**Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons Which May Be Deemed to Be Excessively Injurious or to Have Indiscriminate Effects**

10 March 2023

English only

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**Group of Governmental Experts on Emerging Technologies in the Area of Lethal Autonomous Weapons System**
**Geneva, 6-10 March, and 15-19 May 2023**
Item 5 of the agenda
**Intensify the consideration of proposals and elaborate, by consensus, possible measures, including taking into account the example of existing protocols within the Convention, and other options related to the normative and operational framework on emerging technologies in the area of lethal autonomous weapon systems, building upon the recommendations and conclusions of the Group of Governmental Experts related to emerging technologies in the area of lethal autonomous weapon systems, and bringing in expertise on legal, military, and technological aspects**

## Non-exhaustive compilation of definitions and characterizations

### Submitted by the Chairperson

1.      This non-paper was prepared by the Implementation Support Unit of the Convention on Certain Conventional Weapons (CCW) at the request of the Chair of the Group of Governmental Experts (GGE) on emerging technologies in the area of LAWS, in order to facilitate discussions of the Group.

| Proponent(s) | Year | Reference document[1] | Characterizations/Definitions |
|---|---|---|---|
| **2023** | | | |
| State of Palestine | 2023 | CCW/GGE.1/2023/WP.2/ Rev.1 | 1. Autonomous Weapons Systems (AWS) are systems that, upon activation by a human user(s), use the processing of sensor data to select and engage a target(s) with force without human intervention. |
| Pakistan | 2023 | CCW/GGE.1/2023/WP.3 | 11. LAWS are not one or two types of weapons. Instead, they are a capability category i.e. a weapon system incorporating autonomy in its critical functions, specifically in target selection and engagement. The challenges associated with these weapon systems stem from this capability, which lends itself to layers of unpredictability and cascading impacts. |
| Australia, Canada, Japan, the Republic of Korea, the United Kingdom, and the United States | 2023 | CCW/GGE.1/2023/WP.4 | *Recognizing* that the research and development of new technologies in the field of artificial intelligence is progressing at a rapid pace, potentially enabling novel and more sophisticated weapons with autonomous functions, including those weapon systems that, once activated, can identify, select, and engage targets with lethal force without further intervention by an operator ("autonomous weapon systems" for the purposes of these draft articles and without prejudice to any other understandings of this or similar terms for other purposes). |
| **2022** | | | |
| Australia, Canada, Japan, the Republic of Korea, the United Kingdom and the United States | 2022 | CCW/GGE.1/2022/WP.2 | 17. 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: <br><br>(a) weapons systems must not be designed to be used to conduct attacks against the civilian population, including attacks to terrorize the civilian population; <br><br>(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; <br><br>(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; and <br><br>(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. |
| Argentina, Costa Rica, Guatemala, Kazakhstan, Nigeria, Panama, Philippines, Sierra | 2022 | CCW/GGE.1/2022/WP.3 | 12. 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. |

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[1] All reference documents may be found on ODS and/or on the webpage of the GGE on LAWS meeting for the corresponding year.

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| Leone, State of Palestine and Uruguay | | | 13. 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. |
| | | | 14. 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 |
| | | | "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. |
| Chile and Mexico | 2022 | CCW/GGE.1/2022/WP.5 | 18. (a) Due to the challenges of autonomy in weapon systems, in order to fully comply with key legal obligations and ethical imperatives, States shall: <br><br> • Prohibit the development and the use of weapons with autonomous functionalities that cannot be controlled by humans, therefore subject to cognitive and epistemological limitations. <br><br> • Prohibit the development and the use of weapons which incorporate autonomous functionalities that cannot be used in compliance with IHL, including weapons that: <br><br> • Cannot be directed at a specific military objective; <br><br> • Cause superfluous injury or unnecessary suffering; or <br><br> • Have effects that cannot be limited as required by IHL. <br><br> • Prohibit the development and use of weapons which incorporate autonomous functionalities whose effects cannot be sufficiently understood, predicted and explained. |
| China | 2022 | CCW/GGE.1/2022/WP.6 | 11. 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, meaning that through interaction with the environment, the device can learn autonomously, expand its |

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| | | | functions and capabilities in a degree exceeding human expectations. (…) |
| | | | 13. 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. |
| Finland, France, Germany, Italy, the Netherlands, Norway, Spain and Sweden | 2022 | CCW/GGE.1/2022/WP.7 | 4. On the basis of this approach, the following proposals are submitted for the consideration of the GGE with regard to a possible normative and operational framework on emerging technologies in the area of lethal autonomous weapons systems. In the framework of the GGE, States should commit to:<br><br>• outlaw fully autonomous lethal weapons systems operating completely outside human control and a responsible chain of command, as well as;<br><br>• 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. |
| Argentina, Ecuador, Costa Rica, El Salvador, Guatemala, Kazakhstan, Nigeria, Panama, the Philippines, Sierra Leone and Uruguay | 2022 | CCW/GGE.1/2022/WP.8 | 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. |
| Russian Federation | 2022 | CCW/GGE.1/2022/WP.9 | 3. 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.<br><br>4. The definition of LAWS should meet the following requirements:<br><br>• 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;<br><br>• not be limited to the current understanding of LAWS, but also take into consideration the prospects for their future development;<br><br>• be universal in terms of the understanding by the expert community comprising scientists, engineers, technicians, military personnel, lawyers and ethicists.<br><br>5. 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." |

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| | | **2021** | |
| France | 2021 | CCW/GGE.1/2021/WP.4 | 2. Within this scope, a clear distinction should be made – as the integration of autonomy in weapons systems can and will be gradual – between "fully" lethal autonomous weapons systems (i.e. systems capable of acting without any form of human supervision or dependence on a command chain by setting their own objectives or by modifying, without any human validation, their initial programme or their mission framework) and "partially" autonomous lethal weapons systems (i.e. lethal weapons systems featuring decision-making autonomy in critical functions such as identification, classification, interception and engagement to which, after assessing the situation and under their responsibility, the military command can assign the computation and execution of tasks related to critical functions within a specific framework of action). |
| Argentina, Costa Rica, Ecuador, El Salvador, Guatemala, Kazakhstan, Panama, Philippines, Sierra Leone, State of Palestine and Uruguay | 2021 | CCW/GGE.1/2021/WP.7 | 11. Our delegations identify the following elements of an operational framework on LAWS: (a) Characterization and limitations. There should be a recognition of acceptable and non- acceptable weapons and weapons systems. In this regard, HCPs should characterize what constitutes LAWS, making it possible to affirm that these weapon systems are by nature unacceptable – and differentiate them from semi-autonomous, automatic, and automated systems. Such differentiation should take into account the weapon or weapon system's life cycle and the degree of human-machine interaction involved in them. On the basis of these discussions, the determination of the characteristics of current or future weapons that should be prohibited or regulated could be made. For instance, the International Committee of the Red Cross (ICRC) has characterized these weapon systems as those that select and apply force against targets without human control. The autonomous weapon system self- initiates or triggers a strike in response to information from the environment received through sensors and on the basis of a generalized "target profile" (technical indicators function as a generalized proxy for a target). The weapon system fires itself when triggered by an object or person, at a time and place that is not specifically known, nor chosen, by the user.

As recommended by the ICRC, the use of autonomous weapon systems to target human beings should be ruled out through a prohibition on autonomous weapon systems that are designed or used to apply force against persons. On the other hand, the design and use of  autonomous weapon systems that would not be prohibited should be regulated, including through a combination of (1) limits on the types of target, such as constraining them to objects that are military objectives by nature; (2) limits on the duration, geographical scope and scale of use, including to enable human judgement and control in relation to a specific attack; (3) limits on situations of use, such as constraining them to situations where civilians or civilian objects are not present; and (4) requirements for human–machine interaction, notably to ensure effective human supervision, and timely intervention and deactivation. |

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| Venezuela on behalf of the NAM | 2021 | CCW/GGE.1/2021/WP.8 | 8. It is essential first to identify the key attributes that would characterize a given weapon system as LAWS, including the level of autonomy. Weapons that can autonomously select and engage a target, also known as its critical functions, without the direct control or supervision of a human, should be characterized as LAWS. |
| Chair's summary, Annex III, Report of the 2021 session of the Group of Governmental Experts on Emerging Technologies in the Area of Lethal Autonomous Weapons Systems | 2021 | CCW/GGE.1/2021/3 | 25. States should commit not to use, or to develop, produce, acquire, possess, deploy or transfer with a view towards use, any weapons system based on emerging technologies in the area of lethal autonomous weapons systems that can perform the critical functions of selecting and engaging to apply force against targets without further intervention by a human operator, if: (a) It is of a nature to cause superfluous injury or unnecessary suffering, or it is inherently indiscriminate; or (b) Its autonomous functions are designed to be used to conduct attacks outside a responsible chain of human command and control; (c) The incidental loss of civilian life, injury to civilians, and damage to civilian objects expected to result from the use of the weapon to conduct attacks cannot be reasonably foreseen or are not fully understood by a human operator; or (d) It is otherwise incapable of being used in accordance with international humanitarian law. |

**2020**

| Proponent(s) | Year | Reference document | Characterizations/Definitions |
|---|---|---|---|
| Brazil | 2020 | CCW/GGE.1/2020/WP.4 | 5. An intelligent weapon system with autonomous operation mode (i.e., without human input after activation) capable of recognizing patterns in combat environments, and of learning to operate and make decisions regarding the critical functions of target identification, tracking, locking-on and engaging based on uploaded databases, acquired experiences and its own calculations and conclusions. |
| Germany | 2020 | National commentary on the 11 guiding principles of the GGE on LAWS | Introduction. LAWS [are] weapons systems that completely exclude the human factor from decisions about their employment. Emerging technologies in the area of LAWS need to be conceptually distinguished from LAWS. Whereas emerging technologies such as digitalization, artificial intelligence and autonomy are integral elements of LAWS, they can be employed in full compliance with international law. |
| Chairperson's summary | 2020 | CCW/GGE.1/2020/WP.7 | 25. (a) Certain characteristics of emerging technologies in the area of LAWS require specific and explicit consideration in national and military policies and procedures, such as: self-adaption; predictability; explainability; reliability; ability to be subject to intervention; ability to redefine or modify objectives or goals or otherwise adapt to the environment; and ability to self-initiate. Such requirements should be considered throughout the weapon lifecycle; |

**2019**

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|---|---|---|---|
| Belgium, Ireland and Luxembourg | 2019 | CCW/GGE.1/2019/WP.4 | 3. A number of specific characteristics would, in our view, pose serious concerns from a legal, humanitarian and/or ethical point of view when introduced into lethal weapons systems. Each of the following characteristics in its own would be problematic:<br><br>(a) The ability to run through a targeting cycle, with the final intention to apply lethal force, without any human intervention; |

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| | | | (b) The ability to switch to lethal mode without any human intervention; (c) The impossibility to interrupt or deactivate the autonomous mode; (d) The ability to redefine its mission or objective without any human intervention. |
| Report of the 2019 session of the Group of Governmental Experts on Emerging Technologies in the Area of Lethal Autonomous Weapons Systems | 2019 | CCW/GGE.1/2019/3 | 19. (a) 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 lethal autonomous weapons systems, which is of core interest to the Group; |
| | | | 20. (b) Different potential characteristics of emerging technologies in the area of lethal autonomous weapons systems, including: self-adaption; predictability; explainability; reliability; ability to be subject to intervention; ability to redefine or modify objectives or goals or otherwise adapt to the environment; and ability to self-initiate. |

**2018**

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|---|---|---|---|
| Russian Federation | 2018 | CCW/GGE.1/2018/WP.6 | 2. (a) Autonomous weapons system – an unmanned piece of technical equipment that is not a munition and is designed to perform military and support tasks under remote control by an operator, autonomously or using the combination of these methods |
| China | 2018 | CCW/GGE.1/2018/WP.7 | 3. LAWS should include but not be limited to the following 5 basic characteristics. The first is lethality, which means sufficient pay load (charge) and for means to be lethal. The second is autonomy, which means 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 device. Fourthly, indiscriminate effect, meaning that the device will execute the task 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 way exceeding human expectations. |

**2017**

| Proponent(s) | Year | Reference document | Characterizations/Definitions |
|---|---|---|---|
| The Netherlands | 2017 | CCW/GGE.1/2017/WP.2 | 5. A weapon that, without human intervention, selects and engages targets matching certain predefined criteria, following a human decision to deploy the weapon on the understanding that an attack, once launched, cannot be stopped by human intervention. |
| Belgium | 2017 | CCW/GGE.1/2017/WP.3 | 8. In Belgium's view, the following characteristics or constitutive elements regarding the notions of autonomy, intentionality with lethal consequence, control and unpredictability should be considered in the framework of a strictly conceptual exercise aiming at defining LAWS: |
| | | | (a) Total autonomy in the lethal decision-making process, i.e. LAWS that would be able to switch to lethal mode – or to a mode in which they could inflict wounds to a human person – without any previous or marginal human decision; |

| Proponent(s) | Year | Reference document[1] | Characterizations/Definitions |
|---|---|---|---|
| | | | (b) Full independence from human intervention, at any stage, in the ability to identify and select targets with the intent to maim or kill; |
| | | | (c) An unclear or uncertain division of authority between the human agent and the machine in the intentionality with lethal consequence, as well as a division of authority that would not be subjected to a precise criteria based assessment; |
| | | | (d) The impossibility to bring, at any time and upon human decision, LAWS working in autonomous mode back to remotely controlled mode, or to deactivate them; |
| | | | (e) The openness (i.e. uncertain, unpredictable or unreliable character) or the limited knowledge of the entirety or only one of the potential behaviors of LAWS; |
| | | | (f) LAWS' ability to redefine by themselves the criteria according to which they would be able to operate in terms of environment, targeting or mission among others. |
| Switzerland | 2017 | CCW/GGE.1/2017/WP.9 | 29. Against this background, Switzerland suggested in 2016 to describe autonomous weapon systems as "weapons systems that are capable of carrying out tasks governed by IHL in partial or full replacement of a human in the use of force, notably in the targeting cycle". |