A Data Analysis Framework for LA County Executive Managers
Sponsored by LA County, Auditor-Controller

Team Members
Kaylee Alfaro
Kristen Marenco
Jiabao Shan
Jasmine Cao

Faculty Advisors
Jungsoo (Soo) Lim
Russ Abbott

Liaisons
Karen Loquet
Romeo Martinez
Scott Harvey
Jesse Conde
Grace Cheung
# Table of Contents

1. Introduction 2
   1.1. Background 2
   1.2. Design 2
2. Related Technologies 3
3. System Architecture 3
   3.1. Data Flow 3
   3.2. Initial Proposed Dashboard 3
      3.2.1. Expended Amounts Bar Graph 4
      3.2.2. Contracts Expiring in 30, 60, 90 Days Donut Chart 4
      3.2.3. Details Table 4
   3.3. Final Dashboard 4
      3.3.1. Expended Amounts Bar Graph 5
      3.3.2. Contracts Expiring in 30, 60, 90 Days Donut Chart 5
      3.3.3. Details Table 5
4. Conclusions 6
   4.1. Results 6
   4.2. Future 6
1. Introduction

1.1 Background

This project was sponsored by LA County Auditor-Controller. The Auditor-Controller has access to a wealth of financial data. The Auditor-Controller’s department had projects to develop three dashboards using financial data. One dashboard is to display contract information for users at the manager level. The second dashboard is to summarize financial data for users at the executive level. Lastly, the third dashboard incorporates nonfinancial data alongside the financial data. The project team was tasked with developing the second dashboard.

1.2. Design

The project team was limited by not having access to eCAPs which is the County’s database of contract information. The team’s workaround solution was to update the dashboard using flat files. The first draft dashboard included a variety of visuals to show the users what Power BI dashboards are capable of and what was available to them. The final dashboard incorporated the visuals that were deemed most useful by the users. That dashboard, titled ‘Contract Monitoring,’ connects to the department’s internal dashboard. The main benefit of the design is that it summarizes contract information in a way that highlights potential problem areas for executives in ways that improve on their previous process. The dashboard received a lot of positive feedback and went over well with users. It “went live” in early May 2019.

2. Related Technologies

Since Power BI was mandated by the customer, no other display or visualization systems were considered.
3. System Architecture

3.1. Data Flow

The data sources for this project are flat files containing data derived from the county’s database. Contract data is provided via flat files which are then uploaded to Power BI. The dashboard which is built using Power BI then visualizes these contracts. Some dashboard components may be exported.

3.2. Initial proposed dashboard

The final dashboard visualizations are all modeled after a proposed design mockup submitted to Auditor-Controller executives.

Dashboard Mockup – Dept’l Page 2
After meeting with liaisons and executives, design adjustments were made to this initial mockup. The dashboard title was renamed, the bar graph thresholds were changed and renamed, the table columns were spelled out for user readability, and contracts that were deemed over budget were highlighted in the table column “Expended Percentage.”

3.2.1. Expended Amounts Bar Graph

The final bar graph was named “Expended Amounts” which was split into three different bar graphs one for contracts expiring in 30 days, another for 60 days, and another for 90 days. The y-axis represents the count of contracts that are expiring within the days threshold and within the thresholds listed on the x-axis. The final x-axis consists of three thresholds of contract’s expended amounts, less than 50%, 50% - 75%, and more than 75%. The initial over budget threshold was merged with contracts over 75% because the users wanted to include these contracts together. The zero budget threshold was taken out because in the future that threshold will not exist due to a change in how the Auditor-Controller will report on its contracts.

3.2.2. Contracts Expiring in 30, 60, 90 Days Donut Chart

The initial name “Aging” was deemed too vague for users to interpret the donut chart, therefore, it was renamed to “Contracts Expiring in 30, 60, 90 Days.” Data labels with the numerical count and percentage form were added to the donut chart to make it easier to see for the user.

3.2.3. Details Table

Initially the table did not have a title, however, one was added to make the table attractive to the user. The column names were spelled out to increase readability for the user. A feature was added to the “Expended Percentage” column, whenever the percentage was 100 or above, the text color would change to red. In order to maintain consistency across all dashboards, any time the percentage was 99.xxx any numbers following the decimal place were rounded after 2 decimal places.

3.3 Final dashboard

The final dashboard implements three Power BI visualizations, a donut chart, a bar graph, and a table. All three visualizations are responsive and when clicked will filter through data simultaneously. Data is displayed and sorted per user requirements. The table highlights certain contracts that fall within certain thresholds. All visualizations support exporting to Excel.
The final dashboard is shown above. The color scheme coincides with the Auditor Controller’s choice color scheme.

### 3.3.1. Expended Amounts Bar Graph

The final bar graph is comprised of three different bar graphs one for contracts expiring in 30 days, another for 60 days, and another for 90 days all under the heading, “Expended Amounts”. The y-axis represents the count of contracts that are expiring within the days threshold and within the thresholds listed on the x-axis. The final x-axis consists of three thresholds of contract’s expended amounts, Less Than 50%, 50% - 75%, and More Than 75%.

### 3.3.2. Contracts Expiring in 30, 60, 90 Days Donut Chart

The final donut chart is titled, “Contracts Expiring in 30, 60, 90 Days.” Data labels with the numerical count and percentage form display the count of contracts within the thresholds that are listed in the legend. The legend is titled, “Days Until Expiration” with color coded thresholds, 30 in blue, 60 in red, and 90 in green.

### 3.3.3. Details Table

The table is titled, “Details”. The column names are all spelled out and coincide with the Auditor Controller’s business terminology. To maintain consistency across all Auditor Controller dashboards, the Expenditure percentage is rounded after two decimal places when 99.xxx%.
4. Conclusions

4.1. Results

The final version of the dashboard showed that simplicity is best when creating a graphic user interface. Since, the changes to the dashboard were presented to the users at each iteration, they were pleased with the final outcome.

At the end of fall semester the team proposed to add two features to the next iteration, alerts and forecasting. The users had initially wanted both features, but decided against the features because their needs changed during spring semester. As a result, alerts and forecasting were not included in the final version.

4.2. Future

The final dashboard was released on April 19, 2019 and is in use to at least 300 Executives and Managers. The department team plans to continue to add users to the dashboard. To maintain the accuracy of the data displayed in the dashboard, the department team plans to connect the dashboard to the contract database.