HL7 Mobile Health Standards Transforming Healthcare

Mobile Health Work Group

2015

HL7 Mobile Health Work Group

Mission

"The HL7 Mobile Health Work Group creates and promotes health information technology standards and frameworks for mobile health."
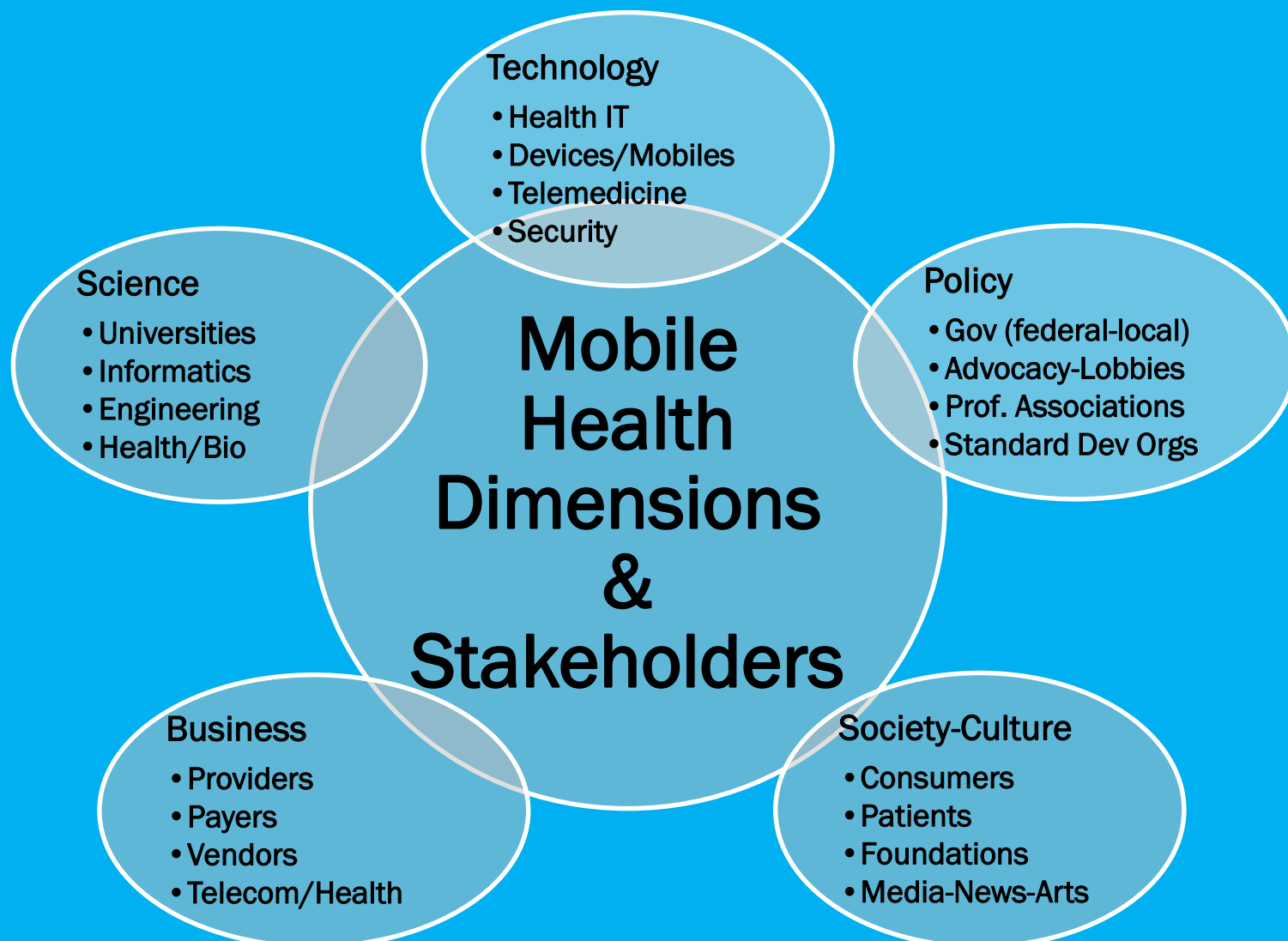
More Than You Think

Charter

- Identify data standards and functional requirements that are specific to the mobile health environment

- Identify and promote mobile health concepts for interoperability as adopted and adapted for use in the mobile environment

- Coordinate and cooperate with other groups interested in using mobile health to promote health, wellness, public health, clinical, social media, and other settings

- Provide a forum where HL7 members and stakeholders collaborate in standardizing to enable the secure exchange, storage, analysis, and transmission of data and information for mobile applications and/or mobile devices.

Mobile Health Work Group Co-Chairs

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Mobile Health Stakeholders

Technology
- Health IT
- Devices/Mobiles
- Telemedicine
- Security

Science
- Universities
- Informatics
- Engineering
- Health/Bio

Policy
- Gov (federal-local)
- Advocacy-Lobbies
- Prof. Associations
- Standard Dev Orgs

Mobile Health Dimensions & Stakeholders

Business
- Providers
- Payers
- Vendors
- Telecom/Health

Society-Culture
- Consumers
- Patients
- Foundations
- Media-News-Arts

What is Mobile Health?

- Many things to many people
- Mobility is the common factor
  - Mobile patients and service users
  - Mobile health and care providers
  - Mobile technologies
    - Extending reach, enabling innovation

So What is Mobile Health?

- Extension of the EHR?

- PHR on a mobile platform?

- Consumer wellness/fitness apps?

- "new" way to access/provide care

  – MOBILE HEALTH

    - All of the above!

    - Not a vertical domain/sector

    - But a horizontal framework that cuts across and impacts all health care domains

- Scenarios illustrating the scope and benefits of Mobile Health

A few Mobile Health Scenarios

- **Moving around a hospital**
  - EHR System services follow providers around a hospital
- **Independent living**
  - Assisted living drawing on a range of mobile services
- **Patient empowerment**
  - Patient involvement in care process across a wide range of lifestyles, including: support for long term conditions
- **Behavioural health**
  - Behavioural health support anytime, anywhere - especially *there*!
- **Secure/trusted messaging**
  - Getting the message(s) – for example on child health to hard-to-reach families
- **Public/Population Health**
  - Disaster Management to PH outreach

Emerging HL7 Mobile Health Standards

1. **mFHAST**

   - Mobile Framework for Healthcare Adoption of Short-Message Technologies standard
     - ✓ transport, structure and content

2. **MH2F**

   - Mobile Health Functional Framework Standard
     - ✓ Consumer Mobile Health Application Functional Framework -

3. **FHIRframe**

   - Fast Healthcare Interoperability Resources for mobile devices open API standard

4. **Meds-on-FHIR**

   - Patient Medication Administration IG using FHIR profile

Mobile Framework for Healthcare Adoption of Short-Message Technologies (mFHAST)

Nathan Botts, PhD, MSIS

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mFHAST Goal

To provide standards for communicating health services through short messages (e.g. SMS, Twitter, etc.)

Short-message Basics

- "Short-Message" encompasses the realm of technologies related to SMS, text messages, instant messages, Twitter, iMessage, USSD, etc

- Messages composed of approximately 140-160 characters

- Estimated that upwards of 200,000 SMS messages are sent every second
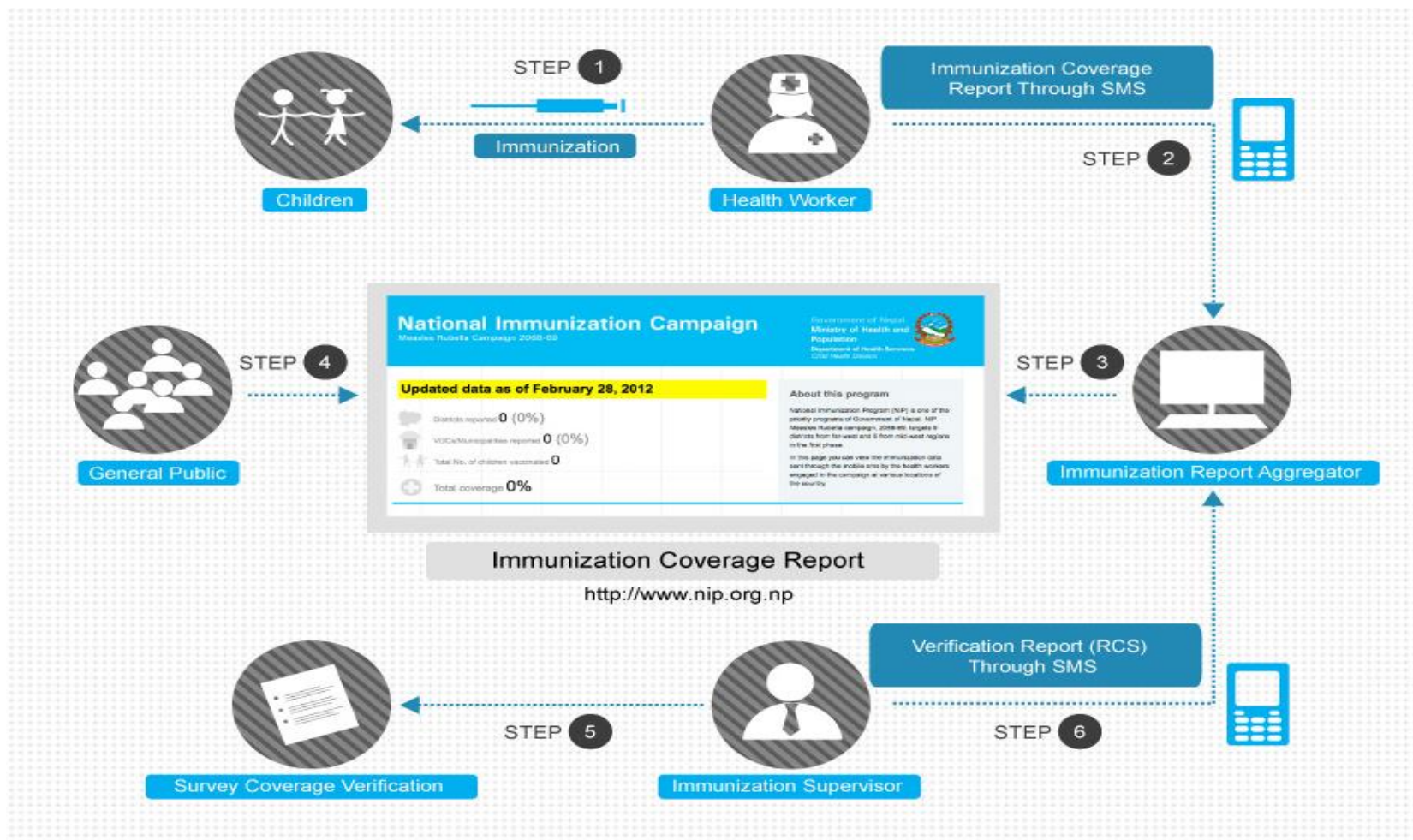
- Low-cost, low infrastructure, low learning-curve

Short-message Tech in Healthcare

Multiple global short-message studies have reported success in improving health outcomes and activities related to:

- Smoking cessation

- Diabetes

- Weight management

- HIV

- Medication adherence

- Appointment attendance

SMS Use Case -Immunization

Reference: http://www.nip.org.np

Short-message Barriers

- Ad-hoc implementations
- Lack of interoperability Standards
- Security/Privacy/Consent
- Message size
- Stateless (at its most basic implementation)
- Cost of message
- Governmental and organizational policy and barriers

Consumer Mobile Health Application Functional Framework

Tim McKay, Ph.D., CISSP

Kaiser Permanente

Consumer Mobile Health Application Functional Framework-Project Scope

- **Define security, privacy and data standards for secure mobile health applications (apps).**

- **Provide industry guidance and common methods to enable the development of mobile health smartphone apps targeted to healthcare consumers/citizens.**

- **Provide a framework for security, privacy and the integration of data generated from apps into PHR and EHR systems as well as into other types of data repositories (e.g., personal data stores, population care systems).**

- **Standards will not address the content of such apps.**

Consumer Mobile Health Application Functional Framework-Project Need

- **Standards for consumer smartphone health apps:**
  - **Focus on:**
    - **Security**
    - **Privacy**
    - **Data Controls**
  - **Allow for:**
    - **personal data tracking using mobile devices**
    - **integration of patient-sourced information into a person's record of care**
    - **clinical decision making using reliable, relevant information**

The proposed project will develop a framework against which Mobile Health Smartphone-based apps can be certified for conformance.

Limited Project Scope

- **Limited by initial set of use cases**

- **Focus on limited problem domain.**

- **Future iteration to add more use cases.**

FHIRframe

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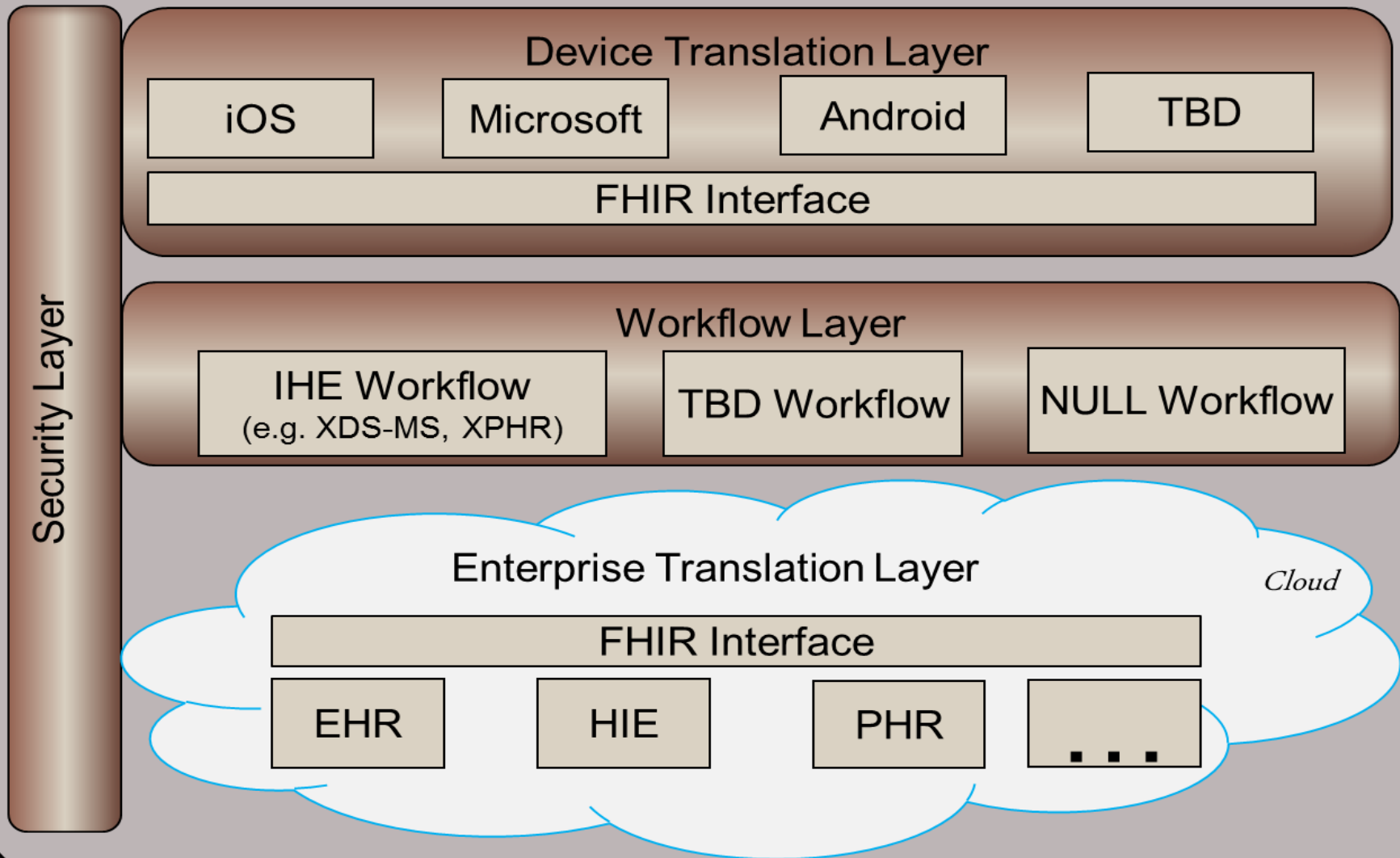North Carolina A & T State University

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Fast Healthcare Interoperability Resources API-Project Need

- **Various mobile devices are capable of capturing health events and information**

- **Many (thousands) health applications that capture data**
  - **Data in a variety of formats**
  - **Data cannot be shared with HIS**
  - **Data cannot be shared across apps/devices**

The project develops an open API specification that eases the creation of interoperable mobile health applications.

Strategy

- **Develop a set of APIs that ease the utilization of FHIR as standard for data for mobile applications:**
  - **Data capture from medical devices**
  - **Data storage on smartphone or tablet**
  - **Data access with electronic health record**
- **Develop companion libraries and software development kit**
- **Support for multiple platforms**
  - **iOS**
  - **Android**
  - **Microsoft**
- **Support for various health information systems**

FHIRframe

Security Layer

Device Translation Layer

iOS	Microsoft	Android	TBD

FHIR Interface

Workflow Layer

IHE Workflow
(e.g. XDS-MS, XPHR)

TBD Workflow

NULL Workflow

Enterprise Translation Layer

Cloud

FHIR Interface

EHR	HIE	PHR	. . .

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Patient Medication Management

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Information Services Technical Specialist

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Patient Medication Administration (Medication on FHIR) A FHIR Profile

- **FHIR Profile =**
  - **FHIR Resources**
  - **Constraints**
  - **Vocabulary/Value Set Bindings**

  Resources (80%) + Constraints and Vocabulary (20%) = A Complete implementable solution (100%)

Benefits of Patient Medication FHIR Profile

- **Solve common problem for general population.**

- **Better patient adherence to medication adherence improves patient safety and quality of life.**

- **Green field (a brand new implementation) to aid mobile application development and the adoption of standards based solutions (FHIR Profile).**

Strategy

- **Develop Use Case to model problem domain.**

- **Define a FHIR Profile for Patient Medication Administration.**
  - **Identify FHIR resources.**
    - **Assess maturity and completeness**
  - **Based on Use Cases identify relationship between FHIR resources.**
  - **Bind vocabularies and value sets to FHIR profile.**

Mobile Health Friday Calls

Dates: Every Friday

Time: 11:00 AM Eastern U.S.

- Mobile Health Wiki page

  http://wiki.hl7.org/index.php?title=Mobile_Health

- HL7 Mobile Health NEWS

  http://wiki.hl7.org/images/2/21/HL7_MHWG_NEWS_2013-02_V1Is1.pdf

Resources...

- Mobile Health Alliance

  www.mhealthalliance.org/

- Continua Health Alliance

  http://www.continuaalliance.org/about-continua

- PWC white paper – Touching lives through mobile health

  www.pwc.com/in/en/assets/pdfs/telecom/gsma-pwc_mhealth_report.pdf

THANK YOU!

- Question?

The HL7 Organization

- Founded in 1987, Health Level Seven International (HL7), with members in over 55 countries, is a not-for-profit, ANSI-accredited standards developing organization

- HL7 is dedicated to providing a comprehensive framework and related standards for the exchange, integration, sharing, and retrieval of electronic health information that supports clinical practice and management, delivery and evaluation of health services

- HL7's 2,300+ members include approximately 500 corporate members who represent more than 90% of the information systems vendors serving healthcare

- Over 43 healthcare standards from anatomic pathology to vocabulary
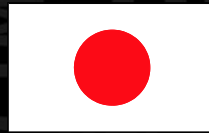
Take a Flash tour at
http://www.hl7.org/documentcenter/public/training/IntroToHL7/player.html

An International Organization with Over 30+ HL7 Affiliates

HL7 Mission - Interoperability Goals

- **HL7's mission is to provide standards for interoperability that:**

  - **improve care delivery**
  - **optimize workflow**
  - **reduce ambiguity**
  - **enhance knowledge transfer**

- **Wide range of healthcare standards: clinical, clinical genomics, administrative, clinical research, electronic claims attachments, public health, personal health, etc**