

# Crunch Time

European positions on lethal autonomous weapon systems  
Update 2018



**PAX**

[www.paxforpeace.nl](http://www.paxforpeace.nl)

# Table of Contents

<b>1. Introduction</b>	<b>4</b>
<b>2. European state positions</b>	<b>7</b>
<b>3. Summary and conclusion</b>	<b>27</b>
3.1 Summary	27
3.2 Conclusion	30
<b>Endnotes</b>	<b>31</b>

## Colophon

November 2018  
ISBN: 978-94-92487-31-5  
NUR: 689  
PAX serie nummer: PAX/2018/07

Authors: Daan Kayser and Alice Beck  
Cover photo: Europe circuit board (Silver Tiger)  
Graphic design: Het IJzeren Gordijn

PAX would like to thank for their invaluable input: the European states for sharing their statements, Frank Slijper, Miriam Struyk, and Reaching Critical Will.

PAX strives to achieve the highest level of accuracy in its reporting. This report reflects official information available in the public domain. We welcome comments, clarifications, and corrections from governments and others; if you believe you have found an inaccuracy in our report or if you can provide additional information, please contact us at: [kayser@paxforpeace.nl](mailto:kayser@paxforpeace.nl)

## About PAX

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

P.O. Box 19318  
3501DH Utrecht  
The Netherlands

[info@paxforpeace.nl](mailto:info@paxforpeace.nl)  
[www.paxforpeace.nl](http://www.paxforpeace.nl)

# 1. Introduction

Lethal autonomous weapon systems (LAWS) have been on the agenda of the United Nations Convention on Certain Conventional Weapons (CCW) for five years.<sup>1</sup> In November 2013 the Meeting of High Contracting Parties to the CCW decided to convene a four-day informal meeting of experts in 2014 to discuss questions related to emerging technologies in the area of LAWS. Three such informal meetings to discuss LAWS took place within the CCW, in 2014, 2015 and 2016.

At the sixth Review Conference of the CCW in December 2016, states decided to formalize their deliberations by establishing an “open-ended Group of Governmental Experts (GGE)”.<sup>2</sup> The goal of the GGE is to “explore and agree on possible recommendations on options related to emerging technologies in the area of LAWS, the context of the objectives and purposes of the Convention”.<sup>3</sup> Two GGE meetings were planned for 2017, but due to financial issues only one took place, for a week in November. In 2018 there were two week-long GGE meetings, in April and August.

European states have been active participants in the CCW expert meetings on LAWS and various EU institutions have contributed to the discussions on the issue. In 2017 a report by the European Economic and Social Committee called for a human-in-command approach to Artificial Intelligence (AI) and supported the call for a ban on autonomous weapon systems.<sup>4</sup> In September 2018 the European Parliament passed a resolution with an 82% majority urging “the VP/HR, the Member States and the Council to work towards the start of international negotiations on a legally binding instrument prohibiting lethal autonomous weapon systems” and to develop and adopt “a common position on lethal autonomous weapon systems that ensures meaningful human control over the critical functions of weapon systems, including during deployment”.<sup>5</sup> Also the issue has been discussed in several European parliaments. In Belgium this led to a resolution calling on the government to “support international efforts for a prohibition on the use of killer robots” and “ensure that the Belgian army will never use killer robots”.<sup>6</sup>

## THE GGE 2018 PROCESS

In 2018 the GGE met for one week in April and one week in August. The agenda of the meeting was built around 4 topics.<sup>7</sup>

- (a) Characterisation 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.
- (b) Further consideration of the 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
- (c) Review of potential military applications of related technologies in the context of the Group’s work

- (d) 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 without prejudging policy outcomes and taking into account past, present and future proposals

At the April meeting it became clear that the majority of states see the human element in the use of force as the central element of the debate. This is an important step as it brings focus to the debate. The Chair, in his summary of the April meeting, mentioned four pathways on the table: “Under the first category, a proposal for a legally-binding instrument stipulating prohibitions and regulations on lethal autonomous weapons system 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 [of] 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”.<sup>8</sup> After the April meeting, 26 states had called for a ban, with the addition of Austria, China, Colombia and Djibouti.

In August 2018, it became even clearer that a majority of states want to take concrete steps against LAWS, and that only a small minority is against taking such action. Regarding the four pathways there are now 2 concrete proposals on the table. France and Germany proposed a political declaration, while Austria, Brazil and Chile put forward a concrete proposal to negotiate a ‘legally binding instrument’, in other words, a treaty, which would guarantee meaningful human control on selecting and attacking targets. However a small group of states say it is too early to take any concrete measures. This group includes Australia, Israel, Russia, the United States and South Korea. Since decisions are made by consensus, this group can significantly delay the process. With the agenda item on characterisation of the systems under consideration, there was a divergence of views between states as to whether a working definition of LAWS was a prerequisite in order to address the potential risks of these weapons.<sup>9</sup> However, most states agreed that “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”.<sup>10</sup> Regarding the human element in the use of lethal force, there was consensus surrounding the fact that humans “must at all times remain accountable in accordance with applicable international law for decisions on the use of force”.<sup>11</sup>

## CURRENT REPORT

In 2017, PAX published the report *Keeping Control: European positions on lethal autonomous weapon systems*.<sup>12</sup> This report compiled positions of European states, taken from statements given at the CCW and other fora, in working papers, national policies and other publicly available information, up to August 2017.

The current report is an update on the positions of European states, compiled by analyzing statements made at the April and August 2018 GGE meetings.<sup>13</sup> It follows the agenda items on characterisation of the systems under consideration, the human element in the use of lethal force, and possible options for addressing the humanitarian and international security challenges. As there were only a limited number of statements available on agenda item 6c: *potential military applications of related technologies*, these have only been included when relevant.

## 2. European state positions

This chapter looks at the positions of European states based on statements made at the Group of Governmental Experts in April and August 2018. Each section includes these agenda items:

1. Characterisation of the systems under consideration.
2. Human element in the use of lethal force.
3. Possible options for addressing the humanitarian and international security challenges.

### AUSTRIA

On characterisation of the systems under consideration, Austria stated that: “The working definition should rather be a reference point than a final definite definition” and that “[t]echnical cumulative approaches seem lengthy and not particularly effective”.<sup>14</sup> Austria suggested “that negative definitions might be helpful to narrow the subject matter down”.<sup>15</sup> It added that “we should focus on the level of meaningful human control” and the “level of autonomy or human involvement in critical functions”.<sup>16</sup> It also stated a focus could be on “any weapon with autonomy in its critical function” as suggested by the ICRC.<sup>17</sup> Austria noted that “autonomy per se is not the source of concern. But autonomy is a function of the level of control. The higher the level of autonomy the lower the level of human control.”<sup>18</sup> Austria emphasised that “[h]uman control is the fundamental issue at the centre of our deliberations to ensure compliance with IHL”.<sup>19</sup>

On the human element in the use of lethal force, Austria noted that based on ethical principles “Humans must remain in control over decisions related to life and death” and that “Human control is an indispensable requirement for compliance” with International Law. Therefore Austria believes “[m]eaningful human control or the retention of a minimum level of human control needs to be ensured to satisfy ethical and legal concerns posed by autonomous weapons systems.”<sup>20</sup> Austria stated that: “State responsibility and individual accountability can by definition not be outsourced to machines. (...) States and humans are subject of law not machines”.<sup>21</sup> It emphasised the need to “look closer at the selection, targeting cycle and the established command and control chains in the use of force”, asking: “[w]here are critical steps where human control needs to be ensured?”.<sup>22</sup> It added that “[t]he targeting process requires complex analysis (...)”. These are deeply human considerations, which should not be transferred into algorithms”.<sup>23</sup> Austria also stated that it considers “target selection and attack as particularly decisive functions with a view to ensure compliance with IHL”.<sup>24</sup> Austria underlined the importance of “the possibility to intervene”.<sup>25</sup> Also, Austria cannot envisage that decision related to international law “could be lawfully exercised by mere algorithms”.<sup>26</sup> It added that “[o]ur entire legal system is based on human agents, not on machines”.<sup>27</sup>



On the possible options for addressing the humanitarian and international security challenges, Austria said that “Article 36 is very valuable” but that it “does not really create a common clear standard” and “there are a number of elements” which are not transparent.<sup>28</sup> Austria emphasised that the “absence of meaningful human control for critical functions would undermine the existing international legal framework and entails substantial international security implications” and that such weapons “might contribute to regional and international instability or lower the threshold for the use of force”.<sup>29</sup> It added that after having discussed LAWS since 2013 “my country has come to the conclusion that the legal, security and ethical challenges arising from (...) LAWS (...) require a clear regulation”.<sup>30</sup> Therefore, Austria is “in favour of establishing a legally binding instrument in order to prohibit lethal autonomous weapon systems that are not under meaningful human control”.<sup>31</sup> It added this “can and should be done before technology is introduced on the battlefield”.<sup>32</sup> Austria noted “human control in critical functions will also allow us to set a legally binding norm that is flexible enough and thus also applicable to future developments.”<sup>33</sup> In that respect Austria together with Brazil and Chile put forward a proposal for the November 2018 CCW Meeting of High Contracting Parties to decide “to establish an open-ended Group of Governmental Experts to negotiate a legally-binding instrument to ensure meaningful human control over the critical functions in lethal autonomous weapon systems”.<sup>34</sup> It emphasised that “it is important to set standards now preventively to minimise the possibly far reaching negative implications of increasingly autonomous weapons systems and ensure the respect for international law in the future” and that “[i]n the absence of a clear international norm judgements of what is acceptable and what is not acceptable will inevitably be subject of interpretation”.<sup>35</sup> On this, Austria stated that “[b]y codifying a clear international norm legal certainty will be created as this norm will set the limits of what is acceptable by the international community and what is not acceptable”.<sup>36</sup>

## BELGIUM

On characterisation of the systems under consideration, Belgium is in favour of “developing a provisional working definition” describing the main characteristics and stated that establishing consensus on a conceptual framework seems indispensable to go forward. It referred to the key elements mentioned in its 2017 working paper.<sup>37</sup> Belgium stated that the focus should be on “systems whose critical functions are autonomous” and added that weapons with non-lethal autonomous functions as well as automated or partially automated weapon systems should be excluded from the debate.<sup>38</sup>

On the human element in the use of lethal force, Belgium wishes to focus on “sufficient/ meaningful human control (...) in a two stages framework: control by design (...) and control in use”.<sup>39</sup> It stated “the final responsibility for the use and the effect of the use of a LAWS should always be attributed to a human agent”.<sup>40</sup> Human control could be translated into “correctly programming shifts between different modes of operations, (...) the potential need for an ultimate human decision/intervention in the targeting function” and “to be able to bring at any time (...) LAWS working in autonomous mode back to remotely controlled mode or to deactivate them”.<sup>41</sup> Regarding authority, Belgium emphasised the need for predetermined and predictable “human-machine division of tasks and authority flow”, an important factor in this is “the ability to externally monitor internal computational processes of LAWS (...) and the ability to intervene if needed”.<sup>42</sup> Belgium highlighted for LAWS operating in autonomous modes “the need to program LAWS in order to allow them to assess (or participate in the assessment of) the law, which “the human actor should at minimum monitor”.<sup>43</sup> Belgium underlined “the possibility to use LAWS within a defined geographical perimeter of operation” which “should be determined by a human actor”.<sup>44</sup>

On the possible options for addressing the humanitarian and international security challenges, Belgium “fully shares the concerns on the possible risks and dangers from an ethical and humanitarian point of view” and believes a common understanding of LAWS is a “prerequisite (...) to take effective measures”.<sup>45</sup> Also, Belgium is “ready to contribute in parallel to the discussion on “meaningful human control” on LAWS”.<sup>46</sup> Belgium deems it important “to make progress towards concrete results”.<sup>47</sup> It believes that the most realistic way forward “is to pursue the options that are described in the French-German non-paper”, however, these options do not “exclude the adoption of other political or legal options (...) when the debate has matured”.<sup>48</sup> The next step should be “the adoption of a political declaration that aims at excluding any introduction of unacceptable autonomous weapon systems” based on two overriding principles: (i) “the human agents should bear the ultimate responsibility in the choice of the means of war”, since “International Humanitarian Law (...) was developed for human agents” and (ii) “[t]he necessity to exercise sufficient human control on LAWS”.<sup>49</sup> Finally, Belgium also underlined the importance of Article 36 reviews.

## BULGARIA

On characterisation of the systems under consideration, Bulgaria stated that a preliminary working definition should be formed and that the degree of human involvement in the system’s critical functions “should be the most crucial criteria”.<sup>50</sup> Bulgaria added that “[n]egotiating and defining attributes should neither prejudice any future outcomes and potential policies”.<sup>51</sup> Bulgaria “do[es] not consider non-autonomous systems such as automated, remotely operated, and tele operated systems to be LAWS”.<sup>52</sup> Bulgaria “shares other delegations’ view that the term “lethality” is not an inherent attribute to the systems under consideration”.<sup>53</sup> It highlighted “autonomy is inversely proportionate to the degree of human involvement, higher autonomy means less human control”.<sup>54</sup> Bulgaria also brought up that self-education capabilities could enhance a system’s autonomy “as it allows an autonomous system to develop better situational awareness once deployed on the battlefield and to change and adapt its behaviours depending on the current situation”.<sup>55</sup>

On the human element in the use of lethal force, Bulgaria stated that “[h]uman-machine interaction is of prime importance at the different stages of development, deployment and use of LAWS”.<sup>56</sup> It added “[t]he development of weapons systems that can select and engage their targets without any form of human control is not acceptable”, adding “the final decision [to use force] should belong to a human being as machines could not replace humans in the decision-making process”.<sup>57</sup> Bulgaria believes this is also the case for the “taking another human being’s life. Such moral resolution cannot be delegated to an autonomous weapons system”.<sup>58</sup> Bulgaria added that “[h]uman intervention in the decision-making process of where and when to use force is a necessity that requires excellent communication links between a machine and a commander or an operator”.<sup>59</sup> Bulgaria also stated that the “subordination of a weapons system to the chain of command must be assured”.<sup>60</sup> Furthermore, Bulgaria shared the view with Swiss and Dutch delegations that “commanders and operators must go through strict and comprehensive training”, adding that “the commander and/or the operator must have a broad comprehension of its capabilities and adequate situational awareness of the operational environment”.<sup>61</sup> They “should foresee a system’s biases and deviations from its pre-programmed functioning and take duly measures on time to prevent any unlawful hostilities”.<sup>62</sup> Finally, Bulgaria stated that “[l]aw pertains to humans, and accountability cannot be reassigned to any machine”, adding that “responsibility (...) must be maintained by humans in the military hierarchy and by States themselves”.<sup>63</sup>

On the possible options for addressing the humanitarian and international security challenges, Bulgaria emphasised that the work of the GGE should not “disrupt the endeavors of academia and industry”, nevertheless the negotiations should not be outrun by technological developments, underlining that “[a]dvancement in autonomy could have a significant impact on the security environment and relations between States”.<sup>64</sup> Bulgaria supports a political declaration, believing that it will “act as an important interim step towards more tangible outcomes”, adding that it is a “balanced document that encompasses aspects with high degree of convergence”.<sup>65</sup>

Bulgaria sees weapon reviews as an important tool to ensure compliance with IHL and highlighted that “the processes of reviewing autonomous systems would be a challenging and complex issue”.<sup>66</sup> Therefore, Bulgaria sees value in measures such as “information exchange, sharing best practices and public access to Article 36 procedures and results to enhance transparency and confidence building among State parties”.<sup>67</sup>

#### CROATIA

Croatia did not make a statement at the 2018 GGE meetings.

#### CYPRUS

Cyprus did not make a statement at the 2018 GGE meetings.

#### CZECHIA

Czechia did not make a statement at the 2018 GGE meetings.

#### DENMARK

Denmark did not make a statement at the 2018 GGE meetings.

#### ESTONIA

On characterisation of the systems under consideration, Estonia stated that “[a]n agreed set of characteristics should not predetermine any future policy options” and that “there should first be consensus on the most appropriate solution” adding that “policy should drive definitions”.<sup>68</sup> Estonia considers an autonomous weapon system to be “any weapon system that can select and engage targets without human intervention”,<sup>69</sup> aligning itself with other states parties and the ICRC. This definition is broader than the notion of LAWS and covers a spectrum where the “boundaries of these categories remain blurry”.<sup>70</sup> Estonia believes that the difficulty “lies in deciding on a point on the spectrum where autonomy becomes legally and ethically problematic” and that a “focus on human-machine interaction might be a more promising way ahead”.<sup>71</sup> Estonia stated that “autonomy relates to particular functions of the system, rather than the system as a whole” and that it “is not an on/off phenomenon”.<sup>72</sup> Estonia stated that the focus should “be on increased autonomy in the critical functions of a weapon system, that is selecting and engaging targets”, so any platform that relies “on a human operator to make real-time targeting decisions, should fall outside the scope of our discussion”.<sup>73</sup> Estonia added that “[l]ethality is (...) not a defining feature of any weapon system”.<sup>74</sup>

On the human element in the use of lethal force, Estonia stated that “human control and judgement are essential in the use of force”, nonetheless stating that these are “flexible terms”.<sup>75</sup> Estonia added that “a requirement of human control reflects existing international law” and that “individuals who plan, decide upon and carry out attacks are duty-bound to comply”.<sup>76</sup> It stated that human control can be exercised in various ways: “not only by making real-time

targeting decisions”, but that “activities across the entire spectrum of touchpoints – including design, testing, deployment, command and control – must cumulatively ensure human control that is necessary for ensuring compliance with international humanitarian law”.<sup>77</sup> It added that “the nature and amount of human intervention required at each of these ‘touchpoints’” would depend on “the capabilities of the weapon system and its intended use” and that “perhaps the most critical ‘touchpoint’ is the decision to use the weapon system in conflict”.<sup>78</sup> Estonia believes that humans must retain ultimate control over decisions of life and death, “not only as a moral and ethical imperative, but as a requirement that follows from international humanitarian law”.<sup>79</sup> Estonia stated that “[h]uman operators can sometimes achieve greater control over force by relinquishing some aspects of their ability to adjust the way in which the force is applied”, mentioning precision guided munitions as an example.<sup>80</sup>

On the possible options for addressing the humanitarian and international security challenges, Estonia believes it is important to consider a broad range of policy options given the diversity of views. Estonia is not convinced “of the need for a new legally binding instrument”, adding that it is not persuaded “that weapon systems with autonomous functions are inherently unlawful” and that “they need to be assessed on a case-by-case basis”.<sup>81</sup> Estonia sees merit in examining three issues: “the manner in which existing principles and rules of international humanitarian law apply and should be interpreted with respect to weapon systems with autonomous functions”, “the unique challenges involved in legally reviewing such weapon systems and the way in which these challenges could be addressed” and “the desirable nature of human-weapon interaction, in particular, the activities to be undertaken at different stages of life cycle of a weapon so as to ensure compliance with international humanitarian law”.<sup>82</sup>

#### ESTONIA AND FINLAND

Estonia and Finland produced a Working Paper entitled “Categorising lethal autonomous weapons systems – a technical and legal perspective understanding LAWS”. In their paper, they clarified several characteristics of machine autonomy. They distinguished automation (which “as a concept means known, predictable pre-programmed responses in any situation in a defined task”) from autonomy (which “should be understood as a capability to perform the given task(s) in a self-sufficient and self-governing manner”) from independence (whereby “only true independence (...) means that the system would be capable of defining and thereby deciding the ultimate goals of its functioning”).<sup>83</sup> They noted that the “distinction between automated and autonomous functioning is not clear-cut”.<sup>84</sup> They also focused on human-weapon interaction, stating, *inter alia*, that “[h]umans must retain ultimate control over decisions of life and death”.<sup>85</sup> Adding that this “does not arise from a discrete rule of international law”, but that human control over weapon systems is “an important and likely indispensable way for humans to ensure that the use of violence complies with international law.”<sup>86</sup> The paper noted to “be meaningful, human control does not necessarily have to be exercised contemporaneously with the delivery of force.”<sup>87</sup> They mentioned “requirements of a military command chain emphasize the nature of task execution; understanding of the time dimension (delay) and the dynamics of the situation are crucial in the task definition and authorization of lethal force.”<sup>88</sup>

#### FINLAND

On characterisation of the systems under consideration, Finland stated that “[a]iming to find a common definition of LAWS could be helpful, but we also recognize the inherent difficulty therein” adding that “we seem to get bogged down quite easily if we approach this only from a technological point of view”.<sup>89</sup> It mentioned that “[t]here may be a need to clarify automation from

autonomy and autonomy from complete technological singularity. We feel that the lines still get blurred when discussing these terms”.<sup>90</sup> It also stated “we should focus on defining the main elements of autonomy, especially in the critical phases of a weapon’s operating cycle. Not only is there a need to understand the meaning of autonomy, it may be necessary to elaborate on different dimensions and degrees of autonomy”.<sup>91</sup> On autonomy, Finland underlined that “there is no technological reference point when a system becomes fully autonomous” and that it “is not an on/off feature, so instead of “autonomous systems” it would be better to use the expression “systems having autonomous features or functions”.<sup>92</sup> Finland stated that the focus must remain on “the targeting cycle and the conditions of the authorization to use lethal force”.<sup>93</sup>

On the human element in the use of lethal force, Finland stated that “[h]uman control in LAWS is context specific; it varies throughout the weapons operating cycle” adding that the “kind and degree of human control that must be exercised at various points leading up to and including the use of a weapon depend heavily on the nature of the weapon and circumstances of its use”.<sup>94</sup> Finland stated that human operators “bear ultimate responsibility for the use of the systems”, but “if the ability of the operator to exert control over the weapon is restricted (...) the designers and manufacturers must exert more control and bear greater responsibility”.<sup>95</sup>

On the possible options for addressing the humanitarian and international security challenges, Finland stated that “it would be problematic to set different standards or requirements for existing weapons systems and for new types of systems”.<sup>96</sup> For the next GGE, Finland feels that the focus should be on trust, as “[o]nly trusted systems can be authorised to execute tasks defined by humans”.<sup>97</sup> It added “[w]hile technology is developing, the trusted space of operation (such as the time-window, the geographical area, etc.) may be enlarged”.<sup>98</sup> Finland emphasised the importance of Article 36 legal reviews, called “for the universalization of this important protocol” and expressed interest in “learning more about standardizing Article 36 review mechanisms and sharing best practices thereafter”.<sup>99</sup> Finland “share[s] the sentiment of other delegations that “the time is ripe for taking steps toward meeting the challenges posed by” LAWS.<sup>100</sup> Finland said that “[t]o meet this need for action and in response to the high interest raised on the issue in the public eye”, it supports the Franco-German initiative “to agree upon a set of principles which would remind us of our existing common commitments under IHL and in the development and use of emerging weapons systems, increase transparency and encourage sharing best practices in this regard”.<sup>101</sup>

## FRANCE

On characterisation of the systems under consideration, France stated “characterisation must be the starting point for our discussions. (...) it is necessary to seek to improve our common understanding of LAWS” adding that the discussion is complex as it deals with prospective systems and is very technical.<sup>102</sup> France supports the Chair’s ‘*via negativa*’ approach as it clarifies misunderstandings between LAWS versus automated and teleoperated weapons systems and those where artificial intelligence supports human’s decision-making.<sup>103</sup> France considers that LAWS are “systems that do not yet exist” and that the discussions do not concern “automated or teleoperated systems currently in existence”. France stated that the autonomy of LAWS must be understood as “total autonomy, without any form of human supervision from the moment of activation” and without any subordination to a chain of command. This system would have the ability to carry out tasks in a complex environment as well as capable of overcoming the rules that a human has entrusted to it and configure new rules without human validation.<sup>104</sup> France stated that, with the current state of knowledge, systems which are beyond human supervision or

command do not have any military utility.<sup>105</sup> France believes that it is important to focus on human-machine interaction to understand it properly and to ensure compliance with international law.<sup>106</sup>

On the human element in the use of lethal force, France stated the notion “of human-machine interaction is relevant for all weapons systems, regardless of their level of sophistication. This interaction is essential, and necessary, from three perspectives: military interest, operational efficiency, predictability and reliability on the battlefield.”<sup>107</sup> It suggests two areas of study of the human-machine interaction. First, in the development of systems, it is “necessary to prove the ability to use these systems in compliance with international humanitarian law”, where the most important factor is “the ability of the designer (and operator) to evaluate the predictability of the deployed system”.<sup>108</sup> In this regard, Article 36 provides the relevant framework. The second area for the use of these systems, where the two principles of command responsibility and subordination must be retained. This subordination applies to the delimitation of the framework of the mission as well as possible adjustments (even when suggested by the system) must belong to the human.<sup>109</sup> Communication links between the military chain of command and the system, even when discontinued, “allow the chain of command to interact with the system”. There are a variety of possibilities for these communication links, but all serve the same purpose of exercising sufficient control, and allowing a human to make the decisions, and be responsible for, the ultimate use of lethal force.<sup>110</sup> France also stated that the development of military uses of artificial intelligence is not intended to replace human command, but “rather to assist it”.<sup>111</sup> In a Working Paper France stated “[t]he most important factor to take into consideration is not system predictability in itself, but the ability of the operator (...) to assess and control it”.<sup>112</sup>

On the possible options for addressing the humanitarian and international security challenges, France noted that the CCW is the relevant framework to discuss LAWS, as it ensures “a balanced approach between the necessities of defence and humanitarian concerns”.<sup>113</sup> France stated that its working paper 4 proposes a middle-ground solution, namely a political declaration, that could be adopted once the discussions have matured.<sup>114</sup> France stated that this declaration reaffirms the “fundamental principles on which we agree, such as the applicability of international law, and would underline the need to maintain human control over the ultimate decision of the use of lethal force”.<sup>115</sup> France stated that taking the necessary time does not mean that we should lack ambition.<sup>116</sup> France believes that these proposals will allow the work to advance, all the while taking into account the currently existing divergence of views and the necessity to give to all delegations the time to formulate a consolidated and informed position on these systems. France underlined that it is difficult to obtain consensus on the characterisation of these systems and hence France does not consider that a legally binding instrument would be appropriate, given that it is neither realistic nor desirable. Adding that negotiation of a legally binding instrument or a preventive prohibition would be premature.<sup>117</sup>

France produced a Working Paper, entitled “Human-Machine Interaction in the Development, Deployment and Use of Emerging Technologies in the Area of Lethal Autonomous Weapons Systems”. In this paper, France stated, *inter alia*, that “[t]he principle of command responsibility must remain” and that the “operating rules, the rules for use, the rules of engagement and the missions of autonomous systems must always be validated by humans”.<sup>118</sup>

## FRANCE/GERMANY JOINT STATEMENTS

As France and Germany have put forward a joint proposal for a political declaration they made several joint statements at the GGE.



On characterisation of the systems under consideration, France and Germany highlighted the need of finding a working definition “acceptable to all parties”, discussing key issues related to the human element in the use of lethal force and “exploring the field of human/machine interaction” and that it is “very timely to explore the possible option to address the international security challenges posed by LAWS”.<sup>119</sup> They stated that the object of the discussions “is limited to fully autonomous weapons, which do not exist to date”.<sup>120</sup> They stated that “the identification of an exact definition is not necessarily a prerequisite to identify the relevant principles and values” as “we do know the ethical values we need to defend and the principles of international law which apply”.<sup>121</sup>

On the human element in the use of lethal force, more particularly on the human-machine interaction, they emphasised that “[t]he human should maintain the overall responsibility” and that “[t]he subordination of a weapon system to a chain of command must be assured”.<sup>122</sup>

On the possible options for addressing the humanitarian and international security challenges, they stated it is “very timely to explore the possible option to address the international security challenges posed by LAWS”,<sup>123</sup> therefore they submitted the Franco-German Paper in 2017 that includes the recommendation for a political declaration.<sup>124</sup> It can serve “as an instrument to guide future developments (...) in line with existing international law and based on shared ethical standards”.<sup>125</sup> Through this, High Contracting Parties would commit themselves to upholding principles like the “full applicability of rules of international law, human accountability for the use of lethal weapon systems, responsibility for their design and employment, ultimate decision-making over the use of lethal force, sufficient human control over lethal weapons systems stipulating sufficient information and understanding of the weapons system in use and of the operating environment as well as the interaction between the two, the development (...) of practical national measures to implement these commitments”.<sup>126</sup> They also pointed out that “a number countries across geographic groups have already stated their support for exploring a Political Declaration”.<sup>127</sup> They stated that they will continue their work on a draft “which will be submitted to the GGE at an appropriate time”.<sup>128</sup> They suggested moving forward “while neither hampering scientific progress nor the consideration of the beneficial aspects of emerging technologies in the area of LAWS for future use”.<sup>129</sup> Finally, they also highlighted “the critical importance of conducting rigorous weapon reviews”.<sup>130</sup>

#### GERMANY

On characterisation of the systems under consideration, Germany believes that a proper distinction between automation and autonomy is key and that autonomy “can be related to whole weapon systems, or more likely, individual functionalities of weapon systems”.<sup>131</sup> Germany stated that autonomy can be understood by referring to it as “the capacity to perceive (...) an environment, evaluate the circumstances of a changing situation without reference to a set of pre-defined goals, reason and decide on the most suited approach towards their realization, initiate actions based on these conclusions, all (...) being executed without any human involvement once the system has been operationalized”.<sup>132</sup> It added that the ability to learn and “develop self-awareness constitutes an indispensable attribute to be used to define individual functions or weapon systems as autonomous” and that such self-learning systems “might also improve the leadership and decision-making performance of the “man in the loop””.<sup>133</sup>

On the human element in the use of lethal force, Germany stated that compliance with IHL might “only be assured as long as humans retain the sufficient control, at least over the

critical functions of the weapons they operate”.<sup>134</sup> It said that “humans must maintain the ultimate decision in matters of life and death” and “rejects weapon systems that completely exclude human involvement in the decision about the use of lethal force”.<sup>135</sup> Germany noted it is necessary to further develop “human-machine interaction (...) in order to balance each the weaknesses of the one and the other where the human has to remain the essential team-element with the overall responsibility [and] the human has to take the decision and to coordinate the processes that might better be executed by artificially intelligent colleagues”.<sup>136</sup> Germany mentioned that human control “requires control over the entire life-cycle of weapons-systems”.<sup>137</sup> It said “[i]ndividuals can be held accountable at all stages in the process of the development, deployment and operation of an autonomous weapon systems”.<sup>138</sup> It believes that “[h]umans must remain accountable for the weapons systems they use and this can only be assured as long as humans retain sufficient control over the critical functions”, adding that “[t]he unique qualities of human judgement must not be replaced by the capacities of machines”, especially as LAWS would depend on “computational systems and subsystems, each of them with their own limitations and risks of failure”.<sup>139</sup>

On possible options for addressing the humanitarian and international security challenges, Germany stated it “rejects autonomous weapon systems which are primarily designed to directly cause lethal effects or other damage to human beings, and which are designed to sense, rationalize, decide, act, evaluate and learn completely independently from human interaction or control”.<sup>140</sup> Germany put forward several possible options. These were a Political Declaration affirming that “humans should continue to be able to make ultimate decisions with regard to the use of lethal force”; transparency and confidence building, including information sharing (...) of new weapon systems to providing mutual access to certain facilities; a code of conduct that would “provide a politically binding set of rules for the development and use” of LAWS; and developing effective national weapons review mechanisms for LAWS. Also, Germany suggested “developing best-practices for the export control of related goods, particularly focusing on software”.<sup>141</sup>

#### GREECE

On characterisation of the systems under consideration, Greece defined “fully lethal autonomous weapons” as “a type of weapon that once launched or deployed (human decision) its mission cannot be terminated by human intervention”, adding that “it has the capacity to learn and to undertake on its own a range of critical functions, such as detection and engagement of targets” and “has the ability without human intervention both to adapt to its operational environment and to select the appropriate action to accomplish its mission through alternatives based on its capabilities”.<sup>142</sup> It stressed that “lethal” “by definition means having the ability to cause death”.<sup>143</sup> Greece mentioned that “weapons systems with a high degree of autonomy have increased the operational depth of missions and have made weapon systems able to achieve greater accuracy and faster deployment on the battlefield”.<sup>144</sup> Greece noted that “current weapon systems with high degree of autonomy when used for defensive purposes (...) have not raised the question of non-compliance with the principles of International Law, although sometimes they act fully autonomously due to the limited time to eliminate the threat”.<sup>145</sup>

On the human element in the use of lethal force, Greece stated “it is important to ensure that commanders and operators will remain on the loop of the decision making process in order to ensure the appropriate human judgment over the use of force, not only for reasons related to accountability but mainly to protect human dignity over the decision on life or death”.<sup>146</sup>



Greece stated that the “legal framework necessary to ensure that any new weapons (...) will be used in compliance with the provisions of international law has already been provided by Article 36 (...) and (...) by the Martens Clause”.<sup>147</sup>

#### HOLY SEE

On characterisation of the systems under consideration, the Holy See stated that “the starting point for a common understanding of LAWS should be the ethical implications upon which many legal frameworks (...) are based” adding that “the Martens’ Clause (...) offers a priori a crucial regulating compass for our work”.<sup>148</sup> The Holy See warned against trying to find a common understanding from a technological perspective, as this would “run the risk of implicitly accepting some potentially future dangerous weapon systems”.<sup>149</sup> It added that the “concept of “autonomy”, i.e., independence or self-steering of the will or one’s actions, can have several different facets and applications”.<sup>150</sup> Instead it advocates for an ethical/legal approach that could “allow us to identify, including *a priori*, the systems that we cannot accept because of their functions, based on an ethical and legal common framework”.<sup>151</sup> It suggested “to consider the principle of “anthropological non-contradiction” as the common point of reference for our discussion”.<sup>152</sup> In other words, any technology “to be acceptable, must be compatible and consistent with the proper conception of the human person, the very foundation of law and ethics”.<sup>153</sup>

On the human element in the use of lethal force, the Holy See stated that “a classic foundation of legal systems is the recognition of the human person as a responsible subject that could be sanctioned for his/her wrongdoing and be obliged to provide redress for the damage caused”, underlining that “[a]n autonomous system has no intention. It merely implements and elaborates algorithms but it does not possess intentions as such”.<sup>154</sup> The Holy See noted “if one delegates important decision-making powers to a machine whose behaviour is unpredictable or whose field of operation is not well-defined or known (i.e., it has machine learning capabilities), the crucial action/responsibility nexus would be inevitably jeopardized”.<sup>155</sup> The Holy See underlined several ethical and legal questions and contradictions. First, the Holy See stated that “[a]n autonomous weapons system could never be a morally responsible subject”, since “[t]he unique human capacity for moral judgment and ethical decision-making is more than a complex collection of algorithms”.<sup>156</sup> Secondly, the Holy See stated that the “unpredictability [of an autonomous weapons system] would be at odds with the principle of *jus in bello*”.<sup>157</sup> Thirdly, the Holy See underlined that “the delegation of powers to autonomous systems puts us on the path of negation, oblivion and contempt for the essential characteristics unique to the human persons and to soldierly virtues”.<sup>158</sup>

On the possible options for addressing the humanitarian and international security challenges, the Holy See said that the issue of LAWS has been “on our agenda for the fifth consecutive year now and thus we look forward to substantial outcomes and hope that a consensual legal and ethical framework can finally be established”.<sup>159</sup> The Holy See “believes that to prevent an arms race and the increase of inequalities and instability, it is an imperative duty to act promptly. The delegation of important decision-making powers to LAWS would take us down a perilous slippery slope. This is particularly problematic when this includes exerting injurious and lethal force”.<sup>160</sup> It noted that “[f]or this reason, relying on the principle of precaution and adopting a responsible attitude of prevention are of the utmost importance in our current endeavours”.<sup>161</sup>

#### HUNGARY

Hungary did not make a statement at the 2018 GGE meetings.

#### ICELAND

Iceland did not make a statement at the 2018 GGE meetings.

#### IRELAND

On characterisation of the systems under consideration, Ireland stated that there is a need for “a clear working definition”, adding that “[t]o try to attain agreement at this stage on a more complex definition could be counter-productive”.<sup>162</sup> Ireland said “the principle of effective human control over the use of force by autonomous weapons systems must remain a central element of our work”.<sup>163</sup> It noted that the term LAWS is comprised of three distinct elements (weapons systems, autonomy and lethality). It said the use of the term “weapon system implies (...) that the system under consideration should include the weapon that actually delivers the required effect to a target”.<sup>164</sup> Ireland defines autonomy as “the degree to which human agency is absent from key decisions”.<sup>165</sup> It added that “[t]he level of autonomy can vary from basic levels of automation through a spectrum of increasing autonomy”, which can go “up to and including fully autonomous systems which can operate across a range of functions without direct human control”.<sup>166</sup> On lethality, Ireland stated that it is not a prerequisite under the CCW, so that “[a]nother approach would be to remove the term ‘lethal’ from the title we are using”.<sup>167</sup> It also suggested avoiding debates on whether these systems exist at present.<sup>168</sup> As a definition, Ireland proposed: “A weapon system which can act autonomously in delivering lethal effects to a target and may also act autonomously in detection and target selection prior to engagement of the target”.<sup>169</sup>

On the human element in the use of lethal force, Ireland stated that “all weapons should remain under meaningful or effective human control and that only by retaining human agency in the decision to use force can we ensure compliance with IHL”.<sup>170</sup> Ireland added that the level of autonomy of a weapon system “is inversely proportional to the degree of human control being exercised over its operation” and that it “may be shaped by a number of factors including the type of information programmed into the machine”.<sup>171</sup> Ireland raised the concerns of “the potential for data used in algorithms to acquire and amplify existing social biases, including gender bias”.<sup>172</sup> It stated that another factor shaping the level of autonomy “may be the range of instructions given to the machine and general constraints imposed on the machine by a human operator”.<sup>173</sup> Ireland noted that as we move along the spectrum of autonomy, “to the question of weapon systems initiating attacks, or redefining operational aims and the self selection of specific targets, the question of ensuring effective human control becomes increasingly important”.<sup>174</sup> Ireland said that effective human control “requires that a human being makes the command decision to use force against identified target sets and has the responsibility of ensuring that such force is used in full compliance with applicable IHL”.<sup>175</sup>

On the possible options for addressing the humanitarian and international security challenges, Ireland noted in April that “[o]ne way to capture the consensus on the ethical issue would be to consider legally binding regulations that would confirm in the form of a legal obligation the recognised necessity to only use autonomous weapons which are under human control”.<sup>176</sup> Ireland suggested other possible measures, such as “to audit the relevant elements of IHL”, and “establishing an oversight regime, possibly a subsidiary body within the CCW framework, to monitor on a continuous basis emerging autonomous weapons applications and be in a position to report to states parties on their likely compliance with IHL” and “draft a best practices guide to the implementation of IHL”.<sup>177</sup> In August Ireland noted it “remains open and sees merit to the range of different proposals”.<sup>178</sup> Ireland stated that it “saw merit in the political declaration, stating that it “has the potential to create the conditions and support our efforts going forward”.<sup>179</sup> It added

that “[a]t this stage, the proposal to immediately begin negotiations on a legal binding instrument would, we believe, be somewhat premature. Ireland sees “merit in a legal binding option” but “the current lack of a common understanding of what is meant by LAWS means that we do not yet have an appropriate platform on which to build an effective negotiating process”.<sup>180</sup>

#### ITALY

On characterisation of the systems under consideration, Italy stated that agreeing on a working definition “is at this stage a fundamental step, from which the discussion on other elements will follow”.<sup>181</sup> Italy maintains that the debate “should focus on those lethal weapons systems which are fully autonomous” and that “these offensive systems – that do not yet exist, but could possibly be developed in the future – pose problems of compatibility with IHL rules”.<sup>182</sup> Italy believes it is possible to make a distinction “by assessing the notion of “autonomy in a weapons system” against the type and degree of human control required or allowed in the use of such a weapon system.” It added that autonomy should be “put in relation with the type of tasks that are executed by the system”.<sup>183</sup> Italy stated that “existing automated weapons systems, governed by prescriptive rules and whose functioning is entirely predictable and intended”, as well as “weapons systems with some fully autonomous functions” are not LAWS.<sup>184</sup>

On the human element in the use of lethal force, Italy stated that “it is paramount that the ultimate decision to use lethal force and to produce lethal effects fully remains in the hands of human beings”.<sup>185</sup> Italy believes these “weapon systems do not present accountability gap issues, as long as responsibility for their effects can be ascribed to the human operators who decided to field and activate them”.<sup>186</sup> It added that “operators charged with deployment and activation decisions will have to take due account of the environment in which the weapons would operate”.<sup>187</sup>

On the possible options for addressing the humanitarian and international security challenges, Italy stated that it “would support efforts aimed at creating the conditions for more widespread compliance with the requirement of Article 36 of Additional Protocol I” and that it shares the views “expressed in the Working Paper 4 jointly presented last year by France and Germany”.<sup>188</sup> Italy believes that “drafting a political declaration which sets basic agreed principles and lays the ground for further work on the issue is an interesting proposal”.<sup>189</sup> Italy stated that “progress in civilian research, development and use of dual-use technologies should not be hampered by excessive regulation”.<sup>190</sup>

#### LATVIA

Latvia aligned itself with the EU statement.<sup>191</sup>

#### LIECHTENSTEIN

Liechtenstein did not make a statement at the 2018 GGE meetings. However, Liechtenstein did make a statement at the First Committee at the UN General Assembly.<sup>192</sup> It stated that “a number of technical developments clearly point to a need for new legal obligations, in particular in the area of lethal autonomous weapon systems”.<sup>193</sup> It supports “efforts to establish binding standards to ensure a human component in the decision making processes of such systems” and stated that “[t]he principled resistance of very few States should not prevent the large majority from establishing and benefitting from new standards in this area”.<sup>194</sup>

#### LITHUANIA

Lithuania did not make a statement at the 2018 GGE meetings.

#### LUXEMBOURG

On the human element in the use of lethal force, Luxembourg stated that “[i]n order to fully comply with IHL, we believe that a certain degree of meaningful human control is mandatory”.<sup>195</sup> It added that “[f]undamental principles of IHL (...) can only be guaranteed if there remains an element of meaningful human control during the stages of target selection and for the ultimate decision of taking a human life.” Luxembourg said that “[b]esides the ethical arguments to be made in favour of this principle, we also believe it is a prerequisite for the compliance with IHL. Furthermore, meaningful human control would guarantee that there remains responsibility and accountability for the use of LAWS”.<sup>196</sup>

On the possible options for addressing the humanitarian and international security challenges, Luxembourg expressed its full support for “the proposal to develop a political declaration” that it sees as “a reasonable and achievable middle ground in the near future” and that “would be a first step in the right direction”.<sup>197</sup> Luxembourg wished to highlight certain references of the political declaration, in particular “the urgency of taking action now in order to guide the development of LAWS”, “the confirmation that humans should continue to be able to make the ultimate decision in regards to the use of lethal force”, “the fact that the political declaration should be viewed as a first step, and not an end in itself” and that “the way forward would be the development of a code of conduct, containing politically binding rules”.<sup>198</sup> Luxembourg stated that the impact of artificial intelligence on society will mostly be positive and we “should be careful not to constrain the potential of this technology”.<sup>199</sup> However, “being aware of the benefits of a certain technology should not prevent us from managing the associated risks”.<sup>200</sup>

#### MALTA

Malta did not make a statement at the 2018 GGE meetings.

#### NETHERLANDS

On characterisation of the systems under consideration, the Netherlands does not believe that “a detailed characterisation or definition of LAWS (...) is a prerequisite to progress with our discussion”.<sup>201</sup> The Netherlands put forward the following working definition: “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”.<sup>202</sup> The Netherlands emphasised that “the key question is how all weapons, including autonomous weapons, remain under meaningful human control”.<sup>203</sup>

On the human element in the use of lethal force, the Netherlands stated that humans are “ultimately responsible for the deployment of any weapon system”.<sup>204</sup> It said that “meaningful human control needs to be exercised within the complete targeting cycle”, adding that “control is distributed. People, with different roles (...) exercise together sufficient levels of human control”.<sup>205</sup> This means that “humans decide, based upon the assessment of the operational context and other factors, whether deployment (...) is allowed under international law”, adding that “humans define the weapon system’s goal” which could be “specific identified targets or (...) type of targets”.<sup>206</sup> The system “should not be able to change its goal-function, or desired effect”.<sup>207</sup> This type of system would be a “fully autonomous weapons system” which would “not to

be under meaningful human control”.<sup>208</sup> It believes meaningful human control must apply “to the whole weapon system’s lifecycle”.<sup>209</sup> During the design phase “[m]eaningful human control should invariably be part of overall design requirements”, for example so that the operator understands the systems behavior.<sup>210</sup> The Netherlands mentioned the requirement of “extensive, realistic and rigorous testing” and that autonomous weapon systems must be “reliable and predictable”.<sup>211</sup> The Netherlands mentioned that autonomous weapon systems “may provide key military advantages” as they respond “faster and more accurately than humans, which can reduce risks to the civilian population and friendly units”.<sup>212</sup>

On the possible options for addressing the humanitarian and international security challenges, the Netherlands stated that the key focus should be “on how we can ensure that the deployment of autonomous weapon systems remains under meaningful human control”.<sup>213</sup> It sees merit in “discussing human control in all the phases of the entire life cycle of the system”, including the exchange of information on design testing and training of military personnel.<sup>214</sup> It is also open to “considering the establishment of a technical group of experts” that could develop an “interpretative guide (...) on the requirements for the deployment of autonomous weapons systems under existing international law”.<sup>215</sup> The Netherlands stated that it continues “to be willing to share best practices” on weapons reviews and that we should strive for “better and universal implementation of weapons reviews”.<sup>216</sup> Finally, the Netherlands supports “further discussion about a possible political declaration as a way to consolidate our shared understanding and to highlight the guiding principles we are developing”.<sup>217</sup>

#### NORWAY

On characterisation of the systems under consideration, Norway stated that its understanding of autonomous weapons systems “is closely tied to a consideration of the human element in the use of lethal force”.<sup>218</sup> It defines LAWS as “weapons systems that are able to select and attack targets without adequate, meaningful or necessary human judgement and control. These are systems with autonomy, or at least elements of autonomy, in their ‘critical functions’”.<sup>219</sup> However, it stated that they must be distinguished by weapon systems already in use “that are highly automatic, but which operate within such tightly constrained spatial and temporal limits that they fall outside the category of ‘fully autonomous weapons systems’”.<sup>220</sup>

On the human element in the use of lethal force, a key question for the Norwegian delegation is “[w]hat would in a specific instance constitute adequate, meaningful or necessary human control”, adding that “[m]any of the core rules of international humanitarian law presume the application of human judgement in, and human control over, the decision-making process”.<sup>221</sup> Thus, in its view, the concepts of human judgement and human control can “provide a useful demarcation between, on one hand, weapons systems that can be used within the limitations set by international humanitarian law and, on the other hand, systems that cannot”.<sup>222</sup>

On the possible options for addressing the humanitarian and international security challenges, Norway put forth that a key question that merits further consideration is “whether existing international regulation of the development and use of the weapons systems in question, provide sufficient guidance to ensure that no weapon system will ever detect, select and/or engage targets without adequate, meaningful or necessary human judgement and control”.<sup>223</sup> However, Norway is sceptical “whether a weapon system (...) that it is able to select and/or attack targets without adequate, meaningful or necessary human judgement and control, would be able to operate within the limitations set by international law”.<sup>224</sup> Norway has not yet

concluded whether LAWS “warrant the development of a new international instrument” nor the “most appropriate form of any new instrument”.<sup>225</sup> It sees merit in “further discussion and information sharing on how existing regulation, including national Article 36 processes, can be best implemented”.<sup>226</sup> Norway welcomes the German-French proposal to develop a political declaration. It stated that: “a political declaration could capture the emerging consensus” and “be a useful step forward and a possible ‘compromise’ between those states that hold that existing regulation is sufficient, and those states that would prefer to start negotiations on a legally-binding instrument”.<sup>227</sup>

#### POLAND

On characterisation of the systems under consideration, Poland stated that “[d]ue to the ever-changing nature of emerging technologies, finding a proper definition of LAWS is at this stage a very challenging task”.<sup>228</sup> It noted two basic questions need to be addressed: “Do we want to define LAWS in order to ban them? Or do we want to create a broad definition of fully autonomous weapons systems and then determine to what extent a human control over specific functions of these systems is required?”<sup>229</sup> Poland shares the view that “lethality as a characteristic of weapons does not bring necessarily an added-value to our discussion”.<sup>230</sup> In fact, Poland would be in favour of using the term FAWS rather than LAWS. It said that to make progress there is a “need to focus on the level and key elements of human control over weapons systems”, adding that having a set of key characteristics of LAWS “would be a prerequisite for seeking future policy options”.<sup>231</sup>

On the human element in the use of lethal force, Poland said that IHL “requires an appropriate level of human control and supervision over selecting and attacking targets and, primarily, an ability to intervene after activation and an ability to deactivate the system if necessary”.<sup>232</sup> Poland shares the common approach “that human control over the critical functions of weapon systems need to be retained. Humans should play a decisive role in deployment, targeting and use of force”.<sup>233</sup> It is “leaning to the conviction that the ethical dimension is of a primary character” as it “is unequivocally related to the issue of responsibility”.<sup>234</sup> Poland said that “humans should remain fully responsible for decisions to use force. In this context, we would like also to stress the importance of predictability”.<sup>235</sup> Poland argues that the debate should be conducted with humans at the centre “due to distinctively human characteristics that AWS do not have, namely the human ability for ethical reasoning and ethical conduct which are inherent to life-and-death decisions”.<sup>236</sup> On responsibility, Poland stated that “[t]he idea of any weapon system, that places the use of force beyond human control, is not acceptable and more responsibility for decisions to kill and destroy cannot be relegated to machines”.<sup>237</sup> Poland also set out that in order to comply with the principle of proportionality, “autonomous weapons would, at a minimum, need to be able to estimate the expected amount of collateral harm that might come to civilians from an attack”.<sup>238</sup>

On the possible options for addressing the humanitarian and international security challenges, Poland stated that there should be work “on strengthening existing regulations like Article 36 (...) as well as on establishing principles and limits for autonomy in weapons systems because only humans, equipped with ethical reasoning, can be held accountable for decisions to use force”.<sup>239</sup> Poland also sees the opportunity to develop a political declaration “affirming State Parties’ desire to maintain human control with regard to autonomous systems”.<sup>240</sup>



## PORTUGAL

Portugal did not make a statement at the 2018 GGE meetings.

## ROMANIA

Romania did not make a statement at the 2018 GGE meetings.

## SLOVAKIA

Slovakia did not make a statement at the 2018 GGE meetings.

## SLOVENIA

On the human element in the use of lethal force, Slovenia said it is necessary to “preserve the autonomy of human control over artificial intelligence, with the possibility of human intervention in all phases of LAWS operation”.<sup>241</sup> It added that “it is necessary to ensure that the autonomy of the implementation of an attack cannot allow for the independent choice of objectives”.<sup>242</sup> Slovenia noted that “artificial intelligence can serve to support the military decision-making process and contribute to certain advantages, but cannot in any way substitute it”.<sup>243</sup>

Slovenia advocates “the development of Autonomous Weapons Systems under strictly defined conditions, namely: (i) it is carried out under the control of state actors; (ii) it will advance the development and progress of civilian technologies to the benefit of humanity; (iii) it will benefit global security and stability; and (iv) the technological progress using artificial intelligence will improve military efficiency, make data processing more accurate and targeting more effective, with fewer casualties and damage and consequently result in a higher level of respect for international humanitarian law”.<sup>244</sup>

On the possible options for addressing the humanitarian and international security challenges, Slovenia stated that, “a complete moratorium on LAWS does not seem feasible”, rather “countries would need to commit to certain restrictions regarding the continued use of LAWS”.<sup>245</sup> Slovenia emphasised that the “development of modern technologies for military purposes must not jeopardize” IHL, which “needs to be further developed/adapted to changing circumstances”.<sup>246</sup> Slovenia stated that the responsibility “for the use and consequences of improper use of LAWS should be borne by its owner or user”.<sup>247</sup> Slovenia believes that “the International Community should regulate the development and use of the LAWS (...) for example, by adopting a new additional protocol”.<sup>248</sup>

## SPAIN

On characterisation of the systems under consideration, Spain stated that it believes it is timely to obtain a “working definition of lethal autonomous systems that allows us to advance in the analysis of the degrees of autonomy and the environment in which they operate”, under the premise that fully autonomous lethal weapons systems do not currently exist.<sup>249</sup> Spain noted that it does “not own nor has the intention to acquire or develop fully autonomous lethal weapons systems”.<sup>250</sup> Spain said that some automated systems or system equipped with a certain degree of autonomy are out of the scope of the work, as they have foreseen sufficient human control in the exercise of the legitimate right to self-defence. These include those dedicated to the “self-protection of ships and aircraft or vehicles against anti-tank missiles, as well as drones or remotely operated systems”.<sup>251</sup>

On the human element in the use of lethal force, Spain wished to reiterate that the respect of IHL requires “sufficient human control on all weapons systems, as well as an attribution of legal responsibility to the operator and to the person who can order their unlawful use”.<sup>252</sup>

On the possible options for addressing the humanitarian and international security challenges, Spain reiterated that Article 36 reviews are the most effective mechanism to ensure compliance with IHL.<sup>253</sup> Spain noted “it would be possible to explore principles of conduct for responsible technological innovation (...) considering at the same time that we must not hinder civilian developments”.<sup>254</sup> Spain also wished to underline the importance of avoiding a lethal autonomous arms race, and prevent its possible acquisition by terrorists or non-state actors.<sup>255</sup> Spain stated that the voluntary exchange of experiences and good practices within the field of LAWS, as well as measures towards better transparency and trust would be interesting. Spain said that it is appropriate to prepare a “political declaration and a politically binding code of conduct that includes transparency measures”.<sup>256</sup> Spain also stated that bearing in mind the acceleration of technology, the creation of a committee of experts within the framework of the Convention that could analyse the risks of new emerging technologies could be considered.<sup>257</sup>

## SWEDEN

On characterisation of the systems under consideration, Sweden said “[t]his GGE may wish to consider a preliminary working definition for the purposes of more focussed discussions, bearing in mind that systems such as remotely piloted or automated systems are not within the scope of the GGE”.<sup>258</sup> It noted LAWS “do not exist and thus are possible future weapons systems”.<sup>259</sup> It added it is vital “to ensure that we are actually discussing the same thing”.<sup>260</sup> Sweden has issues with some definitions put forward, as they would “include existing weapons systems, but not only purely defensive systems, (...) but also offensive systems such as anti-ship missiles and air-air missiles”, adding the question of what “to regulate and what not to regulate would remain” and that “it puts existing weapons systems that are of no humanitarian concern and fully in line with IHL, in the same basket as “Terminators””.<sup>261</sup> Sweden noted that “[m]eaningful human control, or appropriate human involvement” is “of key importance in the context of LAWS” adding it could be further “explored and included in the characteristics of LAWS”.<sup>262</sup> Sweden suggested to explore the issues of “anti-personnel” and “anti-material” stating that “it’s more difficult to design a weapons system that distinguish[es] between a civilian individual and a soldier, but a lesser technical challenge to distinguish between a warship (...) and a civilian vessel” adding this is connected to which “environments prospective systems would operate”.<sup>263</sup> Sweden also stated that “[p]hrases such as “target selection and attack”, “human control in critical phase”, “weapon systems capable of independently identifying and launching attack with possible lethal consequences”, could also refer to existing systems that have are already in use without raising humanitarian concerns.<sup>264</sup>

On the human element in the use of lethal force, Sweden believes that if LAWS were developed, “the aspect of meaningful human control would be of key importance”.<sup>265</sup> Sweden noted LAWS “would not change the situation concerning legal accountability of soldiers and commanders”.<sup>266</sup> Sweden had several comments on the demand that LAWS should “remain under control at all times”. It stated this is not the case with a number of existing systems (for example the RBS15 anti-ship missile) and there are some specific military needs “that are relevant when we discuss aspects of human control.” For example “submarines avoid being in constant communication with their base and it’s called risk of detection.”<sup>267</sup>

On the possible options for addressing the humanitarian and international security challenges, Sweden fully acknowledges the public concern on the issue and the expectation that something needs to be done about it. Sweden is not convinced “that negotiation on a legally binding instrument would be the best way forward at this time” and that a “legally binding instrument (...) needs a definition”.<sup>268</sup> Sweden also believes that “negotiations to develop such an instrument would take time and serious resources”.<sup>269</sup> Sweden noted the difference with the Landmine Convention or the Cluster Munitions Convention as “[t]he weapon systems had been operative for many decades, the design and construction was well known”, “[a]s was the humanitarian cost caused by the use of the weapons (...) which provided convincing arguments for states to act”.<sup>270</sup> Sweden supports Ireland’s proposal for an oversight mechanism that “would be composed of technical governmental experts and serve as a form of early warning mechanism and report back (...) on developments”.<sup>271</sup> Sweden underlined the importance of “conducting legal reviews” that includes the necessity of predictability and that meaningful human control “would need to be tried, tested and evaluated”.<sup>272</sup> It sees the “voluntary exchange of national experiences with review procedures and information exchange (including on best practices) in the interest of greater transparency”.<sup>273</sup> On the German/Franco proposal, Sweden said it is “interesting and worth pursuing”, “would also serve as signal to the public that their concerns are being taken seriously” and could “underline all the areas where we have a common understanding”.<sup>274</sup> It added that another element could be “the importance that researchers and engineers (...) are familiar with IHL”.<sup>275</sup>

## SWITZERLAND

On characterisation of the systems under consideration, Switzerland stated that “the CCW is not aiming for a definitive binding definition” nor “seeking to draw a line between desirable, acceptable or unacceptable systems” or “what needs to be regulated, and how”.<sup>276</sup> It believes the CCW should not “establish a rigid, narrow and cumulative set of criteria” that no “Autonomous Weapon System would ever fall under” and would exclude “developments that warrant our consideration”.<sup>277</sup> Switzerland suggested a description of 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”.<sup>278</sup> The defining characteristics are whether a “system takes on the targeting functions that normally would be done by humans, if it can self-initiate and attack, and or independently select and attack targets”.<sup>279</sup> It remains convinced that IHL compliance should stay a central element of our work. Switzerland mentioned elements in the ‘via positiva’ namely the “critical functions notably in the targeting cycle” and putting the “human machine relationship and the issue of accountability” at the centre of a working definition.<sup>280</sup> Switzerland also underlined elements which in its view are not relevant for characterisation. These elements are *lethality* (as other effects must be included), *degree of autonomy* (as simple systems can be highly autonomous in the critical functions), “switch off button” (as it does in no way affect what happened in the time before), *self-learning*, (as there are many systems without this that still require our attention and consideration), and mobility (as autonomous use of force by static systems could also be relevant for consideration).<sup>281</sup>

On the human element in the use of lethal force, Switzerland stated that “such control (...) is a pertinent factor in view of legal, ethical and military considerations”, adding that increasing “autonomy could support or even replace humans in the execution of certain tasks, but human involvement will still be necessary, notably for qualitative judgements (values etc.)”.<sup>282</sup> It noted that “it is difficult today to conceive of an autonomous weapon system that would be capable of

reliably operating in full compliance with all the obligations arising from existing IHL without any human control in the use of force, notably in the targeting cycle” and that “it might be possible in the future, to exert already a significant level of control in the development and programming phase”.<sup>283</sup> Switzerland stated that “[t]he human control over the delivery of force, strictly speaking, is hence just one element, which is complemented by embedding human control in the design and development phases of the life-cycle of the system”.<sup>284</sup> Switzerland also said that predictability and reliability can be increased “by restricting the (...) systems’ parameters of engagement in line with the system’s capabilities”.<sup>285</sup> An important question for Switzerland is “what level of human control will always be required in the operational use of weapons” as IHL principles appear to require the presence of independent value judgements, which “at least for the moment (...) cannot be taken over by machines”.<sup>286</sup> It also stated that “(...) those who deploy and employ a system with significant autonomy will have a particular responsibility”.<sup>287</sup>

On the possible options for addressing the humanitarian and international security challenges, Switzerland wants to “work towards concrete outcomes” and sees “value in avenues that provide sufficient flexibility”.<sup>288</sup> Switzerland named options like weapons reviews, transparency and confidence building, and to “collate and clarify the relevant existing legal provisions as they apply to Autonomous Weapons Systems”.<sup>289</sup> It also stated that the Group’s future work should “not be prevented by the absence of an agreed definition”.<sup>290</sup> Switzerland believes that “a political declaration would represent a flexible way forward” and “could be a pragmatic and achievable next step”, adding it “would not necessarily represent an endpoint, but rather provide guidance on the way forward”.<sup>291</sup> It highlighted that key elements could include a working definition, “a shared understanding of what autonomy means in the targeting cycle”, a commitment to “retain the necessary level and degree of human implication”, a commitment to fully implementing and complying with international law, a reaffirmation of the obligation to weapon reviews, and the commitment to working towards best practices, technical standards and policy measures.<sup>292</sup> On the possibility of a legally binding instrument, Switzerland stated that “should a consensus emerge on the need for the start of negotiations in the CCW on a legally binding instrument” it would stand ready to participate.<sup>293</sup> Switzerland also stated that the proposals to move to negotiations on a legally binding instrument “draw our attention to a key element that we have also underlined: The need to look in greater detail at the issue of critical functions – selecting and engaging targets”.<sup>294</sup>

## UNITED KINGDOM

On characterisation of the systems under consideration, the UK stated that an “autonomous system is capable of understanding higher level intent and direction. From this understanding and its perception of its environment, such a system is able to take appropriate action to bring about a desired state. It is capable of deciding a course of action, from a number of alternatives, without depending on human oversight and control, although these may still be present”.<sup>295</sup> The UK added that “LAWS do not currently exist” and weapons systems that “are constrained in their action by bounded parameters and input by human controllers” are not fully autonomous weapons.<sup>296</sup> It noted the term ‘autonomy’ is relative and “is not a binary technology”, adding that the concept is more useful “when considered as a relative capability to accomplish a task” and “can be variable by altering limits on programming and parameters across different functions”.<sup>297</sup> The UK believes that “the level, nature and decisiveness of human control over critical functions is the key consideration in the characterisation of LAWS, rather than the technology”.<sup>298</sup> The UK added “that automation confers significant advantages and has existed in weapons systems for decades”.<sup>299</sup> It stated that “evolving human/machine interfaces will allow us to carry out

military functions with greater precision and efficiency”.<sup>300</sup> The UK also stated that it “does not envisage a scenario in which machines with high-order autonomy will exercise ethical and or legal self-determination: all machines will function because of some human initiation to undertake a task”.<sup>301</sup> The UK noted that “[a] ‘one size fits all’ solution runs the risk of neither successfully preventing irresponsible developments in lethal technology, nor realising the potential benefits of autonomy and AI”.<sup>302</sup>

On the human element in the use of lethal force, the UK said “the application of lethal force must be directed by a human, and that a human will always be accountable for the decision”.<sup>303</sup> The UK believes that “whatever the environmental complexity that the system operates within, a minimum level of human control is always required to fulfil the principles of international humanitarian law” and that “[h]uman control means that humans must have the ability to influence decisions on the use of lethal force”.<sup>304</sup> The UK also stated that “[t]he GGE should look to help establish which functions must be subject to human control, and which could be delegated to machines operating under other safeguards”, adding more work is required “to define the circumstances under which specific phase 5 activities [mission planning and force execution] could be delegated to a machine”.<sup>305</sup> The UK noted that “[w]arfare is complex, and will always demand a combination of humans and machines for any military organisation to be effective” adding that “computers are vital for (...) assimilation and processing of huge amounts of data (...) humans are vital for understanding context and evaluating consequences”.<sup>306</sup> The UK noted that the principles of IHL “can only be assessed and applied by a human”.<sup>307</sup> The UK said that “[o]nce deployed, accountability is vested in the trained operators who employ the system, and in the decisions taken by commanders at every level who have operational or tactical responsibility for the conduct of a campaign and the specialists who advise them”.<sup>308</sup> The UK believes that “there should be an audible trail of the decision makers and a record of their assessments on the suitability of the system for use in a specific theatre or phase operations”.<sup>309</sup> The UK stated that new weapons “must allow operators and commanders to understand the operating parameters of the system”.<sup>310</sup> The UK submitted a working paper that clarified the UK’s view on Human Control.<sup>311</sup> It put forward a framework based on the ‘sunrise’ diagram describing “various perspectives from which human control should be considered and influenced to ensure operationally effective, legal and ethical use of weapon systems”.<sup>312</sup>

On the possible options for addressing the humanitarian and international security challenges, the UK stated that its position is that “IHL and Article 36 Weapons Review are the applicable legal framework”.<sup>313</sup> The UK noted that “[t]here is more common understanding to be reached and hence, the debate is far from mature enough to consider legal options”, adding that “a ban on an undefined concept (...) seems counterintuitive and impractical.”<sup>314</sup> It does not agree with use of Protocol IV as it deals with specific capabilities that “can be exactly quantified and understood” and that “there is still a significant spectrum of opinion on what constitutes LAWS”.<sup>315</sup> The UK mentioned it is willing to “share best practice” and it “would also be open to considering the establishment of a technical group of experts” that review emerging technologies.<sup>316</sup> On the Franco-German proposal, the UK stated that it “would be receptive to further discussions on such a declaration”.<sup>317</sup>

# 3. Summary and conclusion

## 3.1 Summary

As this report shows, European states at the CCW have diverging views on how lethal autonomous weapon systems should be characterised, how autonomy should be understood and how the challenges of LAWS should be addressed. However, it appears that there are several elements upon which all European states agree. These include the CCW being the most appropriate framework for the discussions and the full applicability of international law, including international humanitarian law, to the development and use of LAWS. Several states also expressly referred to human rights law. Another element upon which states seem to agree is that there is a ‘red line’ beyond which increasing autonomy in weapons systems is no longer acceptable. Also there seems to be consensus on the need to maintain meaningful human control over the use of force. European states seem to share the opinion that there is a need for the CCW to work towards concrete policy outcomes to address the issue of LAWS.

### CHARACTERISATION OF THE SYSTEMS UNDER CONSIDERATION

A large number of European states seem to agree that a technical focus to characterise LAWS would not be useful and could be outpaced by future developments. There also appears to be agreement that it is not necessary to have consensus on a final definition to move forward in the debate, however a working definition would be useful to ensure there is a common understanding. For a few countries this would be a prerequisite to taking further steps. There is a divergence of views on which of the approaches put forward by the GGE’s chair would be best to address the characterisation of LAWS.<sup>318</sup> Several states combine the various approaches when characterising the systems in their statements.

There does seem to be growing consensus on human control as a central element in the discussions, specifically over the critical functions of selecting and engaging targets. In this respect meaningful human control is the term most used, but other states use the adjective adequate, effective or sufficient human control. A discussion on the most suitable adjective seems unproductive. What is important is that states agree that human control should not merely be nominal, but that there must be a level and form of human control that ensures compliances with ethical and legal norms.

A number of states mention that existing systems should be excluded from the debate. Either because they are tele-operated or are automatic or have limited autonomy and have been used for years without problems. Based on publicly available information, these weapon systems do appear to have sufficient measures limiting their autonomy (time, space and type of targets) and meaningful human control appears ensured. The fact that a number of systems



with a certain degree of autonomy have been used for years seemingly without raising ethical, legal or humanitarian concerns, could make them useful examples to further develop a better understanding of the concept of meaningful human control and the necessary measures to ensure this. PAX believes however it would not be logical to exclude them, simply based on the fact that they already exist. It would be undesirable to have different standards for existing and new weapon systems. Also, as technology of existing systems is being further developed to include increased levels of autonomy, all systems should be assessed based on the same norm.

Several states mentioned the concept of autonomy. There are diverging views of what this entails. Estonia noted autonomy is not an on/off switch and Finland stated there is no technological reference point indicating when a system becomes fully autonomous. Estonia and Finland, for example, define autonomy as the “capability to perform a task in a self-sufficient manner”, while Ireland defines autonomy as the “degree to which human agency is absent from key decisions”.<sup>319</sup> Most states seem to agree autonomy is related to a function and not necessarily a system as a whole. A few states noted that the term ‘lethal’ is not an exclusive element in the characterisation of LAWS. This seems in line with the fact that IHL covers all methods and means of warfare and is not limited to lethal effects. Switzerland noted that the debate “should also cover means and methods of warfare that lead to indirect lethal effects or that do not necessarily inflict physical death, but the effects of which may be restricted to causing, for example physical injury short of death, and physical destruction of objects”.<sup>320</sup>

#### HUMAN ELEMENT IN THE USE OF LETHAL FORCE

There seems to be an emerging consensus on the need to retain meaningful human control over the use of force, with many states mentioning the critical functions of selecting and attacking targets. Human control over the critical functions is also mentioned by a large number of European states as a prerequisite for compliance with IHL. A number of states note that the law is addressed to human agents. The concept of meaningful human control was also put forward as a way of ensuring accountability. The ethical underpinning of human control is also mentioned by several states, specifically regarding life and death decisions. A number of European states noted that these legal and ethical decisions require attributes unique to humans (qualitative decision making) and therefore could not be delegated to machines.

A small number of states believe human control over the decision to deploy a system in compliance with IHL would be sufficient. Parameters limiting the autonomy of a weapon system to ensure human control were put forward by several states. These include setting limits in space and time of the operation and ensuring the commander or operator understands the capabilities of the system and has sufficient situational awareness. Even though the critical functions are often mentioned as the key function needing human control, a number of states note human control can be and should be applied in the broader targeting cycle and entire life-cycle of a weapon system. Examples include ensuring meaningful human control being part of the overall design requirement or as a fundamental principle in developing, testing and reviewing the acceptability of a weapon system. These measures should be aimed at ensuring that a system complies with the legal and ethical norms during deployment and specifically in the use of force. An interesting point raised by the Netherlands is that human control over existing systems is usually distributed over several human actors (commander, operator, legal advisor). A number of states mentioned that human-machine interaction could be beneficial and support the operator and commanders decision making. The UK stated “computers are vital for (...) assimilation and processing of huge amounts of data (...) humans are vital for understanding context and evaluating consequences”.<sup>321</sup> There

is a clear need to further develop the concept of human control as there might be a divergence of views of what the concept entails. Does it mean continuous real time control over a weapon system, or is the decision that a weapon system can be deployed sufficient? Future work on this concept is needed and could be a central element within the debate. A key question to be addressed will be what level and form of human control is necessary to ensure compliance with ethical and legal norms.

#### POSSIBLE OPTIONS FOR ADDRESSING THE HUMANITARIAN AND INTERNATIONAL SECURITY CHALLENGES

European states seem to agree that there is a need for the GGE to work towards concrete policy outcomes. Several possible options were proposed at the 2018 GGE meetings: the proposal to start negotiating a legally-binding instrument, the proposal for a political declaration, as well as other measures, such as transparency and confidence-building measures, information-sharing and the sharing of best practices. Within the CCW as a whole, the option of a legally binding instrument has the most support. However, looking at European states, a political declaration, specifically the proposal by France and Germany, drew much support. Over half (11 of the 19) of the European states who made statements at the GGE in 2018 supported a political declaration. However, a couple of states that support the political declaration have not excluded the possibility of working in the future on a legal instrument, and other states refer to the political declaration as an interim step. For instance, Switzerland stated that “should consensus emerge on the need for the start of negotiations in the CCW on a legally binding instrument”, they would stand ready to participate.<sup>322</sup> Ireland sees “merit in a legal binding option” but “the current lack of a common understanding of what is meant by LAWS means that we do not yet have an appropriate platform on which to build an effective negotiating process”.<sup>323</sup> At the August 2018 meeting Austria, together with Brazil and Chile, tabled a proposal for a mandate to start negotiating a new legally-binding instrument. Austria, the Holy See and Liechtenstein are the only European states that see a legal instrument as the only adequate measure to deal with LAWS. Slovenia also noted that “the International Community should regulate the development and use of the LAWS (...) for example, by adopting a new additional protocol”.<sup>324</sup>

Several states noted that autonomous functions can be dual-use and there is a need to ensure that a regulatory response does not hamper developments in the civilian sector. A number of other measures were mentioned. Weapon reviews were mentioned by 14 states. In general, states are in favour of such procedures, with some states emphasising the need for this regulation to be more universally implemented, and several states called for more transparency. Austria, for example, stated that Article 36 “does not really create a common standard”.<sup>325</sup> A few states called for the establishment of a technical group of experts. For example, Sweden supported the Irish proposal for a subsidiary body within the CCW, stating that it would “serve as a form of early warning”.<sup>326</sup> A couple of states also suggested the establishment of a technical group of experts within the GGE whose work would be to monitor developments related to LAWS. Finally, a small number of European states believed that existing IHL is sufficient to address the legality of LAWS. For example, Greece stated that the legal framework has already been provided by Article 36 and the Martens Clause.<sup>327</sup>

## 3.2 Conclusion

Taking into account the positions of European states and the overall GGE debate, a focus on human control over the critical functions would provide a logical framework to move the discussion forward. This would provide an adequate framework to address the legal, ethical and security concerns related to LAWS and would make it possible to take next steps towards concrete policy outcomes. A next step could be to operationalise the concept of meaningful human control. States should make explicit what level and form human control should have to ensure compliance with the existing norms. Related to this, states should make explicit what measures are needed to ensure human control, including measures that put limits on the autonomy of a weapon system and measures that ensure adequate human decision making. A focus on the critical functions would not mean the complete life cycle should not be taken into account. It merely reflects the opinion of a large number of states that the critical functions are the most relevant functions in relation to compliance with legal and ethical norms.

The fact that a number of European states support a political declaration appears to reflect the delicate balance many European states try to maintain. On the one hand they have technologically highly advanced militaries and are thus wary of limiting their options to further develop their military capabilities. At the same time they have a tradition of fostering existing legal and ethical norms and do acknowledge compliance concerns relating to LAWS.

The fact that these technologies, once developed, will likely proliferate widely and be available to a wide variety of actors, means the military advantage of these systems will be temporary and limited. The related likelihood of an arms race mechanisms developing in the absence of a legally binding instrument risks threatening international peace and security. Therefore PAX believes that it is in the interest of European states to work towards a legally binding instrument ensuring meaningful human control over the critical systems.<sup>328</sup> This would also be in line with the European Parliament resolution which was adopted with a wide cross-party support. A legal instrument is the most suitable and effective way to ensure the negative consequences of LAWS are prevented.

# Endnotes

- 1 There are several terms used to refer to these weapon systems. The CCW coined the term lethal autonomous weapon systems (LAWS). Other terms used are Lethal Autonomous Robots, (fully) autonomous weapons or killer robots. As the main focus of this report are the discussions at the CCW we will use the term lethal autonomous weapon systems here.
- 2 [Final Document of the Fifth Review Conference](#), CCW, 23 December 2016.
- 3 [Recommendations to the 2016 CCW Review Conference](#), submitted by the Chairperson of the Informal Meeting of Experts, 2016. The objective of the CCW is to prohibit or restrict the use of certain conventional weapons which may be deemed to be excessively injurious or to have indiscriminate effects. An example is Protocol IV, which was adopted in 1995, prohibiting the use and transfer of blinding laser weapons.
- 4 [The consequences of artificial intelligence on the \(digital\) single market, production, consumption, employment and society](#), European Economic and Social Committee, adopted May 2017.
- 5 [European Parliament resolution on autonomous weapon systems](#), September 2018.
- 6 [Parlementair Document 54K3203](#), Belgian Federal Parliament, July 2018.
- 7 [Provisional Agenda](#), submitted by the Chairperson, March 2018.
- 8 [Advance copy of the Final Report of the 2018 Group of Government Experts on LAWS](#), 31 August 2018, para 33.
- 9 Ibid., para 27.
- 10 Ibid.
- 11 Ibid., para 28.
- 12 [Keeping Control: European positions on lethal autonomous weapon systems](#), PAX, November 2017.
- 13 Like the 2017 report, the states included in the current report are European Union (EU) Member States, EFTA States (Iceland, Liechtenstein, Norway and Switzerland) and the Holy See. If the statements are available online a link is included.
- 14 Statement of Austria, GGE, CCW, Geneva, [9 April 2018](#).
- 15 Ibid.
- 16 Ibid.
- 17 Ibid.
- 18 Statement of Austria, GGE, CCW, Geneva, 27 August 2018.
- 19 Statement of Austria, GGE, CCW, Geneva, 28 August 2018.
- 20 Statement of Austria, GGE, CCW, Geneva, 28 August 2018.
- 21 Statement of Austria, GGE, CCW, Geneva, [11 April 2018](#).
- 22 Ibid.
- 23 Ibid.
- 24 Statement of Austria, GGE, CCW, Geneva, 28 August 2018.
- 25 Statement of Austria, GGE, CCW, Geneva, [11 April 2018](#).
- 26 Statement of Austria, GGE, CCW, Geneva, [13 April 2018](#).
- 27 Statement of Austria, GGE, CCW, Geneva, 28 August 2018.
- 28 Statement of Austria, GGE, CCW, Geneva, [13 April 2018](#).
- 29 Statement of Austria, GGE, CCW, Geneva, [9 April 2018](#).
- 30 Ibid.
- 31 Ibid.
- 32 Statement of Austria, GGE, CCW, Geneva, [13 April 2018](#).
- 33 Statement of Austria, GGE, CCW, Geneva, 27 August 2018.
- 34 Proposal put forward by Austria, Brazil and Chile, GGE, CCW, Geneva, 29 August 2018.
- 35 Statement of Austria, GGE, CCW, Geneva, 29 August 2019.

36 Ibid.  
37 Statement of Belgium, GGE, CCW, Geneva, [9 April 2018](#) (translation by the author).  
38 Ibid.  
39 Statement of Belgium, GGE, CCW, Geneva, [28 August 2018](#).  
40 Ibid.  
41 Ibid.  
42 Ibid.  
43 Ibid.  
44 Ibid.  
45 Statement of Belgium, GGE, CCW, Geneva, [28 August 2018](#); Statement of Belgium, GGE, CCW, Geneva, [29 August 2018](#).  
46 Statement of Belgium, GGE, CCW, Geneva, [29 August 2018](#).  
47 Ibid.  
48 Ibid.  
49 Ibid.  
50 Statement of Bulgaria, GGE, CCW, Geneva, [9 April 2018](#).  
51 Statement of Bulgaria, GGE, CCW, Geneva, [27 August 2018](#).  
52 Statement of Bulgaria, GGE, CCW, Geneva, [9 April 2018](#).  
53 Statement of Bulgaria, GGE, CCW, Geneva, [27 August 2018](#).  
54 Ibid.  
55 Ibid.  
56 Statement of Bulgaria, GGE, CCW, Geneva, [11 April 2018](#).  
57 Statement of Bulgaria, GGE, CCW, Geneva, [11 April 2018](#); Statement of Bulgaria, GGE, CCW, Geneva, [9 April 2018](#).  
58 Statement of Bulgaria, GGE, CCW, Geneva, [27 August 2018](#).  
59 Statement of Bulgaria, GGE, CCW, Geneva, 30 August 2018.  
60 Statement of Bulgaria, GGE, CCW, Geneva, [11 April 2018](#).  
61 Statement of Bulgaria, GGE, CCW, Geneva, 30 August 2018.  
62 Ibid.  
63 Statement of Bulgaria, GGE, CCW, Geneva, [11 April 2018](#); Statement of Bulgaria, GGE, CCW, Geneva, [9 April 2018](#).  
64 Statement of Bulgaria, GGE, CCW, Geneva, [9 April 2018](#).  
65 Statement of Bulgaria, GGE, CCW, Geneva, [9 April 2018](#); Statement of Bulgaria, GGE, CCW, Geneva, [29 August 2018](#).  
66 Statement of Bulgaria, GGE, CCW, Geneva, [29 August 2018](#).  
67 Ibid.  
68 Statement of Estonia, GGE, CCW, Geneva, [10 April 2018](#).  
69 Ibid.  
70 Ibid.  
71 Ibid.  
72 Statement of Estonia, GGE, CCW, Geneva, [27 August 2018](#).  
73 Statement of Estonia, GGE, CCW, Geneva, [10 April 2018](#).  
74 Ibid.  
75 Statement of Estonia, GGE, CCW, Geneva, [11 April 2018](#).  
76 Ibid.  
77 Statement of Estonia, GGE, CCW, Geneva, [28 August 2018](#).  
78 Statement of Estonia, GGE, CCW, Geneva, [11 April 2018](#).  
79 Statement of Estonia, GGE, CCW, Geneva, [28 August 2018](#).  
80 Statement of Estonia, GGE, CCW, Geneva, [11 April 2018](#).  
81 Statement of Estonia, GGE, CCW, Geneva, [29 August 2018](#).  
82 Ibid.

83 [Categorizing lethal autonomous weapons systems - A technical and legal perspective to understanding LAWS](#), working paper by Estonia and Finland, 24 August 2018.  
84 Ibid.  
85 Ibid.  
86 Ibid.  
87 Ibid.  
88 Ibid.  
89 Statement of Finland, GGE, CCW, Geneva, [9 April 2018](#).  
90 Ibid.  
91 Statement of Finland, GGE, CCW, Geneva, [27 August 2018](#).  
92 Ibid.  
93 Ibid.  
94 Ibid.  
95 Ibid.  
96 Statement of Finland, GGE, CCW, Geneva, [29 August 2018](#).  
97 Ibid.  
98 Ibid.  
99 Ibid.  
100 Ibid.  
101 Ibid.  
102 Statement of France, GGE, CCW, Geneva, [10 April 2018](#) (translation by the author).  
103 Ibid.  
104 Ibid.  
105 Statement of France, GGE, CCW, Geneva, [27 August 2018](#) (translation by the author).  
106 Ibid.  
107 Statement of France, GGE, CCW, Geneva, 28 August 2018 (translation by the author).  
108 Ibid.  
109 Ibid.  
110 Ibid.  
111 Ibid.  
112 [Human-Machine Interaction in the Development, Deployment and Use of Emerging Technologies in the Area of Lethal Autonomous Weapons Systems](#) submitted by France, 27-31 August 2018, Geneva.  
113 Statement of France, GGE, CCW, Geneva, [9 April 2018](#) (translation by the author). France also made a joint statement with Germany on item 6d in August, which is reflected in the table below.  
114 [For consideration by the Group of Governmental Experts on Lethal Autonomous Weapons Systems \(LAWS\)](#) submitted by France and Germany, 13-17 November 2017, Geneva.  
115 Statement of France, GGE, CCW, Geneva, [9 April 2018](#) (translation by the author).  
116 Statement of France, GGE, CCW, Geneva, 13 April 2018 (translation by the author).  
117 Ibid.  
118 [Human-Machine Interaction in the Development, Deployment and Use of Emerging Technologies in the Area of Lethal Autonomous Weapons Systems](#) submitted by France, 27-31 August 2018, Geneva.  
119 Joint Statement of France and Germany, GGE, CCW, [9 April 2018](#).  
120 Ibid.  
121 Joint Statement of France and Germany, GGE, CCW, [29 August 2018](#).  
122 Joint Statement of France and Germany, GGE, CCW, [9 April 2018](#).  
123 Ibid.  
124 [For consideration by the Group of Governmental Experts on Lethal Autonomous Weapons Systems \(LAWS\)](#), submitted by France and Germany, 13-17 November 2017, Geneva.



125 Joint Statement of France and Germany, GGE, CCW, [29 August 2018](#).  
 126 Ibid.  
 127 Ibid.  
 128 Ibid.  
 129 Ibid.  
 130 Joint Statement of France and Germany, GGE, CCW, [9 April 2018](#).  
 131 Statement of Germany, GGE, CCW, Geneva, [10 April 2018](#).  
 132 Ibid.  
 133 Ibid.  
 134 Statement of Germany, GGE, CCW, Geneva, [11 April 2018](#).  
 135 Statement of Germany, GGE, CCW, Geneva, [10 April 2018](#).  
 136 Statement of Germany, GGE, CCW, Geneva, [11 April 2018](#).  
 137 Statement of Germany, GGE, CCE, Geneva, [28 August 2018](#).  
 138 Statement of Germany, GGE, CCW, [April 2018](#).  
 139 Statement of Germany, GGE, CCE, Geneva, [28 August 2018](#).  
 140 Statement of Germany, GGE, CCW, Geneva, [10 April 2018](#).  
 141 Statement of Germany, GGE, CCW, [April 2018](#).  
 142 Statement of Greece, GGE, CCW, Geneva, [9 April 2018](#).  
 143 Ibid.  
 144 Ibid.  
 145 Statement of Greece, GGE, CCW, Geneva, [9 April 2018](#).  
 146 Ibid.  
 147 Ibid.  
 148 Statement of the Holy See, GGE, CCW, Geneva, [27 August 2018](#).  
 149 Ibid.  
 150 Ibid.  
 151 Ibid.  
 152 Statement of the Holy See, GGE, CCW, Geneva, [9 April 2018](#).  
 153 Ibid.  
 154 Statement of the Holy See, GGE, CCW, Geneva, [27 August 2018](#).  
 155 Ibid.  
 156 Statement of the Holy See, GGE, CCW, Geneva, [9 April 2018](#).  
 157 Ibid.  
 158 Ibid.  
 159 Ibid.  
 160 Statement of the Holy See, GGE, CCW, Geneva, [27 August 2018](#).  
 161 Statement of the Holy See, GGE, CCW, Geneva, [9 April 2018](#).  
 162 Statement of Ireland, GGE, CCW, Geneva, [13 April 2018](#); Statement of Ireland, GGE, CCW, Geneva, [10 April 2018](#).  
 163 Statement of Ireland, GGE, CCW, Geneva, [11 April 2018](#).  
 164 Statement of Ireland, GGE, CCW, Geneva, [10 April 2018](#).  
 165 Statement of Ireland, GGE, CCW, Geneva, [28 August 2018](#).  
 166 Statement of Ireland, GGE, CCW, Geneva, [10 April 2018](#); Statement of Ireland, GGE, CCW, Geneva, [29 August 2018](#).  
 167 Statement of Ireland, GGE, CCW, Geneva, [10 April 2018](#).  
 168 Ibid.  
 169 Ibid.  
 170 Statement of Ireland, GGE, CCW, Geneva, [11 April 2018](#).  
 171 Ibid.  
 172 Ibid.

173 Ibid.  
 174 Ibid.  
 175 Ibid.  
 176 Statement of Ireland, GGE, CCW, Geneva, [13 April 2018](#).  
 177 Ibid.  
 178 Statement of Ireland, GGE, CCW, Geneva, 29 August 2018.  
 179 Ibid.  
 180 Ibid.  
 181 Statement of Italy, GGE, CCW, Geneva, [9 April 2018](#).  
 182 Ibid.  
 183 Ibid.  
 184 Ibid.  
 185 Ibid.  
 186 Ibid.  
 187 Ibid.  
 188 Statement of Italy, GGE, CCW, Geneva, [13 April 2018](#).  
 189 Statement of Italy, GGE, CCW, Geneva, [9 April 2018](#).  
 190 Ibid.  
 191 See statement of the European Union, GGE, CCW, Geneva, [9 April 2018](#).  
 192 As Liechtenstein did not make any statements at the 2018 GGE meetings, but did make a statement at the First Committee UNGA, this statement was included to be able to reflect its position.  
 193 Statement of Liechtenstein, First Committee, UNGA, New York, [15 October 2018](#).  
 194 Ibid.  
 195 Statement of Luxembourg, GGE, CCW, Geneva, [9 April 2018](#).  
 196 Ibid.  
 197 Ibid.  
 198 Ibid.  
 199 Ibid.  
 200 Ibid.  
 201 Statement of the Netherlands, GGE, CCW, Geneva, [27 August 2018](#).  
 202 Ibid.  
 203 Ibid.  
 204 Statement of the Netherlands, GGE, CCW, Geneva, 28 August 2018.  
 205 Ibid.  
 206 Ibid.  
 207 Ibid.  
 208 Ibid.  
 209 Ibid.  
 210 Ibid.  
 211 Ibid.  
 212 Ibid.  
 213 Statement of the Netherlands, GGE, CCW, Geneva, 29 August 2018.  
 214 Ibid.  
 215 Ibid.  
 216 Ibid.  
 217 Ibid.  
 218 Statement of Norway, GGE, CCW, Geneva, [28 August 2018](#).  
 219 Ibid.

- 220 Ibid.
- 221 Ibid.
- 222 Ibid.
- 223 Statement of Norway, GGE, CCW, Geneva, [29 August 2018](#).
- 224 Ibid.
- 225 Ibid.
- 226 Ibid.
- 227 Ibid.
- 228 Statement of Poland, GGE, CCW, Geneva, [29 August 2018](#).
- 229 Ibid.
- 230 Statement of Poland, GGE, CCW, Geneva, [11 April 2018](#).
- 231 Statement of Poland, GGE, CCW, Geneva, [29 August 2018](#).
- 232 Ibid.
- 233 Statement of Poland, GGE, CCW, Geneva, [11 April 2018](#).
- 234 Ibid.
- 235 Ibid.
- 236 Ibid.
- 237 [Working Paper on Lethal Autonomous Weapons Systems](#) submitted by Poland, 9-13 April 2018, Geneva.
- 238 Ibid.
- 239 Statement of Poland, GGE, CCW, Geneva, [11 April 2018](#).
- 240 Statement of Poland, GGE, CCW, Geneva, [29 August 2018](#).
- 241 Statement of Slovenia, GGE, CCW, Geneva, [27 August 2018](#).
- 242 Ibid.
- 243 Ibid.
- 244 Ibid.
- 245 Ibid.
- 246 Ibid.
- 247 Ibid.
- 248 Ibid.
- 249 Statement of Spain, GGE, CCW, Geneva, [9 April 2018](#) (translation by the author).
- 250 Ibid.
- 251 Statement of Spain, GGE, CCW, Geneva, 27 August 2018 (translation by the author).
- 252 Ibid.
- 253 Ibid.
- 254 Ibid.
- 255 Ibid.
- 256 Ibid.
- 257 Ibid.
- 258 Statement of Sweden, GGE, CCW, Geneva, [9 April 2018](#).
- 259 Statement of Sweden, GGE, CCW, Geneva, 10 April 2018.
- 260 Ibid.
- 261 Ibid.
- 262 Ibid.
- 263 Ibid.
- 264 Statement of Sweden, GGE, CCW, Geneva, 29 August 2018.
- 265 Statement of Sweden, GGE, CCW, Geneva, 11 April 2018.
- 266 Ibid.
- 267 Ibid.
- 268 Statement of Sweden, GGE, CCW, Geneva, 29 August 2018.
- 269 Statement of Sweden, GGE, CCW, Geneva, 13 April 2018.
- 270 Statement of Sweden, GGE, CCW, Geneva, 29 August 2018.
- 271 Statement of Sweden, GGE, CCW, Geneva, 13 April 2018.
- 272 Statement of Sweden, GGE, CCW, Geneva, 11 April 2018.
- 273 Statement of Sweden, GGE, CCW, Geneva, [9 April 2018](#).
- 274 Statement of Sweden, GGE, CCW, Geneva, 13 April 2018; Statement of Sweden, GGE, CCW, Geneva, 29 August 2018.
- 275 Statement of Sweden, GGE, CCW, Geneva, 13 April 2018.
- 276 Statement of Switzerland, GGE, CCW, Geneva, [10 April 2018](#).
- 277 Ibid.
- 278 Ibid.
- 279 Statement of Switzerland, GGE, CCW, Geneva, [27 August 2018](#).
- 280 Statement of Switzerland, GGE, CCW, Geneva, [10 April 2018](#).
- 281 Ibid.
- 282 Ibid.
- 283 Ibid.
- 284 Ibid.
- 285 Statement of Switzerland, GGE, CCW, Geneva, [28 August 2018](#).
- 286 Ibid.
- 287 Ibid.
- 288 Statement of Switzerland, GGE, CCW, Geneva, [13 April 2018](#).
- 289 Ibid.
- 290 Statement of Switzerland, GGE, CCW, Geneva, [27 August 2018](#).
- 291 Statement of Switzerland, GGE, CCW, Geneva, [9 April 2018](#); Statement of Switzerland, GGE, CCW, Geneva, [13 April 2018](#).
- 292 Statement of Switzerland, GGE, CCW, Geneva, [9 April 2018](#).
- 293 Statement of Switzerland, GGE, CCW, Geneva, [29 August 2018](#).
- 294 Ibid.
- 295 Statement of the United Kingdom, GGE, CCW, Geneva, [10 April 2018](#).
- 296 Ibid.
- 297 Statement of the United Kingdom, GGE, CCW, Geneva, [10 April 2018](#); Statement of the United Kingdom, GGE, CCW, Geneva, 27 August 2018.
- 298 Statement of the United Kingdom, GGE, CCW, Geneva, [10 April 2018](#).
- 299 Statement of the United Kingdom, GGE, CCW, Geneva, 27 August 2018.
- 300 Statement of the United Kingdom, GGE, CCW, Geneva, [10 April 2018](#).
- 301 Statement of the United Kingdom, GGE, CCW, Geneva, 27 August 2018.
- 302 Ibid.
- 303 Statement of the United Kingdom, GGE, CCW, Geneva, 28 August 2018.
- 304 Statement of the United Kingdom, GGE, CCW, Geneva, [11 April 2018](#).
- 305 Statement of the United Kingdom, GGE, CCW, Geneva, 28 August 2018; [Human Machine Touchpoints: The United Kingdom's perspective on human control over weapon development and targeting cycles](#) submitted by the United Kingdom, 27-31 August 2018, Geneva.
- 306 [Human Machine Touchpoints: The United Kingdom's perspective on human control over weapon development and targeting cycles](#) submitted by the United Kingdom, 27-31 August 2018, Geneva.
- 307 Statement of the United Kingdom, GGE, CCW, Geneva, [10 April 2018](#).
- 308 Statement of the United Kingdom, GGE, CCW, Geneva, [11 April 2018](#).
- 309 Ibid.
- 310 Statement of the United Kingdom, GGE, CCW, Geneva, 28 August 2018.
- 311 [Human Machine Touchpoints: The United Kingdom's perspective on human control over weapon development and targeting cycles](#) submitted by the United Kingdom, 27-31 August 2018, Geneva.
- 312 Ibid.

- 313 Statement of the United Kingdom, GGE, CCW, Geneva, [12 April 2018](#).
- 314 Statement of the United Kingdom, GGE, CCW, Geneva, [12 April 2018](#); Statement of the United Kingdom, GGE, CCW, Geneva, 28th August 2018.
- 315 Statement of the United Kingdom, GGE, CCW, Geneva, 28 August 2018.
- 316 Statement of the United Kingdom, GGE, CCW, Geneva, [12 April 2018](#).
- 317 Statement of the United Kingdom, GGE, CCW, Geneva, 28 August 2018.
- 318 The Chair distinguishes four approaches, namely the separative approach, the cumulative approach, the accountability approach and the purpose oriented and effect-based approach. [Chair's summary of the discussion on agenda items 6 a, b, c and d, 9-13 April 2018](#), April 2018.
- 319 [Categorizing lethal autonomous weapons systems - A technical and legal perspective to understanding LAWS](#), working paper by Estonia and Finland, 24 August 2018. Statement of Ireland, GGE, CCW, Geneva, [28 August 2018](#).
- 320 Statement of Switzerland, GGE, CCW, Geneva, [10 April 2018](#).
- 321 [Human Machine Touchpoints: The United Kingdom's perspective on human control over weapon development and targeting cycles](#) submitted by the United Kingdom, 27-31 August 2018, Geneva.
- 322 Statement of Switzerland, GGE, CCW, Geneva, [29 August 2018](#).
- 323 Ibid.
- 324 Ibid.
- 325 Statement of Austria, GGE, CCW, Geneva, [13 April 2018](#).
- 326 Statement of Sweden, GGE, CCW, Geneva, 13 April 2018.
- 327 Statement of Greece, GGE, CCW, Geneva, [9 April 2018](#).
- 328 In September 2018 the European Parliament passed a resolution with an 82% majority urging "the VP/HR, the Member States and the Council to work towards the start of international negotiations on a legally binding instrument prohibiting lethal autonomous weapon systems" and to develop and adopt "a common position on lethal autonomous weapon systems that ensures meaningful human control over the critical functions of weapon systems, including during deployment". [European Parliament resolution on autonomous weapon systems](#), September 2018.





Sint Jacobsstraat 12  
3511 BS Utrecht  
The Netherlands

[www.paxforpeace.nl](http://www.paxforpeace.nl)  
[info@paxforpeace.nl](mailto:info@paxforpeace.nl)  
+31 (0)30 233 33 46

P.O. Box 19318  
3501 DH Utrecht  
The Netherlands