Community of Interoperability Labs:

Pragmatic Approach to Achieving Interoperability

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Disclosures

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Overview

Proposes a practical approach to achieving interoperability within countries and across borders through a network of eHealth advocates in South and Southeast Asia

Problem Statement

During the Covid-19 pandemic, it was difficult to get comparable data across states.

No formally established protocols for such sharing prior to the pandemic

Not clear who are responsible for securely exchange data

WHILE THERE ARE TECHNICAL STANDARDS FOR INTEROPERABLITY like HL7 FHIR), PEOPLE INTEROPERABILITY IS AN IMPORTANT PRE-REQUISITE TO DATA INTEROPERABILITY

About AeHIN

The Asia eHealth Information Network, an informal peer learning network, was created by WHO in 2012 to help countries with their digital health development. AeHIN proposed that an interoperability laboratory is an effective way to build consensus and understanding

Interoperability at AeHIN

2011: Identified interoperability as difficult and elusive

2012: Hosted the launch of the WHO-ITU National eHealth Strategy Toolkit

2015: Hosted a side meeting at the Global Health Research Forum in Manila - agreed to create interoperability labs

2017: Launched the Mind the GAPS framework in Naypyidaw, Myanmar

2017: Launched the Standards and Interoperability Lab Asia at the University of the Philippines Manila

2018: Launched the Community of Interoperability Labs or COIL (6 countries) in Colombo, Sri Lanka

2022: Convened the COIL at the APAMI 2022 general conference in Taipei October 15, 2022. COIL members agreed to adopt and develop the AeHIN framework "Mind the GAPS, Fill the GAPS" as its message for governments to focus on their Governance, Architecture, People/Program Management, Standards and Interoperability [3]. COIL further expounded the GAPS framework by identifying four domains of cooperation for interoperability labs:

1. ***Knowledge sharing on Governance*** **- Document and formalize country health data governance standards and practices in line with local legislation (data custodianship & privacy legislation, indigenous data sovereignty, etc.) and their alignment to regional and global initiatives**
2. ***Knowledge sharing on Architecture*** **- Identify and formalize reusable patterns (knowledge) between regions and communities (and between countries) relating to the International Patient Summary (IPS), health data governance, and healthcare delivery services [4]**
3. ***Knowledge sharing on People and Program Management*** **- Document and formalize the healthcare service delivery landscape in each country, region, city, and local community (services, collaborations, staff, funding models, insurance/payment integration, etc.)**
4. ***Knowledge sharing on Standards and Interoperability*** **- Develop localized protocols by extending internationally-agreed frameworks**

2022: COIL meeting in Taipei

Eight interoperability labs participated and seven presented their current state and needs based on the GAPS framework and the four domains of cooperation.

With regards to domain #2 (*Knowledge sharing on Architecture*) the HL7 International Patient Summary was selected as the AeHIN Core Regional FHIR profile. The discussions during the conference are detailed in Table

2023: COIL meeting in Kuala Lumpur

Commence training on FHIR % SIL-Thailand

Support scholarship of 80 AeHIN members on official HL7 FHIR proficiency

Support the reimbursement of successful exam takers of HL7 FHIR certification

New Zealand (ANZIL)

The Aotearoa New Zealand Interoperability Lab (ANZIL) adopts S23M's model-oriented domain analysis and engineering (MODA + MODE) methodology for evolutionary design, and leverages S23M's Care Platform, which provides a shared formal meta-model and terminology for these domains [5]. The resulting information structures (model instances) can be made freely accessible to all COIL labs and all AeHIN members via a suitable Open Source license. After an initial technology investment on the first stage of the initiative, expenses shift to operational costs for use of the Care Platform Software-as-a-Service (SaaS) subscription service.

Philippines (UPM SILab)

The University of the Philippines Manila Standards and Interoperability Lab (UPM-SILab) focuses on supporting the needs of the government (Department of Health and PhilHealth) by formulating a training program that enables policymakers to convert their narrative policies into their computable representations following the WHO SMART guidelines [6]. In 2022, UPM-SILab helped create the Fast Healthcare Interoperability Resources (FHIR) for the national viral hepatitis initiative and its accompanying implementation guide. In 2023 and with support from the Commonwealth Scientific and Industrial Research Organisation (CSIRO), UPM-SILab will implement Ontoserver to manage the Philippine terminology.

Thailand

The Standards and Interoperability Lab Thailand (SIL-TH) will be utilizing Ontoserver and together with UPM-SILab will explore different approaches for regional-level governance in terminology services. In addition, SIL-TH has been working on FHIR profiles for monitoring the active medications of patients.

Taiwan

The Standards and Interoperability Lab Taiwan (SIL-TW) will provide overall information architecture development experience, including information engineering, architecture design, and code adoption experience in the integration of health insurance and medical information. SIL-TW can create personalized information integration mechanisms and data connection application technology through an integrated information architecture. In addition SIL-TW can leverage Taiwan's strength in the collection, integration, cleaning and value-added applications of medical data.

Hong Kong

As a stakeholder in Hong Kong's e-health sector and the service partner of Hong Kong's electronic Health Record Sharing System (EHRSS) since 2013, eHealth Research Institute (EHRI) will partner with different experts and regional and international organizations to establish the Health Data Interoperability & Incentivization Lab (HDIIL), also a member of the COIL. Though Hong Kong has developed the Hospital Authority's Clinical Management System since 1990 and has developed and implemented a territory-wide public-private electronic Health Record Sharing System since 2016, numerous limitations and challenges remain. Certain health data between public and private sectors are inter-accessible but not interoperable. EHRI welcomes all partners join together to establish the patient-oriented, interoperable and co-benefit eHealth initiative.

Sri Lanka

Sri Lankan Standards and Interoperability Lab (SIL-LK) is working towards setting up a National Summary Electronic Health Record (NEHR) by making the three predominant Electronic Health Records in the state health sector institutions interoperable.

Sri Lanka has published the National Digital Health Architecture Blueprint and National Digital Health Guidelines & Standards defining the minimum dataset to be submitted by EMRs to the NEHR. Sri Lanka is also in the process of developing interoperability guides with the Transport Layer and Client Registry guide documents in draft state circulated for feedback.

In close collaboration with the Ministry of Health Sri Lanka, SIL-LK has identified the necessary FHIR resources for NEHR data exchange and is developing the Sri Lanka Core FHIR Profiles. The profiling exercise has already completed the Patient, Provider, Facility, and Location profiles.

It is also working on setting up foundational digital health services using open source components such as the HapiFHIR server, OpenHIM interoperability layer and Open Concept Lab as the terminology server in support of the NEHR objectives.

Sri Lanka is planning a series of Connectathon events to build the capacity of FHIR based interoperability among EMR developers and implement data exchange in a staggered manner starting with Patient Demographics.

Lao PDR

The Standard and Interoperability Lab Laos (SIL-Laos) will play a pivotal role in driving forward the evolution of interoperability standards for digital health systems, fostering an atmosphere conducive to enhanced information exchange, and producing and sustaining interoperable digital health solutions. It will enable the implementation of the minimum electronic medical record (EMR), ICD10 standards, as well as the National Health ID. In the short term, SIL-Laos will facilitate the adoption of enterprise architecture through The Open Group Architecture Framework (TOGAF), establishing the necessary infrastructure, building capacity and validating data exchange between current systems like EMR, DHIS2, reimbursement, M-supply, and so on.

Upcoming activities 2023

July 1: COIL for pandemic preparedness

Sept 29: Philippine Datathon with MIT Critical Data

October 3: Thailand Datathon with MIT Critical Data

Nov 6-9 (Jakarta): AeHIN General Meeting and Interoperability Demo

Nov 30: Smart City Taipei

Conclusion

Interoperability, while desirable, is a very complex endeavor.

To simplify the process, AeHIN developed the "Mind the GAPS, Fill the GAPS" framework for easy remembrance of the important components.

Member labs of the newly created AeHIN COIL have adopted and extended the GAPS framework to guide collaboration and build trust among members in the region [7].

By creating a learning network of these country interoperability labs, knowledge dissemination is hastened and in turn, the potential for regional interoperability is made possible.