SecureTravel

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Intro & Goal:

After more than a year of people staying at home due to lockdowns, travel in most countries is once again booming. The summer season could bring something new proving your COVID-19 passport vaccination status to travel internationally.

As vaccination rollouts gather pace across the country, attention is now turning to vaccine passports as a key to restart more domestic activities and potentially international travel.

Problem:

Amid another round of surging COVID-19 case counts, there is keen interest to leverage technology to facilitate the re-opening of the global economy. Following the pandemic that led to the near-collapse of the travel and tourism industry, a fall that dealt a harsh economic blow over the last year, there are several initiatives underway to help revive that industry, with digital vaccine passports being one of the more prominent efforts.

What is a Vaccine passport?

A vaccine passport is evidence of vaccination that may be needed as part of a visa or service application. It is electronic proof that an individual has been vaccinated against a virus, in this case COVID. This is most widely known for international travel, but it is often debated for some domestic services.

The goal is to create verifiable, reliable, and accurate digitized inoculation records that will be recognized across countries, allowing people to avoid mandatory quarantine.

How will the digital passport work?

A vaccinated person will receive a vaccination certificate for every COVID-19 vaccine.

The Digital health passport contains a QR code with a digital signature to protect it against falsification.
The QR code is scanned, and the signature is validated when the certificate is tested. Any issuing body (such as a hospital, a testing facility, or a health authority) has its own digital signature key. In each country, all of this information is kept in a secure database.

Benefits:
- Vaccine passports are a proven scheme that could help resurrect the tourism and hospitality industries, which are in desperate need of a boost.

- Vaccine passports are widely regarded as the most straightforward, cost-effective, authoritative, scalable, and fraud-resistant means of demonstrating vaccination status.

- Vaccine passports have been suggested as a way for states, citizens, and tourists to feel more at ease about tourism opening. The presentation of such a digital certificate would, in theory, enable people to prove that they are "secure" and thus avoid mandatory quarantine.

User Types

1. **Admin**
2. **Users**

Functional requirements

Table 1.1 Admin functional requirements

Authentication	The system will allow the admin to to authenticate registered users
Manage user account	The system will allow the admin to add or delete users
Monitor vaccine passport	The system will allow the admin to manage and monitor the vaccine passports to ensure it has been issued by an official authority for legal and security purposes

Table 1.2 User functional requirements

Sign up	The system will allow the user to register on the system, requiring all basic information including: -Full Name -Email address -Password, National ID -Phone number - Country
Login	If the user is already registered, they can directly login to their accounts
Browse Home page	The system will allow users to browse all the displayed features of the home page

View profile	The system allow users allows the users to go to their personal details including: -Name -Date of birth - Age -Barcode of Vaccine passport
View travel history	The user has the option to view the locations they've visited with their health passport
View covid passport	The system allows the user to view their covid passport with detailed information including: -Name -Date of birth -National ID -Nationality -Date of first, second vaccine dose -Vaccine type -The issuing country

Table 1.3 Non-functional requirements

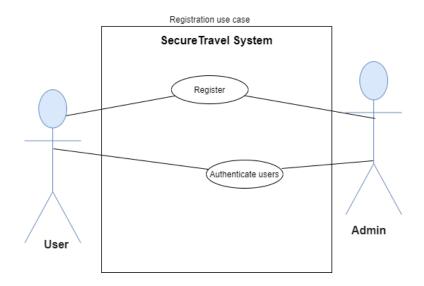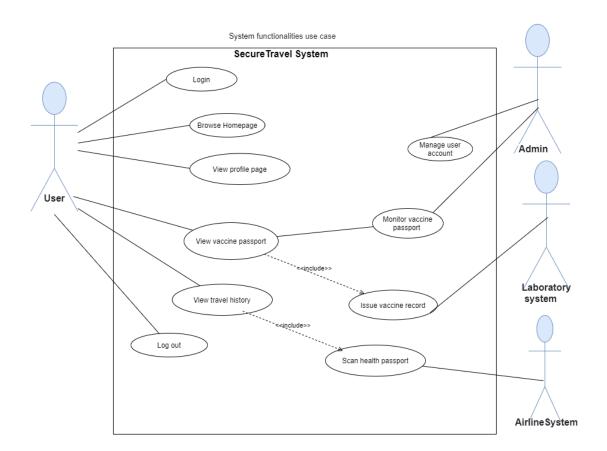| Security	Users account information must be protected, it must be: - Secured and doesn't compromise private data. - Enables end-to-end encryption making it impossible to hack.
Operational	The system should be operated on all types of desktop, Tablet, Smart phone
Capacity	The system should be capable enough to handle Billion users without affecting its performance
Responsiveness	The system must be responsive to user input, if any external interrupt occurs it must return to the same state. For example: if the user was using the app and got interrupted by a Phone call/video call etc., The app should return to the same page and save the state.

Use Case diagram:

Figure 1: Registration use case:

Registration use case

SecureTravel System

Register

Authenticate users

User

Admin

Figure 2: System functionalities use case

System functionalities use case

SecureTravel System

Login

Browse Homepage

View profile page

User

Manage user account

Admin

Monitor vaccine passport

View vaccine passport

<<include>>

View travel history

Issue vaccine record

Laboratory system

Log out

<<include>>

Scan health passport

AirlineSystem

Competitors & Product Inspiration

Through research, we were able to discover multiple similar platforms that are available across the world. Of which include, Covidpass, CoronaPass, NHS Health app

1- COVID PASS

CovidPass is a "health passport" app that aims to resurrect global travel, major activities, and meetings without jeopardizing health and safety or privacy. This app's goal is to allow healthier people to travel or attend events.

2- CoronaPass
CoronaPass is an app that indicates if you've had a negative test result in the last 72 hours, a vaccine certificate, or evidence of a prior infection from two to 12 weeks ago. If required, it can also be printed.

3-NHS Health app
NHS app is an app that acts like a 'covid passport' to show users vaccination passport status for overseas travel

Table 2.1 - Proposed & Similar System Comparison

Features	SecureTravel	COVIDPASS	CoronaPass	NHS Health app
Used Globally	✓	x	x	✓
Health passport that can be used for traveling globally	✓	x	x	✓
Travel history feature	✓	x	x	x
Live on IOS/Android	✓	✓	x	✓
Automatically track and issue vaccine record	✓	✓	✓	x

Target Audience and Stakeholders

Target Audience:

- Mothers, parents/families

- Children (under 18 years old)

- youth and adolescence (14-25 years old)

- Medical community

Stakeholders:

1- MoH:

MoH will be the key stakeholder for SecureTravel as it responds with timely information, when public concerns about safety and efficacy of vaccines are raised to sustain public trust in vaccines and vaccination, it also develop and introduce laws, regulations, and policies that support immunization programmes ensure a secure, high-quality supply base of vaccines.

2- National regulatory authority

NRA is responsible for ensuring that products intended for public consumption (typically pharmaceuticals and biological products such as vaccines) have been thoroughly tested and meet international quality and safety requirements, NRA also have marketing authorization, licensing activities, as well as sharing the safety data they've collected with national, regional, and foreign decision-makers. NRA is a key stakeholder for SecureTravel in the implementation of marketing plans as it has the authorization to market our digital passport product.
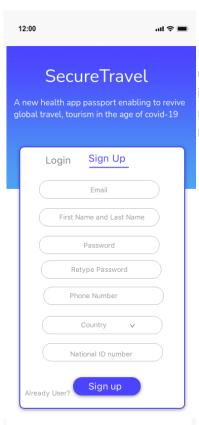
3- Vaccine manufacturers

Vaccine manufacturers continue to create, manufacture, and distribute high-quality vaccines that meet the needs of countries and engage in open discussions with countries and the public sector to ensure long-term access to existing and new vaccines. Vaccine manufacturers are suppliers/vendors to SecureTravel as it relies on SecureTravel for revenue generation and on-going income.

4- National airlines

As most of the national airlines issues updated Guidance on Travel for Fully Vaccinated People, requiring travelers to prove they have been vaccinated against Covid-19 before flying.
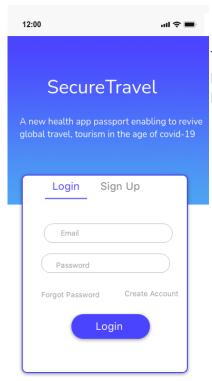
National airlines will be key players for SecureTravel, as it will require individuals to use SecureTravel as a digital passport proof before traveling
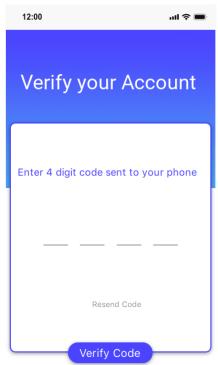
UI/UX Screens:

Sign up Screen

For this interface Figure, this is the first thing that is going to appear once the user launches SecureTravel app. This interface has the sign-up page in which it prompts the users, to enter critical information such as the first and last name, Email, password, Phone number, and their country, National ID number.
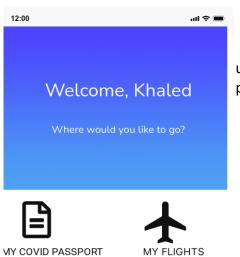

Login Screen:

This interface enables users to log in to the application. If users forgot their password, they could easily click on Reset password and complete the process of resetting their password account.

Verify your account screen:

After the user completes the sign-up, login process, A verification code is sent to the mobile number registered in the system, after entering it correctly, the user can log in.

Home screen:

Home screen interface displays all the features of the app as it enables users to view their covid passport, view their previous flights, go to their profile, and go to the setting if needed

Vaccine passport trips Screen:

This page allows users to view their current, past, upcoming trips using the vaccine passport.

The details of each trip will also be displayed as well as the passport reference number that has been scanned by the airport check-in counter.

Buttons and icons:

Back button: Allows the user to go to the previous

Logout button: Allows users to log out from the application.

Vaccine passport trips

PAST   CURRENT   UPCOMING

Date   12/4/2021
Country   Dubai, UAE
Passport refernce number: CJA12872

Date   06/5/2021
Country   Oslo, Norway
Passport refernce number: CJA14575

GO BACK   LOGOUT

User Profile Screen:

The profile page gives users the option to redirect to their personal information such as: their date of birth, age, country, and they can also access their covid passport barcode to view their vaccination passport details.

Buttons and icons:

Back button: Allows the user to go to the previous

Logout button: Allows users to log out from the application.

Khaled

Date of birth
06/12/1994

Age
26

Country
Saudi Arabia

HEALTH COVID-19 PASSPORT

GO BACK

LOGOUT

Vaccine Passport Screen:

For this interface, it shows all the details for the vaccine passport certificate, including:

- Name of the passport holder
- Date of birth
- National ID
- Nationality
- Date for the first and second dose of vaccine
- Vaccine type
- Vaccination issuing country and location.

Buttons and icons:

Print Button: Allow users print vaccine passport.

Back button: Allows the user to go to the previous

Logout button: Allows users to log out from the application.

12:00

Vaccination certificate

NAME
Khaled alotaibi

DATE OF BIRTH
02/14/1994

ID Number
1104293053

Nationality
Saudi

First Dose Date
28/3/2021

Second Dose Date
19/4/2021

Vaccine Type
Pfizer-BioNTech

Vaccination certificate issued by
Ministry of health - KSA

GO BACK

PRINT

LOGOUT

Test Cases:

Table 3.1: Test scenario for Admin functionalities

Login/Logout	Sign in: Admin should be able to login into the application. Sign out: Admin should be able to log out of the application.
Add	Check if the system grants the admin the privilege to add new information whether it be about the users or the vaccine passport.
Delete	Check if the system enables the admin to delete information about either the users or their personal, vaccine record info.
Monitor/Manage	Check if the systems grant the admin the access to monitor and manage user accounts and profile.

Table 3.2: Test scenario for User and system functionalities

Login/Logout	Sign in: Users should be able to login into the application. Sign out: User Should be able to log out of the application
Forgot password	Check if the system enables the user to reset their password by sending them an email to continue the reset password process
Issue's vaccine record	Check if the system enables linking the vaccine record to the SecureTravel system. Therefore, it will be issued automatically to vaccinated users.
View profile info	Check if the system enables the users to view their profile providing them accurate info

Test scenario for Create Account:

- Check system behavior when valid email and invalid password is entered.

- Check system behavior when invalid email and valid password is entered.

- Check system behavior when valid email and invalid password is entered.

- Check system behavior when a weak password (less than 8 characters) is entered.

- Check system behavior when email and password are left blank and Sign in entered.

- Check Forgot your password is working as expected.

- Check system behavior when valid/invalid password is entered.

- Check system behavior when valid/invalid National ID is entered.

- Check system behavior when valid/invalid Phone number is entered.

- Check system behavior if users receive an SMS when registering to verify the inputted email for authentication purpose.

Test scenario for Sign in:

- Check system behavior when email and password are left blank and Sign in entered.

- Check system behavior when invalid email is entered.

- Check system behavior when invalid email and valid password is entered.

- Check system behavior when valid email and invalid password is entered.

Future Work:

In the future, we hope to have SecureTravel available on the App Store and Play store, we hope to accumulate numerous investors and sponsors that help elevate and improve the application to be expanded globally. In the future, we aim to include several more features including: o enabling users to use digital passports for many activities other than traveling, users will be allowed to use digital passports as a proof to access events, gatherings, conferences and related activities.

Additionally, we hope to maintain the app's usability constantly through continuous updates as we strive for a user-friendly experience that enhances the efficiency of the system and helps enable international travel, tourism, gatherings, conferences and much more to safely return.