Smart Mail Locker

Integrating SingPass into mail collection

Presented by: Seah Qi Yan

Background

Where did I put my letterbox key..

Oh no! Now I need to call a locksmith..

Background

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Singapore

Woman arrested for allegedly stealing grocery vouchers from letterboxes

14 Oct 2020 05:08PM
(Updated: 14 Oct 2020 05:24PM)

Tampered letterboxes in Chua Chu Kang: 5 teenagers arrested for theft
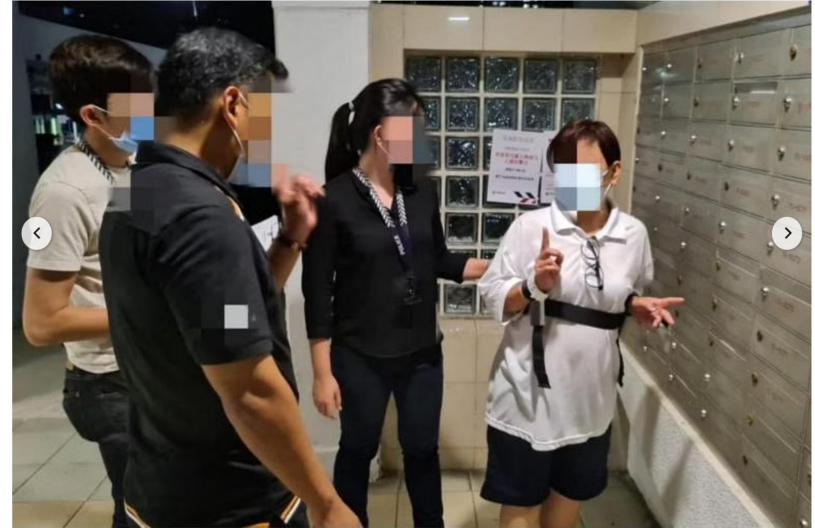
BY ASYRAF KAMIL

Published September 12, 2020
Updated September 14, 2020

7 arrested for alleged theft of Budget 2020 Grocery Vouchers from HDB letterboxes

1 of 3   A suspect escorted by the police at one of the crime scenes to identify the letterboxes where the vouchers were allegedly taken from. PHOTO: SINGAPORE POLICE FORCE

Problem Statement

How might we improve the mail collection process for citizens to increase convenience and deter mail-theft?

Existing Solutions

Traditional Mailboxes

- Requires key to unlock
  - User must remember to bring key
  - Key can be misplaced
- Easy to break into, susceptible to mail theft
+ Simple to operate

Parcel Locker Stations (POPStation, Pick Locker)

+ Stores parcels securely
- Main use-case is for parcels
- Locations are at shopping malls/post-office, rather than residential areas

Proposed Solution

Smart Mail Locker

An extension of existing POPStations implemented by Singpost – **now targeting residential areas and mail delivery & collection**

To enable digital access to all citizens, Singpost can partner with Singpass for verification of users.

Singpost can leverage on existing citizen database and address data in Singpass's Person API
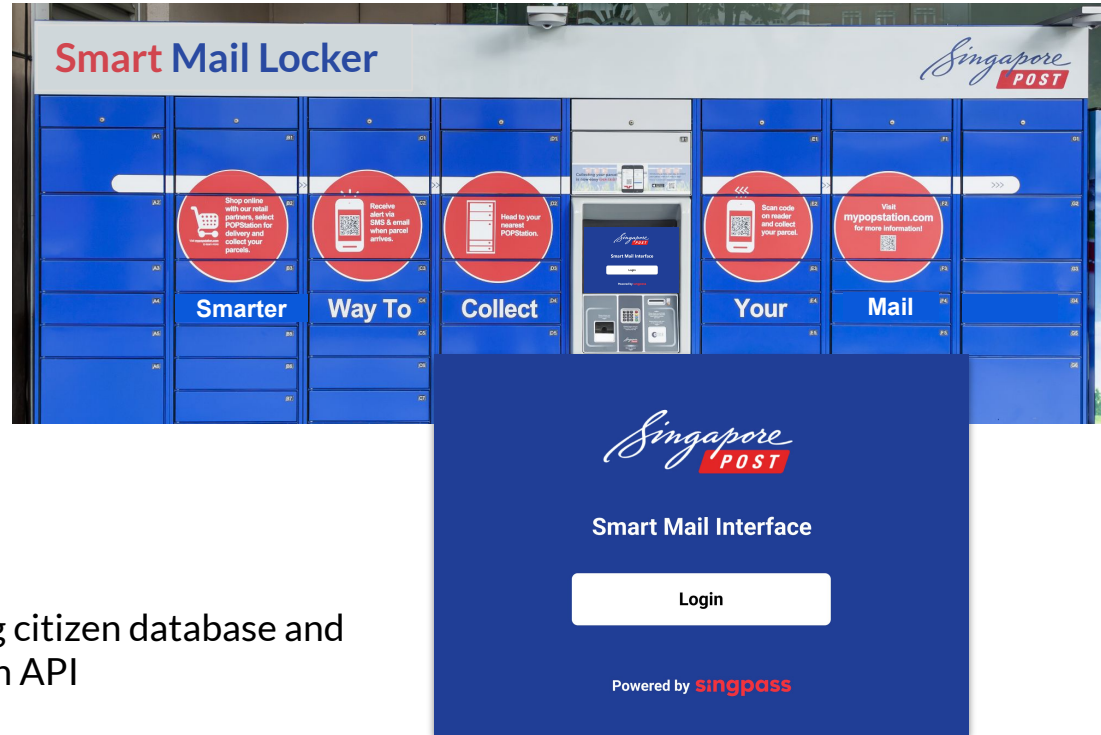
NDI products utilised

Smart Mail Locker will make use of 2 NDI products – Verify and Identiface, as login options for users to verify themselves during mail collection

This allows mail collection to be more convenient (since it is 'keyless'), while ensuring secure storage of mail as physical tampering is prevented and deterred.
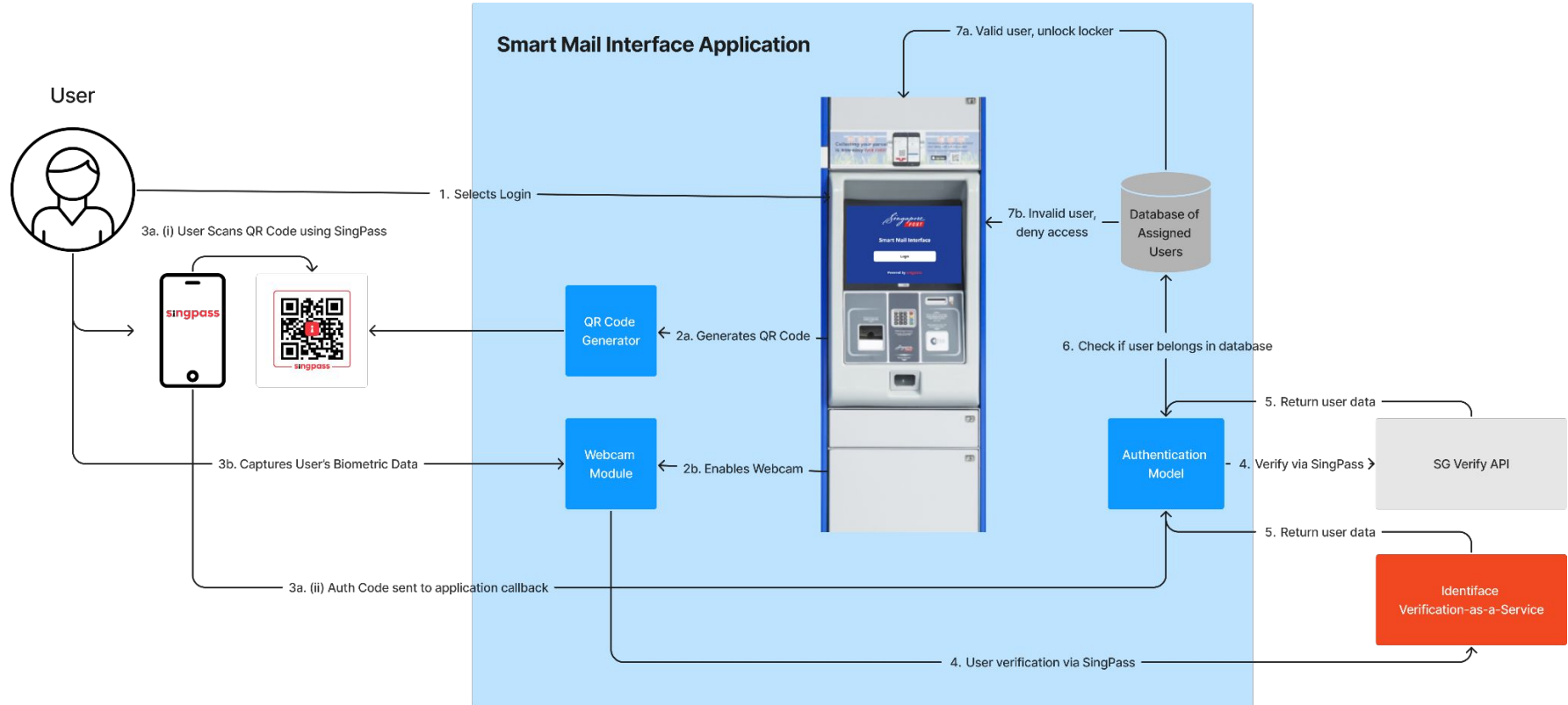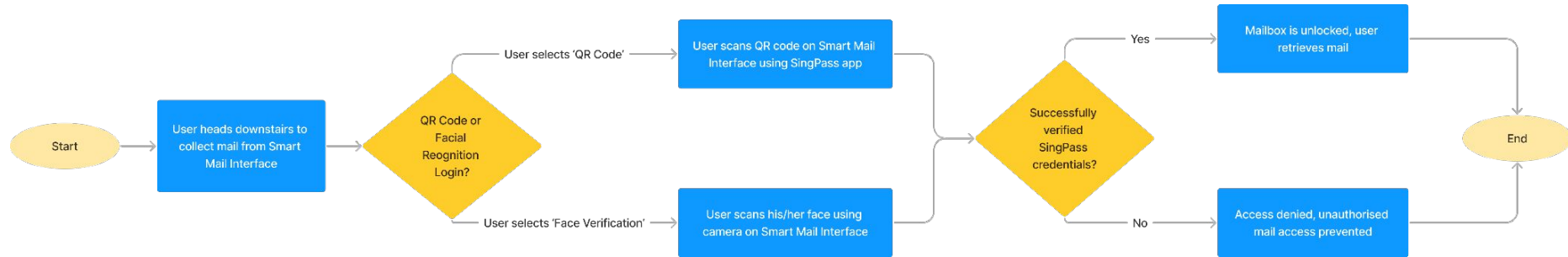
1. SG Verify API

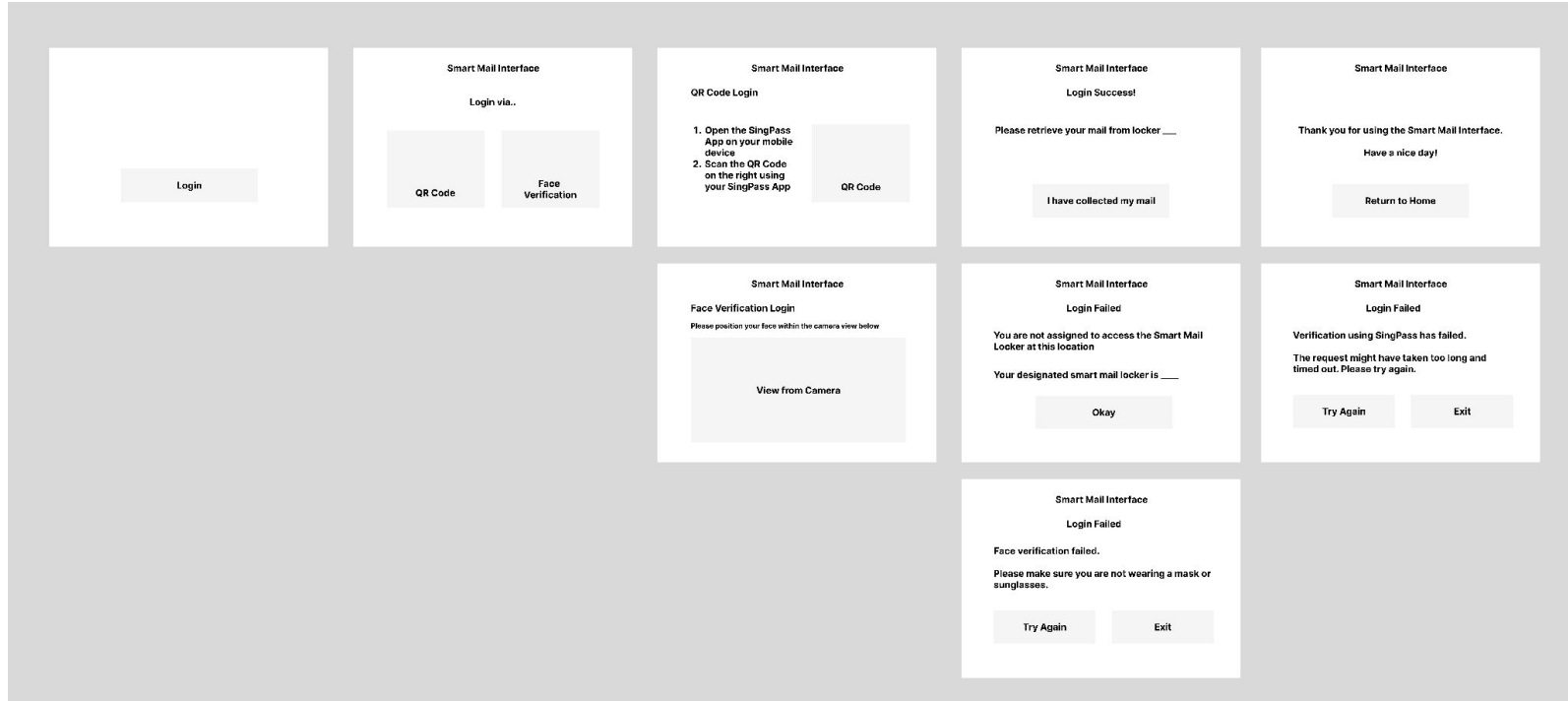**2. Identiface Verification-as-a-Service**

verify

Face verification
with singpass

Architecture Diagram

Smart Mail Interface Application

User

1. Selects Login

7a. Valid user, unlock locker

7b. Invalid user, deny access

Database of Assigned Users

3a. (i) User Scans QR Code using SingPass

QR Code Generator

2a. Generates QR Code

6. Check if user belongs in database

5. Return user data

SG Verify API

3b. Captures User's Biometric Data

Webcam Module

2b. Enables Webcam

4. Verify via SingPass

Authentication Model

5. Return user data

3a. (ii) Auth Code sent to application callback

Identiface Verification-as-a-Service

4. User verification via SingPass

User Flow Diagram

Start

User heads downstairs to collect mail from Smart Mail Interface

QR Code or Facial Reognition Login?

User selects 'QR Code'

User scans QR code on Smart Mail Interface using SingPass app

User selects 'Face Verification'

User scans his/her face using camera on Smart Mail Interface

Successfully verified SingPass credentials?

Yes

No

Mailbox is unlocked, user retrieves mail

Access denied, unauthorised mail access prevented

End

Low-fi Wireframe of Solution

Login

Smart Mail Interface

Login via..

QR Code | Face Verification

Smart Mail Interface

QR Code Login

1. Open the SingPass App on your mobile device
2. Scan the QR Code on the right using your SingPass App

QR Code

Smart Mail Interface

Login Success!

Please retrieve your mail from locker ___

I have collected my mail

Smart Mail Interface

Thank you for using the Smart Mail Interface.

Have a nice day!

Return to Home

Smart Mail Interface

Face Verification Login

Please position your face within the camera view below

View from Camera

Smart Mail Interface

Login Failed

You are not assigned to access the Smart Mail Locker at this location

Your designated smart mail locker is ___

Okay

Smart Mail Interface

Login Failed

Verification using SingPass has failed.

The request might have taken too long and timed out. Please try again.

Try Again | Exit

Smart Mail Interface

Login Failed

Face verification failed.

Please make sure you are not wearing a mask or sunglasses.

Try Again | Exit

Hi-fi Wireframe of Solution

Features: Login via SingPass

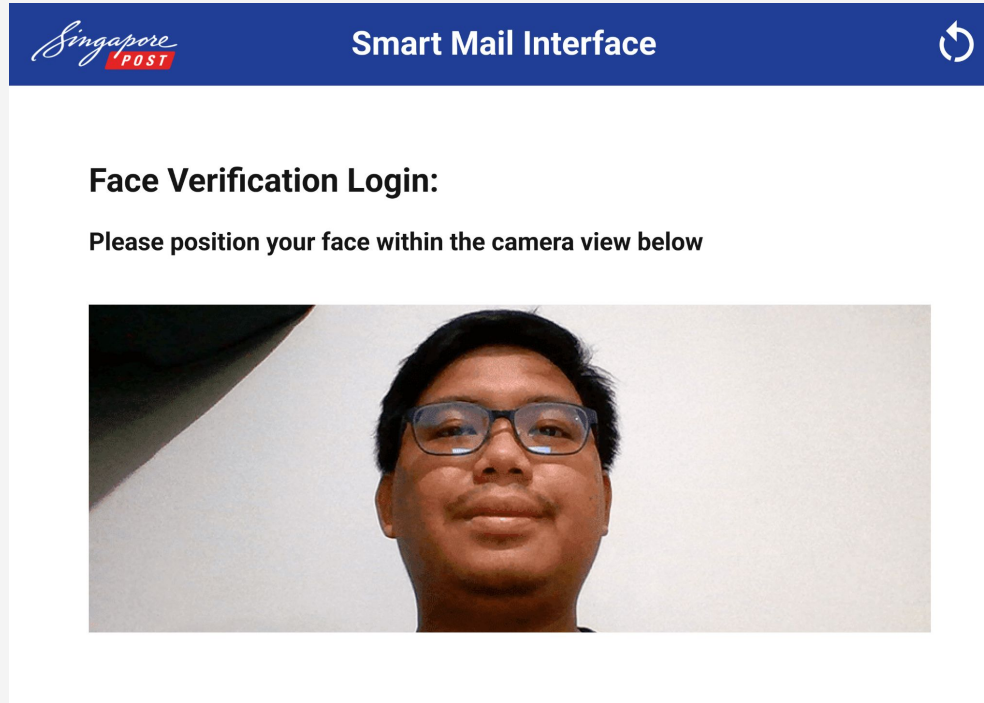# Features: Login via SingPass QR Code

Smart Mail Interface

Singapore POST

QR Code Login:

1. **Open the SingPass App on your mobile device**

2. **Scan the QR Code on the right using your SingPass App**

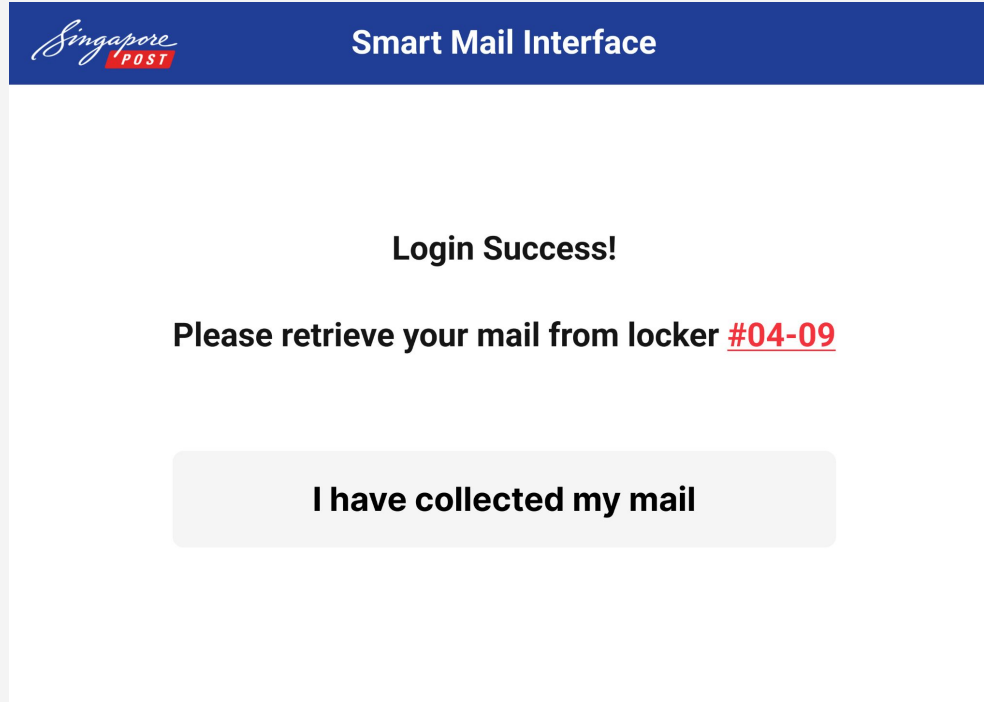# Features: Login via SingPass Identiface

Singapore POST

Smart Mail Interface

Face Verification Login:

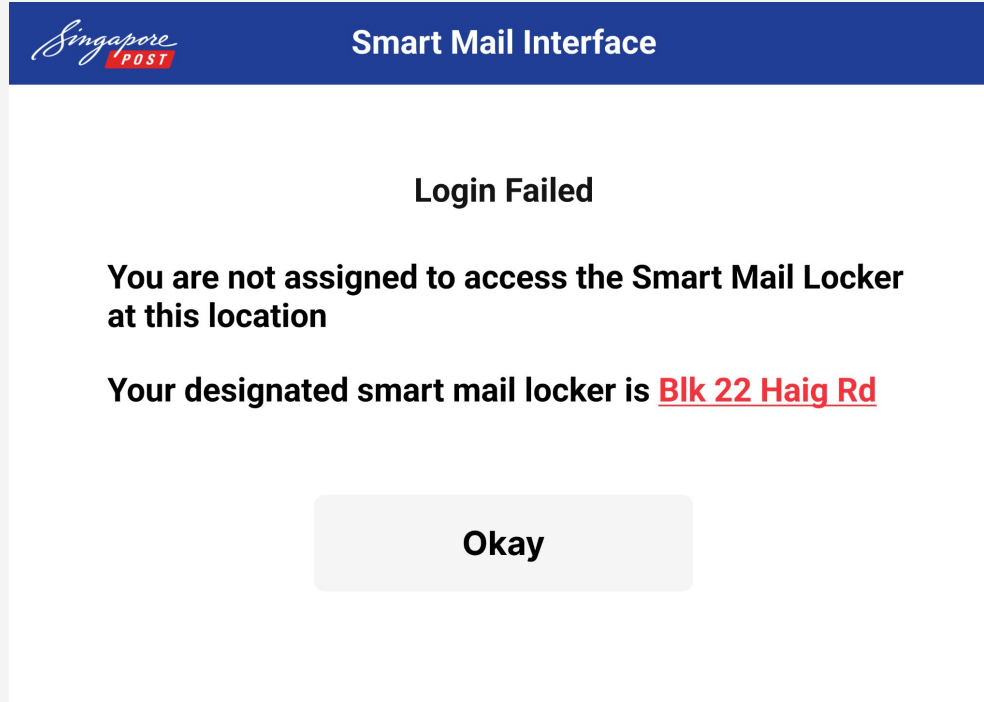Please position your face within the camera view below

Face Verification Image from GizGuide

Features: Collect mail upon verification

Features: Detect wrong locker access

Web-app Prototype

For prototyping/proof-of-concept, a web application prototype has been developed to simulate the user journey at the digital kiosk of a Smart Mail Locker.

The prototype has been deployed on Google Cloud's Compute Engine, you may access it **here** or the following link: **https://intricate-abbey-400016.uw.r.appspot.com/**

The scenario where user accesses the system outside of their designated locker has also been simulated, and can be accessed at the path /loginfailed

Future Developments

Face Identification by default

Simplifies mail-collection to a one-step process for citizens

Track whether you have mail

By equipping weight sensors within each locker compartment

Upon mail delivery, users can also be notified via SingPass

Thank you!

Please contact giyan.seah@gmail.com
if you have any questions!