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Digital Health Diplomacy: Regional and Global Digital Health in a post-pandemic world

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What is Digital Health Diplomacy?

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What is diplomacy?

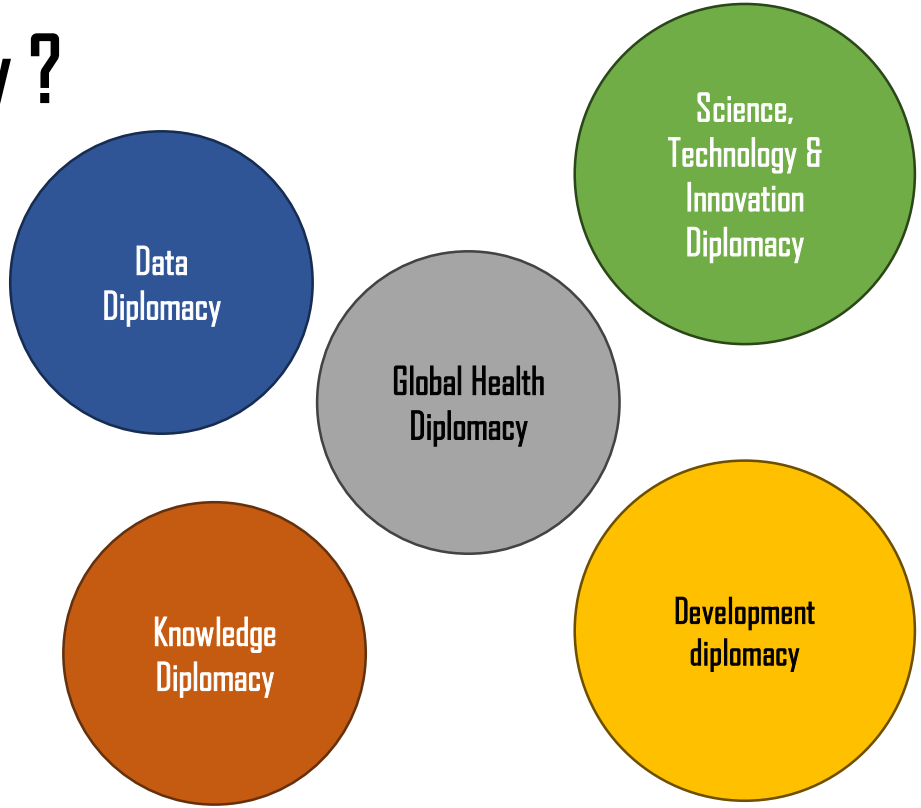
- "the profession, activity, or skill of managing international relations, typically by a country's representatives abroad"

Establishing Trust → Articulating shared Values & Norms → Common Aims, Objectives and Approaches → Formalise codified Agreements: Treaty or MOU's

What is Digital Health Diplomacy ?

Global Health Diplomacy

- the multilevel and multi-stakeholder negotiation processes that shape and manage the global policy environment for health…
- "a political change activity that meets the **dual goals** of improving global health while maintaining and strengthening international relations abroad…"



Digital Health Diplomacy (DHD)

A tripartite definition

- Diplomacy **for** digital health
- Digital health **for** diplomacy
- Digital Health **in** diplomacy

JOURNAL ARTICLE

"Digital Health Diplomacy" in Global Digital Health? A call for critique and discourse

Myron Anthony Godinho ✉, Henrique Martins, Najeeb Al-Shorbaji, Yuri Quintana, Siaw-Teng Liaw

Journal of the American Medical Informatics Association, Volume 29, Issue 5, May 2022, Pages 1019–1024, https://doi.org/10.1093/jamia/ocab282

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Godinho MA, Martins H, Al-Shorbaji N, Quintana Y, Liaw ST. "Digital Health Diplomacy" in Global Digital Health? A call for critique and discourse. Journal of the American Medical Informatics Association. 2022 Apr 13;29(5):1019-24.

Means and Ends…

Diplomatic objectives

- Facilitating greater South-South cooperation & North-South cooperation for DH
- Creating international interdependencies, such that we have more to gain from cooperation than competition or confrontation.

Digital Health objectives

- Establishing a "Global Digital Health Ecosystem"
- What does this constitute?

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A Global Digital Health Ecosystem requires…

'Socio↔Technical' Interoperability

(Is DHD an interoperability problem?)

Technical	Syntactic & Semantic	Organisational & Operational	Regulatory	Social
Global Electronic Health Record	Language (e.g., ICD-11, HL7)	Service: Cross-border telehealth (e.g., Virtual models of care)	Codes of conduct: Policy & legislation (e.g., GDPR, PIPL)	Trust, Interoperable Values, Norms ↓ Aims, Objectives, Approaches

JOURNAL ARTICLE

Digital vaccine passports and digital health diplomacy: an online model WHO simulation FREE

Myron Anthony Godinho ✉, Siaw-Teng Liaw, Chipo Kanjo, Heimar F Marin, Henrique Martins, Yuri Quintana

Journal of the American Medical Informatics Association, Volume 30, Issue 4, April 2023, Pages 712–717, https://doi.org/10.1093/jamia/ocac126

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A Global Electronic Health Record (Global-EHR)

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HL7 Europe Foundation, Board of Directors

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Agenda

- Why and how for a Global EHR
- What is the G-EHR ?
- First steps – Vaccination and International Patient Sumary (on FHIR)
- Next steps:
  - Regional /subregional communities of X-border Sharing and joint DH Capacity-building
  - Standard alignment
  - The Eurorean EHRxFormat as a legal/technical/sociological construct and contribution
- Global Treaty on Digital Health

Why and how on Global HER?

- A global electronic health record (G-EHR) is achievable with focus, concrete steps, value creation and determination to explore certain elements.
- To reach a truly global digital healthcare system, however, we need to work much more profoundly and more decisively on real worldwide cross-border eHealth services, like a global ePrescription system or sharing of minimum sets of data (e.g. the ISO International Patient Summary) and progressively bigger components, such as a vaccination passport, summary or e-cards. For example, medical devices (e.g. insulin infusion pumps, or non-invasive home ventilators) are increasingly globally produced and standardised, yet, the information that they require and generate seems to get ‘chained’ to local, regional or national health systems, in turn, chaining citizens down to their institutions, often their homes. People fear to travel to a remote location where access to their device or health data is not possible. They know healthcare may not be equally safe, which makes them feel unsafe to travel and ‘chained’.
- **Digital Health Diplomacy** refers to the concentrated international efforts towards supranational interoperability in eHealth/Digital Health. These may include international agreements for mutual health data transmission, recognition of information systems or common approaches to the use of international standards.

What is the Global HER?

- A global electronic health record (G-EHR) is not something utopic. It requires focus, concrete steps, value creation and determination to explore the following elements.

  1) Creating a worldwide voluntary patient and health professionals' registries

  2) Setting up a global regime/governance forum for the advancement of agreements and common creations

  3) Using a common exchange format (possibly inspired in the European HER exchange format?

The following worldwide cross-border eHealth services as initial steps:

1. Global ePrescription system
2. Global sharing of minimum sets of data (for example, the ISO International Patient Summary) and, progressively, bigger components, such as vaccination passports/summary/e-cards
3. exploring Globally with the EU European EHRxFormat
4. Internationally approved minimum information sets for advanced data-rich medical devices
5. Internationally approved and maintained digital information leaflets for prescribed drugs.

Global Treaty on Digital Health

Enacting legally binding agreements grounded in international treaties of voluntary participation, on three dimensions:

a. Global rules for telehealth
b. Global rules for the detailed reporting and information exchange in cross-border health threats
c. Decisions on the implementation and governance of concrete digital health services.

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Global Brazilian Experience

Prof Heimar F Marin

Alumni Professor, UNIFESP

Editor-in-Chief, IJMI, Elsevier

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Figure 2 – Schematic representation of RNDS as a national platform for innovation, information and digital healthcare services

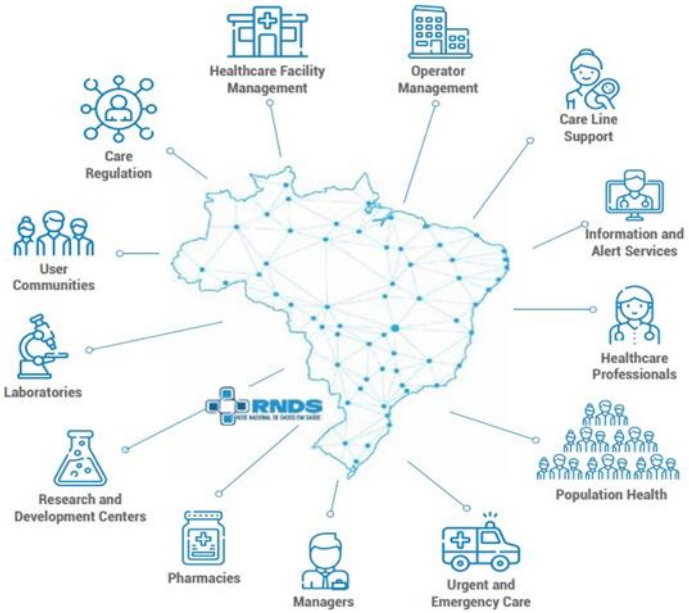

Figure 3 – Seven priorities identified

1. Governance and Leadership for ESD

To ensure that ESD28 is developed under the leadership of the Ministry of Health but, at the same time, is able to incorporate the active contribution of external stakeholders who participate in collaborative platforms.

2. Digitization of the 3 Levels of Care

To induce the implementation of policies for the digization of healthcare systems, accelerating the adoption of electronic health records and hospital management systems as an integral part of healthcare services and processes.

3. Support for Improving Healthcare

To make RNDS support the best clinical practices, through services, such as telehealth, and apps developed in MS and also other applications that are developed by the collaboration platform.

4. The User as Protagonist

Engagement of patients and citizens, to promote the adoption of healthy habits and the management of their health, their family and their community, in addition to assisting in the construction of the information systems they will use.

5. Human Resources Education and Training

To train healthcare professionals in Health Informatics and ensure the recognition of Health Informatics as a research area and Health Informatician as a profession.

6. Interconnectivity Ecosystem

To allow the National Healthcare Data Network to enhance collaborative work in all healthcare sectors so that technologies, concepts, standards, service models, policies and regulations are put into practice.

7. Innovation Ecosystem

To ensure that there is an Innovation Ecosystem that makes the most of the Health Interconnectivity Ecosystem, establishing itself as a large open innovation laboratory, subject to the regulations, standards and policies established through priority 1.

Source: Images - Shutterstock ©

National Healthcare Data Network

INTEGRATOR

- RIA
- REL
- RAC
- SA
- CMD
- RA
- OTHER

APPLICATION LAYER

- app Conecte SUS Cidadão
- app Conecte SUS Profissional
- app Conecte SUS Gestor

SERVICE LAYER

- MongoDB 'PDFs'
- ehr-bff
- ehr-search gateway
- govbr proxy
- ehr-auth

EHR SERVICES

- ehr-validator
- corp config server
- Elastic 'cache'
- EHR Data Services

DATABASE LAYER

- Federal instance (Timeline)
- Regional instances (Full doc)

EVENT BUS

- Full doc FHIR
- Enrichment stream
- TimeLineItem
- evts-logger
- bus refresh

RabbitMQ

CONSUMER

- elastic
- other future apps

Legal Regulation-Brazilian General Data Protection

- Art. 1 This Law provides for the processing of data, including by digital means, by a natural person or a legal entity of either public or private law, with the purpose of protecting the fundamental rights of freedom and privacy and the free development of the personality of the natural person. Sole paragraph. The general provisions of this Law are of national interest and must be observed by the Federal Union, States, Federal District and Municipalities. (by Law No. 13,853/2019)
- Art. 2 The discipline of personal data protection is grounded on the following: I – respect for privacy; II – informational self-determination; III – freedom of expression, information, communication and opinion; IV – inviolability of intimacy, honor and image; V – economic and technological development and innovation; VI – free enterprise, free competition and consumer defense; VII – human rights, free development of personality, dignity and exercise of citizenship by natural persons.
- Art. 3 This Law applies to any processing operation carried out by a natural person or a legal entity of either public or private law, irrespective of the means, the country in which its headquarter is located or the country where the data are located

Vaccination

- Construction of the Immunization Component of the Brazilian IPS - (International Patient Summary): mapping of local vaccines terminologies to SNOMED-IPS
- RNDS has up to March 2023, more than 1.2 billion immunization registries and 66 million COVID-19 exams.
- Brazilian Codesystems for immunization as described for RNDS (https://simplifier.net/redenacionaldedadosemsaude/imunobiolgico), as well as SNOMED IPS were uploaded to an open-source terminology server (Open Concept Lab).

Source:de Faria Leao B 1 , de Assis Molla M 1 , Macedo do Amaral Costa I 1 , Matos R 2 , Neves G 2 , Gaete R 2 , Xavier dos Santos P 2 , Dalbosco Gadenz S . Construction of the Immunization Component of the Brazilian IPS - (International Patient Summary): mapping of local vaccines terminologies to SNOMED-IPS. Abstract Preprint. Digital Portfolio, Social Commitment Board, Hospital Sirio Libanes, São Paulo SP, Brazil, Innovation and Health Informatics Coordination, Digital Health Secretary, MOH Brazil, Brasilia DF, Brazil, Project and Innovation Coordination, Primary Care Secretary, MOH Brazil, Brasilia DF, Brazil. 2023.

Telehealth

- Telemedicine: Resolution # 1643. CFM RESOLUTION No. 2.314, OF APRIL 20, 2022”- Defines and regulates telemedicine, as a form of medical services mediated by communication technologies.
- Telenursing: *Resolution 696/2022. The practice of Telenursing encompasses Nursing Consultation, Consulting, Monitoring, Health Education and Acceptance of Spontaneous Demand, mediated by Information and Communication Technologies (ICT) and in accordance with the General Data Protection Law (LGPD). The issuance of prescriptions and the request for remote exams must be done using an electronic signature, through certificates and keys issued by the Brazilian Public Key Infrastructure (ICP-Brasil).*
- Between 2020 and 2021, more than 7.5 million consultations were performed by more than 52.2 thousand physicians via telemedicine in Brazil. 87% of them were the so-called first appointments. Just over a year after approval by Congress, Law 13,989 already has impacts on the health system. (https://fbh.com.br/resultados-da-telemedicina-no-brasil)

The Brazilian National Healthcare System and Telehealth

- Telemedicine in SUS works both from local and national initiatives, such as the Telessaúde Brasil Redes Program. This happens because the spheres that make up the Unified Health System have autonomy to carry out actions at the municipal, state or regional level.
- Only TeleSUS, the teleconsultation service of the Unified Health System, served more than 1 million people in April 2020.
- Of these, 471,600 were assessed for coronavirus symptoms and around 13,000 were referred for pre-clinical telecare with doctors and nurses

https://telemedicinamorsch.com.br/blog/telemedicina-sus

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Middle Eastern and North African Experience

Prof Najeeb Al-Shorbaji

President, eHealth Development Association, Jordan

President, Jordan Library and Information Association
President, MENAHIA
Vice-president of IMIA
Director, Knowledge, Ethics and Research, WHO/HQ (Retired)

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MENAHIA

- The Middle East and North Africa Health Informatics Association is part of IMIA representing the region;
- MENAHIA was established in 2018 aiming to further the application of informatics methodology and information technology in the field of health care and biomedical research in the region;
- Using and following international standards for health informatics and achieving universal health coverage through ICT;
- Working with the WHO regional Office in Cairo.

MENAHIA

- The Middle East and North Africa is very diversified region (socially, economically, linguistically and health systems structure);
- A number of countries in the region has started to introduce laws and regulations regarding health technologies in general and telehealth in particular;
- The number of countries that teach "health/medical informatics" at universities and higher education institutions;
- Non-government organizations (NGOs) in digital health, eHealth or tele… play a major role in the region.

MENAHIA

- Medical ethics (taught in medical schools and/or imported) are mixed with ethical practices in the region, including Islamic ethics;
- A number of countries in the region di attract patients from other countries for treatment especially because of excellence or prices;
- Almost all countries do import information technology for health from developed countries (Europe, Canada and USA);
- The use of information technology for health is growing exponentially in the region with a challenge of training of older generation.

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The Western Pacific Experience & Building capacity for Digital Health Diplomacy

Prof Teng Liaw

Emeritus Professor, School of Population Health

UNSW Sydney

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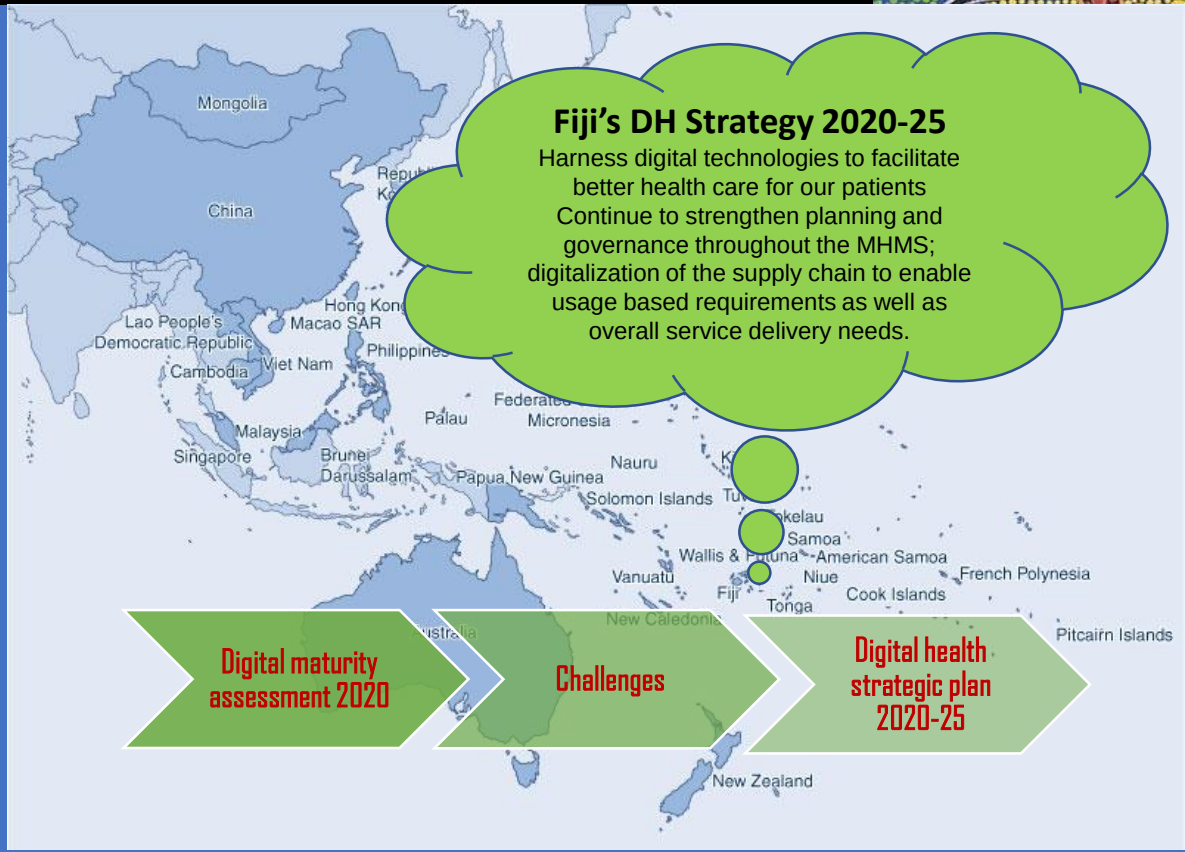
Pacific Island Countries' Digital Health story

- Pacific Island Countries (PICs) are at different stages in their individua digital health journey.
- Part of the problem is navigating the available digital health resources – many are theoretical, detailed, lengthy, and difficult to use.
- PICs face similar challenges in implementing digital health:
  1. *hard-to-reach & small populations,*
  2. *climate change with recurrent disasters,*
  3. *reliance on other countries for imports of ICT,*
  4. *inadequate telecommunication infrastructure, and*
  5. *human resource constraints.*

Asian Development Bank 2021.



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Tuvalu's "very small aperture terminal" dish project

- Enabled P2P communication & teamwork & opportunities for staff education;
- Improved access & reduced domestic & overseas referrals;
- Vulnerable to broader system disruptions; and
- DH implementation has been hampered by misalignment between system design and the contextual realities.

VSAT is a tool not the solution!

TUVALU'S MISSION

VSAT will provide foundational infrastructure on which digital health solutions designed to address various health systems and service delivery challenges may be implemented

Japan
Hong Kong SAR
Macao SAR
Lao People's Democratic Republic
Philippines
Cambodia
Viet Nam
Northern Mariana Islands
Guam
Marshall Islands
Federated States of Micronesia
Palau
Malaysia
Singapore
Brunei Darussalam
Papua New Guinea
Nauru
Kiribati
Solomon Islands
Tuvalu
Tokelau
Samoa
American Samoa
French Polynesia
Vanuatu
New Caledonia
Australia
New Zealand

Digital health strategy 2020-23

Telemedicine (VSAT) as starting point

Value for money

Borgelt K et al PLOS Digit Health 2022.
https://doi.org/10.1371/journal.pdig.0000109

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Australia's telehealth story

The potential barriers to telehealth include

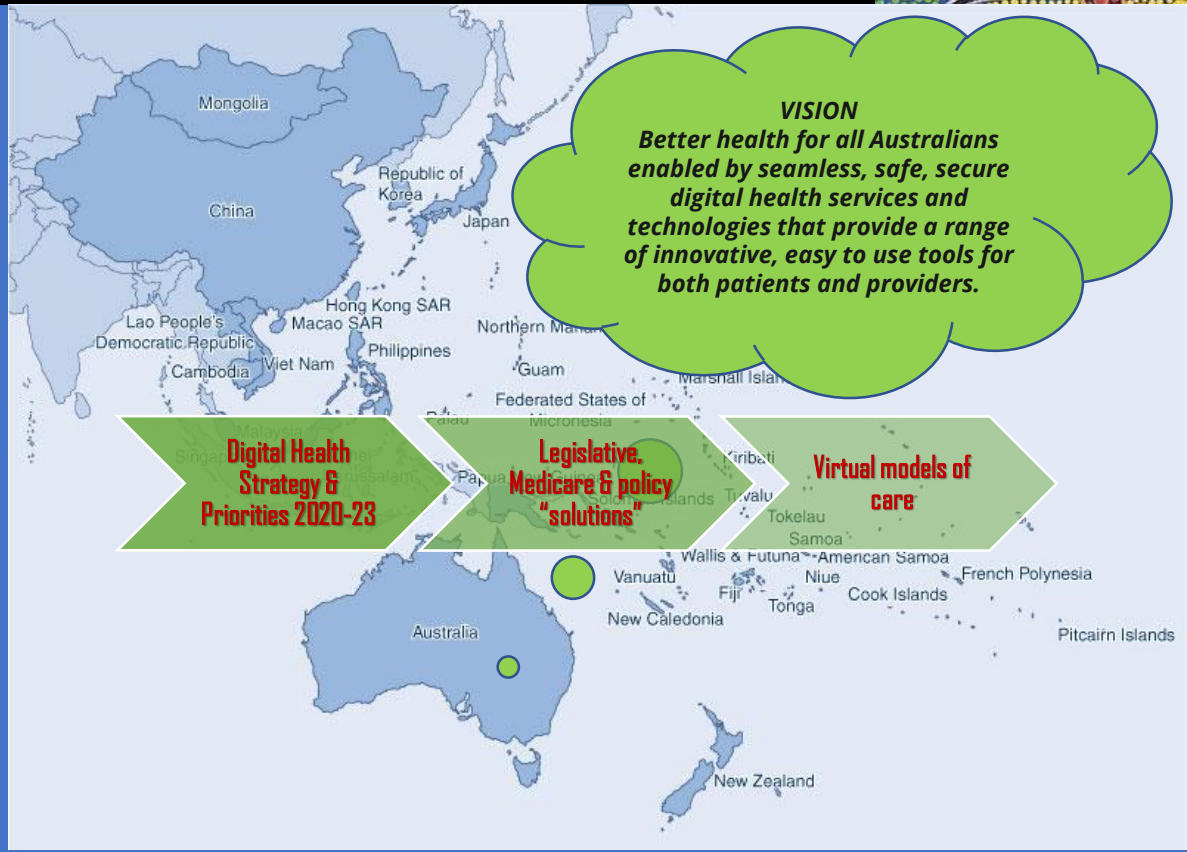
- lack of technological infrastructure,
- citizen accessibility issues,
- limitations in performing physical examination,
- concerns about privacy and confidentiality.

Telehealth mainly used for chronic condition management, existing patients, and medication management.

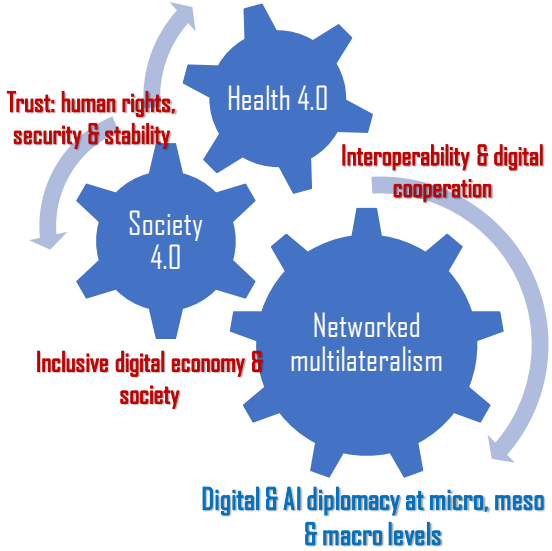
Digital divide: 1 in 4 GPs in Australia do not have technical capability to provide video-consultations.

This subnational heterogeneity in digital maturity is universal for health professionals, organisations & communities in Asia Pacific.

Digital health diplomacy is needed to ensure "no one is left behind"!



Digital health diplomacy - some challenges



1. *Infodemic: misinformation & disinformation*
2. *Fragmentation & information silos*
3. *Ageing population & worried well*
4. *Increasing socioeconomic & digital inequity*
5. *Decreasing trust of public & political institutions*
6. *Climate change and environmental degradation*
7. *Humanitarian crises e.g. wars (& geopolitics)*
8. *COVID-19*

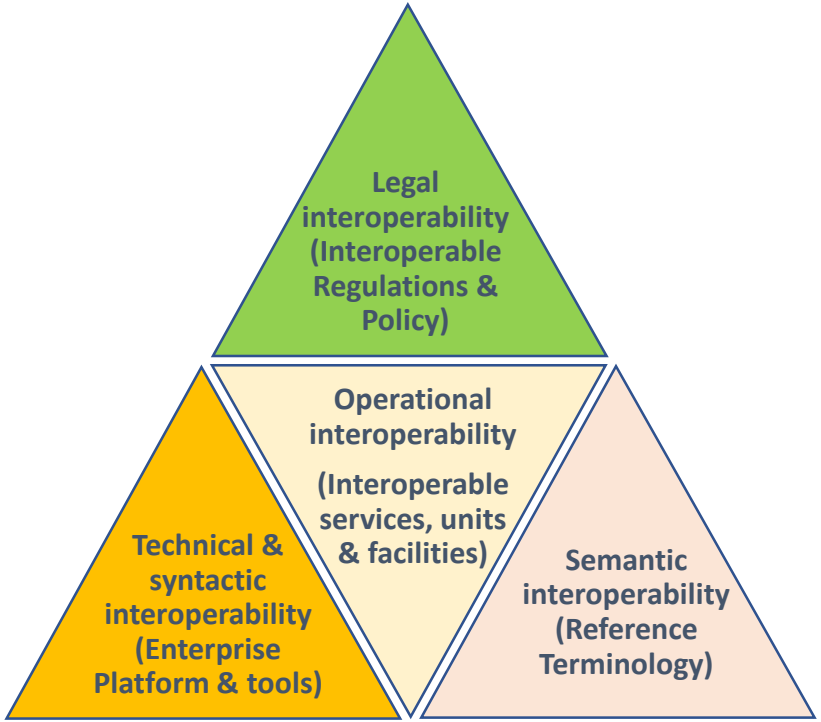
Digital health evolving like the Tower of Babel!

Interoperability is sociotechnical

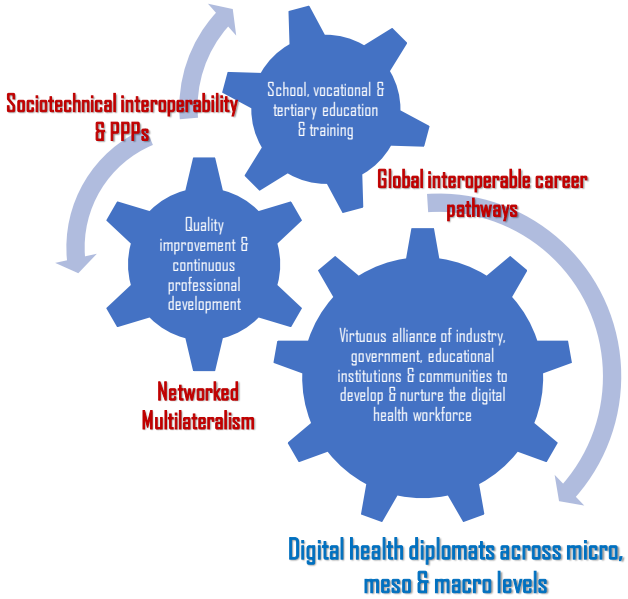
Interoperability applies across the micro-meso-macro levels of the enterprise, supporting

- integrated health services
- integrated management & governance
- stakeholder collaboration & cooperation
- secure & ethical sharing of tools & data
- reusability with efficiencies & improved workflow

"Interoperability by design"



Training the digital health diplomacy workforce



1. Enterprise digital capability maturity:
   - Micro: individual digital competencies
   - Meso: organisation & enterprise digital maturity
   - Macro: health system digital maturity
2. Competency & maturity indicators for the essential digital foundations
   - Enterprise architecture and interoperability
   - Data quality and interoperability
   - Evidence-based systems, tools, decisions & care
   - Learning health organization & system
3. **Digital health diplomacy requires a shared vocabulary & reference terminology**
   - ***ICD-11 + WHO Classification of DH Interventions??***

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Digital Health Diplomacy

- ...is a fast- evolving, multi-faceted concept with real implications for efforts to establish a "Global Digital Health Ecosystem"
- What do you think makes a 'good ' Digital Health Diplomat?

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Questions!

- We welcome collaborators for our next paper, to further demonstrate and explore DHD!
  - Technical and regulatory examples of DHD
  - New approaches and perspectives on DHD
- Are YOU a Digital Health Diplomat? Let us know!

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