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# KILLER ROBOTS

/ What are they and what are the concerns?

# WHAT ARE KILLER ROBOTS?

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**KILLER ROBOTS ARE WEAPON SYSTEMS THAT WOULD SELECT AND ATTACK TARGETS WITHOUT MEANINGFUL HUMAN CONTROL.**

This means the decision to deploy lethal force would be delegated to a machine. This far-reaching development would fundamentally change the way war is conducted and has been called the third revolution in warfare, after gunpowder and the atomic bomb. The function of autonomously selecting and attacking targets could be applied to various platforms, for instance a battle tank, a fighter jet or a ship. Another term used to describe these weapons is lethal autonomous weapon systems (LAWS).

**A COMMON MISUNDERSTANDING IS THAT KILLER ROBOTS ARE DRONES OR THE TERMINATOR.**

Today's armed drones still have a human operator controlling the weapon system from a distance who is responsible for selecting and identifying targets as well as pulling the trigger. The issue is also not about the Terminator. This science fiction concept is unlikely to become a reality in the coming decades if ever at all. The issue is about the removal of meaningful human control from the critical functions of selecting and attacking targets; some of these systems may currently be under development and could be deployed in the coming years.

**THERE SHOULD ALWAYS BE MEANINGFUL HUMAN CONTROL OVER THE SELECTION AND ATTACK OF INDIVIDUAL TARGETS.**

The human operator must be able to make carefully considered legal and ethical assessments, with sufficient information about the situation on the ground and enough time to make a well-considered, informed decision. The desire to retain some form of human control lies at the heart of the debate over lethal autonomous weapon systems. What level and nature of human control is necessary to make a weapon system legally and ethically acceptable? How can we ensure that this control is effective, appropriate and meaningful?

# DO KILLER ROBOTS EXIST?

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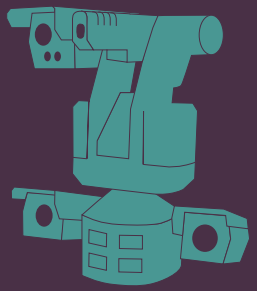
Unless constraints are put in place, lethal autonomous weapons will be deployed in the coming years rather than decades. Several precursors clearly demonstrate the trend to increasingly autonomous weapon systems.

# SGR-A1

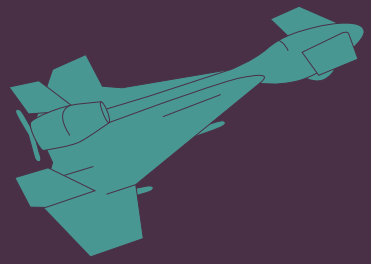
**MADE BY:** HANWHA (SOUTH KOREA)
**Sold to:** SOUTH KOREA



This stationary robot, armed with a machine gun and a grenade launcher, operated along the border between North and South Korea. It can detect human beings using infra-red sensors and pattern recognition software. The robot has both a supervised and unsupervised mode available. It can identify and track intruders, with the possibility of firing at them.

# HARPY

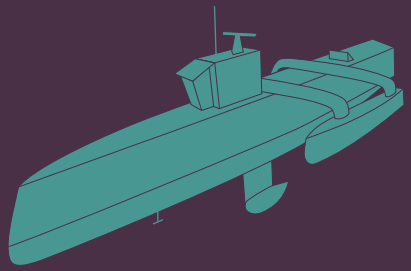
**MADE BY:** ISRAEL AEROSPACE INDUSTRIES (ISRAEL).
**Sold to:** CHINA, INDIA, ISRAEL, SOUTH KOREA AND TURKEY.



This 2.1m long 'loitering' missile is launched from a ground vehicle. It is armed with a 15 kg explosive warhead. The Harpy can loiter for up to 9 hours at a time, searching for enemy radar signals. It automatically detects, attacks and destroys enemy radar emitters by flying into the target and detonating.

# SEAHUNTER

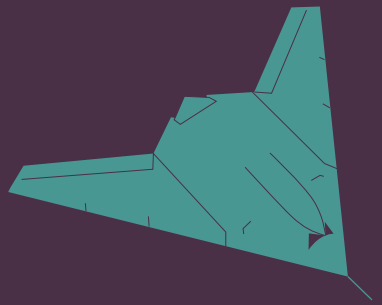
**MADE BY:** PENTAGON'S DARPA (UNITED STATES)
**Sold to:** UNDER DEVELOPMENT



This 40m long self-navigating warship is designed to hunt for enemy submarines and can operate without contact with a human operator for 2-3 months at a time. It is currently unarmed. US representatives have said the goal is to arm the Sea Hunters and to build unmanned flotillas within a few years. However, it has been said any decision to use offensive lethal force would be made by humans.

# NEURON

**MADE BY:** DASSAULT AVIATION (FRANCE)
**Sold to:** UNDER DEVELOPMENT



This 10m long stealth unmanned combat aircraft can fly autonomously for over 3 hours for autonomous detection, localization, and reconnaissance of ground targets. The Neuron has fully automated attack capabilities, target adjustment, and communication between systems.

**DUE TO THE SERIOUS LEGAL, SECURITY AND ETHICAL CONCERNS, THE CAMPAIGN TO STOP KILLER ROBOTS CALLS FOR A BAN ON THE DEVELOPMENT, PRODUCTION AND USE OF KILLER ROBOTS.**

# CONCERNS

## 1 ETHICS

A machine should never be allowed to make decisions over life and death. Such decisions should not be reduced to an algorithm. This goes against the principles of human dignity and the right to life.

A robot does not understand or respect the value of human life. This means that a robot will not be able to make a 'kill decision' that takes into account, implicitly or explicitly, human dignity. It is simply completing the task it was programmed to do. This devalues and dehumanizes the decision, and does not respect the value we place on human life.

## 2 PROLIFERATION

Once developed, lethal autonomous weapons may be relatively cheap to produce and simple to copy. This increases the likelihood of their proliferation to a wide variety of actors, including dictators and non-state actors.

Proponents often focus on the short-term advantages of

employing lethal autonomous weapons, but overlook the longer-term prospect that these weapons may be used against their military and civilian population.

## 3 LEGALITY

Killer robots are unlikely to be able to adhere to fundamental principles of International Humanitarian Law (IHL), such as distinguishing between a civilian and a soldier. A soldier cannot simply be defined as a human with a weapon. In some countries a civilian can carry a weapon for ceremonial reasons at a wedding, and shepherds may be armed to protect their livestock and themselves.

Even harder is the proportionality assessment that weighs civilian harm in relation to military advantage. It is impossible to simply program international law, as it is always dependent on interpretation of the context.

## 4 LOWER THE THRESHOLD FOR WAR

Some speculate that lethal autonomous weapons could lead to less casualties among the attacking forces. However this could also lead to an increase in conflicts by lowering the threshold of going to war. Also, if there are fewer risks to a soldier's security, it may be easier to employ lethal force. A perception of risk-free war may lead to a preference for military rather than political solutions.

## 5 ACCOUNTABILITY

Lethal autonomous weapons create an accountability gap regarding who would be responsible for an unlawful act. Who would be responsible: the manufacturer, developer, military commander or robot itself?

## 6 ARMS RACE

Rapid developments in robotics and artificial intelligence applied to military technology could lead to an international arms race, which would have destabilising effects and threaten international peace and security.

## 7 UNPREDICTABILITY

The deployment of lethal autonomous weapons could lead to accidental wars and rapid escalation of conflicts, as well as other unintended, but dangerous consequences. It's unclear how lethal autonomous weapons designed and deployed by opposing forces will react and interact with each other. These weapons could be highly unpredictable, especially in their interactions with other autonomous systems and if they are capable of self-learning.


UNITED NATIONS
NATIONS
STOP KILLER ROBOTS

# GLOBAL CONCERN

### PUBLIC OPINION

An IPSOS poll in 26 countries shows 61% of respondents oppose killer robots. The poll also asked what concerned them the most. Two-thirds (66%) answered that lethal autonomous weapons systems would "cross a moral line because machines should not be allowed to kill." Over half (54%) said these weapons would be "unaccountable.

### STATES

More than 80 states have spoken on the matter of killer robots since 2013 and 28 states have called for a ban. The majority of states have expressed their desire to retain some form of human control over weapons systems and the use of force.

### EUROPEAN PARLIAMENT

An overwhelming majority of members of the European Parliament have called for the start of negotiations to prohibit lethal autonomous weapons.

### ROBOTIC & AI EXPERTS

Over 3.000 artificial intelligence experts have called for a ban, including prominent scientists such as Stephen Hawking, Anca Dragan, Yoshua Bengio and Stuart Russell. The founders and directors of more than 200 technology companies have pledged not to develop killer robots, including Nnaisense and Clearpath Robotics. Google has committed to not design or deploy AI for use in weapons.

### ICRC

The International Committee of the Red Cross has called on states to establish internationally agreed limits on autonomy in weapon systems, that address legal, ethical and humanitarian concerns;

### UNITED NATIONS

Secretary-General António Guterres has called lethal autonomous weapons "morally repugnant and politically unacceptable." He has urged states to negotiate a ban on these weapons. UN Special Rapporteur Heyns has called for a moratorium on these weapons.

# TIMELINE

## 2009

➔ Founding of the International Committee for Robot Arms Control (ICRAC)

## 2012

➔ Founding of the Campaign to Stop Killer Robots

➔ Autonomous weapons discussed at the UN Human Rights Council

## 2014

➔ First informal meeting on lethal autonomous weapons at the UN in Geneva

➔ Clearpath Robotics becomes the first company to pledge to not develop killer robots

## 2015

➔ Open letter by over 3.000 artificial intelligence experts and scientists warning against killer robots

## 2017

➔ Letter by 116 tech companies calling on the UN to ban lethal autonomous weapons

## 2018

➔ Pledge by tech companies and individuals to not develop or produce lethal autonomous weapons

➔ The European Parliament calls for the start of negotiations on a ban on lethal autonomous weapon systems

➔ Austria, Brazil and Chile call for the start of negotiations on a treaty to retain meaningful human control over the critical functions in lethal autonomous weapon systems

"Machines that have the power and the discretion to take human lives are politically unacceptable, are morally repugnant and should be banned by international law."

SECRETARY-GENERAL ANTÓNIO GUTERRES

"These can be weapons of terror, weapons that despots and terrorists use against innocent populations, and weapons hacked to behave in undesirable ways. We do not have long to act. Once this Pandora's box is opened, it will be hard to close"

**- OPEN LETTER BY 116 TECH COMPANIES**

"States must now work to establish limits on autonomy in weapon systems to ensure compliance with international law and to satisfy ethical concerns."

**- INTERNATIONAL COMMITTEE FOR THE RED CROSS**

"... the actual concept of autonomous weapons, that decisions of life and death are left up to machines, is in principle and intrinsically a problem."

**- COUNCIL ON ETHICS,**

**NORWEGIAN GOVERNMENT PENSION FUND**

"... the proliferation of lethal autonomous weapon systems remains a clear and present danger to the citizens of every country in the world. "

**- RYAN GARIEPY, CLEARPATH ROBOTICS**

"... the question has to be asked whether it is not inherently wrong to let autonomous machines decide who and when to kill."

**- CHRISTOF HEYNS,**

**FORMER UN SPECIAL RAPPORTEUR**

# FAQ.

### ARE YOU AGAINST THE USE OF ROBOTICS BY THE MILITARY?

No. There are various useful and less controversial applications of this technology. For example, robots that are used for transportation.

### IS ALL AUTONOMY IN WEAPON SYSTEMS PROBLEMATIC?

No. There are functions that a machine can undertake autonomously without raising much concern. For example, autonomous take-off and landing, navigation and refuelling are not problematic. However, autonomy in the critical functions of selecting and attacking targets is highly problematic.

### WOULD A TREATY LIMIT POSITIVE CIVILIAN APPLICATIONS?

No. Robotics and AI have many positive applications which a ban should not limit. The Chemical Weapons Convention provides a good example. It demonstrates that it is possible to ban the undesirable military applications while allowing for useful civilian applications.

### DOES A BAN WORK?

Yes. The Chemical Weapons Convention (1992), the Mine Ban Treaty (1997) and the Convention on Cluster Munitions (2008) are all pertinent examples of treaties that have succeeded in preventing widespread use of these weapons and limit the civilian harm related to their use.

### IS IT POSSIBLE TO BAN A WEAPON THAT DOES NOT EXIST?

Yes. An example is the pre-emptive ban on blinding laser weapons (1998) due to the excessive injury they would cause. Even though it is technologically feasible to develop these weapons, they have not been deployed in warfare.

### DO ROBOTS MAKE LESS MISTAKES THAN HUMANS?

Humans make mistakes, but it is an illusion that robots would be infallible. Robots are programmed by humans and bugs in software and biases (gender, racial) are common. The person deploying the weapon system could also program it to undertake unacceptable actions.

### IS NEW INTERNATIONAL LAW NECESSARY?

Yes. Existing law does not adequately address all the legal, ethical and security concerns related to lethal autonomous weapons. These weapons fundamentally differ from other weapons and raise unique challenges. A weapon specific treaty can address these issues, including unambiguously addressing the application of existing law to these weapons.

**THIS INFORMATION BOOKLET WAS PRODUCED BY PAX, A CO-FOUNDER OF THE CAMPAIGN TO STOP KILLER ROBOTS**


## ABOUT PAX

➔ PAX is a Dutch peace organisation that works in 15 conflict areas around the world, including Syria, Iraq, South Sudan and DR Congo. PAX brings together people who have the courage to stand for peace. PAX also works on the issue of disarmament with a focus on weapons that cause unnecessary suffering among civilians. In the past PAX was involved in the processes leading to the treaties banning landmines (1997), cluster munitions (2008) and nuclear weapons (2017). PAX works on a wide range of disarmament issues, including arms trade, nuclear weapons, drones and the link between the financial sector and arms producers. PAX is co-founder and steering committee member of the Campaign to Stop Killer Robots.

**PAXFORPEACE.NL**

## ABOUT THE CAMPAIGN TO STOP KILLER ROBOTS

➔ The Campaign to Stop Killer Robots is an international coalition of more than 90 non-governmental organisations in more than 50 countries. The campaign was formed in October 2012 and is working to ban fully autonomous weapons and thereby retain meaningful human control over the use of force.

**STOPKILLERROBOTS.ORG**