United Nations A/69/517

General Assembly

Distr.: General
10 October 2014

Original: English

Sixty-ninth session
Agenda item 132
Programme budget for the biennium 2014-2015

Information and communications technology in the United Nations

Report of the Secretary-General

Summary

The present report is submitted in accordance with paragraph 12 of General Assembly resolution 67/254 A, in which the Assembly requested the Secretary-General to propose a revised information and communications technology strategy, including lessons learned, by no later than the sixty-ninth session of the General Assembly.

The Secretary-General recognizes the enormous potential of information and communications technology to strengthen the decision-making and delivery capacity of the Secretariat. It is of paramount importance to the Secretary-General to ensure that the technology environment, for which the Chief Information Technology Officer is responsible, fully supports the work of the United Nations in the areas of peace and security, development, human rights and international law, among other mandates. That requires continued focus on successfully delivering existing priority initiatives (such as the enterprise resource planning project, Umoja), as well as a fundamental shift in the approach to, and structure of, information and communications technology systems throughout the Organization. In the past, technology has been regarded as a utility which is separate from substantive business. However, technology and business are not mutually exclusive, they are inextricably linked. The proposed strategy, as requested by the General Assembly, is set out in the present report and is a statement of how technology can be used to best effect in order to support the work of the Organization.

The purpose of the strategy is to strengthen, and provide a common vision for, the delivery of information and communications technology in the United Nations through modernization, transformation and innovation and by providing a framework for improved governance, strong leadership and optimal use of information and communications technology resources.

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I. Introduction

1. The role of technology in the United Nations has become progressively more critical owing to increasing global reliance on digital advances. As the Organization continues to operate in an environment which depends on modern technology, its success is measured by the efficiency of its response to the multiple challenges it faces. Technology has evolved from an enabling function to leading transformation in most organizations. Embracing technology as a partner in business is essential in these changing times. In the United Nations, there should be space for information and communications technology (ICT) to be seen in this light, while firmly retaining its fundamental role in ensuring the efficiency and effectiveness required, both in the substantive areas of the work of the United Nations and throughout the inner machinery of the Organization.

2. The creation of the Office of Information and Communications Technology, headed by a Chief Information Technology Officer at the Assistant Secretary-General level, has been a significant development in the elevated status of ICT in the Organization. The function and leadership role of the Chief Information Technology Officer is crucial in ensuring consistency in ICT delivery while driving the changes that are needed to overcome existing challenges. The Chief Information Technology Officer will provide strengthened leadership in all areas of ICT delivery and is accountable to the Under-Secretary-General for Management for ensuring that the Secretary-General can report to Member States on progress in ICT transformation. The revised information and communications technology strategy outlines ways in which ICT can be delivered more efficiently and effectively and can be improved for users by supporting critical initiatives as a matter of priority and harmonizing ICT services across the board.

3. The decisions of the General Assembly in resolution 67/254 A and the recommendations of the Board of Auditors (see A/67/651) in relation to ICT have focused on the following key thematic areas: ICT governance; information security; technical authority and enterprise architecture; the need for the Office of Information and Communications Technology to lead ICT transformation; the alignment of ICT with the core work and priorities of the United Nations; and the role of ICT in business transformation. The Board emphasized in particular that ICT systems have continued to operate in a highly fragmented way and that the Organization has lacked a common vision for it. The Chief Information Technology Officer has examined how best to ensure that the United Nations is an efficient, expeditious and up-to-date organization with a robust foundation in ICT, enabling its work and underpinning all areas of management and operational delivery. The strategy that has been developed addresses the historical problems that have been outstanding since the publication of the report of the Secretary-General on investing in information and communications technology in 2008 (A/67/793 and Corr.1), but it has a greater focus on improved service delivery brought about through changes in existing structures, systems and processes, as opposed to the introduction of new ICT products. The Board has acknowledged that progress has been made in the following areas: development of the new strategy and capturing and monitoring expenditure on ICT and security. The Board recognizes that the recommendations will take time to be fully implemented and will undertake a full review of progress when the strategy has been approved and has had time to be embedded (see A/69/178 and Corr. 1-6, para. 87, and A/69/5, vol. I, paras. 188, 191, 196 and 199).

4. A great deal has been accomplished by ICT professionals in their modernization efforts within the United Nations already. However, in order to deliver full transformation of ICT in the Organization, the issues outlined by the Board of Auditors have to be addressed as a matter of priority. The strategy presents the ICT drivers for which there is a strategic road map (see annex I below) and which provide a comprehensive approach over the next five years to support organizational priorities and to harmonize ICT delivery. The road map highlights plans for key modernization initiatives, such as, and especially, the enterprise resource planning project, Umoja, and includes projects to transform the ICT capacity of the United Nations to enhance overall effectiveness and improve efficiency. Those activities are expected to be taken forward in the first phase of work of the road map. The strategy also specifically introduces innovation as the second phase of work of the road map, to bring the Organization up to date with other appropriate modern ICT practices in the long term. Many of the most urgent projects on the road map are under way. In some cases, the projects represent ongoing elements of the strategy that will result in institutional change, while others will be extended beyond 2017 owing to their complexity and scope.

5. The strategy outlines the governance mechanisms, stronger leadership and accountability under the Chief Information Technology Officer and value for investment. The strategy also signals that related budget requirements will be presented comprehensively to the General Assembly in the context of the proposed programme budget for the biennium 2016-2017.

II. Information and communications technology mission and objectives

6. Considering the clear need for a common vision for ICT in the United Nations, the mission of the strategy has been distilled as a unified global provision of information and communications technology to enable successful delivery of the United Nations mandates.

7. In the strategy, a pragmatic approach for improving ICT in the Organization is proposed. It is the work of the United Nations — and the need to demonstrate value — that gives direction to the mission of the Office of Information and Communications Technology.. The strategy is therefore derived from the responsibility to ensure that:

(a) The ICT structure for the United Nations can support the substantive work, programmes, priorities and initiatives of the Organization;

(b) ICT is aligned with the needs of the business and that it brings value for investment.

8. The strategy identifies three objectives:

(a) The direction of ICT in support of organizational priorities, such as Umoja;

(b) Harmonization of existing infrastructure and processes;

(c) Greater emphasis on innovation to support the substantive work of the United Nations.

9. Significant inroads have already been made to meet those objectives, including by the Umoja team, the Department of Field Support, the Office for the Coordination of Humanitarian Affairs and offices away from Headquarters. However, there is much work still to be done, which will require rigorous planning and programmatic support. The strategy will meet its overarching objectives by prioritizing the work required to update systems, while supporting existing systems, harmonizing and improving the delivery of services and further pursuing innovation for ICT programmes, business processes, models and architecture, to support substantive work and priorities. ICT objectives will only be met if comprehensive governance structures are in place and by using ICT resources to best effect. The strategy fully supports Umoja; it addresses current inadequacies in the network and infrastructure (as indicated by the Board), presents measures to improve information security and disaster recovery as matters of priority and introduces innovative ways of working to contribute to the substantive work of the United Nations. The strategy is therefore driven by modernization in support of organizational priorities, transformation of ICT delivery and innovation to foster new technological solutions in the long term. The core strategy is dependent on the strengthened governance and leadership framework and on optimal use of ICT resources.

III. Information and communications technology drivers

A. Modernization

1. Enterprise solutions, including Umoja and International Public Sector Accounting Standards

10. The United Nations has several key enterprise solutions, such as Inspira for human resources, and field mission solutions to manage commodities and assets, among others. Although most of these systems are in good repair, they need to be upgraded and maintained. Continued investment is required to ensure consistent business processes and to allow departments to work globally and virtually. Umoja is the largest such enterprise solution project undertaken by the Secretariat in recent years. It represents a fundamental shift in the way in which business information is processed, managed and shared in the Organization.

11. Umoja is being implemented in close partnership between the business and technology programmes of the Secretariat, being rolled out in a manner that is continually informed by lessons learned. The Secretary-General has designated responsibility for mainstreaming the technical component of Umoja to the Chief Information Technology Officer. The fifth progress report on Umoja defined “mainstreaming” as the transfer of responsibilities from the project to the corresponding entities within the Secretariat (A/68/375, summary). The planning and preparations have been under way for some time and will conclude in January 2017. At that time, responsibility for Umoja will be transferred (“mainstreamed”) to the Chief Information Technology Officer, who will take over the management and execution of ICT-related activities including the deployment of Umoja Extension 2.

12. As regards the preparatory activities mentioned above, under the direction of the Chief Information Technology Officer, a temporary project team, comprising staff from the Umoja team and from the Office of Information and Communications Technology, has been established to ensure successful mainstreaming of functions

relating to: (a) ongoing system support and maintenance capacity to manage, maintain and enhance the Umoja production environment; (b) annual build and test programmes of work to integrate new functionality into the production environment, including the release of Umoja Extension 2 functionality; and (c) periodic releases of new functionality and/or maintenance packages within the Secretariat.

13. The scope and priorities for mainstreaming Umoja were developed by guiding principles established by the project team to help determine which tasks can be mainstreamed within the short term (up to three months), medium term (three months to one year) and long term (more than one year). Tasks that will be mainstreamed within the short and medium term will be transitioned to existing areas within the Office of Information and Communications Technology. A detailed plan will be developed for each area of mainstreaming. The Umoja team has a fully developed plan to reduce the number of staff posts from 90 to 50.

14. By January 2017, the 50 remaining staff on the Umoja team will be engaged on the deployment of Umoja Extension 2 throughout that year under the direction of the Chief Information Technology Officer. Those 50 temporary posts will be funded by the Umoja project until the end of 2017. In section II, paragraph 5, of resolution 65/259, the General Assembly stressed that the temporary posts related to the implementation of Umoja were limited to the duration of that project. Those will be mainly business analysts, experts with strong expertise in software configuration and in the Umoja technical areas, together with a good understanding of the functions and operating methods of the United Nations. Efforts will be made to retain the ICT expertise and experience of the Umoja team to ensure continuity and to support the effective operation of Umoja. As with any large new system, Umoja will require ongoing resources and investment.

15. Adopting the International Public Sector Accounting Standards (IPSAS) is another key change to the way the Organization operates, supporting effective management and strengthening accountability, including in the area of assets. In this context, the Office of Information and Communications Technology will coordinate a global ICT asset management team to assess existing assets and develop a plan for refreshing, upgrading and retirement of them, as required.

2. Network and infrastructure

16. The reliability of the network and infrastructure of the Organization is critical. The Office of Information and Communications Technology is focusing on creating a more secure network over the next two years. The local area networks, which support ICT systems in offices across the Secretariat, and the wide area network, which connects those geographically dispersed networks, constitute the backbone on which current and future data, voice and video systems operate and will operate in the future. The individual local area networks and the corporate wide area network have developed over time. While some of those networks are structured and effectively managed, it is imperative that standardization and cohesion are implemented across the system, in order to provide the required solid platform on which to run both routine and complex ICT systems. A more unified approach is required to standardize local networks.

17. The Office of Information and Communications Technology will provide a new wide area network structure with established performance monitoring, facilitating inter-office connectivity and reducing significantly the diversity in

quality of service available to users. The Office will also introduce established ICT frameworks, which prioritize service delivery and create a more transparent and interactive relationship between the service provider and the users. Those frameworks are implemented to insure that ICT services are designed, transitioned, supported and continuously improved in a cohesive and standardized manner. That uniformity of approach will bring improvements to core service delivery and provide the platform and flexibility to support the implementation of Umoja and facilitate any future innovations.

3. Information security

18. During the sixty-eighth session of the General Assembly, the Secretary-General presented a report on the progress achieved in the implementation of recommendations related to strengthening information and systems security across the Secretariat (A/68/552). In resolution 68/247 A, the General Assembly took note of the report and endorsed the conclusions and recommendations contained in the report of the Advisory Committee on Administrative and Budgetary Questions (see A/68/7/Add.11, paras. 6, 14 and 15). The Secretariat recognizes that information security must be handled holistically and that duplication and fragmentation must be addressed without delay. The Office of Information and Communications Technology has established a comprehensive information security framework for the Secretariat, building on the interim initiatives identified in the report of the Secretary-General in the areas of: prevention, incident detection and response, and governance, risk and compliance. The framework covers the following areas:

(a) Transparency: the establishment of full visibility for all ICT equipment and timely updates for all systems;

(b) Continuous monitoring: the establishment of a managed intrusion detection service to centrally collect, correlate and analyse internally generated alerts, notifications and systems log information;

(c) Vulnerability management: threats from internal and external actors must be addressed through measures that ensure internal computing resources are configured and maintained to strengthen their resistance to cyberattacks;

(d) Policy development, compliance and enforcement: additional policies, guidelines and technical procedures to protect ICT resources and data in a consistent and comprehensive manner;

(e) Incident response coordination and intelligence-sharing on threats: analysis of the causes of compromises, forensic analyses of compromised resources and more effective and efficient responses to information security incidents will be developed;

(f) Privacy: there is no uniformly implemented data classification scheme in place that defines “personal data” and identifies appropriate levels of protection, increasing the risks of breach of confidentiality. The Office of Information and Communications Technology will initiate a programmatic activity to develop, in collaboration with the Office of Human Resources Management and other relevant stakeholders, a privacy policy for the Secretariat;

(g) Security architecture and application development: best practices support a model where information security requirements are considered at the initiation of

all projects, including the appropriate consideration of disaster recovery and business continuity measures;

(h) Enhancements to the security infrastructure, including the regions, to protect United Nations information.

19. Upgraded security, combined with clearly defined standards, will support the retirement of unsecure applications and a more robust and well-documented enterprise architecture will reveal applications that are not secure enough to keep in service. Those applications will need to be isolated, decommissioned or replaced with equivalent applications to elevate the information security standard to mitigate the risks which are inevitable in the current climate of malicious software development and cyberattacks.

20. The proposed approach to information security continues the work included in the report of the Secretary-General (A/68/552) and will integrate it with governance structures. Management of a system of rigorous protection of sensitive data is imperative and it is proposed that the central authority for information security be vested in the Chief Information Technology Officer. The Office of Information and Communications Technology will also work to develop a cyberdiligence framework, which will provide mechanisms for cybercrime risk management.

4. Disaster recovery and business continuity

21. The effects in 2012 of storm Sandy on ICT operations demonstrated the need to strengthen and attribute greater priority to operational resilience. A comprehensive review of disaster recovery arrangements and readiness in the Secretariat revealed that adequate arrangements are in place for just 38 per cent of the 215 applications that are identified as critical Of those applications, 93 have been identified as critical at Headquarters, 40 of which have been found to have effective disaster recovery. In offices away from Headquarters, 43 out of 122 critical applications were found to have effective disaster recovery arrangements.[1]

22. Information technology disaster recovery is one of the core elements of the organizational resilience management system of the Secretariat, approved by the General Assembly in resolution 67/254 A. Recognizing that progress must be made in disaster recovery in the Organization, the Secretary-General proposes to strengthen the process in accordance with the decisions of the General Assembly and the recommendations of the Board of Auditors.

23. Guidelines for ICT disaster recovery planning within the Secretariat have been developed to provide for recovery of critical applications within 24 hours of a disaster. Improvements have been made to the communications infrastructure and to the failover mechanisms associated with critical applications and scheduled testing

[1] In his report on revised estimates for the proposed programme budget for 2012-2013 related to the organizational resilience management system (A/66/516) the Secretary-General reported 76 critical applications at Headquarters in 2010. At the end of 2013, a review of the business continuity plan at Headquarters was conducted. That produced a revised business continuity plan in 2014, in which a total of 93 critical applications were identified at Headquarters. The 122 applications identified as critical in offices away from Headquarters are the results of a survey conducted in November 2013 for departments at Headquarters and for offices away from Headquarters in respect of the evaluation and preparation for reporting on the Secretary-General's compact with senior staff for 2013.

is being performed. A full failover of Umoja, including all supporting systems, from its primary location at Valencia to the United Nations Logistics Base at Brindisi has been successfully carried out. The development of enterprise data centres (see below under the section on the enterprise delivery framework for an explanation) will ensure that in future all critical enterprise applications that require global resiliency are hosted in two locations.

B. Transformation

1. Enterprise delivery framework

24. The Secretary-General fully accepts the principle that there needs to be a greater balance between central control and operational freedom in ICT delivery in the United Nations. Departments need the operational freedom to act quickly and the Office of Information and Communications Technology can support this process while providing enterprise systems that will allow them to work in a more unified manner. In resolution 66/246, the General Assembly approved the review of all ICT units in the Secretariat in relation to functions, positions and structure. Following the review and subsequent consultation across the Secretariat (in departments and offices at Headquarters, offices away from Headquarters, regional commissions and tribunals), it is proposed to further restructure delivery of ICT across the Organization and to streamline ICT systems and harmonize the technology units starting with the Department of Management. Annex II to the present report illustrates and explains the organizational delivery structure in context.

25. Across the Organization, there are currently almost 2,000 applications, 70 ICT units, over 130 ICT help desks, 44 data centres and 177 server rooms (see A/67/770, paras. 52 and 55, and A/65/491, table 5). Information and data environments at the United Nations have grown and proliferated in such a way that there is significant overlap, disconnect and redundancy of purpose. It is proposed that fragmentation be further addressed (in a manner which complements work already being undertaken by the Department of Field Support) and overall delivery strengthened by harmonizing existing data processing functions and reducing the carbon footprint in order to align ICT development and delivery objectives with organizational priorities.

26. In resolution 63/269, the General Assembly requested the Secretary-General to ensure that the United Nations use enterprise data centres, rather than local data centres, as far as possible. It is proposed that the functions performed by local data centres be subsumed, wherever possible, by regional centres, as their functions are incorporated into larger systems built and managed by the regions. Likewise, the functions performed by regional centres will be subsumed, wherever possible, by the enterprise data centres, as their functions are incorporated into larger global systems managed by the enterprise data centres. The effect on resources is that at every level, less is spent on hardware, software, facilities and people. Redundancy in all those areas is also reduced and overall resiliency is increased.

27. Establishing unified centres from existing data centres will be the most effective way to eliminate inefficiencies. However, very few of the 44 data centres currently resourced by the United Nations represent possible enterprise-class operations. Those that do are physical installations capable of supporting multiple critical enterprise functions or activities with high-security, resilient infrastructures

and strong recovery capability. Among those enterprise activities are applications development and support, help-desk support, infrastructure support and systems hosting.

28. A primary goal of the transformation is to merge many large processing environments into a few highly interconnected enterprise environments, which can act in concert with one another to develop and support any system or application and be managed from any location on a 24-hour-a-day, 7-day-a-week basis. It is proposed to reduce the number of local data centres in the regions by harmonizing ICT services in the existing numerous offices. Specifically, it is proposed that data centres be harmonized into existing facilities at Valencia and Brindisi to eliminate inefficiencies and risk, and applications shared to address the same or similar business requirements. Redundant applications and systems would be decommissioned, lowering the cost of support, licensing and development. Although good progress has been made, transformation of ICT delivery will take place through harmonizing and reducing the remaining applications, as described below.

29. The numerous application centres in the Organization currently work independently and lack the security required for their scale of work and responsibilities. To address this issue, it is proposed that existing application centres in New York, Bangkok and Vienna be strengthened and their facilities become enterprise application centres. Those centres will expand applications development and support across the Organization and will develop methods and standards of development and process tracking for all enterprise development initiatives to reduce the fragmentation of applications. The enterprise application centres are designed to use the best and most effective way to develop solutions using other United Nations offices and entities. As the centres are strengthened, application development will cease outside the enterprise application centres. They will also be responsible for coordinating and controlling web hosting and web development and provide standardized website services in the Secretariat. The overarching strategic goal of harmonizing websites is a more cohesive framework for the public web presence of the United Nations.

30. The Office of Information and Communications Technology will also leverage existing capacities at Headquarters and at key offices away from Headquarters and assign regional technology centre status to the existing regional centres at the United Nations Office at Nairobi for Africa, in New York for the Americas, at the Economic and Social Commission for Asia and the Pacific (ESCAP) for Asia and at the United Nations Office at Geneva for Europe. It will continue to set strategic direction, establish governance mechanisms, exercise oversight and take policy decisions that guide the regions. The regional technology centres will complement those established for peacekeeping operations, coordinate regional ICT services and institute governance measures. They will ensure consistent architecture and policy compliance within the region and will harmonize ICT functions in line with the strategy. The area of information security, in particular, would benefit from a regional approach, where observance of standards and best practices is critical in mitigating the risk to ICT services and United Nations information. To illustrate the relationship between the enterprise application centres and the regional technology centres, it is envisaged that the proposed enterprise application centres will act as delivery mechanisms for requirements established by the regional technology centres, which will ensure governance standards, information security and architecture requirements are met. The regional technology centres will provide

local ICT services such as desktop, network, videoconferencing and other support services within their particular campus.

31. Help desks are also a critical resource in the Organization and enterprise service desks are required to support enterprise-wide applications and infrastructure. The establishment of standards for tracking problems and reporting is integral to the successful implementation of an enterprise application. Umoja represents the first and most critical challenge to global support of an enterprise application at the United Nations. It is proposed to harmonize help-desk functions to transform them into a global, cost-effective and more efficient shared-service model, which will provide global around-the-clock coverage, along with the regional technology centres. It is proposed that five help-desk facilities (ESCAP, the United Nations Global Service Centre, the United Nations Offices at Geneva and Nairobi and Headquarters) will become enterprise service desks, which will provide support for Umoja as a priority and expand to other enterprise applications and other shared ICT services. Depending on the maturity of supported applications and systems, the enterprise service desk model will allow the required level of flexibility on the location of tier 1 and tier 2 support.

2. Enterprise network operations communications and security centre

32. With the introduction of enterprise services being delivered by the enterprise application centres and supported by the enterprise service desks, there arises the need for enterprise-wide awareness of the health and integrity of the enterprise information environment and infrastructure.

33. To this end, an enterprise network operations communications and security centre is proposed, to provide around-the-clock monitoring and critical response coordination for the global network, security, asset health and disaster management. A major part of that process is the protocol for the coordination of global disaster response and alternative asset management for business continuation. The overall responsibility of the centre is to monitor the reliability and security of the network and to provide proactive and predictive responses to infrastructure failure and security breaches.

3. Global engineering, conferencing and communications in information and communications technology

34. Videoconferencing services should be harmonized globally through the establishment of technical standards, standard operating procedures, tools and operations. Every duty station of the Organization has audiovisual, multimedia, broadcast, radio communication and conference management systems. However, with the exception of videoconferencing services related to peacekeeping, those systems operate in a certain degree of isolation from one another. Studio production, media and building management systems all rely on technology. Global engineering of broadcast and conference management will improve service delivery by establishing greater governance, ensuring compliance, improving communications and knowledge sharing, standardizing equipment and reinforcing security measures.

35. The Office of Information and Communications Technology will continue to improve the infrastructure and services that provide the Secretariat with communications in a standardized way, relying on standard hardware, services, applications, policies and procedures. It will focus on improving existing services

and attaching priority status to critical services, such as virtual meetings and teleconferencing.

C. Innovation

36. The strategy hinges on the understanding that core ICT services must be improved where necessary and fully maintained and the strategic drivers support that goal. Focusing on services and enterprise initiatives (specifically at this time, Umoja) and providing a cohesive structure in order to do so, are priorities. Those focus areas require the Office of Information and Communications Technology to be positioned and understood as a partner in, as well as an enabler for, the work of the Organization. If technology is changing the way in which the Secretariat works and as core services are improved and stabilized, it is inevitable that innovation will play an important role in the strategy to better assist in the delivery of the United Nations mandates and in supporting the post-2015 development agenda. There are many ways in which ICT is going to have an impact on how the United Nations will be expected to work, potentially in relation to, for example, field commodity management; fibre optics and digitization; enterprise computing; mobile technology, mobile solutions and cloud computing; and the analysis of data for tracking and early detection purposes. The Organization should expect ICT to be open to new advances in, and development of, technology to support the substantive work of the United Nations.

1. Analytics

37. The Office of Information and Communications Technology will explore opportunities to develop capacity in analytics and potential means of collaboration with other United Nations entities throughout the global ICT community on the development of analytics solutions to allow for operational flexibility in support of the delivery of their mandates. Analytics could assist in crisis management efforts and the Office would seek to work with the Crisis Information Management Advisory Group to seek to explore this further. Analytics have already made a positive impact on the ability of the Organization to predict or forecast events better. In resolution 67/254 A, the General Assembly underlined “the importance of information and communications technology in strengthening oversight and accountability” and in increasing the availability of accurate and timely information to support decision-making. With that in mind, it has become increasingly clear that there is a data overload and that the ability to harness that data to create actionable information is a critical determining factor in effective decision-making. There is also a compelling need for the United Nations to become a more data-driven Organization, in which departments and stakeholders have full access to all data across the Organization and can use that data to carry out analyses and make better informed decisions.

38. Some analytical methods are currently used by parts of the United Nations in isolated or specialized applications. A platform for data and information collection would enable departments to share data and information productively, both to provide concrete data analysis on specific topics and, more generally, to foster a culture of data sharing within the United Nations system. In support of that effort, there must be standardized and uniform data and information management systems and access methods.

2. Strengthening collaboration and coordination on information and communications technology

39. The Secretariat would benefit greatly from increasing its collaboration with various appropriate entities on joint projects to enhance the impact of ICT in the United Nations. The success of joint projects, however, would depend on careful planning, active project management, clear agreement about roles and relationships and clearly defined goals that contribute to the objectives of the United Nations. An internal platform will be developed in support of the departments to identify opportunities for technology partnerships to implement initiatives more efficiently, in collaboration with other identified entities in the United Nations and drawing on their expertise. Collaboration with United Nations agencies, funds and programmes will also be strengthened through the ICT network.

40. Networks of organizations and individual volunteers use online platforms for collaborative data gathering, processing and publishing to help support relief efforts. Various technologies and methods range from relatively simple data gathering, to highly sophisticated sensor technology and analytics. The increasing availability of free and open-source software and open data reinforce the need for the United Nations to collaborate in the movement of big data, joined with humanitarian and social networking. The Office for the Coordination of Humanitarian Affairs is already an established member of the Digital Humanitarian Network. In recognition of the initiative taken by the Office for the Coordination of Humanitarian Affairs, the Office of Information and Communications Technology plans to use those connections and harness the existing network. It would provide leadership in the Organization, making use of existing developments and technologies to obtain reliable, critical data rapidly and to interact with affected populations and partners.

41. Finally, there should be greater emphasis on standards to strengthen interoperability between systems and across the United Nations system. Building on work under way, standard formats for information exchange will be implemented to allow content, documents and meeting information to be shared effectively throughout the Secretariat. In tandem, the conversion of information to digital formats will facilitate the appropriate availability of information and documents. As documents become available digitally, leveraging existing policies and in compliance with information security best practices, the processes surrounding document creation and use will be automated and satisfy the ever-important need to rely less on paper.

IV. Governance and leadership

42. The General Assembly has stated that duplication and fragmentation in the area of information and communications technology has arisen from ineffective governance and leadership (resolution 67/254 A, para. 8). In that environment, responsible decision-making, oversight and visibility concerning critical resources are lacking. The primary objectives of the strategy relating to governance include affirming leadership and strengthening transparency and accountability and ensuring value for money from investment in ICT. A new governance framework is proposed to oversee ICT architecture, standards and investment choices, to allow for holistic analyses of costs and savings and ongoing support for existing and new initiatives. The leadership role of the Chief Information Technology Officer is a crucial

component of the governance framework in ensuring accountability to Member States for all ICT responsibilities and activities.

A. Role of the Chief Information Technology Officer

43. The General Assembly endorsed the proposal by the Secretary-General that the Chief Information Technology Officer should have responsibility for the overall direction and performance of ICT activities in the United Nations (resolution 63/262). The Board of Auditors determined that the scope and remit of the Chief Information Technology Officer with regard to a strategic vision, business transformation and leadership, was not clearly defined, communicated or understood within the Secretariat, nor was it considered to be clearly differentiated from managing day-to-day ICT operations (A/67/651).

44. The Chief Information Technology Officer is the most senior manager responsible for leading all ICT activities globally in the Secretariat and is accountable to the Under-Secretary-General for Management. The overarching role of the Chief Information Technology Officer is to create and sustain a set of shared views, programmes and values, and to implement innovative technologies to support and facilitate the work of the United Nations. He or she is also the senior Officer responsible for meeting the objectives of the strategy.

45. The strategy differentiates between strategic direction and operations and clarifies the role of the Chief Information Technology Officer under a revised organizational structure (see annex II to the present report). Day-to-day ICT operations will be accomplished through a structure of regional hubs of the Office of Information and Communications Technology and will be the responsibility of the Director of the Global Operations Division, as Chief Technology Officer. Day-to-day ICT operations in the field will continue to be handled by the appropriate departments. That will enable the Chief Information Technology Officer to be more effective in his or her strategic role. The Chief Information Technology Officer will be provided with the necessary central authority and resources to oversee all ICT activities and to determine the shape and development of the underlying ICT architecture for the Organization.

B. Governance framework

46. The ICT governance framework sets out the lines of authority, accountability and teamwork among the various bodies and units that manage ICT at the Secretariat. It clarifies how decisions are made, who provides inputs for the decisions, who is accountable and how ICT activities are coordinated and resourced within the Secretariat. Among the primary objectives of the strategy are improving transparency and strengthening accountability. To help achieve those objectives, the Chief Information Technology Officer will work through two executive-level advisory groups: the Information and Communications Technology Executive Committee and the Information and Communications Technology Board.

47. The Information and Communications Technology Executive Committee, chaired by the Under-Secretary-General for Management, will ensure that ICT is central to, and delivers against, the business requirements and objectives of the United Nations. It is the highest-level decision-making body in the Secretariat on

ICT strategy and priorities and is represented at the level of Assistant Secretary-General and Under-Secretary-General. The Committee meets at least once a year and as required, and is updated quarterly on projects.

48. The Information and Communications Technology Board is responsible for ensuring coherent and coordinated global usage of ICT across departments and duty stations, in line with the objectives of the Secretariat and the general policy direction provided by the Committee. The Board is chaired by the Chief Information Technology Officer and comprises members at the D-1 or D-2 level, representing offices and departments at Headquarters, offices away from Headquarters, the economic commissions and tribunals. The Board meets quarterly and may set up smaller committees to deliberate on specific matters and report to it. There are other technical governing bodies, such as the policy and security committees, which advise the Chief Information Technology Officer on making technical decisions.

49. Information and communications technology policies regulate the implementation, provision and use of ICT resources and data. The establishment of a system of policies, procedures and guidelines is being effected through the Information and Communications Technology Policy Committee, which establishes technical working groups as required. The Policy Committee is comprised of representatives of offices away from Headquarters, the economic commissions and the major departments and offices at Headquarters. The two-layer process of consensus-building at the working group and committee level ensures that ICT policies recommended for issuance reflect both the operational and management perspectives of the ICT community. Finally, the Architecture Review Board is responsible for reviewing and formulating the enterprise architecture of the United Nations and associated standards and policies, and providing recommendations to the Chief Information Technology Officer.

C. Human resources in information and communications technology

50. Information and communications technology staff and expertise are among the biggest assets in the strategy, and performance management and the training of staff are co-dependent. To support dedicated ICT professionals in pursuit of a high level of performance and to align with the new structures which will come about from regionalization, training programmes will concentrate on the development of the requisite ICT skills for staff. The Office of Information and Communications Technology will work with the Office of Human Resources Management to create those programmes to promote technical skills as the basis for career progression, since development and training must be geared towards producing a highly skilled and motivated ICT workforce.

51. Building on the work started as part of the project to rationalize ICT organization (see A/65/491) and the initiative to improve enterprise information and communications technology management (see A/66/94), which were approved by the General Assembly in resolutions 65/259 and 66/246, and the mandate of the Office of Information and Communications Technology to coordinate the ICT human resources management programme and activities, including staff development and the mobility of all ICT staff in the global Secretariat (see A/62/793 and Corr. 1), the Office of Information and Communications Technology plans to consult the Office of Human Resources Management in relation to:

(a) Creating new generic job profiles and standard job profiles in collaboration with the Office of Human Resources Management, based on revised ICT needs and career paths;

(b) Reclassifying ICT staff positions where necessary, to ensure that the Organization adapts properly to emerging technology;

(c) Establishing a training and mobility programme for ICT personnel.

52. Those measures will enable the Organization to implement the strategy consistently and globally, and support staff in acquiring the required competencies, skills and certifications necessary to best support the organization and at the same time achieve their career goals. The Office of Information and Communications Technology will increase the level of professionalism and ensure that the appropriate certifications needed to perform ICT functions are obtained. A critical component of the strategy is establishing an alternative career path for ICT professionals whose suitability for career advancement would be assessed on the basis of the advanced technical competence that they contribute to the work of the United Nations. The Office of Information and Communications Technology will work closely with the Office of Human Resources Management to define the technical skills in areas categorized for upward mobility. While technical abilities and performance will be recognized as the key measures for consideration of recruitment or promotion, strong management skills will also be required at more senior levels. Training programmes and recruitment exercises for ICT professionals will accommodate the requirement of a broad range of skills across the Organization.

D. Information and communications technology performance management

53. The Secretary-General acknowledges the need for more comprehensive performance information on the ICT services provided across the Secretariat, including information on performance targets and benchmarks (see A/67/651, paras. 39 and 82, A/67/770, para. 63, and General Assembly resolution 67/254 A, para. 14). Managing system performance is difficult in a fragmented structure. Although those challenges will be alleviated through the strategy, performance management is part of an integrated management framework.

54. The Secretariat has created the ICT performance management framework, which the Office of Information and Communications Technology started implementing in 2013, following the recommendation of the Board of Auditors, which was approved by the General Assembly in resolution 66/246. The performance management framework will strengthen the management and monitoring of ICT strategic programmes and will demonstrate the value of ICT. The framework also provides the basis for optimizing and harmonizing ICT assets, projects, services and support and a means to align the performance of ICT with the business needs of the Organization.

55. Service-level agreements will continue to ensure that ICT service deliverables are assessed against performance targets and can be held accountable. Senior leaders in the Organization are also required to support ICT endeavours through their compacts. Their expected accomplishments and performance measures are tied to

the implementation of the strategy and specifically to the preparation for, and deployment of, Umoja. The Office of Information and Communications Technology and the Procurement Division will develop new requests for proposals for performance-based contracts where appropriate, which will provide for greater use of key performance indicators in contract management.

V. Optimal use of information and communications technology resources

56. In the relatively short term, demands for new and innovative ICT services are expected to increase and require steady and sustainable funding. That must be considered in parallel with the many complex responsibilities of the United Nations which continue to be amplified by global events. The Office of Information and Communications Technology will ensure that all ICT plans, investments and their implementation are subject to strict governance and review processes. ICT investments will focus on standardized and centralized products and services in order to realize benefits in these core services and to dedicate optimal use of resources to meeting the needs of the Organization. As investment is critical, so is the need for the Office to oversee and monitor ICT investments to enable more informed decision-making and holistic reporting of global costs. It is envisaged that Umoja will be a lever for presenting more consolidated ICT financial information.

57. As an underlying principle, the strategy assumes that investment in ICT, based on the decisions of the General Assembly, will be subject to strict governance, will align with the priorities of the United Nations and will represent a positive return on investment for the Organization. As part of its improved stewardship, the Office of Information and Communications Technology will focus on defragmentation, retirement of systems and global sourcing to ensure that all ICT resources are optimally managed.

58. While most of the proposals in the strategy, if approved, will be implemented on a cost-neutral basis during the biennium 2014-2015, the Secretary-General will put forward detailed resource requirements in the context of the proposed programme budget for 2016-2017. The indicative level of resources for the biennium 2016-2017 is as follows:

(a) $1.1 million for the implementation of activities related to the comprehensive information security strategy, as described in paragraph 16 of the report of the Secretary-General on progress in the implementation of information and systems security (A/68/552), including implementation of subsequent phases of the information security programme described therein;

(b) $1.5 million for the staffing structure associated with the implementation of activities proposed in annex II to the present report;

(c) $390,000 for the implementation of activities related to the proposed analytics programme, as described in paragraphs 37 and 38 above;

(d) $76,000 for the staffing structure for the implementation of the activities proposed in paragraphs 24-31 above.[2]

[2] The indicative level of resource requirements does not include the anticipated costs of mainstreaming and maintaining Umoja.

Budgetary overview for information and communications technology

59. Having conducted an analysis of current and historical ICT budgets, it has been determined that the total annual ICT budget, excluding Umoja, for the biennium 2010-2011 was $759.5 million and for the biennium 2014-2015 it is $653.7 million. If the resources for Umoja are included, the annual ICT budgets for the two bienniums are $809.9 million and $718.3 million, respectively. Approximately 76 per cent of the annualized ICT budget of the United Nations for the period 2010-2015 pertains to peacekeeping operations, with the remaining 24 per cent directed to non-peacekeeping ICT service provision and ICT strategic management. The overview of approved resources by source of funding for ICT programmes and activities during the 2010-2011, 2012-2013 and 2014-2015 bienniums is provided in annex III to the present report. There are an estimated 41,426 total staff members across the Secretariat, with approximately 21,248 staff serving in peacekeeping and special political missions, 16,437 at Headquarters and offices away from Headquarters and 3,741 in the regional commissions and in tribunals (see A/69/292, table 4). There are approximately 97,655 uniformed personnel, comprising military observers, civilian police and troops, as well as United Nations Volunteers, contracted personnel and consultants.[3]

Global sourcing

60. The Chief Information Technology Officer should be ready to produce information relating to the expenditure on consultants and contracts and yet this information is currently difficult to obtain. In the strategy, it is proposed that increasing costs and gain efficiencies in global purchasing and management of ICT goods and services acquired through systems contacts be controlled. Over the next three years, the implementation of the proposed new processes, governance and organizational structure would allow contracts to be managed more efficiently and optimize buying power, conditions and the level of recourse that the United Nations has in respect of ICT contracts. The United Nations will strengthen visibility and control of ICT expenditures through the establishment of standard processes, a centralized contract management capacity, a repository of contracts and a management tool for software licences and hardware purchases. Global sourcing will be implemented using Umoja to support process integrity and visibility and will comply with IPSAS.

61. The Procurement Division in the Office of Central Support Services has worked diligently to consolidate contracts where possible, and the Chief Information Technology Officer will add additional global governance measures in an effort to bring about further efficiencies across the Secretariat. She will increase global contracts and impose governance on existing contracts that are optimized for the scale of the United Nations itself and potentially for the wider United Nations system. The strategy is based on a multitier structure for contract management in order to allow proper control and accountability in the establishment and use of global, regional and local contracts. A central capacity, located in the Office of Information and Communications Technology and comprising departmental participation, will be dedicated to managing global contracts and effective governance.

[3] Peacekeeping fact sheet, 31 August 2014.

62. Regional contract groups will handle contracts that are specific to a particular region, such as cellular contracts, regional technology repair services or regional disposal services. Finally, local contract groups will handle only site-specific needs. Contract savings can be achieved by applying a disciplined, volume-based approach with vendors. Leveraging aggregate purchasing volume will yield significant annual savings for entities responsible for the major systems contracts. There are two primary target areas of the global sourcing strategy: voice and data communications and the purchase of hardware and software licences.

63. The Office of Information and Communications Technology will explore advances in data and voice communications to achieve efficiencies, recognizing the benefits and savings of an increasingly mobile workforce. Carrier, global and regional voice and data contracts will be robustly renegotiated and there will be an annual audit of phone usage by external vendors. Automation of services will reduce telecom back-office expenditures and bandwidths will be actively managed by the Office of Information and Communications Technology as requirements change. To reduce contractual costs associated with hardware and software licence, the following proposals are being recommended:

(a) Creation of a more effective and efficient way to manage global contracts and licences through regionalized contract management;

(b) Negotiation of contract discounts using the global purchasing volume of the system, which will require the Office to work closely with all entities across the Secretariat;

(c) Review of current contracts and recommendations for efficiencies proposed;

(d) Development of performance-based contracts for ICT services;

(e) Decommissioning of redundant systems.

VI. Conclusion

64. The revised information and communications strategy is designed to build the right architecture and structure and mainstream ICT in support of Umoja, and support other critical initiatives in the present and future. Information security remains a priority. The Organization must be able to rely on a sound network and infrastructure. That is a basic requirement and one which the Chief Information Technology Officer takes seriously. The Chief Information Technology Officer is preparing the ground for a faster, more secure and more reliable network in the next two years. She is also taking full responsibility for improving current disaster recovery arrangements for applications.

65. The strategy supports the principle that there needs to be a better balance between central control and operational freedom. The proposals to harmonize functions in regional ICT units, data centres and applications centres will bring about this balance and at the same time reduce fragmentation, inefficiencies and the carbon footprint. The Organization routinely depends on service-desk help, so the service needs to be more dependable. A unified enterprise service desk is proposed which will provide around-the-clock coverage and will be tightened to ensure it can handle the weight of responsibilities arising from the implementation of Umoja.

Similarly, the enterprise network operations communications and security centre will operate around the clock to monitor and ensure the security of systems.

66. The strategy presents future innovative mechanisms for consideration in order to keep up with the developing technology landscape. Using analytics and identifying appropriate collaboration on ICT development could be very beneficial to the Organization.

67. The leadership role of the Chief Information Technology Officer is essential in ensuring full accountability, providing direction for, and oversight of, all ICT activities and representing the common vision articulated in the strategy. Globalization forces technology professionals to become more than ICT experts and more like business architects. As the senior officer responsible for ICT objectives, the Chief Information Technology Officer will support the development of ICT staff to deliver the changes needed by establishing specifically tailored training programmes with the Office of Human Resources Management. As a consequence, a high level of performance will be expected and service-level agreements will reflect new targets that make senior staff more clearly accountable for their responsibilities in ICT. Greater emphasis will also be given to ICT requirements in compacts for senior leaders throughout the Organization.

68. Finally, it is the clear responsibility of the Secretariat to ensure value for investment in ICT. By adopting the strategy, the Secretariat will create value with faster, improved, more reliable ICT services. The core principles of the strategy, together with robust governance mechanisms, reorganized resources and optimal financial management, will bring about and support cultural change in the Organization and establish the concrete conditions required for effective and efficient ICT delivery in all areas of the work of the United Nations.

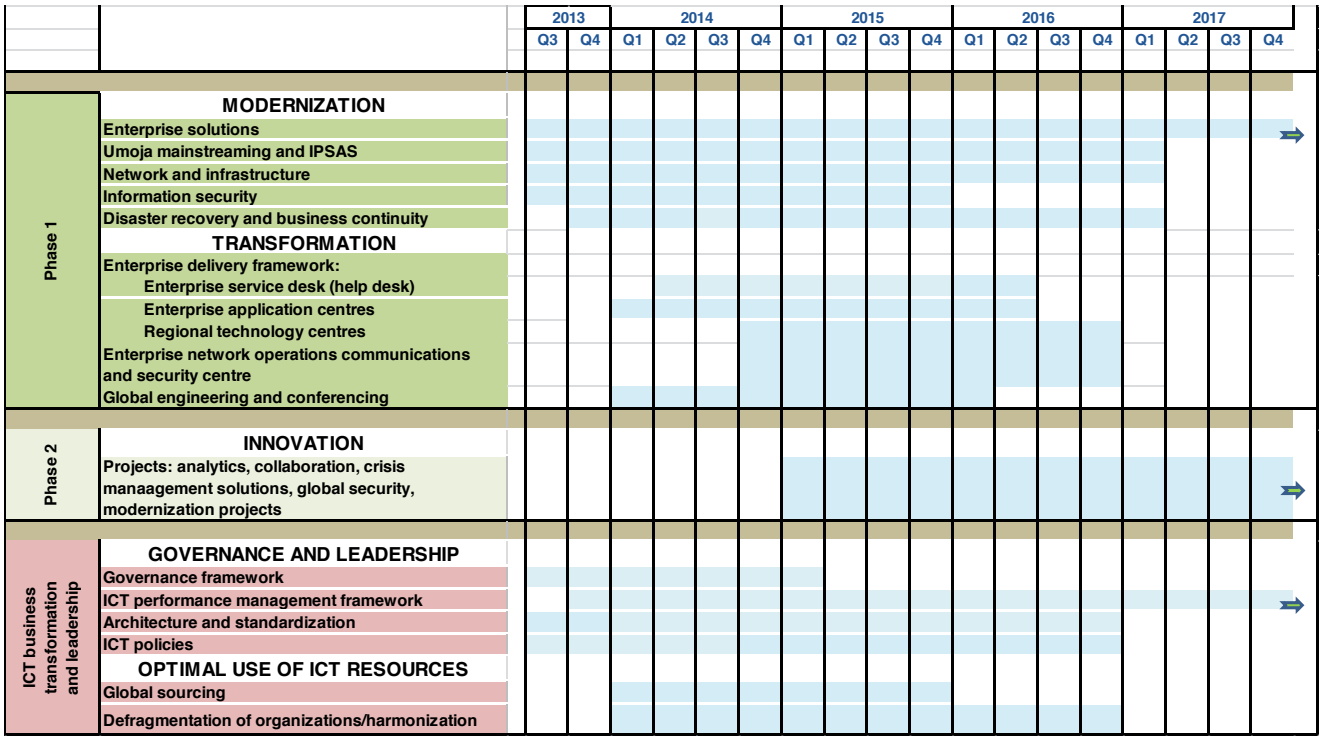
VII. Action to be taken by the General Assembly

69. **The General Assembly is requested to endorse the information and communications technology strategy set out by the Secretary-General to modernize and transform information and communications technology and foster innovation in the Organization.**

Annex I

Strategic road map

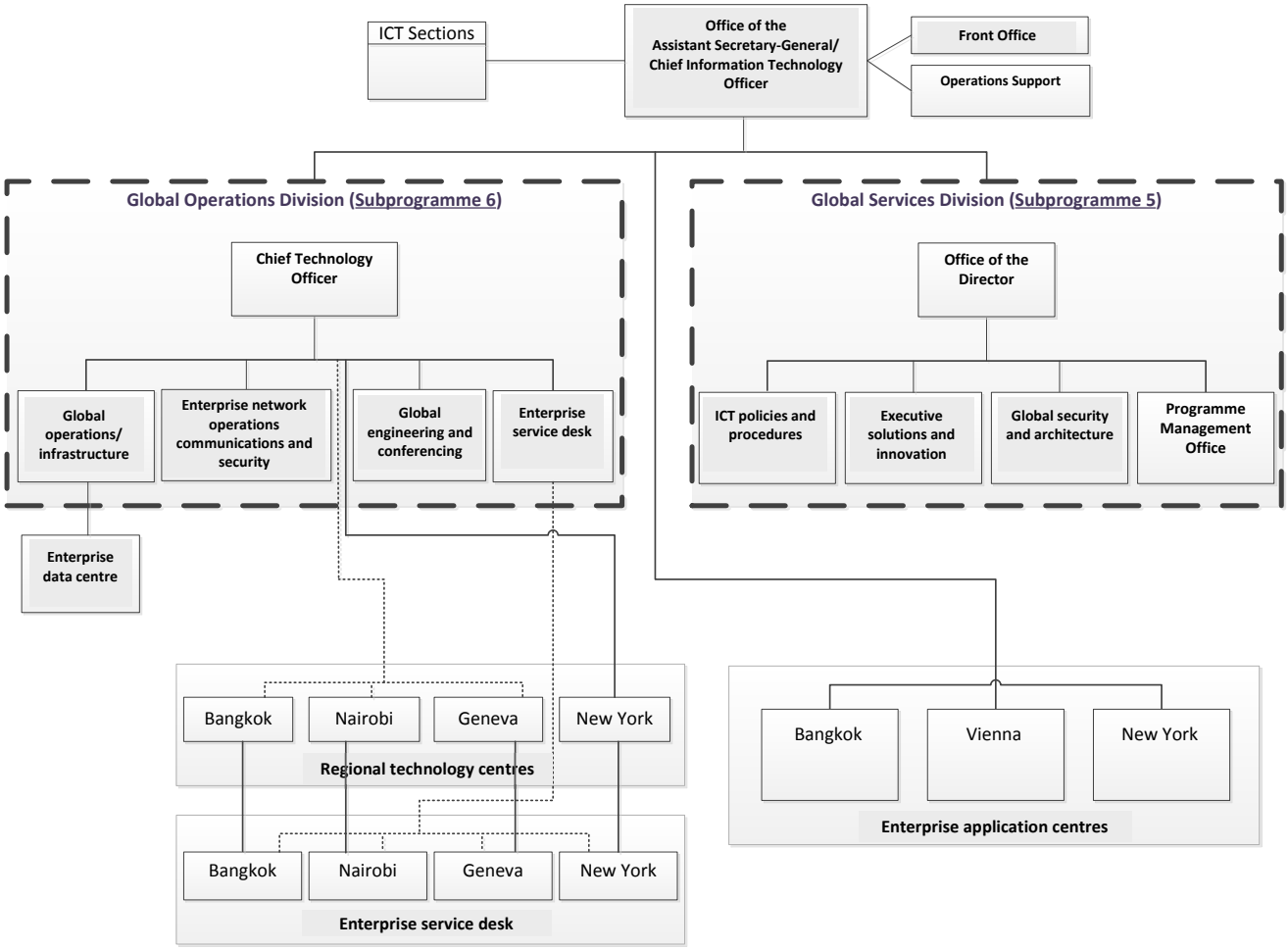
Phase one and phase two cover the strategic ICT drivers of modernization, transformation and innovation. ICT business transformation and leadership covers the two major underlying areas of governance and the optimal use of ICT resources, which are interlinked with the three main elements of the strategy (modernization, transformation and innovation).



Annex II

Organizational structure of the Office of Information and Communications Technology

1. In its resolution 66/246, the General Assembly approved the review of all ICT units in the Secretariat in relation to functions, positions and structure. Following a thorough assessment, the Department of Management will harmonize the various ICT units. The proposed organizational structure below supports a global, enterprise approach to ICT, ensuring awareness of both the operational and support requirements of ICT in the United Nations.



Subprogramme 5

2. The Director of the Global Services Division will be responsible for strategic ICT service delivery and will provide leadership capacity internally. Working with the Chief Information Technology Officer, the Director will provide service delivery oversight for information security, operational resilience and programme management. He or she will also ensure that compliance enforcement authority is established, that governance structures are implemented and enforced and that service delivery and sound business relationship management drive decisions. Additionally, the Director will provide strategic oversight for the information security and operational resilience functions and will ensure that technical authority is established and governance structures are implemented and complied with. The following functions will report to the Director of the Global Services Division:

- **ICT policies and procedures**. This new service will develop and maintain ICT administrative policies and procedures such as new cost-recovery policies. It will also be responsible for a new, asset-based portfolio management programme in compliance with Umoja and IPSAS.
- **Executive solutions and innovation service**. Responsibilities include the oversight and implementation of an analytics and business intelligence strategy for the Secretariat; liaison with the senior management of offices and departments to strengthen innovation; strengthening collaboration and coordination; and development and implementation of communication strategies of the ICT programmes within the Secretariat.
- **Global security and architecture**. The section will set and maintain the enterprise architecture and information security frameworks, and oversee implementation across the Secretariat. It will be responsible for establishing an Organization-wide architecture and strong technical standards. It will also oversee the development of the information security policy and ICT risk management and will assist with information security incidents.
- **Programme Management Office**. The Programme Management Office is expected to operate at the level of large-scale industry standards, with a scope inclusive of programme and project planning governance, finance and compliance enforcement, including monitoring and reporting on the ICT performance management framework.

Subprogramme 6

3. It is proposed that the Director of the Global Operations Division be designated as the Chief Technology Officer, who will be responsible for overseeing all technical and operational aspects of ICT. He or she will work with the Chief Information Technology Officer to execute the strategy and maintain routine ICT operations functions through the use of technological resources. The Chief Technology Officer will direct all technical and operational resources in ICT to attain the goals established in the strategic plan. The following functions will report to the Chief Technology Officer:

- **Global operations and infrastructure**. This function will be responsible for the management, optimization and maintenance of the wide area network backbone, connecting local networks. It will coordinate the standardization of

local area networks and implement quality of transmission services for voice, video and data traffic.

- **Enterprise network operations communications and security centre**. The overall responsibility of the enterprise network operations communications and security centre is to monitor the reliability and performance of the network and the security of network systems and applications. It will provide proactive and predictive responses to infrastructure failure and security breaches.
- **Global ICT engineering, conferencing and communications**. The responsibilities of this organizational unit relate to the global engineering of broadcast, multimedia and conference management, as well as management of broadcast and multimedia industrial systems.
- **Enterprise service desk**. The responsibilities of the enterprise service desk include the coordination of all help-desk support for global applications and business systems.
- **Regional technology centres**. The regional technology centres will be responsible for harmonizing ICT services across the regions, institutionalizing governance and implementing the strategy. They will ensure consistent architecture and policy compliance and will collect business requirements and coordinate solution development in alignment with established standards and architecture.
- **Enterprise data centres**. The enterprise data centres will have a secondary reporting line to the Chief Technology Officer on enterprise systems, system development, support and delivery, policy, standards, compliance, strategic alignment, methodology and priorities in expenditure. They will create a unified approach to harmonizing applications and data centre infrastructure.

4. The enterprise applications centres will be responsible for strategic priorities, such as supporting the mainstreaming of the enterprise applications service delivery model, and supporting the delivery of effective ICT solutions and services for the Secretariat. The Chief of the Global Applications Service will ensure the continuity of critical systems, will develop a strategy for implementing major information systems initiatives and will provide authoritative technical and policy advice to the Chief Information Technology Officer and other senior managers in the Office of Information and Communications Technology. Additionally, this post will carry the responsibility of developing solutions to resolve problems that have an impact on any critical areas of the work of the Organization and for leading the development of standards, procedures and practices across the Secretariat.

Annex III

Budgetary overview

Overview of information technology and communications resources for the bienniums 2010-2011 to 2014-2015 including resources for Umoja

(Millions of United States dollars)

Biennium	*Regular budget*[a]	*Extrabudgetary*[a]	*Support account*[b]	*Peacekeeping missions*[b]	*Special political missions*[c]	*Total*	*Umoja*[d]	*Total including Umoja*	*Annual*	*Annual including Umoja*
2010-2011	301.5	24.9	144.3	1 048.4	Included in regular budget	1 519.0	100.7	1 619.7	759.55	809.85
2012-2013	210.6	24.9	73.8	963.6	58.8	1 331.7	137.3	1 469.0	665.85	734.50
2014-2015	240.7	28.4	37.7	950.7	49.8	1 307.3	129.4	1 436.7	653.65	718.35
Total 2010-2015	**752.8**	**78.2**	**255.8**	**2 962.7**	**108.6**	**4 158.1**	**367.4**	**4 525.4**	**2 079.05**	**2 262.70**

[a] See table entitled "Resources allocated to information technology" (A/64/6 (Introduction)), and A/68/6 (Introduction, table 14), which includes staff costs based on an analysis of posts dedicated to ICT programmes. As extrabudgetary resources presented in A/68/6 excluded expenditure for information technology-related posts, for the purpose of the present analysis it is assumed that extrabudgetary resources for the 2010-2011 biennium were kept at the same level as reported for 2012-2013.

[b] See A/C.5/64/15, A/C.5/65/15, A/C.5/66/14, A/C.5/66/18, A/C.5/68/21 and A/C.5/68/26. As the resources presented in those reports excluded post expenditure for information technology-related posts, for the purpose of the present analysis it is assumed that staff costs for the 2012-2013 and 2014-2015 bienniums were kept at the same level as those reported for 2010-2011.

[c] A/68/327, table 5, excludes staff costs.

[d] A/68/375 and A/69/385 and Corr.1.