



General Assembly

Distr.: General
22 July 2021

Original: English

Seventy-sixth session

Item 135 of the provisional agenda*

**Financial reports and audited financial statements, and
reports of the Board of Auditors**

Tenth 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 22 July 2021 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).

* [A/76/150](#).



Contents

| | <i>Page</i> |
|---|-------------|
| Letter of transmittal | 3 |
| Tenth annual progress report of the Board of Auditors on the implementation of the United Nations enterprise resource planning system | 4 |
| Summary | 4 |
| I. Background | 8 |
| A. Deployment strategy | 8 |
| B. Previous comments by the Board and scope of the report | 9 |
| II. Project governance | 10 |
| III. Umoja Extension 2 deployment | 12 |
| A. Status of Umoja Extension 2 solutions | 12 |
| B. Inter- and intra-solution linkages | 18 |
| C. Documentation of Umoja Extension 2 deployment | 19 |
| IV. Information security | 21 |
| A. Cybersecurity action plan | 21 |
| B. Disaster recovery plan | 21 |
| V. Application controls | 22 |
| A. Process control | 22 |
| B. User access provisioning | 24 |
| C. Delegation of authority | 25 |
| VI. Support functionalities | 25 |
| A. Reporting and analytics | 25 |
| B. Production support | 26 |
| C. Continuous improvement and change management | 27 |
| D. Training | 28 |
| VII. Umoja business case | 30 |
| A. Benefits realization | 30 |
| B. Total cost of ownership | 32 |
| VIII. Mainstreaming plan | 35 |
| IX. Acknowledgement | 36 |
| Annex | |
| Status of implementation of recommendations up to the year ended 31 December 2019 | 37 |

Letter of transmittal

Letter dated 22 July 2021 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 tenth 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

Tenth 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](#) and [A/75/159](#)), 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 \$248.3 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. The current approved budget for the project up to the end of 2021 was \$590.81 million, and the total expenditure up to 31 December 2020 was \$554.68 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 (UE1).** 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 UE1 functionality at the same time (Umoja Integration);

(c) **Umoja Extension 2 (UE2).** 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 programme and project management, the functionalities and processes included in the UE2 subprojects had been deployed by the end of 2020 to the entities that were agreed upon with the business owners for deployment in 2020. During the design and deployment, additional integration and enhancement opportunities were identified, which would be addressed as part of continuous improvement processes in the future.

This is the Board's tenth annual review of the progress of the implementation of Umoja. The report mainly covers the project governance, the deployment of UE2, the information security, the support functionalities, the mainstreaming, the benefits and

the costs of Umoja. In addition, the present report contains the results of the examination of application controls in the areas of process control, user access provisioning and delegation of authority.

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 in a challenging technical landscape and in the face of competing demands on resources. The Board also noted that the project was working within the approved budget during the year 2020.

The Umoja project provided crucial support and functionality to the Organization, its stakeholders and its staff throughout the pandemic together with the data and reporting needed to assist the Organization. Through the timely implementation of a multitude of administrative measures related to the coronavirus disease (COVID-19) pandemic and its global reach, Umoja facilitated the ongoing functioning of the Organization.

The Board, however, notes that the Administration needs to make further efforts to assess and prioritize integration between subprojects as they are identified. The Administration also needs to continue its efforts to provide the level of production support required for the stabilization of UE2 and for continuous improvements. There is also a need to address process control and the implementation of delegation of authority in Umoja.

The Administration should also take steps to produce timely updates of the benefits and calculations of actual total cost to enable Member States to have a complete picture of the total cost and the benefits being derived from the investment made in the Umoja project.

Key findings

Project governance

The Board noted that the implementation status of UE2 in 2020 and the additional integration and enhancement plan for 2021 had not been reported to the Management Committee at the time of the audit.

Status of Umoja Extension 2 deployment

The Board noted that the functionalities of the six solutions had both intra- and inter-solution linkages, and that some linkages were not established and would be assessed as part of continuous improvements in 2021 and onward on the basis of business prioritization.

Application controls

The Board noticed there were nine purchase orders for purchasing 448 items of firearms and ammunition with a value of \$27,141 under the low value acquisition process in 2020. The Board noticed gaps in controls for the low value acquisition process with regard to purchasing of firearms and ammunition.

The Board also noted 132 cases where users holding certain roles were not delegated related authority as requested in the Umoja roles guide and the security liaison officer workbook.

Status of support functionalities for Umoja

The Board noted that certain documents were required when analytical reports in the United Nations business intelligence certified layer were prepared, including a business requirement document, a technical requirement document, a testing document, a data dictionary, a technical document and job aids. However, 141 out of 168 analytical reports lacked some of those documents, including 28 analytical reports for the business requirement document, 26 analytical reports for the technical requirement document, 135 analytical reports for the testing document, 85 analytical reports for the data dictionary, 15 analytical reports for the technical document and one analytical report for the job aids.

The Board also noted that there was no specific plan to consolidate and harmonize tier 1 and tier 2a of the production support system mentioned in the twelfth progress report of the Secretary-General on the enterprise resource planning project ([A/75/386](#)).

Umoja business case

The Board noted that the method used to estimate maintenance costs had been changing since 2018. The estimation patterns for each year in the period 2022–2030 fluctuated and were based on either an equal amount each year or an annual increase of 8 per cent rather than on detailed cost categories. Not using detailed data when estimating maintenance costs will produce the risk of inconsistency and inaccuracy in forecasting those costs.

Mainstreaming plan

The Board noted that there were no measurable indicators related to the mainstreaming plan with an effective assessment of resource requirements, taking into account stabilization activities, workload and capacity development.

Recommendations

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

(a) **The Board recommends that the Administration report the Umoja project update to the Management Committee in a timely manner, in particular those issues related to the UE2 final status, additional integration and enhancement and continuous improvements;**

(b) **The Board recommends that the Administration assess the feasibility of further integrations for UE2 solutions and monitor the implementation status of those integrations as they are identified, assessed and prioritized;**

(c) **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;**

(d) **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 delegations;**

(e) **The Board recommends that the Administration ensure that all the necessary documents for new content in the business intelligence certified layer are produced as part of the business intelligence process and retroactively fill the technical document gaps for reference in future updates;**

(f) The Board 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;

(g) The Board recommends that the Administration update the estimation of maintenance costs with more detailed cost information in the next progress report;

(h) The Board recommends that the Administration set up specific indicators to monitor the progress of the mainstreaming plan.

Follow-up of previous recommendations

Of the 55 pending recommendations from the Board's previous reports, 15 (27 per cent) have been implemented and 40 (73 per cent) are under implementation. 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

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. The approved project budget for Umoja up to the end of 2021 was \$590.81 million. As at 31 December 2020, the Administration had spent \$554.68 million. The General Assembly, in its resolution [75/253 A](#), endorsed the conclusions and recommendations contained in the report of the Advisory Committee on Administrative and Budgetary Questions on the twelfth and final progress report of the Secretary-General on the enterprise resource planning project ([A/75/7/Add.14](#)).

A. Deployment strategy

3. 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.

4. 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 (UE1): 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 (UE2): 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 programme and project 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 for deployment in 2020. The

additional integration and other enhancement opportunities identified during the design and development phases are to be pursued as part of continuous improvements.

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

5. 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 nine progress reports to date, as summarized below.

6. 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.

7. 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.

8. 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.

9. 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.

10. 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.

11. 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 more than 40,000 staff in 400 locations was a significant achievement, given the project's complexity and difficult start.

12. 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 UE2 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.

13. 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.

14. 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 UE2 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.

15. The present report covers project governance, the deployment of UE2 functionalities, the status and functioning of deployed functionalities and the documentation of UE2 deployment; information security related to the cybersecurity action plan and the disaster recovery plan; and application controls related to process control, user access provisioning and delegation of authority. The report also covers support functionalities related to reporting and analytics, production support, continuous improvements and change management, and training; the Umoja business case related to benefits realization and cost; and the mainstreaming plan.

II. Project governance

16. The General Assembly, in its resolution [72/262](#), requested the Secretary-General to closely monitor the overall timeline for the complete implementation of Umoja by identifying and managing key risks to the achievement of the project's objectives and full implementation. It also requested the Secretary-General to implement the project within the approved timeline and budget, through strict project planning and management, to ensure that the Umoja project was completed without further delay. It reiterated that the successful implementation of Umoja required the full support and commitment of senior management, as well as close and continuous engagement with key stakeholders, and requested the Secretary-General to ensure this through performance management and accountability mechanisms, especially at senior levels.

17. The Management Committee, chaired by the Chef de Cabinet and consisting of other senior members of management, is mandated to review the status of implementation of the project periodically, consider change management processes requiring strategic direction and ensure that the findings and recommendations of the Board are effectively fed into the executive management processes. The Management Committee had been provided with information about Umoja on only two occasions, in May and September 2020.

18. The Umoja Steering Committee, headed by the Under-Secretary-General for Management Strategy, Policy and Compliance (the designated project owner) and consisting of various business process owners, has provided leadership and strategic guidance to the Umoja project since its inception. The Committee will remain in place until the end of 2021 to support the mainstreaming process by focusing on ensuring that UE2 is technically stable and user adoption is sustainable. The Committee met on six occasions in 2020, in February, April, June, July, November and December.

19. As Umoja approached the end of its project phase at the end of 2020, the Umoja governance model and structures had been updated to facilitate the Secretary-General's vision for management reform and to implement continuous improvements. Those changes included adjustments to the membership of the Umoja Steering Committee and the establishment of a new Umoja Change Board, so as to replace the membership of the Committee put in place in 2013 by process owners. The UE2 projects are excluded from the scope of the Umoja Change Board until they are fully stabilized and matured by the end of 2021.

20. The Umoja Change Board was established in April 2020, as part of the mainstreaming strategy and to ensure Umoja continues to be a business-driven solution. The Umoja Change Board met in June, August and October 2020 and in January and April 2021.

21. The Department of Management Strategy, Policy and Compliance and the Department of Operational Support provide the necessary joint business leadership to ensure that the Umoja solution remains fit for purpose for the Organization globally. The two departments use the Management Client Board to periodically engage with clients on the strategic and operational needs addressed by Umoja. The Client Board met eight times in 2020.

22. The Enterprise Resource Planning Solution Division was established on 1 January 2021, marking a turning point in the journey to deliver Umoja to the global Secretariat. The new division has dual reporting lines to the Under-Secretary-General for Management Strategy, Policy and Compliance and the Under-Secretary-General for Operational Support.

23. The Secretary-General, in his twelfth progress report, stated that the deployment of UE2, comprising 41 per cent of Umoja processes, would be completed by 31 December 2020, and that additional integration and other enhancement opportunities identified during the design and development phases would be pursued as part of continuous improvement initiatives.

24. The Board noted that the governance committees were in charge of ensuring the effective and timely implementation of the project. Therefore, key issues on the implementation of Umoja should have been presented to and discussed in the Management Committee, including the final implementation status of the six UE2 subprojects, as well as the remaining activities to be completed after the completion of the project phase, in particular those relating to integration and continuous improvements.

25. The Board also noted that the achievements in 2020 and the planned work for 2021 related to UE2 had been discussed in the Umoja Steering Committee in March

2021. However, the implementation status of UE2 in 2020 and the additional integration and enhancement plan in 2021 had not been reported to the Management Committee at the time of completion of the field audit on 6 May 2021.

26. The Board is of the view that considering the deployment schedule of UE2 and the structural and functional changes in Umoja governance made in 2020, the Management Committee should play a more proactive leadership role.

27. The Administration stated that the Umoja project had provided input to the meetings when Umoja was on the agenda of the Management Committee in May and September 2020 at the Committee's request. The Enterprise Resource Planning Solution Division is scheduled to present the thirteenth progress report of the Secretary-General on the enterprise resource planning project and updates on continuous improvements to the Management Committee in September and December 2021.

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 UE2, additional integration and enhancement and continuous improvements.

29. The Administration accepted the recommendation.

III. Umoja Extension 2 deployment

30. 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.

31. The Secretary-General, in his ninth progress report on the enterprise resource planning project ([A/72/397](#)), reported completion of nearly all UE2 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 revised the deployment schedule, with all UE2 solutions scheduled to be deployed by December 2019. In his eleventh progress report ([A/74/478](#)), the Secretary-General further revised the deployment schedule, with all UE2 solutions scheduled to be deployed by December 2020.

32. The Secretary-General, in his twelfth progress report ([A/75/386](#)), stated that all the functionalities included in the UE2 subprojects had been deployed. He further stated that during the design and deployment of the subprojects, additional integration and enhancement opportunities had been identified, which were being addressed as part of the continuous improvement process.

A. Status of Umoja Extension 2 solutions

33. The Board examined the implementation of the six UE2 solutions. Those solutions are targeted towards key activities of the Secretariat and associated entities and include 133 processes, accounting for 41 per cent of total Umoja processes. The Board was informed that the deployment of UE2 processes and functionalities was completed by 31 December 2020. The functionalities, processes and deployment status of those solutions are briefly summarized below.

Strategic planning, budgeting and performance management

34. 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 architecture for this solution includes three components: the strategic management application, business planning and consolidation, and project systems. This integrated planning, management and reporting forms the integration layer that links the strategic planning, budgeting and performance management components together, in combination with the implementing partner management solution, to deliver integrated solutions for planning, management and reporting.

35. The Secretary-General, in his twelfth progress report, stated that the integrated planning, management and reporting functionality was a significant enhancement to the strategic planning, budgeting and performance management solution. The new integrated functionality would enable a holistic, end-to-end capability, using several new and existing UE2 modules, to manage the life cycle of projects from beginning to end and across funding sources. Staff and managers would gain the ability to plan, manage, monitor and track projects, using a results-based management methodology. While the integrated planning, management and reporting solution is not specific to any source of funding such as the regular budget, peacekeeping budget or voluntary contributions, the initial focus of the deployment is the management of projects funded by voluntary contributions. This allows programme managers to address the granular requirements for voluntary contributions while adapting the functionality to needs for assessed contributions.

36. The Board noted that the integrated planning, management and reporting solution had completely replaced the portfolio and project management module and had been deployed to replace the original design function of portfolio and project management. After conducting an internal gap analysis at the end of 2019, the Umoja team decided to use SAP Fiori technology for customized development to form the integrated planning, management and reporting solution, instead of using the SAP portfolio and project management product. The main reason for the choice was that many of the capabilities for capturing programmatic and substantive information are not provided by SAP portfolio and project management. The business planning and consolidation solution had already been deployed for budget planning and therefore the financial planning functionality of SAP portfolio and project management was no longer needed.

37. The Board noted that integrated planning, management and reporting went live in December 2020 to all Secretariat entities, and access was given to all those users who requested it. An expansion of the user base was completed in March 2021.

38. The budget planning functionality has been deployed to all Secretariat entities. Following the deployments in 2019, this functionality was enhanced with an additional model for travel budgeting, significant changes to the position model and further streamlining of the summary model. This enhanced functionality enabled the planning of the proposed programme budget for 2021 in January 2020, followed by the peacekeeping budget for 2021/22 in July 2020.

39. The performance management functionality for the regular budget was deployed to all entities in January 2020. The performance monitoring module for the peacekeeping budget, deployed in July 2019, was enhanced in May 2020. The performance dashboard was initially deployed for six pilot peacekeeping missions in October 2019. The dashboard for regular budget entities, including special political missions, was deployed in May 2020, following the adaptation to the new regular budget annual results framework.

40. The Board noted that the completion status of the business planning and consolidation workplan was 95 per cent, rather than 100 per cent by the end of 2020 as shown in the project management tool of Umoja. This was because the decision on the scope of activities for the United Nations Volunteers programme (UNV) forms has been deferred to 2021 at the request of the business owner.

41. The Administration stated that the UNV forms were requested to be deferred to 2021 by the business owner because UNV had changed its process after the business planning and consolidation forms were developed.

Supply chain management

42. 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 solution architecture for transport planning and management and track and trace functions included two SAP products (transportation management and event management). SAP offered a cloud-based subscription service named “integrated business planning” to meet the needs of the demand planning and supply network planning subprojects.

Transportation management

43. The transportation management solution had delivered functionalities for enabling the execution and monitoring of these movements through an integrated solution architecture that included capabilities to track and monitor (track and trace) incoming and outgoing shipments and to generate alerts for the management of exceptions and contingency planning. The SAP modules for transport management and event management were implemented to plan, execute and monitor goods shipments and passenger movements for the United Nations. The transport management module offered the possibility to consolidate shipments, optimize routing and choice of transport mode, and provide end-to-end visibility of freight and passenger movements. The event management module is implemented to provide near real-time transportation movement updates and active collaboration with goods vendors and freight forwarders.

44. The Board noted that the transportation management solution was completed in two phases by the end of 2019. Phase one, released in January 2019, included shipment of United Nations-owned vehicles, and contingent-owned equipment shipment and troop movements managed at United Nations Headquarters. Phase two, released in December 2019, included all commodities of United Nations-owned equipment, intra- and inter-mission movements of United Nations-owned equipment and long-term charter movements, and expanded the coverage of the solution to 37 United Nations entities. The transportation management solution was deployed to the United Nations Integrated Office in Haiti in November 2020 and to the Economic and Social Commission for Asia and the Pacific in February 2021. A total of 39 United Nations entities have deployed the transportation management solution.

Demand planning and supply planning

45. The gross demand functionality was completed in September 2020. The functionality allows for the development of the gross demand planning requirement, which initiates the planning process, incorporating historical consumption patterns for goods and services, product segmentation and sophisticated statistical forecasting models to project potential future demand.

46. The net demand and source planning functionality, which follows logically after gross demand planning, was released by the fourth quarter of 2020. Net demand functionality takes into account additional sources of supply in the planning process

to rationalize needs, including existing inventories and stock-in-transit. The source planning functionality focuses on establishing sources of supply to meet requirements, such as inventories and equipment surplus in other entity locations, as well as procurement contracts. A total of 192 users from validation group entities were trained in gross demand, net demand and source planning functionalities. The integrated business planning cloud solution integration with the Umoja solution had been achieved through integrating business planning with on-premises systems, with data feeds consolidated through the HANA layer. Data replicated to integrated business planning for supply chain planning purposes includes data from the transport management, the supplier relationship management and the enterprise resource planning central component modules.

47. The Board noted that the demand planning and supply planning solution was deployed to eight solution validation group entities in 2020, and was scheduled to be deployed to 44 entities by the end of 2021.

48. The Board was informed that full deployment of the demand planning and supply planning solution to all entities commenced in the first quarter of 2021 and was scheduled to be completed within 2021. These entities will complete an annual supply chain plan using the system according to the planning cycle submission timeline. Thirty regular budget entities will produce an annual supply chain plan for the 2022 planning cycle by the end of 2021, and 14 peacekeeping budget entities will develop their plans for the next budget cycle by the second quarter of 2022.

Implementing partner management

49. The implementing partner management solution encompasses the full life cycle of collaboration with implementing partners and improves collaboration by providing them with a portal and tools to assist them in becoming eligible partners, requesting scheduled payments, recording the progress of their implementation and submitting other performance details.

50. The United Nations is the first SAP customer to implement this solution, along with the SAP grant management application. After an initial roll-out to a small number of entities at the end of 2018 (to minimize risks) the implementing partner management solution was deployed to all entities in December 2019. Tools were developed to assess and evaluate implementing partners, which was completed by the end of 2020. The functionalities, including identifying, assessing and selecting grantees, defining a flexible project logical framework that reflects detailed agreement clauses, auditing and inspections and recovering inadmissible expenditures from assignees, were deployed by the end of 2020.

51. The user adoption of the implementing partner management solution is still proceeding. The Board noted that out of 2,376 implementing partners within the solution, only 40 implementing partners were accessing the solution through the portal as of March 2021.

52. The Administration considered the feasibility and cost-benefit of the use of the solution by all its partners based on the nature and operational capability of partners as well as the frequency and dollar amount of the engagements, and would continue to encourage the use of the implementing partner management solution by partners with operational capacity.

Fundraising and donor relationship

53. The fundraising and donor relationship solution provides the functionality to register and maintain donor profiles and interact with donors throughout the life cycle, from appeals for funds to the signing of the grant agreement. It supports programme

managers in their analysis of prospective donors, in better forecasting prospective contributions, in launching appeals for funds, in planning media events and in following through with interested donors until the conclusion of a grant agreement.

54. The library of agreements module was implemented in 2020 and included signed contribution agreements and a set of sensitive clauses. In addition, the fundraising and donor relationship solution was used to manage assessed contributions.

55. The solution architecture for this project included a Siebel-based customer relationship management module. The subproject was intended to be integrated with the strategic planning, budgeting and performance management subproject for linkage with higher-level strategies for resource mobilization, the existing grants management module in Umoja and Umoja business intelligence for the purpose of extracting data on the utilization of donor contributions and reporting to donors.

56. The Board noted that the user adoption of programmes and library functionalities in the fundraising and donor relationship solution was not optimal. 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. There were only 21 agreements under the libraries functionality and 25 items under the programmes functionality as of April 2021.

57. The Board was informed that the planned deployment entities of the fundraising and donor relationship solution were all entities of the Secretariat and it had been deployed to all entities that had expressed interest in adopting the solution by the end of 2020. However, the Board noted that 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. The Administration stated that the further adoption of the solution would be the part of the workplan.

58. The Board noted that integration of the fundraising and donor relationship solution with strategic planning, budgeting and performance management, Umoja business intelligence and the function to create a grant upon the signing of agreements, was not established and would be assessed as part of continuous improvement activities.

59. The Administration stated that the integration of the fundraising and donor relationship solution with other Umoja modules was not contemplated in the original scope. As the Organization progressed with UE2, opportunities for such integration and its added value were identified.

Uniformed capabilities management

60. The uniformed capabilities management solution has built the foundation for tying together the end-to-end planning and associated processes of uniformed capabilities management, such as statements of unit requirements, memorandums of understanding with troop- and police-contributing countries, field inspections and verifications of contingent-owned equipment, reporting on troop strength, processing of claims relating to contingent-owned equipment, processing personnel payments, and disbursing payments. The solution architecture for this project is based on Siebel modules, and the government claims management system and Microsoft Access-based databases were replaced. Release 1 of the uniformed capabilities management solution was deployed in December 2018. Release 2 was deployed in August 2019.

61. The uniformed capabilities management 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.

Furthermore, it is accessible remotely and has ensured continuous operations despite the impact of the global pandemic.

62. The Board noted that the updates to the recommendations for the 2020 Working Group on Contingent-Owned Equipment were implemented in July 2020. The functionality of troop and formed police strength reporting and troop cost reimbursement was delivered by the end of 2020. The deployment of the functionality to the production environment to be used by end users began on 18 January 2021.

63. The Board noted that some activities such as continuous improvements and enhancements of the uniformed capabilities management plan shown in the project management tool of Umoja had begun in 2020 and were planned to be completed in 2021.

64. The Administration stated that the uniformed capabilities management plan was a continuous one covering multiple years, and even though the UE2 deployment was concluded in 2020, the overall plan had not been completed at the end of 2020. The plan included continuous improvement activities beyond the scope of UE2 deliverables, had begun in 2020 and was planned for completion in 2021.

Conference and event management

65. 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, cost recovery and accounting, and master data management. It mainly includes calendar and non-calendar conferences and meetings, off-site conferences and meetings and special events.

66. The processes of conference and event management are covered by non-SAP applications. The suite of applications developed and managed by the Department for General Assembly and Conference Management includes Indico.UN for meeting participant management; gDoc for the workflow management of multilingual intergovernmental documentation; and gMeets for meetings management. The gMeets system is integrated with eAPG, the system for assignment of interpreters to meetings.

67. The development of Indico.UN version 2 for conference registration was completed and made available to all Indico.UN existing clients at the end of 2020. The gDoc 2.0 system was partially upgraded in 2020. The upgrade will be finalized in 2021.

68. The Board noted that the analysis of the integration of the conference and event management subsystems with Umoja finance, human resources, supply chain management and travel modules would commence in 2021 and these integrations may be completed by 2023. The conference and event management subsystems were legacy systems and had been used in the Secretariat for many years before UE2 was deployed.

69. The Administration stated that the integration of the conference and event management systems (Indico.UN, gMeets, gDoc and eAPG) with Umoja was not part of the completion criteria, but rather an element of the continuous improvement activities of 2021 and beyond, and that the Department for General Assembly and Conference Management and the Enterprise Resource Planning Solution Division would review all the integration opportunities to decide which integration points would add the most value in 2021. The Department had established a project for the conference and event management systems to be connected with the Umoja finance, human resources, supply chain management and travel modules.

B. Inter- and intra-solution linkages

70. The Board reviewed the intra- and inter-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 integrated planning, management and reporting solution established links between operational project logistical frameworks and the business planning and consolidation function for project budget planning, and the enterprise core component project system for transactional project execution and recording of expenditures, as well as with the strategic management application strategy definition for a link between projects and an entity's higher-level strategic frameworks. The required integration between 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 in the fourth quarter of 2020. The integration between strategic planning, budgeting and performance management and supply chain management, uniformed capabilities management, and fundraising and donor relationships was not established and would be assessed;

(b) With regard to the supply chain management solution, 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 by the end of 2020. The integration between demand and supply planning and other solutions (such as budget formulation and business planning and consolidation) would be considered as a continuous improvement activity in the future;

(c) For the fundraising and donor relationship solution, the integration with performance management and Umoja business intelligence was not established and would be assessed, and integration to create a grant upon the signing of agreements was yet to be achieved by the end of 2020;

(d) For the uniformed capabilities management solution, its integration with the Umoja enterprise core component had been achieved. The integration of uniformed capabilities management with supply chain management was not established and would be assessed. It would be addressed as part of continuous improvement activities in 2021 and onward;

(e) For the conference and event management solution, the analysis of the integration of the subsystems (Indico.UN, gMeets, gDoc and eAPG) with Umoja finance, human resources, supply chain management and travel modules would commence in 2021.

71. The Administration stated that all the remaining integrations or interfaces may be undertaken incrementally as part of continuous improvement activities, as none of them was a standard SAP offering and most could not have been envisaged when the original processes were being designed in the early stages of the project. These integrations were not part of any plan to be achieved by the end of 2020 and the feasibility of these integrations would be assessed as part of continuous improvement initiatives following the successful delivery of UE2.

72. The Board noted that the Secretary-General, in his twelfth progress report, indicated that the additional integration and other enhancement opportunities identified during the design and development phases would be pursued as part of continuous improvement initiatives.

73. The Board also noted that the Secretary-General, in his eleventh progress report, indicated that the deployment of each UE2 solution into the Umoja landscape had

required multiple integrations of new SAP modules with existing modules and/or with non-SAP software. This reflected the added value of an enterprise solution, as such integration eliminated redundant data inputs and provided a better, integrated, end-to-end solution for the business.

74. Furthermore, the ninth progress report of the Secretary-General included specific references to the need for synchronized deployments of different UE2 subprojects in order to leverage the benefits of the intended integration.

75. The Board is of the view that the UE2 solutions are used for the planning and processing of functions crucial to business operations, and that the integration of the solutions will add additional value to the Organization. To achieve the optimal benefits of the Umoja project, in particular of UE2, the functionalities' intra- and inter- linkages should be established.

76. The Administration stated that all integration points associated with the deployment of UE2 had been completed and that any further integration would be completed as part of the process of continuous improvements and in line with the commitments made in the eleventh progress report of the Secretary-General. In that report (A/74/478, para. 88), the Secretary-General had stated that in order to continue to realize the benefits of Umoja, the periodic review of integration opportunities would be undertaken and continuous improvement plans would be developed after the complexity and benefits of such integrations were analysed and adjustments made to effect process improvements, as also recommended by the Board of Auditors.

77. The Board recommends that the Administration assess the feasibility of further integrations among UE2 solutions and monitor the implementation status of those integrations as they are identified, assessed and prioritized.

78. The Administration accepted the recommendation.

C. Documentation of Umoja Extension 2 deployment

79. The United Nations Secretariat technical procedure document on software development states that information and communications technology (ICT) project team members must ensure that deliverables required by each step of the software development process are produced in a timely manner, such as specifications, design documentation, code, test code, test plans, technical documentation and user documentation (APP.02.PROC, para. 4.20).

80. The Board noted that the conference and event management solution did not have documentation about the functional specification document, test readiness review or operational readiness review. The fundraising and donor relationship solution provided only the operational readiness review.

81. The Administration stated that with regard to the conference and event management solution, only after the integration points between the subsystems of that solution and Umoja were identified and the proper governance and approvals process been followed, would the appropriate Umoja-related documentation be written. The Board was informed that since the interfaces between Umoja and the conference and event management subsystems would be assessed in 2021 for development in 2022 and beyond, the functional specification document, the test readiness review and the operational readiness review did not yet exist and would be prepared when the integration begins.

82. The Board was provided with the business design documents for the strategic management application and the integrated planning, management and reporting solution and noticed that the document for the strategic management application was the

report of the Secretary-General on management reform, and the document for the integrated planning, management and reporting solution was a document named “IPMR consolidated business requirements”. These documents were different from documentation for other solutions in both format and form. The functional specification document for the strategic planning, budgeting and performance management subproject was not linked to the tasks in the subproject plan, and some of the files were numbered and others were not. It was therefore difficult to find out how many functional specification files had been created in the subproject and which had been developed.

83. The Administration stated that the Umoja project was developed in two distinct development streams:

(a) The first stream closely followed the waterfall¹ methodology. This stream was delivered by the system integrator where scope changes had contractual implications. All forms, reports, interfaces, conversions, enhancements and workflow objects were identified for each deployment and functional specification documents or business design documents were written depending on whether the change was related to a development or to a configuration. This stream generally involved the implementation of traditional core SAP modules and technologies;

(b) The second stream followed the agile² methodology and consisted of all UE2 subprojects. Some solutions were not typical SAP solutions, and had been custom developed by the Enterprise Resource Planning Solution Division, the Office of Information and Communications Technology or the respective business owner.

84. The Administration stated that each of the Umoja subprojects had different documentation deliverables based on the development methodology and application architecture of the solution.

85. The professional standards defined in the Control Objectives for Information and Related Technology (COBIT) framework recommend the issuance of formal and clear documentation to ensure the transfer of adequate knowledge and skills for supporting systems in an effective and efficient manner. The Board is of the view that one of the critical parts of knowledge transfer is project documentation. Complete, appropriate and sufficient project documents are crucial for project design, building, testing and maintenance. The documentation, such as specifications, design documentation, test plans, technical documentation and user documentation, is the key deliverable of the system project regardless of whether the waterfall method or the agile method was used to develop it.

86. The Secretariat’s ICT technical procedure document on software development (APP.02.PROC, para. 3.4) states that depending on the size and complexity of the software development project, appropriate standard project management principles should be established and maintained in line with those outlined in the project management handbook.

87. The Board raised a request for the project management handbook of UE2, but did not receive any relevant documents. Therefore, the Board cannot obtain the list of deliverables and acceptance procedures for each stage of the project.

88. The Administration stated that the key document for acceptance and delivery of the project is the operational readiness review document. The Administration

¹ Project implementation is carried out in a single iteration of phases: planning, development and testing.

² Project implementation is carried out with iterations of tasks relating to planning, development and testing phases. It is termed “agile” because it attempts to create a minimum viable product at the end of each iteration, without always waiting for the completion of the entire functionality of the software in one go.

provided the operational readiness review files for all UE2 systems except for conference and event management, since the integration of that functionality was not part of the required scope for project completion.

89. The Board is of the view that the project management handbook, which defines the key processes, lists of deliverables and acceptance procedures in the project execution process, is critical during software development. It is the foundation of project implementation. The establishment of a project management handbook is also a best practice in the software deployment process.

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.

91. The Administration accepted the recommendation.

IV. Information security

A. Cybersecurity action plan

92. The Advisory Committee on Administrative and Budgetary Questions, in its report on the Board's report on the implementation of the ICT strategy ([A/75/564](#)), expressed its serious concern that critical and urgent actions related to information security had not been comprehensively implemented and that the Organization continued to be exposed to significant risks. The Advisory Committee also, in its report on the twelfth progress report of the Secretary-General on the enterprise resource planning project, recommended that the General Assembly request the Secretary-General to ensure that the risks to Umoja information security were comprehensively addressed and mitigated and that he provide an update on the measures taken in his final report ([A/75/7/Add.14](#), para. 42).

93. The Board noted that a cybersecurity action plan endorsed in December 2019 was aimed at increasing compliance with existing policies and specific initiatives to improve monitoring and to mitigate control gaps, but that it did not indicate any mechanism for ensuring the action plan's broad implementation and accountability.

94. For the action plan on Umoja, the Board also noted that a specific measure on encryption of data at rest or in transit was pending in 2020.

95. Based on the ICT technical procedure document on cryptographic controls, encryption controls must be used for United Nations sensitive data that might temporarily need to be stored or used in less secure environments, including mobile devices (encryption of data at rest) or when transferred over a less secure communication channel, such as Internet or email (encryption of data in transit).

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.

97. The Administration accepted the recommendation.

B. Disaster recovery plan

98. An ICT disaster recovery plan sets out the procedures designed to maintain or restore ICT operations, possibly at an alternate location, in the event of an emergency, system failure or disaster. The disaster recovery plan document identifies the recovery

time and recovery point objectives, the disaster recovery strategy and the essential ICT assets and services that need to be recovered in case of a disaster, as well as instructions on how to execute the failover process and procedures.

99. In accordance with United Nations ICT procedures for disaster recovery planning, ICT service providers must test and/or exercise the ICT disaster recovery plan on a periodic basis (at least annually) to determine the plan's effectiveness and the Organization's readiness to execute the plan.

100. The Board was informed that a comprehensive disaster recovery plan was in place with clear roles and responsibilities. The disaster recovery plan was tested as part of the disaster recovery exercise conducted on 31 October 2020, with the primary site of Umoja failing over to the disaster recovery site for one week. After running Umoja operations successfully at the failover site for one week, the Umoja system was failed back to the primary site on 7 November 2020.

101. The Board noted that the actual recovery time achieved in the disaster recovery exercise was 18 hours and 15 minutes for the failover exercise, and 15 hours and 38 minutes for the failback exercise. Neither exercise met the recovery time objective of 8 hours.

102. The Administration acknowledged this breach and stated that the Office of Information and Communications Technology was leading the effort to find a solution that would mitigate the identified gap. This effort started in December 2020 and was ongoing.

103. The Board also noted that the last disaster recovery exercise was conducted in 2017. The Administration explained that no subsequent exercises were undertaken primarily owing to the imminent hardware upgrade project. Conducting the exercise on the legacy hardware stack would not yield any valuable metrics or lessons learned. However, in lieu of an actual disaster recovery exercise, a tabletop exercise was conducted to walk through the entire process.

104. The Board is of the view that sufficient disaster recovery exercises can provide a prompt and effective continuation of critical ICT services in the event of service disruption.

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.

106. The Administration accepted the recommendation.

V. Application controls

A. Process control

Low value acquisition process control over firearm and ammunition purchasing

107. The United Nations Procurement Manual states that low value acquisition, a method of solicitation, cannot be used to purchase firearms and ammunition regardless of value.

108. The Board noted that there were 51 purchase orders with a total value of \$106,848 for purchasing firearms and ammunition under the low value acquisition process from 2018 to 2020. Out of the 51 purchase orders, there were nine orders to purchase 448 items of firearms and ammunition with a value of \$27,141 in 2020.

109. The Board was informed that the validation control that restricts the ability to create a low value acquisition purchase order above the threshold of \$10,000 had been in place since Umoja Foundation in 2013. When a low value acquisition purchase order above the threshold of \$10,000 is created, the transactions are blocked by Umoja. However, a purchase order that is under the threshold can be created and proceed without any further validation control, even if the product category of firearms and ammunition is selected.

110. The Board is of the view that the violation of purchasing firearms and ammunition using low value acquisition purchase orders indicates a need to improve the selection validation controls with respect to purchases of firearms and ammunition in Umoja. The Board is also of the view that accurate adoption of methods for procurement of firearms and ammunition is critical to the procurement function.

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.

112. The Administration accepted the recommendation.

Negative balances in different leave quotas

113. The Staff Regulations and Rules ([ST/SGB/2018/1/Rev.1](#)) and the relevant administrative instructions provide the policy for the administration of entitlements, including various types of leave such as annual leave, home leave and sick leave.

114. The Board analysed the absence quotas report of international staff for the period from 1 April 2020 to 5 March 2021 from Umoja and noted there were 521 cases of negative balances, which indicated that leave quota validation was not working correctly. The negative balance cases, based on the type of leave, are summarized in table 1.

Table 1
Cases with negative leave balances

| <i>Type of leave</i> | <i>Number of cases with a negative leave quota balance</i> |
|---|--|
| Annual leave | 215 |
| Compensatory time off | 76 |
| Compressed work schedule regular days off | 2 |
| Floating holiday | 6 |
| Home leave points | 147 |
| Paternity leave | 7 |
| Sick leave with full pay | 20 |
| Sick leave with half pay | 1 |
| Uncertified sick leave | 47 |
| Total | 521 |

Source: Audit analysis of Umoja data.

115. The Administration stated that pursuant to operational needs and for planning optimal workforce availability, Umoja was configured to allow negative annual leave and negative home leave balances. Staff members may not have enough leave in their balance at the time of the request, but will have accrued annual leave days by the start of the leave. Additionally, if there is a negative balance at the close of a leave cycle,

that negative balance is carried over to the next leave cycle. There was a defect in Umoja that was allowing negative balances for other types of leave. This was being addressed through a change request and its resolution was under development.

116. The Board had disclosed findings concerning negative leave balances in its seventh annual progress report on Umoja ([A/73/169](#)). During its current audit, the Board confirmed that the finding still existed and that the validation of leave quotas was not working correctly.

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.

B. User access provisioning

118. There are two key documents that are important for the administration of Umoja roles. The first document, the Umoja roles guide, provides a detailed overview of each transactional role that governs the assignment of Umoja roles to users. It lists all roles and related mapping guidelines in terms of role assignment restrictions or limitations, as well as training requirements, delegation of authority requirements and conflicts concerning segregation of duties. The second document, the security liaison officer workbook, supports security liaison officers in completing the Umoja user registration form and managing access by Umoja end users in their offices. The workbook includes a list of available Umoja roles and role-specific segregation of duty violations (i.e. roles that should not be assigned to the same end user). In addition, it includes details on whether a role requires delegation of authority.

119. The Board noted that Umoja role provisioning was performed through the user access provisioning tool. The security liaison officers use the workbook to review the information in a format that is easy to understand and as a guide while providing access using the tool. The Umoja roles guide is used as a reference by staff members to review the functions performed by each role.

120. The Board compared the configuration and instructions related to delegation of authority and segregation of duties in the latest versions of the Umoja roles guide and the security liaison officer workbook and in the user access provisioning tool and noted that there were seven roles with differing mapping instructions in these two documents concerning the roles required by a delegation of authority. The Board also noted that there were four roles with differing mapping instructions on segregation of duties.

121. The Administration explained that potential discrepancies may exist between the security liaison officer workbook and the Umoja roles guide and recognized that there was a gap in the way in which the workbook and the roles guide had been managed and updated. However, the prevailing system of record is the actual configuration of the delegation of authority requirements and segregation of duties in the user access provisioning tool.

122. The Board is of the view that a clear definition of role provisioning and authorization is essential to ensure the proper performance of responsibilities. The user access provisioning tool and the two Umoja documents should complement and promote each other. Inconsistent stipulations and changing requirements create uncertainty and hamper proper role provisioning. In addition, the discrepancy between the user access provisioning tool and the two documents outlining delegation of authority requirements and segregation of duties for Umoja roles may impede appropriate role provisioning.

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.**

124. **The Board also recommends that the Administration perform the oversight function for role provisioning, including monitoring the segregation of duties and reporting exceptions.**

125. The Administration accepted the recommendations.

C. Delegation of authority

126. The Umoja roles guide and security liaison officer workbook list all roles and provide detailed information for roles that require a delegation of authority.

127. The Board reviewed the list of staff members with Umoja roles from the Umoja system and the list of staff members with delegated authority from the delegation of authority portal and noted 132 cases where users holding certain roles were not delegated the related authority as required in the Umoja roles guide and the security liaison officer workbook.

128. The Administration explained that all the entities related to the 132 cases had already been contacted by the Administration in February, March and April 2021 and had been requested to either issue new delegations of authority or revoke the related roles in Umoja as part of the quarterly monitoring of delegation of authority performed by the Administration.

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.**

130. The Administration accepted the recommendation and will work with the business departments to strengthen internal controls to prevent the granting of Umoja roles without appropriate delegation of authority, including streamlining the security liaison officer workbook and the Umoja roles guide. The Administration will also establish measures to resolve issues identified through the regular monitoring of delegation of authority.

VI. Support functionalities

A. Reporting and analytics

131. The Secretary-General, in his twelfth progress report, stated that reporting was the process of organizing data into information summaries for various business needs and that interactive dashboards were used for visualization of analytics. The plan for analytical reporting included both internal data sources and key external data sources. The Enterprise Resource Planning Solution Division would implement new tools to enable such analytical reporting for decision-making using real-time information. Common data models and customized visualizations would be designed and delivered for the Member States, leveraging rich data from Umoja and other internal and external systems. Umoja would be strengthened in line with the focus on the outcomes of the data strategy issued by the Secretary-General and enhanced data-driven services for clients and stakeholders.

132. The Secretary-General, in his eleventh progress report, stated that an updated governance model had been created to gather requirements and build, validate and

certify reusable data models. Those certified reusable data models would be available for use throughout the Organization under the umbrella name “UNBI certified layer”.

133. The Board was informed that as part of the 2021 annual workplan of the Enterprise Resource Planning Solution Division, the data sources of Inspira had been integrated into the certified data models. In addition, the data sources of the staff list of the United Nations Development Programme and the uniformed capabilities management solution would be introduced in 2021 as part of the dashboard for Member States. As at 31 March 2021, there were 168 analytical reports in the United Nations business intelligence certified layer that could be used for reporting and analytics. There was a project plan for the implementation of SAP Analytics Cloud, which would enable the Organization to do complex analytics and enhance visualization.

134. The Board noted that necessary documents were required when analytical reports in the business intelligence certified layer were prepared, including the business requirement document, the technical requirement document, the testing document, the data dictionary, the technical document and job aids. However, 141 of the aforementioned 168 analytical reports lacked one or more of those documents, including the business requirement document for 28 analytical reports, the technical requirement document for 26 analytical reports, the testing document for 135 analytical reports, the data dictionary for 85 analytical reports, the technical document for 15 analytical reports and job aids for one analytical report.

135. The Board was concerned that those documents were necessary to record and track the process of the preparation of analytical reports and without them in place it was not possible to confirm whether the analytical report was certified or to provide reference for future updates of the analytical report.

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 fill the technical document gaps for reference in future updates.

137. The Administration accepted the recommendation and stated that, given the documentation that was outstanding, there was a need to review the value of going back and post-documenting everything versus cleaning up based on usage. That review was currently in progress and the documentation gaps would be retroactively filled as requested by the business owners.

B. Production support

138. The Secretary-General, in his twelfth progress report, stated that Umoja production support was structured in four tiers and had relied on strengthening the role of local process experts. Tier 0 resolved issues informally and operated locally through local process experts, communities of practice and other resources. Tier 1 consisted of the local information technology help desks for peace operations and the Unite Service Desk of the Office of Information and Communications Technology. Peacekeeping missions were further supported, except for human resources, by tier 2a support provided by the Umoja Support Centre. Both tier 2a and the Unite Service Desk escalated to tier 2b, which was separately managed by each business area at United Nations Headquarters using iNeed. Tier 3 support was provided through the Enterprise Resource Planning Solution Division. The Secretary-General further stated that in line with management reform principles, tier 1 and tier 2a production support had had to be consolidated and harmonized to ensure consistency in the advice provided to all Secretariat entities. Tier 2b had caused a lot of dissatisfaction in terms of lack of dedicated capacity to provide prompt support and resolution to end users based on the volume and complexity of tickets escalated to tier 2b.

139. The Board was informed that the first level resolution rate was the ratio of the number of incidents closed by tier 1 against the number of total incidents closed by all tiers except tier 0. The rate had decreased significantly to 55 per cent in 2020, compared with 68 per cent in 2019. The incidents received had decreased significantly to 11,199 in 2020, compared with 17,239 in 2019.

140. The Administration explained that tier 0 was a widespread support ecosystem that contributed to providing support that was not traced or accounted for before incidents were entered into the system. The reduction of incidents was driven by the greater experience of users using Umoja and, as a result, the incidents that were raised were of greater complexity, which resulted in an increased burden in the higher tiers of production support.

141. The Board noted that the overall number of service requests included both incidents and requests for services, but the calculation of the first level resolution rate did not include requests for services closed by tier 1. There was no prescribed first level resolution rate for tier 1 and no corresponding prescribed indicator for other tiers. Moreover, there was no prescribed overall resolution rate for all service requests received by the production support system.

142. In addition, the Board was informed that the current model of production support followed version 6.0 of the Umoja production support standard procedure and that currently there was no specific plan to consolidate and harmonize tier 1 and tier 2a of the production support system.

143. The Board noted, however, that version 6.0 of the Umoja production support standard procedure was released on 6 February 2019 and some rules were not in compliance with the current business process of the production support model.

144. The Board is of the view that the large decrease in the first level response rate means that incidents not resolved by tier 1 would be escalated to tier 2b or higher, which may make it worse than tier 2b, which is dealing with more complex service requests, cannot provide prompt support and resolution to end users. Fundamentally, there is no baseline to measure resolution of service requests at individual or overall tier levels. This could result in an inability to assess performance either of the different tiers or of production support as a whole, with resources therefore not being properly allocated to the different tiers. Moreover, a late updating of procedures could weaken the transparency and efficiency of production support.

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.

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.

147. The Administration accepted the recommendations and stated that it would prepare an implementation plan if the outcome of the evaluation concerning the consolidation and harmonization of tier 1 with tier 2a dictated it was merited.

C. Continuous improvement and change management

148. The Secretary-General, in his twelfth progress report, stated that continuous improvements in Umoja were recorded, evaluated, processed and implemented through an established change control mechanism, comprising SAP tracking tools

(ChaRM and the Requirements Management solution) and the corresponding processes. The process established the baseline against which the benefits realized would be monitored and reported on.

149. 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, in which certain SAP workflows were monitored. The monitoring programme had continued to be run throughout the periods covered by the Secretary-General's tenth and eleventh progress reports.

150. In its ninth report on the implementation of Umoja ([A/75/159](#)), the Board highlighted that a clear governance structure for the continuous improvement monitoring programme should be put in place, with clearly defined responsibilities.

151. The Board noted that the key workflows of Umoja were not monitored and reported on in 2020, especially with respect to the enhanced system functionalities in UE2 that had been recently deployed.

152. The Administration explained that many changes had occurred owing to mainstreaming, the reorganization of roles and responsibilities and the recent upgrade of the Umoja business intelligence platform to SAP Analytics Cloud in 2020. Owing to the lack of a specific governance structure for the continuous improvement monitoring programme, there was no team assigned to run the monitoring programme.

153. The Board is concerned that inefficiency of key workflows could not be identified and improved without periodic monitoring and reporting, especially with respect to the enhanced system functionalities recently deployed in UE2. Therefore, the benefits realized and key performance of Umoja could not be continuously monitored or reported on.

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 continue working on identifying critical business processes and including them in the programme.

155. The Administration accepted the recommendation.

D. Training

156. The General Assembly, in its resolution [73/279 A](#), reaffirmed the importance of effective and high-quality training for the successful implementation of Umoja and requested the Secretary-General to continue to ensure that senior managers adopted a comprehensive and sustained approach to training and capacity development in their work units and make certain that all users were properly trained before the deployment of any functionality of the project.

157. The Secretary-General, in his twelfth progress report, stated that Umoja training would be transitioned to the Capacity Development and Operational Training Service in the Department of Operational Support as part of mainstreaming. The Service would get support from business areas to develop an overall training strategy for the respective areas and would contribute to capacity-building and training efforts by providing subject matter expertise. With the launch of the online learning portal in September 2018, the focus for Umoja training had moved towards a continuous, self-paced learning approach, with modular online courses on the iLearn Umoja platform being easily accessible. The iLearn Umoja platform had also facilitated peer-to-peer learning using topic-based learning forums, akin to a social media platform. A follow-up, content-specific survey linked to the course learning objective was being developed to measure ongoing training effectiveness. The integrated online and blended training

courses for Umoja Foundation and UE1 would be designed in accordance with the more advanced UE2 course offerings in iLearn Umoja and, as previously stated in the tenth progress report of the Secretary-General, existing training materials for Umoja Foundation and UE1 would be gradually converted and migrated to iLearn Umoja. The Service had already launched a design of all future Umoja human resources training. The UE2 training content currently published in iLearn Umoja would also be maintained and updated to incorporate enhanced system functionalities.

158. The Board was informed that a follow-up survey, which was sent automatically to learners three months after completing a course in iLearn Umoja, was deployed and an evaluation exercise to assess the responses was scheduled to be held in 2021. In 2020, there had been 30,764 enrolments in various Umoja courses, comprising 517 live classroom courses, 29,752 self-paced learning courses and 495 for virtual classrooms.

User adoption of the iLearn forum as a social media platform

159. The Board was informed that the learning forum in iLearn Umoja was a tool to foster social learning so that learners based at duty stations across the globe can exchange ideas and ask questions among their peers. The use of the learning forums was not mandatory but they were an additional, entirely optional resource for learners to utilize. There were other channels available for users to pose queries and those forums were regularly monitored by the Administration.

160. The Board noted, however, that there were 15 topic-based forums available in iLearn Umoja as at 30 March 2021, accounting for 53 per cent of total topics, and of these, eight forums had no topics. Seven forums, with 21 topics, had received only 70 replies since September 2018, which reflected a lower user adoption rate for the learning forums. In addition, some queries posed by users on relevant forums had received no reply and were pending for as long as two years.

161. The Board is of the view that while the use of the learning forums as a social media platform for iLearn Umoja training is not mandatory, as the business owner, the Administration has the responsibility to focus on long-outstanding queries posed by users on the forums, make these forums more attractive to users and make better use of them as an additional resource for learners. The low user adoption rate limits the realization of the original purposes of the forums.

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.

Training materials for Umoja Extension 2

163. The Board was informed that as an Umoja solution evolves through continuous improvements, related UE2 training contents that were currently published in iLearn Umoja would naturally need to be updated. Tasks related to the update of the training material would be included in the workplan of the respective training teams.

164. The Board noted that as at 31 December 2020, there were 97 courses on UE2 published in iLearn Umoja across eight thematic areas. There were 61 courses published in 2020, of which 27 courses originally developed in previous years had been updated. Although UE2 was further deployed by the end of 2020, courses related to some enhanced system functionalities were still not available in iLearn Umoja, such as courses related to strategic planning, budgeting and performance management, conference and event management and supply chain management.

165. The Board is of the view that the lack of a comprehensive training plan for UE2 and of a time frame for training courses on UE2 to be hosted in iLearn Umoja, time-bound deliverables and the total number of courses are not being communicated to

the respective training teams, which could affect the complete and timely delivery of all UE2 training courses.

166. The Administration stated that currently there was an ongoing assessment of the different platforms in the Enterprise Learning Management System. It could not, therefore, be presumed that all UE2 training materials should be available in iLearn Umoja in the future.

167. The Board recommends that the Administration prepare a comprehensive training plan for all UE2 functionalities and that it host all UE2 training materials, where possible, in one central location.

Integration of Umoja training resources

168. The Board noted that Umoja training courses were developed by different technologies and scattered across three different platforms, including the Inspira Learning Management System, iLearn Umoja and the Blue Line platform of the United Nations System Staff College. Umoja human resources training (human resources partner eCertification) was rolled out on the Blue Line platform on 19 February 2021. In addition to an introductory course, 11 modules were to be available by the end of 2021. The Board noted that only 85 learners and one mentor had enrolled in this course at the time of Board's audit.

169. The Administration explained that owing to the limitations of the iLearn Umoja platform, the new online courses in e-learning format had been developed and hosted by the Staff College. The iLearn Umoja platform and the Staff College Blue Line platform were currently being evaluated for meeting the growing needs of the Secretariat in computer-based training, which was a full-scale pilot recommended by the Department of Management Strategy, Policy and Compliance and the Department of Operational Support and endorsed by Technology Steering Committee in February 2021.

170. The Board is of the view that considering the request to convert and migrate Umoja training courses from the Inspira Learning Management System to iLearn Umoja, which was proposed by the Secretary-General, it is necessary to make an overall assessment of the training resources and user training needs so as to integrate and utilize the training resources currently scattered across three different platforms more efficiently.

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.

172. The Administration, while accepting the Board's three recommendations on training, stated that a question regarding the use of the iLearn forum would be added to the previously mentioned follow-up survey. An assessment of the viability, costs and benefits of the different learning management platforms was currently under way, along with the development of a single point of entry for different users and learners. An Umoja learning strategy for the next five years was under development, which would consider the use of the iLearn forum and the integration of training resources on Umoja.

VII. Umoja business case

A. Benefits realization

173. In its seventh progress report on the implementation of the enterprise resource planning system ([A/73/169](#)), the Board stated that it appreciated the efforts made by process owners to identify business processes and build a basis for the quantum of

benefits realized from year to year, and recommended that the Administration develop an Umoja benefits realization plan, with an emphasis on improvements resulting from Umoja-based business processes and monitoring of those processes to leverage further benefits realization. In 2019, the Board, in its eighth report ([A/74/153](#)), recommended that a plan for Umoja benefits realization be finalized, approved and adopted as a priority and that the responsible division should commence work on the measurement of benefits realization for all project phases that had been implemented. The designated Umoja benefits owner, the Business Transformation and Accountability Division of the Department of Management Strategy, Policy and Compliance had been identified in 2019. The Umoja benefits realization plan was drafted in 2018 and was then updated in 2019 in line with the benefits management framework published in June 2019. The benefits realization plan was finalized in 2020 (see [A/75/386](#)).

174. The benefits management framework (version 2.5 of June 2019) stated that through the end-to-end benefits management cycle at the project level, benefits management included life cycle management to identify, plan, track, realize and confirm benefits. On the basis of experience gained after the deployment of Umoja Foundation and UE1, and as recommended by the Board in its reports (see [A/70/158](#) and [A/71/180](#)), the quantitative benefits targets were revised on the basis of a bottom-up approach undertaken by the process owners for their respective areas.

175. The benefits realization plan sets out the methodology for benefits realization from 2020 onward through the Umoja Change Board and the Benefits Working Group, which is supported with a dedicated resource within the Business Transformation and Accountability Division. The Change Board was established in May 2020 and the Working Group in March 2021. Some of the key improvements that Umoja has already produced are summarized by functional pillar and the qualitative and quantitative benefits are presented by functional area in both the ninth and twelfth progress reports of the Secretary-General. According to the Umoja benefits framework of 2020, the Change Board functional subgroups (i.e. the representatives of the business owners) include finance, human resources, property and asset management, supply chain and procurement, and travel.

176. The Administration stated that, as in the management reform framework, new benefits will be grouped under 14 categories, namely increased transparency, cross-pillar cooperation, whole-of-pillar approach, organizational functions, gender parity, simplification, capability, coherence/coordination, effectiveness, efficiency, empowering managers, delegation, accountability and alignment.

177. The Board noted that in the past four years, quantitative benefits had been presented only in the ninth and twelfth progress reports of the Secretary-General. The only difference was the removal of the 2020–2021 figures in the twelfth progress report, amounting to \$33.6 million. No other updated figures of the quantitative benefits are provided in the twelfth progress report of the Secretary-General.

178. The Administration explained that owing to overlapping organizational implementation of reforms such as management reform and peace and security reform, it was no longer feasible for benefits to be counted as unique to Umoja for the 2018–2019 regular budget period and the 2019/20 peacekeeping budget cycle.

179. The Board also noted that a total of \$64.3 million in reductions was reported as having been identified in the proposed programme budget for the biennium 2018–2019 (shown as a footnote to the table showing the quantitative benefits of Umoja in both the ninth and twelfth progress reports of the Secretary-General). Benefits for the past years were updated directly in terms of a total net reduction of \$64.3 million, which came from five functional pillars, including human resources, finance, central

support services, supply chain/procurement/logistics, and technology and data management, but could not be broken down back into the five pillars.

180. The Board is of the view that a lack of updated quantitative benefits would expose the Organization to the risk of inefficiently safeguarding the Umoja business performance records for consistency, accuracy and integrity. A timely update of the actual benefits of the past years would be useful for a more realistic estimation of the total benefits of Umoja. The focus needs to switch to timely updating of the recording, tracking and reporting of the new and different benefits to be gained from the programme of continuous improvements and from the development of the UE2 solutions, and to provide sufficient information and documentation for the whole process of benefits realization. The Board recognizes that all future quantitative benefits will be submitted through budgetary submissions and also recorded through a coordination mechanism led by the Business Transformation and Accountability Division.

181. The Administration stated that the focus had switched to the timely updating of the recording, tracking and reporting of the new and different benefits. However, during the audit period the Board was not provided with any document to support this point.

182. The Board recommends that the Administration reflect the updated quantitative benefits in the next progress report.

183. The Administration accepted the recommendation.

B. Total cost of ownership

184. The total cost of ownership is a comprehensive assessment of information technology and other costs across enterprise boundaries over time. For information technology, the total cost of ownership includes hardware and software acquisition, management and support, communications, end-user expenses, the opportunity cost of downtime, training and other productivity losses.

185. In the eleventh progress report of the Secretary-General, the estimated total cost of ownership of the project was revised upward from \$1,414 million in 2018 to \$1,429 million in 2019 ([A/73/389](#), table 1, and [A/74/478](#), table 2). In the twelfth progress report of the Secretary-General, the estimated total cost of ownership increased from \$1,429 million in 2019 to \$1,479 million in 2020 ([A/74/478](#), table 2, and [A/75/386](#), table 2). Regarding the estimated total cost of ownership for the period 2008–2030, the Board noted that the total cost of ownership has continued to increase. Details are given in table 2.

186. The Secretary-General, in his twelfth progress report, stated that the methodology for calculating the total cost of ownership had been refined with each iteration since the ninth progress report, taking into consideration the feedback each year from the Board to add additional elements, as well as increase the time horizon of some of the elements.

187. The Board noticed that the Administration, in the twelfth progress report, had corrected the calculation and estimation errors in different components of the direct and indirect costs pointed out by the Board in its ninth annual progress report on the implementation of the United Nations enterprise resource planning system.

188. The Board noted that the Administration's estimate of the total cost of ownership had improved, but there was still room for improvement as indicated in table 2 below.

Table 2
Total cost of ownership
 (Thousands of United States dollars)

| Cost category | <i>Eleventh progress report of the Secretary-General on the enterprise resource planning project</i> | | <i>Twelfth progress report of the Secretary-General on the enterprise resource planning project</i> | |
|----------------------|--|--------------------|---|--------------------|
| | Period | Amount | Period | Amount |
| Direct costs (Umoja) | 2008–2020 | 566 385.6 | 2008–2020 | 565 324.3 |
| | | | 2021 | 25 997.0 |
| Indirect costs | 2013–2019 | 144 150.5 | 2013–2020 | 163 548.9 |
| | 2020–2030 | 38 693.7 | 2021–2030 | 28 909.1 |
| Training costs | 2013–2019 | 83 195.1 | 2013–2020 | 88 782.5 |
| | 2020–2030 ^a | 4 221.0 | 2021–2030 | 34 140.7 |
| Maintenance costs | 2016–2019 | 79 349.1 | 2016–2020 ^b | 97 560.0 |
| | | | 2021 | 24 439.6 |
| | 2020–2030 | 513 771.0 | 2022–2030 | 450 000.0 |
| Total | 2008–2030 | 1 429 766.0 | 2008–2030 | 1 478 702.1 |

^a Revised training estimate of \$28.44 million stated in the ninth annual progress report of the Board of Auditors on the implementation of the United Nations enterprise resource planning system (A/75/159, para. 165).

^b Maintenance costs from 2016–2020 go only up to 31 July 2020.

Direct costs

189. 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 twelfth progress report, the Secretary-General reported that the cumulative funding for direct costs as approved by the General Assembly for the Umoja project for the period 2008–2020 was \$565.32 million, while the Assembly in its resolution 75/253 A approved additional resource requirements for 2021 of \$25.48 million.

190. The Board noted that the Secretary-General indicated in his twelfth progress report that there was a resource requirement of \$3.70 million for 2021 for other support areas.

191. The Administration stated that this did not refer to additional funding authorized for 2021, but rather an authorization by the General Assembly for additional spending against enterprise resource planning funding (64ERP) carry-forward balance of up to \$3.70 million. The Assembly authorized the establishment of the 22 positions financed against that funding for 2021, with a cost limited to \$3.7 million.

192. The Board further noted that the direct costs of \$565.32 million for the period 2008–2020 indicated in table 2 (entitled “Total cost of ownership (estimated to 2030)”) of the twelfth progress report actually reflected the total amount of the approved budget, rather than the actual amount of expenditure.

193. The Administration stated that the expenditure of \$518.94 million from 2008 to 2019 was reported in table 4 (entitled “Cumulative resource requirements, 2008–2020”) of the twelfth progress report, and that the final cumulative expenditure (direct costs) under enterprise resource planning funding (64ERP) for the period 2008–2020 was \$554.68 million.

Indirect costs

194. 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 twelfth progress report, the Secretary-General reported indirect costs of \$163.55 million for the period 2013–2020, with estimated costs for the period 2021–2030 of \$28.91 million.

195. The Board considered that there was a set of stable calculation methods and tools for the tracking of team indirect resources costs used in the twelfth progress report. The common standard cost across all process owners was used as a base to calculate indirect costs.

196. The Board noted that the estimated amount had been adjusted for the period 2021–2030 in the eleventh and twelfth progress reports of the Secretary-General. In the twelfth progress report, the indirect cost projections for continuous improvements for the period 2021–2030 amounted to \$28.91 million as compared with \$26.26 million in the eleventh progress report, which represents an increase of \$2.65 million over 10 years.

197. The Administration stated that the process of continuous improvements was under the newly established governance mechanism of the Enterprise Resource Planning Solution Division as of 1 January 2021. Estimates going forward would be refined as more experience was gained. There would be only one additional set of indirect cost calculations undertaken for the next progress report of the Secretary-General.

Training costs

198. Training costs represent the costs incurred for training in terms of user staff time and travel in the calculation of the total cost of ownership of Umoja. In his twelfth progress report, the Secretary-General reported training costs of \$88.78 million for the period 2013–2020; the costs estimated for the period 2021–2030 were \$34.14 million.

199. The Board noted that the assumptions and parameters for estimation of training costs had been updated for the Secretary-General's twelfth progress report.

200. The Administration responded that the updates set out below were made to the cost decay model, taking into account that the remaining UE2 deployments would have been completed by the end of 2020 and the succeeding hypercare and stabilization stage;

(a) As no training sessions using the blended learning method were delivered during the period from August 2019 to July 2020, that training type had been eliminated;

(b) The project is expected to have reached its peak in terms of training numbers by the second quarter of 2021. As a result, from the third quarter of 2021, as the Enterprise Resource Planning Solution Division's focus continues to shift to enhancements and continuous improvements, it is expected that the demand for training will start to decrease, especially given user maturity;

(c) The decay model attempts to show steadily decreasing cost through an enhanced decay rate, using an assumption that there is a steady decrease of 20 per cent in instructor-led training and a related decrease in computer-based training, and performing the calculation so as to reach a more realistic assumption for the period 2022–2030;

(d) Based on the actual cost of training-related travel from 1 August 2019 to 31 July 2020, the estimated travel costs between August 2020 and July 2021 had been conservatively estimated at \$15,000 (for within mission/duty station training-related

travel), as well as for the following period from August 2021 to July 2022 with a decrease relative to the percentage decrease of 20 per cent in instructor-led training. The estimates from 2022 followed the same approach, except that the initial figure of \$150,032 was based on pre-pandemic travel levels.

201. The Board noted that after the change in estimation of costs, the training costs for the period 2020–2030 were revised from \$4.22 million to \$28.44 million in the eleventh progress report, while the estimated training costs for 2021–2030 in the twelfth progress report increased by \$5.7 million or nearly 20 per cent compared with the eleventh progress report.

Maintenance costs

202. The Secretary-General, in his twelfth progress report, reported maintenance costs of \$97.56 million for the period 2016–2020; the costs for maintenance estimated for 2021 were \$24.44 million and for the period 2022–2030 were \$450 million.

203. The Board noticed that the method used to estimate maintenance costs had been changed in the recent three reports. The Secretary-General, in his tenth progress report, reported that the projected maintenance costs for the period 2020–2030 were \$528 million. The estimation was based on an estimate of annual maintenance costs of Umoja of \$48 million, including \$32 million for maintenance activities, with the remaining \$16 million for post-implementation mainstreaming by the Umoja project office. The Secretary-General, in his eleventh progress report, reported that the projected maintenance costs for the period 2020–2030 were \$513.77 million. The estimation was based on the projected budget for 2020 of \$30.87 million, with further extrapolation at the rate of 8 per cent for the period 2021–2030. The Secretary-General, in his twelfth progress report, reported that the projected maintenance costs for the period 2022–2030 were \$450 million. The maintenance costs beyond 2022 were estimated at approximately \$25 million for the Enterprise Resource Planning Solution Division and \$25 million for the Office of Information and Communications Technology annually.

204. The Board noted that the method used to estimate maintenance costs had been changed since 2018. The estimation patterns for each year in the period 2022–2030 fluctuated and were based on an equal amount each year or an annual increase at 8 per cent rather than on detailed cost categories.

205. The Board is concerned that not using detailed data for estimations would produce the risk of inconsistency and inaccuracy in forecasting maintenance costs.

206. The Board recommends that the Administration update the estimation of maintenance costs with more detailed cost information in the next progress report.

207. The Administration accepted the recommendation and stated that the Office of Information and Communications Technology would take the lead in providing the maintenance costs for the Umoja system from 2022 to 2030 for the thirteenth progress report of the Secretary-General, in coordination with the Enterprise Resource Planning Solution Division.

VIII. Mainstreaming plan

208. The General Assembly, in its resolution [73/279](#), requested the Secretary-General to provide a detailed plan for the mainstreaming of the Umoja team into the Secretariat, including measures to ensure a sustainable business model of the Umoja project.

209. The Secretary-General, in his twelfth progress report, stated that when Umoja ceased to be a project at the end of 2020, it had to be mainstreamed fully into the Secretariat with a sustainable business model that could ensure that the solution remained fit-for-purpose and continued to support the business case that had driven its approval by the General Assembly. The mainstreaming plan was outlined in the report. The mainstreaming plan covered a governance model, transforming a business need into a solution, the total cost of ownership and benefits realization.

210. The Board noted that there were no measurable indicators related to the mainstreaming plan to provide an effective assessment of resource requirements, taking into account the stabilization activities, the workload and capacity development.

211. The Board is of the view that, considering that the complexities involved in the stabilization include but are not limited to the variety of functions, the need for flexibility of the technical tools and the complexity of user needs, it is difficult to identify the specific resource constraints and causes of problems in the project owing to a lack of quantitative indicators. In addition, considering the challenging environment, the complex processes involved and the tight timeline for implementing the mainstreaming plan, it would be beneficial to set up measurable indicators with a critical path, a detailed task-wise schedule and a monitoring mechanism.

212. The Board recommends that the Administration set up specific indicators to monitor the progress of implementation of the mainstreaming plan.

213. The Administration accepted the recommendation.

IX. Acknowledgement

214. 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

Annex

Status of implementation of recommendations up to the year ended 31 December 2019

| 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 ERP system, including how it intends to realize both qualitative and quantitative benefits of improved information | The Umoja benefits realization plan was finalized as reported in the twelfth progress report of the Secretary-General. The plan was subsequently presented to the Umoja Steering Committee on 9 December 2020, where the Committee accepted the plan | Given that no consolidated data from the enterprise resource planning system was presented, the recommendation is considered to be under implementation | | 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 and 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 Umoja benefits realization plan was finalized as reported in the twelfth progress report of the Secretary-General. The plan was subsequently presented to the Umoja Steering Committee on 9 December 2020, where the Committee accepted the plan | There is no level of future performance to be achieved post-implementation. The recommendation is therefore considered to be under implementation | | 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 | The Umoja benefits realization plan was finalized as reported in the twelfth progress report of the Secretary-General. The plan was subsequently presented to the Umoja Steering Committee on | Given that no access to skills and capability in operational improvement was provided, 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 |
| | | | include providing access to skills and capability in operational improvement, and holding business areas to account for delivering the expected benefits | 9 December 2020, where the Committee accepted the plan | | | | | |
| 4 | 2015 | A/71/180 , summary, para. 23 (e) | The Board recommends that the Office of Information and Communications Technology and process owners develop detailed mainstreaming plans and seek approval for the required funding at the seventy-first session of the General Assembly | The mainstreaming plan was presented to the Umoja Steering Committee on 29 July 2020 for feedback and discussion. The plan was then finalized as reported in the twelfth progress report of the Secretary-General, together with the approval of the mainstreaming plan by the Advisory Committee on Administrative and Budgetary Questions, the creation of the Enterprise Resource Planning Solution Division and the associated funding | In view of the action taken, the recommendation is considered to have been implemented | X | | | |
| 5 | 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 benefits realization that will arise from the use of Umoja | The benefits realization plan was finalized as reported in the twelfth progress report of the Secretary-General. The plan was subsequently presented to the Umoja Steering Committee on 9 December 2020, where the Committee accepted the plan | Given that no baseline for the monitoring of future benefits realization was provided, the recommendation is considered to be under implementation | | X | | |
| 6 | 2016 | A/72/157 , para. 80 | The Board recommends that the results of the e-procurement pilot be expeditiously analysed and taken into account when implementing e-tendering for all applicable items | In 2019, a project to implement an e-tendering solution (SAP Ariba) was initiated. A pilot was conducted with two solicitation documents | In view of the action taken, the recommendation is considered to have been 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 |
| 7 | 2017 | A/73/169 , para. 38 | <p>The Board recommends that:</p> <p>(a) The Administration should develop an Umoja benefits realization plan, with an emphasis on improvements resulting from Umoja-based business processes and monitoring of the processes to leverage further benefits realization;</p> <p>(b) The Administration should maintain adequate documentation supporting the computation of quantitative figures for benefits realization;</p> <p>(c) The Administration should identify a coordinating division/unit as a primary process owner of benefits realization responsible for</p> <p>(i) monitoring the process of benefits realization,</p> <p>(ii) engaging stakeholders of the various units and divisions, and</p> <p>(iii) continuous monitoring</p> | The benefits realization plan was finalized as reported in the twelfth progress report of the Secretary-General. The plan was subsequently presented to the Umoja Steering Committee on 9 December 2020, where the Committee accepted the plan | There is no documentation supporting the computation of quantitative figures for benefits realization provided. The recommendation is considered to be under implementation | | X | | |
| 8 | 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 | A solution to the negative uncertified sick leave quotas in Umoja has been developed and is undergoing testing. In addition, guidance documents have been disseminated to relevant offices to provide clear instructions on how to clean up any negative balances | 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 |
| 9 | 2017 | A/73/169 , para. 61 | The Board recommends 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 recommendation was being addressed and the Administration planned to complete development of a fix by the end of May and deploy it into production by July 2021 | There were cases of negative leave balances in 2020. During the present audit the Board reiterated this recommendation and combined two recommendations into one. Hence, the Board closes this recommendation | X | | | |
| 10 | 2017 | A/73/169 , para. 71 | The Board recommends that asset classes be reviewed to ensure that similar equipment is categorized under the same asset classes | Settings in the material master records consistently set the asset class for new items purchased through Umoja with asset master record shells created at the time of purchase. For issues resulting from manual creation of records or changes to records initiated by end users, the Office of Programme Planning, Finance and Budget will continue to review and strengthen the accountability and stewardship of United Nations property by end users | In view of the action taken, the recommendation is considered to have been implemented | X | | | |
| 11 | 2017 | A/73/169 , para. 85 | The Board recommends that the Administration ensure that properly documented reviews of user access provisioning are mandatorily carried out by security liaison officers with a frequency to be determined by Umoja process owners | The Umoja security liaison officer terms of reference clearly specify that the security liaison officers are to carry out this function. The Umoja project developed the security liaison officer quarterly access validation tool and procedure to identify cases where user access should be removed. This procedure turned into a bimonthly activity and was renamed as the security liaison officer access validation procedure | In view of the action taken, the recommendation is considered to have been 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 |
| 12 | 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 | This is related to A/73/169 , paragraph 85, above, which is also fully implemented | There were cases in which separated and retired employees had Umoja access. Documentation is needed to further prove the effectiveness of the access validation procedure. The recommendation is therefore considered to be under implementation | | X | | |
| 13 | 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 | Points (a) and (b) of this recommendation have already been considered fully implemented by the Board. Regarding point (c), it is standard procedure for security liaison officers to run the report. The user access provisioning tool also proactively flags segregation of duty violations during role provisioning | There were still discrepancies with respect to the roles for segregation of duty violations between the user access provisioning tool and the Umoja roles guide and security liaison officer workbook. These discrepancies may impede appropriate role provisioning. The recommendation is considered to be under implementation | | X | | |
| 14 | 2017 | A/73/169 , para. 117 | The Board recommends that all the actionable items of the report on the disaster recovery exercise should be completed at the earliest opportunity and a repeat exercise of the updated disaster recovery plan should | All actionable items from the disaster recovery exercise have been completed and a proper disaster recovery failover and failback was conducted in the fourth quarter of 2020. This produced a lessons learned report. | In view of the action taken, the recommendation is considered to have been 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 |
| | | | be conducted after hardware migration to ensure the disaster recovery preparedness of Umoja | Subsequent annual disaster recovery exercises are planned every year after the General Assembly main sessions are completed in the fourth quarter | | | | | |
| 15 | 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 stated that the recommendation was under implementation | Given that a similar issue continued to be noticed, the recommendation is considered to be under implementation | | X | | |
| 16 | 2017 | A/73/169, para. 168 | The Board recommends that operationally imperative change requests and those directly relatable to potential for benefits realization, as long as they do not impact UE2 project deliverables, should be prioritized to ensure continuous improvements to the Umoja system | The Umoja governance committees have been meeting regularly and project updates are reviewed and the risks and mitigation plans are discussed. The new Umoja Change Board governance structure was presented and approved at the Umoja Steering Committee meeting. The Change Board ensures that operationally imperative change requests and those directly relatable to potential for benefits realization are prioritized as part of the continuous improvements to the Umoja system | In view of the action taken, the recommendation is considered to have been implemented | X | | | |
| 17 | 2017 | A/73/169, para. 173 | The Board recommends that the Umoja transition plan for mainstreaming should continue to factor in the potential impact of the Secretary-General's reforms, the timelines of UE2 deployment and the requirements for continuous improvements in various modules | The mainstreaming plan was described in the twelfth progress report of the Secretary-General. The plan factors in the potential impact of the Secretary-General's reforms, the timelines of UE2 deployment and the requirements for continuous improvements in various modules | In view of the action taken, the recommendation is considered to have been 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 |
| 18 | 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 steering the project to its completion | The Umoja governance committees met regularly in 2020 to ensure that the UE2 projects stayed on track for end 2020 deployment. All project updates were reviewed and the risks and mitigation plans were discussed. The Umoja Steering Committee met six times in 2020 | Given that a similar issue continued to be noticed, the recommendation is considered to be under implementation | | X | | |
| 19 | 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 has enriched the 2019 and 2020 project plans in Microsoft Project. Tracking detailed individual tasks across the 2019 subprojects if expanded to every single individual predecessor and successor task would prove unmanageable and take resources away from designing and deploying the subprojects | Given that a similar issue continued to be noticed, the recommendation is considered to be under implementation | | X | | |
| 20 | 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 | UE2 is fully deployed and the project was closed down and mainstreamed. The risk registers were regularly monitored by Umoja governance bodies. The Enterprise Resource Planning Solution Division was established on 1 January 2021 | Given that a similar issue continued to be noticed, the recommendation is considered to be under implementation | | X | | |
| 21 | 2018 | A/74/153 , para. 51 | The Board recommends that the Administration take steps to assess the impact (including financial impact) | The United Nations has remained compliant and within the licensed thresholds following the executed agreements with SAP on usage | In view of the action taken, the recommendation is considered to have been 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 |
| | | | of interfaces to be integrated with Umoja | and metrics of the SAP products purchased/licensed to the United Nations. The periodic checks by SAP licensing itself, in addition to ad hoc spot checks and exchanges on usage/metrics with SAP, confirm full compliance | | | | | |
| 22 | 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 | Business readiness is addressed as part of the individual deployments and formally assessed during the respective operational readiness reviews before each deployment commences. The project is slated for completion and closure by 31 December 2020 | Given that the supporting documentation required by the Board was not received, the recommendation is considered to be under implementation | | X | | |
| 23 | 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 address the complexities of project implementation | Currently, 10 posts of the enterprise resource planning project are in various stages of the recruitment process, with two in the final stage for confirmed onboarding in the course of the next few months | Considering that the recruitment is in process, the audit recommendation is under implementation | | X | | |
| 24 | 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 | A total of 43 recruitments of SAP specialists completed in 2017–2020 allowed the coverage of all major technical requirements for SAP-based enterprise resource planning implementation. The increased internal capacity has enabled the progressive reduction of consultants without compromising delivery | Given that there are important positions vacant in the Administration, 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 |
| 25 | 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 | Another major risk to the ongoing maintenance of the Umoja solution was its growing functional and technical complexity, which was successfully mitigated by continually reprofiling the core team for recruitment and by the technical training programme | Given that there are important positions vacant in the Administration, the recommendation is considered to be under implementation | | X | | |
| 26 | 2018 | A/74/153 , para. 81 | The Board recommends that the Administration review the business requirement for raising invoices through the file upload process, restrict the types of accounts payable and limit the number of users under this process to ensure that the full benefits of the Umoja three-way matching functionality are realized | This change went to production on 30 October 2020 through a change request. The solution hid the "posted" radio button from the accounts payable and accounts receivable user roles (FA.02 and FA.03) as well as FM.08 | In view of the action taken, the recommendation is considered to have been implemented | X | | | |
| 27 | 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 | The user verification testing is to be completed on 31 May 2021. The new security roles will be carefully deployed in the course of the third and fourth quarters of 2021 | Given that the Administration has stated that the recommendation is partially implemented, it is considered to be under implementation | | X | | |
| 28 | 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 | A first review of the banking file shows that the identified duplicates are not true duplicates, which means that the duplicates of vendors created with different names would need to be cleaned up. Therefore, a financial risk has currently not been identified | Given that the Administration has stated that the recommendation is partially implemented, it 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 |
| | | | | and this task is in progress until the review is finalized by the end of 2021 | | | | | |
| 29 | 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 | The change is currently under quality assurance testing and is expected to be deployed in July 2021 | Given that the Administration has stated that the recommendation is partially implemented, it is considered to be under implementation | | X | | |
| 30 | 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 stated that the recommendation was under implementation | Given that a similar issue continued to be noticed, the recommendation is considered to be under implementation | | X | | |
| 31 | 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 Administration stated that the recommendation was under implementation | Given that a similar issue continued to be noticed, the recommendation is considered to be under implementation | | X | | |
| 32 | 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 UE2 functionalities | The Administration was evaluating various functionalities of iLearn Umoja and the Blue Line platform for organizational learning needs. Also, the Administration was currently developing the Umoja learning strategy. The training plans for UE2 functionalities would be reflected there as well, based | 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 |
| | | | | on the needs of the responsible Umoja functional subgroups | | | | | |
| 33 | 2018 | A/74/153 , para. 121 | The Board recommends that Umoja benefits realization plan be finalized as a priority and that the division responsible commence work on the measurement of benefits realization for all project phases that have been implemented | The benefits realization plan was finalized as reported in the twelfth progress report of the Secretary-General. The plan was subsequently presented to the Umoja Steering Committee on 9 December 2020, where the Committee accepted the plan | In view of the action taken, the recommendation is considered to have been implemented | X | | | |
| 34 | 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 | All errors were corrected and information was provided to the Board in 2020. The corrections are further reflected in the twelfth progress report of the Secretary-General | Given that action is under way, the recommendation is considered to be under implementation | | X | | |
| 35 | 2018 | A/74/153 , para. 145 | The Board recommends that the Administration work out and include training costs for the period 2019–2030 in the total costs of ownership | The Administration included actual costs for training through 31 July 2020 and estimated costs through 2030 | In view of the action taken, the recommendation is considered to have been implemented | X | | | |
| 36 | 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 | Actual cost of maintenance is included in the twelfth progress report of the Secretary-General. Maintenance has been estimated in the total cost of ownership to 2030 | Given that action is under way, the recommendation is considered to be under implementation | | X | | |
| 37 | 2018 | A/74/153 , para. 156 | The Board recommends that the Administration prioritize the preparation and putting in motion of the Umoja | The mainstreaming plan was presented to the Umoja Steering Committee on 29 July 2020 for feedback and | 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 |
| | | | 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 UE2 stabilization, production support, continuous improvements and the development of the skills necessary to carry out these responsibilities | discussion. This plan was then finalized as reported in the twelfth progress report of the Secretary-General, with the approval of the mainstreaming plan by the Advisory Committee on Administrative and Budgetary Questions, the creation of the Enterprise Resource Planning Solution Division and the associated funding | | | | | |
| 38 | 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 UE2 subprojects and overcoming the hurdles in adhering to the project timelines, in order to enable a concerted decision to guide project deployment | The Umoja governance committees have met regularly in 2020 to ensure that the UE2 projects stay on track for end 2020 deployment. All project updates are reviewed and the risks and mitigation plans are discussed. The Umoja Steering committee met six times in 2020 | Given that a similar issue continued to be noticed, the recommendation is considered to be under implementation | | X | | |
| 39 | 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 has enriched the 2019 and 2020 project plans in Microsoft Project. Tracking detailed individual tasks across the 2019 subprojects if expanded to every single individual predecessor and successor task would prove unmanageable and take resources away from designing and deploying the subprojects | 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 |
| 40 | 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 | UE2 is fully deployed and the project was closed down and mainstreamed. The risk registers were regularly monitored by Umoja governance bodies. The Enterprise Resource Planning Solution Division was established on 1 January 2021. All risks are reviewed with the business owners and the Umoja Steering Committee, where the risks are mitigated to ensure that UE2 is fully deployed as scheduled | In view of the action taken, the recommendation is considered to be under implementation | | X | |
| 41 | 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 mitigation measures, keeping the risk register as the central document for the management of risks | UE2 is fully deployed and the project was closed down and mainstreamed. The risk registers were regularly monitored by Umoja governance bodies. The Enterprise Resource Planning Solution Division was created on 1 January 2021. As presented to the Independent Audit Advisory Committee on 22 July, all risks are reviewed with the business owners and the Umoja Steering Committee, where the risks are mitigated to ensure that UE2 is fully deployed as scheduled | In view of the action taken, the recommendation is considered to be under implementation | | X | |
| 42 | 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, | Out of the dozens of products/usages by class/type, only a few are significantly below the threshold level and even fewer are close to exhaustion level. The cost differential of not fully used licensing metrics is not | 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 |
| | | | and continue to review financial risks on account of indirect data access | material as the licensing threshold is determined at the time the terms and conditions are negotiated for a discounted price. Once acquired/used, it is not possible for the United Nations to unilaterally discontinue maintenance for the portion not used, etc. | | | | | |
| 43 | 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 stated that the oversight/monitoring tools for important fields in employee master data were being implemented | Given that action is under way, the recommendation is considered to be under implementation | | X | | |
| 44 | 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 Administration stated that the recommendation was under implementation | Given that action is under way, the recommendation is considered to be under implementation | | X | | |
| 45 | 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 case of rescinded delegations and reflect the validity period and approved threshold for | The Administration stated that the recommendation was under implementation | 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 |
| | | | delegations and the need for user roles with global and all-entity rights | | | | | | |
| 46 | 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 Administration stated that the recommendation was under implementation | Given that action is under way, the recommendation is considered to be under implementation | | X | | |
| 47 | 2019 | A/75/159 , para. 127 | The Board recommends that the Administration continue to take action to link data from other key systems with HANA to enrich the capabilities of business intelligence reporting and develop dashboards for monitoring of delegation of authority, in a time-bound manner and with due consideration for information security and data protection | As part of the 2021 workplan, the Business Transformation and Accountability Division identified the following data sources to be integrated with HANA: Inspira, United Nations Development Programme and uniformed capabilities management solution data. All of these data sets were identified as necessary for the Member States dashboard project | Given that action has been taken, the recommendation is considered to have been implemented | X | | | |
| 48 | 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 Department of Operational Support is currently working in collaboration with Department of Management Strategy, Policy and Compliance, through the joint Umoja human resources support framework, to develop a model that ensures the efficient resolution of Umoja tickets related to human resources | Given that a similar issue continued to be noticed, 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 |
| 49 | 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 Administration stated that the recommendation was under implementation | Given that a similar issue continued to be noticed, the recommendation is considered to be under implementation | | X | | |
| 50 | 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 UE2 functionalities and make available all training material on iLearn Umoja | The Administration was evaluating various functionalities of iLearn Umoja and the Blue Line platform for organizational learning needs. Also, the Administration was currently developing the Umoja learning strategy. The training plans for UE2 functionalities would be reflected there as well, based on the needs of the responsible Umoja functional subgroups | Given that action is under way, the recommendation is considered to be under implementation | | X | | |
| 51 | 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 development of tools would be carried out as part of the development and operationalization of the Umoja learning strategy | Given that action is under way, the recommendation is considered to be under implementation | | X | | |
| 52 | 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 UE2 benefits can be | The Umoja Benefits Working Group held its first meeting on 31 March, 2021. The next meeting was on 5 May. In the meantime, the focal point worked with the functional subgroups on tracking the change requests and with the Enterprise Resource Planning | The assessment is yet to be completed. 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 |
| | | | evaluated as planned in the given timelines | Solution Division on developing the business requirements tool to enhance tracking and reporting | | | | | |
| 53 | 2019 | A/75/159 , para. 172 | The Board recommends that the Administration take steps to correct the calculation and estimation errors in different components of the direct and indirect costs and accordingly revisit the amount of the total cost of ownership to be presented to the General Assembly in the next progress report | All errors were corrected and information was provided to the Board in 2020. Information on the corrections is also reflected in the twelfth progress report of the Secretary-General | In view of the action taken, the recommendation is considered to have been implemented | X | | | |
| 54 | 2019 | A/75/159 , para. 177 | The Board reiterates the recommendation that the Administration prioritize the preparation and putting in motion of the Umoja mainstreaming plan. The Board also recommends that the mainstreaming plan be presented to the General Assembly in the next progress report of the Secretary-General on the enterprise resource planning project | The mainstreaming plan was presented to the Umoja Steering Committee on 29 July 2020 for feedback and discussion. This plan was then finalized as reported in the twelfth progress report of the Secretary-General, with the approval of the mainstreaming plan by the Advisory Committee on Administrative and Budgetary Questions, the creation of the Enterprise Resources Planning Solution Division and the associated funding | In view of the action taken, the recommendation is considered to have been implemented | X | | | |
| 55 | 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 UE2 stabilization, production support, continuous improvements and the | The mainstreaming plan was presented to the Umoja Steering Committee on 29 July 2020 for feedback and discussion. This plan was then finalized as reported in the twelfth progress report of the Secretary-General, with the approval of the mainstreaming plan by the Advisory | 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 | |
| | | | development of the skills necessary to carry out these responsibilities | Committee on Administrative and Budgetary Questions, the creation of the Enterprise Resources Planning Solution Division and the associated funding | | | | | | |
| Total number of recommendations | | | | | | 55 | 15 | 40 | – | – |
| Percentage of the total number of recommendations | | | | | | 100 | 27 | 73 | – | – |