**Requirements Document**

**Skip the Lines**

**Puzzled Software Solutions**

**September 30, 2019**

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**Revision History**

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| **Name** | **Date** | **Reason for Changes** | **Version** |
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**1 Introduction**

**1.1 Purpose**

Skip the Lines is an application intended to provide each of its users with the ability to make a reservation at a restaurant as well as provide an estimation of wait times for nearby restaurants. The consequent aim of these services is to reduce the size of lineups among all affected restaurants.

**1.2 Project Scope**

The features of Skip the Lines are to be implemented as an extension of Koogle Maps, one of Koogle’s existing services. These features are expected to:

* Reduce wait times among affected restaurants.
* Provide high accuracy wait-time estimations.
* Vastly reduce the frequency and size of lineups outside restaurants.
* Reduce the amount of time restaurants must spend to coordinate reservations.

**1.3 Glossary of Terms**

|  |  |
| --- | --- |
| **Customer** | A user that is looking for a restaurant to dine at. |
| **Device Location Detection** | The mechanisms for which a device uses to detect its own geographical location. |
| **End Time** | The time that a group’s session with a table ends. |
| **Group** | A collection of one or more customers that eat together at a table. |
| **Koogle Maps** | A web mapping service that offers satellite imagery, aerial photography, street maps, 360° panoramic views of streets, real-time traffic conditions, and route planning for traveling by foot, car, bicycle and air, or public transportation. |
| **Open Table** | An online reservation service that allows a user to find and book a table at a desired restaurant. |
| **Reservation** | A request made by a customer to hold a table for a group where the group’s size and the start time are both specified by the customer. |
| **Reservation Hold Time** | The amount of time a reservation is held after the reservation's start time before it is cancelled. This will be specified by each restaurant. |
| **Restaurant** | An establishment where people go to eat meals that are cooked and served on the premises. |
| **Start Time** | The time that a group’s session with a table begins. |
| **Table** | A table in a restaurant that can hold one group of customers at a time. |
| **Wait Queue** | A queue of all the groups waiting for an available table at a given restaurant. |
| **Wait Time** | The amount of time a group has to wait before receiving a table at a given restaurant. Will be estimated for each restaurant. |

**1.4 References**

“Koogle's Website”, Home. [Online]. Available: https://skipthelines.vernonliu.com/. [Accessed: 26-Sep-2019].

“OpenTable”, Find your table for any occasion. [Online]. Available: https://www.opentable.ca [Accessed: 28-Sep-2019].

**1.5 Overview**

Requirements Document 1.0 aims to provide clarification on the aspects of Skip the Lines, mainly looking at UI/UX interface features, functional, and non-functional requirements. This will be a rough first draft outlining what has been proposed by the client in consideration of the RFP document on Koogle’s website and one client meeting.

**2 Overall Description**

**2.1 Product Perspective**

Currently, Koogle doesn’t have a system for reserving a table at a restaurant. Although there do exist resources for measuring restaurant quality and reservation capabilities, there does not exist a service that provides real time wait estimations. Koogle wants a system that provides such estimates along with an integrated table reservation request system to hold tables and notify customers as tables become available. As of right now, there is an application on the market called OpenTable which does that. Skip the Lines will implement the functionality of OpenTable in addition to a lot of different features. Skip the Lines will be a brand new system with integration in Koogle Maps.

**2.2 Product Features**

The main feature of Skip the Lines will be a system allowing customers to make table reservations in restaurants nearby. In addition, the restaurants will show up in a colour coded fashion on Koogle maps, so customers can browse which restaurants are busy and choose a restaurant that will be more convenient for the customer.

**2.3 User Classes and Characteristics**

There are three classes of users: customer, restaurant user, and Koogle user.

* Customer
  + A customer is any person with a phone, tablet or a computer and an internet connection who is looking to dine at a restaurant. Skip the Lines will allow them to reserve a table at a readily available restaurant, place a reservation in the wait queue of a busy restaurant and view the current wait times of a restaurant. There are a variety of reasons a customer will use this product including, but not limited to:
    - They do not want to cook for themselves or others
    - They do not have any food in their house
    - They want to be waited on
    - They want to socialize in a restaurant environment
    - They want to meet someone new
    - A restaurant has a special food dish on their menu
    - They do not know how to cook
    - They saw an ad for something they want to try
    - A restaurant has a specific cuisine that they do not know how to cook.
* Restaurant User
  + This user class includes an employee or owner of a restaurant. An employee is faced with a high-pressure customer service position that must be handled in a delicate, friendly manner. Their interaction with each customer must be in a professional manner. An employee’s responsibilities will often include preparing or delivering food to accurate specifications as well as multitasking which involves handling various restaurant tasks with efficiency and poise. A specific employee, the host or hostess, has a duty to meet and greet customers who enter the restaurant or customers who phone in to reserve a table to eat at. The host or hostess will be affected the most by this product as they will be the main employee in charge of reservations.
* Koogle user
  + This user class includes an employee of Koogle who has full access to Koogles database and access to the admin menus of Skip the Lines. This user is a technical expert and is a part of Koogles day to day operations.

**2.4 Operating Environment**

Skip the Lines will operate on: Internet Explorer 11+, Edge Browser 44.18362.267.0+, Chrome 77.0.3865.90+ , Opera 2019+, Firefox 69.0.1+, iOS 11+, Android 7+.

Skip the Lines will run on mobile apps and web browser for customers, in restaurant on tablet devices, and Koogle will have a dedicated web interface for managing the service.

**2.5 Design and Implementation Constraints**

The following design and implementation constraints highlight the issues that will limit the options available:

* Restaurants must have a tablet device.
* Restaurants must have access to the internet.
* Any PII must be handled in a secure fashion.
* The completed software will be handed off to Koogle who will be responsible for the maintenance and potential upgrades to the software.
* Skip the Lines will run solely off of Koogle’s servers and databases.

**2.6 Assumptions and dependencies**

In order for Skip the Lines to excel, the following assumptions about the environment are made:

* All users are fluent with technology; They know how to use a smart device.
* Koogle Servers and Databases will be able to accommodate the addition of Skip the Lines and any testing that is required.
* The Puzzled Software Solutions team will have access to Koogle Servers in order to test and deliver the Skip the Lines software.

**3 System Features**

With respect to the three user classes, Skip the Lines will have the following features:

* Customer
  + Check wait times for a restaurant
  + Reserve a table at a restaurant
    - Pre-order food while creating a reservation (Requires customer payment information to be on file)
* Restaurant
  + Request removal from the Skip the Lines system
  + Have the ability to add or remove a customer from a reservation booking.
* Koogle
  + Insert and manage advertising inside the app for a customer.
  + Gather user data
  + Manage a restaurant’s listing
  + Integration with Koogle Maps

**3.1 Reservation Booking System**

This feature facilitates the ability for a customer to create a reservation at a restaurant registered with Skip the Lines.

**3.1.1 Description and Priority**

The reservation booking system is a high priority feature that operates an online reservation service through Koogle Maps. For restaurants registered with Skip the Lines, this system will help run front-of-house business in restaurants, like seating arrangements and wait staff assignments.

**3.1.2 Functional Requirements**

REQ - 3.1 - 1: A customer must be registered with Skip the Lines to make a reservation through Skip the Lines.

REQ - 3.1 - 2: A customer can only make a reservation with a restaurant that is registered with Skip the Lines.

REQ - 3.1 - 3: A customer must be prompted with the reservation hold time before a reservation is sent to a restaurant.

REQ - 3.1 - 4: A customer must not be allowed to create more than one reservation each with reservation start times within 13.5 minutes of each other.

REQ - 3.1 - 5: Each restaurant must specify if customers are required to enter a reservation end time when creating a reservation.

REQ - 3.1 - 6: A customer must be able to see Skip the Lines wait times on Koogle Maps.

REQ - 3.1 - 7: A customer must be able to make a reservation in Skip the Lines from Koogle Maps.

REQ - 3.1 - 8: A customer using Koogle Maps must be displayed restaurant wait times in a colour coordinated fashion.

REQ - 3.1 - 9: A customer must have a payment method registered with their account to be able to pre-order food with their reservation.

REQ - 3.1 - 10: Koogle’s Terms of Service for Skip the Lines must be shown to a customer before they can finish registration.

REQ - 3.1 - 11: A customer must agree to the Terms of Service provided by Koogle to register.

REQ - 3.1 - 12: Koogle’s Privacy Policy for Skip the Lines must be shown to a customer before they can finish registration.

REQ - 3.1 - 13: A customer must agree to the Privacy Policy provided by Koogle to register.

REQ - 3.1 - 14: A customer must be able to enter their name while making a reservation.

REQ - 3.1 - 15: A customer must be able to enter their phone number while making a reservation.

REQ - 3.1 - 16: A customer must be able to enter the size of their group while making a reservation.

REQ - 3.1 - 17: When a table is ready at a restaurant, the group at the top of the restaurant's wait queue must be notified with a text message.

REQ - 3.1 - 18: If a customer does not claim their table before the end of a restaurant's reservation hold time, that customer’s reservation must be cancelled.

**3.2 Restaurant Registration**

This feature facilitates the ability for a restaurant to create an account with Skip the Lines which then allows the restaurant to start taking reservations from customers through Skip the Lines.

**3.2.1 Description and Priority**

This feature is high priority. It facilitates the ability for a restaurant to register with Skip the Lines which allows the restaurant to take reservations through Skip the Lines.

**3.2.2 Functional Requirements**

REQ - 3.2 - 1: A restaurant must enter their primary contact name, primary contact phone number, restaurant name, restaurant address, mailing address, restaurant type, reservation hold time, menu and reservation type at the time of registration.

REQ - 3.2 - 2: A restaurant must be allowed to enter up to 5 additional contact names and contact phone numbers.

REQ - 3.2 - 3: Koogle’s Terms of Service for Skip the Lines must be shown to a restaurant before they can finish registration.

REQ - 3.2 - 4: To register with Skip the Lines, a restaurant must agree to the Terms of Service provided by Koogle.

REQ - 3.2 - 5: Koogle’s Privacy Policy for Skip the Lines must be shown to a restaurant before they can finish registration.

REQ - 3.2 - 6: To register with Skip the Lines, a restaurant must agree to the Privacy Policy provided by Koogle.

**3.3 Customer Registration System**

This feature facilitates the ability for a customer to create an account in Skip the Lines and access to their user profile.

**3.3.1 Description and Priority**

The Customer Registration system is a high priority feature that allows a user to create an account in Skip the Lines. A registered customer must login to receive restaurant wait time estimates and to access the reservation booking system.

**3.3.2 Functional Requirement**

REQ - 3.3 - 1: A customer must be able to create an account with Skip the Lines.

REQ - 3.3 - 2: A customer must be able to select food preference.

REQ - 3.3 - 3: A customer must have the ability to register their payment information with their Skip the Lines account.

REQ - 3.3 - 4: Information that a customer provided while registration must be considered as private information and must not be disclosed to another customer.

**4 External Interface Requirements**

**4.1 User Interfaces**

The customer interface will follow basic Koogle style and functionality conventions. The interface will be incorporated into Koogle Maps. Below, Figure 1 shows an example of what Koogle Maps looks like when a customer searches for a restaurant(s). Koogle Maps will contain a tab under each restaurant's name on the left hand side of the screen that will produce a pop-up menu of the Skip the Lines features that is unique to each restaurant.

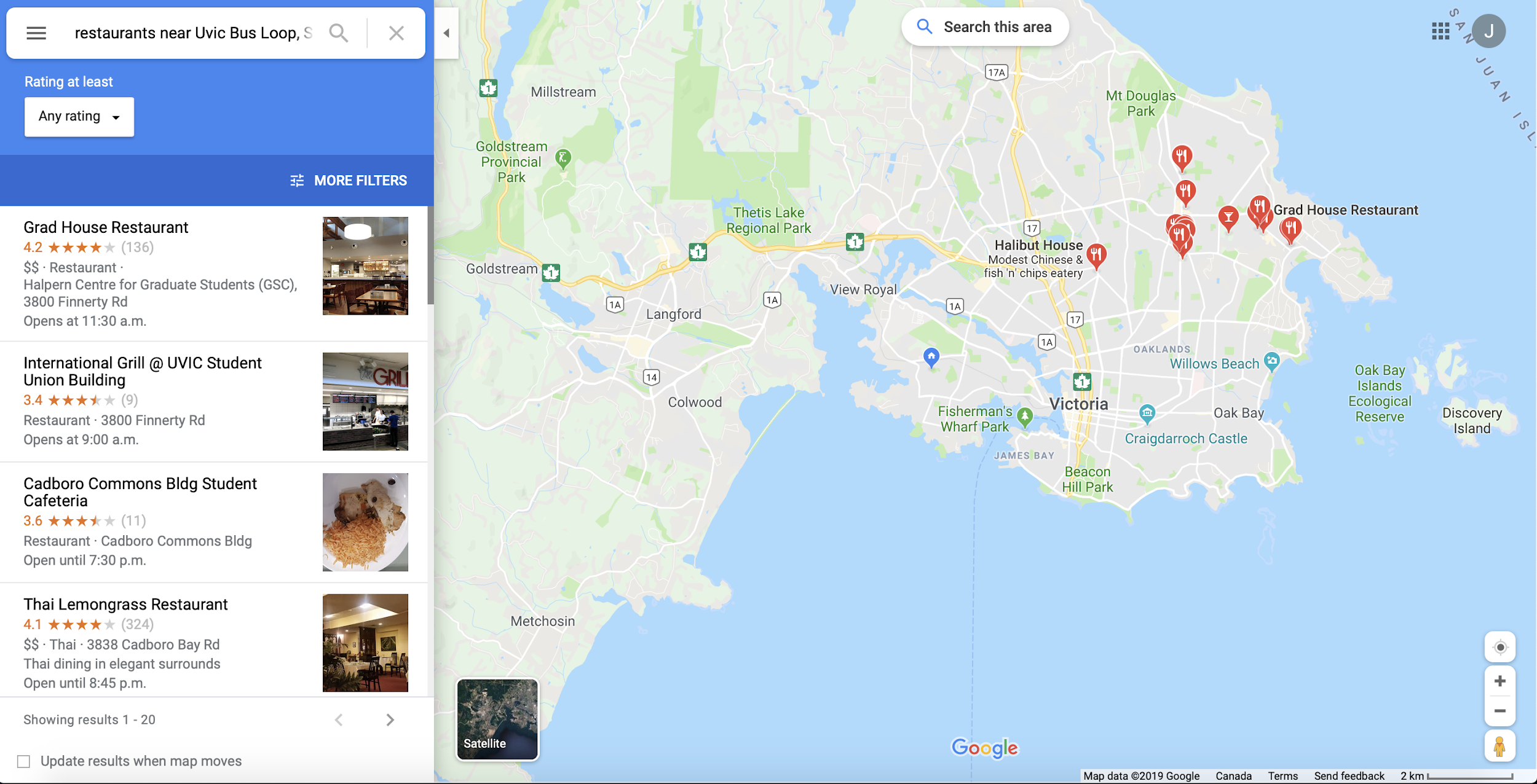
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Figure 1. An example of a search for a restaurant in Koogle Maps.

The restaurant interface will be customized to tailor the layout of tables at each restaurant. The tablet screen will show reservations made on the left hand side of the screen, including a customer's name, phone number, and the time their reservation is for. This will be listed as current reservations where the upcoming group that will be seated next will be shown at the top and the second group to be seated will follow them and so on. There will be a button beside all the reservations with the option to remove a group from the reservation section. At the top of the reservation section will be an “add reservation” button which allows an employee of the restaurant to add customers to the reservation list. Since customers can also make a reservation on their interface, an error message will be displayed if any overlapping tables with the same reservation time are trying to be booked. Underneath the reservations section, a waitlist section will be listed with the same group information as the reservations. The restaurants employees will have the option to select a waitlisted customer and move them into the reservation section with a button that is located beside their name. Beside the Reservation section and waitlist, will be a layout of the restaurant tables. A table highlighted red will indicate that the table is currently used, a highlighted blue table will indicate that a table have been booked and there is no one currently at the table. A grey table will indicate that the table is not currently used or been reserved. There will be the option to select blue and red tables to see all reservations for that table throughout the current day. When an employee signs in, they will be directed to the current day they are working. They will have an option to switch days which will have the reservation bookings that are specific to that day.

REQ - 4.1 - 1: A customer must be able to select a language for Skip the Lines.

REQ - 4.1 - 2: A customer must be able to check the current wait time estimation for each restaurant.

REQ - 4.1 - 3: A customer must be able to access the reservation registration system of each restaurant.

REQ - 4.1 - 4: A customer must have the ability to manually specify a location to search for a restaurant.

REQ - 4.1 - 5: A customer must be able to see every restaurant listed in the area they selected.

REQ - 4.1 - 6: A customer must have the ability to have their location be automatically detected through device location detection.

**4.2 Software Interfaces**

Koogle Servers & Databases

* Data In
  + Up to date information from restaurants
  + Information requests from users (wait times, available reservations, restaurant information)
  + Pull requests from restaurants (requests to be taken off the service)
  + Reservation requests from customers (creating a reservation/altering a reservation)
* Data Out:
  + Reservation information & accompanying relevant customer information to restaurant (when a reservation is created or edited)
  + Advertisements to customer devices (monetization method)
  + Display of information on Koogle Maps (Integration into Koogle Maps)
  + Notifications (specials, alerts to when your table is ready or reservation is nearing)
  + Restaurant information for restaurants registering with Skip the Lines that is not already in Koogle databases.

Customer Devices (Android or iOS or Supported Web Browser)

* Data In
  + Up to date restaurant information (wait times, available reservations, restaurant information)
  + Advertisements (monetization method)
  + Reservation creation/altering confirmation
  + Notifications (specials, alerts to when your table is ready or reservation is nearing)
* Data Out
  + Phone Number, Email, Name upon account creation.
  + Reservation information (creating or altering of said reservation)

Restaurant’s Tablet

* Data In
  + Reservation information & accompanying relevant customer information to restaurant (when a reservation is created or edited)
* Data Out
  + Up to date information (wait times, available reservations, restaurant information)

**4.3 Communications Interfaces**

Skip the Lines offers an indirect communication interface for automatically sending notifications regarding on the wait time and table availability. The wait time will be estimated based on Koogle data services. Notifications will be sent from the system email to the contact information that a customer entered while doing the reservation. Skip the Lines does not support direct communication interfaces between a restaurant and a customer. However, as the reservation system asks customers to leave their contact information while doing the reservation, restaurants are able to reach their customers through those contact information by themselves. Skip the Line must allow a customer user to select if they want to be contacted by email or phone number while doing the reservation.

REQ - 4.3 - 1: If a customer allows the real-time location service, a notification of the wait time must be sent 15 mins earlier than the estimated arrival time from a customer’s current location to a targeted restaurant.

REQ - 4.3 - 2: If a customer does not allow the real-time location service, a notification of the wait must be sent 15 mins earlier than the time a table will be available.

REQ - 4.3 - 3: A notification must be sent to a reserved customer while a table is ready in a targeted restaurant.

REQ - 4.3 - 4: A notification regarding the current wait time and the relevant restaurant holding time must be sent to a customer after making a reservation.

**5 Other Non-Functional Requirements**

**5.1 Performance Requirements**

Wait times listed for restaurants on Skip the Lines are within 10 minutes (+/-) of real wait times. Wait times are to be updated once per minute.

**5.2 Security Requirements**

REQ - 5.2 - 1: A customer must not be able to view another customer’s personal information.

REQ - 5.2 - 2: A customer must not be able to view another customer’s reservation information.

REQ - 5.2 - 3: A customer's location must not be used without that customer's permission.

REQ - 5.2 - 4: Proper information security procedures must be used when handling user information.

REQ - 5.2 - 5: Proper information security procedures must be used when handling user financial information.

**5.3 Software Quality Attributes**

Skip the Lines must provide a well designed user experience for customers and restaurants. This will be achieved using focus groups to survey the user interface and making changes to the interface based on the feedback provided by the focus group members. This is not a quantitative characteristic that can be measured, but rather a qualitative characteristic that will be improved over time based on feedback.

The traditional software qualities we prioritize are:

* *Accessibility*: A customer can be any person with any range of cognitive or physical disabilities. We wouldn’t want such obstacles to hinder their usage of Skip the Lines.
* *Orthogonality*: Skip the Lines will be coordinating several interactions with all sorts of different software running on all sorts of different hardware. Updates to this software that cause problems that propagate could be disastrous.
* *Availability and Reliability*: Skip the Lines must be working properly at all times. If the service was to ever go down or fail in some way, restaurants and customers would end up with inconsistent information which would lead to massive confusion.

**Appendix: Issues List**

Unresolved issues:

* What languages should be supported by Skip the Lines?
* Possible alternative monetization method (possible fee/subscription method).
* Discuss the layout of a customer’s interface, including screen layout constraints, standard buttons and functions.