System and Software Architecture Description (SSAD)

Hangry Mobile Food Truck Locator

<Team number>

Team Members and Roles

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Version History

Date	Author	Version	Changes made	Rationale
03/04/17	JH	1.0	· Create initial project draft	· Initial draft for CS 161 project

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1. Introduction

1.1 Purpose of the SSAD

This document is intended to define the actors, processes, and functionality of the Hangry Mobile Food Truck locator.

1.2 Status of the SSAD

This is the first version of this document.

2. System Analysis

2.1 System Analysis Overview

The primary purpose of Hangry Mobile Food Truck Locator is to allow users to locate local food trucks using an Android phone application. This application will track coordinates of registered food trucks and provide information -- menu, photos, and prices-- regarding specific food trucks that the user selected.

2.1.1 System Context

Figure 1: System Context Diagram

Table 1: Actors Summary

Actor	Description	Responsibilities
AWS DynamoDB	A centralized DB for the application to use	Responsible for keeping and providing data stored online.
Google Location Services	We will be using GLS to locate food trucks in an approximate location	Responsible for providing live location of food trucks to the user.
Users	The users using this app to locate food truck in approximation	The responsibility of the user is to use the application for its designed purpose.
Food Truck Users	The food truck users	To download the app and providing permission to the app to use their live location.

2.1.2 Artifacts & Information

<< This section of the document describes the artifacts and information created by the system.

These artifacts can either be used by the end user or reused by the system to produce further artifacts.
This section should contain:
- a UML class diagram showing the artifacts that the system being developed will inspect, manipulate, and/or produce
- and for each artifact shown in the UML class diagram, the artifact's name and its purpose.

More information and example can be found in **ICM EPG> Task: Analyze the Proposed System.** >>

<<Artifacts and Information Diagram>>
Figure 2: Artifacts and Information Diagram
Table 2: Artifacts and Information Summary

Artifact	Purpose

2.1.3 Behavior

<< This section should contain:
- One or more UML Use-Case Diagrams showing the processes whereby actors and the system interact in order to accomplish a goal that benefits at least one of the actors.
- For each use case shown in the UML use case diagram(s):
  - The assigned identifier (name) of the use case
  - The purpose of the use case
  - The requirement(s) listed in the SSRD that are (completely or partially) covered by the use case.
  - The risks associated with developing/implementing the use case.
  - The pre-conditions for invoking the use case
  - The post-conditions that exist after the use case has been completed
  - English descriptions of the use case's standard (sunny day) course of action and its alternate (rainy day) course(s) of action.

More information and example can be found in **ICM EPG> Task: Analyze the Proposed System.** >>

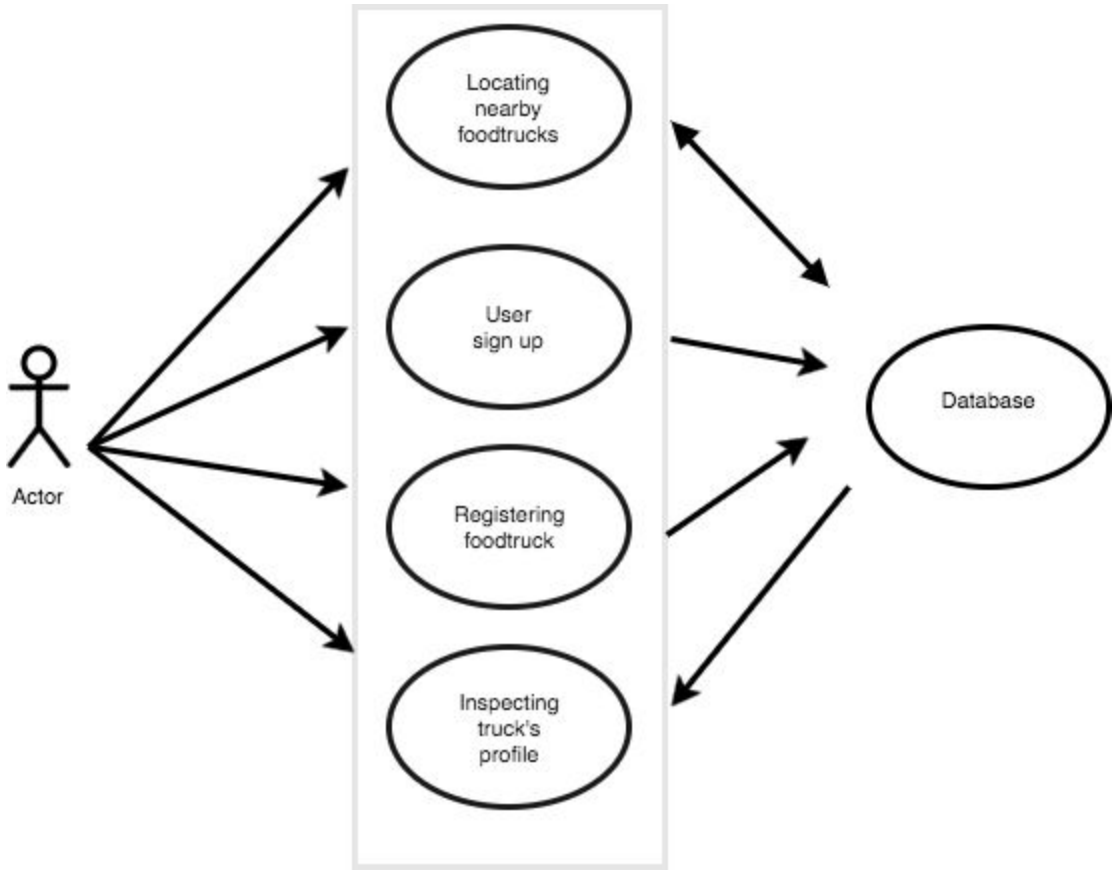


Figure 3: Process Diagram

2.1.3.1 Capability: Food Truck Listings

2.1.3.1.1 Process: Listing nearby food trucks

Table 3: Process Description

Identifier	CR-2
Purpose	Finding nearby food trucks
Requirements	Android device with internet connectivity and a GPS
Development Risks	• Food truck drivers may not keep their locations up to date. • We may have to deal with conflicting data if we allow crowdsourced locations and gps locations
Pre-conditions	User has the Hangry Mobile Food Truck application open
Post-conditions	A google map of the local area will be displayed with an overlay of nearby food truck

Table 4: Typical Course of Action

Seq#	Actor's Action	System's Response
1	User opens the app.	App obtains the user's gps coordinates.
2	User specifies the search radius for nearby food trucks (e.g. 5 miles).	App queries Amazon AWS DynamoDB for all listings within the specified range.
3	App sends all locations returned from AWS/dynamodb to Google Location Services.	A list view or a map view (depending on orientation) is displayed showing all food trucks within the specified search radius.

Table 5: Alternate Course of Action

Seq#	Actor's Action	System's Response
1	User opens the app.	App obtains the user's gps coordinates.
2	User searches for the name of a food truck.	App queries Amazon AWS dynamodb for all listings containing the specified food truck name.
3	App sends all locations returned from AWS/dynamodb to Google Location Services.	A list view or a map view (depending on orientation) is displayed showing all food trucks matching the specified name.

Table 6: Exceptional Course of Action

Seq#	Actor's Action	System's Response
1	User opens the app.	App tries to obtain the user's gps coordinates, but cannot.
2	App displays an option to enable location services if it is disabled, grant permission to the GPS permissions are not granted, or an error is displayed if the location cannot be obtained.	App waits for corrective action from the user, then tries again.

2.1.4 Modes of Operation

<< For projects involving systems that operate in more than one mode this section should contain a description of the system's behavior in each of its modes. More information and example can be found in **ICM EPG> Task: Analyze the Proposed System.** >>
The primary goal of this application is to provide the user with the current location of the food truck, if the user or truck driver lose connection, the application will temporarily be disabled and will resume once the connection is re-established. Therefore, there will be only one mode of operation.

2.2 System Analysis Rationale

<< This section should list and explain aspects of the analysis that are deemed by the team to be less than obvious or actually counter-intuitive and for which, as a result, there is a high risk that readers will not understand or will misunderstand what is intended. More information and example can be found in **ICM EPG> Task: Analyze the Proposed System.** >>

Cases where users can misunderstand how to use the application:

- The truck drivers may not know they need to broadcast their location or have the icon running in the background.
- User accidentally selects the portion to rate a food truck unintentionally.

3. Technology-Independent Model

3.1 Design Overview

3.1.1 System Structure

<< This section should contain
- a conceptual domain model
- a UML hardware component class diagram
- a UML software component class diagram
- a UML deployment diagram
- If necessary, a class diagram for the system's supporting software infrastructure
- and descriptions of the hardware components, software components, and, if necessary, the supporting software infrastructure components of the technology/platform-independent system architecture

More information and example can be found in **ICM EPG> Task: Define Technology-Independent Architecture >>**

<<Conceptual Domain Model>>

Figure 4: Conceptual Domain Model

<<Hardware Component Class Diagram>>

Figure 5: Hardware Component Class Diagram

<<Software Component Class Diagram>>

Figure 6: Software Component Class Diagram

<<Deployment Diagram>>

Figure 7: Deployment Diagram

<<Optional: Supporting Software Infrastructure Diagram>>

Figure 8: Supporting Software Component Class Diagram

Table 7: Hardware Component Description

Hardware Component	Description

Table 8: Software Component Description

Software Component	Description

Table 9: Supporting Software Component Description

Support Software Component	Description

3.1.2 Design Classes

This section should contain:

- UML class diagrams showing all the boundary, entity, and control classes in the design

of the system being developed

- and a description of each class in the diagram

More information and example can be found in **ICM EPG> Task: Define Technology-Independent Architecture >>**

3.1.2.1 <Classes n>

<<Design Classes Class Diagram>>

Figure 9: Design Class Diagram

Table 10: Design Class Description

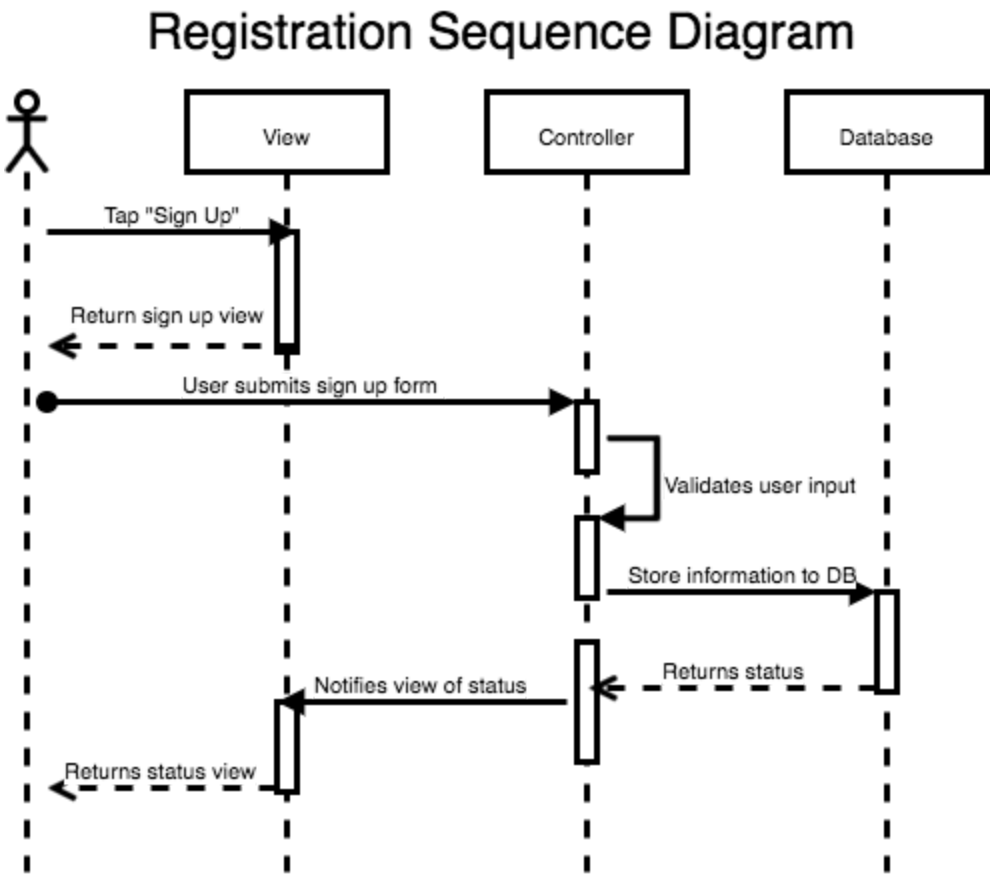
Class	Type	Description

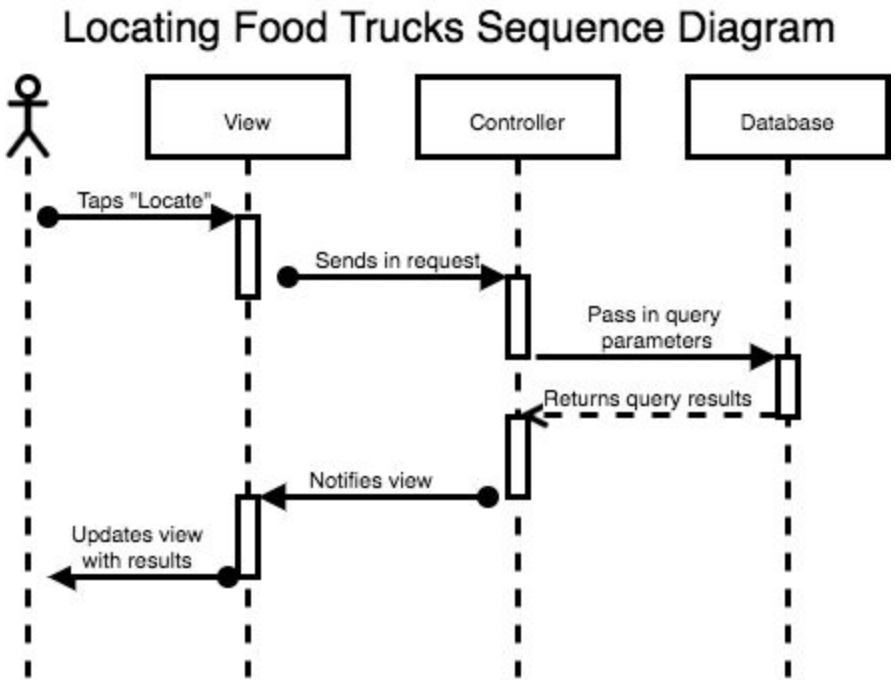
3.1.3 Process Realization

<< This section shows how the proposed architecture can be realized by conducting robustness analysis and constructing sequence diagrams. More information and example can be found in **ICM EPG> Task: Define Technology-Independent Architecture >>**

<<Robustness Diagram>>

Figure 10: Robustness Diagram


Registration Sequence Diagram
View
Controller
Database
Tap "Sign Up"
Return sign up view
User submits sign up form
Validates user input
Store information to DB
Returns status
Notifies view of status
Returns status view


Locating Food Trucks Sequence Diagram
View
Controller
Database
Taps "Locate"
Sends in request
Pass in query parameters
Returns query results
Notifies view
Updates view with results

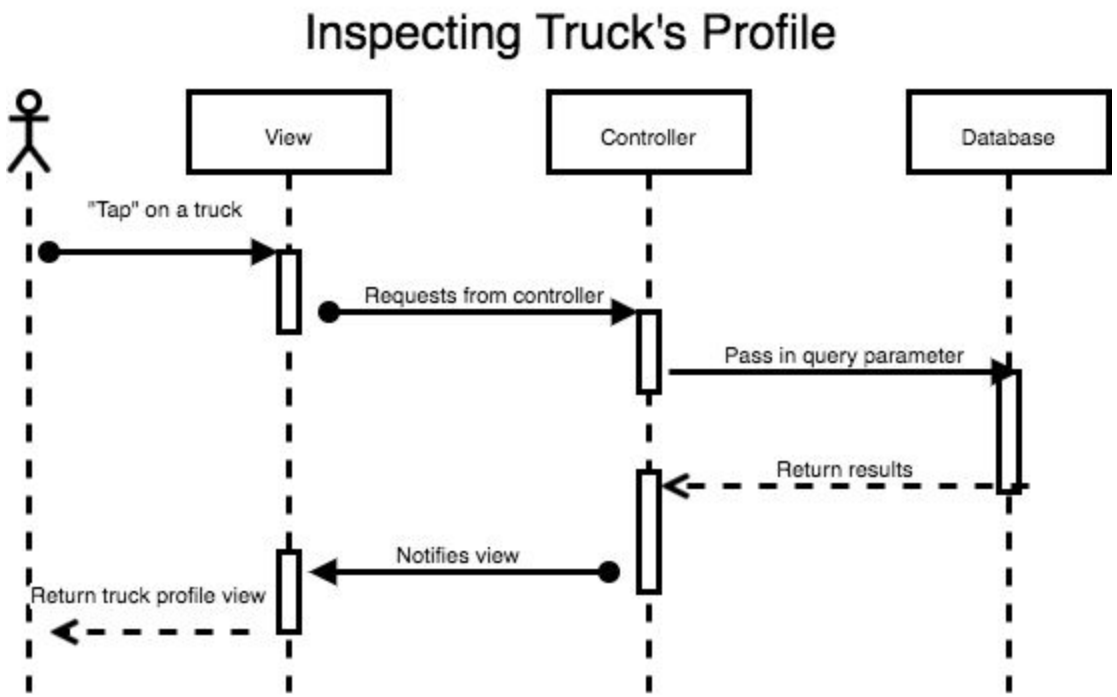


Figure 11: Sequence Diagram

3.2 Design Rationale

<< This section should contain an explanation of how/why the architecture/design described in previous sections was chosen. More information and example can be found in **ICM EPG> Task: Define Technology-Independent Architecture >>**

4. Technology-Specific System Design

<< Once you know specific technology that you team is going to use, design the system and software architecture and document them in this section. >>

4.1 Design Overview

4.1.1 System Structure

<<Hardware Component Class Diagram>>

Figure 12: Hardware Component Class Diagram

<<Software Component Class Diagram>>

Figure 13: Software Component Class Diagram

<<Deployment Diagram>>

Figure 14: Deployment Diagram

<<Optional: Supporting Software Infrastructure Diagram>>

Figure 15: Supporting Software Component Class Diagram

Table 11: Hardware Component Description

Hardware Component	Description

Table 12: Software Component Description

Software Component	Description

Table 13: Supporting Software Component Description

Support Software Component	Description

4.1.2 Design Classes

4.1.2.1 <Classes n>

<<Design Classes Class Diagram>>

Figure 16: Design Class Diagram

Table 14: Design Class Description

Class	Type	Description

4.1.3 Process Realization

<<Process Realization Diagram>>

Figure 17: Process Realization Diagram

4.2 Design Rationale

5. Architectural Styles, Patterns and Frameworks

<< Describe any implementation architecture styles (e.g. the Prism style and 3-tier architecture), patterns (e.g. pipe-and-filter and client-server), or frameworks (e.g. Java and CORBA) used to describe the system architecture. >>

Table 15: Architectural Styles, Patterns, and Frameworks

Name	Description	Benefits, Costs, and Limitations
Model View Adapter	Separates how the data gets handled between the layers	Improves organization