

Software Requirements Specification

for

Microsoft Power BI Data Analytics Dashboard

Version 1.0 approved

**Prepared by Yara Ajjawi, Markniel Cruz, Jevon Fan, Suresh Ghimire, Jiajun Gu,
DeQing Liang, Elton Lin, Edwin Lugo Bautista, Tommy Ly, Winston Pham, Alvin
Truong**

Sponsor: Santa Barbara Public Defender

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Revision History

Name	Date	Reason For Changes	Version
First Draft	12/8/21	First Document Review for Review & Approval	1.0

1. Introduction

Data Analytics through visualization is the primary purpose for this dashboard product; using Power BI features, our client can view all forms of data for analyzing and making informed decisions that can benefit their organization. Our dashboard can perform functionalities that include viewing data to filtering, sorting, and singling out specific data relations. Our functions take different data types from a relational database. We work to manipulate and effectively display easily digestible data to our client, an improvement beyond a mere Excel sheet or table. Our dashboard instead displays pie charts, bar graphs, histograms, amongst other valuable data visualization tools. For added convenience, Power BI hosts more special interactive features such as slicers, enabling our clients to have a more sophisticated direct experience managing their complex data. Live updates enable our dashboard to remain scalable and relevant to our clients. As soon as a database is updated, Power BI factors in changes and updates our client if they have set up a specific threshold or alert based on the value of a particular data field. Overall, our dashboard brings power to our clients' fingertips by allowing them to analyze complex data from different perspectives and make the best decision based on the latest information.

1.1 Purpose

The purpose of the Data analytics dashboard is to display an interactive, real-time data dashboard that incorporates data from our content management system (eDefender) to increase data transparency, understand patterns and trends in the local criminal justice system, measure outcomes, and be better equipped to use evidence-based models to drive policy and system change.

1.2 Intended Audience and Reading Suggestions

This document is intended for project managers, developers, students, the university faculty, and any other additional parties involved with the software's requirements process. This includes all members of the Santa Barbara Public Defender's office and team, students, advisors, faculty, and staff.

1.3 Product Scope

The primary objective of this product is to address big-picture questions about the criminal justice system. The responsibilities to meet this objective will be split between two Power BI dashboards, one internal and the other external. Both dashboards will incorporate data from the Santa Barbara Public Defender's content management system known as eDefender. The purpose of the internal dashboard is to provide a detailed overview of agency operation to help make better daily decisions about resource allocation, staffing needs, and provisions relating to whether the Santa Barbara Public Defender Office is meeting its goals or not. The audience of the external dashboard is the Santa Barbara community, the CEO's Office, and the Board of Supervisors. The external dashboard will increase data transparency, educate the general public about patterns and trends in the Santa Barbara criminal justice system, and measure probable outcomes.

1.4 Definitions, Acronyms, and Abbreviations

- SRS: Software Requirements Specification
- SDD: Software Design Document
- Microsoft Power BI: Business analytics service provided by Microsoft Power Business intelligence and analytics

1.5 References

Developing Data Dashboards to Drive Criminal Justice Decisions

https://www.safetyandjusticechallenge.org/wp-content/uploads/2018/10/2018.10.11_Developing-Data-Dashboards-to-Drive-Criminal-Justice-Decision....pdf

County of Santa Barbara

<http://www.countyofsb.org/da/stats>

2. Overall Description

2.1 System Analysis

There are two primary goals for this project. The first is to educate the general public about the criminal justice system. Visualizing data from the Santa Barbara Public Defender's office allows the general public to absorb and retain volumes of information with brevity. The goal of presenting data using interactive, real-time data dashboards improves the general public's understanding of patterns and trends in the local criminal justice system. The second primary purpose of the project is to provide management at the Santa Barbara Defender's Public Office with a detailed overview of specific program or agency operations. With this project, better decisions can be made about the organization's resource allocation and staffing needs.

There were a few technical hurdles associated with carrying the project through to completion. Most of these technical hurdles stemmed from licensing limitations. The team had no access to Power BI Pro for a long duration of the project, complicating our efforts to publish reports and collaborate on the project. Since the team was not provided with Power BI Pro Licenses, we adopted alternative training methods to collaborate effectively on the project. The team utilized Discord as a means of discourse on the project. A server was created for the Cal State LA team, and the screen share feature was used amply during weekly meetings to maximize efficiency.

2.2 Product Perspective

The dashboard software is saddled with dependencies because Power BI is needed to complete the features of the dashboard. Currently, other municipalities utilize active dashboards, as opposed to just the city of Santa Barbara. Power BI is the main interface that connects Santa Barbara's database and the dashboard displaying all of the visualizations (as predefined in this SRS). For similarities between Santa Barbara and other dashboards, we can see that other dashboards display their information in terms of pdfs and tables, Excel sheets, or Word documents that are directly downloaded to the users local environment. However in the case of Santa Barbara, they can use dashboards that are directly displayed from Power BI. The trait shared with Santa Barbara's dashboard and that of other municipalities is that the motivation behind displaying data is to inform the population about similar data such as amount of inmates, felony status, misdemeanor, or basic violations.

[Excel Sheet Data] -----> [SQL Database] -----> [Power BI Software] --> [SB Dashboard]

2.3 Product Functions

- Allow for user readability of data, easily digestible to accurately take informed decisions.
- Total control over how to display the data, by using a slicer.
- Filter, sort and search different data based on certain relations.
- Update data based on real time database changes.
- Able to publish the dashboards
- Effectively analyze large datasets

2.4 User Classes and Characteristics

The user classes that belong to Microsoft Power BI include but are not limited to students, professors, and the Santa Barbara Public Defender Office Team. The software is intended for the Santa Barbara community, the CEO's office, and the Board of Supervisors to demonstrate the work that is being done within the office.

2.5 Operating Environment

2.5.1 Application will run on Windows, Mac, Linux

2.5.2 Application will run on Modern Browsers

2.5.3 Application will need an internet connection to run properly

2.6 Design and Implementation Constraints

2.6.1 Unstable Internet - The system relies on updated information which requires internet access.

2.6.2 Bad Hardware - Having bad hardware such as low ram will cause applications and devices to reboot and freeze at random times. Bad hardware can also lead to performance issues.

2.7 User Documentation

- <https://docs.microsoft.com/en-us/learn/powerplatform/power-bi>

2.8 Assumptions and Dependencies

2.8.1 Users have to have a stable internet connection to gain access to the database.

2.8.2 The Windows version has to be Windows 8 or higher.

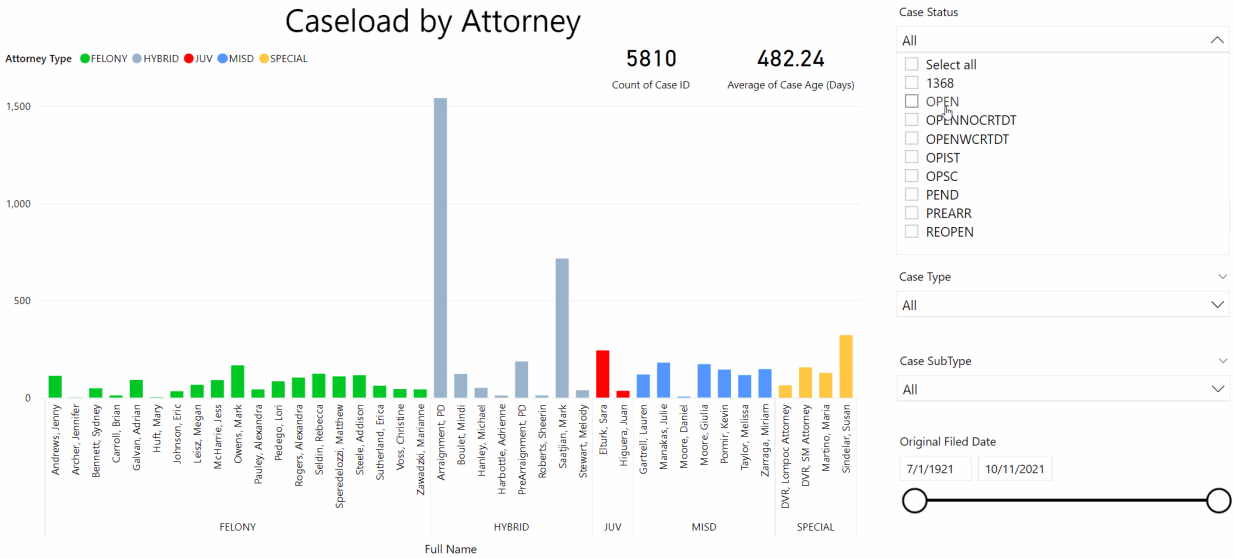
2.9 Apportioning of Requirements

2.9.1 Future versions of the systems are able to:

- Collaborate together on the same dashboard, therefore making faster changes and increasing production flow.
- Share dashboard reports on websites.
- Accommodation of live updates on dashboards.
- Have different alert triggers or thresholds.
- Accommodation of automated refreshes

3. External Interface Requirements

3.1 User Interfaces



3.2 Hardware Interfaces

No external hardware interface requirements.

3.3 Software Interfaces

Computers with Power BI Desktop

Computers with eDefender

3.4 Communications Interfaces

There are no communications interfaces at this time

4. Requirements Specification

4.1 Functional Requirements

4.1.1. Application Requirements

4.1.1.1 The application shall run on a computer.

4.1.1.2 The application shall provide an interface for user login or credentials

4.1.1.2.1 The application shall prompt the user for credentials if the user is accessing a page that requires credentials.

4.1.1.2.2 The application shall prompt the user to correct their credentials in the case that it is incorrect.

4.1.1.2.3 The application shall allow the user to sign out of their account.

4.2 External Interface Requirements

4.2.1 User Interfaces

4.2.1.1 Credentials

4.2.1.1.1 The username shall be visible when inputting the characters.

4.2.1.1.2 The password shall be hidden when inputting the characters.

4.2.2 Hardware Interfaces

N/A

4.2.3 Software Interfaces

N/A

4.3 Logical Database Requirements

Microsoft Power BI uses the database from CalStateLA's cs3.calstatela.edu own servers but it requires an internet connection to first retrieve the data. The software will later on use the Santa Barbara team's own eDefender database.

4.4 Design Constraints

4.4.1 Unstable Network Connectivity

4.4.1.1 Unstable or slow network speeds may result in a delay in how fast data is accessed with queries.

4.4.1.2 Unstable or slow network speeds may result the inputting of information regarding the book.

4.4.1.3 Unstable or slow network speeds may affect the uploading of the image of the book.

4.4.2 Device Performance

4.4.2.1 Weaker hardware may have issues loading large amounts of data if the amount of listings to be displayed exceeds a certain threshold.

5. Other Nonfunctional Requirements

5.1 Performance Requirements

Power BI is a software that can be used by one operator; with the licensing, multiple users may work on one dashboard. Any changes to the dashboard will be instantaneous for all to see. The amount of information to be handled varies depending on the intended client. There will be dashboards provided to the public and private ones for the Santa Barbara team.

5.2 Safety Requirements

5.2.1 Users should make sure to have passwords that are not easy to guess.

5.3 Security Requirements

5.3.1 Users must remember their own username and password.

5.4 Software Quality Attributes

- Ease of use.
- Scalable.
- UI friendly
- UX friendly
- Automation
- Maintainability
- Real Time Data Prioritization
- Theme Relatable
- Story Oriented
- Consistent Labeling

5.5 Business Rules

There are no business rules at this time.

6. Legal and Ethical Considerations

6.1 Product Description

- Product description must be as accurate as possible.

6.2 Your Account

- If you use this site, you are responsible for maintaining the confidentiality of your account and password and for restricting access to your computer, and you agree to accept responsibility for all activities that occur under your account or password. You may not assign or otherwise transfer your account to any other person or entity. You acknowledge that Microsoft Power BI is not responsible for third party access to your account that results from theft or misappropriation of your account. Santa Barbara Public Defender's Office and its associates reserve the right to refuse or cancel service, terminate accounts, or remove or edit content in our sole discretion.