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

22 May 2018
Teleconference
Attendance

This document shows attendance from previous calls [https://tinyurl.com/yc3oxg6q](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”

Voting rights are granted according to the P&P after attending two consecutive calls and by explicit request to the Secretary
IEEE Patent Policy
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.**
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)
  (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
Determination of Quorum

https://tinyurl.com/yc3oxg6q
approval of agenda

1. Attendance
2. Call for Patents
3. Approval of agenda and prior minutes (if quorum present)
4. Updates from subgroups
5. Discussion: Schema Modeling Approach
6. Other business
Approval of Prior Minutes

(April 24 and May 8)
Update:
Sleep Schema Subgroup
Search for three task group leads for stage1 (ground work)
(1) Made leads announcement on May 9, 2018
    Thank you to Antoni, Josh and Ray for volunteering!
Planning of task group work with the leads
(1) Understand the scope and duties of each task group via discussions
(2) Brainstorm on the plan of collaboration
All the leads have reached out their team and kicked off the work
Summary of the collaboration planning:

(1) iMeet should be used for capturing all generated documents/important decisions

(2) Each task lead should choose his preferred tools to use

(3) Make sure the IP, private, personal data is protected

(4) Each task lead will create a document framework/template which will be used to capture the work and serve as a guidance to the team

(5) Task leads meeting occurs every two weeks via emails on the scheduled date

(6) Review the findings/accomplishments from each task group in the future subgroup meetings
Sleep Schema Subgroup Update (pg.3)

- Action Items
  1. Look forward every team member’s contribution
  2. Leads upcoming sync up (June 1, 2018) via email
  3. Review each task group’s work in the next subgroup meeting (June 12, 2018)

- Sleep Schema Meeting Slides/Minutes:
  http://sites.ieee.org/sagroups-1752/sleep-subgroup-meeting-materials/

- If you would like to join our subgroup, please send email to
  simona@openmhealth.org or
  charlotte.chen@philips.com
Update and Approval: Physical Activity and Mobility (PA&M) Schema Subgroup
PA&M Subgroup

- Chair: Shiv Hiremath, Temple University
- >10 people said they’d definitely be interested in participating in this subgroup
- If you would like to join this subgroup, please send email to simona@openmhealth.org
Physical Activity and Mobility Scope and Duties (for Approval)

Scope

• The P1752 Physical Activity & Mobility Schema Subgroup will review and propose Open mHealth schemas related to physical activity and mobility functions. The scope includes but is not restricted to the following: step count, physical activity type and duration, energy expenditure, geotrace, geomobility. The focus of this Subgroup’s work is on modeling data pertaining to physical activity and mobility measures, and not on current or future individual devices or apps that measure them.

Duties

• By reviewing the clinical aspects of cardiorespiratory health and existing relevant devices and apps, the Subgroup shall deliver a list of clinically important measures in the physical activity and mobility domain, as scoped above. The Subgroup shall propose modified and new schemas relating to such measures, including examples as informed by use cases and the list of common and clinically important attributes. Finally, the Subgroup shall deliver a review of mappings and/or relationships to non-Open mHealth schemas.
Update:
Cardiorespiratory Schema Subgroup
Call for (self-) nominations

• Last call for Cardiorespiratory subgroup chair

• Send Ida and Simona (self-)nominations by **Friday, May 25**
  • Name, Affiliation, Which Subgroup, Previous experience in domain, Why Interested
Discussion:
Schema Modeling Approach
Open mHealth approach to data sharing

- first create a common language
  - schemas to structure data
  - an API to exchange it

- then provide free and open-source tools to
  - validate data
  - pull in data from large and popular device manufacturers
  - store data and share it with securely with others
  - move data in and out of EHRs
  - process and visualize data
Open mHealth Schemas

- A schema structures data and follows design principles
- Each data point includes:
  - header (data point ID, body schema ID, creation date-time, source, ...)
  - body (typically a measure, i.e. instance of a measure schema)
  - annotation to SNOMED, LOINC, RxNORM, or UCUM

```json
"references": [
    {
      "description": "The SNOMED code represents Duration of sleep (observable entity)",
      "url": "http://purl.bioontology.org/ontology/SNOMEDCT/248263006"
    }
],
```
Example Header Instance

```json
{
    "id": "123e4567-e89b-12d3-a456-426655440000",
    "creation_date_time": "2013-02-05T07:25:00Z",
    "schema_id": {
        "namespace": "omh",
        "name": "physical-activity",
        "version": "1.1"
    },
    "acquisition_provenance": {
        "source_name": "RunKeeper",
        "source_creation_date_time": "2013-02-05T07:25:00Z",
        "source_data_point_id": "1493623920",
        "modality": "sensed"
    },
    "user_id": "user1432"
}
```
Example Measure Instance

```
{
    "blood_glucose": {
        "unit": "mg/dL",
        "value": 95
    },
    "effective_time_frame": {
        "date_time": "2015-02-05T07:25:00Z"
    },
    "temporal_relationship_to_meal": "fasting"
}
```

Fasting blood glucose of 95 mg/dL on Feb 5, 2015
Example Measure Instance

Fasting blood glucose of 95 mg/dL on Feb 5, 2015

```json
{
  "blood_glucose": {
    "unit": "mg/dL",
    "value": 95
  },
  "effective_time_frame": {
    "date_time": "2015-02-05T07:25:00Z"
  },
  "temporal_relationship_to_meal": "fasting"
}
```
Example Measure Instance

Average fasting blood glucose on waking of 128 mg/dL between Feb 5 and June 5, 2015.
65+ Schemas

Physiologic, e.g.,
- BMI, height, weight
- body temp, BP, BG, HR, RR interval, O2 sat
- sleep episode, sleep duration

Physical activity, e.g.,
- physical activity, activity name
- step count
- minutes of moderate activity
- geoposition
- accelerometer, etc.

Medication, e.g.,
- med prescription, adherence percent
- patient med schedule

Utilities, e.g.,
- time, units
- descriptive statistics

Environmental, e.g.,
- ambient temp

Breathing, e.g.,
- inspiratory time, expiratory time
- breath carbon monoxide

Each schema is for a specific data concept, no “generic” schema
Should Open mHealth use generic schemas?

- Arguments for:
  - More efficient to represent only one (or very few) schema(s) and use codes to distinguish the semantics of the data
  - Developer community only needs to learn the (few) base/generic schema(s)
    - Base/generic schemas can inherit attributes
  - Avoids proliferation of schemas: easier to find, manage, version control
  - Both 11073 20601 and HL7 FHIR use generic schemas
IEEE 11073 20601 Approach

- All numeric measurements are instances of the generic Numeric Metric class
- Instances reference MDC codes to describe what the data is about
  - can’t specify required context, e.g., relationship to meal for blood glucose measurements
- References to other objects occur via Source-Handle-References
  - can’t specify or standardize that e.g., SBP must be paired with a DBP
HL7 FHIR Approach

• Base schema is the **Observation** Resource
• Instances reference LOINC codes to describe what the data is about
• References to other objects occur via *related* attribute
  • reference types are has-member | derived-from | sequel-to | replaces | qualified-by | interfered-by
• Profiles are used to specify constraints and context. Only 1 profile is currently a “Core Profile for Observation”
  • The [Vital Signs Profile](#) specifies the component observation **Blood Pressure Systolic and Diastolic** with a list of allowed additional observations
Should Open mHealth use generic schemas?

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    - Base/generic schemas can inherit attributes
  - Avoids proliferation of schemas: easier to find, manage, version control
- Both 11073 20601 and HL7 FHIR use generic schemas
- Generic schemas do not make the complexity problem go away
  - generic schemas + code + referencing other schemas does not provide sufficient control or specification to handle complexity in a standardized way
  - generic schemas + profiles pushes the complexity to proliferation of profiles
Open mHealth Example of Generic Schema

- We tried out a **generic schema for quantitative measurements**
  - how can it be used to represent heart rate?

- Alternative approach is to define a **template schema** for quantitative measurements, that all schemas of quantitative measures should follow
  - provides standardization and ease of use for common attributes, while allowing custom specification
Summary of Generic Schema Exploration

• No strong argument either for or against use of generic schemas with regards to proliferation of schemas
• Other decision factors
  • Ease of use: OmH schemas are self-contained and easy to understand (we hear...)
  • Flexibility, ease of iteration: mHealth is rapidly evolving, and iteration (e.g., by subgroups) may be easier without having to coordinate on a common generic schema
  • Standards adoption: need a process to vet preferred schemas/profiles, regardless
Proposal for Discussion

• Open mHealth continues developing schemas using our current approach
  • preserves ease of use, supports wider contribution, iteration, and usage, including by those not in the health IT field

• In other work, we are developing the mFHIR Implementation Guide to guide mappings of Open mHealth schemas to FHIR Observation resources
  • for each Open mHealth schema, will develop a corresponding FHIR Observation Profile (aka mFHIR Profile)

• We need a process to determine preferred/official Open mHealth schemas and mFHIR profiles
Summary of Action Items
Future Meetings
Upcoming Meetings

• Main WG:
  • June 5: 8 AM Pacific
    • Subgroup updates
    • Schema approach (cont)
    • Time permitting: API approach, intro to provenance
  • June 19: 8 AM Pacific

• Sleep subgroup
  • June 12, 8:30 to 9:30 Pacific
Adjournment