General Assembly

Seventy-seventh session
Agenda item 138
Proposed programme budget for 2023

Information and communications technology strategy

Report of the Secretary-General

Summary

The information and communications technology (ICT) strategy (2023–2028) was developed in consultation with Secretariat entities and external partners to establish a coherent and effective direction for ICT in the Secretariat.

The strategy outlines five strategic technology areas, including components that will solidify the Organization's infrastructure and systems and facilitate improved user experience while focusing on a three-layered data-management plan. It will also expand the scope of innovation, facilitating the scale-up of identified innovative technology solutions, and will establish an ecosystem for technology and data.

The strategy will balance operational freedom and central control, placing the work of the United Nations at its core as a driver of technology and data initiatives.

The strategy is aimed at achieving three main strategic goals while seeking to create the conditions conducive to the effective, efficient, secured, interoperable and innovative use of technology:

• Serve the United Nations entities to help them to deliver on their mandates

• Enable the digital transformation of the United Nations through innovation and partnership

• Safeguard and secure the Secretariat's information assets

I. Introduction

1.   The previous information and communications technology (ICT) strategy concluded in February 2020. Though many of its objectives were achieved and provided the foundation for the current state of ICT in the United Nations, it is evident that the work of the Organization and the way in which it works has changed dramatically, with health, environmental and security issues increasingly taking centre stage among the range of other challenges the Organization tackles. Concurrently, the implementation of the Secretary-General's reforms in the areas of development, peace and security and management have contributed to an Organization that has changed significantly and is challenged to be better equipped to deliver on its mandates.

2.   Global trends and megatrends continue to emerge in the rapid evolution of the technology and data environment, pointing to a future that is characterized by a combination of necessity, opportunity and risk.

3.   The impact of the coronavirus disease (COVID-19) pandemic has highlighted the key enabling role of technology in the work of the Organization and the increasing global reliance on digital advances.

4.   In its resolution 76/245 on the proposed programme budget for 2022, the General Assembly endorsed the recommendations of the Advisory Committee on Administrative and Budgetary Questions, including that the Secretary-General submit a new, comprehensive ICT strategy. The strategy includes challenges and shortcomings, as well as opportunities and lessons learned, which were also outlined in the final report on the status of implementation of the previous strategy (A/74/353).

5.   The ICT strategy 2023–2028 outlines five strategic technology areas:

  • Enterprise infrastructure and systems

  • Experience and alignment

  • Data and information

  • Technology innovation

  • Technology and data ecosystems

6.   ICT activities will align to achieve three main strategic outcomes that reflect the expected consequences of the strategy's success (further details may be found in the annex):

  • Serve the United Nations entities to help them to deliver on their mandates

  • Enable the digital transformation of the United Nations through innovation and partnership

  • Safeguard and secure the Secretariat's information assets

7.   An implementation road map will be developed for the strategy, laying out the projects needed to advance each of the five strategic technology areas, while noting that their underlying intent is to move the Organization to a higher level of ICT maturity and facilitate continuous improvement.

8.   In defining the ICT focus areas of the Secretariat, the five-year strategy will further advance efforts in key Secretariat initiatives and frameworks.

9. The strategy will:

- Facilitate the Organization's initiatives and strategic objectives through the provision of effective, secure and coherent technology so that they are fit for purpose.

- Establish ICT as a critical enabler for the Secretariat, rendering it more integrated, resilient, agile and flexible in terms of services availability.

- Continue to strengthen existing cybersecurity capacity and establish a cross-cutting cybersecurity programme for the Secretariat in the face of evolving threats. In addition, it will integrate privacy policy and best practices into ICT systems, solutions and services.

- Support enterprise interoperability by designing processes and technology to transcend organizational boundaries and silos.

- Collaborate with Secretariat entities to ensure that ICT policies, systems, solutions and services respond more effectively to the entities' operational requirements.

- Collaborate with Secretariat entities to facilitate improvement in the technological skill level of United Nations personnel.

- Support Secretariat entities in advancing the use of frontier technologies in mandate delivery.

II. Landscape and foundation

10. The previous ICT strategy was designed to overcome the fragmentation of ICT, to leverage technology as a strategic enabler for the work of the Organization and to protect it from evolving cybersecurity threats. In the wake of the strategy's conclusion, it is clear that significant improvements have been made to the ICT landscape throughout the Secretariat, indicating that a major step has been taken towards the goal of coherent, reliable and efficient ICT. Governance and policies, architecture, standards and investment priorities that allow the Secretariat to utilize ICT as a powerful tool to fulfil its mandates have been strengthened. Operations have been solidified and new structures have been established to make core ICT services more effective, efficient and resilient. The application landscape has been improved and simplified. Information security has been strengthened across the Secretariat in the areas of prevention, incident detection and response, and governance, risk and compliance. The progress made in modernizing and transforming ICT across the Secretariat has created a foundation for innovative solutions, using frontier technologies to enable the core work of the Organization. However, there remain many areas where progress is needed, which will be addressed in the present report.

11. In his report entitled "Shifting the management paradigm in the United Nations: ensuring a better future for all" (A/72/492), the Secretary-General indicated that the strategy would continue to adapt to the diversity of functions within the Secretariat. In a decentralized Secretariat, flexibility and agility are essential. Client engagement at both the strategic and operational levels will ensure that solutions enable the United Nations to more effectively and accountably deliver on its programmes and mandates, and to manage its financial and human resources. In the implementation of the ICT strategy, it is necessary for the Organization to ensure flexibility, opportunity and security, recognizing the different "business models" of the various entities in the Secretariat, and move away from the one-size-fits-all approach.

12. More recently, the impact of the COVID-19 pandemic has highlighted the critical importance of ICT in supporting business continuity and mandate delivery across the Secretariat and in intergovernmental bodies. As a result of the work stemming from the previous ICT strategy, many of the systems, services and technologies required for a remote, hybrid and changing workforce were in place, though the scale at which they would be required to operate had not been previously envisaged. Remote working arrangements were critical for the continued operation of the Secretariat throughout the pandemic, which proved the need to revise the replacement cycle of the ICT equipment provided to personnel. In that regard, using enterprise platforms and other productivity solutions designed for remote working would allow United Nations personnel to collaborate and connect regardless of their location.

13. The pandemic exposed the Organization to an increased scale and frequency of cybersecurity attacks, some of which took advantage of the outbreak as an opportunity to obtain information, such as large-scale phishing attempts. Similarly, the scale of remote and hybrid meetings organized and supported by the Secretariat for intergovernmental bodies dramatically increased from pre-pandemic levels, requiring changes to technology and practices.

14. A notable impact of the pandemic was the increased use of a wide variety of devices from diverse locations, including personal, and therefore unmanaged, devices. Accordingly, a need emerged to establish key policies and standards and implement technological measures to manage the security risks that arise from an ICT landscape that is less standardized. Similarly, there is currently an emphasis on addressing the potential conflict related to the use of personal equipment for business purposes, prompting work on a policy framework for the present reality. Critically, the simultaneous need to ensure privacy and an effective working environment is being explored collaboratively across the Secretariat. According to the policy framework being developed, ICT solutions, services and systems will need to include privacy measures.

15. The use of existing and emerging technologies and data continues to be founded on strong ICT governance and policy frameworks, as well as supportive of interoperability within the Secretariat and of information-sharing across the United Nations common system. New technologies will require continued efforts and vigilance to comprehensively integrate cybersecurity into the Secretariat's ICT landscape.

16. Cybersecurity was highlighted in the report of the Board of Auditors on the handling of ICT affairs in the Secretariat (A/67/651). In response, the Secretariat presented a 10-point action plan, with the ICT strategy continuing to advance efforts in that domain. That action plan was intended to remedy shortcomings rather than solidify the Secretariat's existing information security capacities and capabilities. Subsequently, in its resolutions 68/247 and 69/262, the General Assembly took note of the report of the Secretary-General on progress on the implementation of recommendations related to strengthening information and systems security across the Secretariat (A/68/552) and endorsed the previous ICT strategy, respectively. Progress has been made since, with many elements of the action plan implemented to completion or adopted as part of the programme of work of the United Nations.

17. The implementation of new technology solutions has resulted in a relatively rapid transition to new approaches to work. The Organization is now better able to communicate, connect and collaborate, with traditional barriers, such as location and rigid computing environments, becoming less impactful.

III. Mission and principles

18. The mission of the present strategy is to foster, support and enable the successful implementation of United Nations mandates through the efficient and effective delivery of innovative, secure and scalable digital services and solutions.

19. The strategy will set a common direction for the services and solutions to be provided and will underpin the operating model for the Organization's ICT. Client engagement at both the strategic and operational levels will ensure that solutions enable the Organization to more effectively and accountably deliver on its programmes and mandates.

20. Optimization, alignment, integration and adaptation have been identified as key tenets of the strategy. Figure I illustrates the areas that the ICT operating model will cover to support the key tenets. The areas will be under review throughout the strategy implementation and adjusted on a regular basis.

Figure I
Areas covered by the ICT operating model

A. ICT methodology

21. Drawing on ICT best practices, technology implementation is envisaged to leverage a coherent approach to allow prioritization of and focus on technology that connects to and is driven by the strategic needs of the United Nations. The solutions will be delivered throughout the ICT life cycle, using an optimized and agile process that engages all of the Secretariat's ICT capabilities.

22. An effective distinction will be made between interconnected ICT service management and ICT service delivery, in compliance with policies, standards and architecture:

(a) ICT service management seeks to understand and respond to the Organization's requirement for technology and data going forward, including the business requirements of Secretariat entities, and focuses on ensuring adequate support, if feasible; for programmatic work undertaken throughout the Organization;

(b) ICT service delivery pertains to operational ICT that is implemented as a set of services required for the Organization to operate effectively and efficiently. ICT service delivery will be fit for purpose, secure, reliable, resilient and timely.

B. ICT alignment

23. Prior to the implementation of the previous ICT strategy, endorsed by the General Assembly in its resolution 69/262, ICT operated in the context of numerous activities in support of the mandates of Secretariat entities. These activities were typically not harmonized or coherent, resulting in multiple workstreams and inefficient use of limited resources. As a result, drawing from lessons learned and the important principle, highlighted in that strategy, that there needs to be a balance between central control and operational freedom, the present strategy seeks to achieve coherence and a balanced approach through risk management and monitoring.

24. Using an operating model that is tightly integrated with a planned accountability framework for ICT, which will define where functions are undertaken and ensure that they are compliant with ICT policies, procedures, standards and architecture, Secretariat ICT service providers will be supported in their transition to a consolidated governance model. This will be done in a collaborative manner that strengthens engagement with clients at the local level while preserving coherence between the operating model and the strategy.

C. Integrated ICT

25. ICT will be integrated and symbiotic with organizational priorities. Following the establishment of standards, policies and governance structures pursuant to the report of Board of Auditors (A/67/651), effective, supportive and constructive monitoring and compliance will be strengthened and harmonized to help Secretariat entities to holistically achieve coherence while addressing their organizational needs. Examples of how normative elements will be integrated into ICT services, solutions and programmes include the following:

- Information security will be systematically integrated into all ICT-related initiatives throughout the United Nations system. Similarly, the Secretariat, in line with the Data Strategy of the Secretary-General for Action by Everyone, Everywhere, will introduce the concept of "privacy by design", addressing privacy requirements at the outset of a project.

- ICT initiatives will be tightly integrated with enterprise systems to ensure that technology decisions continue to support the initiatives' use and utility. They will also support interoperability with other systems across the Secretariat, thereby facilitating end-to-end integration.

- Multilingualism will be included in the initial plans for ICT systems, services and solutions in accordance with the existing legislative and policy frameworks.

- Barriers to universal design that respects the needs of all people, and gaps in multilingualism, will be properly identified, addressed and removed or reduced, with a view to enhancing experience, creating an enabling environment for everyone, ensuring that systems and practices are accessible and unbiased and promoting a culture of inclusion, while reaffirming the pledge in the 2030 Agenda for Sustainable Development to "leave no one behind".

- The strategy will also ensure that negative environmental impacts of ICT, such as carbon emissions and e-waste, are minimized, by adopting best practices throughout the life cycle of ICT solutions.

26.   In response to the recommendations contained in the report of the Board of Auditors, efforts have resulted in a framework of policies, procedures, guidelines and standards which is being progressively improved. In addition, governance has been strengthened and is operating with active engagement. These efforts are precursors to the implementation of an effective monitoring and compliance function, as identified in the report of the Board of Auditors (A/76/5 (Vol. I)). Noting that ICT issues, in particular in the area of cybersecurity, affect the Organization as a whole and cannot be effectively contained to specific duty stations or locations, the present strategy will define a holistic monitoring and compliance function for all ICT and that engages the Secretariat as a whole.

D.   Adaptive ICT strategy for a changing workforce

27.   Since the conclusion of the previous strategy, experience has demonstrated that the way in which the United Nations works has changed significantly. Globally implemented protocols necessitated a change in the way that the United Nations workforce operates, focused on reliance and agility to enhance and ensure the security of ICT solutions.

IV.   Digital technology strategy

28.   In accordance with the report of the Secretary-General entitled Our Common Agenda, the strategy will support making the United Nations more effective as part of the wider transformation towards a "United Nations 2.0". This strategy focuses on developing the five strategic technology areas depicted in figure II over the next five years. The five areas represent key elements that, if implemented to full maturity, would enhance ICT in support of the Organization's mandates and in advancing its work.

Figure II
Five strategic areas of the ICT strategy (2023–2028)
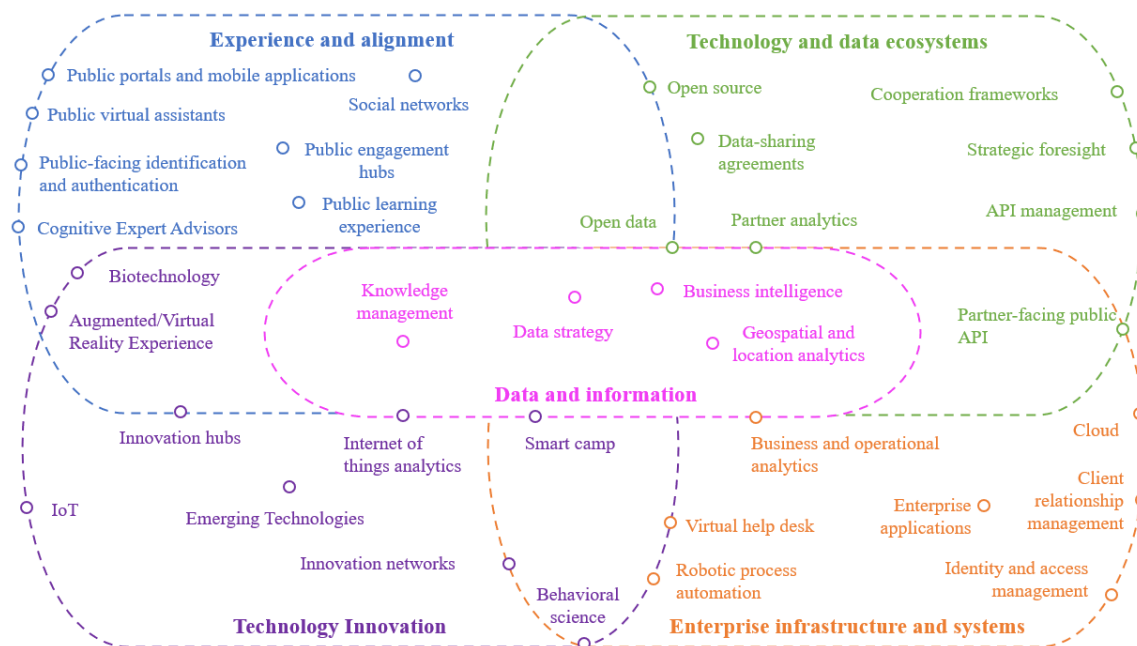
Acronyms: API, application programming interface; IoT, Internet of things.

29. The implementation of ICT in the five key technology areas, currently at varying levels of maturity, will determine the overall success of the ICT programmes throughout the Secretariat. Furthermore, they not only work as part of an integrated apparatus for ICT but in some cases are sequential.

30. The strategy is designed to improve coherence through all layers of ICT services and will establish a global operating model for ICT, allowing for the overlay of an accountability framework that clearly identifies those aspects of ICT that require operational freedom and those that benefit from central control. The strategic approach proposed, while forward-looking, is based on lessons learned from the previous strategy, solidifying its successes and strengthening core services while simultaneously advancing areas of ICT that offer unrealized opportunities.

31. The successful implementation of the present strategy is predicated on addressing the gap between the ICT systems, solutions and services that are currently achievable and those that the United Nations will require going forward. The ICT systems, solutions and services should be tailored to meet the business requirements of Secretariat entities, where appropriate. Successful implementation of the strategy requires resources in key strategic areas, which will be formulated holistically, in consultation with client entities, and submitted through the appropriate budgetary instrument.

A. Enterprise infrastructure and systems

32. The previous strategy identified as critical the aspect of defragmentation under modernization. It improved the overall infrastructure used in the Secretariat and strengthened the Organization's ability to deliver ICT services, which ultimately proved instrumental in facilitating an effective transition to pandemic working practices.

33.   The establishment of a strong foundation for ICT is critical to achieving a level of effectiveness, efficiency, resilience and trust upon which ICT solutions can then be built.

34.   The strategy proposes building upon the work already completed by solidifying the infrastructure that the Organization relies on to operate. As the Organization's legacy infrastructure has aged – in some cases beyond obsolescence – its replacement will have to be carefully planned. Efforts to expand the use of cloud computing, where cost-effective and efficient, will continue in alignment with the management reform, and implementation will be delegated on the basis of an accountability framework to support agility.

35.   Similarly, overall ICT asset management will be strengthened in collaboration with relevant offices. An assessment of the replacement cycle of mobile devices and laptop and desktop computers across the Secretariat, as well as their actual usage, will be conducted, and results will be provided in a subsequent update on the implementation of the ICT strategy.

36.   Support for hybrid work environments that enable collaboration among remote and on-site personnel, has been a critical part of ICT requirements since the onset of the COVID-19 pandemic. Moving forward, the need for hybrid solutions will remain high and will require further organizational support and investment, which includes scaling up solutions, not just for collaboration among United Nations personnel, but also in support of conferences, meetings and events with and for Member States and their partners.

37.   The quality of network connectivity and overall Internet availability have been important factors in the use of cloud computing, and efforts have continued over the years to explore opportunities and technologies to provide these services in locations where the United Nations operates. Most recently, low earth orbit technologies have been examined.

38.   Through cloud-based services, the United Nations has been able to provide comprehensive productivity solutions, which deliver broad services that interoperate effectively and a seamless experience to Secretariat personnel. Similarly, enterprise systems are mature and provide critical services that build on functionality by improving the user experience through improved security and interoperability. The previous strategy reduced the number of applications from 2,340 to under 1,000, with efforts continuing to reduce the number further by increasingly decommissioning unused applications while preserving the required institutional data. Similarly, website rationalization will follow the newly established administrative instruction on United Nations website publishing (ST/AI/2022/2). However, they need to be periodically enhanced, upgraded and replaced on the basis of a wide array of considerations.

39.   The technology elements that support the Organization's use of social media will continue to be strengthened in line with prevailing policies and standards. In that regard, a Secretary-General's bulletin has been promulgated to govern social media use, and efforts are under way to align technologies in support of that instruction.

40.   Continuing to develop enterprise infrastructure and systems is essential. In that context, this strategy proposes the implementation of key technology initiatives that represent an evolution of the current infrastructure, increasing its utility. Examples of such initiatives include the following:

- Advanced process automation to reduce repetitive and time-consuming tasks. Available solutions allow process automation to be tackled across systems, resulting in greater efficiency benefits.

- In support of enhanced decision-making, this area of the strategy will also seek to integrate and harmonize technologies. Doing so will facilitate better use of solutions by Secretariat entities to undertake advanced analytics and visualization based on effective data integration services, allowing data to be used and accessed securely.

- The approach to identity management will be enhanced to create uniformity and coherence and to preserve privacy, streamlining access to services, solutions and systems, including to improve interoperability with the wider United Nations system, where feasible.

41. It is therefore proposed to bring the existing enterprise infrastructure and systems to an enhanced level of effectiveness, resilience and security.

B. Experience and alignment

42. The previous strategy included the area of transformation, which established a foundation of technology use with a focus on addressing functionality gaps. With technology becoming increasingly ubiquitous, the present strategy proposes a conscious and structured approach to the human-technology interface. In the face of the growing complexity of technology solutions, interaction with and through technology will be examined. The effectiveness, intuitiveness and simplicity of that interaction will be addressed so that the use of ICT solutions, systems and services is rendered efficient and rapid through frictionless interaction.

43. Using technology and data, the strategy is focused on enabling Secretariat entities to redefine and advance the way in which the United Nations interacts with the public domain. The area of human experience includes the support of key strategic components, such as initiatives and programmes that will be outward facing and closely aligned with partnerships. It will allow the formation of structured relationships with the public domain and people involved in the Organization's mandates through the universal language of technology and data.

44. The expected outcome is that the technology systems, solutions and services at the disposal of Secretariat entities, with ICT support, will strengthen integration and provide a seamless and intelligent utility for personnel across the Secretariat, bringing people together regardless of their location and function. Technology has the potential to overcome barriers, and systematic efforts will be made to improve the usability of technology provided by the Secretariat.

45. The combination of technologies, such as natural language processing, artificial intelligence and computer vision, will be examined as a means to improve user experience. Where there are inefficiencies in United Nations processes or where information is difficult to access or use, an assessment will be undertaken to identify possible measures to address those challenges and create a seamless experience for United Nations personnel.

46. The portability of technology systems, solutions and services will be emphasized, and efforts will be made to allow Secretariat personnel to use United Nations technologies from any location and any device. This leverages lessons learned from the experience of work during the pandemic and from the changing expectations of the global workforce, as well as the growth in the functionality and availability of technology systems, solutions and services.

47. The strategy will also result in a highly integrated approach to the use of technology, with a focus on Secretariat entities that require technology and data solutions to advance the implementation of their mandates. Entities will partner with Secretariat technology providers to implement systems, solutions and services that

are designed and implemented through integrated teams. This will be achieved in part by supporting Secretariat entities in enhancing their personnel's digital skills and establishing a technology-aware workforce, building organizational knowledge and making the most of the diversity of experiences and perspectives within the Secretariat.

48. Through knowledge-sharing and training, United Nations personnel will be made aware of the technologies, information and data available to them, and how these resources are made available will be optimized. Analysis and assessment of the level of maturity of ICT systems, solutions and services will be referenced against the level of expectations of personnel to allow the identification of priority areas.

C. Data and information

49. Through support for the introduction of new technologies and processes that enable entities and users throughout the Organization to better capture, nurture, protect, share, discover and analyse data, the strategy's end goal is to empower United Nations entities by making sure that trusted data is more readily available across the Secretariat for improved insight and mandate delivery. The synthesis of data into information and, ultimately, knowledge, is also essential to allow the United Nations to make the best use of the information resources at its disposal.

50. With the exponential growth in data, advances in technology and an increasingly complex and fast-changing world, the Organization is making efforts to better leverage data to support its global mandate. The work of the United Nations is highly distributed and diverse in nature, but it is inherently interconnected; therefore, the ability to obtain and use trusted data is critical to the work of the Organization.

51. Current United Nations data practices are characterized by several challenges, including data duplication, lack of interoperability, inconsistent results, disparate frontier technology stacks, capacity gaps, data hoarding and inconsistency in data roles, as well as emergent and rudimentary governance. Comprehensively tackling these systemic data issues across the Organization is a complex and challenging endeavour, but one to which the Secretary-General is committed and for which system-wide efforts are channelled through the data strategy.

52. To have concrete and measurable impact in the data space, the strategy will focus on a three-layered data management plan for the next five years:

(a) **Technology**. Supporting United Nations entities in setting up data architectures, including assessing needs from earlier stages up to the data review processes and delivering a range of new data platforms that enable data integration, data cataloguing, metadata and master data management, data protection and privacy, data-sharing, data analytics and the use of frontier technologies, such as artificial intelligence capabilities;

(b) **Governance**. Strengthening of policies, procedures, and guidelines that provide oversight to data management. Governance is also about ensuring that everyone involved in data management – from data creator to data owner and data user – understands the regulatory frameworks and their unique roles and responsibilities in the overall process. Data governance should facilitate data-sharing;

(c) **Change management**. Supporting United Nations entities to better transition into a new data-driven environment. A key goal is to help clients to understand that everyone, not just ICT personnel, has a role to play in the data management process.

53. By focusing on strengthening the process of capturing, distributing and effectively using knowledge, the data layer analytics and visualization, open data and geospatial information services can be advanced throughout the Secretariat.

54. These technology solutions, governance practices and change management efforts will result in access to modern and more powerful data platforms that will allow more advanced analytics (e.g. predictive analysis) and improved data interoperability that will allow Secretariat entities to combine data sets for unprecedented insights. Building on the work carried out under the previous strategy, the present strategy will continue to create an enabling environment to support United Nations entities in establishing strong analytics and visualization capacities. The Secretariat will support its entities in nurturing technology, data services, advanced predictive capabilities and visualization services. In that context, the integrity of data and the interoperability of systems can be strengthened by applying new or existing policies and standards.

55. By including geospatial data into the overarching data area of the strategy, the Secretariat will be better able to leverage geospatial services and data, integrating them into existing solutions, systems and services. This is critical to the work of the United Nations across all of its pillars. The strategic result will be to allow geospatial data to be easily leveraged throughout the Organization.

56. The practice of knowledge management relates to the synthesis of data and information into knowledge, insight and awareness. In that context, ICT capacities in the Organization will work in collaboration with business units to understand their requirements and to ensure that efforts related to facilitating the availability and use of data, information and knowledge are structured through an effective knowledge management programme that can be applied quantitatively and qualitatively to images and video and sound recordings.

57. In facilitating greater access to data and improving data-sharing among entities, mechanisms will be established to improve protections for sensitive and private data, to improve visibility of data through transparent governance, to create greater appreciation for a data-sharing culture and to use data to predict and strategically anticipate action and enable the design of more forward-looking policies and programme delivery. These measures taken together as part of the Secretariat-wide strategy implementation will result in enhanced collaboration and efficiency across programmes and operations.

D. Technology innovation

58. Building on the previous strategy, the present strategy will establish a structured process to scale up identified innovative technology solutions. Operational requirements of individual Secretariat entities will be a key consideration. It will also transition innovation to a more mature model, making it more predictable, repeatable and efficient.

59. Technological progress and its effect on society constantly create new opportunities and challenges. The strategy proposes that the United Nations continue to innovate to remain relevant and identifies internal capacity for ICT innovation as essential in that regard. The proposal is based on the premise that ICT innovation can be initiated by personnel at all levels and in all business areas throughout the Organization.

60. Innovative ideas are often not visible in an organization and may not gain traction unless there are mechanisms in place to identify and channel them and scale them up. The strategy proposes programmes, such as ICT innovation networks,

emerging technology, United Nations smart camps or Internet of things analytics. Specifically, ICT innovation will be supported through the availability of solid methodologies and processes and the establishment of technology components.

61. The establishment of ICT innovation networks forms a critical supportive mechanism. Leveraging existing and new networks allows the incorporation of a broad range of entities and staff involved in the programmatic and support aspects of the Organization's work. This includes subject matter experts in programmatic and support areas, experts in data and information management, and technology professionals. The ICT innovation networks are connected to the ecosystem component of the strategy and are critical to ensuring that technology in the United Nations is advanced in a way that clearly supports its needs and that, through a collective effort, the coherence and efficiency of technology solutions will increase.

62. Unobtrusive governance that strikes a balance between increasing the likelihood of advancing United Nations mandates through innovation initiatives, and not stifling creativity, will be sought.

63. Emerging technologies, such as artificial intelligence, machine learning, natural language processing, computer vision and blockchain technologies are instrumental in catalysing innovation. By leveraging the technology ecosystem, the strategy will help to ensure that emerging technologies will be made available to the Secretariat to enable the work of the United Nations. Technology innovation implemented through such means will ensure not only that the Secretariat can benefit from emerging technologies but that it will do so efficiently and coherently.

64. Both the provision of emerging technologies and the management of the technology innovation process will be achieved through the formation of networks comprising technology and substantive United Nations personnel to ensure a holistic approach to technology innovation.

65. An emerging area of technology innovation relates to the Internet of things, which pertains to Internet-enabled devices that can, with minimal interaction, gather various forms of data and send and receive them over the Internet. Such devices include hardware that can provide a range of functionalities, from simple sensors to complex devices that are able to send rich data. Work in implementing these technologies has begun with the United Nations smart camps. United Nations bases using Internet of things devices hold great potential, in particular in combination with other emerging technologies, such as computer vision and artificial intelligence. Internet of things analytics offer a significant opportunity to improve efficiencies and effectiveness and connects naturally to the data and information area of the present strategy and to the Data Strategy of the Secretary-General.

E. Technology and data ecosystems

66. The importance of partnerships and collaboration was introduced in the previous strategy. This present strategy recognizes the importance of establishing an ecosystem for technology and data where the component parts operate together efficiently and with synergy. Accordingly, the interconnection among entities and organizational units will be examined to build a strong foundation for technology and data work to be delivered. The ecosystem that is envisaged will balance operational freedom and central control and will position the core work of the United Nations as a driver for technology and data initiatives. This approach represents a new frontier for the United Nations.

67. The principle of implementation through alignment is designed to allow Secretariat entities to deliver ICT systems, solutions and services to their local clients

and to make operational decisions as close to the point of delivery as possible. This approach is derived from the Secretary-General's management reform and establishes an important condition for integration and collaboration, resetting the interaction among Secretariat entities.

68.   Within the United Nations, internal collaboration and partnerships will be implemented as follows:

- **Business relationship management**. The engagement of ICT capacity will be undertaken through a consolidated and distributed interface with a business relationship management role, ensuring that the business needs of the Secretariat are addressed coherently and efficiently and in alignment with the strategy, policies, standards and architecture.

- **Global ICT capacity**. Through active and ongoing engagement with ICT entities globally, a cadre of ICT professionals from a range of locations and entities will create capacity in core ICT areas. This strategy's implementation will establish a structure and methodology to encourage the evolution of the current highly distributed operating model to one in which ICT systems, solutions and services can be obtained from teams that are distributed across geographies and entities through collective intelligence and experience and by leveraging shared technology. The key measures of success will be based on reuse of technology and speed of delivery, with both measures improving efficiency and effectiveness and creating a collective approach to addressing the needs of the Secretariat.

- **United Nations system collaboration**. In line with the Secretary-General's reforms and given both the Secretariat's support for the resident coordinator system and the coordination of humanitarian affairs and common support operations, the strategy will seek to enable collaboration with other United Nations entities wherever possible.

- **External partnerships**. External partnerships with academia, other United Nations entities, other intergovernmental organizations and the public domain at large will be strengthened to allow ICT solutions to be established through joint capacities, training, data and resources.

69.   Data interfaces and data-sharing rely on software interfaces that provide reliable and simple access to data sources. As efforts mature in the implementation of the Data Strategy of the Secretary-General, and the integrity and range of data available become clear, data interfaces that allow controlled and secure sharing of those data will be strengthened to foster collaboration within the United Nations and with external partners.

70.   The ecosystem will set up cooperation frameworks by establishing an operating model based on distributed ICT systems, solutions and services. The cooperation frameworks will create a structured approach to ensure that this strategy is implemented through a collaborative process to strengthen coherence.

V.   Strategic outcomes

71.   Through broad engagement across the Secretariat, key strategic goals have been identified. They represent the expected outcomes of the effective implementation of the present strategy. The strategic goals embody the perspectives of technology providers and of technology and data users throughout the United Nations, who recognize technology's potential in supporting and enabling their work.

72.   Consistent and in alignment with the decisions of the General Assembly in its resolution 69/262 on the previous ICT strategy, it remains central to the present strategy that ICT should support the core work of the United Nations and that, through an effective balance of central control and operational freedom, it acts as both a means to support operations and a strategic enabler to empower the work of the Organization. The below strategic goals were identified during the consultation process:

        (a)   **Serve the United Nations entities for mandate delivery**. Enable United Nations entities to deliver on their mandates using ICT services guided by optimized delivery owing to the increased operational freedom of ICT units and improved relationships and partnerships between ICT teams and their clients. Ensure that ICT systems, solutions and services respond to the business requirements of individual entities;

        (b)   **Enable digital transformation through innovation and partnership**. Enable United Nations entities to leverage the power of data for insights and better-informed decision-making while adhering to strict privacy standards. Enable the introduction of innovative ICT solutions to advance the agenda of the United Nations;

        (c)   **Safeguard and secure the Secretariat's information assets**. Empower Secretariat entities to work together to develop coherent technology and security enterprise architectural principles and artefacts, to allow for the sharing of best practices throughout the United Nations and to aid smaller entities that lack specialized staff.

A.   Serve the United Nations entities to help them to deliver on their mandates

1.   Client-centred technology

73.   ICT will continue to adopt a client-centred approach, placing clients at the heart of ICT services and processes, and to ensure that ICT activities are globally beneficial to and support the work of the United Nations.

74.   ICT services will be fit for purpose; driven by clear business requirements; simple to use, with transparent communication with clients in addressing the complexity inherent to ICT systems; accessible and inclusive; and continually evolving. The services will be designed by forging strong partnerships with clients, understanding their needs and collaborating with a view to creating innovative and value added services.

75.   Engagement will require a global network of business relationship managers who will establish mechanisms to effectively orchestrate user needs and ICT engagement on the basis of agreed frequency, depth and level of engagement. The goal is to broaden the scope of the business relationship management function to actively engage business on current and future plans, projects, performance measures, risks and expectations.

76.   ICT service providers will ensure that clients' expectations are met by making their services comprehensive and responsive on the basis of ease of use, clarity of extent of services offered (including potential limitations and risks), a monitoring mechanism for services provided, agreed escalation procedures, and near-real-time updates upon request.

77.   Existing ICT service catalogues will be linked to time required for the provision of ICT services. Fulfilment of ICT requests and corresponding communications and updates will be strengthened to facilitate predictability and planning for clients and client entities.

2. Optimal delivery

78. The strategy will seek to promote an organizational culture that encourages proactivity and accountability. This culture will be fostered by adopting more collaborative and agile working methods that enable ICT teams throughout the United Nations to handle the increasingly complex challenges with which they are confronted. The strategy seeks to achieve an increase in connectedness, adaptability and autonomy in the way in which the Organization operates.

79. Through analysis and the articulation of a modernized framework for enterprise portfolio management, the strategy will put in place effective enabling principles, processes and practices, with clear responsibilities, to achieve the mission, goals and objectives of the United Nations. Furthermore, it will focus on leveraging technology, wherever possible, to ensure consistency and accuracy in the process of ascertaining and approving business requirements for the Secretariat's projects and to provide easily accessible templates while automating the end-to-end portfolio process.

80. The programme management team of the Office of Information and Communications Technology will improve its support for Secretariat entities globally to achieve effective ICT programme and project management and oversight that comply with standards and policies. This capacity is essential in empowering a hybrid approach to technology implementation in which both business and technology units can envision, develop and implement technology systems, solutions and services in partnership.

81. Drawing from lessons learned, project and portfolio management services will result in improvements in the following areas:

- **Agility**. Programme and project teams use iterative and client-centric methodologies to build services established in an interdisciplinary manner and in accordance with the governance framework.

- **Managing change**. Consistent, flexible and regulated management of programme and project changes, encompassing both routine and emergency modifications, with due consideration for business needs as defined by the business units. Behavioural change will directly support the resilience of systems, solutions and services.

- **Managing risk**. Risk will be more effectively managed through the management of technology throughout its life cycle and the enterprise risk management framework, integrating best practices into the early design parameters.

3. Coherent ICT governance

82. As ICT has become critical to the functioning of the Secretariat, it is important to adopt a coherent approach, especially for business continuity. To that end, ICT governance, which includes policies, standards and frameworks, organizational structures and bodies, culture and people, services, information and processes, has been streamlined and simplified. However, it is also important to recognize that ICT represents a significant expenditure in the United Nations. It has a direct impact on the Organization's ability to implement its mandates, as well as its ability to interoperate with stakeholders on substantive topics, underpinned by smooth information exchange. Lastly, ICT decisions must be made in a manner that allows for the management of risk. Using a continuous improvement process, lessons have been learned, especially during the COVID-19 crisis, to strengthen ICT governance, including the Information and Communications Technology Steering Committee, to better represent client and field capacities (see figure III).

Figure III
ICT governance bodies
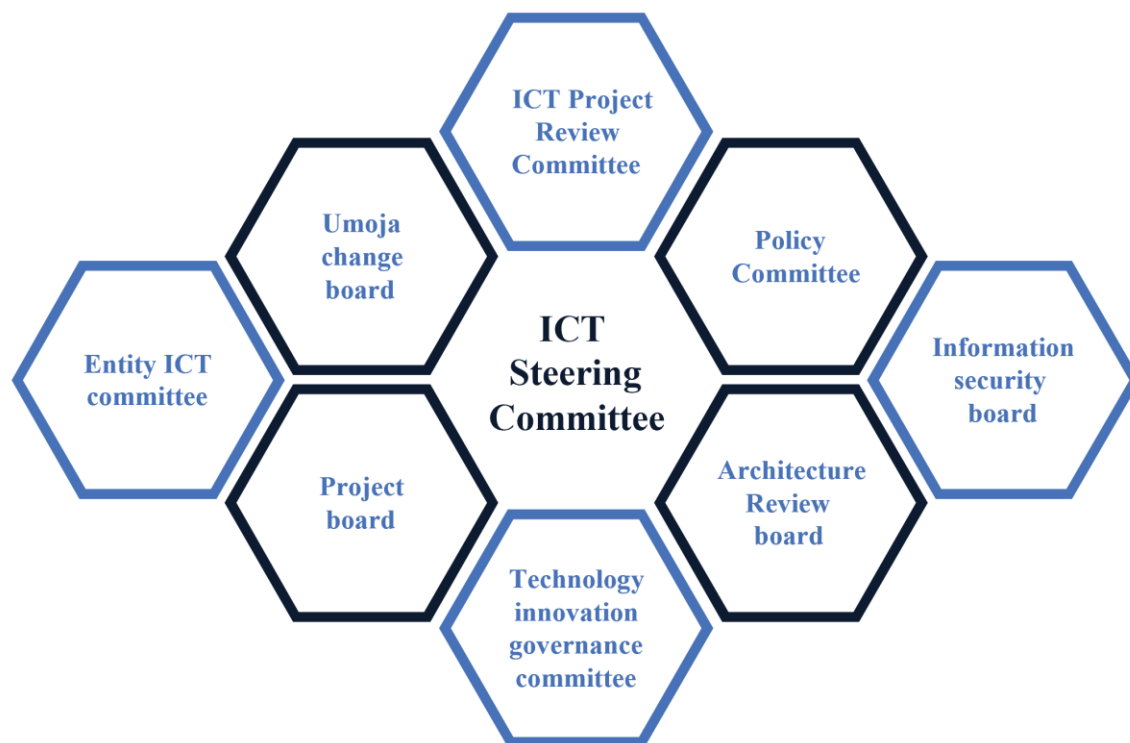
83. It is envisioned that the use of resources, services and assets is more effective when proper governance is adopted and integrated into the policies and processes of the Organization, leading to better performance for the Secretariat and better alignment with organizational goals.

84. ICT governance will continue to provide a unified and integrated approach to technology and thus support strengthened technology-related decisions that are based on transparent data. This will provide flexibility to ensure that entities are encouraged to try new technologies and diverse solutions within the established guardrails.

85. Technology personnel and key partners are envisioned to support the use of the technology governance frameworks so that their benefit is clear and they facilitate rather than hinder the implementation of technology.

B. Enable the digital transformation of the United Nations through innovation and partnership

1. Transformational use of technology

86. The rapid evolution of ICT requires ICT organizational units across the Secretariat to work collaboratively and extend partnerships to business units, which have become essential to the design and delivery of ICT systems, solutions and services. Through strong partnerships, it becomes possible to sustain and advance ICT in a manner that is commensurate with its growth and evolution globally.

87. The data and information component of the strategy highlights how data can be used to gain insights and make better decisions. Secretariat entities will make full use of the information and data at their disposal while adhering to strict privacy standards

and utilizing those data insights to guide planning, regulations, policies, and procedures. Crucial safeguards for client privacy and data security will be improved, and the development of robust data governance procedures will continue to ensure a single source of truth for data.

88. Secretariat entities will be able to use data-sharing and analytic tools and services. The creation of a data ecosystem is essential if the United Nations is to get the most out of its data collection and utilization.

89. An enterprise approach to systems will be taken to make sure that they work together and that the integrity and quality of the available data is as high as possible.

90. Common, safe digital platforms that are backed by open, inclusive information enterprise architecture and governance will be needed to build the world of the future.

91. Exploration of emerging data science, data engineering, machine learning and artificial intelligence will continue to form the cornerstone of planning.

2. Increase in technology

92. The United Nations initiated in the previous strategy and has since continued to introduce technology that supports a modern workplace and hybrid solutions to improve productivity, satisfaction and retention.

93. Planning for the future is necessary to guarantee that technological upgrades are effective and can be deployed throughout the Secretariat to encourage integration, collaboration and efficiencies.

94. Over the past three years, the United Nations has undergone a major technological shift. The advent of digital work environments and the shift of personnel to the use of contemporary workplace technologies was instrumental in ensuring the continuity of operations during the pandemic.

95. The strategy will result in an Organization that has a clear approach to the advancement of technology.

3. Increase in capability

96. Through the strategy's implementation, Secretariat entities will be able to use technology and obtain information to help them to implement their mandates more effectively. Critical areas of the strategy will work together to improve the overall level of capability in the Secretariat, powered by technology and data. The areas of technology innovation and the experience of technology will ensure that frontier technologies directly respond to requirements and directly support Secretariat entities. In addition, widening the Organization's view of emerging technologies will support the development, acquisition and implementation of new technologies.

97. The Organization exists within an ever-changing digital world, and the skills once considered sufficient for the growth of the United Nations are now outdated. New types of skills are needed for personnel to remain properly equipped to advance the Organization's agenda. Emphasis will be placed on the development of United Nations personnel and the skills that they require in the context of a digitally mature Organization.

C. Safeguard and secure the Secretariat's information assets

Cybersecurity

98. The increasing interdependence and interconnectivity of the Secretariat's digital environment requires a consistent, closely coordinated and transparent approach to

cybersecurity that enables all Secretariat entities to comply with basic practices, policies and standards, while establishing accountability and providing global visibility and oversight, in line with General Assembly resolution 69/262.

99. As a result of the strategy, Secretariat entities will be able to work together to apply security enterprise architectural principles and artefacts, allowing for the consistent application of best practices across the Secretariat and aiding entities that may lack specialized capacity.

100. Internal partnerships will be instrumental in implementing consistent good practices, while external partners help to augment cybersecurity capabilities, facilitating the visibility of risks and threats that may present themselves through unusual or unforeseen vectors.

101. Preserving the security, resilience and dependability of digital platforms and environments is at the forefront of the Organization's efforts and will result in systems and procedures that are user-friendly. Security-conscious behaviour will be aided by reinforced cybersecurity awareness campaigns and training.

102. Cybersecurity is a very dynamic and changing area, with threats developing constantly and myriad factors driving their emergence and proliferation. For example, the uncertainty and fear caused by the pandemic was seized upon by adversaries and used to target United Nations personnel. Key enterprise-wide projects were identified, such as network segmentation, and are now being implemented. Cybersecurity investment will be included in a holistic ICT investment plan that will be formulated and presented through the appropriate budgetary instrument. It is envisioned that, through these initiatives, the response to cybersecurity threats, together with the implementation of proactive measures, will result in a more secure Organization.

VI. Conclusion

103. The General Assembly is requested to endorse the ICT strategy set out by the Secretary-General to digitally transform the Organization.

Annex

Key results matrix of the information and technology strategy (2023–2028)

The strategy is expected to deliver the following key results that support the strategic outcomes. A comprehensive results matrix will be developed and included in the implementation road map, which will be embedded in a holistic information and communications technology (ICT) investment plan.

A. Serve the United Nations entities to help them to deliver on their mandates

1 Support entities in implementing their respective digital transformation strategies

2 Build interoperability across key enterprise platforms and systems

3 Expand ICT governance mechanisms at entity level to support prioritization of ICT investments and initiatives

4 Implement transparent ICT asset life cycle management and continuously update global ICT inventory

5 Optimize applications and websites to meet requirements and reduce duplication in technology and data ecosystem

6 Establish programme management centre of excellence to better manage initiatives with large ICT components

7 Establish accountability framework to address need for central control versus local requirements

8 Strengthen technology standardization through established governance mechanisms

9 Establish common enterprise architecture programme, to include standards and associated mandatory baseline, architecture review, programme management and compliance

10 Establish capacity to appropriately assess overall prioritization of Secretariat ICT initiatives and investments and monitor ICT expenditures

11 Continuously update ICT service catalogues

12 Consolidate and optimize systems and infrastructures as applicable

13 Establish strong business relationship management function to capture requirements and strengthen collaboration and partnership

14 Monitor environmental footprint of United Nations data centre operations

15 Support system-wide initiative on United Nations digital identification project

16 Continue to explore frontier technologies in support of Secretariat entities to leverage technology and data with a view to accelerate mandate delivery

B. Enable the digital transformation of the United Nations through innovation and partnership

1 Explore use of open source technologies to ensure collaborative approach and build common capacities

2 Advance cloud solutions, considering cost, privacy and scalability gains

3 Enable United Nations entities to better use data-sharing and analytics tools and services

4 Support innovation culture in using ICT to improve service delivery

5 Introduce new technologies through appropriate ICT governance and ensure appropriate ethical use and privacy safeguards

6 Assess innovative concepts, such as differential privacy, and applicability within United Nations context

7 Support United Nations entities in capacity-building of United Nations staff on analytics and data management

8 Enable United Nations entities in establishing technology partnerships with academia and public and private sectors

C. Safeguard and secure the Secretariat's information assets

1 Reinforce policies and governance on cybersecurity, including processes regulating account provisioning, authentication and security capabilities of central directory

2 Support implementation of data protection and privacy

3 Monitor cybersecurity compliance, including mandatory training compliance

4 Institute regular infrastructure vulnerability assessments, provided centrally

5 Complete Secretariat-wide network segmentation project and implement microsegmentation

6 Centrally provide and manage identity in a consistent manner throughout entire professional life cycle of personnel

7 Increase operational resilience through regular simulation of a disruption scenario designed to validate the viability of one or more aspects of a disaster recovery plan

8 Strengthen detection and response capabilities

9 Automate central scanning of systems and infrastructure that allow proactive vulnerability identification and remediation

10 Deploy tools for configuration management of devices and systems

11 Acquire tools and establish security-specific training capabilities for system designers and developers

12 Establish virtual security operations centre and central incident response management capacity to enable effective 24/7 cybersecurity monitoring

13 Continuously and comprehensively monitor United Nations digital assets, and respond through effective and timely takedown of confirmed fraudulent resources

14	Strengthen comprehensive cybersecurity assessments teams (red team) to evaluate United Nations global cybersecurity posture
15	Establish cloud assessment reporting tools and cloud-security-specific training requirements and capacity
16	Establish global standard cybersecurity framework specific to physical security systems, improving convergence of cybersecurity and physical security
17	Introduce tools that help to assess conference and broadcasting systems for security issues and for effectiveness of implemented security controls

_____