IATA recommendations for vaccine certificate specifications

More and more governments are looking to implement digital solutions to issue and verify vaccine (as well as test, and recovery) certificates using QR codes both in paper and electronic form. For global travel to resume at scale, it is imperative that digital health certificates issued by individual states are interoperable and the solutions being adopted address the risks of proliferation of personal medical data and adequately protect traveller privacy.

A variety of specifications have emerged, with three predominant specifications being currently considered by large parts of the market:

1) **European Union Digital Covid Certificates (EU DCC)** is in in active use by all 27 EU member states and six other European countries since 1 July 2021. Saudi Arabia, Chinese Taipei and many other countries are assessing using the EU DCC specification. Given the EU DCC is proven and is so widely used, the implementation time is shorter and can be digested by IATA Travel Pass, IATA can position it as a preferred option to those States that may either be awaiting WHO to produce a Smart Vaccine Certificate (it is not going to) or who are seeking to rapidly introduce a solution as their vaccination campaigns get under way.

2) **ICAO Visible Digital Seal for Non-Constrained environments (ICA VDS-NC)** leveraging the existing infrastructure for passport issuance and expected to be adopted certain states in the Asia Pacific region.

3) **Smart Health Cards,** an open technology standard developed by the technology industry in active use in North America.

IATA Recommendations - security and Interoperability with other governments

- Display method - A 2D barcode with openly accessible specification is required as a display method available both on paper and digital devices.

- Data elements - IATA recommends that States refer to the new [Technical Specifications and Guidance on vaccine certificate Digital Documentation of COVID-19 Certificates](#) that have just been published by the World Health Organization. Page 22 highlights that: *"Initiatives such as the International Civil Aviation Organization (ICAO) Guidelines on visible digital seals ("VDS-NC") for travel-related health proofs (16) and the European Union (EU) EU Digital COVID Certificate (17) can be considered specific implementations that comply with the guidance laid out in this document and not as parallel or conflicting standards."*

- Health certificates should be always digitally signed to allow for their authentication. A unique vaccination certificate identifier (UVCI) with digital signatures should be generated to secure certificates issued manually.

- Public keys required to authenticate all digital signatures must be openly accessible to all non-State verifiers including airlines.

- ICAO, WHO, the EU and private sector actors working on solutions should continue closely collaborating to ensure interoperability and co-existence of the different models.

- Airlines or any other 3rd parties involved in verification should not be required to store any medical data from health certificates for example evidence that they verified the documents.

- Privacy-preserving solutions should be prioritized when building verification solutions. Going forward, for this and similar problems, States should aim for wider use of technologies providing travelers with full control over their personal data by allowing selective disclosure of the necessary data.

Key Features of the three primary specifications

	EU DCC	ICAO VDS-NC	Smart Health Cards
Format	Available both on a digital and/or paper format	Available both on a digital and/or paper format	Available both on a digital and/or paper format
QR code	A QR code will be included in both digital and paper format. The QR code will contain essential information, as well as a digital signature to make sure the certificate is authentic.	A QR code will be included in both digital and paper format. The QR code will contain essential information, as well as a digital signature to make sure the certificate is authentic.	A QR code will be included in both digital and paper format. The QR code will contain essential information, as well as a digital signature to make sure the certificate is authentic.
Access to public keys for verification and authentication	The European Commission has built a gateway through which all public keys used to sign DCCs and required to authenticate certificate signatures can be distributed across the EU. The gateway can be also used to distribute public keys of non-EU certificate issuers other issuers. The gateway is currently accessible by only the EU Member States. The EU has also developed a specification for machine readable Validation Rules for cross-country travel. States can share the rules using the gateway and enable to verify certificates against each other's rules.	ICAO VDS-NC leverages the existing trust model and Public Key Infrastructure (PKI) that has been used for ePassport authentication. The Document Signer Certificate (DSC) is linked to the issuer's root of trust referenced in the Country-Signing Public Key Certificate Authority (CSCA) Certificate. The DSC is embedded in the QR code, and thus it enables the verifier to conduct offline verification. States can obtain CSCA certificate from other States bilaterally or via the ICAO Master List, publicly available for download from the ICAO Public Key Directory (PKD). Non-State entities, including IATA, do not have access to the ICAO PKD yet.	

Considerations	States, labs and other issuers of vaccination, test and recovery certificates can benchmark the EU DCC in developing their national certificates but should open the access to public keys to other States and everyone who may be involved in authentication. For the EU DCC authentication, IATA is looking to use a likely public masterlist of the public keys which is common practice with ePassport public keys. Another benefit of following the EU DCC standards is when a citizen of the respective country visits Europe, the DCC will have positive benefits in accessing non-aviation venues that need to verify health status such as concerts, museums, sporting events, conferences etc.	The ICAO VDS-NC poses a unique challenge as the issuance of health certificates will be the health authorities which may not be familiar with the signing of documents and use of ICAO PKI or the local regulations and practices may not provide for the re-use of ePassport signing infrastructure for different purposes. Therefore, a close coordination and cooperation between the health and border/foreign affair authorities will be needed. Also, not all States are issuing ePassport globally. 145 States are issuing ePassport and 78 are participating in the PKD.	
References	[EU Digital COVID Certificate European Commission (europa.eu)](#) [e-Health Network technical specification for EU DCC](#) [Guidance for use of EU DCC for Air Travel](#)	[Publications (icao.int)](#) [Microsoft Word - Technical Report - Visible Digital Seal-NC V1.0.doc (icao.int)](#)	[Technical specifications](#)

- Airlines or any other third parties involved in verification should not be required to store any medical data from health certificates for example to evidence that they verified the documents. Appropriate legal framework for processing personal data must be provided.

- IATA wishes to offer its collaboration to the European Commission, ICAO, or any other interested state to further integrate the certificates into airline processes for a secure and seamless passenger experience, such as support for selective disclosure of personal data.

- The implementation of the ICAO VDS is complex so may take longer than the EU DCC. An option for States wanting to use the ICAO solution is to use a phased approach, by starting with the EU DCC for easier implementation and following the ICAO VDS-NC in the longer term.

- ICAO, the EU and WHO are closely collaborating to ensure interoperability and co-existence of the different models.

Considerations relating to IATA Travel Pass:

- IATA Travel Pass can read, ingest, and authenticate a vaccine QR code once its technical specifications and the public key information are shared with IATA. This is already possible for the EU DCC.

- Depending on the specifications, an assessment can be done of the time and effort needed for the IATA Travel Pass to consume the vaccine certificate QR code