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# UAVs for the Benefit of People: The use of Unmanned Aerial Vehicles Within the OSCE Special Monitoring Mission<sup>1</sup>

*Ambassador Ertuğrul Apakan & Cono Giardullo*

“[T]he United Nations [and regional organizations] can benefit immensely from a plethora of technologies to assist its peace operations. Missing such opportunities means missing chances for peace.”<sup>2</sup>

## ABSTRACT

This article explores the adoption of drones by the Organization for Security and Co-operation in Europe’s (OSCE’s) Special Monitoring Mission (SMM) to Ukraine, a first time for the organization, to overcome the impediments imposed by the sides to its monitoring of the security situation in Eastern Ukraine. This article begins by tracing back the origin of the SMM drone program and the challenges posed by jamming, shooting, and the presence of unmanned aerial vehicles (UAVs) belonging to conflicting parties. This article then highlights the contributions made in direct benefit to the residents of the conflict-affected regions, mainly providing critical information for the repair works conducted along the line of contact and by increasing awareness of the security risks nearby entry-exit checkpoints and civilian buildings. The article concludes that a more systematic and coordinated sharing of drones’ images with specific international partners, complements

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1. The views and opinions expressed in this article are those of the authors and do not necessarily reflect the official policy or position of the OSCE SMM, are mostly based on the experience acquired during the first operational five years of the mission, which coincide with the mandate of Ambassador Apakan as its Chief Monitor.
2. A. WALTER DORN, INTERNATIONAL PEACE INSTITUTE, SMART PEACEKEEPING: TOWARD TECH-ENABLED UN OPERATIONS 1 (2016).

the work of SMM monitors and allows the humanitarian responders to perform a more effective needs assessment and advocacy work.

## I. INTRODUCTION

The Organization for Security and Co-Operation in Europe's (OSCE) Special Monitoring Mission (SMM) to Ukraine has been deployed since March 2014 and entrusted by the OSCE's fifty-seven participating states "with a mandate to contribute to reducing tensions and to help foster peace, stability, and security."<sup>3</sup> The mandate clarifies that the SMM is required to uphold the principles of the UN Charter and to cooperate with the United Nations and other relevant actors of the international community.<sup>4</sup> With the underlying assumption that security is indivisible, the OSCE takes a broad and comprehensive approach to security, so-called co-operative security, which "comprises the notion of OSCE co-operation with other international organizations and institutions."<sup>5</sup>

As it goes by the name, the SMM has been doing this in a *special* way, despite being a civilian mission. In fact, it "was asked to perform functions usually performed by peace-keeping missions, in an environment that was essentially a combat zone."<sup>6</sup> In addition, there was a great deal of effort made to adopt the most advanced technologies capable of complementing the monitoring and reporting mandate assigned to the mission. Among others, the UAVs, or drones, certainly stand out, as they are nowadays recognized as being able to "immensely benefit peacekeeping,"<sup>7</sup> and, with a rapidly decreasing financial burden, support the claim as a cost-effective method of monitoring.<sup>8</sup> Nonetheless, they continue suffering "from a 'drone stigma'

3. Ertuğrul Apakan & Wolfgang Sporrer, *The Ukrainian Crisis: The OSCE's Special Monitoring Mission*, 15 *TURKISH POL'Y Q.* 17, 18 (2017).

4. An example may be represented by the so-called "mandated partners," which are listed in the Missions' mandate. For example, the OSCE SMM mandate states: "in co-operation with the concerned OSCE executive structures and relevant actors of the international community (such as the United Nations and the Council of Europe)." *Deployment of An OSCE Special Monitoring Mission to Ukraine: Decision No. 1117*, OSCE, 991st Plenary Meeting, Agenda Item 1, art. 2, PC.DEC/1117 (21 March 2014), <https://www.osce.org/pc/116747?download=true>.

5. OSCE Secretariat, *The OSCE Concept of Comprehensive and Co-operative Security: An Overview of Major Milestones*, SEC.GAL/100/09, at 1 (17 June 2009).

6. Apakan & Sporrer, *supra* note 3.

7. Sandra Morrell Andrews, *Drones in the DRC: A Case Study for Future Deployment in United Nations Peacekeeping*, 10 *INTERSECT* 1, 2 (2017); see also, John Karlsrud & Frederik Rosén, *In the Eye of the Beholder? UN and the Use of Drones to Protect Civilians*, 2 *STABILITY: INT'L J. SEC. & DEV.* 1, 3 (2013); Christof Heyns, *Report of the Special Rapporteur on Extrajudicial, Summary or Arbitrary Executions: Use of Information and Communications Technologies to Secure the Right to Life*, Hum Rts. Council, 29th Sess., Agenda Item 3, ¶ 53, 56, U.N. Doc. A/HRC/29/37 (2015).

8. Andrews, *supra* note 7, at 8.

in which large portions of public opinion tend to consider drones through a military lens.<sup>9</sup> The use of UAVs is increasingly necessary given the large span of territories where access for field-based monitors is limited, or denied by the sides, as continues to be the case in Eastern Ukraine.

## II. MONITORING A CONFLICT THROUGH UAVS: EVER PRESENT CHALLENGES

The first use of unarmed drones, entirely under the control of an international mission deployed in conflict zones, was recorded with the United Nations Stabilization Mission in the Democratic Republic of Congo (MONUSCO) in 2013.<sup>10</sup> Together, with more than 22,000 uniformed personnel, the UN mission contracted SELEX ES to fly five Falco drones entrusted with increasing the situational and operational awareness and improving access to populations in places difficult to reach.<sup>11</sup> Thanks to the use of infrared cameras, the MONUSCO finally gained the capability to extend its operations into the night so that “[p]eacekeeping was no longer merely a daytime job.”<sup>12</sup>

The success of the UAVs was so unexpected that even the UN Expert Panel on Innovation in Peacekeeping recommended “that unmanned aerial systems . . . should not only remain part of the peacekeeper’s toolkit, but their use should also be immediately expanded.”<sup>13</sup>

In view of the success experienced by the UN and because of the broad mandate of the SMM to allow for more innovative approaches, UAVs have become an integral part of the mission monitoring in the conflict-affected Eastern Ukrainian regions. In fact, based on the mandate that tasks the SMM, *inter alia*, to gather information and report on the security situation in the area of operation and establish and report facts in response to specific incidents, the SMM is the first OSCE mission deploying drones to complement its monitoring and reporting activities.<sup>14</sup> OSCE drones are permitted in the no-fly zone established by the Minsk Memorandum along the whole contact line and with at least 30 km in width.<sup>15</sup>

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9. Cono Giardullo, *Fly High or Die Trying: Drones in the Services of Human Rights*, IAI COMMENTARIES, Istituto Affari Internazionali [Inst. of Int’l Aff.] 1 (2018); see also Karlsrud & Rosén, *supra* note 7, at 3.
  10. Giardullo, *supra* note 9, at 2.
  11. *Id.*
  12. A. Walter Dorn & Stewart Webb, *Eyes in the sky for Peacekeeping: The Emergence of UAVs in UN Operations*, 32 INTELLIGENCE & NAT’L SEC. 413, 414 (2017).
  13. PERFORMANCE PEACEKEEPING: FINAL REPORT OF THE EXPERT PANEL ON TECHNOLOGY AND INNOVATION IN UN PEACEKEEPING, 54 (2014).
  14. Apakan & Sporrer, *supra* note 3, at 19.
  15. *Memorandum on the Implementation of the Provisions of the Protocol on the Outcome of Consultations of the Trilateral Contact Group on Joint Steps Aimed at the Implementation of the Peace Plan of the President of Ukraine, P. Poroshenko, and the Initiatives of the President of the Russian Federation, V. Putin, Annex II*, ¶ 7, U.N. Doc. S/2015/135 (2015) [commonly referred to as the “Minsk Agreement”].

Beginning in October 2014, the first long range UAVs manufactured with vertical take-off and landing capabilities and with a range of 160 km were contracted.<sup>16</sup> In November 2015, mid-range fixed-wing drones with ranges varying from 15–30 km and mini UAVs, quad-copters with ranges of 3–5 km, were introduced.<sup>17</sup> All UAVs are equipped with high definition photo or video cameras as well as thermal video sensors. The two latter models are currently operated by field monitoring officers, specially trained to this end.

Unfortunately, OSCE UAVs, which were meant “to overcome impediments imposed by the sides to its monitoring of the security situation in eastern Ukraine,” have faced constant challenges since their deployment.<sup>18</sup> Notably, three challenges shall be mentioned for disrupting the normal course of operations, which in the past caused the SMM to suspend operations for more than a year and half.<sup>19</sup> First, since the extension of the mandate on 1 April 2018,<sup>20</sup> SMM UAVs began experiencing signal interference or possible jamming during a few hundred flights – with more than 14 percent of all SMM UAV flights conducted between January and April 2019 being affected.<sup>21</sup> Second, OSCE drones were targeted by small arms fire or by anti-aircraft weaponry in at least one hundred flights between April 2018 and February 2020.<sup>22</sup> On 19 April 2019, close to the contact line in Donetsk region, a long-range UAV went missing, corresponding to the third such aircraft in six months to have gone missing due to either jamming or targeting.<sup>23</sup> Finally, the mission continuously monitors and reports the presence of a large numbers of drones used by the conflicting sides, introducing a plethora of modern technologies directed at jamming the other side’s aerial vehicles.<sup>24</sup>

16. All information has been confirmed by the authors.

17. All information has been confirmed by the authors.

18. Press Release, OSCE, *OSCE SMM Long-Range Unmanned Aerial Vehicles Resume Monitoring of Security Situation in Eastern Ukraine* (28 Mar. 2018), <https://www.osce.org/special-monitoring-mission-to-ukraine/376456>.

19. John Hudson, *International Monitor Quietly Drops Drone Surveillance of Ukraine War*, FOREIGN POL’Y (28 Oct. 2016); *see also, id.*

20. Its long-range drones’ program subsequently resumed on 28 March 2018.

21. All information has been confirmed by the authors.

22. All information has been confirmed by the authors.

23. *OSCE’s Mission Drone Shot Down after spotting Russian Missile System in Eastern Ukraine*, RADIOFREEEUROPE/ RADIOLIBERTY (1 Nov. 2018), <https://www.rferl.org/a/russia-ukraine-osce-drone-germany-france-suspect-separatists/29577799.html>; Press Release, OSCE, *Spot Report by OSCE Special Monitoring Mission to Ukraine (SMM): SMM Loses Long-range Unmanned Aerial Vehicle near Berdianka* (18 Feb. 2019), <https://www.osce.org/special-monitoring-mission-to-ukraine/411776>; Press Release, OSCE, *Spot Report by OSCE Special Monitoring Mission to Ukraine (SMM): SMM Long-range Unmanned Aerial Vehicle Crashes Near Contact Line in Donetsk region* (19 Apr. 2019), <https://www.osce.org/special-monitoring-mission-to-ukraine/417773>.

24. John Wendle, *The Fighting Drones of Ukraine*, AIR&SPACE (Feb. 2018), <https://www.airspacemag.com/flight-today/ukraines-drones-180967708/>; Michael Sheldon, *#Minsk-Monitor: The Russian Drone Wagons of the Donbas*, MEDIUM (11 Nov. 2018), <https://medium.com/dfrlab/minskmonitor-the-russian-drone-wagons-of-the-donbas-7481a998e8ca; Ukraine, EFAD, https://www.efadrones.org/countries/ukraine/>

Nonetheless, UAVs have proved an invaluable technical asset to monitor the security situation more closely, specifically in areas that are difficult to reach by ground patrols especially considering the hazard created by anti-vehicle mines laid in large numbers across Donbas. Drones are meant to provide direct support to traditional field monitoring conducted by around 600 monitors in eastern Ukraine,<sup>25</sup> support the de-escalation of the conflict, and contribute to alleviate the human suffering. Unmanned aerial vehicles are not a stand-alone tool but rather a complementary one, which shall be appreciated as an indispensable part of the Mission's activities.

### III. A PARADIGM SHIFT: BENEFITING PEOPLE BY USING DRONES

In reason of the comprehensive security approach of the OSCE, UAVs were conceived<sup>26</sup> not only to detect Minsk-prohibited weaponry,<sup>27</sup> but also to support the mission mandate in addition to the monitoring conducted by field-monitors. It is safe to say that drones continue to generate a positive impact on improving the life conditions of civilians living in conflict-affected regions of Ukraine.

In order to assess their usefulness, it is necessary to compare the differences with satellite imagery, which is also used by the SMM, thanks to the financial support provided, inter alia, by the European External Action Service (EEAS). Currently, drones have the ability to collect images at a level of detail that is impossible for satellites to compete with. One of the mini UAVs servicing the SMM, under good weather and flight conditions, can offer a spatial resolution result around fifteen times higher than the images produced by excellent commercial satellite images.<sup>28</sup> Drones can also fly under the cloud cover and generate geo-referenced 3D maps and videos that serve the efforts of the mission by increasing the public and participating states' awareness of the situation in eastern Ukraine. Of course, drone images cannot cover the very large areas visualized by a single satellite picture.<sup>29</sup> Therefore, both tools remain extremely useful to the Mission.

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25. OSCE SMM, *Status Report: As of 10 February 2020* (10 Feb. 2020), <https://www.osce.org/special-monitoring-mission-to-ukraine/446275?download=true>.
  26. The Mission has also been authorized to use UAVs with the explicit attribution of competences made by point 7 of the 19 September 2014 Minsk Memorandum and paragraph 3 of the 12 February 2015 Package of Measures for the Implementation of the Minsk Agreements.
  27. In 2019, approximately 40 percent of weapons observed to be in violation of their respective withdrawal lines during a three months' period were observed by UAVs. All information has been confirmed by the authors. See Cono Giardullo, Walter Dorn & Danielle Stodilka, *Technological Innovation in the OSCE: The Special Monitoring Mission in Ukraine*, in OSCE YEARBOOK 2019 (2020).
  28. All information has been confirmed by the authors.
  29. Press Release, European Commission, European Union Provides Further Satellite Imagery Support to the OSCE Special Monitoring Mission in Ukraine (24 Mar. 2017), [https://ec.europa.eu/commission/presscorner/detail/en/IP\\_17\\_729](https://ec.europa.eu/commission/presscorner/detail/en/IP_17_729).

As “[t]he facilitation and monitoring of repair and maintenance of essential infrastructure [has become] a Mission priority and . . . a substantial part of the [Mission’s] efforts,”<sup>30</sup> UAVs have been utilized to reinforce and complete the monitoring around the repair sites, including reporting relevant findings. In October 2015, the long-range UAV helped assess damages to power lines in the Mariupol area, located within the Donetsk region, with findings useful for the local electricity provider to plan further repairs.<sup>31</sup> In 2017, a drone located a large leak at the Southern Donbas water pipeline, which provides potable water to 1.2 million people on both sides of the contact line.<sup>32</sup> Similarly, near government-controlled Zalizne, a UAV patrolled a phenol plant that deposits chemical waste into a nearby reservoir that requires constant observation and immediate maintenance to reduce the risk of contamination of breaches of the reservoir’s dams into adjacent rivers.<sup>33</sup> While monitoring the localized ceasefire during the summer of 2018, “the SMM regularly flew” drones in the area as an additional confidence building measure between the sides.<sup>34</sup>

Moreover, UAVs are often used for detecting new surface mines<sup>35</sup> deployed near or on public roads, which helps the sides to coordinate removal. But the presence of mines,<sup>36</sup> unexploded ordnances, or explosive remnants of war are closely monitored around entry-exit checkpoints (EECP) between government and non-government controlled areas, where there is a high likelihood of danger to people crossing these facilities in high numbers.<sup>37</sup> Similarly, mini UAVs have also been deployed on a regular basis to monitor the transfer of funds from non-government controlled areas to government-controlled areas in the Luhansk region, in order to ensure the payments made to the government controlled Luhansk Energy Association for the electricity used by pumping stations for distributing water.<sup>38</sup>

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30. OSCE, SMM FACILITATION AND MONITORING OF INFRASTRUCTURE REPAIR IN EASTERN UKRAINE: JANUARY 2017-AUGUST 2018, 1 (2018) [hereinafter INFRASTRUCTURE REPORT].

31. *Id.* at 3.

32. *Id.* at 7; see also, OSCE SMM Ukraine (@OSCE\_SMM), TWITTER (24 June 2017, 6:16 AM), available at [https://twitter.com/osce\\_smm/status/878557386000261120](https://twitter.com/osce_smm/status/878557386000261120).

33. INFRASTRUCTURE REPORT, *supra* note 30, at 7–8.

34. *Id.* at 8.

35. Surface mines are laid in violations of Point 6 of the Memorandum of 19 September 2014 and of the Trilateral Contact Group Decision on Mine Action of 3 March 2016.

36. See e.g., *Latest from the OSCE Special Monitoring Mission to Ukraine (SMM), Based on Information Received as of 19:30, 27 April 2018*, OSCE (28 Apr. 2018), <https://www.osce.org/special-monitoring-mission-to-ukraine/379057>.

37. Ukraine is one of the most mine-affected countries in the world according to UNHCR and the Landmine Report 2018, with mines contaminating everything from farmland to forests, riverbanks, cemeteries, and sometimes gardens or communal spaces, placing Ukraine as the second country for number of antivehicle mines caused casualties in 2017. See Oksana Grytsenko, *Clearing Landmines in Ukraine, One Careful Step at a Time*, UNHCR (2 Apr. 2019); INTERNATIONAL CAMPAIGN TO BAN LANDMINES, LANDMINE MONITOR, 53 (2018).

38. INFRASTRUCTURE REPORT, *supra* note 30, at 5.

Also, the Mission has tried to communicate the impact of the conflict through the use of UAV images, by producing OSCE-internal reports<sup>39</sup> focused on settlements in and near hotspots.<sup>40</sup> Thus, since December 2018, at least three such reports have been published and imagery generated by the UAVs has been used for: a) developing 2D maps and 3D renditions of hotspot areas showing the level of destruction and the hardship faced by civilians by geo-locating the presence of roadblocks, houses occupied by the military, or identifying the hazardous paths endured on a daily basis to access a school or a hospital; b) employing a process known to the satellite imagery analysts as “multi-temporal change detection,” which compares images acquired from the same geographical area over time to identify changes occurring between the acquisition dates to quantify the number of houses partially damaged or destroyed; and c) corroborating the allegations of civilians living near the line of contact who have had their properties destroyed or damaged by matching the impacts of artillery and mortar shelling.<sup>41</sup>

Unlike the public perception of this collection and analytical innovative use of UAVs being at the discretion of a few technical officers, the SMM has proudly adopted a holistic approach. Currently, fifty-four Mission members are directly involved in long-range or mid-range UAV operations in Eastern Ukraine in their capacity as Technical Monitoring Officers/UAV Operators.<sup>42</sup> In addition, 208 monitors are trained to operate mini-UAVs, now embedded in most regular patrols, which moves closer the realization of a long stated Mission goal of assigning a mini-UAV to each team or patrol group.<sup>43</sup> Besides these officers, intense analytical work is conducted at Head Office by human rights and reporting officers, who work hand in hand with imagery analysts in order to cross-reference information obtained through remote sensing sources with field-based interviews and open source information.

#### IV. AN INNOVATIVE APPROACH TO FULFILL THE SMM MANDATE

The former OSCE Chairperson-in-Office has voiced the necessity to focus on civilians “who are living through [the conflict and how to] . . . immediately alleviate the situation for people on the ground.”<sup>44</sup> At least two actions are

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39. The SMM regularly presents restricted reports before the OSCE Permanent Council for the benefit of the fifty-seven participating states only.

40. A hotspot is a village or an area, where the heavy presence of military, freedom of movement impediments and limited access to economic and social rights make the local population particularly vulnerable to the effects of the protracted conflict.

41. Reports are restricted to member states only. All information has been confirmed by the authors.

42. All information has been confirmed by the authors.

43. All information has been confirmed by the authors.

44. H.E. Miroslav Lajčák, *Statement by the Chairperson in Office, Presentation of Priorities*, OSCE, 2, CIO.GAL/4/19 (2019).



compatible with the current use of UAVs: (1) images to support the humanitarian presence in Ukraine; and (2) a deterrent effect to daily conflict. While, the SMM has kick started the use of UAVs to support those actions, much more work is needed to further develop them in the future.

First, the images acquired by the SMM drones can also support the humanitarian actor's presence in Ukraine. While the SMM is not mandated to provide humanitarian assistance, the information gathered by UAVs could support critical decision making by those first responders during the most critical times, as in the aftermath of immediate shelling or during the cold season. Organizations, such as the Hazardous Area Life-support Organization (HALO) or Danish Demining Group (DDG), that conduct extensive surveys across villages close to the line of contact, could benefit from obtaining indications of mine fields by the SMM. Use of UAVs for this purpose shall only be considered as non-exhaustive aerial mappings, in particular as "the heaviest mine and explosive remnants of war (ERW) contamination is believed to be inside the 15km buffer zone"<sup>45</sup> between the sides, which mimics the areas where SMM UAVs are entitled to fly. While general information is shared with humanitarian partners, further discussion is needed, as in any other humanitarian setting, because lines are sometimes unclear concerning who shall collect images for various humanitarian responses and who shall be entitled to use them.

Second, drones are already supporting the day-by-day mission activities by putting in place a "deterrent effect of these monitoring, reporting, and verification activities [which have] likely resulted in the containment of the conflict" and helped "to prevent outright attacks, [probably] reducing human rights violations."<sup>46</sup>

Nowadays, the SMM UAVs are well known to both the Ukrainian Armed Forces and the armed formations, so that at a minimum they are aware that they are being monitored. In an effort to reinforce the "protection-by-presence" role of these technical tools, images and video collected are also increasingly shared on social media. Sometimes, internal briefings to the OSCE participating states include a video of the once broken bridge of Stanytsia Luhanska to show the poor condition of the wooden ramps at the broken section of the crossing point. In other cases, UAVs frames have been posted to social media to show the closure of some EECPs,<sup>47</sup> to assess the security situation and presence of mines, unexploded ordnances or explosive remnants, and make the participating states reflect about the increasing hardship of the tens of thousands of people who each day cross the five EECPs.

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45. *Ukraine: Mine Action*, THE MONITOR (12 Nov. 2018), <http://www.the-monitor.org/en-gb/reports/2019/ukraine/mine-action.aspx>.

46. Apakan & Sporrer, *supra* note 3, at 22; Giardullo, Dorn & Stodilka, *supra* note 27.

47. OSCE SMM Ukraine (@OSCE\_SMM), TWITTER (27 Aug. 2018, 6:20 AM), [https://twitter.com/OSCE\\_SMM/status/1034022898367913984](https://twitter.com/OSCE_SMM/status/1034022898367913984).

To conclude, unarmed, unmanned aerial vehicles will not soon substitute the work conducted by field monitors in reporting about the security situation, but they can certainly play a threefold role. First, UAVs can be used as a complementary monitoring and verification tool, recording incidents and violations where monitors cannot travel, and therefore, helping to “reduce the vulnerability of mission members.”<sup>48</sup> Second, UAVs can provide a larger picture of the situation on the ground by showing the state of affairs of repair work, or mines laid around or in an EECF facility. Finally, a more systematic and agreeable sharing of drones’ images can benefit humanitarian responders, who can then use the analyzed images to nudge governments to do more to ensure a political solution to each conflict.

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48. Fred Tanner, *Sustaining Civilian Missions in Conflict Zones: The Case of the OSCE Special Monitoring Mission to Ukraine*, SWISS PEACE 3 (Mar. 2018), <https://www.swisspeace.ch/publications/policy-briefs/sustaining-civilian-missions-in-conflict-zones-the-case-of-the-osce-special-monitoring-mission-to-ukraine>.