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reports of the Board of Auditors**

Eleventh and final annual progress report of the Board of Auditors on the implementation of the United Nations enterprise resource planning system

Note by the Secretary-General

The Secretary-General has the honour to transmit to the General Assembly a letter dated 21 July 2022 from the Chair of the Board of Auditors transmitting the report of the Board on the progress in the implementation of the enterprise resource planning system (Umoja).

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* A/77/150.

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Letter of transmittal

Letter dated 21 July 2022 from the Chair of the Board of Auditors addressed to the President of the General Assembly

I have the honour to transmit to you the eleventh and final report of the Board of Auditors on the implementation of the enterprise resource planning system.

(*Signed*) Jorge **Bermúdez**
Comptroller General of the Republic of Chile
Chair of the Board of Auditors

Eleventh and final annual progress report of the Board of Auditors on the implementation of the United Nations enterprise resource planning system

Summary

In July 2006, by its resolution 60/283, the General Assembly endorsed the Secretary-General's proposal to implement an enterprise resource planning system (Umoja) across the United Nations Secretariat to replace ageing legacy systems such as the Integrated Management Information System. Umoja is central to the modernization of the business administration of the United Nations. The complex, high-value project is aimed at modernizing a wide range of business processes and systems that are crucial to the efficient and effective management of the Organization.

In December 2011, in its resolution 66/246, the General Assembly requested the Advisory Committee on Administrative and Budgetary Questions to request the Board of Auditors to conduct a comprehensive audit of the implementation of the Umoja project and to report annually to the Assembly starting at the main part of its sixty-seventh session.

In a series of reports since 2012 (A/67/164, A/68/151, A/69/158, A/70/158, A/71/180, A/72/157, A/73/169, A/74/153, A/75/159 and A/76/131), the Board has submitted information on the progress made in the implementation of the Umoja project. The original timeline and budget approved in 2008 envisaged deploying Umoja by the end of 2012 at a cost of $248.31 million. The implementation plans, however, have been substantially revised on several occasions, and the deployment of full functionality was scheduled to be completed by the end of 2020 to the entities that were agreed upon with the business owners. The current approved budget for the project up to the end of 2022 was $622.24 million, and the total expenditure up to 31 December 2021 was $579.51 million.

Umoja was being implemented in different parts of the Organization (clusters), with functionalities split into three phases:

(a) **Umoja Foundation**. Comprising mainly existing core finance and procurement processes, this phase was fully deployed across peacekeeping operations from November 2013, in special political missions from March 2014 and across the remaining Secretariat entities in two clusters, from June and November 2015;

(b) **Umoja Extension 1**. Comprising mainly existing core payroll and human resources management processes, this functionality was deployed across Secretariat entities and peacekeeping operations in two clusters, from June and November 2015. Most non-peacekeeping Secretariat entities therefore received Umoja Foundation and Umoja Extension 1 functionality at the same time (Umoja Integration);

(c) **Umoja Extension 2**. Comprising processes with significant scope for transformation and value addition to the Organization, such as strategic planning and budget formulation, fundraising, implementing partner management, supply chain management and uniformed capabilities management, the functionalities and processes included in the Umoja Extension 2 subprojects had been deployed by the end of 2020 to the entities that were agreed upon with the business owners.

In December 2020, in its resolution 75/253 A, the General Assembly approved the resource requirements for the Enterprise Resource Planning Solution Division. In his final progress report on the enterprise resource planning project (A/76/386), the Secretary-General stated that the Enterprise Resource Planning Solution Division, in conjunction with its business partners, had shifted focus to making continuous

improvements, and the additional integration and other enhancement opportunities identified during the design and development phases were being pursued as part of business-driven continuous improvements.

The present report is the Board's final review of the progress of the implementation of Umoja. The report mainly covers project governance and management, the deployment and continuous improvements of Umoja functionalities, support for and enhancement of Umoja and the benefits and costs of Umoja. Meanwhile, as requested by the Advisory Committee on Administrative and Budgetary Questions (A/75/7/Add.14), the Board conducted an independent assessment of the implementation status of the Umoja project with a view to identifying potential gaps, challenges and opportunities and quantifying best practices and lessons learned. The report also includes an outlook of areas that the Board considers may come under the Umoja solution in the future.

Overall conclusion

The Board noted that Umoja remained a key enabler for modernization and reforms in the administration of the United Nations. The Board appreciates the efforts of the Administration towards multiple deployments and continuous improvements in a challenging technical landscape and in the face of competing demands on resources.

Umoja was mainstreamed into the Secretariat and a new governance model was introduced that will continually drive continuous improvement. The implementation of Umoja globally across more than 400 locations, covering over 40,000 staff members, is a significant achievement. The Umoja system, linking business and resources, has wide-ranging functionality with regard to the management of the financial, human and physical resources of the United Nations. In particular, Umoja Extension 2 includes many new complex functions with significant scope for transformation and value addition to the Organization.

The "Umoja Analytics" platform provides an opportunity for the Organization to further unlock the potential of Umoja data in the data-driven transformation in order to improve decision-making with more powerful and visualized functionalities. The Benefits Working Group was established within the benefits realization framework to oversee the progress of Umoja benefits realization relating to the implementation of Umoja Extension 2 solutions and continuous improvements. The cumulative actual expenditure for the period 2008–2021 was within the approved budget.

The Board notes, however, that the lessons learned from the deployment with an outlook can be regarded as a baseline for the future continuous improvement of Umoja, including the areas of project governance, project management and project operation identified during its independent assessment. With regard to the annual progress audit, the Board also notes that the Administration needs to focus on the enhancement opportunities identified during the deployment phase and promote use of the system by encouraging further adoption by users, ensuring that the solution is fit-for-purpose. There is also a need to integrate the fragmented learning management systems. The Administration also needs to take steps to closely monitor both the benefits and costs of continuous improvements in a timely manner. The key findings of the annual progress audit and the corresponding recommendations are summarized below.

Key findings

Project governance and management

The Board noticed that a post-implementation review had not been conducted after the project was closed. There is a need for the Administration to evaluate the overall achievements of the Umoja project, including the deployment dates, the scope, the functionality and usage at the entity level, the total cost of ownership and lessons learned.

Deployment and continuous improvement

The Board noticed that the user adoption of some solutions was insufficient and that four of six solutions under Umoja Extension 2 had not been assessed through a user satisfaction survey.

The Board analysed change requests in the SAP Solution Manager tool and found that there was a lack of timely maintenance of the change management schedule in this business requirement tool.

Support and enhancement

The Board analysed the one-year usage frequency of the existing 770 business intelligence data models as of the end of March 2022 and noted that only 3 of the top 10 most frequently used data models were certified. The certification of the data models that were most frequently used was not considered a high priority.

The Board noted that Umoja training courses and other training offerings were dispersed among various United Nations Secretariat learning management systems and websites, and that some training materials were delivered in a format that had not been adapted to the recent advances in learning technologies and approaches. A single learner access point for training materials was proposed in the Umoja learning strategy, but a detailed implementation plan was not included.

Benefits and costs

The Board noted that the benefits review of four Umoja Extension 2 solutions had not been conducted as of April 2022. In addition, 3 of 17 change requests approved by the Umoja Change Board were not tracked as required.

In order to keep pace with technological development, a transition to SAP S/4 HANA and related products would likely be required. The Board noticed that the Umoja Steering Committee had endorsed the upgrade to a new SAP enhancement package. Such technology upgrades may bring additional costs to the Organization, which were not included in the current total cost of ownership estimation and will need to be further assessed.

Recommendations

The Board has made recommendations throughout the report. The main recommendations are as follows:

(a) **The Board recommends that the Administration conduct a post-implementation review after the closure of project phase;**

(b) **The Board recommends that the Administration continue to conduct user satisfaction surveys for each Umoja Extension 2 solution to identify areas for improvement and further optimization in order to drive user adoption;**

(c)   **The Board recommends that the Administration maintain the schedule of change management in the SAP Solution Manager tool in a timely manner to reflect updates to change request status and to better monitor the implementation of the change requests;**

(d)   **The Board recommends that the Administration finalize the United Nations business intelligence standard operating procedure in a timely manner and consider the certification of data models that are used with a high frequency as a high priority;**

(e)   **The Board recommends that the Administration apply the approaches outlined in the Umoja learning strategy to design training courses, including using industry-standard design solutions based on different learning objectives, as well as deploying a single learner access point for all operational training with a detailed time-bound implementation plan, based on the overall assessment of Umoja training resources;**

(f)   **The Board recommends that the Administration update a time-bound plan for the review of Umoja Extension 2 benefits, so that the review of the benefits can be undertaken as soon as the stabilization and user adoption of the Umoja Extension 2 solutions are completed, and put in place a monthly process to ensure that the benefits from all change requests approved by the Umoja Change Board are tracked and monitored;**

(g)   **The Board recommends that the Administration update the estimation of total cost of ownership by considering the cost impact of technology upgrades, once the technology path has been approved.**

Follow-up of previous recommendations

Of the 60 pending recommendations from the Board's previous reports, 14 (24 per cent) have been implemented, 23 (38 per cent) are under implementation and 23 (38 per cent) have been overtaken by events. A more detailed commentary on the individual recommendations, together with details of the action taken by the Administration, is provided in the annex to the present report.

I. Background

A. Overview

1. Umoja is an enterprise resource planning system that is aimed at modernizing a wide range of business processes spanning the United Nations administrative and support functions and systems that are essential to the efficient and effective functioning of the Organization. It is being used throughout the entire Secretariat, which includes Headquarters, offices away from Headquarters, international tribunals, field missions, some funds and programmes and institutionally linked entities of the United Nations, which have many different business models and funding and accountability structures. As a single global solution for the Secretariat, Umoja is intended to offer real-time visibility of detailed data on all the administrative operations that it supports, irrespective of where they are being conducted in the world. Umoja represents a significant investment by the United Nations. The project proposal was approved by the General Assembly in December 2008, in its resolution 63/262. The high-level aims of Umoja set out in the first progress report of the Secretary-General (A/64/380) included the following:

    (a) To support management reform and accountability;

    (b) To improve the direction of resources;

    (c) To achieve more efficient and effective working practices through improved systems and processes.

2. In December 2008, in its resolution 63/262, the General Assembly requested the Secretary-General to keep the enterprise resource planning governance structure under review and to report to the Assembly at the main part of its sixty-fourth session on the enterprise resource planning project. In December 2009, in its resolution 64/243, the Assembly requested the Secretary-General to continue to ensure that the Assembly was kept informed, on an annual basis, of the progress of the enterprise resource planning project. By the end of 2021, the Secretary-General had submitted 13 progress reports.

3. The approved project budget for Umoja up to the end of 2022 was $622.24 million. As at 31 December 2021, the Administration had spent $579.51 million. The General Assembly, in its resolution 76/246 A, endorsed the conclusions and recommendations contained in the report of the Advisory Committee on Administrative and Budgetary Questions on the final progress report of the Secretary-General on the enterprise resource planning project (A/76/7/Add.20).

4. The first overall estimated costs of the Umoja were $248.31 million in 2008. In 2017, the Secretary-General estimated the total cost of ownership of Umoja up to 2030 at $1,402.15 million. The total cost of ownership up to 2030 has continued to increase, and was estimated at $1,526.39 million in 2021.

5. The benefits realization plan was approved in 2020 and overall qualitative and quantitative benefits were presented in the twelfth progress report of the Secretary-General (A/75/386). The Secretary-General stated that the estimated cumulative benefits amounting to $624.4 million would have been realized by 2021.

B. Deployment strategy

6. The Administration originally planned to deploy Umoja throughout the Secretariat in two phases by the end of 2012. The deployment plans were subsequently significantly revised and replaced with new deployment plans based on a phased implementation of Umoja functionalities.

7.   The Umoja business processes were arranged into three main functional groupings:

(a)   Umoja Foundation: finance processes (funds management and financial accounting), supply chain, project management and sales and distribution. Umoja Foundation was essential to support International Public Sector Accounting Standards (IPSAS) requirements. The Umoja Foundation phase was completed in November 2015;

(b)   Umoja Extension 1: human resources management processes, such as organizational and position management, personnel administration, entitlements, benefits and time management. Payroll, travel initiation, travel expenses and online booking were included in this phase. This phase was completed in June 2018;

(c)   Umoja Extension 2: processes with significant scope for transformation and value addition to the Organization, such as strategic planning and budget formulation, fundraising, implementing partner management, supply chain management and uniformed capabilities management. This phase comprised the more strategic functions and processes and was deployed by the end of 2020 to the entities that were agreed upon with the business owners. Some functionalities were deployed to more entities in 2021.

8.   In December 2020, in its resolution 75/253 A, the General Assembly approved the resource requirements for the Enterprise Resource Planning Solution Division. In his final progress report on the enterprise resource planning project (A/76/386), the Secretary-General stated that the Enterprise Resource Planning Solution Division, in conjunction with its business partners, had shifted focus to making continuous improvements, and the additional integration and other enhancement opportunities identified during the design and development phases were being pursued as part of business-driven continuous improvements.

C.   Previous comments by the Board and scope of the report

9.   In its resolution 66/246, the General Assembly requested the Advisory Committee on Administrative and Budgetary Questions to request the Board of Auditors to conduct a comprehensive audit of the implementation of the Umoja project and to report annually to the Assembly starting at the main part of its sixty-seventh session. In that connection, the Board has submitted eleven progress reports to date, including the present report, as summarized below.

10.   In its first report (A/67/164), the Board noted that it could not provide any assurance that the project would be delivered on time, within cost and to specification. It also noted that many of the problems encountered were avoidable and pointed to weak project governance and management, as well as wider and deeper weaknesses in United Nations governance and management of business transformation.

11.   In its second report (A/68/151), the Board noted that the project was on a sounder footing. Owing, however, to the challenges identified and the continuing legacy of past project problems and decisions, which would take some time to resolve, the Board stated that it was not yet in a position to provide assurance that the enterprise resource planning project would deliver its full functionality within the existing forecasts of time or cost or deliver the envisaged qualitative and quantitative benefits that would represent an optimal return on investment.

12.   In its third report (A/69/158), the Board noted that the initial roll-out of Umoja Foundation had indicated the need to introduce change more effectively in the future. The Board also noted that resolving those issues would require concerted effort throughout the Organization and that, hence, the Organization needed to develop an achievable, fully funded and independently assured deployment plan that reflected the diversity and complexity of the United Nations.

13.   In its fourth report (A/70/158), the Board noted that, in order to achieve the aggressive implementation timetable for clusters 3 and 4, some key project activities, such as testing routines and data conversion exercises, had been curtailed. The Board also noted that weaknesses in preparing staff for the changes that Umoja would introduce and gaps in post-implementation support arrangements posed further risks to the implementation strategy, and that the Administration had not developed adequate contingency plans to mitigate those known risks. The Board further noted that significant challenges had been encountered with previous deployments of Umoja owing to a lack of organizational readiness, and there was a high risk that similar problems would emerge in 2015.

14.   In its fifth report (A/71/180), the Board, while acknowledging that it was common for problems to be experienced in the implementation of major enterprise resource planning systems, determined that the decision to prioritize adherence to the deployment schedule above the need to ensure organizational readiness had increased the scale of the problems encountered. The Board stressed the need to demonstrate the ability to control the growing costs of the project and realize the financial and service delivery benefits that had been promised in order to present a viable business case that provided justification for further investment by the Member States.

15.   In its sixth report (A/72/157), the Board stressed that there was a need to assess the total cost of ownership of Umoja, including both direct and indirect costs, and in so doing to take steps to account for the training costs in terms of staff time and travel. The Board noted the need to refine the benefits realization calculation by reviewing the original business case for its continuing validity and applicability. The Board also noted that the implementation of Umoja Integration globally across 400 locations, covering more than 40,000 staff members, was a significant achievement, given the project's complexity and difficult start.

16.   In its seventh report (A/73/169), the Board noted the need for better precision in estimating the total cost of ownership and benefits realization. Noting the deployment of the Umoja solution, the Board pointed to the likely extension of Umoja Extension 2 modules into 2019 and noted that Umoja stabilization might require more time after the deployment of functionalities. The Board highlighted concerns relating to user problem resolution, change request management, user access provisioning, controls for the segregation of duties, application controls and data quality.

17.   In its eighth report (A/74/153), the Board noted the need for improved project planning and monitoring, highlighted the risk that the project would not be completed by the end of 2019 and emphasized that the achievement of all inter- and intra-application integration was important for the project to achieve its full potential. The Board highlighted various risks for the project and also noted that application controls in the area of vendor payment processing needed to be strengthened. In addition, the Board highlighted concerns relating to continuous improvements, change request management, business intelligence, the need for improved accuracy in estimating the total cost of ownership and the need for finalization of the mainstreaming plan as a priority.

18.   In its ninth report (A/75/159), the Board noted the need for mitigating the risks to the complete implementation of the project, in accordance with the approved timeline, and also to achieve the intended outcomes of the project. The Board stressed the need for the Administration to continue its efforts to strengthen the skilled resource base to meet the project deliverables and provide the level of production support required for the stabilization of Umoja Extension 2 and continuous improvements. The Board also highlighted a need to address the issues flagged in the functioning of deployed solutions and the implementation of delegation of authority in Umoja user access provisioning.

19.   In its tenth report (A/76/131), the Board noted the need to make further efforts to assess and prioritize integration between subprojects as they were identified and to continue its efforts to provide the level of production support required for the stabilization of Umoja Extension 2, and for continuous improvements. The Board also stressed the need to address process control and the implementation of delegation of authority in Umoja. The Board further highlighted a need to take steps to produce timely updates of the benefits and calculations of actual total costs to enable Member States to have a complete picture of the total costs and the benefits being derived from the investment made in the Umoja project.

20.   The present report includes the annual progress of Umoja implementation and an independent assessment on the overall implementation status of the project. The report covers project governance and management; risk management and mainstreaming; the deployment of Umoja functionalities and their status and functioning; continuous improvement and change management; and application controls. The report also covers support and enhancement related to analytics, production support, training and information security, and benefits realization and costs. Meanwhile, as requested by the Advisory Committee on Administrative and Budgetary Questions, the Board conducted an independent assessment of the implementation status of the Umoja project with a view to identifying potential gaps, challenges and opportunities and quantifying best practices and lessons learned. The report also includes an outlook of areas that the Board considers may come under the Umoja solution in the future.

II.   Governance and management

A.   Project objective

21.   The Secretary-General, in his twelfth progress report on the enterprise resource planning project (A/75/386), described the main objectives of Umoja, which were: (a) to provide a global system that captured accurate and timely core resource data from all operations, including those in the field; (b) to support decision-making by linking programmes and operations with the resources allocated and utilized; (c) to reduce the average time required for administrative processes by streamlining and integrating business processes and using greater automation; (d) to increase organizational efficiency by reducing manual processes and redirecting resources to value-added work; (e) to support the implementation of IPSAS; (f) to enable easy access to reports for Member States, staff and the public, as appropriate; and (g) to enhance accountability, transparency and internal controls.

22.   The Board requested the Administration to provide an overall evaluation of objective achievements and was informed that the related information was included in the twelfth progress report of the Secretary-General, but that no more supplementary information could be provided. The Board noted that significant progress to achieve the objectives had been made, but there were still gaps remaining:

    (a)   **Objective 1**. Umoja is a global and integrated system which provides crucial support and functionality to the Organization, its stakeholders and its staff members, especially during the pandemic, together with the data and reporting needed to assist the Organization. The Board noted that the functionalities and processes included in Umoja Extension 2 had been deployed by the end of 2020 to the entities agreed upon with the business owners. However, the integration of Umoja Extension 2 solutions had not been fully established and would be addressed as part of continuous improvements based on business prioritization;

    (b)   **Objective 2**. The functionalities of the integrated planning, monitoring and reporting solution, as well as the implementing partner management solution, in Umoja

Extension 2 had been deployed by the end of 2020. However, the user adoption of those functionalities, which links the business requirements with Umoja, was insufficient and needed further improvement in order to better support decision-making;

(c) **Objectives 3 and 4**. The Secretary-General, in his second progress report on the enterprise resource planning project (A/65/389), provided the non-financial quantity of the baseline for each of the functional areas. The baseline is a value that is used as a reference point, representing the time and/or the number of human resources full-time equivalents currently required to complete activities as of 2011 (see A/65/389, annex I). However, the baselines were based on assumptions or industry experience relating to realizable efficiencies for each process, which had their limitations. The sixth progress report of the Board of Auditors (A/72/157) recognized that, for many processes, a comparison of pre-Umoja and post-Umoja data was not possible, as processes in the previous systems were largely outside the system and the system data were limited to the final actions taken. The Board noted that the post-Umoja evaluation of process/activity time was not based on the rigorous quantitative analysis method from the enterprise resource planning database. The Board was informed that a continuous improvement monitoring programme had been introduced and was described in the ninth progress report of the Secretary-General (A/72/397), in which some SAP workflows were monitored. In its tenth report on the implementation of Umoja (A/76/131), the Board noted that the key workflows of Umoja had not been monitored and reported on since 2020, especially with regard to the enhanced system functionalities in Umoja Extension 2 that had been deployed. As a result, a comprehensive review of quantitative information on reducing the average time required for administrative processes as well as the amount of staff time spent on manual processes could not be provided by the Administration;

(d) **Objective 5**. Umoja Foundation was essential to support IPSAS requirements;

(e) **Objective 6**. The Board noted that 58 Member States had not yet used the Member States contributions portal, which may hinder easy access to the reports by those Member States;

(f) **Objective 7**. The real-time visibility of detailed data on administrative operations facilitates better transparency and delegation of authority. Umoja has been one of the key enablers of the new system of delegation of authority and the accompanying accountability framework introduced by the Secretary-General on 1 January 2019.

23. Considering the size and complexity of Umoja across the United Nations Secretariat, it is important to review the achievements of Umoja after the closure of the project to determine whether objectives and business requirements are being met and what steps should be taken towards their continuous improvement.

24. The Board noted that the Administration had not conducted a post-implementation review after closing such a broad and complex enterprise resource planning project. The Board is of the view that it is critical to conduct a post-implementation review to assess the achievements of the Umoja project, including the deployment dates, the scope, the functionality and usage at the entity level, the total cost of ownership and lessons learned.

25. **The Board recommends that the Administration conduct a post-implementation review after the closure of the project phase.**

26. The Administration accepted the recommendation.

B. Project governance

27. The Umoja governance structure was initially presented in the report of the Secretary-General on enterprise systems for the United Nations Secretariat worldwide (A/62/510/Rev.1). In 2010, the structure was revised to reflect the evolution of its composition, structure and nomenclature, and presented in the second progress report. Later, a strengthened governance model was presented in the fifth progress report (A/68/375), which included: (a) the Management Committee, chaired by the Chef de Cabinet, which reviewed the project status periodically and provided guidance on strategic issues as needed; and (b) the Umoja Steering Committee, chaired by the Under-Secretary-General for Management (now the Under-Secretary-General for Management Strategy, Policy and Compliance), which oversaw the strategic and operational management of the project.

28. In his twelfth progress report, the Secretary-General proposed a new governance model. The changes in the governance model reflected the new requirements resulting from the closure of the Umoja project and the mainstreaming of appropriate responsibilities. The joint business leadership of the Department of Management Strategy, Policy and Compliance and the Department of Operational Support, the input of the Management Client Board and the management and oversight of the Umoja Change Board on the business-driven programme of continuous improvement all support a coherent and fit-for-purpose governance model to guide the Enterprise Resource Planning Solution Division and the Umoja system in its future development.

29. The Information and Communications Technology Steering Committee, which oversees information and communications technology activities across the Secretariat, will be consulted by the Umoja Change Board and the Enterprise Resource Planning Solution Division, as necessary, on large-scale technical issues that may have a bearing on the implementation of the United Nations information and communications technology strategy or affect its information and communications technology infrastructure.

30. The Board identified some key drivers of governance as a result of Umoja governance changes:

(a) The Board noted that actions taken to strengthen ownership and accountability were introduced when Umoja moved to the deployment stage. During the roll-out of Umoja, the Organization underestimated the degree of business change required in activities such as training, data cleansing, data management and change management and communications. The Board is of the view that for future roll-outs, senior managers need to be clear on the resources and skills required, and leverage guidance and support from the process owners and the technical service team;

(b) The Board noted that the Enterprise Resource Planning Solution Division reported to the Management Committee only once in 2021. The Board was informed that the Management Committee and the Information and Communications Technology Steering Committee would receive biannual updates from the Enterprise Resource Planning Solution Division and/or the Umoja Change Board on Umoja system developments in the future. The Board is of the view that reporting to the Management Committee regularly is an essential prerequisite for maintaining strong leadership in Umoja governance in order to deliver a complex enterprise resource planning solution as a catalyst for business transformation.

C. Project management

Planning and monitoring

Overview of the delays in Umoja deployment

31.   The Board reviewed the adequacy and effectiveness of planning and monitoring with regard to Umoja deployment, given the fact that the actual deployment of Umoja was three times longer and cost more than twice as much as originally projected.

32.   The Board asked for a clear record of entities that had delayed in deploying Umoja and/or its functionalities and a summary of reasons for the delays.

33.   The Board was informed that any deviations in the timing of deployments were detailed in the annual progress reports of the Secretary-General on the enterprise resource planning project. The approach for deployment of entities and functionalities was based on a cluster methodology. The progress of individual entities within each cluster was monitored, and as part of the deployment process, quality gates (i.e. key milestones) and scorecards were used for more complex deployment clusters. As a result, there were delays for clusters based on the Umoja Steering Committee's assessment of design, build and test functionality for solution readiness and data conversion under business readiness.

34.   The Board reviewed the relevant annual progress reports of the Secretary-General and conducted an overview of the delays in Umoja deployment, as shown in figure I.

Figure I
Overview of the delays in Umoja deployment
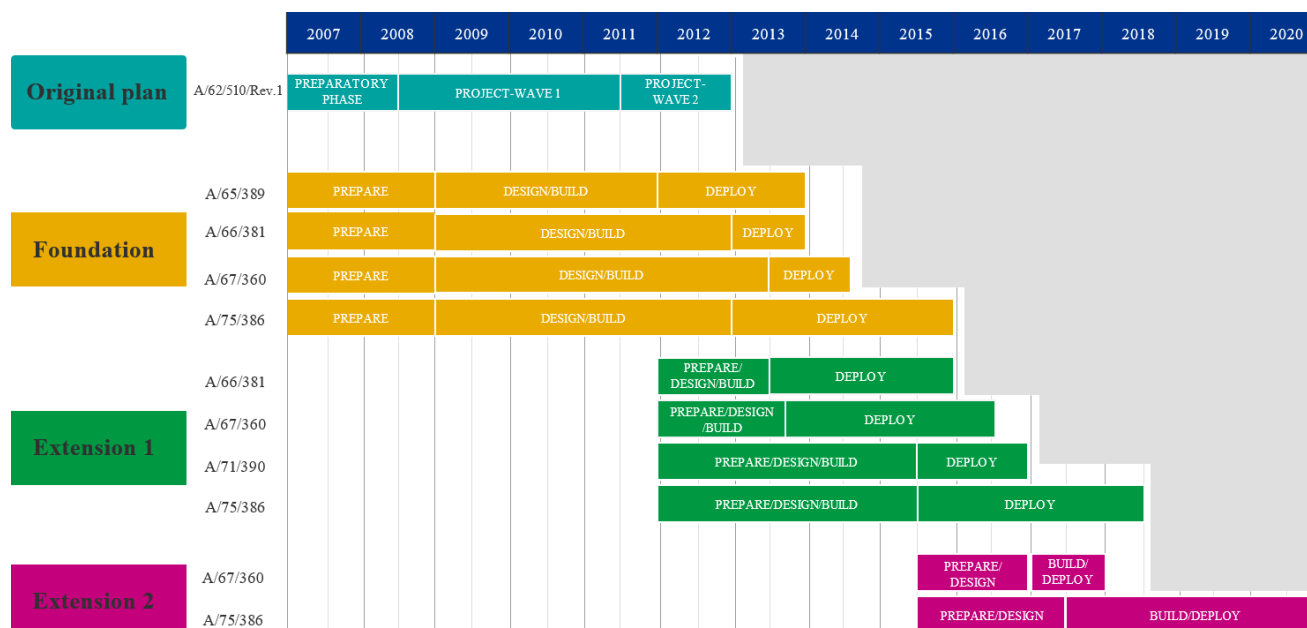
Source: Reports of the Secretary-General on progress on the enterprise resource planning project.

35.   The timeline of the Umoja project was extended five times. The expected completion date was changed from 2012 to 2020. Umoja was originally planned to be deployed throughout the Secretariat in two phases by the end of 2012 (see A/62/510/Rev.1, para. 40), as shown in figure I. The completion date was postponed to 2013, as reported in the second progress report (A/65/389), was delayed again to

2015, according to the third progress report (A/66/381), and by the fourth progress report (A/76/360) full implementation had been postponed to 2018. The implementation of Umoja Extension 1 was postponed to November 2016, while Umoja Extension 2 subprojects were deployed by the end of 2020 to the entities that were agreed upon with the business owners.

36. The Board was informed that some of the main challenges that led to delays in the deployment of Umoja were due to the lack of business preparedness and allocation of dedicated resources from the Organization.

37. The Board is of the view that the adjustments of functional content to the evolving organizational needs, the ambitious but tight schedule, the lack of a detailed implementation plan and an inadequate clarification of the roles and responsibilities of the business units were the main reasons for the delays. The details are as follows:

(a) The Organization and its needs had evolved since the scope of Umoja was first defined. Thus, the functional content, especially Umoja Extension 2, was reassessed and adjusted accordingly to meet evolving organizational needs;

(b) Umoja started with an ambitious and tight timeline, which underestimated the scope, the availability of staff resources (skills) and financial requirements, resulting in several postponements of the deployment;

(c) In the early stages of Umoja development, the project team had used only a high-level timeline that did not include a detailed implementation plan and had no clear information on project milestones, deliverables, tasks, activities and responsibilities. A large enterprise resources planning project should clearly define individual tasks, their interdependencies, critical paths and a detailed task-wise time schedule and should monitor project progress according to the schedule;

(d) The roles and responsibilities of the business units were not clarified adequately before Umoja deployment. The punctual delivery of Umoja required partnership and coordination with the senior managers of business units, who themselves needed to understand their respective individual roles, responsibilities and accountabilities clearly.

Lack of a common standard for project planning and monitoring

38. The Board noted that, with regard to project deployment, the Umoja project management office used a project management tool to prepare activity/milestone-wise plans for each subproject within Umoja. The Board, in its eighth progress report on Umoja (A/74/153), identified some shortcomings in the utilization of the project management tool, such as a weakness in defining inter-task dependencies. In addition, the critical path for the project also remained unidentified, which led to difficulties in estimating the overall time requirement for the project.

39. The Board was informed that the Enterprise Resource Planning Solution Division began using a new project management tool. With the deployment of the SAP Solution Manager tool, user-friendly dashboards and other integration opportunities, the Division saw significant synergies from the pilot of the new project management tool. The Division anticipated adopting the new project management tool for use by 2023, if the pilot concluded successfully.

40. The Board reviewed all 13 projects of 2021, 9 of which were managed by the original project management tool and 4 of which used the pilot tool. The Board noticed that 9 of the 13 projects did not use the critical path functionality, while 2 projects used the critical path functionality, but all items in those projects were set as "non-critical" in the project files.

41. The Administration explained that not all project plans required a critical path, especially in a time-constrained scenario where all functions were interdependent and had to be achieved successfully in unison, as was the case for the majority of the Umoja Extension 2 design, build, test, deploy and support activities across multiple teams.

42. The Board is concerned that, because the Administration does not have unified requirements for the tool used for project management, it is difficult to identify the specific constraints and causes of problems in various projects.

43. **The Board recommends that the Administration establish a common standard for project planning and monitoring across different tools, such as clear documentation of scheduled dates, actual completion dates and the identification of critical paths.**

44. The Administration accepted this recommendation.

Scope controlling

45. The Secretary-General, in his first progress report on the enterprise resource planning project (A/64/380), stated that the cost of an enterprise resource planning initiative was driven primarily by functional scope and geographical scope. The Board reviewed the adequacy and effectiveness of scope controlling in Umoja and a detailed summary is set out below.

Functional scope

46. The Secretary-General, in his second progress report (A/65/389), stated that the functional scope of Umoja included more than 270 processes and encompassed most administrative and support functions in human resources, finance, supply chain and central support services. The Secretary-General, in his third progress report (A/66/381), stated that Umoja's functional scope had increased to 317 processes. In his fourth progress report (A/67/360), the Secretary-General stated that Umoja's functional scope had increased to 321 identified business processes.

47. The Board reviewed the process list status as well as related supplementary documents for details of how business processes had been implemented. The Board noted that 27 processes of Umoja Extension 2 which provided functionalities (i.e. facilities and services management, services to the public, travel management, financial accounting, etc.) were not included in the scope of six Umoja Extension 2 subprojects.

48. The Board was informed that these 27 processes were enhancements to previously deployed Umoja Foundation and Extension 1 functionalities and were deemed by the Umoja project to be under the umbrella of Umoja Extension 2.

49. The Board also noted that, for processes in Umoja Extension 2, there was a lack of clarification of the relationship between functionalities and processes. The provided process list was a high-level overview, but did not include detailed information on how functionalities were mapped to processes.

50. The Board is of the view that, considering that a business process refers to a series of interrelated functionalities, a record of clear mapping between functionalities and processes is beneficial so that the stakeholders have a full picture of the functional scope of Umoja.

Geographical scope

51. The Secretary-General, in his second progress report, stated that Umoja would be deployed throughout the Secretariat, as outlined in the Secretary-General's bulletin ST/SGB/1997/5, including field operations.

52. The Secretary-General's bulletin ST/SGB/1997/5 was amended by ST/SGB/2002/11, which was subsequently amended by ST/SGB/2015/3. The Board reviewed the organizational units listed in the Secretary-General's bulletin ST/SGB/2015/3 and compared the list with the geographical scope of the Umoja deployment chart from the twelfth progress report of the Secretary-General (A/75/386, annexes I–IV). The Board noted that the geographical scope of the Umoja deployment charts from the twelfth progress report grouped organizational units/entities based on their deployment clusters. Some organizational units/entities (e.g. the Department of Field Support and the Department of Management) had ceased to exist as a result of management reform.

53. The Board further reviewed deployments to entities that were not part of the original geographical scope. The Board was informed that changes to geographical scope beyond the entities included within formal deployments were based on the evolution of organizational entities as well as restructuring initiatives, such as: (a) new entity start-up; (b) entity closure and/or liquidation; and (c) reform initiatives.

54. The Board noted that a clear record of the geographical scope of Umoja showing the deployed functionalities within each entity was not available.

55. The Board is of the view that the importance of scope controlling is that it documents changes made, and the stakeholders remain informed about those changes. It is beneficial for the stakeholders to see the scope of the Umoja deployments geographically. There is a need for the Administration to create a geographical representation of Umoja's global deployment at the entity level as a baseline for use from 2022 onward, which will serve as the basis for the communication of continuous improvements across the global Secretariat.

D. Risk management

56. The Board noted that an entity-level enterprise risk management implementation plan was approved by the Management Committee in April 2021 to facilitate a structured and periodic evaluation of risks and control processes for entity-specific risk registers, and to align identified entity-level risks with the Secretariat-wide risk register. An enterprise risk management application called "Fortuna" embedded in Umoja was launched in October 2021, and is being rolled out by the Administration.

57. The Board was informed that the Umoja functional subgroups and the Enterprise Resource Planning Solution Division would be responsible for addressing risks within their respective areas. Noteworthy risks would be communicated by the responsible functional subgroups (or by the Enterprise Resource Planning Solution Division, depending on the nature of the risk) and reported to the Umoja Change Board. In exceptional situations, risks may be reported to the Management Committee and/or the Information and Communications Technology Steering Committee. Secretariat-level risks captured within the enterprise risk management framework were monitored by the Business Transformation and Accountability Division.

58. The Board noted that there were 11 unresolved risks in "Rapport", a tool for the identification and recording of risks used by the Umoja team, where 4 of the 11 were key risks.

59. The Board was informed that these four risks were endorsed for closure by the Umoja Steering Committee in its final session. The remaining open risks would be migrated to Fortuna in accordance with the deployment schedule of the SAP governance, risk and compliance module.

Key post of risk management had been vacant for more than two years

60. The Board identified a potential risk with regard to post vacancies. The Board noted that three posts had been vacant for more than two years as at 29 April 2022, one of which was the Principal Programme Management Officer (D-1), whose responsibilities include optimizing risk management.

61. The Board was informed that the functions performed by the Principal Programme Management Officer had been satisfactorily undertaken by team leaders (P-5) and other support staff while the position remained vacant.

62. The Board is concerned that the long vacancies, especially in key posts related to risk management, will have a negative impact on the operational management of the Enterprise Resource Planning Solution Division.

63. **The Board recommends that the Administration closely monitor the ongoing recruitment process to ensure that the vacant posts, especially the post for risk management, are filled in an expeditious manner.**

64. The Administration accepted the recommendation.

E. Mainstreaming

65. Mainstreaming aims at strengthening in-house capacity and expertise on the enterprise resource planning system and developing a detailed action plan to ensure the transfer of knowledge from consultants to programme and project staff.

66. The Board reviewed the shared responsibility between different departments/divisions mentioned in the mainstreaming plan, and noted that the Enterprise Resource Planning Solution Division shared responsibility with the Office of Information and Communications Technology with regard to application security and production support (tier 0 to tier 3); worked with the Business Transformation and Accountability Division on reporting and analytics; and shared responsibility for user access provisioning with Security Liaison Officers.

67. The Board requested the Enterprise Resource Planning Solution Division to provide official documents (e.g. policy or procedures) that could clarify the shared responsibility between the Enterprise Resource Planning Solution Division and the Office of Information and Communications Technology, the Business Transformation and Accountability Division and Security Liaison Officers.

68. The Board received a document entitled "Umoja – SAP Basis Support Services" from the United Nations International Computing Centre that showed, in part, the delineation of responsibilities between the Office of Information and Communications Technology and the Enterprise Resource Planning Solution Division. However, the Board did not receive supporting documents clarifying the Enterprise Resource Planning Solution Division's shared responsibility with the Business Transformation and Accountability Division and Security Liaison Officers.

69. The Board is of the view that an official policy or procedure that clarifies roles and responsibilities will reduce the potential risk arising from the segregation of duties in the areas where the Enterprise Resource Planning Solution Division has shared responsibilities with relevant parties.

70. **The Board recommends that the Administration update and formalize terms of reference to clearly define the shared roles and responsibilities between responsible parties based on the mainstreaming plan.**

71. The Administration accepted the recommendation.

III. Deployment and continuous improvement

A. Umoja Foundation and Extension 1

72. The Umoja implementation strategy was to achieve a full enterprise design (all functionalities), and a full build and test, followed by a phased geographical roll-out. It was decided to use a "pilot first" roll out, in which the system was first deployed to a group of pilot sites and then to the rest of the Organization. According to the "entity-by-entity" deployment strategy, the Umoja Foundation and Extension 1 functionalities were rolled out to "clusters" (or groups of Secretariat entities). There were five "clusters" during the Umoja Foundation and Extension 1 deployment. The entities of each cluster of Umoja Foundation and Extension 1 are shown in table 1.

Table 1
Entities of each cluster

Phase	Cluster	Entities
Foundation	Pilot	UNIFIL, Office of the United Nations Special Coordinator for Lebanon
Foundation	Cluster 1	All peacekeeping missions
Integration[a]	Pilot	MINUSTAH
Foundation	Cluster 2	All special political missions
Integration[a]	Cluster 3	Office for the Coordination of Humanitarian Affairs, United Nations Office at Nairobi, UNEP, UN-Habitat, ESCAP, United Nations Assistance to the Khmer Rouge Trials
Integration[a]	Cluster 4	United Nations Headquarters, United Nations Office at Geneva, United Nations Office at Vienna, ECA, ESCWA, ECLAC, ECE, international tribunals, international staff at special political missions and peacekeeping missions
Extension 1 – travel	Cluster 5	All peacekeeping and special political missions (national staff and individual uniformed personnel)

Source: Reports of the Secretary-General on progress on the enterprise resource planning project.
Abbreviations: ECA, Economic Commission for Africa; ECE, Economic Commission for Europe; ECLAC, Economic Commission for Latin America and the Caribbean; ESCAP, Economic and Social Commission for Asia and the Pacific; ESCWA, Economic and Social Commission for Western Asia; MINUSTAH, United Nations Stabilization Mission in Haiti; UNEP, United Nations Environment Programme; UN-Habitat, United Nations Human Settlements Programme; UNIFIL, United Nations Interim Force in Lebanon.
 [a] Integration represents Umoja Foundation plus Extension 1.

73. Regarding the Umoja deployment strategy, each Secretariat entity had a different starting point (the "as-is" model) in terms of existing process flows, legacy systems and governance structures. As a result, an individual migration path from each entity's starting point needed to be designed in such a way as to support the adoption of a new, common business model (the "to-be" model) used across the Secretariat globally.

Use of some customized functions was not optimal

74. The Board analysed the date of last usage of 903 customized transaction codes (T-codes), and noted that 49 per cent (444 out of 903) of the customized T-codes had

not been used for more than one year, including 174 customized T-codes that were never used. Of the 444 T-codes, 165 were assigned to user roles, while 279 were not. In addition, some customized T-codes reported error messages and could not be used.

75.   The Administration conducted a preliminary investigation and responded that during the early years of the Umoja project, a decision was made to create customized T-codes for all Z-tables that needed their values maintained to support a business process. In addition, the Umoja project created customized T-codes for log tables used for interfaces to support troubleshooting, batch jobs and utility reports.

76.   The Administration stated that during the deployment of Umoja, customized functionalities were minimized by the Organization and only considered owing to the unique rules and regulations not covered by SAP standard features and configurations. The maintenance and upgrade of customized systems have always been associated with high costs.

77.   The Board is of the view that the Administration needs to minimize customization requirements by taking a longer-term perspective and using a more predictable business demand analysis, so that the Organization can avoid unnecessary investment. The Administration could prepare a comprehensive project plan at the design phase, with a view to re-engineering business processes effectively and employing minimal customization when developing the systems in the future.

78.   **The Board recommends that the Administration investigate the existing 903 customized transaction codes and determine whether the customized transaction codes can be properly used or should be removed if not useful.**

79.   The Administration accepted the recommendation.

B. Umoja Extension 2

80.   The General Assembly, in its resolution 74/263, had endorsed the recommendations contained in the report of the Advisory Committee on Administrative and Budgetary Questions on the eleventh progress report of the Secretary-General on the enterprise resource planning project (A/74/7/Add.17), including the recommendation that the Assembly request the Secretary-General to ensure full implementation of the Umoja project by 31 December 2020.

81.   The Secretary-General, in his ninth progress report on the enterprise resource planning project (A/72/397), reported the completion of nearly all Umoja Extension 2 functions and processes (except supply chain management) by December 2018. In his tenth progress report (A/73/389), the Secretary-General described the progress made under individual solutions and reported that the deployment schedule had been revised, with all Umoja Extension 2 solutions scheduled to be deployed by December 2019. In his eleventh progress report (A/74/478), the Secretary-General reported that the deployment schedule had been further revised, with all Umoja Extension 2 solutions scheduled to be deployed by December 2020.

82.   In his final progress report (A/76/386), the Secretary-General stated that all the functionalities included in the Umoja Extension 2 subprojects were deployed. He further stated that, during their design and deployment, additional integration and enhancement opportunities were identified that were not part of the 321 processes, and were being addressed as continuous improvement processes by the Enterprise Resource Planning Solution Division.

Status of Umoja Extension 2 solutions

83. The Board was informed that the deployment of Umoja Extension 2 processes and functionalities had been completed by 31 December 2020. There were some continuous improvements deployed in 2021. The functionalities and improvements deployment status of those solutions are briefly summarized below.

Strategic planning, budgeting and performance management

84. The strategic planning, budgeting and performance management solution supports the full programme management life cycle, covering strategic planning, resource planning, programme execution and performance management. The solution supports the Secretary-General's management reform vision of empowering managers and staff, increasing transparency and accountability for results and improving on the delivery of mandates. The functionalities under this solution were deployed from 2018 to 2020. The integrated functionality, which included integrated planning, management and reporting, was deployed in the fourth quarter of 2020 and aimed at managing the full life cycle of projects.

85. There were several continuous improvements in strategic planning, budgeting and performance management in 2021, such as integrated planning, management and reporting. A computer program was developed to automatically convert projects defined in the Umoja project system into integrated planning, management and reporting projects. For strategic management applications, an enhancement was delivered to provide the ability to generate the annual budget performance reports for peacekeeping missions. The rollover of peacekeeping budgets was deployed. The automatic rollover of approved regular budgets to the following regular budget cycle had not yet been fully deployed, and the position and summary parts were in preproduction pending testing by the business. The scope of activities for the United Nations Volunteers programme forms had been deferred to 2021 at the request of the business owner. The Board was informed that the use of United Nations Volunteers forms in the budget planning functionality had been cancelled by the business in 2021.

86. The Board queried information regarding the monitoring display module of the integrated planning, management and reporting solution, and noticed that some of the projects did not include input indicators, baselines, targets and risks. Taking the Department of Peace Operations as an example, there were 18 approved projects on integrated planning, management and reporting; however, none of them involved the inputting of monitoring information, such as indicators, risks and supporting evidence. The Board was informed that such monitoring information required each entity to enter that information into the system manually; owing to low user adoption, some entities had not uploaded project data information to monitor projects.

Supply chain management

87. The supply chain management solution covers four broad functional areas: planning for the demand for goods and services; determining the sources of supply; managing transportation; and tracking the movement of goods. The transportation management solution, which supports the planning and execution of transportation of goods and provides global visibility to the Organization's transportation network and operations, was completed in two phases by the end of 2019. The demand planning functionality, which forecasts procurement and logistics planning for materials and services, and can help to reduce stock holdings while ensuring the availability of materials and services, was completed in 2020.

88. The demand planning and supply planning solution, used to manage the supply chain planning activities, had been deployed to 44 entities by July 2021. Regular

budget entities utilized the solution to prepare their supply chain plans by the end of 2021. The global supply chain plan for regular budget entities was approved by the Assistant Secretary-General for Supply Chain Management in January 2022. Peacekeeping entities were in the process of completing their supply chain plans and were on track to complete this activity by the end of the second quarter of 2022.

Implementing partner management

89.   The implementing partner management solution encompasses the full life cycle of collaboration with implementing partners. The solution streamlines the interaction between the Secretariat and implementing partners and end beneficiaries by providing a portal and tools for interaction with the Secretariat before and during their partnership, including recording the progress of implementation and other performance details, and requesting payments. The functionalities were deployed by the end of 2020, and included identifying, assessing and selecting grantees; generating agreements with standard clauses, including clauses on audit requirements; recovering inadmissible expenditures from assignees; and requiring clearly defined logical frameworks for projects.

90.   Improvements to the monitoring of reporting and payments to partners and to the application and agreement formats were introduced in December 2021. Integration with the integrated planning, management and reporting monitoring dashboard completed quality assurance testing in November 2021. In August 2021, the Secretariat joined the United Nations Partner Portal, an online screening platform for potential partners. Once a partner has been successfully verified in the United Nations Partner Portal, it is eligible to submit applications through the grantor management solution in Umoja. Successful applications are then processed further, as agreements, and are managed in the grantor management solution.

91.   The Board noted that the Administration had piloted the implementing partner management solution with the United Nations Office for Project Services, which had 43 users that were provisioned and had accessed the solution in 2021. The Board was informed that the focus in 2022 was to increase the usage of the implementing partner management solution by external partners, prioritizing partners that had a high volume of agreements across multiple Secretariat entities.

Fundraising and donor relationship

92.   The fundraising and donor relationship solution provides functionality for managing fundraising programmes, managing donor information and tracking fundraising opportunities. The solution was first rolled out to seven entities of the Secretariat in September 2018 on a pilot basis, and was deployed to one more entity in October 2020. Further improvements were introduced to manage the profiles and preferences of the donors in September 2021.

93.   The programmes functionality was used to establish and manage fundraising programmes, and the libraries functionality was used to create and manage a library of contribution agreements with key donors. As of March 2022, only 21 agreements had been uploaded and shared for reference in the libraries module. The Board noticed that usage of the solution needed to be further improved.

Uniformed capabilities management

94.   The uniformed capabilities management solution has evolved from its original scope of reimbursements and payments to troop- and police-contributing countries. The solution has delivered a standard enterprise solution for the crucial work undertaken with troop- and police- contributing countries in support of peacekeeping and special political mission mandates through the management of related agreements and reimbursements.

95.   Troop and formed police strength reporting and cost reimbursement functionality was deployed to users in missions and headquarters in January 2021. A total of 22 peacekeeping and special political missions used the uniformed capabilities management solution to capture daily gains and losses in uniformed and other personnel categories, as well as to generate mission summary reports that were published for the information of troop- and police-contributing countries.

96.   There were several enhancements to the solution delivered in 2021. These included additional integrations between the Umoja enterprise central component and the uniformed capabilities management solution through the deployment of a payment remittance advice interface, calculation reports and payment letters to permanent missions, and analytical reports on claim reimbursement processing activities.

Conference and event management

97.   The conference and event management solution covers the life cycle of conferences and events, including conference and event planning, requests and pre-session activities, resource allocation, participant management, event execution and follow-up, and cost recovery and accounting. The solution is delivered through four enterprise applications, developed and managed by the Department for General Assembly and Conference Management, which constitutes the conference and event management supply chain: gMeets for meetings management; Indico.UN for meeting participant management; gDoc for document production and distribution; and eAPG for the assignment of interpreters to meetings.

98.   The Board noted that the planned scope of Indico.UN included the Secretariat entities responsible for organizing meetings and events. The system had been deployed and was in use at United Nations Headquarters, the United Nations Office at Geneva, the United Nations Office at Nairobi and the United Nations Office at Vienna, among others, in 2020 and 2021, and would be deployed to the regional commissions after 2021.

99.   The focus of the current phase of the workplan is on the assessment of the readiness of the Department for General Assembly and Conference Management conference services applications for integration with Inspira and Umoja. The second phase of the workplan will focus on developing a statement of work and coordinating requirements with the Enterprise Resource Planning Solution Division. As the integration of Umoja with other applications has been successfully implemented elsewhere, the Department for General Assembly and Conference Management will build on lessons learned. The scoping was scheduled to be completed by the end of 2022. Regarding the integration of Indico.UN with Umoja, the business analysis run in 2021 was followed by the submission of three business requirements, two of which were currently under implementation. Additional business requirements were under discussion with the relevant Umoja functional subgroups.

Inter- and intra-solution linkages

100. The Board reviewed the inter- and intra-solution linkages of the functionalities of the six solutions and noticed the following:

       (a)   With regard to the strategic planning, budgeting and performance management solution, the required integration of strategic planning, budgeting and programme management and implementing partner management through the SAP grantor programme was achieved with the deployment of the integrated planning, management and reporting solution. The integration of integrated planning, management and reporting with the Umoja enterprise central component project system was also achieved. The integration of strategic planning, budgeting and

performance management and the fundraising and donor relationship had not been established and would be assessed;

(b)   With regard to the supply chain management solution, the integration of transportation management, event management and the Umoja enterprise central component supply chain module was achieved. The demand and supply planning of cloud tenants integrated with on-premises systems and other supply chain management systems (such as supplier relationship management, enterprise resource planning core components and event management) had been completed. The integration of demand and supply planning and business planning and consolidation had not been established and would be implemented by the Enterprise Resource Planning Solution Division when the plans for integration were submitted and approved by the business through the change governance framework;

(c)   For the fundraising and donor relationship solution, the integration of performance management and Umoja business intelligence, and a solution to create a grant upon the signing of agreements, were being contemplated with business stakeholders as part of ongoing continuous improvements;

(d)   With regard to the uniformed capabilities management solution, its integration with the Umoja enterprise central component supply chain and financial modules had been achieved. The integration of uniformed capabilities management and business planning and consolidation, and the integration of uniformed capabilities management and transportation management, had not been established and would be implemented by the Enterprise Resource Planning Solution Division when the plans for integration were submitted and approved by the business through the change governance framework;

(e)   For the conference and event management solution, the scoping of conference services applications integration with Inspira and Umoja was scheduled to be completed by the end of 2022. In addition to building a well-defined process for the transfer of roster data into gDoc and eAPG, the integration with Inspira also seeks to generate dashboards and reports to facilitate the work of all language services within the Department for General Assembly and Conference Management. The work on integration with Inspira will be scheduled once the business analysis is completed.

101. The Advisory Committee on Administrative and Budgetary Questions, in its final progress report (A/76/7/Add.20), stated that the Advisory Committee trusted that the Secretary-General would provide to the General Assembly a list of outstanding integration opportunities and their related timelines and cost profiles. The Administration stated that requirements for integrations would be addressed as continuous improvements, as requested by the business teams, and would be prioritized according to the overall continuous improvement workplan.

102. The Board is of the view that the integration of solutions reflects added value to Umoja Extension 2, as such integration eliminates redundant data entry and provides a better, integrated, end-to-end solution for the business. It is critical that the business, along with the Enterprise Resource Planning Solution Division, identify the potential integration opportunities and assess their feasibility, associated timelines and costs.

Acceptance of Umoja Extension 2

103. The Administration established the operational readiness review as the key document to ensure the implementation of Umoja Extension 2 functionality. The operational readiness review assesses readiness in the following nine areas: management, business, organization, external business partners, user, application, infrastructure, support and data.

104. With the exception of the conference and event management solution, the Board checked the operational readiness reviews of the Umoja Extension 2 solutions. The Board noted that the criteria used to assess operational readiness were comprehensive and were, in principle, sound. However, in practice, some of the assessments did not fully meet the criteria of readiness:

(a)   With regard to user readiness, there are two parts to the criteria. The first part relates to mapping the users to roles, and the second part relates to the appropriate training and qualifications of users. The Board noted that for some solutions, user readiness was evaluated only in terms of the number of training sessions completed, which did not include content related to user access mapping and provisioning, such as the fundraising donor relationship, implementing partner management and integrated planning, management and reporting. According to the comments provided on the training sessions that had been developed, the milestone confirming the completion of those user readiness training sessions was "pass". The Board is of the view that the availability of training courses cannot be considered as the only indicator to assess whether the users are appropriately trained and qualified;

(b)   For organization readiness, the criteria are: (a) roles and responsibilities are clearly established; (b) sufficient capacity is available; and (c) deployment entities are prepared to implement the organizational change required to operate Umoja effectively. With regard to the fundraising and donor relationship solution, the comment provided on organization readiness was that existing training courses on iLearn were available for end users and the milestone was "pass". The Board noted that this milestone was not able to reflect organization readiness in terms of the operation of the solution.

105. The Board noticed that the Administration invested a certain amount of the attention of staff and management to facilitate the completion of conditions. The operational readiness review could reveal some issues that need to be addressed before the deployment of Umoja Extension 2, and assess whether improvements could be made. For example, a more sound user readiness criteria would be to confirm that staff are ready to adopt new ways of working, rather than whether training sessions were conducted.

Insufficient implementation of user satisfaction survey

106. After the implementation of the project phase, user adoption of the functionalities of Umoja will be important. The user satisfaction survey for Umoja aims at understanding how satisfied a customer is with the system and service. The survey could reflect and identify the experience and perception of users as they use the system in order to better improve and enhance the system.

107. The Board noticed that the user satisfaction survey was selectively utilized for Umoja Extension 2 subprojects. The end user adoption assessments of the supply chain management solution's first phase (Galileo decommissioning planning), the transportation management solution and the uniformed capabilities management solution were conducted in January 2018, April 2019 and March 2021, respectively. Among the six solutions of Umoja Extension 2, two user satisfaction surveys, on supply chain management and uniformed capabilities management, were conducted.

108. The Board is of the view that Umoja is not just an information technology project: it also involves organizational and business transformation. User feedback on the system is critical to the continuous improvement and enhancement of Umoja. Modifications and improvements to the system resulting from user feedback also help to improve user adoption of the system. The benefits an organization plans to realize from a new enterprise resource planning system will not materialize until users have embraced and become productive using the new applications and processes.

109. **The Board recommends that the Administration continue to conduct user satisfaction surveys for each Umoja Extension 2 solution to identify areas for improvement and further optimization in order to drive user adoption.**

110. The Administration accepted the recommendation.

C. Continuous improvement

111. The Secretary-General, in his final progress report (A/76/386), stated that the Enterprise Resource Planning Solution Division, in conjunction with its business partners, had shifted focus to making continuous improvements, and the additional integration and other enhancement opportunities identified during the design and development phases were being pursued as part of business-driven continuous improvements.

112. The Board was informed that the governance and process framework for the continuous improvement of Umoja was under the review and control of the Umoja Change Board, which provides periodic updates to the Management Committee and the Information and Communications Technology Steering Committee as needed, following the conclusion of the Umoja Steering Committee in May 2022. The responsibilities and accountabilities are defined within this framework.

113. The Board was informed of the Enterprise Resource Planning Solution Division's strategic direction, which is based on a multi-year view that takes into account the dynamic nature of the technology and the evolving needs of the business. For example, the Umoja Steering Committee approved the multi-year approach, as exemplified by Umoja Analytics, which is a major continuous improvement initiative that the Division undertook in 2021 and which will be delivered over several years.

114. The Board was further provided with the programme budgets for Umoja and the Enterprise Resource Planning Solution Division from 2020 to 2022 and was informed that the strategy and objectives of the Division for the budget period were recorded in a component under a subprogramme in the proposed programme budget, which is the standard budget process for the Secretariat. The annual budget submissions include an assessment of the actual status of a programme, a multi-year strategy and two-year planned objectives.

115. The Board was also informed that the Division has an ongoing programme of work set by change requests raised by business teams through the Umoja change governance structure, which is continuously updated by the functional subgroups. The detailed planning of each continuous improvement occurs within the team plans of the Division. Given the complexity of the changes being introduced, these changes include multi-year initiatives. The project plans for major continuous improvement initiatives are maintained independently of each other. The scope of continuous improvement, from a functionality perspective, is determined based on the business needs, which in turn set the deliverables expected. Improvements, from a system/technical perspective, are based on the product road maps associated with the solution architecture.

116. Prevailing best practices for continuous improvement could be referred to, such as the continuous improvement model of the Information Technology Infrastructure Library (ITIL) 4 Foundation, or the continuous improvement life cycle approach of COBIT 2019.[1] The Organization needs to clearly define the vision of "continuous improvement" with a process capability assessment of the current status and set a

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[1] ISACA, *COBIT 2019 Implementation Guide: Implementing and Optimizing an Information and Technology Governance Solution* (Schaumberg, Illinois, 2018).

target that includes a clear road map for improvement, following a gap analysis to identify potential solutions. A plan could be prepared that employs feasible and practical solutions by defining projects supported by justifiable business cases. Improvement objectives could be set, along with critical success factors and key performance indicators to measure progress towards the vision and manage risks, as well as ensure benefits realization and cost control. This common methodology is a structured approach to implementing continuous improvements.

117. The Board is of the view that the strategy for Umoja has been evolving since 2020, and was being developed not on a long-term basis to cover the system's life cycle, but for the purposes of annual budget formulation. Considering that Umoja will not be replaced in the short term and will still be a significant investment until 2030, the Organization needs to coordinate relevant stakeholders to continue to develop a consolidated long-term plan for the continuous improvement of Umoja that includes a holistic picture and long-term insight, aligned with the future business needs of functional subgroups, to ensure the implementation of the strategy, which should include scope for continuous improvement, visions and objectives for main business areas, resource requirements, a road map, milestones, deliverables and key performance indicators. Such a long-term plan could further incorporate technology resources and business management into Umoja service offerings to ensure that future costs are kept under control by identifying technically feasible and cost-effective solutions, which would continue to make Umoja a key enabler of change across the Organization and help the system maximize the value created by optimizing resource utilization and mitigating risks.

118. In addition, a survey of United Nations staff was conducted by the Office of Information and Communications Technology in December 2021, with the purpose of gaining insight on the opportunities and challenges in the area of information and communication technology, that resulted in 3,598 responses from 87 entities. The survey participants viewed Umoja as one of the five most important tools in terms of information and communications technology core services at the Secretariat, but rated it lowest in terms of ease of use and overall support.

119. The Board is also of the view that a key component of the continuous improvement of Umoja is the experience end users have when they interact with the Umoja service. In that respect, the Administration needs to collect feedback on end users' experiences of Umoja by conducting ongoing end user surveys through current communication channels in order to identify continuous improvement needs from the bottom up, which could increasingly improve user experience.

D. Change management

Lack of timely maintenance of the change management schedule

120. In Umoja, a change is defined as the addition, modification or removal of anything that could have a direct or indirect effect on Umoja, and is classified in change requests as a continuous improvement, operation, incident, internal request or workplan. Change management is the process that ensures that all changes are processed in a controlled manner. The main purpose of change management is to enable fast and reliable delivery of change to the business and mitigate the risk of a negative impact on the stability or integrity of the changed environment. A robust change management process provides management with the assurance that only authorized and tested changes to systems and infrastructures, as scheduled and approved, are implemented in the production environment.

121. The Organization has established a change request management governance framework and a process framework with the implementation of the SAP Solution

Manager – Requirements Management (SolMan), which is an SAP tool that handles the change management process to facilitate business activities in the application life cycle management of Umoja and replaces the tool called "Rapport" that was used to manage change requests prior to 2018. Once a business requirement document is approved by the business, an equivalent information technology requirement document is created. The status of both documents is mapped to ensure that each stakeholder is aware of the status of the respective changes.

122. The Board noted that change requests were arranged with reference to a prioritization criterion, and dates of important change management activities were managed and recorded in SolMan, including the information technology due date, the implemented date and the acceptance date. The information technology due date is the date that the business and the Enterprise Resource Planning Solution Division agreed that the change request would be implemented; the implemented date is the date that the change request was actually put into production; and the acceptance date is the date that a business requirement document, along with the equivalent information technology requirement document, is approved by functional subgroups or the Umoja Change Board. A business requirement dashboard was developed to monitor the status of change requests using a holistic view.

123. The Board analysed the 326 change requests approved as at 7 April 2022 in SolMan, and noted that of those 326 change requests, 141 had not been implemented more than 30 days after the information technology due date, up to a maximum of 434 days, and the acceptance dates of 30 change requests were after the information technology due date. In addition, the average lead time was 163 days for the accepted change requests compared with 62 days for the implemented change requests. The details are shown in table 2.

Table 2
Change request schedule by status

| Status | Total | Overdue[a] | Number overdue by priority[b] | | | | Acceptance date after the information technology due date[c] | Lead time (days)[d] | |
			Very high	High	Medium	Low		Maximum	Average
Implemented[e]	245	88	13	38	33	4	19	359	62
Accepted[f]	81	53	6	23	24	–	11	434	163
Total	**326**	**141**	**19**	**61**	**57**	**4**	**30**	**434**	**88**

Source: Business requirement dashboard as at 7 April 2022.
  [a] Number of change requests not implemented within 30 days after the information technology due date.
  [b] Number of change requests not implemented within 30 days after the information technology due date by priority.
  [c] Number of change requests where the acceptance date is after the information technology due date.
  [d] Number of days that the acceptance date precedes the implemented date of the change request or the audit date.
  [e] Change request is implemented in the production environment.
  [f] Change request is accepted by the functional subgroup or the Umoja Change Board and is pending implementation in the production environment.

124. The Administration explained that it could not assume that all change requests would proceed as initially planned. The information technology due date was not fixed and was subject to change. There were more details related to lead times and a more comprehensive assessment would be required to analyse the implemented date. Some change requests with a long lead time had been moved into production much earlier, but the status of the information technology requirement document remained open, as there were change documents that needed to be closed or cancelled. The status of change requests was jointly reviewed by the Enterprise Resource Planning

Solution Division with the business teams through regular meetings, but the information technology due date was not updated accordingly in SolMan.

125. The Board is of the view that the basic principle of change management is the delivery of fit-for-purpose services and solutions, on time and within budget, resulting in the intended benefits. Once the business change request is accepted, implementation needs to be clearly planned and recorded. Data in SolMan need to be recorded at a high quality and with the appropriate approvals to provide the basis for tracking, monitoring and reporting, and to help stakeholders effectively coordinate the business resource allocations with the change management process.

126. **The Board recommends that the Administration maintain the schedule of change management in the SAP Solution Manager tool in a timely manner to reflect updates to change request status and to better monitor the implementation of the change requests.**

127. The Administration accepted the recommendation.

E. Application control

Insufficient data verification between Umoja and Inspira

128. The final progress report of the Secretary-General stated that the integration of Umoja and Inspira, which would allow for the ability to search for users' index numbers directly within Inspira, would be implemented in the fourth quarter of 2021.

129. The Board noticed that the go-live date of the interface had been updated to April 2022. Umoja and Inspira are the main data sources of the enterprise data warehouse system for administrative data. Inspira, the enterprise learning management system, is used for e-performance, e-recruiting and training. Master data in Inspira are automatically created based on the Umoja data feed. As soon as a new staff member is onboarded in Umoja, the new staff member's data go to Inspira as part of the daily Umoja-to-Inspira data feed.

130. The Board compared the human resources master data as at 29 March 2022 from both the Umoja enterprise central component system and Inspira, and found 1,715 cases that had inconsistencies between Umoja and Inspira in terms of employment status, name, nationality, birthdate and gender.

131. The Board is of the view that it is critical to make sure the recording of the master data in the system is accurate and complete through effective management. Accurate and consistent human resource master data are fundamental to human resources management processes. The discrepancy in master data between Umoja and Inspira poses a significant risk to the reliability of the data contained in these systems and their use as data sources for business intelligence purposes.

132. **The Board recommends that the Administration establish a data verification mechanism for the interface between Umoja and Inspira, on a quarterly basis, for the data fields identified.**

133. The Administration accepted the recommendation.

Deficiencies in grant master data management

134. In chapter 3 of the job aid on creating grant master data, grant value is defined as the total value of the grant in the currency stated in the donor agreement, including both direct and indirect costs. The Board was informed that if the billing rules of a grant were "20 Unconditional – cash" and "50 Conditional – cash", the grant was

associated with the donor agreement and the grant value fields in the grant master data should be in line with the donor agreement.

135. The Board analysed the grant master data where the grant type was a resource mobilization grant or a simple grant and where the billing rules were "20 Unconditional – cash" and "50 Conditional – cash" in Umoja, and noted the following issues with regard to grant master data:

(a)   For the grant value field, there were 253 grants where the grant value filed was less than or equal to one United States dollar, which was inconsistent with the donation amount in the donor agreement. The cash balance of these grants was $102.72 million as at 12 April 2022;

(b)   For the total billing amount field, there were 739 grants where the total billing amount was less than or equal to one United States dollar, which was inconsistent with the donation amount in the donor agreement. The cash balance of these grants was $161.96 million as at 12 April 2022.

136. The Board was informed that the job aid mentioned above was originally created for the deployment of Umoja Foundation, and would need to be updated based on feedback pertaining to specific scenario considerations. The grant value field of grant master data in Umoja is a reference field and has not been linked to financial posting; the user normally adds the United States dollar equivalent value of the resource mobilization grants to this field, but it is not a part of the system controls. The financial revenue postings in the general ledger were the most accurate representation of the grant amounts and consequently were used for various reporting requirements and dashboards.

137. The Board is of the view that accurate grant master data are fundamental to the management of voluntary contributions, and the usefulness of Umoja in improving decision-making depends on the quality of data. Using the grant value or total billing amounts, the entity could analyse the pledged and actual donations from donors, and further manage and monitor fundraising activities over and above the financial posting monitoring in Umoja.

138. **The Board recommends that the Administration review and rectify, as required, the inaccurate grant values and/or total billing amounts in grant master data that have been identified, and update job aids with additional guidance to reinforce the process as required.**

139. The Administration accepted the recommendation.

IV.   Support and enhancement

A.   Analytics

140. The Secretary-General, in his final progress report on the enterprise resource planning project (A/76/386), stated that the Enterprise Resource Planning Solution Division, the Business Transformation and Accountability Division and functional subgroups had been collaborating through the United Nations business intelligence project to ensure high-quality and centrally certified data models. He further stated that his data strategy defined analytics as the use of data to better understand "what happened", "why it happened", "what may happen next", and "how to respond". Umoja Analytics would serve as the foundation for Member States to access richer data, gradually replace multiple older, overlapping business intelligence reporting platforms across the Secretariat, and provide predictive capabilities and answers to

"what if" scenarios to improve decision-making to assist Member States in the analysis of the overall programme of work.

141. The Board was informed that the United Nations business intelligence project was a governance model responsible for the creation of certified data models, which would be used by Umoja Analytics for dashboard development and advanced analytics. The business intelligence platform (SAP BOBJ) was being upgraded, and was the only platform that would be replaced by Umoja Analytics, powered by SAP Analytics Cloud. The current main workplans of Umoja Analytics included enterprise dashboard development, migration from Umoja business intelligence to Umoja Analytics and the deployment of self-service analytics. Enterprise dashboards comprised the Member States' portal for human resources and the uniformed capabilities support portal, and the implementing partner monitoring and reporting dashboard.

142. In addition, the Board was informed that 135 Member States had access to the Members States' contributions portal, while the remaining 58 Member States (30 per cent) had not applied for the access to the contributions portal.

143. The Board is of the view that, considering that there are other Member States portals planned for deployment, the Administration needs to continue to take measures to make Member States use the contributions portal, to realize the commitment to leave no one behind through digital inclusion and to maximize the benefits derived from the contributions portal.

Lack of finalized priority to certify data models with high usage frequency

144. The Board analysed the one-year usage frequency of the existing 770 business intelligence data models as of March 2022, which included 191 United Nations business intelligence certified data models, and noted that the usage frequency varied from 1,152,975 times to zero times, with an average of 15,022 times. The Board further noted that only 3 of the top 10 most frequently used data models were certified, but 10 data models that had been certified in 2020 had been used fewer than 10 times.

145. The Administration explained that suggested priority criteria for analysis/review had already been shared and documented by way of the meeting minutes of the United Nations business intelligence board, and would be included in the draft standard operating procedures of United Nations business intelligence project.

146. The Board is of the view that usage frequency is an important factor that reflects business needs in practice, and priority criteria needs to be formally issued and applied to certify the data models that are used with high frequency, which could provide quality assurance and a more reliable reference for decision-making, and maximize the benefits of the resources assigned to the United Nations business intelligence project.

147. **The Board recommends that the Administration finalize the United Nations business intelligence standard operating procedure in a timely manner and consider the certification of data models that are used with a high frequency as a high priority.**

148. The Administration accepted the recommendation.

B. Production support

149. The Secretary-General, in his fourth progress report (A/67/360), for the first time stated that the post-production support model for Umoja would be in place by July 2013. Nevertheless, in his fifth progress report (A/68/375), the Secretary-General

only envisaged this post-production support model and stated that a detailed organizational structure, roles and responsibilities and standard operating procedures would be presented in the sixth progress report (A/69/385). In his eighth progress report (A/71/390), the Secretary-General stated that the production support arrangement included a service/help desk model, which indicated that the production support model had worked, apart from some identified risks. The current four-tiered production support model of Umoja, which was defined in the twelfth progress report of the Secretary-General (A/75/386), involves shared responsibility between the Office of Information and Communications Technology and the business, with oversight by the Enterprise Resource Planning Solution Division.

Lack of timely updates on the production support standard operating procedure

150. The Board noted that a visualized dashboard was developed to monitor the resolution of service requests submitted by the end users through the four-tiered production support model. While service requests and work orders have been created and closed in a steady stream over the past two years, the Board noted the following issues:

(a) Section 4.7 of the document entitled "Umoja production support in iNeed: guidelines and standard operating procedures" defines the service-level agreement by priority and corresponding target response time and target resolution time, including four priorities of "critical", "high", "medium" and "low". Although the overall service-level agreement compliance rate was 63 per cent from 2019 to 2021, the compliance trend for the priority of "critical", "high" and "question" has dropped sharply since 2019. Details are shown in figure II. In addition, the priority for "question" was not defined in the standard operating procedures;

Figure II
Service-level agreement compliance rate by priority, 2019 to 2021
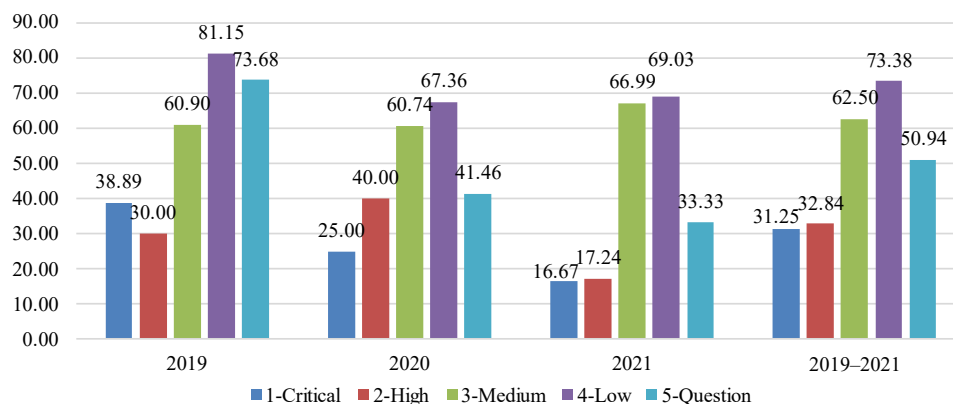
Source: Umoja production support dashboard.

(b) Although the backlog of unresolved tickets decreased steadily from 1 January 2020 to 30 March 2022, from a peak of 3,887 tickets to 1,604 tickets, the existing backlog tickets subject to different sub-areas or assigned to different tiers still had a life cycle longer than the target resolution time, with an average of 385 days overall, while the highest average was 1,817 days in the sub-areas of organization and position management. Different tiers showed different capacities and capabilities for the resolution of backlog tickets. Details are shown in table 3. Apart from the four tiers, the current production support model also included other tiers, such as "tier 1b", established by larger duty stations (e.g. the United Nations

Office at Geneva, the United Nations Office at Vienna, etc.). While service requests submitted to or from tier 1b were included in the Umoja production support dashboard, their activities were not conducted under the purview of the Office of Information and Communications Technology.

Table 3
Life cycle of backlog tickets by tier

	Tier 1	Tier 1b	Tier 2a	Tier 2b	Tier 3
Number of backlog tickets	1 149	193	2	224	36
Average lifetime (days)	292	477	10	685	1 045

Source: Umoja production support dashboard as at 30 March 2022.

151. The Board further noted that the Enterprise Resource Planning Solution Division had not held monthly coordination meetings on Umoja production support to take on oversight responsibility in 2021, even though production support was overseen by the Division, which was also in charge of tier 3. The document "Umoja production support in iNeed: guidelines and standard operating procedures" issued in 2019 was not updated accordingly to define the oversight mechanism.

152. The Administration explained that the Office of Information and Communications Technology was developing a proposal to consolidate and simplify the operations of the Global Service Desk, which would include reviewing and optimizing the current Umoja production support model. Owing to multiple competing priorities in the first year of the functioning of the Enterprise Resource Planning Solution Division, coupled with the challenges of addressing staff rotation and vacancies, the Division was not in a position to undertake monthly coordination meetings on Umoja production support in 2021. Those meetings had been held since the second quarter of 2022, the first of which took place on 29 April 2022. The function within the Division that performed the oversight activity was independent and was not part of tier 3.

153. The Board is of the view that there is a need to conduct a comprehensive impact analysis on the long-term backlog of tickets and to complete the service requests within the target resolution time to further improve user satisfaction. There is also a need to update the standard operating procedures, as they lack some key elements, including a definition of the priority for "question", accountability for failure to meet service-level agreement commitments and an oversight mechanism, as well as other changes resulting from the mainstreaming of Umoja.

154. **The Board recommends that the Administration evaluate the current Umoja production support model, clearly document an oversight and accountability mechanism to address the service requests as required by the service-level agreement, and update production support standard operating procedures accordingly.**

155. The Administration accepted the recommendation.

C. Training

156. The Secretary-General, in his final progress report, stated that the responsibility for the design, development and delivery of Umoja training transitioned to the Capacity Development and Operational Training Service since 1 January 2021, while the ownership of training content continued to remain within each of the business

areas. Each business area provided subject matter expertise and mentorship across the Secretariat, while the Training Service provided expertise and advice in instructional design and development, learning needs assessments, scoping, and effectiveness and impact measurement. In order to integrate Umoja into broader operational training offerings and objectives for maximum effectiveness and impact, the Training Service developed a learning strategy for Umoja for 2021–2025.

157. The Board was informed that as at 31 December 2021, there were 247 published Umoja courses covering 25 functional areas, totalling 2,009 hours. Of the 247 courses, 150 courses covering Umoja Foundation and Extension 1 were hosted on the Inspira learning management system, which was used to deploy introductory, computer-based training courses in a PowerPoint format, while the remaining 97 courses covering 10 thematic areas of Umoja Extension 2 were hosted on the iLearn learning management system in the form of interactive simulation videos and accompanying course guides. Apart from those aforementioned courses, there were 12 other Umoja human resources e-learning courses hosted by the Blue Line of the United Nations System Staff College and the Capacity Development and Operational Training Service learning management system.

158. The Board reviewed the number of courses completed by staff on Umoja from 2019 to 2021 and noted that the number maintained relative stability, with 29,490 in 2019, 30,764 in 2020 and 30,423 in 2021. There were four main course types, namely, live classroom, self-paced learning, virtual classroom and blended learning activity. The self-paced courses were the most popular because they were available worldwide, irrespective of a learner's time zone and location. The distribution and trend of each type over the past three years is shown in figure III.

Figure III
Number of Umoja training courses completed from 2019 to 2021, by type
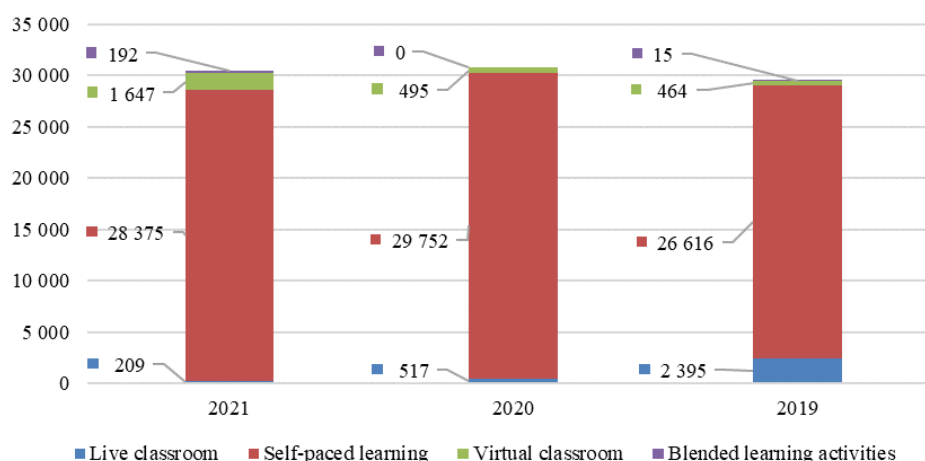
Source: Training data provided by the Capacity Development and Operational Training Service.

Training resources not stored centrally and not developed in industry-standard formats

159. The Board noted that the aforementioned Umoja training courses and other training offerings, such as job aids, were hosted on various United Nations Secretariat learning management systems and websites, including iSeek, the Umoja public website, the Inspira learning management system, the iLearn learning management system, the Blue Line of the United Nations System Staff College, YouTube, the United Nations SharePoint platform, the Knowledge Gateway and many other

locations. A one-stop shop for Umoja training and reference materials, known as the Umoja Learning Hub, was proposed in the learning strategy to address this issue, but the proposal did not include a detailed implementation plan.

160. The Board also noted that some Umoja Extension 2 courses were still not fully available on the iLearn learning management system, such as conference and event management systems, and some training materials on iLearn were still provided in traditional portable document format (PDF).

161. The Board is concerned that such dispersed training resources, which have no central repository, may cause confusion among the learning user groups with regard to where to access the appropriate Umoja learning courses and training materials. In addition, iLearn was developed in the context of the shift from instructor-led to primarily online learning. Some training courses that are still delivered in a traditional technology format may not adapt well to current industry standards of training course design and advancements in learning technologies and approaches, which may diminish the effectiveness of Umoja training.

162. The Administration explained that the selection of the platform depended largely on the strengths of the platform, course objectives and methodologies. There was a pilot project to evaluate the existing learning management systems of the United Nations, including various Umoja learning management systems, which was expected to be completed in the fourth quarter of 2022. The Capacity Development and Operational Training Service recently developed an online catalogue of Umoja courses as a transitional step, which is pending issue.

163. Furthermore, the Board was informed that the Capacity Development and Operational Training Service faced several challenges in migrating and integrating existing Umoja training platforms. Such migration and integration would not only involve the complex coordination of different stakeholders and the redesign of some courses and delivery modalities, and require greater coherence in terms of existing learning offerings and solutions, but also cost time, expertise and resources.

164. The Board is of the view that, with the significant advances in learning technologies and approaches, especially considering the technological and functional limitations of certain learning platforms, fragmented learning management systems need to be migrated and integrated. The development of the Umoja Learning Hub, including a detailed implementation plan, is a proactive way to solve the current situation of resource fragmentation. The Capacity Development and Operational Training Service needs to play a vital role, in coordination with various functional areas, in the development of a detailed implementation plan for advancing the objective of a single learner access point for Umoja-related learning.

165. **The Board recommends that the Administration apply the approaches outlined in the Umoja learning strategy to design training courses, including using industry-standard design solutions based on different learning objectives, as well as deploying a single learner access point for all operational training with a detailed, time-bound implementation plan, based on the overall assessment of Umoja training resources.**

166. The Administration accepted the recommendation.

D. Information security

167. With regard to information security management, the Enterprise Resource Planning Solution Division is responsible for application-related security, whereas the Office of Information and Communications Technology is responsible for infrastructure-related security. The Umoja system and related information and

communications technology infrastructure (i.e. servers, storage area network and backup) are located primarily at the United Nations Global Service Centre in Valencia, Spain, and Brindisi, Italy.

168. The United Nations information and communications technology procedures for disaster recovery planning state that the information and communications technology infrastructure disaster recovery plan must be tested and/or exercised on a periodic basis (at least annually) to determine the plan's effectiveness and the Organization's readiness to execute the plan, and infrastructure disaster recovery roles and responsibilities should be reviewed and revised on an annual basis.

169. The Board reviewed the disaster recovery exercises that have been conducted for the Umoja system since Umoja Foundation went live in 2015, and noted that two disaster recovery exercises were conducted in 2017 and 2020, respectively, and one table-top test was conducted in 2019. Three of four recovery time indicators recorded in the two disaster recovery exercises averaged 17 hours and 29 minutes, far exceeding the 8-hour recovery time objective. There were no tests and/or exercises conducted in 2018 and 2021. In addition, the Umoja infrastructure disaster recovery plan had not been updated since October 2020. Some key elements in the infrastructure disaster recovery plan were outdated. For example, one key staff member in the infrastructure disaster recovery teams had not worked on Umoja since December 2020.

170. The Administration explained that the contact list in the infrastructure disaster recovery plan had been updated after the request of the Board in April 2022. In addition, the infrastructure disaster recovery plan would be fully updated with an infrastructure disaster recovery exercise in 2022, once lessons learned from the infrastructure disaster recovery exercise in 2020 had been incorporated into the plan.

171. The Board also reviewed the business continuity plan, and the Enterprise Resource Planning Solution Division provided a formal business continuity plan, signed on 29 April 2022, upon the request of the Board, superseding the unsigned draft business continuity plan published in 2020. The plan has not been updated on an annual basis, which had been prescribed by the 2020 draft business continuity plan.

172. The Administration explained that unique factors had contributed to a delay in the updating of the business continuity plan, including the mainstreaming of Umoja, the closure of the project and the initial operations of the Enterprise Resource Planning Solution Division.

173. The Board is of the view that it is of paramount importance that the infrastructure disaster recovery plan be updated with the latest information, and be tested and/or exercised at least annually, with optional methods to verify its effectiveness. In addition, it is essential that the business continuity plan be appropriately reviewed and approved to ensure that core services can continue to be delivered efficiently in the event of a major disaster.

174. Meanwhile, the Board noted that nine high-level risks identified were to be addressed by seven tickets in 2021. However, as at 12 April 2022, five of the seven tickets were still open or ongoing and had not been fully addressed, over an average duration of 23 months.

175. The Board is of the view that, along with the process of continuous improvement, new vulnerabilities and cyberattacks may emerge. Therefore, information security for Umoja requires timely protection, including the timely elimination or mitigation of high risks, periodic testing and/or exercises of the disaster recovery plan, up-to-date information on the business continuity plan and an infrastructure disaster recovery plan that is periodically reviewed and appropriately approved. Considering that a similar and related recommendation is under

implementation, the Board reiterates the importance of updating, testing and/or exercising the infrastructure disaster recovery plan at least annually.

V. Benefits and costs

A. Benefits realization

176. The Advisory Committee on Administrative and Budgetary Questions, in its report on the fifth progress report of the Secretary-General on the enterprise resource planning project (A/68/7/Add.7), stressed the need to develop a credible benefits realization plan in order to ensure the delivery of intended benefits in 2013. At the time, the Advisory Committee was concerned that insufficient progress had been achieved and requested the Administration to expedite the finalization of the benefits realization plan year by year until 2020.

177. The Secretary-General, in his eleventh progress report (A/74/478), stated that a Umoja benefits realization plan was drafted in 2018 that took into consideration the recommendations of the Board of Auditors, and was updated in 2019 in line with "United to Reform: Benefits Management Framework (version 2.5 of June 2019)". The Secretary-General, in his final progress report (A/76/386), indicated that the Umoja Steering Committee had approved the benefits realization plan in 2020.

Cumulative quantitative benefits have not been updated

178. With regard to the benefits realization plan, the Board was informed that the Umoja-related efficiencies envisaged, which had been estimated on a full-time equivalent basis as applied to the whole spectrum of the Organization's operations, were reflected as post or non-post reductions in the budget submissions of departments, offices and missions. The overall quantitative benefits from 2013 to 2021 were first presented in the ninth progress report of the Secretary-General (A/72/397) in 2017, as requested by the General Assembly, and indicated that cumulative benefits amounting to $671.2 million would have been realized by the end of 2021. After a deduction of $33.6 million, which was the amount of the total benefits estimated from the 2020–2021 regular and the 2020/21 peacekeeping budgets, respectively, the latest quantitative benefits presented in both the twelfth progress report of the Secretary-General (A/75/386) and the benefits realization plan in 2020 indicated that estimated cumulative benefits amounting to $624.4 million and maximum annualized recurring benefits amounting to $126.6 million would have been realized by 2021. No updated or revised quantitative benefits were shown in the final progress report.

179. In its seventh progress report on the implementation of the enterprise resource planning system (A/73/169), the Board stated that various figures for detailed calculations had been checked in order to validate the stated amount of benefits realization, and indicated that there had been many assumptions for different processes that did not include adequate supporting documentation.

180. The Board is of the view that, taking the significant investment in the Umoja system into consideration, the overall benefits need to be measured, updated and reported to Member States instead of being shown as estimated reductions in budget submissions. The use of non-updated cumulative benefits cannot provide sufficient assurance that they accurately reflect the realistic quantitative benefits that have been achieved.

Benefits review and tracking have not been conducted as requested

181. The Benefits Working Group was established, in accordance with the benefits realization plan, to oversee the progress of benefits realization relating to the continuous improvements to and the implementation of Umoja Extension 2 solutions. A mechanism has been established in which the business areas, through the functional subgroups, identify the benefits that will result from their proposed improvements to the Umoja system, and commit to tracking and reporting on the progress of these benefits. The Benefits Working Group periodically tracks change requests, which are approved by functional subgroups or the Umoja Change Board with the Enterprise Resource Planning Solution Division, and the Benefits Working Group reports regularly to the Umoja Change Board and the Umoja Steering Committee at their meetings.

182. The Board noted that, as scheduled, the qualitative benefits of Umoja Extension 2 would be identified and assessed by the Benefits Working Group from the first quarter of 2021 through the second half of 2022, and include six Umoja Extension 2 solutions. The Benefits Working Group met eight times to agree on responsibilities, establish processes and start recording the benefits of the supply chain management and uniformed capabilities management solutions. Four Umoja Extension 2 solutions had not been reviewed as planned. In addition, a review of the original Umoja Foundation and Extension 1 benefits is not yet on the agenda.

183. The Board is concerned that there is a risk that the timetable for reviewing the benefits of the Umoja Extension 2 solutions will not be accomplished as scheduled.

184. The Administration explained that although all Umoja Extension 2 solutions had been delivered by December 2020, factors such as the staggered deployment of some functionalities and preliminary integration work had meant that benefits tracking and realization work was not yet possible for these solutions. Furthermore, the decision on whether to review the original Umoja Foundation and Extension 1 benefits was for the Benefits Working Group to make. The benefits reporting for Umoja Extension 2 was expected to begin during the period 2022–2023.

185. The Board also noted that the Benefits Working Group had identified 44 enhancements that had significant benefits to the Organization. When reviewing a proposed enhancement, change requests approved by the Umoja Change Board or business team lead should be tracked as requested. However, 3 of 17 change requests approved by the Umoja Change Board, or 18 per cent, had not yet been tracked when the Board reviewed the situation.

186. The Board is of the view that the Umoja project represents a significant investment for the Organization, and requires close planning and monitoring and reporting mechanisms on the progress of its implementation and the achievement of its expected benefits. It is therefore critical to review the benefits after deployment, and the benefits of change requests in terms of continuous improvement should also be tracked properly and in a timely manner.

187. **The Board recommends that the Administration update a time-bound plan for the review of Umoja Extension 2 benefits, so that the review of the benefits can be undertaken as soon as the stabilization and user adoption of the Umoja Extension 2 solutions are completed, and put in place a monthly process to ensure that the benefits from all change requests approved by the Umoja Change Board are tracked and monitored.**

188. The Administration accepted the recommendation.

B. Total cost of ownership

189. The first overall estimated costs of the Umoja project were $248.31 million in 2008 (see A/62/510/Rev.1, table 1). However, the original estimation only considered the costs contained within the budget of the Umoja project without taking into account maintenance and other support costs. In order to form a large business case analysis, the total cost of ownership of Umoja over its proposed operating life to 2030 was calculated to identify all the lifetime costs. In the ninth progress report of the Secretary-General in 2017, the total cost of ownership had been initially estimated as $1,402.15 million, including direct and indirect costs and training and maintenance costs. In subsequent progress reports of the Secretary-General, the total cost of ownership continued to increase, as shown in figure IV. In the final progress report of the Secretary-General, the total cost of ownership estimated to 2030 was broken down into direct and indirect costs, business support costs and training and maintenance costs, and was estimated in 2021 at $1,526.39 million.

Figure IV
Evolution of the total cost of ownership of Umoja

(Millions of United States dollars)
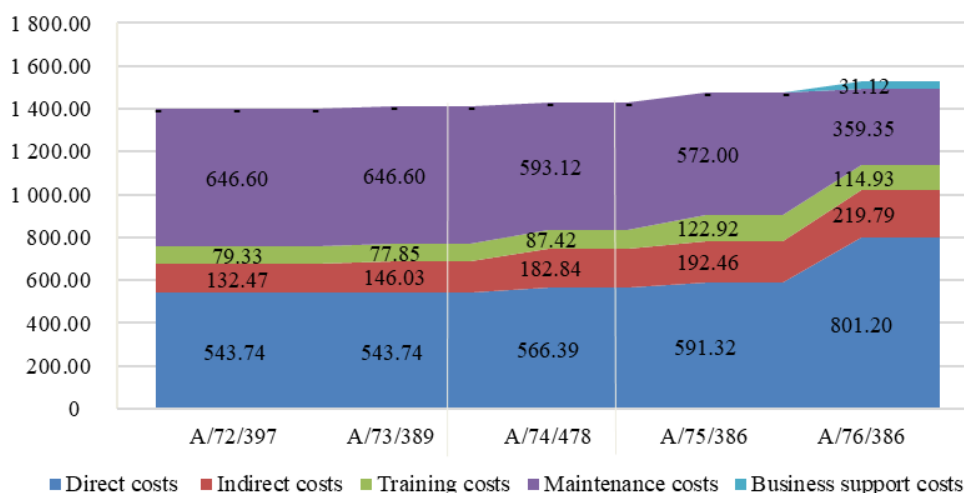
Source: Reports of the Secretary-General on progress on the enterprise resource planning project.

Direct costs

190. Direct costs relate to costs regarding posts, other staff costs (general temporary assistance), consultants and experts, travel of staff (technical/Umoja-related), contractual services, general operating expenses, and supplies and materials. In his final progress report, the Secretary-General indicated that the cumulative direct costs were $801.20 million. However, when compared with the total direct costs estimated in 2020 (A/75/386, table 2) of $591.32 million, the latest total direct costs had increased by 36 per cent. The major factor contributing to this growth included the estimated staffing and operational costs of the Enterprise Resource Planning Solution Division from 2023 to 2030.

191. The current approved budget for the project up to the end of 2022 was $622.24 million, and the total actual expenditure (direct costs) up to 31 December 2021 was $579.51 million.

192. The Board noted that the direct costs for eight years from 2023 to 2030 were estimated based on the direct costs of 2022 ($24.6 million per annum). From 2022, the annual estimate of direct costs was a fixed amount.

Business support costs

193. Business support costs relate to costs incurred by the resources to support business needs and ongoing training and capacity development. The Secretary-General, in his final progress report, stated that the business support costs were estimated at $3.2 million for 2022 and $25.6 million for 2023 onward. This was the first time that business support costs were classified separately. In the twelfth progress report of the Secretary-General, business support costs were included in the other staff costs category under direct costs.

194. The Board noted that in the final progress report, business support costs for 2022 were estimated based on standard salary costs for 22 staff, who contributed to the implementation of the Umoja solution with the Enterprise Resource Planning Solution Division. The estimated amount of business support costs for 2023–2030 was directly based on the eight-year amount requested in 2022 ($3.2 million per annum).

Indirect costs

195. Indirect costs relate to costs incurred by departments to facilitate operational readiness, including activities such as the cleansing and enrichment of data, user testing and deployment coordination. In his final progress report, the Secretary-General stated that indirect costs were $182.27 million for the period 2013–2021 and $37.52 million for the period 2022–2030.

196. The indirect costs estimation model has been adjusted. The Administration indicated that indirect costs from 2008 to 2021 were approximately 31 per cent of direct costs. Given that 321 processes had been successfully deployed and the project had come to an end, a figure of roughly half the historical amount, namely 15 per cent of direct costs, was decided upon as an estimation of indirect costs from 2022 onward, as indicated in the final report progress report.

197. The Board was informed that the indirect costs from 2022 onward were calculated as 15 per cent of direct costs plus business support costs. Owing to the fact that the estimated amounts of direct costs and business support costs were fixed, the annual estimated amount of indirect costs from 2022 onward was a fixed amount.

Training costs

198. When calculating the total cost of ownership of Umoja, training costs account for costs incurred in terms of staff time and travel. In his final progress report, the Secretary-General stated that training costs amounted to $92.54 million for the period 2013–2021, and costs estimated for the period 2022–2030 amounted to $22.39 million.

199. The training costs were broken down into computer-based training, instructor-led training and travel costs. The costs decay model was used as an estimation model for computer-based training costs and instructor-led training costs from 2022 onward in the final progress report of the Secretary-General, which was the same model used in the twelfth progress report. The decay model used attempted to show that costs steadily decreased through a decay rate, using an assumption (20 per cent). The travel costs estimation model was adjusted, and costs were estimated at a fixed amount of $30,000 per year, amounting to a total of $270,000 in travel costs for the period 2022–2030.

Maintenance costs

200. Maintenance costs include support and maintenance costs for Umoja. In his final progress report, the Secretary-General stated that maintenance costs were $130.43 million for the period 2016–2021, $25.44 million estimated for 2022 and $203.48 million from 2023 onward.

201. The Administration stated that maintenance costs were broken down into four cost categories in the estimation model, including: (a) connectivity; (b) contractual services; (c) hosting and related; and (d) licences and maintenance. However, only the hosting and related costs were calculated to grow, at approximately 1 per cent annually, with the other categories remaining fixed from 2023 onward.

Additional costs related to the technology upgrade were not estimated

202. In its report on the final progress report of the Secretary-General on the enterprise resource planning project (A/76/7/Add.20), the Advisory Committee on Administrative and Budgetary Questions indicated that the maintenance support for the current suite of SAP products used by the Organization would expire in 2027. In order to keep pace with technological development, a transition to SAP S/4 HANA and related products would likely be required, which would bring additional costs to the Organization.

203. The Board noted that the Administration endorsed the upgrade to SAP Enhancement Package 8 at the final meeting of the Umoja Steering Committee on 4 May 2022, which was a technology upgrade, but its cost impact had not been taken into consideration with regard to the current total estimated cost of ownership.

204. The Administration conceded that there may be additional costs related to upgrades, but it was not able to qualify them as significant at the time of writing. The total cost of ownership would be re-evaluated and updated each year. The Administration would take into consideration upgrade costs when the technological road map had been clarified and funds were required for the following years.

205. The Board is of the view that at the beginning of the project, not only the direct costs, which were borne by the project budget, but also the total cost of ownership should have been estimated, monitored and reported, to ensure that the final expenditure does not exceed the total estimated cost of ownership. The current estimated amount of total cost of ownership may not reflect the total cost of Umoja during its life cycle, as it does not take into account the additional costs related to future technology upgrades. There is a risk that the final actual expenditure may exceed the current total estimated cost of ownership.

206. **The Board recommends that the Administration update the estimation of total cost of ownership by considering the cost impact of technology upgrades, once the technology path has been approved.**

207. The Administration accepted the recommendation.

VI. Overall assessment

A. General views

208. The Board audited the progress of the implementation of Umoja in 2021 and also conducted an independent assessment of the implementation status of the Umoja project, as requested by the Advisory Committee on Administrative and Budgetary Questions. The general views of the Board on the Umoja project are prepared based on the assertions by the Administration in the 13 progress reports of the Secretary-

General and the key audit findings in the previous progress reports of the Board, taking fully into account the requests made by the Advisory Committee and the requests made by the General Assembly in its related resolutions. Such general views do not cover all aspects of the Umoja project, but do cover the most significant aspects of the implementation of an enterprise resource planning project, from the perspective of the Board.

209. Umoja, as a global and integrated system across the Secretariat and other related entities, has provided crucial support and functionality to the Organization. In its final meeting, held on 4 May 2022, the Umoja Steering Committee declared the Umoja project closed on 31 December 2020. However, the Board identified several gaps in achieving all the objectives of Umoja project, including the integration of Umoja Extension 2 solutions, the adoption by users of the solutions linking the business with the resources, the quantitative analysis of time reduction and efficiency improvement, and access to reporting and analytics by Member States. The Board noted that a post-implementation review had not been conducted after the closure of the Umoja project. The Board is of the view that a review is important to determine whether business requirements and objectives have been met and what actions should be taken in the future.

210. Effective 1 January 2021, Umoja was mainstreamed into the Secretariat and a new governance model was introduced that would continually drive the continuous improvement of such a complex solution and better promote the adoption of Umoja by a large number of end users across the Organization. The Board noted that there were no finalized terms of reference to clearly define the shared responsibilities among responsible parties. The Board is of the view that clarifying roles and responsibilities is crucial to ensuring the effective governance of Umoja after mainstreaming.

211. The deployment of the Umoja project was delayed several times, compared with the original expected completion date of 2012. The actual expenditure of the Umoja project was $579.51 million by the end of 2021, which was a significant increase compared with the original projected cost of $248.31 million. The Board is of the view that the adjustments of functional content to evolving organizational needs, the ambitious but tight schedule, the lack of a detailed implementation plan and the inadequate clarification of the roles and responsibilities of the business units are main reasons for the delays.

212. Umoja Foundation and Extension 1 were completed in 2015 and 2018, respectively. Umoja Extension 2, comprising processes with significant scope for transformation and value addition to the Organization, was deployed by the end of 2020 to the entities agreed upon with the business owners. However, the Board noted that some intra- and inter-solution linkages under Umoja Extension 2 had not been established, and would be assessed as part of the continuous improvements model according to their business prioritization. A clear picture of Umoja's functional and geographical scope at the entity level was not yet available. The Board is of the view that a clear record of the scope of Umoja will serve as the basis for the communication of continuous improvements across the global Secretariat.

213. Umoja Extension 2 comprises many new complex functions within interdependent work streams and involves additional categories of users, making the United Nations solution one that goes beyond the functionality of a traditional enterprise resource planning system. Several continuous improvements and enhancements to Umoja Extension 2 were delivered in 2021 to meet business needs. The Board noted that the user adoption of some solutions in Umoja Extension 2 was not sufficient and user surveys for four solutions under Umoja Extension 2 had not been conducted. The Board is of the view that the Administration needs to conduct

user surveys continually to identify opportunities for continuous improvements, which could increasingly improve user experience.

214. The Administration made some enhancements to application controls in the areas of finance, human resources and supply chain management through change requests. The Board noted that the weaknesses in application controls affected the integrity and quality of the master data in human resources, grants and the vendor bank account. The Board is of the view that continually enhancing application controls is critical to improving system availability and effectiveness.

215. Umoja Analytics provides an opportunity for the Organization to further unlock the potential of Umoja data in the data-driven transformation envisioned by the data strategy of the Secretary-General in order to improve decision-making by senior managers and other end users, combining the use of interactive dashboards and dynamic reports to create powerful visualizations of data. The Board is of the view that the Administration should take further measures to assure the quality of data models for analytics in a cost-effective manner, including the filling of technical document gaps in the certified data models, and prioritizing the certification of data models that are used with high frequency.

216. The Administration also took action to manage the delivery of service requests through the production support dashboard using a holistic approach. The Board is of the view that the delivery of service requests did not include finalized prescribed key performance indicators to manage performance levels, and the production support standard operating procedure needs to be revised to define responsibilities and other matters resulting from the mainstreaming of Umoja.

217. Umoja training, using multiple course types and training resources, is an ongoing activity that enjoys steady course enrolment and completion, which facilitates the proficient use of Umoja among end users. However, the Board noted that the training resources were not integrated into one central repository, and some training courses had not been developed using advanced industry-standard design solutions based on different learning objectives. The Board is of the view that a detailed plan could facilitate the implementation of the Umoja learning strategy for 2021–2025 to address the current fragmentation of resources and further consolidate and enhance training effectiveness.

218. Multiple processes had been established to protect the information security of Umoja and minimize the risk profile for the system. However, the Board noted that the tests/exercises of the disaster recovery plan were not conducted periodically and some of the exercises did not meet the recovery time target. The business continuity plan and the disaster recovery plan were not periodically updated with due approval. High-level security risks identified were not eliminated or mitigated in a timely manner. The Board is of the view that Umoja security requires timely protection in terms of operational management.

219. The Umoja benefits realization plan was finalized in line with the benefits management framework of the United Nations. The Benefits Working Group was established to oversee the progress of benefits realization. The Board noted that the benefits review of Umoja Extension 2 solutions had not been conducted as planned.

220. The latest quantitative benefits presented in both the twelfth progress report of the Secretary-General (A/75/386) and the benefits realization plan in 2020 indicated that estimated cumulative benefits amounting to $624.4 million would have been realized by 2021. The Board is concerned that, because there has been no update on actual benefits and there is insufficient supporting documentation, it cannot be completely assured that the estimated cumulative benefits reflect the realized quantitative benefits.

221. The cumulative actual expenditure of $579.51 million for the period 2008–2021 was within the approved budget of the Umoja project. In order to form a large business case analysis, the total cost of ownership of Umoja had been estimated annually over its proposed operating life to identify all the lifetime costs since 2017, and the current estimate on total cost of ownership for Umoja had increased to $1,526.39 million. The Board is of the view that the current estimation does not take into account the additional costs involving future technology upgrades, which may result in a risk that the final actual expenditure may exceed the current estimate. The Umoja project represents a significant investment for the Organization, and still requires close and continuous monitoring on cost estimations for the future.

B. Lessons learned

222. Umoja brings important business transformation to the United Nations. It is important to take lessons learned from each phase of its deployment and apply them to future continuous improvements or other similar information technology projects. The report of the Advisory Committee on Administrative and Budgetary Questions on the final progress report of the Secretary-General on the enterprise resource planning project (A/76/7/Add.20) stated that the Advisory Committee recommended that the General Assembly request the Secretary-General to include, in the future, a section on lessons learned as part of the regular format of his progress reports on the Umoja system.

223. To better understand the lessons learned from the Umoja project, the Board, using the progress reports of the Secretary-General, the reports of the Board and current audit observations, sets out major lessons learned in project governance, project management and project operation, as seen below.

Project governance

224. **Organizational structure**. A successful implementation of an enterprise resource planning project should receive continuing support from senior management. Governance committees should play a proactive leadership role in directing and steering the project to meet its objectives.

225. **Accountability mechanism**. The responsibilities for directing, managing and delivering the project and the accountabilities at each level in the governance model should be clearly defined.

226. **Deployment strategy**. During implementation, an individual migration path should be designed for each entity to support deployment, as each entity has a different starting point in terms of existing process flows, legacy systems and governance structure.

Project management

227. **Planning and monitoring**. Scope, the availability of staff resources (skills) and financial requirements should be adequately estimated. A detailed implementation plan should be made up that includes clear information on project milestones, deliverables, tasks, activities and responsibilities. Partnership and coordination should be set up with the senior managers of business units.

228. **Change management**. For specific change strategies, a phased implementation approach and end-to-end process management should be adopted in order to fully achieve the objectives of improving productivity, lowering costs, reducing cycle times, increasing transparency and enhancing the quality of services.

229. **Business case**. A specific benefits realization plan should be set out as early as possible for the next large-scale information technology investment, and the quantitative and qualitative benefits should be kept up-to-date from project initiation to closure. The total cost of ownership should be estimated, monitored and reported to ensure that the final expenditure does not exceed the estimated total cost of ownership.

Project operation

230. **Customized development**. Customization requirements should be minimized by using a longer-term perspective and more predictable business demand analysis, so that the Organization can avoid unnecessary investment.

231. **Operational readiness**. A review of user readiness and organization readiness can better reveal some issues that need to be addressed before the project goes live, and be used for further improvements.

232. **Training**. Fragmented learning management platforms and training resources need to be integrated into one central repository for better training effectiveness.

233. **Information security**. The information technology system requires timely protection, including the timely elimination or mitigation of high risks, periodic disaster recovery tests and/or exercises, up-to-date information on business continuity planning and disaster recovery planning with periodic review and appropriate approval.

C. Looking forward

234. To continue to address ever more complex and interconnected challenges, the United Nations needs to reinforce the capabilities of adaptation and innovation. After a more than 12-year implementation, Umoja has leaped into a new journey of continuous improvements to support the Organization as it serves the peoples of the world. Given that the annual audit for Umoja ended in 2022, the Board would like to use the lessons learned from the multi-year implementation of Umoja to promote long-term thinking about Umoja's future to ensure that it continues to support good governance, effective management and high-quality service.

More flexible as a promoter for governance progress

235. In accordance with the vision of Umoja as promoting organizational change, including organizational restructuring, results-based management and empowerment, Umoja needs to drive digital and technological transformation in an agile manner to align governance evolution with the Organization's long-term needs. Specifically, Umoja, as a core enterprise system, needs to support the capacity-building critical to the reform agenda of the Secretary-General, enhance accountability and transparency, and reinforce an effective internal control environment so that the United Nations can drive strategic initiatives in pursuit of its purposes.

More proactive as a catalyst for business transformation

236. Umoja, as an integrated system that links business and resources, has a wide-ranging functionality that enables the management of the Organization's financial, human and physical resources and supports improved resource allocation. To ensure that the United Nations continues to reap the benefits of its enterprise resource planning solution, Umoja will be continuously enhanced to accelerate the progress of business transformation. By promoting a data-driven culture that is focused on achieving excellence in the areas of stronger data and analytics capabilities, this

process of continuous enhancement will help to deliver benefits and improve performance. While considered as fully unlocking the data and analytics potential of the United Nations, Umoja, as the Organization's primary source of data, needs to provide insightful data that includes more internal and external key data sources and predictive and prescriptive analytics, as well as highly interactive reports to improve business controls, monitoring, reporting and decision-making.

More sustainable as an accelerator for service optimization

237. The use of new technologies in streamlining processes and controls, such as artificial intelligence, deep learning, blockchain and robotic process automation, facilitates the innovation of service delivery in a smarter, more efficient way. As a platform for innovation, Umoja is expected to keep pace with technological advances, and align service upgrades with continuous improvements so that the solutions remain up-to-date and fit for purpose. For better user adoption, Umoja will focus on expanding more potential users, such as staff members, Member States, business partners and beneficiaries, with the appropriate delegation of authority, to ensure that solutions continue to remain justified by business needs. With regard to technical upgrades and related cost implications, it is also hoped that Umoja will provide affordable and secure solutions so that stakeholders are able to control the costs and the risks of system and data for continuous improvements.

VII. Acknowledgement

238. The Board wishes to express its appreciation for the cooperation and assistance extended to its staff by the Under-Secretary-General for Management Strategy, Policy and Compliance, the Under-Secretary-General for Operational Support and the Director of the Enterprise Resource Planning Solution Division, together with the members of their staff.

(*Signed*) Jorge **Bermúdez**
Comptroller General of the Republic of Chile
Chair of the Board of Auditors

(*Signed*) **Hou** Kai
Auditor General of the People's Republic of China
(Lead Auditor)

(*Signed*) Kay **Scheller**
President of the German Federal Court of Auditors

21 July 2022

Annex

Status of implementation of recommendations up to the year ended 31 December 2020

No.	Audit report year	Report reference	Recommendation of the Board	Administration's response	Board's assessment	Status after verification			
						Implemented	Under implementation	Not implemented	Overtaken by events
1	2012	A/68/151, para. 16	The Board recommends that the Administration design, communicate and implement a plan within each business area to exploit the defined benefits of up-to-date and consolidated data from the enterprise resource planning system, including how it intends to realize both qualitative and quantitative benefits of improved information.	The benefits realization plan was approved in 2020, and the Benefits Working Group established a mechanism for benefits realization. The United Nations business intelligence team within the Enterprise Resource Planning Solution Division also worked with business areas to capture and transform data into analytical and operational reports covering specific and broad business use cases.	Given that the plan was approved and the Benefits Working Group established, the recommendation is considered implemented.	X			
2	2012	A/68/151, para. 26	The Board recommends that the Administration design a robust methodology which clearly defines: (a) the current status of operational performance in each business unit regarding time, cost, quality; (b) the level of future performance to be achieved post-implementation; (c) the approach and investment involved to achieve the future performance target; and (d) how the benefit achieved will be measured and reported.	The benefits realization plan was approved in 2020. The Benefits Working Group was created and established a benefits realization framework and supporting processes to oversee the progress of Umoja benefits relating to continuous improvement and the implementation of Umoja Extension 2 solutions.	Given that the plan was approved, and the Benefits Working Group and its benefits realization mechanism established, the recommendation is considered implemented.	X			
3	2015	A/71/180, summary, para. 23 (c)	The Board recommends that the Administration ensure business units are supported in the application of the new methodology developed to identify and realize the benefits from improved ways of working; this should include providing access to skills and capability in operational improvement, and holding business areas to account for delivering the expected benefits.	Business area transactional experts worked with users to identify needs and, with the Capacity Development and Operational Training Service, worked to develop training materials to give end users the understanding and skills needed. The business groups committed to ownership and delivery of the benefits.	Given that the training materials were developed, the recommendation is considered implemented.	X			

| No. | Audit report year | Report reference | Recommendation of the Board | Administration's response | Board's assessment | Status after verification ||||
						Implemented	Under implementation	Not implemented	Overtaken by events
4	2016	A/72/157, para. 71	The Board also recommends that the updated benefits realization plan, after approval by the General Assembly, be frozen to serve as the baseline for the monitoring of the future benefit realization that will arise from the use of Umoja.	The benefits realization plan was approved in 2020, and the Benefits Working Group was established to oversee the progress of Umoja benefits realization relating to continuous improvement and the implementation of Umoja Extension 2 solutions.	Given that the plan was approved and the Benefits Working Group established, the recommendation is considered implemented.	X			
5	2017	A/73/169, para. 38	The Board recommends that: (a) The Administration should develop an Umoja benefit realization plan, with an emphasis on improvements resulting from Umoja-based business processes and monitoring of the processes to leverage further benefit realization; (b) The Administration should maintain adequate documentation supporting the computation of quantitative figures for benefit realization; (c) The Administration should identify a coordinating division/unit as a primary process owner of benefit realization responsible for (i) monitoring the process of benefit realization, (ii) engaging stakeholders of the various units and divisions, and (iii) continuous monitoring.	The provision of documentation supporting the computation of quantitative data was the responsibility of the business areas, which were to research and set a baseline for any enhancements with quantitative benefits and submit it to the Benefits Working Group for tracking.	Given that there was no documentation provided to support the computation of previous quantitative figures for benefits realization, the recommendation is considered to be under implementation.		X		
6	2017	A/73/169, para. 57	The Board recommends that the Administration complete the clean-up exercise in time for the annual time certification exercise.	The results as at 29 April 2022 were provided, and showed that only 57 cases of negative leave balances remained. The Umoja human resources support team is reviewing all cases of negative leave balances and reaching out to the entities for action as required.	Given that the clean-up has not been completed and reviewed, the recommendation is considered to be under implementation.		X		

No.	Audit report year	Report reference	Recommendation of the Board	Administration's response	Board's assessment	Status after verification			
						Implemented	Under implementation	Not implemented	Overtaken by events
7	2017	A/73/169, para. 86	The Board also recommends that the Administration take measures to ensure that continuing access to Umoja by all separated and retired employees be terminated and that a policy be put in place to regulate continued access by separated employees to self-service requirements, as needed.	The review of specific separated and retired employees that still have access to Umoja was done by the business owner regularly. Automatic deprovisioning was discussed in the functional subgroup meeting and endorsed by the Umoja Change Board on 12 April 2022. Business requirements were created for automatic deprovisioning.	Given that a similar recommendation appeared in paragraph 120 of A/75/159, the recommendation is considered to have been overtaken by events.				X

8	2017	A/73/169, para. 109	The Board recommends that:
			    (a) Umoja process owners should deprovision already assigned conflicting roles;
			    (b) The segregation of duties rules should be automated by the Umoja process owners in the user access provisioning application;
			    (c) A standard procedure be laid down for the periodic review of any documented conflicts overridden by appropriate business heads. The ability to override segregation of duties should be documented and controlled by means of periodic reviews.
				The Administration provided the following update: (a) conflicting roles could not be assigned in the user access provisioning tool unless explicitly documented, and even then were only for medium and low priority roles; (b) the segregation of duties module was fully implemented in the user access provisioning tool; and (c) the functional subgroup leads were updating the various sources to synchronize them all.	Given that the Administration is still working on the standard procedure, the recommendation is considered to be under implementation.		X		

9	2017	A/73/169, para. 158	The Board recommends that the Administration prescribe a first-call resolution rate and an action plan to achieve the same within a reasonable time frame.	The Administration prescribes a target first-call resolution rate of 57 to 63 per cent, based on a 60 per cent three-year average (from 2019 to 2021), with a standard deviation of +/- 5 per cent. The rate would be updated annually based on the preceding three-year average.	Given that a similar recommendation appeared in paragraph 145 of A/76/131, the recommendation is considered to have been overtaken by events.				X
10	2018	A/74/153, para. 20	The Board recommends that the governance committees stay engaged with project developments, regularly review and monitor the key issues related to project implementation and play a proactive leadership role in	The recommendation was related to Umoja Extension 2 deployment and project timelines. Umoja Extension 2 functionality was deployed and the Umoja project closed at the end of December 2020. There was no further Umoja Extension 2 functionality of	Given that a similar recommendation appears in paragraph 23 of A/75/159, the recommendation is considered to have been overtaken by events.				X

No.	Audit report year	Report reference	Recommendation of the Board	Administration's response	Board's assessment	Implemented	Under implementation	Not implemented	Overtaken by events
							Status after verification		
			steering the project to its completion.	the originally mandated processes to be deployed, and the Umoja project no longer existed.					
11	2018	A/74/153, para. 28	The Board recommends that the Administration prepare project plans clearly defining individual tasks, their interdependencies, critical path and detailed task-wise time schedule and monitor them for assistance in the completion of projects in accordance with the schedule.	The Umoja project management office enhanced the 2019 and 2020 project plans. The level of detail maintained in the project plans was determined by the Organization to be sufficient to efficiently plan and monitor the implementation of the subprojects, which were successfully concluded with the closure of the project phase at the end of 2020.	Given that this recommendation was reiterated in paragraph 31 of A/75/159, the recommendation is considered to have been overtaken by events.				X
12	2018	A/74/153, para. 50	The Board recommends that the Administration continuously review the risks to achieving the full deployment of Umoja (process-wise, application functionality-wise, entity-wise and their envisaged integration) by 31 December 2019 and implement appropriate mitigation strategies.	Risks associated with the effective deployment of the Umoja Extension 2 functionality were overtaken by events through the successful deployment of the remaining functionality and the closure of the project. As at 1 March 2022, the last four risks being monitored by the Umoja Steering Committee had been mitigated.	Given that this recommendation was reiterated in paragraph 77 of A/75/159, the recommendation is considered to have been overtaken by events.				X
13	2018	A/74/153, para. 52	The Board recommends that the Administration review the identified business readiness gaps and take steps to address these gaps in a timely manner.	The Umoja project deployed the last of the Umoja Extension 2 functionalities by December 2020 and was closed. Operational readiness reviews for Umoja Extension 2 were provided in support of this response. The Enterprise Resource Planning Solution Division began operations on 1 January 2021. The hypercare and stabilization period for Umoja Extension 2 was completed.	Given that the Umoja project phase came to an end on 31 December 2020, the Enterprise Resource Planning Solution Division began operations on 1 January 2021 and the hypercare and stabilization period for Umoja Extension 2 ended, the recommendation is considered to have been overtaken by events.				X
14	2018	A/74/153, para. 68	The Board recommends that the Administration take suitable steps to fill the vacant positions early and provide appropriate training to the new recruits to help to	From 2017 to 2020, 43 recruitments were carried out. This is a priority of the Enterprise Resource Planning Solution Division. It is also important to note that the three D-1 positions were filled recently,	Given that a new related recommendation is proposed in the Board's report for 2021 and the Umoja project phase was closed at the end of December 2020, the				X

No.	Audit report year	Report reference	Recommendation of the Board	Administration's response	Board's assessment	Status after verification			
						Implemented	Under implementation	Not implemented	Overtaken by events
			address the complexities of project implementation.	providing helpful upper-level management to the team and allowing the Director to focus on strategic objectives. As the three staff members were promoted from the Enterprise Resource Planning Solution Division, it resulted in three vacant P-5 positions.	recommendation is considered to have been overtaken by events.				
15	2018	A/74/153, para. 69	The Board recommends that the Administration continue to provide the levels of capacity-building support to the project team personnel required to achieve the objective of reducing dependency on consultants, to the extent possible.	Between mid-2016 and September 2021, 1,484 technical training courses, involving SAP certification in most cases, had been provided. These courses included individual training that leveraged the different learning methods offered by SAP Training. In addition to individual technical training, seven focused workshops were also delivered by SAP for members of the enterprise resource planning team between 2017 and 2020.	Given the efforts to provide technical training to Umoja project team/Enterprise Resource Planning Solution Division personnel, the recommendation is considered implemented.	X			
16	2018	A/74/153, para. 70	The Board recommends that the Administration plan and schedule the training to optimize the available time of the project team and plan for the separation of roles delineated for tier-3 production support and roles for future deployment, in order to ease the pressure on the available resources.	Tier-3 support was provided by each team in the Enterprise Resource Planning Solution Division. The competing priorities of training in Umoja Extension 2 deployment (i.e. the "multiple concurrent deployments" outlined in A/74/153, para. 67) were successfully overcome given that the Umoja Extension 2 functionality was fully deployed by 31 December 2020.	Given that the Umoja project phase came to an end on 31 December 2020 and the Enterprise Resource Planning Solution Division began operations on 1 January 2021, the recommendation is considered to have been overtaken by events.				X
17	2018	A/74/153, para. 82	The Board recommends that the Administration automate the execution of the main payment proposal in Umoja and minimize the exceptions for which the execution of an ad hoc payment proposal may be required.	All tasks required from the Enterprise Resource Planning Solution Division were completed. The solution had been with the business for user verification testing since 3 November 2020. The Enterprise Resource Planning Solution Division has no control over when the business decides to test.	Given that action is under way, the recommendation is considered to be under implementation.		X		

No.	Audit report year	Report reference	Recommendation of the Board	Administration's response	Board's assessment	Status after verification			
						Implemented	Under implementation	Not implemented	Overtaken by events
18	2018	A/74/153, para. 83	The Board recommends that the Administration review the master data for banking details to identify and correct cases, where necessary, of multiple vendors associated with the same bank account.	All tasks required from the Enterprise Resource Planning Solution Division were completed. The master data management team constructed a dashboard to facilitate the identification and removal of duplicates. The business must test the dashboard and continue the clean-up work until fully resolved. The Enterprise Resource Planning Solution Division has no control over when the business decides to test.	Given that action is under way, the recommendation is considered to be under implementation.		X		
19	2018	A/74/153, para. 84	The Board recommends that the Administration take measures to minimize the manual interventions in the Umoja-SWIFT interface to ensure the seamless transfer of structured message formats.	This change was fully implemented in November 2021. After completion of quality assurance testing, pre-production testing was executed, completed and signed off by Treasury colleagues. The testing performed was based on a comprehensive list of testing scenarios defined by the Treasury to account for all changes made to the interface solution.	Given that action was taken, the recommendation is considered implemented.	X			
20	2018	A/74/153, para. 113	The Board recommends that the Administration define and adopt target timelines for processes that have stabilized to achieve first-call resolution and for the overall first-call resolution rate for incidents and requests for services.	The Administration prescribed a target first-call resolution rate of 57 to 63 per cent, based on a 60 per cent three-year average (from 2019 to 2021), with a standard deviation of +/- 5 per cent. The rate would be updated annually based on the preceding three-year average.	Given that a similar recommendation appeared in paragraph 145 of A/76/131, the recommendation is considered to have been overtaken by events.				X
21	2018	A/74/153, para. 114	The Board recommends that the Administration identify critical transactions not included under the continuous improvements monitoring programme and implement appropriate measures to monitor their performance.	The continuous improvement monitoring programme was successfully concluded in 2019. A robust change governance framework was established to track ongoing continuous improvements and related benefits, as detailed in the twelfth progress report of the Secretary-General on the enterprise resource planning project (A/75/386).	Given that a similar recommendation appeared in paragraph 154 of A/76/131, the recommendation is considered to have been overtaken by events.				X

No.	Audit report year	Report reference	Recommendation of the Board	Administration's response	Board's assessment	Implemented	Under implementation	Not implemented	Overtaken by events
							Status after verification		
22	2018	A/74/153, para. 115	The Board recommends that the Administration prepare a plan to converge all training material on one common platform. The Board also recommends that the Administration prepare and deploy a comprehensive training plan and material for ensuing Umoja Extension 2 functionalities.	The Administration has been evaluating various functionalities of iLearn Umoja and the Blue Line of the United Nations System Staff College for organizational learning needs. The Administration has begun preparations to converge all training material on a recommended common platform(s), including learning materials for Umoja Extension 2 functionalities.	Given that the mainstreaming of Umoja training and a new related recommendation is proposed in the Board's report for 2021, the recommendation is considered to have been overtaken by events.				X
23	2018	A/74/153, para. 144	The Board recommends that estimates for indirect costs need to be reassessed by considering a uniform standard cost across all process owners, avoiding computational errors and considering the right baseline for continuous improvements.	In the final progress report of the Secretary-General on the enterprise resource planning project (A/76/386), the indirect costs from 2022 onward were calculated as 15 per cent of direct costs.	Given that the indirect costs estimation model has been adjusted, the recommendation is considered to have been overtaken by events.				X
24	2018	A/74/153, para. 146	The Board recommends that the Administration prepare a comprehensive estimate of maintenance costs covering all object heads of expenditure for the period up to 2030 to present a full picture of total cost of ownership to the General Assembly.	The Office of Information and Communications Technology provided estimated maintenance costs from 2023 to 2030 by class of expenditure. Maintenance costs were broken down into four cost categories in the estimation model, including connectivity, contractual services, hosting and related, and licence and maintenance.	Given that a new related recommendation is proposed in the Board's report for 2021, the recommendation is considered to have been overtaken by events.				X
25	2018	A/74/153, para. 156	The Board recommends that the Administration prioritize the preparation and putting in motion of the Umoja mainstreaming plan. The Board also recommends that the plan should identify a robust, nimble and effective post mainstreaming Umoja support structure and cater to the needs of Umoja Extension 2 stabilization, production support, continuous improvements and the development	The mainstreaming plan was completed as at 31 December 2021. A plan with key milestones was provided.	Given that a similar recommendation appeared in paragraph 212 of A/76/131, the recommendation is considered to have been overtaken by events.				X

No.	Audit report year	Report reference	Recommendation of the Board	Administration's response	Board's assessment	Status after verification			
						Implemented	Under implementation	Not implemented	Overtaken by events
			of the skills necessary to carry out these responsibilities.						
26	2019	A/75/159, para. 23	The Board reiterates the recommendation that the governance committees engage more closely and regularly with the implementation of the Umoja project, in particular the changes necessitated while deploying Umoja Extension 2 subprojects and overcoming the hurdles in adhering to the project timelines, in order to enable a concerted decision to guide project deployment.	The recommendation was related to Umoja Extension 2 deployment and project timelines. Umoja Extension 2 functionality was deployed and the Umoja project was closed at the end of December 2020. There was no further Umoja Extension 2 functionality of the originally mandated processes to be deployed, and the Umoja project no longer existed.	Given that the Umoja project was closed at the end of December 2020, the recommendation is considered to have been overtaken by events.				X
27	2019	A/75/159, para. 31	The Board reiterates the recommendation that the Administration prepare project plans clearly defining individual tasks, their interdependencies, critical path and detailed task-wise time schedule and monitor them for assistance in the completion of projects in accordance with the schedule.	The Umoja project management office enhanced the 2019 and 2020 project plans. The level of detail maintained in the project plans was determined by the Organization to be sufficient to efficiently plan and monitor the implementation of the subprojects, which were successfully concluded with the closure of the project at the end of 2020.	Given that shortcomings still existed in the utilization of the project management tool in 2021, the recommendation is considered to be under implementation.		X		
28	2019	A/75/159, para. 77	The Board recommends that the Administration continuously review the risks to achieving the full deployment of Umoja by 31 December 2020 and implement timely and appropriate mitigation strategies.	Risks associated with the effective deployment of Umoja Extension 2 functionality by 31 December 2021 were overtaken by events through the successful deployment of remaining functionality and the closure of the project. As at 1 March 2022, the last four risks being monitored by the Umoja Steering Committee had been mitigated.	Given that there were still seven unresolved risks in "Rapport" as at 5 May 2022, the recommendation is considered to be under implementation.		X		
29	2019	A/75/159, para. 79	The Board recommends that the Administration update the risk register at the time of identification of all the anticipated risks, plan appropriate mitigation strategies and monitor the	The updated procedure for managing significant risks was noted in the presentation to the final meeting of the Umoja Steering Committee and was recorded in the minutes of the meeting. Risk monitoring in the	Given the inadequate use of risk management tools, the recommendation is considered to be under implementation.		X		

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			mitigation measures, keeping the risk register as the central document for the management of risks.	Umoja project and through the start of the Enterprise Resource Planning Solution Division has been continuous and ongoing and will continue apace.					
30	2019	A/75/159, para. 87	The Board recommends that the Administration establish a mechanism for the regular review of appendices to the licence agreement to identify the ones that are not required and explore formally amending/terminating them, and continue to review financial risks on account of indirect data access.	The Enterprise Resource Planning Solution Division and the Procurement Division met regularly with SAP to negotiate the contract as necessary. A thorough review, including of licence arrangements, was undertaken in 2021.	Given that the licence agreements were reviewed and the amendment to the licence agreement was signed in 2021, the recommendation is considered implemented.	X			
31	2019	A/75/159, para. 93	The Board recommends that the Administration take steps to incorporate validation controls for all important fields in employee master data, where technically feasible.	The Administration reviewed possible areas to include validation controls in employee master data. In order to follow SAP best practices, and given the technical considerations, all possible validations had been put in place.	Given that some validation controls of human resources master data were under development, the recommendation is considered to be under implementation.		X		
32	2019	A/75/159, para. 116	The Board recommends that the Administration explore preparing a standard mapping of Umoja user roles with the function and type of authority delegated under the new delegation of authority architecture, which require a particular Umoja role to effectively carry out the delegated functions.	The Umoja roles guide mapped out Umoja user roles with the functions and types of authority delegated. The Umoja roles guide was updated when the new delegation of authority framework was rolled out, and the Business Transformation and Accountability Division continued to flag issues and resolve them with policy owners as and when needed.	Given that the Umoja user roles were mapped out and included function and type of authority, the recommendation is considered implemented.	X			
33	2019	A/75/159, para. 119	The Board recommends that the Administration complement the existing user access provisioning mechanism with measures to grant Umoja roles requiring delegation of authority, in order to address the disconnect between delegations of authority and Umoja roles in the	It is the responsibility of the Security Liaison Officer and the functional approver to make sure users do not have rescinded or invalid delegations of authority. The Business Transformation and Accountability Division, as a second line of defence, also monitors cases of rescinded	Given that the Administration implemented a role validation mechanism in its periodic business operation report, the recommendation is considered implemented.	X			

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			case of rescinded delegations and reflect the validity period and approved threshold for delegations and the need for user roles with global and all-entity rights.	delegations that leave a Umoja role active without a delegation of authority.					
34	2019	A/75/159, para. 120	The Board recommends that the Administration put in place a strong internal control mechanism to ensure the deprovisioning of user roles in Umoja at the time of separation of staff and appropriate updating of the user roles in Umoja when they leave their functions.	The review of specific separated and retired employees that still have access to Umoja is done regularly by the business owner. Automatic deprovisioning was discussed in the functional subgroup meeting and endorsed by the Umoja Change Board on 12 April 2022. Business requirements were created for automatic deprovisioning.	Given that the mechanism for automatic deprovisioning has not operated continuously and effectively for enough time, the recommendation is considered to be under implementation.		X		
35	2019	A/75/159, para. 132	The Board recommends that the Administration ensure that the resolution of incidents and service requests for all tiers can be easily monitored in the system and take necessary action so that all requests are closed within the target resolution time.	The Administration implemented the Umoja production support dashboard, which allowed all Umoja iNeed tier managers to easily monitor open tickets, backlogged tickets and compliance with the current service-level agreement. The Administration is reviewing the service-level agreement, given the maturity of the deployed Umoja solution and the differences in actions required to close requests for services versus incidents.	Given that the resolution of service requests for tiers can be monitored through the Umoja production support dashboard and that a new recommendation related to the service-level agreement is proposed in the Board's report for 2021, the recommendation is considered to have been overtaken by events.				X
36	2019	A/75/159, para. 137	The Board recommends that the Administration put in place a clear governance structure for the continuous improvement monitoring programme, with clearly defined responsibilities, and continue working on identifying critical business processes and including them in the programme.	The continuous improvement monitoring programme was successfully concluded in 2019. A robust change governance framework was established to track ongoing continuous improvements and related benefits, as detailed in the twelfth progress report of the Secretary-General on the enterprise resource planning project (A/75/386).	Given that this recommendation was reiterated in paragraph 154 of A/76/131, the recommendation is considered to have been overtaken by events.				X

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37	2019	A/75/159, para. 143	The Board reiterates the recommendation that the Administration prepare a comprehensive training plan for the total number of training courses to be hosted on iLearn Umoja for Umoja Extension 2 functionalities and make available all training material on iLearn Umoja.	This recommendation reiterates the recommendation in paragraph 115 of A/74/153.	Given that the mainstreaming of Umoja training and a new related recommendation is proposed in the Board's report for 2021, the recommendation is considered to have been overtaken by events.				X
38	2019	A/75/159, para. 144	The Board recommends that the Administration take action to develop and use tools to assess whether the learner can use Umoja functionalities effectively after the training programme.	The Administration has been developing the "Learning Impact Evaluation Framework" which would be finalized by the end of 2022.	Given that action is under way, the recommendation is considered to be under implementation.		X		
39	2019	A/75/159, para. 149	The Board recommends that the Benefits Working Group be constituted to commence work on benefits realization for all phases at the earliest and that the timelines for the benefits realization plan be reviewed to assess whether Umoja Extension 2 benefits can be evaluated as planned in the given timelines.	The Benefits Working Group was created to oversee the progress of Umoja benefits realization. A timetable for the review of Umoja Extension 2 was proposed and the business areas involved would work through the Benefits Working Group to evaluate and report on benefits realization.	Given that a new related recommendation is proposed in the Board's report for 2021, the recommendation is considered to have been overtaken by events.				X
40	2019	A/75/159, para. 178	The Board also reiterates the recommendations that the mainstreaming plan should identify a robust, nimble and effective post-mainstreaming Umoja support structure and cater to the needs of Umoja Extension 2 stabilization, production support, continuous improvements and the development of the skills necessary to carry out these responsibilities	This recommendation reiterates the recommendation in paragraph 156 of A/74/153. The mainstreaming plan was complete as at 31 December 2021. A plan with key milestones was provided.	Given that a similar recommendation appeared in paragraph 212 of A/76/131, the recommendation is considered to have been overtaken by events.				X

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41	2020	A/76/131, para. 28	The Board recommends that the Administration report Umoja project updates to the Management Committee in a timely manner, in particular concerning issues related to the final status of Umoja Extension 2, additional integration and enhancement and continuous improvements.	The minutes of the Management Committee indicated that the Committee agreed to receive updates from the Enterprise Resource Planning Solution Division twice per year. In its next meeting, to take place shortly, the Management Committee will be presented with the request of the Advisory Committee on Administrative and Budgetary Questions to be informed more than twice per year.	Given that the Administration reported to the Management Committee only once in 2021, the recommendation is considered to be under implementation.		X		
42	2020	A/76/131, para. 77	The Board recommends that the Administration assess the feasibility of further integrations among Umoja Extension 2 solutions and monitor the implementation status of those integrations as they are identified, assessed and prioritized.	The deployment of Umoja Extension 2, comprising 41 per cent of Umoja processes, was completed in 2020. Additional integration and other enhancement opportunities identified during the design and development phases are being pursued as part of business-driven continuous improvements through the governance structure.	Given that some integrations identified in the annual progress report have not yet been established, and the action is under way, the recommendation is considered to be under implementation.		X		
43	2020	A/76/131, para. 90	The Board recommends that the Administration make sure that the documentation required for each step of software development is prepared in a timely manner, and that it create a project management handbook for the continuous improvement initiatives for the Umoja system.	The totality of the documents shared demonstrates a robust governance and management structure that the Enterprise Resource Planning Solution Division adheres to in carrying out its objectives of maintaining the Umoja system as fit for purpose, supporting and implementing continuous improvements, and deploying Umoja Analytics.	The Board received the proposed terms of reference for the Umoja Change Board and the Umoja Change Control Board; however, the project management handbook for continuous improvement was not created. The recommendation is considered to be under implementation.		X		
44	2020	A/76/131, para. 96	The Board recommends that the Administration continue to implement the cybersecurity action plan to protect Umoja system security and establish a mechanism to ensure broad implementation of and accountability for the plan.	The Enterprise Resource Planning Solution Division implemented the cybersecurity action plan items, and all platform systems on SAP were architecture compliant systems that had adequate information security.	Given that the cybersecurity action plan was implemented, the recommendation is considered implemented.	X			

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45	2020	A/76/131, para. 105	The Board recommends that the Administration conduct the disaster recovery test on a periodic basis and incorporate lessons learned and corrective actions in disaster recovery plan updates.	Lessons learned were documented and will be included in the next Umoja disaster recovery exercise scheduled for the fourth quarter of 2022.	Given that the recommendation has been partly implemented, the recommendation is considered to be under implementation.		X		
46	2020	A/76/131, para. 111	The Board recommends that the Administration take steps to enhance the validation control that restricts the ability to purchase firearms and ammunition using the low value acquisition process.	The enhancement (validation) was successfully tested in non-production environments and migrated to the production environment on 10 December 2021.	Given that action has been taken, the recommendation is considered implemented.	X			
47	2020	A/76/131, para. 117	The Board reiterates its previous recommendation that the Administration analyse the negative balances identified by the Board for each type of leave quota and rectify the Umoja human capital management module through change request(s), as applicable.	The results as at 29 April 2022 were provided, and showed that only 57 cases of negative leave balances remained. The review and clean up were to be completed by 13 May 2022. The Umoja human resources support team is reviewing all cases of negative leave balances and reaching out to entities for action as required.	Given that the clean-up has not been completed and reviewed, the recommendation is considered to be under implementation.		X		
48	2020	A/76/131, para. 123	The Board recommends that the Administration identify an organizational unit and process responsible for ensuring that the Umoja roles guide, the security liaison officer workbook and the user access provisioning configuration are up to date and fully complement each other.	An organizational unit, in the form of a new functional subgroup for user access, was identified and agreed by the other functional subgroups and approved by the Umoja Change Board on 12 April 2022.	Given that an organizational unit was identified as responsible, the recommendation is considered implemented.	X			
49	2020	A/76/131, para. 124	The Board also recommends that the Administration perform the oversight function for role provisioning, including monitoring the segregation of duties and reporting exceptions.	The Administration identified an organizational unit, in the form of a new functional subgroup for user access, to perform the oversight function, which was agreed by the other functional subgroups and approved by the Umoja Change Board on 12 April 2022.	Given that the mechanism has not been operating continuously and effectively for enough time, the recommendation is considered to be under implementation.		X		

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50	2020	A/76/131, para. 129	The Board recommends that the Administration, in coordination with business owners, strengthen regular monitoring of delegation of authority to prevent the granting of Umoja roles without appropriate delegation of authority.	The Business Transformation and Accountability Division implemented the recommendation through the strengthening of quarterly reporting and follow up with entities holding Umoja roles that lacked delegations.	Given that the Business Transformation and Accountability Division continuously monitors compliance, the recommendation is considered implemented.	X			
51	2020	A/76/131, para. 136	The Board recommends that the Administration ensure that all the necessary documents for new content in the United Nations business intelligence certified layer are produced as part of the business intelligence process and that it retroactively fills the technical document gaps for reference in future updates.	All necessary documents for new content in the United Nations business intelligence certified layer are produced as part of the United Nations business intelligence process. High-usage models were currently under review and necessary documentation gaps will be filled, as required.	Given that new certified report models have lacked necessary documents since the most recent audit and the retroactive filling of the technical document gaps is under way, the recommendation is considered to be under implementation.		X		
52	2020	A/76/131, para. 145	The Board recommends that the Administration prepare a detailed plan to achieve a prescribed first-level resolution rate calculated on the basis of service requests (not just incidents) and a prescribed overall resolution rate for all service requests received to assess the performance of production support and allocate resources to the different tiers.	Detailed live reporting dashboards provided up-to-date and ongoing monitoring of resolutions by each tier. These tools enabled managers to make decisions based on near real-time data and develop performance targets for the service desks, as was recently done by the Enterprise Resource Planning Solution Division.	Given that the first-level resolution is not prescribed by a formal approval document and the performance targets are under development, the recommendation is considered to be under implementation.		X		
53	2020	A/76/131, para. 146	The Board also recommends that the Administration evaluate the consolidation and harmonization of tier 1 with tier 2a and prepare a time-bound plan for implementation based on the outcome of the evaluation.	The recommendation was addressed by redefining responsibilities for tier 2a in the Umoja Support Centre after the unification of the Unite Service Desk and Umoja Support Centre reporting lines in 2019.	Given that action has been taken, the recommendation is considered implemented.	X			

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					Status after verification				
54	2020	A/76/131, para. 154	The Board reiterates the recommendation that the Administration put in place a clear governance structure for the continuous improvement monitoring programme, with clearly defined responsibilities, and that it continues working on identifying critical business processes and including them in the programme.	This recommendation reiterates the recommendation in paragraph 137 of A/75/159.	Given that the continuous improvement monitoring programme did not work in 2021, but efforts to establish a governance structure were noted, the recommendation is considered to be under implementation.		X		
55	2020	A/76/131, para. 162	The Board recommends that the Administration conduct a survey for user adoption of the iLearn Umoja forum and evaluate the utilization of this training resource.	The Administration launched Umoja training needs assessment surveys in 2019, and again in the first quarter of 2022 (ongoing), which included questions on the use of forums under iLearn Umoja.	Given that action is under way, the recommendation is considered to be under implementation.		X		
56	2020	A/76/131, para. 167	The Board recommends that the Administration prepare a comprehensive training plan for all Umoja Extension 2 functionalities and that it host all Umoja Extension 2 training materials, where possible, in one central location.	This recommendation reiterates the recommendations in paragraph 115 of A/74/153 and paragraph 143 of A/75/159.	Given that the mainstreaming of Umoja training and a new related recommendation is proposed in the Board's report for 2021, the recommendation is considered to have been overtaken by events.				X
57	2020	A/76/131, para. 171	The Board recommends that the Administration make an overall assessment of the training resources and training needs of Umoja users and prepare a comprehensive plan for integrating the training resources of Umoja that are currently on different platforms.	The Administration has been evaluating various functionalities of iLearn Umoja and the Blue Line of the United Nations System Staff College for organizational learning needs. Upon completion of data collection, the Administration will prepare a plan to converge all training material on a recommended common platform(s), including learning materials for Umoja Extension 2 functionalities.	Given that a new related recommendation is proposed in the Board's report for 2021, the recommendation is considered to have been overtaken by events.				X

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58	2020	A/76/131, para. 182	The Board recommends that the Administration reflect the updated quantitative benefits in the next progress report.	The benefits owner is accountable for the quantitative benefits identification and calculation, and the Benefits Working Group will be responsible for ongoing measurement and tracking. Quantitative benefits will be reported through the benefit owner's budget fascicle in the future.	Given that neither updated nor revised quantitative benefits were shown in the final progress report, the recommendation is considered to be under implementation.		X		
59	2020	A/76/131, para. 206	The Board recommends that the Administration update the estimation of maintenance costs with more detailed cost information in the next progress report.	The Office of Information and Communications Technology provided estimated maintenance costs from 2023 to 2030 by class of expenditure. Maintenance costs were broken down into four cost categories in the estimation model, including connectivity, contractual services, hosting and related, and licence and maintenance.	Given that a new related recommendation is proposed in the Board's report for 2021, the recommendation is considered to have been overtaken by events.				X
60	2020	A/76/131, para. 212	The Board recommends that the Administration set up specific indicators to monitor the progress of implementation of the mainstreaming plan.	The mainstreaming plan was complete as at 31 December 2021. A plan with key milestones was provided.	Given that action is under way and the mainstreaming plan provided was incomplete, the recommendation is considered to be under implementation.		X		
			Total number of recommendations			**60**	**14**	**23**	**–**	**23**
			Percentage of the total number of recommendations			**100**	**24**	**38**	**–**	**38**