



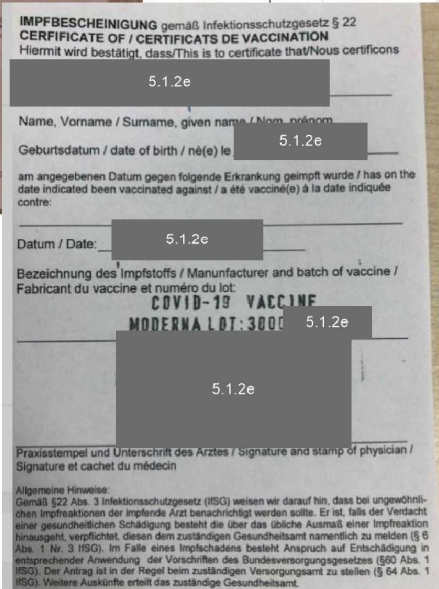
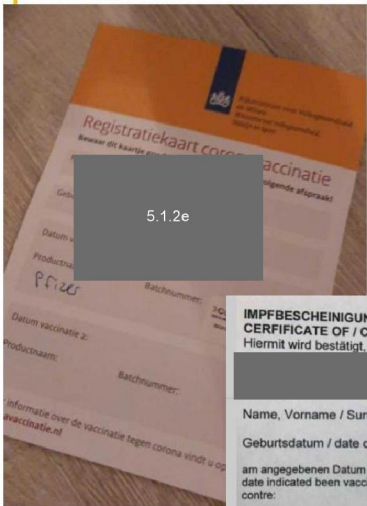
# WAY FORWARD FOR CROSS-BORDER VERIFIABLE COVID-19 VACCINATION CERTIFICATES



2021-02-18

# Background

- On 10-11 December, the European Council called for a coordinated approach to vaccination certificates. On 21 January, the European Council agreed to work on a standardised and interoperable form of proof of vaccination for medical purposes.
- There is an overall consensus on the use of such certificates for medical purposes (continuity of care, e.g. to ensure proper follow up between 1st and 2nd dose). On 21 January, the European Council indicated that leaders would determine at a later stage in what circumstances vaccination certificates could be used.
- On 27 January 2021, the eHealth Network adopted first interoperability elements: a minimum data set and a unique identifier.
  - Guidelines available at [https://ec.europa.eu/health/ehealth/covid-19\\_en](https://ec.europa.eu/health/ehealth/covid-19_en)
- Further work is being conducted on a trust framework. Collaboration with WHO is instrumental.



# PASSPORT OF IMMUNIZATION

Name: 5.1.2e  
Date of birth or Personal Code: 5.1.2e

Disease targeted	Date of vaccination	Brand name of vaccine	Batch number of vaccine	Dose quantity	Dose number	Next booster	Vaccinator
	5.1.2e		5.1.2e	0.5 ml			5.1.2e
	5.1.2e		5.1.2e	0.5 ml			5.1.2e

composed on: 19.01.2021 14:15:21

composed by: Tervise ja Heaolu Infosüsteemide Keskus

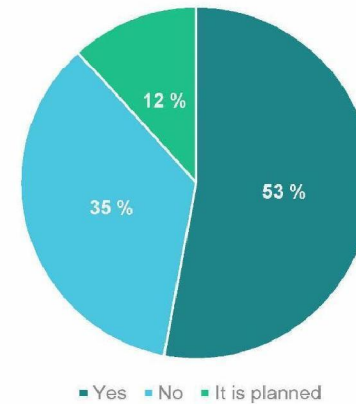


 Certifikát o provedené vakcinaci Certificate of vaccination		
Jméno a příjmení (Name and Surname): <b>František Očkovaný</b>		
Číslo pojistěnce (Health insurance number) 740512852	Číslo občanského průkazu (ID No.) A225961454	Číslo pasu (Passport No.) 45484136
Datum narození / Date of birth [yyyy-mm-dd]: 2000-03-21		
Původce, proti kterému byla vakcinace provedena: (Agent vaccinated against)	SARS-CoV-2 (ICD 11 XN109, SNOMED CT 840533007)	
Typ očkovací látky: Vaccine:	mRNA vakcína proti onemocnění COVID-19 COVID-19 mRNA Vaccine, Severe acute respiratory syndrome coronavirus 2 mRNA only vaccine product (SNOMED CT 1119349007)	
Název produktu: (Name of medicinal product)	Cominaty	
Držitel rozhodnutí o registraci: (Marketing Authorization Holder)	BioNTech Manufacturing GmbH	
Země vakcinace: (Country of vaccination)	CZ	Kód vakcinačního centra: (Vaccination center code)
Vakcinace ukončena: Vaccination schedule completed:	Ano Yes	K 2586963 PČZ 111111
Šarže (Batch number)	Dávka/celkový počet dávek (Number in a series of vaccination/doses)	2/2
Vydavatel certifikátu: Certificate issued by:	Dávka(dose) 1/2	Dávka(dose) 2/2
Datum vakcinace: (Date of vaccination YYYY-MM-DD)	2021-12-26	
Verze certifikátu (Certificate version) 1.0.0	Datum vystavení certifikátu: (Certificate issued YYYY-MM-DD)	2021-12-27
	Certifikát vystavil (Signature)	
Identifikátor certifikátu (Unique identifier of the certificate): 	MUDr. Jan Novák Nemocnice na Františku Na Františku 847/8, 110 00 Staré Město, IČ: 008 79 444	

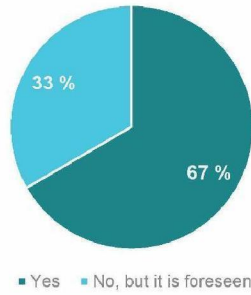
MS are working on and some are issuing vaccination certificates already.

- Both paper and digital solutions are supported

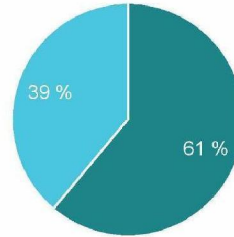
Member States with legislation to cover the issuance of the vaccination certificates



Do Member States issue vaccination certificates/proofs for COVID-19 vaccinated persons?

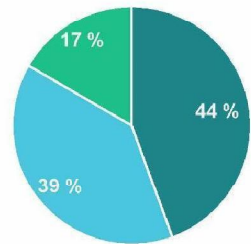


Who receives a vaccination certificate/Proof?



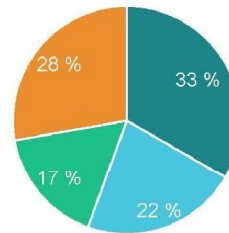
- Everyone who receives vaccination automatically gets a certificate
- Everyone who requests a vaccination certificate

When will the Vaccination Certificate be issued?



- Don't know/not decided
- After every dose
- Only after the completion of the vaccination cycle

How will the Vaccination Certificates be issued?



- Digitally certificates
- On paper
- Don't know yet
- Digitally and on paper

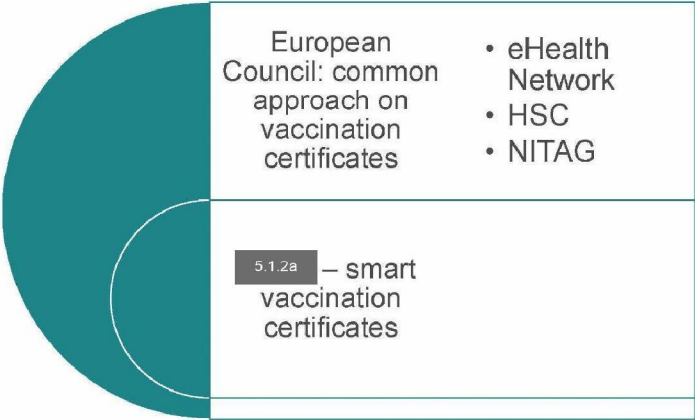


# Purposes of use

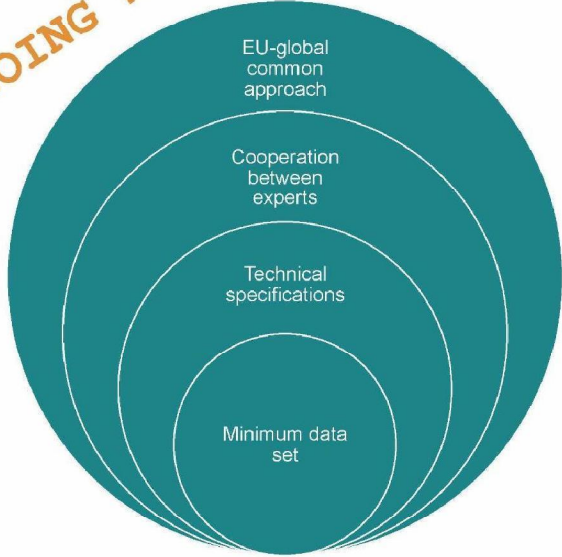
- **Medical purposes (continuity of care) – undisputable**
  - A vaccinated person who has received the first dose in Country A would like to receive the next dose in Country B. The only information available is that on the certificate.
  - A vaccinated person needs to receive information about the date of the next dose.
- **Proof of vaccination – debatable**
  - A vaccinated person presents the vaccination certificate in order to avoid or shorten a quarantine period during or after travel.
  - The organizer of a leisure event provides specific rules to vaccinated persons.
  - Support for proof for people who cannot get vaccinated (due to medical reasons) or cannot receive the next dose should be enabled.
- **Possible extensions – to be aware of**
  - Proofs of negative **test results** – *currently used for preserving free movement*
  - Proofs of a previously contracted **Covid-19 disease** – *used by some MS*

# Cooperation with

5.1.2a



ONGOING WORK



# Minimum dataset

Section	Data element	Description	Preferred Code System
Person identification	Person name	The legal name of the vaccinated person	
	*Person identifier (optional, repeatable)	An identifier of the vaccinated person, according to the policies applicable in each country. It should be captured what type of identifier is used.  Examples: citizen ID card or identifier within the health system/IISe-registry.	
	Sex (optional)	Administrative gender	
	Person date of birth (conditional)	Vaccinated person's date of birth.  Mandatory if no Person identifier is provided.	Complete date, without time, following the ISO 8601.
*Vaccination / prophylaxis information * means that the whole section may be repeated	Disease or agent targeted (optional)	Disease or agent that the vaccination provides protection against	ICD-10 or SNOMED CT (GPS). In the future ICD-11.
	Vaccine / prophylaxis	Generic description of the vaccine/prophylaxis or its component(s)  Example: J07BX03 covid-19 vaccines (temporary code, to be implemented in ATC 2022) 1119349007   COVID-19 mRNA vaccine   1119305005   COVID-19 antigen vaccine	SNOMED CT and ATC Classification (J07 therapeutic subgroup);  In the future substances from the ISO IDMP Implementation-EU-SRS system
	Vaccine medicinal product	Medicinal product name  Example: COMIRNATY concentrate for dispersion for injection	For the time being, this should be the name of the medicinal product as registered in the country.  In the future the information on the medicinal product can incorporate the identifiers from the implementation of the ISO IDMP Standards and the medicinal package's unique identifier
	Marketing Authorization Holder	Marketing Authorisation Holder  Example: Pfizer BioNTech	EMA's Organisations System data (SPOR)
	Number in a series of vaccinations / doses	Order in the vaccination course  Example: 1/2	
	Batch/lot number (optional)	A distinctive combination of numbers and/or letters which specifically identifies a batch	
	Date of vaccination		Complete date, without time, following ISO 8601
	Administering centre Health Professional identification (optional)	Name/code of administering centre or a health authority responsible for the vaccination event Name or health professional code responsible for administering the vaccine or prophylaxis	
	Country of vaccination	The country in which the individual has been vaccinated	ISO 3166 Country Codes
	Next vaccination date (optional)	Date on which the next vaccination should be administered	Complete date, without time, following ISO 8601
Certificate metadata (minimum dataset)	Certificate issuer	Entity that has issued the certificate (allowing to check the certificate)	
	Certificate identifier	Unique identifier of the certificate (UVC1), to be printed (human readable) into the certificate; the unique identifier can be included in the IIS  Certificate valid from (required if known)	See next slide
	Certificate valid from (optional)		Complete date, without time, following ISO 8601
	Certificate valid until (optional)	Certificate valid until (validity can differ from the expected immunisation period)	Complete date, without time, following ISO 8601
	Certificate schema version	Version of this minimum dataset definition - currently set at 1.0.0	Semantic versioning (ISO, <a href="https://semver.org/">https://semver.org/</a> , version 2.0.0 or newer).

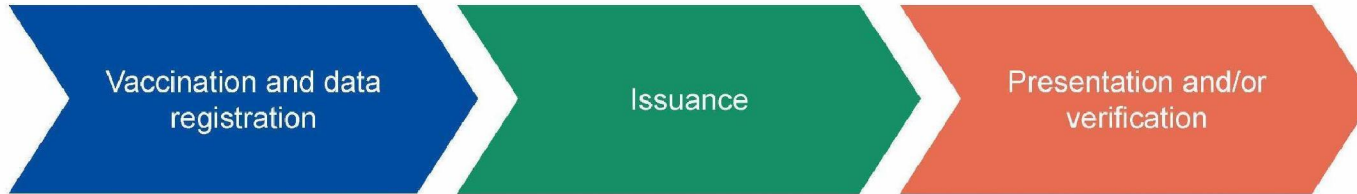
ADOPTED AND  
PUBLISHED

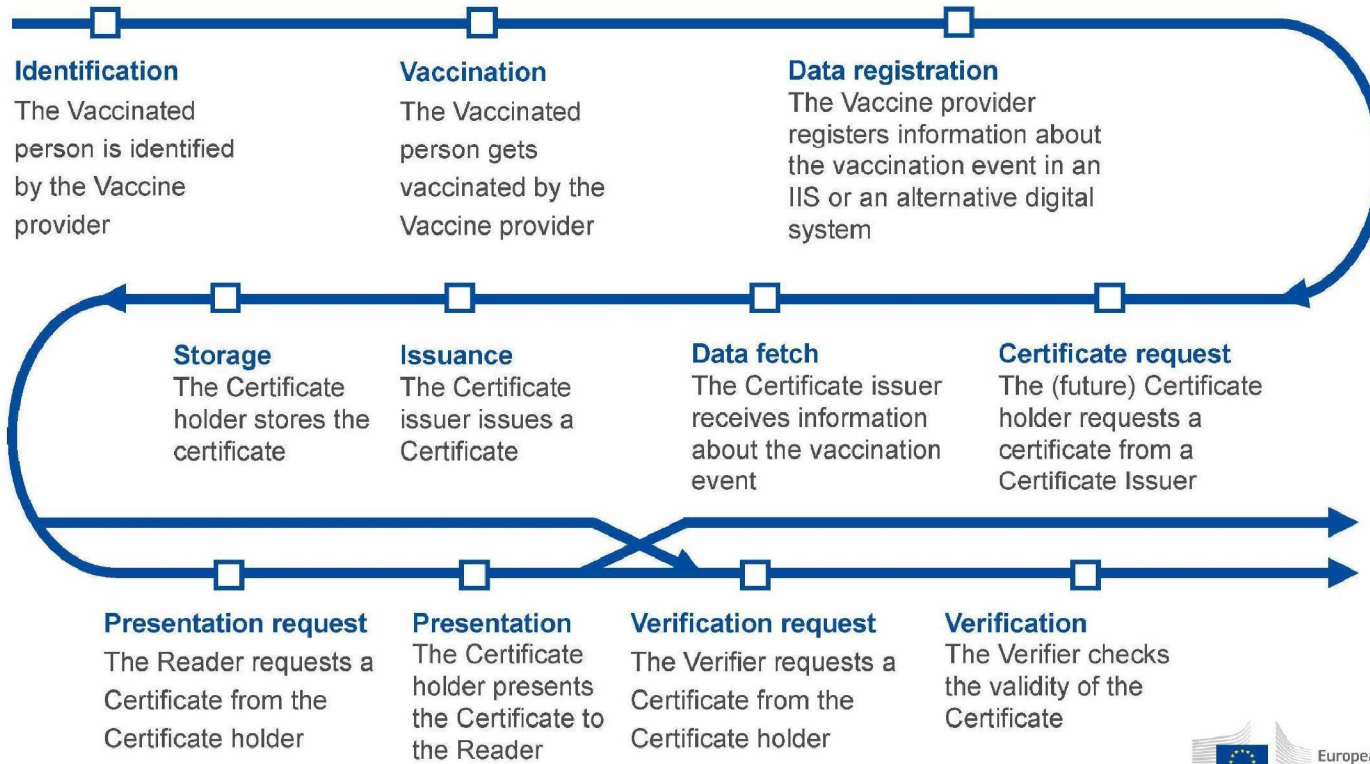
# Unique Vaccination Certificate/assertion identifier (UVCI)

ADOPTED AND  
PUBLISHED

Version	Country	Opaque Unique String			Check sum
		Issuing Entity	Opaque Unique String		
		Issuing Entity	Vaccine/Lot	Opaque Unique String	

# User story, steps





# Trust Framework

ONGOING WORK

The Trust Framework should provide answers to at least the following questions:

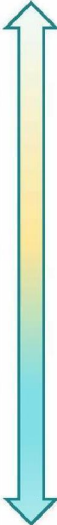
- What entities can issue vaccination certificates?
- How can a certificate reader or verifier establish whether a certificate has been issued by a trustworthy entity?
- How can a verifier ascertain whether the data in the certificate is authentic, valid, and sufficient for a given use case, respecting the data minimization principle?
- What kind of infrastructure is needed for supporting the interoperability of vaccination certificates?
- What would be the legal basis for data processing?

# Trust framework: high-level requirements

- Interoperability (cross-border, preferably global, not only EU-wide)
- Data protection (data minimization, purpose limitation etc.)
- Security and privacy by design/default, robustness
- Simplicity & user-friendliness
- Inclusiveness (medium-agnostic)
- Flexibility on implementations
- Modularity and expandability (to accommodate for instance additional use cases)
- Use of open standards (e.g. FHIR, W3C VC etc.)

# Data minimization

Might be performed in this order, depending on the law

Verification + sensitivity level	Contents and requirements	
None	Visual check only, no verification.	 <p>Little details Little effort Offline</p> <p>Full details Much effort Online/phone/etc</p>
Basic	Only very limited data. Should however enable a basic identity check. Fast. Should work offline.	
Standard	Limited data sufficient for most cases. Should enable identity check. Should be reasonably fast. May require online connection.	
Full	All data. Used rarely. May be slow. May require additional actions such as contacting the issuer.	

# A "keep it simple" model

**Proof of vaccination**  
for medical purposes




V1-ME-12345678  
ASBCD-56789-44

Name: DOE Joe  
Date of Birth: 1987-06-05  
Adm. gender: Male  
Passport number: PF12345678  
National health ID: 050687-987F  
Certificate issued: 2021-06-02

<b>Dose 1/2</b>		<b>Dose 2/2</b>	
Type: C19-mRNA		Type: C19-mRNA	
Date: 2021-02-03		Date: 2021-02-24	
Brand: Comirnaty		Brand: Comirnaty	
MAH: Pfizer Oy		MAH: Pfizer Oy	
Batch: AB123CD		Batch: EF456GH	
Adm. centre: Hospital 1		Adm. centre: Health centre 2	

Country: Middle Earth  
Issued by: National health service  
Signature: Digitally signed

Online verification: <https://www.npsme.health/c19verify>  
Scan to open verification page:  Enter cert ID and verification code: HFGT-HETS-POZ3-BS12-ABSC

QR code is the same as in "Basic" or "Standard"

ME-telecom

**Proof of vaccination**



Level: Basic

Reveal less (left arrow)    Reveal more (right arrow)

Name: D\*\*\* J\*\*\*  
Date of Birth: \*\*g\*.\*\*.\*\*.5  
Certificate issued: 2021-06-02

**Vaccination**  
Type: C19-mRNA  
Date: 2021-02-24



"Quick simple check"

ME-telecom

**Proof of vaccination**



Level: Standard

Reveal less (left arrow)    Reveal In full (right arrow) (enter PIN)

Name: Doe Joe  
Date of Birth: 1987-06-05  
Adm. gender: Male  
Passport number: PF12345678  
Certificate issued: 2021-06-02

**Dose 2/2**  
Type: C19-mRNA  
Date: 2021-02-24  
Brand: Comirnaty  
MAH: Pfizer Oy


▽ Scroll for more?



"Standard check"



ME-telecom

**Proof of vaccination**




Level: Full details

Reveal less (left arrow)    Reveal In full (right arrow)

**Verification details**  
UVC:  
  
Y1-ME-12345678ASBCD-56789-44  
Pass code (valid for 15 mins):  
  
HFGT-HETS-POZ3-BS12-ABSC

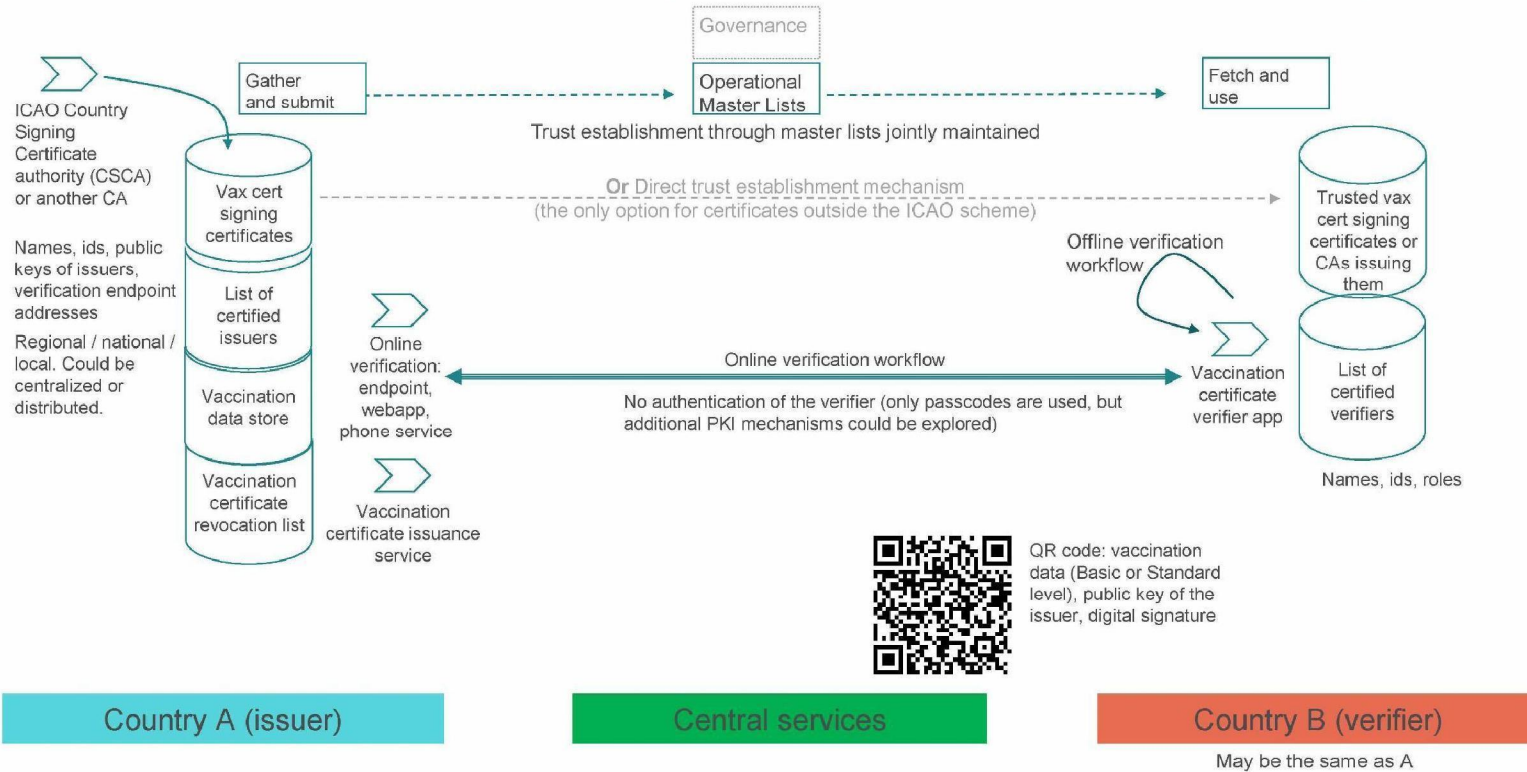
Name: Doe Joe  
Date of Birth: 1987-06-05  
Adm. gender: Male  
Passport number: PF12345678  
National health ID: 050687-987F

▽ Scroll for more

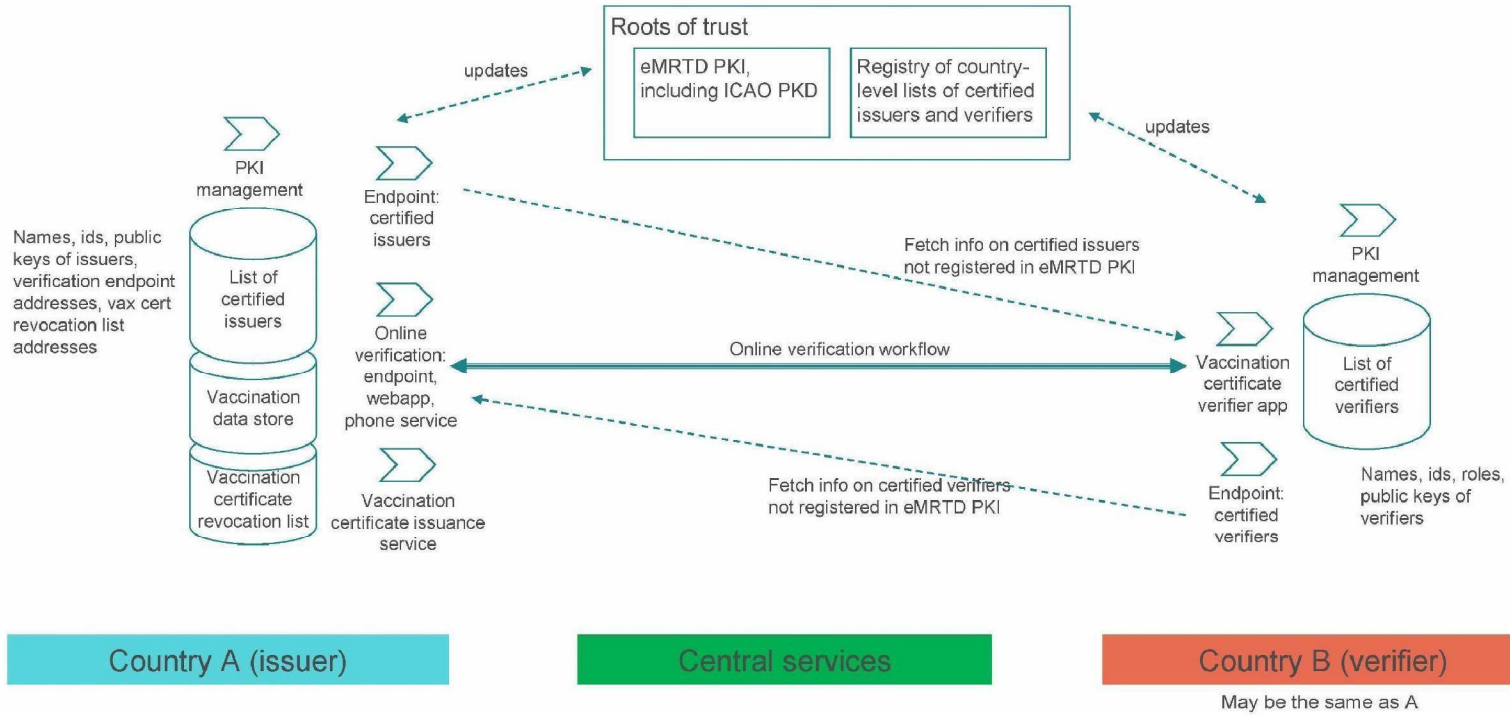


For authorized and authenticated verifiers only

# Overall architecture (option “fully distributed”)



# Overall architecture (option “hybrid PKI”)



## Next steps

- Discussions in the eHealth Network about the draft Trust Framework
  - Adoption of the document in the form of the eHN guidelines?
- Understanding the legal basis for establishing and operating the system
  - Multiple options under consideration
- Decisions on establishing and operating the infrastructure
- Providing support to national projects

# Thank you



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