

**TECHNOLOGY & INNOVATION DEPARTMENT
SOFTWARE LICENSES
AUDIT 18-18
JANUARY 10, 2019**



CITY OF TAMPA

Bob Buckhorn, Mayor

Internal Audit Department

Christine Glover, Internal Audit Director

January 10, 2019

Honorable Bob Buckhorn
Mayor, City of Tampa
1 City Hall Plaza
Tampa, Florida

RE: Software Licenses, Audit 18-18

Dear Mayor Buckhorn:

Attached is the Internal Audit Department's report on Software Licenses.

We thank the management and staff of Technology & Innovation Department for their cooperation and assistance during this audit.

Sincerely,

/s/ Christine Glover

Christine Glover
Internal Audit Director

cc: Dennis Rogero, Chief of Staff
Sonya Little, Chief Financial Officer
Ernest Mueller, Chief Assistant City Attorney
Russell Haupt, Director of Technology & Innovation
Eric Hayden, Infrastructure Services Manager

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/s/ Stephen Mhere

Auditor

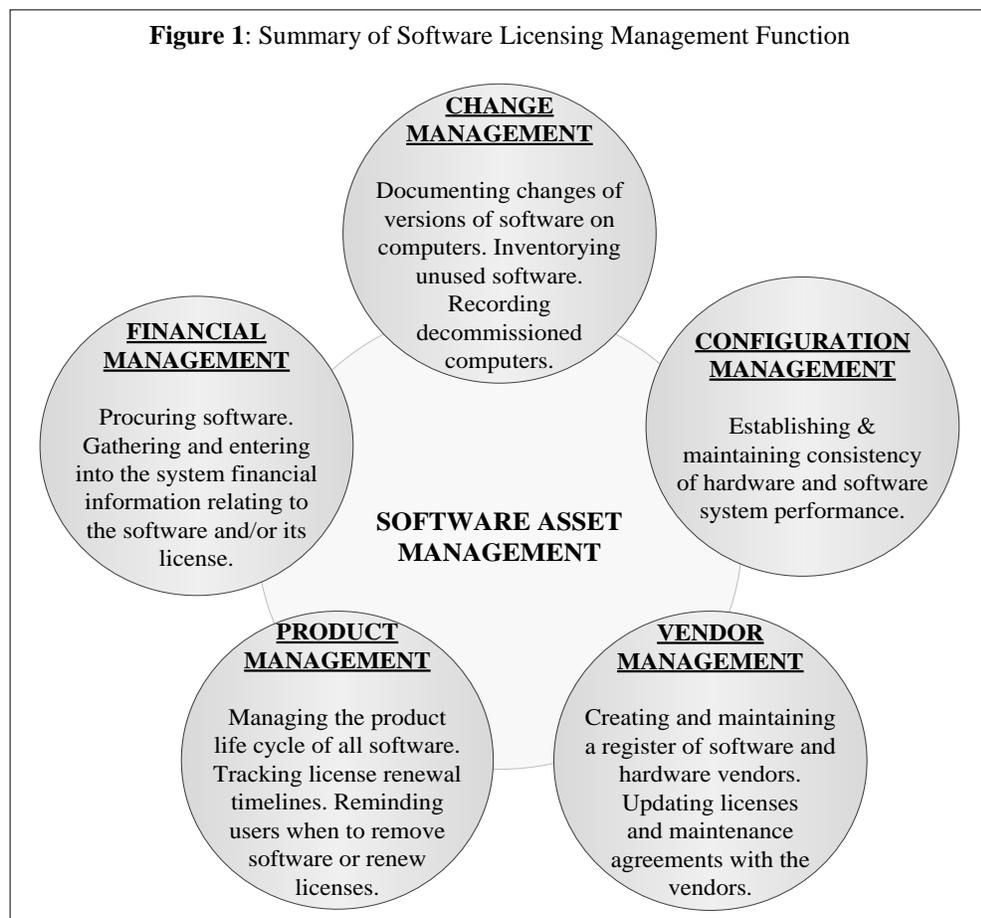
/s/ Christine Glover

Audit Director

**TECHNOLOGY & INNOVATION DEPARTMENT
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BACKGROUND

Software license management is a process by which organizations document and control software and software licenses. The overarching objectives of software licensing include complying with software copyright laws and minimizing the inventory of unused licenses. These objectives help the organization avoid unnecessary legal action as well as reduce licensing costs. Technology and Innovation Department (T&I)'s software procurement office is responsible for the management of all software licenses used by the City of Tampa (COT). The office coordinates tasks and carries out responsibilities in five different domains as summarized below.



Source: Auditor adaptation of T&I (Software Procurement Office) staff's description of their responsibilities.

The City utilizes different kinds of software. For example, Oracle E-Business Suite and Kronos are large applications used by all employees. Microsoft Office has different applications or versions of applications installed on computers. There are other specialized applications used by small departments/divisions. These variations make software licensing a complex and extensive endeavor, requiring diligence and efficiency on the part of the software procurement office.

STATEMENT OF OBJECTIVES

This audit was conducted in accordance with the Internal Audit Department's FY 2018 Audit Agenda. Audit objectives were as follows:

1. Evaluate internal controls relating to the acquisition of software and management of software licenses.
2. Verify that all software installed on computers connected to City networks is appropriately licensed.
3. Assess if software optimization practices are in place and/or effective in preventing an inventory of unused licenses.

STATEMENT OF SCOPE

The period under review was FY 2017 and FY 2018. The main focus of the audit was software license management as well as T&I's role in coordinating software acquisition and installation. Because software applications and licenses are sometimes bundled, we could not disaggregate them to determine costs attributable only to licenses. As such, we were limited in our assessment of license expenditure.

STATEMENT OF METHODOLOGY

We reviewed COT's information security policies, the City Wide Information Technology Management Policy, software license procurement practices, and the City's personnel policy directive for employees on computer use. We also reviewed state and federal statutes on software copyright.

We met with members of T&I's software procurement staff to discuss the responsibilities of their office, the role of the software asset management application in their work, and to familiarize ourselves with the use of that system. We ran reports in the application and used them for data reliability testing. Our review gave us reasonable assurance that the data in the system was reliable for purposes of our audit. We then used the system to determine COT's software licensing compliance status as well as identify overlicensed applications.

We also obtained information from staff in the Purchasing Department relating to the approval process for the purchase of software.

STATEMENT OF AUDITING STANDARDS

We conducted this performance audit in accordance with generally accepted government auditing standards. 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 and conclusions based on our audit objectives.

AUDIT CONCLUSIONS

Based upon a review of documented policies and observation of practices, our conclusions are as follows:

1. A framework of internal controls for the acquisition of software and management of licenses is in place. However, policies need to be updated to bring software procurement and installation in line with best practices.
2. Reports generated by the software asset management tool show that not all software installed on computers connected to City networks are appropriately licensed.
3. T&I has implemented standard software optimization practices, but they have not been successful in preventing an inventory of unused software licenses.

SOFTWARE LICENSING POLICIES

STATEMENT OF CONDITION: In 2008 COT established a City Wide Information Technology Management policy to provide general guidance for employees on the protocol to acquire information technology products, including software. In 2010 the Chief of Staff (COS) issued a directive via a memorandum to all administrators and department directors to inform their staff of the general technology procurement guideline. Not only are the policy and COS directive general in nature, covering both hardware and software technology products, they are also outdated: they have not been revised since their inception.

Our review of available policies shows that COT has not documented a comprehensive policy that clearly and specifically addresses management of software licenses and/or agreements during the phases of software procurement, installation, phase-out, and disposal.

CRITERIA: COT's municipal code (Chapter 2-46), requires all departments to create, document, and maintain policies and procedures. Also, according to the federal government's Government Accountability Office (GAO), software licensing requires a comprehensive policy to provide guidance throughout the software management life cycle from deployment through disposal.

CAUSE: Documentation of a software licensing policy was not prioritized because COT has already issued the City Wide Information Technology Management policy and the COS directive. T&I has also deployed SNOW, an application that can identify unlicensed software in City networks, providing some mitigation to software licensing risks. As of September 2018, T&I's Procurement Team was working on the documentation of standard operating procedures for software acquisition.

EFFECT OF CONDITION: Without comprehensive policy guidelines employees may not be versed in the proper protocols necessary to reduce risks associated with software licensing. They may utilize unlicensed or underlicensed software, inadvertently violating software licensing laws and/or agreements. This exposes the City to elevated levels of legal and reputational risk.

RECOMMENDATION 1: We recommend T&I formulate and document a comprehensive software licensing policy. The policy should incorporate appropriate elements of the City Wide Information Technology Management policy and provide clear guidelines on software acquisition, installation, and management of software licenses and agreements.

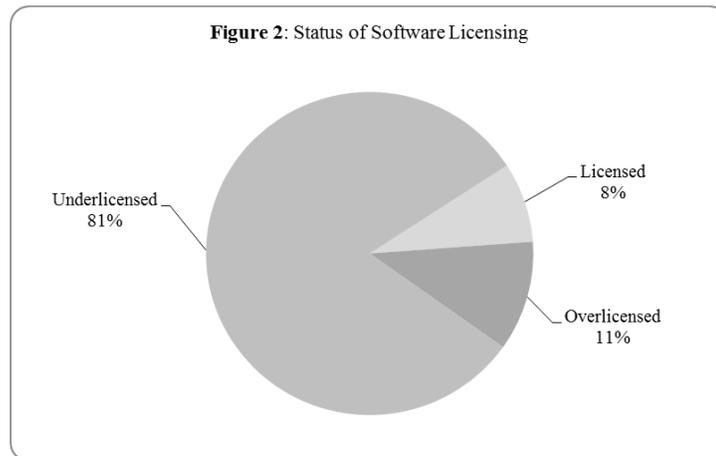
MANAGEMENT RESPONSE: Concur. We will draw from the existing City Wide Technology Management Policy to prepare and publish a new City Wide IT Technology Procurement Policy. The refreshed policy will be written in conjunction with current Purchasing procedures and address technology related purchases. Sections will be added to further clarify managing software licenses and agreements, acquisition, installation and compliance.

TARGET IMPLEMENTATION DATE: March 30, 2019.

UNLICENSED SOFTWARE

STATEMENT OF CONDITION: COT's management of software licenses is a centralized function performed by T&I through its software procurement office. This office's responsibilities include evaluating application software products, providing software installation technical support, and coordinating installation of third party software products. As of September 28, 2018, there were 4,411 software application types installed on City computers, of which 1,897 (43%) required licenses.

In 2016 T&I acquired an application to automate asset management and licensing compliance reporting, but there is no documented policy on handling unlicensed software discovered on City computers. However, the software procurement office has embarked upon some mitigatory action in that respect. Beginning March 2018, the office began notifying employees to uninstall unlicensed applications from their computers, with priority on high risk applications like computer games and Microsoft Office 365. Despite these efforts, a high percentage of applications still remain on City computers without appropriate licensing (see Figure 2 below).



Source: Report pulled from the software asset management application on 10/05/2018.

CRITERIA: COT's Information Security Policy 040104 requires City employees to use licensed software, stipulating strict adherence to terms and conditions of all end user license agreements.

CAUSE: Employees sometimes install software for evaluation then keep it beyond the trial period. They also download software from the Internet erroneously believing it is freeware. Sometimes licensed software is identified as unlicensed because users have not submitted licenses to T&I to be entered in the license management system. All these instances arise because users are not coordinating with T&I when they acquire and install software on their computers.

EFFECT OF CONDITION: Using unlicensed software is a violation of state and federal statutes. It exposes the City to legal, financial, and reputational risk.

RECOMMENDATION 2: T&I should work with all department and division heads to:

- a) Implement controls that help assure that employees coordinate with the software procurement office when acquiring and installing software, including software for evaluation purposes.
- b) Establish protocols for all software licenses and/or agreements to be submitted to the software procurement office so that they can be entered in the license management system.
- c) Identify all unlicensed software currently installed on City computers and either remove them or acquire appropriate licensing.

MANAGEMENT RESPONSE: Concur. As the current environment allows for customers to install their own software for trial and various reasons, it is imperative education and a revised Policy communicate risks and mitigation steps. The desired goal is to lock down the technology so that only T&I can authorize software installation. Until such a time this is technically possible, T&I will publish a more modern policy and procedures for customers to go through T&I for all software purchases and management of newly installed software licensing. We will also establish protocols and communications to arrange for adding existing software license information to the new licensing database and provide for removal of all unlicensed software where licensing cannot be verified.

TARGET IMPLEMENTATION DATE: June 2019.

UNUSED LICENSES

STATEMENT OF CONDITION: COT utilizes a wide variety of software applications installed on laptops, desktop computers, servers, and other devices. In order to use some of these applications, the City is required to purchase licenses. Table 1 lists examples of license types required for different technology infrastructure. Tracking and keeping up with changes in the requirements of each license type can be challenging, and often exposes the City to risks, including overlicensing risk.

Table 1: Types and Examples of Software Licensing		
LICENSE TYPE	EXAMPLE	DESCRIPTION OF LICENSE
Individual User	Subscription	Software is used for a specified period of time at the end of which the user must (i) renew the subscription, (ii) purchase a perpetual license, or (iii) remove the software from the computer.
	Shareware	Software is for a trial period at the end of which the user must either pay a fee for continued use or cease using the software.
Multi-user	Concurrent Use	Specified maximum number of users can use the software at any given time simultaneously. But installation of software can be done on more computers.
	Site/Enterprise	Provides access to software at a single location. Typically, these licenses are individually negotiated with the publisher and vary widely in their provisions.
Network	Server	Requires a single copy of the software to reside on the file server (license per server).
	Per machine	A license should be purchased for each client computer and/or device that accesses or needs to access services, usually through a server.
Add-on	Upgrade	This is for users who want to move up to a newer version of software they already have. The upgrade voids the previous version which cannot be transferred to another user.
	Maintenance	Allows license holder to obtain all updates or upgrades for software during the term of the contract.

Source: Information Technology Infrastructure Library (ITIL) and Tulane University.

Overlicensing occurs when there are more licenses than are required to legally use an application. A license management system report showed 160 overlicensed applications on October 5, 2018. There are costs associated with overlicensing. However, we are unable to quantify them because, according to the software procurement office, license costs entered in the system sometimes reflect bundled costs that include cost for the license, the application, and/or maintenance.

CRITERIA: Research has found that appropriate management of software assets, including the identification of hidden inefficiencies from over-licensed applications, reallocation of software licenses when hardware is decommissioned, and application configuration optimization, can help organizations achieve significant savings on software expenditure.¹

¹ The BSA Global Software Survey and Gartner reported possible savings of up to 25% and 30%, respectively.

CAUSE: There are many possible reasons for overlicensing. Lack of license reallocation is one of them. This happens when, for example, a computer or laptop is decommissioned and the license for a particular application is not recycled or reallocated. Similarly, departmental users can purchase software and/or licenses without coordinating with the software procurement office. This can result in a new license being acquired when the City already has a similar, unassigned version. Also, underutilized software gives an appearance of overlicensing. This happens because the license management system reports all unused or underused licensed software as overlicensed applications.

EFFECT OF CONDITION: Having more software licenses than are needed to use software may be an indication of misallocation of resources. The City could be losing significant amounts of money through the purchase of unneeded licenses or unused software.

RECOMMENDATION 3: We recommend T&I work with department heads and other users to:

- a) Establish protocols that promote coordination between application users and T&I so that when software and/or licenses are acquired or computers, laptops, or other hardware systems are decommissioned the software procurement office is immediately notified and appropriate updates in the license management system are made.
- b) Identify and remove from COT networks all software that is no longer needed or software that has been superseded by its updated version.
- c) Perform a software utilization analysis and implement an optimization strategy that helps minimize the acquisition of applications that are rarely or never used.

MANAGEMENT RESPONSE: Concur with improving the existing protocol. During automatic scans of software on the network, all software versions are identified and require some manual reconciliation. T&I, by practice, only purchases software for customers when requested. It is our standard practice to reallocate unused licenses when a new request is submitted over purchasing unneeded software. While we finish recording existing licenses into the database these exceptions will be managed. The new policy and practice will address handling of all licensing on computers and automated scanning. T&I will continue to manage the reassignment and decommissioning of licensing on retired and replacement computers to better allocate available software to users. The practice will also provide for the latest versions of software available that can be proven to interoperate with the various systems. Priority will be made to work with vendors on out of date software to bring into compliance. Lastly, using our new automation environment, we will develop processes to analyze and optimize application choices, communicate to city managers helping minimize rogue and seldom needed applications from being purchased when a suitable choice is already available.

TARGET IMPLEMENTATION DATE: June 30, 2019.