FOLLOW-UP REPORT
Software Asset Management Assessment
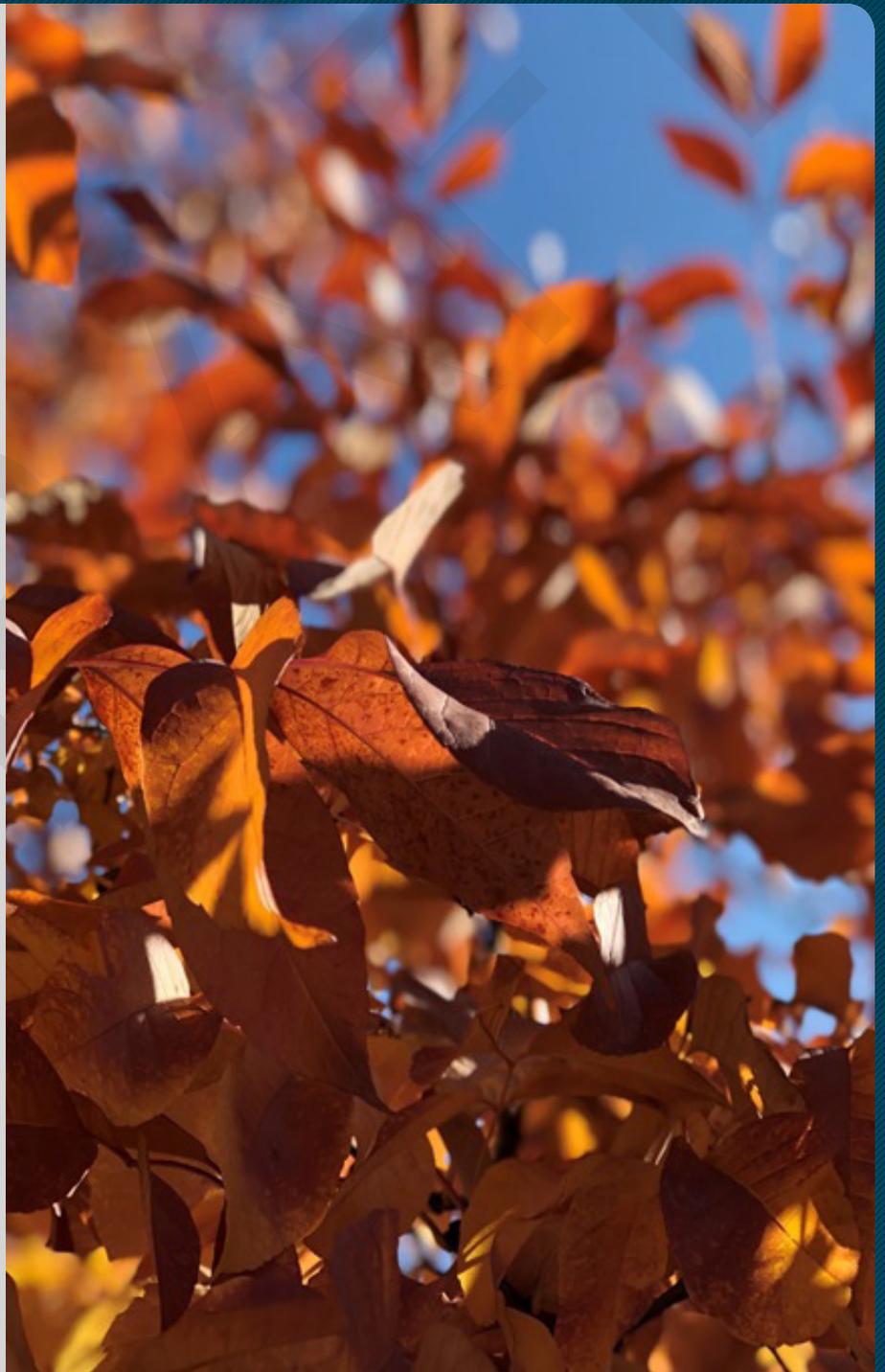## Technology Services
June 2019

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City and County of Denver

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June 6, 2019

AUDITOR'S LETTER

In keeping with generally accepted government auditing standards and Auditor's Office policy, as authorized by city ordinance, the Audit Services Division has a responsibility to monitor and follow up on audit recommendations to ensure audit findings are addressed through appropriate corrective action and to aid us in planning future audits.

In our follow-up effort for the "Software Asset Management Assessment" that was completed by a third party and issued in November 2017, we determined the City's Technology Services agency has fully implemented two of the recommendations made in the assessment report and only partially implemented the other two recommendations. Recommendations 1 and 3 are fully implemented as Technology Services has established an Information Technology Asset Management Charter and communicated the charter across City agencies supported by Technology Services to ensure software asset management objectives are executed. However, Recommendations 2 and 3.1 were only partially implemented as Technology Services has yet to fully implement the automated tool that would help the agency perform software-related compliance checks, such as software inventorying and risk-based reconciliations. Despite Technology Services' efforts, auditors determined the risks associated with the assessment team's initial findings have not been fully mitigated. As a result, the Audit Services Division may revisit these risk areas in future audits to ensure appropriate corrective action is taken.

This report includes a detailed implementation status update for each recommendation.

I would like to express our sincere appreciation to the Technology Services personnel who assisted us throughout the assessment and the follow-up process. For any questions, please feel free to contact me at 720-913-5000.

Denver Auditor's Office

Timothy M. O'Brien, CPA
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RECOMMENDATION — STATUS OF IMPLEMENTATION

FINDING 1 – The current software asset management program has not been integrated with existing discovery sources in order to identify all software deployment, compliance, and license positions throughout the City in an automated process.

Recommendation

1   Accountability and awareness for the software asset management mission should be clearly articulated from leadership in order to drive completion of software asset management objectives.

Status: Implemented (Original target date for completion: January 31, 2018)

Agency Action

Technology Services developed and implemented an Information Technology Asset Management Charter to drive the software asset management objectives. The charter enables the City to strategically leverage the deployment of information technology assets to achieve cost-savings. The charter also provides information on the protection of information technology assets to assure compliance and proper disposal of assets to mitigate risk and exposure.

Additionally, as part of the software asset management objectives, Technology Services communicated the charter across City agencies, and the charter is available on SupportNow, an online help desk for City employees. The Technology Services communications team also published a notice about the charter in its weekly bulletin, as well as in the citywide Denver employee bulletin. The publication of the charter is part of Technology Services' awareness program in support of the software asset management objectives.

RECOMMENDATION — STATUS OF IMPLEMENTATION

FINDING 2 – There is a lack of formalized and understood policies and procedures across the software asset management life cycle, and knowledge of software licensing and compliance is inconsistent throughout the organization.

Recommendation

2   The software governance function should enable the software asset management program to access critical data to carefully report on software compliance, including server access controls to determine completeness of inventory data.

Status: Partially Implemented (Original target date for completion: January 31, 2018)

Agency Action

Technology Services is working to implement an automated tool that will help it record software assets. This tool will also monitor assets throughout their life cycles and spot-check software licenses. As part of the ongoing implementation process, Technology Services purchased a new software asset management module for ServiceNow called "ProPlug-in." This module will enhance software asset management and compliance tasks. However, the module does not have inventory features that would help Technology Services record and track assets for easy review and accountability.

As a result, Technology Services is working on an inventory tool to fix the metering that has not been working properly. Technology Services personnel stated their goal is to get the metering to work properly so that the inventory tool can interface with the newly implemented ProPlug-in module, in order to ensure software compliance, tracking, and license positions throughout the software life cycle.

The estimated completion of the interface work for the inventory tool and software asset management module is by the end of June 2019.

RECOMMENDATION — STATUS OF IMPLEMENTATION

FINDING 3 – There is a lack of a well-defined, robust, and automated method of assessing unused or unallocated software licenses in both personal computers and servers.

Recommendation

3   Maintain accountability by clearly defining roles, responsibilities, access, and communicating these roles across the organization so as to promote visibility to the mission of the software asset management program.

Status: Implemented (Original target date for completion: January 31, 2018)

Agency Action

As mentioned, Technology Services developed and implemented the Information Technology Asset Management Charter. The charter made the information technology asset management team the official "custodian" of the City's information technology assets, in accordance with the information technology asset management policy and the City's Fiscal Accountability Rule 4.2.

The charter tasks the information technology asset management team with the overall oversight, coordination, and governance of the City's Information Technology Asset Management Program. Additionally, the team is also responsible for the overall management of information technology assets, including the entire asset life cycle process from when and how an asset is acquired to when and how it is disposed of or retired.

As part of Technology Services' awareness program to communicate the Information Technology Asset Management Charter across City agencies, the charter is published on SupportNow. Additionally, a notice about the charter was published in the weekly bulletin for City employees. The publication of the charter is part of Technology Services' awareness program to inform City agencies about the charter and to drive the software asset management objectives.

RECOMMENDATION — STATUS OF IMPLEMENTATION

FINDING 3.1 – There is uncertainty associated with the compliance of server licenses due to a lack of in-house licensing expertise and a lack of visibility into software deployment in the data center environment.

Recommendation

3.1   Formalize processes and controls around management of phases of the software life cycle to ensure consistent practice across agencies and Technology Services.

Status: Partially Implemented (Original target date for completion: January 31, 2018)

Agency Action

As discussed, Technology Services has implemented part of the automated software asset management module, called ProPlug-in, that will effectively spot-check deployed software and track licensing throughout their life cycles. However, the agency has yet to implement the inventory portion of the tool, which will record all inventory assets and feed the software asset management module. The expected date of full implementation is June 2019.

CONCLUSION

While Technology Services has adequately implemented two of the recommendations made in the "Software Asset Management Assessment," two others have yet to be fully implemented. For instance, the automated toolsets that would ensure an accurate inventory of software have not been adequately implemented. This poses a risk in producing an accurate software and license position throughout the software life cycle. As a result, the Audit Services Division may revisit these risk areas in future audits to ensure appropriate corrective action is taken.

On behalf of the citizens of the City and County of Denver, we thank staff and leadership from Technology Services for their cooperation during our follow-up effort and for their dedicated public service.

Office of the Auditor

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The **Audit Committee** is chaired by the Auditor and consists of seven members. The Audit Committee assists the Auditor in his oversight responsibilities regarding the integrity of the City's finances and operations, including the reliability of the City's financial statements. The Audit Committee is structured in a manner that ensures the independent oversight of City operations, thereby enhancing citizen confidence and avoiding any appearance of a conflict of interest.

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