Analytics Suite

Payroll Module

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

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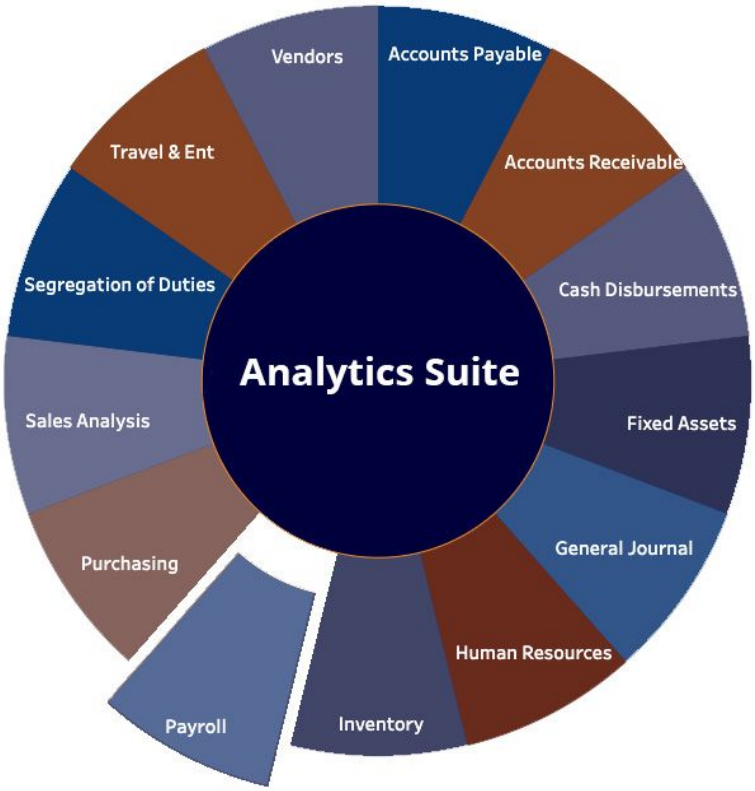
Summary

We created Tableau visual dashboards incorporating more than 50 analytics for detailed oversight of the payroll process at the City of Tulsa. The MUNIS Enterprise Resource Planning (ERP) system was recently implemented within the last two years at the City.

After conducting interviews with City stakeholders, we understood that the overall goal was to pay employees accurately and on time. With that in mind, these dashboards allow users from all levels of the organization to monitor payroll from start to finish, identifying impediments throughout the process.

Payroll is the first module in an Analytics Suite being developed for the City of Tulsa by 9b Corp.



Questions

The work we have produced can answer the following questions:

- What are the risks associated with each step in the payroll workflow?
- What analytics could detect and/or mitigate risks in the payroll workflow?
- What are the details (employees, date, etc.) associated with each risk/analytic?
- Which analytics are intended to monitor fraudulent activity in the process?
- How does a workflow step currently showing high risk trend by month for a selected period?
- Which employees/approvers/clerks/departments/transactions carry the highest risk?
- Which employees need additional training in the payroll workflow?
- Where are the bottlenecks slowing or impeding the payroll workflow?
- How are the developed analytics performing over time (by pay period)?

Products

50+ data analytics for thorough oversight

The newly adopted MUNIS system presents an exciting opportunity to employ a wealth of data for efficient and rich insight at the City.

Using this data, we created more than 50 analytics that detect risks throughout the entire payroll process, from the email request initiating a personnel action to the final invoice generated concluding the payroll manager's workflow. Twenty analytics are applicable to the HR component (approving personnel actions) of payroll, and more than 30 are applicable to the financial component (compiling hours, configuring deductions, etc.).

The analytics we have developed flag risks such as unusual transactions, approvals, and changes, as well as measure sufficient training among employees and pinpoint bottlenecks in the workflow.

Data analysis, which is performed on demand, empowers auditors, financial managers, and other key stakeholders with up-to-date and unbiased information to identify issues and initiate solutions.

Accessible dashboards for rich insight, swift problem solving

We created visual dashboards in Tableau (the City's business intelligence platform) that allow key stakeholders, from the HR Analyst to Chief Financial Officer, to see when the payroll process is performing as expected and to respond appropriately if it is not.

The dashboards are populated by MUNIS data and function according to the code written in our analytics scripts. The interactive visualizations are designed for users to digest essential information quickly—and to dive deeply into complex issues that date as early as the City's adoption of MUNIS.

This comprehensive, timely view of the payroll process allows the City to survey any impediment to paying employees accurately and on time. The ultimate goal of the project is to reassure the City that its payroll system is working properly and to offer data-based insight for improvements.

Workflow Dashboards

We created two dashboards visualizing the personnel action (HR component) and payroll (finance component) workflows. The dashboards have the same structure: three interactive sheets, titled "Process," "Analytics," and "Details".

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

- The **Analytics Sheet** is organized by placing each analytic below its related workflow step. Shading is used to indicate each analytic's weighted risk score (weight times number of flagged occurrences). Darker red coloring indicates more risk.

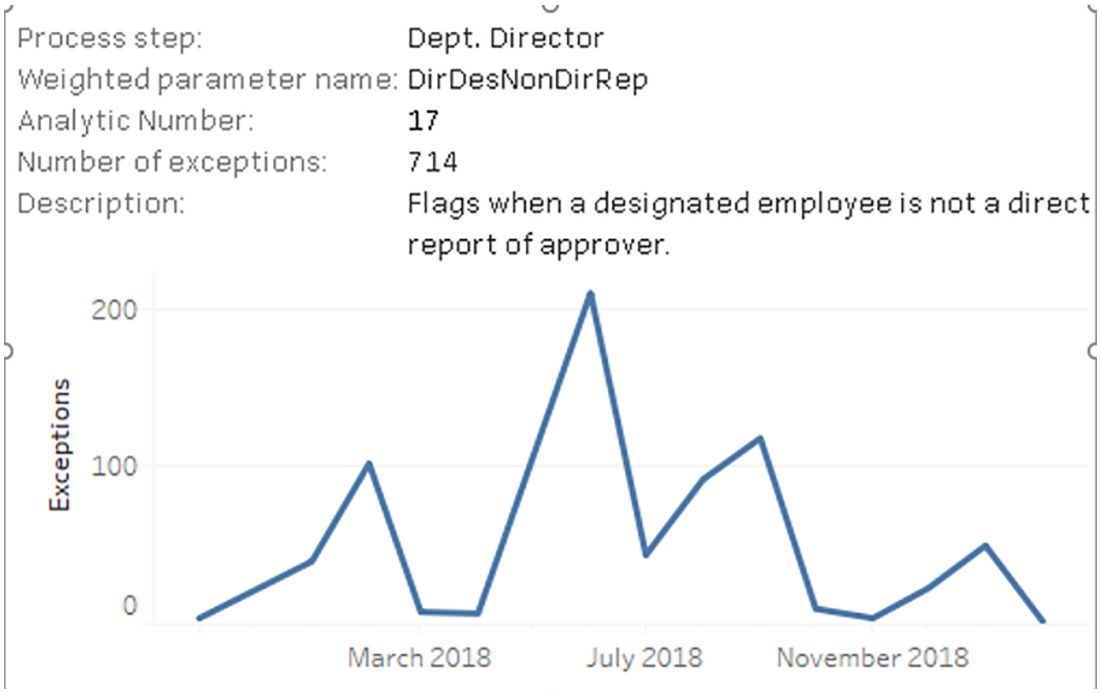
- The **Details Sheet** provides transaction details, which allow the user to understand what conditions triggered the analytic's risk score. Details remain hidden until a user clicks on an analytic.

Notes: Risk score is based on the number of exceptions times the weight assigned in the Weighting Parameters tab. This allows the user to determine which analytics are most important for their review and rises them to the top deepens the color of red when exceptions occur.

- **Filters**: Analytics can be filtered by **Audit Risk** to isolate audit risk analytics, by **Timeliness** to locate bottlenecks, and by **Period** to see how analytics are performing over time.

Additional view

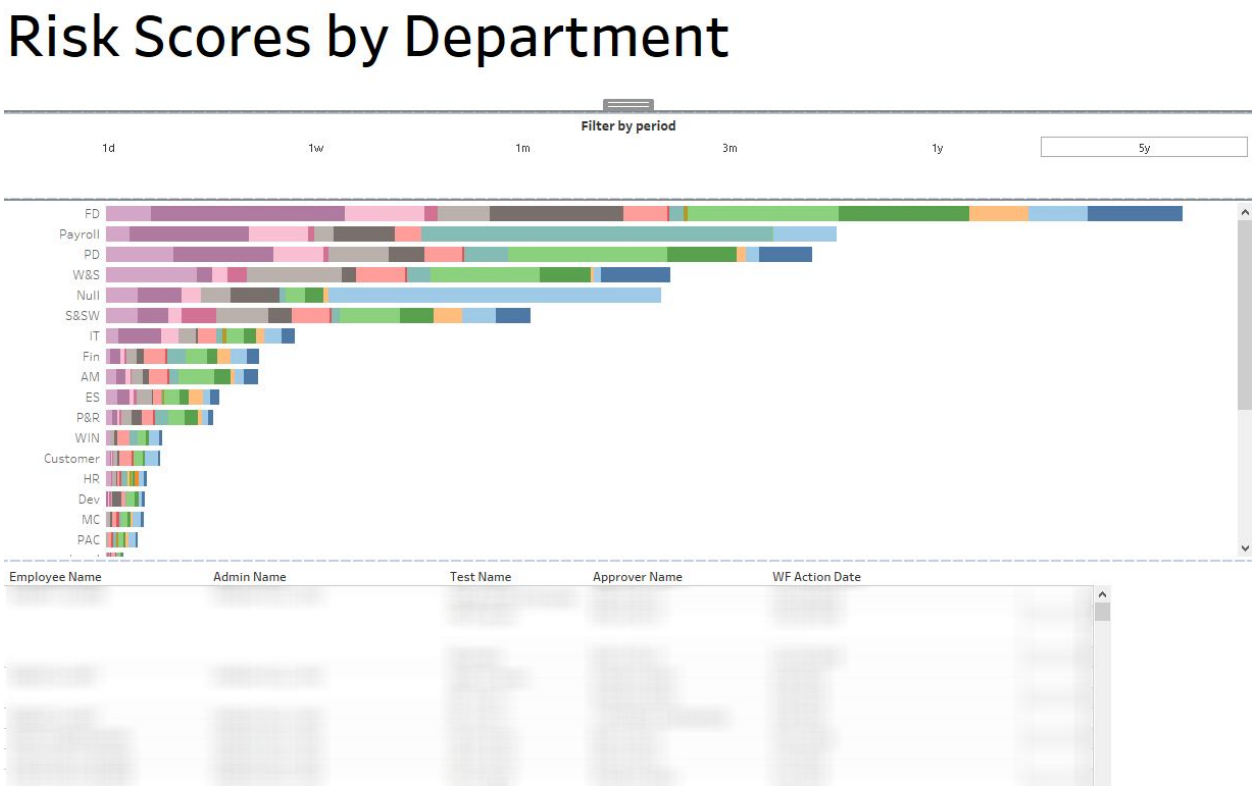
When a user hovers over an analytic box in the workflow visualization, a tooltip displays a line graph that shows the monthly total of instances the particular analytic was flagged.



Risk score dashboards

We created a set of dashboards that show risk scores **by employee, by approver, by clerk, by department, and by transaction**. Each dashboard has the same structure and functionality.

Example: The bar chart below allows the user to quickly to see which departments have the highest risk and which areas of risk are the highest for each department. The user can click on any part of the bar graph to see more information below.



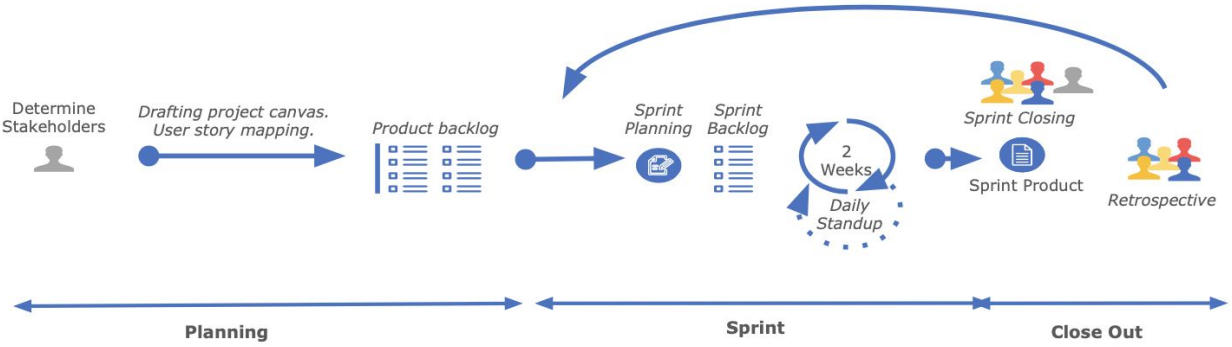
Supporting project documentation for detailed reference, further exploration

In addition to our data analytics and visualization, we provided the following documentation:

- Canvas of our project detailing its goals, stakeholders, value proposition, etc.
- Flowcharts outlining the payroll workflow and each step's associated risks and controls
- Diagrams showing relationships between payroll database tables and MUNIS.
- Analytics not prioritized in our project for City Auditor's Office to use.
- Interview memos from our meetings with key City employees involved in payroll.

Process

We employ the Scrum methodology of project management. This means we deliver a work product every two weeks or less and maintain a collaborative relationship with our stakeholders. We use Scrum to avoid costly delays and deliver the highest value of work as soon as possible.



Phase 1: Planning

We spent one week conducting in-person meetings with the CFO, Controller, Assistant Controller, Payroll Manager, HRIS Administrator and Business Analyst to understand the payroll process. As we gathered information and gained access to necessary databases, we began developing risks associated with each step in the payroll process and analytics to detect them.

Phase 2: Analytics

Over two, two-week “Sprints” we created analytics for risks identified in the payroll process. We began each Sprint by meeting with the City Auditor and Audit Data Analyst to present identified risks and analytics—and come to consensus before moving forward. After building the analytics, we documented the code, performed code reviews, and presented the results to key stakeholders.

Phase 3: Tableau

Using our analytics, we designed interactive dashboards in Tableau to show identified risks in the payroll process. We met with the City Auditor and Audit Data Analyst for user testing and incorporated their feedback into our final visualization. This process was completed in one, two-week Sprint.