The Office of the
Government Chief Information Officer

iAM Smart
Application Programming Interfaces
- Use Cases

October 2021

Version : 1.3

Table of Contents

Purpose

The 2017 Policy Address announced three smart city key infrastructure projects, including the provision of an electronic identity (now renamed as "iAM Smart") for all Hong Kong residents free of charge, allowing them to use a single digital identity for authentication and conducting government and commercial transactions online.

All Hong Kong residents can apply for "iAM Smart" accounts free of charge on a voluntary basis. The account will be bound to the personal mobile device of the applicant. Users can make use of the biometric functions (including facial recognition, fingerprint identification, etc.) provided by their personal mobile devices to authenticate their identities and log in online services. iAM Smart also supports digital signing with legal backing under the Electronic Transactions Ordinance (Cap. 553) for handling statutory documents and procedures.

Three sets of Application Programming Interfaces ("APIs") as below are provided by the Office of the Government Chief Information Officer ("OGCIO") of the Government of the Hong Kong Special Administrative Region of the People's Republic of China for online services to adopt iAM Smart. This document demonstrates several use cases using these iAM Smart APIs.

- Authentication (and Re-Authentication)
- Form Filling
- Digital Signing

Notes : *The use cases described in the document are for reference only. Online service may design their own implementation flow using the iAM Smart APIs.*

Things to know

Before going into details of the use cases, there are things to know about the design of the iAM Smart system.

iAM Smart Account

iAM Smart account is available in two versions, namely iAM Smart and iAM Smart+. The iAM Smart version has authentication, form-filling and personalized notifications functions, while the iAM Smart+ version has the digital signing function in addition. An iAM Smart e-Cert will be given to an iAM Smart+ account.

An iAM Smart account can only be bound to one device at one time. The identification of an iAM Smart account to online service is represented in the form of a unique online service-specific identifier called "Tokenised ID". Different online services will have different values of Tokenised ID for the same iAM Smart user. It helps to preserve the privacy of the iAM Smart user since different online services cannot correlate the same iAM Smart user to track his/her digital footprint by comparing the Tokenised ID they possessed.

iAM Smart Profile

Each iAM Smart account has two profiles. The first profile is the iAM Smart Profile which contains major card face data ("CFD") on the Hong Kong Identity Card ("HKIC"), namely the HKIC number, English name, Chinese name, date of birth, and sex. The CFD will then be checked against the record of identity card. After checking with positive results, these data, except Chinese name, will be marked as "verified". With iAM Smart user's authorisation, these verified data in the iAM Smart Profile can be provided to online services for user account registration purpose.

The verified data in the iAM Smart Profile will be regularly checked with latest records of identity card. When changes are found during regular check, the iAM Smart user will be asked to re-register his/her iAM Smart account in order to update the data in the iAM Smart Profile.

e-ME Profile

The other profile of an iAM Smart account is e-ME profile in which iAM Smart user can input his/her personal information for online form pre-filling. The e-ME profile is initially empty. iAM Smart user can optionally copy data from the iAM Smart Profile or enter other personal information such as mobile number, residential address, marital status, etc. to e-ME profile on a voluntary basis. When online service requests information from the e-ME profile for form pre-filling, the user can give authorisation on an itemised basis through the iAM Smart Mobile App.

Unlike other personal information in the e-ME profile which is either copied from the iAM Smart Profile or entered by the user, the e-ME profile also includes the billing address information which could optionally be retrieved from one of the address data providers, including the electricity and gas companies and the Water Supplies Department. The billing address information consists of a PDF e-bill file and the related data, such as the provider name, owner name, service address, postal address, etc. This information could be used by online services as a kind of address proof, subject to the need of individual services.

Authentication for online service Login

iAM Smart user has to authenticate his/her identity with FIDO Universal Authentication Framework (FIDO UAF). (i.e. the mobile device bounded with his/her iAM Smart account and a local biometric authentication in a registered device would be required to log in iAM Smart mobile app.) to log in iAM Smart System to give authorisation and resulting as successful authentication of the iAM Smart user to the online service.

Re-authentication

Re-authentication provides an alternative for online service to re-confirm the iAM Smart user's identity before completing a transaction (e.g. confirm submission of an application form). After an iAM Smart user has authenticated in an online service using iAM Smart, online service can request the same iAM Smart user to re-authenticate himself/herself to iAM Smart System via iAM Smart Mobile App.

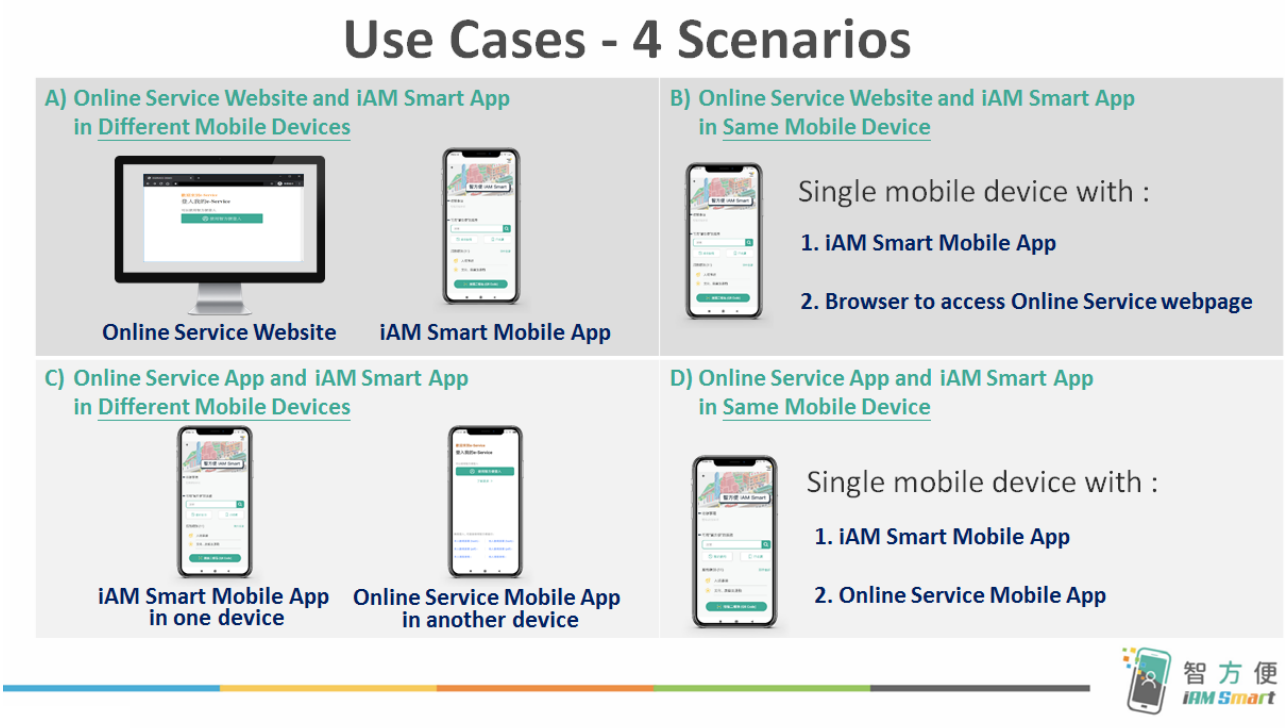
Identification Code and Result Notification for Signing

For iAM Smart user to digitally sign a document in an online service, the online service should first generate the hash from the document (or document digest for a PDF document) to be signed ("Document Hash"). The Document Hash will be sent to iAM Smart System for signing using the private key of iAM Smart user's iAM Smart e-Cert. A signature bundle including the digital signature, iAM Smart e-Cert, etc., will be returned to online service for further computing of the signed document. When iAM Smart user has logged in the online service, both online service and iAM Smart System will compute and display a 4-digit identification code using the Document Hash and the hash of Tokenised ID of the iAM Smart user. iAM Smart User should be requested to verify the two identification codes are the same before authorising the signing request. After receiving and verifying the signature bundle using the iAM Smart e-Cert, online service should notify the signing result to iAM Smart System.

Use Cases

Basically, there are four scenarios as below for iAM Smart API use cases :

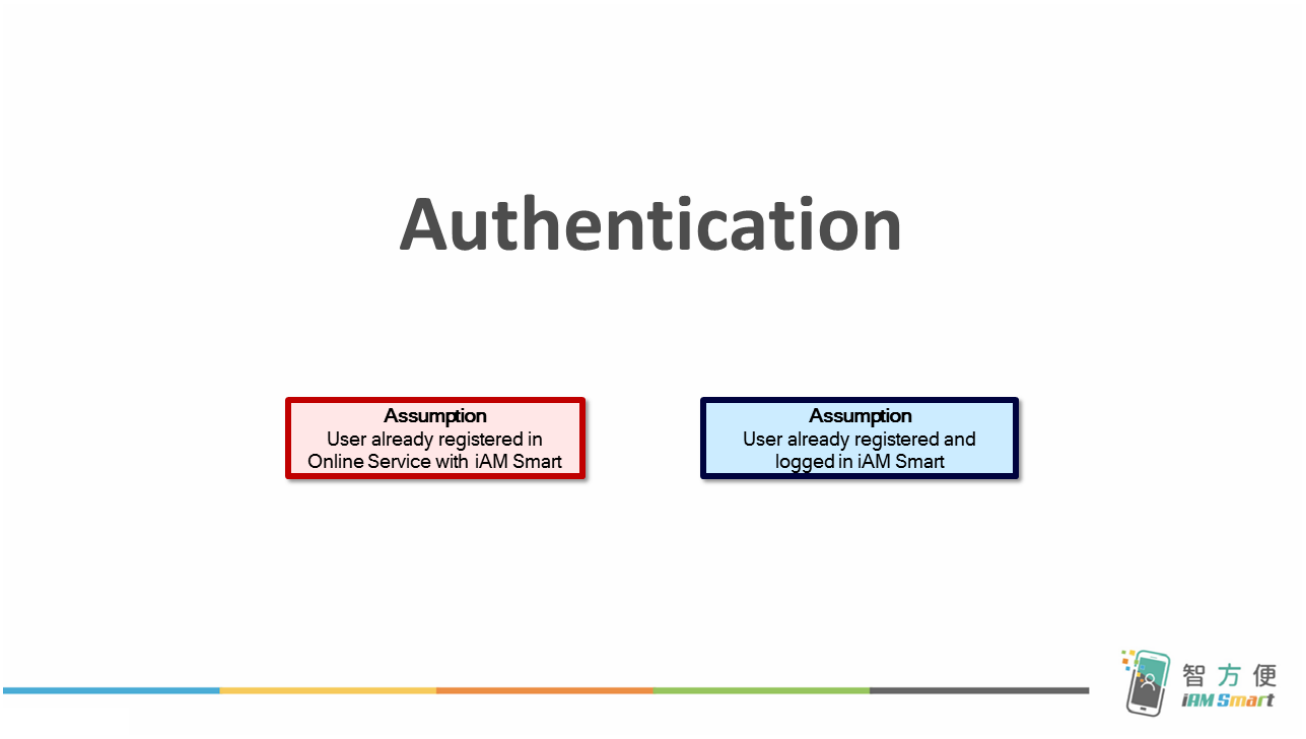
A. Online service Website and iAM Smart App in Different Devices
B. Online service Website and iAM Smart App in Same Mobile Device
C. Online service App and iAM Smart App in Different Mobile Devices
D. Online service App and iAM Smart App in Same Mobile Device



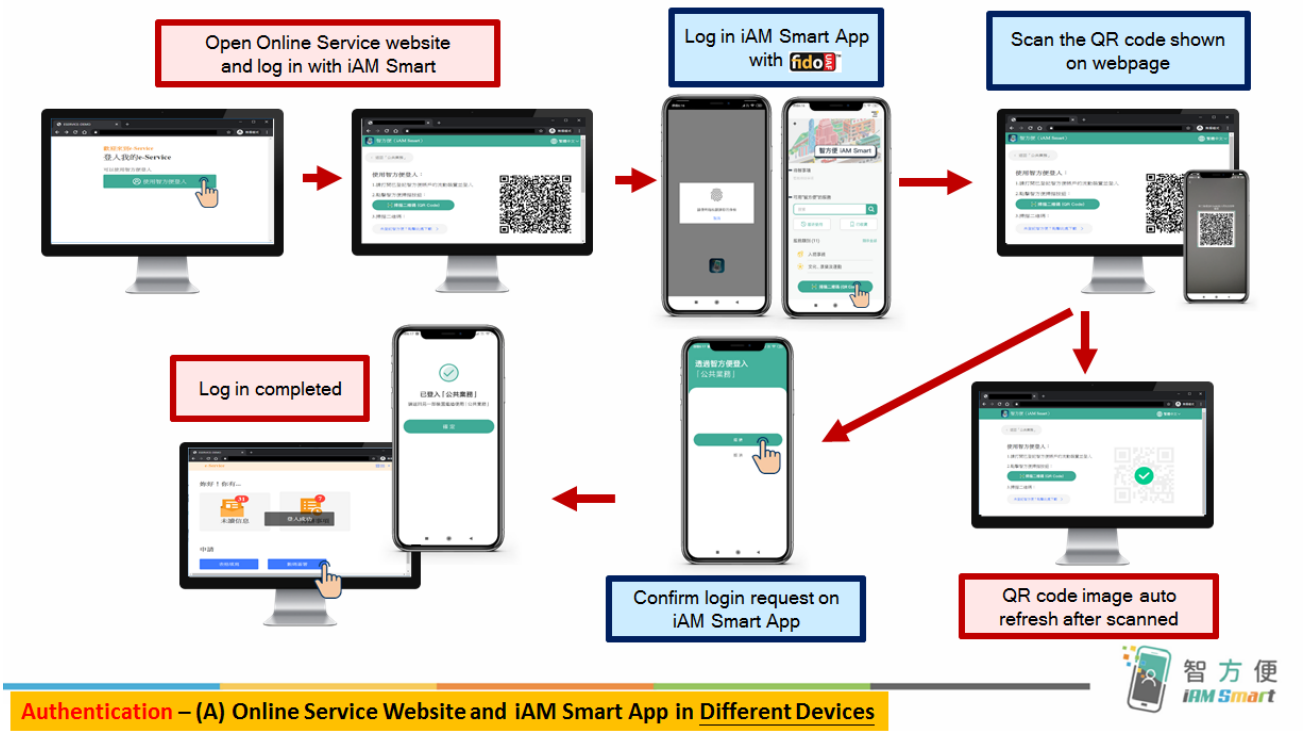
Use cases on the below three sets of iAM Smart APIs are illustrated in the following sections:

1. Authentication (and Re-Authentication)
2. Form Pre-filling
3. Digital Signing

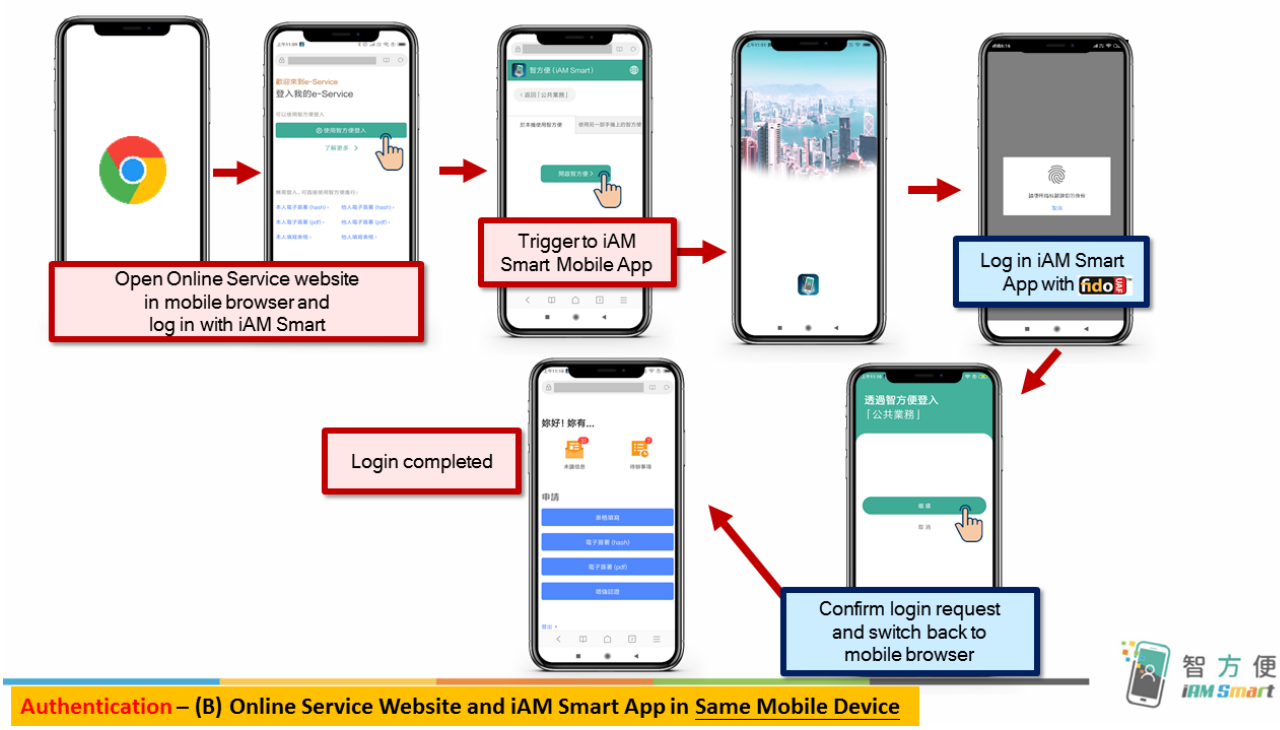
1. *Authentication (and Re-Authentication)*



Authentication – (A) Online Service Website and iAM Smart App in Different Devices

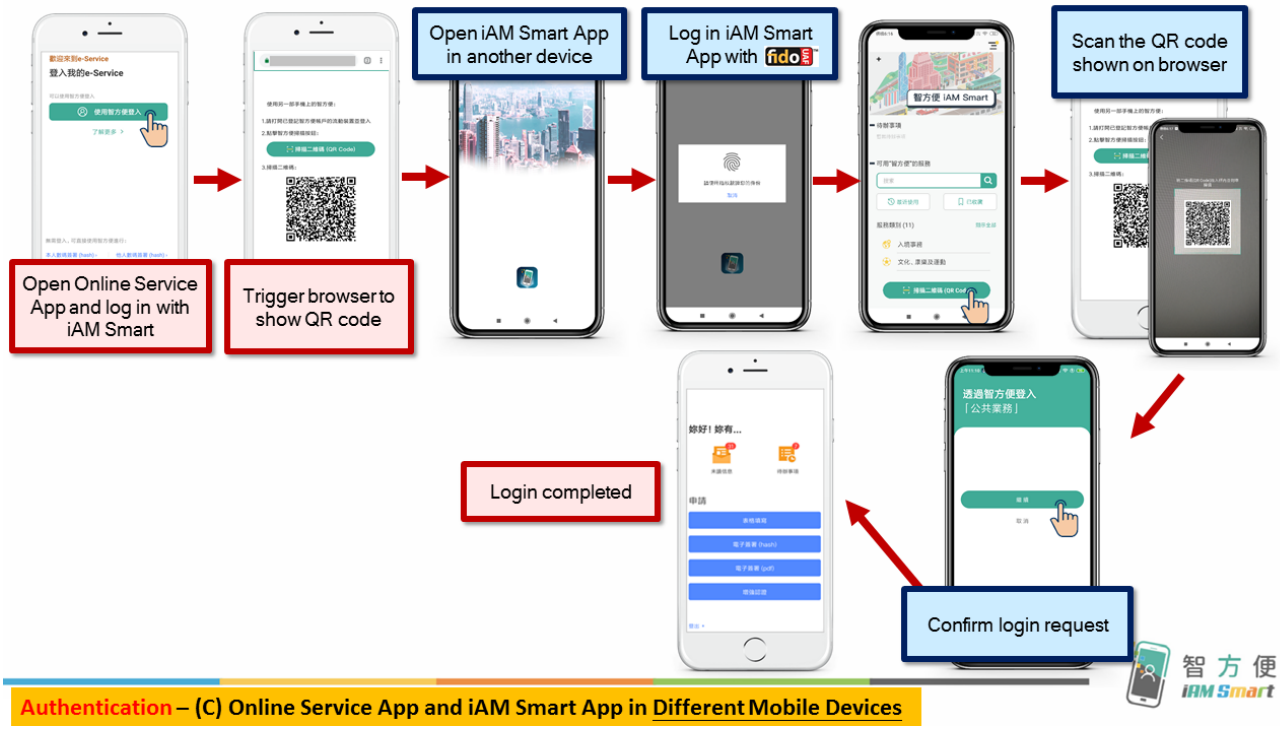


Authentication – (B) Online Service Website and iAM Smart App in Same Mobile Device



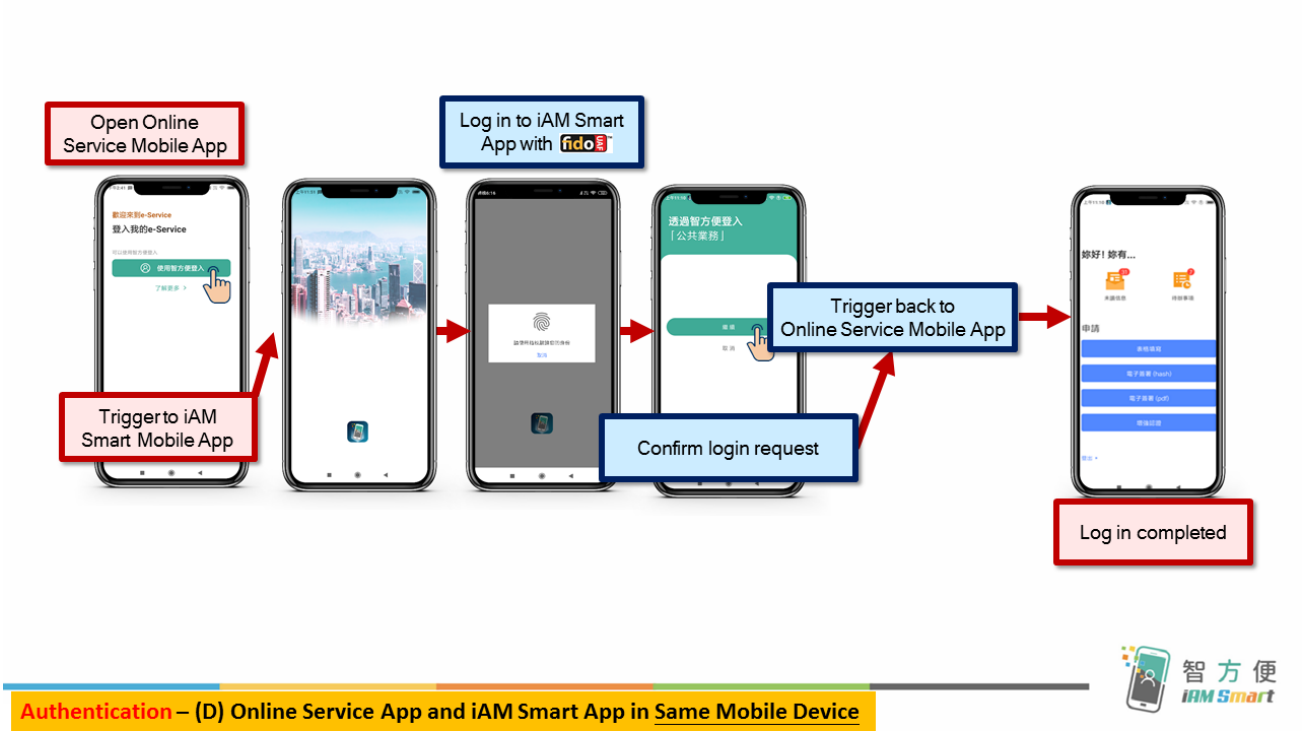
Authentication – (B) Online Service Website and iAM Smart App in Same Mobile Device

Authentication – (C) Online Service App and iAM Smart App in Different Mobile Devices

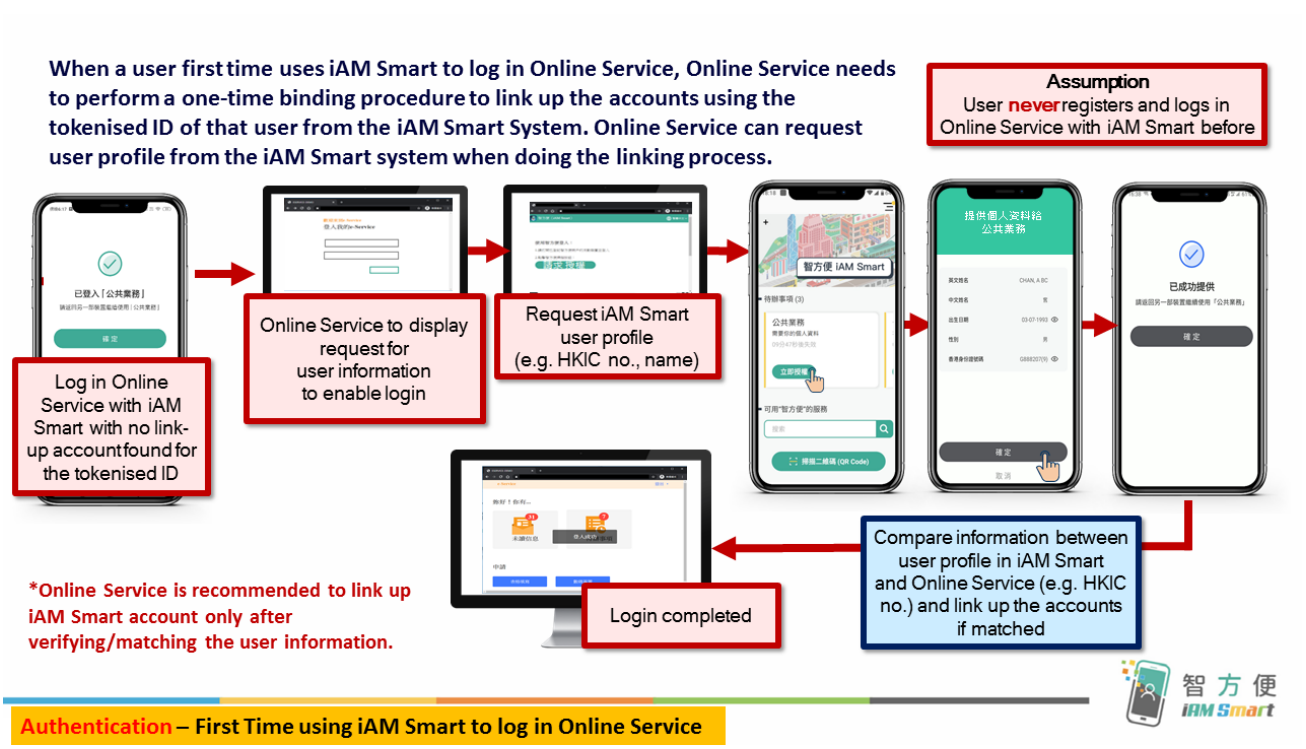


Authentication – (C) Online Service App and iAM Smart App in Different Mobile Devices

Authentication – (D) Online Service App and iAM Smart App in Same Mobile Device



Authentication – First Time using iAM Smart to log in Online Service



Re-Authentication

Assumption
User already registered and logged in Online Service with iAM Smart

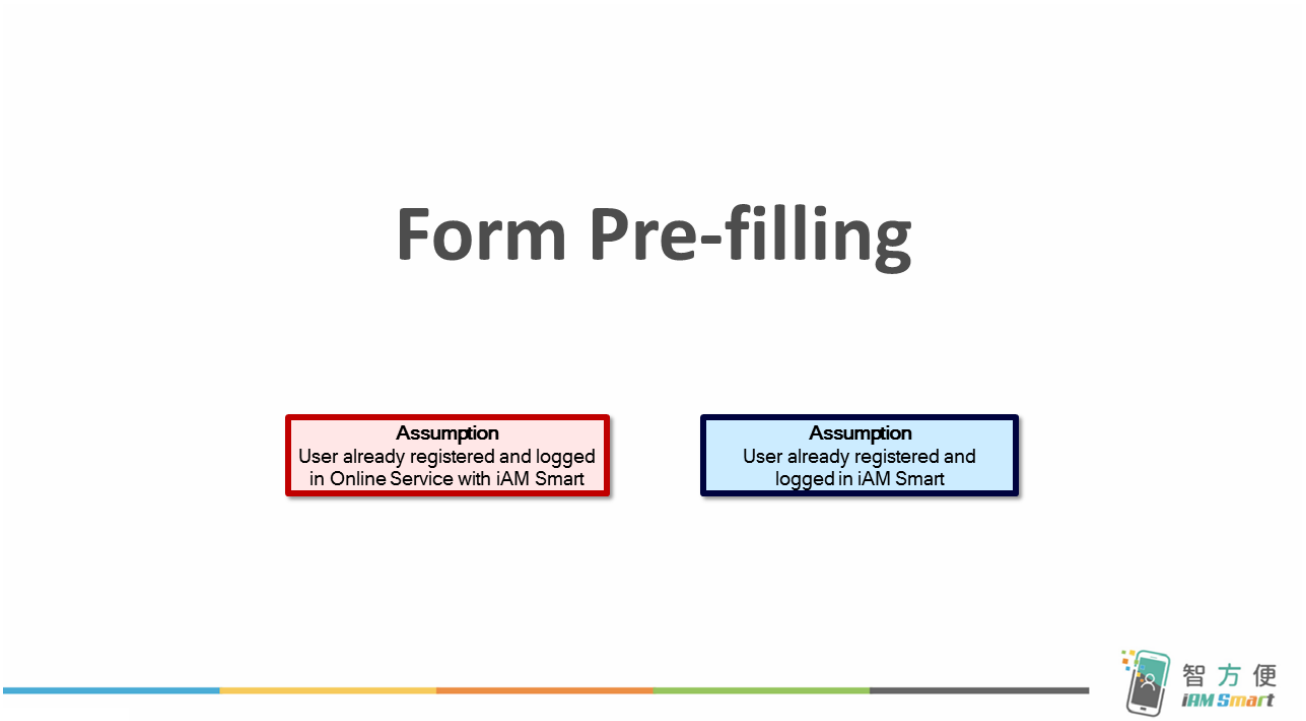
Assumption
User already registered and logged in iAM Smart

智方便 iAM Smart

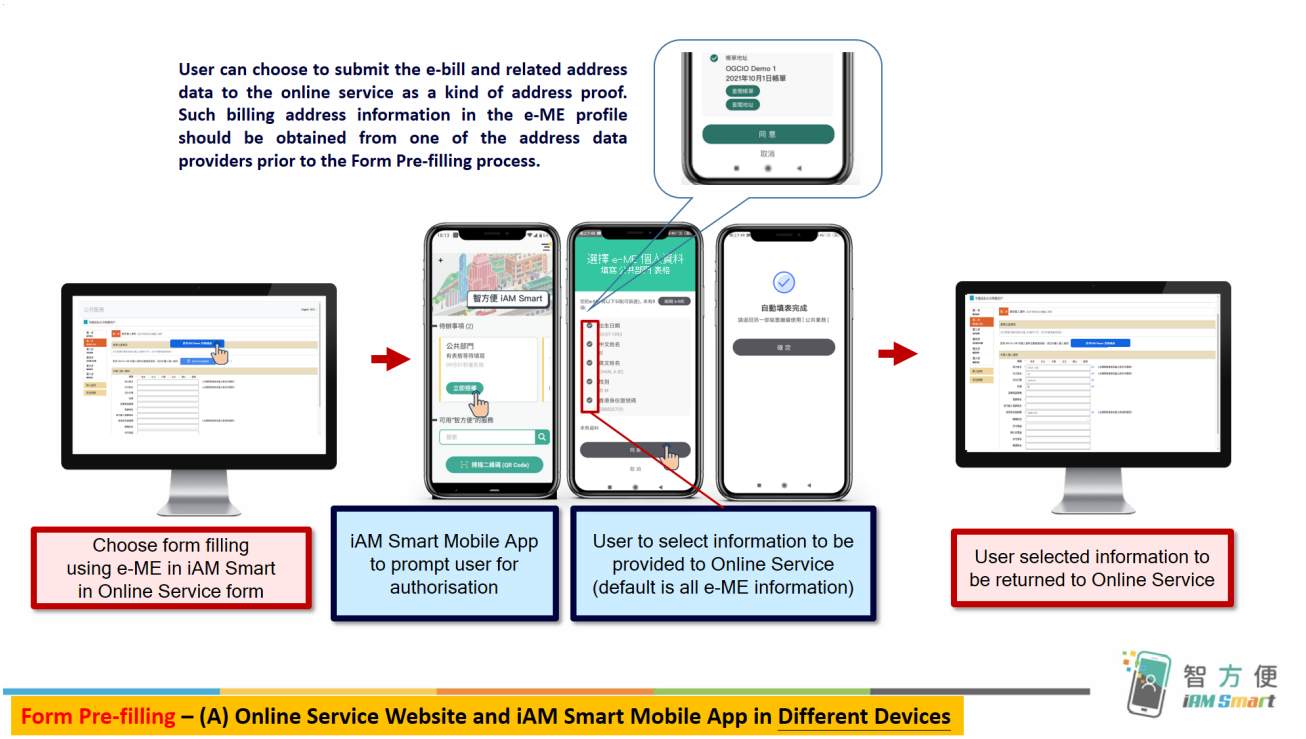
Re-Authentication

智方便 iAM Smart

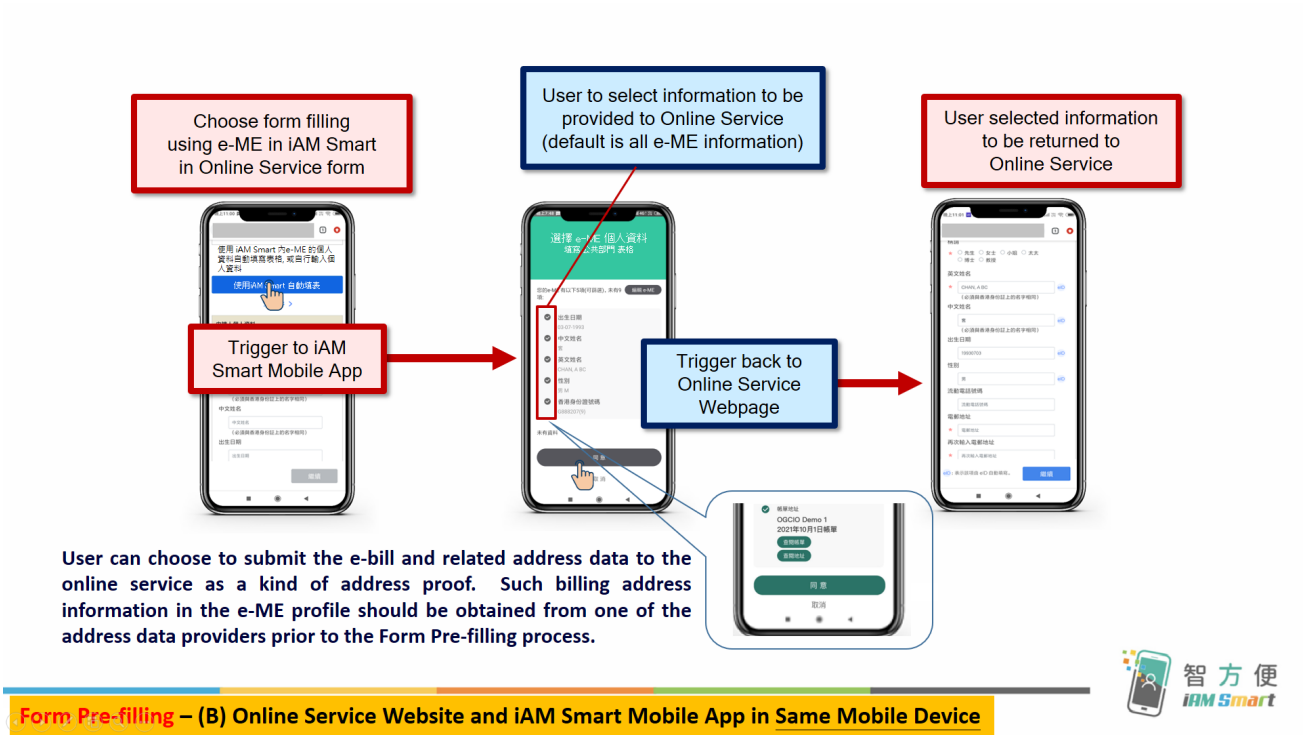
2. Form Pre-filling



Form Pre-filling – (A) Online Service Website and iAM Smart App in Different Devices

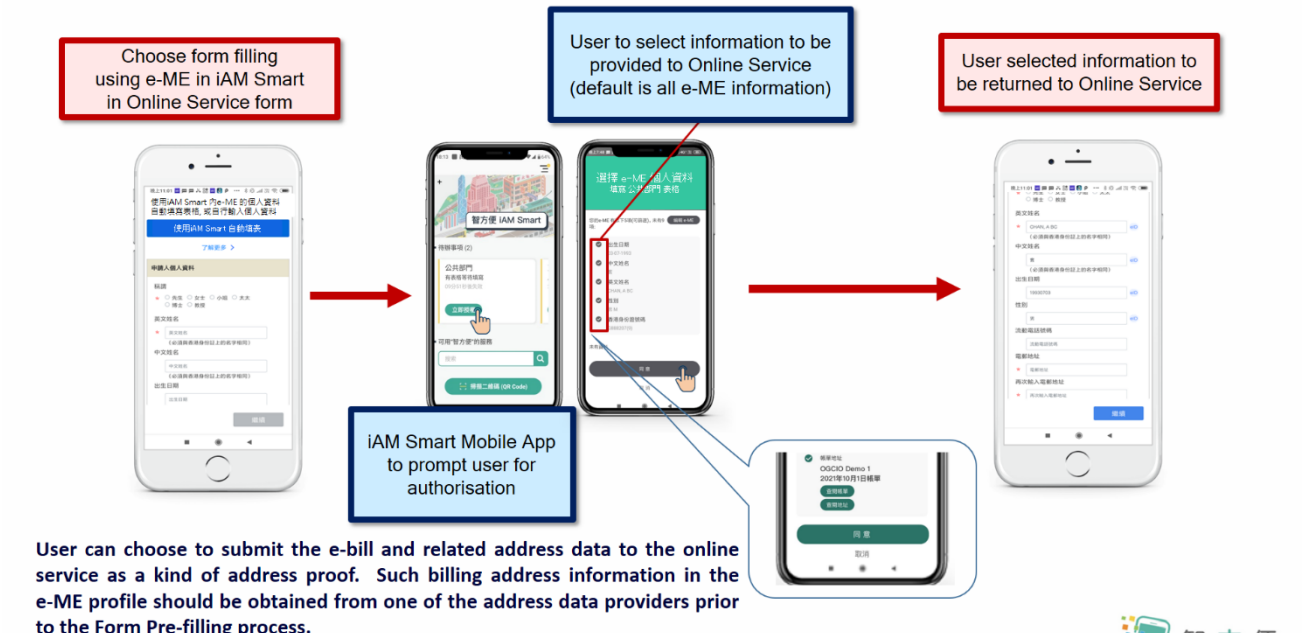


Form Pre-filling – (B) Online Service Website and iAM Smart App in Same Mobile Device



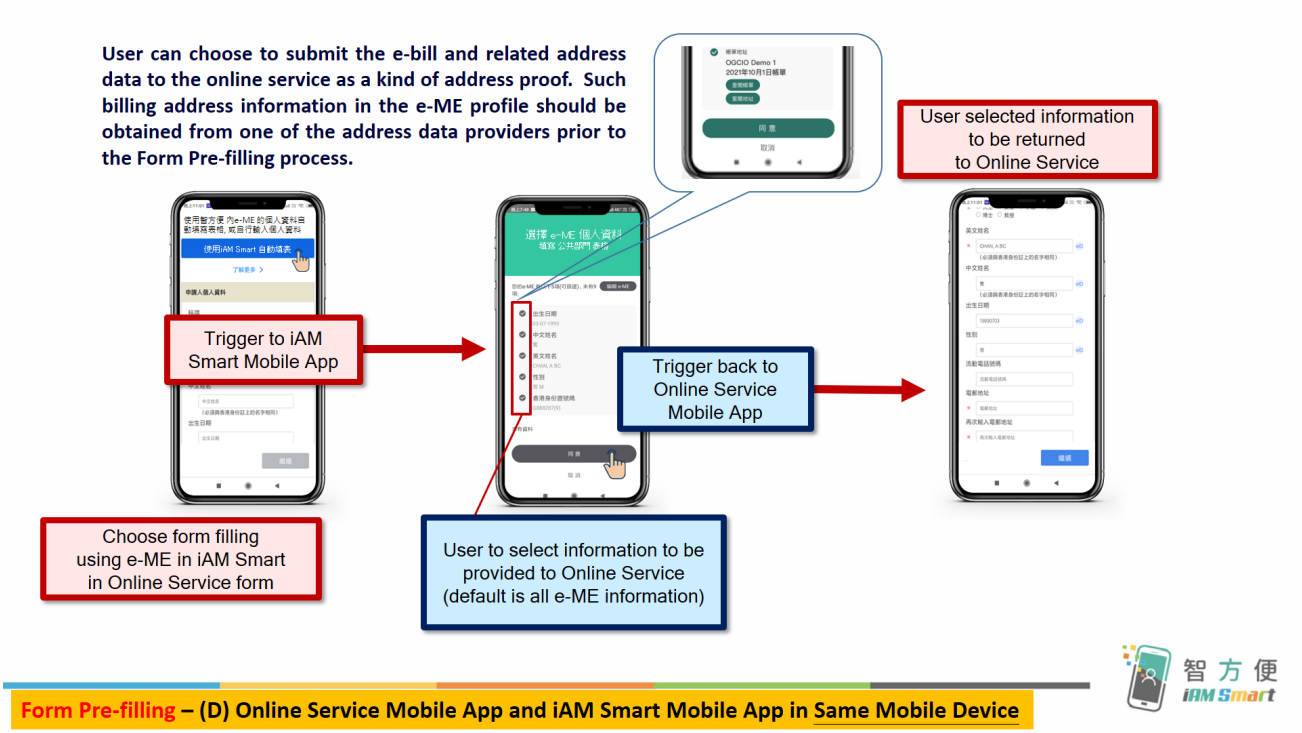
Form Pre-filling – (B) Online Service Website and iAM Smart Mobile App in Same Mobile Device

Form Pre-filling – (C) Online Service App and iAM Smart App in Different Mobile Devices

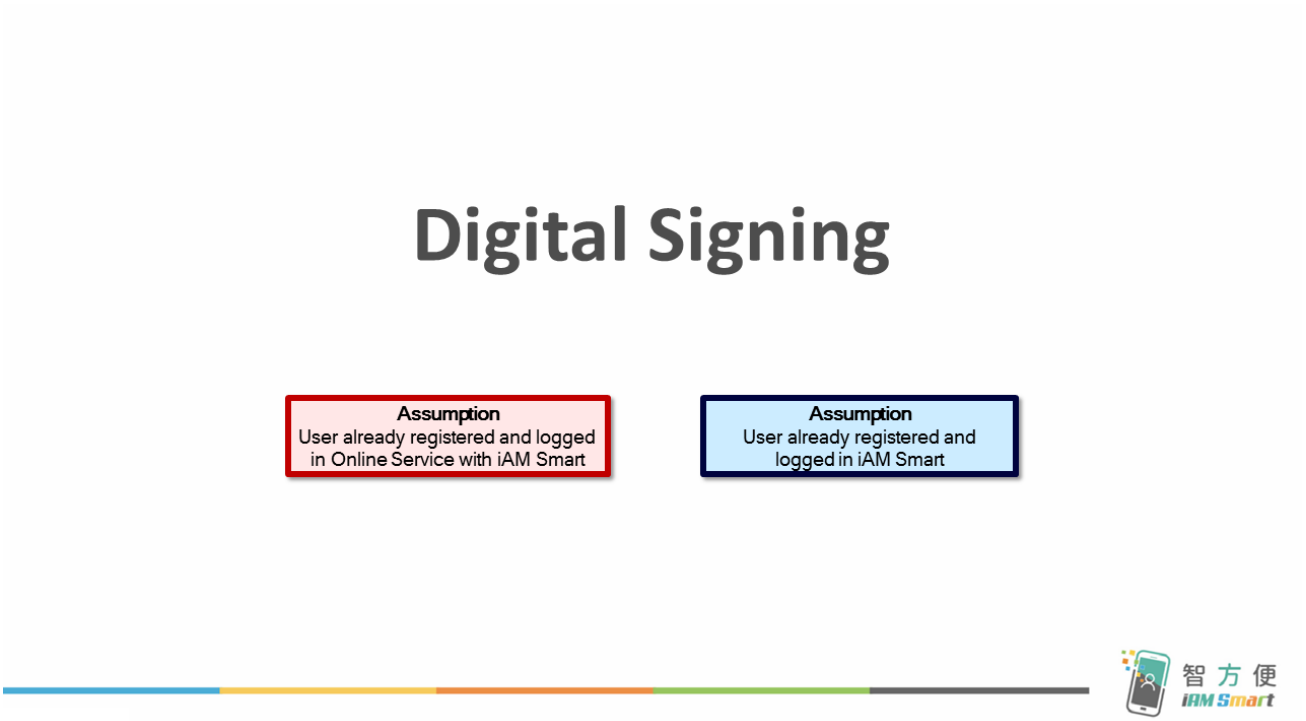


Form Pre-filling – (C) Online Service Mobile App and iAM Smart Mobile App in Different Mobile Devices

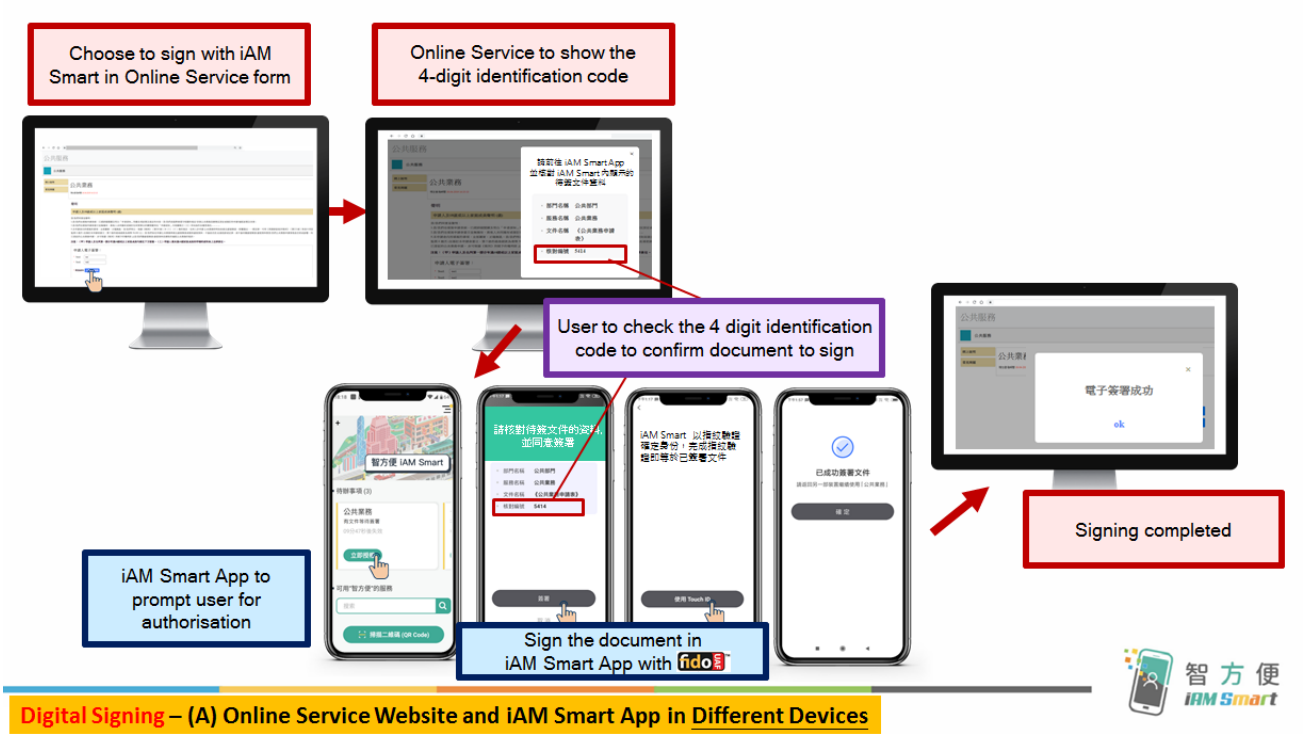
Form Pre-filling – (D) Online Service App and iAM Smart App in Same Mobile Device



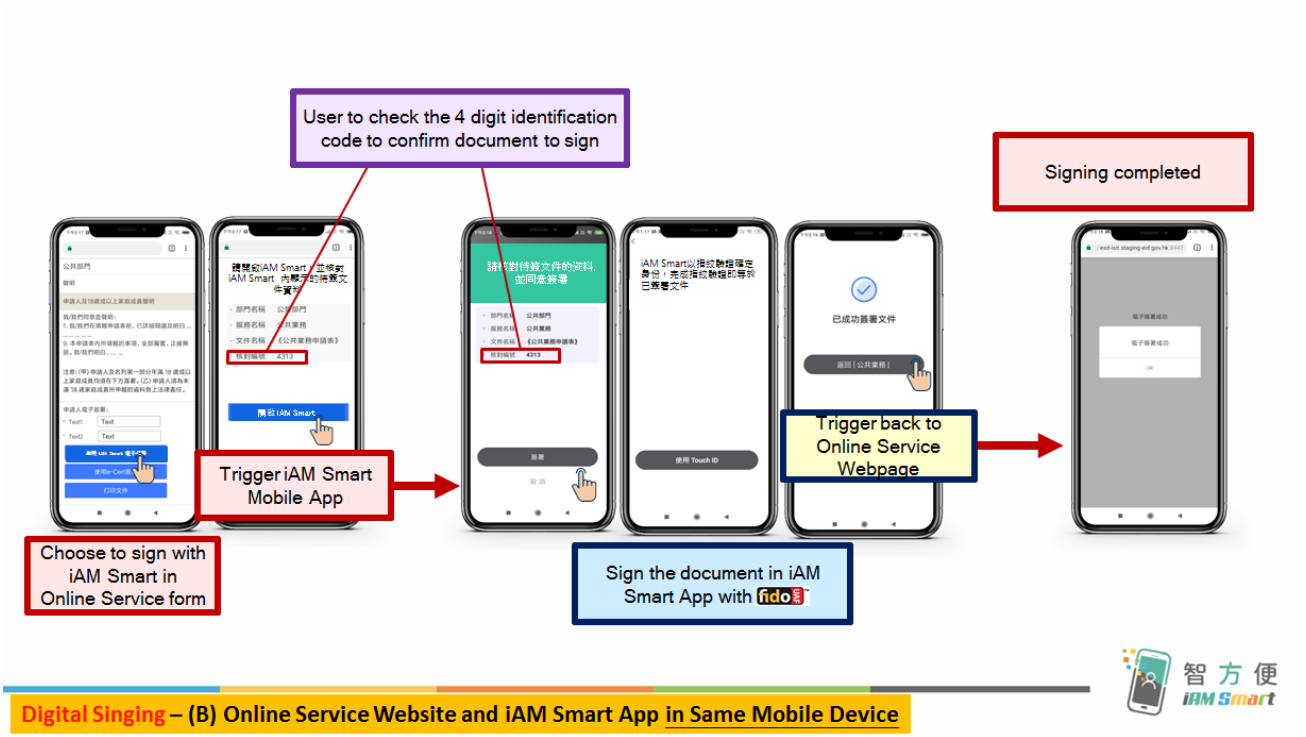
3. *Digital Signing*



Digital Signing – (A) Online Service Website and iAM Smart App in Different Devices

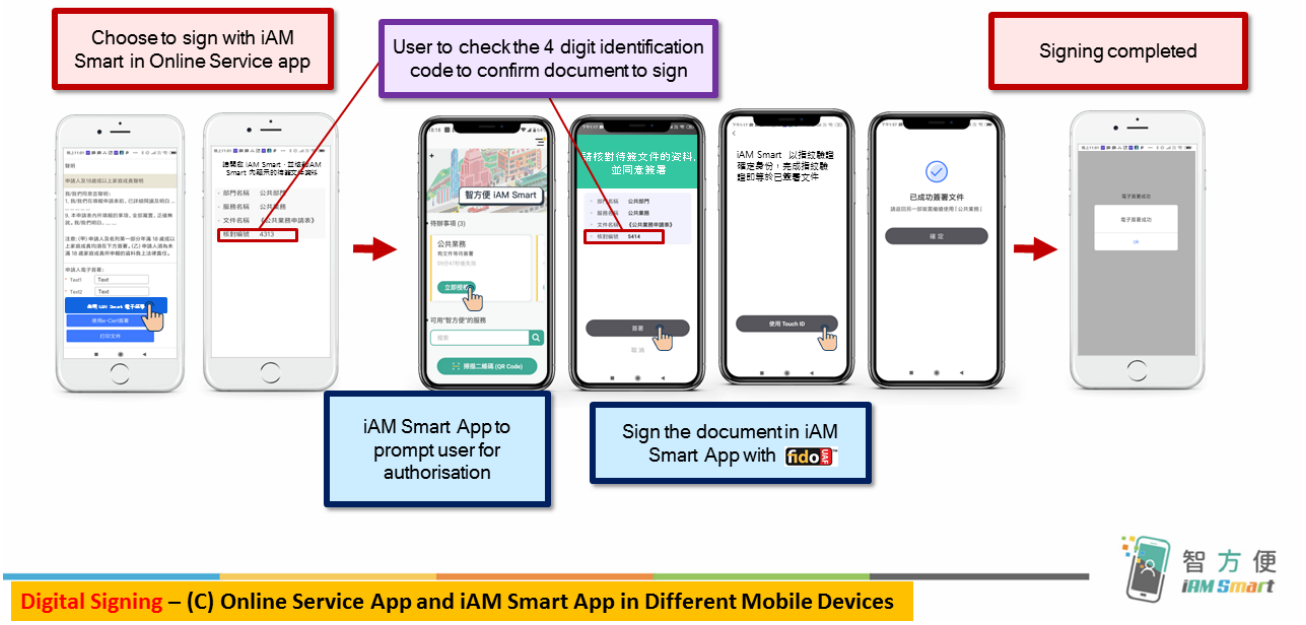


Digital Signing – (B) Online Service Website and iAM Smart App in Same Mobile Device



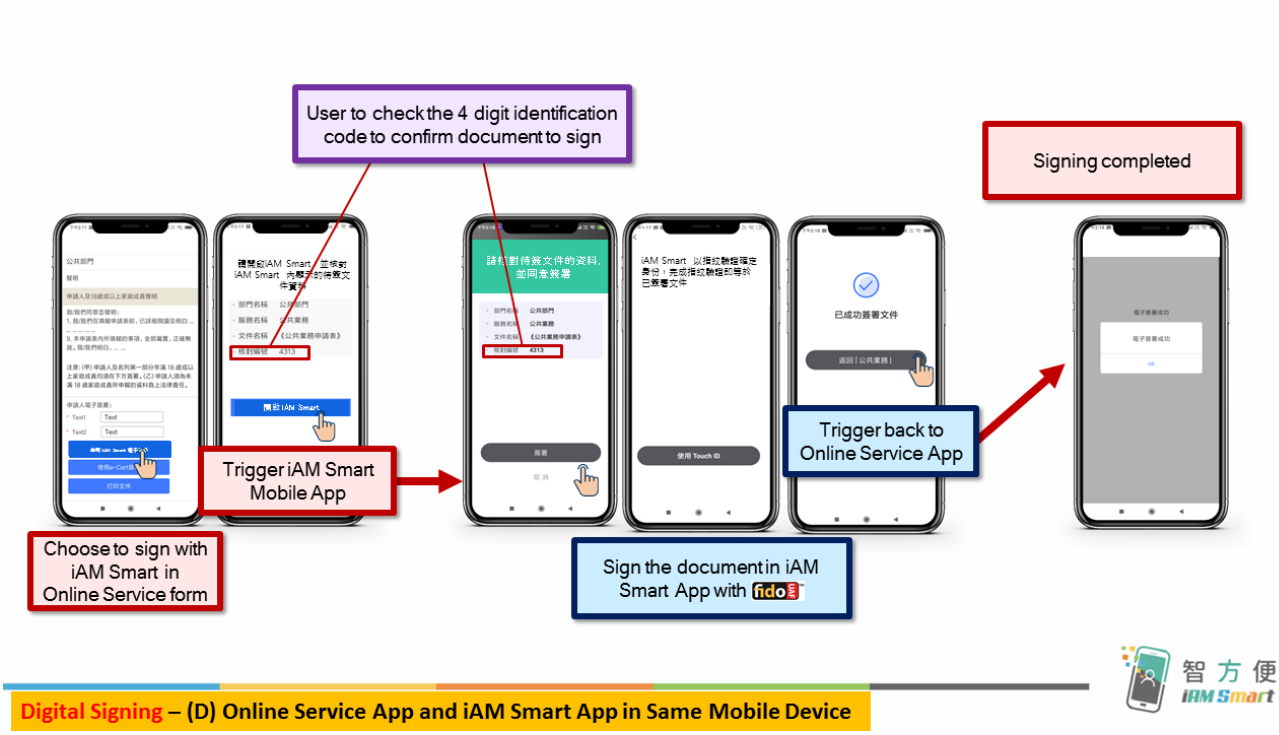
Digital Singing – (B) Online Service Website and iAM Smart App in Same Mobile Device

Digital Signing – (C) Online Service App and iAM Smart App in Different Mobile Devices



Digital Signing – (C) Online Service App and iAM Smart App in Different Mobile Devices

Digital Signing – (D) Online Service App and iAM Smart App in Same Mobile Device



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