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The UN at a crossroads: governing digital technologies that incorporate AI while using them in its peace operations

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Executive summary

The rapid development of artificial intelligence (AI) is transforming social, economic and political relations worldwide in profound ways. Recognising the risks posed by this technological revolution, including violations of fundamental rights, the normalisation of the use of force, and increased international tensions, the UN has spent several years seeking to establish a global governance structure for AI. The organisation intends to establish itself as a central regulatory body, as it believes that current initiatives are fragmented and competitive, and that only collective regulation can prevent potential abuses, particularly in security and the military.

Alongside this normative ambition, the UN is integrating AI and data-driven technologies into its own practices, particularly in peace operations (POs). The increasing use of digital data, coupled with new computing and analytical capabilities, has led to the suggestion that the behaviour of those involved in POs could be more accurately predicted in order to strengthen violence prevention. However, these experiments often remain *ad hoc* or in the experimental phase, and their terms of use are still unclear. This raises critical issues in terms of ethics, operational effectiveness, and alignment with mission objectives and mandates.

The organisation is in a challenging position, as it must promote ambitious international regulation while also setting an example by regulating the internal use of the tools it deploys. This study will analyse this dual approach by examining the UN's normative strategies and the practical methods used to collect, use and analyse data — sometimes automatically — in field operations, with a particular focus on the SAGE and Unite Aware systems. Finally, the study will consider the challenges involved in integrating these technologies into peacekeeping operations, as well as their potential impact on the United Nations' legitimacy in the areas of peacekeeping and the global governance of AI.

Recommendations :

- ✓ In order to avoid “techno-solutionism”, it is important for the UN to consider the advantages of using data-driven and artificial intelligence technologies in its POs, as well as the economic, environmental, and political costs involved.
- ✓ It would be advisable for the UN to bear in mind that AI-generated data can be partial or biased. Precautions must be taken to ensure that these biases do not hinder the missions' objectives and mandates.
- ✓ The UN should continue to prepare itself to address the issues associated with the ownership and sharing of data collected in POs, as well as the transparency and protection of such data.
- ✓ It is important for the UN to be mindful of the level of trust placed in these technologies by both the professionals who use them in peace operations and the populations from whom data is collected. Excessive use of these technologies could undermine the human element of peacekeeping and create distance between UN personnel and the populations they serve.

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List of acronyms

A4P/A4P+	Action for peacekeeping / Action for peacekeeping plus
DOS	Department of Operational Support
DPO	Department of Peace Operations
DMSPC	Department of Management Strategy, Policy and Compliance
DPPA	Department of Political and Peacebuilding Affairs
ETHZ	*Eidgenössische Technische Hochschule Zürich* - Swiss Federal Institute of Technology Zurich
EU	European Union
GPAI	Global Partnership on AI
HLAB AI	High-Level Advisory Body on Artificial Intelligence
HLEG IA	High-Level Expert Group on Artificial Intelligence
HLP DC	High-level Panel on Digital Cooperation
IAWG-AI	Inter-Agency Working Group on Artificial Intelligence
ITU	International Telecommunication Union
JOC	Joint Operations Center
MINUSCA	*Mission multidimensionnelle intégrée des Nations unies pour la stabilisation en République centrafricaine* - United Nations Multidimensional Integrated Stabilisation Mission in the Central African Republic
MINUSMA	*Mission multidimensionnelle intégrée des Nations unies pour la stabilisation au Mali* - United Nations Multidimensional Integrated Stabilisation Mission in Mali.
MONUSCO	*Mission de l'Organisation des Nations unies pour la stabilisation en République démocratique du Congo* - United Nations Organisation Stabilization Mission in the Democratic Republic of the Congo
NGOs	Non-Gouvernemental Organisations
ODCSS	Office of the Director for Coordination and Shared Services
ODET	Office for Digital and Emerging Technologies
OECD	Organisation for Economic Co-operation and Development
OICT	Office of Information and Communications Technology
PICM	Peacekeeping-Intelligence Coordination Mechanism
PO	Peace operations
POC	Protection of civilians
SAGE	Situational Awareness Geospatial Enterprise
TPCC	Troop and Police Contributing Countries
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organisation
UNFICYP	United Nations Peacekeeping Force in Cyprus
UNHCR	United Nations High Commissioner for Refugees
UNICRI	United Nations Interregional Crime and Justice Research Institute
UNIDIR	United Nations Institute for Disarmament Research
UNOCC	United Nations Operations and Crisis Centre
UNU-CPR	United Nations University - Centre for Policy Research
WFP	United Nations World Food Programme

Introduction

During a meeting of the United Nations (UN) Security Council on 19 December 2024, which was organised to discuss artificial intelligence (AI), peacekeeping and international security, the United Nations Secretary-General, António Guterres, made the following statement: *"Artificial intelligence is not just reshaping our world — it is revolutionizing it*". Pleading for the global regulation of AI, he pointed to the added value that such technology could bring to peace, while also highlighting the risks it could pose in terms of inequality, human rights and freedoms, and even international tensions. He went on to warn his audience that, in his view, the fate of humanity should *"never be left to the 'black box' of an algorithm*[1]".

These fears echo the widespread belief that, for several years now, in businesses, government agencies and even in everyday life, AI and algorithmic analysis software – along with the technologies that support them and the data that feeds them – have been significantly reshaping social, economic and political relationships[2]. It has been posited by certain academics that contemporary technological devices, which are predicated on the processing of large volumes of data and machine learning, are exerting such a profound influence on our understanding of the world, individual behaviour and even public policy that we have entered a new era of "*algorithmic governmentality*[3]".

Recommendation methods on shopping platforms or social networks, and certain profile filtering practices in professional recruitment processes[4], for example, suggest that these innovations are governing everyday human life. Furthermore, the political and health management practices of certain international organisations in response to pandemics such as COVID-19[5] virus clearly highlight the growing role of algorithms and AI in population governance. The incorporation of AI into armed conflicts has also raised specific ethical, legal and political questions[6].

By way of illustration, these issues are particularly salient in debates concerning the use and regulation of weapon systems with a certain degree of autonomy[7]. The processes of weapon technologization and battlefield digitisation, along with the new "*networked warfare*" doctrines developed alongside them, have led to a significant detachment of human action in warfare. More and more weapons systems now incorporate software that captures and analyses data to guide military actions, including targeting processes. A recent example of this is the extensive use of AI in Israeli strikes in Gaza[8].

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[1] "Secretary-General Tells Security Council That 'AI' Must Never Equal 'Advancing Inequality', Urging Safe, Secure, Inclusive Future for Technology", *UN Meetings Coverage and Press Releases*, 19 December 2024.

[2] CARDON Dominique, *À quoi rêvent les algorithmes. Nos vies à l'heure des Big data*, Éditions du Seuil, 2015.

[3] ROUVROY Antoinette et BERNS Thomas, "Gouvernementalité algorithmique et perspectives d'émancipation le disparate comme condition d'individuation par la relation ?", *Réseaux*, vol. 177, n°1, 2013, p. 163-196.

[4] DASTIN Jeffrey, "Insight - Amazon scraps secret AI recruiting tool that showed bias against women", *Reuters*, 11 Octobre 2018.

[5] "OCHA-Bucky: A Covid-19 model to inform humanitarian operations", *Center for Humanitarian data,* 28 Octobre 2020.

[6] See for example, JENSEN Benjamin M., WHYTE Christopher, et CUOMO Scott, "Algorithms at war: the promise, peril, and limits of artificial intelligence", *International Studies Review*, vol. 22, n°3, 2020, p. 526-550.

[7] NOONE Gregory P. & NOONE Diana C., "The debate over autonomous weapons systems", *Case Western Reserve University School of Law,* vol. 47, n°1, 2015, p. 25-35.

[8] See for example, DE ROUCY-ROCHEGONDE Laure, "L'IA au cœur de la stratégie israélienne à Gaza", *The Conversation*, 15 February 2024.

In response to this militarisation of AI, non-governmental organisations (NGOs), human rights experts and academics have expressed concern about the increased risk of the dehumanisation of warfare[9]. They highlight the potential issues that the development of these technologies may pose with regard to the normalisation of the use of force, particularly in terms of the dilution of human and legal responsibilities in lethal actions. They also caution that algorithmic analyses can be inherently biased, which can have dramatic effects on civilian populations in conflict zones.

It was largely on the basis of these debates that the UN gradually took up the issue of AI regulation. Recognising that fierce competition between major powers to develop these new technologies would inevitably lead to infringements on freedoms, heightened transnational tensions and even violence in conflict zones, the UN reacted swiftly. Emphasising that international regulatory initiatives were too fragmented and even competitive, it sought to establish itself as a leading player in the development of international standards. To this end, it emphasized its capacity to act as a neutral and representative intergovernmental entity.

Since then, the UN has also sought to serve as a model for uniting the efforts of its Member States and other international organisations around a common global regulatory framework in this area. Consequently, the organisation's capacity to govern new digital and AI technologies is inextricably linked to their increasing use and regulation within the UN itself. The advent of the "*digital age*" and the availability of these technologies has offered new opportunities for UN professionals, particularly in field offices.

For example, the unprecedented increase in usable digital traces in the operational environment has coincided with the deployment of technologies capable of collecting, creating and managing data. The increased computing power of some of these innovations has enabled the UN to aggregate and analyse this data more quickly and efficiently[10]. The idea that it is now possible to better model, understand and predict the behaviour of those involved in conflicts, and to act reactively or even proactively, has gradually gained traction[11].

In practice, while these innovations may improve certain aspects of peace operations, they are generally used on an *ad hoc* basis, which makes it difficult to determine whether such results can be consistently achieved. Furthermore, incorporating these technologies may entail risks and limitations that could compromise mission effectiveness, consistency and ability to fulfil mandates. Recognising the ethical and legal risks associated with the use of AI and related technologies, the UN has produced a set of guidelines to regulate their internal use, including in POs [12]. However, the terms and conditions for applying the relevant principles have not always been clearly defined or implemented promptly. Nevertheless, this regulatory uncertainty has not slowed down early experimentation.

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[9] See, for example, the "Stop Killer Robots" campaign launched in April 2023 and supported by *Amnesty International* et *Human Rights Watch*. See also WILCOX Lauren, "Embodying algorithmic war: Gender, race, and the posthuman in drone warfare", *Security dialogue*, vol. 48, n°1, 2017, p. 11-28.

[10] KARLSRUD John, "Peacekeeping 4.0: Harnessing the potential of big data, social media, and cyber technologies", in KREMER Jan-Frederik et MÜLLER Benedikt (eds.), *Cyberspace and International Relations*. *Cyberspace and international relations: Theory, prospects and challenges*, Springer, 2013, p. 141-160.

[11] DUURSMA Allard & KARLSRUD John, "Predictive Peacekeeping: Strengthening Predictive Analysis in UN Peace Operations", *Stability: International Journal of Security and Development*, vol. 8, n°1, 2019, p. 1-19.

[12] FOURNIER-TOMBS Eleonore, "Towards a United Nations internal regulation for artificial intelligence", *Big Data & Society*, vol. 8, n°2, 2021.

Therefore, it seems legitimate to consider whether the UN's ability to address these challenges will determine its capacity to remain a key player in both peacekeeping and the global governance of AI use. This raises questions about how the organisation is reconciling its normative role in the regulation of digital technologies and AI at the global level with how it regulates and uses these technologies itself to ensure peace. Based on this reasoning, the purpose of this note is to review how the UN has adopted these new technologies, and the issues surrounding their use and regulation.

In the first part, the study will analyse how the UN has sought to establish itself in the international governance of data- and AI-based technologies, in a context of regulatory fragmentation. It will then examine the organisation's growing role, the resources it has mobilised to establish its regulatory authority, and the limits of this ambition. As it seeks to set an example for the governance of these technologies by developing and applying its own standards, the study will also shed light on the relevant stakeholders, standards and applications within the UN and its specialised agencies. By tracing this innovation process, the study will reveal any discrepancies that may have emerged between the adoption of these technologies within the UN and its POs, and their alignment with the organisation's standards and mission mandates.

Secondly, the analysis will provide a more detailed description of the SAGE (Situational Awareness Geospatial Enterprise) incident database and its integration into the Unite Aware platform within the peace operations. These situational awareness tools coordinate the various mission components and support decision-making, with the aim of strengthening the prediction and early warning of unrest in the context of peace operations. The study will provide an overview of the limitations of these technological devices in their current and potential applications. Finally, it will question the political implications of using AI in peace operations and the UN's ability to establish itself as a legitimate peacekeeping force at the international level. This analysis draws on a comprehensive review of academic literature, as well as doctrinal and strategic documents on regulation, in addition to an examination of the use of these technologies within the UN.

1. The UN as a player in AI governance: between international regulatory fragmentation and experimentation in its peace operations

In order to understand how the UN seeks to establish itself as a player in AI governance, this section will proceed in three stages. Firstly, it will outline the UN's stance on the governance of AI technologies at an international level. It will emphasise that, in the absence of binding mechanisms and in the face of global regulatory fragmentation, the UN is attempting to influence AI governance by developing its own standards for its Member States, as well as for the supervision of its own activities. Secondly, it will examine the internal modalities of this innovative and regulatory process. Thirdly, it will present the various applications of these technologies within the UN’s peace missions. This will reveal discrepancies between the enacted standards.

1.1. Regulation of digital technologies and AI in the international sphere: is the UN an influential player in a fragmented regulatory landscape?

Since the end of the second decade of the 2000s, numerous international collaborations have been established to develop standards for regulating the use of AI [see Box 1]. These multilateral efforts have involved the G7 member states, followed by the European Union (EU) and the Organisation for Economic Co-operation and Development (OECD). Specialist literature agrees that the OECD's

regulatory framework has influenced discussions and documents published in this field by the EU, the Council of Europe, the G20, the United States, and the UN[13]. This observation highlights the structuring role of certain international initiatives in the emergence of a form of "*normative core*[14]" relating to the regulation of AI technologies.

However, despite this initial convergence, the normative framework has remained fragmented. As Mark Robinson observes, major actors driving AI-related innovation—such as China and Russia—have generally been reluctant to engage in the development of multilateral normative frameworks for AI, particularly when these frameworks are designed to be legally binding. For example, he explains that "*GPAI's claim to be 'global' is undermined by the absence of 134 of the 178 UN member states, including China*[15]".

Box 1: Early multilateral efforts towards the international regulation of AI

2018: Members of the G7 adopted the ***Charlevoix Common Vision*** for the future of artificial intelligence. Focusing on the need to develop "*responsible*" and "*ethical*" AI, particularly in the commercial sphere, the vision aimed to engage in practices designed to foster "*public trust*". It also encouraged signatory countries to use these technologies in a manner that respects data protection and privacy[16].

2018: The OECD established an **Expert Group on AI**. A year later, the group published a report that formed the basis for the principles set out in the organisation's **Recommendation on Artificial Intelligence**[17]. Signed by approximately forty countries, this document – updated in 2024 – aims "*to foster innovation and trust in AI by promoting responsible and reliable management while ensuring respect for human rights and democratic values*[18]". In 2020, **the OECD Policy Observatory on AI** was established to advise policymakers on the implementation of AI principles.

2018-2019: The European Commission established the **High-Level Expert Group on Artificial Intelligence** (HLEG AI) to develop recommendations on ethical, legal and societal issues relating to AI for the EU[19]. The Council of Europe established the **Ad Hoc Committee on Artificial Intelligence** (CAHAI), responsible for holding consultations on the development of a legal framework for AI design and use based on the Council's human rights, democracy, and rule of law standards[20].

2019-2020: The **Global Partnership on AI (GPAI)**, created by the leaders of the G7 and the EU and signed by fourteen other states, has set itself the objective of *"strengthen multi-stakeholder cooperation in advancing artificial intelligence" and commits to "responsible and human-centered development and use of AI, respecting human rights, fundamental freedoms, and their shared democratic values*[21]".

This regulatory framework has also failed to prevent a variety of actors from becoming involved in various arenas with the aim of developing new standards or influencing existing ones to make them

[13] GARCIA Eugénio V., "Multilateralism and Artificial Intelligence What Role for the United Nations?", in TINNIRELLO Maurizio (eds.), *The global politics of artificial intelligence*, CRC Press, 2022, p. 63.

[14] *Ibid.*

[15] ROBINSON Mark, "The establishment of an international AI agency: an applied solution to global AI governance", *International Affairs,* vol. 101, n°4, 2025, p. 1487.

[16] See "Vision commune de Charlevoix sur l'avenir de l'intelligence artificielle", *Gouvernment of Canada*, G7, 2018.

[17] "OECD Recommendation on artificial intelligence", *OECD*, JURIDE/0449, adopted on 22 May 2019.

[18] *Ibid*.

[19] See "Groupe d'experts de haut niveau sur l'intelligence artificielle", *European Commission*, accessed on 21 November 2025.

[20] See "CAHAI - Comité ad hoc sur l'intelligence artificielle", *Council of Europe*, accessed on 21 November 2025.

[21] See "Lancement du partenariat mondial pour l'intelligence artificielle", *French government*, 16 June 2020.

compatible with their national priorities and ambitions[22]. This dynamic has fostered the emergence of a "*normative cacophony*", giving rise to a fragmented and competitive global regulatory landscape[23]. In this context, some states are seeking to establish themselves as central players in AI governance. In this regard, researcher Laure de Roucy-Rochegonde asserts that the United States, China and the EU already constitute three "*normative powers*" in this field[24].

Furthermore, despite their membership of the EU, countries such as France and the United Kingdom have also attempted to set themselves apart in the regulation of AI technologies by organising international meetings on their own territories. Long marginalised in debates and decisions relating to global AI governance and fearing a widening of the global "*digital divide*", countries such as India, South Korea and Rwanda have also become involved in organising summits dedicated to this issue. While this "*summit diplomacy*", helps to unite groups of states around shared normative frameworks, it also contributes to accentuating the fragmentation of international AI governance[25].

The proliferation of national and international initiatives to regulate AI technologies has led some researchers to warn of the undesirable effects of a "*patchwork*" approach to AI governance.[26] This regulatory fragmentation, reinforced by the enactment of standards developed by the private sector and the manufacturers themselves, would allow states and companies to engage in "*forum shopping*". This involves selecting, based on their own interests, the regulatory bodies that appear to be the least restrictive for their own activities[27]. Concerned about the potential "*balkanization*" of AI governance, these authors argue that this process could, in the long term, result in different territorial entities adopting competing and even contradictory standards[28].

With this in mind, some academics argue that the UN's "*inclusive*" nature, its "*unparalleled convening power*" and its "*neutrality*" give it *de facto* legitimacy to structure debates and global governance on AI[29]. Upon taking office, UN Secretary-General António Guterres made a similar argument, urging Member States to use the organisation as "*as a platform to draw global attention to these crucial matters and to nurture a digital future that is safe and beneficial for all*[30]". More recently, however, he could only note the large number of existing normative frameworks, while reaffirming the UN's

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[22] DE ROUCY-ROCHEGONDE Laure, *Promesses artificielles ou régulation réelle? Inventer la gouvernance mondiale de l'IA* , *Études de l'IFRI*, February 2025.

[23] *Ibid.* ; SCHMITT Lewin, "Mapping global AI governance: a nascent regime in a fragmented landscape", *AI Ethics,* vol. 2, 2022, p. 303–314.

[24] DE ROUCY-ROCHEGONDE Laure, *Promesses artificielles ou régulation réelle?*, *op. cit*.

[25] *Ibid*. A recent report also suggests that only seven countries are involved in the seven most recent major international initiatives on AI governance – which are not UN-led – while 118 other countries are not involved at all. See "Governing AI for Humanity", *UN High-level Advisory Body on Artificial Intelligence,* Final Report, p. 49.

[26] DE ROUCY-ROCHEGONDE Laure, *Promesses artificielles ou régulation réelle?*, *op. cit*.

[27] ROBERTS Huw, *et al.* "Global AI governance: barriers and pathways forward", *International Affairs*, n°100*,* vol. 3, 2024, p. 1281 ; DE ROUCY-ROCHEGONDE Laure, *Promesses artificielles ou régulation réelle?*, *op. cit*.

[28] TURNER Jacob, *Robot rules: Regulating artificial intelligence,* Palgrave Macmillan, 2019, p. 239-240 ; DE ROUCY-ROCHEGONDE Laure, *Promesses artificielles ou régulation réelle?*, *op. cit*.

[29] ROBINSON Mark, "The establishment of an international AI agency: an applied solution to global AI governance", *loc. cit.* ; GARCIA Eugénio V., "Multilateralism and Artificial Intelligence What Role for the United Nations?", *loc. cit.*

[30] "Secretary-General's Address to the General Assembly", *UN Statements*, 25 September 2018.

commitment to continuing its efforts "*to reduce fragmentation of AI governance and help bring these separate initiatives towards a common framewok*[31]".

It should be noted that several UN entities swiftly attempted to develop a framework for reflection and regulation conducive to "*good*" global governance of AI. Since then, the UN's efforts have demonstrated its intention to establish itself as a leading player in this field (see Box 2). The proliferation of these initiatives would also grant the UN epistemic authority in this area[32]. Faced with the adverse effects of the fragmentation of the international regulatory framework, some authors argue that the UN could be capable of preventing practices of "*forum-shopping*[33]". For example, Eleonore Fournier-Tombs explained that ratification of conventions by Member States could oblige them to commit to following UN principles in their own jurisdictions[34]. In the absence of such mechanisms, however, the UN has attempted to establish its own standards to serve as a model not only for its agencies, but also for its Member States and other international organisations[35].

Box 2 : Key UN initiatives on the governance of artificial intelligence (AI)

2015: The United Nations Interregional Crime and Justice Research Institute (UNICRI) was the first organisation to initiate discussions on the need for AI governance[36]. Shortly afterwards, the United Nations Institute for Disarmament Research (UNIDIR) and the United Nations University Centre for Policy Research (UNU-CPR) conducted research to explore the international challenges associated with AI[37].

2017-2025: The International Telecommunication Union (ITU), a UN agency, organises the annual World Summit ***AI for Good*.** This global dialogue platform has long been the organisation's flagship event on the subject. Bringing together multiple stakeholders and disciplines, it sparks debate on how AI can solve global problems in line with sustainable development goals[38].

2017-2020: UN Secretary-General António Guterres, who has made digital governance a central objective of his mandate, was involved the creation of the **High-level Panel on Digital Cooperation** (HLP DC). The group's mission is to enhance trust and promote digital cooperation among UN Member States and other stakeholders. In 2019, it published the report ***The Age of Digital Interdependence***[39], which encourages global digital cooperation and the development of technical and ethical standards in this field through multilateral and multi-stakeholder approaches. Based on this report, António Guterres developed the ***Digital Cooperation Action Plan*[40].**

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[31] "Secretary-General Tells Security Council That 'AI' Must Never Equal 'Advancing Inequality', Urging Safe, Secure, Inclusive Future for Technology", *loc. cit.*

[32] SCHMITT Lewin, "Mapping global AI governance", *loc. cit*.

[33] ROBERTS Huw, *et al.* "Global AI governance", *loc. cit.* ; FOURNIER-TOMBS Eleonore, "Towards a United Nations internal regulation for artificial intelligence", *Big Data & Society*, vol. 8, n°2, 2021.

[34] FOURNER TOMBS Eleanor, *Ibid.*

[35] "Report on the Operational Use of AI in the UN System", *United Nations, HLCM Task Force on the use of Artificial Intelligence in the UN system*, 20 September 2024.

[36] BUTCHER James & BERIDZE Irakli, "What is the State of Artificial Intelligence Governance Globally? ", *The RUSI Journal*, n°164, vol. 5-6, 2019, p. 93.

[37] GARCIA Eugénio V., "Multilateralism and Artificial Intelligence What Role for the United Nations? ", *loc. cit.*, p. 67 ; SCHMITT Lewin, "Mapping global AI governance", *loc. cit*., p. 308.

[38] SCHMITT Lewin, *Ibid.* ; FOURNIER-TOMBS Eleonore, "Towards a United Nations internal regulation for artificial intelligence", *loc. cit.*, p. 3.

[39] "The Age of Digital Interdependence", *Report of the UN Secretary-General's High-level Panel on Digital Cooperation*, 2019.

[40] "Road map for digital cooperation: implementation of the recommendations of the High-level Panel on Digital Cooperation Report of the Secretary-General", *UN General Assembly,* A/74/821, 29 May 2020.

2019: An **ad hoc committee** was set up by UNESCO to propose global standards on AI ethics[41]. The committee's work resulted in the creation of a standard document entitled ***Recommendation on the Ethics of Artificial Intelligence***[42], which was adopted by all 193 member states. However, two years after its adoption, fewer than a quarter of the signatories had actually engaged with the organisation to implement the proposed policy tools. This lack of follow-up underscores the non-binding nature of these standards[43].

2022-2024: The Secretary-General's Special Envoy for Technology launched the creation of **the High-Level Advisory Body on Artificial Intelligence** (HLAB AI), which is responsible for making recommendations for international governance in this field. During the Future Summit organised by the UN in 2024, this body published its report ***Governing AI for Humanity***[44]. During the summit, the 193 states unanimously adopted the ***Global Digital Compact***[45]. The ***United Nations Office for Digital and Emerging Technologies (ODET)***, which was created for this purpose, is responsible for its implementation. With its mandate strengthened, one of its main objectives is to facilitate discussions and decision-making processes concerning global AI governance.

The UN's considerations regarding global AI governance have evolved alongside the integration of new digital technologies into its working ecosystem, sometimes on an *ad hoc* basis. Since 2010, the advent of the "*digital age*" and the increasing adoption of these technologies within the UN have prompted the organisation to reflect on how they might serve its objectives in conflict prevention, humanitarian action, development, and peacekeeping. In parallel, the UN has gradually sought to establish internal "*ethical*" standards governing their use, including in peace operations. It is therefore necessary to examine this process of technological innovation and internal regulation, which unfolded alongside, and in some cases after, the introduction of the technologies under study within the organisation.

1.2. Innovations and regulations within the UN and its peace operations

Over the past decade, several UN agencies, funds and programmes have attempted to incorporate AI-enabled technologies into their activities. In the humanitarian field, for example, the United Nations High Commissioner for Refugees (UNHCR) has been using biometric technologies to identify and track refugees since 2018[46]. In 2019, the United Nations World Food Programme (WFP) partnered with *Palantir* as part of its activities[47]. The US company, which specialises in data collection and AI modelling, was contracted to implement a biometric recognition system to manage the distribution of food aid. This form of privatisation of the humanitarian sector has not been without controversy and questions. One issue is the logic behind involving a US company with strong links to its country's intelligence and defence sector in the humanitarian field, which is supposed to be apolitical[48]. More generally, concerns

[41] GARCIA Eugénio V., "Multilateralism and Artificial Intelligence What Role for the United Nations? ", *loc. cit.*, p. 65.

[42] "Recommendation on the Ethics of Artificial Intelligence", *UNESCO,* adopted on 23 novembre 2021.

[43] ROBERTS Huw, *et al.* "Global AI governance", *loc. cit.,* p. 1277.

[44] "Governing AI for Humanity", *op. cit*. p. 49.

[45] "Draft resolution submitted by the President of the General Assembly, 'Pact for the Future'", *UN General Assembly*, A/79/L.2, Annex I: Global Digital Compact, 20 September 2024.

[46] In Yemen, at the end of 2018, data on 7.1 million refugees was processed by the PRIMES (*Population Registration and Identity Management Ecosystem*), a centralised data management platform used by the UNHCR, see FOURNIER-TOMBS Eleonore, "Towards a United Nations internal regulation for artificial intelligence", *loc. cit*.

[47] See for example "Head to Head: Biometrics and Aid. One timely topic, two opinionated views", *The New Humanitarian*, 17 July 2019.

[48] See MASIERO Silvia, "Digital Humanitarianism: A Critical Discourse Analysis", *MENACIS*, 2023.

were raised about the sharing and protection of data used in this partnership, particularly given that it was collected from so-called "*vulnerable populations*[49]".

While somewhat controversial[50] these activities and partnerships represent only a tiny fraction of the development of data- and AI-based technologies within the UN. This is evidenced by the fact that, in 2022, the International Telecommunication Union (ITU) identified 200 new AI projects within the organisation. By 2024, this figure had risen to 408[51]. In reality, the UN has gradually implemented the digitisation of its working environment and the automation of the management and analysis of "*big data*" in order to achieve its objectives have been gradually implemented since 2009. It was at this time that the UN Secretary-General established the UN Global Pulse network of research and innovation laboratories, based in New York, Jakarta and Kampala, with the aim of *"harness the power of big data,* […] *to develop AI tools for development, humanitarian action, and peace*[52]".

Since then, the UN's approach to inter-agency collaboration in the fields of data, digital technologies and AI has centred on several entities, initiatives and strategic frameworks. Apart from the entities already mentioned, the Office of Information and Communications Technology (OICT) plays a major role in the integration and development of these UN actors. It is responsible to provide "*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*[53]".

Numerous policies have been developed over the years to establish guidelines for the development and use of these technologies within the organisation. In 2018, the United Nations Secretary-General's *Strategy on New Technologies* emphasised the importance of using them in line with the organisation's own sustainable development goals, its Charter, and human rights and international law[54]. Two other important documents were published in 2020: the *Data Strategy*[55] and *Roadmap for digital cooperation*[56]. The former aimed to optimise the use of UN data to enhance decision-making processes, promote information sharing, improve governance and data protection, and boost transparency and operational efficiency. The latter aimed to promote a more inclusive digital society, develop digital skills, defend online rights, and strengthen global trust and cooperation.

In 2022, the *Information and Communication Technology Strategy for 2023–2028*[57] sought to create an enabling environment for the effective, secure and innovative use of technology across the UN system. The same year, the Inter-Agency Working Group on Artificial Intelligence (IAWG-AI) published

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[49] FOURNIER-TOMBS Eleonore, "Towards a United Nations internal regulation for artificial intelligence", *loc. cit*. ; FOURNIER-TOMBS Eleonore. "A women's rights perspective on safe artificial intelligence inside the United Nations", *loc. cit.*

[50] "USA: Failing to do right: The urgent need for Palantir to respect human rights", *Amnesty International*, 28 September 2020.

[51] Figures taken from FOURNIER-TOMBS Eleonore. "A women's rights perspective on safe artificial intelligence inside the United Nations", *loc. cit.*, p. 481 ; "United Nations activities on artificial intelligence (AI) report 2023", *International Telecommunication Union,* 2024, p. 6.

[52] GARCIA Eugénio V., "Multilateralism and Artificial Intelligence What Role for the United Nations? ", *loc. cit.*, p. 65.

[53] SARFATI Agathe, "New Technologies for Civilian Protection in UN Peace Operations", *loc . cit.*, p. 9.

[54] "*Secretary-General's Strategy on New Technologies*", *United Nations*, September 2018.

[55] "Data Strategy of the Secretary-General for Action by Everyone, Everywhere with Insight, Impact and Integrity 2020 – 2022", *United Nations*, May 2020.

[56] "Road map for digital cooperation", *loc. cit*.

[57] "Information and communications technology strategy Report of the Secretary-General", *UN General Assembly*, A/77/489, 30 September 2022.

the Principles for the Ethical Use of Artificial Intelligence in the United Nations System[58]. The aim of these principles was to guide the use of AI systems at all stages of their life cycle within UN entities. The principles emphasised the importance of promoting transparency, accountability and non-discrimination in AI systems, as well as the need for human oversight in critical decision-making processes. Ultimately, in 2023, the UN launched the UN 2.0 Quintet[59] a strategic initiative, which aims to transform the UN system and to set out principles for modernising the organisation's culture and skills[60].

In the field of UN peacekeeping missions, echoing the ambitions of the 2018 *Action for Peacekeeping* (A4P) and the priorities defined by the 2021 A4P+, the *Strategy for the Digital Transformation of United Nations Peacekeeping*[61] has been launched. It was created by the Under-Secretaries-General of the Department of Peace Operations (DPO), the Department of Operational Support (DOS) and the Department of Management Strategy, Policy and Compliance (DMSPC). The digital enablement team, which serves the DPO and the Department of Political and Peacebuilding Affairs (DPPA), is responsible for its implementation within the Office of the Director for Coordination and Shared Services (ODCSS).

The primary aim is to utilise digital technologies as tools for the modernisation of missions, the execution of mandates, and the protection of civilians and peacekeepers. Additionally, the Strategy aims to regulate the use of technologies and data in peace operations based on five key ethical principles: 1) protecting data and privacy; 2) avoiding harm; 3) ensuring respect for human rights; 4) ensuring the transparent and inclusive use of technologies; and 5) integrating a gender-sensitive approach to limit bias in data collection and analysis. However, the effective application of these principles often depends on the specific circumstances of individual missions, the available resources, the practices employed in the field and the willingness of leaders and Member States that contribute troops and equipment[62].

The gap between UN standards and practices in digital technology and AI poses a challenge for the UN, including in its peacekeeping missions. To fully grasp the opportunities, risks and limitations that these innovations bring to peace operations, the role assigned to them needs to be better defined.

1.3. Uses of digital technologies and AI in support of peace operations

Researchers who have examined the growing influence of data, digital technologies, and AI tools in UN peace operations describe these developments in terms of "*Peacekeeping 4.0*[63]", "*Smart*

[58] "Principles for the Ethical Use of Artificial Intelligence in the United Nations System", *United Nations,* High-Level Committee on Programmes (HLCP) Inter-Agency Working Group on Artificial Intelligence, 20 September 2024.

[59] "UN 2.0 Forward-thinking culture and cutting-edge skills for better United Nations system impact", *United Nations,* Policy Brief n°11, September 2023.

[60] It is also a question of supporting Member State in their efforts to combat inequalities, discrimination and gender bias in artificial intelligence data models.

[61] "Strategy for the Digital Transformation of UN Peacekeeping", *United Nations,* September 2021.

[62] OKSAMYTNA Kseniya, "Responsible Management and Use of Data in UN Peace Operations", *International Peace Institute*, October 2023.

[63] KARLSRUD John, "Peacekeeping 4.0: Harnessing the potential of big data, social media, and cyber technologies", *loc.cit.*

Peacekeeping[64]", "*Network-centric Peacekeeping*" or "*Data-driven* peacekeeping[65]". As noted by Dirk Druet, the use of digital technologies for "*monitoring, surveillance, analysis and decision-making in United Nations peacekeeping operations is not new*". For him, the change derives from*" the power and sophistication of the capabilities available to peacekeeping; the volume and structure of data they generate; and the complexity of the management of these tools in a peacekeeping environment*[66]".

Thus, based on the conclusions drawn from this literature, it can be argued that two processes contribute to the importance of data collection, processing and dissemination in POs. Firstly, in the field, the UN has access to an increasing number of information sources from which to generate data and adapt its activities in line with mission mandates. Secondly, the organisation now has powerful technological tools to digitise and analyse the environment, enabling it to coordinate activities and make decisions with unprecedented speed[67].

In the field of intelligence, for example, certain multidimensional missions can now generate data from electromagnetic interception (e.g. radio signals between armed groups), geospatial surveillance (e.g. image and location signals captured by satellites or drones), "*open*" sources[68], and sometimes traces left on certain equipment, weapons and remains of improvised explosive devices[69]. By integrating this information into databases or software capable of cross-referencing or linking it for analysis, sometimes automatically, according to Dirk Druet, missions would now be "*capable of mass visual and digital surveillance in their operating environments"* enabling them *"to conduct 'human terrain mapping' and generate 'pattern of life' analyses to identify and isolate threats*[70]".

More generally, specialist literature suggests that AI-incorporating digital technologies are likely to assist UN peace operations in a number of ways. Firstly, they can help to improve mission deployment processes. For example, in terms of logistics, they are likely to improve the monitoring, management and distribution of mission stocks[71]. Prior to deployment, training for troop and police contributing countries (TPCCs) can also draw on AI-based simulation technology. This would enable peacekeepers to familiarise themselves virtually with unfamiliar environments, or with increasingly complex tasks

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[64] WALTER Dorn, "Smart Peacekeeping: Toward Tech- Enabled UN Operations", *International Peace Institute*, Providing for Peacekeeping no. 13, July 2016.

[65] LAURENCE Marion, "What Are the Benefits and Pitfalls of 'Data-Driven' Peacekeeping? ", *Centre for International Policy Studies,* Policy Brief n° 35, December 2019 ; DUURSMA Allard, *Mapping Data-Driven Tools and Systems for Early Warning, Situational Awareness, and Early Action*, PAX Protection of Civilians, Protection series 1*,* 2021.

[66] DRUET Dirk, "Enhancing the use of digital technology for integrated situational awareness and peacekeeping-intelligence", *loc. cit.*, 2021, p. 2.

[67] In Anglo-Saxon literature, some authors distinguish between the processes of digitalisation of data. The former refers to the "*process of transforming information into digital data*", and the latter to the "*process of accessing and using this data, for example, in the context of machine learning*", DUURSMA Allard & KARLSRUD John, "Predictive Peacekeeping", *loc. cit.*, p. 14-15.

[68] The open sources compiled in the missions consist of information produced by the population either passively – from SIM cards, web browsing and search histories – or actively – available in the media, published on social networks or broadcast on the radio. Furthermore, in some peace operations, AI is also used to detect hate speech, misinformation and disinformation on social media platforms. See SARFATI Agathe, "New Technologies for Civilian Protection in UN Peace Operations", *loc. cit*.

[69] OKSAMYTNA Kseniya, "Responsible Management and Use of Data in UN Peace Operations", *loc. cit*.

[70] DRUET Dirk, "Enhancing the use of digital technology for integrated situational awareness and peacekeeping-intelligence", *loc. cit.*

[71] PASLIGH Hendrik, "The Application of Artificial Intelligence for Peacekeeping", *Security Distillery blog*, 17 July 2019.

and mandates[72]. Furthermore, during deployment, automatic language translation software could facilitate communication and interaction between UN staff members and with the local population[73].

As with the intelligence field, these technologies could also help to better monitor and anticipate conflict situations. It seems that the DPO has made significant efforts to develop strategies and provide missions with tools that can enhance situational awareness and provide an early warning. These two areas of action have been identified as crucial for the effective implementation of protection of civilians (POC) mandates[74]. Combined with machine learning algorithms based on probabilistic models, these systems could, according to some authors, pave the way for "*predictive peacekeeping*". Based on analyses produced by (or with the help of) machines, missions could allocate resources and plan operations with unprecedented responsiveness, even before events occur. It is in this sense that the objectives of the DPO's intelligence policy[75] and the *Secretary-General's Data Strategy*[76] converge.

Finally, these technologies could enhance the efficiency and responsiveness of the UN's decision-making processes. Software and applications have been developed to facilitate the aggregation of data from UN missions in order to generate a "*common operational picture*" that serves as a shared reference point for UN actors to communicate and take action[77]. Above all, they enable this data to be structured, compared and analysed to support decision-making at mission management level, at UN headquarters and even at the UN Security Council[78]. To provide a more concrete understanding of the changes that digital tools and artificial intelligence can bring about in POs, one example is the Unite Aware SAGE platform. This study will focus on this visualisation tool, which incorporates modules that collect and analyse data from all missions for better planning, coordination and faster decision-making.

Despite the apparent regulation of digital technologies and AI within the UN and its specialised agencies, it is worth asking whether this regulatory framework has any real impact. Indeed, as researcher Kseniya Oksamytna pointed out with regard to the responsible management of data produced or analysed by some of the technologies used by these agencies that : "*while the 2022 Principles for the Ethical Use of Artificial Intelligence in the United Nations System stress the importance of adequate data-protection frameworks and data governance mechanisms, guidelines on the use of*

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[72] DORN A. Walter, WEBB Stewart et PAQUET Sylvain, "From Wargaming to Peacegaming: Digital Simulations with Peacekeeper Roles Needed", *International Peacekeeping,* 2020, vol. 27, n°2, p. 289-310 ; DORN A. Walter et DAWSON Peter F., "Simulating peace operations: New digital possibilities for training and public education", *Simulation & Gaming,* 2021, vol. 52, n°2, p. 226–242.

[73] For example, Remash, an AI tool that enables real-time dialogue with large populations, is being used by the UN and other peace actors to engage up to 1,000 citizens in official peace processes in the Middle East. See GIOVANARDI Michele, "AI for peace: mitigating the risks and enhancing opportunities", *Data & Policy*, vol. 6, 2024.

[74] SARFATI Agathe, "New Technologies for Civilian Protection in UN Peace Operations", *loc. cit*.

[75] "Policy. Peacekeeping-Intelligence", *United Nations,* Department of Peace Operations, May 2021, cited in: DRUET Dirk, "Enhancing the use of digital technology for integrated situational awareness and peacekeeping-intelligence", *loc. cit.,* p. 15.

[76] In this document, Antonio Guterres emphasized that these innovations would pave the way for predicting outcomes "*far more effectively than conventional techniques based on static historical reports*", see "Data Strategy of the Secretary-General for Action by Everyone Everywhere - with Insight, Impact and Integrity 2020 – 2022", *loc. cit*.

[77] DUURSMA Allard, *Mapping Data-Driven Tools and Systems for Early Warning, Situational Awareness, and Early Action, op. cit.*

[78] OKSAMYTNA Kseniya, "Responsible Management and Use of Data in UN Peace Operations", *loc. cit. ;* SARFATI Agathe, "New Technologies for Civilian Protection in UN Peace Operations", *loc. cit*.

AI and machine learning in peace operations have not yet been developed[79]". In general, the mechanisms for incorporating these standards into the daily work of UN staff have been vague or incomplete, and have not prevented experimentation in the early stages. Furthermore, the integration of technologies has often been a trial-and-error process, with their alignment with mission objectives and mandates sometimes being carried out retrospectively[80].

While the UN strives to set an example in terms of standards, the lack of strategic focus highlights some of the challenges it has faced in adopting these technologies. This raises questions about the limitations it may have encountered when deploying them and their potential impact. With this in mind, the analysis will now focus on data-driven digital technologies used for situational awareness, early warning, predictive analysis, and decision support in operations.

2. Challenges associated with digital technologies used for early warning and predictive analysis in peace operations

The final part of this note focuses on the Unite Aware SAGE platform and aims to present one of the latest incarnations of data-based digital technologies introduced in POs. Describing this technological innovation process reveals some of the technical limitations specific to this device. The analysis will then highlight the political challenges that could arise from the large-scale collection and automated analysis of data using AI — two capabilities that the UN could leverage for its POs.

2.1. Focus on the Unite Aware SAGE platform and its potential as an early warning and predictive analytics tool in peace operations

The SAGE database was developed in 2015 at the UN Support Base in Valencia. It was introduced to the POs to replace the old incident tracking systems, which were deemed insufficiently centralised and insecure. The main aim was to replace systems in which information was traditionally encoded using free text in order to create a more "*structured*" database that could be analysed more easily.

The SAGE system enables the various components and sections of peacekeeping missions[81] to capture, monitor and visualise geolocated data relating to armed violence, troop movements, and political unrest and tensions in the intervention environment. Within the mission, leaders of the various components can either enter data directly or send it to the Joint Operations Centre (JOC). The JOC is responsible for managing and verifying data entry into SAGE, defining the conditions for accessing the system and data confidentiality, and training personnel in its use[82]. At the strategic level, the United

[79] OKSAMYTNA Kseniya, "Responsible Management and Use of Data in UN Peace Operations", *loc. cit*, p. 11.

[80] SARFATI Agathe, "New Technologies for Civilian Protection in UN Peace Operations", *loc. cit*.

[81] In 2023, *SAGE* was used by all UN peacekeeping missions except those in Western Sahara and Lebanon; as well as in special political missions.

[82] The JOC "*sends 'flash' incident reports about urgent events, organize crisis management meetings, liaise with mission sections, collaborate with JMAC, maintain flow of information between mission components, and facilitate exchanges between mission leadership and headquarters. Overall, JOC's primary responsibilities are planning and reporting. JMAC does the analysis*", quote taken from NAGEL Robert U., FIN Kate, et MAENZA Julia, "You Cannot Improve What You Do Not Measure–The Gendered Dimensions of UN PKO Data", *Journal of Intervention and Statebuilding*, 2022, vol. 16, n°4, p. 3.

Nations Operations and Crisis Centre (UNOCC) centralises and coordinates data produced by the missions, and disseminates it to headquarters[83].

Although SAGE has improved the centralisation of PO data, there is still no standardised, fully consistent and shared taxonomy for entering and classifying data, even within the same operation. Different components or sections of a mission may still use different methodologies for data entry. In some cases, differences in the forms used to collect this data can also lead to interpretation biases when it is analysed[84]. In addition to storing and sorting data, some SAGE tools facilitate or produce descriptive and statistical analyses[85] in order to identify trends or causal links between variables or events. The introduction of Microsoft Power BI into SAGE, a tool that allows data to be overlaid and visualised, has enabled certain missions to improve the study of spatial correlations between different types of events, such as the dynamics between troop rotations and POC-related incidents[86].

However, the deployment of SAGE has also revealed certain limitations. Firstly, several factors have perpetuated forms of information compartmentalisation in certain missions. These include, for example, restricted access to the database for certain sections or components of the mission, a lack of skills in data management and/or analysis, and the existence of a UN organisational culture characterised by bureaucratic slowness[87]. Secondly, as this database focuses exclusively on incidents and activities, it does not allow information on subjects or individuals that is not related to these events to be encoded. *SAGE* also does not permit users to draw on external data sources, which could be cross-referenced to enable more detailed and accurate contextual trend analysis. These limitations reduce its analytical power and effectiveness in terms of early warning and rapid response, including in the field of POC[88].

In order to overcome some of these limitations, the UN has set up Unite Aware. Developed in partnership by India, the DPO and ITU, this platform which integrates the SAGE database aims to : "*gather datasets from throughout the missions and structure them into a common data foundation that can then be used to deliver a wide variety of reports and visualizations to enable situational awareness and decision-making*[89]". First deployed in 2019 within the United Nations Multidimensional Integrated Stabilisation Mission in the Central African Republic (*Mission multidimensionnelle intégrée des Nations unies pour la stabilisation en République centrafricaine* - MINUSCA), Unite Aware became fully operational in 2023, when it was integrated into the work of the United Nations Peacekeeping Force in Cyprus (UNFICYP).

The platform's primary added value lies in its ability to integrate and structure multi-source data – no longer based solely on incidents – relating to the operational environment, security dynamics,

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[83] For its part, the OICT is responsible for providing and maintaining the technological infrastructure.

[84] DRUET Dirk, "Enhancing the use of digital technology for integrated situational awareness and peacekeeping-intelligence", *loc. cit.*, 2021; NAGEL Robert U., FIN Kate, and MAENZA Julia, "You Cannot Improve What You Do Not Measure", *loc. cit.*

[85] In the case of the United Nations Integrated Mission in South Sudan (UNMISS), initial trials with SAGE reportedly "*produced hotspot mapping similar to what the mission's JMAC had produced, but in a much shorter time frame*" cited in NAGEL Robert U., FIN Kate, and MAENZA Julia, "You Cannot Improve What You Do Not Measure", *loc. cit.*, p. 6.

[86] SARFATI Agathe, "New Technologies for Civilian Protection in UN Peace Operations", *loc. cit*.

[87] On this subject, see in particlar NAGEL Robert U., FIN Kate, and MAENZA Julia, "You Cannot Improve What You Do Not Measure", *loc. cit.*

[88] DRUET Dirk, "Enhancing the use of digital technology for integrated situational awareness and peacekeeping-intelligence", *loc. cit*.

[89] *Ibidem*, p. 11.

population movements and logistics, thereby providing a more comprehensive and contextualised view of the situation on the ground. It also allows different categories of data to be cross-referenced and visualised in dashboards using several hundred "*layers*[90]" *i.e.* spatialised and superimposable data sets. Furthermore, unlike SAGE, in Unite Aware the use of these dashboards – interactive maps, graphs, incident feeds, trends – is more accessible and allows various users within the mission, including non-specialist or non-analyst personnel, to access information and monitor the situation in real time[91].

Although the usefulness of the platform remains largely dependent on the quality, relevance and consistency of the data collected, the deployment of Unite Aware in Cyprus has been described as a success. Kseniya Oksamytna, for example, explains that the platform has helped to identify the correlation between seasonal agricultural activities and incursions into the buffer zone separating the Republic of Cyprus and the Turkish Republic of Northern Cyprus[92]. Agathe Sarfati explains that the significant efforts made to train UN staff during the roll-out of the platform for this mission have borne fruit, right up to the highest levels of the mission hierarchy: "*The Special Representative of the Secretary General has started to use data visualizations to inform decision making and communicate the mission's accomplishments*[93]".

Given that the use of Unite Aware is still in its infancy in peacekeeping operations and that the platform continues to integrate new applications, it is advisable, as Kseniya Oksamytna does, to remain cautious about the benefits of its use. The author points out that, in peacekeeping operations with more complex environments and mandates than UNFICYP, the use of Unite Aware could be more challenging[94]. She also explains that the large number of people involved in managing and developing Unite Aware could cause confusion among staff members, especially when seeking assistance.

For his part, Dirk Druet argues that the introduction of the platform could create functional overlaps between activities and entities responsible for intelligence and those working to create a more general understanding of the situation, thereby blurring the boundaries between different units and types of analysis within the mission. To avoid this pitfall, the author suggests that the management of the platform could be integrated or managed by "*the mission's Peacekeeping-Intelligence Coordination Mechanism [PICM] or a similar function in the mission, to ensure an efficient and coherent tasking of the mission's acquisition and analytical assets across all pillars of the mission* [95]".

In any case, the deployment of these new digital technologies within POs has prompted the UN, as well as certain academics, to consider the added value of AI in the management and analysis of Unite Aware data, particularly with regard to predictive analysis and early warning systems. Allard Duursma and John Karlsrud laid the groundwork for this line of thinking, emphasising that AI could significantly improve this area. According to the authors, these technologies would enable certain threats to be anticipated with greater accuracy and, above all, with sufficient advance notice for missions to plan and implement a rapid — even pre-emptive — response. However, to achieve this, the authors explained that POs would still need to obtain increasingly dense and consistent data sets. With regard

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[90] In the case of MINUSCA, *Unite Aware* allowed 173 layers to be superimposed, see DRUET Dirk, "Enhancing the use of digital technology for integrated situational awareness and peacekeeping-intelligence", *loc. cit.*

[91] OKSAMYTNA Kseniya, "Responsible Management and Use of Data in UN Peace Operations", *loc. cit*.

[92] *Ibidem*.

[93] SARFATI Agathe, "New Technologies for Civilian Protection in UN Peace Operations", *loc. cit.*, p. 10.

[94] In January 2026, the deployment of *Unite Aware* will enter its second phase. It is expected to be deployed by the United Nations Military Observer Group in India and Pakistan and within MONUSCO.

[95] DRUET Dirk, "Enhancing the use of digital technology for integrated situational awareness and peacekeeping-intelligence", *loc. cit.*, p. 12.

to this density, they recommended aggregating information relating to situational awareness, particularly from social media or radio, into databases such as SAGE[96].

More recently, Kseniya Oksamytna suggested that AI and machine learning algorithms could capture information from unstructured sources in the data platforms currently deployed in POs. It should be noted that in some missions, data such as that from local radio analysis is already being translated, categorised and analysed using AI[97]. However, at this stage, the Unite Aware platform does not integrate this type of data. As Agathe Sarfati notes with regard to the United Nations Multidimensional Integrated Stabilisation Mission in Mali (Mission Multidimensionnelle Intégrée des Nations unies pour la Stabilisation au Mali - MINUSMA) : "*while the goal is to use social media analysis to inform action, missions currently use these tools mostly for post facto analysis and reporting* [98]". However, Kseniya Oksamytna points out that AI could be used to automate the entry of this data into platforms such as *Unite Aware*. This would free up time for staff who currently record incidents manually, allowing them to focus on data structuring and verification instead.

In the field of "*predictive peacekeeping*", aggregating these different data sources would therefore offer, in the long term, the possibility of using (or supervising) machine learning algorithms capable of identifying "*patterns*" themselves in order to anticipate certain events before they occur. Unlike the traditional statistical methods used in UN data platforms, which rely on the study of scenarios or trends, machine learning does not rely on programming based on pre-established rules[99]. Applied to big data, this approach would enable the inductive detection of significant patterns[100] that could be used to predict violence. For early warning purposes, this approach would enable the rapid identification of events that deviate from behaviours or events considered "*normal*".

To apply this type of predictive tool to POs, UNOCC partnered with the Swiss Federal Institute of Technology Zurich (*Eidgenössische Technische Hochschule Zürich* - ETHZ) in 2021. The aim was to study the potential for AI and machine learning tools to support POs in providing early warnings[101]. At the end of 2023, ETHZ submitted an internal report to UNOCC, deeming the research to be encouraging. Based on an analysis of *SAGE* data from three major UN missions, the report showed that applying deep learning methods based on deep neural networks to aggregated data made it possible to "*generate short-term forecasts of conflict intensity across regions with a UN peacekeeping presence*[102]".

Although the use of these tools remains experimental at this stage, these types of projects and partnerships are likely to become more widespread, given that these technologies are presented as necessary in forward-looking documents on the future of POs[103]. However, it appears that discussions surrounding these experiments point to numerous limitations that could undermine the coherence of

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[96] DUURSMA Allard & KARLSRUD John, "Predictive Peacekeeping", *loc. cit*.

[97] In the case of MINUSMA, the *Pulse Lab Kampala* used machine learning and natural language processing tools to analyse radio content, a particularly popular open source in a country where many regions do not have a stable internet connection, see DRUET Dirk, "Enhancing the use of digital technology for integrated situational awareness and peacekeeping-intelligence", *loc. cit.* ; DUURSMA Allard, *Mapping Data-Driven Tools and Systems for Early Warning, Situational Awareness, and Early Action*, *op. cit*.

[98] SARFATI Agathe, "New Technologies for Civilian Protection in UN Peace Operations", *loc. cit.*, p. 8.

[99] DUURSMA Allard & KARLSRUD John, "Predictive Peacekeeping", *loc. cit*.

[100] *Ibidem*.

[101] OKSAMYTNA Kseniya, "Responsible Management and Use of Data in UN Peace Operations", *loc. cit*.

[102] ETH Zurich, "Submission of Internal Report to UN Partners", *UN-ETH Partnership*, 1 September 2023.

[103] WANE El-Ghassim, WILLIAMS Paul D., et KIHARA-HUNT A., "The Future of Peacekeeping, New Models, and Related Capabilities", *United Nations*, Department of Peace Operations, October 2024.

missions and the UN's ability to claim impartiality in the use of AI technologies. Yet this legitimacy could prove essential if the UN wishes to capitalise on its exemplary status to continue to play a role in setting international standards for the governance of these technologies.

2.2. The political limitations of data-driven and AI-based digital technologies in peace operations and their potential effects on the UN

UN peacekeeping is currently facing a profound crisis, characterised by growing budgetary constraints and doubts about its legitimacy at the decision-making and operational levels. The security situation for peacekeepers on the ground is becoming increasingly challenging, due not only to insecurity, but also to sometimes complex relations with host states or local populations[104]. Against this backdrop, digital technologies and AI present themselves as an appealing solution. They offer the potential to reduce the overall footprint of missions, lower the economic and political costs of deploying uniformed personnel and provide digital surveillance to reduce tactical and strategic uncertainty.

This "techno-solutionist" vision is often based on the idea that technologies are neutral tools with set properties that can be used to achieve specific goals, such as peacebuilding[105]. While most authors defending this vision agree that these technologies, like Janus, have a dual nature and can produce undesirable effects, but suggest that these can be managed. However, the sociology of science and technology has challenged these deterministic and utilitarian principles. This field of study has demonstrated that technological devices are inherently political from their conception to their deployment, and that they extend far beyond the goals for which they are developed or used. They also redefine social and power relations among the individuals around them[106]. Although the specialist literature focuses on the technical, legal and ethical limitations of these devices in peace operations, it pays insufficient attention to their political dimensions. After summarising the limitations highlighted in this literature, the following proposal will be put forward at the end of this note.

Firstly, the literature shows that the development and integration of digital technologies, particularly AI, can incur significant economic and ecological costs. In a context of increasing budgetary constraints, it is up to the UN to assess whether the economic and political benefits that these systems could bring to POs—often deferred and difficult to quantify—justify the investments made. As Eleonore Fournier-Tombs points out, the UN is accountable for its investments despite not pursuing any profit objectives, which further complicates the assessment of the profitability and relevance of such innovations[107]. One way to address this issue is to partner with the private sector, which is developing these technologies itself. While this type of collaboration can benefit the UN and is already widely used within the organisation, questions may arise regarding data ownership and confidentiality.

This leads to the second limitation identified in the literature: the legal and ethical challenges of collecting and managing population data in POs. The deployment of digital technologies on an unprecedented scale has increased the risks in terms of data protection and privacy. The UN recognises

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[104] BAYET Camille, "L'ONU face au défi du consentement des États hôtes d'opération de paix", *Note de l'Observatoire Boutros-Ghali*, Septembre 2024.

[105] HIRBLINGER Andreas Timo, *et al.*, "Digital peacebuilding: a framework for critical–reflexive engagement", *International Studies Perspectives*, vol. 24, n°3, 2023, p. 265-284.

[106] LATOUR Bruno, *Petites leçons de sociologie des sciences*, La Découverte, 2007.

[107] By way of illustration, developing and training natural language processing models, used in the early warning of certain POs to understand, translate, analyse and interpret radio content, can cost up to €5 million. On this subject, see FOURNIER-TOMBS Eleonore. "A women's rights perspective on safe artificial intelligence inside the United Nations", *loc. cit.*

in its doctrinal documents on peacekeeping intelligence that data collection must be conducted "*in full respect of human rights*, [...] *in particular the rights to privacy* [...] *and with particular care not to jeopardise actual or potential sources of information*[108]". The UN also stipulates in its *Strategy for Digital Transformation of UN Peacekeeping* that this process must be guided by the principle of "*do no harm*[109]".

Despite efforts in this area, many challenges remain, including with regard to data produced outside of intelligence activities. On the one hand, in situations where specific data collection technologies are deployed by TPCCs, there may be tensions between the national legal frameworks of the contingents and UN rules. These discrepancies blur responsibilities, data ownership, and transparency and control mechanisms[110]. On the other hand, there is a lack of clear guarantees regarding the rights that individuals can claim over the data collected about them. According to Kseniya Oksamytna, the long chain of delegation of data collection authorisation (from the host state and the mandates assigned by the Security Council to the mission) makes it difficult for individuals to exercise their rights over data concerning them[111]. Finally, as missions become more dependent on digital technologies that share and centralise data, the risk of cyberattacks increases, exposing missions and civilians to greater vulnerability[112].

The third type of limitation of data-based technologies concerns the degree of confidence attributed to them and to the analyses they produce, in a more or less automated manner. Contrary to certain preconceptions that lead to the belief that by aggregating ever more information, it would be possible to achieve a certain form of exhaustiveness and objectivity, the specialist literature has pointed out that the construction of data, as well as the design of the software that manages it or the algorithms that could analyse it, were never completely neutral and remained partial[113]. For example, Dirk Druet explained with regard to *SAGE* that, in the case of the United Nations Organisation Stabilisation Mission in the Democratic Republic of the Congo (*Mission de l'Organisation des Nations unies pour la stabilisation en République Démocratique du Congo* - MONUSCO), simplifying the data entry forms "*led to a large number of Mayi-Mayi groups being collapsed into a single category for event perpetrator attribution, risking the identification of linkages where none exist*[114]". The latter nevertheless argued that the development of automated analysis based on machine learning could potentially correct some of these cognitive biases.

However, machine learning, which underpins most AI algorithms, is based on a system that involves training on huge amounts of data. These aggregates of information may themselves be composed of biases, stereotypes or prejudices, which are likely to be reproduced and amplified in their analyses.

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[108] "Peacekeeping-Intelligence, Surveillance and Reconnaissance Staff Handbook", *United Nations, Department of Peace Operations*, 2020, p. 10.

[109] "Strategy for the Digital Transformation of UN Peacekeeping", *loc. cit.*, p. 13.

[110] SARFATI Agathe, "New Technologies for Civilian Protection in UN Peace Operations", *loc. cit.*

[111] OKSAMYTNA Kseniya, "Responsible Management and Use of Data in UN Peace Operations", *loc. cit*.

[112] SARFATI Agathe, "New Technologies for Civilian Protection in UN Peace Operations", *loc. cit.* ; OKSAMYTNA Kseniya, "Responsible Management and Use of Data in UN Peace Operations", *loc. cit*. ; DRUET Dirk, "Cybersecurity and UN Peace Operations: Evolving Risks and Opportunities", *International Peace Institute*, 2024.

[113] See, for example, HIRBLINGER Andreas T. *et al*., "*Forum: Making Peace with Un-Certainty: Reflections on the Role of Digital Technology in Peace Processes beyond the Data Hype*", *International Studies Perspectives*, vol. 25, n°2, 2024, p. 185-225.

[114] DRUET Dirk, "Enhancing the use of digital technology for integrated situational awareness and peacekeeping-intelligence", *loc. cit.*, p. 16.

This is what researchers Lyria Moses and Janet Chan pointed out in 2018 when they explained that algorithms used in predictive policing could be biased because they rely on "*on assumptions about accuracy, continuity, the irrelevance of omit ted variables, and the primary importance of particular information (such as location) over others*[115]". Building on this idea, some authors specialising in peacekeeping explained that automated predictive analyses could be biased by an over-representation of data collected from a single source or a lack of data collected in a given area[116].

Other authors also point out that variables such as those related to gender are not adequately considered in databases such as SAGE, nor by algorithms capable of producing predictive analyses. They explain that this compromises the ability of POs to take this dimension into account in early warning and conflict resolution, despite the efforts made by the Women, Peace and Security Agenda[117]. They argue that overconfidence in the objectivity of collected data and its automated analysis could therefore cause missions to prioritise objectives that do not fully align with their mandates.

Ultimately, excessive reliance on technology based on digital data and automated analysis can be detrimental to the "*human*" management of the mission and conflict resolution. Indeed, it can lead to a depreciation of collective intelligence, the undermining of certain components of the mission or, quite simply, the creation of greater distance between mission personnel and the population. Some authors, such as Dirk Druet, emphasise that the UN must ensure that data-centric qualitative analysis is not carried out at the expense of solid fieldwork, proximity to the intervention environment, and individualised analytical approaches[118]. More generally, some critical authors suggest that these technologies may give the impression of reducing the uncertainty inherent in peace processes, when in reality they remain technical devices that prescribe new working routines. However, according to them, these routines could replace the degree of doubt, reflection and commitment that is necessary for understanding the situation and finding a solution[119].

John Karlsrud and Allard Duursma also emphasised this when they explained that the growing use of these technologies could increase the trend towards remote management of peacekeeping operations. In a context where some peacekeeping operations have been criticised for their tendency towards "*bunkerisation*", these data-collecting technologies may reduce the ability of missions "*ability to interact, understand and empathize with local populations, which, after all, are those UN peace operations should be most accountable to*[120]". Similarly, Robert Nagel, Kate Fin and Julia Maenza explained that databases such as SAGE did not adequately consider the potential for local community involvement. They highlighted the paradox that "*local insights are key to uncovering conflict dynamics.*" and that "*local beneficiaries' cooperation and buy-in can be a significant boon for missions: communities are sources of intelligence, foundations for early alert networks, sites of radicalization or deradicalization, and, of course, the primary subjects of UN protection*[121]".

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[115] MOSES Lyria and CHAN Janet, "Algorithmic prediction in policing: assumptions, evaluation, and accountability. *Policing and society*", vol. 28, n°7, 2018, cited in DUURSMA Allard & KARLSRUD John, "Predictive Peacekeeping", *loc. cit.*, p. 12.

[116] *Ibidem*.

[117] NAGEL Robert U., FIN Kate, et MAENZA Julia, "You Cannot Improve What You Do Not Measure", *loc. cit*.

[118] DRUET Dirk, "Enhancing the use of digital technology for integrated situational awareness and peacekeeping-intelligence", *loc. cit.*

[119] HIRBLINGER Andreas T. *et al*., "*Forum: Making Peace with Un-Certainty*", *loc. cit*.

[120] DUURSMA Allard & KARLSRUD John, "Predictive Peacekeeping", *loc. cit.*, p. 13.

[121] NAGEL Robert U., FIN Kate, and MAENZA Julia, "You Cannot Improve What You Do Not Measure", *loc. cit*., p. 9.

Finally, the increasing use of digital surveillance technologies can generate mistrust and even defiance among the population towards the mission. Indeed, many authors argue that, as digital data surveillance becomes more widespread and automated, UN missions will need to be able to bridge the gap between early warning and mission response. Otherwise inaction could "*constitute a serious failure of their POC mandate and could damage their reputation*[122]". However, some researchers point out that the capacity of these technologies is not the main issue in terms of early warning, because "*even if attacks on civilians are accurately anticipated within UN peace operations, organisational and political constraints will still likely hamper affective response* […] *decision-making—not technical improvements to early warning systems—is the greatest determining factor of early action*[123]".

Given all these limitations, it appears that data-based technologies are likely to reconfigure social relations and power dynamics among the actors involved in POs. This is also highlighted in some of the critical literature that focuses on the political dimension of these systems. Robert Nagel, Kate Fin and Julia Maenza highlight the lack of integration of gender dynamics and local community perceptions in data construction, stating that "*the status and position of those collecting, analyzing, and disseminating data, and those being 'captured' as data make data construction a political process* [124]" that warrants careful reflection. In another article, Andreas T. Hirblinger and his co-autors explain that in the context of peacebuilding the massive use of data-driven technologies is likely to contribute "*to the depoliticization of the public sphere and possible democratic deficits, where political participation is replaced with extractive and silent data analytics conducted by experts, and political deliberation is replaced with nudging people into certain types of behaviors through the use of indistinct, manipulative methods*[125]".

These reflections on the status of the populations from which the data is extracted, and on the ways in which its analysis and use can alter relations of governmentality, are reminiscent of what Nick Couldry and Ulises A. Mejias have called "*data colonialism*[126]". These two actors, like others who are more specifically interested in this phenomenon in peace processes[127], have pointed out that technologies based on data and AI algorithms can reproduce colonial-style "*extractivist dynamics*". For them, these dynamics can tend to deprive those being monitored of their individuality, their autonomy and even their political agency. This is also suggested by Oliver P. Richmond and Ioannis Tellidis, when they explain that the widespread use of these technologies perpetuates a dominant view of the role of local participation in the peacebuilding process, which is often seen as instrumental or limited and "*which fails to do justice to the political claims of marginalized groups in favor of a rights-based, just, and sustainable peace*[128]".

In the context of peacekeeping, these technologies could have counterproductive effects, particularly given that the digital extractivism and governance dynamics they involve are usually implemented by

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[122] SARFATI Agathe, "New Technologies for Civilian Protection in UN Peace Operations", *loc. cit*., p. 10.

[123] HIRBLINGER Andreas T. *et al*., "*Forum: Making Peace with Un-Certainty*", *loc. cit*., p. 203.

[124] NAGEL Robert U., FIN Kate, and MAENZA Julia, "You Cannot Improve What You Do Not Measure", *loc. cit*., p. 7.

[125] HIRBLINGER Andreas T. *et al*., "Digital peacebuilding: a framework for critical–reflexive engagement", *loc. cit*., p. 278.

[126] COULDRY Nick et MEJIAS Ulises A., "Le colonialisme des données : repenser la relation entre le big data et le sujet contemporain", *Questions de communication*, 2022, vol.2, n° 42, p. 205-221.

[127] See, for example, CRUZ Juan Daniel, "Colonial Power and Decolonial Peace", *Peacebuilding*, vol. 9, n°3, 2021, p. 274–88.

[128] RICHMOND Oliver P. et TELLIDIS Ioannis, "Analogue crisis, digital renewal? Current dilemmas of peacebuilding", *Globalizations*, 2020, vol. 17, n°6, p. 946.

Western actors in Global South countries, many of which were formerly colonised. Furthermore, these technologies are deployed in an institutional environment where the legitimacy of peace operations is contested, as is the Security Council's representative and multilateral claim, given that it decides on mission mandates[129]. Under these conditions, the more widespread the use of these technologies becomes, the more ammunition is provided to those who question the impartiality and legitimacy of UN practices. Therefore, the inherent limitations of using data-driven and AI-based technologies in peace operations could affect the UN's ability to present itself as a neutral and exemplary — and therefore indispensable — player in the international governance of these tools.

Conclusion

An examination of UN initiatives on AI governance, as well as a study of the gradual integration of digital technologies into peace operations, shows that the organisation is engaged in a process of rapid innovation, but one that is fraught with tension. On the one hand, the UN is seeking to establish itself as a key player in developing an international framework for AI regulation, leveraging its institutional legitimacy, growing expertise, and multi-stakeholder approach. However, the organisation is also experimenting with data-driven technologies for its own missions, notably through systems such as SAGE and Unite Aware, which promise to enhance situational awareness, threat anticipation, and decision-making responsiveness.

However, analysis reveals a persistent gap between the UN's stated ambitions and the situation on the ground. Technologies integrating artificial intelligence have been used on an *ad hoc* basis, in the absence of a harmonised framework and fully operational guidelines on the ethical and legal management of data. Technical limitations, such as data heterogeneity, dependence on the quality of sources and bias in data collection and processing, still restrict the scope of the systems deployed. The political challenges seem even more profound. Digital technologies increase the risk to data protection and privacy. They accentuate remote management of operations, reducing UN staff's ability to interact with and integrate local populations into peace processes. This can reinforce asymmetrical relationships that generate mistrust or defiance towards the mission among populations. Ultimately, all of these factors could threaten the impartiality attributed to missions, eroding the UN's exemplary status and consequently its legitimacy in peacekeeping and the governance of AI.

Therefore, the challenge for the UN is not only technological, but also entirely strategic. It must demonstrate its ability to reconcile innovation with responsibility, operational efficiency with respect for rights, and modernisation with maintaining essential proximity to the affected populations. In other words, if the UN wants to be a credible player in developing global AI standards, it must lead by example in its own use of the technology. Peacekeeping is a crucial testing ground in this regard, as it is here that the tensions between the promises and risks of digital technologies play out in concrete terms. Here, the UN's ability to embed its actions in truly ethical, inclusive and sustainable AI governance will be measured.

[129] "ONU : la panne tragique du multilatéralisme", *Le Monde*, 24 September 2024.

Recommendations

- ✓ To avoid “techno-solutionism”, it is crucial that the UN be able to weigh the benefits of incorporating data-driven and AI-based technologies into its peace operations against the economic, environmental and political costs of their use.

- ✓ It would be desirable for the UN to bear in mind that data construction and automated analysis are always partial and biased.
  - ➢ It would be useful to remain mindful of the inherent biases in data collection and processing, even when these analyses are automated using software or AI algorithms.
  - ➢ Special precautions could be taken to ensure that the objectives and mandates of missions are more systematically taken into account in data collection and processing.

- ✓ The UN should continue to equip itself to deal with the dilemmas associated with the ownership and sharing of data collected in POs, as well as with transparency and protection relating to such data.
  - ➢ It would be desirable to establish strict guidelines that allow for the anonymisation of information relating to populations and ensure maximum protection.
  - ➢ Clear protocols should also be established to enable individuals to exercise their right to access information and request its removal.

- ✓ It is important for the UN to pay greater attention to the degree of trust placed in these technologies, both by the professionals who use them in peace operations and by the populations from with the data is collected. Excessive use of these technologies will inevitably be detrimental to the human management of peacekeeping.
  - ➢ It would be desirable for the UN to ensure that investment and confidence in these technologies does not come at the expense of other areas of mission activity, or of the collective intelligence and fieldwork of its staff.
  - ➢ It should be borne in mind that the more widespread the use of these technologies becomes, the greater the distance that could be created between PO staff and the populations they serve. This could limit populations' participation in peace processes or even generate mistrust or defiance towards the mission.

- ✓ It is essential to remember that UN peacekeeping operations effectively serve both a laboratory and a showcase for the governance of these technologies.
  - ➢ A persistent gap between the organisation's standards in this area and observed practices could affect the effectiveness, consistency and legitimacy of missions, calling for particular vigilance.
  - ➢ Given that the organisation has no binding instruments to ensure that its member states adopt the standards it produces, it must set an example and act in line with its objectives and principles if it wants to reduce the global fragmentation of governance of these technologies.

About the author

Antoine Younsi *has been a researcher at GRIP since March 2024. He holds a Master's degree in Sociology and is currently completing a PhD in International Relations at the* Université Libre de Bruxelles *(ULB), focusing on "*counter-terrorism*" regimes in Mali. His areas of expertise include issues relating to military interventions in the Sahel, the use of force in contemporary armed conflicts, civil-military relations in France, and the relationship between technological developments and warfare practices.*

The Boutros-Ghali Observatory on Peacekeeping is a forum for discussion between experts and French-speaking personalities from troop-and-police-contributing countries. It contributes to strengthening triangular dialogue between Member States engaged in peacekeeping, the UN Security Council, and the UN Secretariat.

To learn more about the Boutros-Ghali Observatory on Peacekeeping:
https://www.observatoire-boutros-ghali.org

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