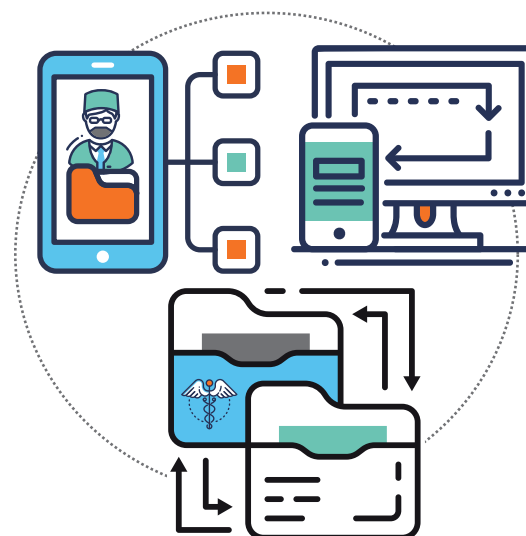


FAST HEALTHCARE INTEROPERABILITY RESOURCES (FHIR)

A STANDARD FOR EXCHANGING DATA BETWEEN HEALTHCARE SYSTEMS

The increasing need for data sharing across the care continuum as a means to improve health outcomes has been further accentuated by the COVID-19 pandemic forcing heightened levels of coordination and collaboration. This requires rapid and reliable exchanges between systems. Interoperability between systems has become a necessity in health care. One standard to do this, Fast Healthcare Interoperability Resources or FHIR, is taking interoperability to the next level for improved clinical decisions, care coordination and transparency.



WHAT IS FHIR?

The **FHIR standard defines how healthcare information can be exchanged** between different computer systems regardless of how it is stored in those systems. It allows healthcare information, including clinical and administrative data, to be available securely to those who have a need to access it, and to those who have the right to do so for the benefit of a patient receiving care. The standards development organization HL7 (Health Level Seven) uses a collaborative approach to develop and upgrade FHIR (HL7-FHIR).

FHIR is based on internet standards commonly used outside of healthcare by a range of industries. These include, in particular, the **Representational State Transfer (REST) approach**, which explains **how to easily exchange individual information packets** (called resources). Resources are the nouns of the Web - they describe any object, document, or thing that you may need to store or send to other services (systems). **FHIR dramatically reduces the barriers to entry** for new software developers to serve healthcare needs by implementing existing requirements and technologies already familiar to software developers.

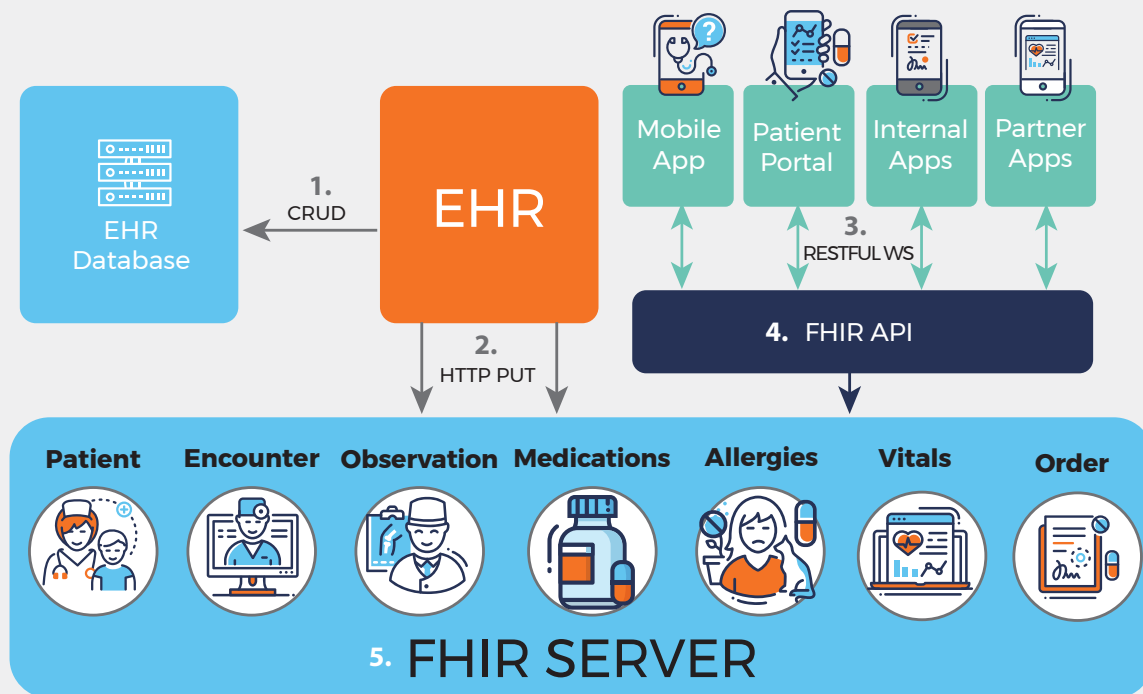
HOW DOES FHIR WORK?

The main aim behind the development of FHIR is to create an accurate framework that can adapt resources and can be interpreted by any system. In that way, FHIR can be used in different applications, such as mobile applications, cloud communications, EHR-based data sharing, and among institutional healthcare providers.

FHIR is built upon the concept of “resources” – the basic units of interoperability which are used as building blocks that can be incorporated in existing systems to try to resolve clinical, administrative and infrastructural problems in healthcare.

The resources must have a common definition and method of representation, a common set of metadata, and a human-readable part. FHIR is designed specifically for web applications and provides resources built on the XML, JSON, HTTP, Atom, and OAuth structures.

FHIR provides software development tools and resources for administrative concepts such as patients, providers, organizations and devices, as well as various clinical concepts including problems, medications, diagnostics, care plans, and financial issues, among others.



1. CRUD: Create, Read, Update, and Delete are 4 functions of persistent storage

5. FHIR SERVER: A server with software that implements the FHIR APIs and uses FHIR resources to exchange data.

2. HTTP PUT: Puts a file or resource at a specific Uniform Resource Identifier (URI), and exactly at that URI. If there's already a file or resource at that URI, PUT replaces that file or resource. If there is no file or resource there, PUT creates one.

3. RESTFUL - WS: Web services that conform to the REST architectural style, called RESTful Web services, provide interoperability between computer systems on the internet.

4. API: Application Programming Interface is a computing interface which defines interactions between multiple software intermediaries. It defines the kinds of calls or requests that can be made, how to make them, the data formats that should be used, the conventions to follow, etc.

BENEFITS OF FHIR TO VIET NAM

- A strong focus on **fast and easy implementation**; developers have reported they experienced simple interfaces being implementable in a single day.
- **Free to use** with no restrictions.
- Support from **major vendors** including Apple, Microsoft, Google, Epic, Cerner, and most other EMR vendors.
- Many **free, online, and downloadable tools**, including reference servers and implementation libraries.
- Many public examples available to help **kick-start development of new applications**.
- Interoperability **out-of-the-box**. Base resources can be used 'as is' but can also be adapted for local requirements (the process of Profiling).
- An evolutionary development path from earlier HL7 healthcare standards, Version 2 and Clinical Document Architecture (CDA), enabling them to **co-exist and leverage** each other.

- A **strong foundation in web standards** including XML¹, JSON², HTTP³, and OAuth⁴.
- Concise and **easily understood** online specifications.
- A **human-readable** serialization format for ease of use by developers.
- A **global community** to assist implementers.

FHIR has been used by healthcare technology implementers around the globe, including the payer community, attracted by its ease of use since it was originally launched in 2012. This has resulted in a broad online community that is supported by web-accessible specifications, software, servers, and libraries built by the community. Other healthcare standards organizations, such as IHE (Integrating the Healthcare Enterprise), also use FHIR. In 2017, the eHealth Administration in collaboration with the Asian Development Bank organized the first regional workshop on HL7-FHIR in Viet Nam.

WHAT IS HAPPENING NOW

With support from the **UK government's Better Health Programme**, the **Ministry of Health** has acquired a licence for SNOMED CT. It is currently undergoing a rigorous evaluation process to make it fit for use in Viet Nam.

The **Better Health Programme Viet Nam** team in collaboration with the eHealth Administration (EHA) is developing the piloting plan for SNOMED CT in several health facilities. Results will be disseminated in 2021 with recommendations for scaling up.

SNOMED covers symptoms, interventions, laboratory tests and results, family history, diagnosis, vaccine administration regimes, anatomy, organisms, devices etc.; it provides content for all healthcare professions and all healthcare specialties





THE BETTER HEALTH PROGRAMME (BHP) IN VIETNAM

The Better Health Programme (BHP) is funded by the UK government's Foreign, Commonwealth & Development Office (FCDO) to collaborate with partner countries to strengthen local health system structures, processes, governance and capacities to improve quality of care and address the growing burden of non-communicable diseases (NCDs). In Vietnam, BHP is delivered by FHI 360 with management support from PwC. BHP Vietnam's assistance focuses on strategies to counter NCDs, education and training, and digital health initiatives.

In relation to digital health, BHP Vietnam is providing technical support to the Ministry of Health of Vietnam to build the digital health ecosystem, including the application of international standards for healthcare data exchange - Fast Healthcare Interoperability Resources (HL7 FHIR) among essential health information systems, and the introduction of the Systematised Nomenclature of Medicine - Clinical Terms (SNOMED CT) into the health service delivery system for effective clinical information exchange and interoperability.

How do I get more information?



Nguyen Thi Thu Nam

Better Health Programme,
FHI 360.

Email:
nnam@fhi360.org

Tran Thi Dieu Trinh

Electronic Health Administration,
Ministry of Health.

Email:
trandieutrinh.mta@gmail.com

Footnotes

1. *Smart Health - The latest National Plan approved in 2019 (Decision 4888) aims to achieve a comprehensive Smart Healthcare System within the next 5 years.*

This factsheet was prepared by FHI 360/PwC with funding from UK Aid through the Prosperity Fund Better Health Programme in Vietnam. It is intended for use in its original form as a freely-available public resource.

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