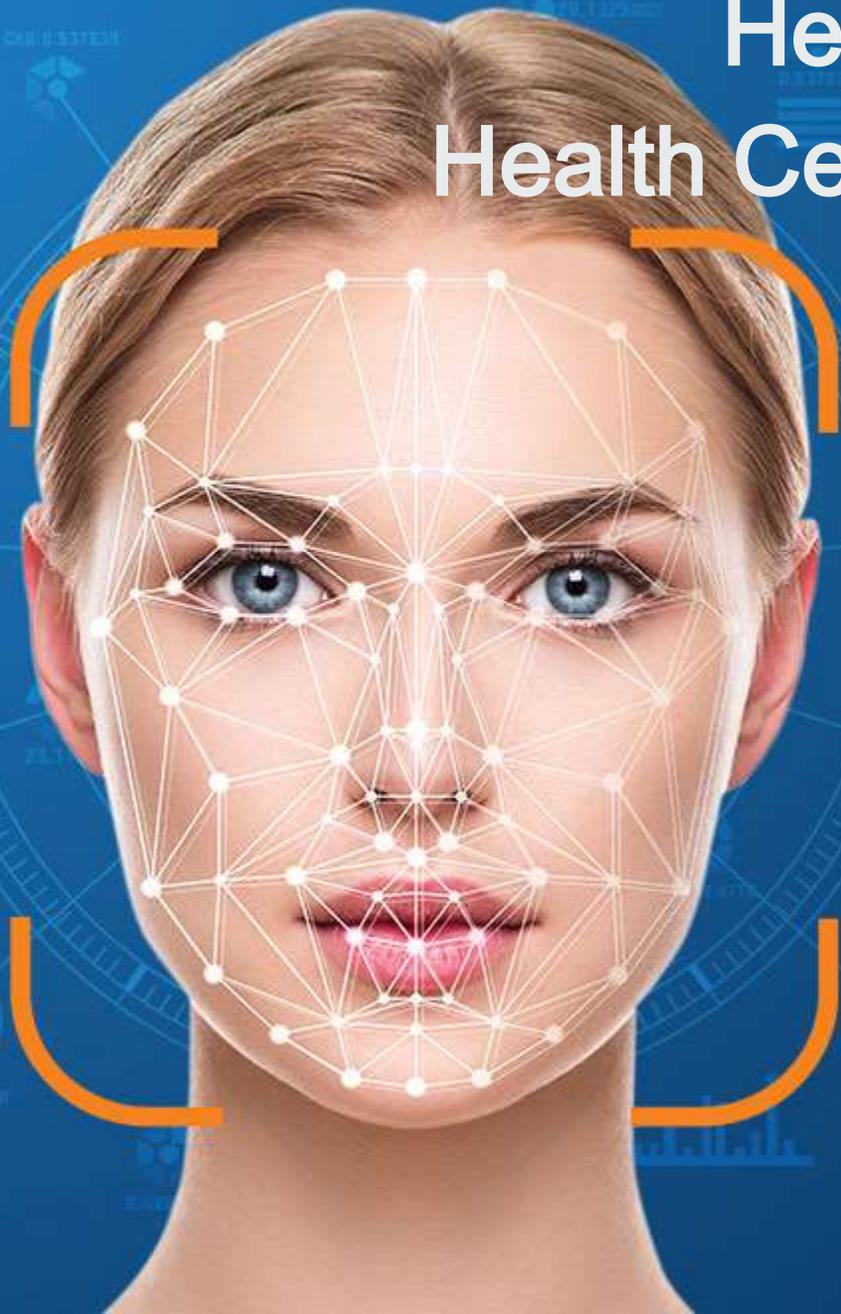


# Health-related VDS Specifications: Health Certificates for International Travel



2021  
ICAO **TRIP**  
VIRTUAL SYMPOSIUM

MONTREAL, CANADA | 25 - 28 MAY 2021

# Health-related VDS Specifications: Health Certificates for International Travel

—  
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Chair – ISO SC17/WG3/TF5,  
Auctorizium, Singapore<sup>2</sup>

Convener – ISO SC17/WG3  
Idemia, Netherlands<sup>3</sup>

# Agenda

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## 01

### Introduction

Main drivers

## 02

### Overview

What it is - and what it is not.

## 03

### Infrastructure

PKI trust model

## 04

### Data Sets

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## 05

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Reading & Validation of the VDS-NC

# 01 Introduction



# Visible Digital Seal – NC

Main Drivers 1: Recovery of air traffic and international travel

**ICAO CAPSCA** (Collaborative Arrangement for the Prevention and Management of Public Health Events in Civil Aviation) and **CART** (Council Aviation Recovery Task Force)

- CART Phase III asked for the development of a global framework for the validation of testing and vaccination records and/or certificates.
- Following the approval by the ICAO Council for Guidelines for VDS-NC, the NTWG, PKD and ISO experts developed specifications for special use cases of VDS for “public health proofs” for cross-border travel.

## WHO

- Larger scope, defines use cases, e.g. proof of vaccination including “core data set”
- Interim guidance for developing a Smart Vaccination Certificate, Release Candidate 1, 19 March 2021

## EU Draft Regulation (Digital Green Certificate)

- eHealth-Network (eHN) proposes interoperability requirements and “data fields” for vaccination certificate, test certificate and certificate of recovery, 18 March 2021
- New technical specifications by April 16, 2021

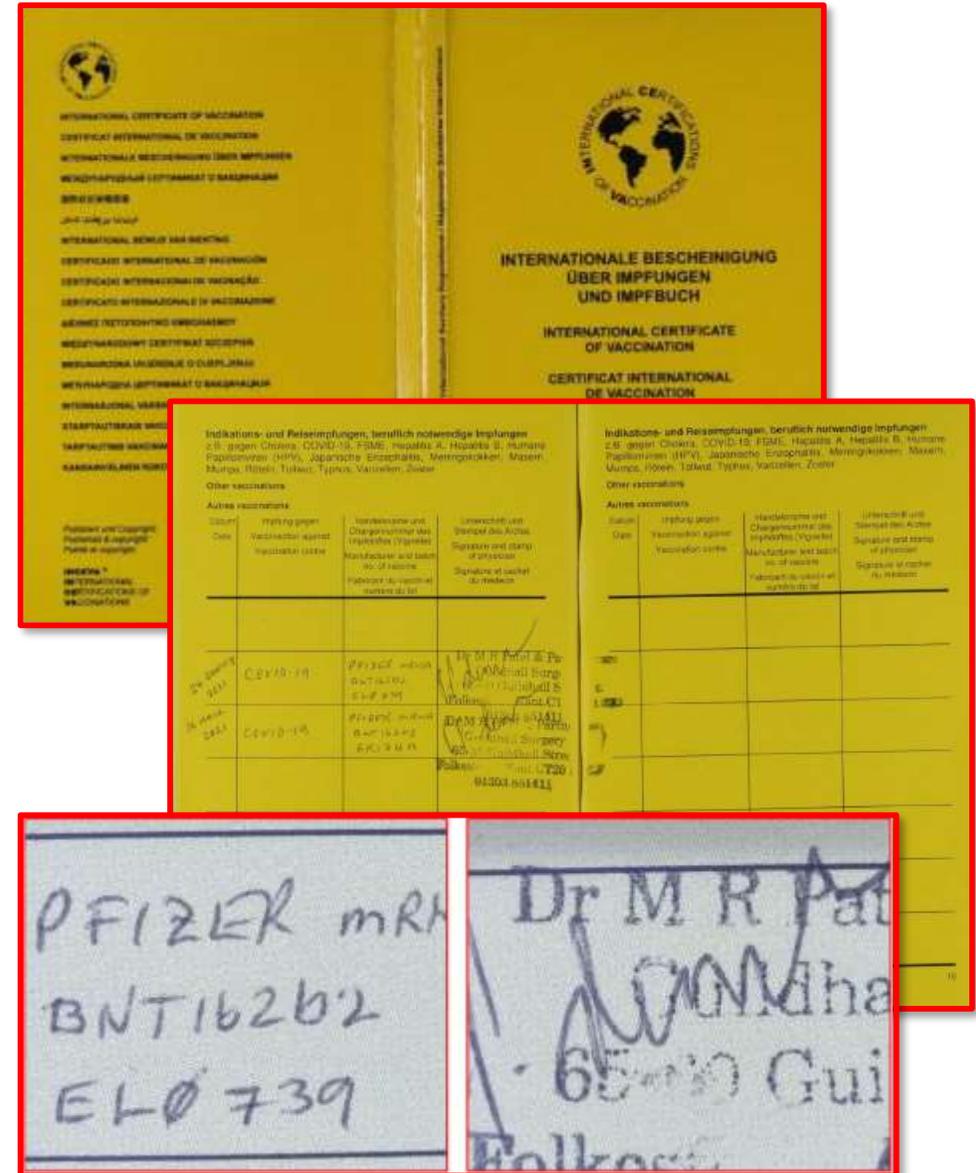


# Visible Digital Seal - NC

Main driver 2: Security of health related proofs

Health proofs as target of fraud

- The counterfeit of vaccination certificates and COVID-test reports have become a mass phenomenon. Blank “yellow books” with complete vaccination entries are sold on Telegram channels for 80 – 150 €.
- The vaccination certification was never intended to be a secure travel document and hence carries no security features.
- The VDS-NC is designed as an accompanying document carrying digitally signed health information – making fraud easily detectable.



Case example: Blank fraudulent yellow book sent from London to Frankfurt carrying vaccination entries, May 2021  
 (Source: BPOL FRA)

# 02 Overview

## MACHINE READABLE TRAVEL DOCUMENTS



### TECHNICAL REPORT

#### VDS-NC

Visible Digital Seal for non-constrained environments

Version - 1.0

Date - April 23, 2021

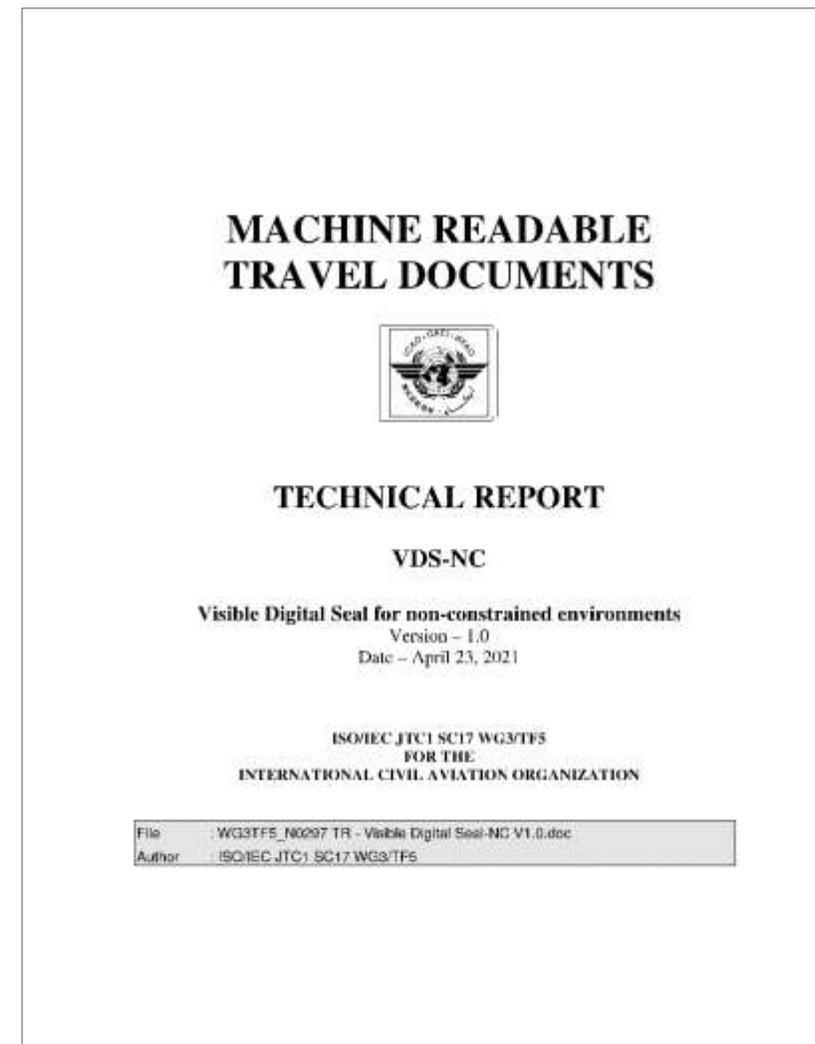
ISO/IEC JTC1 SC17 WG3/TF5  
FOR THE  
INTERNATIONAL CIVIL AVIATION ORGANIZATION

File : WG3TF5\_NC097 TR - Visible Digital Seal-NC V1.0.doc  
Author : ISO/IEC JTC1 SC17 WG3/TF5

# Visible Digital Seal for non-constrained environments

Specifications ready!

- Taking on the challenge, ICAO NTWG and ISO/WG3 experts developed a viable technical solution leveraging existing infrastructure to provide for rapid implementation and global interoperability - Visible Digital Seals for non-constrained environments (VDS-NC).
- The specifications were approved by the Technical Advisory Group on Traveller Identification Programme (TAG/TRIP) on May 6, 2021 and by the Air Transport Committee on May 14, 2021.
- **ICAO is proud to announce this first full set of fully approved specifications for interoperable public health proofs.**
- Based on these specifications, States can begin to develop and implement globally interoperable solutions.
- The specifications can be found at <https://www.icao.int/Security/FAL/TRIP/Pages/Publications.aspx>
- <https://www.icao.int/Security/FAL/TRIP/PublishingImages/Pages/Publications/Visible%20Digital%20Seal%20for%20no>



# Visible Digital Seal - NC

## Main Properties

### What it is:

1. The VDS-NC is designed as a **specific token for cross-border travel**, as an interoperable proof of health events (test, vaccination).
2. The VDS-NC is a **digitally signed 2D-barcode**, to ensure the data is authentic and not been modified.
3. The VDS-NC **relies on an existing two-level PKI trust model** as it is used for e-passports since 2004. It consists of a root of trust (CSCA), a document (barcode) signer, a Public Key Directory and the document itself.
4. The **CSCA does not have to be the same as for e-passports**, though re-using the same CSCA is recommended. If a different VDS-NC CSCA is set up, then specific profiles to differentiate between the function of the CSCA are defined.
5. The VD-NC shall be **easily readable by most barcode scanners** deployed in the travel/border environment.
6. The VDS-NC is **offline verifiable**, without the need for an online-connection.

Proof of Testing	Issued by UTO	Version 1	UTC: U01932
<b>PERSONAL INFORMATION</b>			
Name of the Holder: <b>Cook Gerald</b>	Date of Birth: <b>1990-01-29</b>	Document Type: <b>P</b>	Document Number: <b>E1234567P</b>
<b>SERVICE PROVIDER</b>			
Name of Testing Facility/Service Provider: <b>General Hospital</b>		Country of Test: <b>UTO</b>	
Phone Number: <b>+00068765432</b>	Email Address: <b>genhosp@mail.com</b>	Address: <b>12 Utopia Street</b>	
<b>DATETIME OF TEST &amp; REPORT</b>			
Specimen Collection DateTime: <b>2020-12-12T12:00:00+08:00</b>		Report Issuance DateTime: <b>2021-02-11T14:00:00+08:00</b>	
<b>TEST RESULT</b>			
Type of Test Conducted: <b>molecular(PCR)</b>	Result of Test: <b>negative</b>	Sampling Method: <b>nasopharyngeal</b>	
<b>OPTIONAL DATA FIELD</b>			
ID12345			
			

# Visible Digital Seal - NC

## Main Distinctions

### What it is NOT:

1. The VDS-NC is **not the primary medical vaccination document**. This function stays within the health-related environment: vaccination certificates will be treated and governed as health documents.
2. The VDS-NC **is not intended to replace any national/ multilateral vaccination document**.

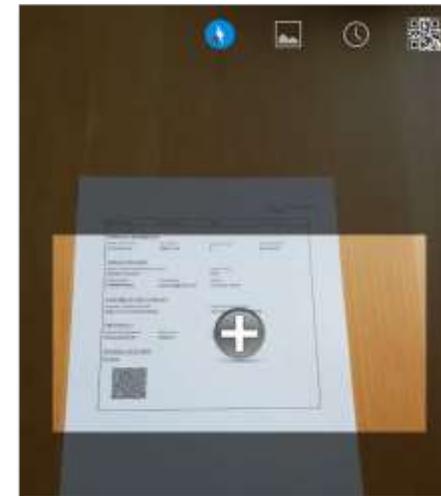




# Visible Digital Seal - NC

## Design Principles

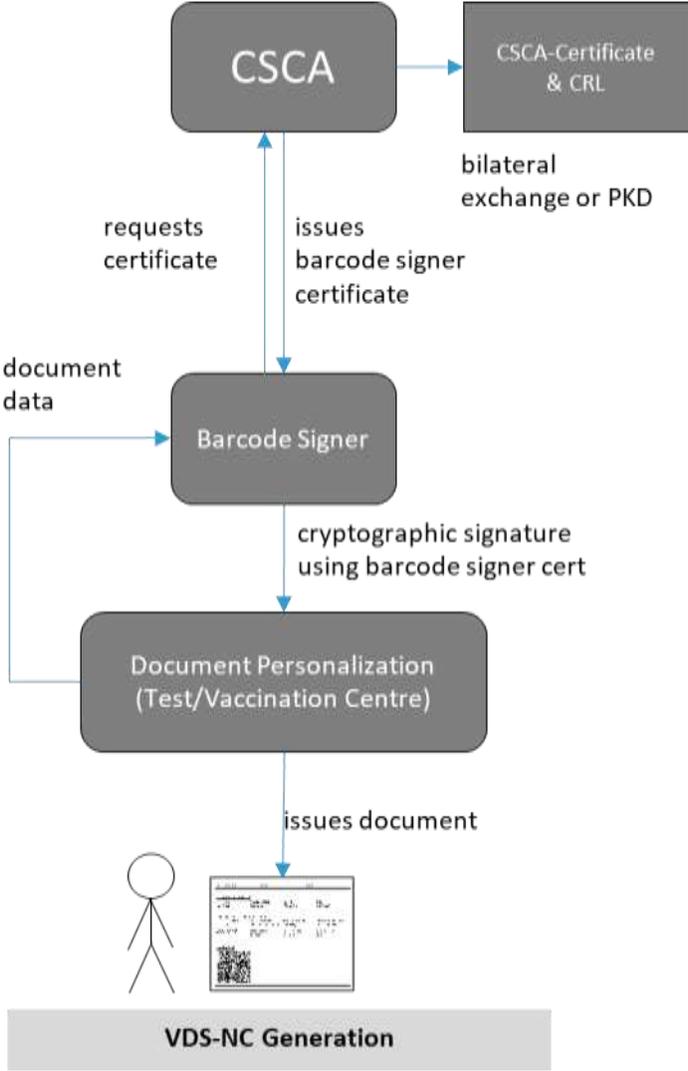
- *Globally Interoperable* – ICAO has followed its global mandate in supporting the development of a globally interoperable specifications.
- *„Human“ Readable* – The VDS-NC is easily readable with barcode scanners deployed in travel/border environment, therefore avoiding reading problems with binary barcodes. → **“Payload”** is human readable
- *Offline Verifiable* – The Barcode Signer Certificate is stored in the barcode itself in order to avoid the complexity of additional certificate exchange; → **Certificate** and **Signature** contained in the barcode
- *Able to leverage the eMRTD Trust Model* – The VDS-NC is based on the existing 2-level Public Key Infrastructure (PKI) consisting of a national Country Signing Certification Authority (CSCA), a document (barcode) signer and a Public Key Directory.
- *Flexible* – The CSCA does not have to be the same as the one for ePassports, though re-using the same CSCA is recommended. If a different CSCA is setup for VDS-NC, then specifically defined profiles are established to allow differentiation between the function of the CSCAs.



Proof of Testing	Issued by UTO	Version 1	UTC: 10/19/22
<b>PERSONAL INFORMATION</b>			
Name of the Holder Cook Gerald	Date of Birth 1990-01-29	Document Type P	Document Number E1234567P
<b>SERVICE PROVIDER</b>			
Name of Testing Facility/Service Provider General Hospital		Country of Test UTO	
Phone Number +00068765432	Email Address genhosp@mail.com	Address 12 Utopia Street	
<b>DATETIME OF TEST &amp; REPORT</b>			
Specimen Collection DateTime 2020-12-12T12:00:00+08:00		Report Issuance DateTime 2021-02-11T14:00:00+08:00	
<b>TEST RESULT</b>			
Type of Test Conducted molecular(PCR)	Result of Test negative	Sampling Method nasopharyngeal	
<b>OPTIONAL DATA FIELD</b>			
ID12345			

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{
  "data": {
    "hdr": {
      "t": "icao.test",
      "v": 1,
      "is": "UTO",
      "msg": {
        "utci": "U01932",
        "pid": {
          "n": "Cook Gerald",
          "dob": "1990-01-29",
          "dt": "P",
          "dn": "E1234567P",
          "sp": {
            "spn": "General Hospital",
            "ctr": "UTO",
            "cd": {
              "p": "+00068765432",
              "e": "genhosp@mail.com",
              "a": "12 Utopia Street"
            },
            "dat": {
              "sc": "2020-12-12T12:00:00+08:00",
              "ri": "2021-02-11T14:00:00+08:00",
              "tr": {
                "tc": "molecular (PCR)",
                "r": "negative",
                "m": "nasopharyngeal",
                "opt": "ID12345"
              }
            },
            "sig": {
              "alg": "ES256",
              "cer": "MIIBeTCCAR2gAwIBAgIBZzAMBggqhkJOPQQDAGUAMB0xCzAJBgNVBAYTA1VUMQ4wDAYDVQQDDAVVVCBDQTAeFw0yMTA0MDcwNDI2MTVaFw0yNjEwMDcwNDI2MTVaMB0xCzAJBgNVBAYTA1VUMQswCQYDVQQDEwIwNTBZMBMBGByqGSM49AgEGCCqGSM49AwEHA0IABBzop6IWxg_Qo8JV1G-r9EzjoAoXKsSUMkuHCTKZTY-b5atMP8jDtjJaGhaL_2VvrNbZ7WDGSwf-7MqqFzxsS6ejTzBNMBIGA1UdJQQLMAkGB2eBCEBDGwIwHwYDVDR0jBBgwFoAUymyksenX8rywn0RH7nDq-Bs2QOqowFgYHZ4EIAQEGAGQLMAkCAQAxBBMCT1QwDAYIKoZiZj0EAWIFAANIADBFaiAce9uX8UOodsOtEkAtkDu2GPyzy_S8vQP4qhzGbooa8gIhAO_5ORo2bsTor6CXHngGld4NNtUGsXNqX1-9qEfVcsqb",
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            }
          }
        }
      }
    }
  }
}
```

# 03 Infrastructure

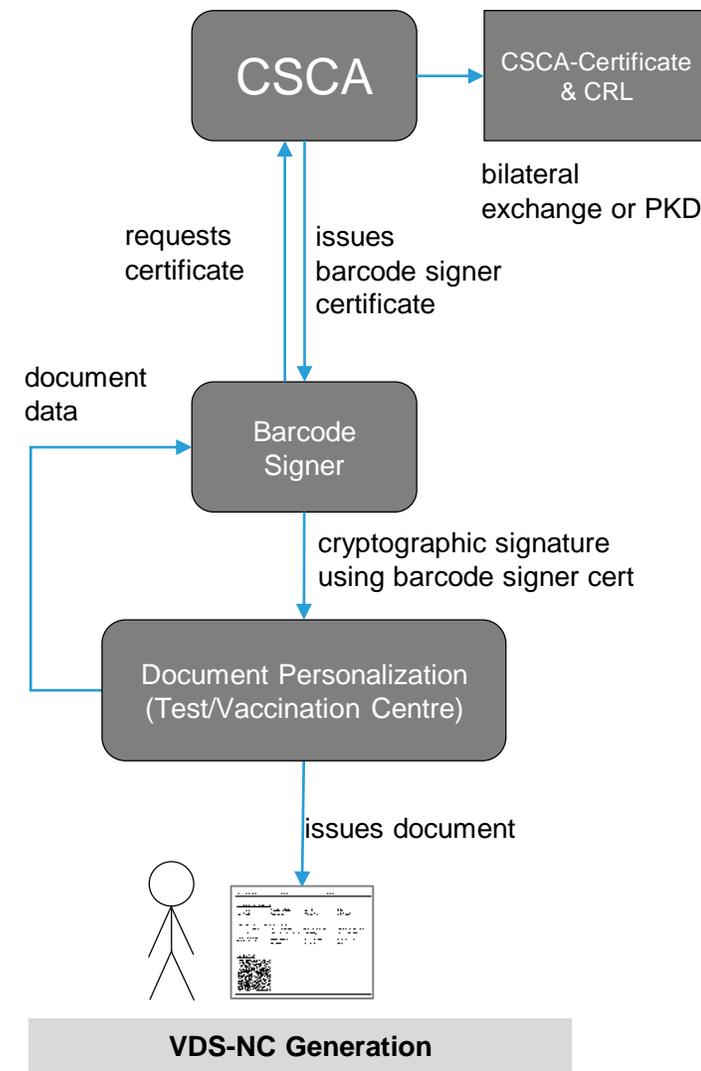


# Visible Digital Seal - NC

## Main conditions for a solution

It order to function we **MUST** agree on:

1. The 2-level **PKI model** consisting of a root of trust (CSCA), a document (barcode) signer and a Public Key Directory. The CSCA does not have to be the same as for e-passports.
2. The **certificate profiles** as defined by ICAO. The certificate profile guarantees interoperability and security across the travel document and health proof use case.
3. The **barcode signer certificate is stored in the barcode** itself in order to avoid an additional repository.
4. A standardized **barcode encoding**. This could be finalized at the end of the discussion process. Easy readability is key.

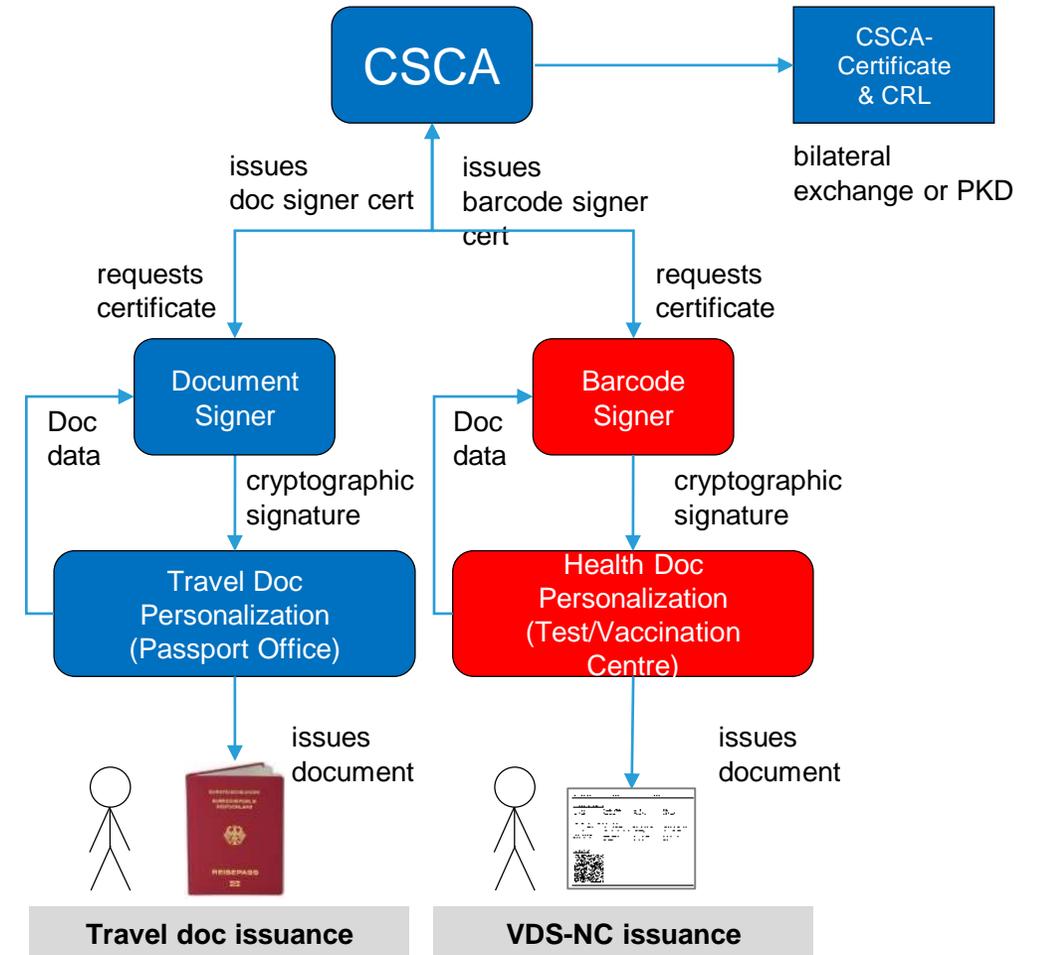


# Issuance of VDS – NC

## PKI model A: Single CSCA

### PKI model A: Single CSCA for both travel docs and health proofs

- The **CSCA** for issuing travel documents acts as the **single root of trust** for both travel documents and health proofs.
- The document (barcode) signers are specific for each travel documents and health proofs.
- The certificate profiles ensure that certificates can be used for the intended purpose only.

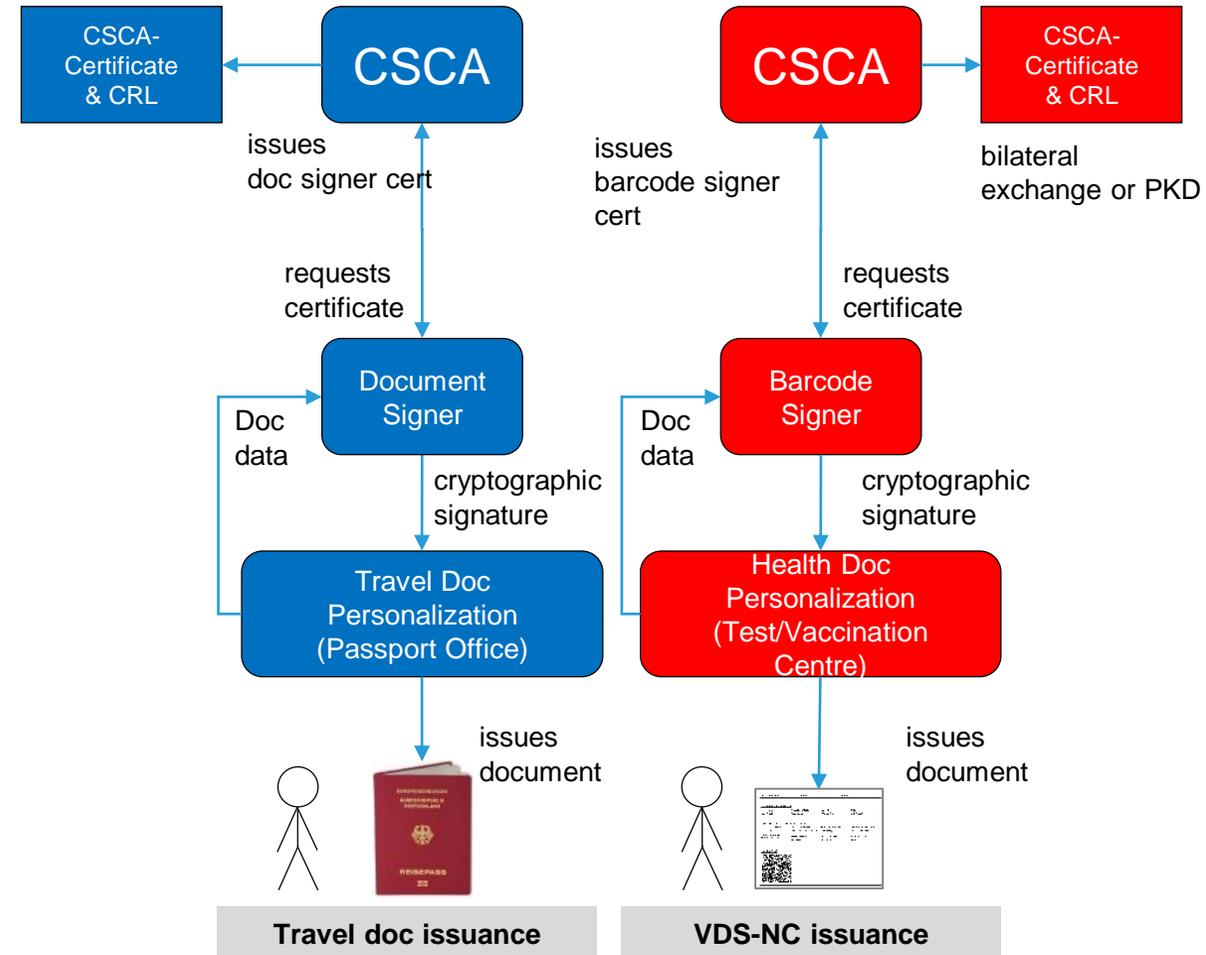


# Issuance of VDS – NC

## PKI model B: Specific CSCA's

PKI model B: Specific CSCA's for each travel docs and health proofs

- There **are specific CSCA's** for issuing travel documents and for issuing health proofs.
- The document (barcode) signers are specific for each travel documents and health proofs.
- The certificate profiles ensure that certificates can be used for the intended purpose only.

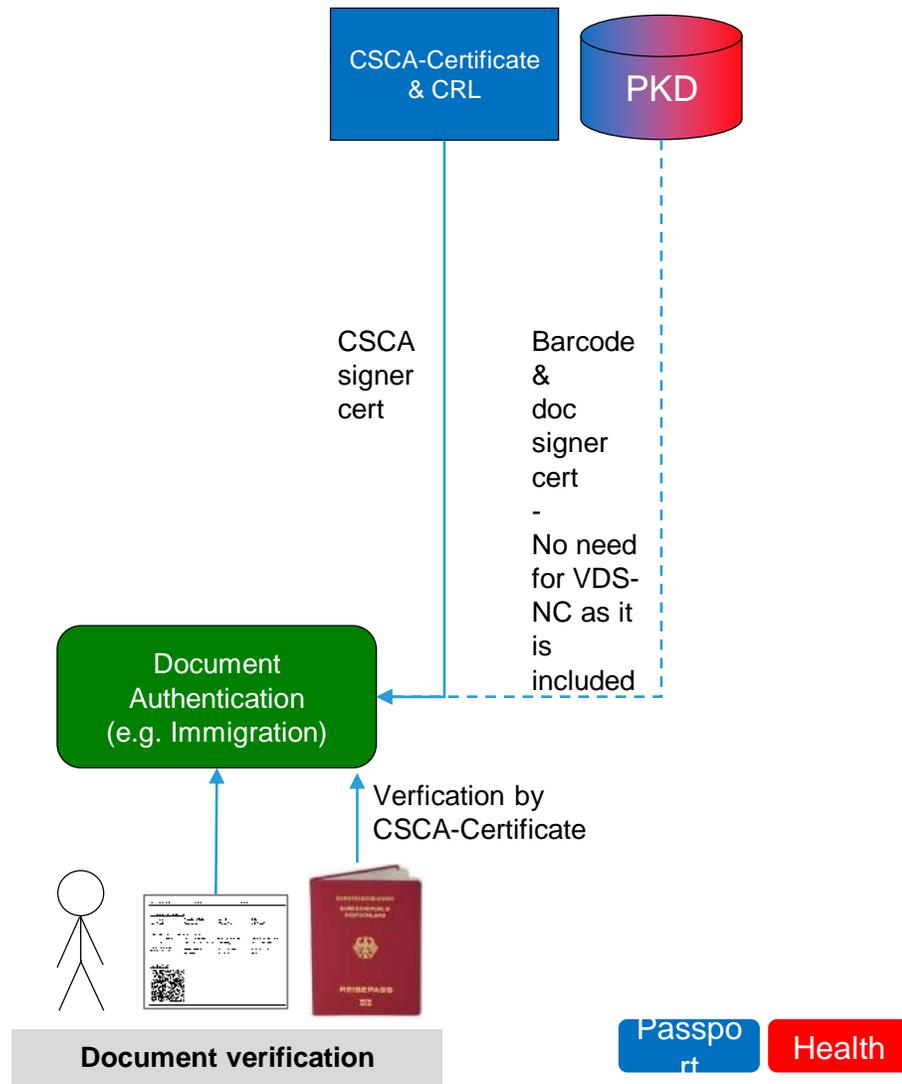


# Verification of VDS – NC

## PKI model A: Single CSCA

### PKI model A: Single CSCA for both travel docs and health proofs

- Immigration systems import the CSCA certs as currently for travel documents.
- They are then able to verify both travel documents and health proofs.
- The certificate profiles ensure that certificates can be used for the intended purpose only.
- Barcode and doc signer certificates could be downloaded from the (single) PKD.

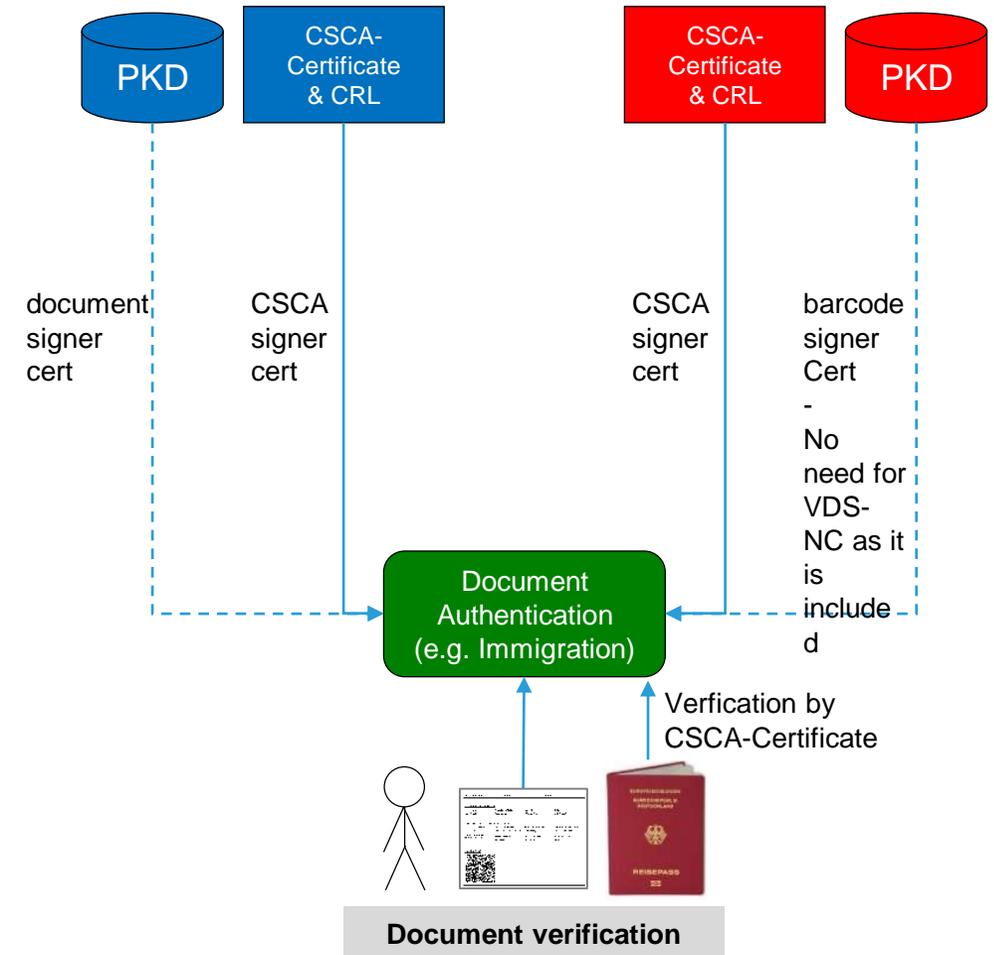


# Verification of VDS – NC

## PKI model B: Specific CSCA's

PKI model B: Specific CSCA's for each travel docs and health proofs

- Immigration systems import the CSCA certs for travel documents and for health proofs.
- They are then able to verify both travel documents and health proofs.
- The certificate profiles ensure that certificates can be used for the intended purpose only.
- Barcode and doc signer certificates could be downloaded from the (specific) PKD.



# 04 Data Sets

Proof of Testing Issued by UTO Version 1 UTCI: U01932

**PERSONAL INFORMATION**

Name of the Holder: **Cook Gerald** Date of Birth: **1990-01-29** Document Type: **P**

**SERVICE PROVIDER**

Name of Testing Facility/Service Provider: **General Hospital** Country of Test: **UTO**

Phone Number: **+00068765432** Email Address: **genhosp@mail.com** Address: **12 Utopia Street**

**DATETIME OF TEST & REPORT**

Specimen Collection DateTime: **2020-12-12T12:00:00+08:00** Report Issuance DateTime: **2021-02-11T14:00:00**

**TEST RESULT**

Type of Test Conducted: **molecular(PCR)** Result of Test: **negative** Sampling Method: **nasopharyngeal**

**OPTIONAL DATA FIELD**

ID12345



Proof of Test

Proof of Vaccination Issued by UTO Version 1 UVCE: U32870

**PERSONAL INFORMATION**

Name of the Holder: **Smith Bill** Date of Birth: **1990-01-02** Passport Number: **A1234567Z** Sex: **M**

Additional Identifier: **L4567890Z**

**VACCINATION EVENT**

Vaccine or Prophylaxis: **XM68M6** Vaccine Brand: **Comirnaty** Disease or agent targeted: **RA01.0**

**VACCINATION DETAILS 1**

Date of Vaccination: **2021-03-03** Dose Number: **1** Country of Vaccination: **UTO**

Administering Centre: **RIVM** Vaccine Batch Number: **VC35679** Due Date of Next Dose: **2021-03-24**

**VACCINATION DETAILS 2**

Date of Vaccination: **2021-03-24** Dose Number: **2** Country of Vaccination: **UTO**

Administering Centre: **RIVM** Vaccine Batch Number: **VC87540** Due Date of Next Dose:



Proof of Vaccination

# Visible Digital Seal – NC: Datasets

## Proof of Testing and Proof of Vaccination

### Proof of Testing:

- The datasets für **PoT** follows the recommendations of **ICAO CART**.
- Notably, it contains a mandatory Document Number and a Document Type in order to establish the link between the person and a secure document.

### Proof of Vaccination:

- The datasets für **PoV** follows the recommendations of **WHO**.
- Notably, it contains a Unique Identifier (e.g. a document number) and an Additional Identifier, both optional, but (strongly) recommended.
- It also allows for multiple vaccination events, with same or different vaccines.

Proof of Test (PersonInformation)

Object: Message				
Data Element (ICAO)	Short Data Element	Content	Mandatory/Optional	Max Size
UTCI	utci	Unique Test Certificate Identifier	M	12
Object: PersonInformation(pid)				
Name	n	Name of the holder (as specified in Doc 9303-3) MUST be used.	M	39
DOB	dob	The DOB of the test subject. The [RFC 3339] full date format YYYY-MM-DD MUST be used.	M	10
DocType	dt	The ID Document Type of the identity document MUST be used. Only these values MUST be used: P – Passport (any type, Doc 9303-4); A – ID Card (any type, Doc 9303-5); C – ID Card (any type, Doc 9303-5); I – ID Card (any type, Doc 9303-5); AC – Crew Member Certificate (Doc 9303-5); V – Visa (Doc 9303-7); D – Driving License	M	Only values stated can be used
DocNum	dn	The ID Document Number of the identity document MUST be used of the document used in DocType. The ID Document Number is the unique identifier of the test subject.	M	24

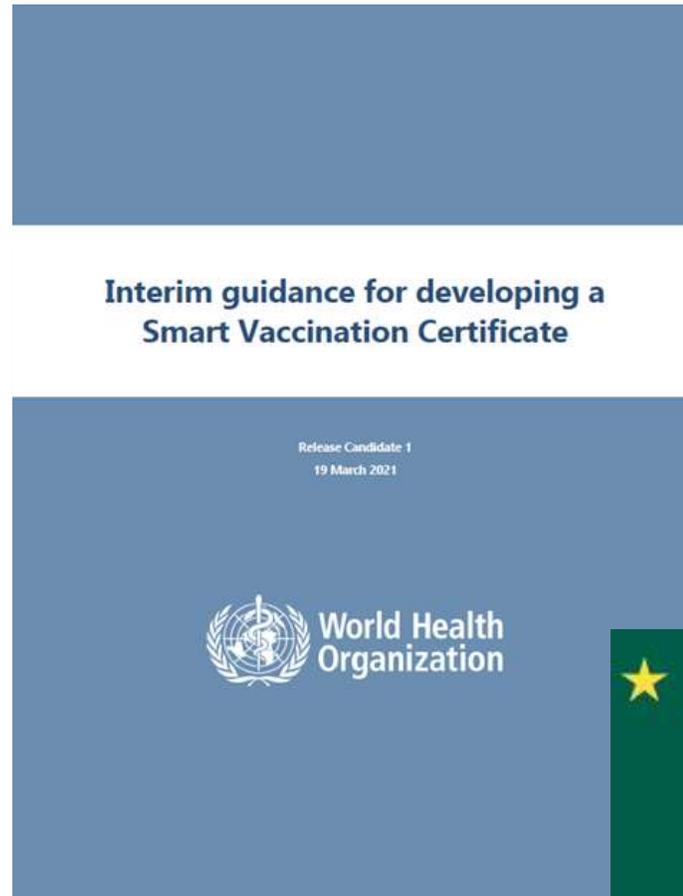


Proof of Vaccination (PersonIdentification)

Object: Message				
Data Element (ICAO)	Short Data Element	Content	Mandatory/Optional	Max Size
UTCI	utci	Unique Test Certificate Identifier	M	12
Object: PersonIdentification(pid)				
Name	n	Name of the holder (as specified in Doc 9303-3) MUST be used.	M	39
Date of Birth	dob	Date of birth of subject. ISO8601 YYYY-MM-DD	C	10
Unique Identifier	i	Travel Document Number; Single Unique Identifier only. Identifier should be valid Travel Document number	O-R	11
Additional Identifier	ai	Any other document number at discretion of issuer	O	24
Sex	sex	Gender of the subject	O-R	1



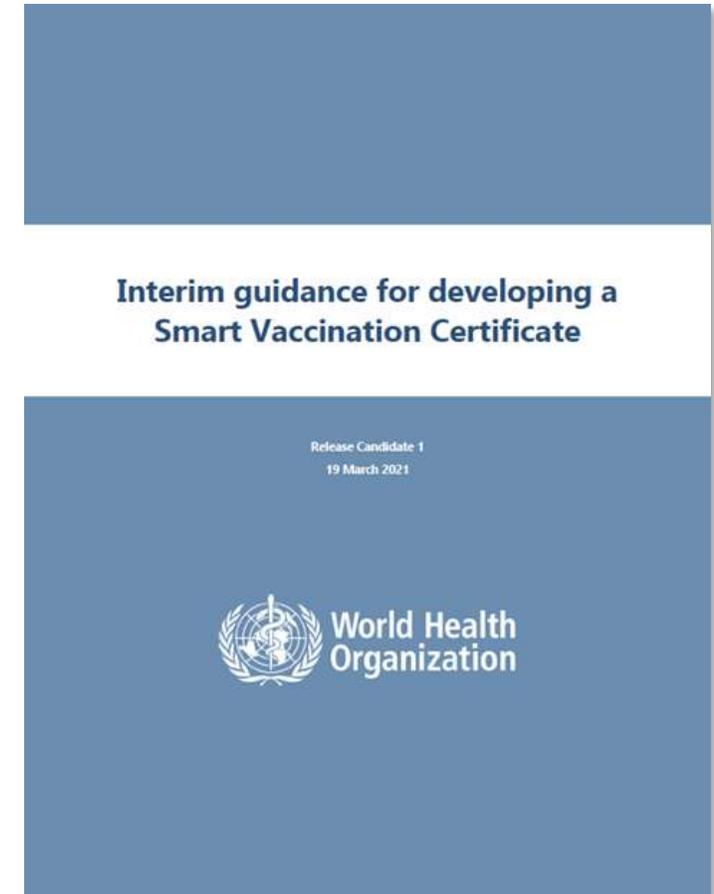
# 05 Related Initiatives



# Related Initiatives

## WHO Smart Vaccination Certificate

- ICAO has been closely working and coordinating with the WHO on the SVC and with the EU with regards to the EU DGC.
- ICAO TAG/TRIP and ISO experts have been actively involved in contributing to both initiatives in order to ensure that any solution to be developed is compatible with the ICAO VDS-NC.
- The first set of specifications for the WHO SVC (Release Candidate 1) were issued on 19 March, 2021. RC2 is going to be published any time soon.
- Based on WHO's decision criteria, the global trust framework outlined is a PKI-based design that follows the ICAO PKI model for ePassports and leverages a Public Key Directory like the one operated by ICAO since now fifteen years.



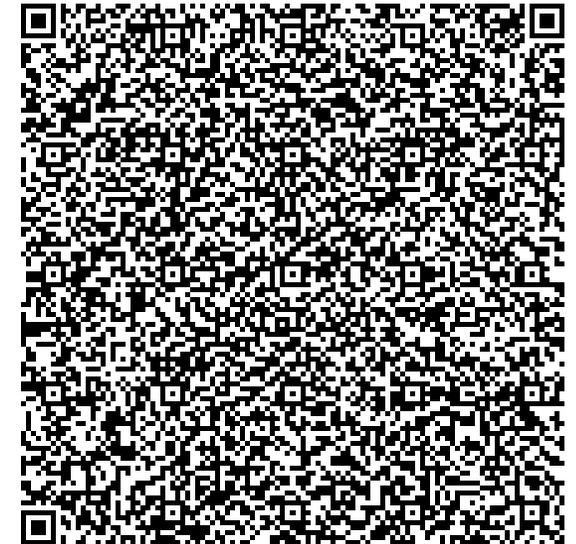
# Related Initiatives

## EU Digital Green Certificate

- The EU is working towards deployment of the EU DGC system by June 2021.
- Notwithstanding the good alignment between DGC Guidelines and the ICAO VDS-NC specifications, both parties have initiated technical discussions in order to identify possible compatibility issues between both technologies as well as global interoperability.
- Main differences are:
  - Encoding of the barcode
  - VDS-NC contains signer certificate as well
  - CSCA Masterlist and CRL required for verifying VDS-NC
  - Barcode Signer (as trustlist) and CSCA required for verifying EU-DGC



EU-DGC



VDS-NC

# 06 Demonstration



# Demonstration Proof of Test

## Normal reading and verification

### What do you see?

- Personal details with verification of signature and verification of barcode signer against CSCA
- Time since specimen collection (for the 48-72 hour requirement)
- Details of the test facility, specimen and test result date and time
- Type of test and sampling method and the result



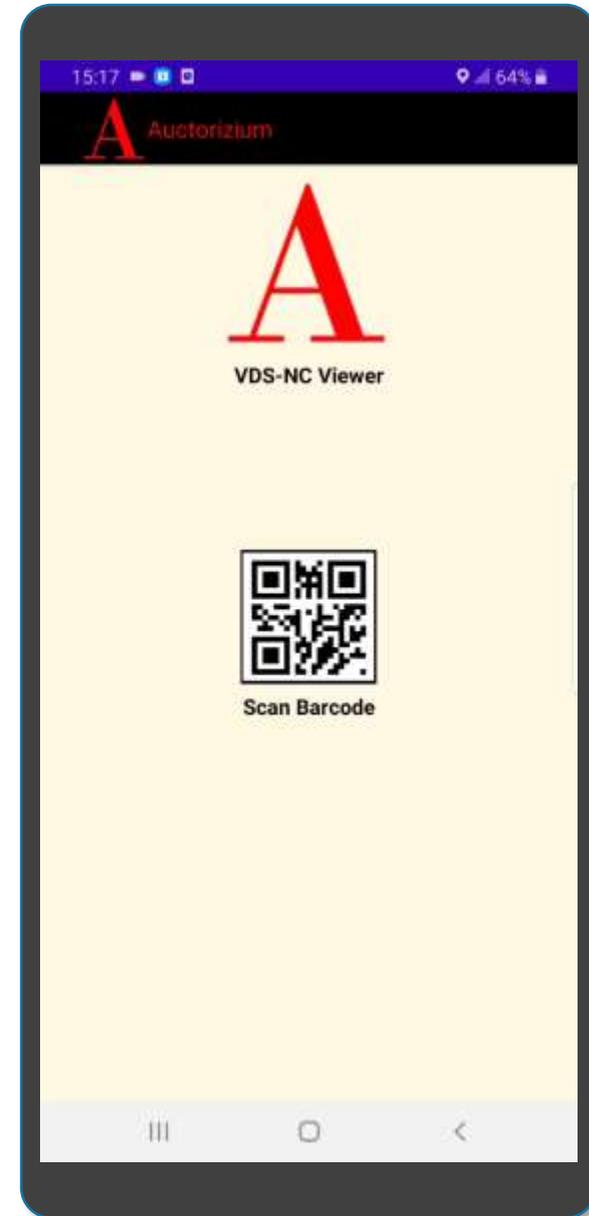
Demo kindly provided by Auctorizium, Singapore

# Demonstration Proof of Test

Verification fails due to unknown CSCA

What do you see?

- Proof of testing – unknown CSCA
- Barcode verification successful
- Barcode signer cannot be verified



# Demonstration Proof of Test

## Verification fails due to manipulation

### What do you see?

- Proof of Testing – Signature failure due to tampering of data.
- The **date** of sampling has been modified (2021-05-20 → 2021-05-21).
- The Rest of the data is correct.



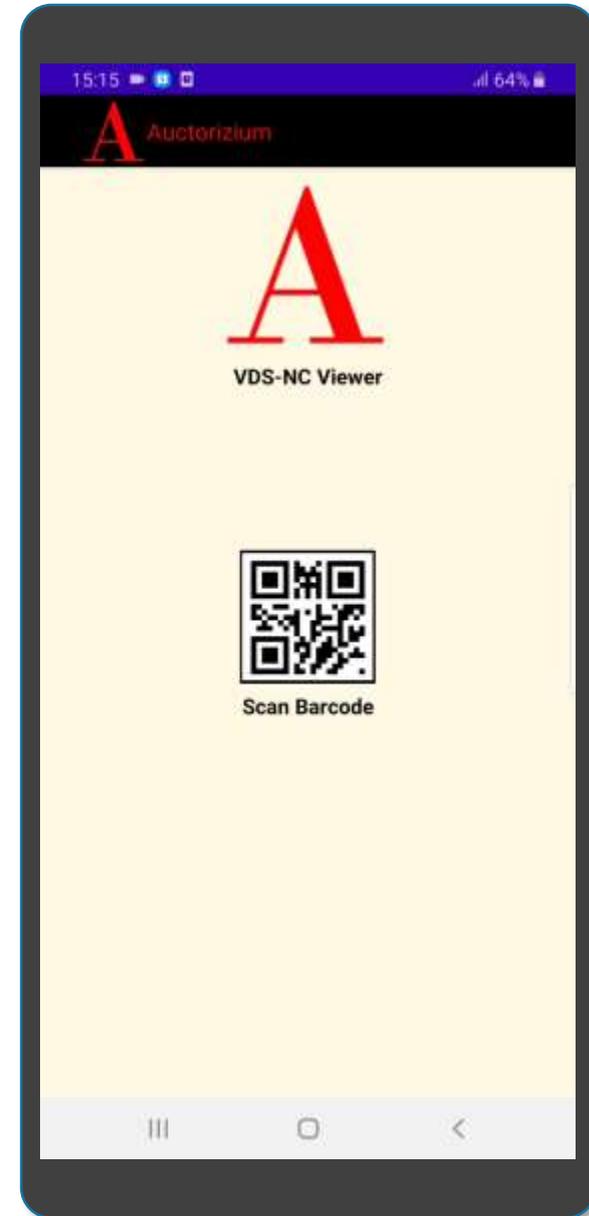
Demo kindly provided by Auctorizium, Singapore

# Demonstration Proof of Vaccination

## Normal reading and verification

### What do you see?

- Two different vaccines for each dose.
- Shows up as two vaccination events
- First is BionTech/Pfizer, next is Moderna.
- First dose in in UTO, second in SGP. Still signed by UTO.



Demo kindly provided by Auctorizium, Singapore

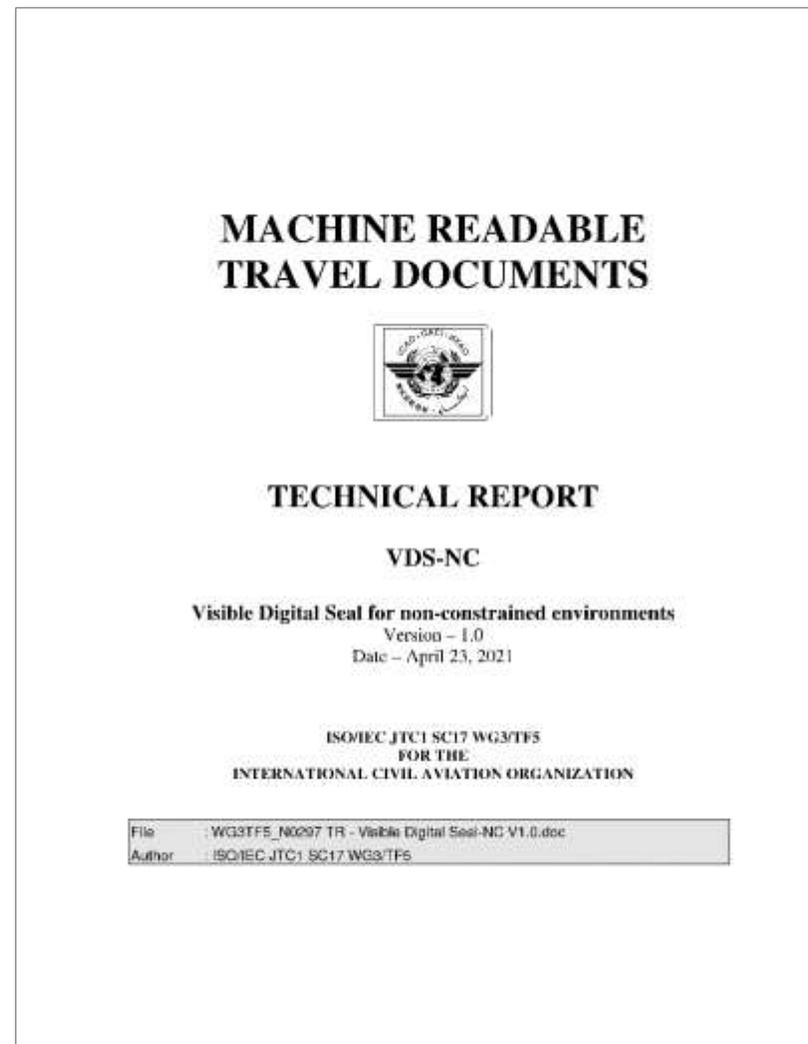
# Summary Next Steps



# Visible Digital Seal - NC

## Summary & Next Steps

- Accomplishing the task set out by ICAO CART Phase III, a global framework for the validation of testing and vaccination records and/or certificates was developed by ICAO TAG/TRIP and ISO experts.
- Specifications for a viable technical solution leveraging existing infrastructures to provide for rapid implementation and global interoperability were published.
- The specifications can be found at <https://www.icao.int/Security/FAL/TRIP/Pages/Publications.aspx>
- ICAO TAG/TRIP and ISO experts will be actively working to ensure interoperability of the VDS-NC with relevant global initiatives such as the WHO SVC and the EU DGC.



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# Thank You



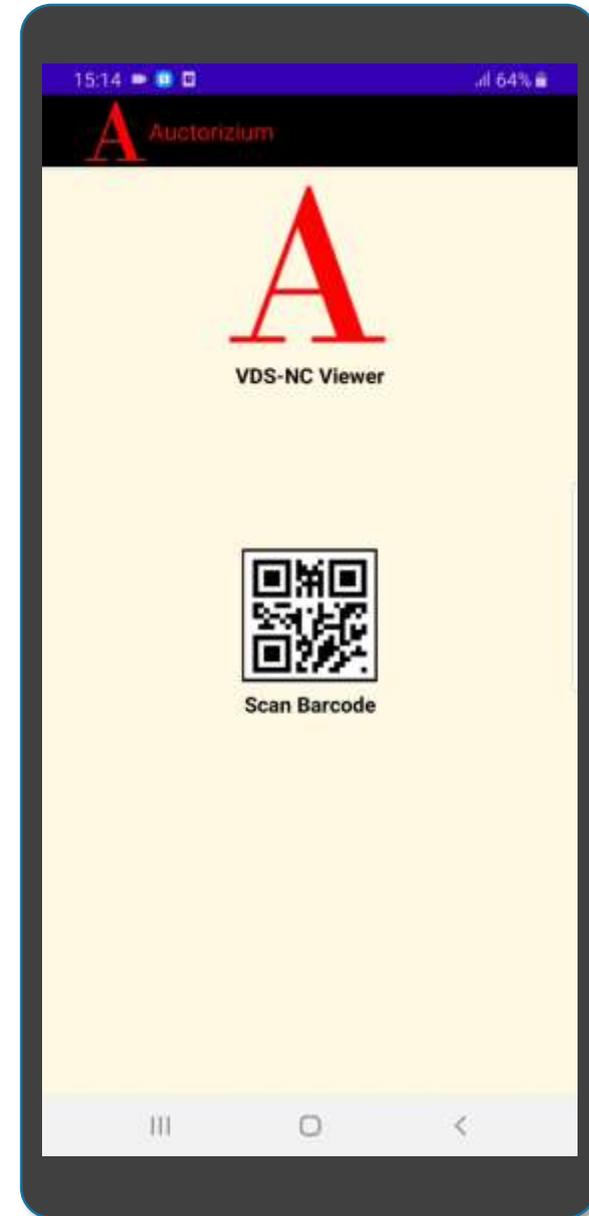
# Backup

# Demonstration Proof of Vaccination

## Normal reading and verification

### What do you see?

- Same vaccine – two doses
- Shown as single Vaccination Event with two separate doses.
- First dose has date of next dose
- For the second dose, date of the next dose is blank.



Demo kindly provided by Auctorizium, Singapore

# Demonstration Proof of Vaccination

Verification fails due to unknown CSCA

What do you see?

- Proof of Vaccination – unknown CSCA
- Barcode signer cannot be verified.



# Demonstration Proof of Vaccination

Signature validation fails due to manipulation

What do you see?

- Proof of Vaccination – signature failure due to tampering of data
- **Name** of the person has been changed (Smith Bill → Smith Ken).
- Anything else is correct.



Demo kindly provided by Auctorizium, Singapore

# Verification of VDS – NC

## PKI-Components - Availability

Component	Purpose	Source	Comment
<b>Barcode Signer Certificate</b>	Validating the digital signature over the health proof data	Contained in the barcode of the VDS-NC itself. There is no need to access a repository such as the PKD.	This corresponds to the well-established e-passport use case where the document signing certificate is stored in the chip of the passport.
<b>Country Signing CA Certificate</b>	Validating the barcode signer certificate	Bilateral exchange or from any well-established national distribution point such as the German Master List published by the German BSI. Alternatively, Country Signing CA Certificates can be downloaded from ICAO PKD (in the ICAO Master List).	This corresponds to the well-established e-passport use case. For the download from the ICAO PKD, there is an ongoing discussion on the commercial use – see chapter “Access to the ICAO PKD”.
<b>Certificate Revocation List</b>	Check if a barcode signer certificate was revoked by the issuing state and should not be trusted anymore.	CRL's are available at the CRL-Distribution-Points referred to in the CSCA Certificate. These are national contact points or the ICAO PKD (also for commercial use).	This corresponds to the well-established e-passport use case.

# Visible Digital Seal – NC: Dataset PoT (1/3)

## Proof of Testing (ICAO) – Personal Information

Object: Message				
Data Element (ICAO)	Short Data Element	Content	Mandatory/Optional	Max Size
UTCI	utci	Unique Test Certificate Identifier	M	12
Object: PersonalInformation(pid)				
Name	n	Name of the holder (as specified in Doc 9303-3) MUST be used.	M	39
DOB	dob	The DOB of the test subject. The [RFC 3339] full date format YYYY-MM-DD MUST be used.	M	10
DocType	dt	The ID Document Type of the identity document MUST be used. Only these values MUST be used: P – Passport (any type, Doc 9303-4); A – ID Card (any type, Doc 9303-5); C – ID Card (any type, Doc 9303-5); I – ID Card (any type, Doc 9303-5); AC - Crew Member Certificate (Doc 9303-5); V – Visa (Doc 9303-7); D – Driving License	M	Only values stated can be used
DocNum	dn	The ID Document Number of the identity document MUST be used of the document used in DocType. The ID Document Number is the unique identifier of the test subject.	M	24



# Visible Digital Seal – NC: Dataset PoT (2/3)

## Proof of Testing (ICAO) – Service Provider

Object: ServiceProvider(sp)				
Data Element (ICAO)	Short Data Element	Content	Mandatory/Optional	Max Size
Name	spn	Name of testing facility or service provider MUST be used.	M	20
Country	ctr	Country of test MUST be used.	M	3
Object: ContactDetails(cd)				
PhoneNumber	p	Contact number of testing facility or service provider MUST be Used. The maximum size of phone number is 19 characters (15 characters in accordance with [ITU-T E.123], 3 characters for International Country Code and the symbol “+” to indicate that an international prefix is required).	M	19
Email	e	Email address of testing facility or service provider MUST be used.	M	
Address	a	Address of testing facility or service provider MUST be used.	M	

# Visible Digital Seal – NC: Dataset PoT (3/3)

## Proof of Testing (ICAO) – Test Information

Object: DateTime(dat)				
Data Element (ICAO)	Short Data Element	Content	Mandatory / Optional	Max Size
SpecimenCollection	sc	Date and time of specimen collection MUST be used.	M	25
ReportIssuance	ri	Date and time of report issuance MUST be used.	M	25
Object: TestResult(tr)				
TestConducted	tc	Type of test conducted MUST be used. Only these values MUST be used: molecular(PCR); molecular(other); antigen; Antibody	M	Only values stated can be used
Result	r	Result of Test MUST be used. Only these values MUST be used: normal; abnormal; positive; negative	M	Only values stated can be used
Method	m	Sampling method is OPTIONAL. Only these values MUST be used: nasopharyngeal; oropharyngeal; saliva; blood; other	O	Only values stated can be used
OptionalDataField	opt	Optional data issued at the discretion of the issuing authority	O	20

# Visible Digital Seal – NC: Dataset PoV (1/3)

## Proof of Vaccination (WHO) – Personal Information

Object: Message				
Data Element (ICAO)	Short Data Element	Content	Mandatory/Optional	Max Size
UTCI	utci	Unique Test Certificate Identifier	M	12
Object: PersonIdentification (pid)				
Name	n	Name of the holder (as specified in Doc 9303-3) MUST be used.	M	39
Date of Birth	dob	Date of birth of subject. ISO8601 YYYY-MM-DD	C	10
Unique Identifier	i	Travel Document Number; Single Unique Identifier only. Identifier should be valid Travel Document number	O-R	11
Additional Identifier	ai	Any other document number at discretion of issuer	O	24
Sex	sex	Gender of the subject	O-R	1



# Visible Digital Seal – NC: Dataset PoV (2/3)

## Proof of Vaccination (WHO) – Vaccination Event

Array: VaccinationEvent (ve)				
Data Element (ICAO)	Short Data Element	Content	Mandatory/Optional	Max Size
Vaccine or Prophylaxis	des	Generic description of the vaccine or vaccine sub-type ICD-11 Extension codes ( <a href="http://id.who.int/icd/entity/164949870">http://id.who.int/icd/entity/164949870</a> )	M	6
Vaccine Brand	nam	The brand or trade name used to refer to the vaccine received.	M	20
Disease or agent targeted	dis	Disease or agent that the vaccination provides protection against ICD-11 Extension codes ( <a href="http://id.who.int/icd/entity/164949870">http://id.who.int/icd/entity/164949870</a> )	O-R	6

# Visible Digital Seal – NC: Dataset PoV (3/3)

## Proof of Vaccination (WHO) – Vaccination Details

Array: VaccinationDetails (vd)				
Data Element (ICAO)	Short Data Element	Content	Mandatory/Optional	Max Size
Date of vaccination	dvc	Date on which the vaccine was administered. The ISO8601 full date format YYYY-MM-DD MUST be used.	M	10
Dose number	seq	Vaccine dose number.	M	2
Country of vaccination	ctr	The country in which the individual has been vaccinated. A three letter code identifying the issuing state or organization. The three letter code is according to Doc 9303-3 and ISO-3166.	M	3
Administering centre	adm	The name or identifier of the vaccination facility responsible for providing the vaccination.	M	20
Vaccine batch number	lot	A distinctive combination of numbers and/or letters which specifically identifies a batch.	M	20
Due date of next dose	dvN	Date on which the next vaccination should be administered. The ISO8601 full date format YYYY-MM-DD MUST be used.	O	10