**Project Michelle Software Design Document**

Written By: Zachary Chia

* 1. **Executive Summary**

This is a software design documentation for Project Michelle. The first in a series of many projects to be completed. Project Michelle is aimed to give the developers a hands-on introduction of the entire end to end flow of a Software Development Life Cycle.

* 1. **Objectives / Timeline**

The primary objective of Project Michelle is the learning through an introductory project. Upon completion, the developers would understand what happens during the SDLC, starting from the beginning where a design document is created, up till the deployment of the entire application. Throughout this process the developers will brainstorm about the implementation of the different services, the creation of multiple environments and successfully deploy a working application that meets user requirements. There will be a deadline of 6 months beginning on the 3rd of May 2022, till 20th November 2022.

* 1. **Stakeholders**

The stakeholders involved in Project Michelle will be Junior Software Developers Yeo Kim Siang, and Zachary Chia. This project directly impacts their growth and skills as a developer. There exists a possible of additional Developers joining the fray in the future projects

* 1. **Project Requirements**

The specifications of the user requirements can be found in the Case Study 2B PDF that was given by FDM Group as a final project assignment before being deployed to their respective locations. A brief overview of the requirements of the project would be to create a web/mobile application which helps automate a Field Technician’s job.

**2.1 Technical Design Overview**

As the first project, simple exposure of technical designs will be discussed and experimented by the development team. In order to jump start Project Michelle, the application will be developed in languages which the development team already has some familiarity in.

**2.2 Languages / Databases**

As the team was initially trained Java Backend Developers. The backend services will be developed in Java Spring Boot. The UI will be developed in JavaScript using React as a library, Angular would be another consideration however it would delay the completion of the project since it is a separate framework. RDBMS would suffice for this project as such, PostGresSQL will be used to store the data for the application.

**2.3 Front End**

JavaScript and React for the development of the front end. As the team will be experimenting with the creation of UI and components for the first time in a project, it is expected that the development of the UI will take longer. As a broad overview, the UI will consist of 5 to 6 components, a landing page for login, and also a dashboard after a user has logged in. There will be a number of API calls to the backend system in order to retrieve a payload to be displayed for the users.

**2.4 Backend**

The backend services will be built with Java Sprint Boot. To gain experience with development and deployment, the backend will have a micro-service architecture consisting of 3 to 4 micro-services. This leaves a lot for extension and reusability in the future upon completion of the project. As the developers are more familiar with services. The consideration would be to complete the backend services as quick as possible and integrate it together with the UI afterwards. There will also be a need to integrate with an outside API, the google maps API in order to complete one of the conditions requested by the user.

**2.5 Technical Challenges**

There are a couple challenges that can be foreseen and would require a bit more time and dedication in order to resolve them.

1. A proper development environment has to be set up. The initial set up of the environment would take more time but it would be beneficial for the team as this mirrors a proper working environment in most companies. Also post set up, the environment can be used for future projects.
2. The frontend would require more time for development and integration as the team was not initially trained in JavaScript and React.
3. Integration with an outside API and getting it to be displayed in the UI
4. Deployment of the services and UI so that it is publicly available.
5. Notification design concerns – account for scalability during 2FA notification.

Addition & Notes

1. Take Docker, Kubernetes, AWS Certifications / Selenium?
2. Change user requirements from Field Technicians to Software Engineers and update the tools / inventory required to stuff that Software Engineers use.
3. Potential to enhance platform to become an inventory management tracking system / Logistics System
4. Chat Log Feature, Machine Learning to predict the issues (Recommendation System) / – Deprioritize