P1752 Working Group Meeting
Sponsored by IEEE Engineering in Medicine & Biology (EMB) Standards Committee

26 Feb 2018
Teleconference
Attendance

This document shows attendance from last call on February 5
https://tinyurl.com/yc3oxg6q (link in the chat window of join.me). If you attended the call, please verify that your name is listed

- If not, email simona@openmhealth.org

Put your name and affiliation in the chat window for attendance today.

- If your name is not listed, or if you are joining only via phone, please email simona@openmhealth.org with “P1752 WG call” as subject

Attendance is important for determining voting rights, so please remember to “check in”
Participants have a duty to inform the IEEE

- Participants shall inform the IEEE (or cause the IEEE to be informed) of the identity of each holder of any potential Essential Patent Claims of which they are personally aware if the claims are owned or controlled by the participant or the entity the participant is from, employed by, or otherwise represents.

- Participants should inform the IEEE (or cause the IEEE to be informed) of the identity of any other holders of potential Essential Patent Claims.

Early identification of holders of potential Essential Patent Claims is encouraged.

Slide #1
Ways to inform IEEE

• Cause an LOA to be submitted to the IEEE-SA (patcom@ieee.org); or

• Provide the chair of this group with the identity of the holder(s) of any and all such claims as soon as possible; or

• Speak up now and respond to this Call for Potentially Essential Patents

If anyone in this meeting is personally aware of the holder of any patent claims that are potentially essential to implementation of the proposed standard(s) under consideration by this group and that are not already the subject of an Accepted Letter of Assurance, please respond at this time by providing relevant information to the WG Chair.
Other guidelines for IEEE WG meetings

• All IEEE-SA standards meetings shall be conducted in compliance with all applicable laws, including antitrust and competition laws.
  • Don’t discuss the interpretation, validity, or essentiality of patents/patent claims.
  • Don’t discuss specific license rates, terms, or conditions.
    • Relative costs of different technical approaches that include relative costs of patent licensing terms may be discussed in standards development meetings.
  • Technical considerations remain the primary focus
• Don’t discuss or engage in the fixing of product prices, allocation of customers, or division of sales markets.
• Don’t discuss the status or substance of ongoing or threatened litigation.
• Don’t be silent if inappropriate topics are discussed … do formally object.

Patent-related information

The patent policy and the procedures used to execute that policy are documented in the:

• *IEEE-SA Standards Board Bylaws*
  (http://standards.ieee.org/develop/policies/bylaws/sect6-7.html#6)

• *IEEE-SA Standards Board Operations Manual*
  (http://standards.ieee.org/develop/policies/opman/sect6.html#6.3)

Material about the patent policy is available at
http://standards.ieee.org/about/sasb/patcom/materials.html

If you have questions, contact the IEEE-SA Standards Board Patent Committee Administrator at
patcom@ieee.org
Participation in IEEE Meetings

Participation in this IEEE meeting is on an individual basis

• Participants in the IEEE standards development individual process shall act based on their qualifications and experience. (https://standards.ieee.org/develop/policies/bylaws/sb_bylaws.pdf section 5.2.1)

• Participants have an obligation to act and vote as an individual and not under the direction of any other individual or group. A Participant’s obligation to act and vote as an individual applies in all cases, regardless of any external commitments, agreements, contracts, or orders.

• Participants shall not direct the actions or votes of any other member of an IEEE Working Group or retaliate against any other member for their actions or votes within IEEE Working Group meetings, see https://standards.ieee.org/develop/policies/bylaws/sb_bylaws.pdf section 5.2.1.3.

By participating in this IEEE meeting, you accept these requirements. If you do not agree to these policies then you shall not participate.
Approval of Prior Minutes

(none to approve today)
Approval of P1752 Policies and Procedures
(deferred to next meeting with established membership)
WG Logistics
Listserv Issues

• Archives now on
• Ask IEEE for assistance if you have listserv issues (start with k.bennett@ieee.org)
• Reminder to reply all ONLY for substantive comments of interest to the whole group
  • Do not announce your intended meeting presence or absence to the list or to the officers
• Meeting invites will be sent via join.me as well as in plain email to the listserv
Reference and Working Sites

  - Meeting times, slides, and approved minutes, and chats
  - Public membership roster
  - All messages archived as of February 16, 2018
- iMeet Central Collaboration site [https://ieee-sa.imeetcentral.com/omh/](https://ieee-sa.imeetcentral.com/omh/)
  - For documents, drafts, etc.
  - iMeet accounts will be set up later for WG members
Old Business:
Themes from Feb 5 Chat
Some themes from Feb 5 Chat

• Data security, privacy, encryption
• Are there links to HL7, FHIR, IHE, openEHR?
• Use cases addressed or not addressed by P1752
• Under Open mHealth, is there a standard procedure for the proposal, validation and approval of clinically valid schemas? Is it an interdisciplinary activity including consensus from medical doctors, statisticians, database designers, etc.?
New Business:
Scope, Definitions, Boundaries
**P1752 Open Mobile Health Working Group**

- **Purpose**: The purpose of this Working Group is to provide standard semantics to enable meaningful description, exchange, sharing, and use of mobile health data across a wide spectrum of use cases addressing consumer health, biomedical research, and clinical care needs. These standard semantics will be in the form of common data and metadata schemas, with reference to standardized terms from clinical terminologies where applicable.

- **Main work**: The main work of this group will be to 1) validate the existing Open mHealth schemas through review and use by WG members; 2) define priority areas for additional schema development; 3) prepare the draft standard for balloting; and 4) promote and support ongoing community use, contribution, and refinement of Open mHealth schemas and tools.

- **Related Standards**:
  - IEEE 11073
  - HL7 FHIR
5.2 Scope: This standard will define specifications for a mobile health data applications programming interface (API) and standardized representations for mobile health data and metadata. Mobile health data encompasses personal health data collected from sensors and mobile applications.
Data From Which Mobile Apps and Sensors?

- Data from mobile apps and sensors that
  - help patients and clinicians understand patient health and health states
  - inform patients and clinicians on health care actions
  - help drive patient changes in health behavior

- Data used by and for health interventions delivered using mobile technologies
  - behavior change (e.g., medication adherence, increasing physical activity)
  - clinical treatment (e.g., virtual consultation, cognitive behavioral therapy)

- Does not include data from
  - sensors/devices in the hospital or clinic setting intended primarily for clinician use
  - electronic health record
  - apps for navigating the healthcare system (e.g., finding doctors, clinic opening hours, insurance coverage, etc.)
# Differences in mHealth and EHR Data

<table>
<thead>
<tr>
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<th>Mobile Health</th>
<th>EHR</th>
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Different perspectives, usage, and considerations.
P1752 PAR

• **5.2 Scope:** This standard will define specifications for a mobile health data applications programming interface (API) and standardized representations for mobile health data and metadata. **Mobile health data encompasses personal health data collected from sensors and mobile applications.**

• **5.4 Purpose:** The purpose is to provide standard semantics to enable meaningful description, exchange, sharing, and use of mobile health data. Data and associated metadata will be sufficiently clear and complete to support analysis for a set of consumer health, biomedical research, and clinical care needs. This standard will leverage data and nomenclature standards such as the IEEE 11073 family of standards for personal health devices as references.
  • **Not about security at rest or in transit, not about encryption**
  • **Not about bandwidth or other low-level communications issues**
  • **Not about storage or architectures for storage**
  • **Not about privacy except as metadata needed to indicate permitted analyses**
5.2 **Scope:** This standard will define specifications for a mobile health data applications programming interface (API) and standardized representations for mobile health data and metadata. **Mobile health data encompasses personal health data collected from sensors and mobile applications.**

5.4 **Purpose:** The purpose is to **provide standard semantics to enable meaningful description, exchange, sharing, and use of mobile health data.** Data and associated metadata will be sufficiently clear and complete to support analysis for a set of consumer health, biomedical research, and clinical care needs. This standard will leverage data and nomenclature standards such as the IEEE 11073 family of standards for personal health devices as references.

5.5 **Need for the Project:** Standardizing mobile health data and metadata will make data aggregation across multiple mobile health sources easier and more accurate, and will reduce the costs of using mobile health data to make biomedical discoveries and to improve health and manage disease.
mHealth and the EHR
1. Diagnosis
   better characterize disease phenotype and the exposome
2. Treatment
3. Monitoring
1. Diagnosis
   better characterize disease phenotype and the exposome

2. Treatment
   24/7 personal tech to improve health behaviors, disease management

3. Monitoring
1. Diagnosis
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   24/7 personal tech to improve health behaviors, disease management

3. Monitoring
   how am I doing? are things better? worse?
mHealth Data

Data-driven Insight

Self Care ———> Better Outcomes

mHealth Interventions
> 165,000 apps many addressing only a single disease

¾ of Americans have more than one chronic disease

will want to bring together their own unique combinations of data, outside of any one app
Combine different data regardless of sensor or app

Build smart-sensemaking

Personalized, clinical insights

- sleep, physical activity, blood pressure?
- pain, anxiety, caloric intake?
main challenges
• validated usable apps and sensors
• supporting "bring your own device"
• data standards to ensure that meaning is maintained across devices
• integration into frontline workflow
When do mHealth data need to be stored in the EHR database? Or do they just need to be accessible to the clinician workflow?
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Relationship to FHIR
Open mHealth and FHIR and mFHIR

EHR System

SMART-on-FHIR environment

FHIR app

EHR data

“R24 Server”

Data Store (OMOP)

basic computation

* e.g., sum, avg, max, min

Sensor data clouds

digital biomarkers

* authenticate and map to OmH schemas

OmH endpoint

App #1

App #2

App #3

Shimmer

sensor #1

sensor #2

sensor #3

Red: 2018 work funded by NIH/NIBIB R24 grant EB025845

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Open mHealth and FHIR, co-evolving

- Open mHealth
  - atomic data
  - in JSON Schema
  - RESTful API
  - common schemas covering 80/20 mHealth needs
  - schemas can be extended (no "profiles")

- FHIR
  - atomic data
  - in XML and JSON
  - RESTful API
  - resources covering 80/20 EHR needs
  - profiles to extend resources
## Differences in Open mHealth and FHIR

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different perspectives, usage, and considerations
Example: medication modeling

- Open mHealth
  - medication
  - medication prescription
  - pharmacy dispensing
  - patient med schedule
  - single dose taken
  - reason dose not taken
  - med adherence %
- prescription → patient schedule (with acceptable window) + doses taken → adherence

- FHIR
  - medication
  - medication order
  - medication dispense
  - medication administration (actual record)
  - medication statement (recalled)
Open mHealth Schemas

FHIR Resources

Current Overlap n = 6
- DataElement
- Value Set
- Naming System
- Body site
- Observation
- Medication

Pending Overlap n = 4
- Location
- Provenance
- Questionnaire
- Questionnaire Response

Future Overlap n = 4
- Goal
- Patient
- Person
- Condition

n = 68
n = 93

IEEE STANDARDS ASSOCIATION
mFHIR Implementation Guide

- **Scope**: detailed technical guidance and FHIR artifacts needed to access Open mHealth data from an mHealth server
- **Funded by NIH R24 EB025845**
- **Team**
  - Eric Haas, Mark Braunstein, Jon Duke, Ida Sim, Simona Carini
  - Advice/support from Graham Grieve, Chuck Jaffe (HL7 CEO)
mFHIR Work

- **mFHIR Implementation guide to include**
  - Work Flow Description(s) for accessing Open mHealth data as FHIR resources from an mFHIR endpoint
  - How to use FHIR technical artifacts to implement a FHIR to Open mHealth interface
  - Description of data element and data type mappings between FHIR resources and Open mHealth schemas
  - Describe how FHIR Provenance is used to represent the data source and device information
  - Creation of the following FHIR technical artifacts
    - Profiles and Extensions (if needed)
    - ValueSets and ConceptMaps (if needed)
    - StructureMaps
    - Operations
  - Demo FHIR app showing use of mFHIR Implementation Guide for core use cases
  - Aiming to present at HL7 Annual Plenary (Sept-Oct 2018)
IEEE P1752 Work

EHR System

SMART-on-FHIR environment

FHIR app

EHR data

“R24 Server”

Sensor data clouds

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*authenticate and map to OmH schemas

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IEEE P1752 work
Approach to P1752 Work

- Define scope, definitions, coverage – achieve common understanding
- Define Use Cases to define boundaries (e.g., with 11073)
- Identify priority schemas to review and API functions to test and refine
Questions and Discussion
Summary of Action Items
Future Meetings

• Moving meetings to every other Tuesday at 8 AM Pacific / 11 AM Eastern
  • Please note that US Daylight Savings Time starts on March 11, so 8 AM Pacific on March 13 will be **GMT -7:00**

• Upcoming meetings
  • Tuesday, March 13
  • Tuesday, March 27
  • Tuesday, April 10
  • Tuesday, April 24
Adjournment