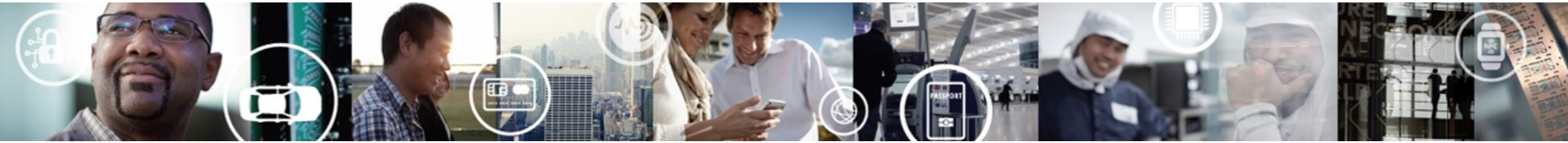
MGOV SERVICES

Mobile is here to stay …

MOBILE IDENTITY & AUTHENTICATION FRAMEWORK

APRIL 2018



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SECURE CONNECTIONS
FOR A SMARTER WORLD

KEY FACTS AND FIGURES

Operations in 33 countries

>$10B Revenue

9000+ Patents

More than 100 facilities

~31,000 employees

Headquarters: Eindhoven

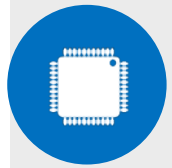
NXP at a Glance

Market Leader in…

SECURE IDENTIFICATION	COMMUNICATIONS PROCESSORS	BROAD-BASED MCUs[1]
RF POWER TRANSISTORS	AUTOMOTIVE	SMALL SIGNAL DISCRETE'S

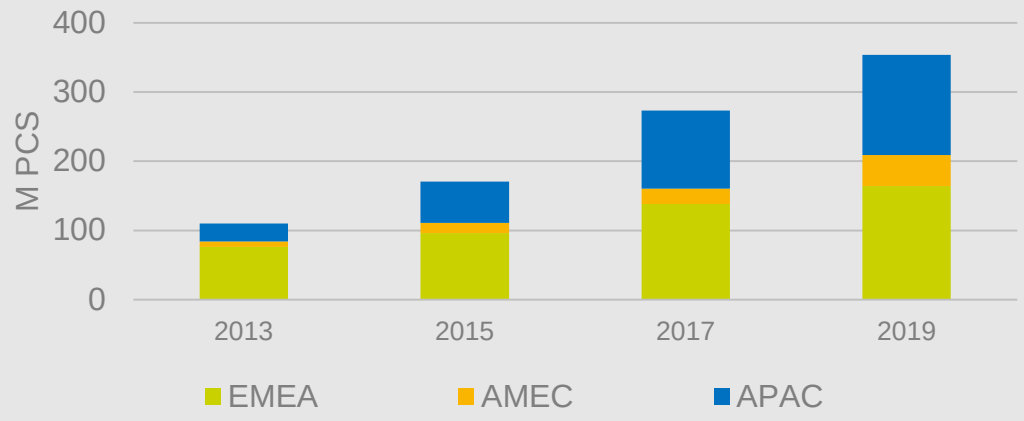
Note:
1. All financial figures are based on trailing twelve month reported information; R&D expense are non-GAAP

NXP Secure ID – product and service offering

	PERSONALIZATION SERVICES	• OS Initialization • Applet- & data loading • Applet CC & FIPS cert. support • Middleware		
	INLAY	• eCover • Datapage • Prelaminate		up to CC EAL 5+
	APPLICATIONS	• ICAO • ePKI • eHealth	• eVehicle • Payment • MIFARE	up to CC EAL 4+
	SECURE IC OS	• Native OS	• Javacard OS JCOP	up to CC EAL 5+
	SECURE ICS	• 8KB -144KB user memory	SmartMX	up to CC EAL 6+

Electronic National ID Application Summary

#1 electronic IDs WW



DRIVERS

- Reduce fraud
- Eliminate identity theft
- Enable gov online services

KEY TRENDS

- Convergence of applications
- Mobile IDs derived from eIDs

USE MODELS

- Visual inspect. by service provider
- 2 & 3 factor authentication for online services

STANDARDS

- None world-wide
- ICAO 9303 often leveraged
- EIDAS in Europe

KEY REFERENCES

35+ out of 65+ countries trust NXP ICs

ECUADOR

GERMANY

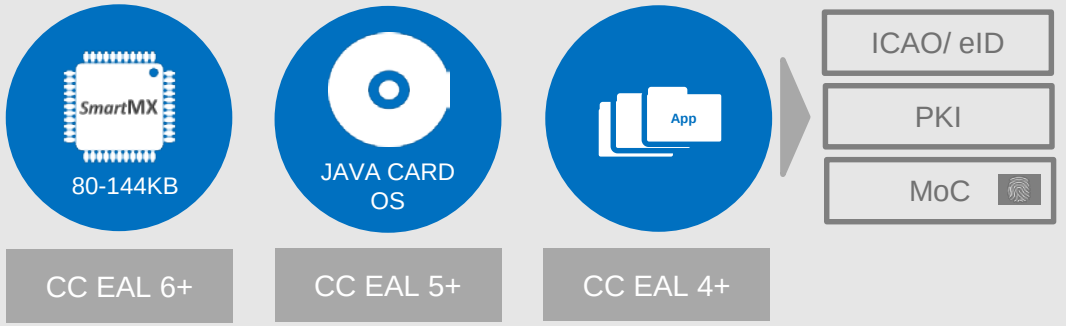
THAILAND

MALAYSIA

NIGERIA

INDONESIA

STANDARD PRODUCT CONFIGURATION



INTRODUCTION

eGOV IS NOW GLOBAL

The world has, without question, entered the age of online government services.
Within the past decade, government agencies worldwide, at the national, state, and even local levels, have been moving quickly to provide websites that provide information, give access to services, and let people update their information.

Transactional online services offered by national websites worldwide (2014 and 2016)

	No. of countries offering the service in 2014	No. of countries offering the service in 2016
Create a personal account	101	142
Submit income taxes	73	114
Pay for utilities	41	104
Register a business	60	97
Pay fines	42	76
Apply for social security benefits	46	63
Apply for a birth certificate	44	55
Apply for environmental permits	40	55
Apply for marriage certificate	39	53
Register a motor vehicle	33	47
Apply for a driver's license	29	38
Apply for a personal identity card	27	31

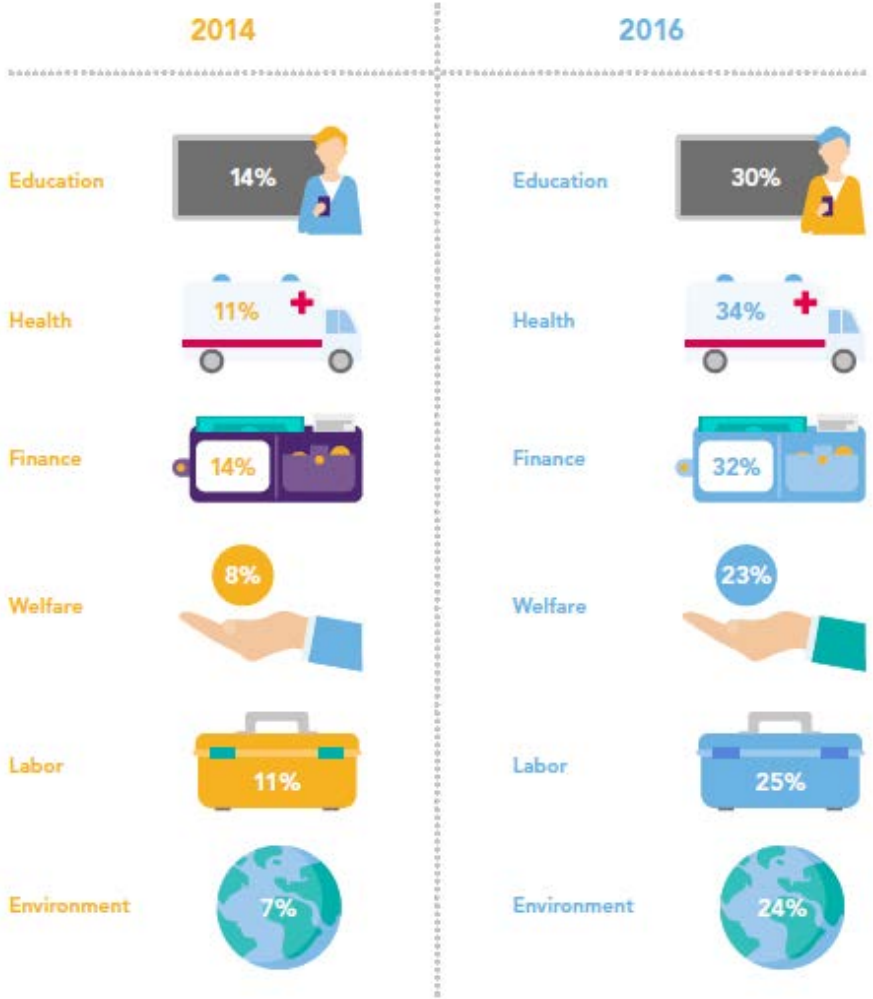
Making online government services available to citizens has several benefits, in terms of cost and convenience

- Online access helps improve workflows and lower administrative costs
- Gov. agencies can service a broader population with fewer personnel, and extend their coverage, without having to establish new offices.
- From the citizen's point of view, eGov makes it easier to interact with government and get things done.

Source: Statista 2017, https://www.statista.com/statistics/421693/e-government-availability-mobile-services/

THE ARRIVAL OF mGOV

A growing number of today's transactional services are designed to be accessed by a mobile device, such as a smartphone or tablet. This subcategory of eGov, known as mobile government or mGov, lets citizens use mobile apps and mobile websites to interact with a range of services.



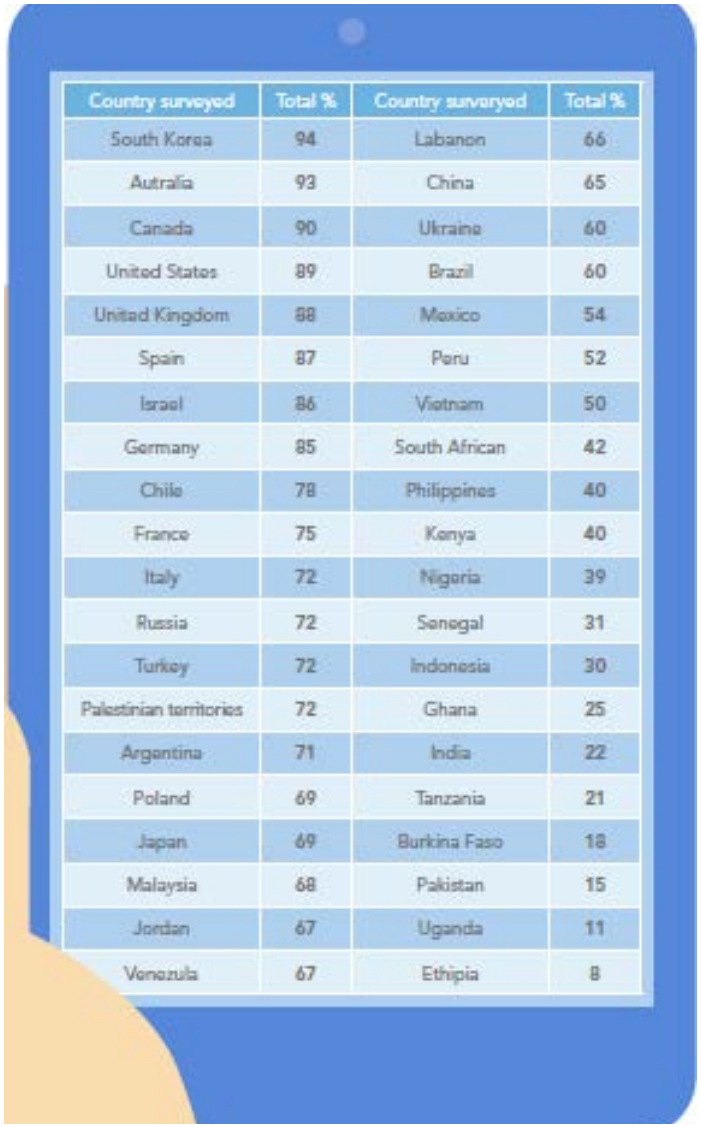
Percentage of countries offering mobile government services (2014 and 2016)

The table shows the categories that Statista is tracking in mobile – covering everything from education and health to finance, welfare, labor, and environment – and confirms that support for mobile increased across all categories.

Source: Statista 2017, https://www.statista.com/statistics/421693/e-government-availability-mobile-services/

THE mGOV-SMARTPHONE CONNECTION

The increased support for mobile access is directly tied to the near universal adoption of mobile devices. Since 2015, the number of mobile-phone subscriptions worldwide has approximately equaled the number of people on the planet – about 7 billion.



Country surveyed	Total %	Country surveyed	Total %
South Korea	94	Lebanon	66
Australia	93	China	65
Canada	90	Ukraine	60
United States	89	Brazil	60
United Kingdom	88	Mexico	54
Spain	87	Peru	52
Israel	86	Vietnam	50
Germany	85	South African	42
Chile	78	Philippines	40
France	75	Kenya	40
Italy	72	Nigeria	39
Russia	72	Senegal	31
Turkey	72	Indonesia	30
Palestinian territories	72	Ghana	25
Argentina	71	India	22
Poland	69	Tanzania	21
Japan	69	Burkina Faso	18
Malaysia	68	Pakistan	15
Jordan	67	Uganda	11
Venezula	67	Ethipia	8

THINKING MOBILE FIRST

In light of the trend that many citizens now use mobile devices to access information, make purchases, and conduct other forms of business, governments at the national, state, and local levels have started adopting the philosophy of “think mobile first.” They’re making mobile technology a priority in their online strategies and, in many cases, designing sites and services with mobile in mind.

- Them mobile-centric approach also requires balancing security requirements with the need for ease of use.
- It’s essential for government agencies to consider the security mechanisms for mobile access at the earliest phases of mGov design and development.

SECURE CONNECTIONS FOR A SMARTER WORLD

SMARTPHONE OWNERSHIP FROM PEW RESEARCH GLOBAL ATTITUDES SURVEY

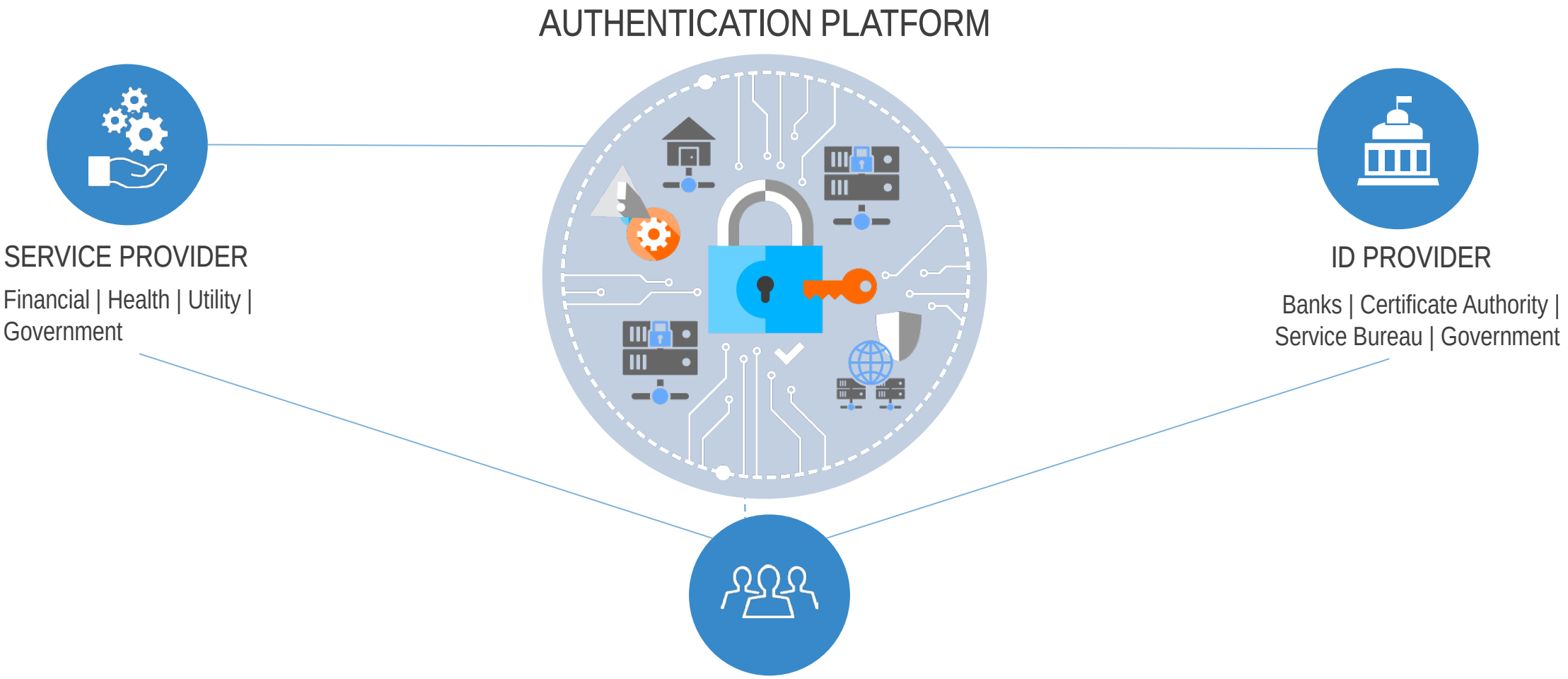
Mobile is here to stay …

Design considerations

best practices for delivering the right combination of security and convenience

What is it about

Provide secure, privacy-enhancing services that conveniently connect users to critical online services, ideally using digital credentials they already have and trust on devices they already use



Vision and Value of a federal identity management

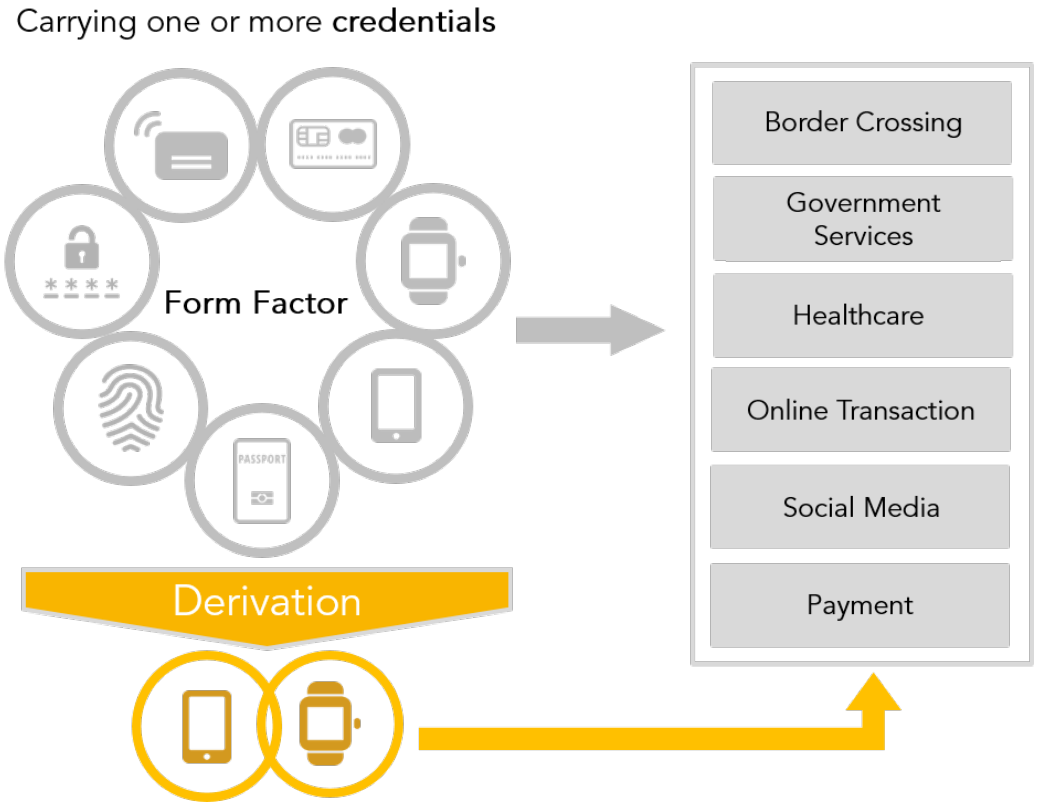
VISION

- DIGITAL ID
- SHARED DIGITAL ID
- NETWORKS
- LINKING PEOPLE & DEVICES

VALUE

- SIMPLIFIED ACCESS
- PROVIDES CHOICE
- PROTECTS PRIVACY

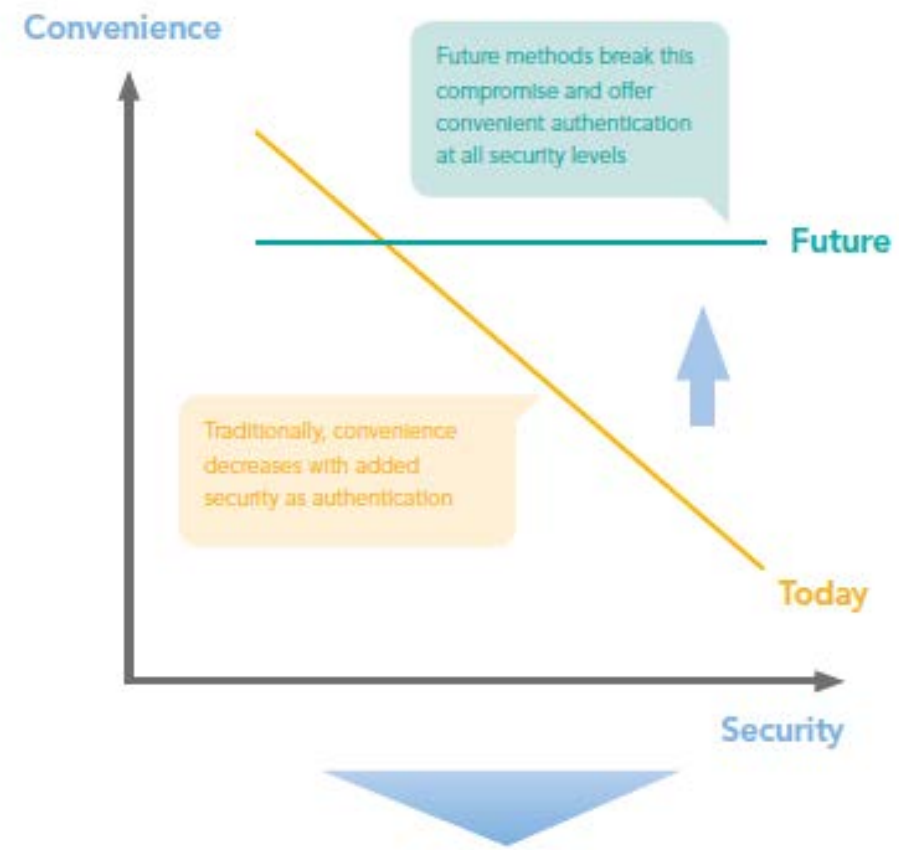
Using a single or federated ID to access multiple services is something private organizations are pursuing, as well, since the approach enables secure use of private digital information while extending the service offering.



LEVERAGE CONTEXT-AWARE AUTHENTICATION

In many of today's online applications, developers are forced to make a tradeoff between security and convenience. As the level of needed protection increases, ease of use tends to go down, since the authentication process becomes more complex.

The added level of flexibility afforded context-aware authentication means it's easier to choose the right level of security for each situation



Support of context aware authentication methods to optimize security, convenience, and costs

Identification method depends on device type and features

- Biometric sensor (e.g. fingerprint, face, voice)
- Non-biometric (e.g. PIN, TAN, password)

Identification method is economical

- Most economical ID solution is chosen for particular situation and application

Identification method depends on security requirements of use cases

- Simple authentication for low-stake applications (e.g. small payments)
- Multifactor authentication for high stake applications (e.g. access health records)

NXP | SECURE CONNECTIONS FOR A SMARTER WORLD

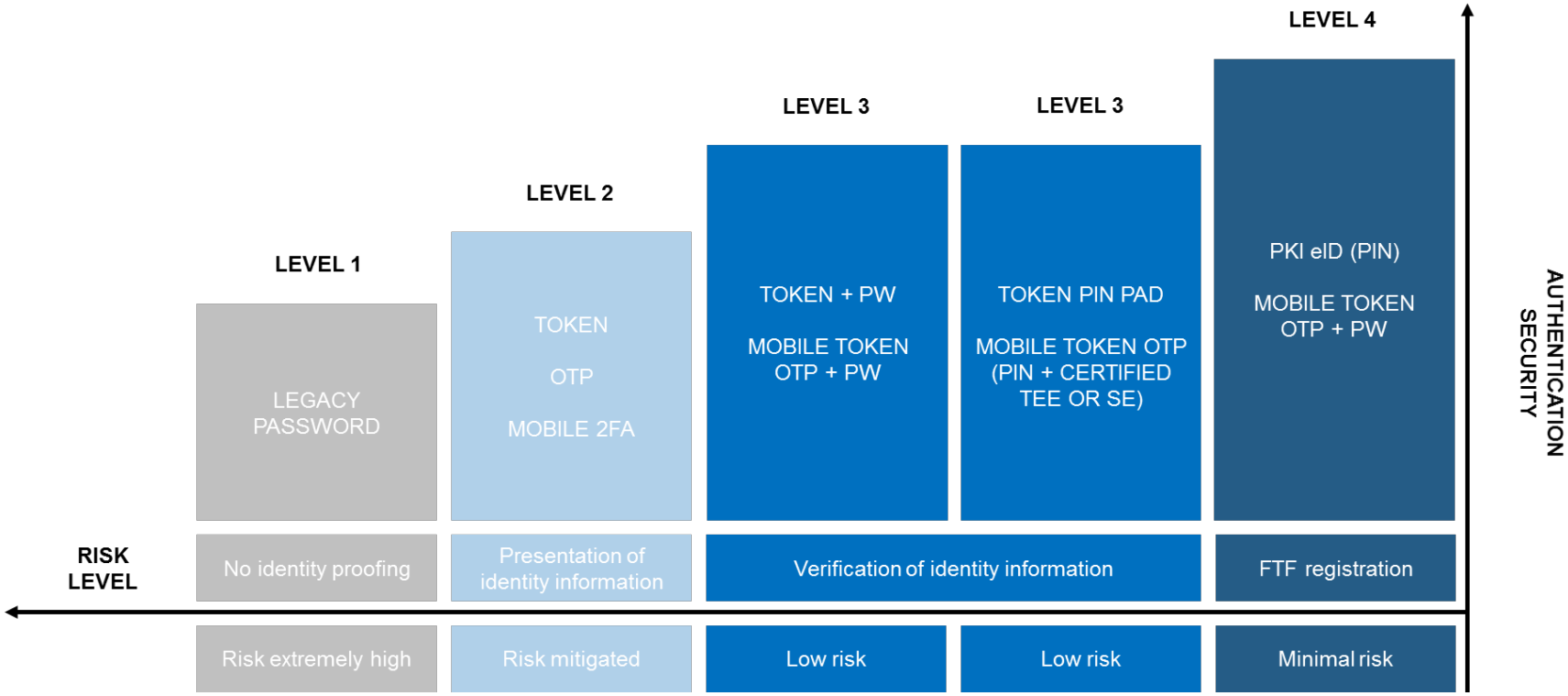
CHOOSE THE RIGHT LEVEL OF ASSURANCE

In the world of identity and access management, the level of assurance refers to the degree of confidence that a credential is neither fraudulent nor stolen, and that the person using the credential is the person to whom the credential was issued.

- When granting access to any government service, the level of assurance needs to meet the requirements of a given use case. A low-risk transaction, for example, is likely to require a lower level of assurance than a high-risk one.
- The security mechanisms supported by an authentication platform typically dictate the level of assurance, and provide a starting point for balancing the tradeoffs involved with risk, complexity, and cost.

- **Described by NIST, eIDAS**
  Strong push to support Mobile Identities in multiple environments
- **Risk Mitigation for the citizen and Relying Party**
  RP makes the authorization decisions based on what was provided.
- **Enables IDPs to reach into the public space**
  Standards (OIDC, FIDO, VoT) bridge identity gaps and reduce the Identity Zoo

Service offering based on level of assurance (LoA) for verified credentials

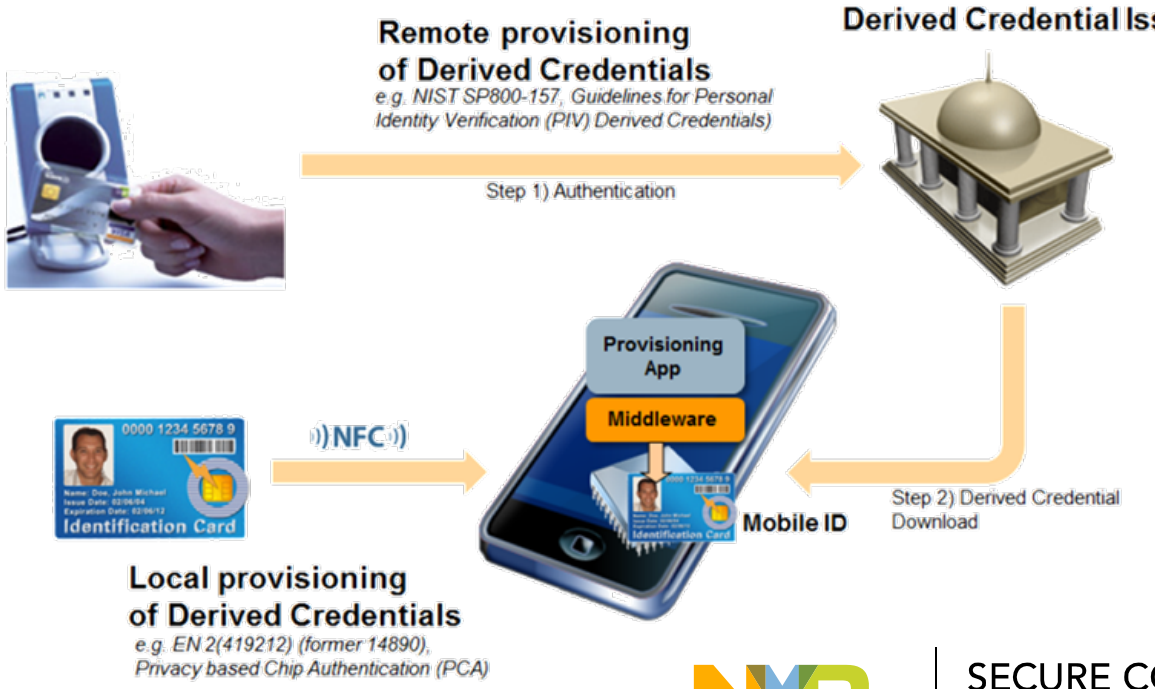


Derived Identities

The use of standardized, time-tested eID formats helps lower development costs, makes the deployment easier to scale, and increases stakeholder confidence. Building on the foundation of eIDs, derived credentials make it easier, safer, and more convenient to deploy and maintain mGov services.

Physical documents used to generate eIDs and derived credentials remain the foundation of all government services – online or offline – and remain the root credentials in case there are any problems with the network infrastructure associated with eGov or mGov services.

- **LOA/VoT is wired into the platform**
  Each assertion provides context to the RP about the device/app/user.
- **Service Workflow Engines**
  Customizable with influence from IDP, RP, Device & User
- **Crypto-signature is not static on the device**
  DI signature are rotated & protected.
- **Device & App Context**
  Centralized „meta“ *knowledge about the nature of the device, user, and mode of authentication.*



SECURE CONNECTIONS FOR A SMARTER WORLD

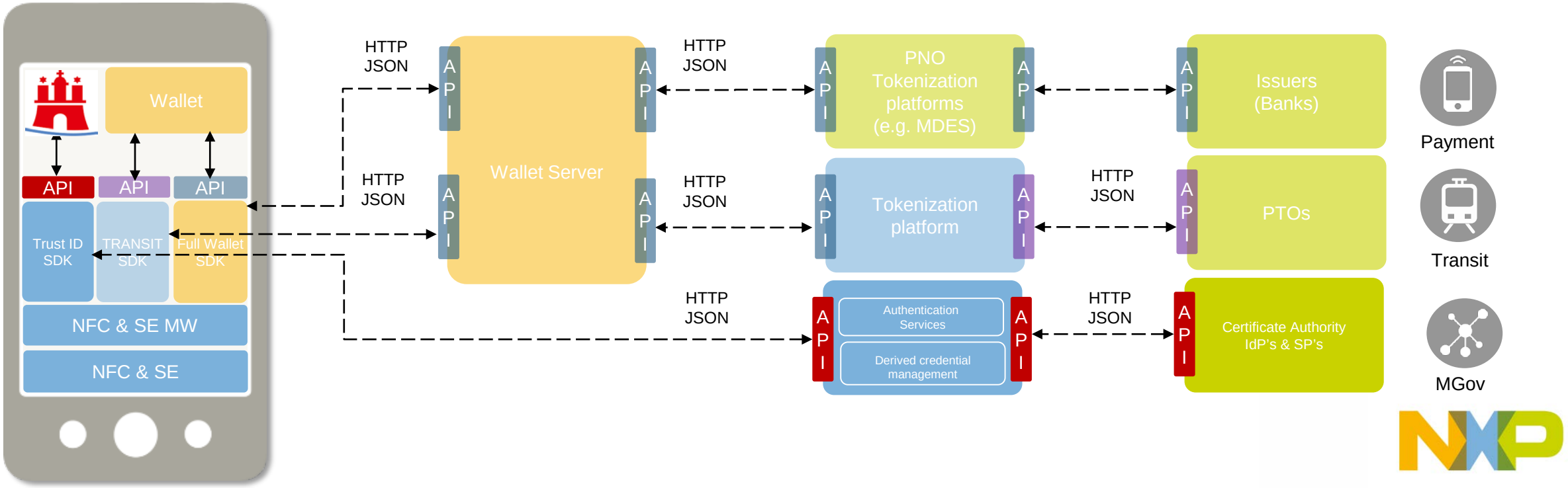
THE MOBILE ID ARCHITECTURE

The derived credential is just one part of the overall architecture used to store, process, and communicate the data necessary for secure authentication. A typical Mobile ID architecture makes use of the following items:

MOBILE ID – This is the derived credential and the Mobile application that hosts it. The Mobile ID resides in it's own "vault", ideally an eSE. The vault is a secure container that stores and processes data, and communicates with entities external to the mobile device, in a way that keeps the data private and safe.

MOBILE ID MIDDLEWARE – This is software that translates high-level API functions into commands that can be used by an eSE, TEE's and other containers and interprets responses to provide feedback to calling applications. The Middleware is as well used to access issued eID cards enabling credential derivation.

MOBILE APPLICATIONS – These are services or applications that run on the mobile device and make use of the Mobile ID credentials.



The overall Eco-System Landscape

Credential Holders

Credential Users, Cards & Devices

(m)Gov. Applications Interfacing & Development

eGov & private sector portals for services

Application/Service providers

- Birth, Death & Marriage Certificates
- Book and Manage Medical Appointments
- Health records & Lab Results
- Replacement of a Driver's Licence
- National Safety Code Safety Certificate
- Permit Application Vehicle
- Application Disability Parking
- Disability Bus Pass Application
- Freedom of Information Requests
- Change of Residence
- mDL
- mVR
- mID
- Bank services
- Insurances
- Mobile SIM Providers
- Peer-to-Peer payment
- Etc.

- mApps
- (m)Websites
- vDocs

OIDC/SDK

Central Authentication Hub

Core Infrastructure

Central Authentication & Credentialing Services Provider

Solution Architect & System & Services Integration

Government Central Authentication Hub

- Authentication Services Provider
- eIDAS Proxy Services Provider
- Biometric Backend Service
- Mobile Credential ServicesProvider
- SDK / Plug-In for Customer Applications
- HW / SW Secure Element personalization

Biometrics

Operator and Server hosting Service

OCSP/ LDAP/ CRL

Certificate Authorities

SAML/OIDC/SDK

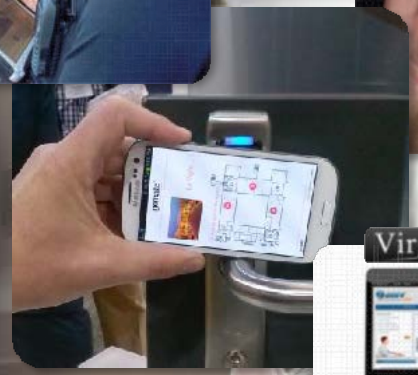
RP's/ & IDP's

Credential Providers & Subscribers

Ministry of Health | Ministry of Transportation | Ministry of Social Development & Social Innovation | EU Member States | Private Sector Partners

So the world is turning

UK
NEW ZEALAND
AUSTRALIA



MOBILE is here to stay….

MOBILE ID CARDs & DRIVER LICENSE

AUSTRIA
SWITZERLAND
GERMANY
UK (POC)

US Pilots:
- ALABAMA
- DELAWARE
- ILLINOIS
- IOWA
- TEXAS
- VIRGINIA

Regional overview

➔ North America: eGov solutions rely on private sector identities

- Some initiatives:
  - UPS eGov services
  - Canadian Gov. using bank identities for mobile services
  - AAMVA started bi-literal mDL pilot, testing decentralized storage of credentials and attributes
- 12 NIST pilots financed by the federal government.

➔ Asia: Dominated by low value digital identities

- Leading countries: South Korea, Singapore, Malaysia

➔ Europe: Heterogeneous solutions

- **User/Pwd credentials:** in some leading countries: France, UK
- **eID based digital identities**: Belgium, Portugal, Spain, Germany, Estonia , Spain, Sweden, Finland, …
- **Banks and mobile ID**: Nordics, Moldova, Azerbaijan, Turkey, Canada

➔ Middle East/Africa: Mobile and eID solutions in ME

- **Middle East**: Oman, Qatar, Bahrain, UAE
- **Africa**: Nigeria, Kenya and SA starting to deploy mobile identity services.

Summery

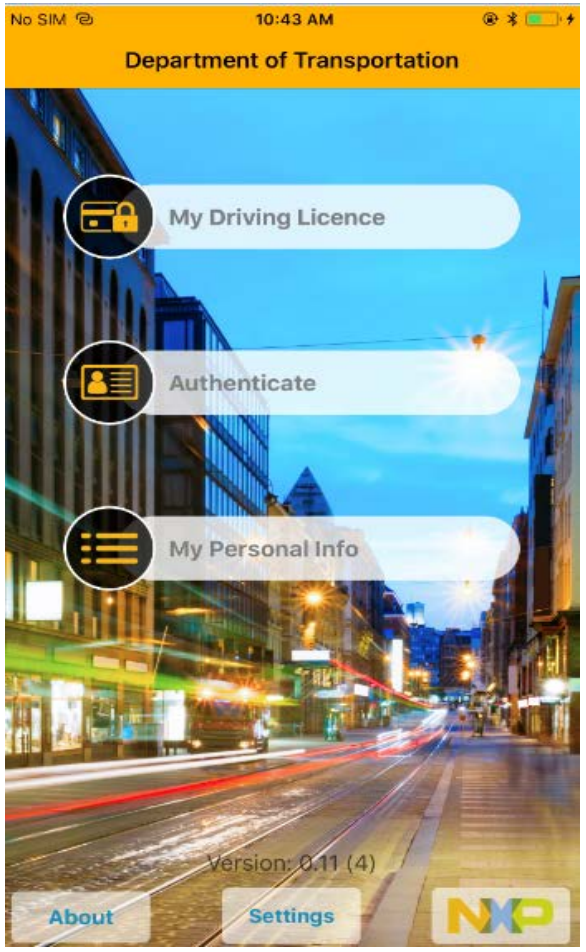
- **«Mobile Identity is here to stay…. »**
  - Many initiatives for the development of **(mobile) digital identity standards**: eIDAS, NIST, ISO and as well ICAO started working groups on virtual documents
  - World bank ID4D (ID 4 Development) initiative to push & enable online services delivery, focus on education, healthcare, agriculture and others in general and as well via **deployment of secure affordable mobile devices**

- **Cost saving remains a strong driver for the adoption of trust services**
  - **Developed countries** massively shifting services to online channel.
  - **Cost of digital transaction** can be up to 50 times lower than face to face transaction (UK study).
  - Studies made in Norway, Australia, Denmark provide similar findings.

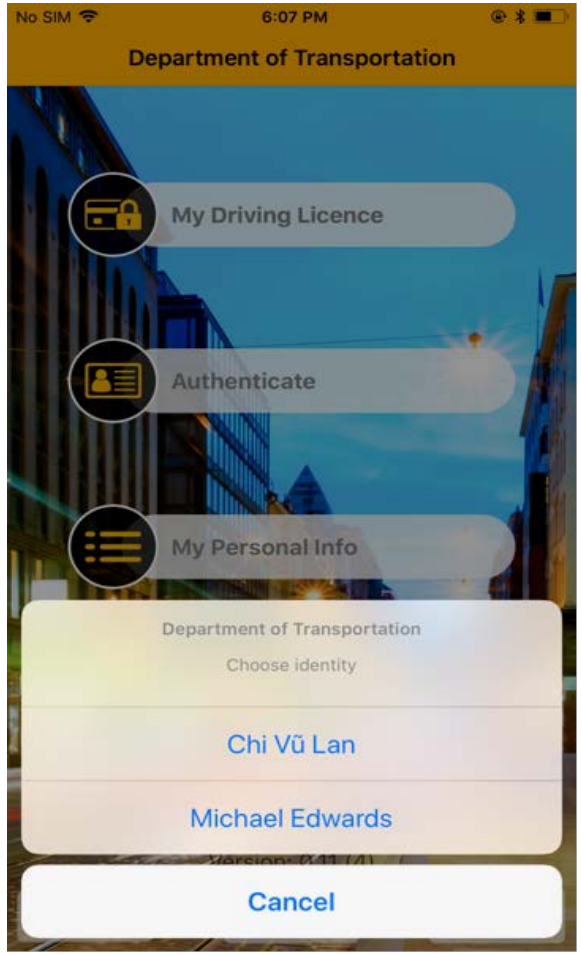
- **The market is still fragmented**
  - **Different approaches**: Government services centric or Private sector lead for specific purposes
  - **Two main trends**: Identity frameworks with standard interfaces/technologies or All-in-One proprietary approaches

Come and see our Mobile Driver License App - Booth C03

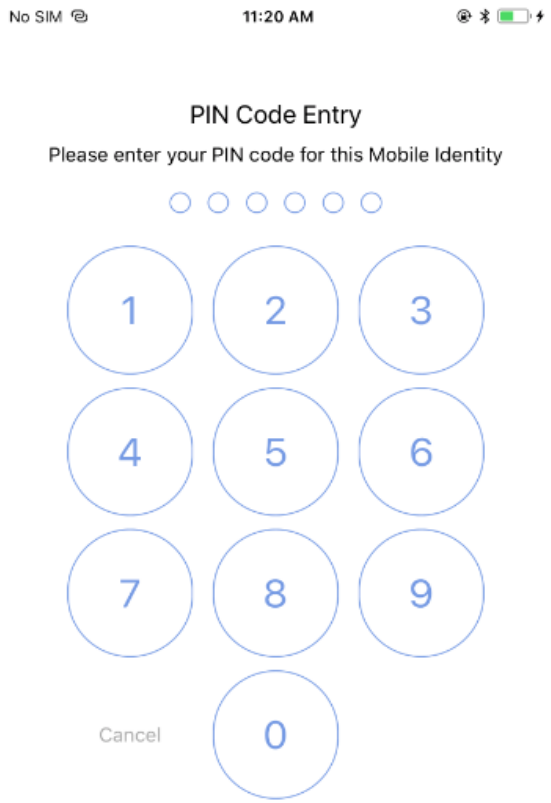
a platform for secure mobile credentialing & authentication of any virtual Gov document



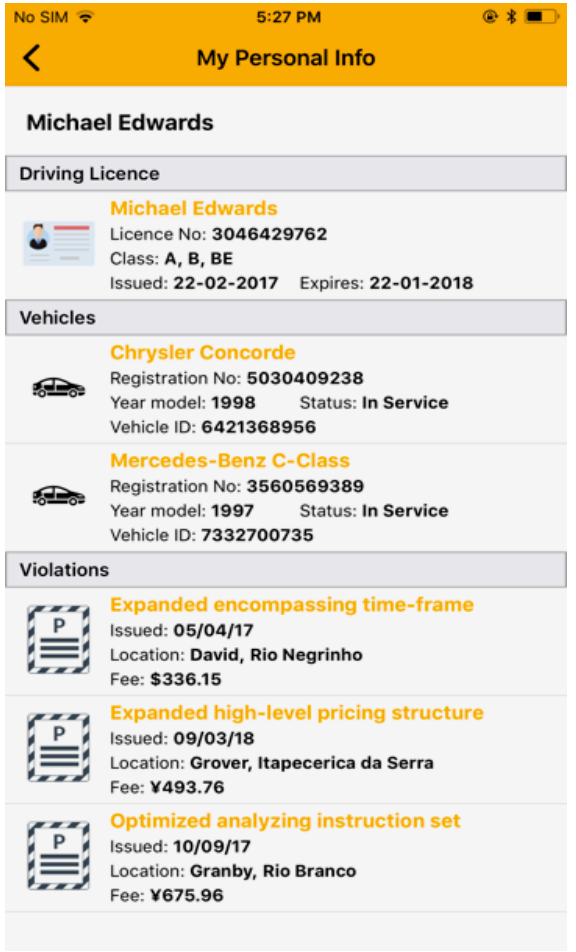
1. Tap on “My Personal Info”. List of ACTIVE Mobile Identities would appear.



2. Select a Mobile Identity to authenticate.



3. Enter PIN to unlock the selected Mobile credentials and attributes



4. virtual DL History overview

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