



SE 201.3- Systems Analysis and Design Group Assignment

SRS Project Report:

Online Passport Portal System

Nova Labs (PVT)Ltd

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Topic: Cloud Passport Portal

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Executive Summary

Cloud Passport System

This assessment focuses on the Department of immigration and emigration of Sri Lanka. To date, the department has relied chiefly on manual means to carry out its workload. As a result, the efficiency and the productivity of the department have been hindered, causing the applicants as well as the department employees to endure unavoidable hardships. The increasing number of passport applicants and not having the necessary mechanisms to tackle the ongoing difficulties have been a direct threat faced by the department. Hence, the core challenge of the department has been to figure out an approach that would assist the department in maximising its productivity and efficiency, which would minimise the setbacks faced by both parties involved. Accordingly, suitable methods and strategies to address the said issues will be discussed throughout the report.

To further analyse the issues surrounding the productivity of the department, a questionnaire was carried out by our team among a selected number of candidates. The questionnaire was conducted via Google forms, where the users were given the opportunity to provide insight with regards to their perception of the proposed system. Moreover, with the requirement to understand the whole as-is system that is currently being used by the department, the department's online website was analysed as a means of gathering further information in this regard. Furthermore, document analysis was carried out within the department as a means of gathering data and information with respect to the department.

According to the findings through the analysis as mentioned above, the system that has been proposed to tackle the said issues allows users to create a personalised account that will generate a user ID for each individual accessing the service. This system contains an interface that will filter the entered applicant details and appoint time slots for them accordingly. The application will be submitted to the department, and the appointments for the applicants will be informed by the system through a notification, therefore, reducing the hassle. Here, the applicants are also presented with the opportunity to use a linked payment gateway to make the payments for their passports.

In the proposed web portal, users are presented with a login page where users can either register or login as a guest, which leads to the homepage dashboard. Here, an array of options and services are presented for the user to access, where the main task is carried out on the application page of the web portal. Here, the applicants are required to enter their personal details accurately and the authenticity of the details entered by the user in relation to the National Identity Card number will be displayed on the application immediately. Here, the back end is connected to a database that stores data and information in relation to the applicants on the Amazon Web Services cloud storage platform. Furthermore, the option of being able to keep track of the status of the passport is a prominent feature offered by the web portal. The current status of the process and the date on which the passport can be obtained are also shown here, making this service very important for the users who have opted for the normal service.

Business Objectives

Cloud Passport System

At present, the department of immigration and emigration of Sri Lanka uses manual methods to carry out its services. This process has been proven to be increasingly difficult as the number of individuals applying for passports has risen rapidly, making a web-based system a necessity to manage the workload incurred by the department.

Due to the increased number of individuals visiting the department, queues of excessive amounts of applicants are formed at the premises. The main objective of our proposed web-based system is to minimise the above-mentioned issue of large and unnecessary crowds of applicants gathering at the premises, causing distress to both the applicants and the department employees.

Furthermore, the proposed web-based system also aims to reduce the amount of time and labour that the department generally requires to carry out their workload by having the applicants themselves go through the process of applying via the web-based system. This also helps improve the accuracy of data and decreases the redundancy of data and errors that may be caused by the employees when carrying out documentation manually.

In addition, we aim to reduce the carbon footprint caused within the department by the use of paper and other materials. This also helps in reducing the amount of physical storage space that is needed by the department to store the documents and relevant resources.

Background

Cloud Passport System,

The department of immigration and emigration of Sri Lanka is responsible for regulating the entry and exit of people towards the nation. At present, the department is utilising a manual process for its ongoing activities.

Our client is currently undergoing a disability to provide their service regarding the increasing rate of new passport applicants. As the applicants visit the department premises, the time and the money that must be spent on the process have become a huge burden on them. Especially the applicants who come from rural areas are facing these hardships for days on end.

And furthermore, the department's employees are facing unfavourable situations due to the lack of staff needed for the manual process. Here, the employees are struggling with the huge workload that has been handed to them and the less time that is given to reduce the rise in demand for their services which has become inconvenient for their performance.

The proposed system's main goal is to provide passports to each individual through our application in a productive manner. This solution can help every person in a way such that visiting the department of immigration and emigration could be minimised.

To overcome these hurdles, we propose to implement a web-based system that facilitates both the department as well as the applicants to ease their tasks in the ongoing as-is system. With the current system containing some flaws, an effective and efficient web application with the relevant features will greatly benefit the department's success. Hence, our team can see the need of the client to have a web-based system as the solution to these circumstances.

Project Scope

Cloud Passport System

Our client's current system utilises manual methods to do the customer interactions, while the to-be system that was proposed uses a web-based application. This system includes a user-friendly interface that allows its users to have their own accounts where these data are being sent to the department of immigration and emigration of Sri Lanka. The sent applications will be processed, and the available time slots will be appointed to the corresponding applicants.

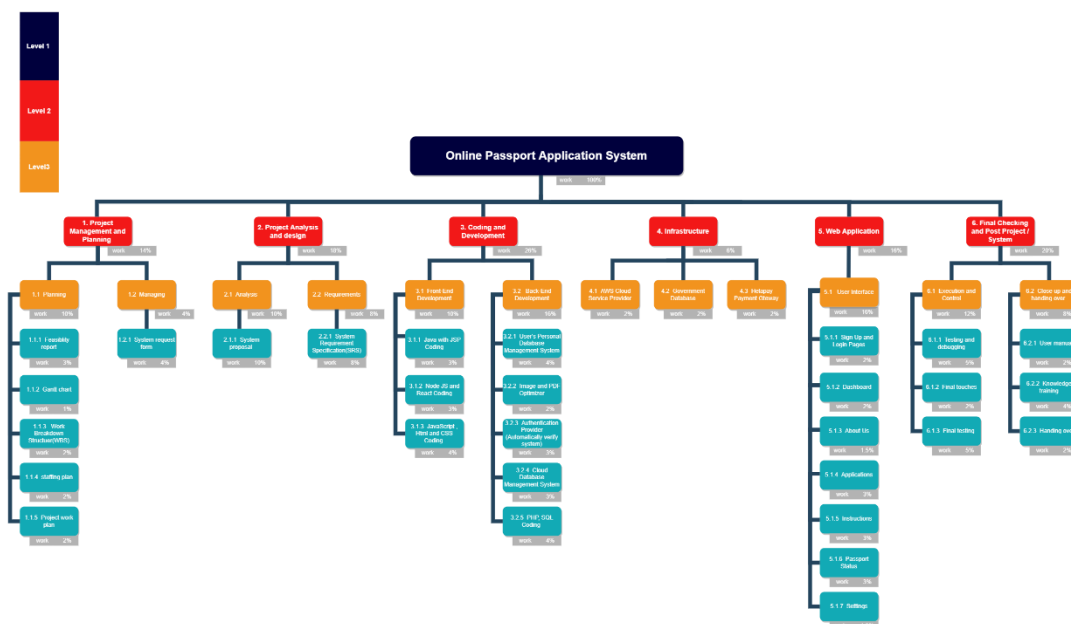
The proposed system provides the passport application to the applicant through a web-based application. The applicant may create their account and enter their confidential details, where those data will be auto corrected if the user enters their details in an invalid format. (Here, a reference will be indicated accordingly) And when an individual creates an account, a user ID will be auto generated within the system. This user ID will be used to identify the user when they enter the system again for further activities.

After filling out the application, the payment for the passport can be made via a payment gateway that has been connected to the system, where the payment process can proceed in a safe and secure manner. Next, the application will be submitted to the department of immigration and emigration of Sri Lanka. The submitted applications will be stored in AWS cloud services, where data protection and privacy are guaranteed. The status of the submitted application can be viewed by the applicant whenever they want, as our system will provide a real-time tracking mechanism to the user as well. (Here, a reference number shall be provided by the department to the user.)

Finally, the filled applications will be processed, and the time slots for the appointments of the applicants will be shared with them through a notification generated from the system.

Work breakdown structure (WBS)

URL: <https://bit.ly/3ypYlpR>



Feasibility analysis

Cloud Passport System

- **Technical feasibility**

The Sri Lankan department of immigration and emigration has requested a system that can be utilised by the employees of the department and the passport applicants. The department also provides a website to its users while it's available 24 hours a day. Apart from that, for the maintenance of data and documentation like applicants' confidential details, they use Microsoft spreadsheets and manual methods such as folders and files.

As the current manual system is not efficient and the applicant data is not protected thoroughly, there is a huge need for a web-based system where the entire process should be digitalized. As the proposed system has most of its requirements gathered with a time limit of 45 days (about one and a half months) to implement and hand over, the to-be system will be implemented using the waterfall development methodology.

When it comes to filling out the passport application, the proposed system provides the passport application to the applicant through the web-based application, which gives the applicant the opportunity to fill in their own details in the system and make the payments for the passport. This process will reduce the need for visits to the department premises as well as the human labour required to do the manual workload within the department.

To provide these services through our system, the technical team can develop a user-friendly and multilingual graphical interface that can be used for the convenience of the applicants. Hence, Figma prototype technologies and photoshop designs are used in developing the user interface of the application.

The front-end would be developed with well-known programming languages such as JavaScript, CSS, HTML, jQuery, and Bootstrap, while the backend of the system consists of databases of information that are confidential and must be maintained. Therefore, MySQL databases are utilised to store data in the databases where these data will be coded with PHP programming language by the developers. As there is a mandatory requirement to protect the data in the databases, the entire system would get linked with the AWS cloud systems so that the security of the data can be assured. Thus, implementing an Online Passport Application system can be concluded as technically feasible.

- **Operational feasibility**

At the moment the client's organisation utilises spreadsheets and manual files to conduct the storing processes within the organisation.

Even though the rate of creation of new documents increases parallel to the passport applicants with each passing day, the department still maintains physical storage for storing their documents. As a result, the as-is system consumes a lot of physical storage and time to organise and retrieve data when required.

When it comes to obtaining stored data from the department system, some problematic situations may arise. Here, some data can get lost due to the decay of paper materials with time or might get misplaced by the employees of the department. Even in a situation where the data is available, the data retrieval from the ongoing system could take a massive amount of time as the required documents must be searched manually.

Since the applicant's confidential details are written on paper-based materials and are submitted to the department for processing, the possibilities of occurrence of data entry errors are at a higher level. In these kinds of situations, data redundancies and inconsistencies can be found within the manual system as well.

In that regard, the proposed system has provided answers to all those inquiries. Since our passport application system is an online system, the data entry process can be conducted by the applicants so that the applicant can fill out their own personal information with file attachments if necessary. This will reduce data entry errors that can happen from the department employee's end. With the databases being maintained by our system and the use of AWS cloud services, the entered data will be secured and stored efficiently which will ease the data retrieval process for the employees and the applicants (when the applicants want to make use of the tracking mechanisms that are being provided by our system). This approach will save time for the employees as well as the applicants and will reduce human labour needed in the department for their manual tasks. Due to the system providing reliable data with a fast access speed, the operational feasibility is achieved by the web-based online passport application system.

● Schedule Feasibility

As the Sri Lankan Department of Immigration and Emigration maintains a manual passport system, the uplifting demand for passport creation has caused the department to request an online web-based system.

Therefore, a feasibility analysis with regard to the time schedules must be conducted where the probability of a workload given to a technical team being feasible can be identified. With the department providing 50 days, a workable schedule is provided below mentioning the tasks that should be completed corresponding to their time slots.

| System Task | Time Span |
|--|---|
| 1. Project Management and Planning Phase 1.1. Planning 1.1.1. Identification of background and scope 1.1.2. Feasibility Report 1.1.3. Gantt Chart 1.1.4. Work Break Down Structure 1.1.5. Staffing Plan 1.1.6. Project Work Plan 1.1.7. Managing 1.1.8. System Request Form | - 02 Days - 02 Days - 01 Days - 01 Days - 02 Days - 01 Days - 02 Days |
| 2. Project Management and Planning Phase 2.1. Analysis 2.1.1. System Proposal 2.2. Requirements 2.2.1. System Requirement Specification (SRS) | - 06 Days - 04 Days |
| 3. Project Management and Planning Phase 3.1. Front-End Developing 3.2. Back-End Developing | - 05 Days - 08 Days |

| | |
|-------------------------------------|-----------|
| 4. Implementation Phase | |
| 4.1. Final Checking and Post System | |
| 4.1.1. Executing and Control | |
| 4.1.1.1. Testing and Debugging | - 03 Days |
| 4.1.1.2. Final Touches | - 01 Days |
| 4.1.1.3. Final Testing | - 02 Days |
| 4.1.2. Close up and Hand Over | |
| 4.1.2.1. User Manuals | - 01 Days |
| 4.1.2.2. Knowledge Training | - 03 Days |
| 4.1.2.3. Handing Over | - 01 Days |

With the above table denoting the time allocations, the project can be finished within 45 days (about 1 and a half months). For that reason, this project is feasible in terms of scheduling.

- **Economic Feasibility**

Our technical team consists of 5 members, and they have dedicated their time to the success of this project. Here, 3 members are responsible for developing the front-end (developing the user interfaces of the system) while the other two developers build the back end (developing the databases of the system) of the system. This information is clearly mentioned in our estimated tables below.

Workload Metrics

| Team Member Name | Job Role | Job section |
|-------------------------|---------------------|---|
| DGTL Geethmal | Front-End Developer | Dashboard User Register Page User Login Page |
| IS Rachinthana | Back-End Developer | Database System Create Data Encryption Image and PDF Optimizer Super Admin |
| BAAV Karunathilake | Front-End Developer | Instructions Page About us Page Passport Status page Admin Login page and Handling Interface |
| SHAS Shayamal | Back-End Developer | Connection to Databases Connect to the Infrastructure Facilities (AWS Cloud Providers, Data Centre) |
| RS Dalpethado | Front-End Developer | Settings page Security purpose Privacy, Policies, updates |

Wage Cost Analysis

| Job Role | Workdays | Cost (Rs.) |
|---|----------|------------|
| Front-End Developer | 05 Days | 22500 |
| Back End Developer | 08 Days | 44000 |
| Front-End Developer - Wage per day- Rs. 4500 Back-End Developer - Wage per day- Rs. 5500 | | |
| Front-End Developer - No of hours per day- 6 Hours Back-End Developer - No of hours per day- 8 Hours | | |

Software, Hardware, and Infrastructure Facilities

| Infrastructure / Equipment's Name | Cost (Rs.) | Total Cost (Rs.) |
|-----------------------------------|------------|------------------|
| Desktop PC – 7 | 100,000 | 700,000 |
| AWS Cloud Providers/ Data Centre | 120,000 | 120,000 |
| Other Implementations | 40,000 | 40,000 |

Budget Cost Analysis

| Description of the Cost | Cost (Rs.) |
|----------------------------------|----------------|
| Front-End Developer | 22,500 |
| Back End Developer | 44,000 |
| Desktop PC – 7 | 700,000 |
| AWS Cloud Providers/ Data Centre | 120,000 |
| Other Implementations | 40,000 |
| Total Cost | 926,500 |

With the intention of understanding the economic feasibility within the system, a cost-benefit analysis was conducted which would later be sent to the department's financial reports.

Development Costs –

- Wages of the technical team.
- The consultant fees and the software fees.
- Cost for conducting a development training program for the department.

Operational Costs –

- Costs for the upgraded hardware and software components.
- Costs for training the department's employees on the new online passport application system.

Tangible Benefits –

- The labour cost of the department reduces.
- Reduction in the usage and the expenses for paper materials within the department.

Intangible Benefits-

- An effective and efficient online passport application system that will help the workload of the department.
- Providing improved customer service through an online-based application.

Requirement Analysis

Cloud Passport System

● Business Requirements

Sponsor point of view

Currently, the department's entire passport system has not been able to develop an online automation system. Our system implements a new online passport application system for the department of immigration and emigration in Sri Lanka. The online passport portal can give new applicants the ability to fill out the application form, pay for their passport fees and obtain their appointments from anywhere at any time. This will be a perfect solution to reduce applicants waiting in long queues for their passports, which will reduce the time being wasted. As for the request, the super administration part is implemented to handle the new online system. Furthermore, this document has identified and explained the scope and objectives of the online passport Portal.

Scope of the project

The suggested system provides online passport applications for the applicants through a web-based passport application system. An applicant can create their own account within the system. If a user fills out the application with the requested details, the user will get directed to the linked payment gateways to proceed with the payment processes. Afterward, the application is sent to the department where the applications will get processed and the users can get the appointed time slots for their appointments.

Business Objectives

- The department's revenue must increase with the new system being implemented.
- Strengthening of customer service within the department.
- Decrease in the utilization of human labour.
- Minimizing the physical storage usage for paper-based documentation.
- The staff shortage of the increasing numbers of applicants should be handled from the proposed system

Overview of the system

The system provides the opportunity for applicants to apply for a passport through a web-based passport portal system. (Online Application Portal)

Overall description of the Portal

- **The perspective of the system**

The proposed system is based on an automated online passport filling system.

- **Functions of the system**

The system provides permission to new applicants where they can fill out an online passport application and submit it to the department of immigration emigration in Sri Lanka with the usage of online facilities.

- **Analysis of the Business Requirement**

- The proposed system may provide an online passport application to the applicants.
- With a user-friendly interface being effective and efficient, customer interaction within the department has been strengthened.
- As the system is online, the manual labour required to complete the passport application process has been reduced.
- On the contrary, the staff shortage which was a major issue within the department should be solved with the utilization of the mentioned system.
- The department's employees can access the system by enrolling themselves as super admins.
- With an online system getting implemented instead of the as-is system, the staff of the department can be at ease with their tasks being smoothly handled by the new system.

Implementation Methods

- Super Admin (department)
- User (new applicant)

Super Admin

The admin part includes administrator-related features and functionalities. Administrators have access to all application requirements.

User

A new applicant can log on to the system as a user and access any sections regarding their requirements.

● User Requirement Analysis

- The user should be able to access the portal through any browser supporting the available HTML versions.
- The users should be able to make an account within the system.
- A user ID should be provided to the applicants for unique identification within the system.
- The new applicant should be able to fill out the passport application and pay the passport fee.
- User transactions done by the applicants must be secured by the system.
- Applicants should be able to enter all the required details into the online application.
- When applicants enter data into the application, the validations should not denote correct data as incorrect data.
- To track the progress of the process, the applicant should receive a reference number that will be generated from the system.
- The status of the tracking system should be updated with each step being completed by the user in real-time.
- The system should send the required time slots for the users through notification when their application process is analysed and completed.

With applying for a new passport being completed, the arrival of the applicant will be essential at the department premises to collect their passport and give their biometric data. (Fingerprints)

Requirement gathering techniques

- Questionnaires

With the intention of gathering the user requirements from the users, our system controller assistant conducted a questionnaire among a few selected candidates. (Google forms were used to gather all the data entered by each individual)

Google Form: <https://forms.gle/3JSnginLMnLNi8ac6>

Gathered Data (Excel sheet): <https://bit.ly/3vZWV7Y>


Cloud Passport Survey

Our team's goal is to develop a web application that allows you to apply for a passport online without having to visit the department.

The main objective of the proposed system is to provide passports to each individual with maximum efficacy and effectiveness through our application without visiting the department of immigration and emigration of Sri Lanka.

This would ease the workload of the employees towards a new applicant.

isavindurachintha@gmail.com [Switch account](#)

 Draft saved

* Required

Email *

Your email

 This is a required question

Do you think we can achieve the things mentioned above with an application like this?

- ☐ Yes
- ☐ No

Would you like to have an app like this?

- ☐ Yes
- ☐ No

If you click the Yes button, please comment further. Or, if you clicked the No button, comment further

Your answer

Would you like to share your personal information with the Internet?

- ☐ Yes
- ☐ No

Would you like to make money transactions online?

☐ Yes
☐ No

Are you aware of money transfer with internet? And express your opinion on it

Your answer

Would you like to see the real-time status of the passport application through our app

☐ Yes
☐ No

Any suggestions to improve our system.

Your answer

Submit

Page 1 of 1

Clear form

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Google Forms

- Responses For Questionnaires

| Timestamp | Do you think we can achieve the things mentioned above with an application like this? | Would you like to have an app like this? |
|---------------------|---|--|
| 28/04/2022 11:02:11 | Yes | Yes |
| 28/04/2022 11:30:58 | Yes | Yes |
| 28/04/2022 12:10:05 | Yes | Yes |
| 28/04/2022 12:13:57 | No | Yes |
| 28/04/2022 12:15:10 | Yes | Yes |
| 28/04/2022 12:20:29 | No | No |
| 28/04/2022 12:25:38 | Yes | No |
| 28/04/2022 13:03:37 | Yes | Yes |
| 28/04/2022 13:08:49 | Yes | Yes |
| 28/04/2022 13:26:54 | Yes | Yes |
| 28/04/2022 15:23:35 | Yes | Yes |
| 28/04/2022 18:06:14 | Yes | Yes |
| 28/04/2022 19:47:32 | Yes | Yes |

| | |
|--|--|
| If you click the Yes button, please comment further. Or, if you clicked the No button, comment further | Would you like to share your personal information with the Internet? |
| It would ease the passport applying process in many ways | Yes |
| This app will save our time and money | Yes |
| Yes, it would be convenient. | No |
| Easy for us | No |
| Efficient | No |
| Human interference is necessary | No |
| I don't trust apps and online methods. | No |
| App would easier the process. | No |
| | Yes |
| It'll be much easier to handle all the paper work online. | Yes |
| If will be a good solution for time wastage on visiting for department | Yes |
| It's Better to have an web application so it will be easier to work with computers as well as mobile. The main | No |
| Having an app is so important to see the updates. | No |

| | |
|---|---|
| Would you like to make money transactions online? | Are you aware of money transfer with internet? And express your opinion on it |
| Yes | Yes. I am aware. As long as the payment is secure, I'm fine with it |
| Yes | Yes. It is easy to do payments through this method |
| Yes | Yes, as long as it's done through a legitimate payment method online transactions are |
| No | Yes, risky |
| Yes | Yes. |
| No | Yes |
| No | No, I haven't done any transactions online. I'm not sure if it's secure. |
| Yes | |
| Yes | |
| Yes | I've done money transfers online |
| Yes | it is good only with secured and guaranteed parties |
| Yes | Yes |
| No | sometimes it's easy to finish the work. but sometimes it's not as we are not trust that n |

| | | | |
|--|--|---------------------------|--|
| Would you like to see the real-time status of the passport application through our app | Any suggestions to improve our system. | Email address | |
| Yes | | shyni00am@gmail.com | |
| Yes | | nightr0329@gmail.com | |
| Yes | | siripala5835@wowcg.com | |
| Yes | Dont add online payment | janithsaliya30@gmail.com | |
| Yes | Make it user friendly | asirimathk@gmail.com | |
| No | | gekayek776@idurse.com | |
| No | | Nandasena6237@svcache.com | |
| Yes | | nnethumzpabz@gmail.com | |
| Yes | | ranidume@yahoo.com | |
| Yes | | nisalwijethunge@gmail.com | |
| Yes | | leedamilindi@gmail.com | |
| Yes | | yasirutishan@outlook.com | |
| Yes | | hirujinadasa14@gmail.com | |

- Document Analysis

As the next requirement gathering technique, document analysis was conducted by our system analyst within the department.

With the requirement to understand the whole as-is system that is currently being used by the department, the department's online website (immigration.gov.lk website) was analysed by our analysts.

(www.immigration.gov.lk)

We have visited and checked out the immigration.gov.lk website, through which we gathered information on how to enhance the online passport application system. we conducted an analysis to identify the department's currently used documentation applications model.

([www.immigration.gov.lk/Passport Application. Pdf](http://www.immigration.gov.lk/Passport%20Application.Pdf))

The department's management system contains a huge portion of documentation with a manual database that has already been set up within the ministry. In that sense, our analyst examined the number of passports issued within the annual report. By knowing the number of issued passports within a month as well as a year, we could get an understanding of the storage needed in cloud facilities (AWS cloud services) when linked with the database.

The number of department employees required in the manual process can give an idea about the workload of the department's staff. With that, the online system can be developed to cover most of the employees' tasks.

Furthermore, we can improve our system by using the payment portal. Applicants should be able to log in to the system and fill out the online form. After that, the person pays the bill. An analyst should check the existing passport system with the applicant's pay billing system in the department. The billing mechanism that is currently used by the existing system provides data for the implementation of the payment gateways that are linked to the suggested system. (E-bills will be provided for the applicants) (<https://bit.ly/3Lb0a2T>)

● **System Requirement Analysis**

Functional Requirements Analysis

Functional requirements for the suggested online passport application portal depend on a set of main topics.

Registration and Login for the Passport portal

- The passport portal shall allow the applicant to register or to log in to the online web-based interface. (This will reduce the time and the money given by the applicants to physically attend the department premises)
- The portal may grant access to the super admins to log in through the portal.
- The system shall provide error messages for invalid emails and passwords.
- Forget password service is provided for a registered applicant if such a situation has occurred.
- The portal will provide multilingual facilities for each user.

Online passport application instructions, policies, and information

- The section shall display Information with regard to the passport application process to the applicants for further clarification purposes.
- The basic instructions that are required in the passport application process for an applicant shall be provided in a user-friendly manner with some tips.
- The policies that are being maintained by the Sri Lankan department of immigration and emigration may get displayed for more information for the users.
- All the news regarding the department of immigration and emigration shall be updated accordingly which will reduce outdated information being exposed to the passport applicants.

Apply for the online passport portal

- An online passport application shall be put on view for the applicant where he/she may enter their confidential details by editing the application in real-time.
- The user shall get the ability to choose whether to go with a one-time procedure or with a normal procedure.
- The portal shall accept all the entered letters, numbers, and characters as data.
- The data entered by the users may be validated with the required formats parallelly by the system where an error message with a reference of format shall be generated accordingly.

Document and Photo uploading

- The passport application must accept pictures and documents that are being uploaded to the application by the applicants. (The applicant will get the ability to upload their birth certificates and national ID copies with their passport photos.)
- Invalid formats of uploads to the online application must get rejected by the application.
- The “submit button” may allow the applicant to submit the whole application to AWS databases for the storage requirements of the department.

Verification

- The verification facilities for the department are provided through an automatic verification system that has already been certified according to the department's standards.

Payment Gateway

- The system should save the applicants' details in the databases temporarily until the payment for the passport applying process is completed.
- Afterwards, the details must be stored on the AWS cloud storage for further activities.
- With the web-based application filled, the user must get directed towards a payment gateway for the user's online payment procedures. (The linked payment gateway is the “HelaPay” payment gateway)
- The payment gateway may provide the user with the ability to select a payment method.
- A “Pay here” button shall take the payment from the applicant and provide the payment receipts to the relevant applicant.

Authentication

- The system must provide authentication mechanisms to check whether the applicant is valid or not.

Passport status

- The web-based portal may provide the status of the submitted passport application for the corresponding user. (A real-time tracking mechanism will be used)
- The application must accept reference numbers entered by the applicant that will grant access to the system's tracking facilities for the applicant.
- The status must be updated in real-time with each stage of the process being achieved by the user.

Non-Functional Requirements Analysis

Usability of the System

- The passport application system's user interface must adhere to the standard colour themes for logos and typefaces.
- The loading time of each section of the online passport application system should take x milliseconds.
- The passport application system should be available in multilingual facilities.

Reliability of the System

- The application portal must produce correct outputs within the specified time duration.
- A system failure must not exceed x minutes.
- A system failure should not affect the user's device's performance
- The user details being entered into the system should be temporally stored until the payment process is completed. With this x process being completed, the data shall be permanently stored in the databases.
- If a user ends a process without making the payment for the passport application, that x process shall not get stored in the databases permanently.

Performance of the system

- The system should be able to support simultaneous users.
- The system should provide availability and accuracy with less response time.

Supportability of the system

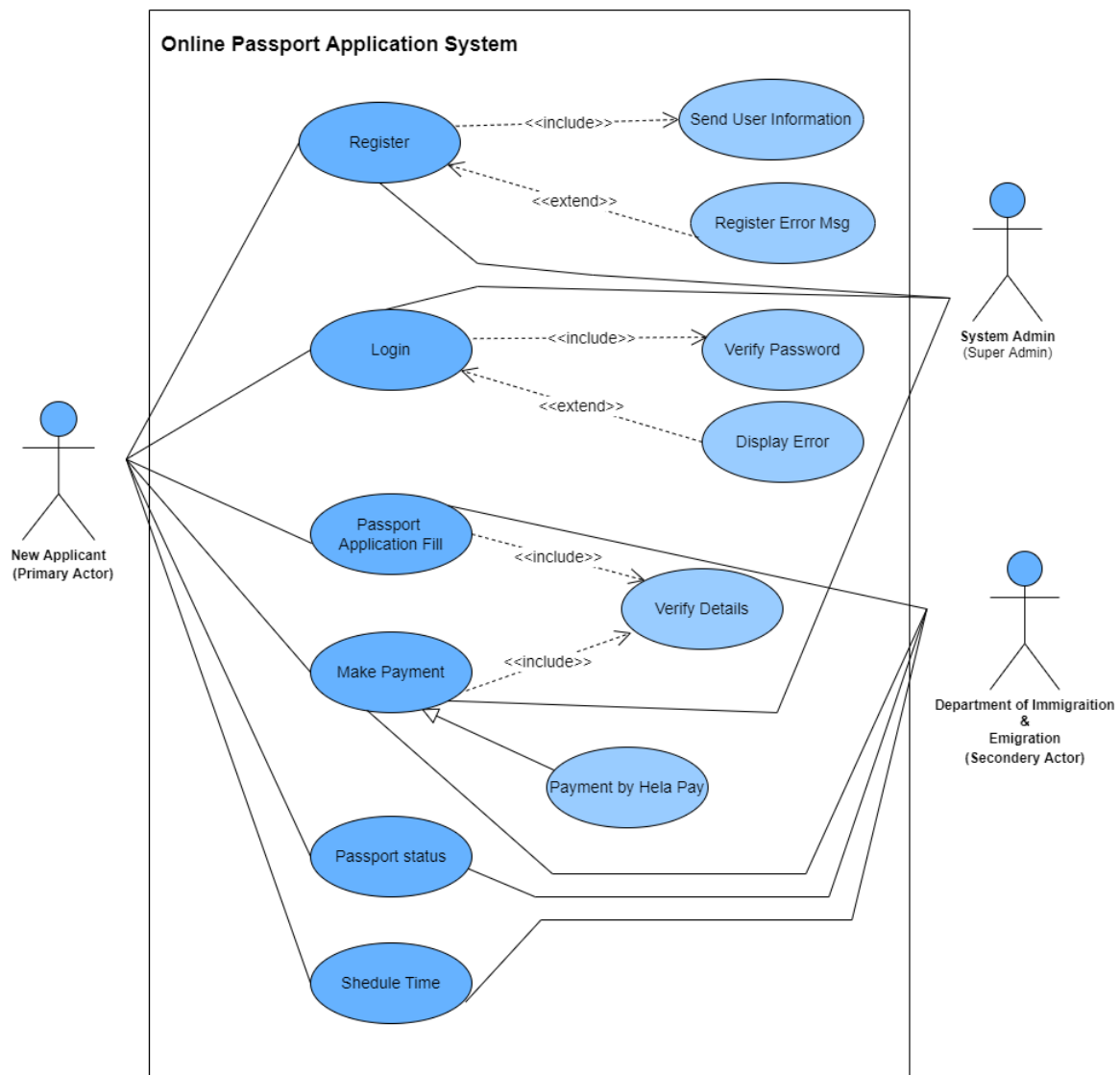
- The online portal should support most web browsers such as Google, Firefox, Internet Explorer, etc.
- The implemented web application system must support devices with operating systems such as Android, Mac, Linux, Windows, etc.
- The system should support all digital devices like mobile phones, desktops, tablets, laptops, and palmtops.

Graphical illustrations of the to be system design

Cloud Passport System

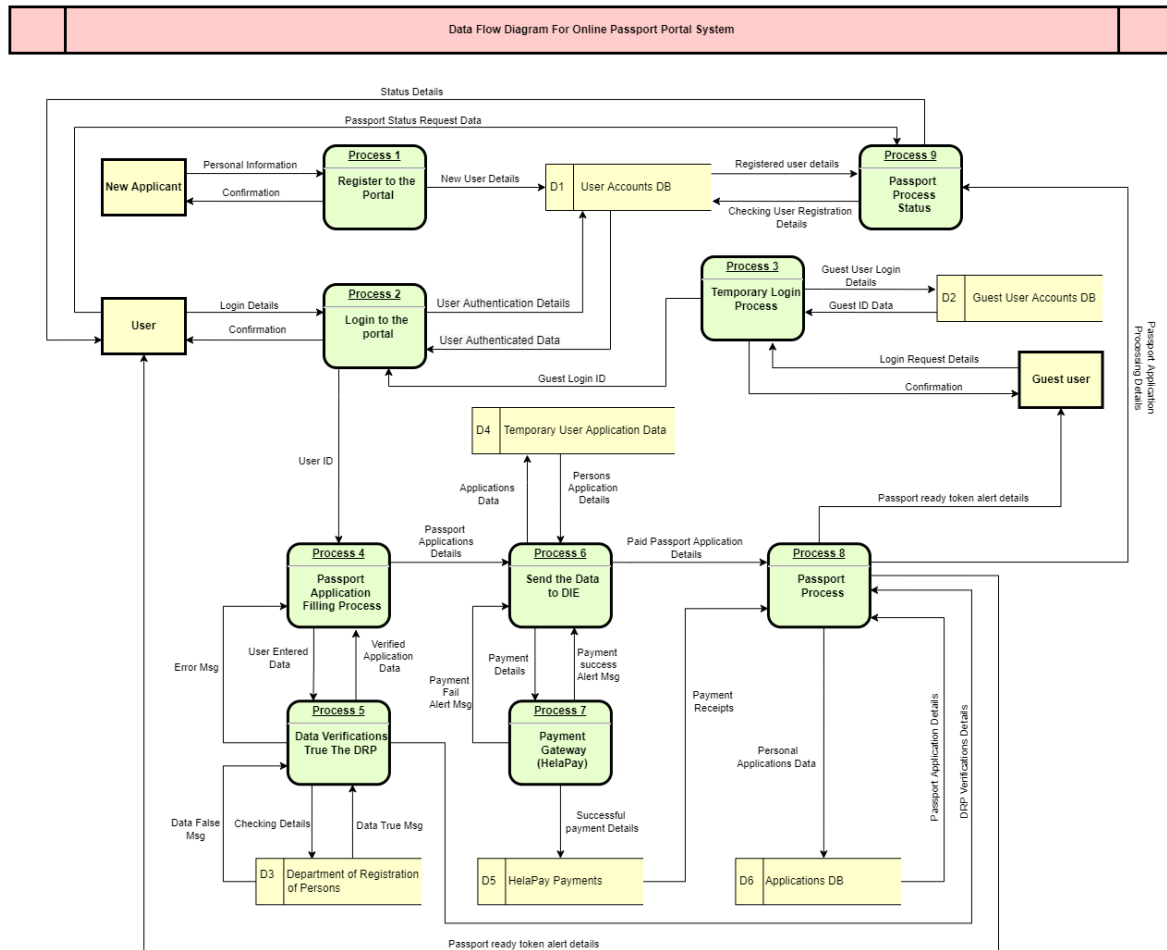
- Use-case diagrams

URL: <https://bit.ly/3xMmf3R>



- Data Flow Diagrams

URL: <https://bit.ly/3OxcEUu>



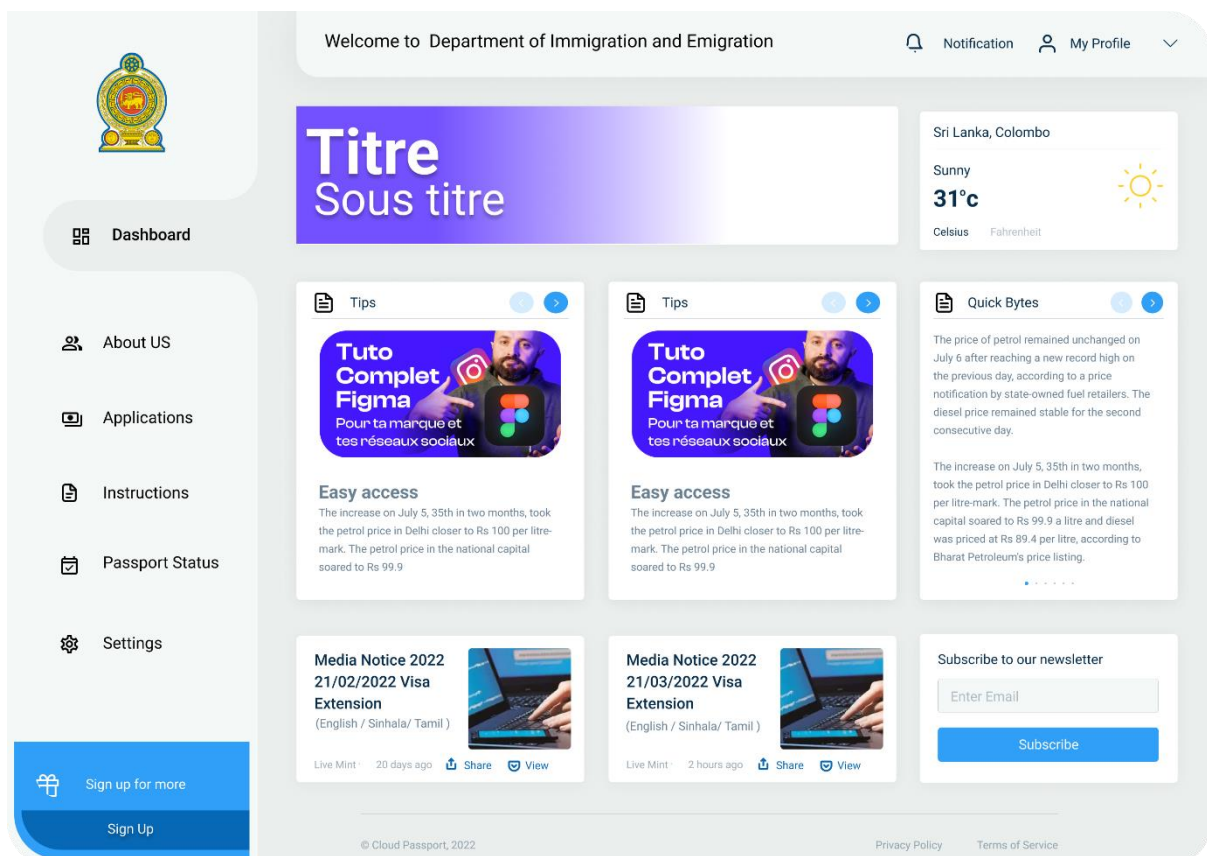
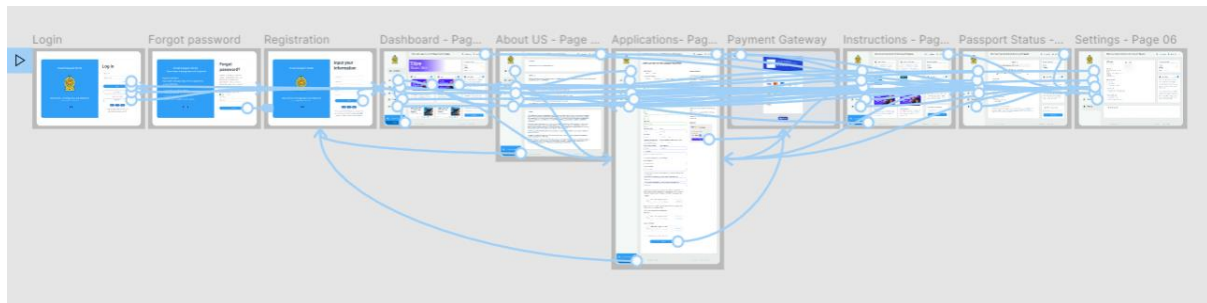
User Interfaces

Cloud Passport System

- **Cloud Passport UI**

URL: <https://bit.ly/3xMgBPp> (Figma)

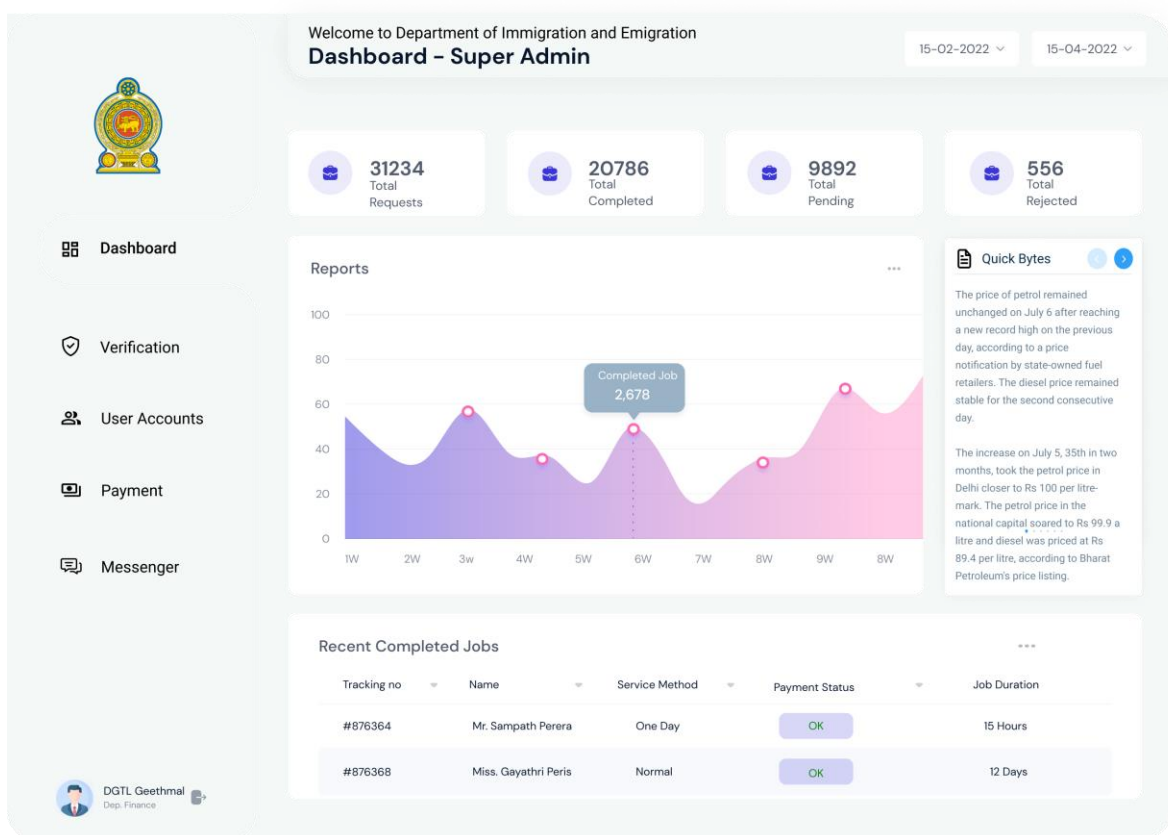
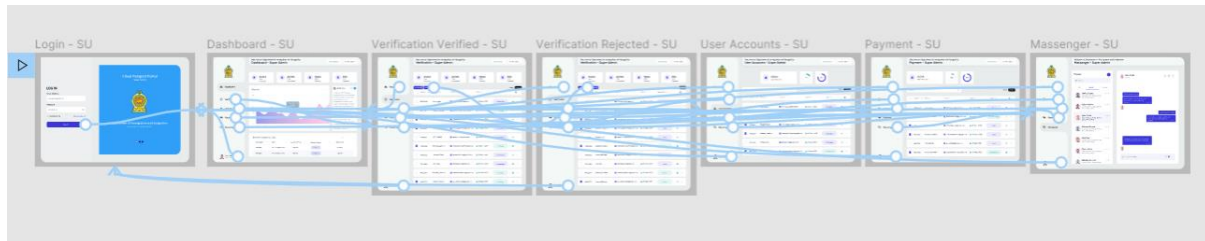
Please use this link to view full User interface & UI wireframe



- **Super Admin UI**

URL: <https://bit.ly/3v5vcnh> (Figma)

Please use this link to view full User interface & UI wireframe

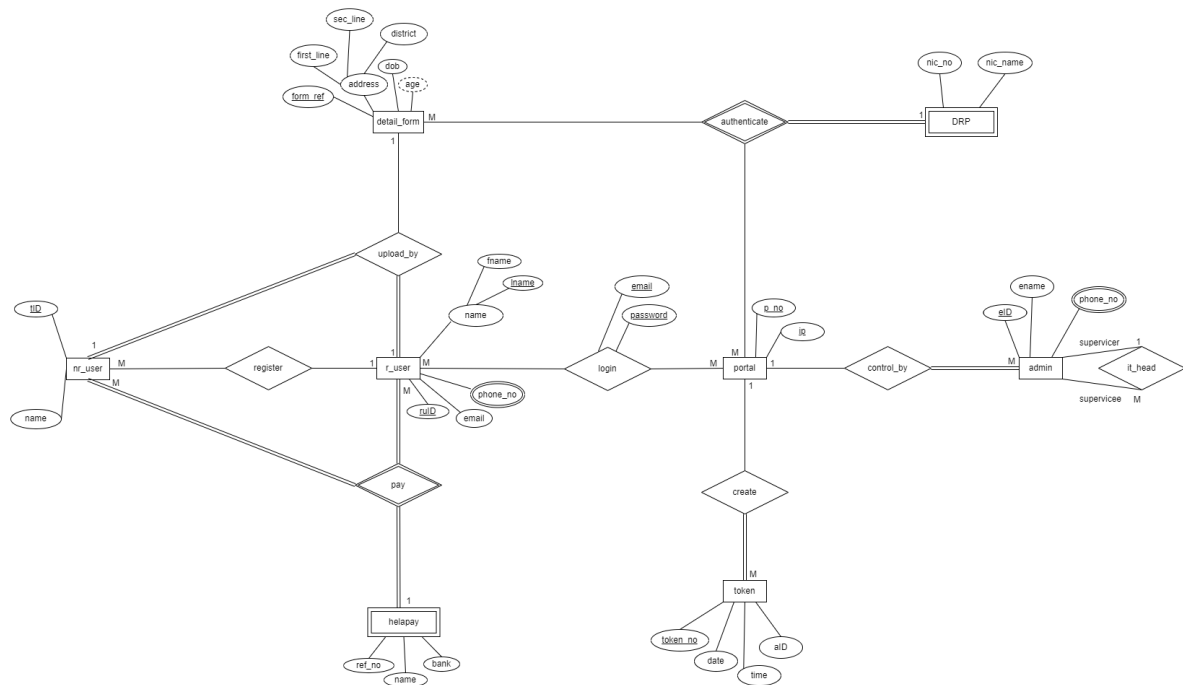


Database design (ER diagram)

Cloud Passport System

ER Diagram

URL: <https://bit.ly/3EL80On>



Entities and Attributes

- **nr_user** - not registered user
 - tID - temporary id number
 - name - name of the user
- **r_user** - registered user
 - ruID - registered user id number
 - Name - name of the user
 - Fname - first name
 - Name - last name
 - Email - email
 - Phone_no - phone number

- Detail_form - data entering form
 - Form_ref - form reference number
 - Address - address
 - First_line - first line of the address
 - Sec_line - second line of the address
 - Dob - date of birth
 - Age - user age

- Admin - administrator
 - eID - employee id number
 - Ename - employee name
 - Phone_no - phone number of the employee

- Portal - online application portal
 - P_no - port number
 - Ip - ip address

- Token - appointment date and time token
 - token_no - token number
 - Date - date
 - Time - time
 - aID - applicant id number

- HelaPay - Online payment gateway
 - Ref_no - reference number
 - Name - payee's name
 - Bank - payee's bank

- drp - department of registration person
 - Nic_no - national identity card number
 - Nic_name - name in the national identity card

Entity relation diagram

The diagram illustrated above shows how entities have engaged with the process related to databases in the system. All the mappable user functions and system functions have been illustrated and all the entities and their attributes have been mentioned and described above.

User functions related to databases

- User registration
- User login
- User uploading details as a registered and not registered user
- User paying as a registered and not registered user.

System functions related to databases

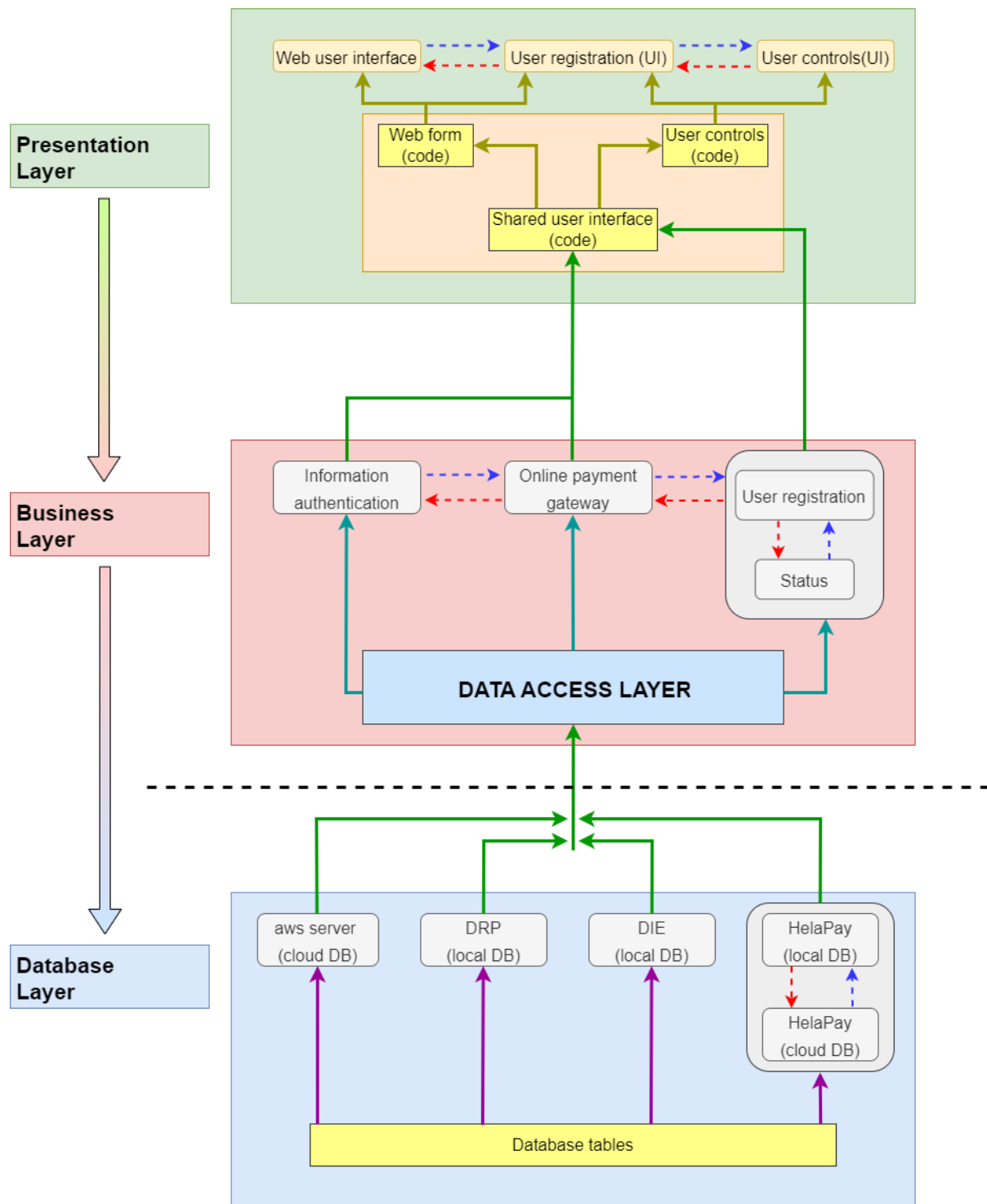
- Authentication of the uploaded documentation
- Online payment gateway
- Online portal management
- Appointment reservation by creating tokens

“DRP” and “HelaPay” are third-party functions that are used to verify the authenticity of the documents which the applicant uploads and to make a secure environment to make payments online.

Admins have control over the portal. The team has its own department head.

System Architecture Diagram

Cloud Passport System



Hardware & software specification

Cloud Passport System

Hardware Requirements

1. System Administration computers

Hardware & Configuration

Processor: Intel or AMD processor with 64-bit support.

Ethernet connection (LAN) OR a wireless adapter (Wi-Fi)

Memory (RAM): Recommended 16 GB or above

Storage Drive: A solid-state drive (SSD)

2. System Server Computers

- Front end servers
- Backend servers - Linux support

Hardware & Configuration

Processor - Intel Xeon Series or AMD Threadripper

CPU Memory - 16/32 GB RAM

Operating System Disk - Dual HDD drives, 1 TB each

Connection - Gigabit Ethernet

Platform - All disk storage residing on a single platform

Recommended Software

- System Administration

Operating System

- Windows
- Linux

- System Server software Recommendations

- Front end server
- Backend server

Operating System

- Oracle Enterprise Linux (OEL), 64-bit (Oracle kernel)
- Red Hat Enterprise Linux (RHEL), 64-bit (Red Hat kernel)

Cloud Services

- Amazon Web Services (AWS) plugins