

A person with a suitcase is standing on a train platform, looking towards a high-speed train. The scene is captured in a blue-tinted, monochromatic style. The platform has a curved, arched roof structure. The train is sleek and modern, with a white and blue color scheme. The overall atmosphere is futuristic and modern.

# Future State Identification

*Strategy & Creative Execution*

SCAD

*Future state- Phase 2*  
**Introduction**

In the near future, the app could be deployed on blockchain making the entire process more secure, tamper proof and time efficient.

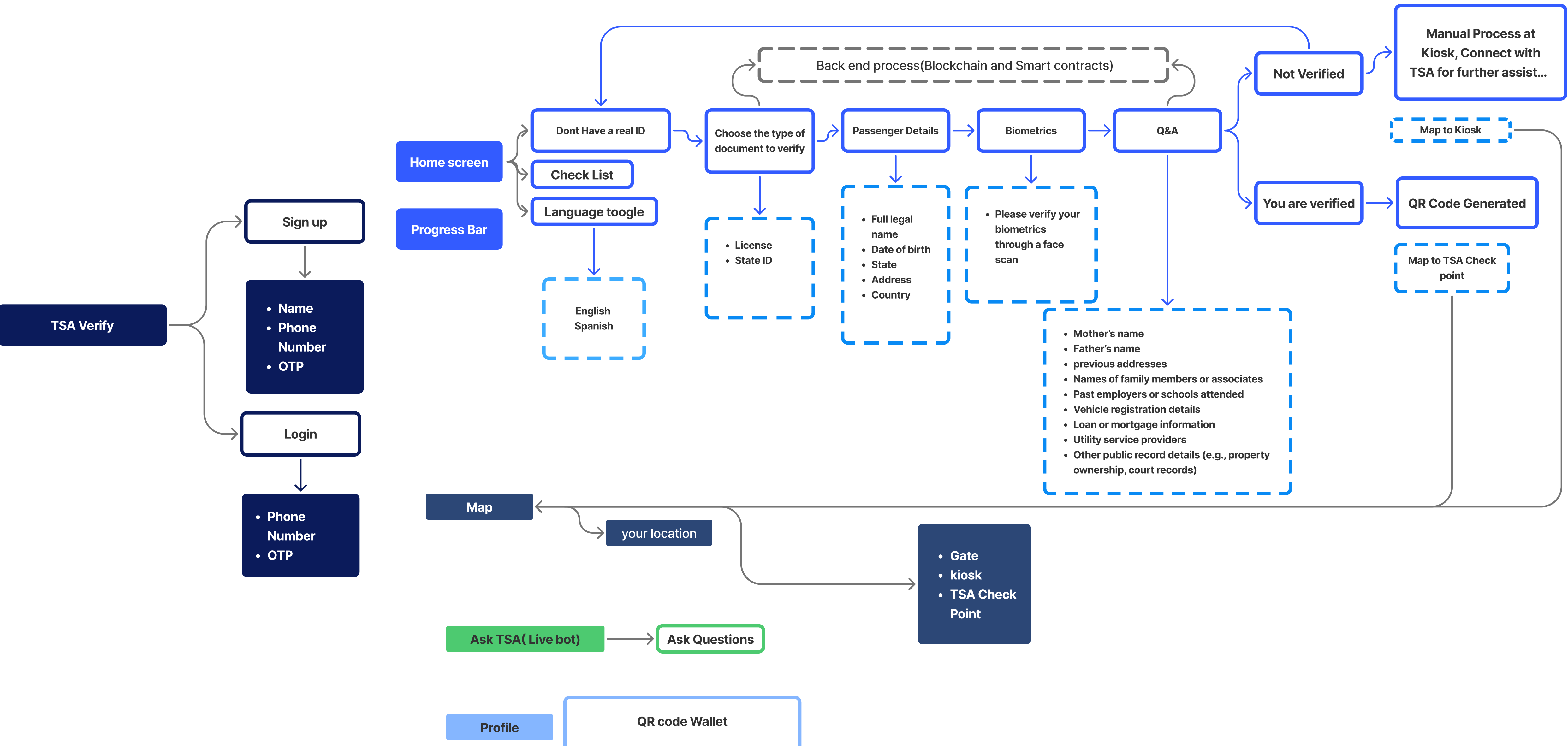
**Block chain based smart contracts for tamper proof and decentralised identity verification.**

With this we can make the entire verification process digital.

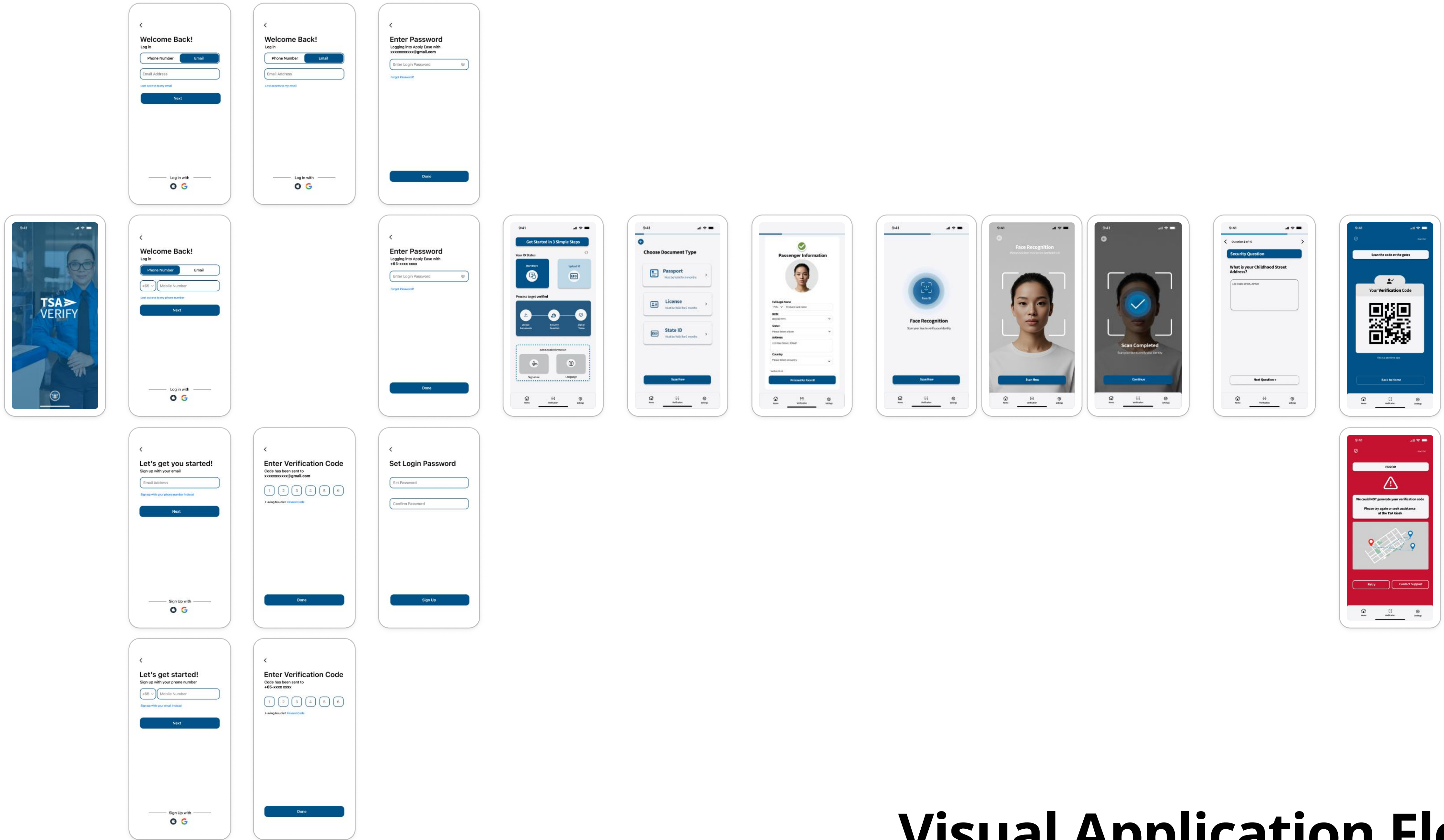
\*Before we look into blockchain tech in detail later, let's look at the app flow for near future first.

A person with long dark hair, wearing a blue denim jacket over a white t-shirt, is holding a silver smartphone. The person's hands are positioned to interact with the phone. The background is blurred, suggesting an indoor setting. The overall image has a blue tint.

*Future State*  
**Application Flow**



# Application Flow



# Visual Application Flow

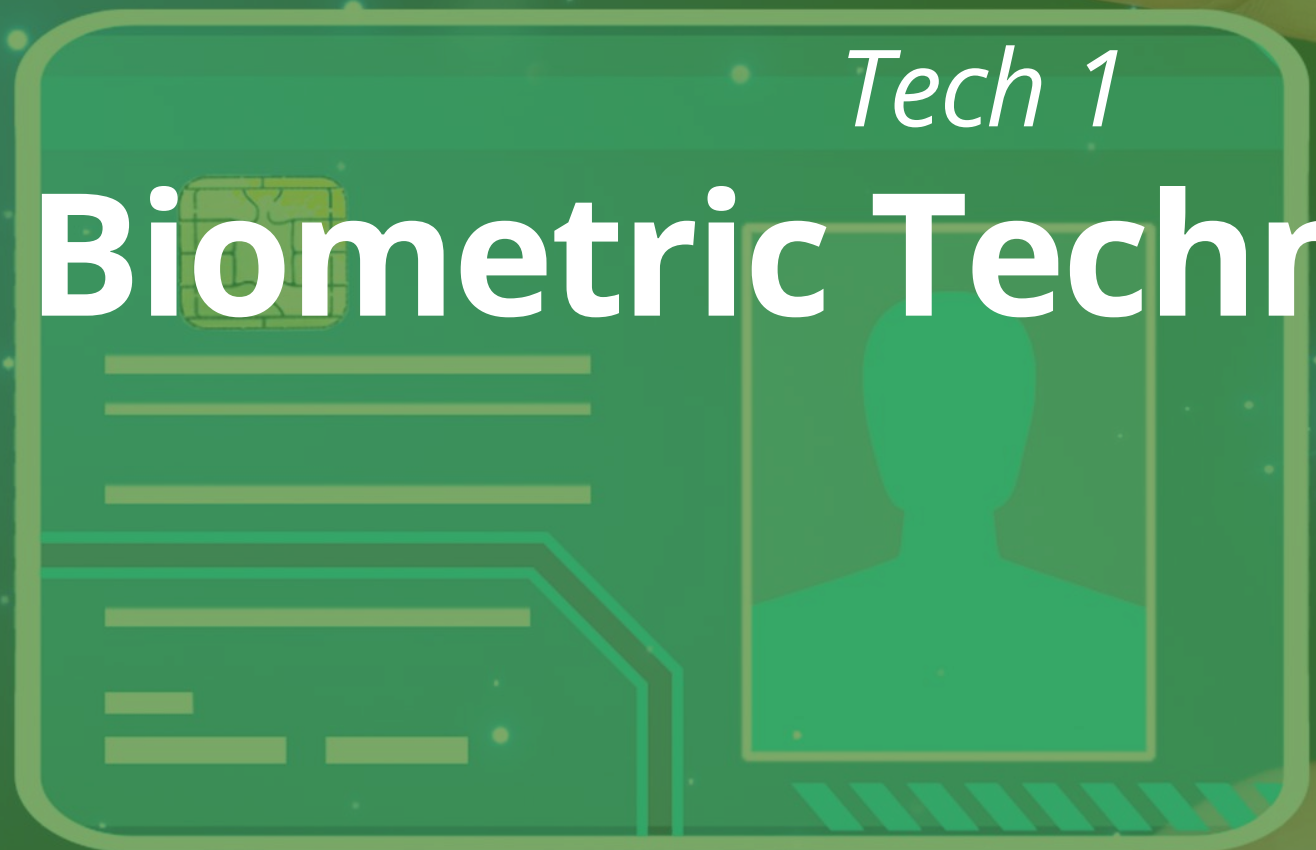
*Future state 2035*

# Introduction

By 2035, identity verification at airports will likely be transformed by a range of advanced technologies aimed at improving airport security, queue efficiency, and overall passenger experience

Some of that tech could include:

*Tech 1*  
**Biometric Technologies**



*About the tech*  
**Biometrics**

**Accelerates and streamlines:** airport operations by automating identity verification through facial recognition, fingerprint, iris, or palm scans.



# How will it be applied?

## Smart Gates:

Biometric smart gates allow travelers to clear security and board flights without showing passports.

## Check in kiosks:

Gesture-controlled biometric kiosks, eliminating the need for touchscreens.

# Supporting Research

**At Dubai International Airport:** Biometric smart gates allow passengers to board flights.

**Tokyo Narita Airport :** Gesture-controlled biometric kiosks

**Alaska Airlines:** Face-to-Check-In system at Seattle-Tacoma International Airport recognizes registered travelers as they approach, automatically pulling up their reservations without any interaction

**Delhi Airport Baggage drop:** facial recognition is linked to baggage drop, ensuring that luggage is matched to the passenger's biometric profile. This prevents baggage fraud and ensures only the rightful owner can claim their bags at the destination

*Tech 2*

# Blockchain and Distributed Ledger Technology

*About the tech*

# Blockchain and Distributed Ledger Technology

## 1. Tamper-Proof Records

Blockchain ensures identity data can't be altered or deleted, protecting sensitive information like biometrics and travel credentials from fraud or misuse.

## 2. Global Interoperability

A decentralised network allows airports and border agencies worldwide to securely verify identities, enabling seamless, cross-border travel verification.



# How will it be applied?

## Global ID Sharing

Airports and countries could validate digital identities via shared, immutable blockchain networks.

## Consent-Driven Access

Travelers could authorize specific entities to access their data temporarily and transparently.

# Supporting Research

**SITA and IDEMIA Collaboration:** Developing a decentralised digital identity ecosystem for secure and seamless travel experiences.

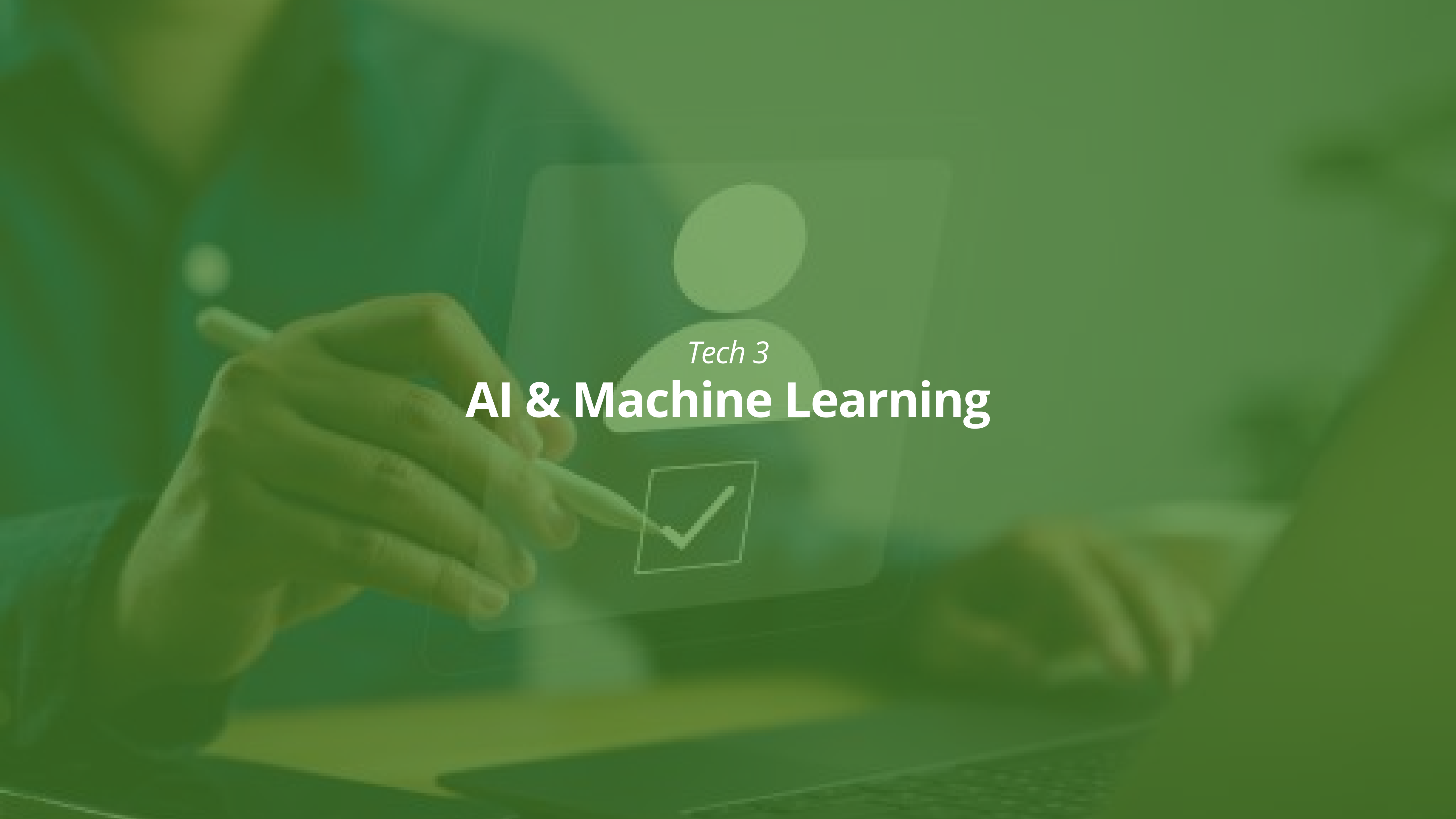
The ecosystem is designed to allow traveler's' digital identities to be recognised and trusted globally, with data remaining under the traveler's control and shared only with their consent.

**AENA Airports:** Spain's leading airport operator, has implemented blockchain-based credentialing to enhance security and efficiency in cargo terminal access.

**Known Traveller Digital Identity (KTDI):** A pilot project led by the World Economic Forum, exploring the use of blockchain and biometrics for international travel verification.

*Tech 3*

# AI & Machine Learning



*About the tech*

# AI and Machine Learning

**Analyze vast amounts of data and patterns:**

Enable airports to analyze vast amounts of real-time data from sources like sensors, cameras, and operational systems, allowing for pattern recognition smarter and faster decision-making.



# How will it be applied?

Passenger support: Personalized updates, directions, and chatbot help

## Dynamic que management

Works by integrating real-time data from a dense network of CCTV cameras, IoT sensors, and passenger tracking systems throughout the terminal.

## Efficient staffing and resource allocation

During disruptions (e.g., delays, equipment failures, or sudden passenger influxes), AI systems can instantly direct staff and resources to where they're needed most.

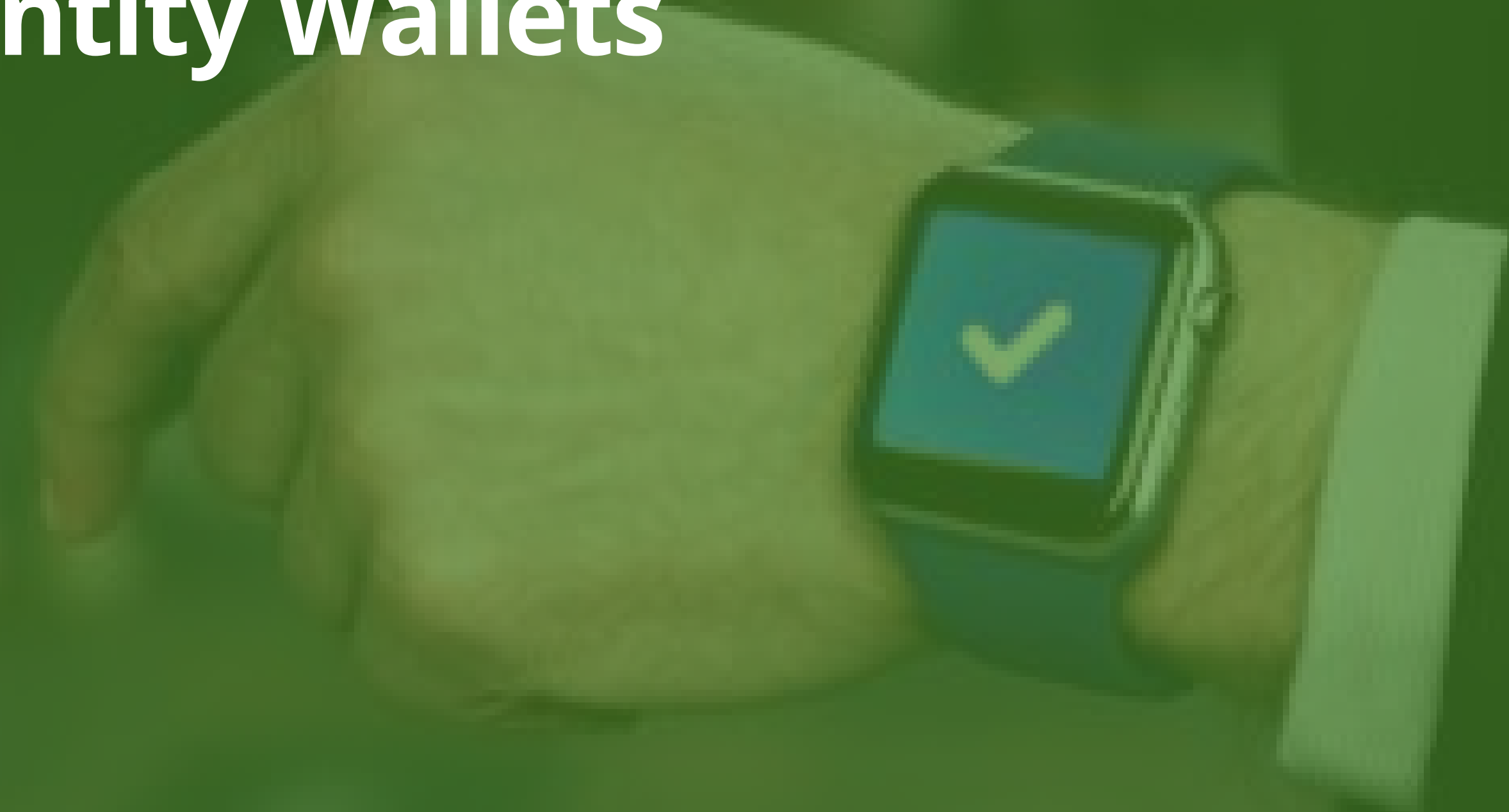
# Supporting Research

**Al Makutom Airport & Schiphol Airport** :Dynamic Que management

**Copenhagen Airport** : uses AI-driven platforms like Better Airport to optimize passenger flow, gate assignments, staff scheduling, and baggage handling

*Tech 4*

# Digital Identity Wallets



*About the tech*

# Digital Identity Wallets

Digital identity wallets are transforming airport security by enabling travellers to use secure, smartphone-based IDs at TSA checkpoints.

# How will it be applied?

## **End-to-End Touchless Identity Verification**

Airport security will become touchless and efficient through mobile-based digital IDs stored on smartphones or wearables. These encrypted credentials will be verified at each checkpoint using technologies like quantum-encrypted QR codes, NFC, or direct device communication.

## **User-Controlled Consent & Self-sovereign identity:**

Blockchain-based self-sovereign identity (SSI) allows travellers to fully control their digital identities, securely managing and sharing only essential information through encrypted wallets.

# Supporting Research

Digital IDs are accepted at over 250 U.S. airports, with airlines like Delta and United using facial recognition for check-in, security, and boarding.

Self-sovereign identity (SSI) pilots at airports like Heathrow and Zurich are already demonstrating seamless, cross-border verification and privacy-centric identity management using blockchain-backed digital credentials.

*Tech 5*

# **Contactless & Seamless Journey Tech**

*About the tech*

# Parallel Reality screens

**Personalized information:** Multi-view pixel and motion sensor technology allows up to **100 travelers** to see personalized information on the screen at once.

# How will it be applied?

## Biometrics through these screens

Motion sensors in the screen identify passengers and Face and iris scan is done using biometric tech .

Tech : Integration of Iris ID iT100 Terminal & IDEMIA OneLoo Gen2.

## Personalized Post Verification information and guidance

After biometric , each individual can only see whether they have been verified and their verification information on the screen and are guided to the next step accordingly

A 100 people can finish this step at once.

# Supporting Research

**Delta:** Parallel Reality screens at Detroit Metropolitan Airport use advanced multi-view pixel technology to allow up to 100 travelers to see personalized flight information

**Iris ID iT100 Terminal:** Supports iris-only, face-only, or fusion modes (combining both modalities for higher accuracy). Captures dual iris and face data simultaneously at distances up to 80 cm. Features anti-spoofing measures and Secure Boot for encryption.

**IDEMIA OneLook™ Gen2:** Combines 3D face capture with iris recognition in <2 seconds. Uses non-intrusive, walk-through authentication suitable for high-traffic area

**Privacy & Data Protection:** Striking the balance between convenience and privacy will be crucial.

**\*Equity & Accessibility:** \*Ensuring all travelers can participate, including those without smartphones or biometric enrollment.

**Cybersecurity:** Strong defenses will be necessary to prevent misuse or hacking of sensitive identity data.

# Challenges and Considerations