FCPS Audit Report: 22-1002 – IT Technology Platform Implementation and Hardware Acquisition & Management

September 2022

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Executive Summary

This audit report summarizes the results of the Office of Auditor General's (OAG) performance audit of the IT Technology Platform Implementation and Hardware Acquisition & Management. The audit was performed in accordance with the Fiscal Year (FY) 2022 audit plan approved by the Fairfax County School Board. This audit covered Fairfax County Public Schools (FCPS) IT assets management and project management processes from FY19 through the first half of FY22 (December 31, 2021).

The objectives of this audit were to:

1. Identify and review the decision process for IT hardware purchases;
2. Review and evaluate the controls established for the distribution of physical IT assets (such as laptops, MiFi devices);
3. Determine if there are adequate controls to properly track the assets; and
4. Evaluate the project management process in Department of Information Technology (DIT) associated with the technology platform implementation, i.e. whether the process is clearly defined and the critical project management components are documented. These include the establishment of appropriate goals and objectives, budget and resources, and the identification of key performance indicators and other information useful to management.

IT Asset Management (ITAM)

The first three audit objectives are related to ITAM, which focuses on the milestones and major activities performed throughout all lifecycle phases of an IT asset. DIT adopted and follows the Information Technology Infrastructure Library (ITIL) framework, a leading industry best practice. ITIL is a set of detailed business practices for activities such as IT service management and IT asset management that focus on aligning IT services and products with the needs of the organization.

DIT has various internal policies and procedures to help guide its staff while delivering technology services. It utilizes two main applications for managing FCPS' IT assets throughout the IT lifecycle: Request IT, an IT assets management application used to track the asset from acquisition to disposal; and Microsoft System Center Configuration Manager that keeps track of FCPS network's inventory.

During FY20 and FY21, when virtual learning became the primary means of instruction, DIT played a critical role in implementing the technology platforms and purchasing the hardware required to support virtual learning. According to DIT, during FY21, 36,925 student laptops were purchased with approximately $18M, which was covered by Coronavirus Aid, Relief, and Economic Security Act (CARES) funding. Additionally, 5,000 mobile wireless routers, also known as MiFi, were purchased at a cost of $382,600 of which approximately two-thirds of the cost was covered by CARES funding.

IT Project Management

The last audit objective is related to IT project management processes. As of June 30, 2022, DIT Project Management Services has a team of 13 staff that assists in the execution and delivery of IT projects. DIT is transitioning from the traditional waterfall framework (that utilizes a method with consecutive activities and dependencies) to the agile methodology. This

methodology focuses on iterative and incremental deliverables with frequent reviews to incorporate stakeholder's feedback throughout the software development lifecycle. Both methodologies are endorsed by the international Project Management Institute (PMI).

Summary of Findings

Overall, DIT decision strategy and tactics for acquiring IT hardware, internal controls over the distribution and tracking of IT assets, and IT project management processes are deemed adequate. As a result of this audit, OAG identified one moderate risk finding and four low risk findings. *[DIT concurs with the findings and recommendations included in this report.]* A summary of the findings and recommendations are provided below:

Finding 1 – Integration of ITAM Lifecycle Information (Moderate risk)

FCPS does not track all the IT asset lifecycle information in one system. The financial information related to contracting, procurement, receiving, and payment is tracked in the Fairfax County financial application system, known as FOCUS, while the operational information is tracked in the application known as Request IT. This method of storing key IT asset information in two separate systems makes it more challenging to provide a comprehensive picture of FCPS' IT asset portfolio. During the audit, OAG manually reconciled the accuracy of the IT assets information stored in FOCUS with the information stored in Request IT with no exceptions.

Recommendation: OAG recommends DIT integrate the financial IT asset information into the Request IT system, which will allow the tracking of the IT asset lifecycle from requisition to retirement.

Finding 2 – ITAM Lifecycle Data Entry Quality (Low risk)

OAG observed inconsistency in the completion of data fields among the Technology Support Specialists who are primarily responsible for entering key IT asset information into DIT's Request IT system. Some data is entered in a different format, or some data fields are not entered at all. Following a consistent data collection/entry process will help ensure that the data is accurate and readily available for analysis and reporting.

Recommendation: OAG recommends DIT develop, standardize, and share a consistent data collection/entry process with all DIT Technology Support Specialists to ensure data quality.

Finding 3 – IT Asset Deployment Status (Low risk)

OAG noted that DIT has ceased applying an IT asset procedure related to the change of deployment status for FCPS IT assets. Per the DIT asset lifecycle procedures, the status of an IT asset should be changed from "Deployed" to "Down" when a device is not connected to the FCPS network for more than 60 days. However, OAG noted that DIT ceased updating the IT asset deployment status due to the pandemic when students were learning virtually. Consequently, the actual status of IT assets deployed and/or down is currently not accurate.

Recommendation: OAG recommends DIT enforce the DIT policy and procedures related to updating the status of IT devices to ensure the accuracy of its records. It should be noted that at the time of this report, DIT is in the process of reinstating this procedure in the training of the schools' Technology Support Specialists.

Finding 4 – ITAM Vendor Monitoring (Low risk)

DIT purchased 137,154 IT devices, totaling $64,504,244 from a vendor, Electronic Systems, Inc. (ESI), as part of the FCPSOn initiative from July 1, 2018, through December 31, 2021.Under the terms of the procurement, ESI is responsible for the distribution of the IT devices to FCPS schools and offices, along with other project management responsibilities. Although, the project management duties and implementation were transferred to ESI in the contract, DIT should still monitor the project execution to ensure that the project goals are met.

OAG noted that evidence of project management related documents such as status, project health, and risk assessment reports, time tracking, and variance tracking were not present in the ESI device projects. It is important for DIT to monitor and document these key project management processes performed by the vendor to help ensure that ESI meets its obligations as specified in the contract.

Recommendation: OAG recommends DIT consider monitoring the project management responsibilities fulfilled by vendors as part of their contract including the maintenance of all supporting documents.

Finding 5 – IT Project Management Application (Low risk)

The IT Project Management Services office uses technology resources such as Microsoft SharePoint, Google Docs, and other Microsoft products to capture pertinent information throughout the lifecycle of projects (i.e. all its subprocesses, stages, interactions, and communications). Although, these are acceptable general management tools, better more specialized project management applications are available. A dedicated project management application with dashboards would offer improved reporting capabilities and transparency that would benefit users such as Leadership and School Board.

Recommendation: OAG recommends DIT consider searching for a project management application that has the necessary capabilities and functionalities to support an efficient process and provide key information about all aspects of the project to all users and stakeholders including Project Managers, FCPS leadership, and School Board.

We appreciate the consultation, cooperation, and courtesies extended to our staff by FCPS leadership and staff.

Background, Scope and Objectives, and Methodology

Background

At FCPS, the mission of the Department of Information Technology (DIT) is to provide information technology leadership, products, and services for FCPS and to manage division-wide information resources ensuring security and integrity. Under DIT, the Office of Information Technology Support Services (ITSS) provides leadership in delivering technology products and services to FCPS. ITSS aims to help FCPS students, parents, teachers, administrative and support staff benefit through the application of powerful technological tools. This function is particularly critical in the virtual learning environment.

Relevant Offices and Sections

Information Technology Support Services (ITSS)
- DIT Project Management: Acts as a division-wide single point of contact for technology project management and is responsible for planning, organizing, and directing technology projects.
- DIT Program Management and Planning: Develops and manages the procurement and budget activities for the Department of Information Technology and other major programs for FCPS.
- DIT Customer Service Center: Provides FCPS with division-wide deployment, service, and support for the life cycle of approved computer hardware, software, and related information technology systems including, service desk, service management, asset management, anti-malware and configuration management.
- DIT Technology Support Services: Coordinates and supervises the activities of site-based Technology Support Specialists that serve all schools and centers.

IT Hardware Purchases (Objective 1)

Major computer orders are coordinated and procured by the FCPS DIT Program Management and Planning Office.

- FCPSOn and Teacher Laptop Refresh (TLR) program are two main computer procurement programs for FCPS school-based learning.
- FCPSOn strives to provide students with equitable access to learning experiences and technology to support their educational development.
- Teacher Laptop Refresh (TLR) program:
  - Teachers need well-functioning laptops and have them replaced on a predictable schedule to ensure platform stability, security, and to meet evolving instructional needs and technical standards. Teacher laptops are refreshed on a 4-year cycle.
- Purchases for FCPSOn are made by grade levels, with orders often covering multiple grade levels.
- FCPSOn timeline was expedited as a result of virtual learning caused by the pandemic.
  - Original Timeline: The original FCPSOn timeline is currently provided on the FCPS public webpage for FCPSOn, with no comment on the expedited implementation.

- Pending approval, FCPSOn will be implemented at remaining schools during the proposed timeline:
  - 2019-20 High Schools
  - 2020-21 Middle Schools
  - 2021-22 Elementary Grades 5-6
  - 2022-23 Elementary Grades 3-4
- <u>Revised Timeline</u>**:** According to the [Johns Hopkins Evaluation Report](#),[1] due to the pandemic, all students were required to receive a device, including at the elementary level.
- In the 2020-21 school year, 60 schools comprised Phase One, Two, and Three of FCPSOn, the district's phased-in 1:1 device initiative. These included nine schools in the Chantilly Pyramid as well as 27 high schools and 24 middle schools throughout the district. Schools in the Chantilly Pyramid and eLearning Backpack high schools [2]adopted FCPSOn as part of a pilot program in 2016.

Major FCPSOn and TLR purchases during the audit scope period are included in the following tables.

Table A presents major FCPSOn and TLR computer purchases breakdown by program.

Table A: Major Computer Purchase Breakdown by Program[3]

Program	Contract	Vendor	Period of Performance	Order Quantity (July 1, 2018 – Dec 31, 2021)	Funded from Cares Act	Expenditures (July 1, 2018 – Dec 31, 2021)
TLR	4400003956	DELL MARKETING LP	6/13/2013 – 9/30/2021	10,827	4,598	**$10,014,179.45**
FCPSOn	4400008968	ELECTRONIC SYSTEMS INC	2/15/2019 – 3/28/2023	153,133	36,925	**$71,966,389.96**
Instructional Assistant Support	4400003956	DELL MARKETING LP	6/13/2013 – 9/30/2021	1,000	1,000	**$780,000.00**
			Subtotal	164,960	42,523	**$82,760,569.11**

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[1] The study sought to explore the experience and reactions of stakeholders to virtual learning in Fairfax County Public Schools.

[2] This program includes five FCPS high schools that are currently a part of the [Virginia Department of Education (VDOE) e-Learning Backpack Grant](#). Those schools are Justice, Lewis, Annandale, Falls Church, and Mount Vernon High Schools. The grant provides funding for the purchase of a laptop device for every ninth-grade student at qualifying schools for up to four years to assist in the transition to digital learning.

[3] Prepared by IT Program Management and Planning

Table B presents Teacher Laptop Refresh program for FY 2019 to FY 2021.

Table B: Teacher Laptop Refresh (TLR) Program – Contract 4400003956

FY	Acquisition	Delivery	Model	Quantity	Purchase/ Financing Lease	Expenditures
2019	TLR: Middle Schools	Direct	Dell E5490	1,874	Financing Lease	$1,760,847.88
2020	TLR: Elementary School	Direct	Dell Latitude 5400	2,161	Financing Lease	$2,078,817.17
2020	TLR: Elementary School	Warehouse	Dell Latitude 5400	2,194	Purchase	$2,061,526.28
2021	TLR: Elementary School	Warehouse	Dell Latitude 5410	4,598	Purchase	$4,112,988.12
			Subtotal	**10,827**		**$10,014,179.45**
			Average Device Cost			**$924.93**

Table C presents FCPSOn computer program for FY 2019 to FY 2021.

Table C: FCPSOn – Contract 4400008968

FY	Acquisition	Delivery	Model	Quantity	Purchase/ Financing Lease	Expenditures
2019	FCPSOn High School	Direct	Dell Latitude 3300	45,901	Financing Lease	$21,436,140.60
2019	FCPSOn High School	Direct	Dell Latitude 3300	15,979	Purchase	$7,462,146.30
2020	FCPSOn Middle School	Direct	Dell Latitude 3310	32,328	Financing Lease	$15,093,304.00
2020	FCPSON Grades 5 & 6	Direct	Dell Latitude 3310	22,000	Financing Lease	$10,274,000.00
2021	FCPSON Grades 4,5 & 6	Warehouse	Dell Latitude 3310	36,925	Purchase	$17,700,799.06
			Subtotal	**153,133**		**$71, 966,389.96**
			Average Device Cost			**$469.96**

Table D presents Instuctional Assistance purchase.

Table D: Instructional Assistant Purchase – Contract 4400003956

FY	Acquisition	Delivery	Model	Quantity	Purchase/ Lease	Expenditures
2021	Instructional Assistant Purchase	Direct	Dell Latitude 3410	1,000	Purchase	$780,000.00
				Average Device Cost		**$780.00**

Concurrent Learning Device Purchases

In addition to the major computer orders, IT Program Management & Planning coordinated the purchase of concurrent learning devices for the virtual learning environment. These purchases, funded by Cares grants, were for audio-visual equipment and monitors in preparation for return-to-school/virtual school.

Table E presents the purchase of concurrent learning devices for the virtual learning environment over four rounds occurring between November 2020 and January 2021.

Table E: Concurrent Learning Devices

Contract	Vendor	Round 1	Round 2	Round 3	Round 4	Subtotal Contract Spend
4400003956	DELL MARKETING LP	$0.00	$692,658.36	$459,143.04	$82,250.00	**$1,234,051.40**
4400003957	ELECTRONIC SYSTEMS INC	$843,202.00	$0.00	$0.00	$0.00	**$843,202.00**
4400006325	CDW LLC	$49,450.00	$11,500.00	$40,250.00	$3,450.00	**$104,650.00**
4400008477	LIGHTSPEED TECHNOLOGIES INC	$27,324.00	$10,692.00	$23,760.00	$0.00	**$61,776.00**
4400009198	LEE HARTMAN & SONS INC	$244,455.75	$105,701.75	$106,356.25	$8,835.75	**$465,349.50**
4400009199	NICHOLAS P PIPINO ASSOCIATES INC	$396,309.41	$863,113.07	$512,331.18	$69,374.00	**$1,841,127.66**
4400009200	TROXELL COMMUNICATIONS INC	$0.00	$336,811.78	$348,782.58	$27,706.38	**$713,300.74**
4400010221	AVI-SPL LLC	$16,852.32	$11,473.92	$37,828.08	$1,972.08	**$68,126.40**
4400010223	CDW LLC	$1,463,735.28	$546,301.08	$313,680.52	$30,487.20	**$2,354,204.08**
	Subtotal	**$3,041,328.76**	**$2,578,251.96**	**$1,842,131.65**	**$224,075.41**	**$7,685,787.78**

MiFi devices

FCPS currently has 8,095 MiFi devices deployed, 440 in reserves but not deployed devices, and 5,476 disposed (retired) devices.[4]

Table F presents MIFI devices and their status.[5]

Table F: MiFi Device Status

MiFi Model	Deployed	In reserves but not deployed	Disposed (Retired)	Total Count
Smartspot 6620	1	0	0	1
Smartspot 8800	477	77	148	702
Smartspot 900[6]	592	172	4,870	5,634
SmartSpot T41	310	30	112	452
Smartspot V400	6,068	132	220	6,420
Smartspot ZTE 291	647	29	126	802
Grand Total	**8,095**	**440**	**5,476**	**14,011**

IT Device Distribution (Objective 2)

Major computer orders procured by DIT Project Management Planning are either shipped directly to schools or to the warehouse. If the warehouse receives the computers, IT coordinates with the warehouse on a schedule for delivery to the schools.

IT Device Tracking (Objective 3)

The DIT Customer Service Center provides FCPS with division-wide deployment, service, and support for the life cycle of approved computer hardware, software, and related information technology systems including, service desk, service management, asset management, anti-malware, and configuration management.

IT devices are tracked in *RequestIT*, formally referred to as the Asset Management Console. The asset lifecycle and definitions are documented in various process documents related to the console.

- Microsoft System Center Configuration Manager, Network device detector, is used by DIT to perform the discovery step to search for, identify, update, and report assets connected to the network.
- Asset system is used as the repository for asset and record keeping supporting the life cycle of asset.

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[4] The majority of disposed devices were returned to the vendor as a result of a nationwide recall.

[5] Based on an IT asset console report generated by OAG on April 7, 2022.

[6] Smartspot 900 had a nation-wide recall due to overheating battery issues.

- An annual scanning process which includes manual inventory verification is used for devices which cannot be scanned virtually.

Notably, procurement is not integrated to the IT Asset Management Application. Some information is captured manually and re-entered in the asset record keeping system.

Disposal process

Per Regulation 5028, the Department of Information Technology (DIT) is responsible for all equipment purchased and managed by DIT. In addition, Policy 5030 mandates that all equipment disposals shall be handled by the Department of Financial Services (DFS). Thus, equipment such as laptops, computers, and tablets are maintained by DIT in their asset management system and are removed and disposed of safely by transferring them to warehouse operations at end of life. The Technology Support Specialist (TSSpec) for the school or department requiring DIT owned asset disposal will remove all obsolete or surplus DIT equipment from the active collection and change the status of the asset in the Automated Computer Inventory System (ACIS) before DIT submits a warehouse request on behalf of the school. The disposal process is as follows:

1. Device is identified as obsolete equipment.
2. Device asset is moved to "End of Life" status in asset management system by school Technology Support Specialist (TSSpec).
3. TSSpec removes hard drive from computer and laptop devices. If the device is an iPad, per NIST guidelines, the TSSpec performs a full factory reset on the device to wipe the data.
4. TSSpec places sticker on device stating "Hard Drive / Data Removed."
5. TSSpec submits a separate request to IT Field Services for destruction of the removed hard drives. Hard drives are transferred to IT Field Services via one of the following methods:
    1. Field Services Technician picks up hard drives from site.
    2. TSSpec drops hard drives directly at Field Services office.
    3. Hard drives are delivered via FCPS pony delivery service.
6. Hard drives are transported to Woodson IT Field Services for destruction to ensure confidentiality of data. The hard drives are destroyed through an industry standard disk shredding process by a contracted vendor, specializing in data destruction services. A certificate of destruction is provided to FCPS upon completion of services.
7. Warehouse pickup of devices is requested by IT Asset Management team via the Financial Services Department online request system. The specific Asset IDs are documented and attached to the assigned Warehouse job number for the scheduled pickup.
8. TSSpec sets aside designated obsolete devices in a secure location at the school to distinguish from active site collection.
9. Devices are transferred from the school to the warehouse for disposal.
10. IT changes the status of the asset to "disposed" and removes it from site inventory group.

Once the request has been completed and transferred to the warehouse as outlined above, the warehouse operations team will inspect the assets to ensure hard drives have been removed from all assets, as indicated by the "Hard Drive Removed" sticker placed on the asset exterior

by DIT. Any assets still containing hard drives are sent back to the pickup location, where DIT will remove the hard drive and submit a new request. Once it is received, the assets are then moved to the secured high value asset area under 24-hour surveillance.

OAG focused its audit on school-based IT asset devices lifecycle, which DIT managed from requisition to retirement. Non-school-based IT asset devices, managed by departments and offices individually, were excluded from the scope.

Project Management (Objective 4)

FCPS DIT has a Project Management Office which is designed to act as a division-wide single point of contact for technology project management. Projects are requested and sponsored by the various FCPS departments and offices.

According to FCPS IT Project Management Process definition, a project has the following attributes:

- Has a definite start and end date
- Creates something unique
- Has a specific budget

Office Goals:
- Improve transparency into a project's progress
- Implement a Dashboard (i.e. Agile/Kanban approach to project management) – DIT is currently viewing demonstrations from vendors

Office Challenges:
- Looking for guidance on how to prioritize projects from different departments according to division needs
- Standardization of input and user comfort with applications
- Looking to return to single entry point for project requests

Scope and Objectives

OAG conducted this performance audit in accordance with Generally Accepted Government Auditing Standards (GAGAS), with the exception of peer review. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings, observations and conclusions based on our audit objectives.

OAG focused on school-based IT asset devices lifecycle, which DIT managed from requisition to retirement. Non-school-based IT asset devices, managed by departments and offices individually, were excluded from the scope.

Process Area	Objectives	Scope
IT Asset Procurement and Management	1. Identify and review the decision process for IT hardware purchases.	IT asset device purchases made by DIT during FYs 2019, 2020, 2021, and 2022 (through December 31, 2021) – OAG selected to include FY 2019 because this was a pre-pandemic year where purchases were made in accordance with an existing plan. Due to the pandemic beginning in FY 2020, purchases were accelerated.
IT Asset Procurement and Management	2. Review and evaluate the controls established for the distribution of physical IT assets (such as laptops, MiFi devices)	Distribution of IT asset device purchases made by DIT during FYs 2019, 2020, 2021, and 2022 (through Dec 31, 2021).
IT Asset Procurement and Management	3. Determine if there are adequate controls to properly track the assets.	Tracking of IT asset device purchases made by DIT during FYs 2019, 2020, 2021, and 2022 (through December 31, 2021).
Project Management	4. Evaluate the project management in DIT associated with the technology platform implementation, whether the process is clearly defined, and the critical project management components are documented, including establishing goals and objectives, budget and resources, and key performance indicators or other useful decision making information.	Project management process in place during FYs 2020, 2021, and 2022 (through December 31, 2021).

As required by GAGAS, OAG assessed whether internal control was significant to the audit objectives. OAG's assessment included the use of the Committee of Sponsoring Organizations of the Treadway Commission internal control framework. The framework includes five components: Control Environment; Risk Assessment; Control Activities; Information and Communication; and Monitoring; along with 17 related principles. OAG determined that all five components of internal control and the 17 related principles were significant to the audit objectives.

In addition, as required by GAGAS, OAG evaluated the design, implementation, and/or operating effectiveness of information system controls. This evaluation includes other information systems controls that affect the effectiveness of the significant controls or the reliability of information used in performing the significant controls. OAG obtained a sufficient understanding of information systems controls necessary to assess audit risk and plan the audit within the context of the audit objectives.

Understanding information systems controls is important when information systems are used extensively throughout the program under audit and the fundamental business processes related to the audit objectives rely on information systems. Information systems controls consist of those internal controls that depend on information systems processing and include general controls, application controls, and user controls.

- Information systems general controls (entity-wide, system, and application levels) are the policies and procedures that apply to all or a large segment of an entity's information systems. General controls help ensure the proper operation of information systems by creating the environment for proper operation of application controls. General controls include security management, logical and physical access, configuration management, segregation of duties, and contingency planning.
- Application controls, sometimes referred to as business process controls, are those controls that are incorporated directly into computer applications to help ensure the validity, completeness, accuracy, and confidentiality of transactions and data during application processing. Application controls include controls over input, processing, output, master file, interface, and the data management system.
- User controls are portions of controls that are performed by people interacting with information systems controls. A user control is an information system control if its effectiveness depends on information systems processing or the reliability (accuracy, completeness, and validity) of information processed by information systems.

Methodology

To fulfill the audit objectives, the audit team performed the following:
- Reviewed applicable FCPS policy and regulation;
- Held walkthrough meetings with those responsible for DIT Program Management and Planning, IT Asset Console Management, and Project Management;
- Reviewed asset tracking internal procedure documents provided by DIT Customer Service Center;
- Reviewed project management documents provided by DIT Project Management;

- Reviewed financial and planning internal documents provided by DIT Program Management and Planning;
- Validated IT asset device purchases made by DIT to financial information using the ORBIT reporting tool;
- Reviewed IT asset console reports generated from *RequestIT*; and
- Conducted follow-up interviews to determine the cause of findings and explore management actions to mitigate conditions observed.

Sample Selection

Test of IT Assets Management (ITAM) Processes

Using auditor's judgement, OAG selected a sample of 230 records, from 23 schools in five regions. In addition, OAG selected a sample of five schools, from the above, to visit and observe the ITAM lifecycle processes at the school onsite. For the sample selection, only pdf image files were provided, and not data files. The PDF image files provided a challenge for OAG to select a random sample since those files are not easy to manipulate in OAG's data mining application.

Test of IT Project Management Processes

OAG reviewed the quarterly status updates provided by DIT, including 50 IT projects from January 1, 2021 to December 30, 2021. Using auditor's judgment, OAG selected a sample of five major IT projects, considering time duration, complexity, and financial value, to review and assess in detail their controls against the *Project Management Institute Body of Knowledge*.[7]

OAG Organization

OAG is free from organizational impairments to independence in our reporting as defined by government auditing standards. OAG reports directly to the Fairfax County School Board through the Audit Committee. We report the results of our audits to the Audit Committee and the reports are made available to the public via the FCPS website.

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[7] The Project Management Body of Knowledge is the collection of processes, best practices, terminologies, and guidelines that are accepted as stand within the project management industry.

Audit Findings, Recommendations, and Management's Responses

The finding(s) within this report has been attributed a risk rating in accordance with established risk criteria as defined in Table 1.

Table 1 – Risk Criteria

Type	Description
High	One or more of the following exists: • Controls are not in place or are inadequate. • Compliance with legislation and regulations or contractual obligations is inadequate. • Important issues are identified that could negatively impact the achievement of FCPS program/operational objectives.
Moderate	One or more of the following exists: • Controls are in place but are not sufficiently complied with. • Compliance with subject government regulations or FCPS policies and established procedures is inadequate, or FCPS policies and established procedures are inadequate. • Issues are identified that could negatively impact the efficiency and effectiveness of FCPS operations.
Low	One or more of the following exists: • Controls are in place, but the level of compliance varies. • Compliance with government regulations or FCPS policies and established procedures varies. • Issues identified are less significant, but opportunities exist that could enhance FCPS operations.

Overall, OAG believes that DIT decision strategy and tactics for acquiring IT hardware, internal controls over the distribution and tracking of IT assets, and IT project management processes are adequate. As a result of this, audit OAG identified one moderate risk finding and four low risk findings.

Finding 1 – Integration of ITAM Lifecycle Information

Risk Rating: *Moderate – Issues are identified that could negatively impact the efficiency and effectiveness of FCPS operations.*

Condition:
FCPS does not track all the IT asset lifecycle information in one system. The financial information related to the contracting, procurement, receiving, and payment is being tracked in the financial application system, known as FOCUS. Meanwhile, the operational information is being tracked in the application known as *Request IT*.

Criteria:
Office of the Auditor General (OAG) mission is to independently determine whether the ongoing processes for controlling fiscal and administrative operations and performance throughout Fairfax County Public Schools are adequately designed, functioning in an efficient, effective manner, and fully accountable to its citizens of Fairfax County.

In following good business practices such as Controls Objectives of Information and related Technology COBIT, it is frequently necessary to reconcile certain IT asset lifecycle information pertaining to contractual, financial, and operational activities. Data elements required to perform the reconciliation such as contract number, purchase order, invoice number, shipment number, and device service tag all are captured in Request IT.

Cause:
- There is no requirement to capture the required data elements mentioned above, in one system which makes the comprehensive tracking and reconciliation of IT assets needlessly complex and inefficient.
- ITAM analytics focuses on accommodating simple user questions which occur more frequently than complex data requests.

Effect:
Storing key IT asset information in two separate systems makes it challenging to provide a comprehensive picture of FCPS' IT assets. It should be noted that OAG manually reconciled the accuracy of the IT assets information stored in FOCUS with the information stored in *Request IT* with no exceptions.

Recommendation:
OAG recommends DIT integrate the financial IT asset information into the Request IT system, which will allow the tracking of the IT asset lifecycle from requisition to retirement.

Management Responses (Actions and Due Date):

- We concur that having purchase information stored in the county-required FOCUS system, which is not integrated into other FCPS systems, creates challenges in manually reconciling the purchase of assets.
- RequestIT is nearing the end of its contract, and our team has spent significant time in market research over the past four months to look at options and new functionality available in contemporary IT Service Management systems, including asset tracking. As we look to implement a replacement for RequestIT in the coming year, we will explore

possible integrations with FOCUS and options for linking procurement information with assets in the same system.

- Our target timeframe for completing the evaluation of integration possibilities between the new tool and FOCUS would be January of 2023.

Finding 2 – ITAM Lifecycle Data Entry Quality

Risk Rating: Low – *Issues identified are less significant, but opportunities exist that could enhance FCPS operations.*

Condition:
OAG observed inconsistency in the completion of data fields among the school's various Technology Support Specialists who are primarily responsible for entering key IT asset information into DIT's *Request IT* system. We found that some data is entered in a different format, and some data fields are not entered at all.

Criteria:
Office of the Auditor General (OAG) mission is to independently determine whether the ongoing processes for controlling fiscal and administrative operations and performance throughout Fairfax County Public Schools are adequately designed, functioning in an efficient, effective manner, and fully accountable to its citizens of Fairfax County.

Technology Support Specialists who are the primarily responsible staff for entering key IT asset information into DIT's Request IT system should follow consistent practices to have complete, accurate, and relevant information.

According to the Standards for Internal Control in the Federal Government[8] (Green Book 2014 Revision), Principle 13 indicates that management should use quality information to achieve the entity's objectives. Attributes that contribute to the design, implementation, and operating effectiveness of this principle include the identification of information requirements, relevant data from reliable sources and data processed into quality information.

Global Technology Audit Guide: Understanding and Auditing Big Data, "Defined and well-controlled processes are necessary for the continued success of a big data program. Without defined and consistent processes, environments can quickly become unstable, and the confidence in the underlying data can be lost. When analytic reports designed to provide strategic insights use inaccurate or incomplete data, their value is immediately undermined. If risks such as these are not addressed, big data programs can quickly lose funding and be eliminated. Therefore, as people and technology are being deployed, careful attention should also be paid to the underlying processes and related controls that support the big data program" (p. 18).

Cause:
- Free text input fields in the Request IT application that allow blank and/or different values as the data entry person chooses.
- There are many staff entering data into the system consisting of 181 schools and centers in FCPS that are served by at least one or more school's Technology Support Specialists who are the staff primarily responsible for entering key IT asset information into DIT's Request IT system.

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[8] Standards set forth by US Government Accountability Office provides the overall framework for establishing and maintaining an effective internal control system. The Green Book may be adopted by state, local, and quasigovernmental entities, as well as not-for-profit organizations, as a framework for an internal control system.

Effect:

- Data entry errors result in poor data quality. Decisions based on inaccurate or incomplete data may prove costly. Inaccurate data continues accumulating, especially when no one is reviewing it regularly.
- OAG efforts to perform a trend analysis was hampered by a lack of historical data and inconsistency in the data input. Inexact or poor data reduces its usefulness to FCPS leadership.

Recommendation:

OAG recommends DIT develop, standardize, and share a consistent data collection/entry process with all DIT Technology Support Specialists to ensure data quality.

Management Responses (Actions and Due Date):

- We concur with the recommendation on standardized data collection and entry, and believe that our current processes are highly effective in that regard. While we have consistent and clearly defined parameters for critical information fields within the asset management system (i.e. student ID, school, asset tag number, etc.), there are two free text fields that allow custom text - one for serial number, which is only available for devices that are not discoverable electronically on the network, and one for room number. We agree that these are used inconsistently across the enterprise, depending on the local need.
- In September, we will begin an assessment of how the data in those fields is currently being used by the local sites to determine what parameters we can provide for consistency, without impeding their ability to track their assets. For example, a school with multiple devices that are not discoverable electronically may need the ability to say that a device is in "Room 25" in the text field, while a different school may need the ability to specify a location without a visible room number like "Coach's Office." A closer look at use cases will assist us with refining parameters.
- As we work to implement a new Service Management tool this year, we will have the opportunity to incorporate this recommendation and create tighter practices within the asset management interface that can ensure more consistent fields. We hope to acquire a new product this fall, with intent to launch the new interface in the spring of 2023.

Finding 3 – ITAM IT Asset Deployment Status

Risk Rating: Low – *Issues identified are less significant, but opportunities exist that could enhance FCPS operations.*

Condition:

DIT halted an automated deployment status change process for IT device assets not on the FCPS network.

Criteria:
- Office of the Auditor General (OAG) mission is to independently determine whether the ongoing processes for controlling fiscal and administrative operations and performance throughout Fairfax County Public Schools are adequately designed, functioning in an efficient, effective manner, and fully accountable to its citizens of Fairfax County.
- Per the DIT asset lifecycle procedures, a status of an IT asset is changed from "Deployed" to "Down" when a device is not connected to the FCPS network for more than 60 days.

Cause:

DIT halted an automated deployment status change process for IT device assets not on the FCPS network due to the pandemic when students were learning virtually.

Effect:
The actual status of IT assets deployed and/or down is currently not accurate.

Recommendation:
OAG recommends DIT enforce the DIT policy and procedures related to updating the status of IT devices to ensure the accuracy of its records.

It should be noted that at the time of this report, DIT is in the process to reinstating the IT asset procedure related to the change of deployment status for FCPS IT assets in the training of the schools Technology Support Specialists.

Management Responses (Actions and Due Date):

- This was a known issue, and we concur with the recommendation. The deployment status change process was designed to detect whether an FCPS device had reported to the FCPS network within a defined timeframe, and if the device had not reported, the deployment status would automatically change from a state of "deployed" - meaning it was assigned and in use - to "down" - meaning it was assigned but not reporting back to the network. Assets that automatically switched to a "down" status would trigger efforts to reach out to the assignee to understand whether the device was experiencing difficulty or had been lost or misplaced.
- When the division moved to virtual learning and every student and staff member was working outside of the FCPS network, we quickly realized that every single FCPS device would eventually move to "down" status, creating a backlog of automation processes running in the background and creating false negatives that devices were damaged or

lost. In an effort to streamline technical support, we halted the automation of the deployment status change.

- We kept that automation off for both the 20-21 school year and the 21-22 school year, while pockets of virtual learning continued.
- The automated process has already been reinstated for the upcoming school year, in the hopes 99% of learning remains in-person.

Finding 4 – ITAM Vendor Monitoring

Risk Rating: Low – *Issues identified are less significant, but opportunities exist that could enhance FCPS operations.*

Condition:
DIT purchased 137,154 IT devices, totaling $64,504,244 from a vendor, ESI, as part of the FCPSOn initiative from July 2018 through December 2021. As part of these purchases, ESI is responsible for the distribution of the IT devices to FCPS schools and offices. OAG noted that evidence of project management related documents such as status, project health, and risk assessment reports, time tracking, and variance tracking was not maintained by DIT for these ESI projects. It is important for DIT to monitor these key project management processes of the vendor to help ensure that ESI meets its obligations as specified in the contract.

Criteria:
Office of the Auditor General (OAG) mission is to independently determine whether the ongoing processes for controlling fiscal and administrative operations and performance throughout Fairfax County Public Schools are adequately designed, functioning in an efficient, effective manner, and fully accountable to its citizens of Fairfax County.

Although, the project management duties (authority) and implementation were transferred to ESI per the contract, DIT should still exercise monitoring of the project execution to ensure that the project goals are delivered per the contract number (4400008968).

Performance monitoring which includes comparing measured performance to established standards is one of the best practices of the contract administration that FCPS adopted as an established guidance on key activities performed after a contract has been awarded.

Cause:
Project Manager from DIT who was responsible for the program implementation retired in 2021, and there was no documentation maintained.

Effect:
Although no discrepancies were noted, it is still important for DIT to monitor these key project management processes of the vendor to ensure ESI meets its obligations as specified in the contract.

Recommendation:
OAG recommends DIT consider monitoring the project management responsibilities fulfilled by vendors as part of their contract including the maintenance of all key supporting documents (as stated under "condition").

Management Responses (Actions and Due Date):

- We concur with this recommendation. Transitions in multiple project management personnel around the ESI device purchase projects resulted in a loss of documentation. While other FCPS project team members have a strong recollection of defined project plans provided by the vendor and monitored by the FCPS project team, we realize we were unable to produce this documentation and do not dispute this recommendation.

- We do believe in the practice of retaining this documentation from vendor-provided project managers. In fact, the typical practice is a standing meeting between the FCPS project manager and the vendor project manager to regularly review project tasks, milestones, budgets, and risks outlined in the project plan and make changes to that plan as necessary. We are beginning a self-evaluation within our project management office to ensure that we have retained this documentation on existing projects, and we require the documentation on future projects.
- We will immediately reinstate the practice of retaining and monitoring this documentation and ensure it is retained in a collective archive.

Finding 5 – IT Project Management Application

Risk Rating: Low – *Issues identified are less significant, but opportunities exist that could enhance FCPS operations.*

Condition:
The Project Management Services office uses IT resources such as Microsoft SharePoint, Google Docs, and other Microsoft products to capture pertinent information throughout the lifecycle of projects. (i.e. all its subprocess, stages, interactions, and communications). Although, these are acceptable general management tools, better more efficient project management applications are available. A dedicated project management application with dashboards would offer improved reporting capabilities and transparency that would benefit users such as Leadership and School Board.

Criteria:
Office of the Auditor General (OAG) mission is to independently determine whether the ongoing processes for controlling fiscal and administrative operations and performance throughout Fairfax County Public Schools are adequately designed, functioning in an efficient, effective manner, and fully accountable to its citizens of Fairfax County.

An IT project management application have the capabilities and functionalities to support DIT in managing and implementing technology initiatives and projects to help FCPS fulfil its mission and strategic goals including providing the required transparency that Leadership and Board seek.

Cause:
Limited funding drives IT to use generally available low-cost applications to do their work. After the pandemic, the information technology role changed significantly with regard to learning. That role requires more financial resources to maintain the normal operations at acceptable service levels and attain the strategic capabilities set by FCPS to accomplish its mission.

Effect:
This is an inefficient use of the Project Manager's time and skills. The lack of reporting capabilities and dashboards would require significant manual labor to provide real time information to the School Board and FCPS Leadership to make informed timely decisions.

Recommendation:
OAG recommends DIT consider searching for a project management application that has the necessary capabilities and functionalities to support an efficient process and provide key information about all aspects of the project to all users and stakeholders including Project Managers, Leadership, and School Board.

Management Responses (Actions and Due Date):
- We concur with this recommendation. This is a known issue, and we have been evaluating possible tools to accomplish this work for the past several months.
- We have selected a project management tracking tool, which is currently in the IT Security Checklist review process.
- We hope to have full implementation of the tool by October 1, 2022, which will allow us to start using it with project teams this fall.