem still exists: a lack of humanity, a lack of meaningful involvement by human beings in decisions over the life and death of other human beings.”²⁷⁶

It raises various other concerns too. The fact that these weapons would reduce the “domestic political cost of waging war” can lead to “to overly-hastened military action.”²⁷⁷ Also there is a chance they “will induce and stimulate an arms race [...] reinforcing oppositions between nations.”²⁷⁸ Another concern is hacking and the risk of “misuse by malicious groups.”²⁷⁹ The Holy See also raises the “psychological impact of these weapons on people.”²⁸⁰ It further warns of an “accountability gap”, which could lead to “diluting or concealing true responsibilities in case of collateral damage”, making it “easy and tempting [...] to invoke technical malfunctions rather than face their responsibility”, which could lead to some being less conservative regarding collateral damage.²⁸¹

HUNGARY

Hungary mentioned LAWS for the first time in 2016 in relation to the CCW, stating that “The CCW and its Protocols play an important role in responding to challenges posed by new technologies and adapting international disarmament norms to new situations.”²⁸²

ICELAND

Iceland was part of a joint statement by Nordic States in 2015 that stated: “We believe that humans should always bear the ultimate responsibility when dealing with questions of life and death. As States we have an obligation to assess the legality of new weapons.”²⁸³ In June 2016 the parliament of Iceland passed a resolution that expressed support for negotiations for a global ban on the production and use of autonomous weapons and called on the government to monitor the development of these issues at the United Nations and elsewhere as appropriate.²⁸⁴

IRELAND

In 2014 Ireland stated that the “human control over the use of force” seemed to be a very sensible approach, adding: “The definition of control, of course, is important in itself, in the context of ensuring that control is effective and not merely nominal.”²⁸⁵ In 2015 it mentioned that its “starting position in relation to Lethal Autonomous Weapons Systems is that weapons should remain under effective Human Control”²⁸⁶, adding in 2016 that “all weapons should remain under meaningful human control.”²⁸⁷ Ireland has stated that “the mandate of the CCW and its Protocols is to regulate or ban the use of specific categories of conventional weapons that have effects which trouble the conscience of humanity. The debate on Lethal Autonomous Weapons Systems reaches far beyond technical and legal complexities, raising fundamental questions about the role of humans in taking lethal decisions in armed combat. The decisive questions may well be whether such weapons are acceptable under the principles of humanity, and if so, under what conditions”.²⁸⁸ Ireland also mentioned “the potential use and abuse of autonomous weapons beyond the battlefield, in law-enforcement for instance, is also deserving of consideration.”²⁸⁹ Ireland also calls on High Contracting Parties to “consider the importance of carrying out legal reviews in accordance with Article 36 of Additional Protocol 1, to ensure that all new weapons, means and methods of warfare are not in violation of relevant international law, including international humanitarian law.”²⁹⁰

ITALY

Italy does not favour a ban or a regulation of LAWS, stating that “the adoption of a total ban or other kinds of general limitations on fully autonomous technologies would be premature”, but considers it “very valuable to continue discussions in the framework of the CCW.”²⁹¹ Italy distinguishes between highly automated systems and LAWS. The first act based on “criteria pre-programmed by human operators” determining the type of target, geographical area and amount of time. These systems could have “high degrees of autonomy in several functions, even some critical ones, but their behavior and actions can still be attributed to the human operator, who remains accountable.”²⁹² LAWS are systems with “autonomous decisions based on their own learning and rules, and that can adapt to changing environments independently of any pre-programming” and could “select targets and decide when to use force, would be entirely beyond human control.”²⁹³ Italy believes that current IHL is sufficient to assess the legality of both types of systems on a case-by-case basis.²⁹⁴ Italy said: “we are inclined to retain the notion of “meaningful human control” as an important element of our debate, that could help us to further advance our understanding.”²⁹⁵ “We are aware that the degree of human control on a weapons system is a variable moving along a continuous scale, which makes it difficult to establish clear-cut categories on the basis of this criterion. At the same time, we believe that we can group weapons systems based on their degree of autonomy.”²⁹⁶

LATVIA

Latvia sees the CCW as an important forum to “address emerging issues by gathering competent diplomatic, legal and military expertise” and appreciates “continued discussions on [...] lethal autonomous weapons systems”.²⁹⁷ Latvia supported a GGE at the 2016 Review Conference.

LICHTENSTEIN

Lichtenstein has not made its position clear regarding a lethal autonomous weapons.

LITHUANIA

In 2013 Lithuania stated: “We recognize that the development of such fully autonomous

weapons could raise substantial questions. This debate is a complex one. We need to improve our understanding, bearing in mind that those technologies are still under development”.²⁹⁸ It supported a GGE at the 2016 Review Conference.

LUXEMBOURG

Luxembourg has not made its position clear regarding LAWS.

MALTA

Malta has not made its position clear regarding LAWS.

NETHERLANDS

The Netherlands has a national policy which is based on an advisory report written by two advisory councils, at the request of the government.²⁹⁹ The report defines an autonomous weapon as “a weapon that, without human intervention, selects and attacks targets matching certain predefined characteristics, following a human decision to deploy the weapon on the understanding that an attack, once launched, cannot be stopped by human intervention.” The Netherlands believes such weapons already exist, like the “Goalkeeper and the Patriot are operating without raising any legal or moral question.”³⁰⁰ It considers *fully* autonomous weapons as “beyond human control.” The Netherlands firmly rejects fully autonomous weapon systems, but does “not support a moratorium on the development of fully autonomous weapon systems” as “technology progress should not suffer” and “the effectiveness of such a moratorium is very doubtful at the least.”³⁰¹ The Netherlands concludes that “there is no reason to assume that autonomous weapons by definition fall under a category of prohibited weapons under International Humanitarian Law.” This has to be assessed on a case-by-case basis and current legal frameworks are sufficient to regulate autonomous weapons.³⁰²

The Netherlands sees meaningful human control as a crucial concept for assessing the legality of a weapon system. This human control should be the broader targeting cycle (pre-deployment) which it calls the ‘wider loop’.³⁰³ To ensure meaningful human control the government must ensure “morally responsible engineering,” that weapon systems should be “extensively tested under realistic conditions” and to strictly apply Article 36 reviews where “meaningful human control should serve as a benchmark.” It calls for a “more widespread implementation by States of the Article 36 procedure at the national level, greater transparency concerning the outcomes of these procedures, and more and better international information sharing.”³⁰⁴ The Netherlands also calls for “awareness raising for the importance of training and education for military personnel who are responsible for the deployment of autonomous weapon systems.”³⁰⁵ Finally, the Netherlands has also called for “the formulation of an interpretative guide that clarifies, reaffirms and spells out relevant International law as it applies to autonomous weapons.”³⁰⁶

NORWAY

Norway distinguishes between highly automated systems that operate “within such tightly constrained spatial and temporal limits that meaningful human control is ensured” and fully autonomous weapons. Norway has not “concluded on a specific legal definition of the term fully autonomous weapons”, but refers to “weapons systems that search for, identify and use lethal force to attack targets, including human beings, without a human operator intervening, and without meaningful human control.”³⁰⁷ Norway stated fully autonomous weapons raise “a number of ethical and legal questions” and a main concern is “whether such weapons could be programmed to operate within the limitations set by international humanitarian law”, particularly regarding fundamental rules of distinction and proportionality.³⁰⁸ Could a fully autonomous weapon “tell if a

soldier is trying to surrender, or to distinguish between a combatant and a civilian?”³⁰⁹

In 2016 it said that “many of the core rules of IHL presume the application of human judgement in the decision-making process.”³¹⁰ Norway also stated that the “intrinsic challenge with fully autonomous weapons would be ensuring individual and state responsibility for unlawful acts in times of armed conflict.”³¹¹ It expressed concern that fully autonomous weapons could “blur lines of responsibility and accountability” and lead to a possible accountability gap with “very serious consequences.”³¹² Norway stated that “the very limited role played by humans in operating these systems, it is possible to foresee situations in which no one could be held responsible [...] with very serious consequences.”³¹³

POLAND

“The importance of introducing some form of control over international transfers of LAWS as entire systems, as well as their elements and technology may therefore gradually increase over time. At the present stage it would seem at least advisable to be able to prevent transfers of such systems and their components to undesirable end-users, whether states or non-state actors,” stated Poland, adding: “Introduction of a stronger state control over international transfers of LAWS and related technology seems currently the most reasonable way forward.”³¹⁴ It has further said that it is “of utmost importance to make sure that human beings remain accountable for use of their crucial functions.”³¹⁵ Poland also stated that “compliance with the fundamental rules and principles of international humanitarian law in the conduct of hostilities, that is distinction, proportionality and precautions in attack, poses formidable challenges, especially as future weapons with autonomy in their critical functions will be assigned more complex tasks and deployed in more dynamic environments than has been the case until now.”³¹⁶ Due to these difficulties “there should be always a human being involved in the targeting process to recognize situations of doubt that would cause a human being to hesitate before attacking. In such circumstances States are obliged to refrain from attacking objects and persons.”³¹⁷ Poland furthermore underlined “the importance of developing further the MHC concept and its institutional extension - the idea of MSC [meaningful state control].”³¹⁸ Poland also mentions the issue of responsibility regarding autonomous weapons, especially due to “complex programming and the Interaction of an autonomous weapon systems with the environment will not always be predictable to effectively control.”³¹⁹ “The responsibility of states for such weapons should also be extended to their development, production, acquisition, handling, storage or international transfers.”³²⁰ Finally, Poland also said that “informal and voluntary mechanisms enabling information and best practices exchange on national legal reviews” could be considered.³²¹

PORTUGAL

Portugal stated: “As new challenges emerge, we should consider how the existing disarmament and non-proliferation instruments can be improved. On current and future developments related to the so-called “new era warfare tools”, notably armed drones, fully autonomous weapons, cyberspace offensive use and militarization of outer space, we encourage the continuation of ongoing international work on these subjects, both at political and technical levels. These discussions should take into account, in our view, the need to promote transparency and the applicable international law or, when needed, the establishment of regulatory multilateral security frameworks responsive to the objective of protecting civilians and Human Rights.”³²²

ROMANIA

Romania stated it sees “merit in the expert discussions on Lethal Autonomous Weapon Systems in the framework of the CCW.”³²³

SLOVAKIA

Slovakia has supported the establishment of a GGE in 2016.

SLOVENIA

Slovakia has supported the establishment of a GGE in 2016.

SPAIN³²⁴

Spain raises uncertainties and apprehensions which are not only legal in nature, but also ethical. It emphasized the need to develop a working definition of “lethal autonomous robots”. Spain stated it viewed the idea of a moratorium on development of such weapons premature until their reach and scope is established. Spain also discussed dual-use technology, arguing that states should not lose sight of potential application of such technology for civil protection, public health, fire and other natural disasters, waste treatment, and so on.³²⁵

Spain argued that it is necessary to involve human supervision and control at the stage of military target selection, including the ability to abort the process of launching the weapon in question in order to allow a clear and precise attribution of personal liability. It also distinguished between different levels of automation, separating offensive and defensive weapons and emphasizing the need to separate those that do not project lethal force.³²⁶ Spain repeated the need to distinguish between offensive and defensive systems, as well as its degree of inherent lethality and the procedural rules prior to its activation. It further expressed support for continuing discussions of lethal autonomous weapons within the CCW framework, but warned against possible negative impacts in the development of autonomous technology for civil uses.³²⁷

SWEDEN

“As a starting point, Sweden has underlined that humans should not delegate to machines the power to make life-or death decisions. As States, we have an obligation to assess the legality of new weapons, and we therefore welcome a continued discussion of this issue within the framework of the CCW.”³²⁸ In this respect it also stated: “decisions on the use of force against persons, humans should never be ‘out of the loop’.”³²⁹ Regarding definitions Sweden mentioned: “it may be more fruitful to focus on identifying the critical functions of concern, with due consideration for the context in which a particular weapons system would be operating, as well as its effects, and take the discussion on definitions further from there. [...] An important consideration for the design and operation of systems with autonomous capability is the level of human control in the system. It follows from our starting point of not delegating power of life and death to machines that Sweden would support the principle of applying Meaningful Human Control which has already been put forward by many parties. The necessary level of human control would depend on the particular situation and the requirements of international law in each case.”³³⁰ Sweden also said: “Despite potential technical advances [...] it is our assessment that weapon systems will not be capable of performing the subjective evaluations necessary to comply with these rules in the foreseeable future. Targeting decisions and other critical functions, including careful balancing of the principles of IHL, must therefore continue to be made by humans.”³³¹

Finally, Sweden has also stated: “at the bottom of the issue lies the fact that a legal review of new weapons, means and methods of warfare is crucial”³³² and that “states have an obligation to assess the legality of new weapons.”³³³ Sweden described its own review process at the 2016 CCW expert meeting.³³⁴

SWITZERLAND³³⁵

Switzerland suggested discussions based on very concrete examples, which applications of autonomous capabilities would seem desirable, legal and acceptable and specifically which are the features of autonomous weapons that raise concern. It said it believes no one wants to see a battlefield with machines entrusted with the power to decide who lives and dies.³³⁶

Switzerland wrote a working paper “Towards a “compliance based” approach to LAWS”.³³⁷ The paper describes autonomous weapon systems (AWS) as “weapons systems that are capable of carrying out tasks governed by IHL in partial or full replacement of a human in the use of force, notably in the targeting cycle”.³³⁸ Regarding international law Switzerland stated in 2014: “The legal basis that can be applied to laws is quite solid” and forms a “non-negotiable line of departure. [...] All use of force or weapon systems must be in accordance with international law”.³³⁹ However, “applying these requirements of lawful use to autonomous weapons systems is not without complexity [...] [as] many pivotal rules of IHL presume the application of evaluative decisions and value judgements.”³⁴⁰ The working paper goes into this in-depth, stating: “The Geneva Conventions [...] were undoubtedly conceived with States and individual humans as agents for the exercise and implementation of the resulting rights and obligations in mind. In addition, many pivotal rules of IHL presume the application of evaluative decisions and value judgements.”³⁴¹

In a statement it adds “Switzerland is of the view that given the current state of robotics and artificial intelligence, it is difficult today to conceive of an autonomous weapons systems that would be capable of reliably operating in full compliance with all the obligations arising from existing IHL without any human control in the use of force, notably in the targeting cycle.”³⁴²

The paper further mentions that: “At the heart of the issue is the question: what is the right quality of the human-machine interaction to ensure and facilitate compliance with IHL?”³⁴³

Regarding human control Switzerland states that “given the current state of robotics and artificial intelligence – the relevant question is not whether a certain level of human control is called for, but what kind and level of human involvement in each of the different phases ranging from conceptualization, development and testing, to operational programming, employment and target engagement.”³⁴⁴ Control can be exercised through “real-time supervision, [...] an autonomous or human operated override mechanism”.³⁴⁵ Switzerland believes that “the obligation to conduct legal reviews is central to discussions on autonomous weapons systems. We see a number of challenges related to autonomous weapons systems distinct from traditional weapons reviews.” Particularly how they “can be meaningfully tested” naming technical but also conceptual challenges, specifically related to proportionality.³⁴⁶ The Swiss further suggested using knowledge from assessing existing systems with limited autonomy in the targeting cycle for assessing future weapons.²⁴⁷ It also raised the question whether these systems would “change the concept of war altogether and lead to lowering the barrier for the initiation of armed conflict?”³⁴⁸ Regarding the military angle, Switzerland suggested to discuss the “expected advantages as well as the risks”, and to “examine in which operational environments, autonomy would be of greater concern than in other context.”³⁴⁹

UNITED KINGDOM

The UK has a national policy based, amongst others, on two publications, namely the 2011 “Joint Doctrine Note 2/11”³⁵⁰ and the 2017 “Joint Doctrine Publication 0-30.2”.³⁵¹ Regarding definitions, the UK states: “An autonomous system is capable of understanding higher-level intent and direction. From this understanding and its perception of its environment, such a system is able to take appropriate action to bring about a desired state. It is capable of deciding a course of action, from a number of alternatives, without depending on human oversight and control,

although these may be present. Although the overall activity of an autonomous unmanned aircraft will be predictable, individual actions may not be.”³⁵² It distinguishes these from automated or automatic systems that “in response to inputs from one or more sensors, is programmed to logically follow a predefined set of rules in order to provide an outcome. Knowing the set of rules under which it is operating means that its output is predictable.”³⁵³ Based on these definitions “the UK believes that LAWS do not, and may never, exist. [...] the UK considers that existing highly automated weapons are not, and should not, be part of this discussion.”³⁵⁴

Current UK policy “is that the operation of our weapons will always be under human control as an absolute guarantee of human oversight and authority and of accountability for weapon usage.”³⁵⁵ “In UK operations every target is assessed by a human, and every release of weapons is authorised by a human; other than in a very small number of instances, all targets are also acquired by a human.”³⁵⁶ Meaningful human control “is not a concept that the UK actively uses in its doctrine, principally because what may or may not be meaningful is almost an entirely subjective judgment: therefore, any system based on this concept would be open to a wide range of interpretation.”³⁵⁷ The UK suggests that “the phrase MHC is changed to more accurately reflect the premise of human-machine interaction, for example intelligent partnership.”³⁵⁸ In a letter in response to questions the UK however mentions meaningful human control a “key concept”.³⁵⁹ The UK has stated that computers are better at tasks that require “the assimilation of huge amounts of data”.³⁶⁰ Humans are better at “complex decision making including understanding context, assessing intent and evaluating consequences.”³⁶¹ The UK believes that the principles of IHL “are best assessed and applied by a human” and “Within that process, a human may of course be supported by a system.”³⁶²

The UK does “not believe that a pre-emptive ban on LAWS is necessary for two reasons: Firstly, existing international humanitarian law is sufficient to assess whether any future weapon system, including LAWS, would be capable of legal use. And secondly, we believe strongly that there could be legitimate non-lethal advantages to increasingly autonomous technology in the future, for example, in the field of logistics. To legislate now, without a clear understanding of the potential opportunities as well as dangers of a technology that we cannot fully appreciate, would risk leading to the use of generalised and unclear language which would be counter-productive.”³⁶³ It stressed “the applicability of International Humanitarian Law to the assessment and use of all weapons systems” and encouraged all states to engage in a legal weapons review process before adopting any system.³⁶⁴ Regarding accountability the UK stated “there must always be human oversight and control in the decision to deploy weapons. It is in this person or with these people that responsibility must initially be vested.”³⁶⁵ ♦

Notes

1 There are several terms used to refer to these weapon systems. The CCW coined the term lethal autonomous weapon systems (LAWS). Other terms used are Lethal Autonomous Robots, (fully) autonomous weapons or killer robots. As the main focus of this report are the discussions at the CCW we will use the term lethal autonomous weapon systems here.

2 See 'Protocol on Blinding Laser Weapons (Protocol IV to the 1980 Convention), 13 October 1995'.

<https://ihl-databases.icrc.org/applic/ihl/ihl.nsf/Treaty.xsp?documentId=70D9427BB965B7CEC12563FB0061CFB2&action=openDocument>

3 These 19 states are: Algeria, Argentina, Bolivia, Chile, Costa Rica, Cuba, Ecuador, Egypt, Ghana, Guatemala, Mexico, Nicaragua, Pakistan,

State of Palestine, Panama, Peru, Holy See, Venezuela and Zimbabwe (see: http://www.stopkillerrobots.org/wp-content/uploads/2013/03/KRC_CountryViews_13Dec2016.pdf).

4 Recommendations to the 2016 CCW Review Conference, [https://unog.ch/80256EDD006B8954/\(httpAssets\)/6BB8A498B0A12A03C1257FDB00382863/\\$file/Recommendations_LAWS_2016_AdvancedVersion+\(4+paras\)+.pdf](https://unog.ch/80256EDD006B8954/(httpAssets)/6BB8A498B0A12A03C1257FDB00382863/$file/Recommendations_LAWS_2016_AdvancedVersion+(4+paras)+.pdf).

5 SIPRI, 'Mapping the debate on LAWS at the CCW : taking stock and moving forward', March 2016, <https://www.sipri.org/publications/2016/eu-non-proliferation-papers/mapping-debate-laws-ccw-taking-stock-and-moving-forward>.

6 These questions were: 1. Is your country planning to participate at the Group of Governmental Experts in August? 2. What is the national position of your country on the need to regulate or ban lethal autonomous weapon systems? Has there been a national debate on this issue, for example a parliamentary debate? 3. Does your country see a need to retain meaningful human control over weapon systems? If so, how can meaningful human control be guaranteed? Over what functions should human control be retained and at what moment in the decision-making process should this control take place? 4. Does your country intend to develop or acquire weapon systems with autonomy in their critical functions?

7 EU countries: Austria, Belgium, Bulgaria, Croatia, Czech Republic, Cyprus, Denmark, Estonia, Finland, France, Germany, Hungary, Greece, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovenia, Slovakia, Spain, Sweden, United Kingdom. EFTA countries: Iceland, Liechtenstein, Norway, Switzerland.

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