8

Current UN standards: Starting from near zero

> Simply put, the scale and complexity of peacekeeping today are mismatched with existing capabilities. . . . New peacekeeping tasks demand new equipment, from night vision and modern communication equipment, to naval vessels. The UN also needs access to new technologies for better situational awareness in the field.
>
> DPKO and DFS (2009: iii, 32)

The UN Department of Peacekeeping Operations (DPKO) and the UN Department of Field Support (DFS), which authored the "New Horizon" study quoted above, have become aware of the technology deficit in the field. At the urging of troop-contributing nations, they sought an evaluation of past, present and future capabilities, which resulted, in part, in the research for this book.

The review of UN history showed that only some missions have used some advanced technologies, usually when they are brought by developed nations. These rare examples were examined in the previous two chapters. Only a small number of simpler monitoring technologies are in regular use. Night-vision devices (NVDs) are present in many missions, but only as short-range image intensifiers, usually of an older (second) generation. The United Nations does not systematically deploy thermal imagers, which are needed for field missions to operate effectively at night. Some technologies that are ubiquitous in the civilian world, such as digital cameras, Global Positioning System (GPS) devices and "Google Earth", have found a regular place in peace operations, but only in a simple form, rarely linked to multi-user databases. The lesson from the

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North Atlantic Treaty Organization (NATO) missions in Bosnia is that the potential for technology use is literally sky-high. It is worthwhile to examine the nature of the technology deficit from which UN peacekeeping currently suffers.

The monitoring technology gap

The monitoring technology gap is of several dimensions. First, there is a gap between UN mandates and UN means. The organization's important, ambitious mandates are too often unachieved or underachieved because of the lack of monitoring capabilities, among other reasons. Particularly for the protection of civilians, sanctions enforcement, border surveillance and nation-building, UN missions are under-equipped with the tools needed to cover large territories at a minimum level of disruption to civilian activities. Some missions, such as those in the Democratic Republic of the Congo (DRC) and Darfur, are responsible for vast areas with only a small number of UN personnel. Regular wide-area surveillance by aircraft is greatly needed. Yet this need has not been met in either of these missions, or indeed in any other, although the UN mission in the DRC (MONUC) has some short-range capability (for example, Mi-35 helicopters). In conflict zones with long porous borders that facilitate the smuggling of guns, drugs and illegal resources, border monitoring and control have been mandated. But standard border surveillance technologies, such as aerial observation and ground radars, are not provided to UN missions. Chapter 3 highlighted the need for UN surveillance at night when most violations, atrocities and illegal trafficking occur. However, only a few missions have successfully broken the night barrier. Long-range night-vision and radar technologies are still lacking in almost all UN missions.

The monitoring technology gap is also characterized by a large divergence in the capabilities of different troop-contributing countries (TCCs). A few nations deploy to UN operations with their own surveillance technologies, considered by them as "standard kit", but most arrive with barely enough to receive reimbursement under the United Nations' list of necessary equipment, that is, self-sustainment in the "observation" and "identification" categories under the United Nations' Contingent-Owned Equipment (COE) system. Moreover, the United Nations' COE standards are ill defined and the night-vision specifications are reached by few contingents. The standards for night vision had to be lowered in most missions; otherwise most contingents would have failed to get any reimbursement in the category. The result is that a few contingents with advanced technologies cover their areas of responsibility more efficiently than other contingents do theirs. Closing the gap, especially between contingents from the developing and developed world, also entails better training and equipping. It means procuring more UN-owned equipment and deploying selected surveillance systems on a force-wide basis. Moreover, it means gaining experience. For instance, the United Nations should start to make night observation and patrols standard in most missions.

Some developed nations insist that they will deploy their troops to the field only when they are equipped with their "standard kits" required for force protection, including monitoring technologies such as radars. Unless the United Nations understands, appreciates and utilizes these capabilities, developed nations will be disinclined to participate in UN operations, viewing them as under-equipped and unnecessarily risky. A United Nations that is better able to demonstrate situational awareness and technological competence will be more enticing to developed as well as developing contributors.

The United Nations also experiences a monitoring technology gap in relation to some of its partners, regional organizations and the agencies with which it cooperates. The European Union (EU) and NATO, both well equipped, have deployed forces in cooperation with the United Nations in the past. In Bosnia, for instance, NATO worked closely with the United Nations both before and after the 1995 Dayton Peace Agreement. Currently, the organizations work together in Kosovo and, to some extent, in Afghanistan. In the DRC, a European Union Force assisted the United Nations during the country's successful 2006 elections. In each of these cases, assistance included sophisticated aerial reconnaissance, including from unmanned aerial vehicles (UAVs). But a smooth operational interface with the United Nations was not achieved in those missions, in part because of the United Nations' lack of technological prowess, especially in image analysis and processing.

In some missions, a monitoring technology gap exists between the United Nations and the parties and forces it seeks to monitor. Some conflicting parties have better technology than the UN watchkeepers for keeping watch. For instance, in Namibia in April 1989, the South African forces employed much better night-vision equipment than the United Nations, which contributed to the United Nations' unawareness of the extent of the incursion of guerrilla (SWAPO/PLAN[1]) fighters from Angola into Namibia. This ignorance allowed South African politicians to raise an exaggerated alarm and seize the initiative at the expense of an embarrassed United Nations. Hundreds of guerrillas were killed. During "Operation Storm", launched by Croatia against the self-proclaimed Serb Republic of Krajina in 1995, aerial surveillance by US drones allowed the Croatian army to aim artillery near UN positions in an attempt to stop the disadvantaged UN peacekeepers from preventing or even observing the ethnic cleansing that was occurring around them.[2] In Georgia, the UN mission was not able to get a real-time picture of events during the Russian advance of August 2008, despite the mission's requests to obtain UAVs, which both sides of the conflict possessed. In Haiti, a few gangs and drug groups possessed better night-vision equipment than the United Nations. In the "cat and mouse" game, the mouse is all too often better equipped and so can evade detection.

In summary, the United Nations' technological gap is of several dimensions: between its ambitious mandates and its modest means,[3] between the developed and developing world contributors (the latter forming the significant majority), between the United Nations and some of its partner organizations, and between the United Nations and some of the parties it is assigned to monitor. Most importantly, the gap reveals the inadequacy of the United Nations in protecting its own staff and carrying out effective operations. The world organization needs the ability to provide early warning of attacks in sufficient time to prevent or mitigate them.

Although the monitoring technology gap remains large and is growing, especially as technology advances at a rapid pace, there are positive signs. The United Nations has shown it has the ability to deal with some high tech. Its communications systems are advanced and impressive, especially given the difficult local conditions and remote areas to which the United Nations deploys. For monitoring technology, there are some recent precedents on which to build. The force in Lebanon has deployed several sophisticated radars for both air and ground surveillance. The mission in Cyprus has installed video cameras in six hotspots between conflicting parties. And the Haiti mission has heliborne cameras that transmit imagery in real time to mission headquarters. The mission in the DRC has attack helicopters with advanced observation for target acquisition. These innovations are slowly helping the United Nations to gain experience and knowledge, which deserves to be documented and studied.

The technology gap in the field has been caused in part by UN headquarters, where little attention has been paid to the issue. Moreover, there remains little awareness of military technologies, particularly among the civilian staff. This is reflected in the "Capstone" document (DPKO and DFS 2008), which fails to mention any technology aside from information technology (computer networks). This technological omission is found in all other categories of DPKO materials: training documents, equipment manuals, policy documents and other forms of internal and external knowledge transmission.

A major challenge will be to integrate technology into the information management and decision-making process. A mental shift will inevitably be required based on greater awareness and training.

Peacekeeping training

There are currently no UN training materials to prepare peacekeepers to use modern monitoring technologies. The majority of publications of the DPKO Integrated Training Service fail even to mention, let alone describe, any monitoring technologies, leaving the false impression that these technologies have no role in modern peacekeeping. A few training documents make casual reference to technologies. The *Selection Standards and Training Guidelines for United Nations Military Observers* (DPKO 2002: 27) simply note the use of "binoculars and night observation devices" and "specialized equipment to support monitoring".

Only the *United Nations Peacekeeping Training Manual* provides a rudimentary level of detail: "In addition to illumination, PKOs [peacekeeping operations] use a wide variety of NVE [night-vision equipment] and ground radars" (DPKO n.d.[a]: 27), Contrary to this statement, ground radars have almost never been used in peacekeeping, although NVE is now deployed in many missions. The Training Manual briefly outlines some means to procure equipment in general[4] and recommends a training activity, which would include "day and night observation where troops/observers would be tested on their ability to observe and report on some contrived incidents" (DPKO n.d.[a]: 44).

The Integrated Training Service of DPKO conducted a survey of its field staff and discovered that "technological awareness" was the "core value and competency" that a majority of staff members in the field would most like to strengthen.[5] The result was true for each category of personnel: military (57 per cent), police (56 per cent) and civilian (58 per cent). Such a high demand may lead to the development of training programmes for various technologies.

UN equipment manuals and lists

The Table of Organization and Equipment (TOE) is used to generate appropriate forces and capabilities for peacekeeping operations. It would be a natural place for a comprehensive list of potential monitoring technologies, but the published TOE (DPKO n.d.[b]) merely recommends that military observers be equipped with NVDs. It makes no mention of other technologies. A later draft version of the TOE (DPKO 2006c) is only slightly better, with more specifics on night vision. It recommends one device for every 10 to 15 soldiers, "unless there is a requirement to increase equipage due to mission/threat level". It also suggests the use of GPS devices together with laser range-finders, which can be used to determine distances to faraway objects so their positions can be identified precisely from the GPS coordinates of the observer. The 2006 draft TOE specifies that the GPS units must have an accuracy of 25 metres or more. But this figure is out of date: currently, even inexpensive commercial models ($200–300) offer a precision of 10 metres or better.

Contingent-Owned Equipment shortfalls and standards

Contingents are expected to bring some basic equipment to the field, as outlined in a Memorandum of Understanding (MOU) signed by the United Nations and the TCC before deployment. The MOU is based on the guidelines provided in the *Manual on Policies and Procedures Concerning the Reimbursement and Control of Contingent-Owned Equipment of Troop/Police Contributors Participating in Peacekeeping Missions* [COE Manual] (United Nations 2008).[6] Despite these minimal requirements, many contributors are unable to meet them, particularly troops from the Global South, which currently provides the bulk of peacekeeping operations. These nations have small military budgets and their armed forces lack sophisticated military hardware for monitoring, such as night-vision equipment (NVE). By contrast, the armed forces of the developed nations are usually well equipped but they contribute far fewer troops to UN PKOs. Sometimes they bring more surveillance equipment than was requested by the United Nations.

As an incentive to nations to bring at least the basic equipment, the United Nations developed the COE system. In essence, UN inspectors examine the equipment of a member state while they participate in a PKO. The member state is then reimbursed financially by the United Nations if it meets the requirements in each category of equipment.

The equipment that contingents bring to the field is inspected upon arrival, quarterly and upon departure to see if it meets the standards described in the COE Manual. A verification report is issued after each inspection. The COE Database contains the verification reports from 2001 onwards.[7] The database shows the level of shortfalls in each of the 25 categories of equipment. Table 8.1 indicates the percentage of contingents that were unable to uphold the COE standards. The categories for positioning (GPS), night vision and “general observation” are among the highest on the equipment shortfall list, as shown in Table 8.1. Most night-vision shortfalls are with the developing world contingents.

For comparison, the average shortfall for all equipment types is 7 per cent. Even the 13–16 per cent shortfalls for monitoring equipment should be considered underestimates of the real percentage. This is because COE inspectors have tended to give many contingents the benefit of the doubt, particularly since the COE Manual is vague on observation and identification standards. In addition, some missions reduced the COE

Table 8.1 Equipment shortfalls: Top 10 of the 25 categories

Rank	Equipment	Shortfall (per cent)
1	Explosive ordinance disposal	18
2	Positioning (GPS)	16
3	Night vision	16
4	General observation	13
5	Level 1 medical	12
6	Tenting	11
7	Catering	9
8	Telephone equipment	8
9	HF radio	8
10	Accommodation	7

Source: COE Database, DPKO/DFS, searching over period 2001–2006.

standard of night vision from the COE Manual range of 1,000 metres because few contingents were able to meet it.

The COE Manual itself is deficient, especially considering its importance in setting the standards for equipment from TCCs. Under COE rules, the TCCs are paid according to two classes of equipment that they bring to the field: self-sustainment and major equipment. The self-sustainment list is standard for almost all UN missions, though in some cases the United Nations assumes responsibility for providing some equipment for some nations. There are 25 categories of self-sustainment: from catering to tenting, from communications (within each contingent) to medical capabilities. The two COE categories of interest here are observation and identification.[8] They are only vaguely defined in the 2008 COE Manual, as quoted in Table 8.2.

If equipment does not meet the standard set by the COE Manual, the country is not reimbursed for that particular category of equipment/capability. But the method used to inspect NVDs rarely includes actual field tests in the dark. Mostly they constitute nothing more than a battery check.

For observation and identification, the COE Manual is deficient in both quantitative and qualitative terms, leading to problems and disputes between contingents and COE inspectors over what is acceptable. The Manual does not provide any formula or means, not even a rule of thumb, to determine how many NVDs or GPS units are needed per military unit. Nor are the types of equipment (goggles, monoculars, image intensifiers or infrared) or capabilities specified. Furthermore, the terms "identify" and "categorize objects" are not defined, so testing is necessarily subjective. Also, for the night-vision category, the COE Manual ignores any consideration of lighting conditions (starlit, moonlit, no-ambient light,

Table 8.2 Contingent-Owned Equipment: Self-sustainment standards and rates (per person) for the observation and identification categories

	Standard	Monthly rate (US$)
Observation		
General	Provide hand-held **binoculars** for general observation use	1.15
Night observation	Detect/identify/categorize persons or items at **1,000 metres** or more; conduct night patrols and intercept missions	24.58
Positioning	Determine the **exact** geographical location	5.78
Identification	Conduct surveillance operations with **photographic** equipment, such as videotape and single lens reflex cameras; process and edit the obtained visual information	1.09

Source: COE Manual (United Nations 2008); emphasis added.
Note: Monthly rates are per person. For a battalion of 800, the United Nations would multiply the specified rate by 800. For NVE, if the battalion meets the requirement for quantity and quality (54 NVE is the standard MONUC adopted), the United Nations will reimburse the TCC 800 × $24.58, or $19,664 per month, for the NVE. The self-sustainment reimbursement rates are often increased by various factors, typically 1–5 per cent, depending on the mission conditions (e.g. environmental, intensified operations, hostility/forced abandonment).

etc.) for the 1 km target range. Similarly, the category labelled "identification" (but better renamed "recording") does not specify the number or quality of cameras/video recorders needed for each military unit.[9] In MONUC, it was decided, after many difficult experiences, to adopt a "force standard" of four NVDs per infantry platoon (usually 20–30 soldiers) and to reduce the required range from 1,000 to 500 metres, because almost no contingent could meet the original COE Manual standard of 1 km.[10] This example highlights the need to establish detailed and rigorous but reasonable COE standards, perhaps by adding an annex to the COE Manual to specify in sufficient detail the standards for observation and identification.

Under the "major equipment" class of the COE Manual, the United Nations *leases* expensive equipment from TCCs as DPKO deems necessary. The listed equipment types are shown in Table 8.3. Here again, the COE standards are inadequate. Without accurate standards for equipment quality and specification of various types, the listed prices can only be considered artificial. The variety and quality of night-vision and radar equipment vary considerably across several generations, with no standards at all being specified (except the requirement for "round-the-clock operability and routine calibration").

Table 8.3 Major observation equipment listed in the COE Manual

	Generic fair market value (GFMV), US$	Monthly wet-lease per person, US$	Percentage (lease/GFMV)
Personal			
Night observation devices – tripod mounted	13,140	159	1.2
Binoculars – tripod mounted	8,586	86	1.0
Area			
Artillery-locating equipment	Special case	–	–
Ground surveillance radar/system	Special case	–	–
Thermal imaging systems – aerial	133,096	1,895	1.1
Thermal imaging systems – ground	111,260	1,674	1.5

Source: United Nations (2008).

The costs listed for these technologies in the current manual represent prices from the 1990s. Many technologies have come down considerably in cost since then. But even with these old and high prices, the value of the technologies can be appreciated. For comparison, the United Nations pays TCCs $1,028 per soldier per month ($303 more for specialists). For the annual cost of one soldier, the United Nations could purchase a tripod-mounted thermal imaging system or lease over 80 of them.

For the "special case" equipment in the table, TCCs need to negotiate the reimbursement rate with the United Nations. The rate is then specified in the MOU between the United Nations and the TCC. The COE Manual does not even list a number of monitoring technologies (see below for a more extensive list).

When the United Nations purchases its own equipment, it also uses certain guidelines. The *Standard Cost Manual 2003* (DPKO 2005a) lists only three observation technologies under "other equipment" with some old and exorbitant figures:

- binoculars (hand-held – $350; tripod mounted – $6,500)
- infrared system (no details – $50,000)
- thermal imaging system (aerial – $120,000; ground – $72,000)

There are serious deficiencies in this list. In fact, "infrared" and "thermal" systems are the same.[11] Like the COE Manual, the Standard Cost Manual grossly oversimplifies the wide range of available technologies in terms of types (image intensification versus infrared), generations (for example, night-vision equipment ranges from first to fourth generation) and equipment quality.[12] Furthermore, the items were priced in 1995, when the costs were considerably higher. In the cases above, the current costs are 10 times lower (for example, $5,000 for thermal infrared devices instead of $50,000). Finally, like the COE Manual, the Standard Cost Manual is incomplete. It fails to list many types of monitoring technology. These documents need substantial review and improvement. Until recently, however, the relevant departments gave little or no priority to the monitoring technology gap.

Policies and operating procedures

To its credit, DPKO is beginning to grapple with monitoring technology issues at the management and policy level. A draft policy on "Monitoring and Surveillance Technology in Field Missions" was first prepared in December 2008. In the long drafting and consultation process, however, it quickly became apparent that the benefits of such technology can come to full effect only with broader improvements in UN intelligence and information management. Consultations revealed the limits of the political will of DPKO and of member states to address such controversial topics as intelligence, euphemistically called "situational awareness" at UN headquarters. That topic will probably require a separate but linked policy. At the urging of the UN Special Committee on Peacekeeping, the policy on monitoring technologies (DPKO 2010a) is being promulgated.

The draft policy calls for advance technology planning, including a "monitoring and surveillance technologies" analysis in the "pre-deployment" phase. This could be subsequently augmented during the "rapid deployment", "mission start-up" and "implementation" phases.[13] Specifically, the military and police sections of DPKO are requested to draft the Concept of Operations to include a section on "Monitoring and Surveillance Capabilities". In addition, these capabilities should be included in the Force Requirements for proposed missions.

The policy also deals with the thorny issue of host-state consent. Some aspects of technical monitoring (for example, with signals interception) may need host-state approval. But technologies used solely for protection purposes, such as closed-circuit television (CCTV) on UN premises, do not require host-state consent. Neither is consent needed for UN operations engaging in enforcement measures imposed by the Security Council under Chapter VII of the UN Charter.

The policy paper suggested that financial allocations for the technologies should be included in mission budgets and that sufficient training should be provided for use of the equipment. The analysis of the data was to be done in a centralized section, probably the Joint Mission Analysis Centre in each mission. “By default, the work of the UN should be open and transparent”, it stated, but information deemed sensitive should be protected and assigned a security classification (for example, “Confidential” or “Strictly Confidential”, as per UN Secretary-General 2007).

A “Standard Operating Procedure” document for “Monitoring and Surveillance Technology in Field Missions” was also drafted. The technologies most needed for staff security were to be included among the strategic deployment stocks at the UN Logistics Base in Brindisi, Italy. This should allow the equipment to be deployed faster as part of the basic kit.

The Monitoring and Surveillance Technology policy and Standard Operating Procedure should help to increase awareness within DPKO and improve the standards for technology use. But it took almost two years to draft the documents, showing how difficult it is to bring progress to such issues, even if they can enhance staff security and better decision-making – both of which are central concerns for UN managers.

Safety and security standards

One might expect UN safety and security documentation to contain a thorough consideration of monitoring technology since it is so prevalent in the security industry. However, in the written materials relating to the safety of UN personnel, there is a paucity of such information. The outdated “Security in the Field” pamphlet (United Nations 1998–), meant to provide individuals going on field missions with basic tips, makes no mention of any technology except walkie-talkies and telephones.

After the terrorist bombing in Baghdad of 19 August 2003, in which 22 UN staff members lost their lives and a large section of the mission headquarters was destroyed, the United Nations developed new structures, procedures and equipment lists for a more systematic approach to personnel protection. The newly created Department of Safety and Security (DSS) introduced Minimum Operating Security Standards (MOSS) for system-wide application (DSS 2004). The “baseline MOSS” provides an extensive list of telecommunications equipment, even for its lowest threat level (phase I, precautionary):[14] a “fully operational, independent radio network utilizing UHF, VHF and/or HF equipment” and mobile satellite telephones for each agency’s country office. The MOSS also recommends the creation of a communications centre manned 24 hours a day, seven days a week (24/7), in addition to an ever-present emergency communications system.

Under the security system, each country's Designated Official and Security Management Team must develop country-specific MOSS. This includes a Threat and Risk Assessment and a table of equipment, training and structures. The only monitoring technologies listed in the template table for phases I to III (that is, precautionary, restricted movement, relocation phases) are digital cameras and GPS devices, both of which are "mandatory for Field Security Coordination Officers". Only when there exists a threat of terrorism are "Enhanced Protective Measures and Resources" (Annex B of DSS 2004) recommended to "supplement" the baseline MOSS. Included in the perimeter protection and access control measures are: CCTV monitoring and recording of perimeter areas by a 24/7-manned control room and possibly X-ray machines; metal detector archways and/or wands at visitors' entrances. In addition, a vehicle-check mirror is recommended for the driveway entrance.

Thus the DSS documentation deals solely with security equipment for UN facilities and with communications systems for travelling personnel. Realizing that a more proactive approach to security means achieving better situational awareness, the DSS partnered with DPKO in 2006 to look at equipment in the field more generally. The joint Technical Specifications Working Group was mandated "to identify and procure security-related equipment necessary for DPKO-led operations" (DPKO 2006b: 6). The Peacekeeping Operations Support Service unit of DSS was tasked with maintaining awareness of new equipment and recommending equipment priorities in the field. So far, the Working Group has developed specifications for only one type of monitoring technology: CCTV.[15]

This review shows the meagre nature of UN documentation for employing monitoring technology in PKOs. The training manuals, equipment standards and equipment lists are far from adequate for a proactive approach in the field. Many categories of technology have not even been mentioned. What would a more thorough list look like? Table 8.4 is an attempt to provide the answer. It lists monitoring technologies that should find application in peacekeeping and be covered in UN documentation, especially in the COE Manual.

Demand from the field: The low–medium-cost project

In February 2008, I had the opportunity to brief DPKO's Extended Senior Management Team and, at the end of the meeting, the DPKO leadership decided to commence two projects to improve surveillance equipment in UN missions. One project was to conduct a more in-depth study of past, present and future UN capabilities, resulting in an internal report by me which has become part of the present book. In parallel, a low–medium-cost technology project was launched to rapidly address the shortfall for

Table 8.4 Summary of monitoring technologies

	Types	Quantity measured[a]
Video monitors	• video cameras • web cameras (indoor/outdoor) • closed-circuit television (CCTV) • digital video networks (DVN) • aerial & space-based surveillance	Visible light: electromagnetic radiation of wavelength 400–700 nanometres
Night-vision equipment	• image intensifiers (II) • thermal or infrared (IR) imaging	For II: visible light Thermal devices: IR (electromagnetic radiation of wavelength 700–12,000 nanometres)
Motion detectors	• automatic illuminators • alert or alarm connections	Changes in IR or radar or light beam intensity
Radars		Reflected radio waves*
	• air surveillance radar (ASR)	ASR: 2–30 cm
	• artillery-locating radar (ALR)	ALR: 3–50 cm
	• ground-penetrating radar (GPR)	GPR: 2–10 m
	• ground surveillance radar (GSR)	GSR: 10–30 cm
	• synthetic aperture radar (SAR)	SAR: 1 mm–1 m
	• marine radars	Marine: 3–15 cm
	• weather radars	Weather: 2–15 cm
	• speed enforcement radars	Speed enforcement: 1–2 cm
X-ray machines	• baggage and shipments • portable	Electromagnetic radiation of wavelength 0.03–3.00 nanometres*
Acoustic sensors	• small arms fire detection and localization • movement of persons or vehicles	Acoustic (sound) waves in air or ground
Seismic sensors	• geophones (for personnel/vehicle detection) • seismic arrays (for explosion detection)	Acoustic waves produced by movements in the Earth's surface
Chemical sensors	• explosives detector	Molecular mass or chemical binding properties
Metal detectors	• hand-held wand • mine detector	Electric currents inducted in underground (metal) objects*

Pressure transducers	• intrusion alarms • road monitor	Pressure applied (converted to an electric signal)
Electronic monitors	• signal-locating equipment • radio scanners / signal monitoring	Electromagnetic radiation (radio waves) of wavelength > 1 mm
Positioning and tracking systems	• Global Positioning System (GPS) • transponders and tags • radio frequency identification	Radio signals from the GPS of satellites

Notes: Other technologies less likely to be used in peacekeeping include: sonar, ultrasound, LIDAR (light detection and ranging), taut-wire fences, IR break-beam detectors, seals and tags. Nuclear detectors (e.g. Geiger counters) are needed only when nuclear materials present a potential hazard.

[a] Items marked with * are "active sensors", meaning that the devices emit a wave and the reflection is measured by them. Infrared devices can be active if they are equipped with an IR emitter to "brighten" the area invisibly; otherwise they are "passive".

low- and medium-cost technologies in selected missions. DPKO sent a Code Cable to 14 field missions asking them to identify the types of technology they possessed and any shortfalls that existed. This resulted in long lists of many needed technologies. The responses expressed the same need for monitoring technologies as found in a previous survey of UN field personnel conducted in 1995. That survey found that the large majority of personnel (90 per cent) thought ground sensors had a place in peacekeeping (see Appendix 6 for a detailed description of the survey). The 2008 low–medium-cost project received responses from the missions themselves. The technologies desired by the missions, listed in Table 8.5, were many.[16]

MONUC requested cameras for its rudimentary glass-domed surveillance (Lama) helicopters. It noted that the more advanced attack helicopter (Mi-35) had cameras for "target identification" but that these were "for national use only". The Indian contingent tended to keep the imagery within its unit, hesitant to share with other contingents in the eastern Congo, especially those from Pakistan and Bangladesh – countries that could be potential future opponents. Unlike the Mi-35, the Lama helicopters have no gyro-stabilized pod for onboard cameras. Imagery was taken from the Lama helicopters but only using hand-held cameras, leading to reduced resolution and greater blur.

The African Union/United Nations hybrid operation in Darfur (UNAMID) stated that it was unable to monitor many events, areas and routes owing to the large distances involved. Furthermore, its staff had no expertise in Intelligence, Surveillance, Target Acquisition and Reconnaissance (ISTAR) to exploit and manage information from numerous sources. So UNAMID suggested that any future ISTAR system or concept should have the following characteristics: simple, robust, reliable, as maintenance-free as possible, having a small logistics trail and a low-training requirement, inexpensive and proven to work under harsh climatic conditions.

The United Nations Disengagement Observer Force in the Golan Heights (UNDOF) identified an "urgent priority" to obtain long-range night vision, otherwise it "could not fulfill its monitoring/observation mandate". It explored the option of borrowing NVE from the United States, though this proved unsuccessful.

The United Nations Interim Force in Lebanon (UNIFIL) noted that only 4 out of its 32 units (in 62 locations) were equipped with surveillance cameras, sensors and/or thermal imaging systems for force protection. The mission wanted to expand its system of Internet Protocol (IP) cameras for the protection of facilities. Whereas Contingent-Owned Equipment from some countries (for example, France, Italy and Spain) was quite advanced, UN-owned equipment was seriously lacking in

Table 8.5 Low–medium-cost surveillance technology shortfalls, as identified by the field missions

Mission (location)	Cameras desired (types)	Other technologies desired	Purposes
MINURSO (Western Sahara)	• digital, high zoom • GIS (GPS-stamp) for aerial photos • CCTV with motion sensor • aerial • night vision (long-range, 3rd generation)	• satellite imagery of Western Sahara and boundaries	• team-site perimeter security • patrolling • mapping (e.g. position of berm and roads network)
MINUSTAH (Haiti)	• video/still • CCTV (remote places) • heliborne • motion detection • real-time streaming • thermal vision (including cabling) • satellite imagery	• GSR for control of border and remote areas • radars (ground surveillance; and to "see" through walls) • frequency scanners • metal detectors • chemical (gunpowder) sensors • fingerprint scanner	• unit perimeter surveillance (e.g. high tower installation) • patrols of borders and port areas • border surveillance • find hidden weapons/ ammunition and drugs
MONUC (DRC)	• cameras for surveillance helicopters • satellite images of specific areas of the Kivus to identify changes	• radars to detect vehicles and personnel, and for tracking of light aircraft • UAVs	
UNAMID (Darfur)	• digital camera and laptop to UNMO teams • night-vision devices (monocular, helmet-mounted, for vehicle driving, weapons site) • aircraft fitted for observation • UAVs with live feed	• dedicated ISTAR cell at Force HQ	• monitor events, areas and routes over large area • detect, identify and recognize groups beyond effective weapons range, especially at night • overmatch opposition • protection of halted convoys and long-range patrols

Table 8.5 (cont.)

Mission (location)	Cameras desired (types)	Other technologies desired	Purposes
UNDOF (Golan Heights)	• night-vision equipment (long-range) • thermal weapons site	• satellite images to update geo-database	• night-time temporary checkpoints • approaches to observation post • spotting violations
UNFICYP (Cyprus)	• improved CCTV system • portable CCTV system with thermal vision • portable sensor system	• portable sensor systems (acoustic/seismic)	
UNIFIL (southern Lebanon)	• surveillance cameras at UN camps and with deployed units • satellite and aerial imagery • night vision (mounted on vehicles and weapons, and non-mounted)	• radars	• day/night security of camps • monitoring specific areas in mission
UNMIL (Liberia)	• aerial reconnaissance (especially at night), UAVs • network cameras • increased bandwidth	• GSR	• security of UN compounds • border surveillance • search for arms caches
UNMIS (Southern Sudan)	• day and night with motion sensors • satellite and aerial reconnaissance	• RFID tags, bar code readers and scanners	• perimeter surveillance for team sites • aid UNMO movements • monitoring and verification, especially at night

UNMOGIP (Kashmir)	• laser range-finders • thermal IR binoculars		
UNOCI (Côte d'Ivoire)	• night-vision equipment • UAVs	• metal detectors • radars (ground-penetrating, ground, air, maritime) • X-ray machines • GIS tools • sensors (motion detectors, acoustic and seismic sensors)	• arms/diamond embargo enforcement • cross-border surveillance • protecting military positions, guarding storage facilities, securing office and residential areas • elections/DDR (low-intensity operation)
UNOMIG (Georgia)	• UAVs	• radars	• air and coastal observation
UNTSO (Palestine, including Lebanon)	• Internet Protocol cameras (PTZ) • modern night-vision equipment	• intrusion sensors • IR beams	• observation post security, especially in isolated areas

Source: Responses from the 14 UN peacekeeping missions to Code Cable 0451 of 27 February 2008 sent to heads of mission from Under-Secretary-General Jean-Marie Guéhenno requesting the missions to fill out a survey on current and potential technologies in order to identify where shortfalls exist, as well as a way forward.

Abbreviations: DDR – disarmament, demobilization and reintegration; GIS – geographic information system; GSR – ground surveillance radars; ISTAR – Intelligence, Surveillance, Target Acquisition and Reconnaissance; PTZ – Pan Tilt Zoom; RFID – radio frequency identification; UAV – unmanned aerial vehicle.

comparison. UNIFIL does not possess any of its own satellite or aerial reconnaissance means, radars, radio monitoring, or acoustic or seismic sensor equipment. This was due in part to the fact that it is “not specified in the Force Requirements for traditional types of units”. However, the mission had deployed some unusual but necessary equipment, notably electronic countermeasures (jammers) against improvised explosive devices (IEDs). It was seeking to procure radars and forward-looking infrared, as proposed by the Italian Force Protection Company. This use was to be procured by the Communications and Information Technology Service within the DFS,[17] along with smart CCTV technology for the security of Force HQ. In addition, a portable under-vehicle surveillance system was under procurement. As cars drive through a checkpoint, cameras take images of the bottom of the vehicles so operators can search for IEDs. The envisioned system would also include a vehicle plate recognition system.

Some nationally owned equipment in UNIFIL was very advanced, including the best radars the United Nations has yet deployed: COBRA counter-battery radars, air detection radars (NC130 and NC140) and maritime radars aboard frigates and other ships. UNIFIL was the first mission in UN history to deploy intelligence, surveillance and reconnaissance companies. COE night-vision equipment was mounted on both vehicles and weapons. Soldiers also carried digital cameras and NVDs, ranging from 35 to 200 NVDs per battalion.

Despite being in existence for over 60 years, the UN mission in Kashmir (United Nations Military Observer Group in India and Pakistan, UNMOGIP) did not possess any advanced technologies, including night-vision equipment. This limited its effectiveness because most of the operations of the opposing forces – India and Pakistan – occurred after sunset. The mission relied on the personal cameras of UN observers. It requested a vehicle tracking system because it was unable to track its patrols. In the event of serious incidents or accidents, the mission found that it could locate a car only through the local authorities, sometimes preventing a timely rescue. It sought the ability to locate in real time the position of all cars moving along the line of control that separates the opposing Indian and Pakistani forces. The mission reported: “This is an issue which is affecting the quality of work, the safety and security and the motivation of experienced officers we have here.”[18]

Political concerns were also raised in the responses from the missions. The United Nations Truce Supervision Organization and the United Nations Mission in Sudan (UNMIS) noted that the introduction of new technical and electronic equipment required consultation with the host countries. The United Nations Operation in Côte d’Ivoire (UNOCI/ ONUCI) ventured: “in the sensitive pre-election/ DDR [disarmament, demobilization and reintegration] period and considering [the] suspicious attitude toward ONUCI demonstrated by local political and military actors, the use of surveillance tools may endanger the mission's credibility and impartiality." It might be considered as "intelligence-gathering" and seen to be "contradictory to the organization's established transparency". When parties seek to evade UN detection of their activities, these kinds of allegations are often heard.

Based on the responses from 14 field missions, DPKO then identified seven missions for providing additional technology. These were: the United Nations Mission for the Referendum in Western Sahara (MINURSO), the United Nations Stabilization Mission in Haiti (MINUSTAH), UNDOF, UNIFIL, the United Nations Mission in Liberia (UNMIL), the United Nations Observer Mission in Georgia (UNOMIG) and UNMIS. It tasked the Integrated Operating Teams with helping to procure new technology, which resulted in an influx of equipment into a few of the missions, although some snags were observed such as a lack of current funding and long procurement lead-times. MINURSO received some cameras and GPS for its five team sites. MINUSTAH gained a substantial number of cameras, including infrared and snake cameras to take pictures at night and around corners.

UNMIL reported that it was setting up a CCTV system, though hampered by the rainy season, and it had many other equipment needs. Its lack of monitoring equipment was further highlighted in an audit by the United Nations' Internal Audit Division (2009): "UNMO teams and Sector HQs did not have video camera recorders, sound recorders, night-vision binoculars or goggles, or infrared sensing equipment essential for surveillance and monitoring operations." The lack of state-of-the-art surveillance equipment was bemoaned in the audit and the mission promised to improve its standards.

Unfortunately, the low–medium-cost project was closed in November 2008, after substantial gains were achieved. In addition to the provision of hardware, the project generated greater awareness about monitoring technologies, though many missions had asked for much more than they received. Some missions put desired items into their budgets and identified future benefits of technology (Ostrowski 2008: 4). The project concluded modestly that "there is awareness that more has to be done in the technology field" (Obiakor 2008).

It is recommended that a similar project be launched over a longer time period to include not simply low-and-medium-cost technologies but some higher-cost ones as well. A coordinated and integrated effort will help make the procurement process easier and more effective both financially and organizationally. The project should run over more than one budget cycle so that greater results can be observed. The 2008 project ran for only a short period of time, from February to November, and it was not possible to see how budgets reflected the increases in monitoring technology.

Export permits are needed to purchase some equipment (for example, advanced night-vision equipment), meaning that procurement time might need to be further extended. Some of the newest equipment might not be accessible because of a lack of permission from the manufacturing nation (for example, the United States).

In a positive development, the first Capability Development Officer in the Office of Military Affairs arrived in 2008. Also, the suggestion in the draft policy for "a procedural framework, like development of the COE Manual and possible development of a 'UN Policy on Monitoring' in a holistic approach" (DPKO 2010a), was greeted with hope. Maybe these steps will lead to a sustained effort.

Given the high demand from the field, the modest response from UN headquarters and the low technological standards over the history of UN peacekeeping, one question naturally arises: why the continuing technology gap? In order to close this gap, a wide range of obstacles will need to be reviewed and eventually overcome. For UN technologies to be improved, it is important to understand the weaknesses and deficiencies of the UN system as well as any problems with the technologies themselves.

Notes

1. PLAN (the People's Liberation Army of Namibia) was the military wing of SWAPO (the South-West Africa People's Organization).
2. Some of the reconnaissance provided at the beginning of Operation Storm was probably supplied by the United States. Similarly, in Zaire in 1996, the United States used satellite imagery to draw conclusions that were at odds with UN estimates about the number of refugees. This led the Multinational Force Commander, General Maurice Baril, to conclude: "Some nations who controlled intelligence used it to kill the mission" (personal communication, 21 November 2000).
3. The gap between "mandate and means" is an aspect of the larger "commitment–capability" gap in peacekeeping. See Langille (2002b).
4. The means of acquiring equipment are: a Memorandum of Understanding with member states, a Letter of Assist from member states or contractors, or outright purchase as UN-Owned Equipment. The Training Manual does not mention these provisions, or the deployment of equipment as part of the unpaid National Support Element.
5. Integrated Training Service (2008: 20). After technological awareness, the core values and competencies that most staff wanted to improve were (in order): "commitment to continuous learning", "planning & organizing", "creativity" and "communication".
6. The 2008 COE Manual of 233 pages was finalized by the 2008 Working Group on Contingent-Owned Equipment and published as UN Doc. A/C.5/63/18 of 29 January 2009. The contents of the COE Manual are reviewed every two years by the Working Group.

7. The COE Database is not available to the general public, but information on the COE system can be found at <http://www.un.org/en/peacekeeping/sites/coe/about.shtml> (accessed 5 January 2011).
8. The COE Manual also calls for "early warning and detection systems to protect contingent premises" under the self-sustainment category of "Field Defence Stores". However, this requirement does not necessitate technology under the current UN interpretation. A single sentry would suffice to meet the COE standards.
9. Payments are made per person in a military unit only if the entire unit has the required capability. Payments in each category are "all or nothing". TCCs meeting the requirements in part do not receive compensation. For example, if 50 NVDs are required and the contingent has only 25, the TCC is not reimbursed at all for the category.
10. Isberg (2004). Even with the reduced standard, MONUC COE inspectors estimated in November 2006 that only 50 per cent of the contingents have equipment that can satisfy the requirement.
11. Thermal imaging is usually done by detecting radiation in the middle "far" infrared part of the electromagnetic spectrum.
12. When the United Nations provides night-observation equipment, its standard is much lower than the one specified for Contingent-Owned Equipment: the NVD must have an "effective range" of only 250 metres as per the specifications of the UN systems contract. This inconsistency should be corrected.
13. Mission start-up is further subdivided into three distinct phases: I (initial start-up), II (build-up) and III (consolidation).
14. The security phases are I (precautionary), II (restricted movement), III (relocation), IV (emergency operations) and V (evacuation). See DSS (2004).
15. I do not know the degree of detail in these specifications – email requests to the Peacekeeping Operations Support Service for the specifications were not answered.
16. The low–medium-cost technologies survey also covered radio monitoring, jamming technologies and special communications; GIS systems; and several other technologies.
17. The DFS works closely with DPKO.
18. UNIFIL response to the low–medium-cost survey, dated 5 March 2008.