Deliverable #1 Template

SE 3A04: Software Design II – Large System Design

1 Introduction

- This section of the SRS should provide an overview of the entire SRS.

1.1 Purpose

- Specify the purpose of the SRS
- Specify the intended audience for the SRS

1.2 Scope

- Identify the software product(s) to be produced, and name each (e.g., Host DBMS, Report Generator, etc.)
- Explain what the software product(s) will do (and, if necessary, also state what they will not do)
- Describe the application of the software being specified, including relevant benefits, objectives, and goals
- Be consistent with similar statements in higher-level specifications (e.g., the system requirements specification), if they exist

1.3 Definitions, Acronyms, and Abbreviations

- Provide the definitions of all terms, acronyms, and abbreviations required to properly interpret the SRS
- This should be in alphabetical order.

1.4 References

- Provide a complete list of all documents referenced elsewhere in the SRS
- Identify each document by title, report number (if applicable), date, and publishing organization
- Specify the sources from which the references can be obtained
- Order this list in some sensible manner (alphabetical, or something else that makes more sense)

1.5 Overview

- Describe what the rest of the SRS contains
- Explain how the SRS is organized

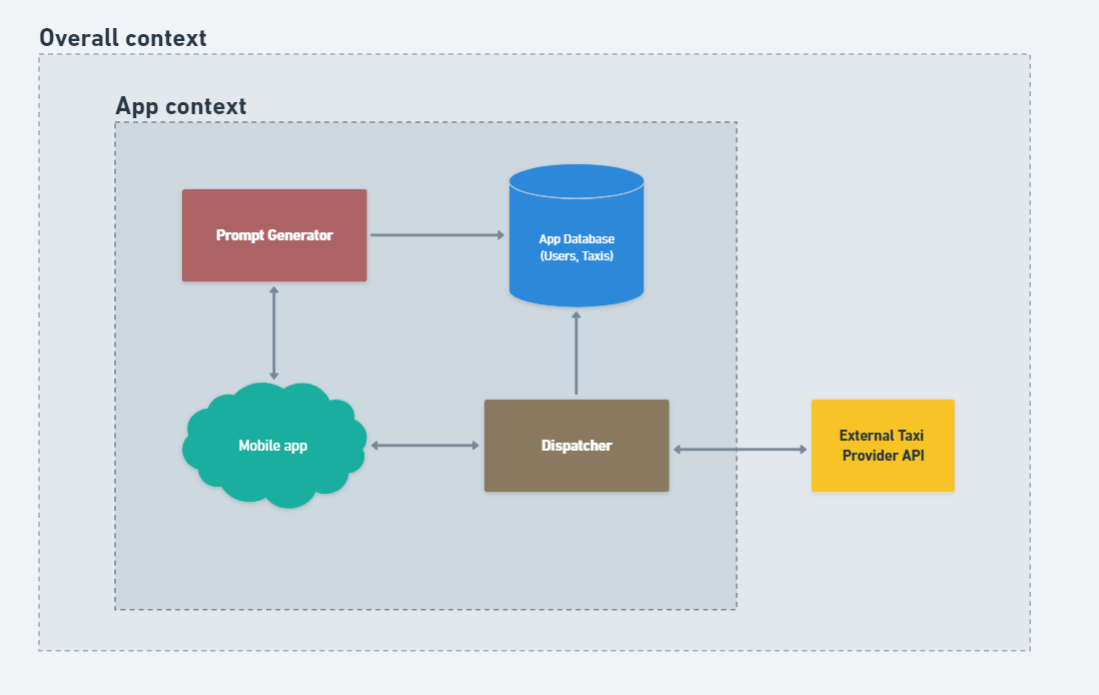
2 Overall Description

- This section of the SRS should describe the general factors that affect the product and its requirements.
- It does not state specific requirements.
- It provides a *background* for those requirements and makes them easier to understand.

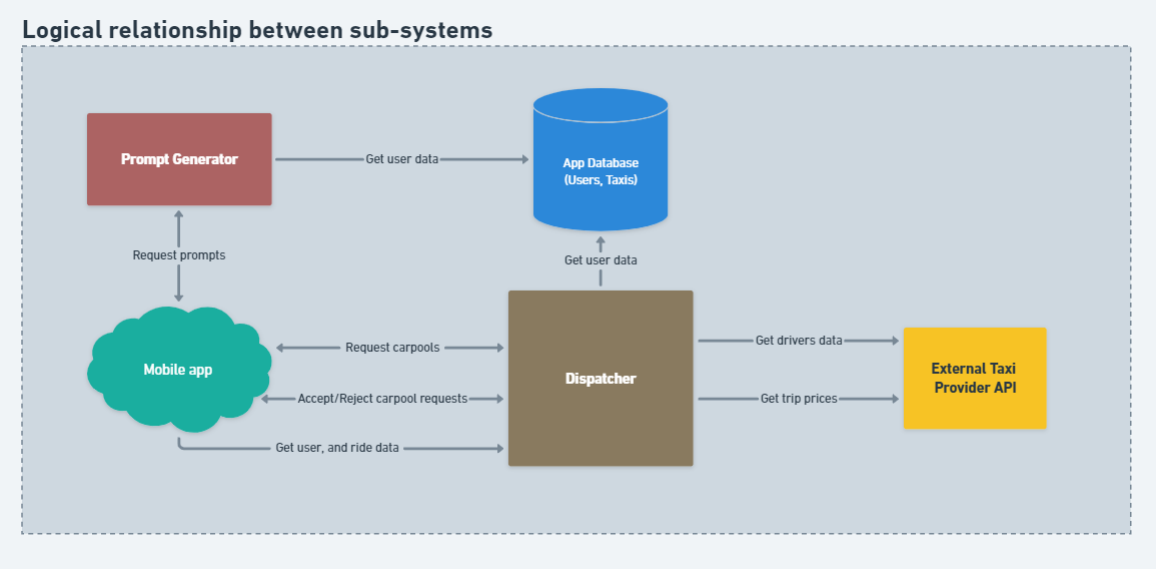
2.1 Product Perspective

a) The product being developed is an Android application which empowers the ability to book carpool via a user-friendly interface using a taxi company. The application will securely store customer personal information such as carpool request histories, and personal data inputted by the user. The product is not self-contained since its functionality depends heavily on the taxi service provider. There are several out-of-scope concerns such as: driver's information input (profile, shift, locations, etc.) and payment processing.

b) The general interaction can be visualized as follows:



2.2 Product Functions



a) The app will be able to book taxi.

- Able to communicate with taxi's service API.
- Able to handle and display taxi data correctly.

b) The app be able to handle carpool scheduling and coordination.

- Able to plan the most optimal route and let the driver follow the calculated route.

c) The app be able to display the estimate time-of-arrival (ETA) of taxis.

- Able to calculate ETA in real-time

d) The app be able to input the taxi's unique identifier via the mobile app.

2.3 User Characteristics

a) Riders

- Riders are users who use the app to request car pool.
- Riders can be anyone from any background of tech-expertise
- Riders are expected to:
  - Input personal information only a few times.
  - Have stable and highly available mobile internet connection.
- Riders might be interested one or more following characteristics of the app:
  - User interface and experience of navigating the mobile app.
  - Realtime taxi information display (ETA, location, route, . . .)
  - Ease of taxi booking, and check-in.

b) Taxi Drivers

- Drivers are users who drive and operate taxis, fulfill carpool requests, and ensure the safety of the riders.
- Drivers must be registered with the taxi service and from any background of tech-expertise.

- Drivers are expected to have stable and highly available mobile internet connection.
- Drivers might be interested one or more following characteristics of the app:
  - Accuracy display of real-time pick-up and drop-off information.
  - Accuracy of aggregating and storing of rides information (since it ties directly to their performance).
  - Accuracy display of user's profile summarization.
  - User interface and experience of navigating the mobile app.
  - Ease of accepting/ rejecting rides.

2.4 Constraints

a) **Geographical**: The app can only operate on the land which the taxi service operate.

b) **Technological**: App must be integrated with softwares that the taxi service provider uses.

c) **Fare Determination**: Since the app does't support payment processing directly, the fare has to be determined and processed through the taxi service provider.

d) **Data Privacy Regulation**: Data which transmits and stored within the app needs to be processed in a way which complies with the data protection act.

2.5 Assumptions and Dependencies

a) Assumptions

- Drivers information are provided by the taxi provider (driver profile and shift).
- The taxi provider has dedicated API which provide real-time data on driver's availability.
- The taxi provider determines trip prices.
- Payment processing is external and not under the scope of the application.

b) Many problems may occur when the following assumptions failed to hold:

- If trip prices are not determined by the taxi service provider, additional calculations must be performed to find fare fees after each trip.
- If drivers data are stored and handled within the context of the app, additional mechanism must be provided for drivers to update their information. In addition, driver's data storage must comply with the Canadian Data Protection Act.

2.6 Apportioning of Requirements

a) **Technological**: Some specific technilogical requirements (Database type, Integration with taxi provider, etc...) have to be delayed untill the implementation phase.

b) Non-function Requiremens such as UI,UX, or performance can be finetuned when the app is being implemented or after release.

3 Use Case Diagram

- Provide *one* use case diagram for the most important Business Event.
- The text of all use cases will be specified under "Highlights of Functional Requirements"

4 Highlights of Functional Requirements

- Specify the "use cases" organized by Business Event. (The Global Scenario is what you might think of as a use case). Be sure to consider Business Events that aren't just triggered by users with goals (e.g. something happens in the environment that your system needs to respond to)
- Your focus should be on what the system needs to do, not how to do it. Specify it in enough detail that it clearly specifies what needs to be accomplished, but not so detailed that you start programming or making design decisions.
- Keep the length of each use case (Global Scenario) manageable. If it's getting too long, you need to condense your steps and give a name to what's accomplished by that sequence of steps. (e.g. "Authenticate user" in one line, instead of a list of steps of how to; that's a design decision anyways)
- You are *not* specifying a complete and consistent set of functional requirements here. (i.e. you are providing them in the form of use cases/global scenarios, not a refined list). For the purpose of this project, you do not need to reduce them to a list; the global scenarios format is all you need.

Below, we organize by Business Event.

BE1. Business Event name

VP1.1 Viewpoint name

- S_1**:** Initial response of the system to the Business Event
- E_1**:** Reaction of the environment to S_1
- S_2**:** Response of the system to E_1
- E_2**:** Reaction of the environment to S_2

  ...
- S_n**:** Response of the system to $E_{(n-1)}$
- E_n**:** Reaction of the environment to $E_{(n-1)}$
- $S_{(n+1)}$**:** Final response of the system concluding its function regarding the Business Event

VP1.2 Viewpoint name

- S_1**:** Initial response of the system to the Business Event
- E_1**:** Reaction of the environment to S_1
- S_2**:** Response of the system to E_1
- E_2**:** Reaction of the environment to S_2

  ...
- S_k**:** Response of the system to $E_{(k-1)}$
- E_k**:** Reaction of the environment to $E_{(k-1)}$
- $S_{(k+1)}$**:** Final response of the system concluding its function regarding the Business Event

VP1.3 ...

VP1.4 ...

VP1.5 ...

...

Global Scenario of *Business Event Name*: It is the scenario corresponding to the integration of all the above scenarios from the different Viewpoints of the Business Event BE1.

- S_1: Initial response of the system to the Business Event
- E_1: Reaction of the environment to S_1
- S_2: Response of the system to E_1
- E_2: Reaction of the environment to S_2

  ...
- S_m: Response of the system to $E_{(m-1)}$
- E_m: Reaction of the environment to $E_{(m-1)}$
- $S_{(m+1)}$: Final response of the system concluding its function regarding the Business Event

BE2. Business Event name

VP1.1 Viewpoint name

- S_1: Initial response of the system to the Business Event
- E_1: Reaction of the environment to S_1
- S_2: Response of the system to E_1
- E_2: Reaction of the environment to S_2

  ...
- $S_{n'}$: Response of the system to $E_{(n'-1)}$
- $E_{n'}$: Reaction of the environment to $E_{(n'-1)}$
- $S_{(n'+1)}$: Final response of the system concluding its function regarding the Business Event

VP1.2 Viewpoint name

- S_1: Initial response of the system to the Business Event
- E_1: Reaction of the environment to S_1
- S_2: Response of the system to E_1
- E_2: Reaction of the environment to S_2

  ...
- $S_{k'}$: Response of the system to $E_{(k'-1)}$
- $E_{k'}$: Reaction of the environment to $E_{(k'-1)}$
- $S_{(k'+1)}$: Final response of the system concluding its function regarding the Business Event

VP1.3 ...

VP1.4 ...

VP1.5 ...

...

Global Scenario of *Business Event Name*: It is the scenario corresponding to the integration of all the above scenarios from the different Viewpoints of the Business Event BE2.

- S_1**:** Initial response of the system to the Business Event
- E_1**:** Reaction of the environment to S_1
- S_2**:** Response of the system to E_1
- E_2**:** Reaction of the environment to S_2

  ...
- $S_{m'}$**:** Response of the system to $E_{(m'-1)}$
- $E_{m'}$**:** Reaction of the environment to $E_{(m'-1)}$
- $S_{(m'+1)}$**:** Final response of the system concluding its function regarding the Business Event

5 Non-Functional Requirements

- For each non-functional requirement, provide a justification/rationale for it.
  Example:
  SC1. *The device should not explode in a customer's pocket.*
  Rationale: Other companies have had issues with the batteries they used in their phones randomly exploding [insert citation]. This causes a safety issue, as the phone is often carried in a person's hand or pocket.
- If you're making a guess because you couldn't really talk to stakeholders, you can say "We imagined stakeholders would want...because..."
- Each requirement should have a unique label/number for it.

5.1 Look and Feel Requirements

5.1.1 Appearance Requirements

LF-A1.

5.1.2 Style Requirements

LF-S1.

5.2 Usability and Humanity Requirements

5.2.1 Ease of Use Requirements

UH-EOU1.

5.2.2 Personalization and Internationalization Requirements

UH-PI1.

5.2.3 Learning Requirements

UH-L1.

5.2.4 Understandability and Politeness Requirements

UH-UP1.

5.2.5 Accessibility Requirements

UH-A1.

5.3 Performance Requirements

5.3.1 Speed and Latency Requirements

PR-SL1.

5.3.2 Safety-Critical Requirements

PR-SC1.

5.3.3 Precision or Accuracy Requirements

PR-PA1.

5.3.4 Reliability and Availability Requirements

PR-RA1.

5.3.5 Robustness or Fault-Tolerance Requirements

PR-RFT1.

5.3.6 Capacity Requirements

PR-C1.

5.3.7 Scalability or Extensibility Requirements

PR-SE1.

5.3.8 Longevity Requirements

PR-L1.

5.4 Operational and Environmental Requirements

5.4.1 Expected Physical Environment

OE-EPE1.

5.4.2 Requirements for Interfacing with Adjacent Systems

OE-IA1.

5.4.3 Productization Requirements

OE-P1.

5.4.4 Release Requirements

OE-R1.

5.5 Maintainability and Support Requirements

5.5.1 Maintenance Requirements

MS-M1.

5.5.2 Supportability Requirements

MS-S1.

5.5.3 Adaptability Requirements

MS-A1.

5.6 Security Requirements

5.6.1 Access Requirements

SR-AC1.

5.6.2 Integrity Requirements

SR-INT1.

5.6.3 Privacy Requirements

SR-P1.

5.6.4 Audit Requirements

SR-AU1.

5.6.5 Immunity Requirements

SR-IM1.

5.7 Cultural and Political Requirements

5.7.1 Cultural Requirements

CP-C1.

5.7.2 Political Requirements

CP-P1.

5.8 Legal Requirements

5.8.1 Compliance Requirements

LR-COMP1.

5.8.2 Standards Requirements

LR-STD1.

A Division of Labour

Include a Division of Labour sheet which indicates the contributions of each team member. This sheet must be signed by all team members.

IMPORTANT NOTES

- Be sure to include all sections of the template in your document regardless whether you have something to write for each or not
  - If you do not have anything to write in a section, indicate this by the *N/A*, *void*, *none*, etc.
- Uniquely number each of your requirements for easy identification and cross-referencing
- Highlight terms that are defined in Section 1.3 (**Definitions, Acronyms, and Abbreviations**) with **bold**, *italic* or underline
- For Deliverable 1, please highlight, in some fashion, all (you may have more than one) creative and innovative features. Your creative and innovative features will generally be described in Section 2.2 (**Product Functions**), but it will depend on the type of creative or innovative features you are including.