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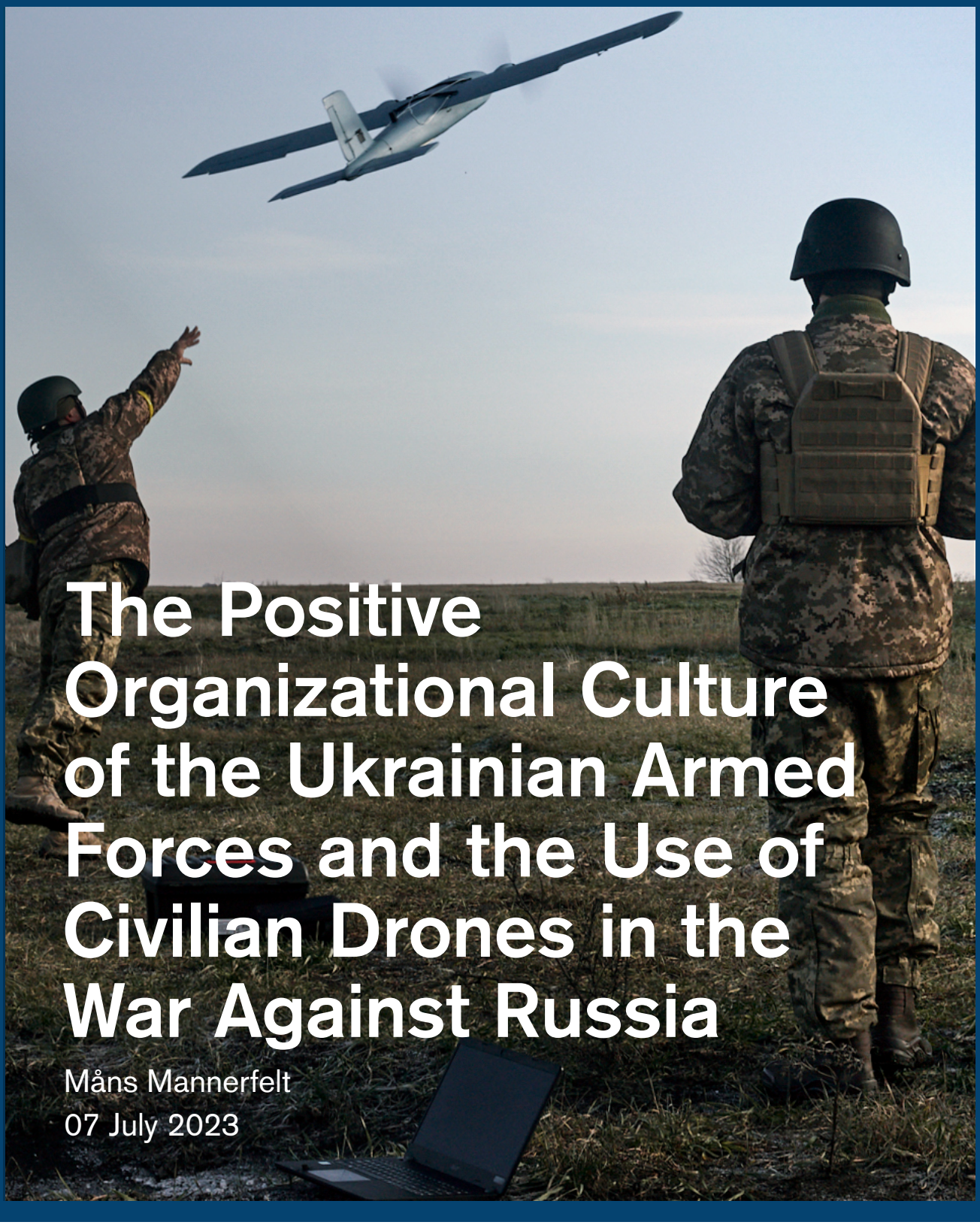

# The Positive Organizational Culture of the Ukrainian Armed Forces and the Use of Civilian Drones in the War Against Russia

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The primary purpose of this report is to describe how the organizational culture of the Ukrainian armed forces has contributed to military innovation, which in turn has proved to be an important factor in success on the battlefield. The way in which the use of civilian drones has increased is testimony, among other factors, to a culture within the armed forces that encourages initiative even in more junior parts of the chain of command. States, such as Sweden, that view Russia as a potential military threat but practice mission command or a similar doctrine should look on Ukraine's success as a confirmation of the need to decentralize decision making. They should continue to pursue a military doctrine that decentralizes authority, responsibility and initiative. Furthermore, Western nations should adopt the use of civilian drones in their defence planning, in the way the Ukrainian armed forces have, possibly through the development of cheap, disposable and accessible military grade drones to be used in a similar way to commercial drones in Ukraine today. The secondary purpose of this report is to describe how these drones are used and their increased prevalence. The use of civilian drones in military conflict is a symbol of modern warfare, and military techniques and technologies based on civilian drones are likely to be a growing feature of future conflicts.

## Introduction

Commercial drones are rapidly becoming a more prevalent tool in contemporary wars and conflicts. In contrast to conventional tactical drones, these cheap and disposable commercial Unmanned Aerial Vehicles (UAVs) quickly became a symbol of Russia's war against Ukraine. Even before 24 February 2022, there were well documented cases of the use of civilian drones in Syria, Nagorno-Karabakh and Tigray, but Russia's full-scale invasion of Ukraine has entailed a dramatic surge in the use of commercial drones in armed conflict.[1] This surge is partly due to the increased accessibility of commercial drones.[2] More importantly, however, the increased use was partly enabled by, and exemplifies the application of, mission command – the command principles that the NATO-endorsed reforms of the Ukrainian armed have characterized since 2014.[3] This has created a culture that encourages initiative from all service members, which has in turned enabled the military innovation that has almost certainly made a significant contribution to Ukrainian tactical successes.[4]

## How Commercial Drones Are Used

The benefits of commercial drones are extensive and they have become a common aspect of operations involving reconnaissance, artillery adjustment, propaganda and

1 https://www.stimson.org/2022/drone-warfare-in-ukraine-understanding-the-landscape/

2 https://www.rferl.org/a/ukraine-russia-invasion-drones-war-types-list/32132833.html

3 https://ecfr.eu/publication/defend-resist-repeat-ukraines-lessons-for-european-defence/

4 https://www.csis.org/analysis/ukrainian-innovation-war-attrition

even assaults on Russian positions.[5] More than anything, Ukraine has used the drones for reconnaissance. A continuously deployed network of drones along the frontline has enabled the creation of an extensive and constant Intelligence, Surveillance and Reconnaissance (ISR) matrix that provides instant visualization of the frontline.[6] This is made possible by use of the SpaceX "Starlink" high-speed internet as well as numerous drone operator units or "очі" (eyes). The result is an unorthodox, extensive and instant command and control (C2) system enabled by a commercial product. This cheap C2 system has greatly contributed to the effectiveness of Ukrainian forces. Being a satellite system, the Starlink technology has also greatly improved the ability of Ukraine's drone operators to avoid being jammed.[7]

The drones are also used for reconnaissance related to artillery fire adjustment and combat command. Working in pairs, the drone operators, or очі, surveille the frontline and battlefield for enemy troops. When units are spotted, the operators can provide almost instant intel to commanders during an offensive operation.[8] Furthermore, each drone pair is connected to an artillery battery, which results in extremely efficient fire adjustment by Ukrainian artillery.[9] Drone operators have reported that an artillery battery can fire within minutes of an enemy position being spotted. Furthermore, the instant video feed enabled by Starlink allows the artillery to adjust its fire almost instantly should it miss its target. This use of drones in combination with artillery was important to the success of the Ukrainian counter offensive in 2022.[10] The drones have also been used by Ukrainian commanders for combat awareness. During combat, Ukrainian commanders have reportedly used drones to obtain an understanding of the locality of their units, which greatly contributes to the capability and effectiveness of command in combat.[11]

It should be noted that even though Russia possesses the same type of drones and uses them in a similar manner, they have not been as effective, especially in terms of artillery fire adjustment. Because of Russia's rigid chain of command, where soldiers need authorization from more senior officers even for basic tasks and objectives, Russian forces are less able to take advantage of the instant visual reconnaissance provided by the drones. Even when Russian drone operators identify a Ukrainian position, they are often unable to hit the target in time.[12]

In addition to reconnaissance, there are well documented examples of Ukraine using the drones to attack Russian positions. By mounting 3D-printed grenade cases under the drones, both Ukrainian and Russian drones can hover over the enemy's positions and drop grenades. Ukraine has also used high-speed racing drones to fly horizontally into Russian positions, causing explosions in places where top-down

5 https://www.csis.org/analysis/ukrainian-innovation-war-attrition

6 https://www.stimson.org/2022/drone-warfare-in-ukraine-understanding-the-landscape/

7 https://www.csis.org/analysis/ukrainian-innovation-war-attrition

8 https://www.youtube.com/watch?v=kgnPh8n3cOc

9 https://www.csis.org/analysis/ukrainian-innovation-war-attrition

10 https://www.washingtonpost.com/world/2022/12/02/drones-russia-ukraine-air-war/

11 https://www.csis.org/analysis/ukrainian-innovation-war-attrition

12 https://www.washingtonpost.com/world/2022/12/02/drones-russia-ukraine-air-war/

arial attacks cannot reach, such as bunkers.[13] It should be noted, however, that civilian drones have a dramatically shorter strike range than military grade assault drones.

## The Organizational Culture of the Ukrainian Armed Forces

Ukraine has transformed its armed forces since 2014, adopting NATO practices and standards. NATO support has been especially focused on developing mid-level command, communications and logistics. Today, these characteristics are some of the key differences from the Russian military. Part of NATO reforms have focused on transforming the hierarchical relationships within Ukraine's armed forces, inherited from the Soviet system, into an organization more closely associated with the principles of mission command.[14] Mission command is a military doctrine that combines centralized intent with decentralized execution and subsidiarity to achieve speed of action and increased initiative. Mission command is practiced by many western nations. Sweden, for example, has pursued the doctrine of mission command, or *Uppdragstaktik*, in its armed forces since 2002.[15]

In the Russian army today, as in the Soviet system, mid-level initiative, authority and responsibility are not encouraged. As a result, units often find themselves waiting for orders from higher ranking officers, which creates huge tactical inefficiencies. This was also true for Ukrainian forces before 2014 and was one of the reasons why they performed so poorly during the annexation of Crimea. Since then, Ukraine has undertaken numerous reforms to westernize its military, especially by engendering decision-making authority in lower levels of the command chain. In 2022, for example, Ukraine adopted the concept of "developing a professional sergeant corps".

While Ukraine has yet to complete its organizational transformation, and the extent and significance of the reforms are contested, it is evident that Ukraine has an obvious tactical advantage over Russia because of the competence and use of its non-commissioned officer corps.[16] In 2021, Ukraine further increased its ambitions by adopting a new military strategy of pursuing western style network centric warfare (NCW).[17] NCW is a military doctrine that seeks to turn informational superiority into increased fighting capabilities. Its aim is to increase combat tempo, efficiency and lethality by creating a network of informational sensors and decision makers. A key aspect of NCW is the delegation of authority to use available intelligence to smaller units. For Ukraine, the use of civilian drones has become a key factor in its adaptation OR the adoption of NCW.[18] Furthermore, the strategy has probably contributed to the growing use of civilian drones in the war. Engendering authority at lower levels, to soldiers and commanders personally facing the tactical challenges, enables and stimulates creative solutions. Together, all these reforms combined have resulted in a

13 https://www.economist.com/the-economist-explains/2023/03/24/how-racing-drones-are-used-as-improvised-missiles-in-ukraine

14 https://ecfr.eu/publication/defend-resist-repeat-ukraines-lessons-for-european-defence/

15 https://kkrva.se/forsvarsmakten-och-uppdragstaktiken/

16 https://ecfr.eu/publication/defend-resist-repeat-ukraines-lessons-for-european-defence/

17 https://pism.pl/publications/Ukraines_New_Military_Security_Strategy

18 https://greydynamics.com/network-centric-warfare-in-ukraine-the-delta-system/

change of culture in the armed forces, which has in turn contributed to the Ukrainian Army's flexibility and ability to adapt to new tactical circumstances. Ukraine's fast adoption and creative use of civilian drones in conflict is partly an example, and partly a result, of these reforms and the tactical advantages that they entail in terms of adaptability.[19]

In contrast, the Russian army is still centralized and hierarchical like the Soviet Army was. The Russian Army famously suffers from having too many colonels and too few corporals; or rather, too few lieutenants as the equivalent of western non-commissioned officers. In addition, there is an unwillingness to delegate authority to junior officers. Factors like these discourage initiative and by extension military innovation. Some experts have even stated that the lack of NCOs is the key weakness of the Russian army. This, in sharp contrast to Ukraine's armed forces, means that Russia has had a harder time adapting to new challenges and opportunities during the war.[20]

The superiority and advantage of Ukrainian forces in terms of adaptability is apparent from the fact that Ukraine was quick to utilize civilian drones on a wide scale in February 2022 while it took Russia until the summer, not surprisingly at the initiative of junior officers who were growing increasingly frustrated.[21] Compared to the Ukrainian armed forces, Russia lacks a culture that stimulates military innovation, which has proved costly in the short run and might be devastating in the long run.

This difference should not be taken for granted, given that both armies originated from the same Soviet Army. Just 10 years ago, both forces were very similar and, despite numerous reforms and acquisitions, Ukraine's armed forces still mostly relied on the same materiel as Russia's.

## Reasons for the Surge in Civilian Drones in the War in Ukraine

**Price:** In a war characterized by limited resources, especially on the Ukrainian side, the low price of commercial drones has propelled their use in the conflict. One of the most used drones, DJI's Mavic 3, costs around $1,600. This is a highly accessible price compared to that of traditional military drones, which means that drones can be used as consumables. Given Ukraine's limited resources, especially financial, this has proved an important factor in the increased use of civilian drones in the war.[22]

**Accessibility:** Even though the biggest drone manufacturer, China's DJI, has banned exports to Ukraine and Russia, it is still very easy to buy the drones in neighbouring countries and import them to the war zone.[23] Since the outbreak of the war, an increasing number of fundraising organizations, such as United24, have been dedicated to providing the Ukrainian armed forces with civilian drones

19 https://ecfr.eu/publication/defend-resist-repeat-ukraines-lessons-for-european-defence/

20 https://ecfr.eu/publication/defend-resist-repeat-ukraines-lessons-for-european-defence/

21 https://www.armscontrol.org/act/2023-01/features/learning-fly-drones-russian-ukrainian-war

22 https://observers.france24.com/en/europe/20220808-ukraine-russia-modified-commercial-drones-battlefield-donations-weapons

23 https://www.rferl.org/a/ukraine-russia-invasion-drones-war-types-list/32132833.html

from neighboring countries.[24] Their accessibility has therefore been crucial to the prevalence of the drones.

**Easy to use:** The fact that civilian drones are light and easy to use has prompted their use in Ukraine. A pilot needs little or no training to fly a civilian drone. The outbreak of the war spurred a number of centrally endorsed training academies for drone pilots. In Kyiv, for example, the Dronarium can train pilots in just five days.[25] Because civilian drones are designed for commercial use, their controls are extremely easy to operate. This should be contrasted with the controls of traditional military UAVs, which take much longer to master. This has greatly contributed to the rapid growth of civilian drones in the war in Ukraine.

**Fits a need:** Traditionally, military materiel and capabilities go through extensive and complicated acquisition processes. The more expensive and advance the system, the more complicated the processes. The use of civilian equipment is considered unorthodox by any military force, and the increased use of civilian drones in the Ukrainian armed forces, especially considering the speed of it, is no exception. Their use should therefore be viewed as a result of necessity rather than preference. If there had been a cheap and accessible military alternative, the civilian drones would almost certainly not have risen to prominence in the same way. Furthermore, there is evidence of frustration within the Ukrainian armed forces at the central command's inability or reluctance to formalize the acquisition of the civilian drones.[26] This indicates that development of the use of the drones is still very much being spearheaded outside of central command. The unorthodox nature of the process is further emphasized by the fact that C2 systems are being developed as civilians initiatives. Continuing initiatives to develop the use of the drones despite the lack of endorsement from central command indicates that there is a real need that soldiers and local commanders are trying to meet. This is a demand for cheap, high-quality ISR. The fact that this need exists is a factor in the prevalence of the drones.

**Organizational culture:** Much of the military innovation that has occurred in Ukraine has not originated from the high command. Instead, most of the initiatives come from junior officers.[27] This reflects an organizational culture that supports service members' creativity in resolving tactical challenges, even at junior levels. This organizational culture has created an environment with the potential to generate more creative solutions to challenges that arise later in the war. This in turn should be viewed as an advantage of the flexibility of Ukrainian forces, which has proved to be one of the success factors in the war and contributed to the increased use of civilian drones. Similarly, network-centric warfare strategy adaptation has probably also contributed to the increased use of civilian drones, primarily because it is a centrally endorsed ambition to pursue drone technology, but also because it emphasizes the importance of engendering authority at lower levels of command. The strategy contributes to an organizational culture that stimulates military innovation.

**Nature of the mobilization:** It is possible to speculate that the nature of the mobilization contributed to the prevalence of civilian drones. Going back to 24

24 https://u24.gov.ua/dronation

25 https://dronarium.academy/en/

26 https://www.csis.org/analysis/ukrainian-innovation-war-attrition

27 https://www.csis.org/analysis/ukrainian-innovation-war-attrition

February 2022, Ukraine was faced with a shock attack from a superior foe and had to quickly mobilize up to 700 000 personnel. Drawing on a tech-savvy population and an IT-driven economy infused with a collective notion of "any and all ideas are encouraged – we need anything going" is likely to have contributed to the use of drones.[28] (For example, civilians used Molotov cocktails and constructed metal roadblocks early in the war.) Furthermore, the rapid influx of civilians into the ranks of the Ukrainian armed forces, which differ from the traditional military hierarchical culture usually inherent in armed forces, might also have contributed.

## The Wider Lessons From Civilian Drones and on the Need for Military Innovation in Ukraine

The need to adapt based on opportunities and challenges is especially important when facing a numerically superior and better resourced adversary. The growing prevalence of civilian drones in the Ukrainian effort against Russia proved to be an important factor in Ukraine's tactical successes, especially given Ukraine's limited economic resources, equipment and personnel.

This was at least partly enabled by the culture of the armed forces, where even unorthodox initiatives can find a footing. From a long-term perspective, the Ukrainian military's organizational culture could potentially continue to create the necessary conditions for stimulating military innovation in the future. It is therefore not unlikely that we will continue to observe creative solutions to tactical issues by the Ukrainian armed forces.

This phenomenon should be viewed as a tactical advantage of the flexibility that Ukraine has relative to Russia. The use of civilian drones reflects flexibility in two ways: partly through the creativity and speed in which the drones have been adopted and partly by the fact that this phenomenon reflects an organizational culture that stimulates military innovation. It should also be noted that Ukraine has proved flexible in other aspects of the war, such as the speed at which it has integrated western weapon systems into its forces and the way it quickly adapted to the changing form of warfare in the early stages, from a chaotic multi-front operation to the war of attrition that now exists.

Drones will continue to be an important part of Ukrainian efforts. More specifically, retired US Army Brigadier General Mark Kimmitt has stated that intelligence from drones will be vital for recognizing weaknesses in the Russian lines in the coming offensive.[29] While the use of civilian drones will in all likelihood continue to impact the war in Ukraine, as well as warfare in general, for the foreseeable future, it also reflects the age old lesson that military innovation is a necessity, not least for the inferior force in a conflict or war.

Against the backdrop of an increasingly militarily assertive Russia, western nations with numerically inferior and resource poorer militaries (relative to Russia) need to learn from Ukraine's success. The growing prevalence of the use of civilian drones,

28 https://www.cbc.ca/news/world/ukraine-lviv-resistance-1.6370600

29 https://youtube.com/watch?v=zTdOdhKdtBU

and the Ukrainian forces' subsequent tactical successes, are prime examples of maximizing human and economic capital against a superior foe. Nations that view Russia as a potential threat need to adopt this plan and arrange their military capabilities accordingly.

There are therefore two central lessons that countries such as Sweden should learn from the Ukrainian success.

- States should start, or continue, to pursue an military organizational culture that is less hierarchical, with a strong core of junior to mid-level officers that has the trust and authority to take initiatives in the spirit of mission command principles. In Ukraine, this has been proved to stimulate military innovation. For Sweden, which has practiced mission command for 20 years, the Ukrainian example should serve as a clear confirmation of the tactical advantages and superiority of decentralized authority and/or mission command principles.

- States should learn from Ukraine in its adaptation of the tactical use of civilian drones. It will be necessary to invest in and develop military grade drones with the same features as civilian drones, that is, low price and good accessibility. There are signs that the Swedish armed forces are testing the use of civilian drones for tactical purposes. Recently, the Swedish defence material administration (FMV), together with the Swedish Defense Research Agency, conducted tests of what appeared to be a Parrot ANAFI, a commercial drone, for use in indirect fire.[30] Sweden should invest in and pursue military systems like the Parrot ANAFI for tactical purposes in future.

## Policy Recommendations

- Ukraine's ability to encourage and stimulate military innovation because of the non-hierarchical organizational culture of its armed forces has been an important success factor in the war. Western nations, especially those with a numerically smaller military relative to Russia, should pursue a similar military organizational culture based on mission command principles that encourage bottom-up initiative and innovation.

- The Ukrainian armed forces should continue to pursue mission command principles.

- Western nations should adapt and further develop the tactical use of military drones with the same features and objectives as the civilian drones used in Ukraine. These include reconnaissance, artillery adjustment and assault objectives. Nations should in particular pursue or continue to pursue the cheap and accessible drone-based ISR-matrix methods developed by Ukraine.

- The Ukrainian Ministry of Defence should continue to endorse and formalize the use

30 https://se.linkedin.com/posts/foi_under-v%C3%A5ren-fortsatte-utvecklingen-av-metoder-activity-7062034722708688896-2wTp

of civilian drones in the armed forces through the establishment of procurement procedures and drone academies.

- The Ukrainian government, as well as other national governments, should continue to invest in the drone industry. The past 30 years has seen a shift in the concentration of technological advances from the military industrial complex to the commercial market. Western governments should therefore continue to promote commercial innovation in connection with future and potential military capabilities.

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