WHO’s Global Digital Health Certification Network (GDHCN)

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9 May 2024

World Health Organization

To **improve health for everyone, everywhere** by accelerating the development and adoption of appropriate digital health solutions to achieve the health-related SDGs

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Global Digital Health Strategy Main Objectives

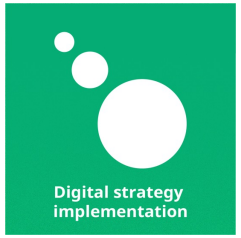
- Promote global collaboration & advance the transfer of knowledge on digital health
- Advance the implementation of national digital health strategies
- Strengthen governance for digital health at global, regional and national levels
- Advocate people-centered health systems that are enabled by digital health

Global Digital Health Strategy: Actions for the WHO secretariat – Mandate for Trust Architecture

"A national interoperable digital health ecosystem should be set up in such a way that the information technology health infrastructures **are both interoperable among each other and**, allowing for differences in national legislation and policies, **capable of sharing health data with infrastructures of other countries**"

- To Promote digital health collaborations and partnership models within and across organizations on the use of software global goods, open-standards, and **common digital health architecture**.

- **To Develop regulatory framework on international health data**, to agree on global appropriate use of health data, and to outline principles of equitable data-sharing principles for research, consistent metadata and definitions, artificial intelligence and data analytics; primary and secondary use of data
- Develop a guideline on **global interoperability standards for digital health**.



- To Identify and engage with relevant stakeholders, regulatory bodies and regional eHealth/digital health networks to **support the implementation of digital health transformation at national or regional level**.

- **To Support Member States and stakeholders to use person-centric, digital health devices and systems** to enhance health workforce performance and facilitate evidence-based decision to improve public trust in using digital health technologies inside or outside the context of a public health emergency.
- **To Develop and promote the use of tools that support the digitalization of integrated health service with a focus on patient's managed quality of service.**

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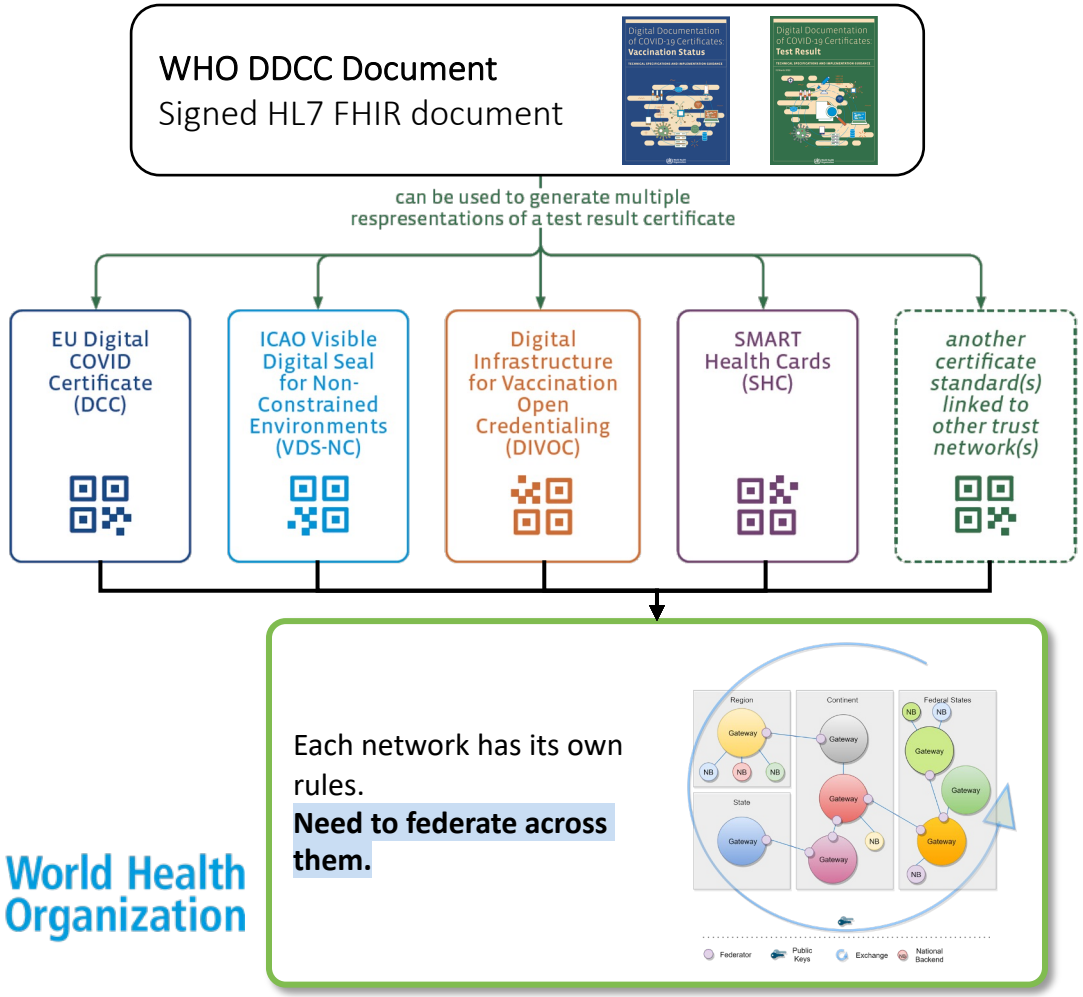
Based on the experience from digital COVID-19 certificates, it is evident that consensus on global governance and policies are required so that health documents can be recognized and used globally



- Varying public health **policies** across countries
- Standards **implemented in a variety of ways** without governance
- Many existing digital standards **don't interoperate**
- Need to architect for **multiple use cases** beyond COVID-19
- Need for a **directory to federate** across trust networks

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The GDHCN is digital public infrastructure to meet confluence of requests to the secretariat in the Global Strategy on Digital Health, requests for leadership during COVID-19, and understanding of need to build upon successes from COVID-19 for greater health systems resiliency

2020

Actions for the WHO secretariat under the "Global Strategy for Digital Health"

Collaboration and knowledge transfer

Promote **common digital health architecture**

Digital strategy implementation

Support **implementation** of digital health in countries & regions

Digital health governance

Global **interoperability standards** for digital health

Human-centred health system

Promote use **person-centric**, digital health devices and systems

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2021

Publication of "Digital Documentation of COVID-19 Certificates Technical Specifications & Implementation Guidance"

- ✓ Specifications are **software-agnostic**
- ✓ For **mobile-based & paper-based certificates**

2022

G20, WHO, OECD, Global Digital Health Partnerships Pilot for a "Federated Public Trust Repository"

- ✓ **Successful federation** across existing networks: EU DCC, ICAO Health Master List, DIVOC, SMART Health Cards
- ✓ Leveraging **Public Key Infrastructure** technology

2023

Uptake of EU DCC System & Launch of Global Digital Health Certification Network (GDHCN)

- ✓ Creation of a "**phone book**" of public keys for countries
- ✓ **Expands upon the legacy** of the EU DCC network & lessons learned from G20 pilot
- ✓ Currently for **COVID-19**, but can be expanded
- ✓ **Circular sent by DG** for Member States for voluntary participation

List of participants currently onboarding or onboarded to GDHCN

Region of the Americas

1. Bahamas
2. Bolivia
3. Belize
4. Brazil
5. Canada
6. Chile
7. Ecuador
8. Honduras
9. Paraguay
10. Suriname
11. Uruguay
12. El Salvador
13. Panama
14. Guatemala
15. Argentina
16. Colombia
17. Costa Rica
18. Peru
19. British Virgin Islands

European Region

1. Belgium
2. Croatia
3. Czech Republic
4. Cyprus
5. Estonia
6. Finland
7. France
8. Greece
9. Israel
10. Latvia
11. Lithuania
12. Malta
13. Netherlands
14. San Marino
15. Slovakia
16. Spain
17. Sweden
18. Ukraine
19. United Kingdom
20. Iceland
21. Slovenia
22. Portugal
23. Georgia
24. Poland
25. Kyrgyzstan
26. Faroe Islands
27. Montenegro
28. Ireland
29. Andorra
30. Monaco
31. Türkiye
32. North Macedonia
33. Moldova
34. Armenia
35. Albania
36. Luxembourg
37. Hungary

African Region

1. Benin
2. Zimbabwe
3. Madagascar
4. Burkina Faso
5. Tanzania
6. Burundi
7. Togo

Eastern Mediterranean Region

1. Morocco
2. Iraq
3. Qatar
4. Oman
5. Kingdom of Saudi Arabia

Western Pacific Region

1. New Zealand
2. Singapore
3. Japan
4. Australia
5. Mongolia
6. Malaysia

South East Asia Region

1. Indonesia
2. Thailand
3. Sri Lanka

X = In progress. Currently going through technical preparation, testing and/or pending Letter of Application

X = Onboarding completed. Testing completed and Letter of Application received.

77 participants in total as of 8 May 2024

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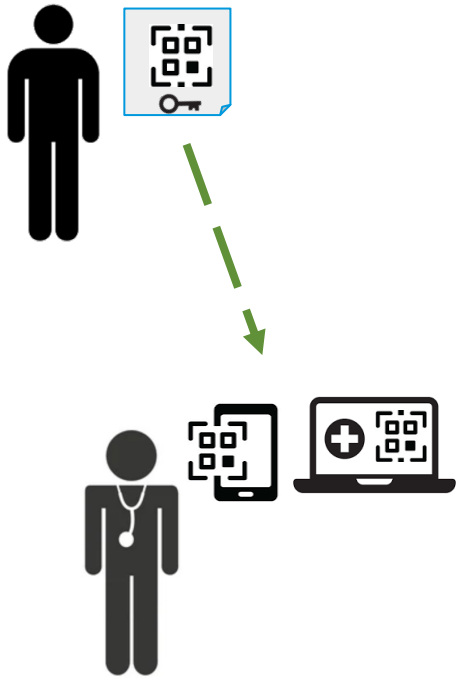
Global Digital Health Certification Network

– Individual-mediated exchange with consent

Verifiable Digital Health Certificates

HCERT - EU DCC	HCERT – SMART HEALTH LINKS
International Patient Summary (IPS)	Digitized ICVP (yellow book)
Routine Immunizations	Health Worker Credential.
Health Insurance Card	etc.



What digital public infrastructure do we need so that an individual present a digital health certificate, whose provenance can be verified, to a health worker?

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Global Digital Health Certification Network

– Individual-mediated exchange with consent

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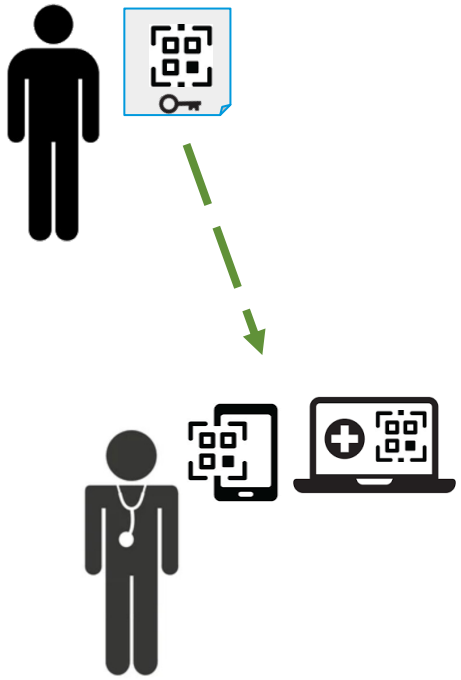

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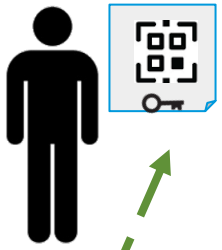
– Individual-mediated exchange with consent

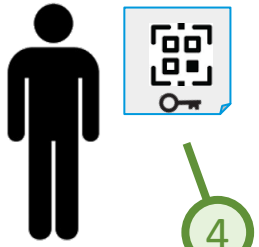
START:
Individual accesses digital health wallet in jurisdiction A to:

- select health information to disclose, consent directives, auth. & access controls
- Request a health certificate to be issued



Individual travels to jurisdiction B and seeks care

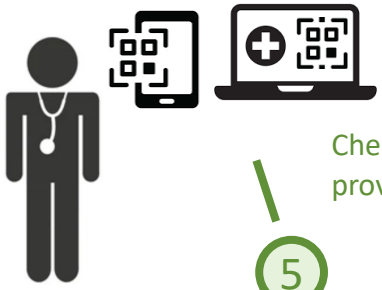
3



END:
Health content in certificate utilized for provision of care

4

Individual presents certificate to health worker



Check digital signature to verify provenance of digital health certificate.

5

2

Health document issued to individual as a verifiable digital health certificate

Participant A

Document Generation Service

1

Document Signing Service

Document Verification Service

Health document generated and signed

A

Send public keys used to verify digital health certificates

Global Digital Health Certification Network

Public Key Infrastructure

Trust Network Gateway

Key Distribution Service

Retrieve public keys used to verify digital health certificates

B

Participant B

Document Generation Service

Document Signing Service

Document Verification Service

Pilgrim configures access to IPS via QR code on national health wallet

1

Pilgrim seeks care and shows IPS QR code to health worker

3

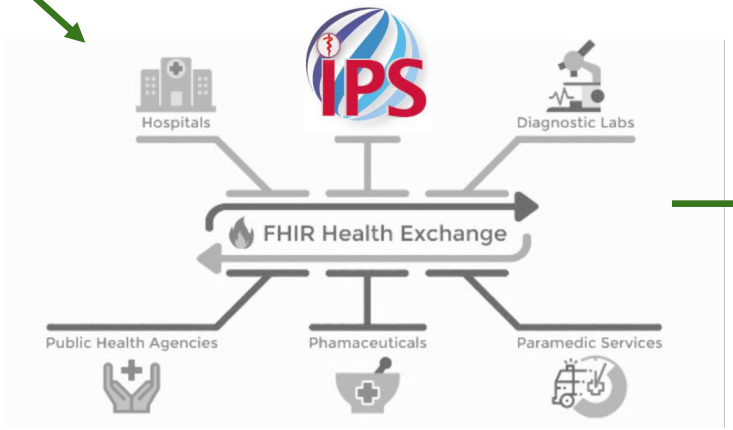
2

IPS generated from patient care history in origin country

Health worker scans IPS QR code in their EMR

4

Origin Country



5

IPS

EMR retrieves IPS from origin country HIE

KSA

A

IPS verification keys published to GDHCN

B

Verification keys retrieved by EMR to ensure provenance of IPS

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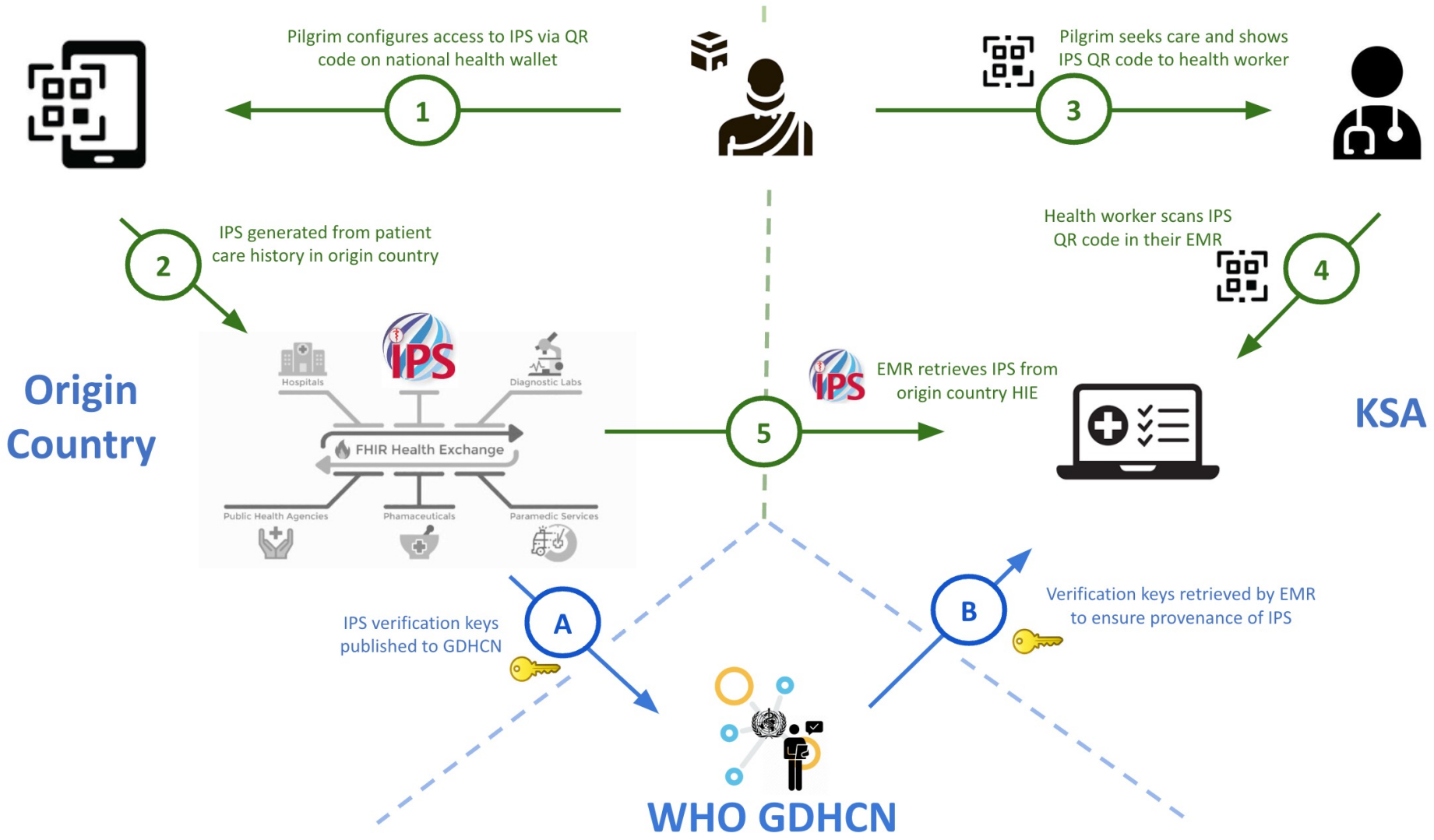
Pilgrims share health records using QR code on phone or ID badge



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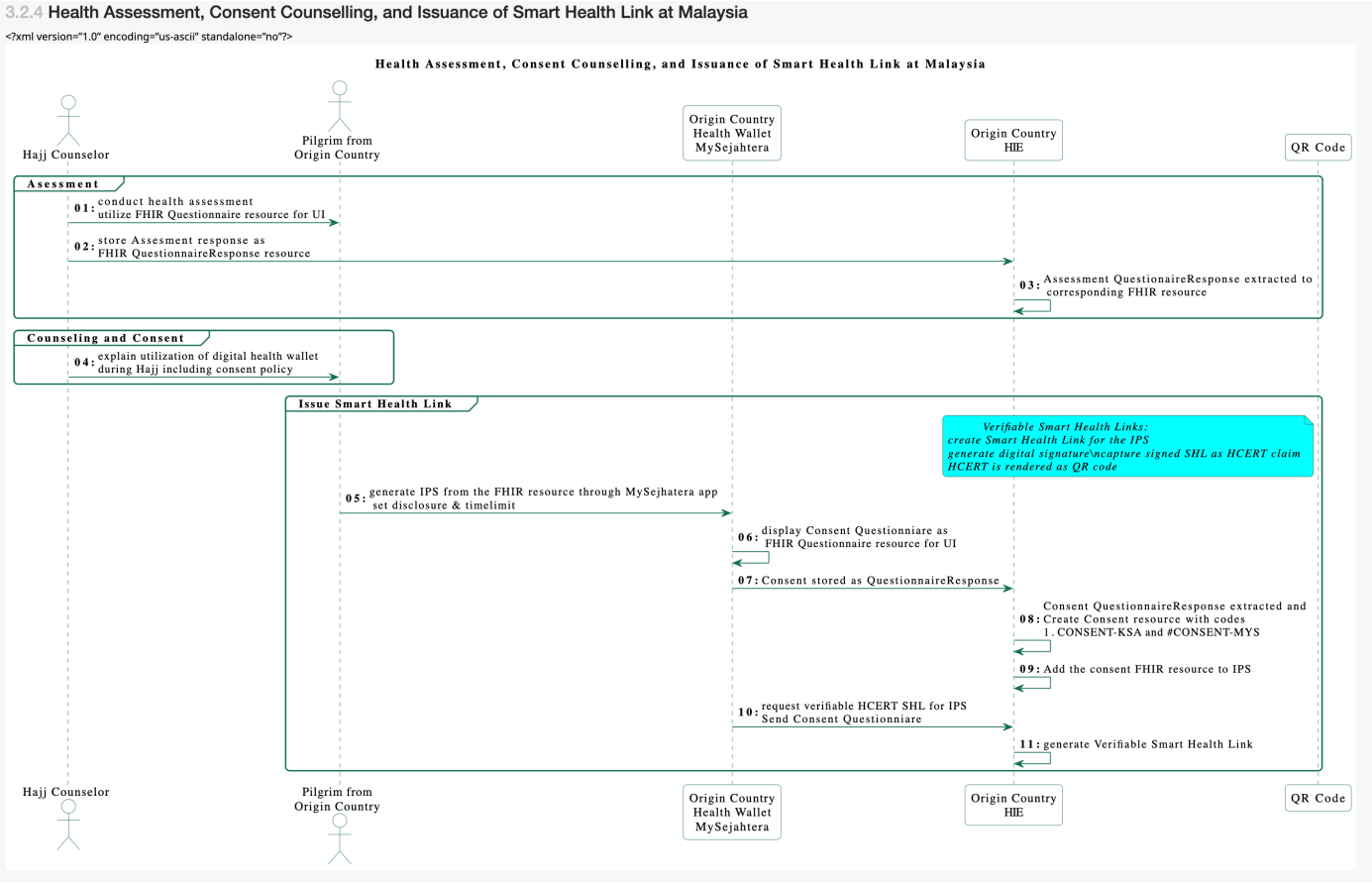
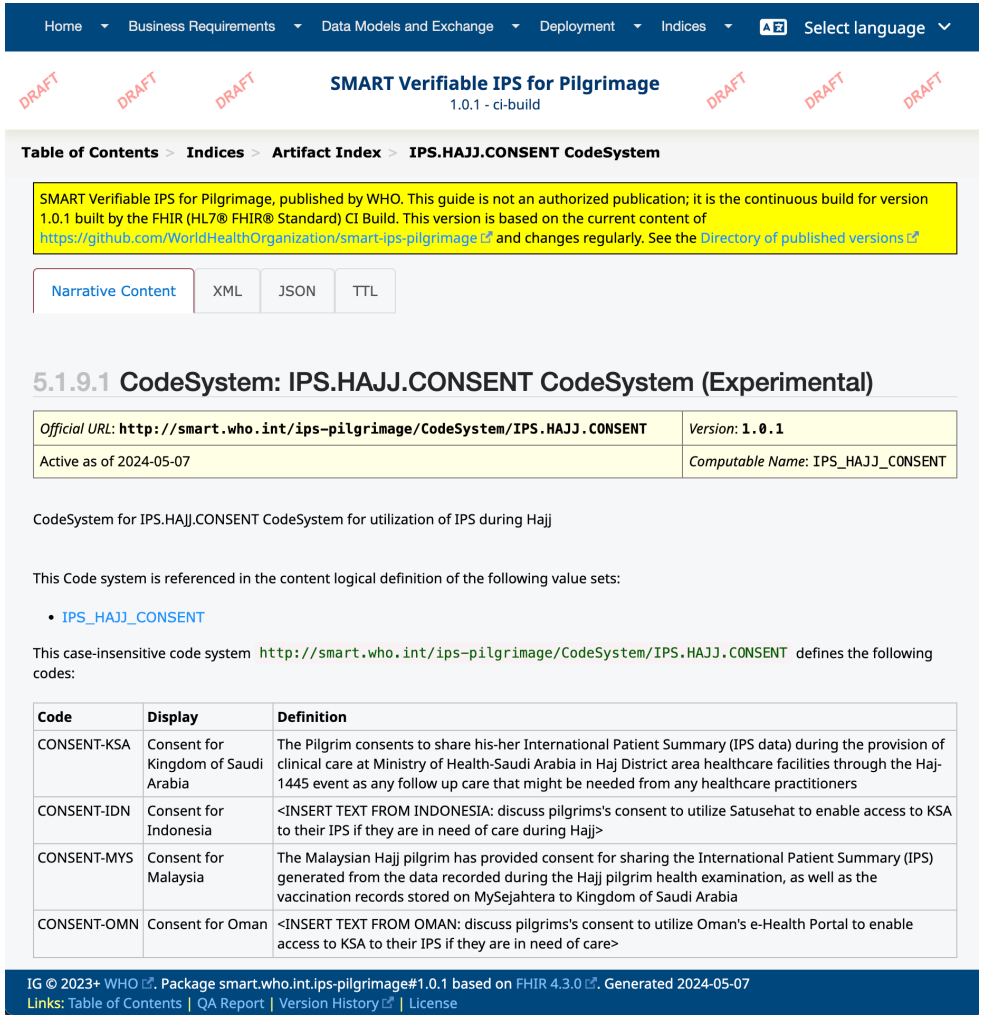
– Hajj consent management





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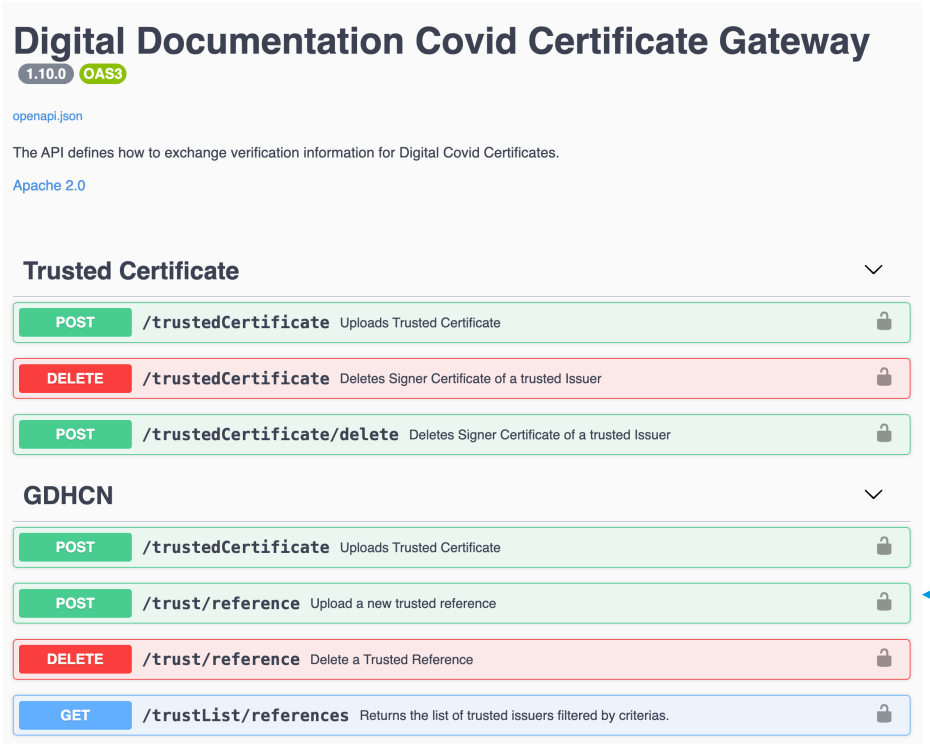
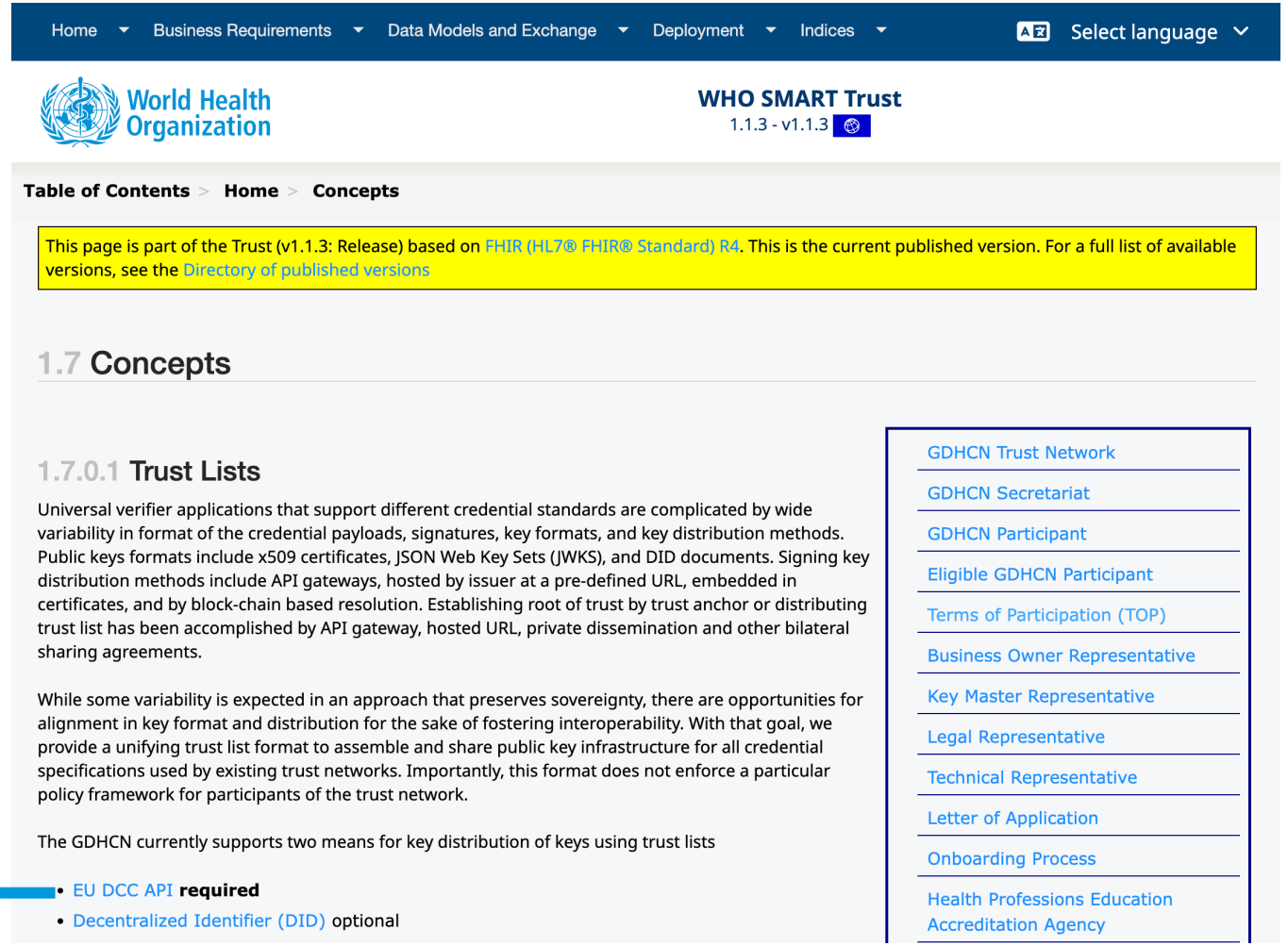
A publish keys – EU API

B retrieve keys – EU API, DID





IHE Digital Signatures

- IHE Digital Signature (DSG) profile currently supports XML digital signatures for document sharing
  - Leverage **XAdES**, an European Telecommunications Standards Institute (ETSI) for XML digital signatures
  - Detached and Enveloping signatures, not Enveloped

- Gap in IHE DSG for JSON documents (preferred by many HL7 FHIR vendors)
  - Will leverage JAdES, the JSON equivalent of XAdES

- Current work underway to clarify how the International Patient Summary (IPS) and other HL7 FHIR documents should be signed.

- Draft for Public Comment ready being prepared for release next week

- Potential to test at IHE Europe, Trieste, Italy June 3-7

XAdES extends the IETF/W3CXML-Signature Syntax and Processing specification [XMLDSIG] into the domain of non-repudiation by defining XML formats for advanced electronic signatures that remain valid over long periods and are compliant with the European "Directive 1999/93/EC of the European Parliament and of the Council of 13 December 1999 on a Community framework for electronic signatures" [EU-DIR-ESIG] (also denoted as "the Directive" or the "European Directive" in the rest of the present document) and incorporate additional useful information in common uses cases. This includes evidence as to its validity even if the signer or verifying party later attempts to deny (repudiates) the validity of the signature.

Key Links and Resources

Overview of the Global Digital Health Certification Network

https://www.who.int/initiatives/global-digital-health-certification-network

Onboarding process

https://smart.who.int/smart-trust/concepts_onboarding.html

Press release announcing the launch of the GDHCN and collaboration with the European Commission

https://www.who.int/news/item/05-06-2023-the-european-commission-and-who-launch-landmark-digital-health-initiative-to-strengthen-global-health-security

Secretariat email for onboarding

tng-secretariat@who.int

Secretariat email for technical support questions

tng-support@who.int

Technical specifications

https://smart.who.int/smart-trust

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Thank you

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