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CardinalHealth™

prepared by

REAL STONE SOLUTION

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Table of Contents

3

Figures:

Tables:

1. Introduction

1.1. Scope

This document is intended to inform the reader about the development of the 3-dashboard software design for the Agile team at Cardinal Health. The development of the dashboards began in November and was completed during the winter quarter of 2023. The development consists of a solution consisting of three dashboards that organize the important information for decision-making for the Cardinal Health Agile team. The first dashboard, known as Project Health, which will contain information about the projects in progress, will be divided into quarters and will display the completed projects and the hours worked. The second dashboard is known as the Iteration Review, which consists of several graphs and tables with information on the projects in progress and the unexpected. And last but not least, the Sprint Overview dashboard will also have several graphs to analyze the completed and ongoing projects. All these dashboards will help the Cardinal Health Agile team to analyze data and make decisions.

1.2 Purpose

This SDD is intended to provide a software system design that will satisfy functional and nonfunctional requirements stated in SRS Document of Real Stone Solution. The purpose of this document is to serve as a guideline throughout the development phase of the project for developers.

1.3 Intended Audience

The audience consists of the staff who will create the dashboards for the Cardinal Health team described in this document, as well as their advisors.

2. Definitions, Acronyms, Abbreviations

Acronyms	Definitions
Power BI	It is a data analysis service aimed at providing interactive visualizations and business intelligence capabilities with an interface simple enough for end users to create their own reports and dashboards.
VM	Virtual Machines
Amazon Workspace	This VDI that where are going to use during this project.
VDI	Virtual desktop infrastructure (VDI) is the hosting of desktop environments on a central server. It is a form of desktop virtualization, as the specific desktop images run within virtual machines (VMs) and are delivered to end clients over a network. Those endpoints may be PCs or other devices, like tablets or thin client terminals.

Table 1 Definitions

2.1. Reference Materials

This subsection provides a complete list of all the documents and sources of information referenced in the SPMP. The references were used for the preparation of this document:

[1] vmware, "What is a virtual machine?," vmware, [Online]. Available: https://www.vmware.com/topics/glossary/content/virtual-machine.html. [Accessed 24 October 2022].

[2]   Amazon, "Amazon WorkSpaces FAQs," Amazon, [Online]. Available: https://aws.amazon.com/workspaces/faqs/#:~:text=A%3A%20An%20Amazon%20WorkSpace%20is,like%20using%20a%20traditional%20desktop. [Accessed 24 October 2022].

[3]   vmware, "What is VDI (Virtual Desktop Infrastructure)?," vmware, [Online]. Available: https://www.vmware.com/topics/glossary/content/virtual-desktop-infrastructure-vdi.html. [Accessed 24 October 2022].

[4]   J. Scardina, "Microsoft Power Bi," TechTarget, December 2022. [Online]. Available: https://www.techtarget.com/searchcontentmanagement/definition/Microsoft-Power-BI. [Accessed 24 October 2022].

[5]   Techstreet Enterprise, " IEEE/ISO/IEC 29148-2018," IEEE, 2018 11 30. [Online]. Available: https://subscriptions.techstreet.com/products/728160. [Accessed 20 12 2022].

[6]   Asmo, "Agile Methodology: An Overview," Zenkit Blog, 18 3 2018. [Online]. Available: https://zenkit.com/en/blog/agile-methodology-an-overview/. [Accessed 17 08 2022].

[7]   nvisia, "The Agile Process 101: Understanding the Benefits of Using Agile Methodology," nvisia, 16 9 2020. [Online]. Available: https://www.nvisia.com/insights/agile-methodology. [Accessed 17 08 2022].

[8]   vmware, "What is VDI (Virtual Desktop Infrastructure)?," vmware, [Online]. Available: https://www.vmware.com/topics/glossary/content/virtual-desktop-infrastructure-vdi.html. [Accessed 23 October 2022].

3. Conceptual Model

3.1. Software Design in Context

The Dashboard requested by Cardinal Health will be designed with the Microsoft Power BI platform. The same will be used since it is a tool requested by the client for the creation of the dashboard.

3.2. Software Design Descriptions within the Live Cycle

3.2.1. Influences on SDD preparation

The software requirements specification (SRS) is often the fundamental software life cycle product that drives a program design. The project design is determined by the requirements in the SRS (product viewpoint, functional and non-functional requirements, and interface requirements), as well as the expectations of the stakeholders.

3.2.2. Influences on Software Life Cycle Products

- This SDD document will describe the dashboard design. Additionally, this document will be influenced to perform the different tests.

3.2.3. Design Verification and Design Role in Validation

- The SDD is the document to corroborate and validate if the solution meets the specific Real Stone Solution SRS requirements. The solution requirements are listed in the design sections of the document. The SDD document will be influencing the testing performed on the solution.

4. Design Description Information Content

4.1. Introduction

The design description of the dashboards, and how these dashboards were built for the Cardinal Health Agile team. Diagrams and user perspectives are used throughout the identification of the document.

4.2. SDD Identification

This is the initial version of the SDD document of the project. The date of the issue is 18 February 2023. The scope of the document is stated in section 1. The copyright of the document belongs to Real Stone Solution.

4.3. Design Stakeholders and Their Concerns

The stakeholders identified in Real Stone Solution will be the development and administrative team, the client, and the Real Stone Solution team mentor. The Real Stone Solution development and administrative team is responsible for developing the solution required by the client. The client can be an organization/group/individual that makes any request or service request to the Real Stone Solution team about the requested solution. The mentor will act as an overseer in the progress of the solution development and will provide additional assistance to the Real Stone Solution team.

4.4. Design Views

This project will be implemented as several Dashboard building tools. This project was designed with Power Bi and SharePoint, for the construction of the Data and Information Visualizations to help the Agile team of Cardinal Health get clear information.

4.5. Design Viewpoints

The context viewpoint shows what is expected of the system's user. The user's and stakeholders' roles are defined. The system boundary should be defined. The users will be the design entities, with the information flowing between them and the dashboards. In the viewpoint-design aspects, the input-output relationships will be discussed. This viewpoint can benefit from analysis and assessment techniques.

4.6. Design Elements

The Design Elements will be explained and shown and shown more in the next section (section number 5).

4.6.1   Design Entities

- User

- Power Bi

- SharePoint

- Project Health's Dashboard

- Iteration Review 's Dashboard

- Sprint Overview's   Dashboard

4.6.2   Design Attributes

Description Table	
Table Name	**Description**
User	It will be interaction with the dashboard
Power Bi	Tool to create dashboards.
SharePoint	Retrieve data from customer databases to implement in the dashboards.
Project Health's Dashboard	It will have project information by quarter and financial.
Iteration Review 's Dashboard	It will have the information of the projects by teams and those that emerged of high importance
Sprint Overview's Dashboard	Graphically display the number of projects completed and in progress.

Table 2 Description

4.7   Design Rationale

The Dashboards are designed with a focus on improving visualization and search of data using a filter, tables, and graphs. The design facilitates the search for agile group metrics. Dashboards can be easily used. The dashboards are connected to SharePoint to retrieve information from the database. The dashboards have been created according to the reference models provided by the Cardinal Health team.

4.8   Design Languages

This project didn't require us to create any program, all the project was worked on the Power Bi and SharePoint platforms. We use the company VM to have access to these two tools.

5. Design Viewpoint

5.1. Introduction

A set of design views will be presented to support the design and development process behind the Cardinal Dashboard. This project is going to be fully on a virtual machine. All components will be explained in further detail in the Design Viewpoints section. A design view will be governed by one or more selected design viewpoints. These views will be explained by showcasing use case diagrams and use case descriptions. Five viewpoints are designed for the system as listed below.

- Context Viewpoint
- Logical Viewpoint
- Information Viewpoint
- Interface Viewpoint
- Interaction Viewpoint
- State Dynamic Viewpoint

5.2. Context Viewpoint

The context viewpoint goes over the relationship and dependencies between the user and the system. It will also go over the system's functionalities and its function boundaries, although this can change as more work is done on the design.

5.2.1. Design Concerns

13

The design subject's offered service will be identified, this includes the users, the stakeholders, and the system boundaries.

5.2.2. Design Elements

In the Cardinal Dashboard, the user needs to log in to the virtual machine, and then the user has the following cases:

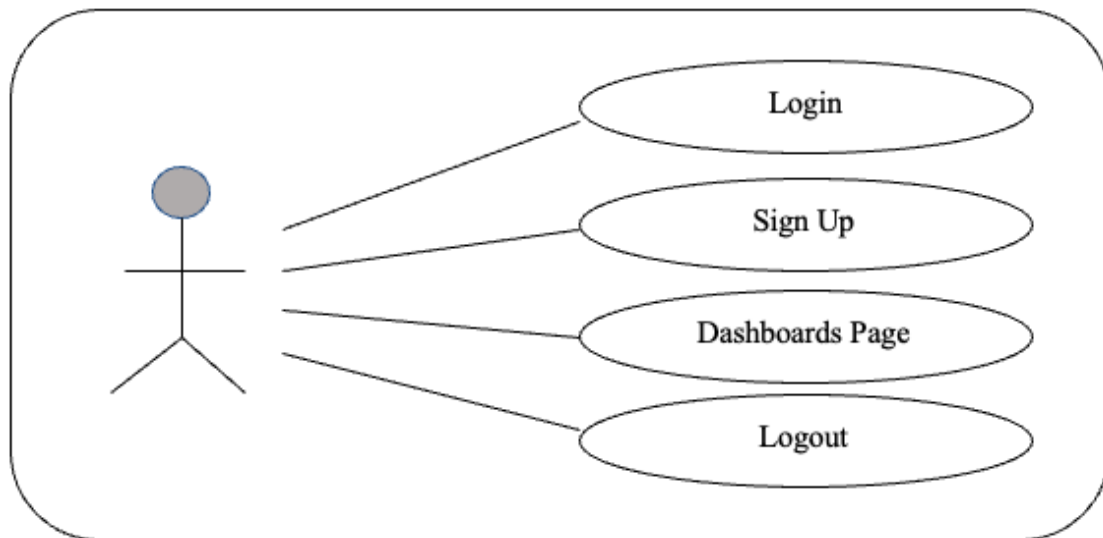1. **Login:** The user logins to the Virtual Machine of the company.

Figure 1 Visualization of Login Use Case Diagram

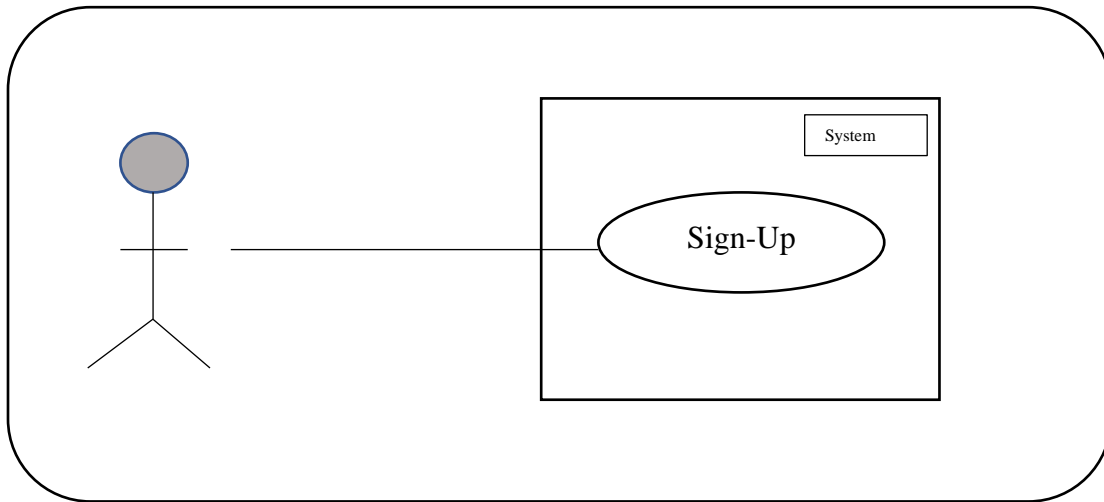2. **Sign -Up:** A new user registers the system.

Figure 2 Visualization of Sign-Up Use Case Diagram

3. **Dashboards Page:** selection of boards and filters for the search of desired information with the program Power BI.
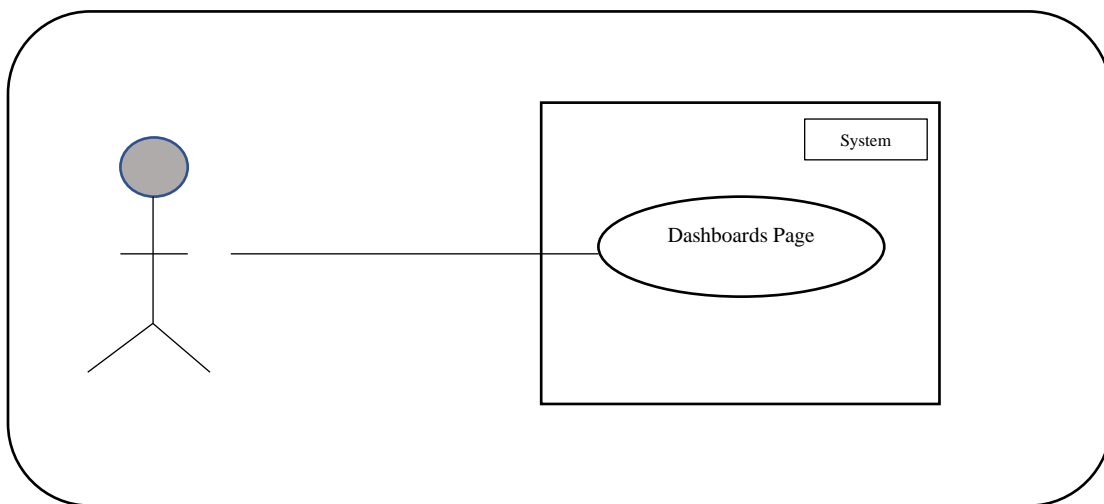

Figure 3 Visualization of Dashboards Page Use Case Diagram

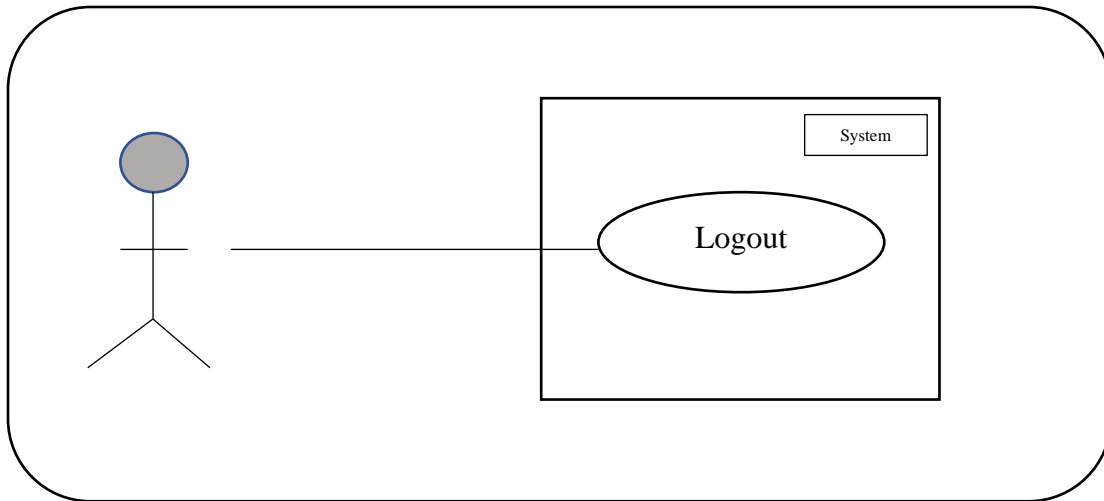4. **Logout:** The user logs out of the Virtual Machine.

Figure 4 Visualization of Logout Use Case Diagram

5.2.3. Example Language

A brief description of the content is explained below in the form of tables. All the use cases presented will be explained in order in the following tables.

- **Use case name**- Each use case is given a name to identify them.

- **Description**- A general description of the use case is defined.

- **Actors**- Identifies who is going to use the product.

- **Trigger**- Describes the action the actor takes to run the use case.

- **Basic flow**- Describes a basic course of what the actor does and what the system does in response.

- **Post condition**- Explains what happens after the use case runs.

16

Use case name	Sign in
Description	The user will sign in using their personal information.
Actors	User
Trigger	The user case will be triggered after the user has successfully signed in.
Basic flow	1. User will press the Sign-in button. 2. They will enter their information. 3. The user's information will be registered in the database. 4. The user will be redirected to the Login page.
Postcondition	The user's information will be stored in the database.

Table 3 Sign-In Use Case Description

Use case name	Login
Description	After registration is complete, the user may be able to login into Virtual Machine.
Actors	User
Trigger	When the user has successfully logged into their account.
Basic flow	1. User will click the login button. 2. The user will enter their information and press enter. 3. The information will be validated in the database. 4. The user's information will be validated and entered into the virtual machine.
Postcondition	The user will have successfully logged in.

Table 4 Login Use Case Description

Use case name	Dashboard
Description	The user will see the information he needs from the company using filters and graphs.
Actors	User
Trigger	The user has pressed the button to select the desired dashboard
Basic flow	1. The user clicks the Power Bi program. 2. The user presses the Dashboard of her choice. 3. They are redirected to the Dashboard page.
Postcondition	The Dashboard page is displayed for the user.

Table 5 Dashboard Use Case Description

Use case name	Logout
Description	The user will be logged out of their account.
Actors	User
Trigger	Must select the logout button.
Basic flow	The user will select the logout button. They will be redirected to the login page.
Postcondition	The user has successfully logged out.

Table 6 Logout Use Case Description

5.3. Composition Viewpoint

This section will identify and explain in detail the components and subsystems of the system. It will also go over their relationship and dependencies on one another. The main components behind the Cardinal Dashboard system are the following:

- Virtual Machine Web-browser (client) - Regardless of the device, this is the software the customer uses to connect to the Internet and requests access to our next component, the Cardinal Dashboard.

- Cardinal Dashboard - The Real Stone Solution team will be developing for the customer to interact with the dashboard and your search. This will run from the customer's virtual machine, avoiding the need for any installations or coding for specific operating systems, and will require a constant internet connection to be accessed.

- Database server - Networked computers on a network dedicated to database storage and data retrieval from the database. The database server is a key component for our Dashboard since it will display the necessary information about the company.

5.3.1. Design Concerns

The system components and their interconnections are illustrated in the component diagram. Cardinal Health is the client, a server with the site, and a database. The server establishes a connection between the client and the database with a Virtual Machine.
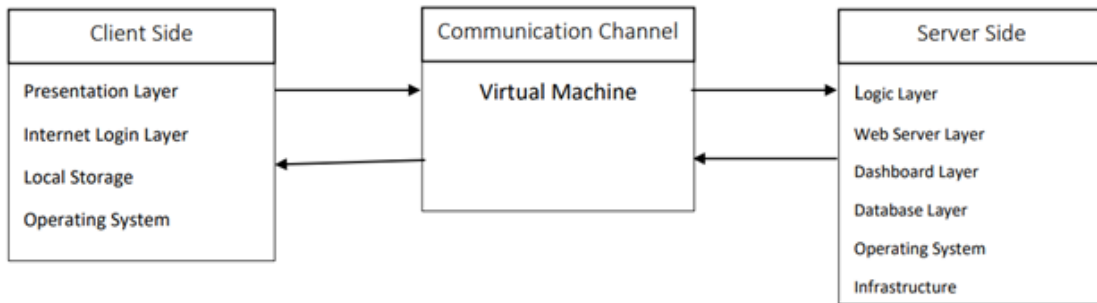

Figure 5 Component Diagram

5.4. Design Elements

The Dashboard would be built into the virtual machine provider by the client. Inside the Virtual Machine, we are going to build the dashboards using Power Bi and SharePoint. Power Bi would be used to create and organize each dashboard and the information needed for the dashboards is going to be retrieved from SharePoint.
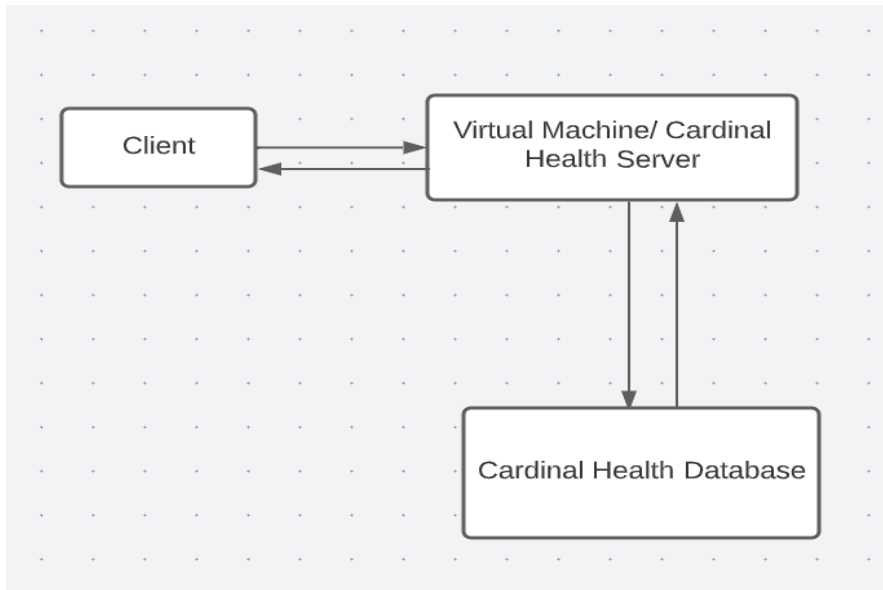
5.5. Example Language

Figure 6 Example Language Diagram

5.6. Interface Viewpoint

The interface viewpoint provides information to the users in the correct way to use and navigate between the 3 Dashboards. The viewpoints consisted of specifications for each part of the following sections.

5.6.1. Design Concerns

The interface viewpoint is important because the interface description for each dashboard gives the needed information about how to use the dashboard and how they connect.

5.6.2. Design Elements

Now we are going to be focusing on the interface of each dashboard. The only way to access this dashboard is via the virtual machines provided by Cardinal Health.

5.6.3. Example Language

Figure 7 Iteration Review

Figure 8 Sprint Overview

Figure 9 Project Health

As we can see we have 3 Dashboards, one called Iteration, the other one called Sprint and the last one is Project Health. In these Dashboards, the client can see all the data relating to the projects they are working on as a company. They can filter the data by changing the fiscal year, the team that is working on the project, and the department.

5.7. Database Schema Diagram

In this project with didn't have to create a database, the database that we use was provided by the client (Cardinal Health). They let us use the data they had in SharePoint to work in the dashboards. Data models are presented below:

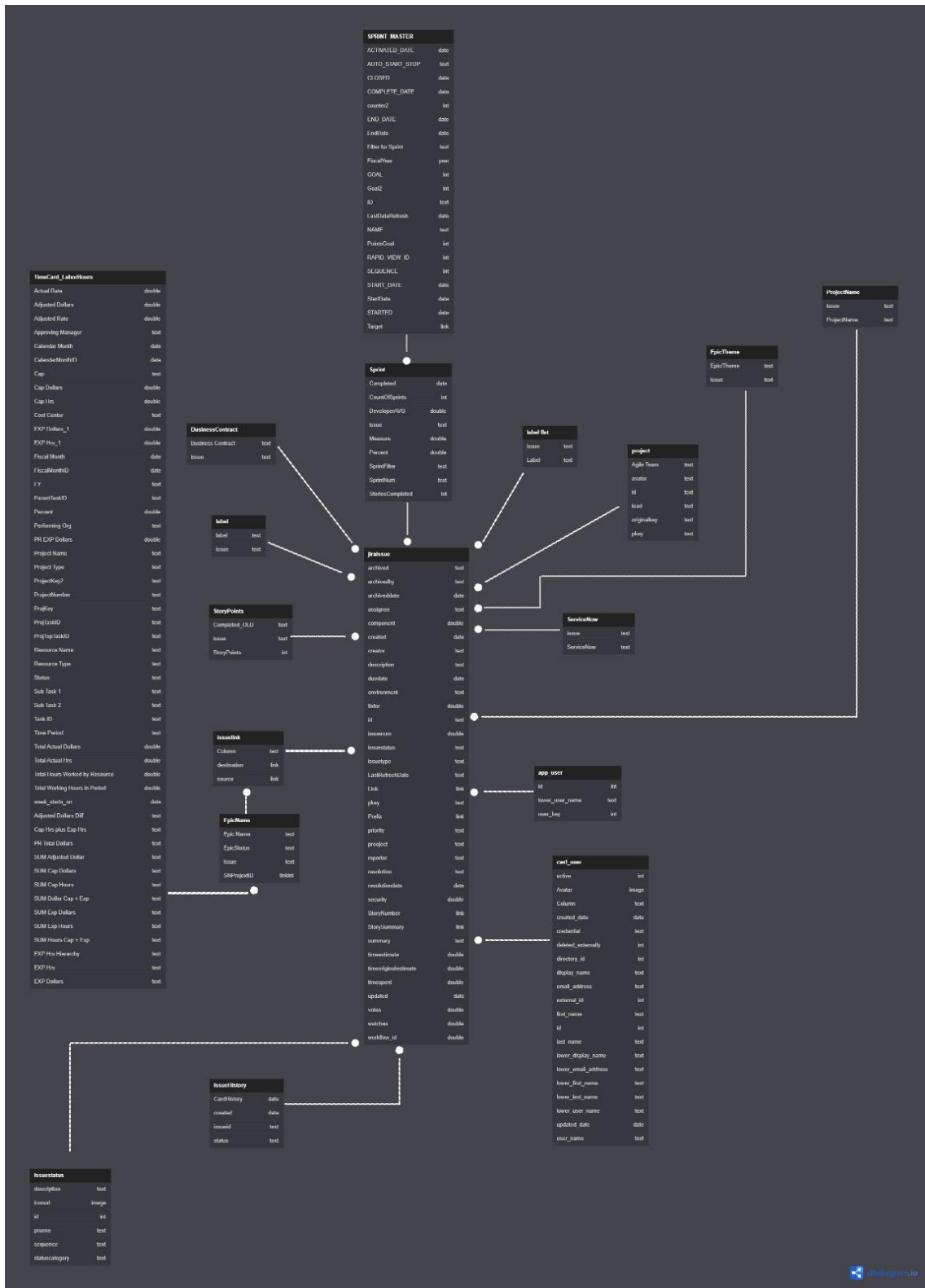- Data Model of Databases used in Iteration Review and Sprint Overview Dashboards

Figure 10 Iteration Review and Sprint Overview Dashboards' Databases

- Data Model of Databases used in Project Health Dashboard

Figure 11 Project Health Dashboard's Databases

5.8. Class Diagram

Our project didn't create a program, so this section doesn't apply to our project.

6. Planning of project

The Planning of the project is listed below:

Activity	Task	Date
Project Health Filters and Database.	Perform the information search correctly between the database and the dashboard.	11/28/2022
Project Health Interface.	The elements of the Dashboard should display in their correct position and without errors.	12/4/2022
Interaction Review Filters and Database.	Perform the information search correctly between the database and the dashboard.	12/17/2022
Interaction Review Interface.	The elements of the Dashboard should display in their correct position and without errors.	12/23/2022
Sprint Overview Filters and Database.	Perform the information search correctly between the database and the dashboard.	01/24/2023
Sprint Overview Dashboard Interface.	The elements of the Dashboard should display in their correct position and without errors.	01/31/2023

Table 7: Planning of Project