



| ICAO

TRIP 2022

SEAMLESS AND CONTACTLESS

Sharing data to accelerate the recovery

13 - 15 SEPTEMBER 2022

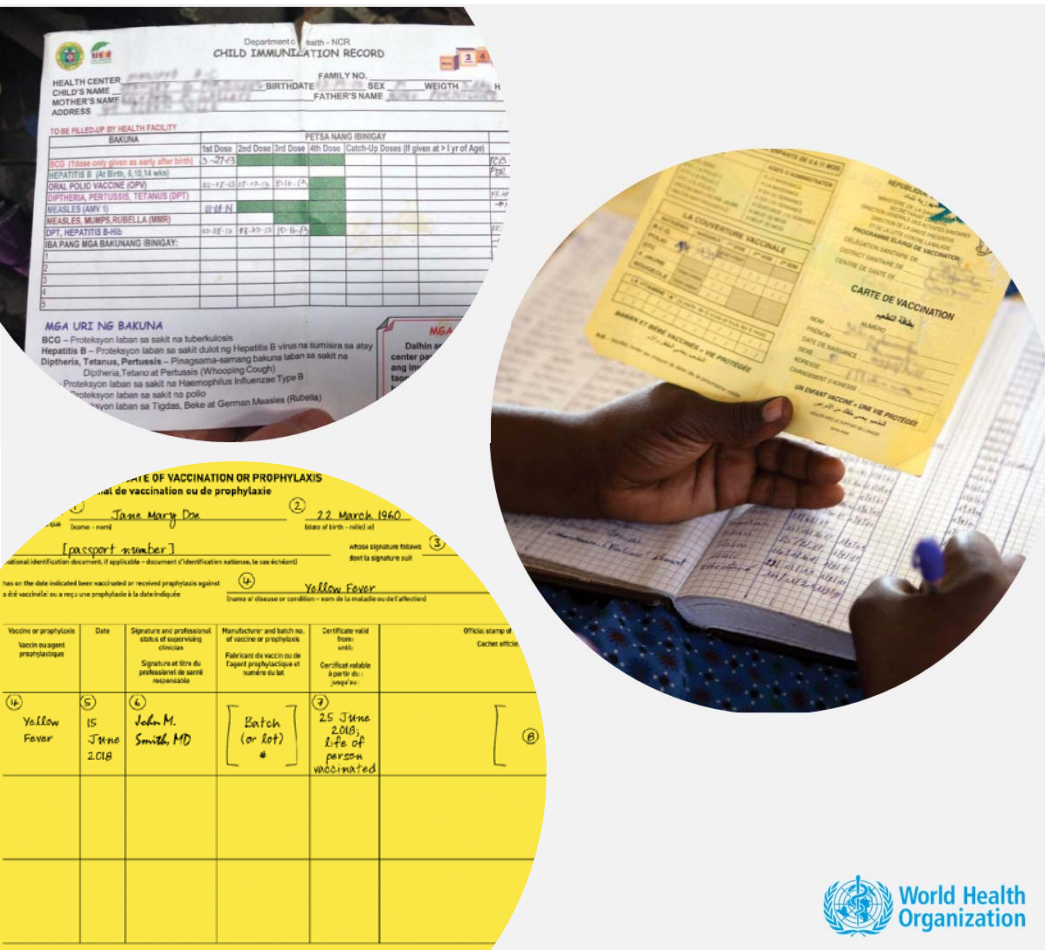
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Before COVID-19, individual immunization records have been implemented in a variety of ways in every country



- The **international certificate of vaccination or prophylaxis for international travellers (i.e., yellow booklet)** - bought from WHO with WHO logo or nationally branded
- Home-based records for **routine childhood** immunizations
- ... or, more often, something in between:
 - Use of the “yellow booklet” for recording routine childhood immunizations
 - vaccinations received as **adults** under the “other vaccinations” section
 - Campaign specific certificates e.g., Ebola, Cholera, COVID-19
- Overall inconsistency in how this is done globally

Photos from: [Practical guide for the design, use and promotion of home-based records in immunization programmes \(who.int\)](#) Yellow Fever - Chapter 4 - 2020 Yellow Book | Travelers' Health | CDC

With the increased use of digital technologies globally, and the COVID-19 pandemic, there was a clear opportunity to adopt digital vaccination certificates

Direct benefits

- ✓ Can be **easily distributed** without the complications arising from supply chain issues of delivering paper forms
- ✓ More **durable** (physically – paper can easily be damaged)
- ✓ **Greater trust** in the information available in a digital format (digital age) because it is more difficult to fraud and counterfeit

Indirect benefits

- ✓ **Easily scalable to other use cases** – e.g., personal health records, diagnostic test certificates
- ✓ Strong **foundation** to building sustainable health information systems
- ✓ **Greater access to information** by public health authorities for decision making



However, there were key challenges in implementing international travel-related measures

- **Lack of scientific evidence** on virus characteristics or effectiveness/impact of PHSMs
- High **uncertainty** due to the emergence of new VOCs/new pathogens
- **Varying levels of risk tolerance** across countries
- Difficulties operationalizing the “**precautionary approach**”
- No **international definition** of “essential travel”
- **No global trust** architecture for digital COVID-19 certificates
- **Highly multisectoral** area both nationally and internationally – requiring an immense amount of coordination



Digital vaccination certificates do not exist in a vacuum, but work with and contribute to the larger ecosystem of immunization information systems



DDCC guidance documents have been published as a starting point with those considerations in mind

Requirements and specifications for technology implementers

- Business processes, workflows & use cases
- Core data elements mapped to standard terminology code sets (including an annexed spreadsheet)
- Functional and non-functional requirements
- Overview of signing a digital certificate with PKI
- HL7 FHIR Implementation Guide (linked website) detailing relevant standards for consistent representation and interoperability

Implementation considerations

- Data protection principles
- Ethical considerations
- National governance considerations

Digital Documentation of COVID-19 Certificates: Vaccination Status
TECHNICAL SPECIFICATIONS AND IMPLEMENTATION GUIDANCE

Digital Documentation of COVID-19 Certificates: Test Result
TECHNICAL SPECIFICATIONS AND IMPLEMENTATION GUIDANCE
31 March 2022

Scenarios of use
✓ **Continuity of care**
✓ **Proof of vaccination**

Scenarios of use
✓ **Proof of negative test result**
✓ **Proof of previous SARS-CoV-2 infection**

[Digital documentation of COVID-19 certificates: vaccination status: technical specifications and implementation guidance, 27 August 2021 \(who.int\)](#)
[Digital documentation of COVID-19 certificates: test result: technical specifications and implementation guidance, 31 March 2022 \(who.int\)](#)

DDCC specifications supports countries to adopt whichever modality best fits their context

1 International Certificate of Vaccination or Prophylaxis (i.e. yellow card)



2 National Immunization Home-based Record



1 Test report




Illustrative formats of digital vaccine certificates

3

A handwritten paper certificate with only a HCID, which links to a DDCC:VS

OR

A handwritten paper certificate with a 2D barcode containing the full DDCC:VS core data set




4

A PDF print-out certificate with only a HCID which links to a DDCC:VS


OR

A PDF print-out with a 2D barcode containing the full DDCC:VS core data set



5

A DDCC:VS held on a smartphone




Illustrative formats of digital test result certificates

2

(2) a handwritten paper test result certificate with only a HCID that links to a DDCC:TR

OR

a handwritten paper test result certificate with a 2D barcode containing the full DDCC:TR core data set




3

a PDF print out test result certificate with only a HCID that links to a DDCC:TR

OR

a PDF print out with a 2D barcode containing the full DDCC:TR core data set




4

A DDCC:TR held on a dedicated smartphone application

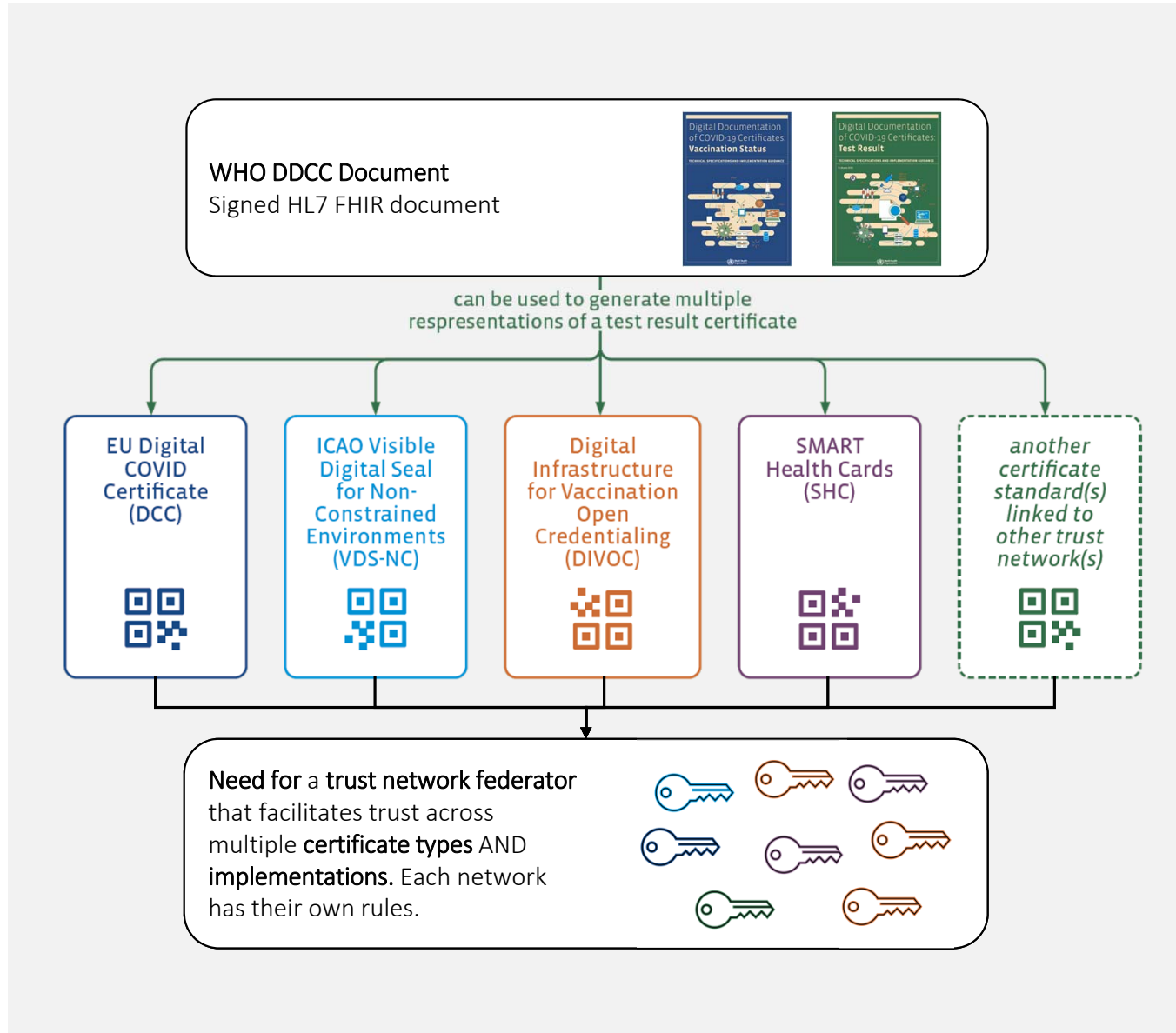
OR

A DDCC:TR represented within an electronic personal health record held on a smartphone and/or digital health wallet



DDCC is an “umbrella” specification

- Varying public health policies across countries based on their risk tolerance
 - Mutual recognition vs. Reissuance model
- Many existing digital standards that don't interoperate
- Establishing a new standard or central solution would not be viable at this point in the pandemic
- Investment in digital technologies is expensive – will need to architect for use cases beyond COVID-19
- Updating the IHR and digitizing the International Certificate of Vaccination or Prophylaxis (“yellow card”) will take time
- There is a need for directory to federate across trust networks

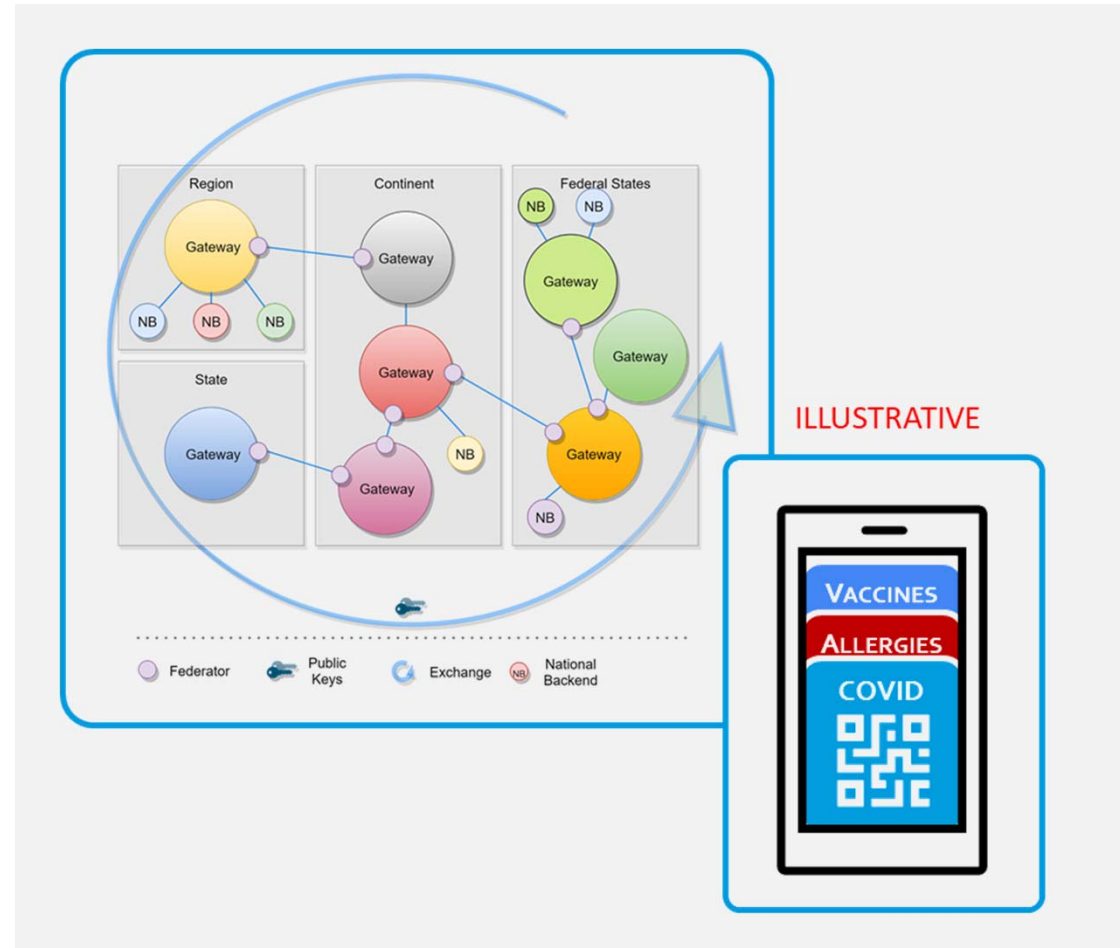


Future directions of the DDCC - federated model of Interoperable Digital Health Trust Networks

WHO is coordinating and consulting with member states, G20, OECD, GDHP to discuss a federated model of Interoperable Digital Health Trust Networks consisting of:

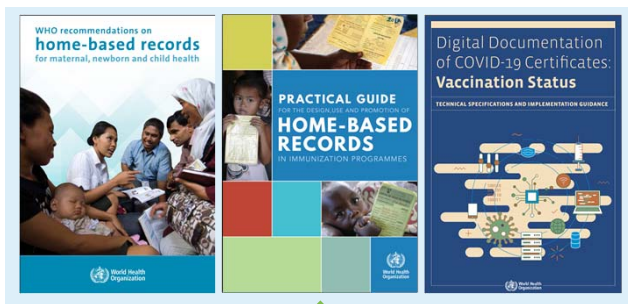
1. [Directory of trusted services:](#)
 - PKI for any digitally signed health document
 - Metadata services e.g. terminology, product list
 - Business rules library e.g. is a given course of vaccinations considered valid?
 - Credential & health document issuance
2. [Federator to manage access between trust networks](#)

Leveraging the [HL7 FHIR](#) (Fast Healthcare Interoperability Resources) [IPS](#) (International Patient Summary). Specific to COVID-19 first but working towards a [portable digital health wallet](#).



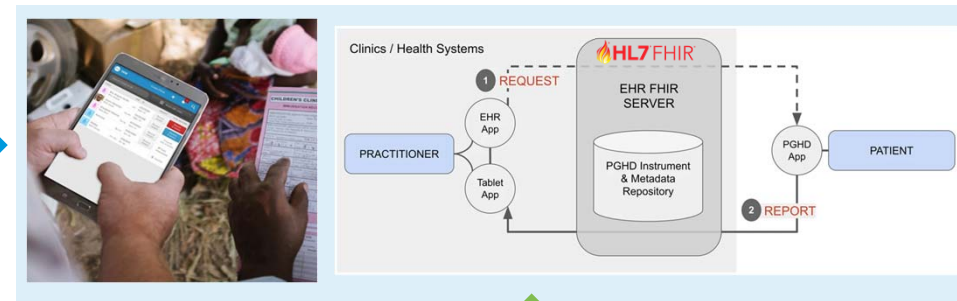
Digital personal health record - Leveraging the SMART Guidelines methodology to digitize and scale provider-side and client-side solutions

Healthcare worker

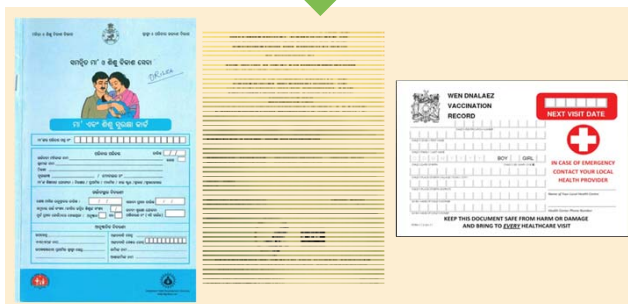


Provider-side applications

Within a FHIR-based enterprise architecture & trust network

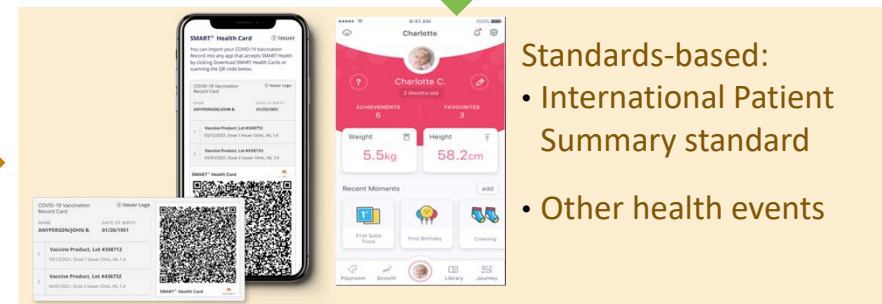


Individuals



Maternal, Child, Immunization Card held by individuals

Personal health record with eWallet of rendered credentials



Standards-based:

- International Patient Summary standard
- Other health events

Trust networks beyond COVID-19

It is fundamentally about the right for **an individual patient** to have **access and control** over **their own health information** in the form of **a personal health record**, which can **then be used for a variety of use cases where credentials are needed** such as:

- ✓ The yellow card (IHR)
- ✓ International travel
- ✓ Reimbursements (UHC)
- ✓ Prescriptions



Thank You

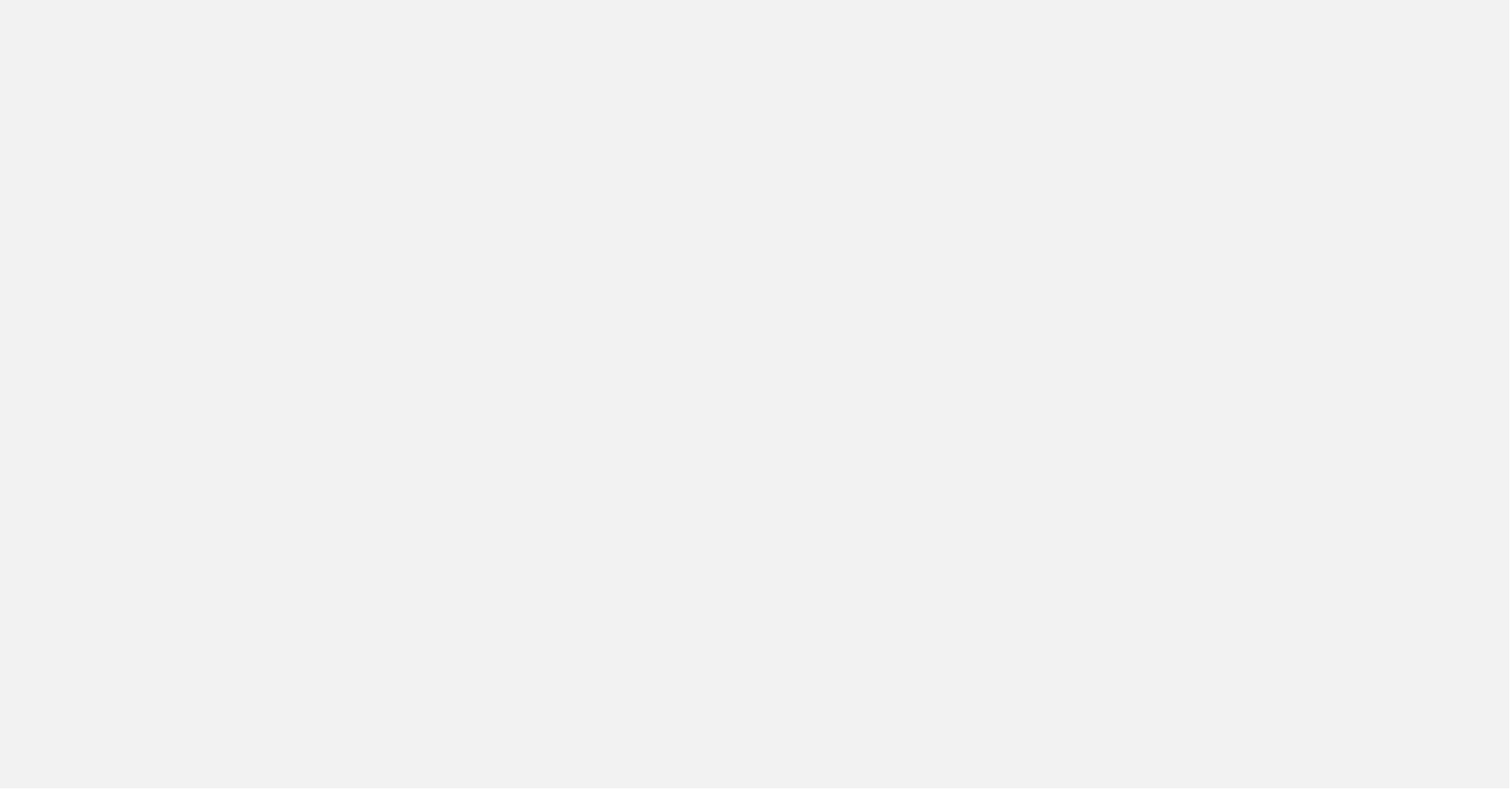


Text



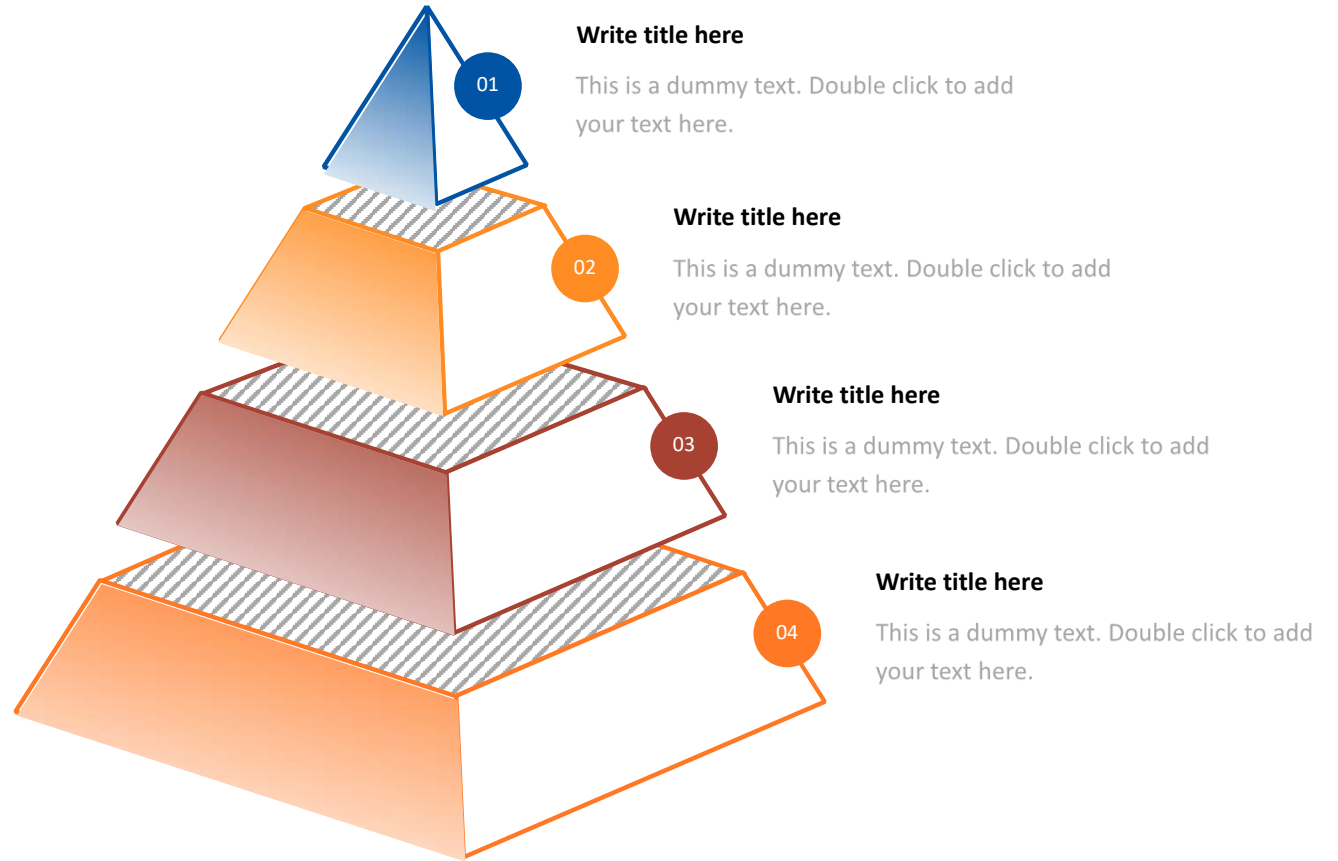
Paths forward for international travel-related health measures

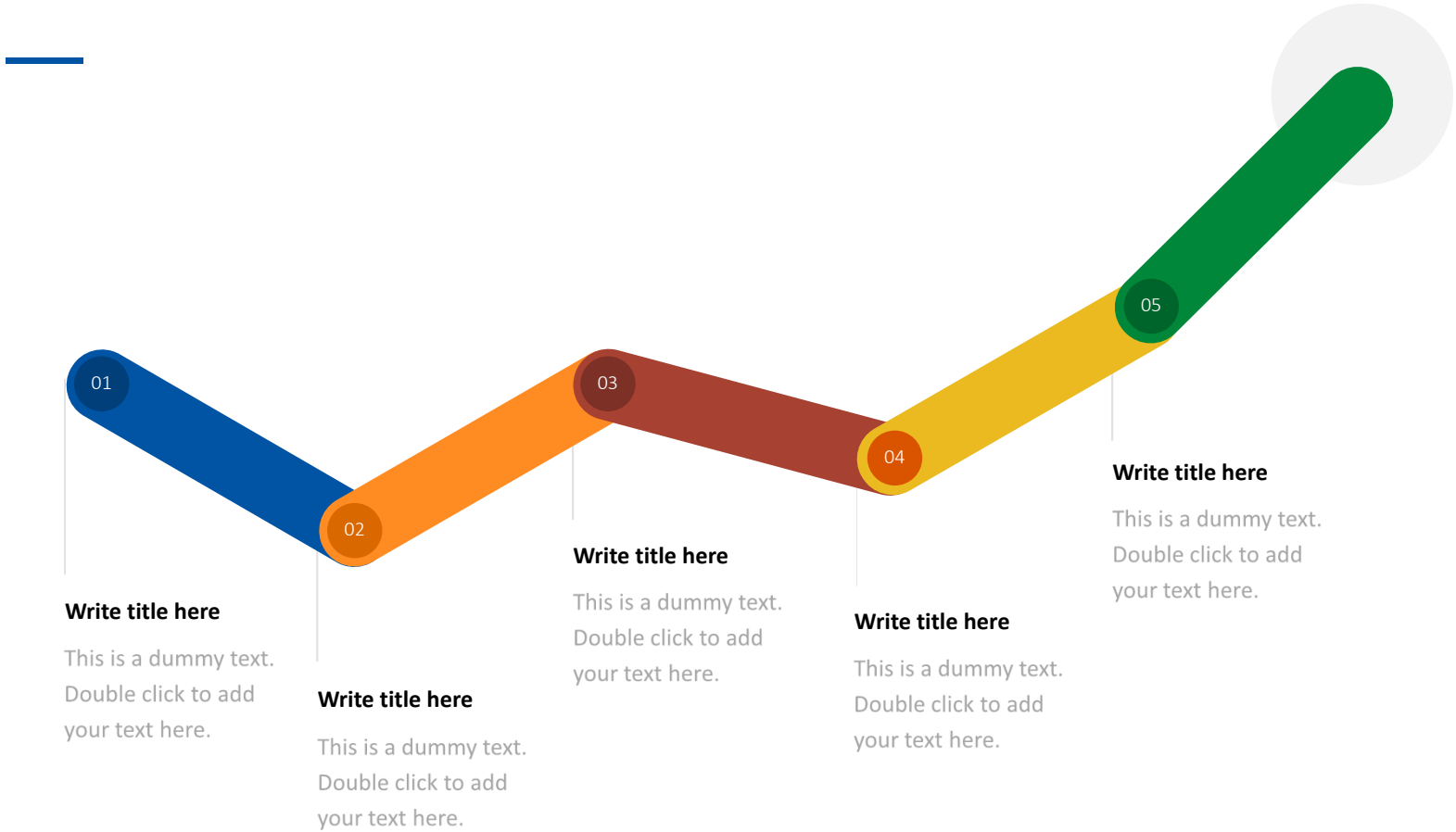
- ✓ Regular **systematic reviews of evidence on both effectiveness and impact of PHSMs** should continue to be conducted and used to inform future health emergency responses
- ✓ While technical guidance must be risk-based and context-specific, **key principles should be respected throughout the decision-making process** (i.e., evidence-informed decision-making, transparency, coordination, respect for human rights)
- ✓ **“Essential travel” needs to be clearly defined** to ensure that key operations are not disrupted during any health emergency (i.e., transport of essential personnel and goods, repatriations).
- ✓ **Coordination should be enhanced** at national and international levels to leverage from the experience and perspectives of different sectors; yet avoiding overlapping mandates.
- ✓ Consider the use of **trust networks beyond COVID-19**

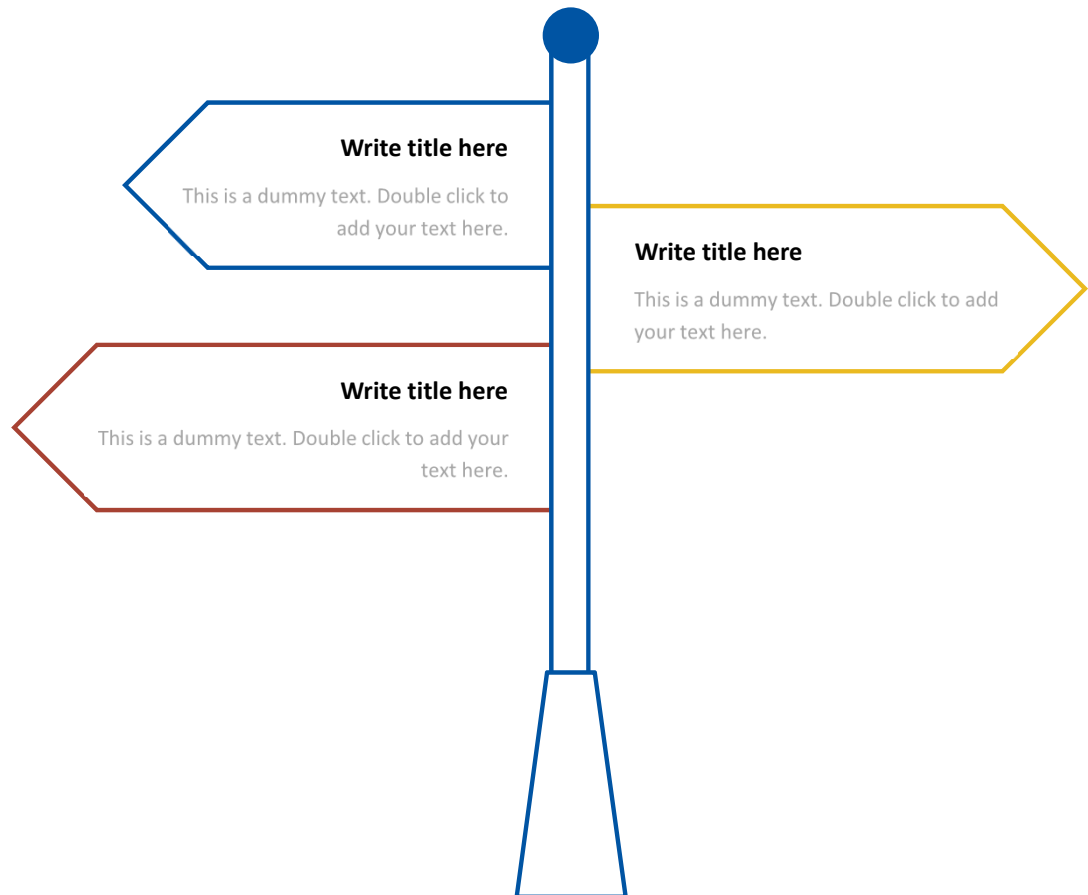














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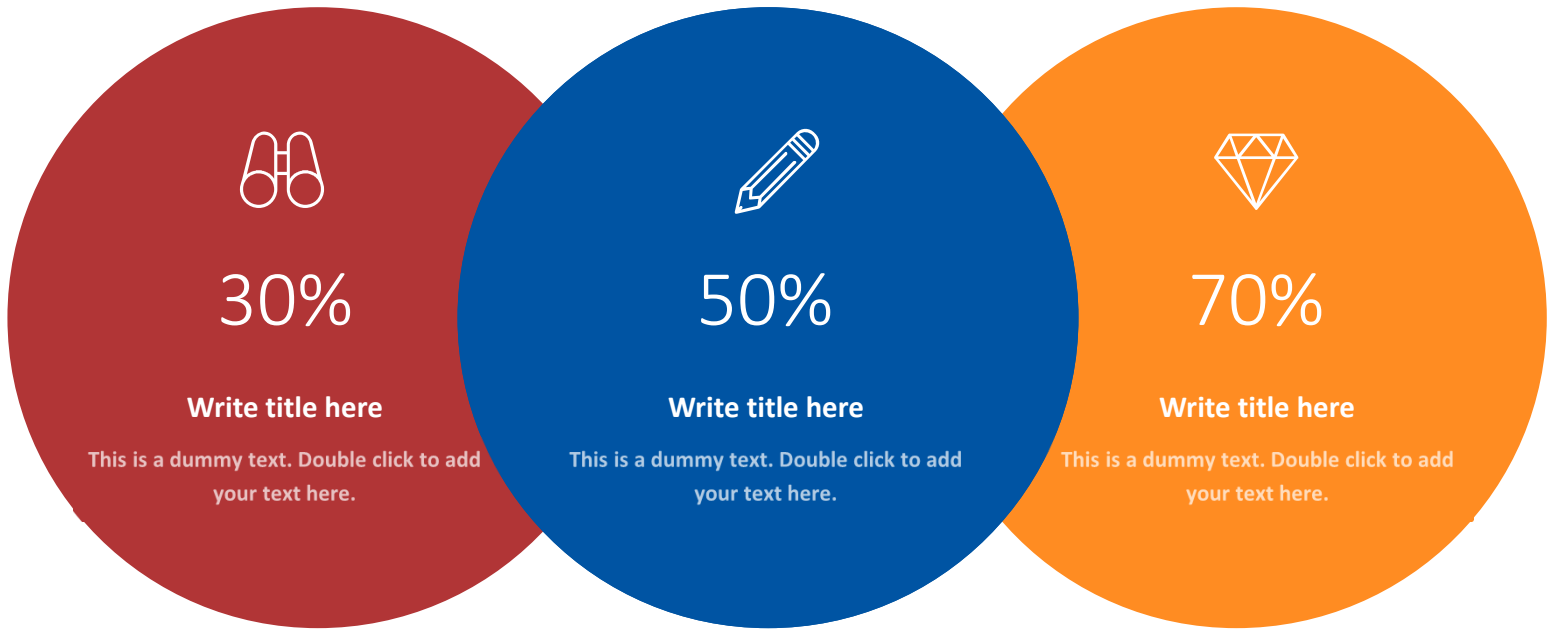
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