

United Nations Field Technology Framework



This Framework has been issued specifically to DFS ICT staff for guidance for operational and budget planning purposes
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DEPARTMENT OF FIELD SUPPORT
INFORMATION AND COMMUNICATIONS TECHNOLOGY DIVISION

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Introduction

The Field Technology Framework

1. This report constitutes the first Field Technology Framework (FTF)¹ that sets the vision for the development of Information and Communications Technology (ICT) in support of United Nations field operations over the next five years (2018–2023). It supports the goals of the Department of Field Support (DFS) to provide ICT solutions in the field that are rapid, effective, efficient, and responsible. These four essential requirements will be incorporated into all ICT planning and operations over the lifetime of the framework. The FTF has been developed in the context of significant global advances in technology and in view of the many serious environmental changes faced by field missions.
2. The Information and Communications Technology Division (ICTD) of DFS is fully committed to implementing the Organization’s Information and Communications Technology Strategy - while making certain that the required levels of empowerment and operational flexibility exist - to ensure the agile and efficient delivery of ICT services in the dynamic and complex context in which field missions operate. The ICT Strategy, which was endorsed by the General Assembly in 2015, was designed to enhance the capacity of the UN to fully utilize technology and innovative programmes, to build integrated solutions to support the work of the Organization, to reduce fragmentation, and to create economies of scale by adopting an enterprise approach.
3. The FTF also fully complements the Secretary-General’s management reform proposals, and it supports the critical role of ICT in bringing decision-making closer to the point of mandate delivery and enabling inter-operability across the UN system to enhance the overall impact and effectiveness of the Organization. The

¹ Hereafter referred to as “the FTF” or “the Framework”

coherent ICT service delivery model proposed in the FTF leverages existing resources and mechanisms. It brings together various organizational components to concentrate all efforts on effective delivery and to support the substantive and operational work of the Organization being carried out around the world. Focusing on client engagement and empowerment at all levels will ensure that ICT services and solutions equip the United Nations to more effectively and accountably deliver on its programmes and mandates. This framework can also, in due course, be expanded to include a wider range of Secretariat and other UN entities.

4. ICT trends continue to indicate the potential to make a significant impact on the way that UN field operations are supported. Cloud computing opportunities represent radical change for the Organization's use of technology: producing efficiency gains while, at the same time, improving the overall quality and accessibility to ICT services for users in the field. Adopting an enterprise approach, as articulated in the ICT Strategy, optimizes efficiencies and drives the modernisation of ICT field operations. This ensures that the latest developments are incorporated in a manner that is relevant, agile and sustainable.
5. In the meantime, the physical security threats faced by United Nations field operations are also evolving rapidly. Mandates are becoming increasingly complex and the operating environments in which peace missions deploy are ever more challenging. It is, therefore, critical to ensure that field operations have the appropriate tools to accomplish given tasks in a protected environment. The report of the 2014 Expert Panel on Technology and Innovation in UN Peacekeeping (TIP) addressed these challenges and described the way in which technology and innovation can be used to meet critical operational challenges and requirements and to enhance overall operational effectiveness. The provision of innovative technology solutions in support of field operations is driven by the requirements on the ground where peacekeepers are compelled to confront a wider range of unconventional and asymmetric threats. Field ICT needs to be adapted to changing internal and external environment factors to positively impact mission mandate implementation and to retain its relevance.

6. The Organization is moving towards a policy of open access to data, thereby fostering accountability and transparency as well as the simplification and decentralization of the decision-making necessary to ensure the success of the Secretary-General's management reform agenda. This requires a central capacity to produce cross-cutting authoritative reports and dashboards, complemented by the empowerment of users across business units to create their own dashboards and analytics products by implementing local self-service business intelligence (BI). In a field context, an effective approach is required to underpin the delivery and presentation of priority and timely information to facilitate situational awareness and effective decision-making at all levels of operations.
7. The FTF establishes a roadmap that focuses on maintaining and increasing the relevance of ICT in support of international field operations; to this end, the FTF has two operational objectives:
 - to optimize current core ICT operations
 - to reposition field ICT to become the effective delivery vehicle for cross-cutting new and innovative technology solutions in support of mandate implementation.
8. Accomplishing these two operational objectives requires the implementation of a significant change management programme. A comprehensive and ongoing understanding of the field ICT landscape is fundamental to the successful implementation of the FTF. This will mean a new data-driven approach, beginning with the benchmarking of the current ICT landscape to inform strategic technology management decision-making. Multiple and varied projects as well as the review of field ICT's underlying support frameworks are necessary (this includes human and physical resources, funding, organizational structures, governance mechanisms and standardisation of processes and procedures). The existing roles performed at UN Headquarters (UNHQ), the UN Global Service Centre (GSC) and in Field Technology Sections (FTS) require review and alignment. In addition to outlining direction, this report will detail the projects, initiatives, actions, and

activities required to deliver the two operational objectives underpinning the FTF. An annual progress report will measure achievements and inform stakeholders of any changes of direction or new initiatives over the life of this and future frameworks.

9. The next two sections of this report, “Optimizing Core ICT Operations” and “Delivering Innovation and Technology Solutions to Field Operations”, encompass the implementation of the operational objectives. The third and concluding section, “Support Mechanisms and Delivery Frameworks”, addresses the necessary changes to current mechanisms and frameworks to support and enable the effective delivery of the FTF’s operational objectives.

1. Optimising Core ICT Operations

Introduction to the Core

10. The delivery of technology services to international field operations faces unique challenges: not least because many field locations are remote and lack basic national ICT infrastructure and missions require access to diverse systems to support day-to-day core operations. The local Field Technology Sections are mandated to deliver high quality, robust and reliable ICT services in support of mission mandate implementation. The infrastructure and service management frameworks that support these services are invariably built and maintained by the Organization and deliver a broad range of services: from “command and control” radio-based systems in support of uniformed personnel and staff safety and security to regular voice, video and business applications.
11. Systems are being established to automate the collection of ICT landscape data to allow for effective measurement of the impact of the FTF implementation and to inform future initiatives, decisions and opportunities. The FTF draws from a number of ongoing data-driven reviews that examine the scale and scope of current field ICT operations. This baseline data is used and referred to throughout this report.
12. The optimisation and modernisation of core operations will be concentrated in three areas, which aim at improving the quality, relevance and sustainability of services provided for international field operations. This section identifies major impact core ICT activities and outlines the plans for their optimization and modernisation.

1.1 Enterprise Operational Initiatives

13. The following initiatives leverage technologies that are enterprise in nature and where the enterprise approach of delivering ICT in the field is proven to be advantageous. Some significant field-led ICT activities are maturing into enterprise initiatives: facilitating the defragmentation of the ICT operational landscape, leveraging economies of scale, and providing efficient and effective solutions to field operations and to the wider UN Secretariat.

1.1.1 Connectivity

14. Missions have ever-increasing requirements for the internet, resulting in greater demands for high-quality bandwidth. Bandwidth - which remains one of the main cost drivers in delivering services to field operations - is fundamental to the successful delivery of technology services to field operations. Delivering sufficient bandwidth has been an ongoing challenge, given the environments in which international field missions operate. This has assumed even greater importance in recent years with the successful pursuit of initiatives to centralize applications and services at the GSC to standardise and reduce the footprint of field operations. These efforts will continue as field operations require more centralized voice, data and video services, and with the introduction and rollout of cloud computing. Recently, there have been substantial advances in both bandwidth technologies and in the ways in which these technologies can be managed and optimized. Optimizing field operations investments in the provision of bandwidth is a primary objective in the near term.

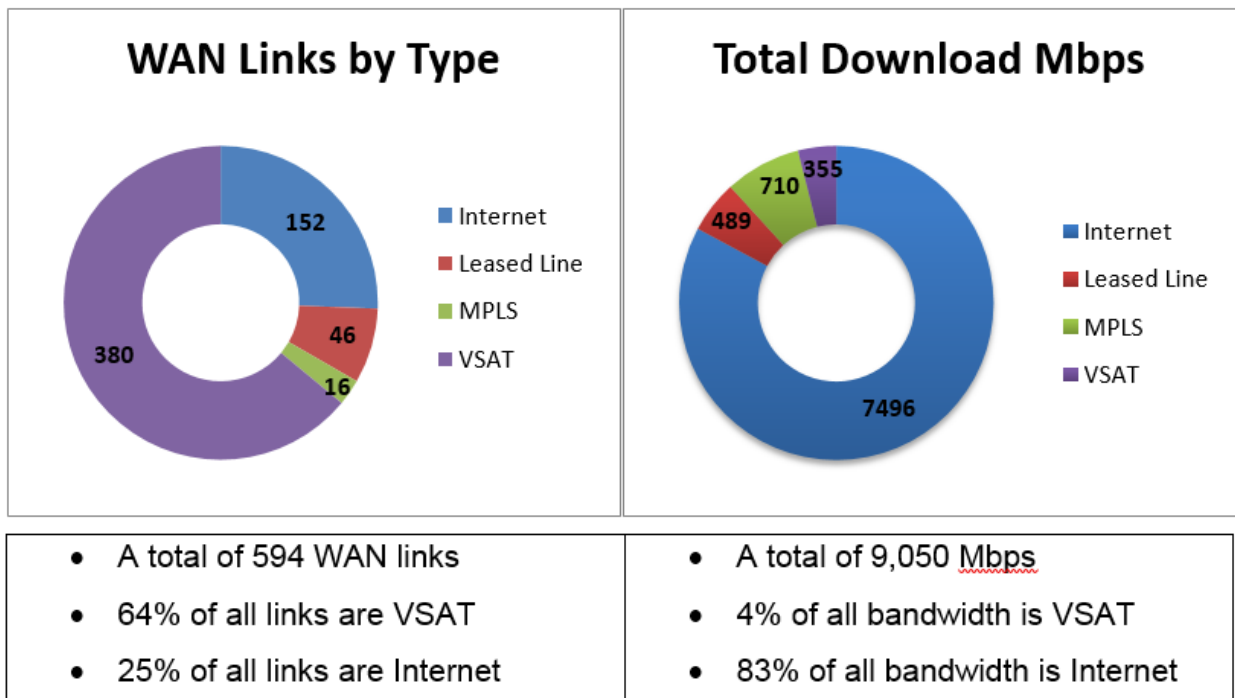
15. The wide area network (WAN) comprises connectivity from all mission field locations to the GSC: providing access to centralized applications and ICT services, facilitating intermission and interoffice communications across the Organization, and accommodating access to external internet and telephony services. The WAN requirements from UNHQ, Offices Away from Headquarters

(OAHQ) and Economic Commissions have been incorporated into the DFS WAN, creating the “One UN Network”. To optimize WAN operations, ICTD is standardising three connectivity types:

1. Satellite (VSAT)
2. MPLS (Multi-Protocol Label Switching) / Leased Lines
3. Internet (Terrestrial and Satellite).

16. An analysis of connectivity data from 594 links across 41 different organizations (Peacekeeping and Special Political Missions, OAHs, and Economic Commissions) in 272 locations revealed that 64% of the WAN links are satellite (VSAT) and constitute 49% of the overall cost while only making up 4% of the overall bandwidth downloaded (Diagram 1.1.1).

Diagram 1.1.1 – Connectivity



17. In view of this analysis and the high cost, optimizing satellite service is a priority. The seven different VSAT configurations currently in place will be reduced to two to simplify the asset and operational landscape. In addition, there are three significant associated initiatives underway:

1. Modernisation and standardisation of all existing satellite earth stations by conversion to the latest “L band” technology. This will allow all VSAT sites to gain access to the full span of UN-contracted satellite transponder space and to facilitate the second initiative described below.
2. Optimization of bandwidth investment and management will be achieved through the rollout of a dynamic bandwidth allocation system (DBAS). DBAS allows for the assignment of costly satellite bandwidth based on user demand across locations rather than the current system, which relies on fixed allocation of bandwidth to each site. One shared pool of redundant bandwidth will be maintained to cater for crisis and surge activity, as opposed to each site maintaining its individual and expensive redundant capacity.
3. The introduction of low-orbit satellite services, such as “Other 3 Billion” (O3B, now SES Networks), have been successfully piloted in eight peacekeeping environments. Compared to traditional geostationary satellites, low-orbit satellite technology is capable of faster connectivity, delivering higher bandwidth and lower latency and providing better performance and end-user experience. Other innovative and globalised connectivity technologies are emerging and will be continuously evaluated to insure the timely adoption and appropriate retirement of legacy technologies.

18. Field missions have relied on satellite telecommunications that are provided through the UN-owned satellite network since the mid-1980s. The UN satellite

network is based on the “Intelsat” backbone (Intelsat having previously been an international organization associated with the UN). The UN owns all the hardware associated with this network, which hubs and is centrally managed through the GSC. UN staff are qualified to support the network and the associated bandwidth is guaranteed. Essentially, the UN controls all elements of this service, which makes it a valuable resource in support of crisis management, rapid deployment and expansions, as well as regular operations. The UN-owned satellite network will continue to play a key role in supporting the core business of the Organization.

19. MPLS has been adopted by the Office of Communications and Information Technology (OICT) as the replacement for expensive point-to-point leased lines. This technology provides virtual “full mesh” connectivity (point-to-multipoint) without compromising the quality of service and security. It allows Secretariat sites to communicate seamlessly with each other within a closed and managed network.
20. The Internet is the cheapest form of connectivity and has the potential to have the greatest impact over the coming years. It is now readily available to most missions locally but can vary in quality and cost. It will need to be managed centrally to be effective and to strengthen information security.
21. The One UN Network will be comprised of optimized and standardised satellite-based solutions, MPLS and Internet connectivity. The need to combine various connectivity options is not confined to the UN. Global corporations that operate in more than 150 countries, including distribution networks to remote areas, are adopting frameworks and technologies to increase their performance and to realize WAN efficiencies. ICTD has standardised on intelligent WAN (iWAN) - a validated design framework that incorporates a number of technologies which are designed to reap the most benefits from WAN investment. iWAN requires that minimum quality parameters are set for each traffic type, that is voice, video or applications, and intelligently selects the least-costly path based upon which available link (Satellite, MPLS, Internet) best meets the pre-set criteria. This will allow the

Organization to drive down the usage of more expensive satellite connectivity, thereby achieving significant efficiencies without compromising the quality of the service. It will also allow the GSC to provide effective performance and quality of service, to monitor connectivity across the UN Secretariat, and to minimise the diversity of service provided to these disparate locations.

1.1.2 Hosting and the Impact of Cloud Computing

22. The second significant infrastructure initiative requires the creation of the “One UN Data Centre” managed at the GSC. In line with the ICT Strategy, the GSC data centre hosting and storage landscape is already changing through an ongoing initiative involving the migration of applications and data from other Secretariat data centres. The internal physical hosting arrangements at the GSC data centre are being defragmented to enable an enterprise service. The current infrastructures will merge into one physical and one logical data centre with a singular access layer, a singular security layer, and a singular core infrastructure for data centre operations. Integrating a managed cloud computing component into the existing in-premises infrastructure at the GSC will modernise the Organization’s hosting infrastructure.

23. OICT has developed a comprehensive cloud strategy that provides the opportunity to make significant improvements to service delivery, to enhance mobility and agility, and to achieve efficiencies. The requirement for the Organization to host some applications, data and services on-premises at the GSC will continue. However, unless there is an opposing policy or business justification, hosting on the cloud will become the default option and a migration plan for current in-house applications to the cloud will be implemented. The hosting strategy for the Organization is, therefore, hybrid - combining the on-premises hosting capacities at the GSC with a managed public cloud. The unified One UN Data Centre will facilitate an enterprise approach: simplifying operations and resulting in a cost effective, adaptive and flexible hosting capacity to support field operations

and the wider Secretariat community. From the field users' perspective, connectivity to the One UN Data Centre will be seamless. The central management and brokering of these services for the Secretariat will be performed by the GSC. Storage of data in field locations will be reduced to a minimum.

24. GSC investment in on-premises storage will be minimised and all future investments in data centre infrastructure will be based on the hybrid-hosting model. During the lifetime of the FTF, transformation to cloud-based operations will be accomplished: creating efficiencies, facilitating improved mobility and leveraging the global corporate investment in cloud-based innovation. This will enable the Organization to take advantage of modernised hosting infrastructure and to adopt new and innovative technology solutions more rapidly.
25. Cloud-based hosting services, such as Microsoft Azure and Amazon Web Services, will be available to be integrated into the One UN Data Centre during 2018. The Organization will promote a multi-vendor cloud platform that is centrally managed and orchestrated in order to optimize the flexibility and agility of future cloud operations. The GSC will play the key role in managing and supporting the Organization's cloud strategy. Approved enterprise application platforms (addressed in Section 1.2.2) will be hosted on the One UN Data Centre infrastructure in a simplified, accessible and secure environment. The Organization's future applications will be developed and managed on these platforms.

1.1.3 Embracing the Cloud - Office 365

26. The first significant step into cloud computing is underway with the migration to Microsoft's cloud-based Office 365 (MS Office 365) under the umbrella of Microsoft 365 licensing model. This will create valuable opportunities for the Secretariat, including the return to a single email platform and the phased introduction to the user community of intuitive cloud-based services included in the MS Office 365 platform. During 2013 and 2014, DFS successfully migrated from the field-hosted

“Lotus Notes” email system to the centrally hosted Microsoft Exchange, with mailboxes hosted at the GSC. In the final quarter of 2017, the Department of Peacekeeping Operations (DPKO) and DFS at UNHQ migrated from Lotus Notes mail to the cloud-based MS Office 365 Exchange mail. In the second quarter of 2018, the current 36,000 field operation mailboxes hosted at the GSC will be migrated to the same platform, placing the Secretariat on one email platform and one “un.org” domain.

27. In addition to email, the MS Office 365 platform offers field users other key cloud-based products and services, including the following:

- MS Office Suite (Excel, Word, PowerPoint, etc.)
- OneDrive (1 TB personal file storage)
- Teams (integrates users with content, files, chat, meetings, and tools on one platform that teams can use to effectively collaborate)
- Skype for Business for unified communications (instant messaging, voice and video conferencing, online meetings)
- Power BI (data discovery, and visualization dashboards and tools)
- SharePoint Online and Yammer for enterprise collaboration and social networking.

28. These intuitive products will empower users and significantly enhance their ICT experience, create efficiencies, facilitate a collaborative and mobile workforce, provide seamless future upgrades for products and services, and reduce future capital expenditure on hardware relating to server and storage equipment. Skype will facilitate offices to manage desktop conferences internally to complement the highly valued professional conference room VTC (video teleconferencing) service. Consolidation of existing ICT technical tools, such as MS System Centre Configuration Manager, will facilitate the rollout of the Microsoft 365 product Intune - a powerful tool for centrally managing mobile devices (such as smartphones, tablets and laptops) for software upgrades and distribution; and for enhancing

information security by protecting data and managing security patches. The introduction of Microsoft 365 Enterprise Mobility and Security suite will provide appropriate security for classified information in response to the information protection mandate. In addition, Power Apps and Flow, which are designed to build simple business apps and workflows, will be standardised for these functions. These Microsoft products will be rolled out in a phased manner throughout 2018 and 2019; they will be accompanied by the required learning and policy changes where necessary.

1.1.4 Modularisation

29. One of the ongoing data-driven reviews analysed ICT equipment at each location across the Secretariat and highlighted the diversity in vendor, type, and model of the products in use, and the consequent complexity to the ICT landscape. This analysis revealed that out of the 594 locations (field offices):

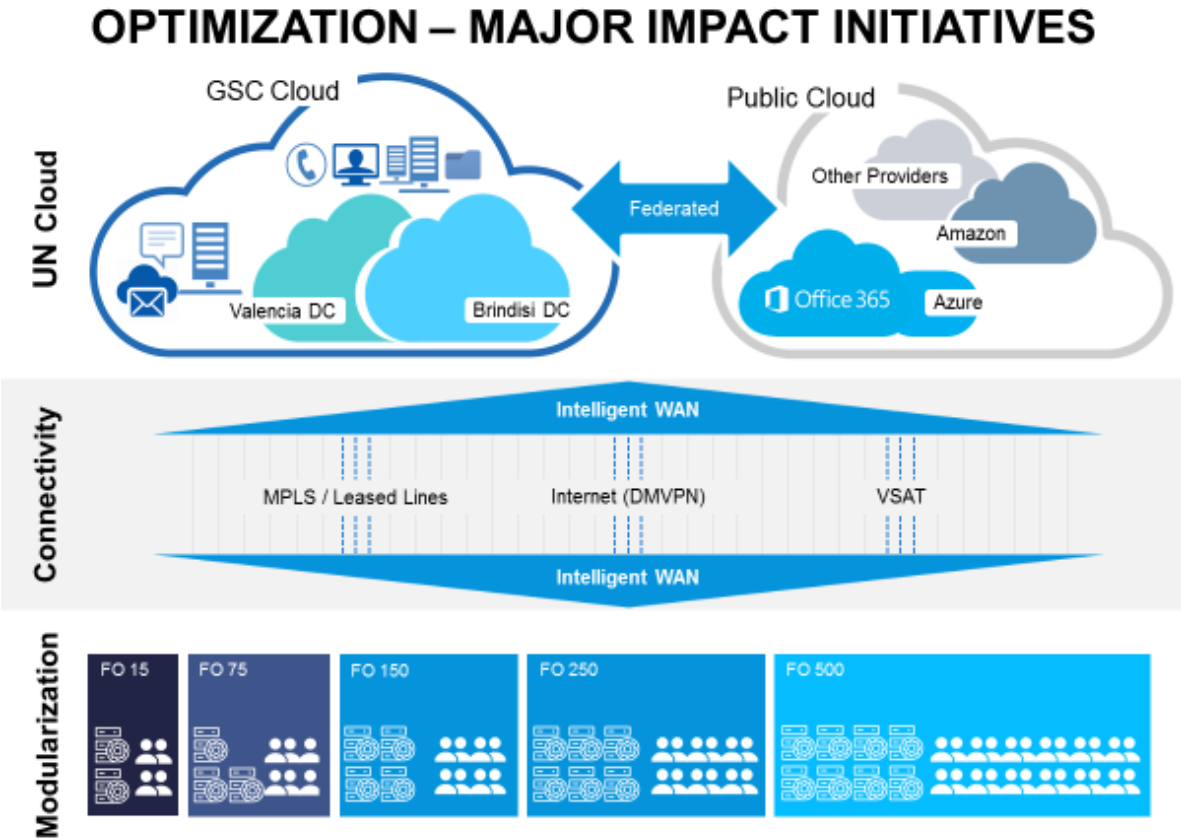
- 44% have 15 IT network users or less
- 34% have between 16 and 75 users
- 8% between 76 and 150
- 4% between 151 and 250
- 10% have greater than 250 users.

30. The FTF categorises all serviced locations into five field office (FO) types directly related to the number of users serviced: FO-15, FO-75, FO-150, FO-250 and BO-500. Based on these categories, a modularisation project has been initiated to standardise models of routers, servers, switches, Wi-Fi access, WAN accelerators, proxies, firewalls, and data back-up technologies. This standardisation will simplify the field-based technology asset landscape. Standardising the configurations associated with these devices will also facilitate central management of updates and patches, minimise the diversity of service provision and quality of service

across locations, reduce troubleshooting, maximise the integrity and security of systems, and facilitate centralized monitoring.

31. Field technology modularisation will be underpinned by a comprehensive Modularisation Management System (MMS), operated from the GSC and supported by an enhanced Network Control Centre (NCC) monitoring operation. The integrity of modularisation will be maintained by a process of detailing each product in the enterprise service catalogue. It will require missions to receive technical clearance and align mission acquisition and replacement of assets plans.
32. Modularisation will facilitate rapid deployment by the provision of turnkey modular solutions for field mission start-ups and expansions. Analysis shows that 78% of start-up locations fall within the capacity of the FO-15 and FO-75 modularisation solutions, and the most recent deployment experiences indicate the need to support operations that do not require the immediate establishment of major infrastructure. The first 90 days of deployment are invariably managed from *ad hoc* and temporary buildings and facilities. Modular solutions are scalable, easy to deploy and can be monitored and supported remotely by the GSC. Assuming reliable connectivity and power sources, they are sufficiently flexible to support rapid deployments in various environments and situations.
33. As the modularisation programme of work develops and expands during 2018–2019, Field Technology Sections will be able to choose an increasing number of services from a standard enterprise catalogue, delivered and supported in a uniform manner across all missions.
34. Diagram 1.1.2 summarizes the initial three enterprise initiatives that will drive the necessary changes to optimize core operations. Implementation of these complex and interdependent initiatives will be managed through enterprise programme and project management.

Diagram 1.1.2 – Summary Enterprise Initiatives



1.2 Optimizing Key Functional Areas

1.2.1 Rapid Deployment

35. DPKO is mandated to deploy a fully functional, multi-dimensional peacekeeping operation within 90 days from the approval of the Security Council. In addition, there is a requirement to provide surge support to field missions: in times of crisis or natural disaster, when changes in mandates dictate expansion, or for *ad hoc* deployments to support one-off events. It is expected that future UN field operations will require more agility and flexibility.

36. Many of the initiatives described in the FTF are designed to facilitate the future vision of support to field operations. Modularisation will allow for rapid connectivity from remote locations to central resources with pre-packaged and pre-configured standardised technologies. The One UN Data Centre, One UN Network and MS Office 365 will result in managed, monitored and easy access to enterprise applications and the range of intuitive MS products. Expensive bandwidth and hosting/storage will have the capability to be scaled up or down rapidly, depending on immediate and changing requirements.
37. I-Dart (ICT DFS Advance Response Team), based at the GSC, has been steadily reduced as new mission start-ups have declined in numbers, and it has limited capacity to support rapid or surge deployments. The reduced I-Dart capacity will be subsumed into the Remote Mission Support service at the GSC. It will play a coordination role in identifying experienced field staff for standby rapid-deployment duties. Standby staff will be organized by Region into virtual teams. Each virtual team will have staff members with the required skills sets for short-period rapid-deployment or surge requirements. These teams will be managed through the Regional ICT Services and will benefit from annual training and exercises to acquire and maintain the necessary skills and familiarity with equipment and systems to maintain readiness for a variety of rapid-deployment scenarios. As staffing tables in missions become increasingly challenged to support local needs, this initiative will require constant review and possible revision.

1.2.2 Applications and Business Intelligence Roadmap

38. In line with the ICT Strategy, DFS will participate in the development of requirements for new enterprise applications: supporting their development and maintenance while retaining the capacity to develop and implement Department- and field-focused solutions in compliance with Secretariat-wide ICT governance. Field-focused solutions will address the needs across field operations, particularly those that impact the substantive implementation of missions' mandates. "Off-the-shelf" solutions (requiring minimum or zero customisation) will be implemented

where appropriate. In further alignment with the ICT Strategy, application development will shift to cloud-based platforms. The architecture and design process of all future Departmental and field application solutions will be managed and approved by the Field Architecture Section (FAS) based at UNHQ as part of its wider portfolio. The role of Business Solution Managers (BSMs) working with Departmental and field clients will be consolidated in the FAS. Business relationship management skills will be fostered in staff of Field Technology Sections, ensuring that development is aligned with the specialized needs of field operations.

39. The immediate priority is to restructure the application development environment and to adopt a modern and automated approach, including transitioning to cloud-based software development and delivery. While this restructuring takes place, there will be a decrease in development activities in the short term as new processes are instituted and resources are refocused. The GSC will lead this process, ensuring that future development is built on approved platforms, hosted on the One UN Data Centre, and aligned with the vision of hosting future applications on the cloud (unless otherwise mandated).

40. The field applications strategy is consolidated around four platforms hosted at the GSC:

1. Enterprise Resource Planning: Umoja-SAP
2. Workflow Applications: the Field Support Suite (FSS) of integrated applications that are built on a .net platform and consist of 29 field-focused solutions
3. Content Management and Workflow: Microsoft “SharePoint” platform and hosting solutions, such as the “Cosmos” content management solution and the “Comet” correspondence management solution
4. Oracle Client Relations Management (CRM): a platform managed by OICT, which hosts enterprise solutions, such as the iNeed service management tool and three field-specific solutions:

- (i) eCOE for contingent-owned equipment
- (ii) eFMS for fuel management
- (iii) eRMS for rations management.

41. These four platforms will be maintained to support the status quo. A set of modern and standard future end-state Secretariat platforms is being determined that will inform the structure of cloud-based application hosting and development, enable decisions on new development, and facilitate the migration of legacy systems to end-state platforms in a phased manner.

42. Diagram 1.2.2 shows the current and proposed end-state platforms by function. The end-state platforms depend heavily on the integrated and intuitive MS Office 365 suite. Focus will be concentrated on deploying these platforms and fostering the skills sets to develop solutions on them, based on an agile and a modern DevOps (development and operations) environment.

Diagram 1.2.2 – Departments’ current and Secretariat proposed end-state application platforms (to be agreed)

Function	Current	Future
Intranet	Unite Docs, Unite Connections, Drupal, POINT, Cosmos (SharePoint)	SharePoint Online
File Management		
File Sharing – Business	Unite Docs, Unite Connections, Cosmos, Share Drives	SharePoint Online
File Sharing – Personal	Unite Docs, Unite Connections, Cosmos, Share Drives, Local PC	OneDrive
Policies and Practices	ODS, PPDB (SharePoint)	SharePoint Online
Records Management	HP TRIM	SharePoint Online
Collaboration		
Basic Collaboration	Unite Docs, Unite Connections, Cosmos	SharePoint Online, Yammer
Communities of Practice	Unite Connections, CoP (SharePoint)	SharePoint Online
Unified Communications	Skype for Business, Cisco Jabber	Skype for Business (O365)
Internal Social Networking	Cosmos My Sites	Yammer
Correspondence Management	CorLog, Comet, eCorrespondence (DGACM)	SharePoint (Comet Plus)
Contact Directory/Address Book	Blue Pages, AD, iSeek, POINT	Unite Contacts*
Search	SharePoint Search (FAST), Solr	SharePoint Search (FAST)
Customer Relationship Management	iNeed	Siebel in the cloud
eLearning / Testing	Moodle, PeopleSoft, WES	PeopleSoft (Inspira)
Business Intelligence	Tableau, Qlik, Power BI, Business Objects, Crystal Reports	Umoja SAP BI, Power BI, Qlik

43. The Mission Support Management Dashboard (MSMD) was launched in October 2017 and gives near real-time information on the missions' HR, Finance, Budget, Procurement, and Travel data. On the USG DFS's guidance, Directors and Chiefs of Mission support have now made this dashboard available and open to all mission staff. This is a significant initiative in promoting transparency, and it is a sign of how DFS intends to empower field operations on both the management and substantive areas by adopting an open approach to analysing missions' data. A change management board will guide the development of the MSMD, adding functionality that includes performance indicators. The detailed dashboards being made available to ICT managers and technical staff will be summarized and included in the MSMD, promoting transparency and an open approach to ICT operations.
44. The Organization is moving towards a policy of open access to data, fostering the accountability and transparency required for the success of the Secretary-General's management reform agenda. The Business Intelligence roadmap will empower users in local business units, through a self-service approach, to create their own dashboards and analytics products thus simplifying and decentralizing decision-making. The strategy requires a three-step approach:
- 1) Establishing an open platform
 - 2) Enabling self-service analytics – “Just in Time” analytics
 - 3) Instituting an IT-managed data architecture and governance.
45. Providing an open data platform will enable the Organization to present public data to external stakeholders coherently, as exemplified by the United Nations Development Programme (UNDP) and other UN entities. Internally, DFS will work to ensure that the multiple sources of data, including data from enterprise applications, such as Umoja and Inspira, will be structured and made available through a governance system to skilled BI champions for self-service dashboard and analytics production. These local products will be shared with a wider user consumer base.

46. A number of underpinning initiatives are required for the successful implementation of the Applications and Business Intelligence Roadmap. The implementation of “Unite Identity”, the Organization’s single sign-on (login) solution for applications and services, will be prioritized. This will simplify and secure user access to applications and services. This key initiative requires the defragmentation of the Organization’s active directory structure, with the full integration of “dpko.dfs.un.org” into the Organization's global active directory infrastructure: “global.un.org”. In addition, the decommissioning of legacy applications, especially those based on the Lotus Notes platform, will be fast-tracked. The requirement for the integration of visualization, BI and analytics, in many future field solutions, and the move to a DevOPS application development environment will require further revisions to Organizational structures and mechanisms already initiated with the revised structure at the GSC. Developing and sustaining a coherent field applications strategy will be supported by the following actions and initiatives:

- Alignment with the Organization’s enterprise applications strategy
- Automation of the field application development environment
- Integration of field application development with the One UN Data Centre (hybrid cloud) initiative
- Focus on the Organization’s simplified and functional end-state platforms
- Migration of access to all applications and services to the Organization’s single sign-on platform Unite Identity
- Fast-tracking of legacy systems decommissioning
- Implementation of a transformative BI roadmap to enable data-driven decision-making to support substantive operations: providing easy access to centralized products and including the ability of field operations to generate their own product.

47. The future application environment will depend on secure, cost-effective, standardised and interoperable platforms, built on a structured hybrid cloud-hosting environment and centrally catering for enterprise needs while enabling

business units to utilise the common infrastructure to produce agile localised solutions.

1.2.3 Information Security

48. The Chief Information Technology Officer (CITO) has overall responsibility for information security at the UN and has put in place a framework to strengthen security across the Secretariat. This framework includes the Secretariat's 10-Point Information Security Action Plan, currently being implemented across the Organization. The areas of focus to further raise field operations' information security readiness and standards are as follows: increasing user awareness to threats, compliance with the Organization's information security policies and technical procedures, implementing enterprise information security initiatives, and developing local expertise in support of field operations.
49. One of the greatest threats to information security emanates from within an organisation, and these intentional or unintentional vulnerabilities can be addressed through proper training of technology staff and through the implementation of awareness programmes for end-users. OICT has developed effective online Information Security Awareness training and certification, and DFS and field missions have achieved high levels of user compliance. As staff and uniformed personnel continue to rotate, this certification process will necessitate continuous focus and integration with mission check-in processes.
50. Compliance with the Organization's information security policies, guidelines and technical procedures has been facilitated by the creation of a dedicated space on the Field Technology site that breaks these down into action points (<https://compliance.dfs.un.org>). Field managerial and operations ICT staff will use this site to track their compliance and implementation rates. This provides a compliance health picture of both the local and cross-mission environments.

51. The centralization initiatives around the One UN Network and the One UN Data Centre have brought about improved coherence to the management of the information security landscape. However, additional enterprise-level assistance will reduce the burden on local Field Technology Sections as they focus on managing the information security of their local infrastructure. Specific enterprise projects are, therefore, being implemented at the GSC to centralize the monitoring and management of major information security services. These services are designed to support and to be fully visible to the field-based information security teams. These projects will also serve to provide the CITO clearer visibility of the field information security landscape. To this end, the following projects are currently being implemented:

- Federation and central management of field missions' firewall and intrusion detection systems, based on a revised two-tier architecture that is related to the size, scope and complexity of local office operations. This will include a "lite" firewall and intrusion detection management system for small sites.
- Consolidation and central management of the "Symantec Endpoint Protection" server and management of anti-virus updates and responses
- Central management of Microsoft updates and patches (SCCM)
- Central monitoring and verification of mission data back-up systems.

52. The functions of the GSC information security team are being revised, with a change of emphasis from audit and assessment to an operational posture, focusing on the provision of centralized information security services in support of field missions. The team will focus on the following: developing a regime to monitor the information security environment, verifying and validating readiness, applying technical procedures and processes, conducting penetration tests, and implementing remedial action programmes. The GSC team will continue to validate enterprise business continuity by testing failover for applications between the geographic locations of Brindisi and Valencia; however, there will be a future reduction in this effort as the hybrid-cloud-based hosting infrastructure evolves.

The GSC information security team will coordinate an annual security incident response exercise across missions. The GSC will continue adhering to international standards, such as “ISO 22301” to assume its central responsibilities.

53. The volume and diversity of local data gateways as well the increase in number and sensitivity of the types of sensors and networks that support force protection and situational awareness in increasingly insecure field environments, increases the risk and potential security threat at the local level. In addition, the numbers of industrial devices connected inside ICT networks are increasing. The demands for ICT information security within Field Technology Sections is increasing together with expanded responsibilities. More specialized staff needs to be developed with the expertise to implement the required technical controls and processes related to technology infrastructure and information security inside mission environments. This specialized staff will be responsible for protecting critical mission-based information, and systems and sensors while advising mission leadership on operational information security issues. ICT information security staff will manage the reporting and escalation procedures for security incidents outlined in “Standard Operating Procedure for Security Incident Reporting in Missions”. More information security responsibilities will pass to the Chiefs of Field Technology Sections. As data storage in missions continues to be reduced, Chiefs FTS will also assume responsibility to validate the effectiveness of field missions’ disaster recovery procedures on an annual basis.

54. To facilitate the transitioning of existing staff into Information Security (InfoSec) functions, the Field InfoSec Certification training and development track has been established, which requires students to follow a progressive three-step programme over a three-year period. Year one, 2017-2018, focuses on foundation and practitioner skills. Year two will focus on developing specific expert skills directly related to field operations. Year three will provide the certification required for managing InfoSec across an operational landscape. This training track will provide the information security practitioners and managers required for the future.

55. Technology will play an increasing role in future conflicts. For example, cyber-attacks on countries' national infrastructures, power or transport grids, can be adapted for military purposes. United Nations field operations can be similarly targeted. Building in-house expertise in information security and focusing on protecting the Organization's assets and capabilities are important first steps to prepare for and mitigate against future evolving cyber threats.

1.2.4 Geospatial Information Systems - Future Impact

56. The influence of geospatial information services on supporting mission mandate implementation is steadily growing. The final report of the Expert Panel on Technology and Innovation in Peacekeeping highlighted that modern technologies² and their applications³ will significantly enhance the sustainment of effective field operations⁴ and will aid decision-making.

57. The delivery of effective products and services to field operations is the responsibility of the UN Geospatial Information Section (UNGIS), which is mandated to provide GIS products to support the Security Council and the broader Secretariat. While the main GIS effort has been operational in nature, UNGIS has been at the forefront of developing effective partnerships and managing global initiatives on behalf of Member States in order to optimize global GIS systems and capabilities in support of sustainable development, disaster risk reduction and other core UN activities. The section works closely with the UN Statistics Division in visualizing key indicator data that tracks the progress of implementation of the Sustainable Development Goals. These substantive and cross-cutting efforts will continue to be supported as UNGIS expands its impact on supporting mandate implementation through the application of innovative and new technology solutions.

² GPS, mobile devices, UAVS, remote sensing and GIS

³ Geo-location, tracking, incident reporting, border demarcation, rapid image acquisition, surveillance and monitoring, groundwater exploration, geo-visualization and geospatial analysis

⁴ Situation awareness, security, military, logistical, etc.

58. In view of the Organizational mandate and the requirement to provide operational and tactical support at UNHQ and in the field, UNGIS will focus on the following initiatives:

- Further developing capacities in the core areas of geospatial data, spatial analysis and the enterprise GeoPortal
- Optimizing and cataloguing its core and specialized products and services
- Integrating with the Organization's enterprise architecture and the Field Technology Service Delivery Model
- Supporting the drive for innovation and the provision of technology solutions to field operations
- Developing GIS products and services for use across the UN System
- Developing and cataloguing products suited to a broader client base to enable and visualize a wide range of activities
- Providing expertise and support to the optimization of the Situational Awareness Programme (see Section 1.3.1).

59. The provision of GIS services to field operations will be enabled by the activities described in Section 1.1 Enterprise Operational Initiatives, that is the optimization of connectivity and bandwidth to field locations and the utilization of the cloud capabilities of the One UN Data Centre for hosting and storage requirements. GIS components will play a key role in the development of many future enterprise applications and systems. Development of GIS applications and systems will fall under and adhere to the Applications Roadmap and the DevOps environment, and it will align with the overall field technology architecture and end-state application platforms. Mechanisms will be put in place to consider and include GIS at the initiation and design phases of all future initiatives.

60. The GSC will play a key role in operationalizing geospatial information as highlighted by General Assembly Resolution A/RES/68/284, which allows for the consolidation and centralization of the provision of core GIS products and services to field missions. GIS operational activities will benefit from integrating with

established procedures and organizational structures at the GSC and at mission level, such as service management, service delivery, and disaster recovery and business continuity processes.

61. UNGIS provides many critical support services to field operations, including in the areas of image analysis; geospatial intelligence; border-marking; conducting terrain analysis and geophysical site surveys, and utilizing satellite imagery; providing advanced satellite imagery analysis; and utilizing specialized equipment in support of ground water exploration and disturbed terrain analysis. These and other advanced services will be standardised, catalogued and coordinated by UNGIS at the GSC in close coordination with the Field Technology Sections in the field missions and relevant stakeholders.
62. Effective platforms, such as the UN “GeoPortal”, directly support core field operations and provide standard base maps and services, such as data visualization, basic analysis, and the preparation, exposure and exporting of digital map products. The existing web-based infrastructure will be utilized to allow access to products that can be used by clients to integrate into presentations and applications and enrich data visualization using digitized base maps, geocoding or geoprocessing services. Satellite imagery analysis skills will be further developed and expanded to meet increasing demand.
63. The integration of UNGIS functions and activities into the overall ICT service delivery model is critical in enabling organizational operational initiatives of high impact, providing innovative products and services to field operations and making available products and services to integrate with and to enhance and enable other products and services. As well as delivering core products, UNGIS will simplify and liberalize access to selected products and services, enabling and enriching the work of a much broader client base.

64. UNGIS will continue to lead partners in the high value initiative to develop an open source GIS platform and to initiate foundational work on the development of the next generations of “smart” field camps. Continuing efforts and investment of resources are required to ensure that the existing potential of UNGIS is optimized and utilized to the best effect.

1.2.5 Umoja

65. As Umoja moves to the next phase, incorporating Supply Chain Management, responsibility for the legacy and future Umoja rollouts will transfer from ICTD to the Logistics Support Division (LSD). Budget formulation, fundraising and donor-relationship management, implementing partners, conference event management, and force management are scheduled, and ICTD’s future role will focus on:

- Providing user support to field missions
- Hosting the Umoja solution at GSC and supporting future hosting arrangements
- Enabling BI to provide reporting, analysis and visualization for Umoja data for operational entities.

66. As Umoja continues to stabilize in the field and as the business data pool increases with each deployment, the focus will be on providing field managers and users with both centralized authoritative / local self-service reports and the visualized information required for informed decision-making.

1.2.6 Environment

67. The DFS Environment Strategy became effective on 1 January 2017 and focuses on five key pillars: energy, water and wastewater, solid waste, wider impact, and environment management systems. ICT has a role in supporting its implementation and will also implement specific measures to reduce its own environment footprint.

68. The Environment Strategy requires improved analytics to effectively monitor progress, and the work of the Environmental Units will be supported with the required tools and applications. The most significant impact over the coming years can be realized by enabling the “Internet of Things” (IoT). This will facilitate the collection and analysis of data from a wide variety of network-connected devices associated with engineering, facilities management, logistics, and transportation that will supplement key information that is used to inform the global environmental landscape and consumption patterns, and aid decision-making. The GSC is working closely with environment and engineering stakeholders to initiate a project to provide a central monitoring platform for the collection and analysis of data to inform environmental- and facilities-management-related decision-making by leveraging existing knowledge in ICT in remote monitoring.
69. The cloud computing initiatives will deliver significant net reductions in the environmental footprint. ICTD has experience in working with alternative energy sources in support of its more remote ICT communications installations. Solar and wind alternative energy systems will be standardised and integrated with battery systems to provide globally monitored energy solutions for in-mission ICT installations of various sizes. This will have a positive environmental impact as well as mitigate deficiencies in power supply at field locations.
70. Energy-efficient printers and print management systems are already included in systems contracts and the ratio number of users per printer will be raised significantly. It is estimated that standby power accounts for 10% of the electricity used in work environments. Systems will be implemented to automate the shutdown of computing devices that are idle for an extended period. To further promote environmental initiatives, the GSC will promote proofs of concept and environmental best practices, which are transferable to field operations in the areas of e-waste management.

1.3 Optimizing Field Operations - Initiatives

71. In addition to the Enterprise Operational Initiatives described in Section 1.1, field mission operations demand the implementation of complementary local technology solutions tailored for their special environments and mandates. These demands need constant review. In the initial stages of the implementation of the FTF, a number of standardised initiatives targeted at current and future field requirements will be implemented. The Situational Awareness Programme is the flagship initiative.

1.3.1 Situational Awareness Programme

72. In January 2017, the Secretary-General issued the memorandum “Strengthening Information Management, Coordination and Crisis Management Arrangements”. In it, he states: “Improving integrated information flow, the coordination of situational awareness and crisis response is critical to a more effective and efficient United Nations”. The Situational Awareness (SA) Programme was established to address the fragmented and stove piped approach to managing information flow within and across field missions, and to provide the technology platforms on which timely data will be presented and visualized to allow for effective crisis and medium-term decision-making.

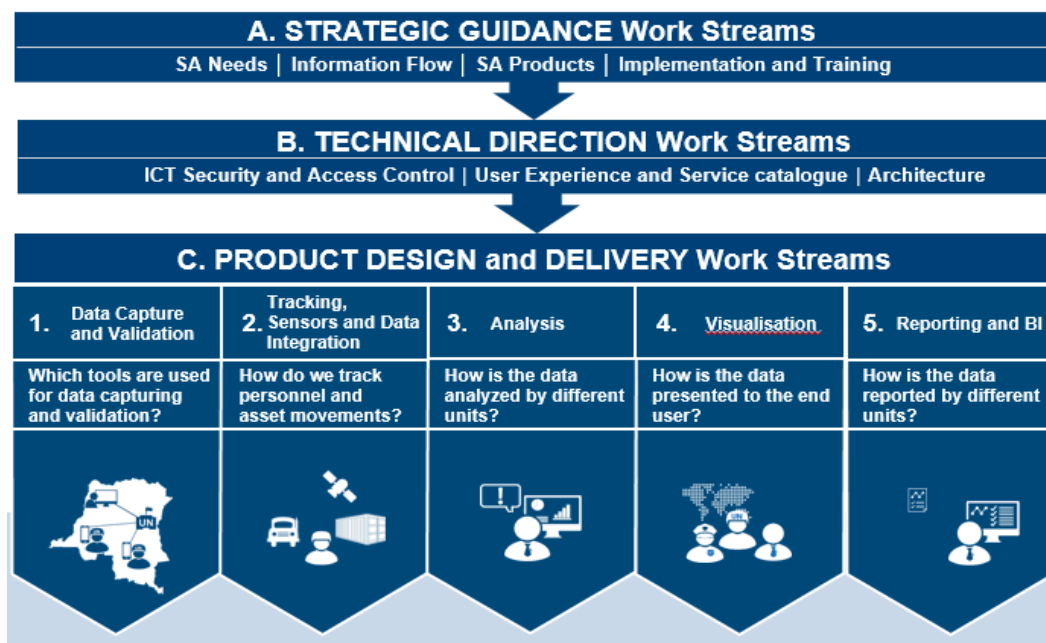
73. The SA Programme had been approved by the USG DPKO and USG DFS with the overall executive responsibility for delivery delegated to the Chief of Staff. The Programme has two components: substantive and technology. The delivery of the substantive component is assigned to the Director of the United Nations Operations and Crisis Centre (UNOCC) at UNHQ, while the Director of Information and Communications Technology Division (ICTD) is responsible for delivering the technology component. Each field mission’s Chief of Staff will coordinate the local implementation of the Programme supported by the Chief Field Technology Section.

74. A workshop in Entebbe in October 2016, attended by civilian and uniformed information specialists and consumers from across field missions, identified the priority data required for informing both crisis and longer-term decision-making as:

- operational incidents and events
- fixed and variable mission operational data
- asset tracking data, video streams, and data from various sensors
- relevant data from other UN partners
- information from social media and external sources.

75. Delivery of the SA Programme is managed through three interdependent work streams, as depicted in Diagram 1.3.1 (the technology solutions workstreams are represented in B and C). The technology work streams will deliver an integrated suite of technology solutions to collect, verify, store, visualize, analyse, report and present trusted data to enable a Mission Common Operating Picture (MCOP). The provision of standardised technology solutions and the coherent presentation of data on a common, easily accessible and visual platform is the key technology output of the Programme. The technology workstreams have delivered their recommendations, including a high-level architecture defining the roles and interoperability of the various components. The next phase involves the technology managers who will conduct in-depth consultation with the client base, initially through a working group chaired by the Chief of Staff of MINUSCA. These consultations will utilize real-life scenarios and refine prototypes to ensure that the end products are fit-for-purpose.

Diagram 1.3.1 – The three work streams designed to deliver the Situational Awareness Programme



76. The SA Programme will provide standard tools and procedures to the various mission operations centres⁵ and will deliver the data required to enable crisis response and short-term decision-making. This data will also be provided to key offices (Joint Mission Analysis Cell (JMAC, J2 etc.)) and decision-makers through and intuitive desktop/mobile portal. The Programme will inform UNHQ analysis and reporting requirements.

77. Implementing the SA Programme is a complex endeavor with significant dependencies between the substantive and technical work streams. However, its successful implementation will address long-standing deficiencies, standardise how field operations manage and present information in support of situational awareness, and positively impact the capacities of field operations to make decisions based on timely and trusted data. Managing the technology work streams of the Programme and integrating the products and technology solutions

⁵ Joint Operations Centre (JOC), Military Operations Centre (MOC), Police Operations Centre (POC), Security Information Operations Centre (SIOC). etc.

that will underpin and enable it is the key field initiative currently being undertaken. It is the initiative with the most direct impact on enabling core mission mandate implementation.

1.3.2 Signals Academy

78. Command and control communications is critical for both normal and crisis operations and is considered a life-support activity. With TCC/PCCs using contingent-owned communications systems that are, in many cases, incompatible with each other, a critical function of the Field Technology Section is to provide cross-cutting interoperable communication systems to facilitate command and control across a diverse technology landscape. It is assisted by signals staff officers, dedicated TCC-provided signals companies and the generic signals components embedded in deployed battalion contingents. It is critical that these military and police enablers are familiar with operating and supporting UN equipment and that they understand standard operating procedures.

79. Launched in 2015 as part of the Regional ICT Service in Entebbe, the UN Signals Academy (UNSA) is an outcome of the Partnership for Technology in Peacekeeping (PTP). Its role is to bridge capabilities gaps and to enhance the preparedness of signals military and police personnel to be deployed into UN peacekeeping missions through the provision of standardised, mission-specific and gender-inclusive ICT training on UN-owned equipment (UNOE) and on UN standard operating procedures.

80. A signals training needs assessment highlighted the various levels of preparedness of TTC/PCCs and identified specific gaps. The report pointed to the need for reinforcing induction training (prior to deployment) and promoting the training of trainers with a combination of classroom-based and online courses to achieve a more effective and efficient training and capacity building. New initiatives are being piloted at the Academy to develop training of trainers and pre-induction courses. A certification system will be proposed to improve the effectiveness of

deployed signals staff, the implementation of which will require a certification exam (for force generation purposes) to be agreed by TCCs.

81. With the adoption of new and innovative technologies for force protection and situational awareness, the Academy will need to develop its curriculum to train on these advanced systems and support their integration into day-to-day operations. It is examining ways to support the SA Programme and including options to establish a simulated mission operations centre to train and familiarize rotating uniformed personnel on underlying technologies and procedures.
82. The Signals Academy is principally supported by ex-budgetary funds. To sustain its impact and develop its full potential in the longer term, funding needs to be secured as well as continued engagement with partners. In the near-term, the Signals Academy will be placed under the managerial control of the Regional ICT Service in Entebbe.

1.3.3 Command and Control / Emergency

83. The ability to communicate in a crisis is critical, with staff and uniformed personnel most likely to be withdrawn from locations where communications channels are broken. Robust independent layers of communications based on radio and satellite technologies are designed and deployed by Field Technology Section experts in field operations. The implementation of and support for these independent layers of emergency communications is specialized and will continue to be refined and prioritized. Collaboration will continue with the Office of Military Affairs (OMA) and the Department of Safety and Security (DSS) to ensure that these systems are optimized, monitored and fully integrated into day-to-day operations.
84. As field mission environments evolve and become more complex, there is emphasis on a mobile uniformed force, with UN contingents asked to operate beyond their traditional, well-defined geographical areas of operation. There are requirements to expand operational communications with other mission

components and actors involved in mandate implementation at the tactical level. An interoperable radio solution (RIOS) is available to facilitate communications between previously incompatible national systems. Trained UN signals companies enable interoperability of diverse generic communications systems by managing the required technology solutions. As more advanced technologies become available - for example, the use of tablet computers to collect data as part of the SA Programme and the use of mini drones to support patrols, the role and responsibilities of UN signals companies will expand. The Signals Academy will further enable the sustainability and effectiveness of UN signals companies.

85. The integration and optimization of ICT signals capacities and resources, both civilian and military, require a standardised approach. The relationships between the Field Technology Sections, signals staff officers, UN-enabling signals companies, and generic signals components will be reviewed in close cooperation with OMA and the Police Division to ensure cohesion and effective command and control.

1.3.4 Mission Service Desk

86. The Field Technology Section service desk in field missions plays a key role in managing client satisfaction. Service desk operations and processes are currently being standardised across mission environments. A standardised approach will allow for committing to specific performance indicators for managing and resolving incidents and requests for service. This initiative leverages the iNeed application's self-service module, which is now available at all mission locations. As a second phase, this standardised approach will be expanded to other mission entities, initially logistics and facilities management, to create a Mission Service Desk that is responsible for managing incidents and services. This will provide users in field missions with a single virtual point of entry for all client requests.

87. The Mission Service Desk will route incident and service requests to the relevant units charged with providing resolutions. The positioning of the Field Technology

Section, under the Operational Resource Management Service in the revised mission organigram, facilitates this role as a cross-cutting solutions provider. This initiative is underpinned by the direction from the USG DFS to develop and publish standard incident and service request catalogues across a wide range of Mission Support functions.

1.3.5 Wi-Fi

88. A key enabling service for mission operations is the access to a standardised, secure, reliable and robust Wi-Fi infrastructure across mission locations-irrespective of remoteness or the number of users. A standardised fit-for-purpose Wi-Fi solution supports operations and mobility within missions. It will also facilitate the gathering and exchange of data from the Internet of Things, facilitating the monitoring and management of smart physical devices and supporting security, engineering, environment, facilities management, transport, logistics, and other services. Field Technology Sections will focus on providing and maintaining quality Wi-Fi as a core mission service and as a platform for the next generation of Wi-Fi enabled services.

1.3.6 Safety and Security Systems

89. Support is fragmented for safety and security systems, such as CCTV, security perimeter sensors and access control systems, and there is a requirement to implement an integrated approach. This requires coordination between the Logistics Services Division, DSS and ICT as the technology advisors and implementers. Work continues to ensure that future solutions are aligned with field technology architecture.

1.3.7 Intermittent Power Supply

90. Power outages are the main reason for interruption of technology-based services to and at field locations. The Field Technology Sections have developed capacities to create backup and standby power to support missions' installations by integrating Uninterruptable Power Supplies, battery banks and alternative energy sources to mitigate interruptions to the regular power supply. Standard and centrally managed plant and power support systems will be implemented to ensure continuous power provision to remote sites globally. Service Level Agreements will be negotiated with the Logistics Support Division at UNHQ and with the engineering sections in field missions on the provision of stable mission grid power to ICT installations.

Optimizing Core Business: Summary and Conclusions

91. The initiatives described in this section focus on achieving the first objective of this framework: to optimize current core ICT operations. As the FTF is implemented, the effect of these initiatives will impact the quality and relevance of services provided to field operations. The enterprise operational initiatives will deliver optimized infrastructure platforms to support connectivity, hosting and storage, and simplify the ICT asset landscape. Using optimized infrastructure as a foundation, effective, interoperable and secure product and application platforms will be implemented to support the Organization's standardised solutions for file sharing, collaboration, BI, records management, social networking, customer relationship management, correspondence management, GIS, and eLearning. These coordinated initiatives will enable true mobility, enhance information security, support informed decision-making and provide an optimal end-user experience. A focus on initiatives relevant to field operations and on positively impacting substantive mandate implementation will ensure that field technology is forward-facing and client-focused.

92. Optimizing current core ICT operations will generate cost savings and cost avoidance, and it will facilitate the repurposing of resources to develop the capacities necessary to incorporate the new role of providing and being the catalyst for introducing innovation and technology solutions to field operations. This is the second operational priority and is addressed in the next section.

2. Delivering Innovation and Technology Solutions to Field Operations

Introduction – Becoming Innovative

93. Repositioning field ICT operations to become the effective delivery vehicle for innovative and new technology solutions in support of field mission mandate implementation is the second operational objective of the FTF and a key Departmental priority. The High-Level Independent Panel on Peace Operations (HIPPO) report, under the section “Uniting Our Strengths for Peace – Politics, Partnership and People”⁶, requests more field-focused and more people-centric peace operations, and it encourages a more innovation-driven, strategic and results-oriented approach. Technology-centred innovation can save lives and has the potential to be a transformative force in implementing the Organization’s field-based mandates. The following paragraphs detail the steps required to enable the current ICT model to take the lead in introducing a technology-centred innovation approach and to explain how this can enhance capabilities and ensure that the application of innovative solutions becomes an integral component of mission activities.

2.1 Establishing an Innovation and Technology Framework

94. In its core operations, ICT has been at the forefront in deploying new technologies and implementing change management practices across field operations. Individual missions, driven by mandate requirements, have been active in the application of targeted innovative solutions. Innovation has been achieved based on necessity and has been driven by dedicated staff assuming extra responsibilities. Three annual symposia on Partnerships for Technology and Innovation in Peacekeeping have been held in conjunction with Member States

⁶ Presented to the Secretary-General on 16 June 2015.

and academia. These have resulted in outputs, including the development and implementation of ground-breaking technology solution projects, in the areas of force protection, information security and training.

95. Moving to the next level in achieving excellence in field technology innovation requires applying dedicated resources and establishing a field-focused innovation and technology support structure aimed at facilitating innovation in an integrated manner at all levels and fostering the inclusion of all field mission components. At the strategic level located at UNHQ, the support structure links UN technology experts and users from programmatic components and peacekeepers with the technology sector and with scientists and researchers engaged in modern technology and innovation. This will generate a community of invested and interested expertise to guide the introduction of innovation into field operations.

96. Specifically, ICTD will pursue the development of three closely linked capabilities: Research and Development (R&D), Partnerships, and Think Tanks. These capabilities will pursue the following objectives:

1. Facilitate research and development for technology solutions that address present and future needs of field operations' programmatic components. This will ensure that field innovation solutions target concrete needs on the ground and that their requirements reflect the views of the field-based user communities.
2. Foster and synchronize strategic partnerships between the UN and academic institutions as well as with governmental partners and other supporters. This will require establishing a dedicated capacity to coordinate technology partners, creating a platform to enable innovation-centred dialogue among all partnering entities to foster collaboration and to agree on common goals and agendas.

3. Make use of think-tank capacities for technology-centred analysis and policy development. This consists of establishing and utilizing a network to conduct tailored analyses; develop technology roadmaps, metrics and business cases; create impact analysis and feasibility studies; augment and support decision-making; and justify investments on the adoption of new technologies.
97. The role of ICTD will be expanded to be the catalyst for innovation and the provision of technology solutions to field operations. To this end, a newly established unit in ICTD is proposed at HQ to manage and operationalize the three outlined capabilities and to provide direction to GSC and field operations.

2.2 Mainstreaming Emerging Technologies

98. In addition to strategy considerations, a field-focused innovation and technology support structure will leverage established mechanisms within the Field Technology delivery model and will ensure the following functions are achieved:
- Implement proofs of concept and pilot projects
 - Manage the transition from prototypes and concepts to finalized solutions that can be made available for broader use
 - Package, publish and deliver complete and catalogued solutions to field operations
 - Monitor and report on impact and sustainability, determine support requirements, and organize training and learning for the leadership, implementers and users of solutions.
99. The Field Technology Service at the GSC has incorporated innovation and technology capacities into its organizational structure and has assigned dedicated

resources to them. The Regional ICT Framework⁷ will provide support to the GSC by organizing pilot projects and promoting field tests, and it will act as a source for filtering field requirements while fostering intermission cooperation arrangements and exchanges of expertise. A properly resourced UN Signals Academy can support capacity development in both uniformed and civilian mission personnel by including relevant training sessions and technology workshops into its curriculum, and, subject to appropriate investment, can act as an education centre for innovation and technology solution deployments.

100. Field missions will become core innovation drivers, empowered to drive new approaches within the context of the FTF. Each mission's Chief Field Technology Section (FTS) will assume the function of mission technology officer, acting as the link between field technology and innovation, and programmatic needs. Chief FTS will support and advise mechanisms incorporating the Mission Leadership Team currently evolving in field missions in support of the Peacekeeping Intelligence Policy and the Situational Awareness Programme. The Mission Leadership team will provide governance over the mission's information cycle and approve the requirements for and the priority use of related technology solutions.

101. The revised FTS organigram for field operations includes a new Innovation and Technologies Solutions Unit, as described in Section 3.1.4 "Field Technology Section – In Missions". This tactical unit will support the Chief FTS in transitioning innovation and technology solutions into day-to-day operations, including those related to situational awareness, force protection, protection of civilians, and ICT security. The unit will gather requirements and coordinate directly with the operational unit at the GSC and the strategic innovation capacities at UNHQ. These three tiers of dedicated resources, with the appropriate coordination and reporting mechanisms, completes the field-focused innovation and technology support structure.

⁷ See Section 3.1.4

102. Driven by requirements, MINUSCA and MINUSMA are at the forefront of implementing force protection and situational awareness technologies. The urban surveillance system in Bangui is an integral component of day-to-day operations. It was used to support the visit of the Pope, enable special operations and in one case identified an assassin and defused a potentially explosive situation. In Kidal, on 8 June 2017 at 6:12 pm local time, the camp was attacked by rebels using a barrage of rockets and mortar rounds. The “sense-and-warn” system, installed to alert personnel of incoming fire, detected the first mortar shell in mid-air and set off an alarm about 15 seconds before impact. The loud sirens could be heard across the sprawling camp. Eight persons were in an accommodation area in the north end of the camp. The moment they heard the alert siren, they ran to the nearest bunker. Seconds later, a mortar shell crashed into their accommodation and set buildings on fire. The cameras on the perimeter of the camp were monitoring to see if any vehicle-borne attacks were coming, a tactic previously combined with mortar/rocket fire on 12 February 2016. The radar system determined the origin of the mortar fire from the trajectory and a Quick Reaction Force was subsequently dispatched. A planning officer for MINUSMA, Lt. Col. Matthew Murphy, wrote: “Last night, many would have been killed by indirect fire without the effective radar and warning indication”. Unfortunately, these are not isolated incidents, but they highlight the lifesaving value of the appropriate use of technology.

103. At the same time, significant lessons have been learned as the challenges and impact of integrating technologies into day-to-day mission operations become apparent. These pilot projects will be reviewed carefully to identify the aspects that

- lend themselves to be executed and supported internally by Mission Support or a force-generated capacity
- would benefit from having a market-led solution
- do not lend themselves to either UN-led or market-driven solutions.

2.3 Field Innovation - Areas of Focus

104. Initial efforts will concentrate on the following areas:

- Mission protection (incorporating force protection)
- Situational awareness
- Electricity generation / conservation
- Medical support
- Transportation
- Water
- Protection of civilians.

105. Access to scarce water resources is increasingly connected to conflict. Driven by recent droughts in Somalia and South Sudan, UNGIS-led water exploration projects have considerable success in combining desktop satellite imagery analysis and the application of ground radar in the field. A suite of technologies to support the protection of civilians is being identified. Drones are now included in the Contingent Owned Equipment (CoE) catalogue, and work is underway to implement “drones as a service” in mission environments. New services, such as tracking the movements of people through analysis of mobile phone signals, will provide enhanced situational awareness. Successful innovative solutions will be mainstreamed into core operations and become standard catalogue offerings that will be delivered with the required training, standard operating procedures, support and ongoing monitoring.

2.4 Becoming Innovative: Summary and Conclusions

106. Warfare based on technological advances will change how armed conflict will be waged in the future. The Secretary-General has warned that rapidly evolving technological advances pose unforeseen challenges to regional and global stability alongside their many benefits. He has stated that "advances in technology are giving rise very quickly to new methods and means of warfare, with potentially

undesirable or unclear consequences". Information communication technologies, artificial intelligence and 3D printing can be used for military purposes. Innovations intended for civilian applications, such as synthetic biology or facial recognition software, can be repurposed for harmful outcomes. Such developments will impact the future role of the UN in conducting Peacekeeping operations. Implementing an effective field-focused innovation and technology structure now will leverage effective technologies in support of Peacekeeping operations while developing an in-house innovative culture will lay the foundation for supporting future operations.

107. ICT will maintain its relevance by successfully optimizing and maintaining high service levels in delivering core operations. At the same time, it will create the environment to enable the delivery of innovative technology solutions to support field operations. This is a significant challenge and one that will require a considerable cultural shift and support from relevant UN departments, Member States and other external entities. It will also require investment during a period in which funding is expected to be reduced. Best practices in funding innovation will be explored. Future progress reports on the implementation of the FTF will provide updates in this regard.

108. The next and concluding section of the FTF details the changes required to current support mechanisms and delivery frameworks that will underpin and advance the implementation of the two operational priorities of this framework.

3. Supporting Mechanisms and Delivery Frameworks

Introduction

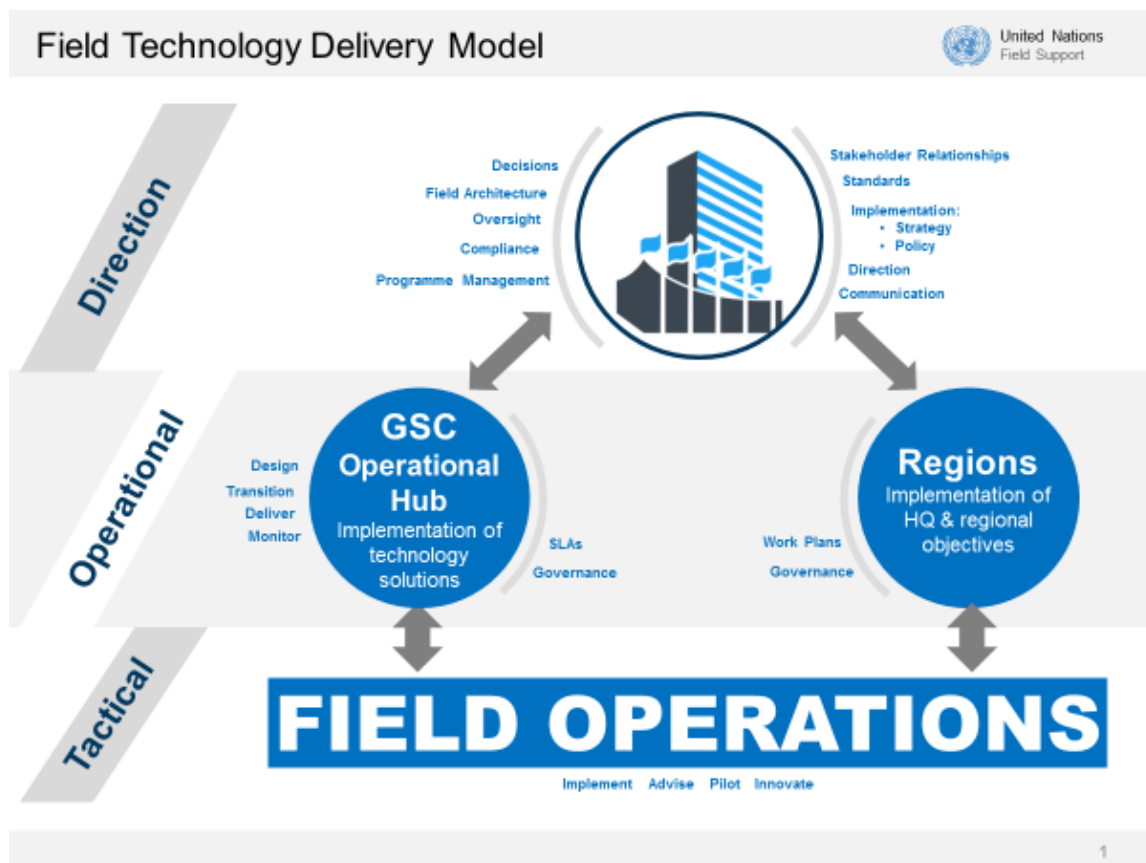
109. The successful implementation of the two operational priorities of the FTF requires not only an evolution in the application of technology, but it also requires a review and realignment of the current support mechanisms and delivery frameworks that exist solely to empower and support field-based technology operations in delivering effectively in support of mission mandate implementation. This section describes the overall delivery model required, considering Organizational objectives, the global nature of operations and the inherently complex field environment. The section also covers the structure, organization, governance, staffing, human resource development, funding, acquisition planning and implementation mechanisms required, and it incorporates them in a coherent and integrated approach to deliver both global and tactical solutions to field operations effectively and flexibly.

3.1 The Field Technology Delivery Model

110. The Field Technology Delivery Model brings together the various organizational components that comprise the field technology landscape and concentrates all efforts on effective delivery to support the tactical work at the field mission level. The model encompasses three distinct layers, each with clearly defined roles and responsibilities. Layer one concentrates direction and global implementation activities at UNHQ. Layer two, the operational layer, focuses on supporting field operations through the implementation of globalised technology solutions managed at the GSC. The work of the Regional ICT Services complements that of the GSC by implementing and aligning UNHQ direction, regional, and local field mission objectives. Layer three, the tactical layer, comprises the failovers within the field mission structures and is focused on the effective delivery of technology solutions and support to the end-user community in field mission locations.

111. The three layers act as one technology delivery mechanism, specifying the responsibilities each layer has to DFS, the GSC and to Field Mission Leadership. The model is designed to ensure that the assignment of authority at each level is complemented by the requisite accountability to ensure coherent delivery. Some of the structures, mechanisms and governance that support the model are already in place, but others need to be developed and formalised. This section proposes the actions required to strengthen the model and establish it as the optimal delivery mechanism for the FTF's priority objectives. The Field Technology Delivery Model, illustrated in Diagram 3.1.1, summarizes the responsibilities and relationships between the three layers. The model is designed to assign roles and responsibilities clearly and to create the linkages and mechanisms to ensure that operational and tactical delivery is effective across a complex global span of control.

Diagram 3.1.1



3.1.1 Field Technology Direction - UNHQ

112. The Field Technology Delivery Model defines the role of UNHQ in providing leadership and direction, and it clarifies the associated activities. These activities are centred on four sections: Field Technology Architecture, Field Planning and Oversight, Field Mission Support, and Geospatial Information. To fulfil its role, the following specific functions are being strengthened or realigned: field technology architecture, programme and project management, innovation, communications, benchmarking of technical and non-technical indicators, business engagement, and monitoring compliance. Approval by the Field Architecture Section in the areas of infrastructure, applications and data is the prerequisite for the commencement of any technology activity across all field locations, thereby ensuring that all initiatives are aligned and optimized.

3.1.2 Field Technology Operational Hub - GSC

113. The Field Technology Service at the GSC is the operational hub, delivering the enterprise technology solutions necessary to support field operations. Specifically, it delivers connectivity, data storage, event monitoring, field applications, hosting, telecommunications, geospatial, and operational information security services to field missions and other clients. This role is fully aligned with the GSC's mission statement as the Department's "operational support, services and solutions provider in field technologies, logistics, OSH, and environmental performance". The Field Technology Service plays a crucial role in implementing the first operational objective of the FTF: to drive the modernisation and optimization of core operations through the implementation of enterprise optimization initiatives, including the three current ongoing initiatives:

- One UN Network
- One UN Data Centre
- Modularisation.

114. The 2017 Civilian Staffing Review at the GSC resulted in the reorganization of its structure and mechanisms into a bimodal model that focuses on Service Delivery and Service Management. This facilitates a client-centric and service-optimization approach. A new section has been established, Technology Development, Design and Planning. It will provide the initial innovation and technology capacities and resources to support the operational aspects of the FTF's second operational objective: to deliver innovation and technology solutions to field operations.

115. To avoid duplication of effort and reduce the diversity of services prevalent across missions, the GSC will take on the role of providing field operations with a catalogued standard suite of field-ready, cross-cutting technology solutions and services. The selection of these solutions will be driven by field requirements, and the GSC will coordinate the design, proof of concept, transition and subsequent monitoring of effectiveness. Driven by the modularisation initiative, the GSC will be empowered to lead field operations towards a simplified technology landscape. Field operations will benefit through the automation of system configurations and updates, a simplified asset base and acquisitions strategy, a common approach to integrating technology solutions into day-to-day operations as well as the provision of effective performance measurements for service delivery.

116. The 24/7 event and performance monitoring services will be extended to provide rapid resolutions to more incident types on initial detection. As well as extending monitoring to additional ICT services inside mission networks, environment and engineering equipment attached to mission networks (Internet of Things) will be monitored. This will include generators and wastewater treatment plants as well as various sensors to monitor environmental indicators. A Field Remote Infrastructure Management (FRIM) project has been initiated with the relevant logistics and environment components.

117. Sustaining operations in an environment of constant rotation of uniformed and non-uniformed personnel, is an ongoing challenge that impedes the effectiveness and adoption of technology solutions in field environments. To address this, the Signals Academy and the GSC will deliver an innovative, interactive transition service that is supported by field-friendly e-learning platforms, which are suitable to the diverse client base and will replace legacy training and material-based systems.

118. A Client Technology Board (CTB) has been established to strengthen governance and foster closer relationships between the Field Technology Service at the GSC and its field and other UN clients. The CTB supports the broader GSC Client Advisory Board (CAB) and provides a forum for ICT managers in the field to provide feedback in relation to GSC FTS service delivery against established performance frameworks. The CTB will ensure that the FTS is meeting its commitments to clients while providing an insight on FTS operations, technologies, priorities, and challenges.

119. With the continued implementation of the ICT Strategy and the Secretary-General's Management Reform, FTS at the GSC will be mandated to offer enterprise technology solutions to a wider UN client base. This will result in economies of scale while gaining additional benefits from facilitating UN entities in the sharing of data, platforms and technology solutions. The FTS has the organizational structure, the scalable staffing model and an effective cost recovery mechanism approved by the UN Controller, and it is well positioned to implement the significant changes required to align its operational activities with the FTF. The use of second-party UN-contractual staffing services allows for the annual revision of work plans and resource components, and it is particularly effective and flexible in facilitating the ongoing annual changes required to enable a transitional environment.

120. The FTS will continue to align with international best practices, such as the ITIL Service Management Framework and ISO 20000 Certification. To maintain its

impact, a meaningful change management agenda will be implemented in the 2018–2019 period, with significant efficiencies expected to be delivered based on the optimization of its core operations: in particular, the realization of benefits from a reduction in storage and an optimized wide area network. These benefits will enable investments in a broader range of efficient technology services and solutions in support of UN field operations and to support the innovation agenda.

3.1.3 Regional ICT Services

121. The Regional ICT Services (RICTS) represent and serve the interests and needs of field operations by geographical location. They are responsible to Regional client boards, with additional reporting lines to ICT at UNHQ. RICTS are managed through an annual work plan, which includes agreed upon goals with UNHQ, including those that are specifically related to the ICT Strategy. UNHQ goals are complemented by Region-specific goals that are approved by the relevant client board. These Regional entities ensure that ICT is close to its clients and responsive to their needs. At the same time, field operations benefit from coordinated UNHQ direction and leveraging Regional and local initiatives.

122. The RICTs are non-operational and complement the work of the FTS at the GSC by providing field-driven requirements and feedback, testing proofs of concept, and by effectively implementing and evaluating pilot projects. They play a key role in the implementation of compliance, standardisation, technical procedures, and harmonisation of services. They make policy recommendations, coordinate support to mission start-ups and liquidations, strengthen consistency of service provision, and develop a common approach to partners in the Regions.

123. Three field-focused Regional ICT Services exist: Middle East / Asia Region; Africa Region; and a service established at the GSC to cover the few field entities that do not fall under the two larger groups. RICT offices are location agnostic. The FTF proposes that the Middle East / Asia Region also supports the entities

currently covered by the GSC to reduce the Regional ICT Services to two. Additionally, it proposes that this realignment be formalised through the regulatory committees in the future.

124. The Regional ICT Service has proved effective in the implementation of ICT Strategy goals and in the areas of compliance direction, policy and standardisation, and reporting tangible efficiency gains in terms of human and material resources and cost avoidance. It has been particularly effective in managing across a broad field landscape that currently spans 35 field operations. This span may increase and the requirement for the Regional ICT Service within the Field Technology Delivery Model will become increasingly important as the Secretary-General's Management Reform agenda progresses.

3.1.4 Field Technology Sections - In Missions

125. The "Supplementary Guidance on Mission Support Structures", dated 7 September 2017 from the USG DFS, has given field missions two budget cycles to implement the revised mission support structure. The Geospatial Information Technology and Telecommunications Section (GITTS) is to be renamed to the Field Technology Section (FTS). In the revised three-pillar Mission Support structure, FTS is placed under the Operational Resource Management Pillar. Operations and Resource Management brings together strategic and cross-cutting mission support functions with a view to ensuring coherence in forecasting, performance monitoring, planning, and coordination related to operational and resourcing activities. Placing FTS in this pillar is in line with this framework, which emphasises the added strategic and enabling value that ICT can bring to field operations while optimizing and reducing the local effort required to provide ICT utility services.

126. The Field Technology Section's internal structure consists of three units, which are aligned with the core objectives of the FTF:

- i. The **Operations Management Unit (OMU)** is aligned with the first objective of the FTF: to provide and optimise all core technology operational activities. It manages the programme of operational technology activities and their underlying infrastructure and networks, ensuring availability and performance to the highest industry standards. It provides effective layers of emergency technology services in support of force protection, protection of civilians, and general safety and security. The OMU delivers high-value geospatial services across mission components while managing sensors and information workflow.

- ii. The **Innovation and Technology Unit (ITU)** aligns with the second objective of the FTF: the delivery of innovation and technology solutions to field operations. This is a new unit that is initially intended to be small; then it will evolve to be an enabling and complementary unit to OMU over the next four budget cycles. ITU will examine field operations requirements and provide expertise on technology and innovative solutions. It implements pilot projects and monitors, coordinates and reports on their progress, demonstrates and field-tests solutions, and transitions verified and catalogued solutions for implementation to the OMU. It is responsible for the successful integration of innovative technologies into day-to-day operations. The ITU works within the Field Technology Delivery Model, working closely with the Technology Development, Design and Planning Section at the GSC and with UNHQ strategic innovation and technology resources to form one effective delivery operation.

- iii. The **Service Management Unit (SMU)** supports the two operational units. It provides first-level support to field technology clients and manages service desk operations, providing regular management reports and dashboards on service availability and performance. It will manage an expanded mission service desk and provide mission clients with a single virtual point of entry for customer support, routing requests for service

electronically to the relevant technical resolution units across the mission support structure. SMU monitors client experience and advises on programmes for continuous service improvement. It will manage compliance with organizational standards, policies and technical procedures and ensure that the Organisation's ICT service management and service delivery framework, ITIL, is appropriately implemented. It reports on service and operational level agreements, develops plans, oversees and monitors implementation of field-based projects, and conducts SMU communications activities. It manages administrative tasks related to FTS activities, including finance, human resources, contractual and risk management, procurement activities, and audit compliance. It will perform regular disaster recovery exercises, IT security assessments, manage and report on compliance, and implement plans to mitigate IT security risks. The SMU manages the mission information security incident response plan.

127. Based on the standardised FTS organizational structure, the relationships between the civilian and uniformed signals staff and components will be revised. The senior signals staff officer's role is critical and will be reviewed. A proposal that utilizes the Senior Military Signals Staff Officer, with defined responsibilities to the Military Chief of Staff and to the Chief FTS, will be examined with the OMA.

128. In the revised structure, the Chief of the Field Technology Section assumes additional responsibilities. S/he will advise mission leadership on the application of technology, translating aspects of field missions' mandated requirements into technology proposals. Within the Operations and Resource Management pillar, the FTS will perform increased cross-cutting and enabling functions. The Chief FTS will adopt many of the functions of a Chief Technology Officer and will require additional capabilities and capacities to effectively perform this role. Future advancement for Chiefs of FTS will be within the ORM pillar and training and

development programmes will be put in place to assist current staff in developing the required skills to meet the new requirements.

129. In smaller missions, the structure will be composed of two units: the Service Management Unit and the Operations Management Unit, with the roles for information security, project management and innovation clearly assigned. Services provided by the Remote Mission Support service at the GSC are available to support and complement smaller missions in areas where gaps in capacity exist.

3.1.5 Governing the Delivery Model

130. Coherent and integrated governance is required to ensure that the various elements of the Field Technology Delivery Model are empowered to deliver with the appropriate level of responsibility, authority and accountability, while ensuring that field, GSC and UNHQ management and leadership exercise the operational control that their roles require. Appropriate reporting lines and associated work plans exist within the model. The Director of ICTD at Headquarters reports directly to the USG DFS through the ASG, with an additional reporting line to the CITO, thereby ensuring that field technology is aligned with the priorities of DFS and the ICT Strategy.

131. Operational coherence within the model is supported by the additional reporting line of the Chief FTS at the GSC to the Director of ICTD on technology operations. The GSC utilizes a mature Service Level Management Framework to manage its relationship with field missions and other entities. The Client Technology Board (CTB), described in paragraph 118, has been established as an additional mechanism to strengthen governance and foster closer relationships between the FTS at GSC and its technology clients. The GSC will continue to manage a robust performance management framework, including reporting requirements and key performance indicators in support of operational governance.

132. Regional Chiefs of ICT Services are responsive to their Regional client governance boards on delivery of Regional and local priorities with an additional reporting line to the Director of ICTD to ensure alignment with UNHQ direction and compliance priorities.

133. Chiefs of FTS in field missions report to their respective Director / Chief of Mission Support on field mission operational priorities, with an additional reporting line to the relevant Regional Chief of ICT Services on delivery of respective Regional work plans.

134. Appropriate governance, reporting mechanisms and tangible work plans ensure that accountability for delivery exists at all three levels of the Field Technology Delivery Model.

3.2 People

3.2.1 Human Resources

135. The ICT workforce in field operations will play a critical role in achieving the objectives outlined in the FTF. The workforce is integral to achieving the modernisation, transformation and innovative objectives of the ICT Strategy. Staff in field operations are, by nature, open to change and flexible in approach, and they often perform their duties under difficult and stressful conditions. Over 75% of field technology personnel work in the 40 countries listed at the bottom of the World Bank “ease of doing” business index.⁸ The workforce model is heavily dependent on contractor staff, who account for 44% of the overall technology workforce in the field. The contractual element of the workforce introduces flexibility and will facilitate the introduction of new skill sets required to achieve the two operational objectives of the FTF.

⁸ The World Bank, *Doing Business 2015: Going Beyond Efficiency* (Washington, D.C., 2014)

136. Field mission staffing is calibrated based on the necessity for continued support to mandated operations in crisis and conflict situations. A core of skilled International UN technical staff capable of supporting the independent networks that deliver key life-support ICT services is required. At the same time, skilled nationally recruited staff need to be optimized within the structure. The overall percentage of nationally recruited technology personnel is 54% of the total of UN technology personnel in the field; international staff represent 35% and UN volunteers represent 11%. This is a general guideline of an operationally effective mission staffing model designed to deliver services in both normal and emergency crisis environments.

137. As the two operational priorities are implemented, new opportunities will arise for UN technology personnel to redeploy to high-value functions. Future growth is expected in the following functional areas: service management, project management, ICT security, technology solutions and innovation, business relationship management, BI and analytics, safety and security technologies, renewable energy production, cloud and data architecture, contract management, and technology audit. New opportunities will emerge from the mainstreaming force protection and situational awareness projects that are currently heavily outsourced. The staff training and development programme will target specific areas to allow staff to acquire relevant new skills and transition to new functions.

138. Ensuring gender balance in technology functions in field operations has been a challenge. Google reports 30% female participation in its workforce despite their significant efforts. Efforts focus on increasing female representation in UN field technology management positions. The Signals Academy will continue to promote targeted training for female uniformed personnel, hence enhancing their suitability for mission assignments.

139. Support for staff career development will continue to be a priority. Rosters for all Field Technology job descriptions continue to be refreshed. Vacancy rates in the field are often as low as 2%, and

positions are filled within 65 days, on average. The HR support work provided by ICTD facilitates staff career development and advancement, mobility as well as the effective management of mission surges and downsizings.

3.2.2 Training and Staff Development

140. Future investments in training will be fully aligned with the FTF and its objectives.

As the two operational priorities are implemented, the requirement for specific or new skill sets will be in demand. This will provide opportunities for staff to develop new career avenues. Future technology managers in the field will be profiled as Chief Technology Officers transitioning to more strategic roles and act as advisors to mission leadership on matching appropriate technology solutions to mission requirements. Managerial and leadership training will focus on enabling this transition.

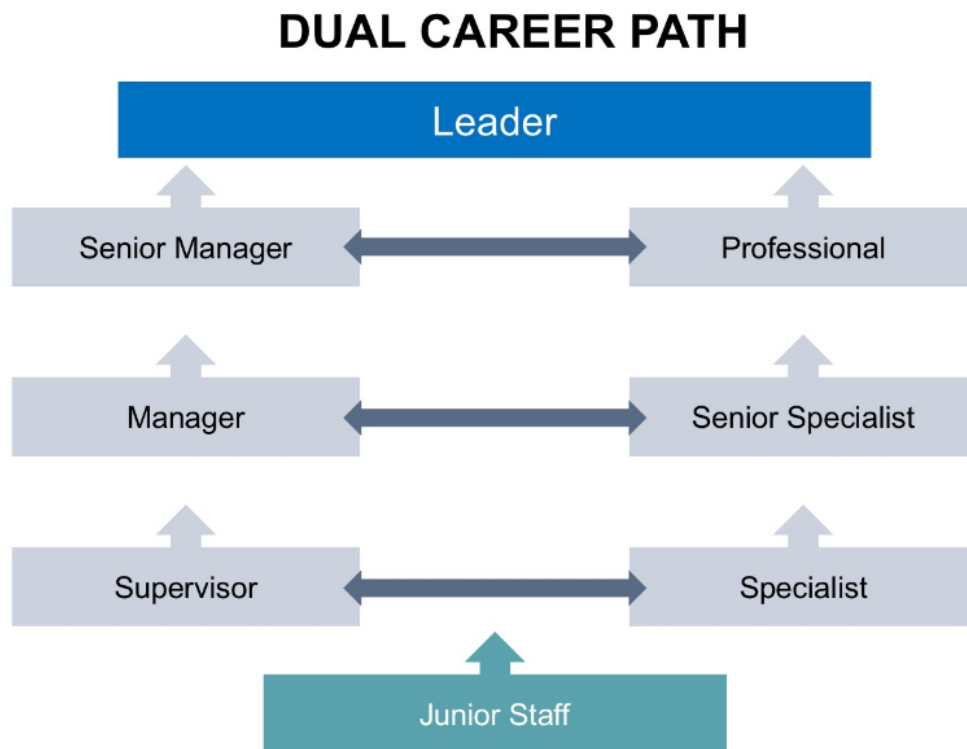
141. A revised field technology learning and development approach will align current and future field technology needs with the development of the capabilities, skills and competencies within the field technology workforce. This approach will encompass a wide range of activities designed to improve the capabilities of the workforce. It will include online training, on-the-job training, mentoring and coaching, and formal classroom training. Formal training each year will be supplemented by a number of in-house-developed workshops, which will focus on ensuring that formal training tracks are contextualized for the field-working environment so that learned skills are directly applied and utilized in support of day-to-day operational activities.

142. In implementing this approach, two plans will be developed and maintained:

1. Long-term Organizational Skills Requirements Plan:

- This plan will align with the objectives of the FTF and will be periodically reviewed to verify that it is effective and up-to-date.
 - A strategic focus toward training and career development opportunities for field staff will be applied by developing various training and certification pathways that address both functional and soft skills.
2. Short-term Capability Requirements Plan: to address a set of priorities that reflects the needs for the following fiscal year
- This plan will be finalized by April of each year and will align with the long-term plan.
 - Missions will be supported in identifying the profiles of staff suitable for development.
 - A team of subject matter experts and line managers will be included in conducting the needs analysis.

Diagram 3.2.2 – Learning and development approach



143. To address career development and retention of staff in a field-technology-focused structure, two high-level learning and development tracks will be pursued that support a dual career path option: Field Technology Functional Development and Governance, Leadership and Management Development. This will address the problem of providing career advancement for highly technical staff whose preference is to remain effective in their specialized areas of work. Support for this track will be addressed to the Organization's HR authority. The Chief of Field Technology Architecture Section at UNHQ will steer the Field Technology and Functional Development efforts while the Chief of the Field Technology Service at the GSC will oversee the Governance, Leadership and Management Development efforts.

144. Development and certification tracks in the immediate term will focus on developing capacities of staff in field operations to support information security and BI delivery.

145. An electronic Learning Management System will be established to record, manage and track staff learning and development, over time. A separate development initiative will be initiated to provide field users of technology systems the skills to optimize their user experience.

3.3 Funding and Acquisition

146. The annual cycle that governs strategic planning and budget preparation will be amended for the 2018–2019 cycle, as illustrated in Diagram 3.2.3, and will introduce the FTF and its annual progress reports as a key driver that informs annual work plans, budget development and acquisition planning. As DFS develops its performance indicator framework, the indicators for ICT will be adopted and implementation will be monitored. Current ICT indicators are focused on client support and the fulfilment of client incident and service requests. Additional internal standardised indicators of achievement across missions will be developed and focus on compliance with policy and guidance.

Diagram 3.2.3

ANNUAL CYCLE STRATEGIC PLANNING AND DIRECTION FOR REGIONS AND MISSIONS

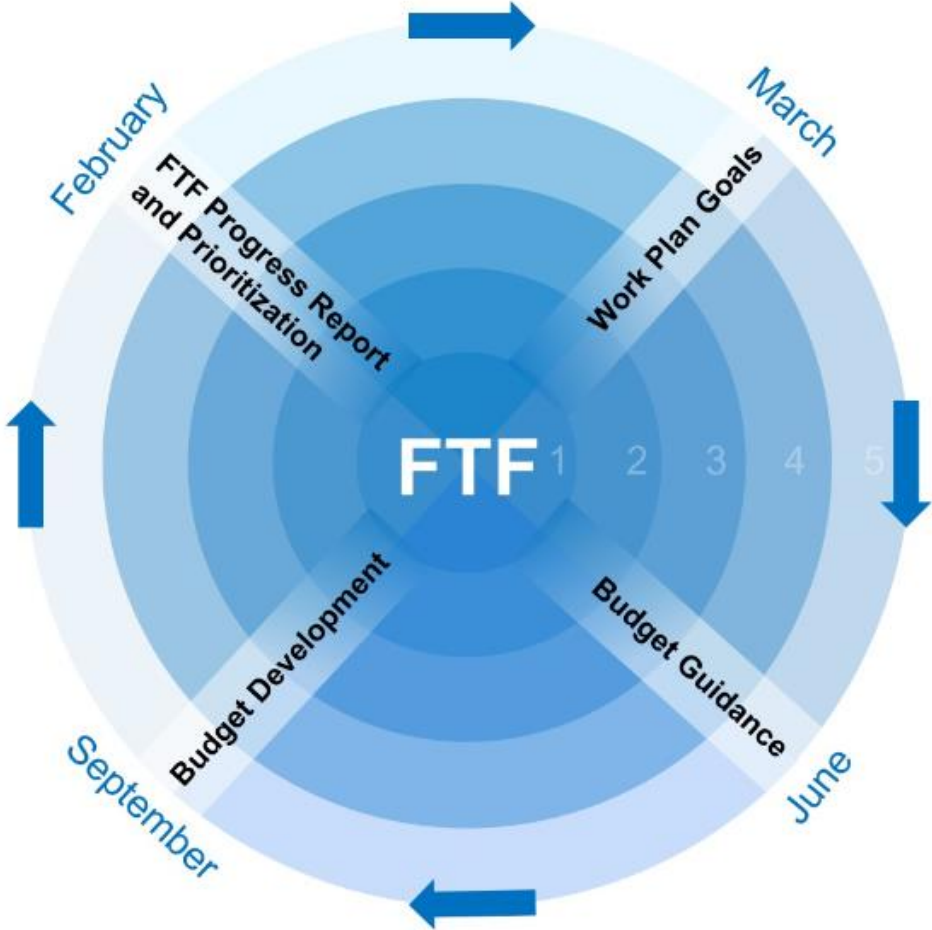
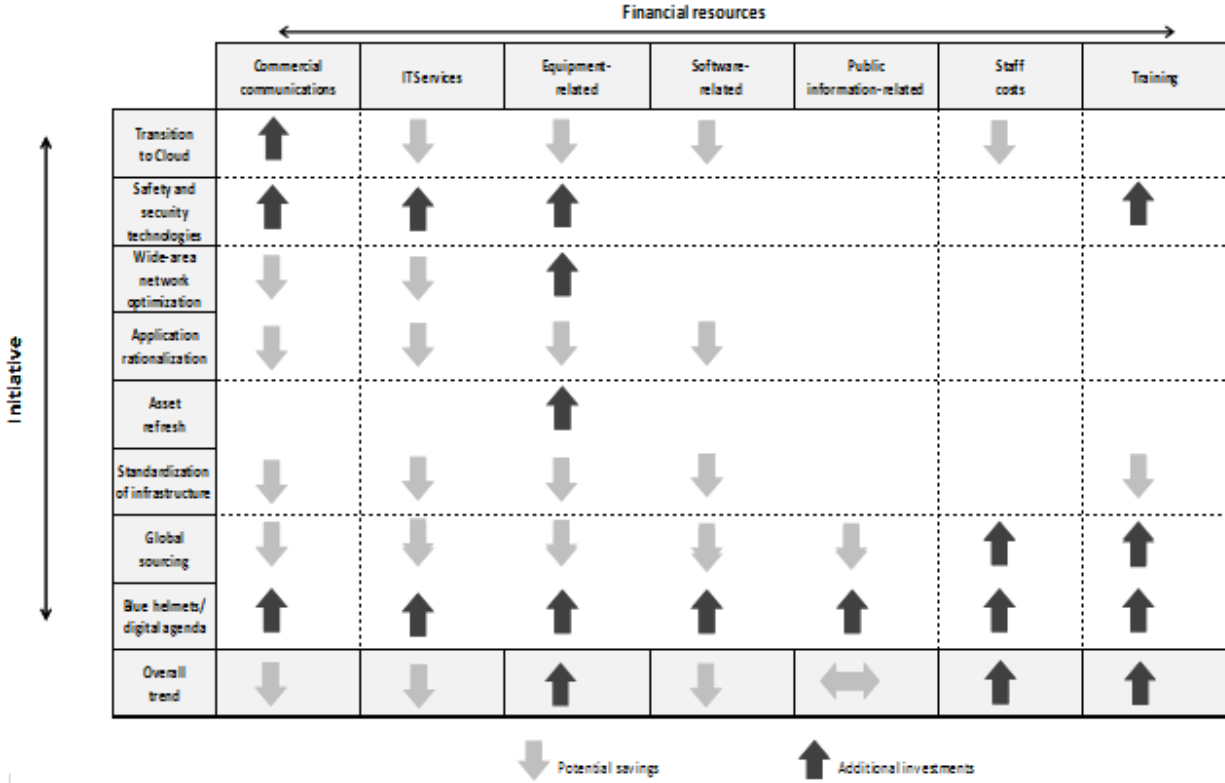


Diagram 3.2.4 – Financial Projections



147. The projections for areas that are expected to produce financial savings and those that will require additional investment over the coming years are highlighted in Diagram 3.2.4. A key concern, over the coming years, will be dealing with the aged assets, both in use and in stock across field missions. The 71st Session ICT Strategy Progress Report reports that of the assets that were in use in field missions, 56% (\$265.6 million) had passed the end of their useful life and 34% (\$50.0 million) of the items in unit stock had passed the end of their useful life (Diagram 3.2.5). The enterprise modularisation project, described in Section 1.1.4, will help simplify the mission asset base; however, investment in modernising the ICT asset base will need to be prioritized over the coming years to maintain service at acceptable levels. ICTD will identify the categories of assets that require priority replacement based on the potential impact on operations to assist missions in developing a prioritized-assets refresh programme.

148. Budgetary challenges and the capability to generate the required funds through optimization, efficiencies, cost avoidance, and other means constitutes a significant risk to the successful implementation of the FTF.

3.4 Project Management and Communications

149. The implementation of the FTF will be guaranteed by an ongoing programme of work in support of the two operational objectives. This programme of work will include short-, medium- and long-term projects managed at UNHQ, the GSC, the Regions, and the Field Missions. The Project Management Office (PMO) at UNHQ will create the project management environment, and it will monitor, oversee and report regularly on progress. The FTF implementation approach requires that programme and project management become embedded into the culture and the main vehicle for delivery of directional, operational and tactical objectives. Effective communications and transparency on programme and project delivery will complement periodic reports and provide ongoing visibility to stakeholders. The status of major initiatives and communications relevant to the implementation of the FTF can be seen on the Field Technology website (<https://ft.dfs.un.org>), which also acts as a central repository for communicating all issues related to field technology.

Conclusion

150. The annual Global Client Satisfaction Survey 2017, undertaken by DFS, had more than 7,000 field-based respondents who placed the four ICT services surveyed (user support, internet connectivity, ICT applications, and ICT equipment) in the higher satisfaction and higher importance category with two other services: safety and security, and payroll services. This current client endorsement cannot be taken for granted, given the changing landscape described in the introduction to this framework. The FTF specifically addresses maintaining future relevance and outlines the actions required to ensure that complex client requirements are continually addressed.

151. The principal focus of the FTF is to strengthen the capabilities of the local Field Technology Sections to deliver relevant services and to increase the impact of technology solutions in support of current and future core mission operations. Implementing the operational objectives will be supported by a field technology organization delivering as one. The Field Technology Delivery Model, organizational structures and mechanisms are being adjusted and modernised to support delivering the framework's objectives. As the implementation of the FTF progresses, it is expected that the Field Technology Section will become increasingly innovative and deliver solutions that are highly relevant to client needs. The Chief FTS in field operations will assume an advisory role to mission leadership on the application of technology. Retaining, developing and adapting the existing motivated workforce will be critical to achieving the end-state.

152. The coming years will bring additional threats and opportunities. The FTF will endeavour to repurpose ICT, increase its relevance in support of international field operations, and deliver higher levels of client satisfaction. This is a significant challenge and one that merits this approach. The FTF will be reviewed annually and adjusted as required. The annual progress report, to be issued every February to inform stakeholders, will include updates and amendments.

153. The FTF has been reviewed by the Assistant Secretary-General for DFS, the Chief Information Officer of the United Nations, and the Under-Secretary-General of DFS.