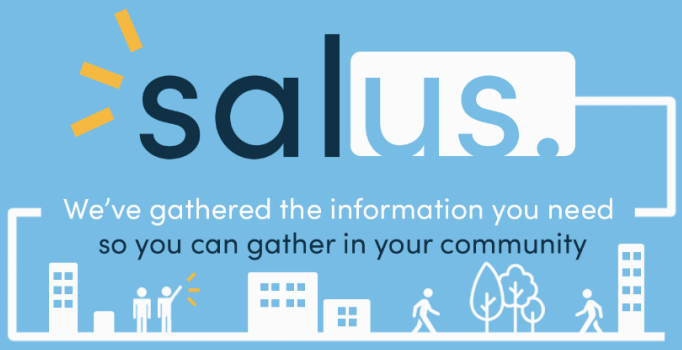

DESIGN SPECIFICATION

University of Washington
HCDE 518 Autumn 2021

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In this Document

1. PROJECT OVERVIEW

1. Project Overview

Problem Context and Background

Do I need my vaccine card? Do I need my mask? Do I even have my vaccine card? Where do I go to check COVID-19 requirements and are they even up to date?

As the COVID-19 pandemic has progressed over the past few years, we continue to be inundated with information, rules, and responsibilities that are constantly changing. As these keep building, so have frustrations surrounding them. Many feel detached from and confused by navigating the pandemic at this point, leading to exasperation and complacency.

But there's a way to combat this. What if there was a central platform that consolidated all of the rules and requirements for your favorite places and provided a personalized, hassle-free way to store and present your documentation? Could we make the process of distributing and sharing information about requirements and regulations easier for those who are responsible?

Design problem

Design question

How can we make accessing, compiling, and sharing information about changing pandemic requirements in local spaces and providing documentation more easily accessible while incorporating community and relevant data?

Target users and stakeholders

Primary users

- Information gatherers: English speaking adults who visit public spaces
    - **Locals:** Those currently living in their city* who are visiting public spaces
        - Because of time and resource constraints, our primary users were mainly restricted to English speaking adults in the Seattle, Washington area
    - **People leaving the area:** People currently living their city who are visiting other cities or states
    - **Visitors/newly moved:** People who are visiting the city or recently moved to their city
- Information distributors
    - **Corporate:** Those in positions of power in corporations that set rules and guidelines to be enforced by the rest of the company and its employees.

- **Large businesses:** Businesses that are overseen by large corporations (e.g. Target)
- **Independent/small businesses & business owners:** Those that run businesses that are not overseen by larger corporations
- **Managers/higher-level employees:** Those that oversee other employees and communicate information to them. Might also have direct interactions with visitors/customers/patrons.
- **Customer-facing employees:** Employees that have direct interactions with visitors/customers/patrons

Extreme/edge case users

- High risk individuals
  - People who are at high risk of severe COVID due to pre-existing medical conditions
- People living with high-risk individuals or children
  - People who are living with someone at high risk of severe COVID due to pre-existing medical conditions or children who are not yet able to get vaccinated
- Healthcare workers
  - May be following different/stricter institutional guidelines, as well as coming into contact with high-risk individuals. As "information distributors," also advise patients about what precautions to take based on their personal circumstances.
- People who can't get vaccinated yet
  - Individuals may not be able to get vaccinated yet for a wide range of reasons, including medical reasons (e.g. cancer treatment, allergies), financial/work-related reasons (e.g. cannot take time off from work if develop side effects from vaccine), concerns about immigration/lack of documentation, etc.

Other stakeholders

- Local and state governments
  - State, county, and city officials that decide on and enforce COVID-19 mandates and guidelines
- Vaccination institutions/centers
  - Places that administer COVID-19 vaccines and vaccine documentation
- Other platforms that provide similar information
  - Platforms that also distribute information about COVID-19 requirements and guidelines in general and in regard to public spaces (e.g. Google Maps, restaurant websites)
- News/media outlets

Non-users/anti-users

- People/bots distributing misinformation
- People who don’t care about or don’t intend to follow the guidelines

Document audience

The intended audience for this design specification is the development team in charge of implementing Salus, both its digital and physical components. This document describes the project and covers the key functionalities and features of Salus along with their supporting research and rationales.

2. RESEARCH

Exploratory & foundational research

Methods

Survey

Description:
We designed a survey on Qualtrics in order to probe these main points: What are the most confusing and/or troublesome parts of navigating changing rules for people who visit these places? How do people learn about the guidelines and requirements for places they visit? How would they want to, ideally? The survey contains a variety of question types, including multiple choice questions, free response, and ranking questions. There are two sections, one that focuses on learning about COVID-19 guidelines and requirements in different places, and one about vaccination documentation and showing proof. The survey takes about 10 minutes to complete and allows us to explore a variety of information. It is structured to address key points that our group identified as potentially important, and also to allow participants to express their thoughts freely through probing questions.

Users:
39 total responses

- Age range: 20-57 years old
    - Skewed younger: 29/39 (96%) under 30 years old
- Occupation: 28 working professionals, 4 students, 5 declined to answer
- Gender: 18 female, 14 male, 6 non-binary/third gender, 1 declined to answer

Rationale:
To complement our in-person research methods, the survey was chosen to probe people's own perceptions of these systems and allow them to elaborate further than we would be able to glean from observations in real-time. Since we were at the beginning of our research process when the survey was conducted, we needed to explore and tease apart what a large number of people themselves think of these systems, good or bad, rather than just rely on our own thoughts and intuitions. By distributing a survey, we could gather a large number of responses, more than we would gain by any in-person methods and be able to better quantify them.

Diary study

Description:
We conducted a diary study with users from our primary stakeholders group; adults who visit public spaces.

The diary study consisted of two parts:

1. A 10-minute daily response form regarding their daily outings and interactions with COVID-19 requirements distributed via Google Forms that participants had to fill out for three days during the week of the study
2. An exit interview at the end of the three days.

Before the start of the diary study, all users were given a 15-minute introduction, on-call or in-person, covering the purpose of the study, the team, instructions about filling out the form and an agreed upon date and time for exit interviews. The daily response form contained open ended questions about places participants visited that day, if they looked up the COVID guidelines in that place and their source of information, issues while looking for information, issues during outing, and if they were unable to visit any place because of the COVID rules. We monitored responses to the forms daily and sent reminders to participants if they had forgotten to fill the form on any given day.

The interviews ranged from 35 to 60 minutes and were recorded with consent from participants and were conducted in the English or participants' native language or both as per their comfort. They were semi-structured open-ended and asked participants about their experience with COVID-19 rules and regulations, such as familiarity with protocols, how they find and share information about these protocols, travel habits, and any frustrations/difficulties they have surrounding these in additions to any suggested changes they had for the system.

Users:
5 total users

- Male, 28 years old, software engineer
- Female, 30 years old, PhD candidate
- Female, 28 years old, master's student, Seattle
- Female, 26 years old, acupuncturist, Seattle
- Female, 30 years old, master's student, Seattle

Rationale:
The intent of the diary study was to understand how individuals find out and navigate COVID-19 rules in the places they visit in their daily lives. By employing a more naturalistic approach with

little interference from our end, we hoped to gain raw data about people's current interactions with these systems. This information is important to inform our decisions about how to fit our design into current habits and processes amongst the general public.

Interviews

Description:
We conducted interviews with "information distributors" who are responsible for compiling rules for individuals visiting places they were responsible for managing. After collecting information about the participants roles and responsibilities, participants were asked about their experiences with navigating requirements/mandates as they have changed, methods of communicating information to patrons/visitors, potential recipients of the information and the content of information, challenges in communicating rules, dealing with issues of confusions/miscommunications between patron/visitor/consumer and them/the institution, things which have worked and those which have not, and suggestions for improving the information dissemination system. The interviews ranged between 30 to 45 minutes in length and were recorded after seeking consent from participants. All interviews were conducted in English.

Users:
3 interviewees

The users interviewed were all living and working in Seattle, Washington. Their occupations are:

- Office Manager and Building Coordinator
- Hotel Rooms Controller
- Analyst for Washington State Department of Corrections

Rationale:
"Information distributors" are just as important as "information gatherers" in the current systems and in the scope of our solution. Thus, it is vital to understand their roles, processes, and thoughts so that we can account for all sides of the equation to create a holistic solution that does not leave any factor out. Ultimately, the flow of information starts from people and institutions in these roles, so these perspectives and contexts are necessary for comprehensive view.

Competitive analysis

2. Research

Description:
We conducted a competitive analysis with platforms that had similar or parallel features, functionalities, and goals to those we hoped to incorporate into our design. Through both our team members' previous knowledge and researching similar platforms, we generated a list of platforms that are currently being used to address areas in our problem space. We registered for these platforms to use them ourselves, if possible, and also did online research to find out how users are describing their experiences using these platforms.

Platforms analyzed:
5 platforms:

- Google Maps
- Citizen
- Washington Exposure Notifications (WA Notify)
- Clear
- New York State's Excelsior Pass

Rationale:
It comes as no surprise that others have also been working to find solutions to this and similar problem spaces. By learning about and understanding existing options for users, we can gain insight into what is working and resonates with users, and what pieces may still be missing. It also helps us avoid designing a redundant solution.

Research findings

- The majority of individuals feel some **confusion, frustration, or anxiety** when navigating current pandemic requirements. Specifically, users are frustrated by conflicting information across multiple, difficult-to-navigate sources.
    - When checking COVID-19 requirements, 60% of survey respondents reported feeling anxious or frustrated. When asked whether they knew the COVID-19 guidelines in their area, 49% of survey respondents reported that they were somewhat sure, unsure, or did not know.
- Many individuals on both information gatherer and distributor ends experience **friction** at the entrance of public spaces. The design of the vaccine cards and **lack of a widespread convenient digital option** contribute to this friction.
    - This was evident in both our survey results and interviews with information distributors.
    - Even in the platforms that we analyzed that use a method of code generation and scanning have the limits of being state specific or having previous connotations of being a platform used for different purposes (e.g. Google Maps, Citizen)
- Many individuals **do check requirements** for exceptional outings, like attending an event. Information is often distributed by email, though it often gets lost in the process and over time.
    - This was indicated both in the survey results and in our interviews with information distributors.
- Though users generally do not look up requirements for places that they regularly visit, they are sometimes **caught off guard by updates** to the requirements that they did not know of beforehand
    - This was indicated both in the survey results and in our interviews with information distributors.
- In general, individuals experience a **disconnect** between COVID-19 data and local regulations leading to **confusion** about the reasoning behind regulations. Relationships with the data have also changed as the pandemic has progressed. Whereas information sharing has previously been scary and punitive, people are now generally more interested in **community-centered** and, perhaps, even **occasionally delightful information sharing**.
    - This was discussed by interviewees during a number of interviews that occurred during the diary studies
- Varying levels of technology proficiency leave some people out of current solutions
    - This was discussed in our interviews with information distributors, who interact with a wide variety of individuals

- This was also evident in the fact that all of the platforms in our competitive analysis required a rather high level of technological proficiency and had no analog components

Design requirements

1. The solution should be systematic and uniform, so that information can be understood quickly and easily
2. The solution should be easily implemented alongside existing information flows and decision-making processes
3. The solution should be adaptable to the constantly changing landscape of the COVID-19 pandemic
4. The solution should be easily shareable, as many people find out about changes through word of mouth
5. The solution should highlight the relationship between requirements and community well-being, as opposed to a punitive approach
6. The solution should deliver information directly to users
7. The solution should provide a frictionless experience at the entrance of public spaces
8. The solution should be accessible to users with varying levels of technology proficiency

Personas

Persona 1

The Busy Bee: No time for hassle

Lily K.

AGE	26
EDUCATION	Masters
GENDER	Female
OCCUPATION	Start-up founder
LOCATION	Seattle
TECH LITERACY	High

> I need an efficient way to show proof of vaccination and check COVID-19 rules when I go somewhere

Personality

Extroverted | Team Player

Bio

Lily has lived in Seattle for 2 years. She's a full time business owner and a part-time graduate student. She goes to the gym 2-3 times a week on average, and goes to a restaurant 3-4 times a week on average.

Core needs

- She needs information to be easily shareable with her friends.
- She needs information to be delivered directly to her.
- She needs frictionless experiences when entering public spaces.

Frustrations

- She feels that she got caught off guard by changes in requirements.
- She thinks that information that has been communicated to her is not easily accessible (e.g. emails from the past).
- She feels that it's cumbersome and frustrating to keep track of and pull out vaccination card.

Brands

Platform/Tech

Laptops

Smart Phones

Internet

Persona 2

The Front Man: A friendly face and helpful hand

David L.

AGE	46
EDUCATION	Bachelor's
GENDER	Male
OCCUPATION	Front desk at a hotel
LOCATION	Seattle
TECH LITERACY	Medium

> How can I save time for both our staff and our guests who are coming from out of town and don't know the COVID-19 protocols here?

Personality

Introverted | Organized

Bio

David has lived in Seattle for 4 years. He works full time at the front desk of a large hotel as the hotel room controller. His job is front-facing so he talks to many guests and visitors daily, but since he is not the most outspoken person, he gets tired of talking all day.

Core needs

- He needs solutions that can be integrated with the existing information flows and decision-making processes in his company.
- He needs a system that is easy to understand for the out-of-city/state visitors who may be unfamiliar with the requirements.
- He wants to be able to communicate requirements efficiently and quickly, especially on busy days.

Frustrations

- He thinks that having to put signs up all over the hotel and lobby takes away from the hotel experience and aesthetics.
- He feels that guests are confused about hours and whether or not local businesses are open or closed during the pandemic.
- He thinks that having to update information across many platforms (e.g. emails, website, social media, third party reservation services) is hard.

Brands

facebook Marriott

Platform/Tech

Laptops

Smart Phones

Internet

Persona 3

The Newcomer: New home, new life, new rules

Katherine T.

AGE	26
EDUCATION	Masters
GENDER	Female
OCCUPATION	Software engineer
LOCATION	Seattle
TECH LITERACY	High

> "I'm confused about these new COVID-19 requirements, but I want to help my community!

Personality

Introverted | Independent

Bio

Amy just moved to Seattle for work, and she's originally from Texas. She lives alone and does not know many people in the area. She's active on social media, but most of the people she knows are not from the Seattle area. She enjoys going to places alone or with 1-2 people, including cafes, restaurants, museums.

Core needs

- She wants to feel like what she is doing is actively contributing to her new community.
- She needs information to be clear and easily accessible.
- She needs information to be consistent across platforms and not in contradiction with each other.

Frustrations

- She found that she cannot use the WA state vaccination record app since she was vaccinated out of state.
- She has a fear of losing her vaccination record because she doesn't know where to get a replacement.
- She's adjusting to new requirements and norms that are very different from where she moved from.

Brands

facebook android

Platform/Tech

Laptops

Smart Phones

Internet

Usability Testing

After developing our initial low fidelity prototype, we conducted usability testing to evaluate our design choices and identify areas of improvement to implement in our mid and high-fidelity prototypes. Users were asked to walk through a number of scenarios and tasks explained by the team member. They were encouraged to think out loud during the process, notify if they are stuck, and ask any questions that come up. Users were also asked a short series of questions before and after performing the tasks. *Detailed information and scripts available in the Appendix.*

Users

7 total users

- Male, 28 years old
- Female, 30 years old
- Male, 67 years old
- Female, 62 years old
- Female, 57 years old
- Female, 34 years old
- Male, 25 years old

The age range (25-67 years) in our usability testing sample ha much greater variety than those used in our exploratory research. This allowed us to gain valuable insights from a demographic that has otherwise not had a voice in our design process.

Tasks tested

Sign up and onboarding

Scenario: You have heard about this app from a friend and do not know too much about it. You decided to download it to check it out. Open the app and complete the onboarding process to learn more about the platform. The task is complete when you move past the registration screen.

Uploading vaccination card

Scenario: You realize that you do not want to carry your vaccination card around with you or have to scroll through your phone to find a picture of it, so you decide to upload your proof of vaccination to the platform. The task is complete after you see that your documents have been verified.

Ordering accessories

Scenario: You decide that it would be convenient to have some physical accessories with your code on them, so you don't have to take out your phone every time you go to a restaurant. First, navigate to see your Code. Then, order a sticker and keychain with your Code. The task is complete once your order has been placed.

Bringing up your Code

Scenario: You have just arrived at a restaurant for dinner and the host asks to see your proof of vaccination. Pull up your Code in the app for them to scan. The task is complete once your Code is displayed on the screen.

Checking COVID-19 requirements for a saved place

Scenario: You are planning to head to your favorite coffee shop and decide to check to see if they have updated their COVID-19 requirements. Since you visit this coffee shop often, you have already saved them to your favorite places. Navigate to your saved places and check the COVID-19 guidelines for that place. You will see that it is labeled as "Location 2" for the purposes of this prototype and usability test. The task is complete once you have seen the COVID-19 requirements for this place.

Adding a new place to your saved places

Scenario: You have just joined a new gym that you plan to visit regularly. Since you will be visiting often, you decide to add the gym to your saved places so you can get updated on any changes to their COVID-19 requirements. Navigate to where you would go to add a new place. The task is complete once you have found where to click to add a new place.

Main evaluation findings and changes

Severity 1: Prevents use of system

We did not have any issues at this level of severity

Severity 2: Significantly impairs user experience

- Issue: The definition of a "tag"***** is unclear and unfamiliar. Users thought of a "tag" as a physical tag (e.g. clothing tag). Relationship between the digital QR code and physical accessories is unclear. ****In the low fidelity prototype, My Code was called My Tag***
    - Changed the name of the Tag to Code, which has a clearer connection to the digital qualities of the Code.

- Issue: “Upload Photo” and “Take Photo” are unclear. Users get confused about the type of photo and of what. Users erroneously assumed that they were uploading a photo of themselves or a photo unrelated to the document. Photo is often understood as a photo of a person. Confusion about the two options of “upload” and “take” potentially meaning that you have to do both.
    - Change: Updated wording to indicate reference to the type of document: “Take photo of [documentation or identification]”, “Upload [documentation or identification] from Photos” to make clear what the user should be uploading
- Issue: General confusion about terms (“My Places”, “My Institutions”, “Report”)
    - Change: Added informational pop ups throughout the platform to address areas of possible uncertainty.

Severity 3: Minor improvements to be addressed if possible

- Issue: The meaning of “verified” is unclear. Users thought that it meant that they verified the document on their own. Checkmark icon on the verification pending page is unclear and/or makes it seem like it is already verified.
    - Change: Removed the checkmark icon and replaced it with a progress bar. Defined verification process and what happens after in both onboarding and after document upload.
- Issue: Unclear how to navigate to order physical tags after uploading documentation.
    - Change: Included instructions both in onboarding and after uploading documents to direct users to order and view their Code.
- Issue: “Proceed to shipping” is unclear versus options like: “Proceed to checkout” or “Click here to purchase”
    - Change: Updated wording to “Checkout” and “Payment”.
- Issue: The login page has the same information as the registration screen. No fields to enter name at registration or confirm password.
    - Change: Differentiated between the two processes by adding name, location, and password confirmation fields in the registration flow.
- Issue: General confusion and uncertainty about security and privacy off the platform
    - Change: Added a frequently asked questions (FAQ) page attached to a sticky button on each page that addresses these concerns.
- Issue: Newest changes to requirements for a place are not obvious.
    - Change: Implemented icons and red text to indicate the newest updates.
- Issue: Consideration for minors and those who do not use phones often
    - Change: Added Family Groups that allow users to create and access codes and information for people who are added to their group.

Severity 4: Requested functionalities & suggestions to be addressed in the future

- Additional feature: Notifications for when users are “due” for a booster or second dose
- Additional feature: Notifications for updates to requirements

Additional changes made

- Added feature to view where your Code has been scanned
- Added identification upload process
- Added share button to a place’s requirement info page
- Added clearer cancel buttons to relevant pages
- Added order history for accessories
- Added order number and order summary to order confirmation page
- Added PIN option when scanning Code for extra security and ID validation
- Changed icon for My Code from a home icon to QR code icon
- Struck through pricing on order pages to clarify that the first 5 accessories ordered are free

3. PLATFORM DESIGN

Project Scope

In scope

The following areas and main features are within our current scope of implementation and are covered in this document:

- Mobile implementation
- Sign up process
- Onboarding process
    - Uploading identification
    - Uploading documentation
    - Creating a Code
- Ordering physical accessories
- Saved places
- Explore area
- Physical accessories

Out of scope

The implementation of the following features are not discussed in this document, but are official parts of this design solution and have been discussed by our team as next steps:

- Interfaces and flows for these main features:
    - Businesses & institution registration and management
    - Assignable roles (e.g. Admin, manager, member) for institutions
    - Code scanners
    - Reporting test results
    - Code Customization
    - Viewing scanned locations
    - Family groups
    - Setting a PIN
- Comprehensive symbol/icon glossary and bank
- Media kit for information distributors
- Crowd sourced data on characteristics places (e.g. distanced space, open windows)
- Calendar integration for saved places and updates
- Integrated data and statistics
- Photo editing for clarity of uploading document photos
- Web implementation

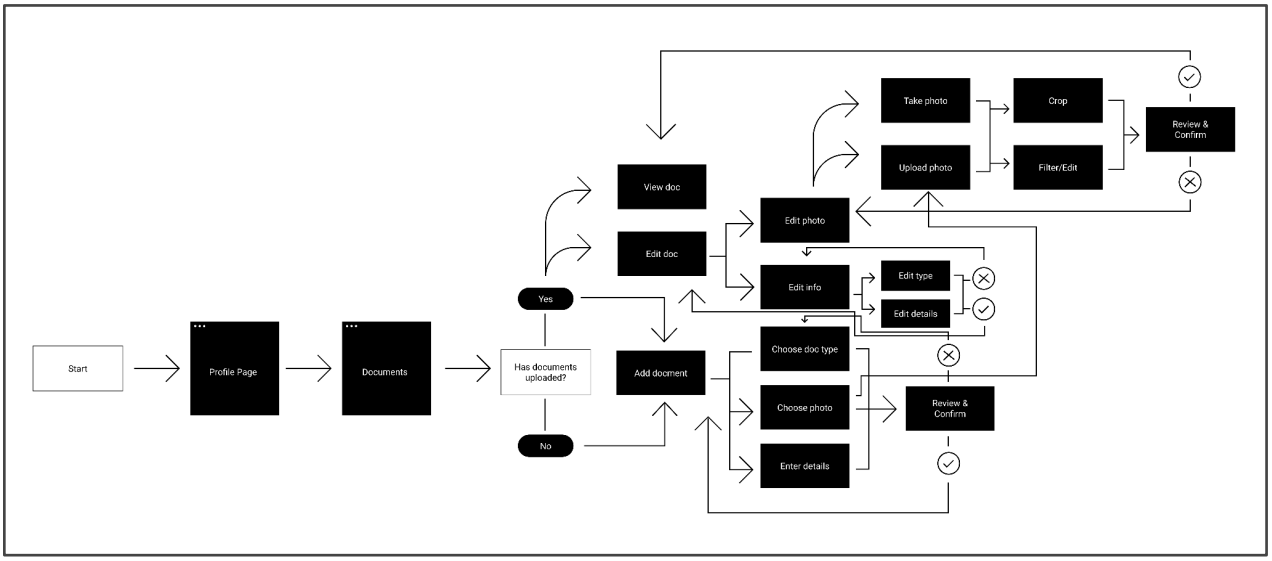
The platform is not intended to provide these functionalities:

3. Platform Design

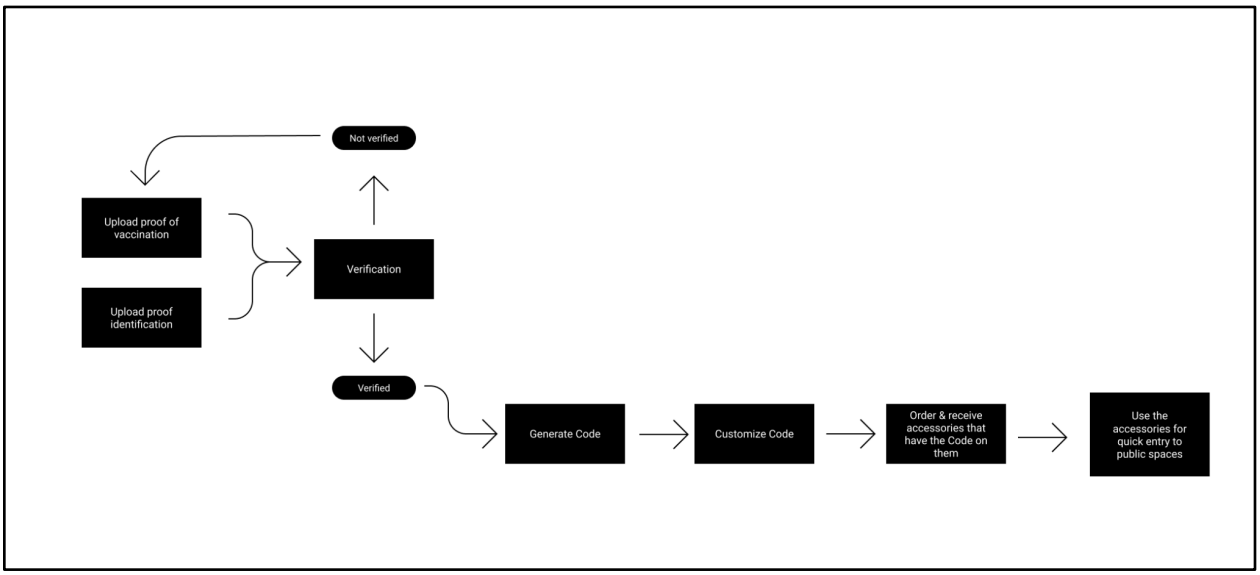
- Documentation fraud detection beyond verifying against identification information (name and birthdate), which is the current verification system in place when verifying documentation in person in the United States

High-level process flows

Adding, viewing, editing documents from profile page

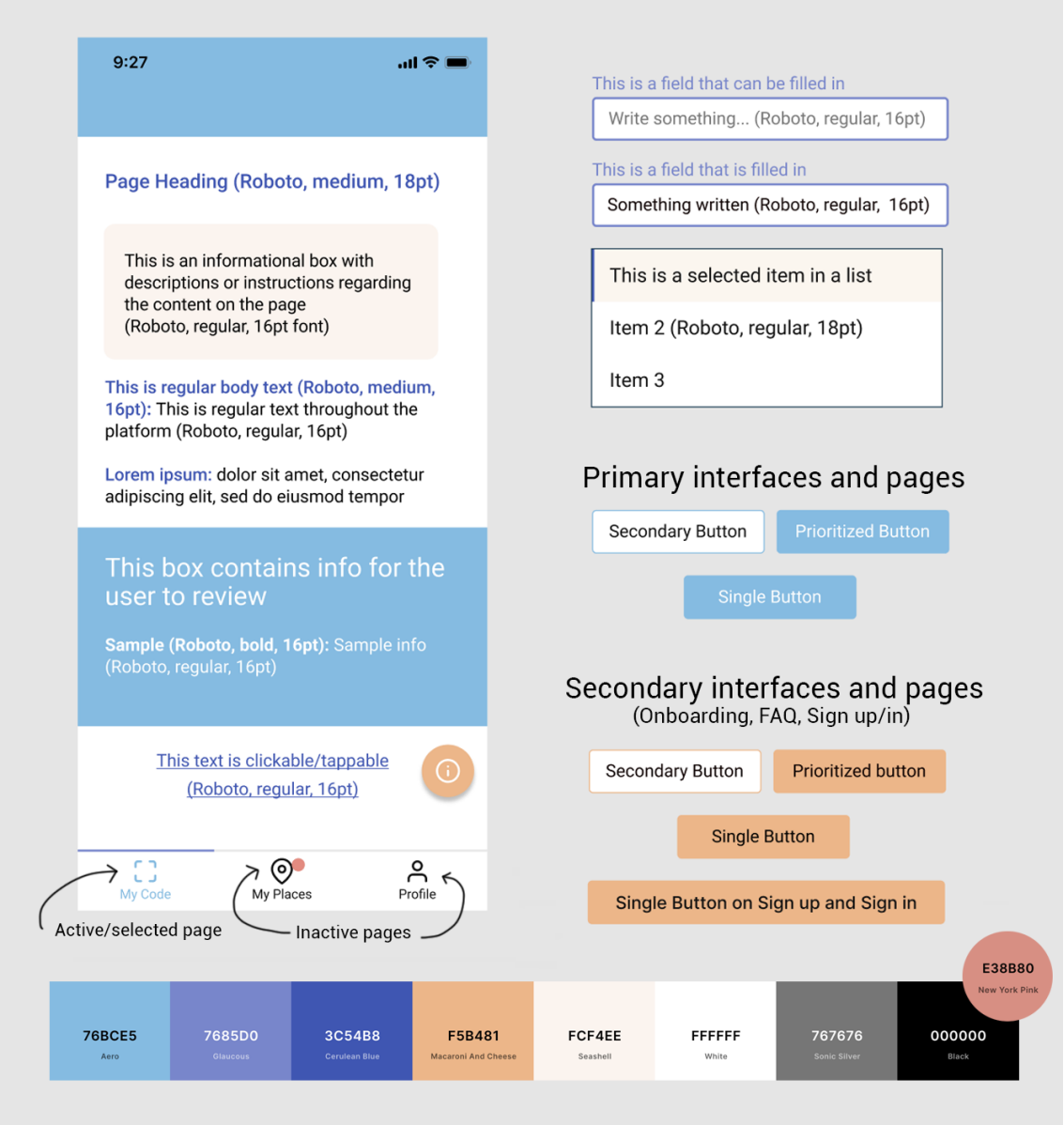


Generating a Code and using accessories



UI Style Guide

A simple design language without extraneous graphics and embellishment was opted for both to reflect the practical nature of the platform and to not distract or confuse, especially for users who are less familiar with digital technologies.

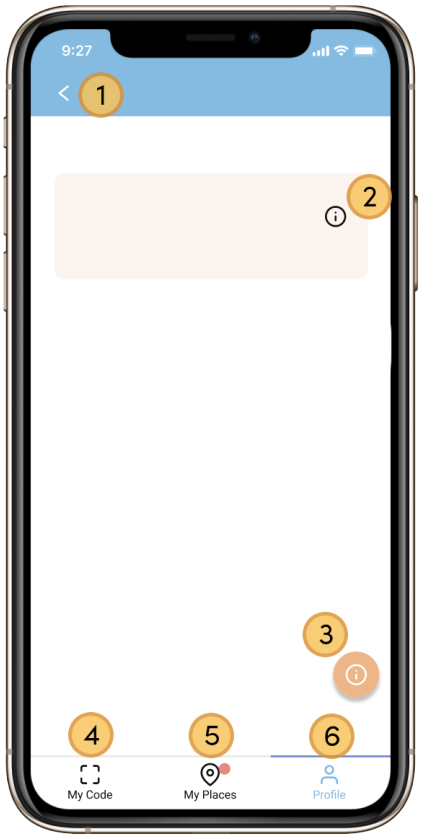


Blue was chosen as the main color because of its prevalence in healthcare settings and associations with credibility, trust, and knowledge along with cleanliness and calm. Oranges and yellows invoke community, warmth, and optimism.

Annotated UI screens

Constants

Several elements appear on a majority of screens and have the same functions and are detailed here to avoid redundancy in other sections



#	Label	Description
1	Back button	Takes user to the previous page
2	Informational popup button	Displays a popup with helpful tips, information, and/or definitions of various aspects throughout the platform. See *list of informational popups*
3	Frequently Asked Questions (FAQ) button	Displays the FAQ page

4	My Code button	Takes user to the My Code homepage
5	My Places button	Takes user to the My Places homepage
6	Profile button	Takes user to the profile homepage

List of informational popups

Popups are overlaid over the center of the screen and can be closed by tapping outside the popup box or tapping the X inside the box

Accepted documents

Valid driver's license, birth certificate, state-issued identification card, social security card, military identification card, passport, or passport card.

Location

Your current location. Can be manually set or updated automatically with GPS permission. Used to send updates relevant to your location (e.g. requirment changes on federal, state, county, city levels)

Customization

Customize your Code by changing the colors, frame, or icon. Don't worry; the QR code will never change.

My Family Group

Add other Salus members to your family group and you will be able to access their Code so they can be scanned alongside yours on the same device.

My Institutions

Keep up to date with your institutions and manage your business pages.

My Documents

Upload your documents to update your unique code. Don't worry, the QR code will never change unless you delete your Code.

Report

Report if you have a positive COVID-19 test result to selected institutions and agencies.

PIN

Your Personal Identification Number (PIN) can be used to identify you when your Code is scanned and ensure that no one else can use your Code. You will enter you PIN on the scanner's device once your PIN is activated. You can also choose to bypass enter your PIN at selected places after your first scan at the business or institution. Treat your PIN as a password and do not share your PIN with anyone.

Merchandise

Stickers: Vinyl stickers with your printed unique code.

Keychains: Keychains with your printed unique code.

Bracelets: Wearable bracelets with your printed unique code.

Masks: Reusable masks with your printed unique code.

Customization

Customize your Code by changing the colors, frame, or icon. Don't worry; the QR code will never change.

My Code's info

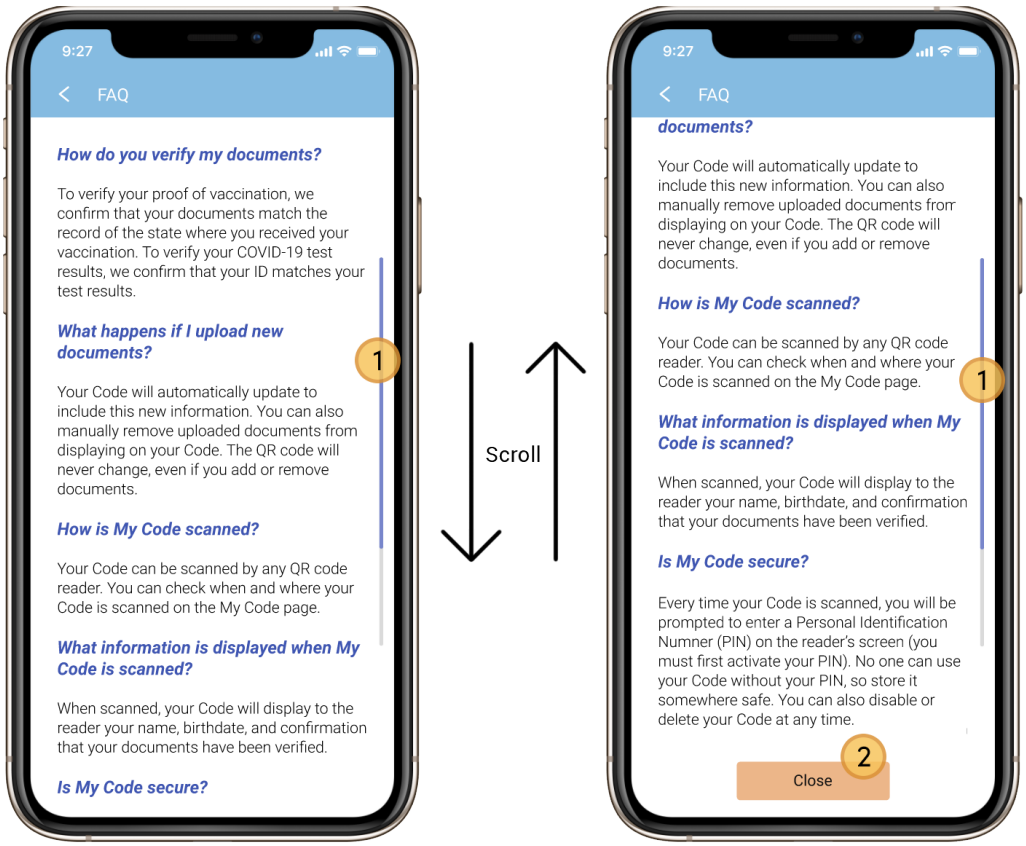
See information and documents that are attached to your Code.

Toggle between your view and a scanner's view

View scanned location

See where your code has been scanned. Can be used for securtiy and contact tracing purposes

Frequently Asked Questions (FAQ)



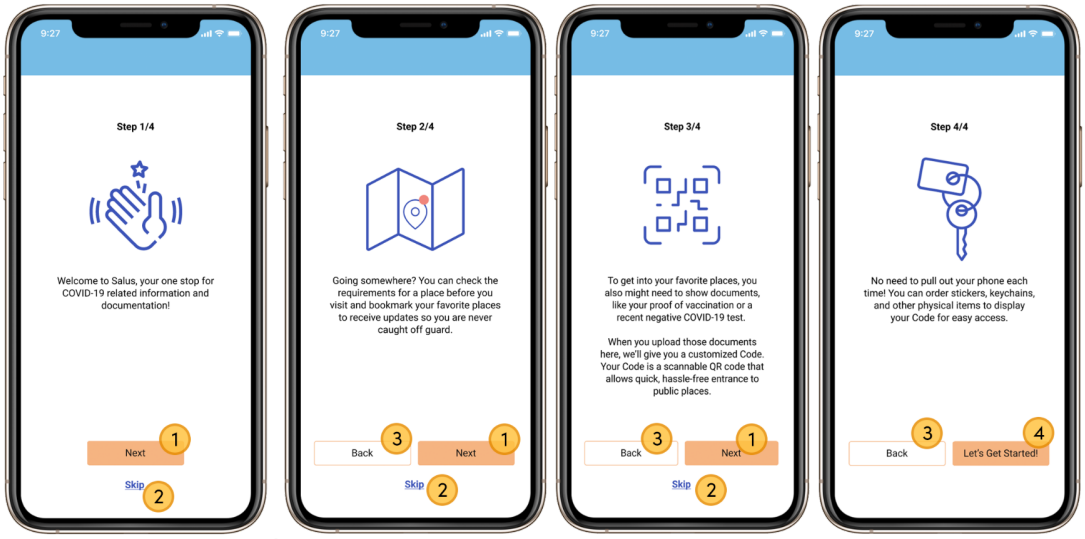
#	Label	Description
1	Scroll bar	Indicates scrollability of the page. Page is scrolled by dragging anywhere.
2	Close button	Closes the FAQ page

Setup

Splash screen

#	Label	Description
1	Splash screen	Displayed when the user first opens the app. Auto advances to the onboarding page if the user is not registered. Auto advances to the sign in page if the user has created an account. Auto advance to My Code page if the user has selected to remember their login.

Onboarding



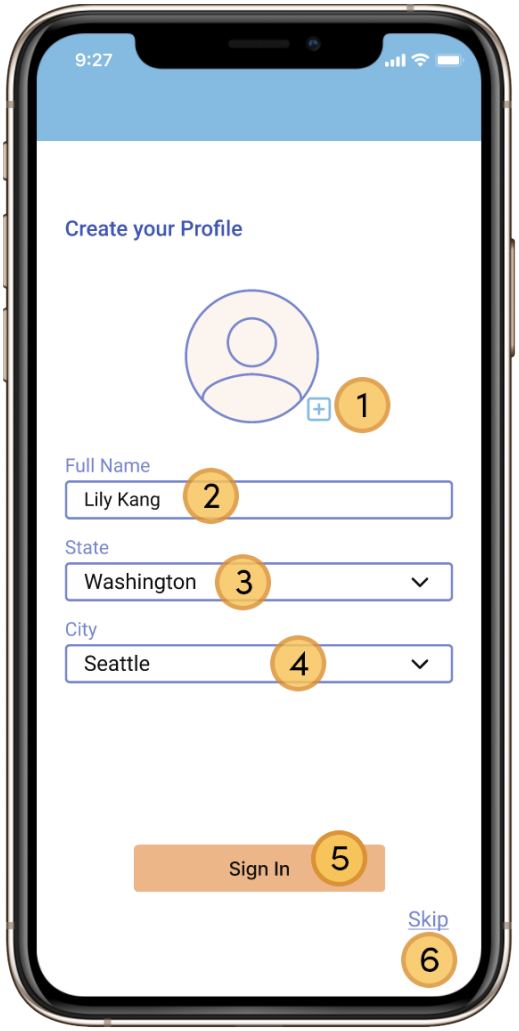
#	Label	Description
1	Next button	Advances user to the next onboarding page
2	Skip button	Skips the rest of the onboarding steps and advances user to the sign up page
3	Back button	Takes the user to the previous onboarding step page
4	“Let’s get started!” button	Takes user to the create account page

Account creation and sign in

#	Label	Description
1	Name field	User enters first and last name
2	Email field	User enters email address
3	Password field	User enters password
4	Password visibility toggle	Toggle whether or not the password is displayed or represented by asterisks or bullets
5	Confirm password field	User enters password a second time for confirmation
6	“Remember me” checkbox	Allows user to bypass login next time they open the app
7	Sign up button	Takes user to profile creation page
8	Social media sign up buttons	Allow user to sign up by connecting social media platforms. Account will be linked to the email address associated with that account.

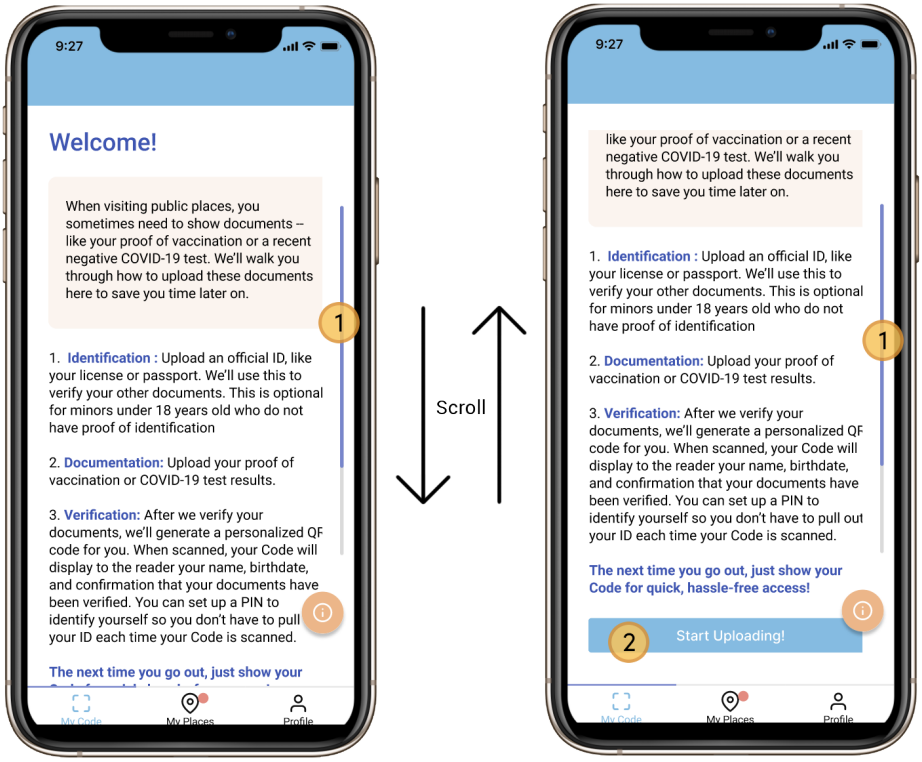
9	Sign in link	Takes user to sign in page
10	Sign in button	Takes user to My Code page

Profile creation



#	Label	Description
1	Add profile picture button	Prompts user to upload or take a photo for use their profile picture
2	Name field	Auto-filled from info entered on sign up page
3	State drop-down menu field	Displays drop-down list of all United States states and territories for user to select
4	City drop-down menu field	Displays drop-down list of all cities in the selected state for the user to select. Also has a search bar. (not included in prototype)
5	Sign in button	Takes user to welcome page and saves inputted information
6	Skip button	Takes user to welcome page, leaving profile blank except for name

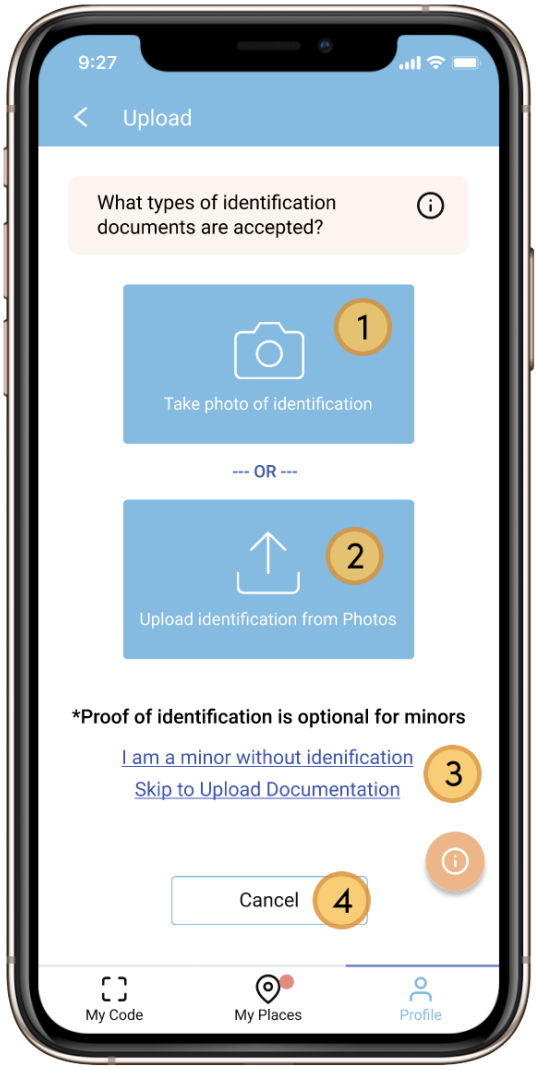
Welcome page



#	Label	Description
1	Scroll bar	Indicates scrollability of the page. Page is scrolled by dragging anywhere.
2	Start uploading button	Takes user to identification upload page

Uploading

Identification upload



#	Label	Description
1	Take photo of ID button	Allows user to take a photo with their phone's camera. Opens camera
2	Upload photo of ID button	Allows user to upload a photo from their device. Opens default gallery app.
3	Minor option button	Takes user to upload documentation page
4	Cancel ID upload button	Takes user back to welcome page

View uploaded identification

#	Label	Description
1	ID photo	Identification photo that the user uploaded
2	Edit ID photo button	Takes user back to identification upload page
3	Next button	Takes user to edit identification information page

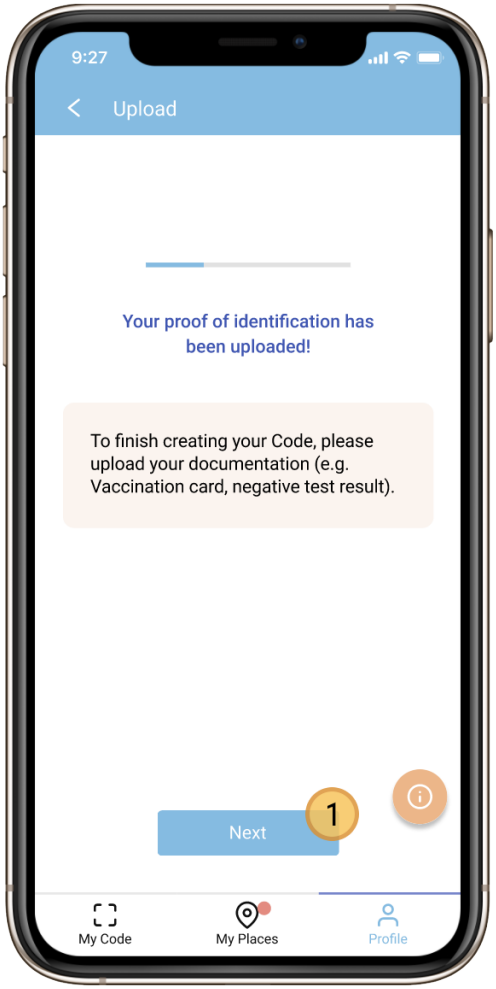
Edit identification information

#	Label	Description
1	ID photo	Identification photo that the user uploaded
2	ID type drop-down menu field	Displays drop-down menu of accepted forms of identification (not in prototype)
3	First name field	Auto-filled from user information. Can be edited.
4	Last name field	Auto-filled from user information. Can be edited.
5	Date of birth	User enters date of birth. Blank field prompts user to user MM/DD/YYYY format
6	Review button	Takes user to review identification page

Review identification

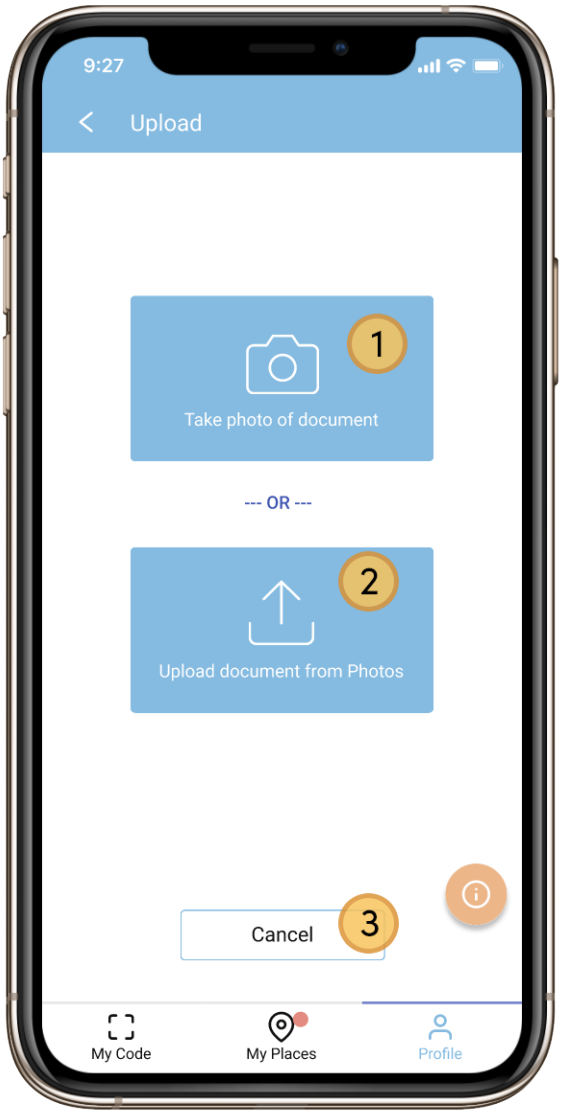
#	Label	Description
1	ID photo	Identification photo that the user uploaded
2	Identification information	Information about the Identification that user entered (name, date of birth)
2	Edit ID information button	Takes user back to edit identification information page
3	Submit ID button	Submits user's proof of identification. Takes user to upload interstitial page

Upload interstitial page



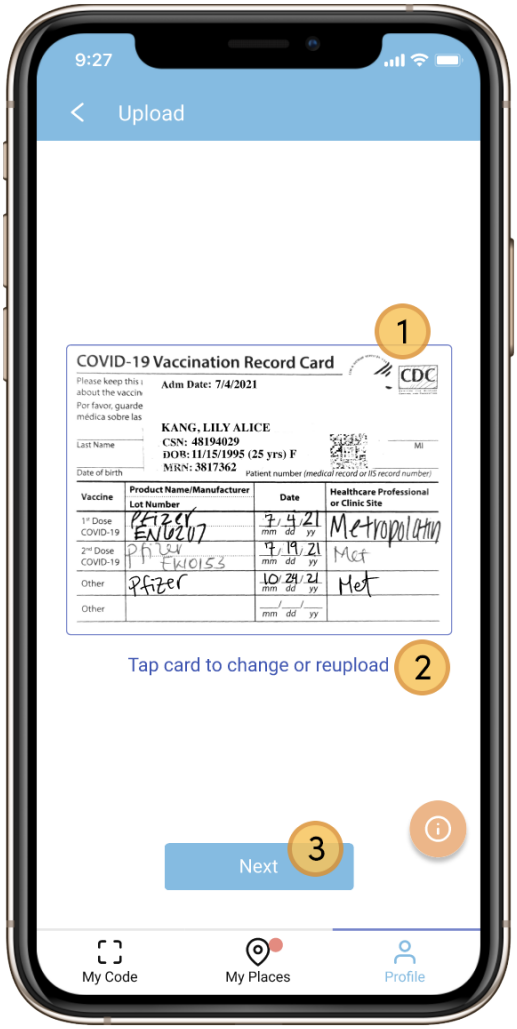
#	Label	Description
1	Next button	Takes user to documentation upload page

Documentation upload



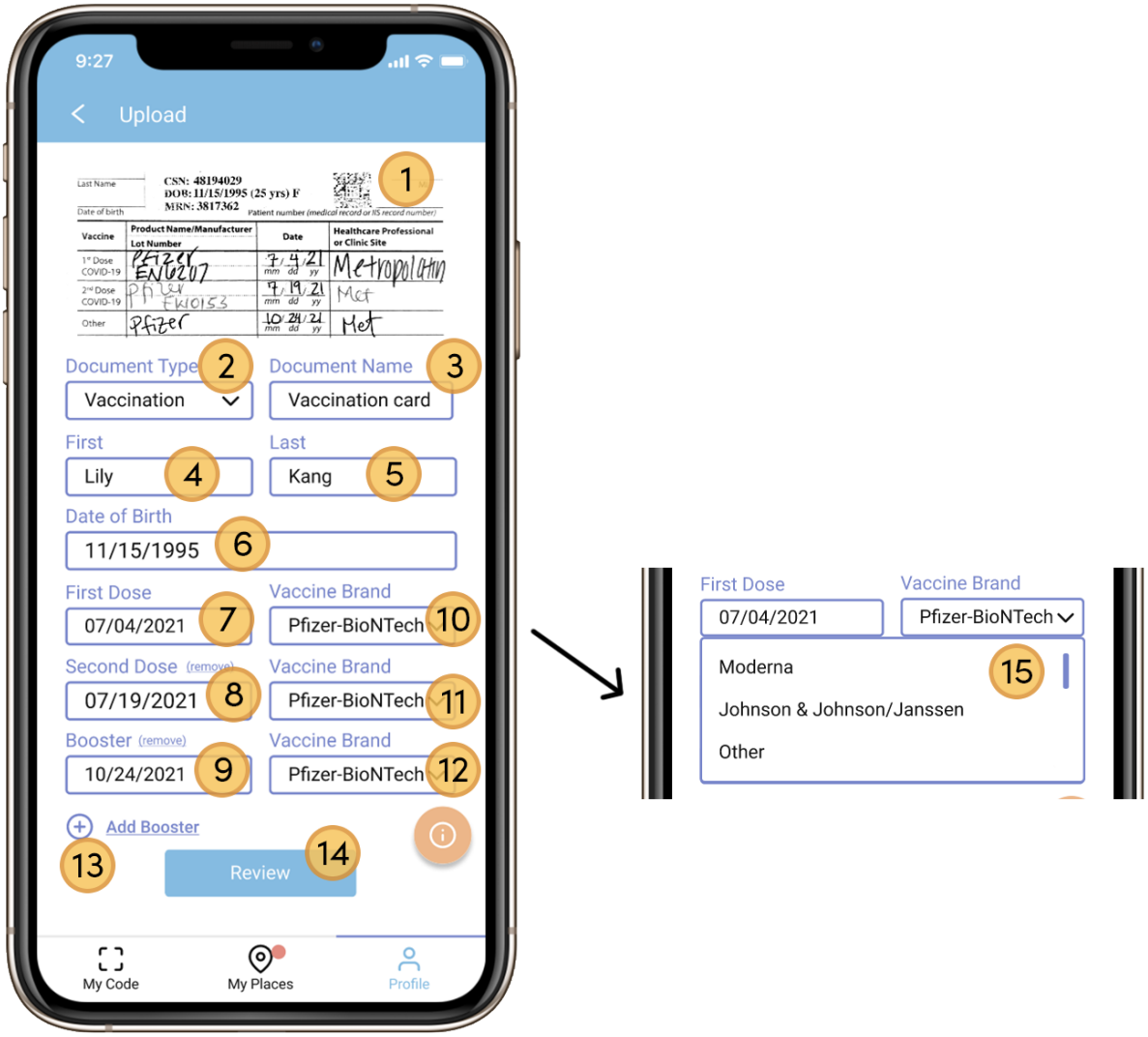
#	Label	Description
1	Take photo of document button	Allows user to take a photo with their phone's camera. Opens camera.
2	Upload photo of document button	Allows user to upload a photo from their device. Opens default gallery app.
3	Cancel document upload button	Takes user back to welcome page

View uploaded documentation



#	Label	Description
1	Documentation photo	Documentation photo that the user uploaded
2	Edit documentation photo button	Takes user back to documentation upload page
3	Next button	Takes user to edit documentation information page

Edit documentation information

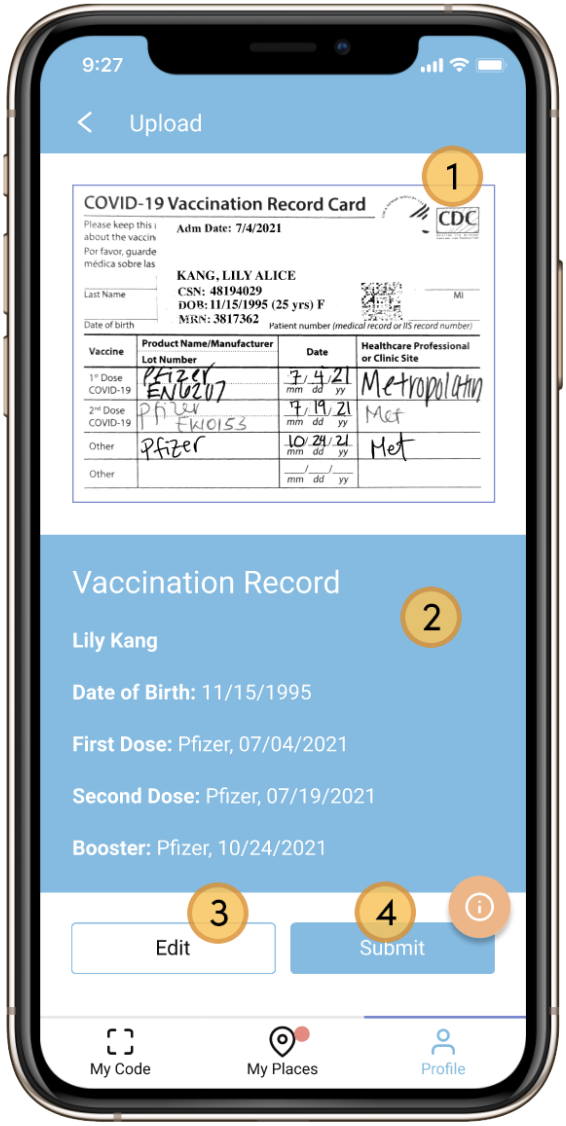


#	Label	Description
1	Documentation photo	Documentation photo that the user uploaded
2	Document type drop-down menu field	Displays drop-down menu with types of documentation (i.e. Vaccination, test result, exemption), with option for custom entry “other” (not in prototype)

3	Document name field	User enters custom name for document
4	First name field	Auto-filled from user information. Can be edited.
5	Last name field	Auto-filled from user information. Can be edited.
6	Date of birth field	Auto-filled from user information. Can be edited.
7	First dose date field	Auto-filled via text recognition from uploaded photo. Can be edited.
8	Second dose date field	Auto-filled via text recognition from uploaded photo. Can be edited. Tap “remove” text to remove second dose.
9	Booster dose date field	Auto-filled via text recognition from uploaded photo. Can be edited. Tap “remove” text to remove booster dose.
10	First dose brand field	Auto-filled via text recognition from uploaded photo. Can be edited. Displays drop down menu of major vaccine brands with option for custom entry “other”
11	Second dose brand field	Auto-filled via text recognition from uploaded photo. Can be edited. Displays drop down menu of major vaccine brands with option for custom entry “other”
12	Booster dose brand field	Auto-filled via text recognition from uploaded photo. Can be edited. Displays drop down menu of major vaccine brands with option for custom entry “other”
13	Add booster button	Adds another booster brand and date field

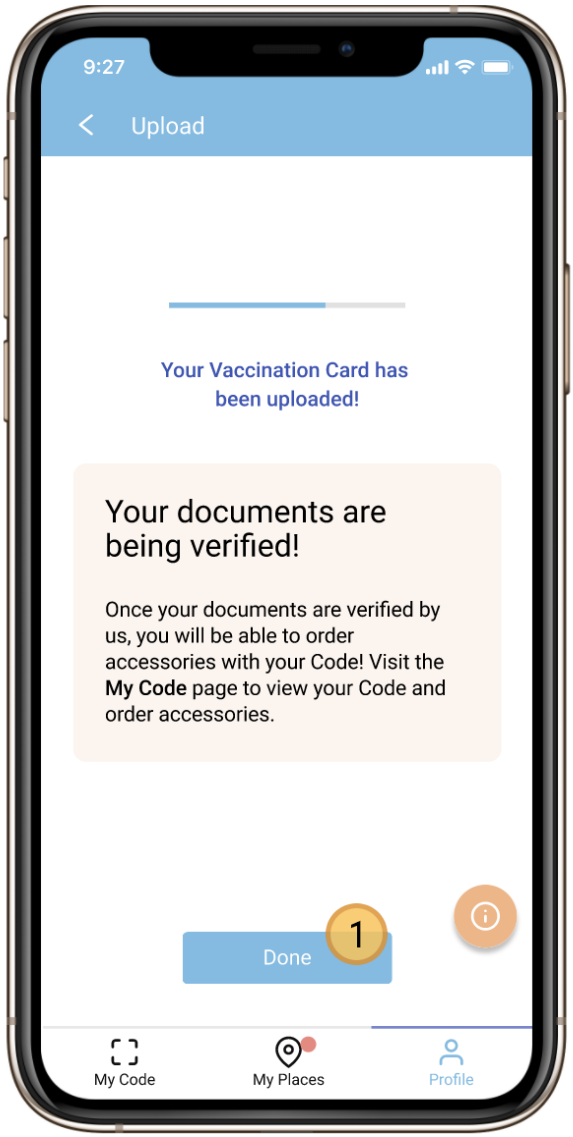
14	Review button	Takes user to review documentation page
15	Vaccine brand drop-down menu	Drop down menu of major vaccine brands with option for custom entry “other”. User taps to select and drop-down menu closes upon tap or brings up field to type in “other” entry (“other” type field not in prototype)

Review documentation



#	Label	Description
1	Documentation photo	Documentation photo that the user uploaded
2	Documentation information	Information about the document that user entered
3	Edit documentation information button	Takes user back to edit documentation information page
4	Submit documentation button	Submits user's documentation. Takes user to upload verification page

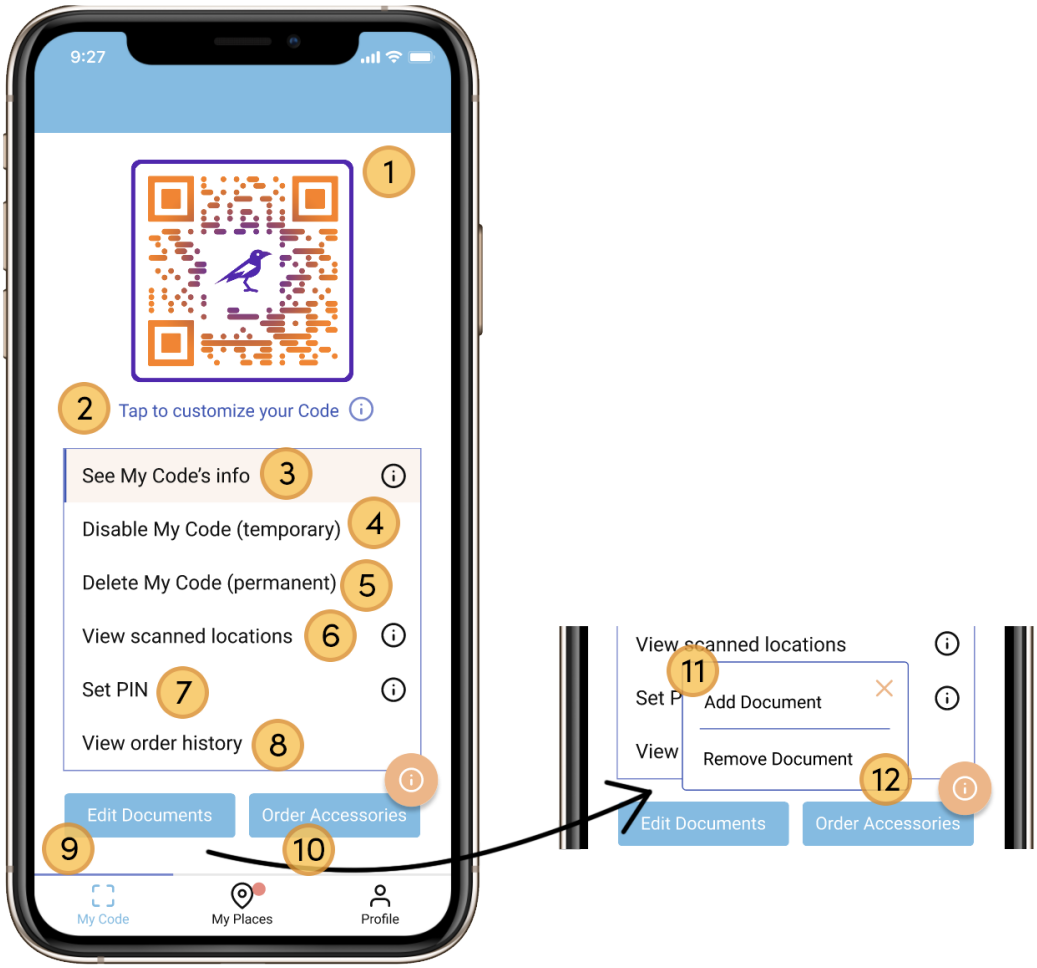
Upload verification page



#	Label	Description
1	Done button	Submits user's documentation and takes user to My Documents page

My Code

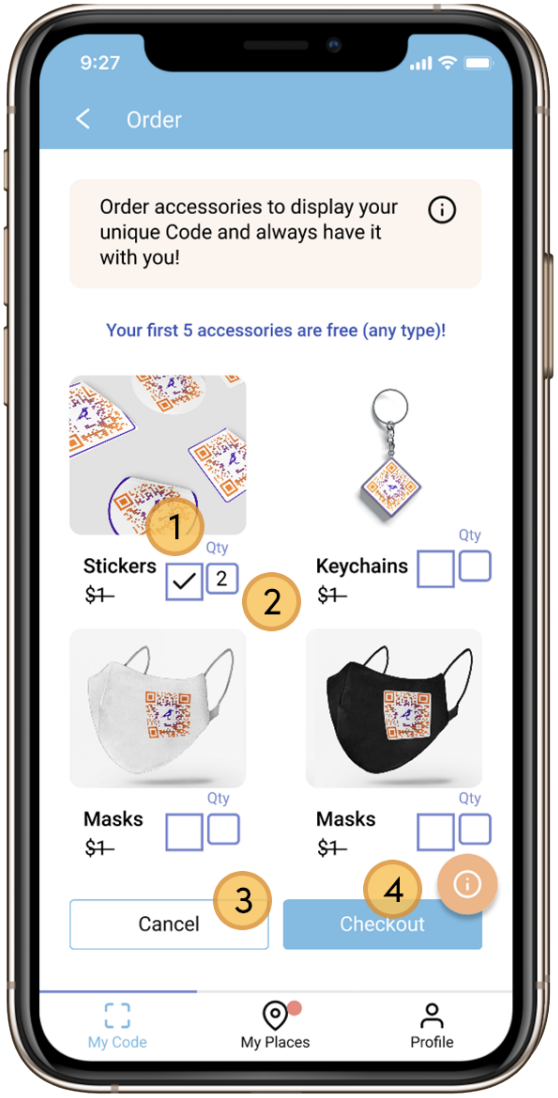
My Code homepage



#	Label	Description
1	Code	The user's unique Code
2	Customize Code button	Takes user to the customize Code page (not in prototype)
3	Code info button	Takes user to see what information is attached to their code (not in prototype)

4	Disable Code button	Temporarily disables the Code (not in prototype)
5	Delete Code button	Permanently deletes the Code. User will be able to create a brand new Code afterwards. Previous code will not be usable (not in prototype)
6	View scanned location button	Takes user to scanned locations page to see where and when their Code has been scanned (not in prototype)
7	Set PIN button	Takes user to set up PIN page (not in prototype)
8	View order history button	Takes user to view their accessory order history (not in prototype)
9	Edit documents button	Displays pop up with options to add or remove documents attached to their Code. Popup can be closed by tapping outside the box or tapping the X inside the box.
10	Order accessories button	Takes users to order accessories page
11	Add document button	Displays a list of the user's documents that they can select to add to their Code (not in prototype)
12	Remove document button	Displays a list of the user's documents that they can select to remove from their Code (not in prototype)

Order accessories

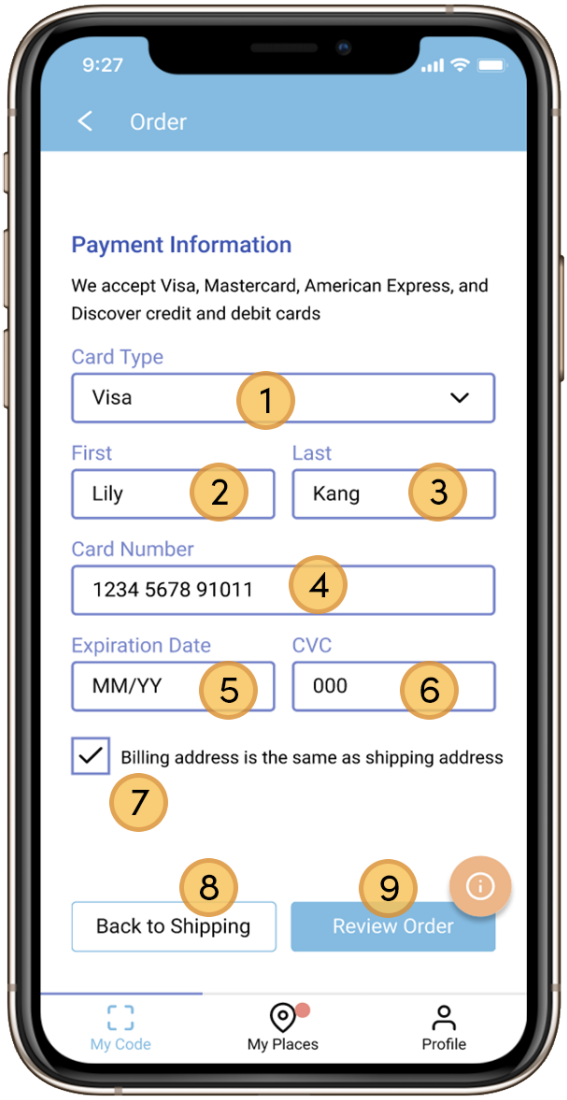


#	Label	Description
1	Photo of accessory	A photo showcasing the accessory
2	Accessory selection and quantity field	User selects the accessory to order by tapping the checkbox and typing in the quantity
3	Cancel order button	Takes user back to My Code homepage
4	Checkout button	Takes user to shipping information page
Note: not implemented in prototype, but we plan to also include informational pop ups about each product that includes details such as: descriptions, dimensions, materials		

Shipping information

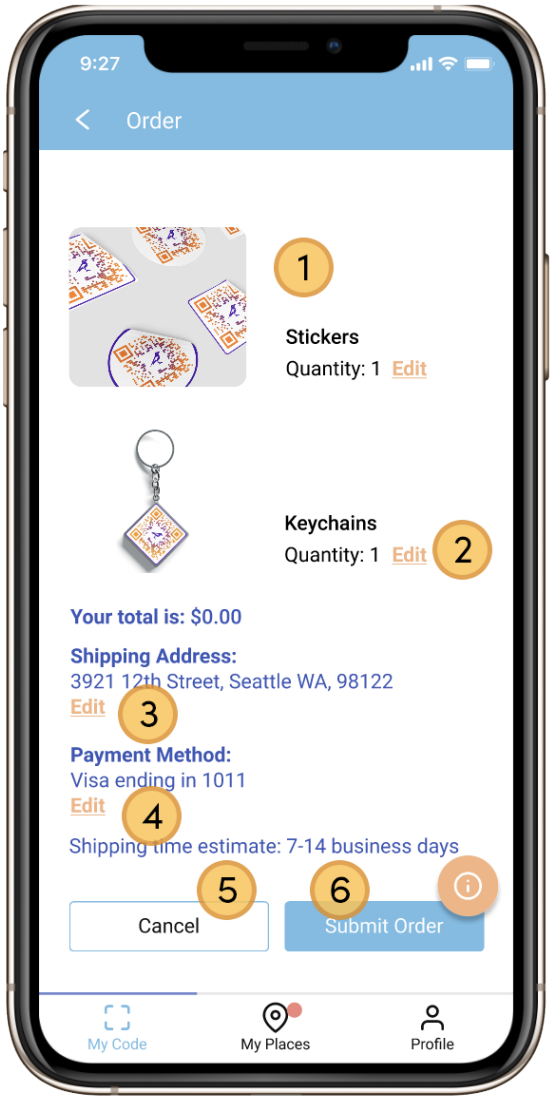
#	Label	Description
1	First name field	Auto-filled from user information. Can be edited.
2	Last name field	Auto-filled from user information. Can be edited.
3	Address field	User enters street address
4	City field	User enters city
5	State field	User enters state
6	Zip code field	User enters zip code
7	Back to selection button	Takes user back to order accessories page with their selected options saved
8	Payment button	Takes user to payment information page

Payment information



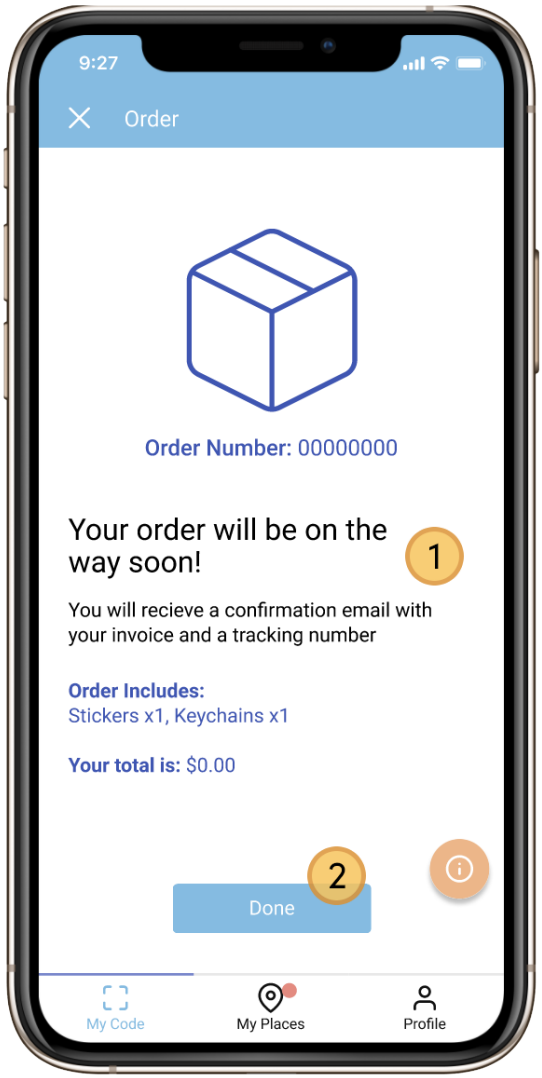
#	Label	Description
1	Card type drop-down menu	User can select card type from the drop-down menu (not in prototype). This field is also auto-filled based on the user's card number.
2	First name field	User enters first name on card
3	Last name field	User enters last name on card
4	Card number field	User enters card number
5	Expiration date field	User enters card expiration date
6	CVC field	User enters card CVC
7	Billing address checkbox	If unchecked, user will be able to enter billing address in separate fields (not in prototype)
8	Back to shipping button	Takes user back to shipping information page
9	Review order button	Takes user to review order page

Review order



#	Label	Description
1	Selected accessory	Description of accessory selected for order.
2	Edit selected accessory button	Takes user back to order accessories page with their selected options saved
3	Edit shipping address button	Takes user back to shipping information page
4	Edit payment button	Takes user back to payment information page
5	Cancel button	Takes user back to My Code homepage and cancels their order (does not save their accessory selections or shipping and payment information)
6	Submit order button	Submits the user's order and takes user to the order confirmation page

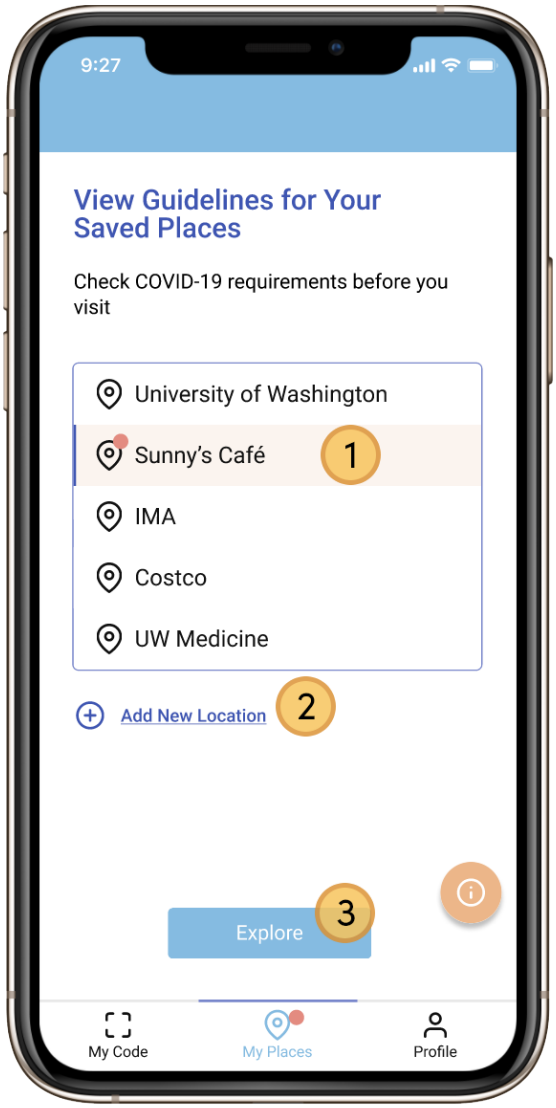
Order confirmation



#	Label	Description
1	Order summary	Summary of the user's order. Includes order number, description of accessories ordered, and total amount paid
2	Done button	Takes user to My Code homepage

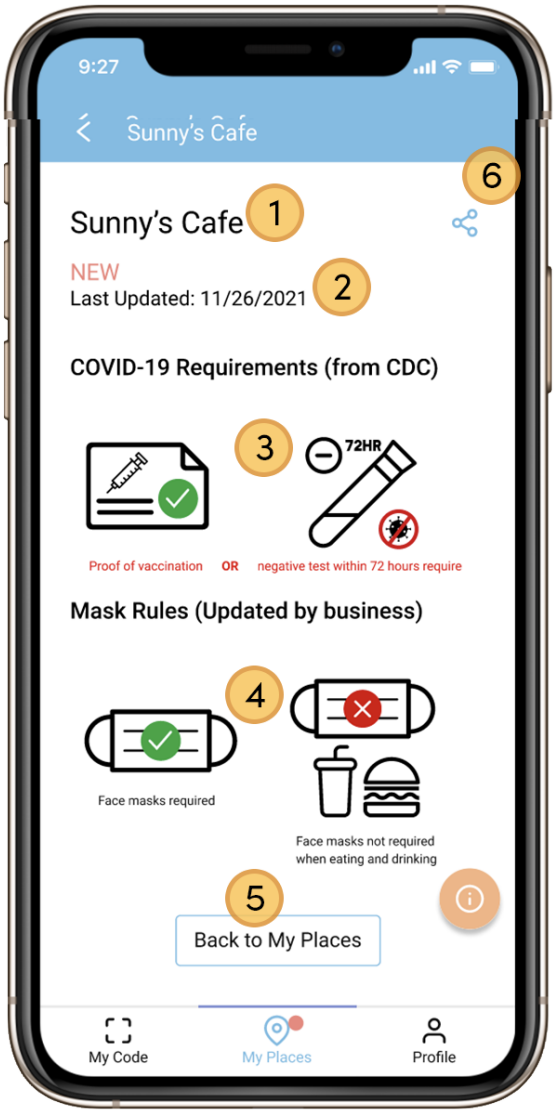
My Places

My Places homepage



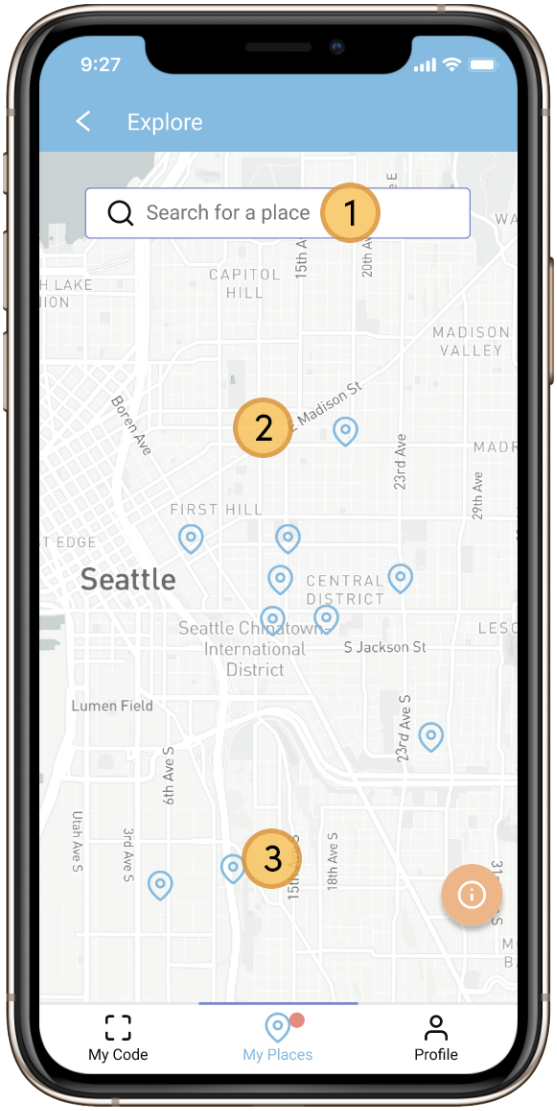
#	Label	Description
1	My places list	List of user's saved places. Tapping on the name of the place takes them to place information page. Red dot on the pin icon indicates a new update to the place.
2	Add new location button	Takes user to add location page (not in prototype)
3	Explore button	Takes user to explore page

Place information page



#	Label	Description
1	Name of place	Name of selected place
2	Last updated section	Displays date when requirements were last updated and whether or not there are new changes
3	Requirements from CDC	Requirements that come directly from the CDC
4	Requirements updated by business	Requirements that are updated by the business/place itself
5	Back to My Places button	Takes user back to My Places homepage
6	Share button	Brings up device's panel to share link to open place information page

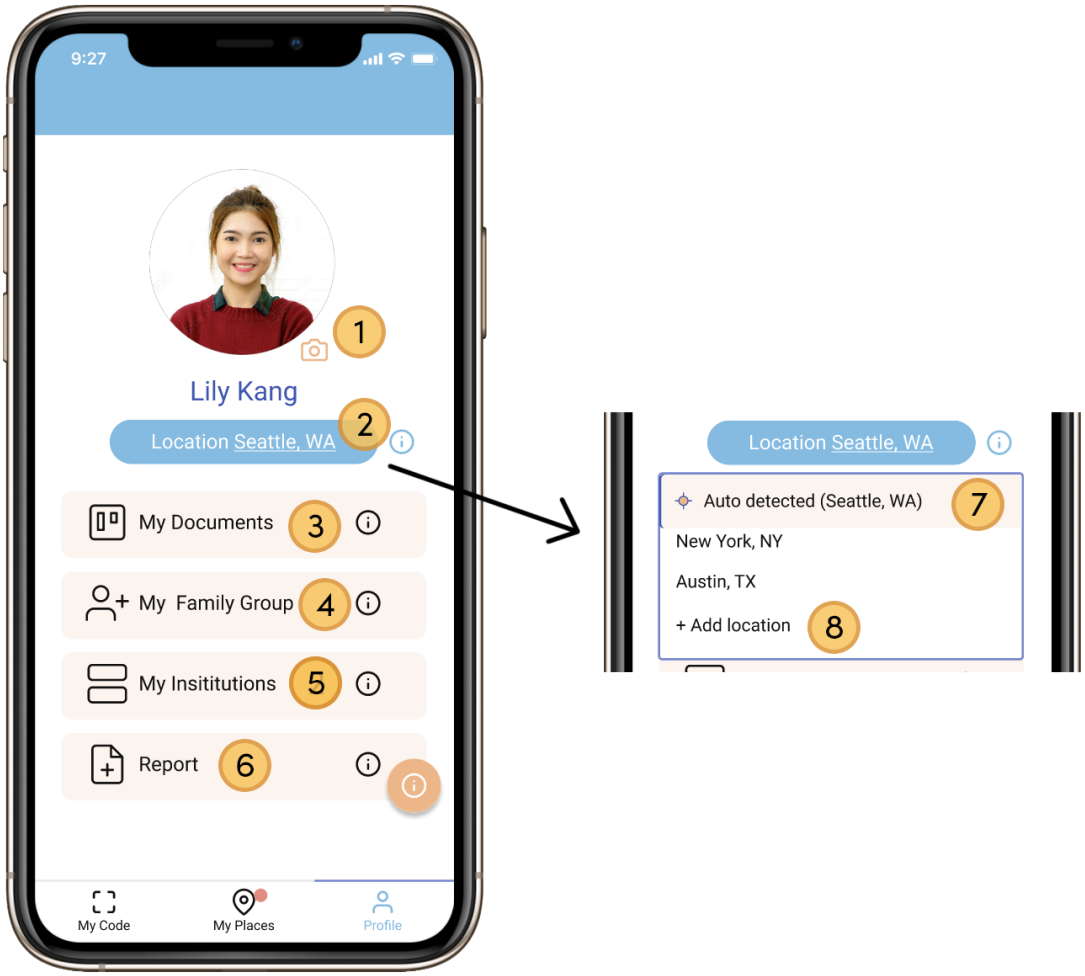
Explore page



#	Label	Description
1	Search bar	Allows user to type in a search query (i.e. key words, place name, coordinates, place type) to look for a place.
2	Map	Map of area set in user profile. Can be dragged with one finger and zoomed in and out by pinching
3	Place marker	Marks places relevant to the user because of behaviors such as searching for the place, viewing the place, visiting the place. Tapping on a place marker opens its place information page

Profile

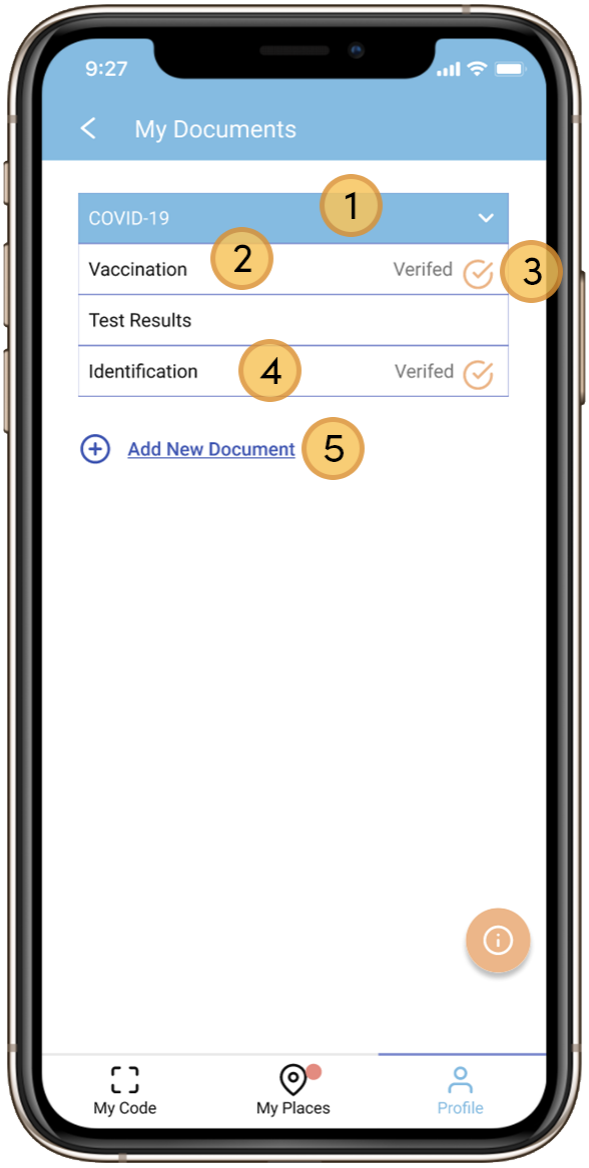
Profile homepage



#	Label	Description
1	Edit profile picture button	Prompts user to take or upload a new photo (not in prototype)
2	Location button	Brings up drop-down menu of user's current location and saved locations
3	My documents button	Takes user to my documents page

4	My family group button	Takes user to my family group page to view, edit, add, and remove family members (not in prototype)
5	My institutions	Takes user to my institutions page (not in prototype)
6	Report button	Takes user to report page where they can report positive tests to selected places and institutions (not in prototype)
7	Auto detected location option	If selected, prompts user to allow GPS access and follows their location (not in prototype)
8	Add location button	Prompts user to add new city and state to add a new location (not in prototype)

My Documents



#	Label	Description
1	Document category label	Groups uploaded documents. Collapses and expands the list on tap. Currently no options in platform to add categories besides COVID-19, but designed in the case that the platform be used in other contexts
2	Name of document	Name of the uploaded document
3	Verified status	Indicates that a document is verified
4	Identification document label	If tapped, gives user option to edit or delete identification document (not in prototype)
5	Add document button	Takes user to upload documentation page

Viewing uploaded document

#	Label	Description
1	Documentation photo	Documentation photo that the user uploaded
2	Documentation information	Information about the document
3	Edit button	Takes user to edit documentation page
4	Remove from Code button	Removes document from Code if attached. If document is not attached to Code button will read “Add to Code”

Physical accessories

Digital Mockups

Face masks

Reusable, cloth face masks with a slot for a filter. Screen-printed Code on the left side. Made to fit an average American adult face shape and size.

Keychains

Metal and acrylic keychains. 1.5”x1.5” square metal frame with Code behind acrylic front.

Stickers

Vinyl gloss stickers. 1.5” square or circle shapes. Water and weather resistant.

Mid-fidelity prototypes

Physical prototypes made roughly to size. Materials differ from the envisioned final product, but suffice as tangible representations of what the accessories might look and feel like and evaluate their practicality of use

Stickers

Keychains

Design Rationale

Physical accessories

Our initial research pointed toward the need for both efficient digital and non-digital solutions to our problem space. Especially for those who do not often use or rely on technology, having a physical component expands the use cases and flexibility of the Codes.

Our research also indicated that individuals might be feeling emotionally disconnected and ambivalent toward COVID-19 generally and in regard to requirements and their connection to their personal lives and community as the pandemic has continued on. By having a tangible product that is customizable and personalized, we hope that they might facilitate a newfound connection or even delight in navigating COVID-19.

Customization of Code

Another aspect of our design that we implemented to facilitate connection and delight in this problem space is the ability for users to customize their Code. While the connection of vaccination records and test results to QR codes is not novel in itself, we have seen no other platform that incorporates personalization into the process. By having the option to add a personal touch, users will feel more of an affinity and positive relationship with the platform, encouraging use and lessening the overall negative valence that often surrounds these situations. In an already difficult time, including a fun and light-hearted aspect that does not come at a cost of making light of the situation could add some needed levity.

Information displayed upon scanning Code

Our team went through several iterations while deciding what type of information would be displayed to the scanner after scanning a Code. We initially thought to include documentation details such as vaccination brand, dose number, and date. However, there was concern about privacy issues, as the scanner could somehow screenshot or save this information as it appears on their screen, which they would not be able to do when just looking at a physical card. Because of these considerations, we decided that the following would be displayed:

1. First and last name
2. Date of birth
3. Vaccination status: (e.g. “fully vaccinated”)
    a. This would be verified upon the user’s uploading of their documents
    b. As the definition of “fully vaccinated” changes, the system would update this indicator accordingly
4. ID Verification: “ID Verified”

    a. This would be verified upon the user's uploading of their documents
5. Vaccination Record Verification: "Vaccination Record Verified"
    a. This would be verified upon the user's uploading of their documents
6. Test Results: (e.g. "Negative PCR: 11/22/2021")
    a. The date of the test is important to display because the validity of the results depend on when the test was taken

Identification Upload & Verification

Because there is no federal database of COVID-19 vaccinations in the United States, nor do states themselves have comprehensive vaccination databases, we could not realistically rely on these non-existent infrastructures to verify vaccination documentation. Therefore, we sought to employ the same type of verification that is currently in use, which is comparing the name and date of birth on the documentation and identification. By having the user upload both of these documents, our system can reconcile this information on the back end in order to verify documentation. This also allows for verification of documents such as test results or medical exemptions.

PIN

One of the main goals of our design is to reduce the friction at entrances of public spaces as much as possible. The current systems in place in much of the United States require users to show physical proof of identification along with their proof of vaccination or other documentation, resulting in a minimum two-step process. Since users already upload their proof of identification along with their documentation to verify the legitimacy of their documentation, the system could also verify their valid identification. However, just indicating that an ID was verified did not seem strong enough to substitute for showing physical proof of identification.

Giving users the ability to activate a unique PIN addresses this issue. As long as users do indeed keep their PIN completely private, only they would be able to enter it in on the scanner's device at the time of scanning, confirming that the account belongs to them. However, we have not yet spoken with any relevant parties regarding the practicality and adoption of this method,

In addition to addressing the reduction of friction at entrances, a PIN combats security and privacy concerns that users have expressed in some of our usability testing. If a Code can be scanned by any device capable of reading QR codes, anyone can scan your code and see your information (image if you have your phone with the sticker laying on a table) unless there is an

authentication system, such as the PIN, in place. Likewise, if someone manages to steal your code, they will not be able to use it unless they also know your PIN.

Standardized symbols/icons

We intended for the elements of our platform to be systematic and uniform, so that information can be understood quickly and easily and also accessible to users with varying levels of technology proficiency. Our team noticed the wide variety of signage being used by businesses to communicate their COVID-19 requirements. While some of these were clear and concise, others were denser and more convoluted; individuals would need to take considerable time to interpret them, leading to confusion, frustration, and annoyance. If there was a largely recognized symbolic system to communicate this information, it could be made easily digestible, so users could interpret the meaning effortlessly. This simple, visual imagery also makes the information more accessible to those who might not be native English speakers or have difficulty reading text. Additionally, their inclusion in the media kit for information distributors, makes it simpler for them to generate signage, which is helpful especially for those who may not have much experience with digital graphics.

Saved Places

During our initial research, we learned that users generally don't look up requirements for places that they regularly visit, but are sometimes caught off guard by updates to the requirements that they did not know of beforehand. Instead of only having the capability to search for specific places and explore your area, having saved places allows user to receive updates and push notifications about updates and changes to a place's COVID-19 requirements and related information such as hours of operation and dining services (e.g. dine-in, take out, outdoor dining only).

Family Groups

The conception of family groups did not happen until some of our team members spoke with an individual who told them about their experience as a parent of a minor, and another who lives with an elderly grandparent. Both minors and seniors are populations that might not have regular access to digital technology or have limited knowledge of it. Family groups allow people such as family members or caregivers to manage their Salus accounts, including presenting their Code digitally alongside theirs if presenting on the phone and ordering accessories for them.

Scan tracking

Dynamic QR codes already have a built-in capability of being trackable, meaning that once they are completed, records of their usage will start being tracked. This includes information such

as the location of the scan, the number of scans, what time the scans took place, as well as the operating system of the device used. To expand this capability, we propose that information about the business or institution that scans the code (if applicable) be added to the tracking record. Each device used to scan would ideally be registered to a Salus user who is added as a member of a business or institution within the platform, allowing for this information to be generated. We envision that the business or institution will also be able to access a record of Salus users that have been scanned at their place during a certain period of time.

Tracking scans of Codes address two concerns: privacy and security of the Code and contact tracing. If a user sees that their code is being scanned at locations and times that they have not authorized, this is a sign that someone is using their Code without their consent, and they will be able to disable temporarily or delete their Code to create a new one, invalidating their previous Code. Since the user will have a record of where their code was scanned, they will be able to report a positive test to these places. Likewise, if an institution receives a report of a positive test, they can notify users that have scanned in during that period of time.

4. FUTURE DIRECTIONS

Ways in which the platform could be improved and expanded upon not otherwise mentioned or fleshed out in this document

Partnership with state and/or federal agencies

One apparent barrier to the success of our design is trust that the general public has in the platform. Especially since the platform deals with personal data regarding a sensitive topic, trust is vital if the platform is going to have widespread acceptance and adoption. From our initial research, we learned that many visit state and federal resources to learn about COVID-19 rules and requirements, telling us that these are the authorities that many people trust in regard to the current pandemic. If our platform was endorsed by these authorities, we envision that it would gain considerable credibility leading to wider adoption.

Incentives for institutions upon sign up

In addition to fostering trust, users, especially business and institutions, would be much more likely to adopt the platform if there were apparent incentives and benefits for them. Because it would be an initial added setup process and infrastructure to incorporate into existing ones. Beyond the promise of more long-term efficiency, we believe it would be useful and attractive to implement some sort of up-front incentive package upon sign up. Our team has not yet discussed what this would consist of.

Hypothetical speculation: state and federal databases

The structure of the verification process for proof of vaccination proposed for our current design was decided based on the fact that there is currently no centralized database in the United States for these records. Some states such as New York and Washington do have state databases, but they are not comprehensive, for example, they do not include those who received vaccination at mass vaccination sites. These databases most reliably include those who have received vaccinations at official medical facilities (e.g. hospitals, doctor’s offices, pharmacies). Therefore, we could not rely on these infrastructures in any way.

If we speculate into the future and hypothesize a time in which we do have centralized databases, either on the state or federal level, this platform would be much more powerful and easy to use. Hopefully, there will not be another pandemic, but we hope that if there is, there

might be a more centralized system. If there is, this platform would be more reliable and secure, along with other wider reaching benefits beyond our design.

5. APPENDIX

Digital Prototype

Link to high fidelity prototype demo

Video demonstration

Link to video demonstration of the platform

Research Materials

Survey

Link to PDF of survey

Diary study

Link to PDF of diary study questionnaire
Link to PDF of diary study materials (interview questions)

Interviews

Link to PDF of interview materials (semi-structured script, questions asked)

Usability Testing Materials

Link to PDF of usability testing materials (script, questions asked)