

## **Project Brief**

The primary objective of this project is to design and develop a smart suitcase that incorporates an ARM (Advanced RISC Machine) chip for enhanced functionality and connectivity. The smart suitcase will provide a range of features and capabilities to enhance the travel experience, ensuring convenience and security for users.



# /'seyj'/

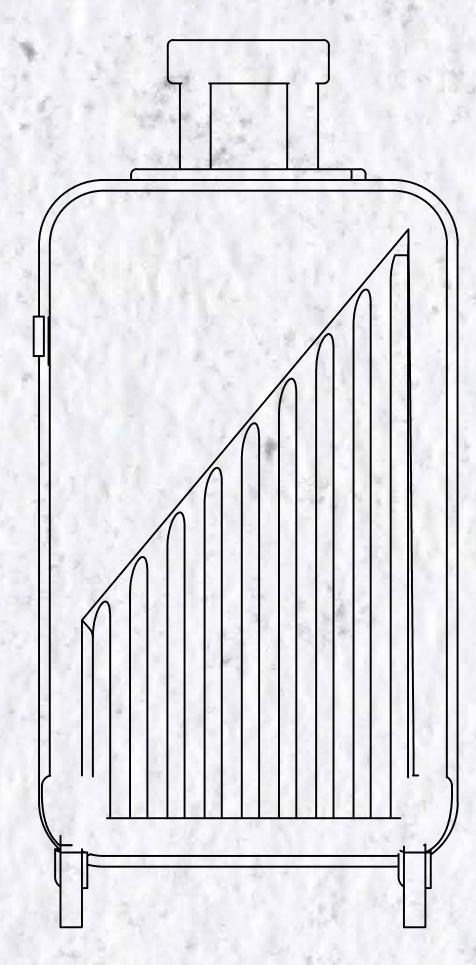
adjective, sag·er, sag·est.

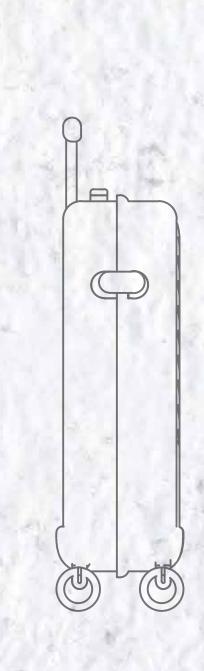
wise, judicious, or prudent.

A sage is traditionally seen as a knowledgeable and trusted advisor, and this reflects the suitcase's role in simplifying and enhancing the travel experience. The name implies that the suitcase is not just a passive travel accessory but a smart companion that offers valuable insights and support to travelers.

# **Project Details**







## Who likes 'sage'?

#### Conventional users

- Vacation
- •Corporate Trips Visiting people in different
- cities Picnic or short trips

#### Alternative users

- College students
- •Business owners for portable stalls
- Equipment carriers

# The Chronicles of 'sage'

- A suitcase is something which stays with us throughout our journey.
- •It runs with us to places
- ·We can sit on it while waiting for our
- •It becomes our whole closet when away from home •We weigh it a million times before
- getting on a plane
  Sometime when travelling in a car it becomes our headrest •Clothes stay wrinkle-free in a suit-
- but sometimes,

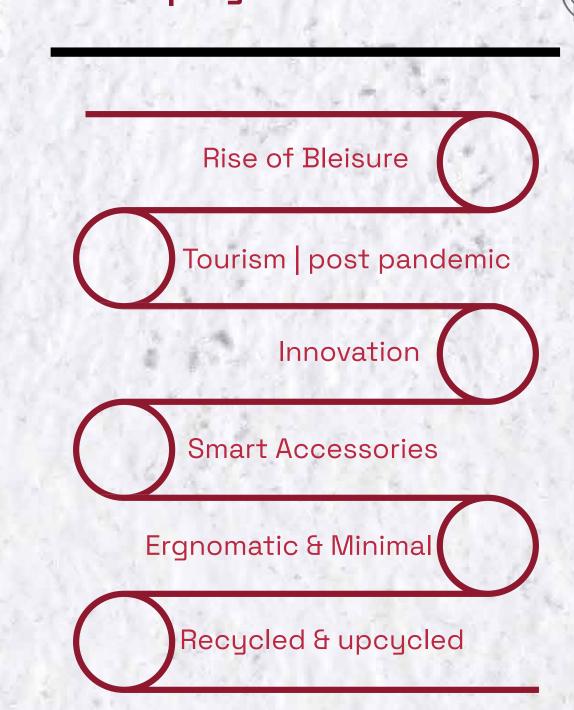
case too

- •it gets lost with no way to return
- •or one of the wheel gets tired of carrying much weight
  •or sometimes the hardcase doesn't
- fit into small spaces or sometime's the zipper can get stuck
- •or the lock broken

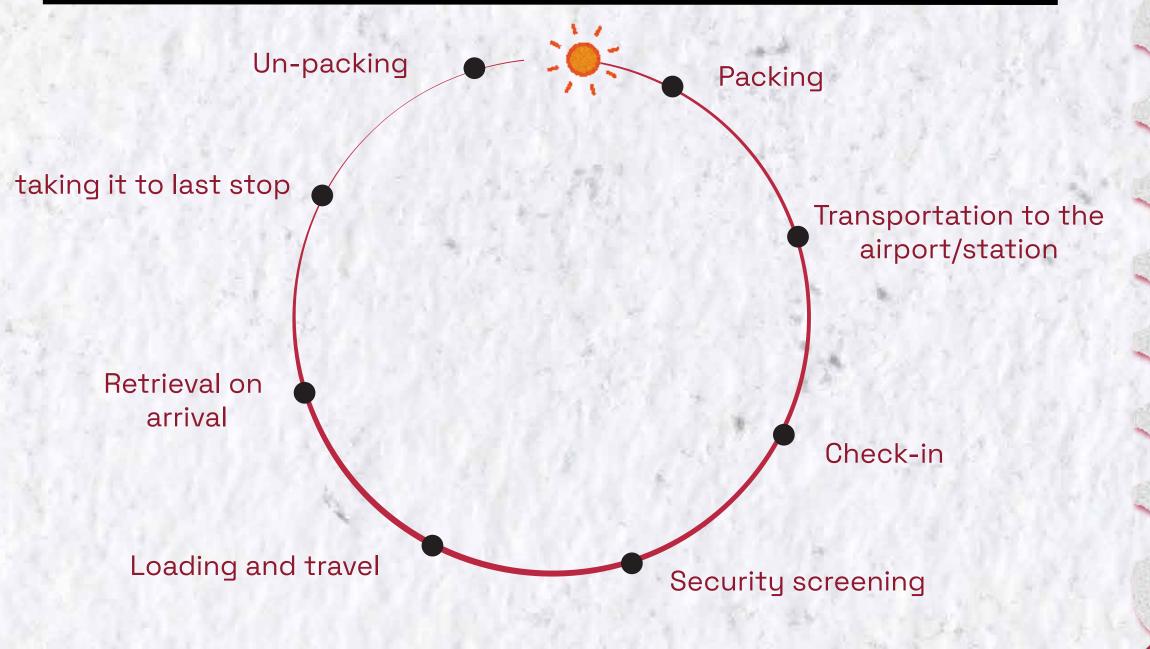
# The Qualities of 'sage'

# **DURABILITY** SIZE AND CAPACITY LIGHTWEIGHT **EASY TO MANEUVER GOOD ORGANIZATION**

#### **Trends | Key Features**



# The Journey of 'sage'?



#### Problems one might face without "Sage"

Loss or Misplacement of Luggage: Passengers frequently experience the loss or misplacement of their luggage during travel, leading to frustration and delays.

Limited Connectivity: Traditional suitcases lack built-in connectivity features, such as tracking and remote control, which could help travelers keep better tabs on their belongings.

Security Concerns: The security of luggage is a significant concern for travelers. A smart suitcase could provide enhanced security features.

Inefficient Packing: Many travelers struggle with packing efficiently, leading to issues such as wrinkled clothes and disorganized items.

Weight Management: Overweight luggage can result in extra fees at the airport. Some smart suitcases have built-in scales to help travelers weigh their luggage and avoid additional charges.

SECURITY

#### who loves 'sage'?

In a world where everyone is moving onto better things with the fast paced technological developments, moving to different cities. Sometimes that demographical changes we forget how hard it can get for our parents to cope up.

So Sage is specifically made for the age group 55+. All the assistance required for people with less or no experience at all.

From International to National it covers all their needs as well helps the kids to keep a track of them and their belongings.

## why loves 'sage'?

It can help to decrease the physical strain, security features and is greater convenience for elderly.

Additionally, amenities built-in chargers and simple-to-use wheels can make moving around hotels and airports less strenuous and more convenient.



# Think & Feel

plicated?

- here?

# Say & do

•Why is everything so com-

- •Where should I go now? •When will my luggage be
- •Am I sitting at the right qate?
- When should I call the taxi?

•I will figure it out •This should be the right place

- •Take help from people around and feel embarassed
- •Forget to take medicines on time

## Hear

•You shoul not be travelling alone

·You are doing this wrong •Where are your kids? You will lose your belongings

 People travelling with families

•Complex mechanisms and through security checks

•Extra charges for everything miniscule

#### Brief

To design a suitcase incorporating an ARM chip which helps the user making the travel transition to a new place easier as well as the navigation on travel stations like airports, railways etc more comfortable

#### **Brand**

American Tourister/ Samsonite

# **Price Range**

Premium Medium range

#### **Material**

Hard shell Polycarbonate: because it is -Lightweight -Durable, and

-Impact-resistant

#### Application

Digital Scaling Remote Locking **Texting Alerts** Real-time Tracking **Proximity Sensors** 

#### **Target Audience**

**DEMOGRAPHIC** 

Age: 50 and above Gender: Any Education: Employed, Unemployed, Retired etc Martitial Status: Any

#### **GEOGRAPHIC**

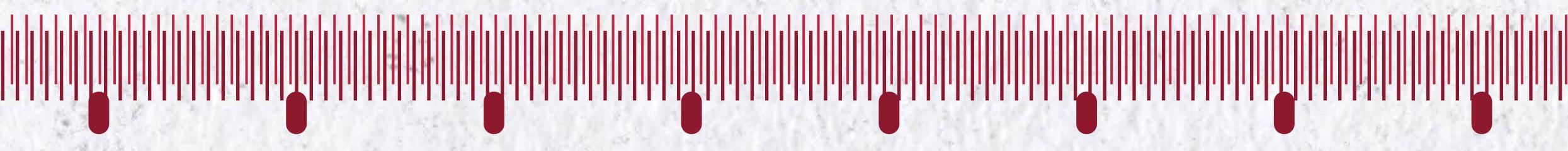
City: Bengaluru Region: South Country: India

#### **Key Milestones**

ARM Chip Integration: Integrate the ARM chip into the suitcase and establish connectivity. GPS Tracking and Security: Implement GPS tracking, security features, and the remote locking/unlocking system.

Smart Packing Assistance and App Integration: Develop smart packing assistance features and integrate them with the mobile app.

# HOW AN ARM CHIP COULD HAVE VARIOUS FEATURES THAT ENHANCE THE USER EXPERIENCE



#### **GPS Tracking:**

An ARM chip can be used to provide real-time location tracking of the luggage using GPS technology.

#### **Power Bank:**

The luggage can be equipped with a built-in power bank to charge electronic devices such as smartphones, tablets, and laptops

#### Digital Lock:

The luggage can have a digital lock system that can be accessed through a smartphone app.

#### Weighing Scale:

integrated An weighing scale into the luggage, which can help travelers avoid overweight baggage fees.

#### Proximity Sensor:

theft.

A sensor that alerts users when their luqgage is out of range, helping prevent loss or

#### **LED Lighting:**

To help travelers locate their luggage low-light conditions.

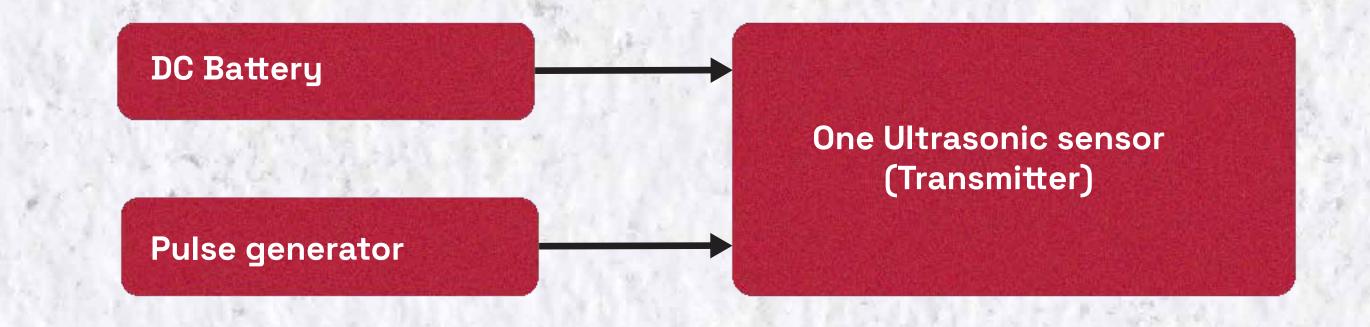
#### Bluetooth Connectivity:

connected to smartphone ing, tracking, and alerts. power bank.

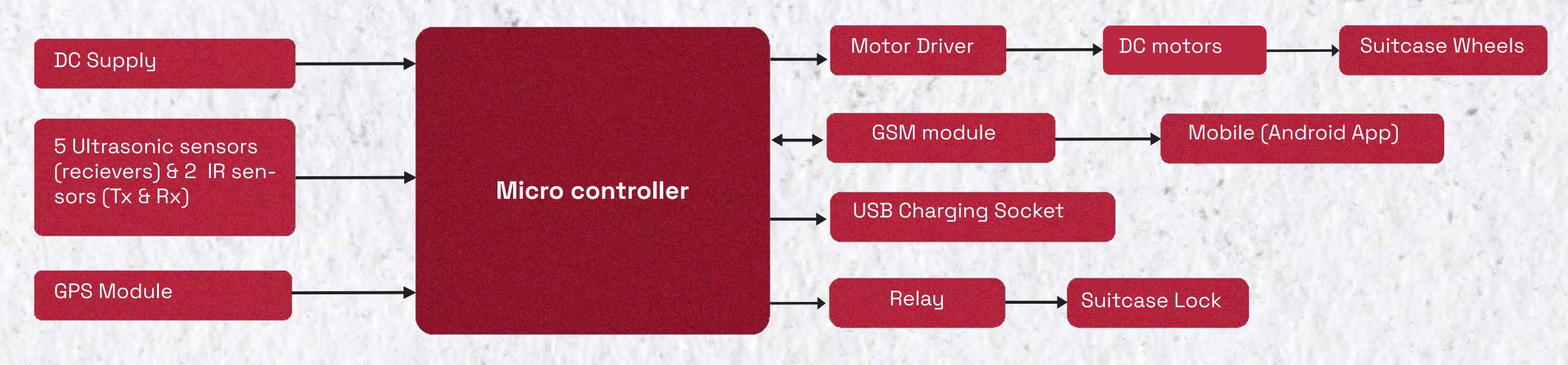
#### Mobile App Integration:

a The luggage can be via integrated with a Bluetooth, allowing mobile app that prousers to access var- vides users with inious features of the formation such as luggage, such as battery status, localocking and unlock-tion, and security

# **BLOCK DIAGRAM FOR SMART SUITCASE**

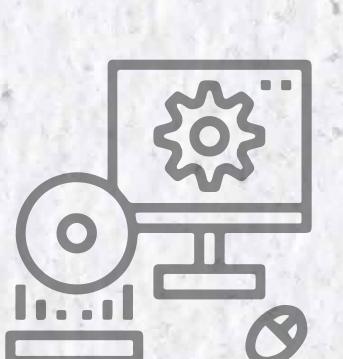


### Beacon which the user will carry



System mounted on suitcase

# REQUIREMENTS FOR SMART SUITCASE "SAGE"



# Hardware

**Arm Microcontroller**  Power Supply Unit •RFID Reader •RFID Tags •IR sensor •LCD Display Unit

•GPS •Bluetooth Load Cell

•Ultrasonic Sensor Relay Driver •Motor

•Buzzer

# Combination lock

•Cross Ribbons

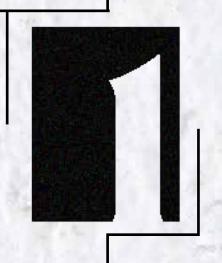
Double wheels •USB Port

•Aero-Trac™ suspension wheels Suspension Double Wheel

**Featured Components** 

•Colour: BRUSHED BLACK •Material: PC

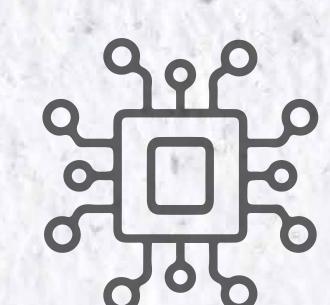
•Dimension: 55.0 x 39.0 x 21.0cm •Volume: 36L



# Software & Connecitivity

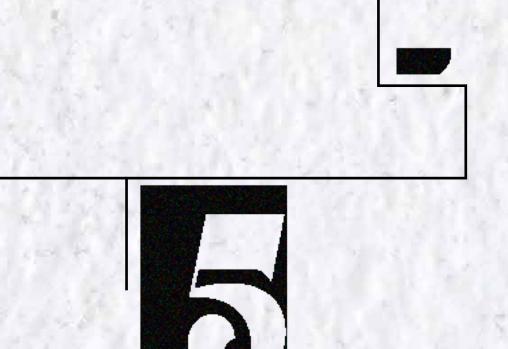
Arduino IDE: Arduino IDE is a popular software development environment for programming ARM-based microcontrollers. It provides a simple and easy-to-use interface for writing code and uploading it to the ARM chip.

USB, Bluetooth and Wi-Fi either of them can be used for thr connectivity.



# Security

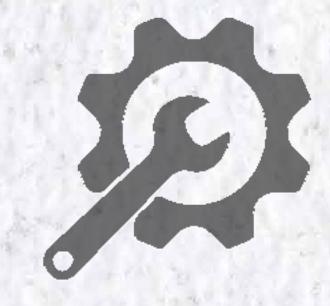
- Threats
- Hardware Security (including secure boot, hardware encryption, and tamper detection)
- Software Security (including access control, encryption, and secure communication protocols)
- Network Security
- Authentication and Authorization (passwords, tokens, and biometrics)
- Auditing and Monitoring
- Compliance and Certification

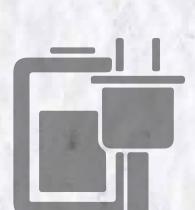




Keep the chip clean and dry Use the appropriate power supply Update firmware and software regularly

Protect against physical and cyber attacks Monitor performance





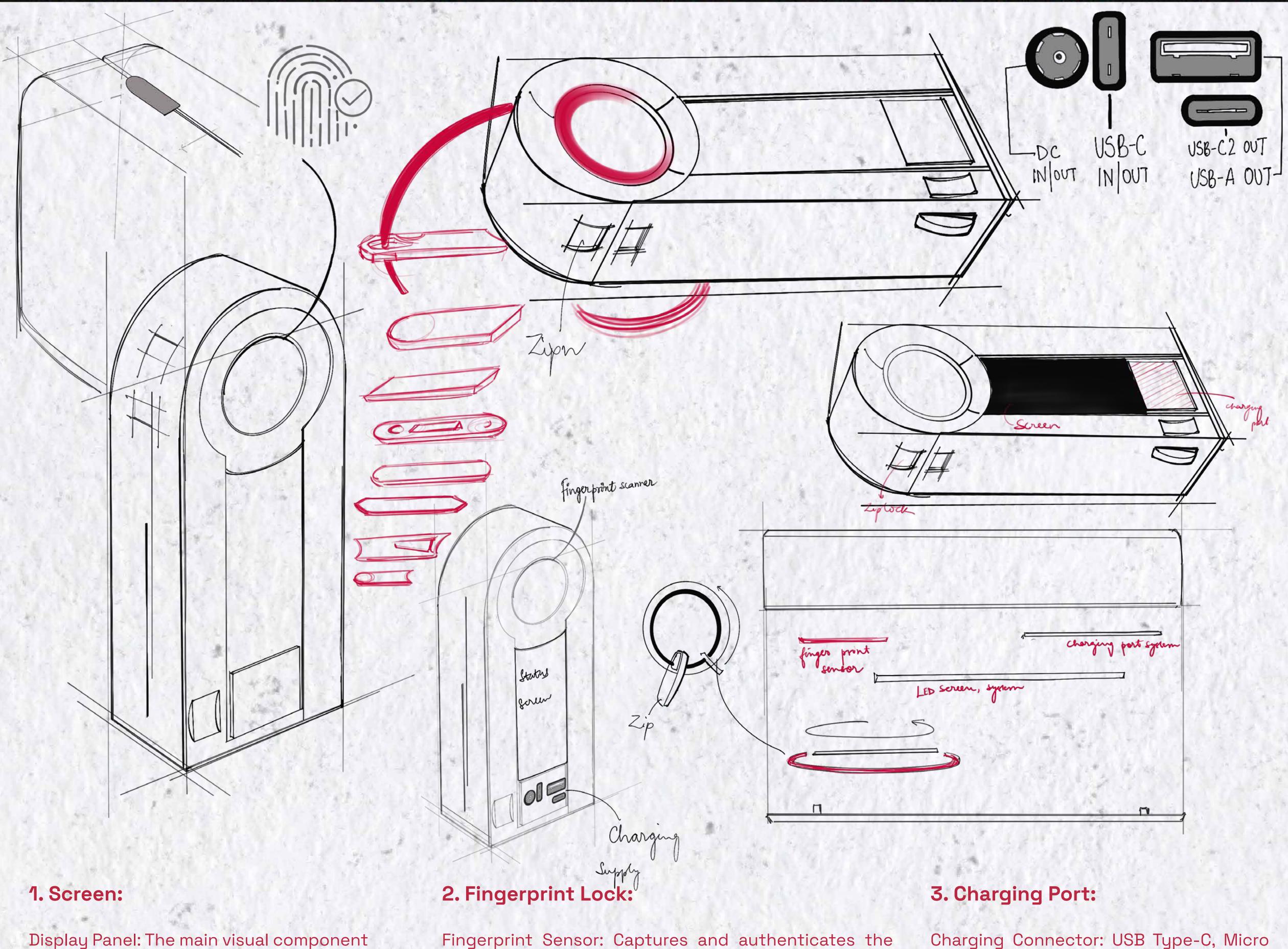
# **Power Options**

**Built-in Battery** Removable Battery Solar Power Kinetic Energy **Power Outlets** 









Display Panel: The main visual component of the screen, available in different types such as LCD, OLED, or e-ink.

Display Driver: A chip responsible for converting digital signals into visual output on the display.

Touchscreen Technology: If the screen is touch-enabled, a capacitive or resistive touchscreen layer is required.

Backlighting: For improved visibility, especially in low-light conditions.

Control Interface: Circuitry and connectors for user interaction and communication with the suitcase's main system.

Fingerprint Sensor: Captures and authenticates the user's fingerprint for security.

Microcontroller Unit (MCU): Processes fingerprint data and communicates with the lock mechanism.

Lock Mechanism: Physical or electronic mechanism that controls access to the suitcase.

Power Supply: Power source for the fingerprint sensor and lock system.

**Feature Extraction** 

**Biometric Sensor** 



Database

compatibility.

nected devices.

Indicator Lights: LED indicators to show the charging status.

USB, or other connector types for device

Power Source: Internal battery or external

