

- Subject to final review -

## Emerging Commonalities, Conclusions and Recommendations

### I. Possible Guiding Principles

It was affirmed that international law, in particular the UN Charter and international humanitarian law as well as relevant ethical perspectives, should guide the continued work of the Group. Noting the potential challenges posed by emerging technologies in the area of LAWS to international humanitarian law (IHL),<sup>1</sup> the following were affirmed, without prejudice to the result of future discussions:

1. International humanitarian law continues to apply fully to all weapons systems, including the potential development and use of lethal autonomous weapons systems.
2. Human responsibility for decisions on the use of weapons systems must be retained since accountability cannot be transferred to machines. This should be considered across the entire life cycle of the weapon system.
3. Accountability for developing, deploying and using any emerging weapons system in the framework of the CCW must be ensured in accordance with applicable international law, including through the operation of such systems within a responsible chain of human command and control.
4. In accordance with States' obligations under international law, 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.
5. When developing or acquiring new weapons systems based on emerging technologies in the area of LAWS, physical security, appropriate non-physical safeguards (including cybersecurity against hacking or data spoofing), the risk of acquisition by terrorist groups and the risk of proliferation should be considered.
6. Risk assessments and mitigation measures should be part of the design, development, testing and deployment cycle of emerging technologies in any weapons systems.
7. Consideration should be given to the use of emerging technologies in the area of lethal autonomous weapons systems in upholding compliance with IHL and other applicable international legal obligations.
8. In crafting potential policy measures, emerging technologies in the area of lethal autonomous weapons systems should not be anthropomorphized.
9. 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.

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<sup>1</sup>Reference to the Chair's summary (p. xx)

10. CCW offers an appropriate framework for dealing with the issue of emerging technologies in the area of lethal autonomous weapons systems within the context of the objectives and purposes of the Convention, which seeks to strike a balance between military necessity and humanitarian considerations.

## **II. Characterization of the systems under consideration in order to promote a common understanding on concepts and characteristics relevant to the objectives and purposes of the Convention**

Having examined different conceptual approaches to characterization and considered sets of specific characteristics relevant to the objectives and purposes of the Convention, and without prejudice to any future understanding on characterization, it was noted that

1. For some delegations, a working definition of lethal autonomous weapons systems is essential to fully address the potential risks posed. For others, absence of an agreement on a definition should not hamper discussions or progress within the CCW. Characterization, or working definitions, should neither predetermine nor prejudice policy choices; they should be universally understood by stakeholders.
2. Purely technical characteristics such as physical performance, endurance or sophistication in targeting acquisition and engagement may alone not be sufficient to characterize lethal autonomous weapons systems, especially in view of rapid evolution in technology.
3. Technical characteristics related to self-learning (without externally-fed training data) and self-evolution (without human design inputs) have to be further studied. Similarly, attempting to define a general threshold level of autonomy based on technical criteria alone could pose difficulty as autonomy is a spectrum, its understanding changes with shifts in the technology frontier, and different functions of a weapon system could have different degrees of autonomy.
4. Lethality as made explicit in the mandate of the GGE does not prejudice the application of and respect for all rules relevant to the conduct of hostilities.
5. Autonomy in the military targeting and engagement cycle has to be studied further keeping in view that autonomy can exist throughout or during parts of the targeting cycle and could start to be applied increasingly in other contexts such as close combat.
6. In the context of the CCW, 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.

## **III. Human element in the use of lethal force; aspects of human-machine interaction in the development, deployment and use of emerging technologies in the area of lethal autonomous weapons systems**

In the context of the objectives and purposes of the CCW, it was noted that the nature and quality of the human-machine interface is important to addressing concerns related to the development, deployment and use of emerging technologies in the area of lethal autonomous weapons systems. In line with the Chair's 'sunrise slide', the following touch points in the human-machine interface were considered: 0) political direction in the pre-development phase; 1) research and development; 2) testing, evaluation and certification; 3) deployment, training, command and control; 4) use and abort; 5) post-use assessment. It was noted that:

1. Accountability threads together these various human-machine touch points in the context of the CCW. Humans must at all times remain accountable in accordance with applicable international law for decisions on the use of force.
2. Where feasible and appropriate, inter-disciplinary 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.
3. Weapons systems under development, or modification which significantly changes the use of existing weapons systems, must be reviewed as applicable to ensure compliance with IHL.
4. 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 or commercial restrictions on proprietary information.
5. Accountability for the use of force in armed conflict must be ensured in accordance with applicable international law, including through the operation of any emerging weapons systems within a responsible chain of command and control.
6. Human responsibility for the use of force must be retained. To the extent possible or feasible, this could extend to intervention in the operation of a weapon if necessary to ensure compliance with IHL.
7. Necessary investments in human resources and training should be made in order to comply with IHL and retain human accountability and responsibility throughout the development and deployment cycle of emerging technologies.
8. Keeping in mind the foregoing, and recognizing the authority and responsibility of States in this area, it would be useful to continue discussions on reaching shared understandings on the extent and quality of the human-machine interaction in the various phases of the weapons system's life cycle as well as clarifying the accountability threads throughout these phases.

#### **IV. Review of potential military applications of related technologies in the context of the Group's work**

The valuable contribution of experts from the tech community, industry, academia and civil society to building awareness and understanding of the potential military applications of emerging technologies in the area of lethal autonomous weapons systems in the context of the Group's work was recognized. These inputs have been channeled mainly through experts participating in national delegations, panels put together at the invitation of the Chair, side events and open calls for contributions on the CCW website. They have ensured that the Group's policy consideration advances in step with developments in the technology field and a minimum degree of transparency regarding potential military applications is built up.

The value of initiatives by industry, the science and technology community, academia and other organizations to develop a common scientific and policy vernacular across the globe was also recognized.

Moving forward, ways and means to preserve this momentum and cross-fertilization of knowledge through dialogue in the context of the CCW need to be found.

Enhanced participation of cross-disciplinary experts, with due regard for gender balance, in delegations attending CCW meetings should be encouraged to ensure that the Convention's consideration of the issue stays in step with the advance of technology.

#### **V. Possible options for addressing the humanitarian and international security challenges posed by emerging technologies in the area of lethal autonomous weapons systems in the context of the objectives and purposes of the Convention**

In the context of the CCW, delegations raised a diversity of views on potential risks and challenges posed by emerging technologies in the area of lethal autonomous weapons systems including in relation to harm to civilians and combatants in armed conflict in contravention of IHL obligations, exacerbation of regional and international security dilemmas through arms races and the lowering of the threshold for the use of force. Proliferation, acquisition and use by terrorists, vulnerability of such systems to hacking and interference, and the possible undermining of confidence in the civilian uses of related technologies were also raised.

Delegations presented different options to address these potential risks and challenges in the context of the objectives and purposes of the CCW. Their pros and cons were discussed under four categories: a legally-binding instrument, a political declaration, and clarity on the implementation of existing obligations under international law, in particular IHL.

- Under the first category, a proposal for a legally-binding instrument stipulating prohibitions and regulations on lethal autonomous weapons systems was made. A mandate to negotiate a legally-binding instrument to ensure human control over the critical functions in lethal autonomous weapons systems was proposed.
- Under the second category, a proposal for a political declaration that would outline important principles such as the necessity of human control in the use force and the importance of human accountability, and with elements of transparency and technology review was made.
- Under the third category, proposals were made to further discuss the human-machine interface and the application of existing international legal obligations. The need to identify practical measures, best practices and information sharing for improving compliance with international law, including legal weapons reviews required by Article 36 of the Additional Protocol I to the Geneva Conventions, was also underlined.
- As IHL is fully applicable to potential lethal autonomous weapons systems a view was also expressed that no further legal measures were needed.

It was felt that the options were not necessarily mutually exclusive, and the work carried out so far in the GGE on principles, characterization, human-machine interface and review of potential military applications of emerging technologies in the area of lethal autonomous weapons systems and related emerging commonalities offered useful building blocks for future work. Existing understandings need to be consolidated, open questions clarified and further common ground built on the basis of consensus.

The Group emphasized that the CCW offers an appropriate framework for dealing with the issue of emerging technologies in the area of lethal autonomous weapons systems. Within the context of the broader policy work internationally necessitated by the combinatorial effects of emerging technologies in the area of lethal autonomous weapons systems, the Convention's modular and evolutionary character, the balance it seeks to strike between humanitarian considerations and military necessity as well as the opportunity it offers to engage multiple stakeholders make it an ideal

platform for focused and participative discussions for reaching common understandings on the subject.

### **Recommendation**

Some delegations made proposals for strengthening the mandate of the GGE going forward. These proposals are listed in Annex III. Some delegations called for retaining the existing mandate; others underlined that the current mandate offered sufficient flexibility and scope for stepping up work while continuing to explore options for an outcome. A suggestion was made for rationalizing the number of days for the GGE (as reflected in Annex III)<sup>2</sup>.

In the light of the above discussions, the Group recommends that,

The Group of Governmental Experts related to emerging technologies in the area of lethal autonomous weapons systems (LAWS) in the context of the objectives and purposes of the Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons shall meet for a duration of ten days in 2019 in Geneva in accordance with Decision 1 of the Fifth Review Conference of the High Contracting Parties to the Convention (CCW/CONF.V/10), consistent with CCW/CONF.V/2.

The Rules of Procedure of the Review Conference shall apply *mutatis mutandis* to the Group. The Group shall conduct its work and adopt its report by consensus which shall be submitted to the 2019 Meeting of the High Contracting Parties to the Convention. The widest possible participation of all High Contracting Parties is to be promoted in accordance with the goals of the CCW Sponsorship Programme.

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<sup>2</sup> Annex III of the Final Report