Work Group II of the UN Disarmament Commission: Recommendations on common understandings related to emerging technologies in the context of international security

UNIDIR briefing on uncrewed systems

Excellencies, ladies and gentlemen, colleagues,

Today I will discuss uncrewed systems, their respective benefits and threats to international security, relevant technological developments, and what implications this all poses to arms control and disarmament.

What are uncrewed systems?

To start with, what are uncrewed systems? Uncrewed systems refer to systems which can operate in a range of domains, namely in the air, on the ground, and in the maritime domain.

These operate without personnel on board and are either controlled remotely or are semi-autonomous or even entirely autonomous. In the context of today’s briefing, the term “autonomy” refers to navigation abilities as well as object identification functions enabled by artificial intelligence, and not to autonomous targeting or use of force.

Uncrewed aerial vehicles, or UAVs are the most common type of uncrewed system used in the military as well as the civilian domain. In the maritime domain, we are seeing a keen interest, development and, increasingly, use, of systems which can operate either on the surface or underwater. Uncrewed systems destined for the land domain however face more environmental obstacles to their use. For this reason, my remarks today focus primarily on aerial and maritime systems, which I will refer to as UAVs and UMVs going forward.

UAVs and UMVs are not homogenous. For example, they can differ widely in terms of their size, payload weight, wing type, speed, ability to operate on or under water, their intended uses, and much more.

As mentioned, uncrewed systems can be used for both civilian and military purposes. Overall, military systems tend to have a higher endurance and payload capacity, as well as a higher cost than civilian systems, but this is not always the case. Indeed, certain civilian systems possess very performatant technical characteristics, making them as good if not better than certain low-end military uncrewed systems.

Regardless of the intended user, military actors can also choose to use civilian systems, including modified civilian systems; therefore, it isn’t always as easy as distinguishing between “military” and “civilian” systems given the increased blurring of the lines between them, in both functions and uses.

What benefits do they offer? What threats should we be prepared for?

This leads me to the second segment of my briefing: what can uncrewed systems be used for? What benefits do they offer, but equally, what risks and threats do they pose? Due to time constrains, I will highlight only a few overarching benefits and challenges, noting of course that this list is not exhaustive.

Benefits:

- **Risk to personnel life is reduced**: Use of uncrewed systems implies a different approach to military missions, namely due to the reduced risk to life of personnel during operations. Uncrewed systems could therefore incentivise riskier missions, as well as more persistent ones. For example,
it can enable longer maritime operations for UMVs in a way that would not be possible if personnel were on board.

- **Affordable force projection**: They also offer affordable force projection (affordable with respect to traditional, crewed systems). This means that not only can a greater range actors obtain uncrewed systems, they can also obtain a greater number of them compared to their crewed equivalents.

- **Peacekeeping and security provision**: Beyond military operations, uncrewed systems, so far particularly UAVs, can be used to deliver humanitarian aid, disaster relief, and ensure public safety. This can take the form of search and rescue, provision of food and medicine, but also aiding with peacekeeping or ceasefire monitoring.

**Challenges:**

- **Proliferation and misuse**: Uncrewed systems, and civilian UAVs in particular, are accessible to a large number of actors (military and civilian, state and non-state). The democratisation of access to a spectrum of actors increases the probability of them being diverted for use by illicit actors and for illicit purposes. This is relevant for both armed and unarmed systems. Indeed, unarmed systems can also pose risks to international peace and security through their ability to conduct surveillance and data gathering, which can namely enable attacks from other types of weapon systems. Moreover, unarmed systems can also be weaponised, with the vehicles themselves used as a weapon.

- **Separation between military and civilian systems becoming increasingly blurred**: Technological advances are increasingly blurring the lines between military and civilian technologies, with this trend particularly apparent regarding UAVs. Technological advances will be expanded upon further below.

- **Lowering the threshold for the use of force**: Uncrewed systems could lower the threshold for the use of force, particularly from the point of view of the legitimate use of force and its definition in international law. For example, their ability to remove personnel from risk has led to claims that this could incentivise armed hostilities or conflict.

It must be noted that some challenges are also specific to a certain domain of operation, and the scope and scale of some of the challenges also differ depending on the system. Currently, UAVs cause the greatest challenges to international security due to their accessibility and widespread use by a range of actors, but there is growing traction and use of maritime systems which should not be overlooked.

**What are relevant technological developments and what impact may these have on international security?**

Uncrewed systems are comprised of a set of components which make a whole. These components include the vehicle body itself; the means of propulsion; electronics and sensors; and the communications system.
Science and technology developments aim to improve the performance of uncrewed systems and these individual components, to overcome existing technical challenges and make vehicles more endurant, reliable, performant, and able to overcome countermeasures.

For example, advances in means of propulsion seeks to increase the endurance of systems, thus their range of action as well as their payload capacity.

Another example relates to ongoing developments in the fields of electronics, namely sensors, artificial intelligence and computing power which would serve to increasingly enable navigational autonomy and reduce reliance on an operator or satellite data. This could influence surveillance and reconnaissance activities.

Finally, broader technological trends, such as miniaturization should also be kept in mind. This relates to the improvement of systems and components, where they are kept the same size or made smaller, but without losing their quality or capabilities. In other words, size should not be taken as an indication of capability – yet categorisations of uncrewed systems whether for export control or other mechanisms often focus on these types of metrics.

**Conclusions: Implications for disarmament and arms control**

To conclude, there is continued and increased interest in the development and use of uncrewed systems. Several factors have driven this, with technological advances being one of them.

There are also certain implications to bear in mind for arms control and disarmament, namely around the transparency, oversight and accountability over the production, transfer, and use of uncrewed systems:

1. It is important to consider uncrewed systems as both a system as a whole and in terms of the individual components which comprise these systems. This is because elements can be replaced, added, or changed. For example, while uncrewed systems can be sold unarmed, it does not preclude a lethal payload being added to them subsequently.

2. Conventional arms control processes, such as confidence-building mechanisms and export control regimes, may lose relevance if they cannot accurately reflect evolution in the development and use of uncrewed systems. Focusing on the capability and effect or potential effect of uncrewed systems could be a way to help mitigate this. This should include considerations to ensure that these elements are sufficiently future-proofed so as to take into account potential future trends.

3. Democratization of access is one important aspect, but others include the trends affecting demand, and how this may be reflected in a democratization of production. This can make controlling and regulating the supply side more complex. This is important as it leads to questions for the UN Register of Conventional Arms and other instruments that focus on transfers of complete systems and not domestic production, licensed production or technology transfers.

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