

HealthCerts – An Overview

1 For most countries, an extensive vaccination process is underway. There are ongoing discussions how vaccine-certificates can be part of the effort to reopen the global economy and enable cross-border travel. There is a need to collaborate amongst governments to support cross border prospects that provide global solutions.

2 We published **HealthCerts a set of digital open standards and schema for issuing digital COVID-19 test results/vaccination certificates**, in line with international standards and the Singapore Government’s requirements. This will allow the global community to collectively improve it so that governments and public health authorities may adapt it.

3 This document is written primarily for **government leaders and their partners**, but it should be helpful to software development teams as well. In particular, it is meant to help leaders decide whether a digital vaccine-certificate suite of products like HealthCerts would be useful in your operating context. Together with HealthCerts, we have developed Notarise to digitally authenticate and endorse certificates and Verify¹ to enable authorities to confirm certificate’s legitimacy as shown in Figure 1 below.

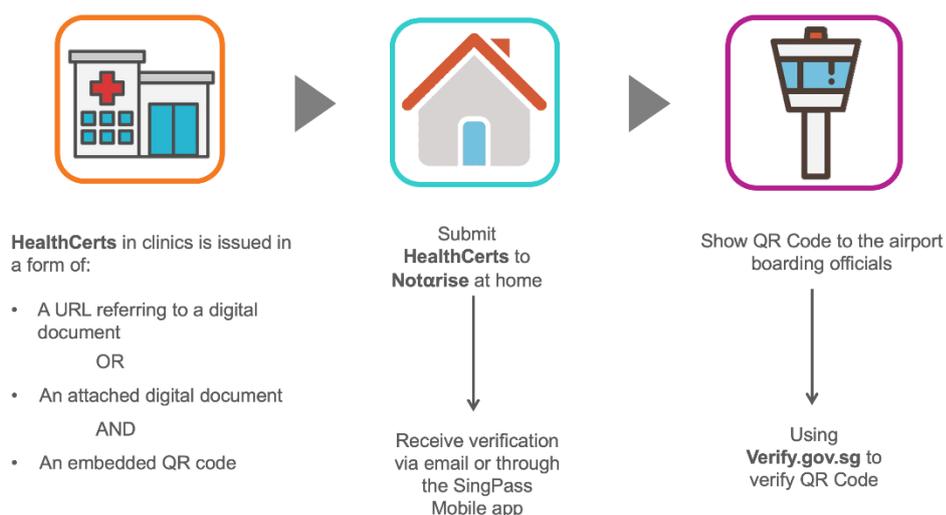


Figure 1 : Use of HealthCerts, Notarise and Verify

Digital Vaccine-Certificates in Singapore

4 The Government Technology Agency, in collaboration with the Singapore Health Ministry have developed a system for issuing, authenticating and verifying digital certificates shown in Figure 2 below. It ensures certificates issued are tamper-proof, secure and comply with international standards and the Singapore Government’s requirements.

¹ <https://notarise.gov.sg> and <https://verify.gov.sg>

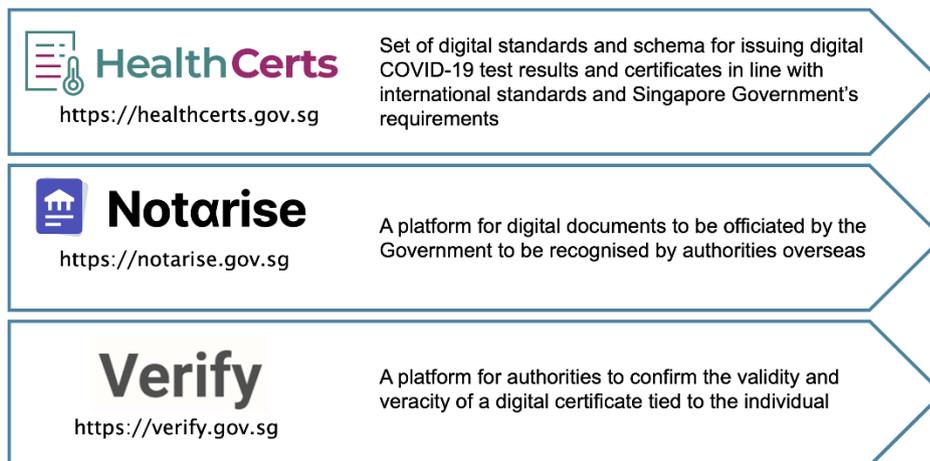


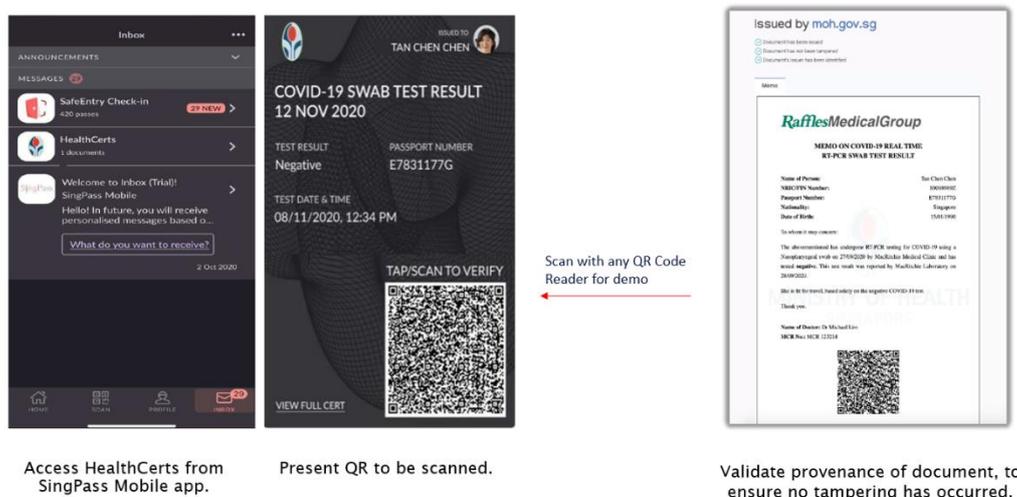
Figure 2 : System for issuing, authenticating and verifying digital certificates

How it works

5 **HealthCerts** is a set of digital open standards and schema for issuing, authenticating and verifying digital COVID-19 test results/vaccination certificates. HealthCerts are issued in line with international standards² and the Singapore Government's requirements. It is interoperable with private sector solutions. The certificates are also tamper-proof (data stored is immutable) and secure, protected against unauthorised access.

6 The digital certificate stores identity details (name, national identity number, DOB etc.) and test details (type, status, date, medical institution details). The QR³ code will be sent via email or presented under the SingPass Mobile app (shown in Figure 3 below).

Presenting HealthCerts on SingPass Mobile



² Fast Healthcare Interoperability Resources (FHIR) specification

³ Documents referenced by the QR code are encrypted using this [library](#)

Figure 3 : HealthCerts presented on SingPass Mobile app

7 HealthCerts is powered by **OpenAttestation**, an open-source framework using blockchain to issue⁴ cryptographically trustworthy documents which can be verified independently without the need for proprietary software or equipment.

8 For added assurance, Digital Certificates may be digitally authenticated and endorsed by the Government through **Notarise** to ease downstream verification by ensuring:

- Untampered content - Authenticate the veracity of the Digital Certificate against blockchain hash value
- Trusted provenance - Verify the legitimacy of Digital Certificate according to our travel policy requirements and checks that the laboratory (or clinic) is authorised to issue Digital Certificates
- Rightful ownership - Strong identity assurance through SingPass⁵ to prevent impersonation

9 **Verify**⁶ provides an easy, reliable way to ensure digital certificates have not been tampered with and issued/ digitally authenticated and endorsed by a recognised entity.

For more information, visit <https://healthcerts.gov.sg> and <https://openattestation.com>.

Global Interoperability

10 To support the opening of cross-border travel, there is a need to verify travellers' identity and their associated health status, in ways that interoperate with other solutions. We have therefore **designed HealthCerts with global interoperability in mind as an open standard**.

11 **Issuance** - Entities can sign up to issue digital certificates compliant with the HealthCert standard. At the moment, **AOKpass, Accredify, Collinson** and **Trybe.ID** provide issuance service to clinics and labs such as Innovative Diagnostics, Gleneagles Hospital and Parkway Shenton Medical Group in Singapore and overseas countries. See full list of partners - [List Of Providers \(healthcerts.gov.sg\)](https://healthcerts.gov.sg) which support over 400 institutions in countries such as Canada, Denmark, Hong Kong, Indonesia and Malaysia.

12 **Verification - As Verify is open sourced [here](#)**, private companies or governments can develop their own versions of Verify, with their own list of recognised COVID labs or foreign authorities. Private sector offerings:

- **Affinidi** provides **document verification services** for attesting document authenticity and validation to airlines & airports.
- IATA conducts verification against the **rules engine of other countries** to determine if the test certificate meets the **destination** country requirements.

⁴ [Issuing Document using DID](#)

⁵ Singapore's Digital Identity, SingPass

⁶ [Decentralised Issuer's Identity Proof using DNS-TXT](#)

13 Wallets – We have open source the reference implementation to store and share HealthCerts from mobile app - <https://github.com/Open-Attestation/identity-wallet>

- Accredify provides a Digital Health Passport to store, display and share HealthCerts
- Coming to SingPass Mobile and more...

14 Singapore welcomes working with partners to further the work in this space, including further enhancing interoperability, privacy, and verifiability for such certificates.

Please contact Steven_koh@tech.gov.sg or Karen_kee@tech.gov.sg for further queries.

HealthCerts Team (15 March 2021)