New Technologies and the Protection of Civilians in UN Peace Operations

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Executive Summary

The United Nations has increasingly focused on the modernization of peace operations, including through the Strategy for the Digital Transformation of UN Peacekeeping. However, the full potential of the link between digital transformation, new technologies, and peacekeeping has not yet been realized, particularly when it comes to the protection of civilians (POC). Too often, the Department of Peace Operations (DPO) deploys new technological tools first and only then determines how to apply them to POC objectives. As a result, mission staff are often harnessing technologies for POC in an ad hoc manner.

One of the main ways new technologies can contribute to POC is through timely and effective early-warning mechanisms. Platforms like SAGE and Unite Aware can help missions analyze data on threats and violence against civilians. Intelligence, surveillance, and reconnaissance tools like satellite imagery and unarmed aerial vehicles (UAVs) can aid in the collection of such data. The monitoring of communication platforms can also provide contextual information and insight into trends in public opinion, giving clues about future waves of violence.

However, there are many limitations to the use of new technologies for POC. The implementation of such technologies is not standardized across missions and often depends on the willingness and capability of individual staff members. Effective data analysis requires that the data input into existing platforms is both accurate and relevant and that the database is adequately maintained, which is not always the case. Troop-contributing countries may also lack the appropriate equipment, capacity, and mindset to implement new technologies for peacekeeping. In addition, there are risks related to potential breaches of data privacy and cyberattacks. Finally, there is often a "response gap" between data collection and responses to protect civilians, which are ultimately what matter.

Ultimately, the UN system needs to develop a dedicated theory of change for POC. This requires first identifying long-term POC goals and then working backward to ascertain which new technologies can effectively support these goals and how. Through this process, the UN can maximize the potential of new technologies to safeguard civilians.

Introduction

The United Nations has recently been exploring ways to boost its internal capacity to use new technologies to enhance its overall effectiveness (see Table 1). The modernization of peace operations through new technologies has been at the forefront of this endeavor.[1] In 2021, the UN launched its Strategy for the Digital Transformation of UN Peacekeeping to reinforce peace operations' mandate implementation, including the protection of civilians (POC), which the Security Council has designated as a priority among mandated tasks.[2]

Ensuring that POC activities are "enabled by technology and informed by data" could help address some of the acute challenges that missions face in protecting civilians, including by enhancing early-warning capabilities, improving access to hard-to-reach populations, and boosting the capacity of uniformed personnel.[3] Early warning in particular plays a central role in POC by allowing missions to proactively identify potential threats and quickly intervene, and the 2023 POC policy acknowledges the potential benefits of new technologies and data for early warning.

> The ongoing digital transformation of peacekeeping lacks a theory of change for how new technologies can contribute to POC.

However, the full potential of the link between digital transformation, new technologies, and peacekeeping has not yet been realized.[4] One major reason for this is that the ongoing digital transformation of peacekeeping lacks a theory of change for how new technologies can contribute to POC. Rather, too often, the Department of Peace Operations (DPO) deploys new technological tools first and only then determines how to apply them to POC objectives. As a result, mission staff are often harnessing technologies for POC in an ad hoc manner.

The purpose of this paper is to reflect on the interaction between new technologies and POC, particularly in relation to early warning.[5] The first section of the paper reviews peace operations' use of new technologies and data, which could be further used for early warning for POC. The second section discusses the limitations and risks of the use of new technologies for POC, particularly around data protection and privacy. The paper concludes by calling for a theory of change for how new technologies can contribute to POC in peacekeeping operations.

Box 1. What are "new technologies"?

The UN recognizes that digital transformation is enabled by new technologies and data, but it does not provide a clear-cut definition of "new technologies," which are fluid and ever evolving. The UN secretary-general's Strategy on New Technologies gives examples such as artificial intelligence, biotechnology, material sciences, and robotics.[6] New technologies are often perceived as multipliers, enablers, and catalyzers for impact, whether good or bad.[7] This is also true for POC as new technologies can both enhance protection outcomes and pose threats to civilians.

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1   For more on the challenges posed by new technologies in peacekeeping, see: Jane Esberg and Christoph Mikulaschek, "Digital Technologies, Peace and Security: Challenges and Opportunities for United Nations Peace Operations," UN Peacekeeping, August 25, 2021.

2   The implementation of the strategy is centered on three priority projects in the office of the under-secretary-general for peace operations: enhancing situational awareness, leveraging technology for uniformed peacekeepers, and addressing mis- and disinformation. UN Peacekeeping, "UN Peacekeeping Digital Transformation," December 14, 2022, available at https://peacekeeping.un.org/sites/default/files/dts_roadmap_as_of_14_dec_2022.pdf .

3   While early warning is not the only area that can benefit from new technologies and data in the implementation of POC mandates, it has been the most researched so far and is one of the areas where new technologies are most applicable.

4   UN Department of Peace Operations (DPO), "Policy: The Protection of Civilians in United Nations Peacekeeping," May 1, 2023, para. 33. The UN Security Council also encouraged "exploring available and future technologies and best practices that can contribute towards… the protection of civilians" in a presidential statement. The POC Handbook also recognizes the potential of new technologies to improve POC mandate implementation. See: UN Security Council, *Statement by the President of the Security Council*, UN Doc. S/PRST/2021/17, August 18, 2021; UN DPO, "The Protection of Civilians in United Nations Peacekeeping: Handbook," 2020, pp. 103–106.

5   This is not the only area that can benefit from new technologies and data in the implementation of POC mandates, but it has been the most researched so far and is one of the areas where new technologies are most applicable.

6   United Nations, "UN Secretary-General's Strategy on New Technologies," September 2018.

7   The UN Security Council recognized in a presidential statement that "technology has the potential to act as a force multiplier by enhancing performance, saving resources, simplifying work processes, and allowing peacekeeping missions to have a deeper understanding of the environments they operate in, through improved collection, analysis and dissemination of data. UN Doc. S/PRST/2021/17.

Table 1: Select UN initiatives and frameworks on new technologies

Partnership for Technology in Peacekeeping	2014	Brings together a range of stakeholders, including governments, civil society organizations, companies, and academic institutions, to develop and deploy innovative technological solutions to address the challenges faced by peacekeepers in the field[8]
Expert Panel on Technology and Innovation in UN Peacekeeping	2014	Published a report acknowledging that "United Nations peacekeeping remains well behind the curve" in adopting and applying new technologies; the report included POC as a programmatic priority for the use of new technologies in peacekeeping and proposed the concepts of "digital peacekeepers" and "technology-contributing countries"[9]
High-Level Panel on Digital Cooperation	July 2018	Convened "to provide recommendations on how the international community could work together to optimize the use of digital technologies and mitigate the risks"[10]
UN Secretary-General's Strategy on New Technologies	September 2018	Launched "to define how the United Nations system will support the use of these [new] technologies to accelerate the achievement of the 2030 Sustainable Development Agenda and to facilitate their alignment with the values enshrined in the UN Charter, the Universal Declaration of Human Rights and the norms and standards of International Laws"[11]
UN Secretary-General's Data Strategy	May 2020	Developed "to generate more value from the UN's wealth of data," including "stronger decision-making and policy advice, greater data access and sharing, improved data governance and collaboration, robust data protection and privacy, enhanced efficiency across our operations, greater transparency and accountability, and better services for people and planet"[12]
Roadmap for Digital Cooperation	May 2020	Set out actions to build an inclusive digital economy and society, build digital capacity, protect digital human rights, promote digital trust, and foster digital cooperation[13]

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8 UN Department of Operational Support (DOS), "Partnership for Technology in Peacekeeping," 2023, available at https://operationalsupport.un.org/en/partnership-technology-peacekeeping .

9 Expert Panel on Technology and Innovation in UN Peacekeeping, "Performance Peacekeeping: Final Report of the Expert Panel on Technology and Innovation in UN Peacekeeping," December 22, 2014.

10 United Nations, "Secretary-General's High-Level Panel on Digital Cooperation," 2020, available at https://www.un.org/en/sg-digital-cooperation-panel .

11 United Nations, "UN Secretary-General's Strategy on New Technologies," September 2018, available at https://www.un.org/en/newtechnologies/ .

12 United Nations, "Data Strategy of the Secretary-General for Action by Everyone, Everywhere," May 2020, available at https://www.un.org/en/content/datastrategy/index.shtml .

13 UN General Assembly, *Road Map for Digital Cooperation: Implementation of the Recommendations of the High-Level Panel on Digital Cooperation—Report of the Secretary-General*, UN Doc. A/74/821, May 29, 2020.

Action for Peacekeeping Plus (A4P+)	March 2021	Includes data and technology as a cross-cutting priority across eight priorities for strengthening UN peacekeeping[14]
Strategy for the Digital Transformation of UN Peacekeeping	September 2021	Aims "to enable missions to implement their mandates more effectively and to enhance the safety and security of peacekeepers by harnessing the potential of digital technologies as well as mitigating risks, while positioning peacekeeping to continue to evolve in its use of technology"[15]
Information and Communications Technology (ICT) Strategy (2023–2028)	September 2022	Outlines five strategic technology areas and aims "to create the conditions conducive to the effective, efficient, secured, interoperable and innovative use of technology" across the UN[16]

Using New Technologies for Early Warning for POC

With the implementation of the Digital Transformation Strategy underway, there are a number of areas in which UN peacekeeping operations could further make use of data and new technologies for early warning for POC, including enhancing data analysis for situational awareness; strengthening intelligence, surveillance, and reconnaissance technologies; and monitoring communication platforms.

> Developing such a theory of change would require identifying long-term POC goals and then working backward to determine how new technologies could contribute to achieving those goals.

Data Analysis for Situational Awareness

Many of DPO's current efforts have been oriented inward, focusing on pushing for a cultural shift in missions toward the use of new technologies. This includes digitizing workflows, improving data collection, and better using data for situational awareness. These efforts are encapsulated in the rollout of the Situational Awareness Geospatial Enterprise (SAGE) database and, more recently, the Unite Aware platform, which is being piloted in Cyprus and the DRC. While these tools are not specific to POC, they can contribute to POC if tailored for use in early warning.[17]

The UN's revised POC policy notes that POC can be enabled by new technologies and better informed by data.[18] The POC handbook also recognizes that data analysis can be used "to understand incident data better and to draw out patterns, dynamics and trends that may not be apparent from an anecdotal or qualitative approach to analysis."[19] This can support proactive decision-making and POC responses, including through improved early warning.[20]

14 UN Peacekeeping, "A4P+: Priorities for 2021–2023," 2021, available at https://peacekeeping.un.org/en/a4p-action-peacekeeping-priorities-2021-2023 ; United Nations, "What Is Action for Peacekeeping Plus (A4P+)?" October 22, 2021, available at https://peacekeeping.un.org/sites/default/files/a4p_fact_sheet_221021_final.pdf .

15 UN Peacekeeping, "Strategy for the Digital Transformation of UN Peacekeeping," September 17, 2021, available at https://peacekeeping.un.org/en/strategy-digital-transformation-of-un-peacekeeping .

16 UN General Assembly, *Information and Communications Technology Strategy—Report of the Secretary-General*, UN Doc. A/77/489, September 30, 2022.

17 UN DPO, "The Protection of Civilians in United Nations Peacekeeping: Handbook," p. 104.

18 UN DPO, "Policy: The Protection of Civilians in United Nations Peacekeeping," para. 33.

19 UN DPO, "The Protection of Civilians in United Nations Peacekeeping: Handbook," p. 104.

20 "Peacekeeping Intelligence for the Protection of Civilians," IPI closed-door roundtable, June 16, 2023.

The rollout of the SAGE database began in 2015, allowing missions to input, monitor, and visualize data such as incidents related to armed conflict, troop movements, demonstrations, intercommunal tensions, and attacks against UN peacekeepers. The joint operations center (JOC) is the custodian of SAGE, and all UN mission components can input data either directly or through the JOC.[21] The database's main purpose is to make data more consistent by replacing unstructured incident and activity reporting with a centralized repository of information. Currently, SAGE is used by almost all peacekeeping missions (except the missions in Western Sahara and Lebanon), including those with a POC mandate.

Many missions have used SAGE to develop their own dashboard on POC. In particular, the analytical capabilities of SAGE have been enhanced by the introduction of Power BI, a Microsoft-powered app that enables users to superimpose and visualize data, allowing for the identification of trends and spatial correlations between events.[22] SAGE provides the baseline data that some mission staff have used specifically for POC purposes. For example, the UN mission in Mali (MINUSMA) created a POC dashboard on Power BI that was automatically synced with SAGE three times a day. The dashboard showed graphs, tables, and maps that were useful for data analysis. For instance, the mission used the dashboard to explore the dynamics between troop rotations and POC incidents to check for correlation between the two, but found no basis for such correlation in the end. The POC dashboard is not fully ready for use in strategic planning but, according to the mission, has helped in advising the mission's leadership on POC.[23] Other missions, such as the missions in the Democratic Republic of the Congo (MONUSCO) and South Sudan (UNMISS), have also used Power

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BI to develop POC dashboards that have been relatively effective.[24] However, because these tools are not systematized across UN peacekeeping operations, they are vulnerable to changes in the peacekeeping landscape. For instance, as MINUSMA is preparing to close, there is a risk that these practices and lessons will be lost.

Another tool that has been developed by building on SAGE is the early-warning rapid-response app, which has been available in several missions, including MONUSCO and MINUSMA. This app allows users to disseminate an early warning to all relevant mission components based on an incident input into SAGE and to call for them to generate recommendations for action.[25] However, these early warnings need to pass through many layers before they are disseminated, and the system has been criticized as an inadequate tool for responding to POC incidents. It has also raised concerns about whether peacekeepers would be held accountable for failing to respond to an early warning, as well as the onerous training required to use the system considering the frequency of troop rotation. The app has thus not lived up to its promise to boost early warning and rapid response to POC incidents.

To be useful, such tools depend on the quality of the data entered into SAGE. However, data quality remains a concern due to biases and inconsistencies in the way it is entered and classified, as well as barriers to accessing the database and varying levels of user proficiency.[26] Different mission components may use different methodologies for inputting data into SAGE, which can lead to discrepancies and duplication in the reporting of incidents. For instance, there are often no standardized definitions of civilians, categories of incidents, and types of perpetrators, making it difficult to analyze data

21 Allard Duursma and John Karlsrud, "Predictive Peacekeeping: Strengthening Predictive Analysis in UN Peace Operations," *International Journal of Security and Development* 8, no. 1 (2019).

22 Microsoft, "What Is Power BI?" 2023, available at https://powerbi.microsoft.com/en-us/what-is-power-bi/ .

23 Interview with MINUSMA official, May 2023.

24 Lauren Spink, "Data-Driven Protection: Linking Threat Analysis to Planning in UN Peacekeeping Operations," Center for Civilians in Conflict (CIVIC), November 2018, p. 80.

25 Allard Duursma, "Protection of Civilians: Mapping Data-Driven Tools and Systems for Early Warning, Situational Awareness, and Early Action," PAX, April 2021.

26 Dirk Druet, "Enhancing the Use of Digital Technology for Integrated Situational Awareness and Peacekeeping-Intelligence," Center for International Peace and Security Studies, McGill University, April 2021.

to develop early warning for POC.

Several missions have tried to address these issues. MINUSMA established an informal oversight committee on data use in SAGE to ensure that relevant mission staff are all on the same page with regard to reported incidents.[27] This committee allowed all mission components to jointly review, verify, and approve the data to ensure accuracy. However, this was extremely time-consuming and still required a systematized approach, including a clear taxonomy and user guidance. In MONUSCO, hundreds of incidents are logged on SAGE every day, but at the time of writing, there was only one officer to manage the data. In other missions, the JOC strives to corroborate, approve, and deconflict data. However, there are no UN-wide systems for validating data.

Another challenge is that while SAGE can consolidate data effectively, it does not enable users to draw on external data sources to analyze context-specific trends. As such, SAGE has been of limited use for early-warning systems for POC, despite ad hoc efforts in some peacekeeping missions. To overcome some of these challenges, DPO is in the process of piloting Unite Aware, a platform building on SAGE.[28] Unite Aware allows users to gather all the datasets collected in various missions in a single interface that they can use to generate reports and visualizations to improve situational awareness and support decision making.[29] To date, however, given that it is still being piloted, Unite Aware has not shown clear results in supporting POC.

Unite Aware was first rolled out in 2019 in the UN mission in the Central African Republic (MINUSCA). However, insufficient training, a lack of dedicated resources, and inadequate thinking around maintenance of the technology upon deployment all made it difficult for staff to integrate Unite Aware into their workflow.[30] Unite Aware was recently rolled out using a more sustainable approach in the UN mission in Cyprus (UNFICYP) and again in MINUSCA, with more staff dedicated to ensuring the platform's integration into different mission components.[31]

As with SAGE, Unite Aware depends on accurate and relevant data. As noted by one UN official, "Unite Aware is a technical platform. It's not a capability. It's everything around it which would make it work."[32] The data needed for POC depends on each mission's context and mandate, and its availability partly depends on missions' method of collecting information. Depending on the mission, this may include data on the locations of civilian infrastructure such as villages, schools, hospitals, sources of drinking water, and POC camps; community dynamics; locations of natural resources; natural disasters such as flooded areas; transhumance routes; electoral processes; and troop rotations and patrols. In the event of an attack, it is crucial for missions to gather as much data as possible, including the type of attack; the nature of the conflict; the location or village affected; the number of victims; the victims' sex, community, and age; and details on the perpetrators. This data is a baseline for analyzing incidents such as kidnapping, casualties, and conflict-related sexual violence and their impact on civilian populations.

This POC-related data has not yet been systematically integrated into Unite Aware. To do so, DPO will need to continue engaging with civil affairs and protection personnel in missions to ensure that the most important POC data is being identified, collected, and presented on Unite Aware.[33]

> The data needed for POC depends on each mission's context and mandate, and its availability partly depends on missions' method of collecting information.

27 See also: Kseniya Oksamytna, "Responsible Management and Use of Data in UN Peace Operations," International Peace Institute, forthcoming.

28 See: United Nations, "Unite Apps," available at https://uniteapps.un.org/frontpage .

29 Druet, "Enhancing the Use of Digital Technology."

30 Interview with UN official, June 2023.

31 UN Peacekeeping, "Action for Peacekeeping: Digital Transformation Underway in UNFICYP," January 2, 2023, available at https://peacekeeping.un.org/en/action-peacekeeping-digital-transformation-underway-unficyp .

32 Interview with UN official, June 2023.

33 Interview with UN official, June 2023.

However, this will likely take a significant amount of time. In the meantime, missions will need to continue their efforts to input adequate data related to POC into SAGE to improve early warning.

Intelligence, Surveillance, and Reconnaissance Technologies

Intelligence, surveillance, and reconnaissance technologies can also contribute to early warning for POC. Potential tools include geographic information systems (GIS) using satellite imagery and digital mapping, unarmed aerial vehicles (UAVs), night-vision gear, autonomous surveillance vehicles, multispectral sensors, and phone imagery. Peacekeeping operations have used such technologies to varying degrees depending on the capabilities of troop- and police-contributing countries. From a POC perspective, such tools can help missions monitor potential physical threats against civilians and human rights violations, surveil protected areas, plan force distribution to anticipate and deter threats against civilians, and conduct forensic analysis to hold perpetrators accountable.[34]

Since their introduction in the peacekeeping missions in Chad, Haiti, and the Democratic Republic of the Congo in the early 2010s, UAVs have been used for several purposes in integrated peace operations.[35] For example, they have been used to monitor troop movements and confirm or deny the presence of potential attackers, thus enhancing civilian protection.

Satellite imagery has been used by humanitarian agencies, human rights agencies, and UN peacekeeping missions to map conflicts and boundaries and monitor human rights violations and humanitarian needs.[36] For example, UNICEF, the UN Refugee Agency (UNHCR), the World Food Programme (WFP), and the Office for the Coordination of Humanitarian Affairs (OCHA) have all used satellite imagery to assess humanitarian needs.[37] This has been made possible with the support of the UN Satellite Centre (UNOSAT), a specialized agency dedicated to providing satellite imagery and analysis to the UN system.[38] Satellite imagery and analysis also allow for post-violence forensic analysis, increasing accountability for the perpetrators of attacks. For instance, the Investigative Team to Promote Accountability for Crimes Committed by Da'esh/ISIL (UNITAD) has used satellite imagery to identify and prepare for the exhumation of mass grave sites, as well as to collect evidence of serious international crimes.[39]

These geospatial imagery techniques could be replicated and strengthened in peacekeeping to complement efforts to identify emerging threats and anticipate future violence, especially in areas that are hard to reach. Context-specific indicators, including the movements of armed groups and changes in vegetation that impact traditional grazing patterns and routes used by pastoralists, could serve as the foundation for these assessments.[40]

Monitoring of Communication Platforms

The monitoring of online spaces and communication platforms has become an increasingly crucial component of early-warning systems for POC. Social media monitoring tools can offer contextual information and identify trends in public sentiment, which is particularly vital due to the increas-

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34 A. Walter Dorn, *Keeping Watch: Monitoring, Technology and Innovation in UN Peace Operations* (Tokyo: United Nations University Press, 2011), p. 20; Walter Dorn and Cono Giardullo, "Technology Investments Paying Off in Peace Operations," Security and Human Rights Monitor, June 8, 2020.

35 Lloyd Axworthy and A. Walter Dorn, "New Technology for Peace & Protection: Expanding the R2P Toolbox," *Daedalus* 145 no. 4 (Fall 2016). See also: A. Walter Dorn, "Smart Peacekeeping: Toward Tech-Enabled UN Operations," International Peace Institute, July 2016, p. 7.

36 See: Elodie Convergne and Michael R. Snyder, "Making Maps to Make Peace," *International Peacekeeping* 22, no. 5 (October 2015); Robin Pierro, "Satellite Imagery for Human Rights Monitoring," Engine Room Library, August 2017.

37 See: OCHA, "The Centre for Humanitarian Data," available at https://centre.humdata.org/ .

38 Elodie Convergne and Michael Snyder, "Geospatial Technology as a Conflict Prevention and Management Tool in UN Peacekeeping," International Peace Institute, March 2015.

39 UNITAD, "Collect, Store, and Preserve Evidence to the Highest Possible Standards," available at https://www.unitad.un.org/content/collecting-storing-and-preserving-evidence ; UN Security Council, *Letter Dated 7 November 2022 from the Special Adviser and Head of the United Nations Investigative Team to Promote Accountability for Crimes Committed by Da'esh/Islamic State in Iraq and the Levant Addressed to the President of the Security Council,* UN Doc. S/2022/836, November 8, 2022.

40 Christoph Dworcshak, Sebastian Frowein, and Melanie Sauter, "Eyes from Above: Improving Early Warning Systems in UN Peacekeeping through Remote Sensing Data," forthcoming.

ingly rapid spread of misinformation, disinformation, and hate speech.[41] False narratives can challenge the credibility and legitimacy of UN peace operations, impacting their ability to protect civilians effectively. Misinformation, disinformation, and hate speech can increase insecurity, normalize violence, deepen community divisions, restrict civic engagement, and suppress the voices of moderate figures in civil society.[42] Hate speech can also signal mounting physical threats against civilians, as observed in historical cases like the lead-up to the Rwandan genocide in 1993–1994.[43] DPO has thus initiated a dedicated workstream on monitoring, analyzing, and responding to instances of mis- and disinformation within peacekeeping operations, in alignment with the Strategy for the Digital Transformation of UN Peacekeeping.[44]

UN peacekeeping operations have adopted several tools to monitor social media platforms. Most of them are procured externally, including Logically AI, Crimson Hexagon, Dataminr, Predata, TalkWalker, and Phoenix.[45] Some tools are specific to certain social media platforms, such as Sparrow, developed by the Department of Political and Peacebuilding Affairs (DPPA) to analyze Twitter data, and CrowdTangle, which is specific to Meta products.[46] DPO's focus is on guiding missions in the use of these technologies rather than advocating for the exclusive use of a particular tool. DPO hopes missions can integrate these tools into their existing data-gathering processes, including through joint mission analysis centers and potentially SAGE and Unite Aware.

However, there are obstacles to ensuring these tools

> Social media monitoring tools can offer contextual information and identify trends in public sentiment, which is particularly vital due to the increasingly rapid spread of misinformation, disinformation, and hate speech.

can be effectively used for early warning. Although Internet access is rapidly increasing, limited access in numerous conflict-affected areas results in significant gaps in data availability. Moreover, even in areas where Internet usage is widespread, not all segments of the population use social media to the same extent, which can bias the results of social media analyses. Additionally, social media analysis tools do not provide the level of geographic accuracy peacekeeping operations require to respond tactically to any threats identified.[47] While the goal is to use social media analysis to inform action, missions currently use these tools mostly for post facto analysis and reporting.[48]

In addition to social media monitoring, MINUSMA has used natural language processing to analyze radio content in Mali, where talk radio serves as a primary source of information for the vast majority of the population. MINUSMA's Big Data Radio Mining and Analysis project, supported by Germany and the Netherlands, uses voice-recognition technology developed by the UN Global Pulse Kampala Lab to transcribe local radio programs broadcast in local languages. The mission can then monitor keywords used in these programs to enhance its situational awareness and identify instances of hate speech. While this initiative was developed by MINUSMA, there have been discussions at UN headquarters about using natural language processing in other contexts.[49] However, this presents some challenges as many African languages and dialects lack sufficient digital text data for effective computational analysis.

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41 Druet, "Enhancing the Use of Digital Technology"; Albert Trithart, "Disinformation against UN Peacekeeping Operations," International Peace Institute, November 2022.

42 UN DPO, "Protection of Civilians Newsletter," Fourth Issue Brief, 2022, on file with author.

43 In this regard, DPO has partnered with the special adviser on the prevention of genocide to understand the linkages between hate speech and mis- and disinformation and conceptualize the various levels of incitement to violence and when and how to take action (whether judicial, operational, etc.).

44 UN DPO, "Protection of Civilians Newsletter."

45 See, for example: Build Up, "Phoenix," available at https://howtobuildup.org/programs/digital-conflict/phoenix/ .

46 It is important to note that none of these tools can be used to monitor WhatsApp, which is one of the biggest vectors (if not the biggest vector) of misinformation, disinformation, and hate speech in many contexts. See also: Annika Hansen, "Peacekeeping in the Digital Age: Future Threats and Capability Requirements," in *The EU, Irish Defense Forces and Contemporary Security*, Jonathan Carroll, Matthew G. O'Neill, Mark Williams, eds. (Cham: Palgrave Macmillan, 2023).

47 Druet, "Enhancing the Use of Digital Technology."

48 Interview with DPO official, May 2023.

49 Hansen, "Peacekeeping in the Digital Age" ; Druet, "Enhancing the Use of Digital Technology."

Box 2: Key actors working on innovation for peace operations and the UN system

Several UN entities are working to promote technological innovation in peace operations, though none of these have a mandate specifically focused on POC.

Digital Enablement Team for the Strategy for the Digital Transformation of UN Peacekeeping: Located in in the Office of the Director for Coordination and Shared Services (ODCSS), which serves DPPA and DPO, the Digital Enablement Team spearheads the implementation of the Strategy for the Digital Transformation of UN Peacekeeping with three priority projects for peace operations: enhancing situational awareness, including through the rollout of Unite Aware; leveraging technology for uniformed peace-keepers; and addressing mis- and disinformation, including through social media monitoring. It is mostly reliant on extrabudgetary funding.[50]

Office of Information Communications Technology (OICT): OICT provides system-wide leadership, services, guidance, and security and develops standards, policies, and infrastructure on all ICT-related activities across the UN system, including in peace operations.[51] OICT serves as a link between the updated ICT Strategy and the Strategy for the Digital Transformation of Peacekeeping. At headquarters, OICT's Emerging Tech Lab is dedicated to innovation and guidance on emerging technologies.[52]

UN Operations and Crisis Center (UNOCC): UNOCC offers prompt assessments of events on the ground for the whole UN system. Its objective is to facilitate well-informed, synchronized, and timely decision making and strategic involvement in operations and crisis management at UN headquarters. It achieves this through round-the-clock assistance to senior managers across the UN system. UNOCC led the development and rollout of the SAGE platform.

UN Innovation Network (UNIN): UNIN "serves as a platform for sharing expertise to further innovation in the UN system." The network includes over 3,000 UN personnel and external partners from more than seventy UN entities.[53]

UN DPPA's Innovation Cell: Launched in January 2020, the Innovation Cell aids DPPA and its field operations in responding to the UN secretary general's request for the UN system to enhance its development and use of innovative methods. It is part of UNIN.[54]

UN Global Pulse/Innovations Lab: Presented as the "Secretary-General's Innovations Lab," Global Pulse evolved from an initiative on big data and artificial intelligence for development, humanitarian action, and peace to "a network to advance responsible innovation in the UN's work to protect people and the planet."[55] UN Global Pulse developed the initiative on radio data mining and leads other programs related to digital inclusion, crisis prevention and response, a fair digital commons, and UN transformation.[56]

50 UN Peacekeeping, "UN Peacekeeping Digital Transformation."

51 See: OICT, "ICT Strategy for the Future United Nations," 2015.

52 OICT, "Emerging Technologies Lab," available at https://unite.un.org/emerging%20tech .

53 UN Innovation Network, "Welcome to the UN Innovation Network," available at https://www.uninnovation.network .

54 UN DPPA, "Innovation," available at https://dppa.un.org/en/innovation .

55 Lauren Parater, "UN Global Pulse Repositions as the Secretary-General's Innovation Lab, Transitioning Offices and Expanding Innovation Efforts for a UN 2.0," UN Global Pulse, February 3, 2023.

56 See: Lauren Parater, "2022 Annual Report: UN Global Pulse Showed Its Value in a Changing World," UN Global Pulse, June 7, 2023.

Anticipating Limitations and Risks for the Use of New Tech for POC

While new technologies and data provide opportunities to enhance early warning for POC and assist in protecting vulnerable populations, they also have limitations and risks. To mitigate these risks, the Digital Transformation Strategy recognized the importance of the "do no harm" principle.[57]

Limitations of Technologies and Data for POC

There are several limitations to the use of new technologies in early warning for POC. First, new technologies are often deployed in peacekeeping settings without a clear understanding of how they can or should contribute to POC. Their use in the service of POC objectives has therefore been ad hoc, depending on the willingness and capacity of individual staff.[58]

Second, as mentioned earlier, the data missions gather is not always reliable or relevant to POC. For the data analyses and visualizations generated by SAGE and Unite Aware to contribute to POC, the data in SAGE needs to be accurate and relevant, providing a sound, context-specific understanding of the factors that aggravate threats to civilians.[59] While this is the UN's ambition, existing data does not allow for predictive analysis and can at best be used for analysis of past events or general trends. As stated by one UN official, "If you want to have predictive analysis, you need worthy data, and this starts from the very beginning and the person who is collecting and reporting on the data."[60]

Third, the UN lacks the capacity to process and act on information in a timely manner, resulting in a "response gap." As noted in a report by the Center for Civilians in Conflict (CIVIC), "The UN is moving much more toward integrated reporting, but not integrated planning."[61] This is particularly problematic for the implementation of POC mandates. While technological advancements can improve reporting and bolster situational awareness, what ultimately matters most is timely, decisive, coordinated action to avert physical harm to civilians. If new technologies and data analysis enable missions to detect and anticipate violence and threats to civilians but leave them unable to act, it would constitute a serious failure of their POC mandate and could damage their reputation.

Fourth, the organizational culture within the UN does not promote the use of data and new technologies in general, let alone for POC objectives. As noted by Annika Hansen and Naomi Miyashita, "the challenge is not solely technical, as working cultures, mindsets, and capacities also impact the lack of integration," and "technology in and of itself will not make the difference; the culture, systems, and processes put in place by the people who run peacekeeping will."[62] Progress is gradually being made at the mission level, but there is still a long way to go. A positive example can be observed in UNFICYP, where staff at various levels have been trained on the use of Unite Aware, and the special representative of the secretary-general has started to use data visualizations to inform decision making and communicate the mission's accomplishments.[63] Similar efforts could be taken in missions with POC mandates.

Fifth, missions' databases are not always integrated. It is often unclear how different databases should interact, particularly the Office of the High Commissioner for Human Rights' (OCHCR) database for reporting on human rights violations and SAGE. In fact, there is no information-sharing protocol to clarify which types of human rights

> The organizational culture within the UN does not promote the use of data and new technologies in general, let alone for POC objectives.

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57 Annika Hansen and Naomi Miyashita, "UN Peacekeeping Embraces the Digital World," IPI Global Observatory, September 17, 2021.

58 Interviews with UN officials, May–June 2023.

59 Interviews with UN officials, April–May 2023.

60 Interview with UN official, June 2023.

61 Spink, "Data-Driven Protection."

62 Hansen and Miyashita, "UN Peacekeeping Embraces the Digital World."

63 Interview with UN officials, June 2023.

data are shared with SAGE or how often and how this data can be accessed and linked to other SAGE data. Although there are strong reporting standards in human rights, and this data is critical for POC joint threat assessments, prevention, and planning, there is no straightforward or systematic way to integrate the data.[64]

Sixth, lack of Internet connectivity can be an obstacle to using new technologies to analyze and respond to threats to civilians. Unite Aware, for instance, requires high bandwidth. While this is not an issue for missions in Europe or the Middle East, Internet penetration is low in many peacekeeping contexts in Africa.[65] This lack of connectivity and access to devices that connect to the Internet, in addition to the high cost of data, can also limit the ability of local populations to interact with technologies.

Seventh, operational challenges on the ground can limit the utility of some new technologies. For instance, CIVIC notes that despite the deployment of geospatial intelligence tools such as UAVs in missions, there are significant limitations to the amount and type of information they can gather. For example, dense forest coverage can hinder the capturing of valuable imagery, necessitating the involvement of specialists for image analysis.[66]

Eighth, it can be challenging for the UN to partner with large tech companies and the private sector, particularly to address mis- and disinformation. For example, the UN's collaboration with social media platforms to address disinformation has not risen to the level of a systematic partnership but remains ad hoc and fragmented, with individual UN staff often using their own contacts. These platforms' content-moderation policies also limit the extent to which they remove or flag disinformation that missions bring to their attention.[67]

Ninth, host states do not always consent to the

UN's deployment of new technologies, resulting in ongoing debates in the General Assembly's Special Committee on Peacekeeping Operations.

As stated by Walter Dorn, obtaining host-state consent has typically been a prerequisite for aerial observation, and this consent has mostly been granted. However, certain states have sought to impose constraints and prerequisites on technology usage in UN operations, underscoring the concerns around national sovereignty and the confidentiality of information gathered by the UN.[68]

Finally, troop-contributing countries may lack the equipment or capacity to deploy new technologies in peacekeeping operations. Moreover, many troop-contributing countries have concerns about the use of data-gathering technologies such as UAVs. In particular, there are concerns over "the ownership of the vast amount of data gathered from UAVs and other technologies and how this data, especially personally identifying information, is stored, shared, and handled, particularly when this technology is contingent-owned."[69]

Risks: Data Protection and Cyber Vulnerability

The risks of deploying new technologies for POC must be mitigated to ensure a "do no harm" approach, which is one of the principles of the Strategy for the Digital Transformation of Peacekeeping. One of the main risks is a disregard for data protection and privacy of populations.

The world's largest humanitarian organization, the International Committee of the Red Cross, recognizes that "protecting individuals' personal data is an integral part of protecting their life, integrity and dignity."[70] Humanitarian organizations have put guidelines and working procedures and practices in place to ensure the responsible use and management of data on individuals affected by armed conflict.

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64   Written exchange with UN official, July 2023.

65   Internet penetration in African peacekeeping contexts ranges from 35 percent in Mali to 7 percent in South Sudan. Statista, "Share of Internet Users in Africa as of January 2023, by Country," available at https://www.statista.com/statistics/1124283/internet-penetration-in-africa-by-country/ .

66   Spink, "Data-Driven Protection," p. 26; Oksamytna, "Responsible Use and Management of Data in Peacekeeping."

67   Gabriel Delsol and Albert Trithart, "The UN's Response to the COVID-19 Infodemic," International Peace Institute, May 2023; Trithart, "Disinformation against UN Peacekeeping Operations."

68   Dorn, "Smart Peacekeeping."

69   Fiifi Edu-Afful, "Peacekeeping in Nonpermissive Environments: Assessing Troop-Contributing Countries' Perspectives on Capabilities and Mindsets," International Peace Institute, March 2023, p. 6.

70   International Committee of the Red Cross, "Handbook on Data Protection in Humanitarian Action," 2020.

UN peacekeeping operations should adopt a similar approach when using data and new technologies to implement their POC mandates.[71] This was acknowledged by the 2014 Expert Panel on Technology and Innovation in UN Peacekeeping, which wrote that "missions must take care to protect sensitive information as well as the privacy of particularly vulnerable individuals in protection scenarios."[72] As noted by Kseniya Oksamytna, data protection in peace-keeping missions is critical to prevent unintended harm caused by the disclosure of sensitive or personal information and to ensure that data collected by the UN is not used for planning or committing human rights violations. Moreover, individuals should have ownership rights over the data collected about them, including the right to withhold or withdraw information, which may be a challenge for the use of UAVs.[73]

> The risks of deploying new technologies for POC must be mitigated to ensure a "do no harm" approach.

Another risk is that as peacekeeping missions become more reliant on digital technologies, they become increasingly vulnerable to cyberattacks. These cyberattacks can pose a risk to civilians if UN missions have a repository of information about civilians and victims of armed conflict. Missions will therefore have to reinforce their cybersecurity.[74] Technological failure could also expose missions' overde-pendence on new technologies and create data protection and privacy risks.[75] Ultimately, the principles of data protection and privacy, human rights compliance, and "do no harm" should continue to guide the implementation of the Strategy for the Digital Transformation of Peacekeeping.[76]

Box 3: Artificial intelligence and POC in UN peacekeeping

In recent months, there has been a rapid increase in the use of artificial intelligence (AI) across various sectors. The UN is also exploring the potential applications of AI.[77] One potential use of AI is for "predictive peace-keeping," which Allard Duursma and John Karlsrud define as the early identification of threats and timely action to mitigate them.[78] The UN has been critiqued for its inability to use data analysis for prevention. AI could help by allowing missions to process information more effectively using multivariate models that assess the complex interactions between the factors that can lead to violence against civilians. Toward this end, there have been external initiatives to use machine learning to help predict POC incidents based on SAGE data.[79] However, predictive peacekeeping is not a silver bullet, as missions' ability and willingness to act and respond to emerging threats to civilians in a timely manner remains a challenge. Further, many caution against the hasty implementation of AI tools without a solid foundation of data in peacekeeping missions, as the quality of analysis relies on the quality of the data. Additionally, there is a pressing need to establish governance mechanisms for AI and anticipate the bias it can perpetuate due to biased training data, algorithmic design choices, and lack of diversity in development teams. When AI learns from a biased dataset, it can perpetuate and reinforce those biases over time. To prevent this, it is crucial to use diverse and representative data and continuously monitor the information stored, collected, analyzed, and managed.

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71 Christopher Kuner and Massimo Marelli, eds., *Handbook on Data Protection in Humanitarian Action, Second Edition,* International Committee of the Red Cross, May 2020; Paola Gaeta and Antonio Coco, "Data Protection in War," April 27, 2023, in In and Around War(s), produced by Geneva Academy of International Humanitarian Law and Human Rights, podcast, SoundCloud, available at https://soundcloud.com/user-230423719/season-2-episode-2-data-protection-in-war .

72 Expert Panel on Technology and Innovation in UN Peacekeeping, "Performance Peacekeeping: Final Report of the Expert Panel on Technology and Innovation in UN Peacekeeping," December 22, 2014, p. 118.

73 Oksamytna, "Responsible Use and Management of Data in Peacekeeping."

74 See: Dirk Druet, "Cyber: Role and Capability of UN Peace Operations" (working title), International Peace Institute, forthcoming.

75 Dorn, "Smart Peacekeeping," p. 26.

76 UN Peacekeeping, "Strategy for the Digital Transformation of UN Peacekeeping," p. 14.

77 UN DPPA Innovation, "Futuring Peace," 2022, available at https://futuringpeace.org/project/generative-artificial-intelligence-and-its-implications . See also: Farnaz Fassihi, "U.N. Officials Urge Regulation of Artificial Intelligence," *New York Times*, July 18, 2023; "What's In Blue—Artificial Intelligence: High-Level Briefing," Security Council Report, July 2023.

78 Duursma and Karlsrud, "Predictive Peacekeeping."

79 Allard Duursma, "Data-Driven Analyses in UN Peacekeeping Missions," March 13, 2022.

Conclusion

Nearly a decade ago, the Expert Panel on Technology and Innovation in UN Peacekeeping wrote that "peacekeeping missions should incorporate technology in the design and implementation of protection of civilians strategies, in particular their early warning and early response mechanisms."[80] This was further reiterated in the newly revised POC policy, which treats new technologies and data as enablers of POC. However, the potential of new technologies has not yet been fully harnessed for POC. The broader digital transformation of peacekeeping is underway, but there is no theory of change for how new technologies could contribute to POC. Too often, DPO is deploying new technological tools first and only then determining how to apply them to POC objectives in an ad hoc manner.

Developing a dedicated theory of change for POC

would entail first identifying long-term POC goals and then working backward to ascertain how and which new technologies can effectively support these goals. Analysis of the context in which missions operate and the three tiers of POC activities can be a good way to identify specific uses for new technologies. By strengthening these links and focusing on POC-specific requirements, the UN can maximize the potential of new technologies to safeguard civilians.

Further, the principles of data protection and privacy, human rights compliance, and "do no harm" should remain at the forefront of the Strategy for the Digital Transformation of Peacekeeping.[81] Finally, further research is needed to take stock of the contributions of new technologies to POC beyond enhancing situational awareness and to learn from other contexts and organizations that use new technologies and data to enhance protection outcomes.

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80 Expert Panel on Technology and Innovation in UN Peacekeeping, "Performance Peacekeeping," p. 73.
81 UN Peacekeeping, "Strategy for the Digital Transformation of UN Peacekeeping," p. 14.

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