



ECA Information and Communications Technology Strategy

Taking ICT to a Strategic Level



United Nations
Economic Commission for Africa

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Executive Summary

The Information and Communications Technology Section is responsible for the Economic Commission for Africa's information and communications technology (ICT) infrastructure. Until 2012, the Section functioned as an operational unit in the Division of Administration, working within the framework of an ICT strategy prepared to support the biennium budgets from 2010 through 2013. Linking the strategy to the biennial budget (\$18.1 million over the three years) was fully appropriate for an operational section in the Division of Administration. However, December 2012 saw the introduction of a new dynamic at ECA, in response to the need to effectively support Africa's transformation agenda. A new business plan was prepared for 2013-2015, with a view to making ECA "the think tank of reference on matters pertaining to African development." To reflect the need for a more strategic orientation, the Information and Communications Technology Section (then known as the Information Technology and Umoja Support Section) was brought

into the newly created Public Information and Knowledge Management Division, together with the sections responsible for communications and media relations, publications, and knowledge and library services. Together these sections contribute to the Commission's strategic objectives by promoting visibility and impact.

The previous operational ICT strategy ended in December 2013, and a new ICT strategy was needed. The new strategy would not be time-bound or budget-related; rather, it would establish guiding principles, aligned to the Commission's overall vision, against which to make staffing and investment decisions in the biennial budget and supplementary extrabudgetary resources. Concurrently, Headquarters in New York has also been engaged in preparing a global United Nations ICT strategy that addresses operations level requirements. The Commission's needs will be included in this global strategy, but the ECA strategy goes beyond operations to add a higher strategic level focusing on

organizational effectiveness and impact. In this way, the new ICT strategy will enable ECA to increase its influence on Africa's transformation agenda.

To formulate this strategy a six-person drafting team was put together, made up of four representatives from the user community corresponding to the four basic purposes for ICT: productivity, collaboration, communication and data design and analysis, plus the Chief of the Information and Communications Technology Section, and an outside specialist in ICT strategy formation. The team held initial consultations with interested staff in early December 2013, after which the specialist prepared an inception report. The team then reconvened in March 2014 to finalize the strategy and present it to senior management for consideration and approval.

Based on the investigations of the team, the following vision is suggested for the ICT strategy, with a view to taking forward the Commission's aspirations of becoming the premier think tank for supporting Africa's transformational agenda: *to ensure that ECA staff always use the most suitable, cost-effective and user-friendly information and communications technologies available to maximize productivity and facilitate collaboration, communication, and data collection and analysis.*

For this to occur, all of the support, services and products offered by the Information

and Communications Technology Section should be based on mutual understanding between the Section and its clients, the specific challenges in the current ICT environment and organizational culture, and full knowledge of the most appropriate technologies available to meet user requirements.

To these ends, the following five principles are intended to form the basis for a decision-making framework that would achieve the Commission's strategic shift to new ways of working and, more specifically, determine the choice of particular organizational arrangements, operating processes or technology components.

- 1. The Commission's ICT customer service delivery model should be state-of-the-art.** ECA should design its ICT architecture looking at where technology is headed, not where it is now. For this, a Chief Technology Officer should lead the Information and Communications Technology Section, advising ECA on the best technology fit for specific requirements, and ensuring that ECA stays abreast of new developments and exploits the benefits of new technologies.
- 2. Technology and systems decisions should apply an end-user design approach,** taking staff and client requirements and preferences as the starting point. A "Workplace

Transformation Programme”, based on an inventory of current technologies and on workflow analysis to identify duplication, bottlenecks and performance enhancement opportunities, could be used to roll out updated or new technologies and systems using a two-speed approach, with 20 per cent of the changes introduced quickly and the rest over time.

3. The Commission’s technology framework should be interoperable and compatible across all stakeholders,

to facilitate information sharing and collaboration. A flexible approach to software selection is suggested – allowing better “fit-for-purpose” and more choice – as long as the selections ensure interoperability and compatibility.

4. Data design, collection, analysis and presentation should feature prominently in the ICT strategy,

given the Commission’s increased emphasis on leveraging data to inform its policy work. For this, a Data Technology Analyst should be added to staff resources. The Analyst would be an expert in uncovering hidden relationships in structured and unstructured data, and would be able to advise staff on the most appropriate, reliable and available data. The Analyst would also introduce data design technologies to facilitate data

identification, collection, management, analysis, visualization and presentation.

5. Staff should become proficient in the technologies they require for their work,

to remain competent and fully productive. An organization-wide ICT skills framework and a corresponding competency programme should be introduced to maximize performance.

Altogether over 50 suggestions have been made, which are summarized in annex 2.

In order to implement the ICT strategy, in addition to adding a Chief Technology Officer and a Data Technology Analyst, the units that make up the Information and Communications Technology Section should be clustered into three purpose-driven areas: customer-facing units (productivity; training; data and content); technology-facing units (networks; communications; storage); and strategic services (advisory services; Umoja).

A business plan and corresponding budget should be prepared to carry out the recommendations of the strategy. Strategy implementation should be overseen by an ICT committee chaired by the Director of the Public Information and Knowledge Management Division, with the Chief of the Information and Communications Technology Section acting as secretary, and staff members representing the four user perspectives (productivity, collaboration, communication and data).

In addition, a sounding board of experts in forward-looking technologies and the United Nations Office of Information and Communications Technology should meet annually to review progress and advise on future plans. Quality assurance should be arranged through the Strategic Planning and Operational Quality Division's programme accountability framework, based on criteria established for the individual functional responsibilities and the strategy as a whole.

Risks identified include managing changes to the organizational and bureaucratic cultures, connectivity constraints, the possibility of "initiative overload", having the required staff and funding, maintaining implementation momentum, ensuring coordination with

the United Nations global ICT strategy, maintaining data safety and security, and managing staff expectations. Each of these risks can be mitigated, and part 5 of the present document offers suggestions to that effect.

This new ICT strategy, if implemented successfully, could significantly enhance the Commission's ability to live up to its aspirations as Africa's foremost think tank, by using cutting-edge technology, data and analysis for research and development, and making staff more productive. The manner in which ECA engages with technology will profoundly influence its own future and, correspondingly, the future of Africa's transformation.

PART 1 – Introduction: Why Have a New ICT Strategy?

Organizational context

The Information and Communications Technology Section is responsible for managing the Commission’s ICT infrastructure and providing telecommunications and videoconferencing support to ECA and the other United Nations agencies located within the ECA compound. The Section maintains the Integrated Management Information System (IMIS) Enterprise Resources Planning system and supports the introduction of its successor Umoja, develops and deploys other software applications for administrative and substantive needs, and provides ICT customer support and training to its clients. The Section also serves the five subregional offices in Rabat, Niamey, Yaoundé, Kigali and Lusaka, and the African Institute for Economic Development and Planning (IDEP) training facility in Dakar.

Until December 2012, the Information and Communications Technology Services Section belonged to the Division of Administration. It operated on the basis of the 2010-2013 ICT strategy, which was prepared to support the business plan for 2010-2012, and subsequently extended to include 2013. According to the vision statement of the previous ICT strategy, the Section functioned “as a business enabler and partner to provide stable, secure, reliable and cost-effective access to the Commission’s ICT and knowledge resources, for all staff members and key stakeholders, from anywhere, on any device, at any time.” To this end, the strategy document included eight objectives which were articulated in a series of major projects over the three years, which together with the regular operating budget totalled \$18.1 million. The major maintenance activities over this period were for satellite infrastructure to facilitate reliable communications and infrastructure support for the co-located United Nations agencies,

conferencing facilities with the subregional offices and IDEP, and IMIS for business process facilitation. The major new investments in this period were in support of the roll out a new Enterprise Resources Planning system (Umoja), introducing software to facilitate remote access, server virtualization and mirroring for the website to ensure continual access, infrastructure upgrades to the local area network, security, and introducing a disaster recovery plan.

December 2012 saw the introduction of a new dynamic at ECA, in response to the need to effectively support the increasingly vibrant growth and transformation of its member States. A new business plan was drafted for 2013-2015 that aimed to establish the Commission as “the think tank of reference on matters pertaining to African development.” A reprofiling process was initiated to introduce the systems, staffing and structure to enable ECA to achieve this aspiration. The Section was brought under a new, strategic-level division – Public Information and Knowledge Management – as one of the four sections involved in promoting the visibility and impact of the products and services offered by ECA.¹

¹ Specifically, the Communications Section would introduce a “campaign” approach to product design and launch, using a range of materials and formats to ensure maximum exposure to the target audiences. The Publications Section would focus on creative design work and have the flexibility to commission top-quality, cost-effective and timely material. The Information and Communications Technology Section would support the requirements for the Commission’s ICT tools and platforms to be geared towards maximizing productivity and facilitating collaboration. The Knowledge Services Section would act as a “one-stop shop” access point for African knowledge collections and as a coordinator for knowledge facilitation services connecting African professional communities (through “Solution Exchange”).

The 2010-2013 ICT strategy ended with the start of the new biennium 2014-2015. The new ICT strategy, beginning from 2014, would be required to update the mission and approach of information and communications technology services in line with the new Business Plan considerations. In addition, the new Strategy should ensure conformity with the larger initiative from United Nations headquarters to introduce an updated ICT strategy, which the ECA strategy should conform to and support

Relationship with the United Nations global ICT strategy

Over the course of 2013, the Chief Information Technology Officer of the United Nations, Atefeh Riazi, has been leading an effort to formulate a global ICT strategy that will be presented to the General Assembly during its sixty-ninth session. Working with IT chiefs and staff representing the various departments in Headquarters, offices away from Headquarters and the regional commissions, including ECA, have been collaborating in this effort.

As of March 2014, five key components of the strategy had been identified:

1. Establish strong governance;
2. Define enterprise architecture and information security standards;
3. Optimize the financial model;

4. Reduce fragmentation by establishing centers of excellence;
5. Ensure long-term support of the reform agenda already underway through the roll-out of International Public Sector Accounting Standards (IPSAS) and Umoja.

Furthermore, ST/SGB/2003/17 created an organization-wide Information and Communications Technology Board, with responsibility, among other things, “to ensure the consistency of departmental plans and strategies with the overall Secretariat strategy.”

To this end, the Commission’s ICT strategy is being closely coordinated to ensure conformity and consistency (see part 4). Key features of the strategy – its high-level strategic focus and emphasis on forward-looking technologies – would warrant consideration of ECA as one of the above-mentioned centers of excellence, serving as a potential model for other regional commissions.

Elements of the ICT strategy going forward

Given that the Information and Communications Technology Section is taking on a more strategic role, the present strategy differs from the earlier one both in scope and content. In terms of scope, it focuses on strategic considerations relating to

promoting the Commission’s impact, rather than the operational considerations relating to delivering technology outputs. In terms of content, it does not spell out specific costs or inputs; rather, it frames the decision-making considerations that go into, for example, selecting a particular piece of equipment for purchase or a course of action. As such, it provides more flexibility and adaptability to changing needs than a business plan, where detailed expenditure items must be spelled out in advance. Finally, it is not time-bound: since it is designed to achieve the organization’s goals, it remains in effect until these goals change.

A strategic-level vision for ICT is a pressing need at the current moment in the Commission’s refocusing, and in the current global ICT environment. In today’s world, organizations and citizens are finding that not only is technology changing at a rapid pace, it is also changing the ways people work, communicate, learn and make decisions. ICT professionals in particular are finding it increasingly difficult to cope with the rapid rate of technological change, and so the organizations they work for are finding it increasingly difficult to identify and apply ICT systems that best align with their plans and strategies.

To this end, preparing an ICT strategy that enables ECA to adapt to and increase its influence on Africa’s transformational agenda is a complex undertaking. The strategy must clearly articulate the link between the

Commission's technology assets and how the technology is leveraged to increase the timeliness and quality of its business lines – in this case business operations, policy product development and policy advisory services. Accordingly, a purpose-driven approach has been taken, based on the four basic organizational demands for ICT:

- **Maximizing productivity** – with standardized, user-friendly internal business applications, minimized down time, a responsive help desk, user skills training if needed, remote accessibility and disaster recovery.
- **Facilitating collaboration** – ensuring ECA has the best-in-class and most appropriate interactive platforms (websites, intranet, mail list-serves, corporate social networks, one-stop shop shared interagency portals and repositories, and collaboration spaces and tools) with seamless interfaces between applications.
- **Facilitating communications** – intuitive state-of-the-art telecommunications technologies and infrastructure for ECA headquarters and the subregional offices, ensuring reliable and high quality

connectivity, with adequate security levels.

- **Facilitating data design and analysis** – providing the technology infrastructure for the databank architecture proposed by Reprofitting Task Force 4, allowing internal and external clients to contribute, access and analyse available data sets, and non-technical staff to organize, manipulate and visualize data for quicker decision-making and more concise policy advisory services.

To formulate this strategy, a six-person drafting team was formed, composed of one representative from the user community for each of the above perspectives, the Chief of the Information and Communications Technology Section, and an outside specialist in ICT strategy formation. The team held initial consultations with interested staff in December 2013, after which the specialist prepared an inception report spelling out the key findings for inclusion in the strategy. Following further discussions and the drafting of the initial document, the team reconvened in March to finalize the strategy and present it to senior management for consideration and approval at their April senior management team meeting.

PART 2 – Suggested Principles for the ICT Strategy

The new ECA ICT strategy aims to leverage the unprecedented advances in ICT to fulfill more end-user requirements of its staff and stakeholders. It builds on previous successes and lessons learned, and leverages new opportunities arising from circumstances both internal and external to ECA. Internally, there is a better understanding and adoption by staff of new technologies, and how ICT can better service their needs. Externally, the evolution of technological innovation implies that software and systems are available that, with an appropriate level of knowledge and expertise, can fundamentally enhance current levels of productivity, collaboration, communication and data access and utilization among ECA staff.

To this end, the ICT strategy sets out an ambitious programme of re-evaluation and change across all support, services and products offered by the Information and Communications Technology Section.

Vision and mission

The new vision for the role of ICT in helping to achieve the Commission's aspirations of becoming the premier think tank supporting Africa's transformational agenda is **to ensure that ECA staff always use the most suitable, cost-effective and user-friendly ICT available to maximize productivity and facilitate collaboration, communication and data collection and analysis.** For this to occur, all of the support, services and products offered by the Information and Communications Technology Section should be based on mutual understanding between the Section and its clients, the specific challenges in the current ICT environment and organizational culture, and full knowledge of the most appropriate technologies available to meet user requirements.

To this end, the strategy can be considered successful when:

- The Information and Communications Technology Section's clients perceive that the technologies they use are effectively maximizing their productivity and are facilitating their collaboration, communication, and data collection and analysis.
- The support, services and products offered by the Section are both appropriate to the organizational environment and culture, and effectively leverage the United Nations corporate systems and applications to the benefit of the Commission's performance, within the framework of the wider United Nations ICT strategy.
- ICT at ECA remains fully adaptable to take advantage of the ongoing developments and innovations in the field.

Guiding principles of the strategy

Based on the above vision and mission, the following five principles form the basis for a decision-making framework that would achieve the Commission's strategic shift to new ways of working and, more specifically, determine the choice of particular organizational

arrangements, operating processes or technology components.

- 1. The ICT customer service delivery model should be state-of-the-art**, leveraging complementarities in structures, staffing, technology and systems to maximize responsiveness and effectiveness of client support.
- 2. Technology and systems decisions should apply an end-user design approach.** Such an approach employs a user-driven decision-making framework, taking staff and client requirements and preferences, rather than the best, most sophisticated technology, as the starting point.
- 3. The technology framework should be interoperable and compatible across all stakeholders** – including headquarter and subregional staff, national counterparts and other partners – to facilitate information sharing and collaboration.
- 4. Data design, collection, analysis and presentation should feature prominently in the ICT strategy**, given the new emphasis of ECA on leveraging data to inform its policy work, combined with continuous advances in data technologies and data-intensive products and services.

5. Staff should become proficient in the technologies they require for their work, to remain competent and fully productive.

The implications of these guiding principles are covered in the following section.

PART 3 – Implications of the ICT Strategy for ECA

Guiding principle 1: The ICT customer service delivery model should be state-of-the-art

Global advances in ICT are moving rapidly and having an increasingly profound impact on every field of endeavour. To take one example, technology now allows 24 hour access to cost-free advanced analytical tools and complete interoperability between computers, hand-held tablets and mobile smart phones.

This environment has the potential to substantially impact organizational business processes in three ways:

- **Decentralized decision-making:** Innovation in technology's usability, adaptability and access through open networks can support more effective localized decision-making and service delivery. Those closer to the impact can

now readily make important decisions to maximize value and reduce risk.

- **Expanded consultations:** Discussions and information exchanges can involve large numbers of people. Decisions can be more relevant and have greater buy-in. Business processes can be made more innovative and efficient to resolve bottlenecks and barriers.
- **Confidence and trust:** Innovative ICT expands and enhances opportunities for sharing information and developing trust through integrity, accountability and compliance. Programmes and projects can be better managed and monitored, and given more flexibility to adjust to unforeseen challenges.

The new environment means that organizational boundaries are no longer imposed by traditional physical parameters.

They can extend into virtual organizations, accommodating the circumstances of staff and stakeholders, and reducing fixed investments and transaction costs.

As mobile devices gain computing power, the variety and depth of services is poised to grow rapidly. In parts of Africa, mobile phones already function as a service delivery platform. For example, reminding an HIV/AIDS patient to take medication or a pregnant woman to go for regular check-ups at the nearest clinic requires only a text. Some 15 million Kenyans take advantage of a 23,000-strong mobile-money authorized agent network, using basic texting on their mobile phones to carry out financial transactions.

Another technology field advancing rapidly is information and data analysis. Where ICT once focused on the “computing” and “process” aspects to facilitate organizational decision-making, information management is fast becoming a critical problem for organization managers, because data are available everywhere and in huge volumes. Advanced technologies have been developed to support information and data analysis, and when these are made available to staff, it can result in more efficient and cost-effective human resources management, procurement, publishing, communications, advocacy, events management, and day-to-day office activities generally.

ICT services should be positioned to take advantage of this new, promising environment. ECA should design its ICT architecture looking where technology is headed, not to where it is now. Here are some of the steps that ECA can take to make its ICT customer service delivery model state-of-the-art and to keep it ahead of the technology curve:

**Maximize productivity, by
Introducing a strategic advisory
support role for the Information and
Communications Technology Section.**

The senior position in the Section should be redefined to include organization-wide strategic advisory services, with the position renamed as “Chief Technology Officer” and a corresponding job description prepared. The Chief Technology Officer should have a dedicated team that ensures the Section stays on top of the new developments in ICT, and exploits the benefits of new technologies for ECA. The Chief Technology Officer and the advisory team should work closely with users, be continuously engaged in research, development and testing for ways to respond to user needs with the best technology fit for their requirements, and ensure that informed technology decisions are made early in programme design processes.

Staying adaptable in what the Information and Communications Technology Section makes available to users. The one-size-fits-all approach to users’ choices for computers

and communication tools should be replaced by offering a range of alternatives, including introducing a “bring your own device” scheme, where users can opt for a fixed sum to purchase their own preferred model from a pre-vetted list of vendors. Similarly, users should have a menu of suitable applications for networking or office work (instant messaging, calendars, note-taking, etc.) outside of the corporate business applications. In selecting corporate technologies, a premium should be placed on user interface, and “right quality” stressed over “best quality.”

Staying up-to-date with the latest developments. The service model used by the Information and Communications Technology Section should be restructured, by moving from using long-term staff on temporary contracts to an institutional service contract renewable yearly, with a service assurance framework (for processes, systems and human resources) that motivates the service provider to stay abreast of the latest technologies.

Facilitate collaboration, by Reaching out with systems development. The Information and Communications Technology Section should work with staff and external clients to develop new technology-enabled systems. Users should be encouraged to engage with the Section when they perceive a need for or come across potentially useful new technologies. The ICT systems development process should be designed to

engage users in all stages, from identification, development, testing and assessment. The Section’s systems development work should extend to other clients interested in engaging with ECA. Collaborating with external clients would add the benefit of leading by example for the countries ECA services, to demonstrate the value of ICT.

Embracing e-learning products and services. IDEP should consider adopting some of the e-learning products available (massive open online courses, Kahn Academy, MIT Open Course, TedTalks, etc.) to widen access and reduce training delivery costs.

Making linkability easy. The Information and Communications Technology Section should introduce standardized information and data formats based on common open standards to make it easier for users to participate in development and to ensure that the systems developed can interact seamlessly.

Facilitate communications, by Improving bandwidth. ECA should invest in providing stable, high-bandwidth connectivity between headquarters, subregional offices and other major stakeholders to facilitate increased engagement, collaboration and partnering, which would also aid security risk mitigation and business continuity planning.

Getting closer to clients. Publication distribution lists and mailing lists maintained

by ECA sections should be consolidated into a client relationship management system – an e-registry application that would include advanced contact and analysis tools and would be able to track customer feedback on the effectiveness and impact of ECA products and services.

Making it easier to meet client

expectations. The Commission’s model for capturing content, information and data should be specifically directed to fulfilling client expectations. The model should cover both structured and unstructured data sets and information, so that responses to requests for analysis can incorporate both. ECA should adopt an on-demand, flexible publishing schedule for its information assets, along with a client feedback system to ensure that it stays up-to-date.

Facilitate data impact, by

Building a one-stop shop. A one-stop shop should be established for all data sets, products and services, which should serve both internal and external clients. The shop should include the latest advances in the important area of geographic information system (GIS) technologies, which can easily capture, store, manipulate, analyse, manage and present all types of geographical data. The data model should enforce reusability from a single source (the COUNT principle – collect once, use numerous times) when considering new data collections.

Exploring the data warehouse concept.

The one-stop shop could be created as a “data warehouse”, which uses cutting-edge technology to comprehensively manage and manipulate structured and unstructured data from any source. Rather than a linear approach to reporting and analysis from statistical products that are not necessarily aligned, this model can seamlessly interrelate all sources and allow for more insightful analysis. The data warehouse concept should be explored for the proposed ECA databank architecture.

Including everything collectable. If the data warehouse model is adopted, country-based partners such as the United Nations Development Programme and smart phone technologies should be tapped to include non-standard or unstructured data from original sources. A systematic approach to discovering reusable data assets should be introduced using search tools and catalogues.

Guiding principle 2: Technology and systems decisions should apply an end-user design approach

Investigations by the drafting team have identified a perception among staff that many of the ICT tools currently in use do not meet their needs, reduce their productivity and provide a poor user experience.

These issues have been compounded by:

- A standardized, one-size-fits-all approach to procurement decisions that is not fit-for-purpose, resulting in overly expensive end-user devices and associated services that may meet the needs of the average staff member, but offer minimum functionality for the power user and can be too complicated for the marginal user.
- Operating predefined ICT applications and platforms without consideration to adapting to the needs of a particular user.
- A growing divergence between the inflexible corporate ICT applications staff are required to use at work and the modern, user-friendly applications staff use at home.
- Cost-inefficient products and services resulting from being locked into contract arrangements with particular technical service providers and product suppliers.

The level of frustration reflects the degree to which attitudes of ECA staff towards technology are reported to be changing. Many were proficient users of multiple operating systems across multiple device types in their private lives, and have come to question why the benefits of modern consumer technology could not be the norm within their working environment. Many are also fully aware of and could be expected to take responsibility and apply reasonable judgment when dealing with

information, without being burdened with overreaching technical controls.

Many of these perceptions and actualities could be redressed through the adoption of an end-user design approach. Such an approach employs a user-driven decision-making framework, taking as the starting point staff and client requirements and preferences, rather than the best, most sophisticated technology. The following end-user design suggestions represent some of the more practical solutions along these lines:

Maximize productivity, by

Carrying out an inventory of the Commission's current technologies. A thorough inventory and evaluation of the currently licensed ECA technologies and equipment should be carried out in order to identify under-utilized infrastructure and software that may be in demand but is not properly rolled out, or that has outlived its usefulness. Staff should be made aware of and encouraged to use such potentially valuable technologies through a multi-channel communication effort and easy-to-follow training initiative.

Understanding, optimizing and adapting business processes. Workflow analysis should be applied to priority tasks to identify opportunities for reducing duplication and bottlenecks and for increasing performance and quality assurance aspects of productivity.

Account should be taken of the specific requirements of ECA – for example, the fact that managers travel frequently and require access to corporate applications on the road, including when they are off line. Innovative standard operating procedure measurement tools should be introduced to identify bottlenecks, bridges and other structural barriers and opportunities to streamlining.

Initiating a “Workplace Transformation Programme”. Based on the results of the inventory, a campaign approach, led by users, should be introduced to implement underutilized technologies and updated business practices that will streamline work flows and introduce supportive and effective ICT regulations. A campaign would reflect the urgency of achieving operational efficiency within ECA that is more aligned with the enhancements being made in other dimensions of the Commission’s work, and would go far in addressing low use and staff frustration with existing ICT.

The programme’s scope should include:

- **User experience:** design ECA ICT products and services with users’ needs in mind.
- **Proportionate security:** security should be proportionate to the risk for the vast majority of ECA standard practices.

- **Sustained value:** making sure that value can be sustained before ICT purchase decisions are finalized. This includes designing for change, and opening up access to all types of stakeholders.
- **Consumerized ICT:** ECA needs to make it possible to use the sort of general, commodity technology that works well for staff in their roles as IT consumers.

The Workplace Transformation Programme should follow a “two-speed” approach, whereby 20 per cent of the change is tested and prototyped within a quick turnaround time, followed by mainstreaming the change slowly into the other 80 per cent of the business.

Facilitate collaboration, by Using networking for developing, testing and rolling out end-user design technologies and business processes. The knowledge management strategy proposes creating internal knowledge networks, in English, French and/or Amharic, that would allow all ECA staff to share knowledge, experience and ideas on operational issues. These networks should be used to identify improvements to be included in the above-mentioned workplace transformation programme, to identify staff willing to work on them, to seek advice from staff when barriers arise, and to keep them informed of progress. Similarly, collaboration tools suggested in the

knowledge management strategy (addendum) could be used for the development teams to interact for co-creating new products, systems and processes.

Adopting modern interoperable tools and models. The staff development teams working on developing these new products, systems and processes should be encouraged to utilize more fluid, interactive, open and informal collaboration/co-creation tools (Unite, Google Docs, wikis, blogs, messaging services, etc.) instead of the traditional document repository technologies (e-Room, G-Drives multiple content repositories, inbox). Informal flexible technologies help teams to view collaboration as a continuous process and not as one-off assignments. Teams could also experiment with different collaboration models (co-authorship; co-analysis; co-programming, etc.) to promote innovation.

Creating a single point of service. A service delivery centre with an open, web-based menu should be set up as a single point of service for all staff to easily access and utilize. This would increase ease-of-use, and centralize technology-based services and product development for both internal and external clients. The centre would also include access to multi-channel, multi-platform training modules.

Facilitate communications, by Creating a more flexible and intuitive approach. Traditional communications tools now in use by ECA (Lotus Notes, internal memos, iSeek) should be integrated and blended with commonly used and open social networking tools (social media, social networks, community of practices, etc.) to create a flexible and more intuitive approach to staff and client communications. This more fluid approach allows for communications to take place across platforms and devices (unified communications with multi-platform and multi-device interoperability). Practical guidelines should be prepared for staff on how to effectively use Internet and social media channels more effectively.

Encouraging use of social and multimedia technologies. Greater systematic use should be made of social and multimedia technologies, in place of the practice of linear messaging. These more popular communications channels can encourage more continuous interaction, widen the Commission's reach, and improve relations with groups of clients, such as the media, donor partners or other stakeholders. The same applies to internal communications, which should be redesigned to integrate the user-friendly technology tools, apps and platforms that most staff are already familiar with.

Speaking the language of the audience. Multilingualism is a feature of ECA, and should be addressed in the context of facilitating

end-user design communications. Dedicated resources should be invested in translation services, which is also a recommendation included in the communications strategy. This could be done through traditional approaches (outsourcing, internal capacity) or through innovative approaches (the creation of a strategic translation fund, academic partnership support, user-generated translation, technology-based translation tools).

Facilitate data impact, by

Introducing a platform that can identify, capture and classify new strategic data.

A platform should be designed and rolled out that can leverage mobile, location-based and social network analysis technology to complement traditional and official government data. Introducing this new strategic data is not an end-product on its own, but should be used to blend, complement and strengthen official data analysis, and support predictive and scenario-building models, to allow for a better understanding of the real-time environment.

Expanding publishing channels to increase reach and measurability. Online visualization and multi-channel, multi-platform publishing platforms should be leveraged to repurpose ECA publications from presenting static content (backward-looking, historical) to offering live data tools (live documents, digital, available anywhere). The additional tools and

channels would increase reach and create an opportunity for clients to “interact” with knowledge assets. They would also increase the measurability of ECA communications beyond shipping numbers to active participation (what they read, where they read, how they read, etc.) and allow for better audience segmentation and targeting.

Investing in state-of-the-art real time data monitoring:

Data monitoring should be scaled up to become more accurate (across audience segmentation and geographic locations), holistic (including several sources of similar data sets) and time-sensitive (collected on a quarterly, monthly or even daily basis). The higher the data relevance and quality, the stronger the competitive advantage for ECA products and services.

Guiding principle 3: The technology framework should be interoperable and compatible across all stakeholders

Staff and stakeholder engagements are almost always accompanied, and served, by different technologies that, if integrated, can optimize business processes, streamline workflows, and facilitate sharing and collaboration. On the other hand, organizations that stress conformity over compatibility create bottlenecks and block opportunities to increase effectiveness and efficiency. ECA currently employs a mix of legacy and new technologies that could hinder the uptake of more suitable

technologies and inhibit staff from maximizing product and service delivery value.

When procuring ICT systems, it is usually easier to rely on a single ICT brand, tool, system, or product. Many organizations lack the expertise to introduce a more complex but appropriate standards-based system featuring a suite of compatible applications. They may also be constrained by senior managers who are unable to determine which requirements are relevant to their ICT needs, or who are unwilling to authorize the high initial costs of a new more appropriate system.

Even though high short-term costs might seem a barrier to change, in the long-term these standards-based ICT investments can be leveraged to substantially reduce transfer costs associated with inefficiencies. In addition, greater use of open standards makes it easier to exchange data between internal and external systems, and this would enable ECA to deliver advanced data-intensive products and services.

Integrated technology platforms and systems, built from separate interoperable and compatible applications, help organizational units coalesce individual tasks and initiatives into collective deliverables. The following suggestions could make this a reality for ECA:

Maximize productivity, by Adopting an interoperable standards framework. Along with above-mentioned

business process workflow analysis, ECA should introduce an interoperable standards framework for its information and communications technologies to maximize workflow efficiencies, information sharing and collaboration. ECA should also reevaluate all its technology tools, models and platforms against a fit-for-purpose framework for meeting the needs of staff and stakeholders, in terms of relevance, value, interoperability, scalability and sustainability. All common content types should be considered when developing interoperable technology solutions to include the delivery platforms (paper, digital, multimedia), type (publications, data sets, policy briefs) and mode of delivery (direct mail, conferences, forums). Unit-specific transition plans, with milestones and timelines, should be introduced to either eliminate, solidify or introduce particular technologies. To address the cost issue, the plan should be carried out as a longer-term initiative (two to four years). In considering new technologies, the less expensive, more common, mass-market versions of IT products (as opposed to “best-in-class”) and cloud services should be introduced where possible, to minimize overheads and benefit from consumer market value, innovation and user-friendly services.

Facilitate collaboration, by Investing in and leveraging videoconferencing. In-office and meeting room videoconferencing should be leveraged to increase face-to-face meeting time and

strengthen relationships, particularly between ECA headquarters and the subregional offices. Full room videoconferencing or interactive webinar tools can “bring” the subregional offices into open forums and events held at ECA headquarters.

Using e-conference technology to engage “before, during and after”. Multi-platform e-conferencing technology (webinars, event-specific apps, video streaming) should be systematically incorporated into event processes and used for preparation work, during the event and in follow-up actions, so that participants can nurture and maintain a longer and more valuable engagement process.

Extending the use of dashboards. An open dashboard platform should be introduced as a monitoring aid for the Commission’s range of products, services and events, presenting in a visible manner the key content and data items. For example, in support of ECA country profiles, real-time country dashboards could be set up to serve both internal as well as external purposes. An event dashboard could provide comparative data sets, networking opportunities with other participants, pre-event discussions and post-event planning.

Increasing the strategic value of IDEP. The Institute’s online offerings to external clients – the private sector, non-governmental organizations, civil society organizations, Governments – should be expanded by introducing state-of-the-art curriculum and

information modules. Mobile applications, which are integral to delivering e-learning modules, should be emphasized, and systems to allow electronic payments for courses should be introduced.

Facilitate communications, by Leveraging technology to strengthen branding. Technology channels should be considered in a branding exercise, to disseminate and strengthen the Commission’s brand identity. Traditional branding elements include styles and formats, but with the new ECA brand, the style and mode of delivery could also be a strong branding element and a strong indicator of ECA positioning. For example, applying state-of-the-art technology to publish across several channels and platforms in an interactive and inclusive manner projects an impression of how effectively ECA works.

Leveraging technology to strengthen external communications. Multi-channel, audience-specific communications packages should be organized according to a “portfolio” approach for journalists and other targeted audiences, which could be available for delivery when needed and in a manner that they can use it.

Introducing “ECA One” as an Amazon-like platform for all material. A one-stop shop modern interface comparable to Amazon.com – “ECA One” – should be introduced. It would

feature digital data, library and web offerings from all ECA units, ensuring multi-platform interoperability and very simple ease-of-use. It would include an intuitive and powerful meta-search engine that could also locate and include material from third party stakeholder sources.

Facilitate data impact, by

Introducing “ECA One Data”. Within the ECA One platform, an interactive data library should be created to specifically leverage all data sets from ECA and third party stakeholder sources. Users could be invited to download, upload and manipulate data online, discuss with data advisers and explore new initiatives to source, collect and analyse data.

Preparing an ECA data glossary. A glossary for the Commission’s data collections should be prepared to increase usability and user comprehension, using common, easy-to-understand language to define and explain through “how to” and “what if” scenarios the data and metadata.

Introducing a data life-cycle framework: ECA data collections should be subject to a life-cycle framework to help sustain their relevance and value. Particularly for large data sets, a life-cycle framework can be invaluable to identify which data are out-dated, where the new sources of data are, what are the appropriate steps for data collection, how can data be blended to increase value and significance, and

in what form should data be collected to better fit new technologies for collection and analysis.

Guiding principle 4: Data design, collection, analysis and presentation should feature prominently in the ICT strategy

The Commission’s new profile puts strong emphasis on leveraging statistical data to inform its policy work. However, as a result of technological advances, data availability is growing exponentially and the formats data are available in are multiplying. To ensure that the most relevant and timely data from the most appropriate sources are applied to the policy research ECA carries out, the Commission will need to use technologies to identify the most strategic data needs and to develop strategies to access and analyse it from multiple sources and formats.

To this end, the Commission’s ICT strategy is required to support the introduction of skills and technology platforms that can respond to opportunities to fill unmet intelligence gaps, including negotiating access to new data sources and providing advice to policy specialists on the most appropriate data elements and sources to support their research work and identify current and emerging issues and trends. The following suggestions would make this happen:

Maximize productivity, by

Adding a Data Technology Analyst to the Commission's staff resources.

A Data Technology Analyst position should be established in ECA, responsible for offering advice to the policy specialists in the different divisions and subregional offices on the most appropriate, reliable and available data for their work. To carry out this role, the Data Technology Analyst should be fully cognizant of all the structured and unstructured, formal and informal data available in the Commission's collections or from other sources (for more details on this capability see below).

Introducing data design technologies.

ECA should invest in the best technologies and establish the corresponding capacities to apply them for managing its data and identifying unmet or future data-related needs. Emphasis should be in the areas of data identification, collection, management, analysis and visualization/presentation. Technologies needed should be for forecasting data life-cycle activities to determine strategic information, trends and impacts pertaining to short- and long-term needs of staff and stakeholders. The technology stack should be suitable for all data sets including location-based data requirements (mobile, digital, GIS, Landsat), and the technologies should be able to layer data sets onto interoperable maps (Google Maps, OpenStreetMap) for better visualization opportunities. The relative value of Landsat should be compared with GIS for ECA geographic data, keeping in mind that Landsat

is preferable for global change research and for applications in agriculture, cartography, geology, forestry, regional planning, surveillance and education.

Leveraging technologies to maximize data utilization.

Technologies should be introduced that can enhance the quality of the Commission's data and increase its use for internal business processes. Technology is available that can ensure that all data are of high quality and fit for purpose, including factors such as accuracy, validity, reliability, timeliness, relevance and completeness. Data governance can be improved through technology and data selection guidelines for introducing a "single source, multiple use" data modality, ensuring that only a single authoritative source for data is maintained. In addition, the possibility of using data to enhance the current ECA workflow and business processes should be explored, with a view to producing measurable increases in efficiency, effectiveness and relevance.

Facilitate collaboration, by

Networking with data experts.

ECA specialists should be participating in the relevant academic and professional networks to stay abreast of all aspects of the data-lifecycle capture and analysis processes and issues.

Establishing a data asset register. An open and transparent catalogue should be

maintained to provide a complete view of all ECA structured and unstructured data assets as a resource base, in connection with the data glossary suggested earlier.

Facilitate communications, by

Using data to communicate the Commission's professionalism. ECA should take advantage of opportunities through its product development to highlight its data acumen. One area to explore could be to promote how its data use enhances the value of its products. Another could be to offer new data products and services to current and new clients, as well as to re-package existing data products to better meet client expectations.

Facilitate data impact, by

Leveraging analytical technology to shift from backward-looking to forward-looking policy advisory services. ECA should shift its emphasis away from pre-specified data collection models designed for historical or backward-looking data analysis (linear statistics, single-point, single-time, annual, single-view) and towards multi-dimensional data collection models designed for forward-looking data analysis (trendspotting, predictive analysis, propagative, comparative and scenario-based analysis) to use for offering policy options.

Investing in data quality assurance technologies. Quality assurance controls

should be established for data management (assuring integrity, confidentiality and availability) to prevent ECA from exposure to unnecessary risk.

Guiding principle 5: Staff should become proficient in the technologies they require for their work

Highly skilled and capable staff are essential to a world-class ECA delivering the products and services that its stakeholders expect and require. Highly skilled staff can drive innovation and increase collaboration; innovation can drive the ECA agenda for identifying new products and services, and collaboration can fuse processes into ideas that have the power to upgrade not just the Commission's operations and service delivery but its organizational culture.

ICT proficiency is a key element in building a skilled and capable workforce, both for ICT skills to match the current requirements as well as planning for the future. The competencies needed here include strategy and architecture design, business change management, technology solution development and implementation, service management and delivery, procurement and management support, and stakeholder interface. Currently, ICT skills and competency levels of ECA staff vary widely, from technologically challenged to advanced proficiency. Areas that require attention include the following:

Maximize productivity, by

Adopting an organization-wide ICT skills framework. A formalized skills framework should be established to help ensure appropriate ICT skills are available to increase internal workflow efficiencies and external service delivery. The framework's ICT competency programme should be based on cost-benefit scenarios that combine upgrading staff skill sets through training with outsourcing alternatives to maximize performance.

Introducing a sustainable solution for developing and retaining technical expertise within the Information and Communications Technology Section.

The longstanding issue should be addressed of replacing the external contractors in the Section – currently over 50 per cent of its staff resources – and bringing in a more appropriate and sustainable solution. The responsibilities should either be fully outsourced to an organization capable of keeping staff up-to-date with the latest technologies, or should be covered through an in-house rationalization of the true requirements of ECA for ICT support services.

Issuing training modules. Introducing a range of interoperable applications rather than remaining with a one-size-fits-all approach implies a greater need for proficiency training in different software. Guidelines and training modules delivered by the Section's trainers

should be made available for the range of applications available for staff use.

Facilitate collaboration, by

Engaging the subregional offices more actively. The interactions between the subregional offices and ECA headquarters for ICT product development and prototyping should be changed from a spoke-and-hub model to a distributed network model. This would better leverage the strengths and opportunities offered by the subregional offices and increase lateral dialogue, decision-making and planning. Staff working in the subregional offices should take the lead in introducing specialty products and services that can be aggregated and/or rolled out regionally.

Facilitate communications, by

Enhancing communications channels in the subregional offices. The subregional offices should be provided with the means to enhance their communications channels within the subregions, in order to increase client engagement/partnerships and more effectively meet their commitments to deliver ECA subregional/national events, products and services (e.g. subregional priorities for Agenda 2063).

Facilitate data impact, by

Enhancing in-house data interpretation and visualization capacities. ECA should

recruit or contract data interpretation and visualization expertise to support data collection, assembly, visualization and presentation approaches that add value to ECA products and services such as evidenced-based policy options.

Introducing a network of internal “laboratories”. Internal units or teams should

be identified as “laboratories” or innovation centers, for developing new products and services, and for creating an environment for building and leveraging staff technology skills.

PART 4 – Key Resource and Organizational Arrangements

The ECA reprofiling exercise transferred the section responsible for information and communications technologies from the Division of Administration, where it performed operational functions, to the Public Information and Knowledge Management Division, where it is expected to also perform strategic functions and directly influence the organization's ability to reach its aspirational goal of becoming Africa's premier think tank. This shift calls for introducing strategic-level capacity in the Information and Communications Technology Section, reflecting the Commission's need for specialized technology expertise, both to maintain a competitive and competent workforce and to maximize its products service offerings to stakeholders and clients.

The role relates primarily to providing ECA with advice on the technology decisions made in the four areas of productivity, collaboration, communication and data impact. The guiding

principles incorporated into the present ICT strategy, and the corresponding actions to be taken in the near term, are based on the capacity of the Section to play this strategic role. This capacity is reflected in the addition of two new staff profiles, in a reorganized structure for the Section, and in more strategic-level oversight, guidance and quality assurance arrangements.

New strategic competencies

Two strategic-level experts are required. Additional details of these roles are contained in the Annex.

Chief Technology Officer. The significant role of technology in strategic decision-making has created the need for ECA to understand the impact of current and new technology as well as recognize the pivotal importance of technology-enabled applications to the

creation of internally and externally-facing products, services and processes. To adjust to this new reality, and to help ECA engage with technology at a strategic level, a Chief Technology Officer is required.

The Chief Technology Officer should head the Information and Communications Technology Section and be responsible for the overall implementation of the Commission's ICT strategy. As such, the Chief Technology Officer should continually monitor new technologies and assess their potential to become new products or services, oversee the selection of research projects to ensure that they have the potential to add value to ECA and its stakeholders, provide reliable technical assessments of potential technology-enabled applications, explain future plans to the media, and participate in government, academic, and industry groups where there are opportunities to promote the Commission's reputation and to capture valuable data.

The Chief Technology Officer would be relied on to advise ECA on which technologies to adopt, both at the corporate level as well as for key initiatives, products and services being carried out by its divisions and offices. This responsibility would include providing the divisions and offices with expert advice on the best, most appropriate and cost-effective application to use for a specific system or project they are proposing.

To carry out this role successfully, the Chief Technology Officer should remain continuously aware of current and future ICT trends, as well as the relative merits and disadvantages of current technologies within the wider picture. The Chief Technology Officer should also stay abreast of the evolution of technology and would be fully knowledgeable about the relative advantages and drawbacks of any particular productivity, collaboration, communication or data management tool.

Data Technology Analyst. In just a few years, Internet-enabled portable devices have gone from a luxury for a few to a way of life for more than one billion people who own smart phones and tablets. Some 50 per cent of all Africans have mobile phones and their penetration is expanding rapidly. This means that informal social- and user-generated data sources and data types are growing exponentially.

Leveraging this abundance of new unstructured data and using them to complement the analysis of formal, government-supplied data is the purview of the Data Technology Analyst. A Data Technology Analyst is someone with wide knowledge of techniques and theories from a range of technology fields, who is able to extract meaning from both structured and unstructured data and create high quality and original data products and services. A Data Technology Analyst is able to offer expert advice on identifying the data to be collected,

in which fashion it should be assembled and stored, and how it can be manipulated and visualized in real-time.

Similar to the advisory role of the Chief Technology Officer, the Data Technology Analyst would act as an internal technical adviser to the policy units in the house, helping them to identify the best data to use for their particular assignment. He or she would be thoroughly familiar with the characteristics of the data in the Commission's data collections, as well as potential additional sources not yet included. The Data Technology Analyst would also have the skills to design systems for the researchers to compile and analyse the data recommended. The role should be included as an integral part of the strategic advisory services of the Information and Communications Technology Section to the rest of ECA, including the African Statistical Centre.

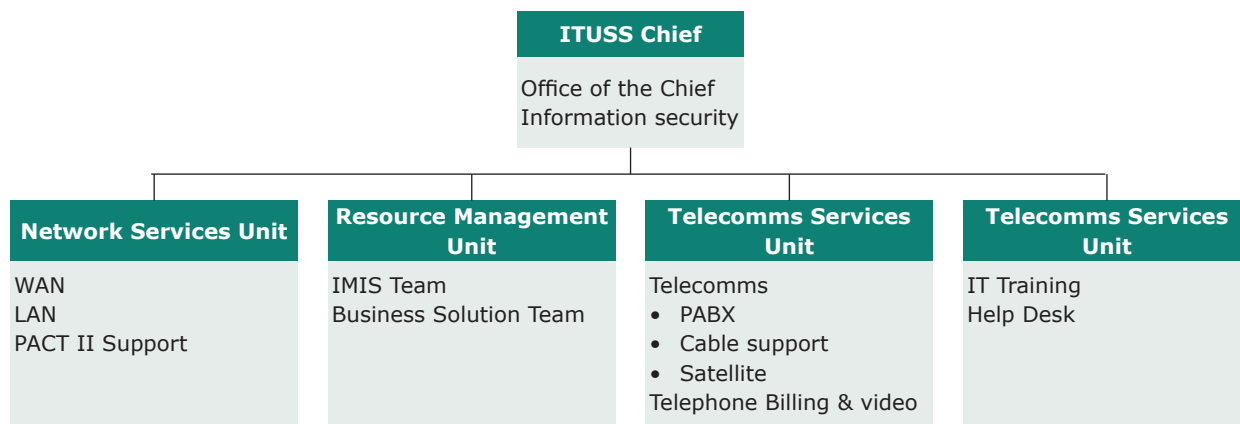
A more strategic Information and Communications Technology Section

In adjusting the Section's organizational structure to offer the technology services that best support the Commission's work, it is also understood that the Public Information and Knowledge Management Division is purposed for both upstream advisory services and downstream operations, support and training across the areas of ICT, communications, knowledge services and publications.

With this in mind, the Section would also be designed to support both upstream and downstream (strategic and operational) demands of internal clients. In addition to introducing a Chief Technology Officer position and adding a strategic Data Technology Analyst competency, the Section should also be organized in a way that better aligns its units to its different purposes.

Current structure. The Section is currently comprised of the following four units with tightly intertwined work assignments and technology:

1. Network Services Unit – responsible for managing the core infrastructure (WAN, LAN and electronic security systems).
2. Resource Management Unit – responsible for running IMIS, the future ERP system of the United Nations Secretariat (Umoja), and for developing and deploying software applications, both for administrative and substantive needs.
3. Telecommunications Support Unit – responsible for the telephone, radio, satellite and videoconferencing infrastructure, and client billing.
4. Customer Support Unit – responsible for the Service Desk, IT training and service level management for United Nations agencies.



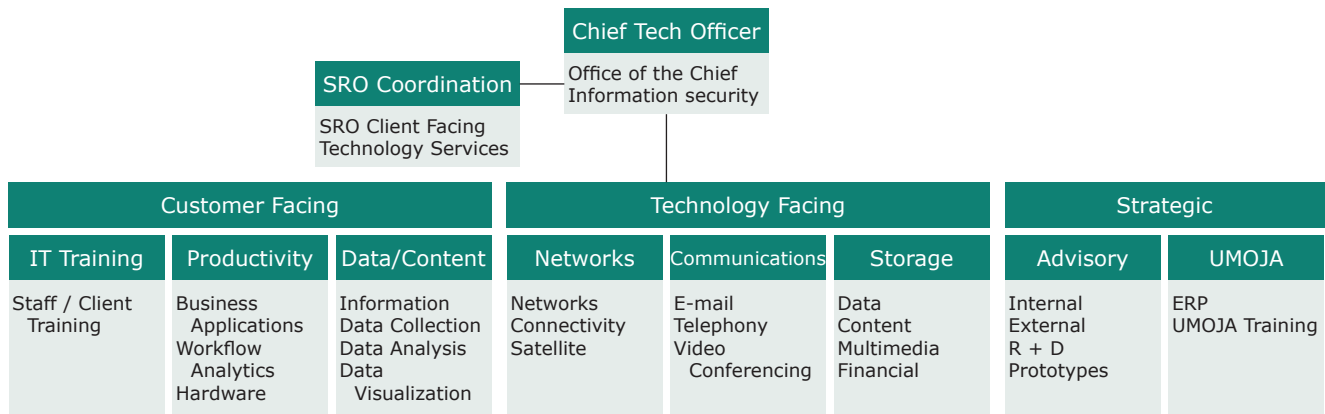
Proposed new structure. There may be better structures that can better service the dynamic environment that ECA is entering. Aligning the Section’s services along the following purpose-driven areas may better suit this transformational change:

1. Customer facing – units responsible for all user-facing software and hardware, data, graphic user interface, etc. (in essence, everything a user sees and uses. Covers ICT training; productivity (business systems software; workflow analytics and user interface design for business applications; hardware such as computers, printers and scanners); data and content (user interface screens for internet content, information systems and data collection and analysis; data visualization).
2. Technology facing – units responsible for all infrastructure-facing application software and hardware including

maintenance, testing new technology, governance, business continuity planning and disaster risk planning. Covers networks (WAN/LAN electronic networks; connectivity; satellite connections); communications (e-mail; telephony; video and teleconferencing); storage (physical/virtual servers for data; knowledge/information repositories; multimedia; administrative/finance records).

3. Strategic – units responsible for providing strategic advisory services, and identifying forward-looking products and services. Covers advisory services (internal and external advisory services; research and development; prototyping); Umoja (transition from IMIS; opportunities for adding value/reducing transaction costs; training).

Additionally, an **office for Subregional Office Coordination** would support the



Chief Technology Officer in incorporating the expertise and initiatives of the subregional offices into the Section’s skills base, coordinating the “distributed” model of technology product and service development.

The advantage of a purpose-driven structure over a technology-oriented structure is that it brings together all resources dedicated to one purpose to better balance the service with the demand. Taking communications as an example, a user intending to communicate virtually has a choice of fax, e-mail, voice over IP, analogue or digital telephone, satellite phone, videoconferencing or teleconferencing. Bringing these services together in one unit offers flexibility in allocating resources to the alternative channels depending on utilization patterns.

Oversight, guidance and quality assurance arrangements

Oversight arrangements. The Senior Management Team (SMT) should be the body reviewing and endorsing the ICT strategy, presented by the Director of the Public Information and Knowledge Management Division. The SMT should also monitor strategy implementation, reviewing it twice yearly as a standing agenda item.

It will be important for the approved ICT strategy and the Section’s corresponding business plan to have oversight from an ICT Committee representing the key user dimensions. An ICT committee has also been mandated by section 4.4. of ST/SGB/2003/17 of 21 November 2003, which established an Information and Communications Technology Board at United Nations Headquarters, of which the Chair of the local Committee is a member.

For ECA, this Committee would comprise of six members, paralleling the membership of the Strategy's drafting team:

- Director of the Public Information and Knowledge Management Division (Chair)
- Representative from the Strategic Planning and Operational Quality Division, covering the perspectives of performance monitoring and maximizing productivity
- Representative from a subregional office, covering the subregional perspective and that of facilitating collaboration
- Representative from the Procurement Section (Division of Administration), covering the perspectives of procurement decisions and facilitating communications
- Representative from the African Centre for Statistics, covering the perspectives of a headquarters user unit and facilitating data design and analysis
- Chief of the Information and Communications Technology Section (member-secretary)

The main role of the Committee would be to monitor the progress and performance of the strategy against success criteria, to approve the corresponding business plan for the Section, and to consider and recommend investment

decisions on the basis of the strategy's guiding principles.

The Director of the Public Information and Knowledge Management Division would be directly responsible for the oversight and day-to-day monitoring of the strategy and the Section's business plan. At the Senior Management Team's biannual review, the Director will also report on behalf of the ICT Committee.

Guidance arrangements. Given the fast-moving nature of technological developments, it would be important for the ICT strategy to have a sounding board comprised of experts familiar with forward-looking technologies, their implications for organizational effectiveness and their relevance to the situation in Africa. The board should also have close interaction with the United Nations Office of Information and Communications Technology in New York, which is implementing the global ICT strategy. The board should meet at least once yearly to review strategy progress and performance, ensure coordination and coherence with the global ICT strategy, and recommend new directions for ECA strategy implementation to take.

Quality assurance. Success criteria for the overall strategy were spelled out at the beginning of part 2. In the business plan, these success criteria would be detailed and monitored in the context of the regular

meetings of the ICT Committee, and be reported to the SMT in the twice yearly reviews.

To oversee the various dimensions of the strategy from a performance perspective, the Strategic Planning and Operational Quality Division should incorporate progress and performance parameters into its overall programme accountability framework. Quality assurance aspects for each of the functional responsibilities of the Section's unit clusters should be as follows:

- Customer facing units – continual feedback would be sought from users on the various aspects of unit performance (appropriateness, timeliness, quality,

value-for-money) through feedback questions and after-action reviews of product and service development tasks.

- Technology facing units – performance and return on investment indicators would be established on initial investments and running costs, and tracked against benchmarks.
- Strategic units – systematic feedback would be obtained from client units as well as the ICT advisory body on the effectiveness and impact of the advisory services and of the R&D activities carried out (development, prototyping, testing, roll-out).

PART 5 – Risks and Assumptions

The following risks are to be considered in the context of the ICT strategy roll-out:

Organizational culture risk. The new strategy would impact the way in which ECA functions, and could potentially be subject to miscommunication or resistance unless the transition is effectively managed and staff concerns addressed. To address these issues an internal communications plan would be prepared by the Communications Section to promote staff awareness and understanding, and highlight staff opportunities and gains. The planned overall reprofiling of the Public Information and Knowledge Management Division, of which the ICT strategy is a part, would include career counselling and training on new capacities. In addition, the strategy's roll-out plan would be tailored to introducing the less controversial quick wins initially, to build positive momentum.

Bureaucratic culture risk. Similarly, the bureaucracy of the United Nations may inhibit the introduction of localized decision-

making for technology choices and innovative approaches laid out in the strategy. To address these concerns the global ICT strategy would be counted on. Specifically, it would include opportunities for allowing United Nations offices to become “centers of excellence”; in this case ECA could suggest becoming a center in the area of business development (as opposed to business continuity), which should provide some latitude for experimentation. Also, the presence of the Director of the Public Information and Knowledge Management Division on the corporate ICT board would help to ensure that potential issues could be raised in this forum.

Connectivity risk. Connectivity issues – availability, bandwidth and cost – can be major considerations in many countries in Africa, including the countries where ECA headquarters and some of the subregional offices are located, and this could inhibit the effective introduction of many new products and systems foreseen in the strategy. Addressing this risk could be done

through a focus on introducing products and systems that are adaptable to low bandwidth environments or that take greater advantage of mobile applications, for which a relatively good infrastructure is available. Active engagement of the subregional offices in product development, as suggested in the strategy, would help to ensure that field and headquarters perspectives are taken into account. Additionally, assessments to identify more effective use of technologies in place could reveal opportunities for enhancements.

Risk of initiative overload. The new strategy would initiate a wave of change across a wide spectrum of departments and offices, and this challenges the capacity of staff to deal with all the dependencies. To mitigate the risk of work overload and duplicate or conflicting effort, clear priorities would be set in the context of cohesive planning by the Public Information and Knowledge Management Division and the interrelated business plans of its component sections, and systematic feedback obtained on progress and constraints.

Resources risk – technical, financial and human. Available staff and funding may be too limited to implement all of the suggested recommendations. In this case, a phased approach would be applied, prioritizing the initiatives – training, workflow analytics, and new skills – against the pivotal changes having the greatest multiplier effect. The future direction is about more done for less, providing an opportunity for priority investment in

efficiencies and capacities, as well as an imperative in making the change work for staff and stakeholders.

Implementation risk. With many recommendations of the ICT strategy reliant on each other, project planning for implementation needs to be structured in a way that maintains momentum and creates initial results quickly. Therefore, the priority planning should include both short-term and long-term incremental monitoring and evaluation. A two-speed approach is being suggested for the major transformations, with 20 per cent of the initiatives aiming for rapid results, and 80 per cent to be mainstreamed over time. Agile implementation models would be introduced, providing the flexibility to adapt and modify project planning to accommodate unforeseen challenges.

Coordination risk. The ECA ICT strategy is written from the ECA user perspective. Each United Nations office has its own unique perspectives, and so the ECA strategy must ensure that it adheres to and complements the global ICT strategy in a manner that supports the operationalization of global systems and does not create conflicting service platforms and tools. Overcoming barriers and leveraging synergies would be ensured with the Director of the Public Information and Knowledge Management Division as a member of the corporate ICT board, a representative of the New York Office of information and Communications Technology represented on

the ECA sounding board, and sharing or co-creating implementation plans together with Headquarters.

Risk of data safety and security.

Electronically held data has come increasingly under threat and privacy issues are becoming more important. The risk to ECA collected and stored data would be managed through clear data security and storage policies and actions and efficient storage mechanisms, which reduce the possibility of data loss and the consequent reputational risk. For example, the advantages of cloud computing, which offer higher levels of security than locally hosted servers, would be examined. The best protection against security intrusions is by ensuring that staff are sufficiently aware of

and alert to the risks, and take the precautions necessary. Security risk awareness would be part of the ICT skills framework established under guiding principle 5.

Risk and opportunity for ICT-enabled changes.

ICT has become a 24/7 operation with little room for failure. The expectation of ECA staff for greater speed, collaboration and integration of services significantly increases expectations and dependency on ICT services. The extreme diversity of the requirements of ECA require basic ICT provision to be both robust and cutting-edge. Two-way communication channels with users should be opened, so that the Section is continually aware of user expectations and users are continually aware of its plans and capabilities.

PART 6 – Conclusions

A strategy paper lays out how an organization intends to approach a particular business function, in this case the application of technologies for its ICT management functions. It establishes the parameters against which decisions are taken, projects are approved, and resources are allocated. It also projects how the particular function supports the organization's overall business model in the most effective manner. From the strategy comes a business plan and corresponding resource allocations and investment decisions. Rather than focusing in on programme plans and budgets directly, the strategy allows for the preliminary step of providing the rationale behind plan contents.

In the case of the ICT strategy for supporting the organization's strategic refocusing, the goal is for ECA to ensure that its staff always use the most suitable, cost-effective and user-friendly ICT available to maximize productivity and facilitate collaboration, communications and data collection and analysis. This intention leads to five guiding principles: the ICT customer service delivery model should be

state-of-the-art; technology and systems decisions should apply an end-user design approach; the technology framework should be interoperable and compatible across all stakeholders; data design, collection, analysis and presentation should feature prominently in the ICT strategy; and staff should become proficient in the technologies they require for their work. From these principles a series of implications are derived that determine the ICT-related activities to be carried out and how the responsibilities would be organized.

The ICT requirements of ECA are changing to address the demanding and agile development and economic environment that Africa is facing. There are increasing opportunities for Africa to move, and move first, to this new era of applying technology to leapfrog straight to the technology frontier, without worrying about adapting older legacy systems, to cope with the new realities of increased connectedness between all stakeholders. Technological advancements are also opening up new opportunities for identifying,

collecting and analysing formal and informal data sets. Combining these two new realities could substantially influence both upstream and downstream positive change for the continent. For this reason, ECA, as the premier service provider to high-level decision- and policymakers, must also be at the forefront of understanding the balance between the strategic importance and the practical applications of data and technology.

The right choices make the difference between ECA becoming an enabling leader and trusted

partner of first choice or simply playing catch up to other development organizations. Furthermore, the right choices are not only about which technologies to use, but how to engage with them (acquisition, subscription, outsourcing, in-house R&D, partnering with technology partners). In an increasingly changing African continent, the manner in which ECA engages with technology will have a profound influence on its future – financially, competitively and politically.

ANNEX 1 – Details of the new strategic competencies of the Information and Communications Technology Section

A. Chief Technology Officer

Two positions are commonly seen within organizations that rely on technology for competitive advantages and productivity, the Chief Technology Officer and the Chief Information Officer. Essentially, as their respective titles apply, a Chief Technology Officer's focus would relate to how the organization engages with technology at a strategic level, while a Chief Information Officer would have a comparable focus on the management of information. The differences are set out below.

A Chief Technology Officer has deep technical knowledge of the relevant fields, and is primarily customer-facing and concerned with long-term and big picture issues. The Chief Technology Officer is responsible

for technology strategy, which includes information, communications, operations and competitive technologies, and should be continuously aware of science and technology trends and futures. The rate at which technology changes in all areas – information, communications, education, data capture, dissemination and visualization, biotech, energy, environment – creates an ongoing challenge to be aware of technological developments and make good choices about which technologies to engage. In the case of ECA, it is therefore recommended that this function also include research and development, scanning and identifying potential new technology or technology-enabled products and services that can be prototyped and introduced into the portfolio of tools and approaches.

A Chief Information Officer is primarily internally-facing and concerned with information strategy, culture, and compliance. Information strategy describes the roles and uses of information in shaping the future of the business and in setting and achieving business goals. Information culture is the degree to which information is integrated into the fabric of the business-use by executives to understand competitive and economic environments and to define and execute strategy; use by managers to inform decision processes and to manage performance; use by staff to drive effective and efficient day-to-day operations.

At ECA, the responsibility for information management currently rests with the Strategic Planning and Operational Quality Division, which is responsible for monitoring compliance with, among other things, the Executive Information System, which is being developed as a dashboard, as well as other reporting requirements that rely on progress, performance and impact measurements. What is currently missing at ECA, which would be addressed by the ICT strategy, is a Chief Technology Officer.

The skills and capabilities to be included in the job description of a Chief Technology Officer include:

Roles of ECA Chief Technology Officer:	Infrastructure Manager (internal)	Operations Manager (internal/external)	Strategic Technology Planner (internal/external)	Client Technology Enabler/Broker (external)
Monitoring and assessing new technologies	Low	Medium	High	High
Testing/exploiting new technology (technology innovation)	Low	High	Medium	High
Integrating new technology	Medium	High	Low	Medium
Leverage technology across ECA/stakeholders	High	High	High	Medium
Use technology to drive the ECA data-driven business strategy	Medium	High	High	High
Use technology to drive the ECA internal and external communications strategy	Medium	High	High	High

Roles of ECA Chief Technology Officer:	Infrastructure Manager (internal)	Operations Manager (internal/external)	Strategic Technology Planner (internal/external)	Client Technology Enabler/Broker (external)
Use technology to create new income/resource opportunities	Low	Medium	High	High
Introduce cost and workflow efficiencies	High	High	Medium	Medium
Design ECA products and services to enhance client relationships	Low	Medium	High	High
Enhance productivity and collaboration	Medium	Low/medium	High	High
Build out or leverage existing IT infrastructure	High	High	Low	Low

B. Data Technology Analyst

A Data Technology Analyst would have extensive experience to better identify data to be collected, in which fashion they should be assembled and stored, and how they can be manipulated and visualized in real time.

A Data Technology Analyst is also able to keep an organization’s technology systems current with the state-of-the-art. For example there is currently a move towards “Open Data”, where anyone, including service provider clients, is able to upload and download data for their own purposes. To offer this facility, users must be able to easily query data in common, unscientific language. Currently, ECA data querying technologies do not provide for questions posed in ordinary

language, only those precisely written as software queries, and so employees or clients without specialized training are unable to get information on their own. A Data Technology Analyst would allow ECA to move to an Open Data standard, making it easier for employees to take advantage of sophisticated tools for data analysis, and opening up possibilities for sweeping changes in how its knowledge work is carried out.

The position calls for deep familiarity with the following:

- Data engineering including progressive and scalable taxonomy and meta-data models

- Location-based data such as geographic information systems in geospatial intelligence (GIS/GI)
- Business intelligence including pattern recognition, workflow analytics and machine learning
- Advanced data visualization and layering of linear and multidimensional data
- Designing data structures that easily configure to scenario, uncertainty modeling and trend spotting
- Data storage models, including data warehousing, data marts and distributed computing
- Knowledge/data discovery in social and information networks (social network analysis)

ANNEX 2 – Summary of actions suggested, based on the implications of adopting the ICT strategy and its guiding principles

Guiding principle 1: The ICT customer service delivery model should be state-of-the-art

1. Introduce the role of Chief Technology Officer so that the Section can offer strategic advisory services to the whole of ECA on the best technology fit for specific requirements.
2. Allow users the choice of selecting their own computer and communication tools (“bring your own device”), or to remain with the corporately offered package.
3. End the Section’s reliance on staff with temporary contracts by introducing an institutional service contract with a single service provider that remains up-to-date with the latest technologies.
4. Use a development approach for technology-enabled systems that engages users, both internal and with clients, in all stages – identification, development, testing and assessment.
5. Encourage IDEP take greater advantage of the wide range of e-learning products now available, with a view to widening access and reducing training delivery costs.
6. Introduce standardized information and data formats based on Open Standards, to facilitate user engagement in systems development and ensure the results link seamlessly.
7. Invest in stable, high-bandwidth connectivity between Headquarters, the subregional offices and other major

stakeholders to facilitate increased engagement, collaboration and partnering.

8. Consolidate all distribution and contact lists into a client relationship management system with client analysis and feedback tracking on use of ECA products and services.
9. Enhance the ability to meet client expectations for content, information and data by introducing a model that builds flexibility into capturing and publishing its information assets.
10. Establish a one-stop shop for all data sets, products and services, including all GIS data, which enforces reusability from a single source when considering new data collections.
11. Explore the possibility of ECA adopting a data warehouse system for its databank architecture, which would allow it to manage and manipulate structured and unstructured data from any source.
12. Work with partners to access original sources and tap non-standard and unstructured data using smart phone technologies, for inclusion in the data warehouse.

Guiding principle 2: Technology and systems decisions should apply an end-user design approach

13. Inventory all of the Commission's licensed technologies and equipment to see which are in demand, which are underutilized and which have outlived their usefulness.
14. Analyse workflows of priority tasks against standard operating procedures and the unique requirements of ECA to identify opportunities for reducing duplication and bottlenecks.
15. Roll out the underutilized technologies and updated business practices, with a two-speed 80-20 "Workplace Transformation Programme", led by users.
16. Utilize internal knowledge networks for implementing the workplace transformation programme, by sharing challenges and innovations, and collaborating on tasks.
17. Adopt modern, informal and flexible collaboration tools, such Google Docs and chat rooms, to ensure collaboration on systems development assignments remains continuous.
18. Set up a service delivery centre with a web-based menu as a single point of

service, to increase ease-of-use, centralize product support and facilitate access to various platforms.

19. Integrate commonly used social networking tools with the official communications tools (Lotus Notes, iSeek, hard copy memos) to create flexible and more intuitive communication.
20. Encourage the use of social and multimedia technologies as communications channels instead of linear messaging (i.e. e-mails) to staff, clients and stakeholders.
21. Factor multilingualism into all communications efforts, facilitating availability or use of translation with traditional approaches (translators) or more innovative means (technology).
22. Introduce a data management platform that can leverage mobile, location-based and social network analysis technology for predictive modelling and scenario-building.
23. Expand tools and channels for offering live data tools in ECA publications, to enable clients to better use and interact with the material; capture this use for better targeting.
24. Scale up data monitoring to make it more accurate, holistic and time-sensitive, to

give ECA a better competitive advantage for its products and services.

Guiding principle 3: Technology framework of ECA should be interoperable and compatible across all stakeholders

25. Adopt an interoperable standards framework for all information and communication technologies, gradually replacing current technologies using a “fit-for-purpose” approach.
26. Invest in more robust videoconferencing (in-office tools; full-room facilities; interactive webinar tools) to increase face-to-face interaction and to strengthen relationships between Headquarters and the subregional offices.
27. Systematically incorporate e-Conference technology (webinars, event-specific apps, video-streaming etc.) into event processes for preparation work, during the event and for follow-up.
28. Introduce an open dashboard platform as a monitoring aid for the Commission’s range of products, services and events (country dashboards for country profiles, event dashboards, etc.).
29. Increase the strategic value of IDEP by expanding its online offerings to external

clients with state-of-the-art curriculum and information modules, mobile applications and electronic payment.

30. Leverage technology to strengthen branding, by including a signature style and mode of delivery as a brand element and a strong indicator of the Commission's positioning.
 31. Leverage technology to strengthen external communications, by building multi-channel audience-specific communications packages for journalists and other target audiences.
 32. Introduce a one-stop shop modern interface, comparable to Amazon.com, for all digital data, library and web offerings from all ECA units, including an intuitive meta-search engine.
 33. Issue a glossary or dictionary for the Commission's data collections with easy-to-understand language and how-to/what-if examples, to increase usability and user comprehension.
 34. Introduce a "life-cycle" framework for the Commission's data collections, for continual review of outdated data, new sources, collection steps and formats, and increased utilization potential.
35. Add a Data Technology Analyst to the Commission's staff resources, responsible for offering advice to policy specialists on the most appropriate, reliable and available data for their particular task.
 36. Invest in data design technologies to identify strategic information, trends and impacts, for determining unmet data-related needs and forecasting future needs.
 37. Invest in data design technologies to maximize data utilization, including accuracy, validity, reliability, timeliness, relevance and completeness, for both ECA products and processes.
 38. Encourage ECA specialists to participate actively in the relevant expert networks to stay abreast of the data lifecycle capture and analysis process and issues.
 39. Establish a "data asset register" to provide a complete view of all ECA data assets as a resource base.
 40. Highlight the Commission's data acumen through its product development, demonstrating how data enhances the

Guiding principle 4: Data design, collection, analysis and presentation should feature prominently in the ICT strategy

value of its products, and offering new or repackaged data products.

41. Reorient data collection technology from pre-specified models for historical, backward-looking data analysis, towards multi-dimensional models forward-looking analysis.
42. Establish data quality assurance controls for data management integrity, confidentiality and availability to prevent ECA from exposure to unnecessary risk.

Guiding principle 5: Staff should become proficient in the technologies they require for their work

43. Adopt an organization-wide ICT skills framework that helps ensure appropriate ICT skills are available to increase efficiencies of internal workflows and external service delivery.
44. Solve the issue of developing and retaining the Section's contracted expertise, through a staff rationalization exercise or outsourcing responsibilities to a knowledgeable service provider.
45. Issue user guides and staff training modules for the range of applications introduced under the more flexible approach of interoperability rather than the one-size-fits-all approach.

46. Engage the subregional offices in product development by changing from a hub-and-spoke to a distributed network model, giving them lead roles in selected initiatives.

47. Enhance the subregional office communication channels within the subregions to facilitate client engagement and partnerships in ECA events, products and services.

48. Introduce in-house or contracted expertise for data interpretation and visualization to add value to ECA products and services such as evidence-based policy options.

49. Create an internal network of innovation centers ("laboratories") for units or teams to develop new technology-based products and services and leverage staff technology skills.

Actions relating to the organizational arrangements for the strategy

50. Add two new strategic competencies to the Information and Communications Technology Section:
 - A Chief Technology Officer, to offer strategic advisory services to all ECA offices and ECA as a whole on the best technology fit for their specific requirements.

- A Data Technology Analyst, to advise ECA policy units on the best data to use for their research or policy work, and to design the systems needed to compile and analyse it.
51. Organizationally align the units that make up the Information and Communications Technology Services Section to the roles set out in part 4 above, namely:
- Customer services – covering all the user-facing dimensions of the Section’s responsibilities, e.g. ICT training, productivity (business systems hardware and software), and data and content (user interface screens for internet content, information and data).
 - Technology infrastructure –all infrastructure-facing responsibilities, e.g. electronic networks, communications and storage.
 - Strategic services – providing strategic advisory services to ECA and identifying forward-looking products and services, including Umoja.
 - Subregional office coordination – to support the Chief Technology Officer in incorporating the expertise and initiatives of the subregional offices into the Section’s skills base and distributed product development.
52. Establish the strategy’s oversight, guidance and quality assurance arrangements:
- An ICT oversight committee, chaired by the Director of the Public Information and Knowledge Management Division, with the Chief of the Information and Communications Technology Section acting as secretary and with representation from four user perspectives – SPOQ/productivity; SRO/collaboration; DoA Procurement Section/communications; ACS/ data design and analysis – would be responsible for monitoring the performance of the strategy, approving the business plan for the Information and Communications Technology Section, and considering investment decisions based on the strategy’s guiding principles.
 - Guidance would be provided by a sounding board comprised of experts on forward-looking technologies and representatives from the United Nations Office of Information and Communications Technology in New York, to review strategy progress and performance, ensure coordination and coherence with the global ICT strategy, and recommend new directions for ECA strategy implementation to take.

- For quality assurance, the Strategic Planning and Operational Quality Division would incorporate progress and performance parameters into its overall programme accountability framework.

