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A 360° approach to drone proliferation in crisis and war zones

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On first instance one could ask oneself what relationship might justify NATO's interest in the use of dual-use technologies beyond the strictly military point of view, only to find out that operational necessities and official documents show that this connection is well established. During the Nineties of the past century NATO and UN had to find practical means of cooperating for peace-support and crisis-management operations, until September 2008 when the secretariats of both organisations agreed to establish a framework for expanded consultation and cooperation. In early 2016 NATO and UNODC joined efforts to support partners in Central Asia build technical capacities and skills to address the drug control challenges that impact their region and the world.

NATO's past Strategic Concept of 2010 recognised the risks and threats posed by the combination of terrorism, instability, trans-national illegal activities, cyberattacks, organised crime and extremist groups (paras 10-12). The current 2022 Strategic Concept, approved in the Madrid Summit, continues this line and it is worthwhile to mention its relevant paragraphs.

10. Terrorism, in all its forms and manifestations, is the most direct asymmetric threat to the security of our citizens and to international peace and prosperity. Terrorist organisations seek to attack or inspire attacks against Allies. They have expanded their networks, enhanced their capabilities and invested in new technologies to improve their reach and lethality. Non-state armed groups, including transnational terrorist networks and state supported actors, continue to exploit conflict and weak governance to recruit, mobilise and expand their foothold.

11. Conflict, fragility and instability in Africa and the Middle East directly affect our security and the security of our partners. NATO's southern neighbourhood, particularly the Middle East, North Africa and Sahel regions, faces interconnected security, demographic, economic and political challenges. These are aggravated by the impact of climate change, fragile institutions, health emergencies and food insecurity. This situation provides fertile ground for the proliferation of non-state armed groups, including terrorist organisations. It also enables destabilising and coercive interference by strategic competitors.

12. Pervasive instability results in violence against civilians, including conflict-related sexual violence, as well as attacks against cultural property and environmental damage. It contributes to forced displacement, fuelling human trafficking and irregular migration. These trends pose serious transnational and humanitarian challenges. They undermine human and state security and have a disproportionate impact on women, children and minority groups.

34. Countering terrorism is essential to our collective defence. NATO's role in the fight against terrorism contributes to all three core tasks and is integral to the Alliance's 360-degree approach to deterrence and defence. Terrorist organisations threaten the security of our populations, forces and territory. We will continue to counter, deter, defend and respond to threats and challenges posed by terrorist groups, based on a combination of prevention, protection and denial measures. We will enhance cooperation with the international community, including the United Nations and the European Union, to tackle the conditions conducive to the spread of terrorism.

The same summit approved the "Human Security Approach and Guiding Principles 14 Oct. 2022", where it is stated that NATO's human security work currently focuses on five areas where the Alliance can be most effective: protection of civilians; preventing and responding to conflict-related sexual violence; combating trafficking in human beings; children and armed conflict; and cultural property protection.

The following Vilnius Summit approved the "NATO Policy on Combatting Trafficking in Human Beings, 12 Jul. 2023", choosing to concentrate its attention on one facet of organised crime, under the wider term "non-state armed groups". In practical terms, whenever a NATO force is employed in a crisis prevention and management operation, following the 360-degree approach, it has to understand the political landscape of the operations theatre (which means also the infiltration of organised crime into politics) and to adopt the necessary force protection measures also vis-à-vis the risks posed by criminal organisations, including their employment of dual-use technologies.

While there is ample literature on the evolution of Law Enforcement Agencies/Military techniques and the deployment of dual-use technologies in military operations, little is known about the current and prospective use of kinetic dual use technologies by OCGs (Organised Criminal Groups) and DTOs (Drug Trafficking Organisations). Existing anecdotal evidence on the use of UAVs (Uncrewed Aerial Vehicles) for smuggling activities since 2014 indicate that current deployment may be still sporadic and primarily limited to small scale smuggling operations. Multiple factors indicate that the trend is likely to increase as a result of technological advancements, lower production costs, more awareness on social media and a growing base of skilled users among military, paramilitary units and the general population, especially younger generations and gamers' communities.

For the purpose of this article, the focus remains on OCGs but the use of kinetic dual use technologies could generally be exploited by terrorist groups alike. The design by LEAs (Law Enforcement Agencies) of dissuasive, preventive and repressive strategies adapted to the local context could be effective in addressing the misuse of these technologies by different groups of individuals.

1. The evolution of LEA/Military techniques and the deployment of dual-use technologies

In recent decades, the development of innovative technologies, often produced for Civil Use but with possibilities of use for the Military (Dual-Use Technologies) has been fundamental both for the Armed Forces and for LEAs.[1]

Considering the war in Ukraine, Horizon Europe, the EU key funding program for research and innovation, which in the past was only focused on Civil Security-Law Enforcement technologies, more recently expanded its research to also encompass Defence/Military technologies.[2]

Examples of dual-use technologies include satellites, drones, radars, AI imaging technologies and electronic counter measures (ECM):

- Satellite imaging technologies: thanks to the lower costs of set up and launch, Low Orbit Satellites have been employed in Border Control[3];
- Drones[4]: the use of UAVs is extensive in patrolling activities. One example is the Predator B UAV recon asset which provides an extensive suite of intelligence surveillance reconnaissance systems (ISR);
- Radars: originally created for military use, radars are applied in patrolling activities at the borders and can be installed on Low Orbit Satellites, UAVs or on cars, i.e., Vehicle and Dismount Exploitation Radar (VADER);

[1] Renewed attention to Dual Use technologies in the European Union is reflected in the requirement that "All H2020-funded projects must comply with the relevant national, international and EU laws on dual-use items." (EU Commission Guidance note — Research involving dual-use items). "Definition: items, including software and technology, which can be used for both civil and military purposes, and shall include all goods which can be used for both non-explosive uses and assisting in any way in the manufacture of nuclear weapons or other nuclear explosive devices – EU Article 2(1) of Regulation No 428/2009.

[2] "We will enhance and leverage collaborative defence investments at the EU level, including Research and Technology. We will fully exploit the potential of synergies with other EU financial instruments, such as Horizon Europe" Council of the European Union – Brussels 21 March 2022.

[3] The United States Department of Homeland Security (DHS) use CubeSat technologies to control the Southwest border with Mexico.

[4] UAVs have been around since 1917; the first one was a quadcopter called the Ruston Proctor Aerial Target, and it was utilized by the military to drop bombs on enemy territory/ EW TOG paper - OneDrive (live.com)

- AI imaging technologies: specific intelligence military technology AI IMINT (IMage INTelligence), is used extensively to fight trafficking and smuggling activities, e.g., illicit oil smuggling to North Korea;
- ECM (Electronic Counter Measures) can be used to jam communication signal between different groups or in case of UUV (Uncrewed Underwater Vehicles) or USV (Uncrewed Surface Vehicles).

2. Anecdotal evidence on the use of UVs by criminals and DTOs

Alike opposing armies whose technological superiority is key to determine the outcomes of confrontation, LEAs and OCGs are engaged in an ever-ending struggle to acquire new technologies that could increase the chances of dominance in their respective fields of action. Criminals are traditionally inventive and adaptive to countermeasures.

Early documented evidence about the use by criminals of UAV to transport items like drugs, weapons and cell phones into US prisons date back to 2013. Similar incidents have been recorded in 2014 and 2015 in Ireland, Britain[5], Australia, and Canada and continue to these days[6].

In the context of smuggling operations, UVs can be utilized effectively to transport goods across borders. One of the first recorded cases of this use dated back to 2014 when Russian Border Guards near Kaliningrad seized a UAV transporting 10 kilograms (about 22 pounds) of cigarettes[7].

In April 2015, near Calexico, California, USCBP (US Customs and Border Protection) seized approx. $1,5 million worth of heroin that had been smuggled across the border using a radio controller to command a commercial-grade, multirotor aircraft (quadcopter) to drop bundles enclosed in bubble

[5] On 19 Dec.2018 drone sighting caused the Gatwick airport to close its only runway and suspended all flights for two days: Gatwick Airport Shut Down by 'Deliberate' Drone Incursions - The New York Times (nytimes.com)

[6] Drone Contraband Deliveries Are Rampant at US Prisons | WIRED UK Drugs, weapons 'smuggled to prisoners by drone' - BBC News.

[7] Update: Russians capture cigarette-smuggling drone | Ars Technica,
Lithuanian drone detained in Russia last week was used for cigarette smuggling - World - TASS,
Russians capture cigarette-smuggling drone – sUAS News – The Business of Drones,
The Lithuanian Mob Was Smuggling Cigarettes Into Russia with a Drone (vice.com).

wrap. This marked the country's first seizure of a narcodrone, an uncrewed vehicle transporting illegal drugs from Mexico to the United States[8].

The use of UV as delivery drones is not limited to aerial vehicles but also includes Uncrewed Underwater Vehicles (UUVs). In July 2022, Spanish police seized three underwater drones built to smuggle drugs across the sea from Morocco. The unmanned submersibles are apparently capable of carrying up to 200 kilograms of cargo[9].

In Mexico drug cartels are at war and the situation is more alarming. As in modern warfare, DTOs use UAVs for Intelligence, Reconnaissance and Surveillance (IRS) missions to prevent counter narcotic operations led by US and Mexican LEAs. In the last 5 years, the Jalisco Cartel deployed weaponized UVs as loitering munitions. In 2021, the Cartel killed several police and military officers using "suicide drones" charged with explosive.[10] Since 2014, some cartels can commission their own customized UAVs with tailored product specifications[11].

3. Future trends

Existing anecdotal evidence on the use of UAVs for smuggling activities since 2014 indicate that current deployment may be still sporadic and primarily limited to small scale smuggling operations. Multiple factors indicate that the trend is likely to increase as a result of technological advancements, lower production costs, more awareness on social media and a growing base of skilled users among military, paramilitary units and the general population, especially younger generations and gamers' communities.

Technological advancements relate primarily to the development of Generative Artificial Intelligence based on machine learning to increase autopilot functionalities, swarm formations and ECM like masking and jamming capabilities. According to some observers, the use of commercial drones in

[8] How Many Drones Are Smuggling Drugs Across the U.S. Southern Border? | Air & Space Magazine| Smithsonian Magazine.
[9] Drug smuggling: Underwater drones seized by Spanish police - BBC News.
[10] Kleinschmidt, Trenta (2022), Scanning the Horizon Drones and Counter-narcotics in Latin America KU.edoc: Scanning the Horizon: Drones and Counter-narcotics in Latin America.
[11] Paul Rexton Kan (2010), Cartels at War: Mexico's Drug-Fueled Violence and the Threat to U. S ... - - Google Books.

warzones will over time cede the pace to military graded machines, but their use will continue to be determinant in low intensity conflicts and wherever no alternative solutions are available.

Commercial UAVs are utilized both for Intelligence, Surveillance and Reconnaissance (ISR) operations as well as rudimentary loitering ammunitions. As indicated by a report of the Center for Naval Analysis (CNA) "*the availability of cheap, tactical UAV for close-support operations is something all militaries must consider*". The use of commercial UAVs in the war in Ukraine has profoundly affected the nature of combat operations and had considerable impact on the ground. Military strategists have learnt through experience how to integrate tactics, techniques and procedure (TTPs) for using drones in the battlefield. Tactics, techniques and procedure for commercial drone operations are becoming part of the basic training curriculum for soldiers. More resources are invested into procuring foreign manufactured devices as well as ramping up domestic production for future needs[12].

The widespread adoption and use of UVs in the context of military confrontation will have spill-over effects on other sectors of societies and increase the chances of their use with criminal intent. This is particularly alarming for developing countries with weak law enforcement, porous borders and outdate physical and cyber security infrastructures. In the context of fragile states, the proliferation of humanitarian and emergency parcel delivery systems using UAVs to move medications and emergency aid in remote areas should be carefully monitored to prevent theft and misuse by local criminal actors.

4. The value of LEA / Military integration

In a lower measure, also OCGs and DTOs can use ISR to control and coordinate their activities in running their operations. Criminals are traditionally a step ahead of LEAs in the adoption of new technologies and techniques to run their operations and there is growing evidence since the mid-2010s to confirm this is also the case in relation to the use of UVs for smuggling operations.

One possible approach to slow down if not to reverse the trend is to foster stronger cooperation between LEAs and Armed Services. This cooperation could take the form of fusion centres, training

[12] Jeffrey A. Edmonds, Samuel Bendett (2023), Russia's Use of Uncrewed Systems in Ukraine Russian-Uncrewed-Systems-Ukraine.pdf.

programmes and pilot projects for C2 (Command and Control) or C2I (Command, Control and Intelligence)[13].

AI and big data can support C2 in Joint LEA / Military operations. Improved C2 coupled with strong cooperation between LEA / Military and Civil Society Organizations / NGOs and other non-institutional actors increase LEA situational awareness and operational effectiveness.

Aerial/Satellite Images, Traces of Radars and Digital Chats of Criminals add to the growing amount of data that can be collected in areas like border crossings. The different equipment that can be used to fight crime activities in this territory need to be integrated to achieve full control of all information.

LEA / Military integration could bolster LEA's effectiveness in facing hybrid threats and contrast the use by criminals of UVs and other new technologies, but this is not an easy mission.

Applying C2 in a Joint LEA / Military force involving multiple stakeholders and actors require additional efforts. The main issues encountered in the C2 of Joint Forces are the existence of different Jurisdictions, LEAs Data Base accessibility, common training and, LEAs / Military communication using Liaison Functions[14].

LEA / Military integration requires careful scenario planning and the development of tailored solutions to the specific operational context. While the complexities of such integration should not be underestimated, not least in relation to potential human rights abuses and other unintended consequences, there appears no other way to move forward but to join forces in the face of an escalating security threat.

[13] The military vocabulary defines C2 as the ability to manage, organize, and synchronize various military resources.
[14] MAJ Jason D. Imboden (2019), The U.S. Military Defends the Homeland AD1106610.pdf (dtic.mil).

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