

ANNEX A

Proposals Related to Emerging Technologies in the Area of Lethal Autonomous Weapons Systems A Resource Paper

DISCLAIMER

This Annex is an updated version of the previous document UNIDIR released in July 2022, and includes the following additional submissions to the GGE on LAWS in 2022 that were not included in the previous version: *Elements for a legally binding instrument to address the challenges posed by autonomy in weapon systems, Protocol VI, Working Paper submitted by Finland, France, Germany, the Netherlands, Norway, Spain and Sweden, Working Paper of the People's Republic of China on LAWS, Working Paper of the Russian Federation 'Application of International Law to Lethal Autonomous Weapons Systems (LAWS)'*.

1. Application of International Humanitarian Law (IHL)

Elements for a legally binding instrument to address the challenges posed by autonomy in weapon systems	Outline for a Normative and Operational Framework on Emerging Technologies in the Area of LAWS	Principles and Good Practices on Emerging Technologies in the Area of Lethal Autonomous Weapons Systems	Protocol VI	Roadmap Towards New Protocol on Autonomous Weapons Systems
<p>Background</p> <p>[...]</p> <p>If the CCW is to remain relevant and responsive to the challenges that increased incorporation of autonomous functionalities in weapon systems entail, it should take developments in other fora into account.</p> <p>The CCW does not operate in a vacuum.</p> <p>Thus a holistic, multidimensional understanding of the effects of the incorporation of autonomy in weapon systems is needed in order to fully grasp its shaping, potential annulation or magnifying effects over human agency and how this impacts upholding of ethical imperatives, compliance with international law, international humanitarian law and international human rights law as well as its impact on international security.</p> <p>At this stage of technological development, the question is not if we “can” remove the user from the application of force to kill, injure or harm another human being, rather, the consequences that the removal of the human operator entails.</p>	<p>I. Normative Framework Preambular part</p> <p>A recognition that an appropriate balance should be struck between the necessity to allow progress in or access to these dual-use emerging technologies (as recalled by guiding principle j), and the importance of taking into account humanitarian considerations and challenges with regard to IHL in the development and use of such technologies (c.f. guiding principle k).</p> <p>“Operative” part</p> <p>2. The normative framework could then affirm a number of principles for the development and use of weapons systems in the area of LAWS.</p> <p>This “operative” part should build on the already endorsed 11 guiding principles, while elaborating further on the issue of human-machine interaction:</p> <p>a. Full applicability of International Law and in particular IHL to all weapons systems, including lethal weapons systems featuring autonomy (see guiding principle a);</p>	<p>Application of International Humanitarian Law</p> <p>7. International humanitarian law continues to apply fully with respect to weapons systems based on emerging technologies in the area of LAWS.</p> <p>8. The right of parties to an armed conflict to choose methods or means of warfare, including weapons systems based on emerging technologies in the area of LAWS, is not unlimited. (CCW preamble with insertion in bold).</p> <p>9. In cases involving weapons systems based on emerging technologies in the area of LAWS not covered by the Convention and its annexed Protocols or by other international agreements, the civilian population and the combatants shall at all times remain under the protection and authority of the principles of international law derived from established custom, from the principles of humanity, and from the dictates of public conscience. (2019 GGE Report ¶17g)</p>	<p>Article 1: General Provisions</p> <p>Sec. 1: This Protocol shall apply to all emerging technologies in the area of autonomous weapon systems.</p> <p>Sec. 2: In conformity with the Charter of the United Nations and of the rules of applicable international law, the High Contracting Parties agree to comply with the obligations specified in this Protocol, to address the serious ethical, legal, humanitarian and security risks and challenges posed by the development of emerging autonomous weapon systems.</p> <p>[...]</p>	<p>II. Elaborate these common grounds</p> <p><u>Introduction</u></p> <p>2. Recognize the risks and challenges posed by autonomous weapon systems to:</p> <p>2.1. compliance with international law, including IHL, international human rights law (IHRL), and international criminal law (ICL);</p> <p>5. Affirm that context-based human judgement and control is essential in order to ensure that the use of AWS is in compliance with international law, and in particular IHL.</p> <p><u>Ethical Considerations</u></p> <p>15. Recall that the Martens’ Clause, which is a customary international law that brings together law and ethics, is particularly relevant in assessing new technologies and new means and methods of warfare and provides that civilians and combatants remain under the protection and authority of the principles of humanity and the dictates of public conscience in cases not addressed by existing treaties.</p>

United Kingdom Proposal for a GGE Document on the Ap- plication of Internation- al Humanitarian Law to Emerging Technologies in the Area of Lethal Autonomous Weapon Systems (LAWS)	Working Paper of the People’s Republic of China on LAWS (July 2022)	Working Paper of the Russian Federation “Application of Inter- national Law to Lethal Autonomous Weapons Systems (LAWS)”	Working Paper submit- ted by Finland, France, Germany, the Nether- lands, Norway, Spain and Sweden to the 2022 Chair of the GGE on LAWS	Working Paper submit- ted to the 2022 Chair of the Group of Govern- mental Experts (GGE) on emerging technolo- gies in the area of lethal autonomous weapons systems (LAWS)
<p>ANNEX A – a possible outline</p> <p>International Humanitarian Law</p> <ul style="list-style-type: none"> • Basic Rules of International Humanitarian Law: The object of this section is to re-affirm the relevance and application of the core principles and rules of IHL. These principles and rules have general and continuous application in relation to the behavior of parties to armed conflict. No advanced method of warfare or autonomous weapons system permits the derogation or relaxation of the rules of IHL and it is imperative that states and parties to armed conflict ensure that their conduct conforms to these requirements in all circumstances and no matter what means or method of warfare is adopted. • Distinction: Parties to an armed conflict must at all times distinguish between the civilian population and those hors de combat and combatants, and between civilian objects and military objectives and shall direct their operations only 	<p>I. Regulating Military Application of Artificial Intelligence (AI)</p> <p>[...]</p> <p>Countries should uphold a national defense policy that is defensive in nature, develop and use AI technologies in the military domain in a prudent and responsible manner, and ensure that relevant weapon systems and their means of warfare comply with international humanitarian law and other applicable international law. Meanwhile, countries should strike a balance between legitimate defense development and humanitarian concerns, and respect all parties’ needs to maintain their own security.</p> <p>[...]</p> <p>III. Unacceptable Autonomous Weapons Systems and Acceptable Autonomous Weapons Systems</p> <p>[...]</p> <p><i>Acceptable Autonomous Weapons Systems</i> could have a high degree of autonomy, but are always under human control. It means they can be used in a secure, credible,</p>	<p>Introduction</p> <p>This document aims to ensure strict compliance with international humanitarian law (IHL) obligations while enhancing the effectiveness of combat tasks execution through the use of prospective lethal autonomous weapons systems and new technologies in that area.</p> <p>The provisions of this document should be applied with due regard to the situation, while resolutely working to ensure the unconditional implementation of combat tasks in compliance with the IHL norms.</p> <p>2. LAWS in the IHL context</p> <p>Norms of international law, including international humanitarian law, fully apply to LAWS.</p> <p>The right of the parties to a conflict and their armed forces to choose methods and means of warfare is not unlimited. It is prohibited to use weapons and methods of warfare of a nature to cause superfluous injury or unnecessary suffering.</p>	<p>Over the course of the past months, a number of very substantial proposals have been put forward by the members of the GGE. A common feature of the 11 guiding principles, of the “Final Declaration” adopted by the Sixth Review Conference in 2021 and of these recent proposals is the acknowledgment that International Humanitarian Law (IHL) continues to apply fully to all weapons systems, including the potential development and use of lethal autonomous weapons systems, and that lethal autonomous weapons systems incapable of being used in accordance with international law, including International Humanitarian Law (IHL) should not be developed and used. This is at the core of the debate on lethal autonomous weapons systems and should continue to guide the work of the GGE on LAWS.</p> <p>[...]</p>	<p>2. Emphasise that human beings must make the decisions with regard to the use of force, exert control over weapons systems that they use, and remain accountable for decisions over the use of force in order to ensure compliance with International Law, in particular International Humanitarian Law.</p>

From a legal perspective, it remains highly questionable whether weapons which incorporate autonomous functionalities are able to be used in compliance with key provisions of International humanitarian law and human rights law, given the inherent uncertainties and complexities of wartime environments. We are of the view that there is an implicit requirement for meaningful human control embedded in IHL, notably vis-à-vis the principles of distinction, proportionality, precautions in attack and military necessity. Similar requirements are also at the core of international human rights law.

[...]

International Regulation in the Framework of the CCW

The challenges posed by autonomy in weapon systems are of such nature that there is a clear need for a legally binding instrument, the reasons being the following:

1. The need to clarify, strengthen and advance IHL regarding the specific challenges posed by weapons which incorporate autonomous functionalities. Existing international law, including international humanitarian law, while still applicable, is insufficient because its fundamental rules regarding the use of force were designed when humans made value judgements notably vis-à-vis the principles of distinction, proportionality, precautions in attack and military necessity at the

c. Agreement by the HCP that lethal weapons systems featuring autonomy must only be developed, produced, acquired, modified, deployed and used in accordance with the following provisions:

- Ensure compliance with international law when studying, acquiring, adopting or modifying (legal review – see guiding principle e) and using lethal weapons systems featuring autonomy.
- Retain appropriate/sufficient human control during the whole life-cycle of the system considered (see guiding principle c) by ensuring that humans will still be in a position to:
 - exercise their judgement with regard to compliance with IHL in the framework and context of an attack, and thus take critical decisions over the use of force.

I. Operational Framework

3. To operationalise the principles enshrined in the normative framework, the High Contracting Parties could agree on a compilation of measures and policies, to be implemented at national level:

b. To operationalise the general provision 2c, an appropriate/sufficient scheme of human control considered during the whole life cycle of the system, must be put in place, taking into account the system's characteristics and its operational framework:

Other Prohibitions or Restrictions on the Use of Weapons Systems Based on Emerging Technologies in the Area of Lethal Autonomous Weapons Systems

12. The potential use of weapons systems based on emerging technologies in the area of LAWS must be conducted in accordance with applicable international law, in particular international humanitarian law and its requirements and principles, including, inter alia, distinction, proportionality, and precautions in attack. (2019 GGE Report ¶17a)

- a.** These international humanitarian law requirements and principles must be applied through a chain of responsible command and control by the human operators and commanders who use weapons systems based on emerging technologies in the area of LAWS. (based on 2019 GGE Report ¶17d)

b. Compliance with these international humanitarian law requirements and principles in the potential use of weapons systems based on emerging technologies in the area of LAWS requires, inter alia, that human beings make certain judgements in good faith based on their assessment of the information available to them at the time. (based on 2019 GGE Report ¶17f)

13. Distinction. Civilians and civilian objects must not be made the object of attacks involving the use of weapons

<p>against military objectives. The exercise of distinction requires the ability to observe, recognise and exercise situational judgement. The deployment of an autonomous system in a manner that does not have regard to these requirements is unlawful.</p> <ul style="list-style-type: none"> • Proportionality: Parties to an armed conflict are prohibited from launching an attack that is expected to cause incidental harm to civilians that exceeds the direct military advantage anticipated from the attack. This principle of proportionality requires the individual taking a decision to attack to appreciate of the context and object of the attack before it is possible to assess the legality or the illegality of the action. The application of the principle requires qualitative, subjective and strategic appreciation of the military advantage and the expected impact of the attack. • Necessity: The principle of military necessity permits measures, including measures and weapons which engage autonomous functions, which are necessary to accomplish a legitimate military purpose and are not otherwise prohibited by international humanitarian law. • Humanity: Parties to an armed conflict are prohibited from the infliction of all suffering, injury or destruction which not necessary for achieving the legitimate purpose of a conflict. Compliance with the 	<p>reliable and manageable manner, can be suspended by human beings at any time and comply with basic principles of international humanitarian law in military operations, such as distinction, proportionality and precaution.</p> <p>[...]</p>	<p>In line with Article 36 of Additional Protocol I (AP1) to the 1949 Geneva Conventions, in the study, development, acquisition or adoption of LAWS, it should be determined whether their employment would, in some or all circumstances, fall under the prohibitions of international law norms. Besides, it should be concluded whether they are in violation of the principles of international humanitarian law: legality, distinction, proportionality, humanity and military necessity, as enshrined in AP I (contained in paragraph 17 of the International Humanitarian Law Manual for the Armed Forces of the Russian Federation of 8 August 2001).</p> <p>Precautions contained in Articles 57 and 58 of AP I are to be taken with respect to attacks. It is banned to use LAWS by prohibited ways (methods) of warfare listed in Section II of the International Humanitarian Law Manual for the Armed Forces of the Russian Federation. The said provisions are reproduced in the Section on Specificities of Conducting Field Operations of the International Humanitarian Law Manual for the Armed Forces of the Russian Federation of 8 August 2001.</p>	<p>I. Within the Preambular part, the High Contracting Parties (HCP) to the CCW should:</p> <p>2. Reaffirm also international law (in particular the United Nations Charter and International Humanitarian Law) as well as relevant ethical perspectives which guide the work of the HCP.</p> <p>[...]</p>	
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<p>moment of the application of force.</p> <p>Autonomous functionalities in weapon systems also call for a broader approach than the traditional scope of IHL. In this regard, IHL would need to focus not only on use but also other aspects in the weapon's lifecycle.</p> <p>[...]</p>	<ul style="list-style-type: none"> • Use. Set of measures enabling human operators to assess and ensure compliance with IHL – in particular principles of distinction, proportionality and precautions in attack – during operation: human approval for any substantial modification of the mission's parameters; communication links; ability to de-activate the system if and when necessary, unless technically not feasible. 	<p>systems based on emerging technologies in the area of LAWS. Attacks involving the use of weapons systems based on emerging technologies in the area of LAWS may only be directed against military objectives.</p> <p>14. Proportionality. The expected loss of civilian life, injury to civilians, and damage to civilian objects incidental to attacks involving the use of weapons systems based on emerging technologies in the area of LAWS must not be excessive in relation to the concrete and direct military advantage expected to be gained.</p> <p>15. Precautions in attack. Feasible precautions must be taken in planning and conducting attacks involving the use of weapons systems based on emerging technologies in the area of LAWS to spare, as far as possible, civilians and civilian objects from the loss of life, injury, and damage or destruction. Feasible precautions are those that are practicable or practically possible, taking into account all circumstances ruling at the time, including humanitarian and military considerations.</p>		
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<p>principle of humanity requires judgement and understanding as to the nature of human suffering and any use of an autonomous weapons system which fails to have regard to this requirement for judgement and understanding in a manner that is able to balance this against the legitimate purpose of the conflict is unlawful.</p> <ul style="list-style-type: none"> • <u>Martens Clause</u>: The right of parties to conflict to choose means and methods of warfare is not unlimited, IHL instruments that in cases not specifically covered by the provisions of its instruments, the civilian population and the combatants shall at all times remain under the protection and authority of the principles of international law derived from established custom, from the principles of humanity and from the dictates of public conscience. • <u>Feasible precautions</u>: In the conduct of military operations, constant care must be taken to spare the civilian population, civilians and civilian objects. All feasible precautions must be taken to avoid, and in any event to minimize, incidental loss of civilian life, injury to civilians and damage to civilian objects. This obligation falls on persons who plan or decide upon an attack, autonomous systems may be engaged in realising this obligation, but the obligation cannot be divested onto the system. 		<p>4. Ensuring compliance with IHL by the personnel of the Armed Forces in LAWS potential use</p> <p>Adequate legal training for the personnel of the Armed Forces is a key component of ensuring a high level of compliance with IHL while using LAWS.</p> <p>Legal support for operations carried out by troops (forces) in armed conflicts, including when carrying out missions of maintaining or restoring international peace and security with a view to ensure compliance with international humanitarian law in these circumstances is provided through:</p> <ul style="list-style-type: none"> • studying international humanitarian law by military personnel; • conducting legal review of draft combat and other documents; advising commanders (senior officers) on issues of the application of international humanitarian law taking into account execution of specific combat tasks; • assisting commanders in establishing interaction with local authorities' bodies and humanitarian organizations working in the operational area of troops (forces). 		
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2. Weapons Prohibitions and other Regulations/Restrictions

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<p>International Regulation in the Framework of the CCW</p> <p>The challenges posed by autonomy in weapon systems are of such nature that there is a clear need for a legally binding instrument, the reasons being the following:</p> <p>1. The need to clarify, strengthen and advance IHL regarding the specific challenges posed by weapons which incorporate autonomous functionalities. Existing international law, including international humanitarian law, while still applicable, is insufficient because its fundamental rules regarding the use of force were designed when humans made value judgements notably vis-à-vis the principles of distinction, proportionality, precautions in attack and military necessity at the moment of the application of force. Autonomous functionalities in weapon systems also call for a broader approach than the traditional scope of IHL. In this regard, IHL would need to focus not only on use but also other aspects in the weapon's lifecycle.</p> <p>2. The need to avoid a fragmented approach through national</p>	<p>I. Normative Framework “Operative” part</p> <p>2. The normative framework could then affirm a number of principles for the development and use of weapons systems in the area of LAWS. This “operative” part should build on the already endorsed 11 guiding principles, while elaborating further on the issue of human-machine interaction:</p> <p>b. Clear commitment by High Contracting Parties (HPC) not to develop, produce, acquire, deploy or use fully autonomous lethal weapons systems operating completely outside human chain of command and control. To that end, the HCP would agree to implement necessary measures at national level;</p> <p>c. Agreement by the HCP that lethal weapons systems featuring autonomy must only be developed, produced, acquired, modified, deployed and used in accordance with the following provisions:</p> <ul style="list-style-type: none"> • Ensure compliance with international law when studying, acquiring, adopting or modifying (legal review – see guiding principle e) and using lethal weapons systems featuring autonomy; 	<p>Weapons Prohibited from Use in All Circumstances</p> <p>10. A weapons system based on emerging technologies in the area of LAWS must not be used if it is of a nature to cause superfluous injury or unnecessary suffering, if it is inherently indiscriminate, or if it is otherwise incapable of being used in accordance with international humanitarian law. (Sixth RevCon Declaration ¶19)</p> <p>10. To prevent the development of such weapons systems based on emerging technologies in the area of LAWS that could not, under any circumstances, be used in compliance with international humanitarian law:</p> <p>a. Weapons systems must not be designed to be used to conduct attacks against the civilian population, including attacks to terrorize the civilian population;</p> <p>b. Weapons systems must not be designed to cause incidental loss of civilian life, injury to civilians, and damage to civilian objects that would invariably be excessive in relation to the concrete and direct military advantage expected to be gained;</p>	<p>Article 3: Prohibitions and Regulations</p> <p>Sec. 1: It is prohibited to develop, produce, possess, acquire, deploy, transfer, or use under any circumstances autonomous weapons systems if:</p> <p>1.1. its autonomous functions are designed to be used to conduct attacks outside meaningful human control; and</p> <p>1.2. its use does not comply with principles of international humanitarian law or the dictates of public conscience. This includes systems that:</p> <p>1.2.1. are incapable of distinguishing between civilians, enemy combatants and combatants hors de combats;</p> <p>1.2.2. are of a nature to cause superfluous injury or unnecessary suffering or are inherently indiscriminate.</p> <p>Sec. 2: Each High Contracting Party shall institute measures to ensure that meaningful human control is retained in the entire life cycle of any weapon system incorporating autonomy, including by remote or controlled deactivation to reduce or limit unplanned damage.</p>	<p>I. Recognize the common grounds</p> <p>5. The fundamental starting point that AWS that cannot be used in accordance with International Humanitarian Law (IHL) must not be developed, deployed, or used and are de facto already prohibited, and that AWS that would select and engage targets without any human control would not only be unlawful, but they would also be questionable from an ethical point of view, particularly with regard to the need to uphold human dignity;</p> <p>6. The need to work collaboratively to prohibit or regulate AWS that are not sufficiently predictable or controllable to meet legal requirements and in a manner that sufficiently addresses relevant ethical perspectives;</p> <p>7. The need to work collaboratively to identify and agree on limits and other regulations to uphold the rules of IHL;</p> <p>9. the value of voluntary measures such as the sharing of national policy and standards and good practice guidance, which can act as confidence building measures that complement, but are not replacement for, and</p>

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	<p>II. Definition and Category of LAWS</p> <p>In terms of autonomy, the main purpose of autonomy is to reduce the dependence on human and external resources in military operations, to improve the adaptability to complex dynamic environment and survivability on the battlefields, and thus to better accomplish the battlefield missions assigned by human beings. The use of relevant weapons systems should be regulated specifically according to different scenarios and different degrees of autonomous capabilities. If autonomous capabilities are not used in the killing chain (e.g., drones for intelligence collection and reconnaissance), even if some weapons systems have a high degree of autonomy, the autonomy in those weapons will not lead to humanitarian concerns.</p> <p>[...]</p> <p>III. Unacceptable Autonomous Weapons Systems and Acceptable Autonomous Weapons Systems</p> <p>The killing chain of weapons systems includes observation, orientation, decision, action and other critical links. Weapons systems</p>	<p>2. LAWS in the IHL context</p> <p>[...]</p> <p>The right of the parties to a conflict and their armed forces to choose methods and means of warfare is not unlimited. It is prohibited to use weapons and methods of warfare of a nature to cause superfluous injury or unnecessary suffering.</p> <p>[...]</p> <p>Precautions contained in Articles 57 and 58 of AP I are to be taken with respect to attacks. It is banned to use LAWS by prohibited ways (methods) of warfare listed in Section II of the International Humanitarian Law Manual for the Armed Forces of the Russian Federation. The said provisions are reproduced in the Section on Specificities of Conducting Field Operations of the International Humanitarian Law Manual for the Armed Forces of the Russian Federation of 8 August 2001.</p>	<p>[...]</p> <p>Thus, the States submitting the present working paper are of the view that the GGE should seek consensus on a two-tier approach, based on the recognition that lethal autonomous weapons systems that cannot comply with IHL are de facto prohibited and should not be developed or used, and that further work is needed to operationalize this commitment at national level.</p> <p>[...]</p> <p>I. Within the Preambular part, the High Contracting Parties (HCP) to the CCW should:</p> <p>1. Reaffirm the role and objectives of the CCW which remains the appropriate forum, notably because of its object and purpose as well as its multilateral nature, to address the issue of LAWS (as affirmed in guiding principle k), under which a normative and operational framework must be adopted;</p> <p>[...]</p> <p>4. Recognise that lethal autonomous weapon systems that cannot be used in accordance with international law, including international humanitarian law, are de facto prohibited;</p>	<p>3. Recognise the urgent need for adequate rules and limits on the development, deployment, and use of autonomous weapons systems to ensure sufficient human involvement and oversight.</p> <p>7. Emphasise that this determination is based on the shared view that there is an urgent requirement for the international community to address the particular risks and challenges posed by the integration of autonomy in weapons systems through the development of effective and multilaterally agreed rules, limits and other measures for such systems.</p> <p>9. Recognise as a fundamental starting point that autonomous weapon systems that cannot be used in accordance with international humanitarian law, must not be developed, deployed or used and are de facto already prohibited. Also recognise that autonomous weapons systems that would select and engage targets without any human control, would not only be unlawful; they would also be questionable from an ethical point of view, particularly with regard to human dignity.</p>

<p>measures, which might give leeway to dispersion and lack of homogeneity in the adopted measures, contrary to the interest of having an international benchmark from which compatible national measures are implemented.</p> <p>3. The nature of the CCW as a normative framework which reaffirms the need to continue the codification and progressive development of the rules of international law applicable in armed conflict, with regard to weapon systems, which are or have the potential as weapons with autonomous functionalities to be excessively injurious or have indiscriminate effects.</p> <p>Draft Legally Binding Instrument on Prohibitions and Regulations</p> <p>Taking into account the specific ethical, legal and societal questions and international security related concerns raised when removing human decision making from the application of force, there is a clear need for establishing a set of specific rules to regulate at an international level, regarding weapons which incorporate autonomous functionalities.</p> <p>In this regard, the following draft of a legally binding instrument establishing prohibitions and regulations can be considered:</p> <p>1. Due to the challenges of autonomy in weapon systems, in order to fully comply with key legal obligations and ethical imperatives, States shall:</p>	<ul style="list-style-type: none"> • Preserve human responsibility and accountability (see guiding principles b and d) at all times, in all circumstances and across the entire life cycle as basis for state and individual responsibility – human responsibility and accountability can never be transferred to machines. This requires spatial and temporal limits on such weapons systems that may vary according to the situation / context of their employment. • Retain appropriate/sufficient human control during the whole life-cycle of the system considered (see guiding principle c) by ensuring that humans will still be in a position to: <ul style="list-style-type: none"> - understand – depending on their role and level of responsibilities – the systems’ way of operating, effect and likely interaction with its environment; - evaluate and monitor the reliability of the systems; - validate the usability/serviceability of the systems; - define and validate rules of use and rules of engagement; - define and validate a precise framework for the mission assigned to the system (objective, type of targets, restrictions in time and space, etc.); - exercise their judgement with regard to compliance with IHL in the framework and context of an attack, and thus take critical decisions over the use of force. 	<p>c. The autonomous functions in weapons systems must not be designed to be used to conduct attacks that would not be the responsibility of the human command under which the weapon system would be used;</p> <p>d. Weapons systems are to be developed such that their effects in attacks can be anticipated and controlled, as may be required, in the circumstances of their use, by the principles of distinction and proportionality and such that attacks conducted with reliance upon their autonomous functions will be the responsibility of the human command under which the system was used.</p> <p>Other Prohibitions or Restrictions on the Use of Weapons Systems Based on Emerging Technologies in the Area of Lethal Autonomous Weapons Systems</p> <p>12. The potential use of weapons systems based on emerging technologies in the area of LAWS must be conducted in accordance with applicable international law, in particular international humanitarian law and its requirements and principles, including, inter alia, distinction, proportionality, and precautions in attack. (2019 GGE Report ¶17a)</p> <p>a. These international humanitarian law requirements and principles must be applied through a chain of responsible command and control by the human operators and commanders who</p>	<p>Sec. 3: Each High Contracting Party shall ensure that weapon systems do not rely on data sets that can perpetuate or amplify social biases, including gender and racial bias.</p> <p>Sec. 4: Each High Contracting Party shall ensure that weapon systems do not cause lasting environmental damage.</p> <p>Sec. 5: Each High Contracting Party shall develop regulations for due register, tracking and analysis of AWS, thus allowing for accountability for both all chain of command and fabrication and development.</p>	<p>without prejudice to, international rules and regulations on AWS;</p> <p>II. Elaborate these common grounds</p> <p><u>Introduction</u></p> <p>1. Recall the objectives and purposes of the CCW, specifically “the need to continue the codification and progressive development of the rules of international law applicable in armed conflict.”</p> <p>3. Recognize that new legally binding rules and principles are needed to safeguard against such risks and challenges.</p> <p><u>General commitments</u></p> <p>16. Agree to prohibit the development, production, possession, acquisition, deployment, transfer or use under any circumstances of AWS if:</p> <p>16.1. its autonomous functions are designed to be used to conduct attacks outside a responsible chain of human command and control; and</p> <p>16.2. its use cannot comply with principles of IHL or the dictates of public conscience. This includes systems that:</p> <p>16.2.1. are incapable of distinguishing between civilians, enemy combatants and combatants hors de combats;</p> <p>16.2.2. Are of a nature to cause superfluous injury or unnecessary suffering or are inherently indiscriminate.</p> <p>18. Recognize the need to prevent the development of AWS that cannot be used in accordance with IHL by ensuring, inter alia, that:</p>
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with autonomous functions at certain links may not necessarily cause indiscriminate effects. Therefore, general prohibitions or restrictions may undermine the legitimate defense capabilities of countries, and even their rights to use relevant technologies peacefully.

Parities should consider classifying autonomous weapons systems into two categories: *unacceptable* and *acceptable*, and prohibit the unacceptable parts and regulate the acceptable parts, so as to ensure relevant weapons systems are secure, reliable, manageable and in line with international humanitarian law and other applicable international law. It should be emphasized that above classification will not hamper further discussions of the definition of LAWS, and the discussions of unacceptable and acceptable autonomous weapons systems should not exceed the mandate of the GGE.

Basic characteristics of *Unacceptable Autonomous Weapons Systems* should include but not limited to the following: Firstly, lethality, meaning sufficient lethal payload (charge) and means. Secondly, autonomy, meaning absence of human intervention and control during the entire process of executing a task. Thirdly, impossibility for termination, meaning that once started, there is no way to terminate the operation. Fourthly, indiscriminate killing, meaning that the device will execute the mission of killing and maiming

5. Recognise therefore that lethal autonomous weapons systems operating completely outside human control and a responsible chain of command are unlawful.

II. In order to operationalize the two-tier approach, the HCP should:

1. Commit not to develop, produce, acquire, deploy or use fully autonomous lethal weapons systems operating completely outside human control and a responsible chain of command (see guiding principles b, c, and d);

2. Commit to only develop, produce, acquire, modify, deploy or use lethal weapons systems featuring autonomy when the following provisions are fulfilled:

a. compliance with international law is ensured when studying, acquiring, adopting or modifying (legal review – see guiding principle e) and **using lethal weapons systems featuring autonomy;**

b. appropriate human control is retained during the whole life-cycle of the system considered (see guiding principle c) by ensuring that humans will be in a position to, **inter alia: at all times** have sufficient assurance that weapons systems, once activated, act in a foreseeable manner in order to determine that their actions are entirely in conformity with applicable national and international law, rules of engagement, and the intentions of its commanders and operators. For this purpose,

10. Commit to work collaboratively to prohibit autonomous weapons systems that are not sufficiently predictable or controllable to meet legal requirements, and in a manner that addresses ethical imperatives.

11. Commit to work collaboratively to identify and agree on limits and other regulations to uphold the rules of international humanitarian law for other types of autonomous weapons systems, including through, for example:

- Limits on the type of target;
- Limits on the duration, geographical scope and scale of use;
- Requirements for human-machine interaction/human control to ensure effective oversight of a weapon system and allow for timely intervention and deactivation;
- Clear procedures to ensure that human operators are informed and empowered to effect or control autonomous weapon systems.

13. Acknowledge that voluntary measures, such as the sharing of national policy standards and good practice guidance, can act as confidence building measures that complement, but are not a replacement for, and are without prejudice to, international rules and regulations on autonomous weapons systems.

<p>1.1. Prohibit the development and the use of weapons with autonomous functionalities that cannot be controlled by humans, therefore subject to cognitive and epistemological limitations.</p> <p>1.2 Prohibit the development and the use of weapons which incorporate autonomous functionalities that cannot be used in compliance with IHL, including weapons that:</p> <p>1.2.1. Cannot be directed at a specific military objective;</p> <p>1.2.2. Cause superfluous injury or unnecessary suffering; or</p> <p>1.2.3. Have effects that cannot be limited as required by IHL.</p> <p>1.3. Prohibit the development and use of weapons which incorporate autonomous functionalities whose effects cannot be sufficiently understood, predicted and explained.</p> <p>2. Positive obligations, in the form of regulations, should be developed to ensure humans exercise control in the use of weapons which incorporate autonomous functionalities, in line with their obligations under IHL and ethical requirements, notably in terms of:</p> <p>2.1. While recognizing that the nature and degree of human control may vary during all/different stages of a weapon's development and use, a human operator shall:</p> <p>2.2.1. Be certain that there are adequate environmental limits in place, including spatial and temporal limits;</p>		<p>use weapons systems based on emerging technologies in the area of LAWS. (based on 2019 GGE Report ¶17d)</p> <p>b. Compliance with these international humanitarian law requirements and principles in the potential use of weapons systems based on emerging technologies in the area of LAWS requires, inter alia, that human beings make certain judgments in on good faith based on their assessment of the information available to them at the time. (based 2019 GGE Report ¶17f)</p> <p>13. <i>Distinction.</i> Civilians and civilian objects must not be made the object of attacks involving the use of weapons systems based on emerging technologies in the area of LAWS. Attacks involving the use of weapons systems based on emerging technologies in the area of LAWS may only be directed against military objectives.</p> <p>14. <i>Proportionality.</i> The expected loss of civilian life, injury to civilians, and damage to civilian objects incidental to attacks involving the use of weapons systems based on emerging technologies in the area of LAWS must not be excessive in relation to the concrete and direct military advantage expected to be gained.</p> <p>15. <i>Precautions in attack.</i> Feasible precautions must be taken in planning and conducting attacks involving the use of weapons systems based on emerging technologies in the area of LAWS to</p>		<p>18.1. Weapon systems are not designed to be used to conduct attacks against the civilian population, including attacks against civilian population and attacks to terrorize the civilian population;</p> <p>18.2. Weapon systems are not designed to cause incidental loss of civilian life, injury to civilians, and damage to civilian objects expected to be gained; that would invariably be excessive in relation to the concrete and direct military advantage and</p> <p>18.3. the autonomous function in weapon systems must not be designed to be used to conduct attacks that would not be the responsibility of the human commander under which the weapon systems would be used.</p> <p>19. Recognize the need to implement regulations to ensure that all weapon systems incorporating autonomy must be used with meaningful human control.</p>
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regardless of conditions, scenarios and targets. Fifthly, evolution, meaning that through interaction with the environment, the device can learn autonomously, expand its functions and capabilities in a degree exceeding human expectations.

Autonomous weapons systems with all of the five characteristics clearly have anti-human characteristics and significant humanitarian risks, and the international community could consider following the example of the Protocol on Blinding Laser Weapons and work to reach a legal instrument to prohibit such weapons systems. In view of the developing nature of relevant technologies, more specific evaluation criteria on autonomy and evolution are encouraged.

Acceptable Autonomous Weapons Systems could have a high degree of autonomy, but are always under human control. It means they can be used in a secure, credible, reliable and manageable manner, can be suspended by human beings at any time and comply with basic principles of international humanitarian law in military operations, such as distinction, proportionality and precaution.

For such weapons systems, China supports countries to take necessary risk mitigation measures and implement a tiered and categorized regulation in particular. Countries should fully take into account the inherent characteristics of

developers, commanders and operators – depending on their role and level of responsibilities – must have a sufficient understanding of the weapons systems' way of operating, effect and likely interaction with its environment. This would enable the commanders and operators to predict (prospective focus) and explain (retrospective) the behavior of the weapons systems; **during the development phase:** evaluate the reliability and predictability of the system, by applying appropriate testing and certification procedures, and assess compliance with IHL through legal reviews; **during the deployment:** define and validate rules of use and rules of engagement as well as a precise framework for the mission assigned to the system (objective, type of targets etc.), in particular by setting spatial and temporal limits that may vary according to the situation and context, and monitor the reliability and usability of the system; **when using:** humans should also exercise their judgement with regard to compliance with rules and principles of IHL, in particular distinction, proportionality and precautions in attack, and thus take critical decisions over the use of force. This includes human approval for any substantial modification of the mission's parameters; communication links; ability to de-activate the system if and when necessary, unless technically not feasible.

2.2.2. Be fully aware and approve any decision on determining the operational context through a sufficient level of situational awareness;

2.2.3. Be certain on the reliability and predictability in the identification, selection and engagement of targets;

2.2.4. Take the necessary precautions during the conduct of operations to ensure that a weapons system is not able to change mission parameters without human validation.

2.2.5. Allow for constant human supervision and ensure intervention where necessary as to be able to:

2.2.5.1. Interrupt and deactivate the weapon during its operation phase.

2.2.5.2. Verify that auto-deactivation features operate as intended, in particular when required by the legal assessment of the user.

3. States should ensure that there are means to conduct effective investigations, prosecution and punishment for violations incurred during the use of weapons with autonomous functionalities, so as to ensure individual responsibilities. It is the responsibility of commanders and operators to ensure that they can comply with their legal obligations in the deployment and use of weapons with autonomous functionalities.

Taking into account technological advancements which impact autonomy in weapons systems States may need to identify additional

spare, as far as possible, civilians and civilian objects from the loss of life, injury, and damage or destruction.

Feasible precautions are those that are practicable or practically possible, taking into account all circumstances ruling at the time, including humanitarian and military considerations.

autonomous weapons systems, the confrontation on the modern battlefields, the complex and open environment and other factors. Countries should decide on their own specific measures and implementation mechanism based on their own national situation. China supports all parties to conduct exchanges and cooperation on risk mitigation measures through case studies, scenario workshop, practice exchanges, etc.

[...]

c. human responsibility and accountability

is preserved (see guiding principles b and d) at all times, in all circumstances and across the entire life cycle as basis for State and individual responsibility and can never be transferred to machines. To that end, the following measures and policies should be implemented:

- **on responsibility:** doctrines and procedures for the use of lethal weapons systems featuring autonomy; adequate training for human decision makers and operators to understand the system's effect and its likely interaction with its environment; operation of the system within a responsible chain of human command, including human responsibility for decisions to deploy and for the definition and validation of the rules of operation, use and engagement;
- **on accountability:** measures enabling an after action review of the system to assess compliance with IHL of a system, unless technically or operationally not feasible; mechanisms to report violations, investigation by States of credible allegations of IHL violations by their armed forces, their nationals or on their territory; disciplinary procedures and prosecution of suspected perpetrators of grave breaches of IHL as appropriate.

recommendations, provided that such additions are guided by the principles of humanity and the dictates of public conscience.

Such recommendations may include additional prohibitions and regulations as well as inter alia, voluntary measures, exchange of best practices.

Any further recommendations shall be grounded so as to preserve human control and to avoid any accountability gap.

Conclusions

The reflections mentioned above derive from the substantive discussions within the GGE LAWS for the past years. They provide a basis for a framework that while ensuring the full applicability of international law, including IHL, highlights the need to develop additional legally binding norms based on ethical standards, to give an adequate normative response to the challenges posed by autonomy in weapon systems.

Risks associated with ending of the arms race and building confidence among autonomous functionalities in weapons systems could be inherent/built in, thus further consideration is needed on the viability of mitigation measures particularly when dealing with categorizations that are context-dependent as prescribed by IHL (vg. distinction between combatants and non-combatants, or military targets or civilian objects).

[...]

			<p>d. tailored risk mitigation measures and appropriate safeguards regarding safety and security (see guiding principles f and g) are adopted and implemented.</p>	
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<p>Furthermore, taking into account the irreversibility and magnitude of the risks we are dealing with (particularly with regard to decisions on life and death) the most effective way to address this is through prohibitions as risk avoidance measures and regulations as risk prevention/mitigations measures. Prohibitions and regulations once established, should then be operationalized through national implementation measures.</p> <p>[...]</p>				
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3. Application of International Human Rights Law (IHRL) and International Criminal Law (ICL)

Elements for a legally binding instrument to address the challenges posed by autonomy in weapon systems	Outline for a Normative and Operational Framework on Emerging Technologies in the Area of LAWS	Principles and Good Practices on Emerging Technologies in the Area of Lethal Autonomous Weapons Systems	Protocol VI	Roadmap Towards New Protocol on Autonomous Weapons Systems
<p>Background</p> <p>[...]</p> <p>If the CCW is to remain relevant and responsive to the challenges that increased incorporation of autonomous functionalities in weapon systems entail, it should take developments in other fora into account. The CCW does not operate in a vacuum.</p> <p>Thus a holistic, multidimensional understanding of the effects of the incorporation of autonomy in weapon systems is needed in order to fully grasp its shaping, potential annulation or magnifying effects over human agency and how this impacts upholding of ethical imperatives, compliance with international law, international humanitarian law and international human rights law as well as its impact on international security.</p> <p>At this stage of technological development, the question is not if we “can” remove the user from the application of force to kill, injure or harm another human being, rather, the consequences that the removal of the human operator entails.</p>				<p>II. Elaborate these common grounds</p> <p><u>Introduction</u></p> <p>2. Recognize the risks and challenges posed by autonomous weapon systems to:</p> <p>2.1. Compliance with international law, including IHL, international human rights law (IHRL), and international criminal law (ICL);</p> <p><u>General commitments</u></p> <p>21. Reaffirm that the conduct of a state’s organs such as its agents and all persons forming part of its armed forces, is attributable to that state. In accordance with IHL, IHRL, and ICL, this includes any such acts and omissions involving the use of AWS.</p>

<p>United Kingdom Proposal for a GGE Document on the Ap- plication of Internation- al Humanitarian Law to Emerging Technologies in the Area of Lethal Autonomous Weapon Systems (LAWS)</p>	<p>Working Paper of the People’s Republic of China on LAWS (July 2022)</p>	<p>Working Paper of the Russian Federation “Application of Inter- national Law to Lethal Autonomous Weapons Systems (LAWS)”</p>	<p>Working Paper submit- ted by Finland, France, Germany, the Nether- lands, Norway, Spain and Sweden to the 2022 Chair of the GGE on LAWS</p>	<p>Working Paper submit- ted to the 2022 Chair of the Group of Govern- mental Experts (GGE) on emerging technolo- gies in the area of lethal autonomous weapons systems (LAWS)</p>

From a legal perspective, it remains highly questionable whether weapons which incorporate autonomous functionalities are able to be used in compliance with key provisions of International humanitarian law and human rights law, given the inherent uncertainties and complexities of wartime environments. We are of the view that there is an implicit requirement for meaningful human control imbedded in IHL, notably vis-à-vis the principles of distinction, proportionality, precautions in attack and military necessity. Similar requirements are also at the core of international human rights law.

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4. CHARACTERIZATION

Elements for a legally binding instrument to address the challenges posed by autonomy in weapon systems	Outline for a Normative and Operational Framework on Emerging Technologies in the Area of LAWS	Principles and Good Practices on Emerging Technologies in the Area of Lethal Autonomous Weapons Systems	Protocol VI	Roadmap Towards New Protocol on Autonomous Weapons Systems
	<p>Normative Framework “Operative” part</p> <p>2. The normative framework could then affirm a number of principles for the development and use of weapons systems in the area of LAWS. This “operative” part should build on the already endorsed 11 guiding principles, while elaborating further on the issue of human-machine interaction:</p> <p>b. Clear commitment by High Contracting Parties (HPC) not to develop, produce, acquire, deploy or use fully autonomous lethal weapons systems operating completely outside human chain of command and control. To that end, the HCP would agree to implement necessary measures at national level.</p>	<p>Characteristics and Concepts</p> <p>3. The role and impacts of autonomous functions in the identification, selection, or engagement of a target are among the essential characteristics of weapons systems based on emerging technologies in the area of LAWS. (based on 2019 GGE Report ¶19a)</p> <p>4. Emerging technologies in the area of LAWS can include novel advancements in the field of Artificial Intelligence.</p> <p>5. These principles and good practices may be of particular relevance when considering uses of weapons systems based on emerging technologies in the area of LAWS in which the system operator relies on autonomous functions to select and engage targets with lethal force and, before activation, the system operator does not identify a specific target or targets for intended engagement.</p> <p>6. The following considerations may continue to aid the identification of characteristics and concepts relevant to emerging technologies in the area of LAWS and to the application of these principles and good practices:</p>	<p>Article 2: Characterization</p> <p>For the purpose of this Protocol:</p> <p>Sec. 1: “Autonomous weapon systems” refers to weapon systems that incorporate autonomy into their critical functions of selecting, targeting, and engaging to apply force without human intervention.</p> <p>Sec. 2: “Meaningful human control” refers to the threshold of application of human judgment and intervention necessary to ensure the maintenance of human agency, responsibility, proportionality and accountability in undertaking decisions regarding the use of any weapon and the ability of human operators to effectively supervise any weapon, undertake the necessary interaction that could either be directive or preventive, and to deactivate, terminate, or abort the operation of the weapon altogether.</p>	<p>II. Elaborate these common grounds</p> <p><u>Characterization</u></p> <p>6. Recognize that an exact technical definition of AWS is not required for the elaboration, development, and negotiation of any normative and operational framework in the context of the Convention, bearing in mind that autonomy exists on a spectrum and purely technical characteristics may alone not be sufficient to characterize AWS in view of rapid evolution in technology.</p> <p>7. Recognize that a working characterization is a useful starting point and that such characterization should focus on the human element and human-machine interaction since these are essential to addressing the issue of attribution of responsibility.</p> <p>8. Affirm that a weapon system may be characterized as an AWS if it incorporates autonomy into the critical functions of selecting and engaging to apply force against targets, without human intervention. This means that a target is selected and force is applied based on the processing of sensor data, rather than direct human inputs.</p>

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	<p>II. Definition and Category of LAWS</p> <p>Addressing the definition of LAWS is the key of negotiating any practical control measures. Due to the dual-use nature of LAWS-related technologies, as relevant discussions become broader, more concerns and divergencies will appear, and it could be more difficult to get any outcome. In our view, we should focus on weapons systems with autonomous killing capabilities, which means autonomous weapons platforms with a lethal mission payload.</p> <p>In terms of lethality, CCW is not intended to prohibit all conventional weapons. Discussions deviated from lethality would not only be contrary to the goal of the CCW, but also make it difficult to have objective and fair discussions on the impacts of AI and other emerging technologies. In terms of autonomy, the main purpose of autonomy is to reduce the dependence on human and external resources in military operations, to improve the adaptability to complex dynamic environment and survivability on the battlefields, and thus to better accomplish the battlefield missions assigned by human</p>	<p>Definition</p> <p>There is no consensus definition of LAWS in existing international law. Since the issue pertains to prospective types of weapons, the definition of LAWS should not be interpreted as limiting technological progress and detrimental to research on peaceful robotics and artificial intelligence.</p> <p>The definition of LAWS should meet the following requirements: contain the description of the types of weapons that fall under the category of LAWS, conditions for their production and testing as well as their usage procedure; not be limited to the current understanding of LAWS, but also take into consideration the prospects for their future development; be universal in terms of the understanding by the expert community comprising scientists, engineers, technicians, military personnel, lawyers and ethicists.</p> <p>A lethal autonomous weapons system is a fully autonomous unmanned technical means other than ordnance that is intended for carrying out combat and support missions without any involvement of the operator.</p>	<p>I. Within the Preambulary part, the High Contracting Parties (HCP) to the CCW should:</p> <p>1. Reaffirm the role and objectives of the CCW which remains the appropriate forum, notably because of its object and purpose as well as its multilateral nature, to address the issue of LAWS (as affirmed in guiding principle k), under which a normative and operational framework must be adopted; [...]</p> <p>4. Recognise that lethal autonomous weapon systems that cannot be used in accordance with international law, including international humanitarian law, are de facto prohibited;</p> <p>5. Recognise therefore that lethal autonomous weapons systems operating completely outside human control and a responsible chain of command are unlawful.</p>	<p>9. Recognise as a fundamental starting point that autonomous weapon systems that cannot be used in accordance with international humanitarian law, must not be developed, deployed or used and are de facto already prohibited. Also recognise that autonomous weapons systems that would select and engage targets without any human control, would not only be unlawful; they would also be questionable from an ethical point of view, particularly with regard to human dignity.</p>

a. Characterization, or working definitions, should neither predetermine nor prejudice policy choices; they should be universally understood by stakeholders. (2018 GGE Report ¶22a)

b. Purely technical characteristics such as physical performance, endurance, or sophistication in target acquisition and engagement may alone not be sufficient to characterize LAWS, especially in view of rapid evolution in technology. (2018 GGE Report ¶22b)

c. Attempting to define a general threshold level of autonomy based on technical criteria alone could pose difficulty because autonomy exists on a spectrum, understandings of autonomy change with shifts in the technology frontier, and different functions of a weapons system could have different degrees of autonomy. (based on 2018 GGE Report ¶22c)

d. A focus on characteristics related to the human element in the use of force and its interface with machines is necessary in addressing accountability and responsibility. (based on 2018 GGE Report ¶22f)

9. Affirm that lethality is not an intrinsic characteristic of a weapon system but an effect or manner of use, and that any weapon system can be contrary to international law regardless of whether it is lethal or not.

beings. The use of relevant weapons systems should be regulated specifically according to different scenarios and different degrees of autonomous capabilities. If autonomous capabilities are not used in the killing chain (e.g., drones for intelligence collection and reconnaissance), even if some weapons systems have a high degree of autonomy, the autonomy in those weapons will not lead to humanitarian concerns.

In addition, in order to deepen the understanding of countries, especially developing countries, of relevant technologies, the Governmental Expert Group (GGE) should distinguish between basic concepts such as remote-controlled weapons, automatic weapons and autonomous weapons, offensive autonomous weapons and defensive autonomous weapons, as well as anti-equipment autonomous weapons and anti-personnel autonomous weapons. This will make the GGE's discussions more scientific and accurate, and therefore easier to make substantive progress.

III. Unacceptable Autonomous Weapons Systems and Acceptable Autonomous Weapons Systems

The killing chain of weapons systems includes observation, orientation, decision, action and other critical links. Weapons systems with autonomous functions at certain links may not necessarily

The said definition does not extend to include unmanned aerial vehicles as well as existing highly automated military systems.

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cause indiscriminate effects. Therefore, general prohibitions or restrictions may undermine the legitimate defense capabilities of countries, and even their rights to use relevant technologies peacefully.

Parities should consider classifying autonomous weapons systems into two categories: *unacceptable* and *acceptable*, and prohibit the unacceptable parts and regulate the acceptable parts, so as to ensure relevant weapons systems are secure, reliable, manageable and in line with international humanitarian law and other applicable international law. It should be emphasized that above classification will not hamper further discussions of the definition of LAWS, and the discussions of unacceptable and acceptable autonomous weapons systems should not exceed the mandate of the GGE.

Basic characteristics of *Unacceptable Autonomous Weapons Systems* should include but not limited to the following: Firstly, lethality, meaning sufficient lethal payload (charge) and means. Secondly, autonomy, meaning absence of human intervention and control during the entire process of executing a task. Thirdly, impossibility for termination, meaning that once started, there is no way to terminate the operation. Fourthly, indiscriminate killing, meaning that the device will execute the mission of killing and maiming regardless of conditions, scenarios and targets. Fifthly, evolution,

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meaning that through interaction with the environment, the device can learn autonomously, expand its functions and capabilities in a degree exceeding human expectations.

Autonomous weapons systems with all of the five characteristics clearly have anti-human characteristics and significant humanitarian risks, and the international community could consider following the example of the Protocol on Blinding Laser Weapons and work to reach a legal instrument to prohibit such weapons systems. In view of the developing nature of relevant technologies, more specific evaluation criteria on autonomy and evolution are encouraged.

Acceptable Autonomous Weapons Systems could have a high degree of autonomy, but are always under human control. It means they can be used in a secure, credible, reliable and manageable manner, can be suspended by human beings at any time and comply with basic principles of international humanitarian law in military operations, such as distinction, proportionality and precaution.

[...]

5. HUMAN-MACHINE INTERACTION/HUMAN CONTROL

Elements for a legally binding instrument to address the challenges posed by autonomy in weapon systems	Outline for a Normative Framework on Emerging Technologies in the Area of LAWS	Principles and Good Practices on Emerging Technologies in the Area of Lethal Autonomous Weapons Systems	Protocol VI	Roadmap Towards New Protocol on Autonomous Weapons Systems
<p>Introduction</p> <p>In the view of our delegations, the focus of concern should be on how to preserve meaningful human control in weapons which incorporate autonomous functionalities, as to prevent the further dehumanization of warfare.</p> <p>Background</p> <p>At this stage of technological development, the question is not if we “can” remove the user from the application of force to kill, injure or harm another human being, rather, the consequences that the removal of the human operator entails. From a legal perspective, it remains highly questionable whether weapons which incorporate autonomous functionalities are able to be used in compliance with key provisions of International humanitarian law and human rights law, given the inherent uncertainties and complexities of wartime environments. We are of the view that there is an implicit requirement for meaningful human control imbedded in IHL, notably vis-à-vis the principles of distinction, proportionality, precautions in attack and military necessity. Similar requirements are also at</p>	<p>I. Normative Framework “Operative” part</p> <p>2. c. Agreement by the HCP that lethal weapons systems featuring autonomy must only be developed, produced, acquired, modified, deployed and used in accordance with the following provisions:</p> <ul style="list-style-type: none"> • Preserve human responsibility and accountability (see guiding principles b and d) at all times, in all circumstances and across the entire life cycle as basis for state and individual responsibility – human responsibility and accountability can never be transferred to machines. This requires spatial and temporal limits on such weapons systems that may vary according to the situation/context of their employment. • Retain appropriate/sufficient human control during the whole life-cycle of the system considered (see guiding principle c) by ensuring that humans will still be in a position to: <ul style="list-style-type: none"> - Understand – depending on their role and level of responsibilities – the systems’ way of operating, effect and likely 	<p>Characteristics and Concepts</p> <p>6. The following considerations may continue to aid the identification of characteristics and concepts relevant to emerging technologies in the area of LAWS and to the application of these principles and good practices:</p> <p>d. A focus on characteristics related to the human element in the use of force and its interface with machines is necessary in addressing accountability and responsibility. (based on 2018 GGE Report ¶22f)</p> <p>Other Prohibitions or Restrictions on the Use of Weapons Systems Based on Emerging Technologies in the Area of Lethal Autonomous Weapons Systems</p> <p>12. a. These international humanitarian law requirements and principles must be applied through a chain of responsible command and control by the human operators and commanders who use weapons systems based on emerging technologies in the area of LAWS. (based on 2019 GGE Report ¶17d)</p>	<p>Article 2: Characterization for the purpose of this Protocol</p> <p>[...]</p> <p>Sec. 2: “Meaningful human control” refers to the threshold of application of human judgment and intervention necessary to ensure the maintenance of human agency, responsibility, proportionality and accountability in undertaking decisions regarding the use of any weapon and the ability of human operators to effectively supervise any weapon, undertake the necessary interaction that could either be directive or preventive, and to deactivate, terminate, or abort the operation of the weapon altogether.</p> <p>Article 3: Prohibitions and Regulations</p> <p>Sec. 1: It is prohibited to develop, produce, possess, acquire, deploy, transfer, or use under any circumstances autonomous weapons systems if: 1.1. its autonomous functions are designed to be used to conduct attacks outside meaningful human control;</p> <p>[...]</p>	<p>I. Recognize the common grounds</p> <p>1. The importance of the centrality of the human element in the use of force and the recognition that AWS raise important challenges with respect to human control and judgment over the use of force is important;</p> <p>2. The importance of ensuring that human beings retain decisions with regard to the use of force, exert control over weapon systems that they use, and remain accountable for decisions over the use of force.</p> <p>II. Elaborate these common grounds Introduction</p> <p>4. Affirm that responsibility and accountability for decisions on the use of force must be retained by humans, since this cannot be transferred to machines;</p> <p>5. Affirm that context-based human judgement and control is essential in order to ensure that the use of AWS is in compliance with international law, and in particular IHL.</p> <p><u>Meaningful human control</u></p> <p>10. Recognize that meaningful human control is context-based, dynamic,</p>

United Kingdom Proposal for a GGE Document on the Application of International Humanitarian Law to Emerging Technologies in the Area of Lethal Autonomous Weapon Systems (LAWS)	Working Paper of the People's Republic of China on LAWS (July 2022)	Working Paper of the Russian Federation "Application of International Law to Lethal Autonomous Weapons Systems (LAWS)"	Working Paper submitted by Finland, France, Germany, the Netherlands, Norway, Spain and Sweden to the 2022 Chair of the GGE on LAWS	Working Paper submitted to the 2022 Chair of the Group of Governmental Experts (GGE) on emerging technologies in the area of lethal autonomous weapons systems (LAWS)
<p>ANNEX A – a possible outline Research and Development</p> <p>Human understanding:</p> <ul style="list-style-type: none"> • What levels are acceptable and how could it be measured or assessed? Could an end user understand the concept for use? What level of understanding is required by each individual within the authority chain of weapon deployment? <p>Training and Planning for Use</p> <p>Linked to the above section, this would set out how states might best ensure a system is understood by those who would operate it. Potential areas for further clarification could include:</p> <ul style="list-style-type: none"> • How is best training developed? How do varying levels of autonomy change this at both individual and collective levels? • How does training prepare the force for the use of AI enabled systems under the most stressing scenarios (this might include situational complexity, uncertainty, high workload, high tempo etc)? • How does training address the procedural, C2 and safety precautions that support compliance with IHL? 	<p>II. Definition and Category of LAWS</p> <p>[...]</p> <p>In terms of autonomy, the main purpose of autonomy is to reduce the dependence on human and external resources in military operations, to improve the adaptability to complex dynamic environment and survivability on the battlefields, and thus to better accomplish the battle-field missions assigned by human beings.</p> <p>[...]</p> <p>III. Unacceptable Autonomous Weapons Systems and Acceptable Autonomous Weapons Systems</p> <p>Basic characteristics of <i>Unacceptable Autonomous Weapons Systems</i> should include but not limited to the following:</p> <p>[...]</p> <p>Secondly, autonomy, meaning absence of human intervention and control during the entire process of executing a task.</p> <p>Thirdly, impossibility for termination, meaning that once started, there is no way to terminate the operation. Fourthly, indiscriminate killing, meaning that the device will execute the mission</p>	<p>4. Ensuring compliance with IHL by the personnel of the Armed Forces in LAWS potential use</p> <p>Adequate legal training for the personnel of the Armed Forces is a key component of ensuring a high level of compliance with IHL while using LAWS.</p> <ul style="list-style-type: none"> • Legal support for operations carried out by troops (forces) in armed conflicts, including when carrying out missions of maintaining or restoring international peace and security with a view to ensure compliance with international humanitarian law in these circumstances is provided through: studying international humanitarian law by military personnel; • Conducting legal review of draft combat and other documents; advising commanders (senior officers) on issues of the application of international humanitarian law taking into account execution of specific combat tasks; assisting commanders in establishing interaction with local authorities' bodies and humanitarian organizations working in the operational area of troops (forces). 	<p>In the framework of the GGE, States should commit to:</p> <p>[...]</p> <p>2. Regulate other lethal weapons systems featuring autonomy in order to ensure compliance with the rules and principles of international humanitarian law, by preserving human responsibility and accountability, ensuring appropriate human control and implementing risk mitigation measures.</p> <p>[...]</p> <p>I. Within the Preambular part, the High Contracting Parties (HCP) to the CCW should:</p> <p>[...]</p> <p>5. Recognise therefore that lethal autonomous weapons systems operating completely outside human control and a responsible chain of command are unlawful.</p> <p>II. In order to operationalize the two-tier approach, the HCP should:</p> <p>1. Commit not to develop, produce, acquire, deploy or use fully autonomous lethal weapons systems operating completely outside human control and a responsible chain of command (see guiding principles b, c, and d);</p>	<p>1. Acknowledge the centrality of the human element in the use of force and recognise that autonomous weapons systems raise important challenges with respect to human control and judgement over the use of force as well as serious concerns from humanitarian, legal, security and ethical perspectives.</p> <p>2. Emphasise that human beings must make the decisions with regard to the use of force, exert control over weapons systems that they use, and remain accountable for decisions over the use of force in order to ensure compliance with International Law, in particular International Humanitarian Law.</p> <p>3. Recognise the urgent need for adequate rules and limits on the development, deployment, and use of autonomous weapon systems to ensure sufficient human involvement and oversight.</p> <p>11. Commit to work collaboratively to identify and agree on limits and other regulations to uphold the rules of international humanitarian law for other types of autonomous weapons systems, including through, for example:</p>

<p>the core of international human rights law.</p> <p>Beyond the very real concerns regarding the feasibility of weapons which incorporate autonomous functionalities to operate within legal constraints (vg. issues of predictability and reliability), the ethical perspective should guide the work of the GGE on retaining human agency and intent in the decisions to use force, specifically on matters of life and death.</p> <p>Draft Legally Binding Instrument on Prohibitions and Regulations</p> <p>1. Due to the challenges of autonomy in weapon systems, in order to fully comply with key legal obligations and ethical imperatives, States shall:</p> <p>1.1. Prohibit the development and the use of weapons with autonomous functionalities that cannot be controlled by humans, therefore subject to cognitive and epistemological limitations.</p> <p>[...]</p> <p>2. Positive obligations, in the form of regulations, should be developed to ensure humans exercise control in the use of weapons which incorporate autonomous functionalities, in line with their obligations under IHL and ethical requirements, notably in terms of:</p> <p>2.1. While recognizing that the nature and degree of human control may vary during all/different stages of a weapon's development and use, a human operator shall:</p>	<p>interaction with its environment;</p> <ul style="list-style-type: none"> - Evaluate and monitor the reliability of the systems; - Validate the usability/serviceability of the systems; - Define and validate rules of use and rules of engagement; - Define and validate a precise framework for the mission assigned to the system (objective, type of targets, restrictions in time and space, etc.); - Exercise their judgment with regard to compliance with IHL in the framework and context of an attack, and thus take critical decisions over the use of force. <p>II. Operational Framework</p> <p>3. To operationalize the principles enshrined in the normative framework, the High Contracting Parties could agree on a compilation of measures and policies, to be implemented at national level:</p> <p>a. To operationalise the general provision related to preserving human responsibility and accountability:</p> <ul style="list-style-type: none"> • doctrines and procedures defined for the use of lethal weapons systems featuring autonomy; • adequate training for human decision makers and operators to understand the system's effect and its likely interaction with its environment; • human responsibility for decisions to deploy and for the definition 	<p>b. Compliance with these international humanitarian law requirements and principles in the potential use of weapons systems based on emerging technologies in the area of LAWS requires, inter alia, that human beings make certain judgments in good faith based on their assessment of the information available to them at the time. (based on 2019 GGE Report ¶17f)</p> <p>Responsibility and Accountability</p> <p>16. General Considerations. The following principles related to accountability and responsibility, although not exhaustive, should be considered across the entire life cycle of weapons systems based on emerging technologies in the area of LAWS:</p> <p>a. Human responsibility for decisions on the use of weapons systems must be retained since accountability cannot be transferred to machines. (Guiding Principle (b))</p> <p>b. Humans must at all times remain accountable in accordance with applicable international law for decisions on the use of force. (Sixth RevCon Declaration ¶20 / 2018 GGE Report ¶23a)</p> <p>Good Practices Related to Human-Machine Interaction</p> <p>19. Human-machine interaction, which may take various forms and be implemented at various stages of the life cycle of a weapon, should ensure that the potential use of weapons</p>	<p>Sec. 2: Each High Contracting Party shall institute measures to ensure that meaningful human control is retained in the entire life cycle of any weapon system incorporating autonomy, including by remote or controlled deactivation to reduce or limit unplanned damage.</p>	<p>multidimensional, and situation-dependent. Meaningful human control must ensure that a human can make moral and legal judgement over the acceptability of the effects of an attack. It must also ensure that there is a human user who is legally and morally responsible for the effects of an attack.</p> <p>11. Recognize that meaningful human control consists of the elements of human judgment and human intervention. Human judgment refers to the application of human agency in undertaking decisions regarding the use of any weapon. Human intervention, on the other hand, refers to the ability of the operators to effectively supervise any weapon, to undertake the necessary interaction that could either be directive or preventive, and to deactivate, terminate, or abort the operation of the weapon altogether.</p> <p>12. Recognize that the application of machine learning could have implications on the maintenance of meaningful human control over an AWS.</p> <p>13. Affirm that any weapon system in which the system operator relies on autonomous functions to select and engage targets with lethal force and, before activation, the system does not identify target and targets for intended engagement are by definition outside the scope of meaningful human control.</p>
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<ul style="list-style-type: none"> • How is complexity managed? What levels of understanding are acceptable? • How does this enable adequate understanding of a system and allow calibration of appropriate trust? How is 'adequate' determined? <p>Deployment and use</p> <p>This section would set out agreements and good practices for how operators and commanders can ensure compliance with IHL when using systems with autonomy in operations. Potential areas for further clarification could include:</p> <ul style="list-style-type: none"> • How accountability and responsibility are determined, agreed and set out <ul style="list-style-type: none"> - how this changed from previous conclusion earlier in the cycle? • Are operational limits or parameters needed – how are these best determined and defined? • When might commanders wish to abort the use of such systems? What considerations should be taken into account? How should this be handled in practice? • How is situational understanding passed between human and system? • Where must human control be present or absent, or what degrees of control are necessary? 	<p>of killing and maiming regardless of conditions, scenarios and targets. Fifthly, evolution, meaning that through interaction with the environment, the device can learn autonomously, expand its functions and capabilities in a degree exceeding human expectations.</p> <p>Autonomous weapons systems with all of the five characteristics clearly have anti-human characteristics.</p> <p>[...]</p> <p><i>Acceptable Autonomous Weapons Systems</i> could have a high degree of autonomy, but are always under human control. It means they can be used in a secure, credible, reliable and manageable manner, can be suspended by human beings at any time and comply with basic principles of international humanitarian law in military operations, such as distinction, proportionality and precaution.</p> <p>[...]</p> <p>Countries need to enhance self-restraint on research and development activities, implement necessary human-machine interaction throughout the life cycle of such weapons systems, based on comprehensive consideration of the operational environment and weapons characteristics. Personnel who develop and use such weapons systems must receive comprehensive and systematic training, and observe ethics and relevant laws.</p>	<p>6. Measures aimed at increasing IHL compliance when developing and using LAWS</p> <p>[...]</p> <p>Focus should be placed on taking into account ethical considerations on human-artificial intelligence (AI) interaction. An important enabler for AI development is improvement of accessibility and quality of data used in the relevant elaboration process.</p>	<p>2. Commit to only develop, produce, acquire, modify, deploy or use lethal weapons systems featuring autonomy when the following provisions are fulfilled:</p> <p>[...]</p> <p>b. appropriate human control is retained during the whole life-cycle of the system considered (see guiding principle c) by ensuring that humans will be in a position to, inter alia:</p> <ul style="list-style-type: none"> • at all times have sufficient assurance that weapons systems, once activated, act in a foreseeable manner in order to determine that their actions are entirely in conformity with applicable national and international law, rules of engagement, and the intentions of its commanders and operators. For this purpose, developers, commanders and operators – depending on their role and level of responsibilities – must have a sufficient understanding of the weapons systems' way of operating, effect and likely interaction with its environment. This would enable the commanders and operators to predict (prospective focus) and explain (retrospective) the behavior of the weapons systems; • during the development phase: evaluate the reliability and predictability of the system, by applying appropriate testing and certification procedures, and assess compliance with IHL through legal reviews; 	<ul style="list-style-type: none"> • requirements for human-machine interaction/human control to ensure effective oversight of a weapon system and allow for timely intervention and deactivation; • clear procedures to ensure that human operators are informed and empowered to effect or control autonomous weapon systems.
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<p>2.2.1. Be certain that there are adequate environmental limits in place, including spatial and temporal limits;</p> <p>2.2.2. Be fully aware and approve any decision on determining the operational context through a sufficient level of situational awareness;</p> <p>2.2.3. Be certain on the reliability and predictability in the identification, selection and engagement of targets;</p> <p>2.2.4. Take the necessary precautions during the conduct of operations to ensure that a weapons system is not able to change mission parameters without human validation.</p> <p>2.2.5. Allow for constant human supervision and ensure intervention where necessary as to be able to:</p> <p>2.2.5.1. Interrupt and deactivate the weapon during its operation phase;</p> <p>2.2.5.2. Verify that auto-deactivation features operate as intended, in particular when required by the legal assessment of the user.</p> <p>3. [...] It is the responsibility of commanders and operators to ensure that they can comply with their legal obligations in the deployment and use of weapons with autonomous functionalities.[...]</p> <p>Any further recommendations shall be grounded so as to preserve human control and to avoid any accountability gap.</p>	<p>and validation of the rules of operation, use and engagement;</p> <ul style="list-style-type: none"> • operation of the system within a responsible chain of human command and control; • accountability in the event of IHL violations: <ul style="list-style-type: none"> - measures enabling an after action review of the system to assess compliance with IHL of a system, unless technically or operationally not feasible; - mechanisms to report violations, investigation by States of credible allegations of IHL violations by their armed forces, their nationals or on their territory; - disciplinary procedures and prosecution of suspected perpetrators of grave breaches of IHL as appropriate. <p>b. To operationalise the general provision 2c, an appropriate/sufficient scheme of human control considered during the whole life cycle of the system, must be put in place, taking into account the system's characteristics and its operational framework:</p> <ul style="list-style-type: none"> • Overall. Humans must have sufficient assurance that weapons systems, once activated, act in a foreseeable manner in order to determine that their actions are entirely in conformity with applicable national and international law, rules of engagement, and the intentions of its commanders and operators. For this purpose, developers, commanders and 	<p>systems based on emerging technologies in the area of LAWS is in compliance with applicable international law, in particular international humanitarian law.</p> <p>In determining the quality and extent of human-machine interaction, a range of factors should be considered including the operational context, and the characteristics and capabilities of the weapons system as a whole. (Guiding Principle (c))</p> <p>20. At various stages of the life-cycle of a weapon, the following good practices related to human-machine interaction can strengthen compliance with international humanitarian law, strengthen accountability, and mitigate risks in the use of weapons systems based on emerging technologies in the area of LAWS:</p> <ul style="list-style-type: none"> a. Conducting legal reviews (2019 GGE Report ¶23b), including the practices described in paragraph 24; b. Conducting rigorous testing and evaluation of systems (2019 GGE Report ¶23b), such as to ensure that they function as anticipated in realistic operational environments; c. Providing for physical security and appropriate non-physical safeguards, including cyber security against hacking or data spoofing (Guiding Principle (f)); d. Incorporating readily understandable human-machine interfaces and controls (2019 GGE Report ¶23b); 		<p><u>General commitments</u></p> <p>16. Agree to prohibit the development, production, possession, acquisition, deployment, transfer or use under any circumstances of AWS if:</p> <p>16.1. its autonomous functions are designed to be used to conduct attacks outside a responsible chain of human command and control;</p> <p>19. Recognize the need to implement regulations to ensure that all weapon systems incorporating autonomy must be used with meaningful human control.</p>
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<p>Human-Machine Interaction</p> <p>This would be an overarching theme throughout the whole document. The document would need to address the level of human involvement is necessary to achieve the IHL ends. How does this involvement vary across different systems and in different environments in order to meet the best outcomes in terms of applying the principles of IHL? Equally what are the implications of autonomous systems for chains of accountability and the need for humans to be accountable for IHL outcomes?</p>			<ul style="list-style-type: none"> • during the deployment: define and validate rules of use and rules of engagement as well as a precise framework for the mission assigned to the system (objective, type of targets etc.), in particular by setting spatial and temporal limits that may vary according to the situation and context, and monitor the reliability and usability of the system; • when using: humans should also exercise their judgement with regard to compliance with rules and principles of IHL, in particular distinction, proportionality and precautions in attack, and thus take critical decisions over the use of force. This includes human approval for any substantial modification of the mission's parameters; communication links; ability to de-activate the system if and when necessary, unless technically not feasible. 	
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	<p>operators must have a sufficient understanding of the weapons systems' way of operating, which enable the commanders and operators to predict (prospective focus) and explain (retrospective) the behavior of the weapons systems.</p> <ul style="list-style-type: none"> • Development. Testing and certification procedures to assess the reliability and the predictability of the system and its potential interaction with the environment of use and to allow for the required legal review; • Deployment. Definition or validation by the human command of a precise set of parameters for the system's mission (objective, type of targets, restrictions in time and space, etc.); • Use. Set of measures enabling human operators to assess and ensure compliance with IHL – in particular principles of distinction, proportionality and precautions in attack – during operation: human approval for any substantial modification of the mission's parameters; communication links; ability to de-activate the system if and when necessary, unless technically not feasible. 	<ul style="list-style-type: none"> e. Establishing policies, doctrine and procedures (based on 2019 GGE Report ¶23b), such as guidance on the ethical development and use of emerging technologies; f. Training personnel (2019 GGE Report ¶23b), such as training to enable system operators and commanders to understand the functioning, capabilities, and limitations of the system's autonomy in realistic operational conditions; g. Ensuring a domestic legal framework under which a State can hold its personnel accountable; h. Circumscribing weapons use through appropriate rules of engagement (2019 GGE Report ¶23b); i. Conducting operations under a responsible command; j. Reporting incidents that may involve violations; k. Conducting assessments, investigations, or other reviews of incidents that may involve violations; and l. Taking measures to mitigate the risk of unintended engagements, such as those described in paragraph 29. 		
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6. RESPONSIBILITY AND ACCOUNTABILITY

Elements for a legally binding instrument to address the challenges posed by autonomy in weapon systems	Outline for a Normative and Operational Framework on Emerging Technologies in the Area of LAWS	Principles and Good Practices on Emerging Technologies in the Area of Lethal Autonomous Weapons Systems	Protocol VI	Roadmap Towards New Protocol on Autonomous Weapons Systems
<p>Draft Legally Binding Instrument on Prohibitions and Regulations</p> <p>3. States should ensure that there are means to conduct effective investigations, prosecution and punishment for violations incurred during the use of weapons with autonomous functionalities, so as to ensure individual responsibilities. It is the responsibility of commanders and operators to ensure that they can comply with their legal obligations in the deployment and use of weapons with autonomous functionalities.</p>	<p>I. Normative Framework “Operative” part</p> <p>2. The normative framework could then affirm a number of principles for the development and use of weapons systems in the area of LAWS. This “operative” part should build on the already endorsed 11 guiding principles, while elaborating further on the issue of human-machine interaction:</p> <p>c. Agreement by the HCP that lethal weapons systems featuring autonomy must only be developed, produced, acquired, modified, deployed and used in accordance with the following provisions:</p> <ul style="list-style-type: none"> • Preserve human responsibility and accountability (see guiding principles b and d) at all times, in all circumstances and across the entire life cycle as basis for state and individual responsibility – human responsibility and accountability can never be transferred to machines. This requires spatial and temporal limits on such weapons systems that may vary according to the situation/context of their employment. 	<p>Responsibility and Accountability</p> <p>16. General Considerations. The following principles related to accountability and responsibility, although not exhaustive, should be considered across the entire life cycle of weapons systems based on emerging technologies in the area of LAWS:</p> <p>a. Human responsibility for decisions on the use of weapons systems must be retained since accountability cannot be transferred to machines. (Guiding Principle (b))</p> <p>b. Humans must at all times remain accountable in accordance with applicable international law for decisions on the use of force. (Sixth RevCon Declaration ¶20 / 2018 GGE Report ¶23a)</p> <p>17. Responsibility and International Humanitarian Law. International humanitarian law imposes obligations on States, parties to armed conflict, and individuals, not machines. (2019 GGE Report ¶17b).</p> <p>a. States, parties to armed conflict, and individuals remain at all times responsible for adhering to their</p>	<p>Article 2: Characterization</p> <p>For the purpose of this Protocol:</p> <p>Sec. 2: “Meaningful human control” refers to the threshold of application of human judgment and intervention necessary to ensure the maintenance of human agency, responsibility, proportionality and accountability in undertaking decisions regarding the use of any weapon and the ability of human operators to effectively supervise any weapon, undertake the necessary interaction that could either be directive or preventive, and to deactivate, terminate, or abort the operation of the weapon altogether.</p> <p>Article 3: Prohibitions and Regulations</p> <p>Sec. 5: Each High Contracting Party shall develop regulations for due register, tracking and analysis of AWS, thus allowing for accountability for both all chain of command and fabrication and development.</p>	<p>I. Recognize the common grounds</p> <p>2. The importance of ensuring that human beings retain decisions with regard to the use of force, exert control over weapon systems that they use, and remain accountable for decisions over the use of force.</p> <p>11. The need to ensure that, in accordance with the principle of state responsibility, every internationally wrongful act of a state, including such other actions or omissions involving the use of AWS, entails the international responsibility of that state;</p> <p>II. Elaborate these common grounds</p> <p><u>Introduction</u></p> <p>4. Affirm that responsibility and accountability for decisions on the use of force must be retained by humans, since this cannot be transferred to machines.</p> <p><u>General Commitments</u></p> <p>20. Reaffirm that every internationally wrongful act of a state, including such conduct involving AWS, entails the international responsibility of that state.</p> <p>21. Reaffirm that the conduct of a state’s organs such as its agents and all persons forming part of its armed forces,</p>

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		<p>5. Responsibility</p> <p>Responsibility for the use of LAWS bears a person operating the robot system or "programming" and giving an order to use LAWS. Responsibility for the decision to apply LAWS rests with the relevant officer.</p> <p>When setting combat missions, commanders of different ranks must assess potential threats for civil population and facilities, and, if the use of such weapon is imperative, take all possible measures to prevent losses, including among civilians.</p>	<p>II. In order to operationalize the two-tier approach, the HCP should:</p> <p>[...]</p> <p>c. human responsibility and accountability is preserved (see guiding principles b and d) at all times, in all circumstances and across the entire life cycle as basis for State and individual responsibility and can never be transferred to machines. To that end, the following measures and policies should be implemented:</p> <ul style="list-style-type: none"> • on responsibility: doctrines and procedures for the use of lethal weapons systems featuring autonomy; adequate training for human decision makers and operators to understand the system's effect and its likely interaction with its environment; operation of the system within a responsible chain of human command, including human responsibility for decisions to deploy and for the definition and validation of the rules of operation, use and engagement; • on accountability: measures enabling an after action review of the system to assess compliance with IHL of a system, unless 	<p>2. Emphasise that human beings must make the decisions with regard to the use of force, exert control over weapons systems that they use, and remain accountable for decisions over the use of force in order to ensure compliance with international law, in particular International Humanitarian Law.</p>

	<p>II. Operational Framework</p> <p>3. To operationalise the principles enshrined in the normative framework, the High Contracting Parties could agree on a compilation of measures and policies, to be implemented at national level:</p> <p>a. To operationalise the general provision related to preserving human responsibility and accountability:</p> <ul style="list-style-type: none"> • doctrines and procedures defined for the use of lethal weapons systems featuring autonomy; • adequate training for human decision makers and operators to understand the system's effect and its likely interaction with its environment; • human responsibility for decisions to deploy and for the definition and validation of the rules of operation, use and engagement; • operation of the system within a responsible chain of human command and control; • accountability in the event of IHL violations: <ul style="list-style-type: none"> - measures enabling an after action review of the system to assess compliance with IHL of a system, unless technically or operationally not feasible; - mechanisms to report violations, investigation by States of credible allegations of IHL violations by their armed forces, their nationals or on their territory; - disciplinary procedures and prosecution of suspected perpetrators of grave breaches of IHL as appropriate. 	<p>obligations under applicable international law, including international humanitarian law.</p> <p>b. States must also ensure individual responsibility for the employment of means or methods of warfare involving the potential use of weapons systems based on emerging technologies in the area of LAWS in accordance with their obligations under international humanitarian law. (2019 GGE Report ¶17c)</p> <p>18. State Responsibility. Under principles of State responsibility:</p> <p>a. Every internationally wrongful act of a State, including such conduct involving the use of a weapons system based on emerging technologies in the area of LAWS, entails the international responsibility of that State.</p> <p>b. The conduct of a State's organs such as its agents and all persons forming part of its armed forces, is attributable to the State. This includes any such acts and omissions involving the use of a weapons system based on emerging technologies in the area of LAWS, in accordance with applicable international law.</p>		<p>is attributable to that state. In accordance with IHL, IHRL, and ICL, this includes any such acts and omissions involving the use of AWS.</p>
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			<p>technically or operationally not feasible; mechanisms to report violations, investigation by States of credible allegations of IHL violations by their armed forces, their nationals or on their territory;</p> <ul style="list-style-type: none">• disciplinary procedures and prosecution of suspected perpetrators of grave breaches of IHL as appropriate.	
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7. LEGAL REVIEWS

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<p>Legal Weapons Review</p> <p>Legal weapons review must include an assessment that allows for the understanding of the attributes and effects in weapons with autonomous capabilities, as well as its conformity with international humanitarian law and international law, in particular:</p> <ol style="list-style-type: none"> 1. Evaluate its technical performance, including in terms of reliability and predictability and whether its foreseeable effects are capable of being limited to military objectives and controlled in time and space; 2. Confirm its intended or expected use; and 3. Confirm the placement of adequate limits on tasks and types of targets. <p>Legal reviews of weapons autonomous functionalities should adopt a precautionary approach and deny authorization when there might be less than full certainty of all the characteristics listed in the paragraph above.</p>	<p>II. Operational Framework</p> <p>3. To operationalize the principles enshrined in the normative framework, the High Contracting Parties could agree on a compilation of measures and policies, to be implemented at national level:</p> <p>c. With regard to legal reviews:</p> <ul style="list-style-type: none"> • An encouragement to States that have not yet done so to join Additional Protocol I to the Geneva Conventions or to recognize the obligation to conduct legal weapon reviews on a unilateral basis. • An encouragement to voluntary exchanges of information and good practices within the committee of technical experts as a confidence building measure. 	<p>Legal Reviews</p> <p>21. In accordance with States' obligations under international law, in the study, development, acquisition, or adoption of a new weapon, means, or method of warfare, including such potential weapons systems based on emerging technologies in the area of LAWS, determination must be made whether its employment would, in some or all circumstances, be prohibited by international law. (based on Guiding Principle (e))</p> <p>22. Legal reviews, at the national level, in the study, development, acquisition, or adoption of a new weapon, means, or method of warfare are a useful tool to assess nationally whether potential weapons systems based on emerging technologies in the area of LAWS would be prohibited by any rule of international law applicable to that State in all or some circumstances. States are free to independently determine the means to conduct legal reviews, although the voluntary exchange of best practices could be beneficial, bearing in mind national security considerations or commercial restrictions on proprietary information. (2019 GGE Report ¶17i)</p>	<p>Article 4: Review of Weapons</p> <p>Sec. 1: Each High Contracting Party shall ensure that weapon systems under development or modification which changes the effects or use of existing weapon systems, including as a result of self-learning process, must be reviewed to ensure compliance with international law.</p> <p>Sec. 2: Each High Contracting Party shall be transparent regarding all aspects of the development of autonomous weapon systems across their entire life cycle, including national processes for reviewing them, taking into account the system's self-learning capabilities.</p> <p>Sec. 3: Each High Contracting Party shall identify and share on a voluntary basis information and good practices on the conduct of review of autonomous weapon systems.</p> <p>Sec. 4: Each High Contracting Party shall ensure the integration of inter-disciplinary perspective in research and development of autonomous weapon systems bearing in mind national security considerations and restrictions on commercial proprietary information.</p>	<p>I. Recognize the common grounds</p> <p>8. The importance of the obligation of states to conduct national weapons review to determine, in the study, development, acquisition, or adoption of a new weapon, means, or method of warfare, whether its employment would, in some or all circumstances, be prohibited by international law;</p> <p>II. Elaborate these common grounds</p> <p><u>National Weapons Review</u></p> <p>23. Reaffirm that states have obligations under international law whereby, in the study, development, acquisition, or adoption of a new weapon, means or method of warfare, determination must be made whether its employment would, in some or all circumstances, be prohibited by international law.</p> <p>24. Recognize that legal weapon reviews at the national level are a useful tool to assess nationally whether potential weapons systems based on emerging technologies in the area of lethal autonomous weapons systems would be prohibited by any rule of international law applicable to that state in all or some circumstances.</p>

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<p>ANNEX A – a possible outline Article 36 Weapon Reviews</p> <ul style="list-style-type: none"> • In the context of autonomous systems what information and level of understanding is necessary to inform an effective weapons review? • Does the inclusion of AI functionality make a difference in relation to the scope of the review or the resulting authorisation? • Does machine learning necessitate re-review and authorisation? If so how is this built into the review process and operationalised to ensure that the system does not exceed authorities? • How should the approval parameters applied to the system as a result of a weapons review be best effected through the authorisations process and through into Rules of Engagement (RoE)? 		<p>2. LAWS in the IHL context</p> <p>[...]</p> <p>In line with Article 36 of Additional Protocol I (AP1) to the 1949 Geneva Conventions, in the study, development, acquisition or adoption of LAWS, it should be determined whether their employment would, in some or all circumstances, fall under the prohibitions of international law norms. Besides, it should be concluded whether they are in violation of the principles of international humanitarian law: legality, distinction, proportionality, humanity and military necessity, as enshrined in AP I (contained in paragraph 17 of the International Humanitarian Law Manual for the Armed Forces of the Russian Federation of 8 August 2001).</p> <p>Precautions contained in Articles 57 and 58 of AP I are to be taken with respect to attacks. It is banned to use LAWS by prohibited ways (methods) of warfare listed in Section II of the International Humanitarian Law Manual for the Armed Forces of the Russian Federation. The said provisions are reproduced in the Section</p>	<p>II. In order to operationalize the two-tier approach, the HCP should:</p> <p>[...]</p> <p>2. Commit to only develop, produce, acquire, modify, deploy or use lethal weapons systems featuring autonomy when the following provisions are fulfilled: a) compliance with international law is ensured when studying, acquiring, adopting or modifying (legal review – see guiding principle e) and using lethal weapons systems featuring autonomy;</p> <p>b. appropriate human control is retained during the whole life-cycle of the system considered (see guiding principle c) by ensuring that humans will be in a position to, inter alia:</p> <p>[...]</p> <ul style="list-style-type: none"> • during the development phase: evaluate the reliability and predictability of the system, by applying appropriate testing and certification procedures, and assess compliance with IHL through legal reviews. 	<p>12. Recall the obligation for States to conduct national weapon reviews, as codified in Article 36 of Additional Protocol I to the Geneva Conventions, to determine, in the study, development, acquisition or adoption of a new weapon, means or method of warfare, whether its employment would, in some or all circumstances, be prohibited by international law.</p> <p>While not sufficient to deal with all issues autonomous weapons systems raise, weapon reviews play an important complementary role and there is value in strengthening such reviews.</p>

23. Weapons systems based on emerging technologies in the area of LAWS under development, or modification that significantly changes the use of existing weapons systems, must be reviewed as applicable to ensure compliance with international humanitarian law. (based on 2018 GGE Report ¶23(c))

24. Legal reviews of weapons systems based on emerging technologies in the area of lethal autonomous weapons systems can include the following good practices:

a. The legal review considers whether the weapon is of a nature to cause superfluous injury or unnecessary suffering, or if it is inherently indiscriminate, or is otherwise incapable of being used in accordance with international humanitarian law. (building on and implementing paragraph 10 above)

b. If the use of the weapon is not prohibited, the legal review considers whether the use of the weapon is subject to the rules in any CCW Protocols or other rules applicable to certain types of weapons, applicable to the State in question.

c. The legal review is conducted with an appropriate understanding of the weapons' capabilities and limitations, its planned uses, and its anticipated effects in those circumstances.

25. Reaffirm that, where feasible and appropriate, interdisciplinary perspectives must be integrated in research and development, including through independent ethics review, bearing in mind national security considerations and restrictions on commercial proprietary information.

on Specificities of Conducting Field Operations of the International Humanitarian Law Manual for the Armed Forces of the Russian Federation of 8 August 2001.

4. Ensuring compliance with IHL by the personnel of the Armed Forces in LAWS potential use

[...]

Legal support for operations carried out by troops (forces) in armed conflicts, including when carrying out missions of maintaining or restoring international peace and security with a view to ensure compliance with international humanitarian law in these circumstances is provided through:

[...]

- conducting legal review of draft combat and other documents.

		<p>d. The legal review advises on potential practical measures that would assist in ensuring compliance with international humanitarian law, such as the practices described in paragraph 20.</p>		
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8. RISK MITIGATION

Elements for a legally binding instrument to address the challenges posed by autonomy in weapon systems	Outline for a Normative and Operational Framework on Emerging Technologies in the Area of LAWS	Principles and Good Practices on Emerging Technologies in the Area of Lethal Autonomous Weapons Systems	Protocol VI	Roadmap Towards New Protocol on Autonomous Weapons Systems
<p>Conclusions</p> <p>Risks associated with ending of the arms race and building confidence among autonomous functionalities in weapons systems could be inherent/built in, thus further consideration is needed on the viability of mitigation measures particularly when dealing with categorizations that are context-dependent as prescribed by IHL (vg. distinction between combatants and non-combatants, or military targets or civilian objects).</p> <p>Furthermore, taking into account the irreversibility and magnitude of the risks we are dealing with (particularly with regard to decisions on life and death) the most effective way to address this is through prohibitions as risk avoidance measures and regulations as risk prevention/mitigations measures. Prohibitions and regulations once established, should then be operationalized through national implementation measures.</p>	<p>II. Operational Framework</p> <p>2. d. Commitment by the HCP to adopt and implement tailored risk mitigation measures and appropriate safeguards regarding safety and security. (see guiding principles f and g)</p> <p>e. Establishment of a committee of technical experts within the CCW to monitor technological evolutions related to emerging technologies in the area of lethal autonomous weapons systems [see proposal from the Franco-German non-paper shared at the November 2017 GGE].</p> <p>SECTION II – OPERATIONAL FRAMEWORK</p> <p>To operationalize the principles enshrined in the normative framework, the High Contracting Parties could agree on a compilation of measures and policies, to be implemented at national level:</p> <p>3. d. With regard to appropriate safeguards:</p> <ul style="list-style-type: none"> • adoption of measures to prevent the diversion of lethal weapons systems featuring autonomy (i.e. by regulating the production, acquisition and transfers of such systems); 	<p>Good Practices Related to Human-Machine Interaction</p> <p>20. At various stages of the life-cycle of a weapon, the following good practices related to human-machine interaction can strengthen compliance with international humanitarian law, strengthen accountability, and mitigate risks in the use of weapons systems based on emerging technologies in the area of LAWS:</p> <p>[...]</p> <p>c. Providing for physical security and appropriate non-physical safeguards, including cyber security against hacking or data spoofing (Guiding Principle (f));</p> <p>Risk Assessments and Mitigation Measures</p> <p>25. Risk assessments and mitigation measures should be part of the design, development, testing, and deployment cycle of weapons systems based on emerging technologies in the area of LAWS. (based on Guiding Principle (g))</p> <p>26. During the design, development, testing, and deployment of weapons systems based on emerging technologies in the area of LAWS, the risks, inter</p>	<p>Article 5: Risk mitigation</p> <p>Sec. 1: Each High Contracting Party shall ensure effective and comprehensive risk assessments and mitigation measures as part of the entire life cycle of emerging technologies in the area of autonomous weapon system.</p> <p>Sec. 2: Each High Contracting Party shall ensure physical security; appropriate non-physical safeguards including cyber-security against hacking or data spoofing, and measures to reduce the risk of diversion to unintended persons/entities; and/or acquisition by non-state actors, including terrorist groups; and of proliferation when developing or acquiring autonomous weapon systems.</p> <p>Sec. 3: There should be regular provision of capacity-building activities covering risk mitigation in the development of autonomous weapon systems.</p>	<p>I. Recognize the common grounds</p> <p>4. The importance of relevant ethical perspectives in addressing these risks and challenges;</p> <p>12. The importance of ensuring physical security and appropriate non-physical safeguards, including cybersecurity against hacking or data spoofing, and of considering the risk of acquisition by terrorist groups and the risk of proliferation.</p> <p>II. Elaborate these common grounds</p> <p>Introduction</p> <p>2. Recognize the risks and challenges posed by autonomous weapon systems to:</p> <p>2.1. Compliance with international law, including IHL, international human rights law (IHRL), and international criminal law (ICL);</p> <p>2.2. ethical considerations, including undermining of human dignity, loss of human agency and erosion of moral responsibility and accountability in the use of force;</p> <p>2.3. Humanitarian considerations; and</p> <p>2.4. Non-proliferation and the maintenance of international peace</p>

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<p><u>ANNEX A – a possible outline Testing And Evaluation</u></p> <p>This section would set out what might be involved in the robust assessments of a system, and what practices help to provide confidence in its performance within the intended context of use. Acknowledging the through-life process, activities within this section would focus on compliance with the requirements documents, and legal, regulation and certification requirements. Potential areas for further clarification could include:</p> <ul style="list-style-type: none"> • How can bias and unintended harms, whether through their original rollout or as they learn, change and are redeployed, be identified and eliminated? • How is risk best calculated? • How are systems best regulated or certified? • What is good practice in identifying and implementing appropriate constraints? • How is complexity best managed? What levels of understanding are acceptable? Would we need to consider T&E at a system of systems level as well as at the individual system level? 	<p>III. Unacceptable Autonomous Weapons Systems and Acceptable Autonomous Weapons Systems</p> <p><i>Acceptable Autonomous Weapons Systems</i> could have a high degree of autonomy, but are always under human control. It means they can be used in a secure, credible, reliable and manageable manner, can be suspended by human beings at any time and comply with basic principles of international humanitarian law in military operations, such as distinction, proportionality and precaution.</p> <p>For such weapons systems, China supports countries to take necessary risk mitigation measures and implement a tiered and categorized regulation in particular.</p> <p>Countries should fully take into account the inherent characteristics of autonomous weapons systems, the confrontation on the modern battlefields, the complex and open environment and other factors. Countries should decide on their own specific measures and implementation mechanism based on their own national situation.</p>	<p>6. Measures aimed at increasing IHL compliance when developing and using LAWS</p> <p>Given the specificities of technologies in the area of LAWS, efforts should be made to ensure information security. This can be facilitated through addressing the following tasks:</p> <ul style="list-style-type: none"> • enhancing information security in the Armed Forces, other branches, military units and bodies, as well as developers and manufacturers of weapons, military and specialized equipment; • strengthening cooperation among states in the area of ensuring information security, aimed, inter alia, at establishing an international legal regime of guaranteeing security in the sphere of information and communication technologies use. <p>Furthermore, there is a need for improving mechanisms of ensuring global and regional collective security, implementing and developing, as appropriate, confidence-building measures, and preventing military incidents.</p> <p>Focus should be placed on taking into account ethical considerations</p>	<p>II. In order to operationalize the two-tier approach, the HCP should:</p> <p>[...]</p> <p>d. Tailored risk mitigation measures and appropriate safeguards regarding safety and security (see guiding principles f and g) are adopted and implemented.</p>	<p>6. Recall the renewed determination, as expressed in the Final Declaration of the 6th CCW Review Conference, to intensify multilateral efforts to address the risks of emerging technologies in the area of autonomous weapons systems, taking into consideration, inter alia, the legal, military and technological aspects bearing in mind ethical perspectives.</p> <p>7. Emphasise that this determination is based on the shared view that there is an urgent requirement for the international community to address the particular risks and challenges posed by the integration of autonomy in weapons systems through the development of effective and multilaterally agreed rules, limits and other measures for such systems.</p>

• implementation of measures to increase resilience against cyberattacks and, unless technically not feasible, procedures or mechanisms enabling the human operator to deactivate the system/self-deactivation/self-destruction mechanisms if the system overrides the framework of its mission without human validation.

alia, of civilian casualties, as well as precautions to help minimize the risk of incidental loss of life, injuries to civilians, and damage to civilian objects must be considered. Other types of risks should be considered, as appropriate, including but not limited to the risk of unintended engagements, risk of loss of control of the system, risk of proliferation, and risk of acquisition by terrorist groups. (2019 GGE Report ¶23a)

27. Where feasible and appropriate, verifiability and certification procedures covering all likely or intended use scenarios must be developed. The experience of applying such procedures should be shared, bearing in mind national security considerations and restrictions on commercial proprietary information. (based on 2018 GGE Report ¶23d)

28. Where feasible and appropriate, interdisciplinary perspectives must be integrated in research and development, including through independent ethics reviews, bearing in mind national security considerations and restrictions on commercial proprietary information. (2018 GGE Report ¶23b)

29. Measures to mitigate the risk of unintended engagements (e.g., engagements against civilians, civilian objects, or unintended military targets) involving weapons systems based on emerging technologies in the area of LAWS, can include measures across the life-cycle of the weapons system to:

and security, including thresholds for armed conflict and new arms races.

3. Recognize that new legally binding rules and principles are needed to safeguard against such risks and challenges.

General Commitments

17. Recognize the need to address the risks and challenges posed by AWS that rely on data sets that can perpetuate or amplify unintentional social biases, including gender and racial bias.

Risk Mitigation

26. Affirm that, when developing or acquiring new AWS, physical security, appropriate non-physical safeguards, including cyber-security against hacking or data spoofing, the risk of acquisition by terrorist groups and the risk of proliferation should be considered.

27. Affirm that, during the design, development, testing and deployment of AWS, the risks inter alia of civilian casualties, as well as precautions to help minimize incidental loss of life, injuries to civilians and damage to civilian objects must be considered. Other types of risks should be considered, as appropriate, including but not limited to the risk of unintended engagements, risk of loss of control of the system, risk of proliferation, and risk of acquisition by terrorist groups.

28. Agree that risk mitigation measures to help minimize incidental loss of life, injuries to civilian and damage to

<p>Training and planning for use</p> <p>Linked to the above section, this would set out how states might best ensure a system is understood by those who would operate it. Potential areas for further clarification could include:</p> <ul style="list-style-type: none"> • How are unforeseen circumstances mapped? • How are necessary constraints identified and implemented? • How might different interactions (based on geography, time) be accounted for? 	<p>China supports all parties to conduct exchanges and cooperation on risk mitigation measures through case studies, scenario workshop, practice exchanges, etc.</p>	<p>on human-artificial intelligence (AI) interaction. An important enabler for AI development is improvement of accessibility and quality of data used in the relevant elaboration process.</p> <p>It is likewise important to promote the voluntary exchange of relevant experiences and best practices between states.</p>		
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		<p>a. control, limit, or otherwise affect the types of targets that the system can engage;</p> <p>b. control, limit, or otherwise affect the duration, geographical scope, and scale of the operation of the weapons system, such as the incorporation of self-destruct, self-deactivation, or self-neutralization mechanisms into munitions and weapons systems;</p> <p>c. reduce automation bias in system operators as well as unintended bias in artificial intelligence capabilities relied upon in connection with the use of the weapon system; and</p> <p>d. otherwise enhance control or improve decision-making over the use of force, including relating to timing, precision, and accuracy.</p>		<p>civilian objects resulting from the use of AWS may include, inter alia: (a) incorporating self-destruct, self-deactivation, or self-neutralization mechanisms into weapon systems; (b) measures to control the types of targets that the system can engage; (c) measures to control the duration and geographical scope of the weapons system; and (d) clear procedures for trained human operators to activate or deactivate functions in weapons systems.</p> <p>29. Agree that risk assessments and mitigation measures should be part of the design, development, testing and deployment and use cycle of emerging technologies in any weapons systems, including weapons systems based on emerging technologies in the area of lethal autonomous weapons systems.</p>
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9. ETHICAL CONSIDERATIONS

Elements for a legally binding instrument to address the challenges posed by autonomy in weapon systems	Outline for a Normative and Operational Framework on Emerging Technologies in the Area of LAWS	Principles and Good Practices on Emerging Technologies in the Area of Lethal Autonomous Weapons Systems	Protocol VI	Roadmap Towards New Protocol on Autonomous Weapons Systems
<p>Introduction</p> <p>Technology plays a central role in international relations; it shapes the way states fight during wartime and compete during peacetime. In this regard, emerging technologies pose concrete challenges to peace, stability and security and raise new fundamental ethical, legal, political and humanitarian questions about how power is understood and used, and the role of humans in warfare.</p> <p>[...]</p> <p>Background</p> <p>[...]</p> <p>If the CCW is to remain relevant and responsive to the challenges that increased incorporation of autonomous functionalities in weapon systems entail, it should take developments in other fora into account.</p> <p>The CCW does not operate in a vacuum.</p> <p>Thus a holistic, multidimensional understanding of the effects of the incorporation of autonomy in weapon systems is needed in order to fully grasp its shaping, potential annulation or magnifying effects over human agency and how this impacts upholding of ethical imperatives, compliance</p>	<p>I. Normative Framework Preambular part</p> <p>This part of the normative framework could include:</p> <ul style="list-style-type: none"> • A general reference to international law (in particular IHL) and the “relevant ethical perspectives” which have guided the works of the HCP. 	<p>Preamble and Introduction</p> <p>Reaffirming that international law, in particular the United Nations Charter and International Humanitarian Law (IHL) as well as relevant ethical perspectives, should guide continued consideration and elaboration, by consensus, of possible measures and options related to the normative and operational framework on emerging technologies in the area of lethal autonomous weapons systems (LAWS);</p> <p>Good Practices Related to Human-Machine Interaction</p> <p>20. At various stages of the life-cycle of a weapon, the following good practices related to human-machine interaction can strengthen compliance with international humanitarian law, strengthen accountability, and mitigate risks in the use of weapons systems based on emerging technologies in the area of LAWS:</p> <ul style="list-style-type: none"> e. Establishing policies, doctrine and procedures (based on 2019 GGE Report ¶23b), such as guidance on the ethical development and use of emerging technologies. 	<p>Article 1: General Provisions</p> <p>[...]</p> <p>Sec. 2: In conformity with the Charter of the United Nations and of the rules of applicable international law, the High Contracting Parties agree to comply with the obligations specified in this Protocol, to address the serious ethical, legal, humanitarian and security risks and challenges posed by the development of emerging autonomous weapon systems.</p>	<p>I. Recognize the common grounds</p> <p>4. The importance of relevant ethical perspectives in addressing these risks and challenges;</p> <p>II. Elaborate these common grounds</p> <p><u>Introduction</u></p> <p>2. Recognize the risks and challenges posed by autonomous weapon systems to:</p> <p>2.2. Ethical considerations, including undermining of human dignity, loss of human agency and erosion of moral responsibility and accountability in the use of force;</p> <p><u>Ethical considerations</u></p> <p>14. Recognize that autonomous weapon systems could raise three main ethical concerns, namely the possible loss of human dignity in the process of using force, the possible loss of human agency in the decision to use force, and the erosion of moral responsibility and accountability for decisions to use force.</p> <p>15. Recall that the Martens’ Clause, which is a customary</p>

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<p>Introduction</p> <p>CCW High Contracting Parties have long agreed the need for substantial progress in the area of Lethal Autonomous Weapons Systems. Central to this is the need to increase understanding and agreement of the ways in which systems with autonomy can be developed and used ethically, responsibly and in compliance with International Humanitarian Law (IHL).</p> <p>The Document – Possible Structure and Contents</p> <p>Best practice and commentary may also address questions of ethics in an applied and context appropriate manner. This prevents the 'ethics issue' becoming an intangible catch-all which defies inclusion in either consideration of the legal framework or as a matter of practice. Rather it frames, as far as possible, ethical concerns at each stage of the weapon's lifecycle and informs best practice on the basis of the concern. An ethical concern in relation to research methodology and an ethical concern</p>	<p>III. Unacceptable Autonomous Weapons Systems and Acceptable Autonomous Weapons Systems</p> <p>[...]</p> <p>Personnel who develop and use such weapons systems must receive comprehensive and systematic training, and observe ethics and relevant laws. At the same time, considering the rapid development of relevant technologies, the international community could consider formulating ethical norms as a priority, put people's well-being at the center and follow the principle of AI for good. Such norms will guide countries to follow the common values of humanity such as peace, development, fairness, justice, democracy and freedom, and observe national or regional ethical norms in the development, deployment and use of relevant weapons systems.</p>	<p>Definitions</p> <p>[...]</p> <p>The definition of LAWS should meet the following requirements:</p> <p>[...]</p> <p>be universal in terms of the understanding by the expert community comprising scientists, engineers, technicians, military personnel, lawyers and ethicists.</p> <p>6. Measures aimed at increasing IHL compliance when developing and using LAWS</p> <p>[...]</p> <p>Focus should be placed on taking into account ethical considerations on human-artificial intelligence (AI) interaction. An important enabler for AI development is improvement of accessibility and quality of data used in the relevant elaboration process.</p>	<p>I. Within the Preambular part, the High Contracting Parties (HCP) to the CCW should:</p> <p>2. Reaffirm also international law (in particular the United Nations Charter and International Humanitarian Law) as well as relevant ethical perspectives which guide the work of the HCP;</p>	<p>9. Recognise as a fundamental starting point that autonomous weapon systems that cannot be used in accordance with international humanitarian law, must not be developed, deployed or used and are de facto already prohibited. Also recognise that autonomous weapons systems that would select and engage targets without any human control, would not only be unlawful; they would also be questionable from an ethical point of view, particularly with regard to human dignity.</p> <p>10. Commit to work collaboratively to prohibit autonomous weapons systems that are not sufficiently predictable or controllable to meet legal requirements, and in a manner that addresses ethical imperatives.</p>

with international law, international humanitarian law and international human rights law as well as its impact on international security.

[...]

Beyond the very real concerns regarding the feasibility of weapons which incorporate autonomous functionalities to operate within legal constraints (vg. issues of predictability and reliability), the ethical perspective should guide the work of the GGE on retaining human agency and intent in the decisions to use force, specifically on matters of life and death.

[...]

Ethical concerns, likewise, have not been sufficiently considered in the context of the GGE LAWS. The ethical considerations in our discussions must not be reduced to simply informing the legal analysis of a given situation: not everything illegal is unethical and vice versa. Precisely because of their impact on the right to life and human dignity, the use of force, increasingly mediated through technology, must consider the wider ethical and societal implications as the main parameters to confront these challenges.

Draft Legally Binding Instrument on Prohibitions and Regulations

Taking into account the specific ethical, legal and societal questions and international security related concerns raised when removing human decision making from the application of

international law that brings together law and ethics, is particularly relevant in assessing new technologies and new means and methods of warfare and provides that conscience in cases not addressed by existing treaties.

<p>in relation to command accountability are two entirely different concepts, both of which can benefit from a conceptual application through development of best practice guidelines.</p>				
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force, there is a clear need for establishing a set of specific rules to regulate at an international level, regarding weapons which incorporate autonomous functionalities.

[...]

Due to the challenges of autonomy in weapon systems, in order to fully comply with key legal obligations and ethical imperatives, States shall:

[...]

1.1. Prohibit

[...]

2. Positive obligations, in the form of regulations, should be developed to ensure humans exercise control in the use of weapons which incorporate autonomous functionalities, in line with their obligations under IHL and ethical requirements, notably in terms of:

[...]

Conclusions

The reflections mentioned above derive from the substantive discussions within the GGE LAWS for the past years. They provide a basis for a framework that while ensuring the full applicability of international law, including IHL, highlights the need to develop 7 additional legally binding norms based on ethical standards, to give an adequate normative response to the challenges posed by autonomy in weapon systems.

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10. PEACEFUL USES OF AI

Elements for a legally binding instrument to address the challenges posed by autonomy in weapon systems	Outline for a Normative and Operational Framework on Emerging Technologies in the Area of LAWS	Principles and Good Practices on Emerging Technologies in the Area of Lethal Autonomous Weapons Systems	Protocol VI	Roadmap Towards New Protocol on Autonomous Weapons Systems
	<p>I. Normative Framework Preambular part</p> <p>A recognition that an appropriate balance should be struck between the necessity to allow progress in or access to these dual-use emerging technologies (as recalled by guiding principle j), and the importance of taking into account humanitarian considerations and challenges with regard to IHL in the development and use of such technologies (c.f. guiding principle k).</p>	<p><i>Reaffirming</i> without prejudice to the result of future discussions, the following guiding principles, which were affirmed by the High Contracting Parties: (j) Discussions and any potential policy measures taken within the context of the CCW should not hamper progress in or access to peaceful uses of intelligent autonomous technologies.</p>	<p>Article 1: General Provisions</p> <p>[...]</p> <p>Sec. 3: Nothing in this Protocol shall hamper progress in, or the inherent right of every State to access to peaceful uses of emerging technologies including artificial intelligence.</p>	<p>I. Recognize the common grounds</p> <p>4. The principle that progress in or access to peaceful uses of intelligent autonomous technologies should not be hampered.</p> <p>II. Elaborate these common grounds</p> <p><u>General Commitments</u></p> <p>22. Agree that any discussion and any policy measure or instrument on AWS taken within the context of the Convention should not hamper the inalienable right of each High Contracting Party to access, development, research, production, and use of artificial intelligent technologies for peaceful purposes without discrimination.</p>

United Kingdom Proposal for a GGE Document on the Application of International Humanitarian Law to Emerging Technologies in the Area of Lethal Autonomous Weapon Systems (LAWS)	Working Paper of the People's Republic of China on LAWS (July 2022)	Working Paper of the Russian Federation "Application of International Law to Lethal Autonomous Weapons Systems (LAWS)"	Working Paper submitted by Finland, France, Germany, the Netherlands, Norway, Spain and Sweden to the 2022 Chair of the GGE on LAWS	Working Paper submitted to the 2022 Chair of the Group of Governmental Experts (GGE) on emerging technologies in the area of lethal autonomous weapons systems (LAWS)
		<p>Definition</p> <p>There is no consensus definition of LAWS in existing international law. Since the issue pertains to prospective types of weapons, the definition of LAWS should not be interpreted as limiting technological progress and detrimental to research on peaceful robotics and artificial intelligence.</p> <p>[...]</p>	<p>I. Within the Preambular part, the High Contracting Parties (HCP) to the CCW should:</p> <p>[...]</p> <p>3. Recognise that an appropriate balance should be struck between the necessity to allow progress in or access to dual-use emerging technologies (as recalled by guiding principle j), and the importance of taking into account humanitarian considerations and challenges with regard to IHL in the development and use of such technologies (c.f. guiding principle k).</p> <p>[...]</p>	<p>4. Recall and acknowledge the value of the conclusions and recommendations of the Group of Governmental Experts (GGE) on emerging technologies in the area of Lethal Autonomous Weapons (LAWS); the reports and summaries of the Chairs of the GGE; and the endorsement by the High Contracting Parties of the CCW in 2019 of the 11 Guiding Principles on LAWS.</p>

11. POTENTIAL BENEFITS OF AUTONOMY IN WEAPON SYSTEMS

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	<p>I. Regulating Military Application of Artificial Intelligence (AI)</p> <p>Military applications of AI should be conducive to improving the humanitarian situation on the modern battlefields by reducing combatant casualties, protecting civilians, and preventing escalation of unintended conflicts.</p> <p>II. Definition and Category of LAWS</p> <p>In terms of autonomy, the main purpose of autonomy is to reduce the dependence on human and external resources in military operations, to improve the adaptability to complex dynamic environment and survivability on the battlefields, and thus to better accomplish the battlefield missions assigned by human beings.</p>	<p>3. Potential benefits of the use of LAWS</p> <p>LAWS can show more efficiency than a human operator when performing the assigned tasks and reduce error probabilities. In the IHL context such systems are capable of considerably reducing the negative implications of the use of weapons related to the human operator's errors, his mental or physical state, moral, religious, and ethical attitudes.</p> <p>The use of highly automated technologies can ensure increased guidance accuracy of weapons targeting military assets, facilitate to reduce the risk of intentional strikes against civilians and civilian facilities. LAWS are devoid of weaknesses inherent in human beings. They do not act out of revenge, panic, or exasperation, and they are immune to prejudice or fear.</p> <p>Potential spheres of LAWS use may include: destruction of military objects; ensuring protection and security of strategic facilities (atomic power plants, dams, bridges, etc.); elimination of terrorist groups; protection of civilians.</p>		

