
# INTERNAL AUDIT DIVISION

# REPORT 2019/077

## Audit of technology obsolescence at the Office of the United Nations High Commissioner for Refugees

**There was a need to establish a regulatory framework for technology obsolescence, address technology asset inventory discrepancies, and assign centralized responsibility for planning, budgeting and procurement of information and communications technology equipment**

**26 August 2019**
**Assignment No. AR2019/166/02**

# Audit of technology obsolescence at the Office of the United Nations High Commissioner for Refugees

## EXECUTIVE SUMMARY

The Office of Internal Oversight Services (OIOS) conducted an audit of technology obsolescence at the Office of the United Nations High Commissioner for Refugees (UNHCR). The objective of the audit was to assess whether UNHCR had adequate and effective control processes in place to alleviate the threats of interruptions to its business processes posed by obsolescence of technology. The audit covered the period from 1 January 2017 to 31 December 2018 and included a review of higher and medium risks related to the regulatory framework and assignment of responsibilities for technology obsolescence; procurement of information and communications technology (ICT) assets; ICT asset management life cycle; budgeting for ICT equipment; and interoperability of new assets with assets in use.

Whilst UNHCR had recognized obsolescence of ICT assets as a key institutional risk, there was no regulatory framework to address this important issue. UNHCR needed to address the growing obsolescence in ICT equipment and seek management approval for assigning centralized responsibility to the Division of Information Systems and Telecommunications (DIST) for planning, budgeting and procurement of ICT equipment. UNHCR also needed to address the discrepancies between the ICT assets procured and those that were installed on the network.

OIOS made three recommendations. To address issues identified in the audit, UNHCR needed to:

- Establish a regulatory framework for information technology obsolescence in the Organization;
- Address the growing obsolescence of ICT equipment by seeking management approval for: (a) a leading role for DIST in the planning and budgeting of such equipment; and (b) a centrally managed capital fund for procuring ICT assets; and
- Ensure that: (a) Serially Tracked Items such as ICT devices procured for UNHCR's use are distinguished from similar items procured for use by implementing partners and distinctly accounted for; and (b) procedures are in place to reconcile ICT asset procurement data in the UNHCR enterprise resource planning system 'Managing for Systems, Resources and People' with devices detected and managed on the UNHCR network.

UNHCR accepted the recommendations and has initiated action to implement them.

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# Audit of technology obsolescence at the Office of the United Nations High Commissioner for Refugees

## I. BACKGROUND

1. The Office of Internal Oversight Services (OIOS) conducted an audit of technology obsolescence at the Office of the United Nations High Commissioner for Refugees (UNHCR).

2. Frontline information and communications technology (ICT) includes the hardware, software, and supporting network infrastructure that helps UNHCR achieve organizational objectives and deliver services without which it would be unable to function effectively. Due to the high speed of innovation and subsequent refresh rate of technology assets compared to other types of assets, frontline ICT assets can quickly become obsolete if they are not carefully managed on a life cycle basis. Inadequate management of the inevitable obsolescence of frontline ICT assets could lead to poor or degraded service delivery or extended outages culminating in interruptions to UNHCR's protection services. A better practice approach to ICT asset management involves the acquisition, use, and disposal of ICT assets to maximize service delivery over an asset's useful life. Management of the life cycle of a particular technology mitigates risk and helps define and plan the cost of updating and replacing assets when they become obsolescent.

3. Chapter 2 of the UNHCR Manual specifies that the Division of Information Systems and Telecommunications (DIST) is responsible for ensuring that UNHCR has global ICT systems, services and infrastructure that are stable, modern and updated and that its technologies are up-to-date and fit-for-purpose to best achieve the Organization's operational goals. DIST is also responsible for advising UNHCR on how best to innovate, leverage and apply emerging technologies to support business objectives.

4. The Administrative Instruction UNHCR/AI/2017/13 on Serially Tracked Items (STIs) defines STIs as certain tangible assets - such as computers, servers, radio equipment, generators and motorcycles - with an expected original purchase, or fair value in case of donations, of less than $10,000 that are expensed upon acquisition and are neither accounted for as Property, Plant and Equipment (PPE) nor as inventory but nevertheless need to be tracked for operational purposes. The Administrative Instruction on STIs established the useful life of desktop computers (4 years), laptops (3 years) and core network devices (5 years) and also introduced an automatic deletion from the UNHCR enterprise resource planning system 'Managing for Systems, Resources and People' (MSRP) two years after the end of their useful life.

5. The summary of the purchase orders processed by the Supply Management Service (SMS) of the Division of Emergency, Security and Supply (DESS) for the period from 2015 to 2018 for three primary vendors indicated that 29,503 items comprising of laptops, desktop computers and network devices were procured at a total cost of $38 million.

6. Comments provided by UNHCR are incorporated in italics.

## II. AUDIT OBJECTIVE, SCOPE AND METHODOLOGY

7. The objective of the audit was to assess whether UNHCR had adequate and effective control processes in place to alleviate the threats of interruptions to its business processes posed by obsolescence of technology.

8. The audit was included in the 2019 risk-based work plan of OIOS because of the inherent risks posed by technology obsolescence which could adversely affect programme delivery and protection functions throughout the Organization.

9. OIOS conducted this audit from March to May 2019. The audit primarily covered the period from 1 January 2017 to 31 December 2018. SMS procured ICT assets from three major vendors with whom it had concluded global frame agreements. In addition, some of the field operations also procured ICT equipment directly from these vendors. For a meaningful assessment of the possible obsolescence of ICT assets, OIOS reviewed the procurement and ICT asset data pertaining to the 4-year period from 2015 to 2018. Based on an activity-level risk assessment, the audit covered higher and medium risk areas in the management of technology obsolescence in UNHCR, which included: the regulatory framework and assignment of responsibilities in relation to technology obsolescence; procurement of ICT assets; ICT asset management life cycle; budgeting for ICT equipment; and interoperability of new assets with assets in use.

10. The audit methodology included: (a) interviews with key personnel; (b) reviews of relevant documentation; (c) analytical reviews of data from MSRP, UNHCR Service Desk and network tools; and (e) sample testing of controls.

11. The audit was conducted in accordance with the International Standards for the Professional Practice of Internal Auditing.

# III. AUDIT RESULTS

## A. Regulatory framework for managing technology obsolescence

There was a need for a regulatory framework for managing technology obsolescence

12. The UNHCR Corporate Risk Register identified technology obsolescence as a key risk and noted that if DIST does not update the ICT infrastructure, applications, and systems in line with product and vendor recommendations, new releases of one product will be incompatible with obsolete products and essential corporate systems will become unusable resulting in extended system downtime, loss of productivity and additional unplanned expense to replace or bypass the unavailability of core corporate systems. International Standards[1] provide guidance for establishing a framework for obsolescence management and for planning a cost-effective obsolescence management process that is applicable through all phases of the product life cycle (i.e., planning, acquisition, operation and maintenance and disposal). Life cycle management is particularly important for ICT assets due to the high pace of innovation.

13. In 2017, DIST had promulgated the Operational Guidelines (OG) for Budgeting and Procurement of ICT Equipment and Services (UNHCR/OG/2015/6/Rev.2) to assist UNHCR Field Offices as well as Bureaux and Divisions at headquarters in preparing their annual administrative budgets for the procurement and management of ICT equipment and services. These were issued to address shortcomings and progressive obsolescence in the existing guidance for budgeting and procurement of ICT equipment and services.

14. Whilst UNHCR had identified technology obsolescence as an institutional risk, OIOS noted that the OG did not lay down an adequate regulatory framework to handle obsolescence-related risks. In particular, the OG had the following shortcomings:

[1] International Electrotechnical Committee IEC 62402: 1.0

- Its effectiveness was impaired since it was issued as an operational guidance which meant its compliance was recommended but not mandatory;

- The OG did not set out clearly the specific roles and responsibilities of headquarters and field offices in relation to handling obsolescence risks. For example, it did not clearly assign which entity within UNHCR was responsible to ensure the effective management of obsolescence-related risks. However, DIST clarified that even with limited resources, it was monitoring and flagging equipment obsolescence globally and whether the field operations followed the OG; and

- The OG did not address the need for a framework for obsolescence management taking into consideration the four-stage asset life cycle. Therefore, UNHCR did not have formal arrangements for effective management and monitoring of the life cycle status of ICT equipment and the management of the end-of-life stage of aged technologies across UNHCR.

15. In the absence of an appropriate regulatory framework, ICT obsolescence was not dealt with effectively, as further explained in subsequent sections of this report.

**(1) The UNHCR Division of Information Systems and Telecommunications should establish a regulatory framework for information technology obsolescence in the Organization.**

*UNHCR accepted recommendation 1 and stated that DIST and the Assets and Fleet Management Section of DESS were updating the Administrative Instruction on Serially Tracked Items to specifically address Technology Obsolescence.* Recommendation 1 remains open pending receipt of the updated Administrative Instruction on Serially Tracked Items setting out the regulatory framework for information technology obsolescence in UNHCR.

Need to address growing obsolescence in ICT equipment and for assigning centralized responsibility to DIST for planning, budgeting and procurement of ICT equipment

16. Control Objectives for Information and Related Technologies (COBIT), which is a good practice framework on ICT management and governance, requires that organizations should prepare budgets reflecting the investment priorities supporting strategic objectives based on the portfolio of ICT-enabled programmes and ICT services. The 2017, OG issued by UNHCR stated that the justification for its issuance was to ensure:

- Better and more accurate budgets through involvement of technical staff;
- Budgeting for regular replacement of ICT assets due to loss, damage, or obsolescence;
- Better coordination between field offices and headquarters on procurement actions and consolidation of requirements to achieve best value for money on all expenditures for ICT services and equipment;
- An understanding of where funds are allocated and the ability to make informed decisions on budget reductions;
- Timely replacement of obsolete equipment; and
- No duplication of procurement actions unless justified.

17. The OG required that a budget provision must be made sufficiently in advance to replace obsolete or fully depreciated ICT equipment. For a four-year replacement cycle, equipment replacement should be budgeted in the year the equipment is three years old. For example, during the 2018 budget planning

exercise carried out in the spring of 2017, field operations should budget for the replacement of equipment purchased in 2014.

18. OIOS noted that the budgetary arrangements for refreshing inventory and managing obsolescence were fragmented and weak. The OG stated that "DIST does not maintain a central budget for the procurement of ICT equipment for normal use in Headquarters or in Field Offices. The budget holder of these locations is expected to make sufficient provision for all ICT procurement within the next budgeting cycle". In the absence of a central budget, UNHCR had not put in place ICT investment plans backed by adequate funding strategies. At the field level too, funding arrangements were discretionary in nature, given that budget holders were only 'expected' to make sufficient provisions for replacement. Field operations continued to use obsolete equipment since budgetary provisions were not made for their replacement.

19. OIOS noted that 18,908 computers (8,657 laptops and 10,251 desktop computers) existed on the UNHCR network as at audit date, of which 14,615 were added between 2015 and 2018. Though desktop computers and laptops have different useful life spans, for ease of reporting, they are not differentiated in this report[2]. Their ageing information is provided below:

| **Year in which desktop computers and laptops were added to network** | **Number** |
|---|---|
| 2019 (up to March) | 263 |
| 2018 | 4,714 |
| 2017 | 4,342 |
| 2016 | 3,196 |
| 2015 | 2,363 |
| 2014 and earlier | 2,723 |
| Not known | 1,307 |
| **Total** | **18,908** |

20. The average age of computers on the network was between 3 and 4 years which meant that many were on the verge of obsolescence, as defined in the AI on STIs. OIOS assessed that 5,086 computers acquired between 2013 and 2015, or 27 per cent of UNHCR's computer inventory, was obsolete and needed replacement.

21. These obsolete assets were used at 275 locations in 110 operations as at 31 December 2018. In addition, 80 operations used 1,307 assets whose acquisition year was not known (seven per cent of the total). Based on the aforesaid, OIOS concluded that operations had not taken measures to allocate budget provisions in advance to replace the ICT assets as per the OG.

22. OIOS noted that the Independent Audit and Oversight Committee had recommended in 2017 that UNHCR conduct a cost benefit analysis to assess whether efficiencies could be obtained in funding the ICT equipment on a continuous basis by means of a capital replacement fund. In response, DIST proposed to create a capital fund and associated services for organization-wide managed replacement of depreciated ICT equipment and to cover the annual support contracts for essential core components. DIST believed that optimized procurement and selective replacement of aging ICT equipment could lead to savings over time and result in a more secure and operationally efficient workforce. It estimated that half of the initial funding for the capital replacement fund could be met by consolidating the ICT equipment budgets under the respective administrative budgets of the country operations. DIST, therefore, requested $12 million in

[2] Up to 31 December 2017, the useful life for desktops and laptops was 3 years. Effective 1 January 2018, the useful life was established at 4 years for desktops and 3 years for laptops.

its 2018 annual programme review submission for the fund to ensure that UNHCR was "fit for business and fit for the future". However, this proposal did not materialize and the proposed capital replacement fund was not set up.

23. In consequence, UNHCR did not achieve the primary objective of the OG which was to ensure better and more accurate budgets and regular replacement of ICT assets due to loss, damage, or obsolescence. This was due to the absence of an effective budgeting mechanism and inadequate attention to the escalating risk of obsolescence.

**(2) The UNHCR Division of Information Systems and Telecommunications (DIST), in consultation with other relevant Divisions, should address the growing obsolescence of information and communications technology (ICT) equipment by seeking management approval for: (a) a leading role for DIST in the planning and budgeting of such equipment and; (b) a centrally managed capital fund for procuring ICT assets.**

*UNHCR accepted recommendation 2 and stated that DIST would undertake this recommendation as part of the 2020/21 Annual Programme Review.* Recommendation 2 remains open pending receipt of documentary evidence that management approval has been sought for a leading role for DIST in the planning and budgeting of such equipment and for the creation of a centrally managed capital fund for procuring ICT assets.

## B. Management of information and communications technology assets

There was a need to address discrepancies between the ICT assets procured and installed on the network

24. An effective, up to date and comprehensive ICT inventory system is essential to serve as the basis for any analysis of assets, including an assessment of potential obsolescence. The overall system of record for all ICT equipment is the Item Master in MSRP. The Item Master for all equipment including ICT is maintained by SMS in consultation with DIST. As new equipment becomes available or as existing equipment reaches its end of life and is no longer supported by the original manufacturer, DIST requests SMS to update the MSRP Item Master. The administration of STIs (including computers), their issuance, use, physical disposal and update of MSRP are subject to the procedures defined in the 2017 Administrative Instruction on STIs. The AI has established the useful life of ICT assets (such as servers, network devices, laptop and desktop computers) and other assets (such as motorcycles and generators) after which they would be deactivated from the STI/asset database. The ICT assets in MSRP should remain synchronized with the assets in the network.

25. In OIOS' opinion, due to their unique nature, ICT assets should not be categorized together with other STIs (such as generators) for accounting, monitoring and management. ICT assets are part of the UNHCR network and should be subject to internal control measures such as the real-time monitoring of their use by UNHCR personnel, remote management, and easy tracking of their physical location. However, the 2017 AI did not consider this unique situation and did not differentiate them from the regular STIs. OIOS' review identified the following inconsistencies as the items in MSRP could not be matched with the numbers in the network:

- The summary of the purchase orders processed by SMS for the period from 2015 to 2018 indicated that 27,100 computers (laptops and desktops) were procured. Of these, only 14,615 units (54 per cent) were added to the network during the same period. The balance of 12,485 laptops and desktops (valued about $12 million) were not connected to the network. This quantity may have been assigned to implementing partners either under transfer of ownership or right of use

agreement, although precise information was lacking and there was no focal point in UNHCR to confirm this number;

- Out of the 27,100 computers procured, only 18,100 were recorded as STIs in MSRP. The remaining 9,000 computers (valued at about $8.1 million) were recorded as consumables in MSRP, had no asset IDs and were expensed;

- Of the 9,000 computers recorded as consumables (under the previous policy referred to in paragraph 27, DIST records confirmed that 6,900 (or 36 per cent) were active in the UNHCR network; and

- Of the 18,100 computers recorded as STIs in MSRP, only 3,250 units could be matched (based on the serial numbers) to the computers connected to the UNHCR network while the remaining 11,365 computers (14,615 less 3,250) connected to the network could not be matched to the MSRP records due to missing information links (such as serial number or asset ID). These missing devices could be physically present, but could not be tracked due to lack of synchronization between MSRP and network data.

26. Similar discrepancies existed in the case of core network devices as well. OIOS noted that between 2015 and 2018, 2,430 network devices were procured at a total cost of $5.2 million (1,248 network devices costing about $1.6 million were procured under consumables and 1,182 network devices costing $3.6 million were procured under STI/PPE). However, only 1,700 devices (procured from 2015 to 2018) existed in the network at the time of the audit.

27. This condition arose because the previous UNHCR Policy on Serially Tracked Items (IOM 90/2011 dated 30 December 2011) determined the expected useful life of all ICT assets as three years. It specified that ICT assets with an acquisition value of less than $10,000 but lower than the minimum price threshold (such as $1,000 for desktops/laptops and $2,000 for servers and network switches) were considered as consumables by the Item Master and, hence, were not subject to asset management controls and procedures. Furthermore, the previous policy as well as the current AI did not specify that the STIs in MSRP should be matched/related to the ICT assets in the UNHCR network. The discrepancies between the STIs in MSRP and computers in the network will also exist if the automatic removal of STIs from MSRP is not simultaneously followed by decommissioning of the same assets from the network.

28. In the absence of accurate and credible data, no assurance could be obtained that the ICT assets were adequately managed at all stages of the product life cycle. This had an impact also on the assessment of obsolescence, since accurate inventory figures provide the basis for obsolescence management.

**(3) The UNHCR Division of Information Systems and Telecommunications, in collaboration with the Division of Emergency, Security and Supply should, in order to address inventory discrepancies and identify obsolescence, ensure that: (a) Serially Tracked Items such as the information and communications technology (ICT) devices procured for UNHCR's use are distinguished from similar items procured for use by implementing partners and distinctly accounted for; and (b) procedures are in place to reconcile ICT asset procurement data in the Managing for Systems, Resources and People system with devices detected and managed on the UNHCR network.**

*UNHCR accepted recommendation 3 and stated that: (a) DIST would work with DESS to allow items procured for partners to be distinguished from items procured for UNHCR internal use; and (b) the AI on STIs would be updated to ensure that the serial numbers for ICT equipment are accurately*

*recorded in MSRP at time of procurement or during physical verification and a reconciliation performed annually.* Recommendation 3 remains open pending receipt of documentary evidence that inventory discrepancies have been addressed by distinguishing items procured for partners from items procured for UNHCR's use and that procedures are in place to reconcile ICT asset procurement data in MSRP with devices on the UNHCR network.

The interoperability of new assets with the assets in use was found to be satisfactory

29. COBIT specifies that the organization should define and maintain descriptions and relationships between key resources and capabilities required to deliver ICT services. This is particularly important when ICT assets are regularly refreshed and all the ICT assets continue to deliver the optimum service to the organization without major disruptions. OIOS noted that DIST had in place a satisfactory change management process that ensured that new ICT devices were subject to tests before they were added to the production network. OIOS' review of the Global Service Desk incident data identified no instances where ICT services were disrupted due to server or network device replacement.

# IV. ACKNOWLEDGEMENT

30. OIOS wishes to express its appreciation to the management and staff of UNHCR for the assistance and cooperation extended to the auditors during this assignment.

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**ANNEX I**

## STATUS OF AUDIT RECOMMENDATIONS

### Audit of technology obsolescence at the Office of the United Nations High Commissioner for Refugees

| Rec. no. | Recommendation | Critical[1]/ Important[2] | C/ O[3] | Actions needed to close recommendation | Implementation date[4] |
|---|---|---|---|---|---|
| 1 | The UNHCR Division of Information Systems and Telecommunications should establish a regulatory framework for information technology obsolescence in the Organization. | Important | O | Submission to OIOS of the updated Administrative Instruction on Serially Tracked Items setting out the regulatory framework for information technology obsolescence in UNHCR. | 31 December 2019 |
| 2 | The UNHCR Division of Information Systems and Telecommunications (DIST), in consultation with other relevant Divisions, should address the growing obsolescence of information and communications technology (ICT) equipment by seeking management approval for: (a) a leading role for DIST in the planning and budgeting of such equipment and; (b) a centrally managed capital fund for procuring ICT assets. | Important | O | Submission to OIOS of evidence that management approval has been sought for a leading role for DIST in the planning and budgeting of ICT equipment and for the creation of a centrally managed capital fund for procuring ICT assets. | 30 June 2020 |
| 3 | The UNHCR Division of Information Systems and Telecommunications, in collaboration with the Division of Emergency, Security and Supply should, in order to address inventory discrepancies and identify obsolescence, ensure that: (a) Serially Tracked Items such as the information and communications technology (ICT) devices procured for UNHCR's use are distinguished from similar items procured for use by implementing partners and distinctly accounted for; and (b) procedures are in place to reconcile ICT asset procurement data in the Managing for Systems, Resources and People system with devices detected and managed on the UNHCR network. | Important | O | Submission to OIOS of evidence that inventory discrepancies have been addressed by distinguishing ICT assets procured for partners from ICT assets procured for UNHCR's use and that procedures are in place to reconcile ICT asset procurement data in MSRP with devices on the UNHCR network. | 30 June 2020 |

[1] Critical recommendations address critical and/or pervasive deficiencies in governance, risk management or control processes, such that reasonable assurance cannot be provided with regard to the achievement of control and/or business objectives under review.
[2] Important recommendations address important (but not critical or pervasive) deficiencies in governance, risk management or control processes, such that reasonable assurance may be at risk regarding the achievement of control and/or business objectives under review.
[3] C = closed, O = open
[4] Date provided by UNHCR in response to recommendations.

# APPENDIX I

# Management Response

| Rec. no. | Recommendation | Critical[7]/ Important[8] | Accepted? (Yes/No) | Title of responsible individual | Implementation date | Client comments |
|---|---|---|---|---|---|---|
| 1 | The UNHCR Division of Information Systems and Telecommunications should establish a regulatory framework for information technology obsolescence in the Organization. | Important | YES | Dep. Dir. ICT Customer Support | Q4 2019 | DIST and DESS/AFMS are currently updating the Administrative Instruction on STI to specifically address Technology Obsolescence. |
| 2 | The UNHCR Division of Information Systems and Telecommunications in consultation with other relevant Divisions, should address the growing obsolescence of ICT equipment by seeking management approval for: (a) a leading role for DIST in the planning and budgeting of such equipment and; (b) a centrally managed capital fund for procuring ICT assets. | Important | YES | Dep. Dir. ICT Customer Support | Q2 2020 | Will be undertaken as part of the 2020/21 Annual Program Review. |
| 3 | The UNHCR Division of Information Systems and Telecommunications in collaboration with the Division of Emergency, Security and Supply should, in order to address inventory discrepancies and identify obsolescence, ensure that: (a) Serially Tracked Items such as the ICT devices, procured for UNHCR's use are distinguished from similar items procured for use by implementing partners and distinctly accounted for; and (b) procedures are in place to reconcile ICT asset procurement data in MSRP with devices detected and managed on the UNHCR network. | Important | YES | Dep. Dir. ICT Customer Support | Q2 2020 | a) DIST will work with DESS/AFMS to allow items procured for partners to be distinguished from items procured for UNHCR internal use.<br><br>b) The AI on STI will be updated to ensure that serial numbers for IT equipment are accurately recorded in MSRP at time of procurement or during physical verification and on annual basis the reconciliation will be performed. |

[7] Critical recommendations address critical and/or pervasive deficiencies in governance, risk management or control processes, such that reasonable assurance cannot be provided with regard to the achievement of control and/or business objectives under review.

[8] Important recommendations address important (but not critical or pervasive) deficiencies in governance, risk management or control processes, such that reasonable assurance may be at risk regarding the achievement of control and/or business objectives under review.