GUJARAT TECHNOLOGICAL UNIVERSITY

Shree Swami Atmanand Saraswati Institute of Technology

affiliated with GTUg

A

Project Report

on

DIGITAL DOCUMENT ID

Prepared as a part of the requirements for the subject of

DESIGN ENGINEERING – 1B

B. E. II, Semester – IV

Computer Engineering Department

Submitted by:

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Shree Swami Atmanand Saraswati Institute of Technology

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CERTIFICATE

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<u>ABSTRACT</u>

Digital Document Id is the solution for your most annoying problem of losing and forgetting document every time its an online cloud base solution where you register and upload all your document with their keyword or in serial wise. you get an unique id for access those document with your id any one can get access of those document after you allow them

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LIST OF ABBREVIATION

AEIOU: Activity, Empathy, Interaction, Observation, User.

PDC: Product Development Canvas

I/O: Input and Output

LMN: Learning Needs Matrix

UMANG: Unified Mobile Application for New-age Governance

NeGD: National e-Governance Division

PAN: Permanent Account Number

CHAPTER 1: INTRODUCTION

1.1 DESIGN THINKING & ITS IMPORTANCE

Design Thinking is a method used by designers to solve complex problems and find desirable solutions for clients. When design principles are applied to strategy and innovation the success rate for innovation dramatically improves. Design thinking is at the core of effective strategy development and organizational change. Design can be applied to products, services, processes, physical locations, etc. Anything that needs to be optimized for human interaction. You design the way you lead, manage, create and innovate. [1]

1.2 NEED

Currently, in India, many of the documents issued by government or non-government entities are in physical form. This means every time an individual needs to share the document with an agency to avail any service, an attested photo copy either in physical form or on scanned form is shared. Use of physical copies of document creates huge overhead in terms of manual verification, paper storage, manual audits, etc., incurring high cost and inconvenience. This creates problem for various agencies to verify the authenticity of these documents, thus, creating loopholes for usage of fake documents/certificates. In addition, lack of strong identity of the owner that is attached to these documents, it is easy to misuse someone else's document.

1.3 PURPOSE

Digital India aims to transform India into a knowledge based economy. It is an ambitious program and aims to deliver good governance to citizens by synchronized and coordinated engagement with both Central government & State government. Delivery of service through e-Governance represents a paradigm shift and the key is to ensure that the right skills are made available for various stakeholders across the implementation spectrum. This shift requires considerable enhancement of capacities for visualizing, conceiving and delivering projects aimed at transforming existing systems. This requires knowledge of domain as well as technical and techno-commercial-legal capabilities in different levels of government officials. Above all, it requires a basic change in the outlook and functioning of government, so that it becomes citizen-centric rather than process-centric.

The key vision areas under the Digital India Programmer are to "provide shareable private space on a public cloud" and to "digitize all documents and records of the citizens and make them available on a real-time basis". This means that "providing citizens with easy access to a shareable private space on a public cloud can greatly facilitate process reengineering through paperless processes. Documents can be issued in verifiable electronic format, made

available in various e-Document repositories; citizens can digitally store their documents in any of their preferred digital locker, and then share them with various agencies without the need to physically submit them. This mechanism of 'e-Document repositories' and 'Digital Document id' will greatly improve the citizen convenience and usher in paperless transactions across the entire ecosystem of public services. All these must be with due user authentication, consent, audits, and other security best practices. This easy access to the digital resources ensures that citizens are not asked to provide government documents or certificates, which are already available with some department/institution of the government, in physical form. Individuals should have an easy way to provider their consent electronically and share various documents when availing a service.

1.4 <u>OBJECTIVES</u>

i   Enable digital empowerment of individuals by providing them with a choice of Digital Locker on the cloud offered by one of the providers.

ii   Enable self signing via e-Sign and make them available electronically. iii. Minimize the use of physical documents.

iii Ensure authenticity of the e-documents and thereby eliminate usage of fake documents.

iv Secure access to various Government issued documents.

v   Reduce administrative overhead of Govt. departments and agencies using electronic documents thus making it easier for the individuals to receive services in a paperless manner.

vi Anytime, anywhere access to their documents by the individuals.

vii Open and interoperable architecture for creating a multi-provider ecosystem providing choice to the issuers, requesters, and individuals. This also allows rapid digitalization across various systems.

1.5 <u>PROBLEM DEFINITION</u>

It is highly recommended that government issued documents to individuals have a strong identity such as Aadhaar. When digital documents/certificates are not attached to a strongly verifiable identity, it is important to note that, while those documents can be still made available online in electronic format, it can potentially be misused by another person who has same name/gender etc. It is difficult to verify if the document was issued to same individual without affixing a real identity such as Aadhaar

CHAPTER 2: EVOLUTION OF IDEA

2.1 Observation Record Sheet (AEIOU Framework)

Understanding the problem of society, it is one of the biggest challenges for engineer as till now we were making projects on imaginary ideas. So, the first sessions were based on understanding the domain of the problem in broader sense with emphasized on interacting with the people of our domain area which include more casual talks than technical sections. We were mostly observing what are major of the basic problems in our domain.

Our domain is COWSHED MANAGEMENT as we know there are number of people are present for their different purpose and duties all of them are from different background and have to platform different function or utilized the space in different way.

- A : Activity
- E : Environment
- I : Interaction
- O : Object
- U : Users

➢ In this stage, we find the various users which are directly or indirectly related to our project.

2.1.1 Activity Framework

Activity means specific task performed by the user on the system. These are goal-directed sets of actions- paths towards things people want to accomplish.

- What is actually going on?
- Why is it going on?
- How is it going on?
- What is involved?

➢ **General impression/observation: -**

Verification, Card producing, Authentication, Document Verification, Cloud Computing, Filtering, Scratching, Sorting, Details Verification and etc…

➢ **Element, Features and Special Notes: -**
Scanning, Document Upload, Login/Logout, Edit Details, onfirmation, Storing Data, and etc…

2.1.2 Environment Framework

Environments include the entire arena where activities take place.
For example,

- What describes the atmosphere and function of the context, including individual and shared spaces?
  - ➢ **Area: -**
    Urban, Rural, Industrial and etc…

  - ➢ **Near By: -**
    Educational Building, Offices, Hospital and etc…

2.1.3 Interaction Framework

Interactions are between a person and someone or something else, and are the building blocks of activities.

- What is the nature of routine and special interactions between people, between people and objects in their environment, and across distances?
- Who are involved? Why? How?
- ➢ **General impression/observation: -**

Consumer	→	Consumer
Provider	→	Consumer
Helpline	→	Consumer
Emails	→	Consumer

2.1.4 Object Framework

Objects are the building blocks of the environment, key elements sometimes put to complex or even unintended uses, possibly changing their function, meaning and context.
For example,

- What are the objects and devices people have in their environments, and how do these relate to their activities?
- ➢ **General impression/observation: -**
  Digital Id, Chips, Web Servers, Engineers, Data Storage, Website, Ui application

2.1.5 Users Framework

Users are the people whose behaviors, preferences, and needs are being observed.

- Who is present?
- What are their roles and relationships?
- What are their values and prejudices?

- ➢ **General impression/observation (who is present? Role & responsibilities?): -**
  - ➢ Students, Banks, Providers, Corporates, consumers, Civilians and etc…

4

➤ As in our first canvas of activities we have observed the following activities.
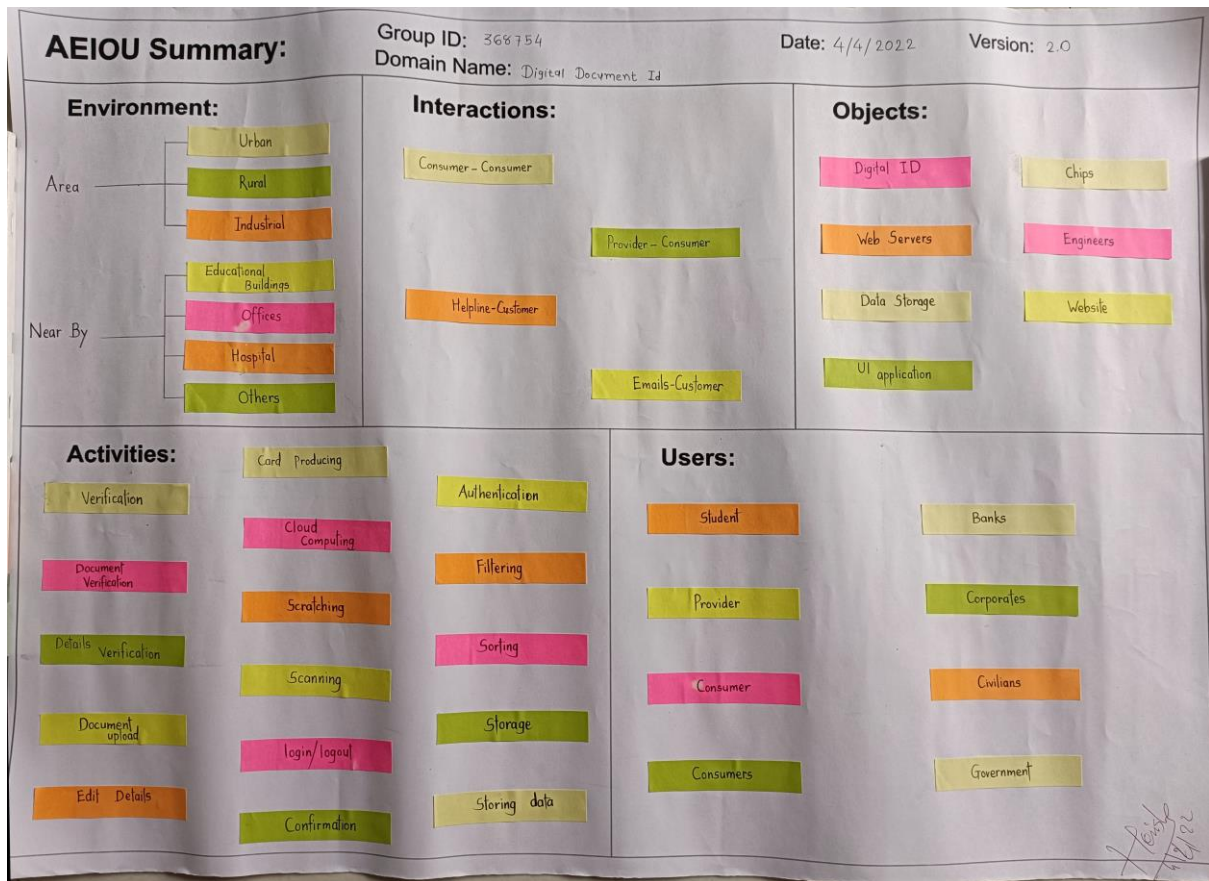
[Fig. 2.1.6 AEIOU Summary canvas]

2.2 Mind Mapping / Framework

"A mind map is a visual representation of hierarchical information that includes a central idea surrounded by connected branches of associated topics"

Mind mapping is a great way to brainstorm, plan, or turn ideas into the steps needed to make it real.

Mind mapping is canvas is the easy way to know about what the project is and what is done after completion of project.

Mind Mapping is a technique of visual representation to show the relationship between various ideas, concepts or other information.

It helps in project planning, collecting and organizing data, brainstorming, and presentation. To help solve problems, find resources and uncover new ideas.

Hear, mind mapping of our domain, **"DIGITAL DOCUMENT ID"** is given below
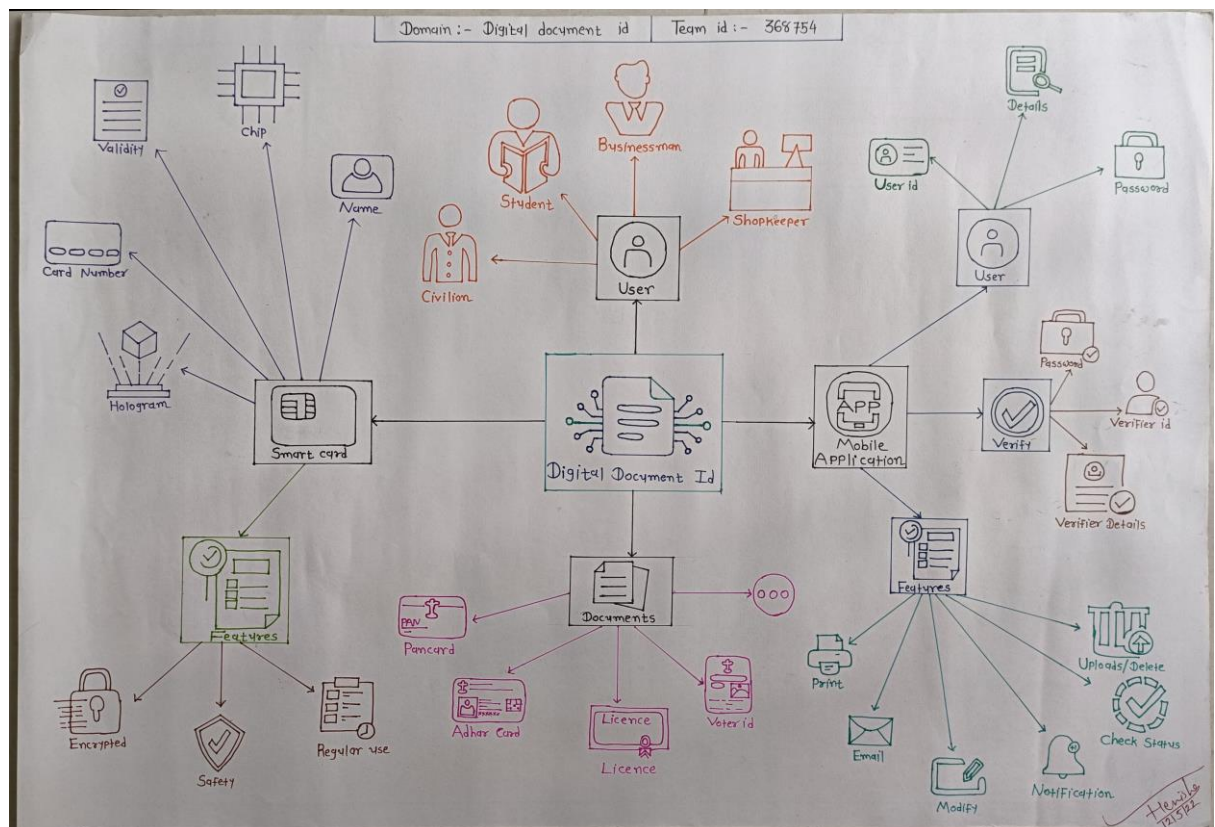
[Fig. 2.2.1 Mind Mapping Canvas]

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2.3 Empathy Mapping / Framework

Empathy is the ability to sense other people's emotions, coupled with the ability to imagine what someone else might be thinking or feeling. SO, In Empathy mapping canvas we are feel the topic and describe that how people feels when they use the product.

Empathy Mapping Canvas is made up of USERS (Who uses the product), STAKEHOLDERS (Who have the ownership of product), and ACTIVITIES (What kind of works can be done by this product).

[Fig. 2.3.1 Empathy Mapping Canvas]

❖ **USER: -**

The person who are directly connected to the system.
   ➢ Provider
   ➢ Corporates
   ➢ Civilians
   ➢ Student
   ➢ Banks

❖ **STAKEHOLDER: -**

Any person or group who will be affected by the system, directly or indirectly are called stakeholder.

   ➢ People
   ➢ Companies
   ➢ Government

❖ **ACTIVITIES: -**

The activities that user might be doing.

   ➢ Document verification
   ➢ Detail verification
   ➢ Card Producing
   ➢ Confirmation
   ➢ Sorting
   ➢ Document Upload
   ➢ Edit Details
   ➢ Login/logout
   ➢ Storage
   ➢ Scanning

❖ STORY BOARDING: -

➢ HAPPY: -

My father's friend forgot to bring his voter id card for some Government work. But he could able to print out his card using this smart card. So, he was happy as he Didn't have to come back home for his voter id card.

➢ HAPPY: -

Students of college who are going through their admission process have to bring all required documents with them. But by using this card, they don't have to bring all the documents only one card is enough. So, they can easily finish their admission process with only one smart card. Thus they are happy with this.

➢ SAD: -

As per the terms and conditions of this smart card if you have different names in different type of documents then you are not eligible for the smart card. One person has some type of problem so he is not able to generate his smart card. This is an unhappy moment for him.

➢ SAD: -

Some old generation people are unhappy with this smart card because they don't know how to use this technology. they also don't know how to enter details and documents, verify the documents online web or in application Because of this reason one group of people is unhappy.

After empathizing we found the problem that the patient have to stand in long queue for their case registration.

2.4 Ideation Canvas / Framework

An ideation canvas is a rough whiteboard where ideas can be stretched into any limits or dimensions, Ideation session is not aimed at finding solutions to the defined problem. But to define the best possible problem and stretch out it's possible.

Ideation canvas is made up of People (Who can use), Activities (What kind of works can be done by this product), Situation/ Context Location (On which place this technology can be use), Props /Possible Situations.

- **What is ideate mode?**
  Ideate is the method of the design process in which you aim to generate radical design alternatives. Mentally it represents a process of going wide" in terms of concepts and outcomes-it is a mode of flaring" rather than "focus." The goal of ideation is to explore a wide solution space - both a lot of ideas and a diversity of those ideas. From this vast depository of ideas, we built prototypes to test with users.
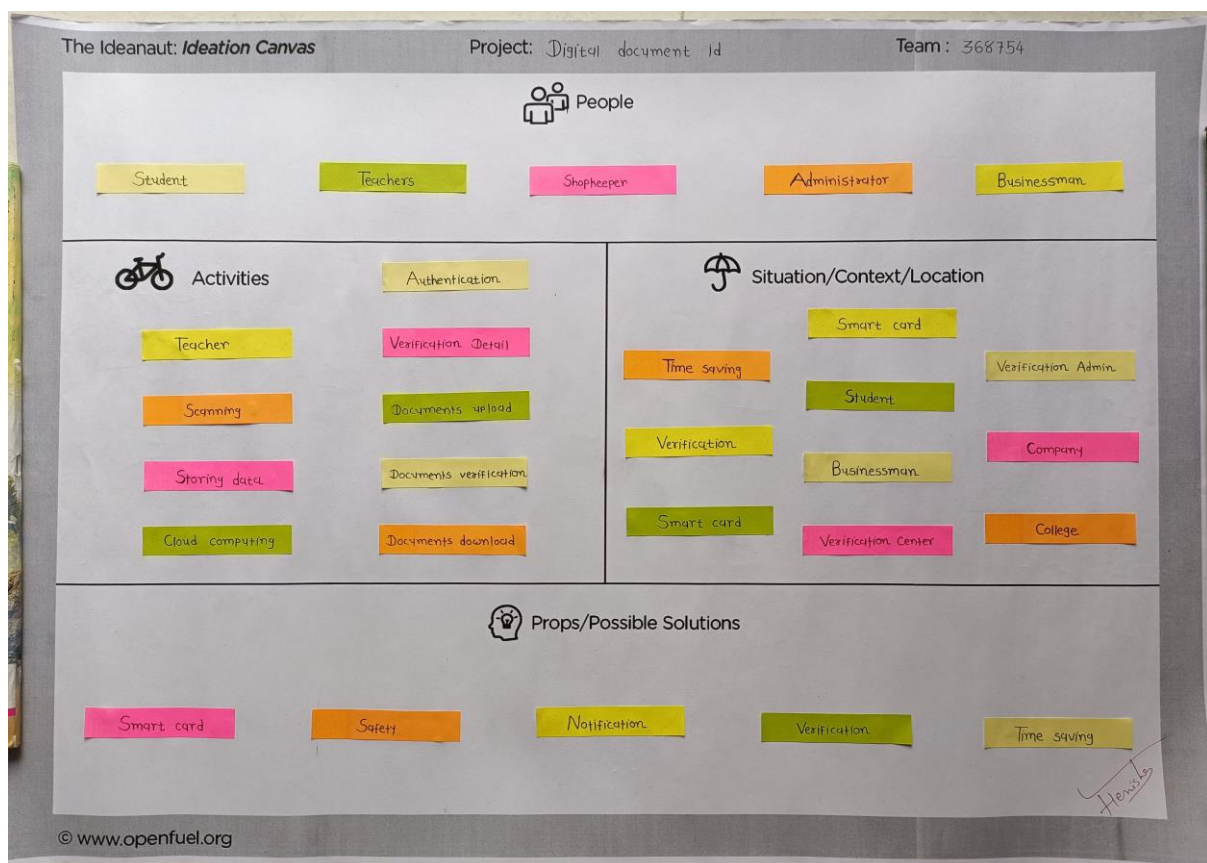
[Fig. 2.4.1 Ideation Mapping Canvas]

❖ <u>**People: -**</u>

Looking forward a set of different people involved was peeped into. We came out with following idea on involvement of people.

People are the users associated with this project:

➢ Customer	➢ Doctor
➢ Family	➢ Friends
➢ Visitor	➢ Shepherd
➢ Mechanic	➢ Self
➢ Buyer	➢ Kids
➢ Plumber	➢ Farmer

❖ <u>**Activities: -**</u>

With the thought on people involved in different activities, an attempt was made to think up in possibilities of various activities. Elaboration at maximization is essential here at the stage while identifying activities.

Activities concerned to this project is as below:

➢ Walking
➢ Breeding
➢ Selling
➢ Milking
➢ Watering
➢ Showering
➢ Feeding
➢ Meeting
➢ Mumbling
➢ Harvesting

❖ <u>Situation/Context/Location: -</u>

With the number of people identified doing many activities, we attempted to identify different locations that are involved in performing such activities, situations that are applied to perform certain activities and context of importance that was relevant to activities. Different type of ideas we came up with the following.

➢ Feeding → Hod → Cowshed
➢ Harvesting → Tools → Field
➢ Showering → Water → Bathing Place
➢ Selling → Cows → Cow Fair
➢ Milking → Bucket → Cowshed
➢ Visiting → Visitor → Cowshed

❖ <u>Props/Tools/Objects/Equipment's: -</u>

This section of the ideation canvas helps in carving out different requirement in -line with attempting / looking forward to have an idea about addressing a problem some of the solution regarding to problem as below.

➢ Mechanic Tools
➢ Steel Chain
➢ Dry Rub
➢ Shade
➢ Hand Cart
➢ Sanitizer
➢ Water Tank
➢ Pipe
➢ Gloves
➢ Camera
➢ Liq. Nitrogen

2.5 Product Development Canvas / Framework

After all the observation and reverse engineering, we started to make product development canvas. In product development canvas, we have mentioned about our purpose for making a product, listed out the users, product function, product features, and component needed for making the product. Then we went to different users and explained our project and based on that we got customer revalidation and product experience

A product development canvas is the ground where in the best possible ideas after the ideation session are pitched and nurtured to develop.

Product development canvas made up of purpose (why this technology needs to be invented). People (who can use), product experience (how is experience by using this product), product functions (main functionality of this product), product features (features of this product), components (what kind of hardware/software has been used), /feedback), reject/redesign/retain (decision or advice of customer).
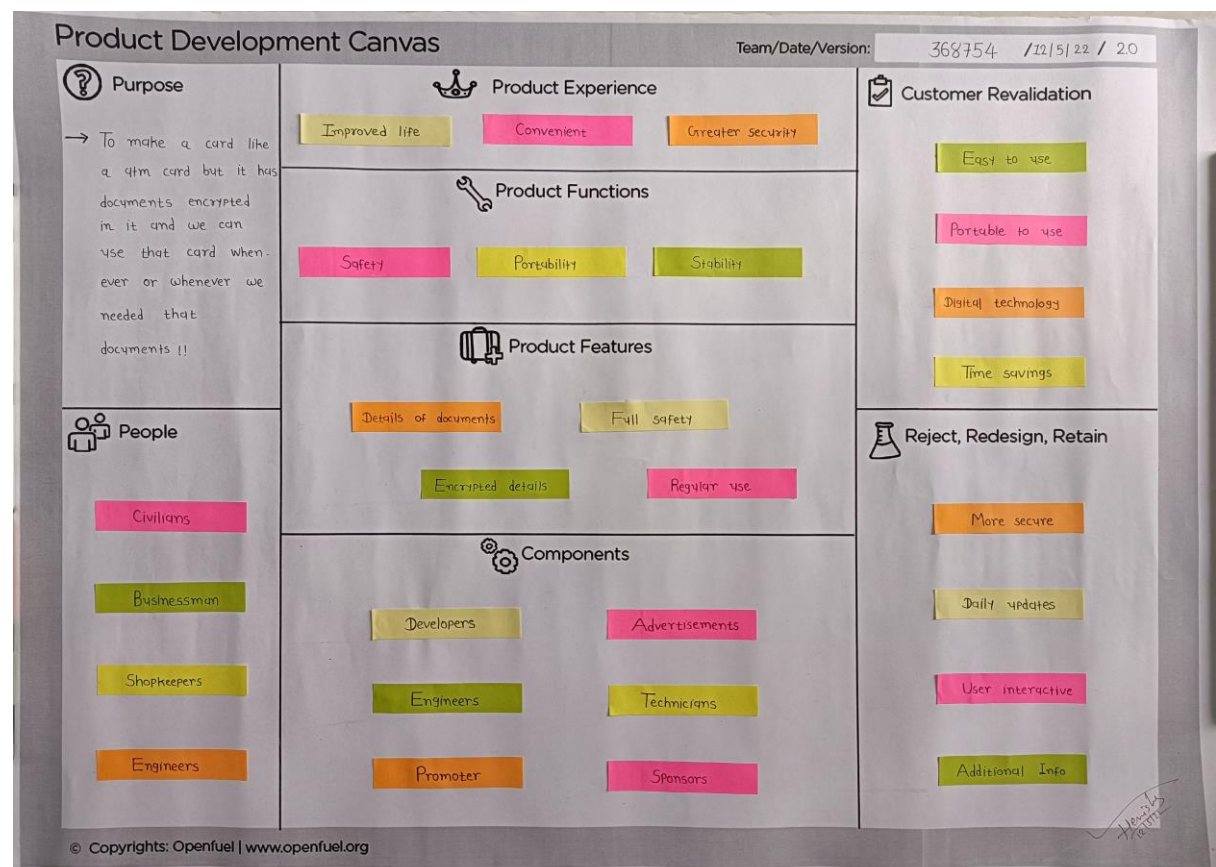
[Fig. 2.5.1 Product Development Canvas]

❖ <u>Purpose</u>

In the last sheet we were precise about the purpose of our topic. In our canvas we are fully concern about comfort of people and requirement of them.

➢ To make a card like a atm card but it has documents encrypted in it and we can use that card whenever or wherever we needed that documents !!

❖ <u>People</u>

Then we will choose the people which are preciously link to this our purpose.

➢ Students
➢ Shop Keeper
➢ Businessmen
➢ Bankers
➢ Others

❖ <u>Product experience</u>

In this section we know that how the people felt who used our product.

➢ Improved Life
➢ Convenient
➢ Greater Security

❖ <u>Product function</u>

Some functions are as given below:

➢ Safety
➢ Probability
➢ Stability

❖ <u>Product features</u>

Some features are as given below:

➢ Encrypted Details
➢ Full Safety
➢ Regular Use
➢ Details of Documents

❖ <u>Components</u>

Now the components use to design these features are given below

- ➤ Developer
- ➤ Engineer
- ➤ Promoter
- ➤ Sponsors
- ➤ Technician
- ➤ Advertisement

❖ <u>Customer revalidation</u>

- ➤ User 1: Easy to Use
- ➤ User 2: Portable to Use
- ➤ User 3: Digital Technology, Time Saving

❖ <u>Reject, redesign, retain.</u>

After customers rejection of our product, we should redesign our product and we try to develop a new or modify our product according to customer's feedback

- ➤ More Security
- ➤ Daily Update
- ➤ User Interactive
- ➤ Additional Info.

2.6 <u>LNM Canvas</u>

The full form of LNM is "Learning needs matrix", This canvas is helpful to student to identify the learning requirement at any early stage along with time allocation for each learning priority.

[Fig. 2.6.1 LNM Canvas]

CHAPTER 3: PRIOR ART SEARCH

3.1 Introduction

"A prior art search is simply involves checking database to find out whether someone else has already describe the ideas similar to yours."[1]

In this search we will search the database and find if someone else is already make a project on this topic by this we can identify the scope of this topic and check if we are first to make the project on this topic of not if we are not then we can find some guidance from past project for out project.

3.2 Literature survey

study on the topic Digital Empowerment of Rural People-Issues and Challenges[2]. It discusses about the various plans and strategies which were adopted by the government for empowering the rural people for making them digitally literate. It mainly focuses on digital empowering of citizens. The empowerment of citizens can be done through various methods like digital India through which people can be made digitally literate and empowered. The study concludes that digital empowerment of citizen's act as a catalyst for the economic development of a country with minimum paper transactions.

study to understand the awareness and perception of student community towards the digital India initiative. They also try to examine the extent to which students are making uses of these scheme and the barriers they face while utilizing the schemes. They found that the students are having a very positive outlook towards the initiative and strongly believe that it will lead to proper governance. The students are also aware about the schemes. Even though the major difficulty faced by them was the lack of proper knowledge about the computer and the internet. The authors suggest that students are having knowledge about the schemes from the seminars, newspapers and from the college workshops. Therefore if more workshops can be arranged it will help the community to develop better perspective towards digitalization.

a study on the title transformation through digital India[3], evaluating the benefits and importance of moving toward a digital platform. The author says that the digital India initiative will lead to an overall transformation of the economy particularly in the areas of government, lives of the citizens and the economy as a whole. The digital transformation of the country will change the pace of growth and it will result in faster adaptability, response, e-governance and transparency of all activities. The author says that the India is going to see rapid growth in all the areas in the coming years after the digitalization

that digital India plays an important role for the digital development of the country. But there are challenges towards them like inaccessibility and inflexibility which may divert them to failure. Though there are challenges, if it's properly implemented it can give great result for the future of Indian citizens. This paper analyses the vision opportunities and challenges of digital India

3.3 Additional works that are similar to this project

A. Digi Locker[4]

Digi Locker is a flagship initiative of Ministry of Electronics & IT (MeitY) under Digital India programme. DigiLocker aims at 'Digital Empowerment' of citizen by providing access to authentic digital documents to citizen's digital document wallet. The issued documents in DigiLocker system are deemed to be at par with original physical documents as per Rule 9A of the Information Technology (Preservation and Retention of Information by Intermediaries providing Digital Locker facilities) Rules, 2016 notified on February 8, 2017 vide G.S.R. 711(E).

Link

https://www.digilocker.gov.in/

Uses

You can use it to store important and official documents such as educational certificates, birth certificates, PAN cards, Aadhaar cards, Passports and Voter IDs on your mobile phone. You can also sign into digilocker.gov.in using a web browser.

Benefits to Citizens

1. Important Documents Anytime, Anywhere!
2. Authentic Documents, Legally at Par with Originals.
3. Digital Document Exchange with the consent of the citizen.
4. Faster service Delivery- Government Benefits, Employment, Financial Inclusion, Education, Health.

Benefits to Agencies

1. Reduced Administrative Overhead: Aimed at the concept of paperless governance. It reduces the administrative overhead by minimizing the use of paper and curtailing the verification process.
2. Digital Transformation: Provides trusted issued documents. Issued Documents available via DigiLocker are fetched in real-time directly from the issuing agency.
3. Secure Document Gateway: Acts as a secure document exchange platform like payment gateway between trusted issuer and trusted Requester/Verifier with the consent of the citizen.
4. Real Time Verification: Provides a verification module enabling government agencies to verify data directly from issuers after obtaining user consent.

B. UMANG[5]

Unified Mobile Application for New-age Governance (UMANG) is developed by the Ministry of Electronics and Information Technology (MeitY) and National e-Governance Division (NeGD).

Umang acts as a unified platform for all citizens to access all government departments and their services. It provides seamless integration with other Digital India Services like Aadhaar, DigiLocker, and PayGov. The government says that all the new such service will automatically be integrated with the platform.

It also supports Aadhaar-based and other authentication mechanisms for service access. The sensitive profile data is saved in an encrypted format and no one can view this information.

 Umang can also help users get PAN card, check Provident Fund (PF) balance, file IT Returns, pay utility bills (electricity, water, property tax, etc...) and more. Students can also view their CBSE, ICSE results and also check out AICTE-certified engineering colleges on the Umang app. it supports 13 regional dialects including Hindi, Kannada, Telugu, Tamil, Bengali, Marathi and others. It is available on both Google Play and the Apple App Store

Link

https://web.umang.gov.in/

3.4 <u>Outcome of the Literature</u>: -

Survey From the literature review, the clear idea and the different methods which are used to develop our project has been gained. After a detailed literature review based on need, it is proposed to develop application or web to secure and save the data on database and Print as Pdf

CHAPTER 4: REVERSE ENGINEERING

4.1 Overview

Reverse engineering, also called back engineering, is the process by which a man-made object is deconstructed to reveal its designs, architecture, or to extract knowledge from the object; similar to scientific research, the only difference being that scientific research is about a natural phenomenon[3]

3 basic steps of reverse-engineering

1. Information extraction
The original object or design is studied, and information about it is extracted.

2. Modeling
The information collected is abstracted into a conceptual model.

3. Review
The model is tested in different contexts to determine if it was successfully reverse-engineered.

4.2 User Perspective:

There are many reasons for performing reverse engineering in various fields. Reverse engineering has its origins in the analysis of hardware for commercial or military advantage. However, the reverse engineering process in itself is not concerned with creating a copy or changing the artifact in some way; it is only an analysis in order to deduce design features from products with little or no additional knowledge about the procedures involved in their original production. In some cases, the goal of the reverse engineering can simply be a redocumentation of legacy systems.

4.3 Developer Perspective

App name	Feature	Advantage	Disadvantage
Digiloker	Add document View document Download document	View Document Anytime and Anywhere Download and Share Document	Network data or Wifi required
Digital ID	View document Scan document Share Document	Download and Share Document	Document Data Steal Problem, Network data required
DocuSign	Add document Download eSign Documents	View Document Anytime and Anywhere Download	Make it easy to use and descriptive . confusing interfaces when open it

CHAPTER 5: PROTOTYPING

5.1   Tools and technology

❖ **TOOLS**
Ideation Canvas
Problem Identification

❖ **SKILL**
Knowledge of
- Photo Editing,
- App or web development,
- Basic programing language(c, cpp, java)
- Android Studio
- Flutter
- Firebase

❖ **SOFTWARE**
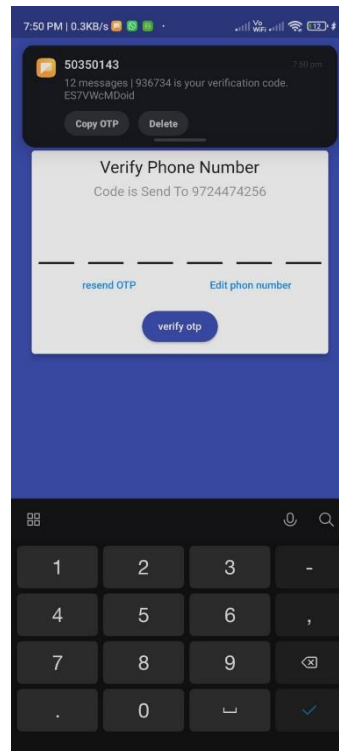Photoshop
Android Studio
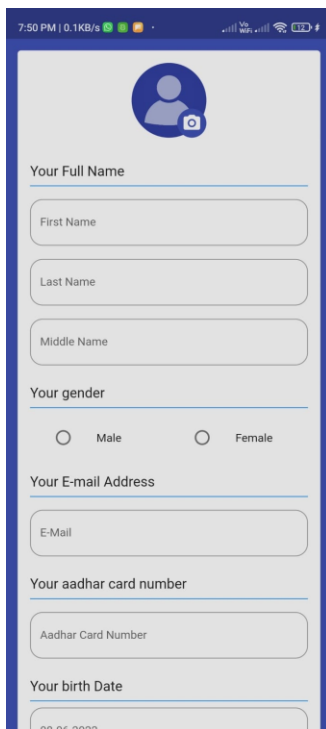Chrome

❖ **Material Requirement**
Computer,
Laptop
Etc.

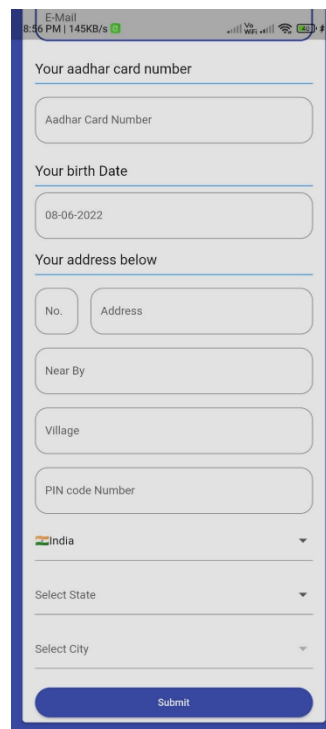## 5.2 PROTOTYPE

[Fig. 5.2.1 Phone Number Verification Screen]
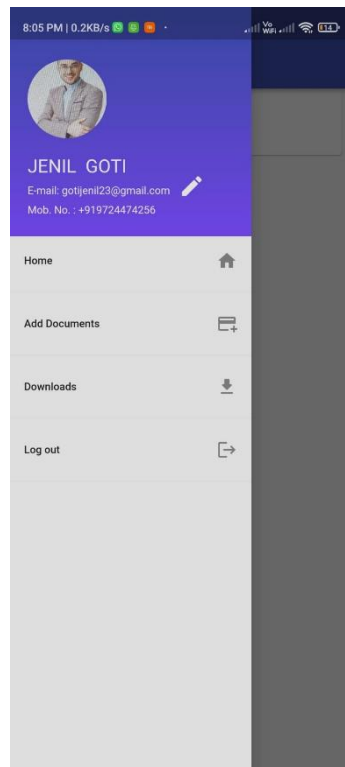

[Fig. 5.2.2 OTP verification screen]

[5.2.3 Add User info screen]

[5.2.4 Add User Info Screen(After Scrolling)]

[5.2.5 Home Screen]   **[5.2.6 Drover Screen]**   **[5.2.7 All Document Screen]**
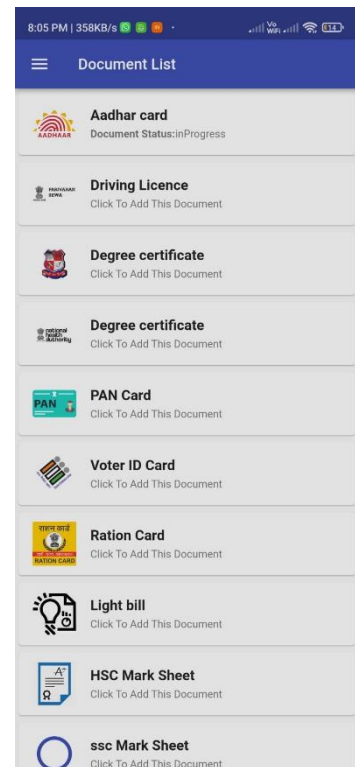
[5.2.8 Add Document Screen]   **[5.2.9 Add Document Screen (After Scroll)]**   **[5.2.10 Submit Response]**
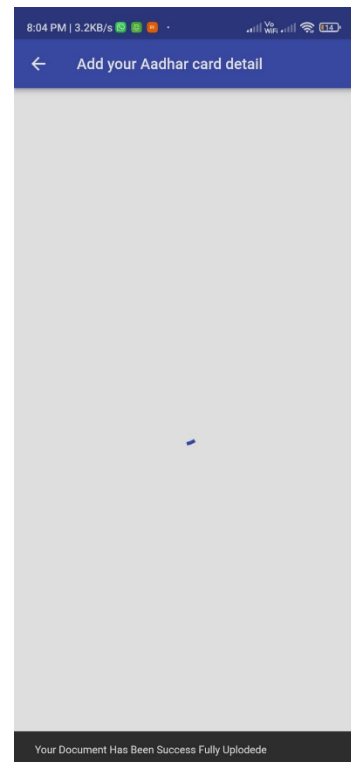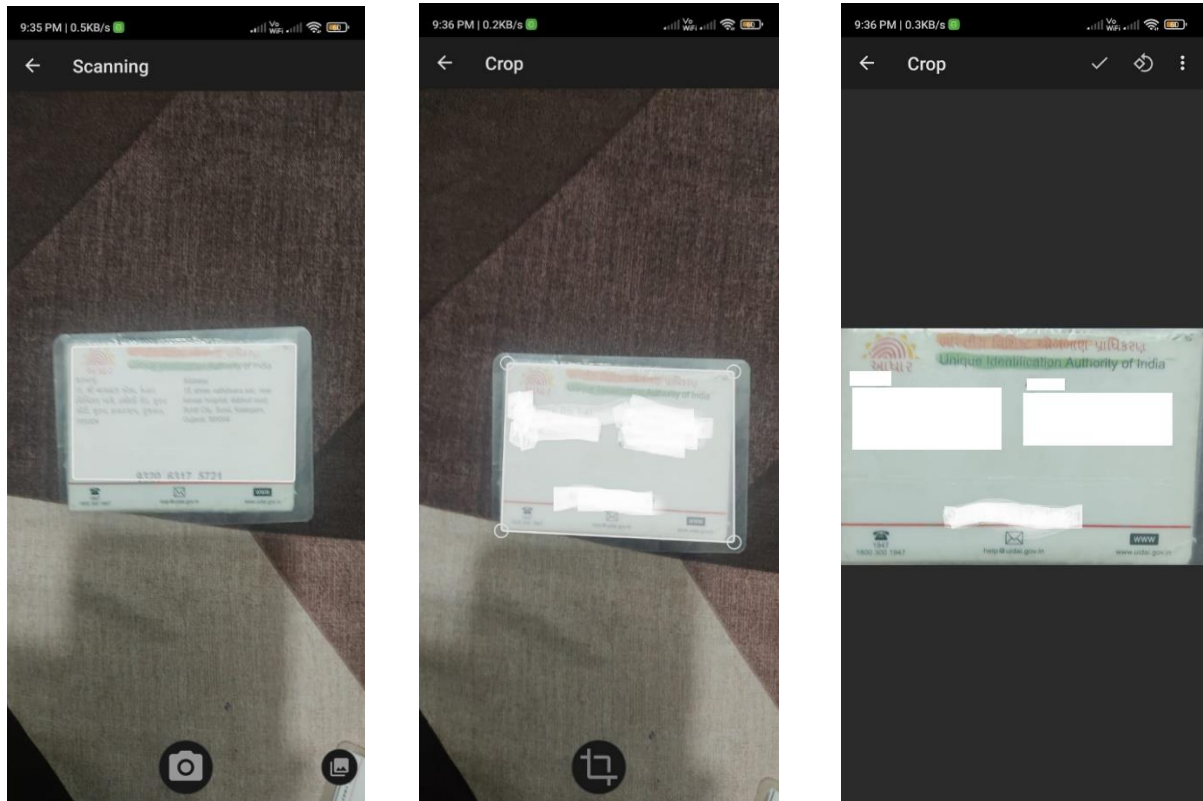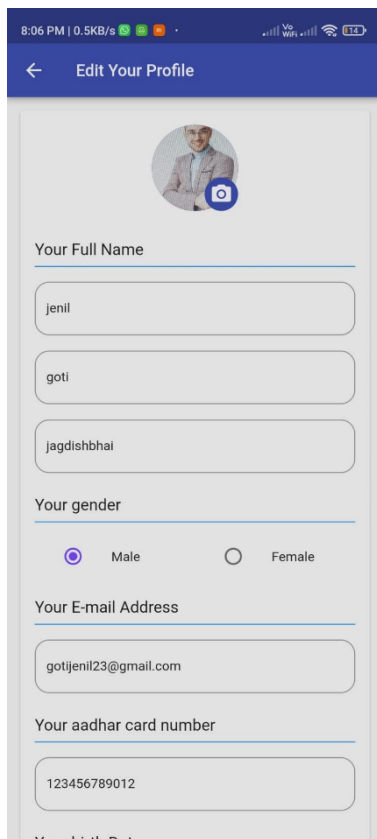
**[5.2.11 Document Scanner Screens]**
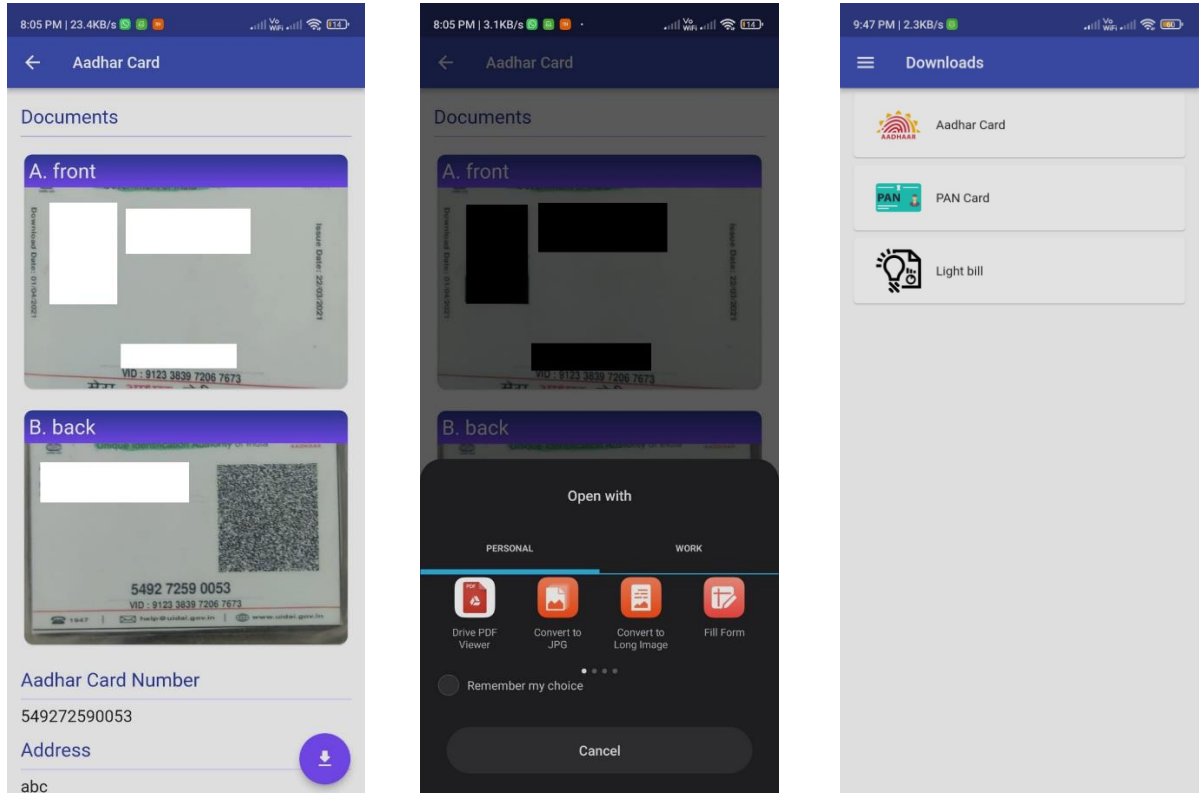
[5.2.12 Document Detail Sc..]   [5.2.13 Doc Open With scr..]   [5.2.14 Downloads Screen]
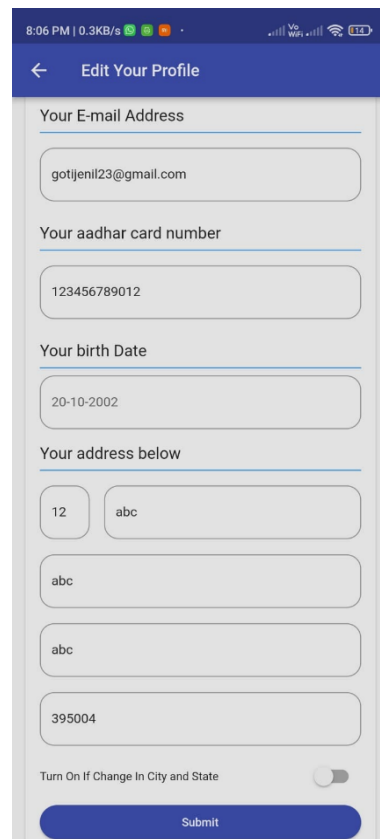
[5.2.15 Edit Profile Screen]   **[5.2.16 Edit Profile With (after Scrolling)]**

<u>CONCLUSION</u>

By design engineering, we able to identify the problem which are manifest during the use and we were also able to solve them by improving our domain and come up with new technical solutions.

We also learn to emphasize user's issues through empathy canvas and come up with effective solution through product development canvas.

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