SURVEYHUB

Functional Requirements Document: Senior Project

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Tiffany Kwong
TiffanyIrisKwong@gmail.com

Functional Requirements Document (FRD)

Section 1: Product description

SurveyHUB is a centralized hub for surveys. Consumers give product or service feedback after a completed transaction and the corresponding business establishment collects the data for ongoing improvement in the company's operation plans. Completed transactions result in a QR code on a receipt to scan into the app sending surveys to the account. Completed surveys instill a monetary reward system and available coupon offers to consumers. SurveyHUB would receive compensation from the organizations that decided to use the survey service, thus being able to pay consumers for expressing feedback. When consumer users submit many surveys with quality feedback, they may get hired on by SurveyHUB as a *secret shopper*. As a *secret shopper*, they will be assigned missions and completion of missions will result in higher pay compared to a regular consumer user and freebies will also be given to the *secret shopper*.

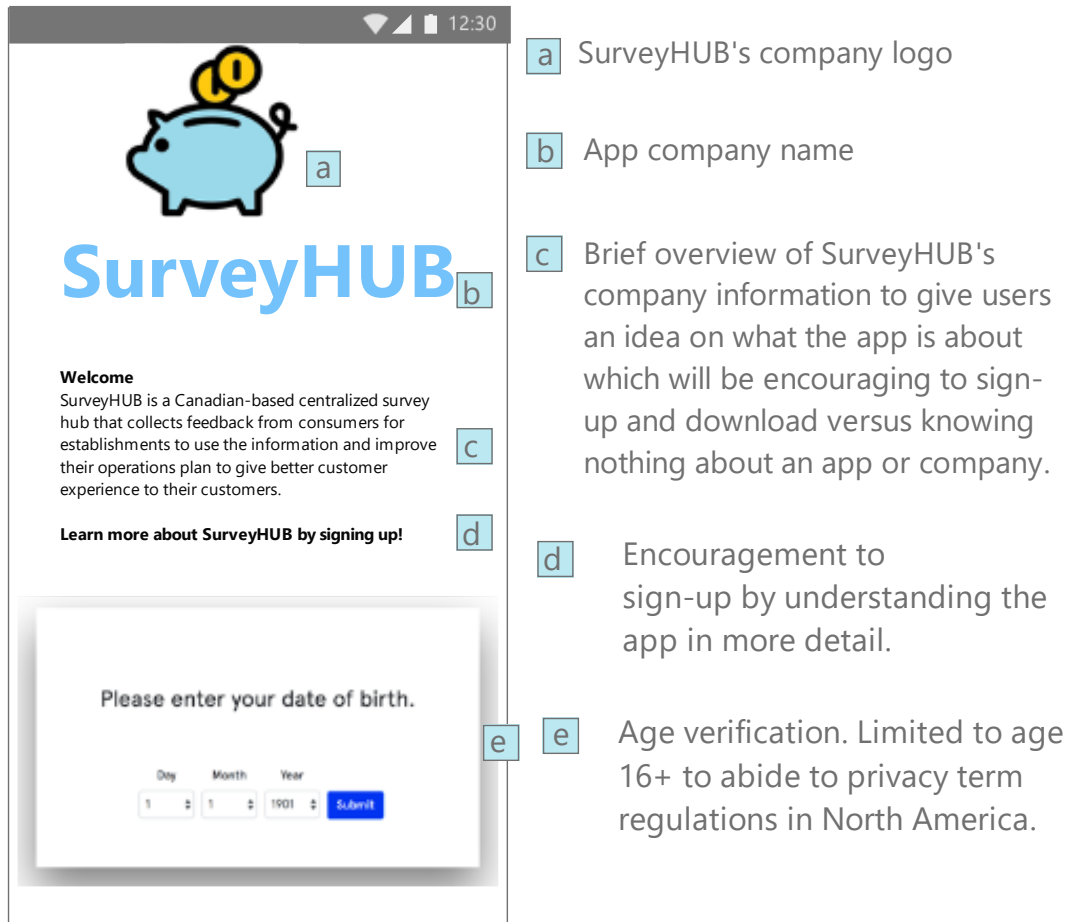Section 2: Site map and feature list
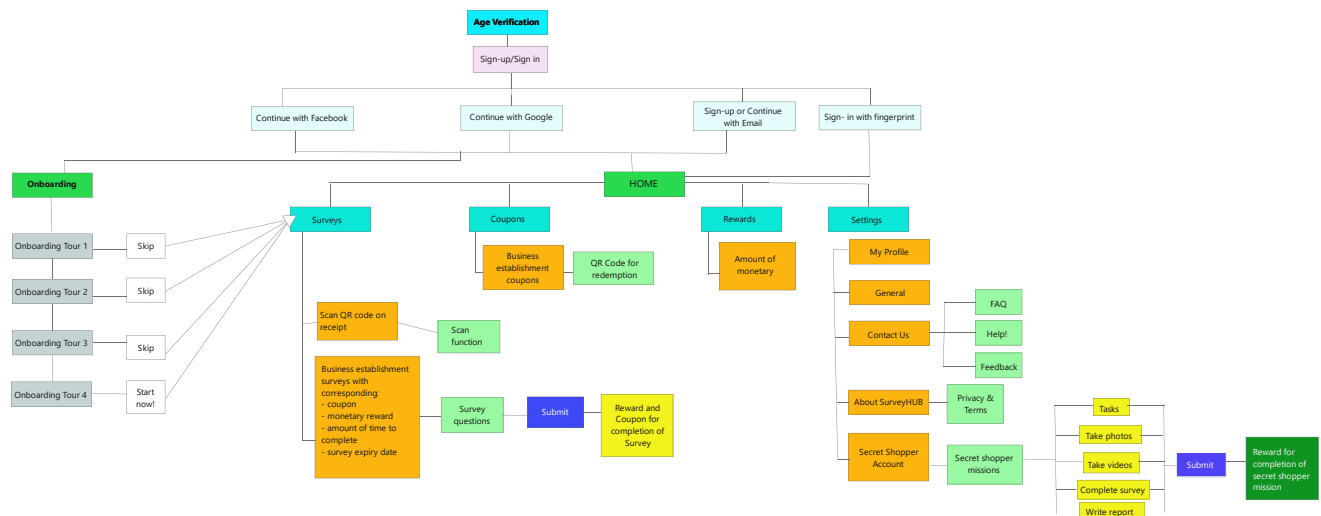
The main functionalities to deliver optimum user experience are:

-   Authentication for more accurate information for business entities and the ability to issue cheques or direct deposit for users. The authentication can be done through Facebook, Google, or email.
-   Camera scan function to scan receipts into the app for surveys to be activated and available on the app.
-   Camera function for taking photos and videos must also be available for Secret Shoppers to complete their missions.
-   GPS for push notifications in case of a user being near an establishment and having a coupon offer to redeem at the corresponding establishment. GPS also helps Secret Shoppers to arrive at the correct locations for the Secret Shopper Missions.

- Age verification functions to ensure users are of 16 years of age to abide to certain privacy policy and term regulations for minors under the age of 16.
- Surveys, upon completion there will be monetary reward and coupon offer on account processed immediately and reflected on the app.
- Coupons, upon completion of survey, a coupon offer including but not limited to free appetizer or free movie ticket may occur and can be redeemed through a QR code being scanned by the staff attendant. QR code must be a real-time interaction to ensure the validity of the person using it, so if a user was to screen shot the QR code it will not work, as the code will change.
- Rewards show the amount of monetary reward earned from completion of surveys and will be mailed out every three (3) months. Next pay date will be shown on the screen. The security needs to be strong to protect the user's information especially if it is connected to a bank account.
- Settings has the common information listed plus a s*ecret shopper* option that will only appear if a user is hired on as a Secret Shopper. Secret shopper missions are available when a user is hired on with SurveyHUB as a Secret Shopper. A user can be hired on as a Secret Shopper if he/she is active and completes surveys with quality feedback. *Secret shopper* missions provide better pay and freebies for user.

Section 3: Annotated wireframes

Figure 1: Age verification upon signing up

a   SurveyHUB's company logo

b   App company name

c   Brief overview of SurveyHUB's company information to give users an idea on what the app is about which will be encouraging to sign-up and download versus knowing nothing about an app or company.

d   Encouragement to sign-up by understanding the app in more detail.

e   Age verification. Limited to age 16+ to abide to privacy term regulations in North America.

a Section you are currently on. There are a total of 4 sections as outlined in the fixed toolbar at the bottom. (In this case the *Survey* section in in Figure 2.). This is to easily identify which page the user is on.

b Survey for the establishment listed. This survey is posted by the business establishment and wording may be altered to reflect the voice and tone of being

c Logo of the establishment linked to corresponding survey. The logo helps user to identify the establishment quicker from memory than reading the name if the user is familiar with the company logo.

d Coupon offer that can be earned upon completion of the survey. The coupon is an offer for the corresponding establishment of the survey they are completing. This heightens the chances of customer retention for the establishment. This is also an encouraging factor for the customer to return to the business to use the coupon offer.

e Monetary reward that can be earned upon completion of survey. Monetary reward will be given to the user for the completion of the survey. The monetary reward is a commission cut of what SurveyHUB earns from the corresponding establishment. This is to encourage users to complete more surveys for the monetary reward.
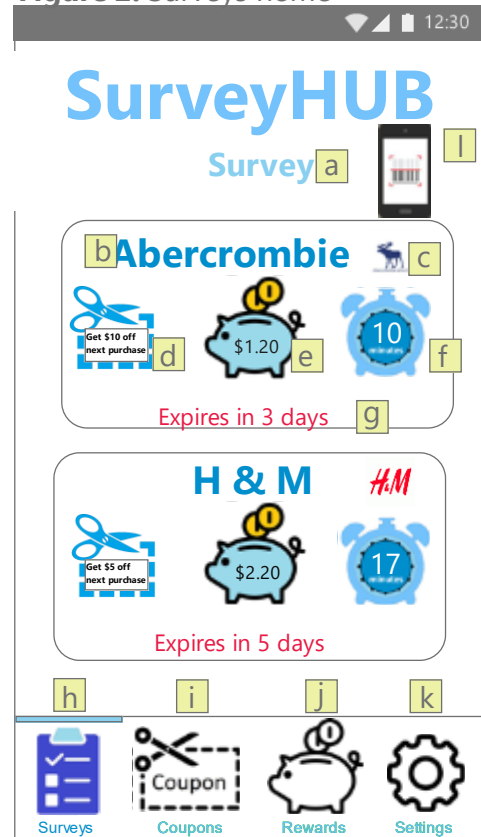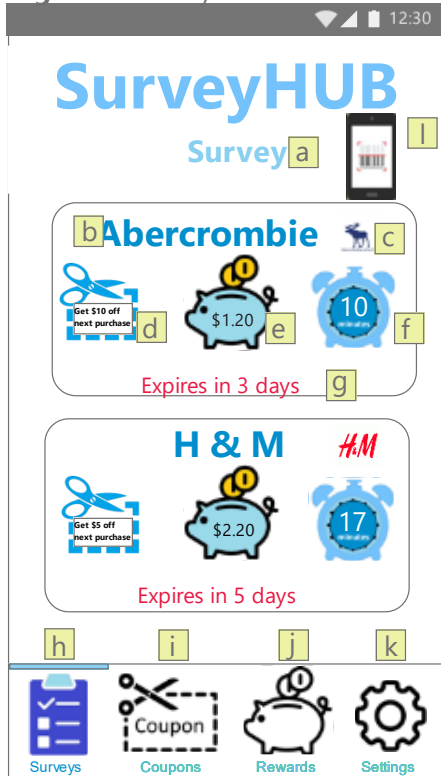
Figure 2: Surveys home

Figure 2: Surveys home

f   The amount of time it will take to complete the survey. It allows users to have an expectation of how long it will take, instead of realizing that it may take too long.

g   The survey expires in X amount of days. This allows a reasonable and specified time span of completing the transaction experience to give accurate feedback. It shows how much time is left for the user to complete the survey. The limited time period also encourages users to complete the surveys as soon as possible to get the rewards.

h   Icon in fixed toolbar to go to survey screen. (When icon is highlighted in dark blue and the thin blue bar appears above, it states that you are currently on that screen section.) This is to easily identify which page the user is on.

i   Icon in fixed toolbar to go to coupon offers of the app. (When icon is not highlighted and no thin blue bar above, it states that you are currently NOT on that screen)

J   Icon to go to rewards section of the app.

k   Icon to go to the settings section of the app.

l   Function to scan receipt QR code into app to receive a survey for corresponding establishment that can be completed immediately or in the future. This is to avoid forgetting to complete a survey, which is a main point of SurveyHUB - having a centralized survey hub.

Figure 3: Coupons
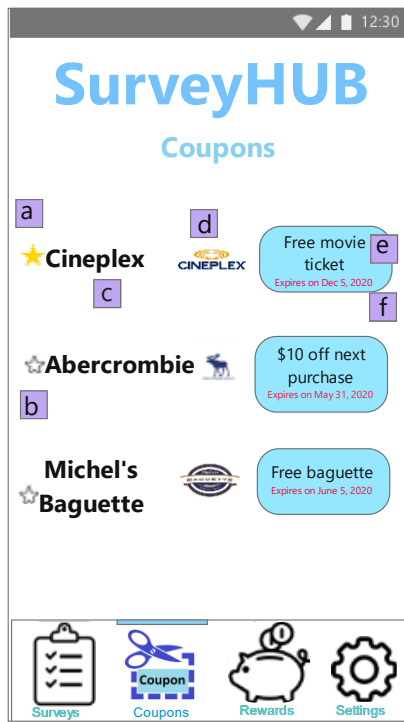
a Favorites or star function for coupon offers to show up at the top of the list. Yellow star means its starred and is put in priority at the top of the list so that it can be easily found or identified by the user. The coupon offers will be listed in order of most recent to expire to ones that have the most time left before expiry. This is to encourage to complete the surveys before they expire.

b Favorites or star function for coupon offers to show up at the top of the list. When the star is white or has no color, it means that it is NOT starred and not put in priority by the user and will NOT be put at the top of the list. This is for the user to be able to quickly find the coupons they need or want.

c Coupon for the corresponding establishment The coupon is rewarded by the establishment to the user for completing the survey feedback to their establishment. This is to encourage both completion of the survey and customer retention.

d Logo of establishment to corresponding coupon offer. The logo helps user to identify the establishment quicker from memory than reading the name if the user is familiar with the company logo.

e Coupon offer for corresponding establishment to encourage both completion of the survey and customer retention. When user is within closer proximity of the establishment, the app will send notifications to the user to let them know they can use the coupon at a location close to them. This acts as a reminder and an encouragement to use the coupons.

f Expiry date of coupon for corresponding establishment and offer. This is to encourage users to return to the place of business more frequently or within a specified period of time. This can help users remember the establishments and help with customer retention for businesses. When quickly approaching the expiry date, the app will send notifications to the user as a reminder and encouragement to use the coupons.
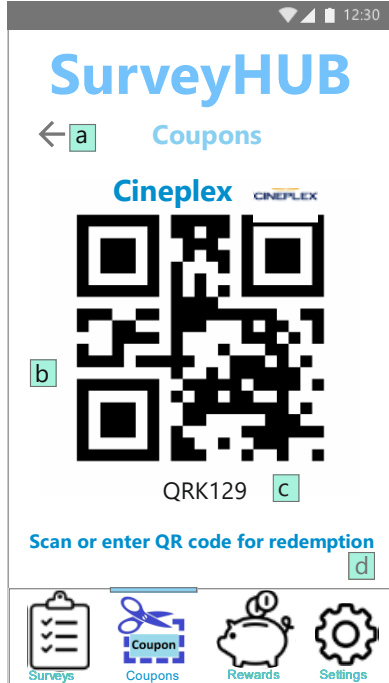
a   Back button to take user to the
    previous screen. (In case this goes
    back to main Coupon screen.)

Figure 4: QR code coupon

b   QR code for corresponding coupon
    offer. The coupon can only be used
    once. Upon redemption, a
    confirmation screen will follow. The
    coupon is provided by the
    corresponding establishment for
    completing the customer survey to
    encourage feedback and customer
    retention. This code can be used by
    staff and self-checkout.

c   Code for corresponding coupon offer.
    The code can be entered instead when
    scanning the code is not working or is
    not an option. This code can be used
    by staff, self-checkout and online
    transactions.

Figure 5: Confirmation screen
for QR code redemption

d   Instructions on how to use QR code.
    The instructions will be either scanning
    the QR code upon redemption by the
    staff attendant or by yourself if the user
    is making an online or self-checkout
    transaction.

e   Confirmation for QR code
    redemption. Clicking on anywhere on
    the screen from this part will lead
    back to Coupons section of app. A
    clear message to users about a
    coupon being redeemed is important
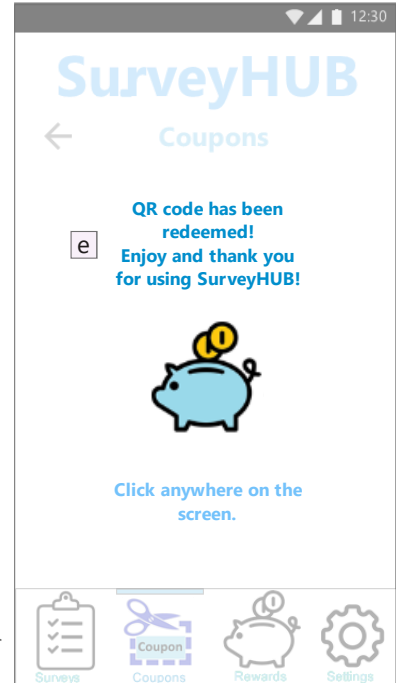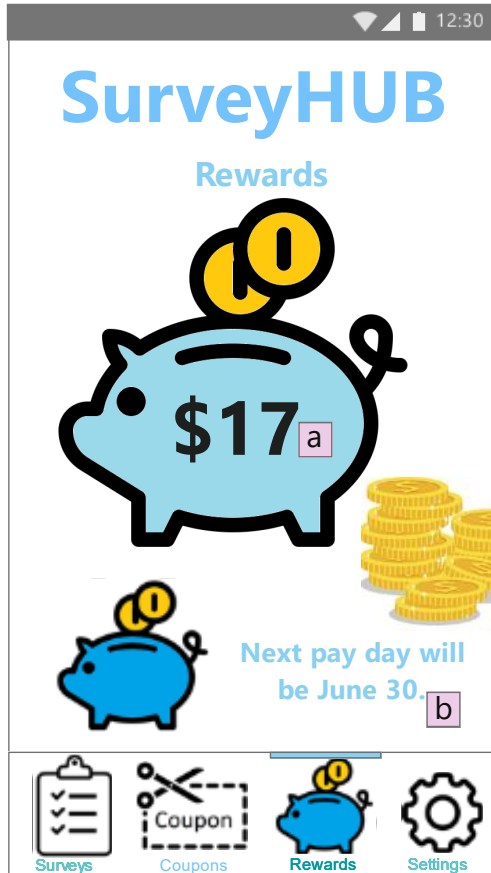   to avoid confusion.

Figure 6: Rewards section

a   Amount of monetary rewards on account. The monetary reward amount is accumulated from all the surveys and secret shopper missions (if they were hired on as a secret shopper by SurveyHUB) the user completed. This is updated as soon as a user completes either a survey or mission. The quick update and increase in monetary value will act as a motivator to do more and earn more, which can turn out as exciting and intriguing to a user.

b   The next pay date where a cheque will be mailed to user OR direct deposit will be sent to bank account if bank information was provided (bank option is not mandatory). This allows the user to know when their money is coming in from completing surveys and secret shopper missions. Lets the user be excited waiting for their monetary reward and perhaps getting in more surveys before the pay day to earn more for that 3-month period.

a   To view or edit profile information including name, address, phone number, birthdate, gender, and bank information (optional). SurveyHUB needs the profile information to be able to send the monetary rewards to the user for the completion of surveys and secret shopper missions.

Figure 7: Settings

b   To view or edit text size, mobile notifications, and email updates. When user is within closer proximity of the establishment, the app will send notifications to the user to let them know they can use the coupon at a location close to them. The notifications can be sent through notifications and/or email. This acts as a reminder and an encouragement to use the coupons. The email updates can pertain to but not limited to updates to policies, the app, and the company.

SurveyHUB
Settings

My Profile   a

General   b

Contact Us   c

About SurveyHUB   d

Secret Shopper Account   e

Surveys   Coupons   Rewards   Settings

c   Contact information, FAQs, information for help, and the ability to submit feedback to SurveyHUB. Made to assist the user in using the app, helping SurveyHUB improve the app, and allowing users to reach out to SurveyHUB. Being able to reach out to SurveyHUB or get assistance is important to feeling valued an appreciated.
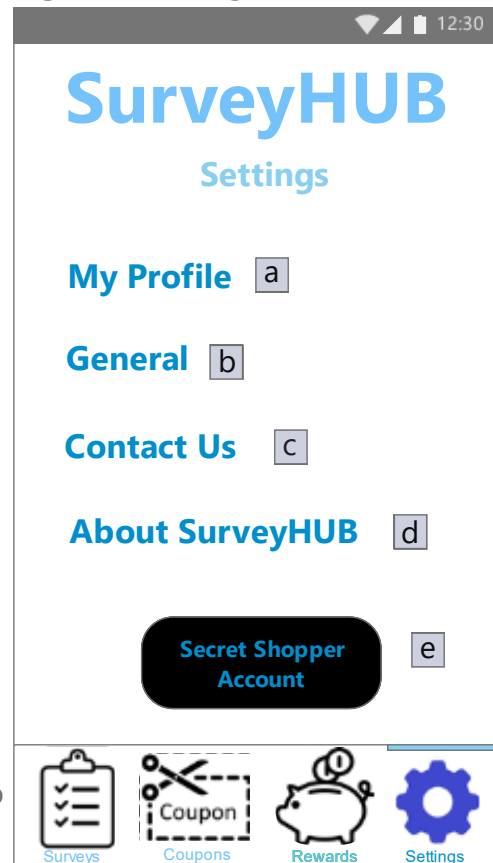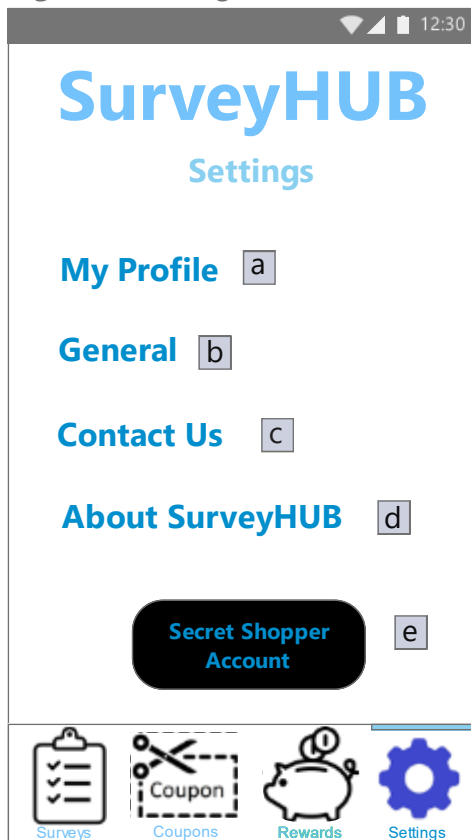
Figure 7: Settings

d · SurveyHUB company information and app privacy and terms. Getting to know or letting users know about SurveyHUB is important in building a connection with users. They have the right to know information about SurveyHUB, what user data we collect, what we do with the data collected, and the privacy policy and terms the company follows.

e · Not available to all users. Only shows up if user is hired on as a Secret Shopper for SurveyHUB from completing quality responses to surveys as an active user. Secret shopper account are for secret shoppers to do secret shopper missions to earn more monetary rewards, freebies, and coupons. The rewards are accessible on the normal or usual SurveyHUB account. The secret shopper missions requires the shopper to complete and submit tasks.

Figure 8: Secret Shopper Missions
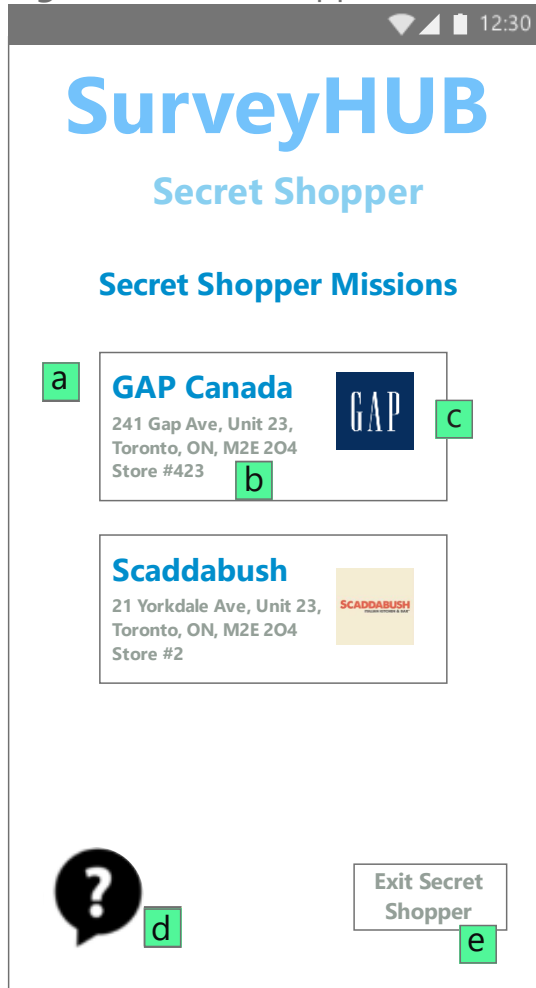
a Secret shopping mission for establishment listed at the specified location listed below.

b Address for secret shopping mission for establishment listed. In case the secret shopper cannot find the location, there is a GPS function that is linked to Google Maps to guide them. The GPS function also determines whether or not they are at the correct location.

c Logo for secret shopping mission for establishment listed for easy identification.

d Icon for inquiries which lead to Figure 9: Connect with SurveyHUB agent to assist with the secret shopping mission. This is to assist the secret shopper with questions related to the tasks, the app, error occurrences, confusion, complaints, or events related to secret shopper missions or using SurveyHUB. Users need to understand everything from how to use the app to the tasks to complete the missions.

e Exit Secret Shopper section and return to regular user account. Exiting is necessary to create a clear difference for regular and secret shopper accounts.

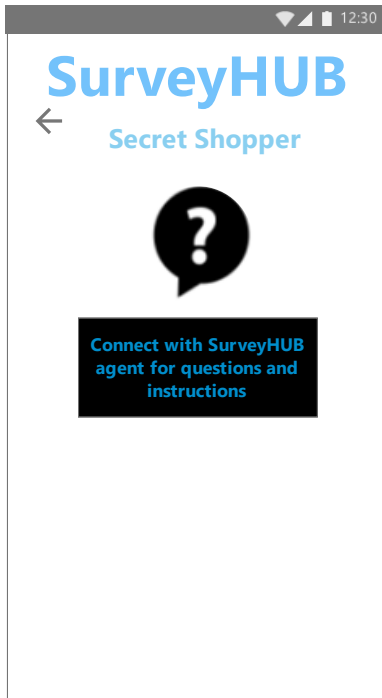**Figure 9:** Inquiries - connect with agent


Figure 10: Connect with agent

While connected with agent, user can still access app and be guided through any processes and have any questions answered by the agent.

a   Interaction tasks
Ex: Ask the sales associate for a pair of tight fitting jeans, but you don't know which style fits your body type best. Take notice of the interaction for future tasks.
The tasks are made to analyze the customer service provided for improvement in operation plans and management.

b   Take photos of the store. General layout of the store and anything that stands out either in a positive or negative way. Several photos can be submitted. Photos of people's faces are not permitted due to privacy issues. The photos are used for support in the survey questions and the report.

c   Take videos of the store. General layout of the store and anything that stands out either in a positive or negative way. Several videos can be submitted. Videos of people's faces are not permitted due to privacy issues. The videos are used for support in the survey questions and the report.

d   Until the completion of Interactions, Take Photos, and Take Video are completed; Survey and Write Report will be unavailable to complete. (Therefore Survey and Write Report are in a light gray lettering.)
Survey will be questions related to the customer experience. Completion of Survey will allow access to Write Report. This is to make sure secret shopper goes through a thorough process of the customer experience and giving an accurate depiction of the experience.

e   Until the completion of Interactions, Take Photos, Take Video, and Survey are completed; Write Report will be unavailable to complete. This is to make sure secret shopper goes through a thorough process of the customer experience and giving an accurate depiction of the experience. The report will be how you felt about the customer experience and how you felt the interactions went.

Figure 11: Secret Shopper Mission initial screen
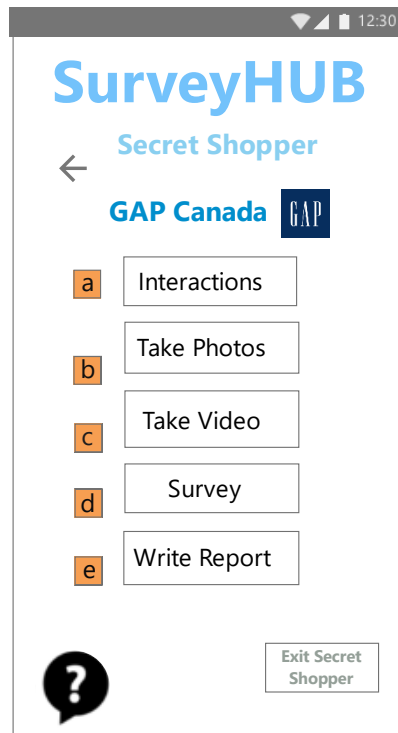
Figure 12: Secret Shopper Mission checklist
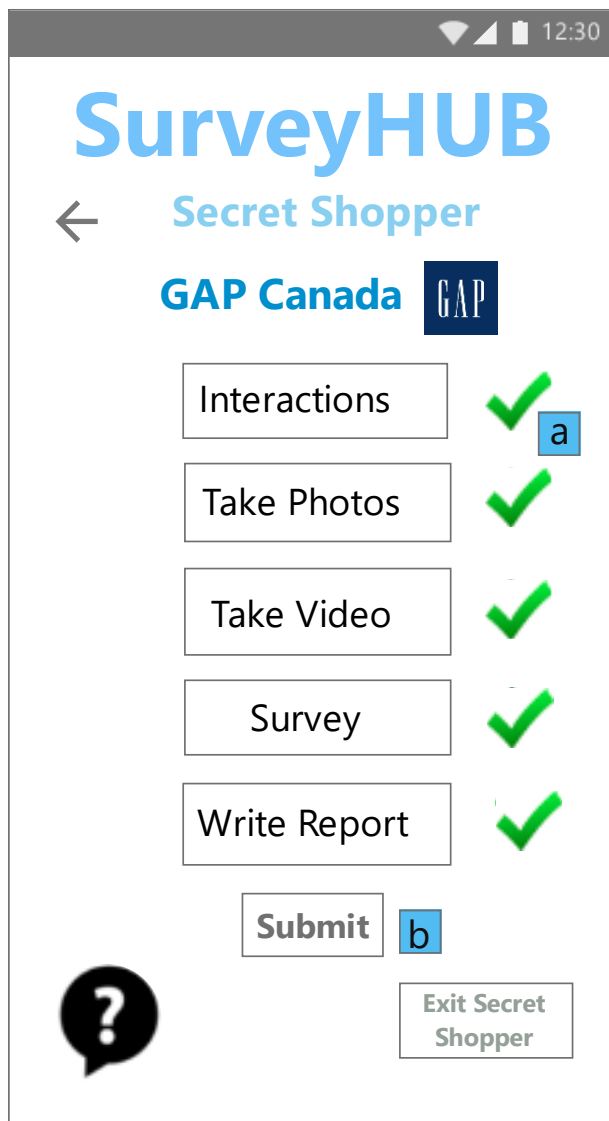
a The checkmarks show that you had completed those sections. However, you can always go back to completed sections to edit or add more information. This is to show necessary progress and what steps the secret shopper are missing or haven't completed yet.

b Submission will lead to Figure 13: Secret Shopper completion reward

Figure 13: Secret Shopper mission completion reward
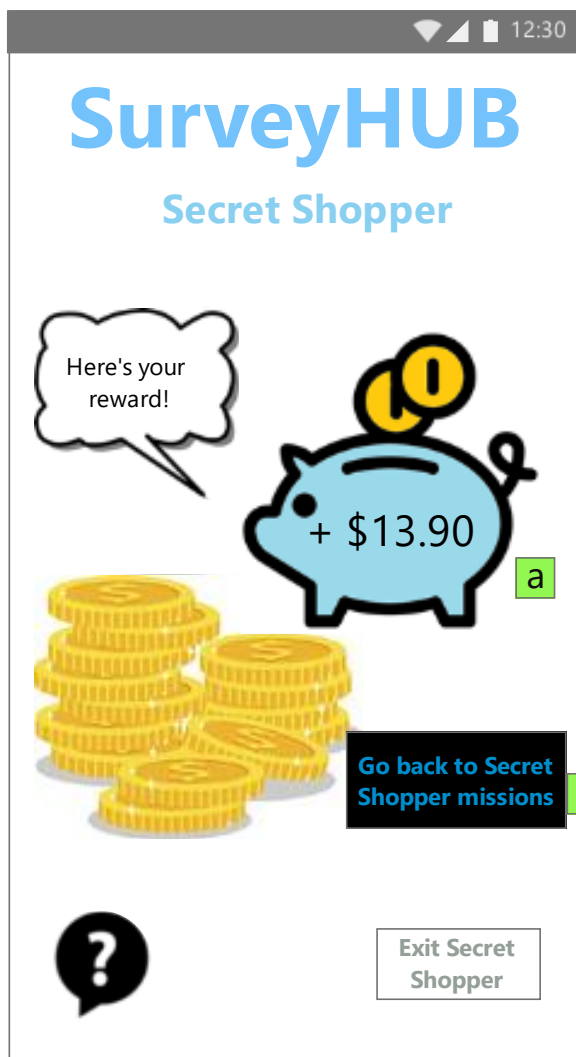
a. Amount of monetary reward earned for secret shopper mission. The increase pay or monetary value will encourage users to do more surveys to receive more secret shopper jobs that pay more and give more perks and rewards.

b. Takes user to Secret Shopper Missions home screen where user can view available missions. Completed missions will disappear from the Secret Shopper Missions list.

Section 4: Data model

Data Model for SurveyHUB

Consumer
Transactions_survey_QRcode

Business_establishments
Business_ID
Business_name
Business_logo
Business_main_address

Business_head_office_address
Business_head_office_contact
Business_head_office_contact_number
Business_head_office_email

Business_branch_name
Business_branch_number
Business_branch_address
business_branch_contact
Business_branch_contact_number
business_branch_email

Transactions_survey_QRcode
business_survey
Business_coupon
business_potential_coupon
Business_coupon_qr_code
Business_qr_code_redemption
Business_coupon_expiry_date
Business_monetary_reward
business_potential_monetary_reward
Business_survey_expiry_date
Business_time_to_complete_survey

Surveys
business_ID
business_name
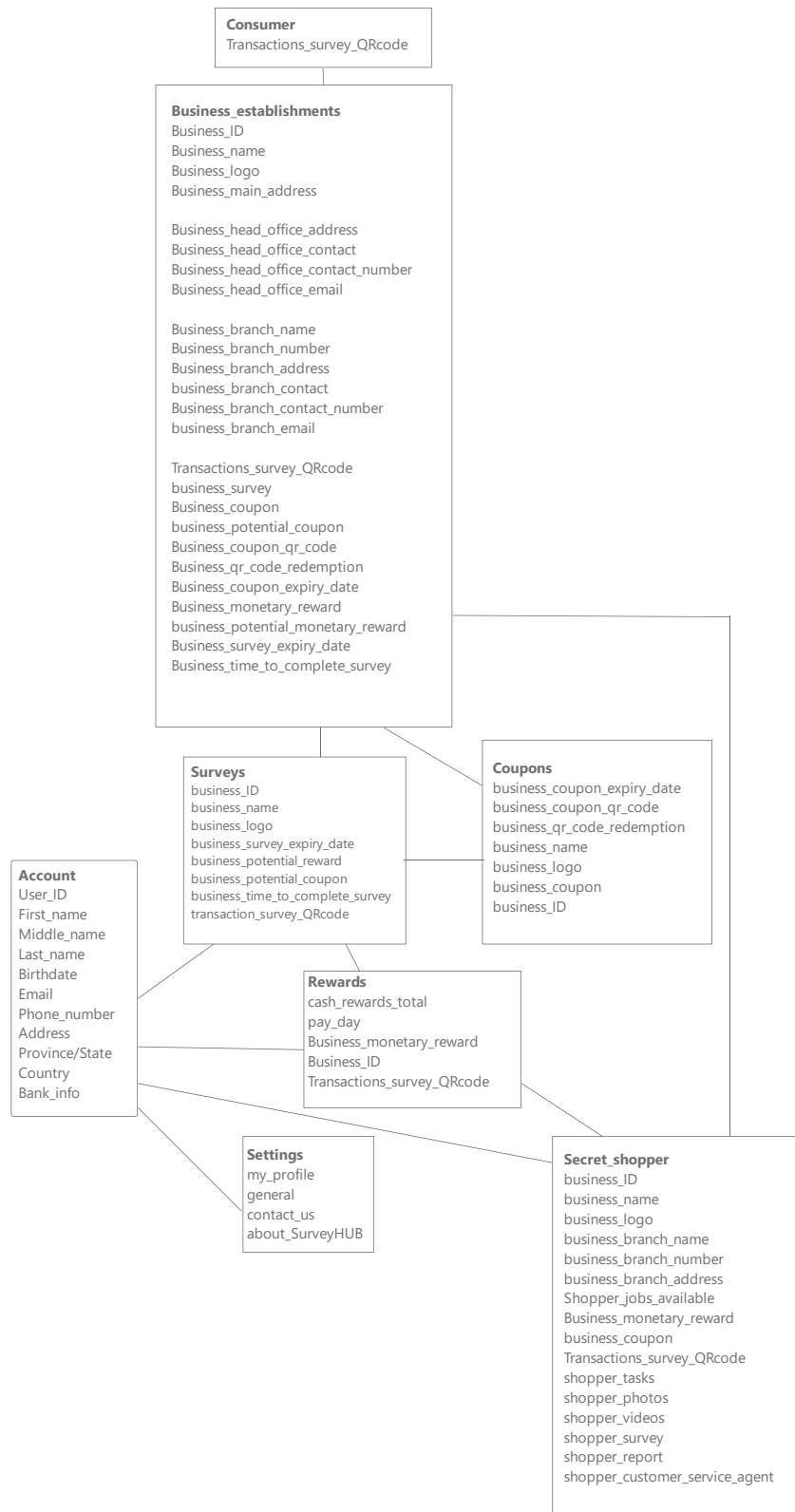business_logo
business_survey_expiry_date
business_potential_reward
business_potential_coupon
business_time_to_complete_survey
transaction_survey_QRcode

Coupons
business_coupon_expiry_date
business_coupon_qr_code
business_qr_code_redemption
business_name
business_logo
business_coupon
business_ID

Account
User_ID
First_name
Middle_name
Last_name
Birthdate
Email
Phone_number
Address
Province/State
Country
Bank_info

Rewards
cash_rewards_total
pay_day
Business_monetary_reward
Business_ID
Transactions_survey_QRcode

Settings
my_profile
general
contact_us
about_SurveyHUB

Secret_shopper
business_ID
business_name
business_logo
business_branch_name
business_branch_number
business_branch_address
Shopper_jobs_available
Business_monetary_reward
business_coupon
Transactions_survey_QRcode
shopper_tasks
shopper_photos
shopper_videos
shopper_survey
shopper_report
shopper_customer_service_agent

Section 5: Tech Stack

SurveyHUB: Centralized survey hub for consumers to complete surveys based on customer satisfaction, happiness, and the experience. In exchange for the feedback, consumers will be given monetary rewards and coupon offers to establishments.

Requirements

Consumer users of this product need:

- To be able to log-in via Google or Facebook.
- To be able to complete surveys.
  - Surveys: Feedback completed through business questionnaires.
- To have their private/personal information protected.
- To have the ability to log-in as a secret shopper and use the app to document their experience through pictures, videos, filling out a questionnaire, writing a report, and complete a tasks checklist.
  - Their location will be verified through GPS and user-confirmation to avoid being at the wrong address or inputting the wrong address.

Purpose: Centralized survey hub for solving the lack of consumer feedback data needed for analysis to create operational plans to increase customer satisfaction and happiness and provide the best possible customer experience.

Hardest problem: Having users engaged and intrigued enough to want to fill out more surveys.

Industry: SaaS / Online survey services. SurveyHUB acts as a third-party provider hosting applications and making them available to customers over the internet.

App Store Category: Lifestyle

Project size: Mid-range project

Mobile only - Native app: Can be easily found and downloaded from the app store. As surveys tend to be dry for the most part, the app needs to be engaging, easy to use, and working smoothly for users to even consider using the app. If a survey app doesn't have anything intriguing it is hard to grab users' attention and have them complete the surveys, so there needs to be multiple things that draw users in. Besides the monetary rewards and coupons; good user experience, fast performance, responsive, and high security is crucial for the app. High security is extremely significant to protect all users of the app from hacking and data leakage. User personal information including but not limited to name, address, and bank information (for direct deposit instead of a cheque in the mail) are on file. The app will primarily be used on mobile phones. It needs device features like camera and GPS for s*ecret shopper* missions. During *secret shopper* missions, pictures and videos need to be taken and uploaded. GPS function are to make sure secret shoppers are at the correct location and providing them with assistance on how to get to the point of destination (if necessary). Real-time interactions like push notifications, reminders, and messaging will be available for easy communication with SurveyHUB. Using GPS, the app will track the user's location and when the user is near an establishment where a coupon

offer can be used on account, it will send the user a notification. We are avoiding websites because of all the device features we will need including GPS, camera, notifications, and messaging.

Apple iOS technology stack programming languages: According to deviceatlas.com more users use iOS than Android in North America, therefore SurveyHUB decided to use iOS to build the native app since the target audience is North America.

Tech Stack Associated Costs

***All costs are in Canadian Dollars

Estimated engineering cost: $159,050 to $279,100

Estimated timeline from research phase to completion: 6 to 9 months

Estimated time: 70+ hours to design, 490+ hours to develop

Mid-size team with project lead

iOS application developers in Canada and America typically cost between $75 to $250 USD equivalent to $105 to $350 CAD per hour according to davzo.com.

Engineering team cost:

Developers ($105-350/hour)	$51,450 to $171,500
App Testing and Deployment	$35,000
Ongoing Maintenance Costs & Support	$33,000
Starting Total Engineering Cost to Build	$119,450 to $239,500 Canadian Dollars

Reference: https://mlsdev.com/blog/app-development-cost

iOS - Native Application

iOS: Mobile operating system exclusively for Apple iPhone, iPod Touch, and iPad

SwiftUI: Used to build user interfaces across Apple platforms with the power of Swift. It is easy to learn, code is simple and clean. Allows you to easily manage themes.

Swift: A programming language developed by Apple. It can be used to create mobile apps for iOS and other Apple products. It is similar and highly compatible with programming language Objective-C. Designed to work with Cocoa Touch frameworks.

Cocoa Touch: Application development environment for building software programs to run on Apple products including but not limited to iOS for iPhone and iPod Touch. Cocoa Touch is made up of several frameworks, the main ones being Core Animation, Core Audio and Video, Core Location, and Core Data.

The Core Animation helps create rich user experiences by allowing for smooth movement of visual elements. The Core Data provides an object-oriented data management solution and aids in defining an application's data model in a logical and graphical way.

Main functions include but not limited to Storyboards, Document picker, TextKit, auto-layout, UI state preservation, and push notifications.

Main framework include but not limited to Foundation Kit, UIKit (based on Application Kit), GameKit, MapKit, EventKit UI, Message UI, Notification Center, PushKit, and Twitter.

Objective-C: Object-oriented programming language used to derive OS X, iOS and their APIs. Main language at Apple Inc.

SQLite: Embedded relational database software for local/client storage in application software in web browsers, operating systems, and embedded systems such as mobile phones. It is used in iOS for handling data and uses SQLite queries making it easy for SQL users to understand.

AWS (Amazon Web Services): Offers reliable, scalable, and inexpensive cloud computing services that allows you to pay-as-you-go. It offers over 175 fully featured services from data centers globally. Has services including data lakes and analytics. AWS offers variety of databases that are purpose-built for different applications giving the customer the right tools for corresponding best cost and performance needed. It is built to satisfy the security requirements for high-sensitivity organizations and offers the ability to encrypt that data.

Apple X-code: Integrated development environment containing software development tools to create software for Apple products: iOS, iPadOS, watchOS, tvOS, and macOS.

iOS SDK: Software development kit for development of mobile apps on Apple's iOS operating system.

Native Application: SwiftUI

User's Phone

Client-side

Back-End Framework: Cocoa Touch

Programming Language: Objective-C

Database: SQLite

Web Server: AWS

Operating System: iOS Toolkit (Apple Xcode & iOS SDK)

SurveyHub Server

Server-side

Section 6: Risk Zone

The biggest potential trap for my application is risk zone 6, data control and monetization. SurveyHUB will be collecting users' personal information including but not limited to legal name, address, phone number, email, birthdate, bank information, and shopping behavior. All of this is needed to issue cheques or direct deposit for monetary reward system and data sent to corresponding business partner. Users will know about their data being sold to establishments, as it will blatantly be stated in the app under *Privacy Terms* which is how SurveyHUB can afford to compensate consumer users.

The users will not have the right and ability to access the data SurveyHUB has collected about them. They can however change their details under *My Profile.* To support users in knowing about themselves, the app can offer virtual badges for using a certain number of coupon offers, doing a certain amount of surveys, and doing surveys for the same establishment a certain number of times.

Users share in the profit of that data when they complete surveys and earning monetary rewards. When they complete enough quality surveys, they get an opportunity to work for SurveyHUB as a *secret shopper* with better pay, perks, and freebies.

Users would not be able to share and monetize on their own independently without completing surveys.

If bad actors were to steal the data, it would leak partnered establishment information and consumer user personal information. They may be able to alter the data meant for the establishment giving false or incorrect information, resell the data, or use the data for making their own operations plan. The worst thing that could happen is data showing the world the confidential operations information an establishment runs by. Another thing that could happen is the personal consumer information being sold and scamming methods are used on consumer users through phone call and email.

The policy in place will be to destroy the customer data if shut down. The customer data will be transferred to the new company if it were to be bought or sold.

I will need to instruct my engineering team to really concentrate on the security to prevent security breach. The age of consent is 16, so users under the age of 16 cannot use the app, this is to avoid privacy issues for minors, so age verification must be put into place at the beginning of the app.

SurveyHUB Prototype

Link: https://xd.adobe.com/view/39169857-0387-4a98-4249-2e7729118a3e-4f27/

Please note:

This is only a demo with guidance on which buttons to push to proceed.