IEEE STANDARDS ASSOCIATION

IEEE

P1752 Working Group Meeting

Sponsored by IEEE Engineering in Medicine & Biology (EMB) Standards Committee

- 18 September 2018
- Teleconference

Attendance

- This document shows attendance from previous calls **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

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

Slide #2

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.**

For more details, see *IEEE-SA Standards Board Operations Manual*, clause 5.3.10 and *Antitrust and Competition Policy: What You Need to Know* at http://standards.ieee.org/develop/policies/antitrust.pdf

Slide #3

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

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: upcoming activities
6. Other business

Approval of Prior Minutes

(August 28)

Update:
Physical Activity and Mobility (PA&M) Schema Subgroup

Physical Activity & Mobility (PAM) Sub-group

1. We are making progress on the following tasks
   - Task 1: Common Devices and Apps (Norm leading)
     - Uploaded it to iMeet Central
     - Discussion about bringing vendors and manufacturers to the group
   - Task 2: Important PAM attributes (Shiv, Simona, and others)
     - Uploaded it to iMeet Central
   - Task 3: Defining use cases
     - Simona provided us with an example
     - We will start brainstorming on use cases
     - We will discuss on how use cases wile be utilized in a clinical or research environment
2. Next Meeting: Thursday Sep 20, 2018 (11am to 11:30am Eastern Time)

Use case

- Following Use Case Example was provided by Simona
  - Pertains to a person determined to be at moderate cardiovascular risk.
  - The person and the primary care physician jointly decide on improving exercise to meet AHA/WHO/CDC guidelines of 150 minutes of moderate exercise (3-6 METS) every week.
  - They agree on a goal of 4000 steps daily.
  - The person starts gathering step count data on a mobile device or app to track daily steps.
  - At the next scheduled visit (e.g., in 90 days), the PCP and person review the data vs the stated goal of 4000 daily steps.
  - The PCP may focus not so much on individual daily data but on summary measures like average daily steps per week or per month.

Update:
Sleep Schema Subgroup

Sleep Schema Subgroup Update (pg.1)

- **Developed use cases for sleep attribute(s) to support sleep schemas development**

(1) Final draft of the use cases for sleep attributes is in iMeet (ad hoc team)

(2) Subgroup review/comment on the use cases

(3) Modifying/Completing the use cases based on the feedbacks.

Here is the link to the final draft of the use cases:

https://ieee-sa.imeetcentral.com/omh/folder/WzIwLDEwMjY4MDc3XQ/

Sleep Schema Subgroup Update (pg.2)

- **Need WG feedbacks on some attributes relevant to sleep, but not sleep specific. For example,**

1	ID	Sleep Attribute(s)	Attribute Abbrev.	Use Case Description	Use Case ID	Revised Use Case Description	Status
19	18	Resting Heart Rate	RHR			No value to create a use case for this attribute alone. Although this is a reported value from many sleep devices as heart rate. This needs to be collected through some means. Question: How do we point to or use as sleep attributes that other sub-groups or P1752 will be defining. i.e. Cardiac team or similar.	Follow-up question for P1752 main group.
20	19	Heart Rate Variability + RHR	HRV			When a preson gets up and feel sleepy, he might check his deep sleep duration or percentage on his HRV+RHR tracker with capability to estimate sleep stages from the HRV+RHR. This needs to be collected through some means. Question: How do we point to or use as sleep attributes that other sub-groups or P1752 will be defining. i.e. Cardiac team or similar.	Follow-up question for P1752 main group.

Sleep Schema Subgroup Update (pg.3)

- **Preparation of drafting schemas**

(1) Drafted a list of mapping between sleep schema name vs. sleep attributes

(2) Subgroup review/comment on the mapping list

(3) Discuss the approaches of the schema drafting

- **Next Step ---- Sleep schema development**
- **Sleep Schema Subgroup Meeting Slides/Minutes:**

http://sites.ieee.org/sagroups-1752/sleep-subgroup-meeting-materials/

- **Next Subgroup Meeting: Oct 9, 2018 11:30am to 12:30 pm**

Discussion:
intro to mProv project

mProv: Provenance-based Data Analytics Cyberinfrastructure for High-frequency Mobile Sensor Data (NSF 1640183)

mHealth Data and Metadata

- At the basic level, a data point is a measurement (often quantitative: value + unit) associated to a time point or time interval and to some context (e.g., HR *at rest*)
- Metadata can be at the level of individual data point. The mProv project looks at set of data points → a data stream
  - data stream is a set of data points (of size from 1 to millions) that have the same metadata
- The goal of the mProv project is to develop
  - techniques for integrating metadata and data capture over mobile streaming data, and for propagating such data in order to enable reasoning about uncertainty and variability
  - runtime infrastructure and APIs for efficient sensor data acquisition and reply
  - mechanisms for managing privacy policies

Example OmH Metadata (for data points)


```
{
    "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"
}
```

mProv Metadata (for data streams)

- Data stream metadata include *data descriptor*, *execution context* and *annotations*
- *data descriptor* includes information about each data point element: name, data type, text description, unit of measure, sampling frequency, etc.

```
 "data_descriptor": [
   {
    "name": "duration",
    "type": "float",
    "unit": "hour",
    "description": "Approximate Sleep duration in number of
hours",
    "stream_type": "periodic",
    "expected_samples_per_day": 1,
   },
```

MD2K early implementation of mProv model

mProv Metadata (for data streams)

- *execution context* includes information about
  - the algorithm that generated this data stream (description, authors, version, pointer to the code, references, etc.)
  - the processing module (name, input stream(s) ID and name, input parameters)

```
"processing_module": {
    "name": "core.feature.sleep_time",
    "input_streams": [
     {
      "id": "CC_INPUT_STREAM_ID_CC",
      "name": "CC_INPUT_STREAM_NAME_CC"
     }
    ],
    "input_parameters": {
    }
```

MD2K early implementation of mProv model

```
"algorithm": {
    "method": "core.feature.sleep.SleepTime.listing_all_sleep_times",
    "authors": [
     {
      "name": "Md Shiplu Hawlader",
      "email": "shiplu.cse.du@gmail.com"
     },
     {
      "name": "Alina Zaman",
      "email": "alina.cse@gmail.com"
     }
    ],
    "version": "1",
    "reference": {
     "paper": "http://ieeexplore.ieee.org/document/6563918/"
    },
    "description": "Sleep duration in hours including sleep onset and
offset."
   }
```

MD2K early implementation of mProv model

mProv Metadata (for data streams)

- *annotations* can be added to the output stream to describe for ex., why no value is outputted
  - potential explanations include no input data, invalid input data, valid data but otherwise unable to produce result

- Data points are not objects in the mProv metadata model
- No place to describe semantics of the data point (i.e., schema ID), or acquisition provenance

Discussion Questions

- Should we have the same metadata model for data points and data streams?
- Do these metadata categories cover the main areas needed?
  - OmH data points: *id/schema id/creation datetime*, *acquisition provenance*
  - mProv data streams: *data descriptor*, *execution context* and *annotations*
    - data sharing preferences pending (permissible sharing to whom, when, for what)
  - HL7 FHIR device: *Device, DeviceMetric, DeviceComponent*
- Where to go from here?
  - Decide conceptually on data points or data streams
  - Identify major metadata categories
  - Define and enumerate properties
  - Define and enumerate value sets for properties
- How? Use cases, review other approaches, a subgroup, etc.

Looking forward at other topics

- Major schema areas
  - Cardiorespiratory
  - Patient-reported outcomes (behavioral, symptoms)
- Any additional thoughts from the group about the topics covered in the last couple of calls, namely overall schema development and API

Future Work

Summary of Action Items

Future Meetings

Upcoming Meetings

- Main WG (please note changes from previous announcements)
  - TBD: 8 AM (Pacific)
- Sleep subgroup
  - October 9, 2018 8:30am to 9:30 am (Pacific)
- PA&M subgroup
  - September 20, 2018 11 to 11:30 am (Eastern)

Adjournment