



Analytics Suite

Purchasing Module

Prepared for: City Auditor's Office, City of Tulsa

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Project Overview

Why this project was completed:

Every department within the City of Tulsa requires goods and services to function, and the City's overall operation largely depends on the effectiveness of the procurement process. This means the Purchasing division must fulfill requests in a timely manner, at the lowest cost, and within contract obligations.

With the new MUNIS financial system, the City now has a wealth of data to measure Purchasing performance according to these criteria. 9b analyzed and visualized this data in user-friendly dashboards in Tableau—the City's business intelligence platform.

How this project benefits the City:

- **Purchasing:** Reduces complexity of MUNIS data, identifies bottlenecks in the workflow and targets training opportunities.
- **Internal Audit:** Pinpoints risks associated with the Purchasing workflow and details how frequently and to what extent they occur; fast, frequent and focused auditing.
- **Finance:** Increases transparency of overall spend and generates insights to meet strategic goals and safeguard City assets.

Scope

Develop data analytics and interactive Tableau dashboards for continuous oversight of Purchasing at the City of Tulsa.

Objectives

- Analyze and visualize risks occurring across the procurement process, from requisition to purchase order.
- Enable financial managers and auditors to easily monitor Purchasing performance and make data-driven decisions.
- Cultivate a collaborative relationship with City stakeholders to deliver the highest value throughout the development of the Analytics Suite. See *Page 7*.

Methodology

- Read internal Purchasing documentation and gained access to MUNIS data tables.
- Interviewed Purchasing division staff regarding internal procedures and priorities.
- Documented workflow for procuring goods and services and assigned risks to each step.

Results

- **35+ data analytics** track key steps in the Purchasing process, flagging requisitions/purchase orders as they move through the workflow and accumulate risk, such as inefficiency, inaccuracy and non-compliance.

• **Four KPIs show** 1) average processing time by type of requisition and workflow step, 2) average processing time by department and purchasing phase, 3) change orders that cause purchase orders to exceed \$25,000 and \$100,000 with a vendor, and 4) Requests For Action Invoices (RFAINs, or “emergency invoices”) by month, by amount and by department.

• **Tableau dashboards** capture all data analytics and views in one accessible location. See *Exhibits starting on Page 4*.

Background

A City of Tulsa ordinance places purchasing responsibility in the Finance Department. The Purchasing division assists departments across the organization in procuring required supplies, equipment and services. The objective is to complete the procurement process in a timely manner, at the lowest cost, and in accordance with contract specifications.

The process begins with the using department filing a requisition with Purchasing, along with an estimate of cost (greater than the \$2,499.99 purchasing card limit). Purchasing staff review the requisition and have the authority to revise it as to quantity, quality or estimated cost. Staff also can consolidate requisitions to take advantage of bulk purchasing discounts.

A competitive process is required for most purchases; two exceptions are purchases with petty cash and sole source acquisitions. Purchasing is required to use the most stringent competitive process that will achieve the City's objectives. A written statement of the reasons for not using a more stringent competitive process in an acquisition is required. Dollar limits and various procedures to be used for bidding and purchases in specific categories are detailed in the ordinance. For example, written contracts are required for purchases greater than \$100,000.

The time-sensitive and cost-effective procurement of goods and services is critical to the City's overall operation. When those criteria are compromised, the organization is vulnerable to risk. Inadequate employee training, inefficient price negotiation, or unforeseen contract expiration—these all can lead to a requisition stagnating in the workflow and consequently, the using department not having what it requires to fulfill its duties or meet standards.

This risk analysis project focuses on Purchasing process steps completed in the MUNIS financial system, from creation of the requisition to changes to the approved purchase order.

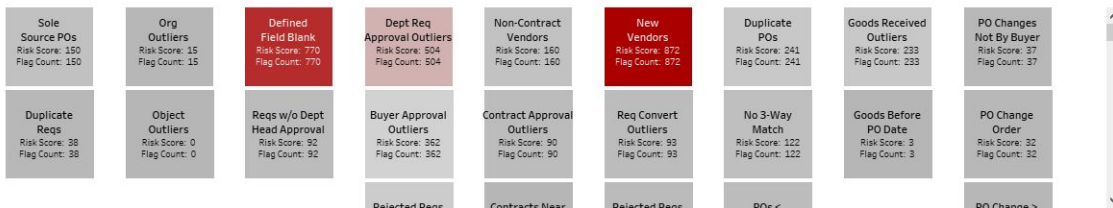
Exhibit: Tableau Visualizations

The Tableau dashboard developed in this project illustrates the approval process for Purchasing transactions in three interactive sheets.

- The **Process Sheet** breaks down the procurement process by workflow step.



- The **Analytics Sheet** shows each analytic directly below its related process step. Shading indicates each analytic’s weighted risk score (weight times number of flagged occurrences).



- **Filters:** Analytics can be filtered by **Audit Risk** to isolate audit risk analytics, by **Bottleneck** to measure workflow efficiency, and by **Period** to see how analytics are performing over time.
- The **Details Sheet** provides transaction details, which allow the user to understand what conditions triggered the analytic’s risk score. Details are hidden until an analytic is selected.

The screenshot shows a table with the following columns: Req_No, TestNum, PO_Entry_Dt, PO_Department, Req_Entered_By, Req_General_Comments, Vendor_Name, ApproverName, Step_Num., Action_Tak., WIF_Action_Date, and ApproverDt. The table content is mostly blurred, but the column headers are clearly visible.

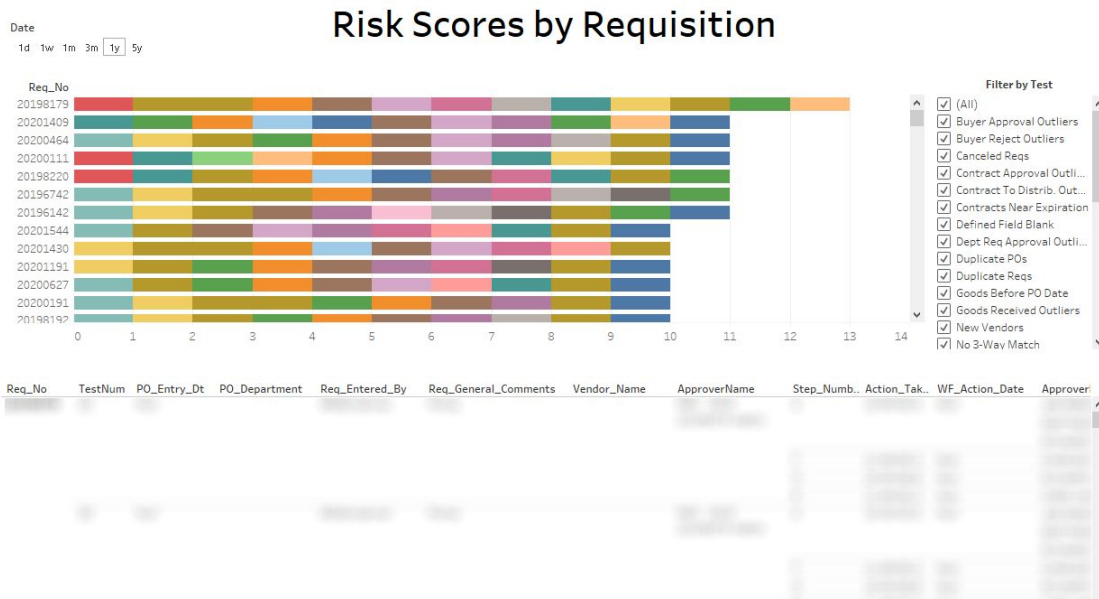
Additional view

When a user hovers over an analytic box in the workflow visualization, a tooltip displays a line graph that shows the monthly total of instances the particular analytic was flagged.

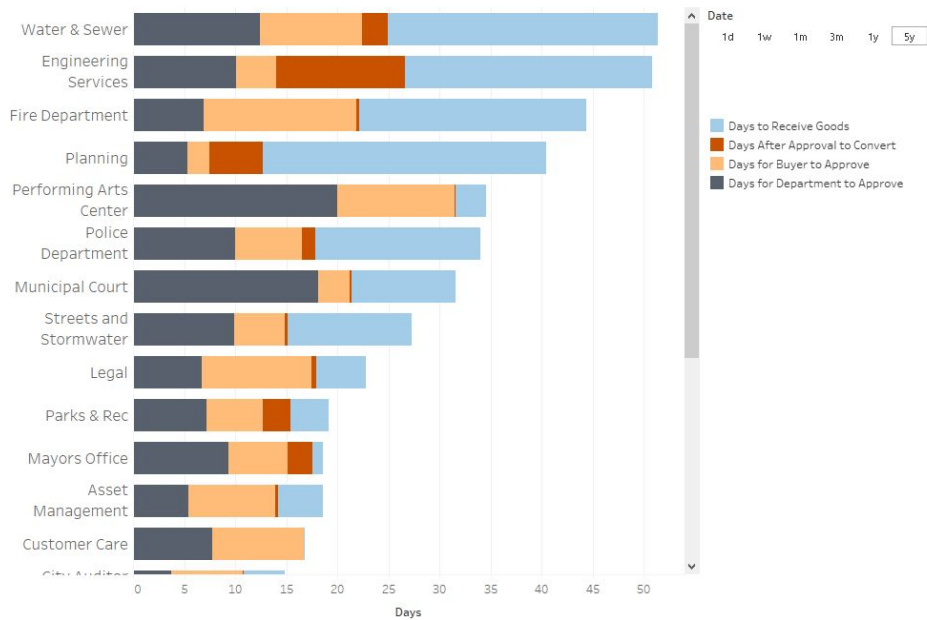


Risk scores

A set of stacked bar graphs that show risk scores **by employee, by approver, by department, and by requisition**. Example: The user can quickly see which requisitions have the highest risk, which accumulates as the requisition moves through the purchasing process.



The **Average Length of Processing (KPI)** shows the average amount of time it takes for a department to process a requisition. Colors represent different phases of the process. This KPI will inform specific training needs by department. A similar KPI completed in this project shows the average processing time by type of requisition and by workflow step.



The **Change Orders Over Limits (KPI)** shows purchase orders (POs) that had an original amount within City policy limits (light gray bar), but later had a change order that pushed the amount over the limits. These POs also do not have documentation permitting them to exceed the policy limits.

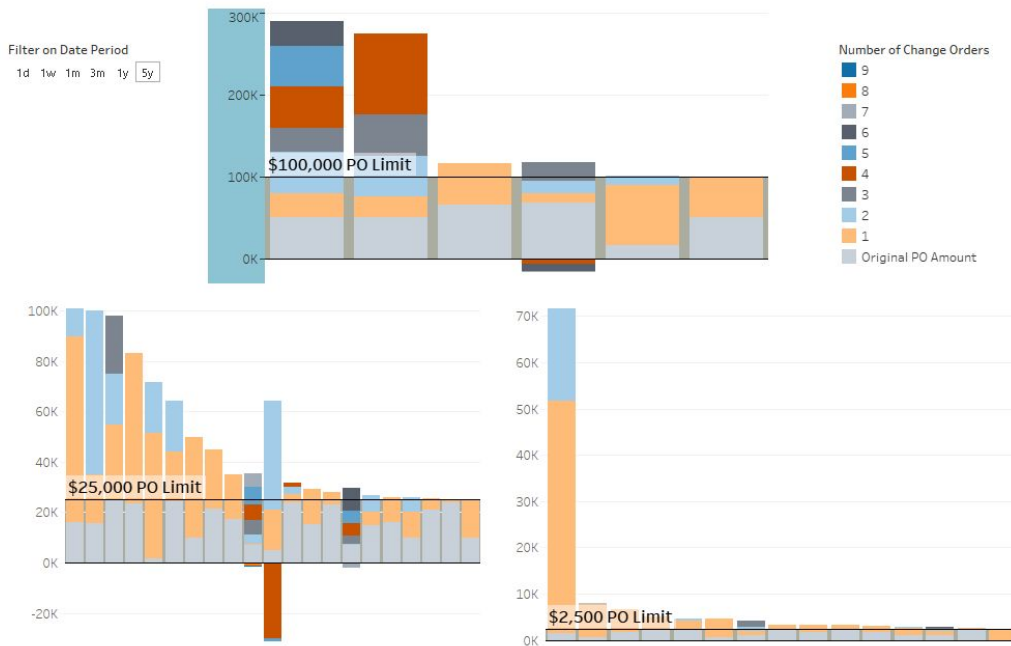


Exhibit: Analytics Suite

Purchasing is the fourth Module in an Analytics Suite being developed by 9b for the City of Tulsa.

