

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.

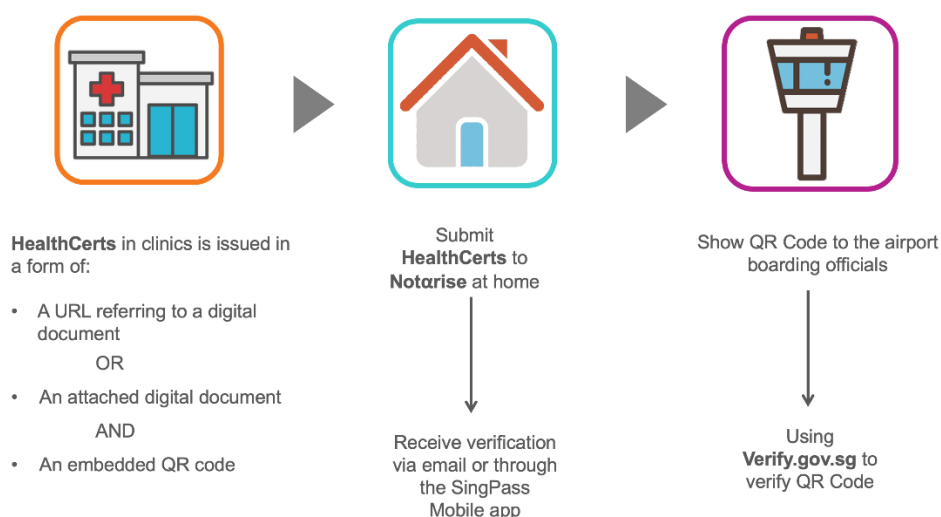


Figure 1 : Use of HealthCerts, Notarise and Verify

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>

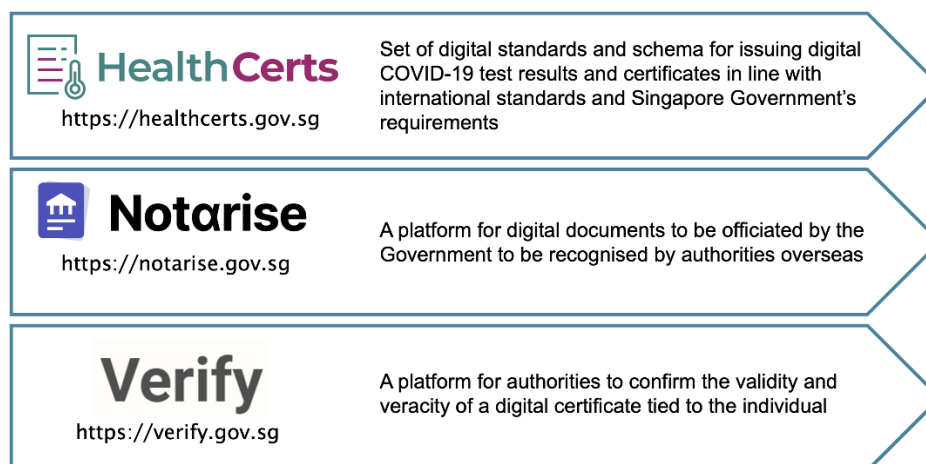


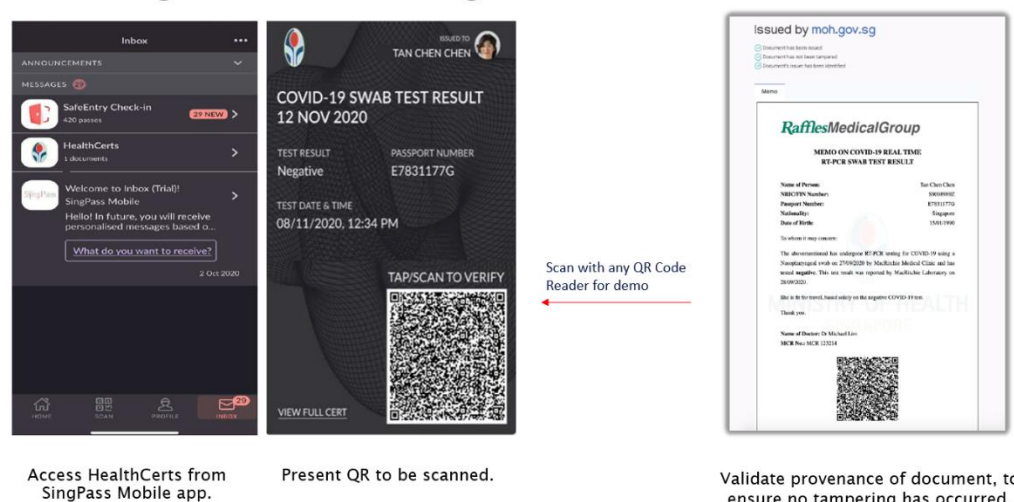
Figure 2 : System for issuing, authenticating and verifying digital certificates

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 ensures 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.

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HealthCerts Team (15 March 2021)