IHE 101: Reading an IHE Profile

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IHE Terminology

IHE Profiles

Describe specific solutions to interoperability problems by specifying how **"Actors"** use standards to address a specific healthcare use case. Each IHE Profile assigns specific requirements to specific actors.

IHE Actors

Responsible for producing, managing and/or acting on information in the context of IHE Profiles, defined in terms of its primary responsibility.

IHE Domains

Responsible for the development and maintenance of the IHE Technical Frameworks that document the Integration Profiles. Each Domain manages Integration Profiles in a particular part of healthcare.

For our EMS activities, most of the profiles referenced are from the IT Infrastructure (ITI) and Patient Care Coordination (PCC) Domains

Domains	Sponsors
Cardiology	American College of Cardiology
Dental	American Dental Association
Devices	Healthcare Information Management Systems Society
Endoscopy	Japanese Association of Health Information Systems
Eye Care	American Academy of Ophthalmology
IT Infrastructure	Healthcare Information Management Systems Society
Pathology and Laboratory Medicine	College of American Pathologist, Japanese Association of Health Information Systems, PHAST
Patient Care Coordination	Healthcare Information Management Systems Society
Pharmacy	European Association of Hospital Pharmacists, GS1 Netherlands, Nictiz
Quality, Research and Public Health	Healthcare Information Management Systems Society, Radiological Society of North America
Radiation Oncology	American Association of Physicists in Medicine
Radiology	Radiological Society of North America
Surgery	International Foundation of CARS, International Society for Computer Aided Surgery

Integrating the Healthcare Enterprise (IHE) Terminology

IHE Technical Frameworks

IHE Profiles are part of a larger body of work known as IHE Technical Framework.
Each domain committee in IHE has their own Technical Framework Document.
https://profiles.ihe.net/GeneralIntro/

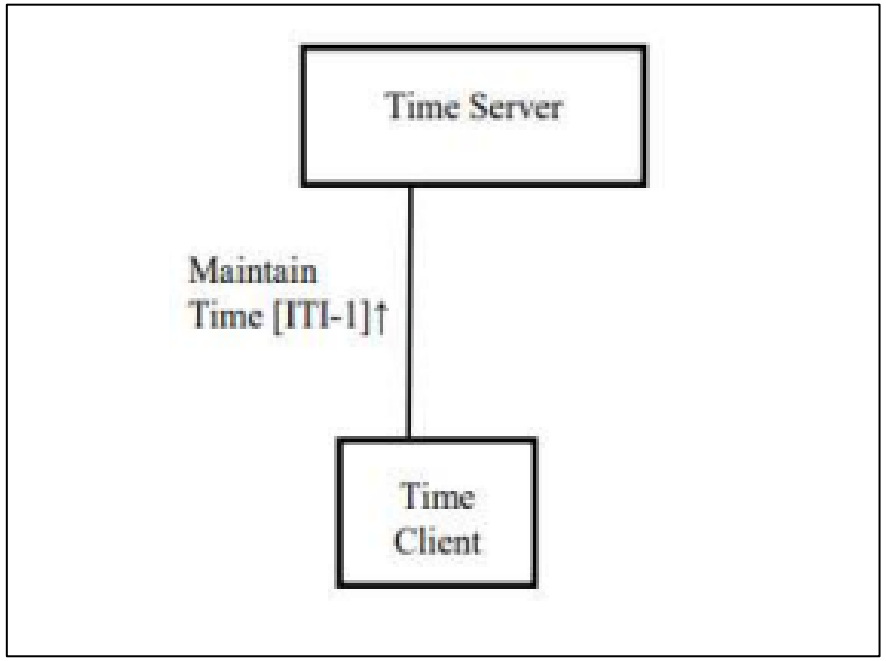
- **Volume 1** provides **a high-level description** of the profile use cases and scenarios, the concepts and logical system view associated with each use case, and the actors, transactions and content to be exchanged for the use case.
- **Volume 2** provides **detailed information about the transactions**, including the expected behaviors for each actor involved in a transaction, and the messages and protocols used to support the information exchange. (ITI Technical Framework is broken up in to sub volumes)
- **Volume 3** describes the **content exchanged**, and generally includes specific requirements on HL7 CDA® documents and HL7 FHIR® resources used in exchange.
- **Volume 4** describes **national extensions and restrictions** that have been added to IHE profiles by national deployment committees.

Integrating the Healthcare Enterprise (IHE) Terminology

IHE Integration Profiles

An IHE profile is a **specification that describes a collection of system components (Actors) the interactions between those components (Transactions), and optional behaviors that resolve the interoperability challenges presented by one or more use cases**. Each actor has specific requirements that it must support, and optional named capabilities (Options) that can be implemented to support features needed in more specific domains.
https://Profiles.ihe.net

Volume 1 (Actors):
The core of the profile is the **actor / transaction diagram**, which describes the software components and the interactions they must participate in. The simplest IHE profile would have two actors and one transaction between them, as in the figure below from the IHE Consistent Time Profile.



Integrating the Healthcare Enterprise (IHE) Terminology

How to Read an IHE Profile

Volume 2 (Transactions):
IHE describes the interface between the Actors as **transactions**. That is because the interface between actors may require multiple interactions in order to successfully complete an activity. Most transactions will also be described using sequence diagrams

Volume 3 (Content):
Volume 3 is where most IHE **domains describe restrictions on the message itself**, especially when the messages are complex. In IT Infrastructure, most volume 3 content is related to one of three topics: the Metadata used in the Cross-Enterprise Document Sharing (XDS) and related profiles (XDR, XDM, XCA); the format of documents stored or accessible to a health information exchange that describe what policies a patient has consented; and the format of a document containing a digital signature for other content.

Volume 4 (National Extensions):
Volume 4 content describes refinements to IHE profiles made by national committees in accord with their local laws and regulation.

IHE Terminology

Integration Profile

Describes the solution to a specific integration problem, and documents the system roles (Actors), standards and design details for implementers to develop systems that cooperate to address that problem.
- PIX: Narrowly scoped to describe how to link patient identifiers from different sources ±
-PDQ: Find me the list of all patients with demographics “like this”

Actor

IHE Actors are responsible for producing, managing and/or acting on information in the context of an IHE Profile.
- An Actor is defined in terms of its primary responsibility.
- Each IHE Profile assigns specific requirements to specific actors.
- One Actor might participate in multiple Profiles
- A product might implement multiple Actors

IHE Terminology

Transaction

Transactions are interactions between actors that communicate the required information through standards-based messages.

Profile Requirements

- An Actor without a Profile has no requirements
- Document Registry is referenced in Transactions
- An Integration Profile specifies requirements
  - Transactions to be supported
  - Other documented behavior
- Requirements need context of a profile

IHE Terminology

Named Option

Functionality an actor within a profile may choose to implement

- Enhanced functionality ± Implementation choice
- IE Support for CD media is required for the Media Creator actor in the Portable Data for Imaging profile
  - There are Options for support of USB or DVD

Profile Dependencies

Some profile/actor pairs require you to also implement an actor in another profile.

- All XDS.b actors are required to implement a Secure Node or Secure Application actor in the ATNA profile. All requirements for both actors must be implemented. Specified in a Dependency table in Volume 1

How do IHE profiles relate to HL7?

IHE profiles include standards across the entire ecosystem.
HL7 implementation guides are constrained to profiling only HL7 specifications.

IHE does not mean NOT HL7, instead more often a combination of of HL7 and other standards selected for the specific use case and solutions.

The IHE Approach:

- Agree on the problem
- Conduct a standards assessment – what's available
- Evaluate and select the best ones for the use case
- Profile and test at Connectathons
- Results in modular approach – lego blocks- (why our profiles are relevant to EMS)

IHE's EMS-focused Integration Profiles

Paramedicine Care Summary (PCS)

IHE Integration Profile

Quality, Research & Public Health Domain

Standards Profile Based On: FHIR R4, HL7 V3, CDA

Additional Information:

- Provides the structures and transactions for transmission of the patient's paramedicine encounter information to the receiving facility
- Makes prehospital and paramedicine interventions and patient assessments available to the hospital/emergency room IT system electronically when the patient arrives, or in advance of patient arrival to the hospital

Referral Interfacility Patient Transport (RIPT)

IHE Integration Profile

Quality, Research & Public Health Domain

Standards Profile Based On:
FHIR R4, CDA

Additional Information:

- Shows patient discharge using FHIR transactions and CDA documents to make the flow of the patient information from the hospital to the transport team paperless
- Reduces transport team's time spent gathering information in the facility, ensures that accurate data are received and sent, and allows the team to spend quality time providing care to the patient

Quality Outcome Reporting for EMS (QORE)

IHE Integration Profile

Quality, Research & Public Health Domain

Standards Profile Based On:
FHIR R4, HL7 V3

Additional Information:

- Facilitates electronic data capture of quality measure data to enable automated data capture and streamlined quality measure analysis
- Uses a query and a SEND transaction to move quality measurement data across several EMR entities that will allow for these data to be used for quality and registry measurement for Hospitals and EMS companies

Resources

- **IHE.net – technical frameworks**
  - https://www.ihe.net/resources/technical_frameworks/
- **IHE Profiles for Health Information Exchange: eBook by Audacious Inquiry (Keith Boone)**
  - https://www.iheusa.org/ebook
- **NEMSIS/IHE USA Github Repo**
  - https://github.com/IHE/EMS
- **Educational Videos – IHE's YouTube Channel**
  - https://www.youtube.com/channel/UC_7Rx9MracVwqVXDOH8Hj5Q