Technology and Peacekeeping
Can India Become a Technology-Contributing Country

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In August 2021, under India's presidency, the United Nations Security Council (UNSC) adopted a statement recognising the importance of technology in peacekeeping. At the high-level Security Council open debate on 'technology and peacekeeping', India's External Affairs Minister Dr S. Jaishankar stated that '21st-century peacekeeping must be anchored in a strong ecosystem of technology and innovation'.[1] In the meeting, UN Secretary-General António Guterres outlined the elements of a digital transformation strategy for peacekeeping. Another significant development of that day was the launch of UNITE AWARE, a technology platform developed by India in collaboration with the UN, aimed at providing terrain-related information to UN peacekeepers to ensure their safety and security. These developments suggest that future peacekeeping operations will be technology-enabled.

India shows genuine enthusiasm and interest in this envisioned transformation of the UN peacekeeping operations. India is the largest troop-contributing country (TCC) to UN peacekeeping missions, and the UN considers India one of the most committed peacekeepers. However, in the context of mounting calls for increased use of technology in peacekeeping operations, the question is whether India can become a technology-contributing country (TecCC). This article argues that India should take the technology aspect seriously while continuing its

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ISSN 0976-1004 print

Journal of Defence Studies, Vol. 16, No. 3, July–September 2022, pp. 473–488

traditional role, contributing troops, to sustain its historical interest and influence in UN peacekeeping operations.

The article proceeds as follows. The first part provides a brief outline of the UN deliberations of peacekeeping and technology. The evolution of policies and strategies related to peacekeeping and technology in the UN and the practical and operational applications of these policies and strategies are discussed in two sub-sections. The second part examines how actively India is engaging with the debate of peacekeeping and technology in the UN. It also discusses the potential areas India can contribute to becoming a TecCC.

Technology and Peacekeeping

The UN peacekeepers are deployed in some of the most challenging and dangerous environments. Nonetheless, peacekeepers are often vulnerable, frequently under-equipped, with significant gaps in equipment and training. The UN is exploring all available means and best practices to protect civilians and UN personnel and for safer and more successful peacekeeping missions. The UN thinks a robust technology and innovation ecosystem can facilitate UN peacekeeping missions implement their mandates more efficiently in complex milieus. In this regard, the UN has designed several policies and strategies, particularly in the last two decades. The following two sub-section sections will discuss the evolution of technology-related peacekeeping policies in the UN and its operational applications.

Evolution of Policies and Strategies

Calls for use of technology in UN peacekeeping operations are not new. One can trace its roots back to the beginning of the millennium. In August 2000, the Report of the Panel on United Nations Peace Operations, popularly known as the Brahimi Report, proposed that peacekeeping needs to be brought into the information age. It also noted that peace operations could benefit significantly from technological innovations and discussed the information technology strategy, policy and tools. The report then identified the gaps in the UN strategy, policy and practice that hampered the constructive use of technology in peacekeeping operations and offered recommendations to bridge them.[2]

The Brahimi Report resulted from the UN experience of failures in meeting the complex peacekeeping challenges that emerged in the mid-1990s, particularly in Africa and Asia. Rapid technological advancement

and its impact on military affairs were the primary causes of concern. New technologies changed the way wars are fought by improving the capability to monitor an enemy or opponent. It transformed the peacekeeping operations from traditional to multidimensional missions with ambitious mandates. Consequently, in addition to keeping the peace between warring parties, civilian protection, prevention of civil wars and massacres and building nations also became peacekeepers' tasks.

Unfortunately, prior to the Brahimi Report, the technological revolution that transformed armed conflicts had barely touched the UN peace operations. The UN members expressed their indifference towards integrating technological progress into the peacekeeping operations on many occasions. For instance, in 1990, the report of the Special Committee on Peacekeeping Operations noted that further discussion is needed on the possible employment of advanced technology in peacekeeping operations. Many members raised 'the issues of economic feasibility and political advisability of using such technology'.[3] In 1992, the Special Committee emphasised that the UN did not require independent high-tech means for peace operation, particularly for intelligence gathering.[4]

However, this indifference has gradually changed, and the UN began to acknowledge the need for technology in peace operations. For instance, in addition to the Brahimi Report, the 2000 Report of the Special Committee on Peacekeeping Operations also underlined the need for enhanced use of information technology in peacekeeping operations. It recognised the vital role of information technology in effectively managing and disseminating information.[5] The Committee also requested the Secretariat to revisit establishing information technology systems.

In 2005, another Special Committee Report highlighted the need for enhancing the UN's 'capacity to gather field information and assess risks, all forms of technical monitoring and surveillance methods'.[6] The other significant proposal of the report was exploring the aerial monitoring capabilities in volatile and dangerous conditions to ensure the safety of peacekeepers.[7] In the same year, the Report of the Office of Internal Oversight Services on the review of the effectiveness of military information management in UN peacekeeping operations noted that 'it is also necessary to adequately equip peacekeeping operations with new technology for information collection and analysis, especially in the areas of communications monitoring, electronic countermeasures and information security'.[8]

In 2006, the Special Committee highlighted 'the need for priority action by the Department of Peacekeeping Operations to examine how all forms of technical monitoring and surveillance means, mainly aerial monitoring capabilities, can be used by the UN to ensure the safety and security of peacekeeping personnel'.[9] The Committee also recommended a discussion with troop-contributing countries on this issue and requested the Secretary-General to provide a comprehensive assessment.[10] In 2008, the Committee requested the Department of Peacekeeping Operations (DPKO) 'to present a progress report on the use of advanced monitoring and surveillance technologies in peacekeeping operations'.[11] It also asked the Secretariat 'to develop appropriate modalities for the use of advanced monitoring and surveillance technologies with due attention to legal, operational, technical and financial considerations as well as the consent of the countries concerned with regard to their application in the field'.[12]

Later, in 2014, the Expert Panel on Technology and Innovation in UN Peacekeeping deliberated this issue thoroughly and proposed an extensive deployment of technology and innovative practices to strengthen peacekeeping operations. In February 2015, the Expert Panel submitted its report to transform UN peacekeepers into 'digital peacekeepers'. The report also addressed the prevalent concerns of the member states that the use of technology in peacekeeping operations will lead to violations of basic principles of peacekeeping impartiality and state sovereignty. In the initial years of consultations, many member countries expressed their fear of using technology for narrow political purposes, particularly technology such as Unmanned Aerial Systems or Vehicles (UAS or UAVs).

The report focused on employing advanced technologies primarily in two areas of peacekeeping operations: providing the basics for missions and for operational imperatives. While the basics include providing safety and security, shelter, water, energy, health and mobility, operational imperatives comprise command and control, monitoring, reconnaissance and reporting and information and communications technologies.[13] To enhance the security of individuals, camps and accommodation, patrols and convoys, the panel recommended using technologies such as perimeter lighting, motion-detection technology, emergency communications, tamper-resistant tracking, counter-improvised explosive device (IED) technologies and camera technology using remote access to live feeds.[14] Similarly, ground-penetrating radar and advanced geospatial imaging tools were recommended to find water. Geographic Information System-

Table 1 Important Policies and Strategies Related to Peacekeeping and Technology

Brahimi Report	2000
Monitoring and Surveillance Technology in Field Missions (Policy and SOP)	2008
Partnership for Technology in Peacekeeping	2014
Report of the Expert Panel on Technology and Innovation in UN Peacekeeping	2015
DPKO/DFS Implementation Strategy	2016
Peacekeeping Intelligence Policy	2017
Use of Unmanned Aircraft Systems (UAS) Capabilities (Guidelines)	2019
Revised Policy on Peacekeeping Intelligence	2019
Surveillance and Reconnaissance Staff (PKISR) Handbook	2020
Ministerial-level open debate and presidential statement on Technology and Peacekeeping	2021
Secretary-General's 'Strategy for the Digital Transformation of UN Peacekeeping'	2021

Source: Compiled by the author, from various sources.

enabled command and control, satellite imagery, UAVs, comprehensive sensor suites and big data were recommended to improve the operational imperatives, including the command and control of the missions.

After the 2015 Report, the UN produced several strategies and guidelines on using advanced technology in peacekeeping operations. Monitoring and Surveillance Technology in Field Missions (Policy and SOP), Partnership for Technology in Peacekeeping, DPKO/Department of Field Support (DFS) Implementation Strategy, Peacekeeping Intelligence Policy, Use of Unmanned Aircraft Systems (UAS) Capabilities (Guidelines), Revised Policy on Peacekeeping Intelligence and the Peacekeeping-Intelligence, Surveillance and Reconnaissance Staff (PKISR) Handbook are some significant developments in this period (Table 1). In addition to this, the Secretary-General's initiatives such as Action for Peacekeeping,[15] Global Pulse[16] and Strategy on New Technology[17] also contributed a lot to the evolution of peacekeeping and technology policies.

The latest policy developments related to technology and peacekeeping in the UN are the Secretary-General's 'Strategy for the Digital Transformation of UN Peacekeeping' and the presidential statement adopted on the same topic in August 2021 under India's presidency. The Secretary-General's Strategy focuses on four objectives:

1. Technology innovation at the headquarters and the field;
2. Maximising the potential of new technologies to enhance the capacity of missions to carry out their mandates effectively;
3. Using technology to detect, analyse and address threats against civilians, peacekeepers and humanitarian missions; and
4. Ensuring the responsible use of digital technologies.[18]

In the 18 August presidential statement, the Security Council acknowledged technologies' 'potential as a force multiplier'. It also encouraged 'exploring available and future technologies and best practices that can contribute to the safety and security of peacekeepers and protect civilians, and allow for safer and more effective peacekeeping missions'.[19] The statement also highlighted the 'need to leverage the technological tools available to support greater situational awareness of peacekeeping missions and their front-line peacekeepers through measures to improve information acquisition and analysis capacities, including surveillance and monitoring capacities'.[20]

Operational Technologies and Applications

As peacekeepers have regularly come under direct attack in recent years, there was a systematic push to deploy many of the recommended technologies in UN peacekeeping operations. This led to the development of a range of operational technologies and applications. Situational Awareness Geospatial Enterprise (SAGE), SMART IED Threat Mitigation Technology Roadmap (SMiTMiTR), Spatio-Temporal Incident Mapping Tool, Smart Camps, UAVs/UAS, Notification of

Table 2 Operational Technologies and Applications

SAGE (Situational Awareness Geospatial Enterprise)
SMART IED Threat Mitigation Technology Roadmap (SMiTMiTR)
Spatio-Temporal Incident Mapping Tool
Smart Camps
UAVs/UAS
Notification of Peacekeeper Casualties database system (NOTICAS)
UN C4ISR Academy for Peace Operations
Early Warning Tracking Mobile App
UNITE AWARE Platform

Source: 'Strategy for the Digital Transformation of UN Peacekeeping', UN, 2021.

Peacekeeper Casualties database system (NOTICAS), UN C4ISR Academy for Peace Operations, Early Warning Tracking Mobile App and the UNITE AWARE Platform are some examples (Table 2).

The SAGE database includes 'incidents of armed violence, information on troop movements, increased tensions, hijackings, abductions, protests, and many more potentially relevant incidents'.[21] Systematic analysis of SAGE can enhance the UN's predictive capability, which could also translate into preventive action on the ground. According to Allard Duursma and John Karlsrud, the early warning tools such as SAGE could assist peacekeepers in determining risks, deploying troops and conflict-prevention endeavours. They provide examples of Mali, where data analysis helped identify threats to United Nations Multidimensional Integrated Stabilization Mission in Mali's (MINUSMA's) air assets and Darfur, where it assisted the mission in deciding troop deployment and patrols.[22] Situational Awareness Geospatial Enterprise is currently operational in most peacekeeping operations.

SMART IED Threat Mitigation Technology Roadmap (SMiTMiTR) was developed by the United Nations Mine Action Service (UNMAS) as one of the tools for IED threat mitigation. The UN developed this application in collaboration with the member states, research institutions and private firms. Its goal is to connect users and field specialists with available technology or research related to any IED threat. The three primary purposes of the SMiTMiTR are to: enable all UN entities involved in IED Threat Mitigation to increase; achieve maximum synergy between the efforts aimed at dealing with the current and future threats and the efforts; and solve the current issues of the sector-wide IED Threat Mitigation knowledge and information management.[23] In Mali, the most sophisticated digital technologies such as IED forensic technologies were also used.

Spatio-Temporal Incident Mapping Tool (STIM) was developed in 2020 with the primary objective to appraise the impact of force operations on the protection of civilians (POC). The STIM 'records force activities, such as Temporary Operating Bases and patrols, plots these activities on a map, and then superimposes incidents in which civilians were targeted'.[24] It also helps 'coordination between its POC unit and military components to verify POC incidents, identify the mission's impact on POC and decide how to improve responses'.[25] The tool was also employed in Mali for assessing the impact of force operations on the protection of civilians. In 2017, the UN mission in Mali claimed that its

'sense and warn' radar alert system detected rockets and mortar attacks and saved the lives of many peacekeepers.[26]

Notification of Casualties (NOTICAS) was jointly developed by the UN DPKO and the DFS with the Singapore Armed Forces. This software application helps casualty reporting and situational awareness of UN peacekeeping operations. Similarly, the Smart Camp initiative, which includes threat detection, early warning and response facilities, help the UN for more integrated and efficient peace operations. The Early Warning Tracking App is supposed to guide efforts to improve rapid response to threats to civilians. It consists of 'two mechanisms: (1) a rapid verification and dissemination of early warning information based on SAGE; and (2) a monitoring mechanism for rapid response'.[27] The tool was first tested in the Mopti region in Mali in August 2020.

Recently, UN peace operations began employing a variety of data-capture and monitoring technologies, including UAVs, GIS, satellites; full-motion video; ground-based sensors; and infrared imagery of changing landscapes, etc.[28] The UN has contemplated UAV deployment in its peacekeeping operations for years. However, at present, drone technology is becoming integral to peacekeeping missions. The primary concern of the member states was the ownership of the data collected and stored by the UAVs. The UN used an UAV for the first time in UN peacekeeping history in Haiti in 2007. However, it was for a short period, and its usage was limited.

The UAV debate 'took a turn in 2013 when the Security Council granted the Department of Peacekeeping Operations (DPKO) permission to contract surveillance drones for MONUSCO'.[29] This deployment aimed to monitor some of the outlawed armed groups in the Eastern region of Democratic Republic of the Congo (DRC) and protect the civilian population more efficiently. Later, UAVs were used in many peacekeeping missions including Central African Republic and Mali. According to the Expert Panel on Technology and Innovation, UAVs constitute an indispensable source of information for peacekeepers. The UN believes that UAVs are a modern response that can promptly improve peacekeeping forces' success and response rate through surveillance.

Technologies such as satellite imagery has been used 'to help map conflicts, and perception surveys have reached out to understand better both the conflict dynamics and the impact of peace operations, including unintended negative consequences'.[30] Satellite imagery data can be used to monitor the movements of conflicting parties, observing arms smuggling

networks, identify the locations and needs of internally displaced persons and refugees, border management, human rights violations, etc. The optical imagery from very high-resolution satellites provides an accurate real-time happening on the ground. For instance, the Humanitarian Information Unit of the US Department of State extensively used satellite imagery data to identify the villages damaged or destroyed in Darfur during the civil war.[31] Similarly, in 2018, satellite imagery data analyses helped to establish an arms embargo violation in South Sudan.[32] In March 2020, a BBC investigative report utilised satellite images to establish Turkey's violation of the arms embargo on Libya. The images confirmed that Turkey shipped tanks and weapons to Libya soon after agreeing to a UN arms embargo.[33] Recently, in Myanmar, satellite analysis combined with information on settlement locations helped the UN to identify the destroyed villages in Buthidaung, Maungdaw and Rathedaung Townships in Northern Rakhine State.[34]

The use of machine learning to detect hate speech by the MINUSMA; and the deployment of artificial intelligence to monitor social media by the United Nations Organized Stabilization Mission in the Democratic Republic of the Congo (MONUSCO) are other examples of integrating technology into the peacekeeping operations. The UN Secretary-General's strategy and action plan on hate speech 'points to the need to use technology to understand the relationship between the misuse of social media for spreading hate speech and the factors that drive individuals to violence'.[35] The UN Digital Toolkit on the role of digital technologies in armed conflict mediation highlights that 'if the data is triangulated with social media analytics, it can provide advance information of potentially destabilizing events—a form of early-warning—or insights into the sources and promoters of violence, hate speech, misinformation, or disinformation'.[36]

Can India become a TecCC?

India is one of the largest contributors of troops to UN Peacekeeping Operations. More than 2,50,000 Indian troops have served in 49 of the 71 peacekeeping operations deployed so far.[37] At present, India is currently the second-largest troop contributor with 5,538 personnel deployed in seven UN peacekeeping missions.[38] Moreover, India has also played a leadership role in many peacekeeping missions. It has provided Military Advisers, Civilian Police Advisers, Force Commanders and several Special Representatives of the UN Secretary-General to

various missions. Korea, Cyprus, Namibia, Sinai, Sierra Leone, Sudan and Congo are a few examples. However, since the attacks against the peacekeepers are growing significantly and India lost more peacekeepers than any other troop-contributing country,[39] in future, India should focus predominantly on providing technology to the peace operations and equip its troops with modern technologies to manage complex emergencies.

Recently, India has been at the forefront of transforming the traditional peacekeepers into 'digital peacekeepers'. For this purpose, during its UNSC presidency in August 2021, India convened a ministerial-level open debate on the theme of technology and peacekeeping. During the debate, India proposed a four-point framework for UN peacekeepers to meet contemporary threats. First, 'employing operationally proven, cost-effective, widely available, environment-friendly, reliable and field serviceable technologies'. Second, 'need for a sound information and intelligence foundation to ensure early warning and mobilising early response'. Third, 'ensure technological improvements are continuous and are available on the ground'. Fourth, 'consistent training and capacity building of peacekeepers in the realm of technology'.[40] All these points were further emphasised in the unanimously adopted presidential statement on peacekeeping operations. The statement remarked that:

> The Security Council recognizes 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; further emphasizing that existing and new technologies can support the safety and security of peacekeepers and the protection of civilians, by enabling effective and timely decision-making including through early warning and response.[41]

India has also spent US$ 1.64 million to develop the situational awareness technology platform UNITE AWARE in collaboration with the UN DPKO and the Department of Operational Support (DOS).[42] This platform helps to visualise the entire peacekeeping operation and enable monitoring it on a real-time basis through modern surveillance technologies, including satellite-based solutions. However, though the United Nations Institute for Training and Research (UNITAR) has a Satellite Centre called UNOSAT for making satellite-based solutions and geographical information easily available for the UN, the organisation

does not have its own satellites. Therefore, the UN primarily relies on freely available satellite data or purchases from private firms. However, 'most commercial satellite imagery does not arrive until two weeks after orders it. This turn-around time is too long for operational use'.[43] Moreover, real-time imagery is considerably more expensive. Therefore, most UN-ordered satellite imagery is used to create maps.

India has low-cost satellite technology and its space agency, Indian Space Research Organisation (ISRO) can collaborate with the UN for developing a dedicated constellation of Small Satellites (SmSats) for peacekeeping missions. Through the UNISPACE+50 initiative, India shares its spacefaring know-how with aspirant partner nations, which includes a capacity-building programme on small satellite-building.[44] India also 'shares its facilities and expertise in space science and technology through the UN-affiliated Centre for Space Science and Technology Education in Asia and the Pacific'.[45]

Similarly, India can contribute to the energy security of peacekeeping missions. Despite a booming global renewable energy market, the peacekeeping missions still depend on fossil fuels, especially diesel-power generators for energy needs. From the perspective of peacekeeping, reliance on diesel-power generation presents logistics and security challenges. Recently, the International Renewable Energy Agency (IRENA) and UN signed a memorandum of understanding (MoU) to advance the use of host-country generated renewable energy in peacekeeping missions.[46] India could leverage its solar power credentials as the leader of the International Solar Alliance (ISA) to support the peacekeeping missions in meeting their energy requirements. India's National Thermal Power Corporation Limited (NTPC) has been involved in solar projects in many African countries, including Mali, where peacekeepers are deployed.

India has also signed a MoU with UNC4ISR Academy for Peace Operations (UNCAP) to support the Partnership for Technology in Peacekeeping initiative. With the help of UNCAP, the Centre for United Nations Peacekeeping (CUNPK) could provide specific pre-deployment training in information and communications technologies (ICT), Intelligence, Surveillance and Reconnaissance (ISR) technologies and camp security and early warning technologies. The Centre would also consider developing e-Learning courses in advanced technologies that are accessible remotely to the missions and troops. In the recent past, India has also established IT centres in South Africa, Egypt, Morocco, Ghana, Namibia, Tanzania and Madagascar. Similarly, vocational

training centres were established in Ethiopia, Rwanda, Burundi, Burkina Faso, Gambia, Zimbabwe, Madagascar and Egypt.[47] These centres can be used for training peacekeepers and civilians.

India is the first country to deploy an all-women contingent to a UN peacekeeping mission. The first all-women contingent, a Formed Police Unit from India, was deployed in 2007 to the UN Operation in Liberia (UNMIL). Since 2019, it has deployed a Female Engagement Team as part of a Rapidly Deployable Battalion in the UN Mission MONUSCO. India should consider training these female units to transform them into digital women peacekeepers. The other advantage for India is that Western technologies are too foreign, costly and sophisticated. Many African states consider Western technologies as intrusive. Moreover, these are sophisticated, expensive and unsuitable for the harsh climate. India has also gained considerable *goodwill* for being actively involved in peacekeeping operations not only in the UN but in host countries as well.

In short, to sustain its historical interest and influence in the UN peacekeeping operations, India should chart out specific strategies to become a TecCC. However, such a strategy should be balanced, providing technical assistance to the missions while continuing troop contribution, rather than transforming its traditional troop contributor role to a tech contributor. Also, India should consider utilising the goodwill it has earned over the years as a dedicated peacekeeper, particularly in Africa, to build enduring economic and strategic relationships with host states.

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operations stronger and safer, mobilising support for political solutions and better equipping and training of forces.

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