A Report to the Audit Committee

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Audit of the Metropolitan Nashville Permitting and Licensing System Upgrade – Interim Report Two

November 11, 2014

Metropolitan
Nashville
Office of
Internal Audit

EXECUTIVE SUMMARY
November 11, 2014

Why We Did This Audit

This system development life cycle audit is to ensure that controls over project management, business processes, data integrity and security are implemented before system go-live.

What We Recommended

Delineate responsibilities for clean-up and conversion of existing data. Formalize classification of information stored in the system. Start work on application user security roles.

AUDIT OF THE METROPOLITAN NASHVILLE PERMITTING AND LICENSING SYSTEM UPGRADE – INTERIM REPORT TWO

BACKGROUND

The land management and permitting software known as KIVA is currently used by 24 agencies in the Metropolitan Nashville Government to provide Nashville citizens with services such as building permits applications, inspections, professional licensing, parcels and streets information lookup, and so forth. The fiscal year 2013 Capital Spending Plan allocated $5 million dollars to upgrade this system.

OBJECTIVES AND SCOPE

The objectives of this audit are to determine if industry practices for information system project management and application internal controls are considered and used throughout the project's system development life cycle.
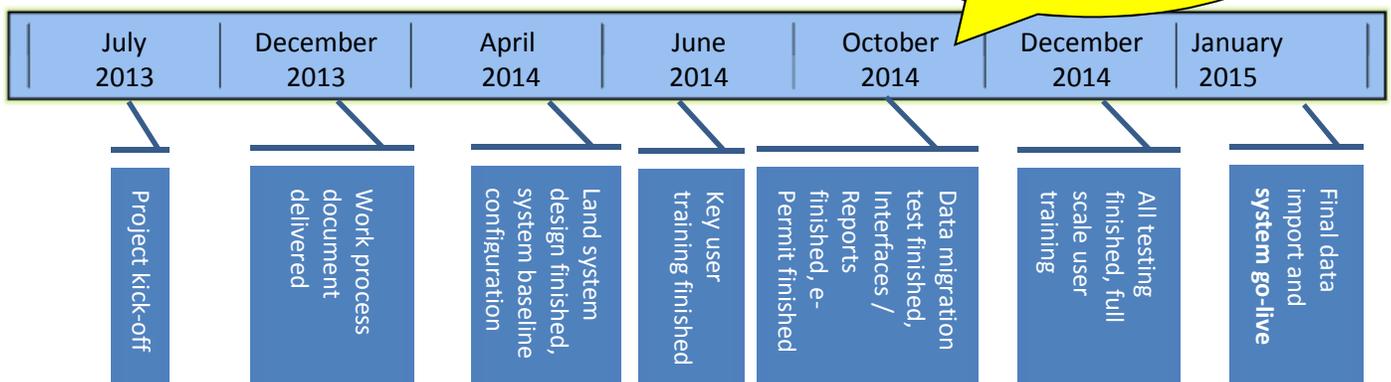
This report covers the project implementation practice at the time of the audit.

WHAT WE FOUND

As of October 31, 2014, the project was two weeks behind the target January 2015 implementation schedule. Data conversion testing, e-Permit beta version acceptance and e-Plan beta version reviews were behind schedule as proposed at the beginning of the project. The project could benefit through additional attention to data conversion, data classification, and beginning defining application security requirement earlier rather than just prior to implementation.

PROJECT STATUS AS OF OCTOBER 10, 2014

Budget: $5 million
Estimated: $3.9 million
Actual: $979,555

July 2013	December 2013	April 2014	June 2014	October 2014	December 2014	January 2015
Project kick-off	Work process document delivered	Land system design finished, system baseline configuration	Key user training finished	Data migration test finished, Interfaces / Reports finished, e-Permit finished	All testing finished, full scale user training	Final data import and **system go-live**

PROJECT MILESTONES AND COSTS

As of October 31, 2014, the project was two weeks behind the target January 2015 implementation schedule. Data conversion test, e-Permit beta version acceptance and e-Plan beta version review were behind schedule as proposed at the beginning of the project. Out of the $5 million approved budget, a contract of about $2.65 million was awarded to the vendor, Civic Engineering, for the development and implementation of the system. Also, $1.1 million was estimated for additional hardware, software and maintenance needed for the new system.

Four change orders have been approved by the Steering Committee, totaling $172,710 plus annual cost of $28,500[1]. Additionally, two change orders totaling $210,000 plus $23,500 annual cost were pending approval by the Steering Committee (see Appendix B).

A summary of the established milestones and current status can be viewed in Appendix A.

AUDIT OBSERVATIONS

Internal control helps entities achieve important objectives and sustain and improve performance. The Committee of Sponsoring Organizations of the Treadway Commission (COSO), *Internal Control – Integrated Framework (2013 Framework)*, enables organizations to effectively and efficiently develop systems of internal control that adapt to changing business and operating environment, mitigate risks to acceptable levels, and support sound decision making and governance of the organization. The audit observations listed are offered to assist management in fulfilling their internal control responsibilities.

Observation A: Formalize Legacy Information Conversion Plan

No formal plan existed to delineate responsibilities of each party involved in remediation and conversion of legacy information. Metropolitan Nashville Information Technology Services project team members did have a list of items to be checked during the data conversion process.

Criteria:
The Committee of Sponsoring Organizations of the Treadway Commission, *Internal Control – Integrated Framework (2013 Framework)*, Control Activities – Principle 11

Recommendation for the project management team to:

Establish a formal data conversion plan which defines responsibilities to be assumed by each party including vendor and user departments. Such responsibilities include, but are not limited to, scrubbing legacy information, ensuring completeness of records converted, issue tracking, and establishing testing procedures for completeness and information accuracy.

Observation B: Metropolitan Nashville Information Security Policies

User department data classification and retention requirements submitted to the project team were not detailed enough, using words such as "most data" or "forever", to delineate requirements for information to be processed and stored in Cityworks . Data classes and retention schedules should be determined for items such as "permits", "contractor license information", "customer contact

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[1] All annual costs will not incur until second year, and will not be funded by this project budget.

information", or "inspection results", etc. Cityworks is capable of providing granular protections based on users' specific needs.

Criteria:
- The Committee of Sponsoring Organizations of the Treadway Commission, *Internal Control – Integrated Framework (2013 Framework)*, Control Activities – Principle 11
- Metro Nashville Information Security Policy – Information Classification
- Metro Nashville Information Security Policy – Information Labeling and Handling
- Metro Nashville General Records Schedule

Recommendation for the project management team to:

Ensure user departments go through a formal data classification and retention identification process for information processed and stored in Cityworks.

Observation C: Complete Definition of User Roles, Groups and Permissions

Plans for definition of user roles, groups, and permissions within Cityworks should be initiated early in the implementation phase of the project. Information Technology Services members of the project team was compiling a user group list for departments to review prior to configuration in the system. Although there will be months before the system go-live date, planning ahead can help ensure application security meets business requirements such as least privileges, segregation of duties, minimum number of groups for easy maintenance, and management oversight at the system go-live date.

Existing user groups in the KIVA system were often created on the fly to satisfy a specific need. This approach resulted in a large amount of groups with various permissions assigned so that no one was able to tell the final impact of all combined permissions assigned to a user.

Criteria:
- The Committee of Sponsoring Organizations of the Treadway Commission, *Internal Control – Integrated Framework (2013 Framework)*, Control Activities – Principle 11
- ISO 27002 – Chapter 11.2 User Access Management

Recommendation for the project management team to:

Ensure user departments specify and document their user access needs in accordance with the to-be-established data classification, labeling and handling procedure, and business internal control prior to the system go-live date.

GOVERNMENT AUDITING STANDARDS COMPLIANCE

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 observations and conclusions based on our audit objectives.

METHODOLOGY

To accomplish our audit objectives, we performed the following steps:

- Interviewed key stakeholders of the project, such as the Code Department, Planning Department, Water Services, Public Works, and Assessor's Office.

- Attended business process modeling workshops.

- Reviewed and analyzed documentation for compliance with the guidelines of Project Management Body of Knowledge.

- Evaluated internal controls currently in place.

- Considered information technology risks.

AUDIT TEAM

Mark Swann, CPA, CIA, CISA, Metropolitan Auditor
Qian Yuan, CISA, In-Charge Auditor

APPENDIX A – OVERVIEW OF KEY PROJECT PHASES

Need Analysis

- June 2012: Metro Council approved five million ($5,000,000) capital spending
- July 2012: Initial Kiva replacement project kickoff
- October 2012: Departmental requirements finalized
- December 2012: Initial Accela response to upgrade request reviewed
- Metro Expenditure: $1,078.55
- Vendor Expenditure: Invoiced: $18,256   Paid: $18,256
- Cumulative Expenditure: $19,334.55   (0.39%)

Procurement Process

- April 2013: Request For Quote released
- July 2013: Civic Engineering / CityWorks awarded
- Metro Expenditure: $0
- Vendor Expenditure: Invoiced: $0   Paid: $0
- Cumulative Expenditure: $19,334.55   (0.39%)

Planning & Design

- October 2013: Project charter approval by Steering Committee
- December 2013: Department Workflow / Workshops completed
- January 2014: Implementation report document acceptance
- Metro Expenditure: $174,634
- Vendor Contract: $635,000   Invoiced: $599,383   Paid: $599,383
- Cumulative Expenditure: $890,971.26   (17.82%)

Implementation

- March 2014: Baseline PLL configuration acceptance - Beta version
- March 2014: Credit Card Interface acceptance - Beta version
- April 2014: Land System acceptance – Beta version
- April 2014: ArcGIS Desktop Extension acceptance – Beta version
- June 2014: Data Conversion acceptance (Test Pass)
- July 2014: All Interfaces completed
- July 2014: System Reports completed
- August 2014: E-Permits acceptance – Beta version
- August 2014: Electronic Plans Review acceptance – Beta version
- October 2014: IVR Configuration acceptance – Beta version
- Metro Expenditure: $264,297
- Vendor Contract: $1,165,000   Invoiced: $2,620   Paid: $2,620
- Cumulative Expenditure: $979,555 (19.59%)

> Current Status: Delayed but on Budget

Production

- February 2015: System Go-Live
- February 2016: Fully acceptance based on success criteria
- Metro Expenditure: $0
- Vendor Contract: Invoiced: $0   Paid: $0

Maintenance & Support

- July 2013: Year 1 maintenance, update and support
- July 2014: Year 2 maintenance, update and support
- July 2015: Year 3 maintenance, update and support
- July 2016: Year 4 maintenance, update and support
- July 2017: Year 5 maintenance, update and support
- Metro Expenditure: $0
- Vendor Contract: $849,272   Invoiced: $95,000   Paid: $95,000

No.	Description	Budget Impact	Project Schedule Impact	Steering Committee Approval Status
1	Metro Water Services Department Integration With Customer Information Systems	$20,210	None.	Approved 4/8/2014.
2	Google Maps Enterprise API	10,000 + 10,000 (annual cost)	None.	Approved 8/28/2014.
3	Fire Department Permits Addition	95,000	None.	Approved 8/28/2014.
4	Addition of AMS Software for Stormwater Maintenance	47,500 + 18,500 (annual cost)	None.	Approved 8/28/2014.
5	Alarm Registration Back-office System Conversion	135,000	None.	Pending approval.
6	Secure Web Access Portal for Alarm Registration and Renewals	75,000	None.	Pending approval.
	Total Approved Amount	$172,710 + $28,500 (annual cost)		

APPENDIX C – MANAGEMENT RESPONSE AND CORRECTIVE ACTION PLAN

We believe that operational management is in a unique position to best understand their operations and may be able to identify more innovative and effective approaches and we encourage them to do so when providing their response to our recommendations.

Recommendations	Concurrence and Corrective Action Plan	Proposed Completion Date
The project management team should:		
A. Establish a formal data conversion plan which defines responsibilities to be assumed by each party including vendor and user departments. Such responsibilities include, but are not limited to, scrubbing legacy information, ensuring completeness of records converted, issue tracking, and establishing testing procedures for completeness and information accuracy.	**Concur.** A formal Data Conversion Plan has been established and defines responsibilities of the vendor, Metro ITS, and Metro Departments (see attached). In addition, a Department Testing checklist will be distributed to the department team leads for documentation and sign-off of data conversion testing.	Completed on 10/30/2014.
B. Ensure user departments go through a formal data classification and retention identification process for information processed and stored in Cityworks.	**Concur.** We will alter our department's Data Classification plan which we have on record to change "most data" to read; "All data except that which has been identified as internal, confidential or restricted, herein". Such change would apply to all three lines for the Codes Department – Building, Licensing and Property Standards. Under the data retention column for Codes – Building, Licensing and Retention, we will review the comments to ensure that it is clear that all data and records within the system are "permanent" in nature.	
C. Ensure user departments specify and document their user access needs in accordance with the to-be-established data classification, labeling and handling procedure, and business internal control prior to the system go-live date.	**Concur.** Metro ITS is currently working with the departments to define user access groups within the Cityworks PLL and Land systems. All security groups within Kiva have been pulled and sent out to the departments for review and update.	Estimated completion date: 11/30/2014.