IEEE STANDARDS ASSOCIATION

IEEE

P1752 Working Group Meeting

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

Please mark your attendance at:
https://tinyurl.com/yc3oxg6q
(see chat window)

- 5 November 2019
- 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 (Simona)

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 of prior minutes (if quorum present)
4. Updates from subgroups
5. Discussion: draft standard document
6. Presentation: Quantitative sleep schemas (7-8) + physical activity schema
7. Other business

Approval of Prior Minutes

(none today)

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

Physical Activity & Mobility (PAM) Sub-group

- Presentation of PA Schema to follow

Update:
Sleep Schema Subgroup

Sleep Schema Subgroup Update

➢Status and Next Steps

Quantitative sleep measure task group:

---Prepared 1st set of schemas for WG to review

---Get 2nd batch of schemas ready for WG to review on Nov 19 or earlier

Qualitative sleep measure task group:

---Finalized sets of short surveys

---Draft the schemas for these sets of questionnaires and get ready for WG to review on Nov 19 or earlier

➢ **Sleep schema subgroup meeting slides/minutes:**

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

➢ **Next subgroup meeting: Nov 19, 2019 11:30am to 12:30 pm**

➢ **Info on the sleep group: email charlotte.chen@Philips.com or Simona.Carini@UCSF.EDU**

Update:
Metadata Subgroup

Metadata Subgroup Update

- Finalizing discussions on
  - GUID, using RFC 4122 approach
  - Data absence: supporting identification of absence only, not reason
- Minimum metadata schema(s) almost ready for drafting
- Slides available on subgroup webpage: http://sites.ieee.org/sagroups-1752/metadata-subgroup/
- Next call, November 5 (today) at 9 am Pacific
- Let Simona (simona@openmhealth.org) know if you are interested in participating

Discussion:
Draft Standard Document

Draft Document Review

- The document describes base principles for schema modeling
- Document will reference the (latest version of the) schemas on the P1752 OS site, not include a copy of the schemas
- The OS site will have more details about the individual schemas and relevant sample data
- Such details are subject to change and will follow a different process: changes to the standard document will need to go through the more structured ballot process

Main comments

Thank you all who have reviewed the document!

- Various editorial suggestions for improving clarity of language
- Suggestions to clarify that the standard does not pertain telemedicine and also to explain its focus in more detail
- Suggestion to add some more examples and also to use examples relevant to the schemas that are part of the standard
- Suggestion to add a reference to patient-centered measurements in several paragraphs
- Suggestion to discuss raw data

Next step: version 2

- Comments on / edits to the draft document uploaded on designated folder on iMeet: https://ieee-sa.imeetcentral.com/omh/folder/WzIwLDEyMjg3NDE0XQ
- if you have not yet accessed iMeet and you cannot find an email invitation, email simona@openmhealth.org
- The 2nd version of draft standard document will be distributed by November 14

Presentation:
Quantitative Sleep Schemas

Introduction of Quantitative Sleep Schemas (I)

➢Groundwork

1. Initial Investigation

---Sleep schema standard comparison

---Clinically important sleep attributes

---Review common sleep attributes of the existing devices & apps

2. Quantitative Sleep Attributes/Measures

---Created a list of sleep attributes

---Generated use case(s) for each sleep attribute

---Determine the final list via review/discussions with a sleep medicine expert (Dr. David White)

➢Schema Drafting and Validation

---Drafted schemas for all selected sleep attributes

---Drafted sample data for each schema

---Reviewed and validated schemas (first-level syntax validation)

Introduction of Quantitative Sleep Schemas (II)

➢First Batch of Schemas for WG to Review (Distributed on Oct. 31)

1. List of schemas for review

---total-sleep-time

---deep-sleep-percentage

---light-sleep-percentage

---time-in-bed

---sleep-onset-latency

---ambient-temperature

---ambient-light

---ambient-sound

All available on iMeet https://ieee-sa.imeetcentral.com/omh/folder/WzIwLDEyMzYzNDA1XQ

```
{
    "$schema": "http://json-schema.org/draft-07/schema#",
    "type": "object",
    "description": "This schema represents sleep onset latency, i.e. the amount of time between when a person starts to want to go to sleep and sleep onset.",

    "definitions": {
        "duration_unit_value": {
            "$ref": "duration-unit-value-1.x.json"
        },
        "time_frame": {
            "$ref": "time-frame-1.x.json"
        },
        "descriptive_statistic": {
            "$ref": "descriptive-statistic-1.x.json"
        },
        "descriptive_statistic_denominator": {
            "$ref": "descriptive-statistic-denominator-1.x.json"
        }
    },
    "properties": {
        "sleep_onset_latency": {
            "$ref": "#/definitions/duration_unit_value"
        },
        "effective_time_frame": {
            "description": "As a measure of a duration, sleep onset latency should not be associated to a date time time frame. Hence, effective time frame is
            "allOf": [
                {
                    "$ref": "#/definitions/time_frame"
                },
                {
                    "required": ["time_interval"]
                }
            ]
        },
        "is_main_sleep": {
            "type": "boolean"
        },
        "descriptive_statistic": {
            "$ref": "#/definitions/descriptive_statistic"
        },
        "descriptive_statistic_denominator": {
            "anyOf": [
                {
                    "$ref": "#/definitions/descriptive_statistic_denominator"
                },
                {
                    "description": "If the value needed is a standard unit of duration, select from the duration-unit-value value set.",
                    "type": "string"
                }
            ]
        }
    },
    "required": [
        "sleep_onset_latency",
        "effective_time_frame"
    ]
}
```

Sample data


```
{
    "effective_time_frame": {
        "time_interval": {
            "start_date_time": "2018-02-05T21:35:00Z",
            "end_date_time": "2018-02-05T39:05:00Z"
        }
    },
    "sleep_onset_latency": {
        "value": 17.5,
        "unit": "min"
    },
    "is_main_sleep": true
}
```

```
{
    "effective_time_frame": {
        "time_interval": {
            "start_date_time": "2018-04-05T21:35:00Z",
            "end_date_time": "2018-05-05T22:00:00Z"
        }
    },
    "sleep_onset_latency": {
        "value": 15.25,
        "unit": "min"
    },
    "is_main_sleep": true,
    "descriptive_statistic": "average",
    "descriptive_statistic_denominator": "d"
}
```

Introduction of Quantitative Sleep Schemas

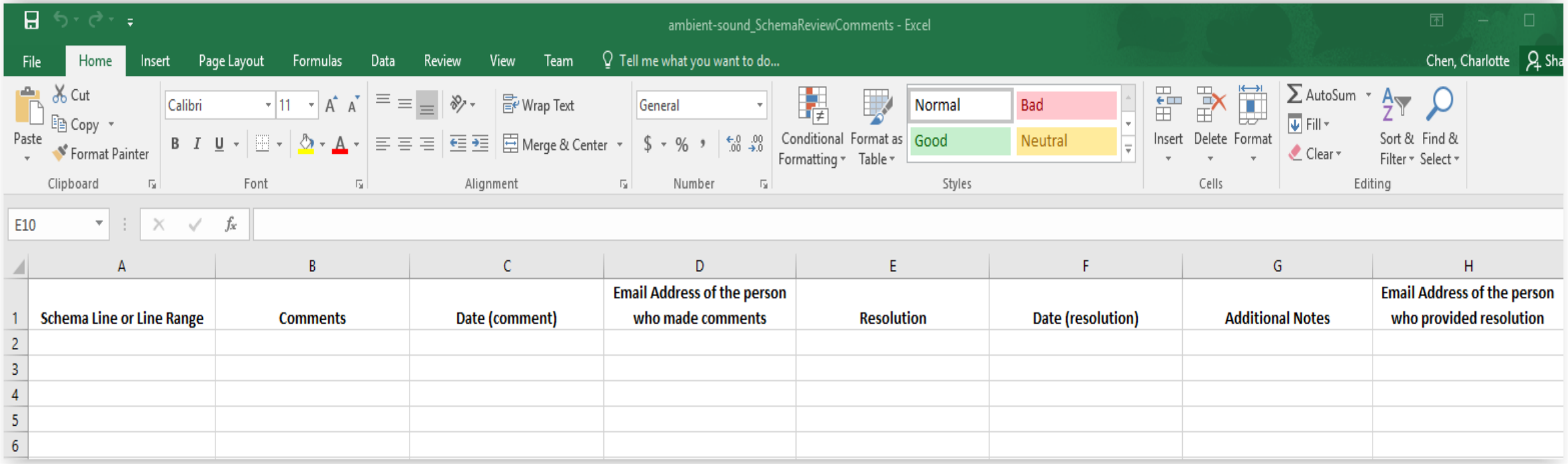
2. Review Schema (Reference to Simona's email on Oct 31/Nov 1)

---Use the notepad++ or other tools (could show line numbers) to open the schema for review

---Download schema and review sheet (sample data would help you understand the schema)

---Capture review comments by filling columns A, B, C, D (see below)

---Upload review sheet to iMeet (or send it to Charlotte.Chen@Philips.com for merging in)



Presentation:
Physical Activity Schema

Physical Activity Schema

- Schema and sample data available at https://ieee-sa.imeetcentral.com/omh/folder/WzIwLDEyMjUyNTc4XQ
- Provide comments in spreadsheet as just described for sleep schemas

```
{
    "$schema": "http://json-schema.org/draft-07/schema#",

    "description": "This schema represents episode(s) of physical activity.",
    "type": "object",

    "definitions": {...},

    "properties": {
        "activity_name": {
            "description": "Name of the activity. This can be sedentary.",
            "$ref": "#/definitions/activity_name"
        },
        "base_movement_quantity": {
            "description": "Number of repetitions of the activity base movement, if applicable (e.g., if activity is walking, base_movement_quantity would be
            "allOf": [
                {
                    "$ref": "#/definitions/unit_value"
                },
                {
                    "properties": {
                        "unit": {
                            "anyOf": [
                                {
                                    "enum": [
                                        "steps",
                                        "laps",
                                        "skips",
                                        "movements",
                                        "strokes"
                                    ]
                                },
                                {
                                    "type": "string"
                                }
                            ]
                        }
                    }
                }
            ]
        },
        "effective_time_frame": {
            "description": "As a measure of a duration, physical activity should not be associated to a date-time time frame. Hence, effective time frame is
            "allOf": [
                {
                    "$ref": "#/definitions/time_frame"
                },
                {
                    "required": [
                        "time_interval"
                    ]
                }
            ]
        },
```

```
},
"distance": {
    "description": "The distance covered, if applicable.",
    "$ref": "#/definitions/length_unit_value"
},
"cumulative_elevation_gain": {
    "description": "The total ascent, if applicable.",
    "$ref": "#/definitions/length_unit_value"
},
"duration": {
    "description": "The net duration of the activity, if applicable.",
    "$ref": "#/definitions/duration_unit_value"
},
"duration_moderate_activity": {
    "description": "The duration of moderate-intensity physical activity, if applicable.",
    "$ref": "#/definitions/duration_unit_value"
},
"duration_vigorous_activity": {
    "description": "The duration of vigorous-intensity physical activity, if applicable.",
    "$ref": "#/definitions/duration_unit_value"
},
"average_cadence": {
    "description": "The average rate at which the activity was performed. If none of the units listed applies, the string alternative will allow
    "allOf": [
        {
            "$ref": "#/definitions/unit_value"
        },
        {
            "properties": {
                "unit": {
                    "anyOf": [
                        {
                            "enum": [
                                "steps/min",
                                "strokes/min",
                                "skips/min",
                                "laps/min",
                                "movements/min",
                                "strokes/lap"
                            ]
                        },
                        {
                            "type": "string"
                        }
                    ]
                }
            }
        }
    ]
},
```

```
        },
        "kcal_burned": {
            "description": "The calories burned during the activity.",
            "$ref": "#/definitions/kcal_unit_value"
        },
        "reported_activity_intensity": {
            "description": "Self-reported intensity of the activity performed.",
            "type": "string",
            "enum": [
                "light",
                "moderate",
                "vigorous"
            ]
        },
        "met_value": {
            "description": "Average Metabolic Equivalent of Task value for the activity",
            "type": "number"
        },
        "light_activity_percentage": {
            "description": "Percentage of the activity duration that was of light intensity.",
            "allOf": [
                {
                    "$ref": "#/definitions/unit_value"
                },
                {
                    "properties": {
                        "unit": {
                            "enum": [
                                "%"
                            ]
                        }
                    }
                }
            ]
        },
        "descriptive_statistic": {
            "$ref": "#/definitions/descriptive_statistic"
        },
        "descriptive_statistic_denominator": {
            "anyOf": [
                {
                    "$ref": "#/definitions/descriptive_statistic_denominator"
                },
                {
                    "description": "If none of the units listed applies, the string alternative will allow validation of the unlisted unit. If the value need
                    "type": "string"
                }
            ]
        }
    },
    "required": [
        "activity_name",
        "effective_time_frame"
    ]
}
```

Sample data


```
{
    "activity_name": "Running",
    "effective_time_frame": {
        "time_interval": {
            "start_date_time": "2019-03-29T08:26:03Z",
            "end_date_time": "2019-03-29T09:14:41Z"
        }
    },
    "distance": {
        "value": 7.45,
        "unit": "km"
    },
    "duration": {
        "value": 45.5,
        "unit": "min"
    },
    "kcal_burned": {
        "value": 383,
        "unit": "kcal"
    },
    "average_cadence": {
        "value": 184,
        "unit": "steps/min"
    },
    "cumulative_elevation_gain": {
        "value": 108,
        "unit": "m"
    },
    "duration_moderate_activity": {
        "value": 41.5,
        "unit": "min"
    },
    "duration_vigorous_activity": {
        "value": 4,
        "unit": "min"
    }
}
```

Future Work

Timeline Proposal for Draft Review (1)

- October 15 WG call
  - INTRO: draft standard document; beginning of review period, comments due Oct 31st in iMeet Central
    - *By Oct 31: distribute 1st batch of sleep schemas and the PA schema via iMeet; with comments from WG members due in iMeet Nov 19*
- November 5 WG call
  - DISCUSSION: draft standard document
  - INTRO: Quantitative sleep schemas (7-8) + physical activity schema, beginning of review period, **comments due Nov 19**
    - *By Nov 14: distribute 2nd version of draft standard document*
    - *By Nov 21: distribute 2nd batch of quantitative sleep schemas via iMeet; comments from WG members due in iMeet Dec 13*
- November 26 WG call
  - DISCUSSION: 2nd version of draft standard
  - DISCUSSSION: 1st batch of quantitative sleep schemas (7-8) + physical activity schema
  - INTRO: 2ND batch of quantitative sleep schemas + qualitative sleep schemas, beginning of review period, comments due Dec 13
    - *By Dec 6: distribute 2nd version of quantitative sleep schemas (7-8) + physical activity schema*
    - *By Dec 12: distribute metadata schema via iMeet; comments from WG members due in iMeet Jan 7*
    - *By Dec 13: "final" draft standard ready*

Timeline Proposal for Draft Review (2)

- December 17 WG call
  - DISCUSSION: 2nd version quantitative sleep schemas (7-8) + physical activity schema
  - DISCUSSION: second batch of quantitative sleep schemas + qualitative sleep schemas
  - INTRO: minimum metadata schemas, beginning of review period, comments due Jan 7
    - *By ~Jan 7: "final" version of quantitative sleep schemas (7-8) + physical activity schema*
    - *By Jan 7: distribute 2nd version of 2nd batch of quantitative sleep schemas + qualitative sleep schemas*
- January 14 WG call
  - DISCUSSION: 2nd version of 2nd batch of quantitative sleep schemas + qualitative sleep schemas
  - DISCUSSION: Metadata schemas
    - *By Jan 21: "final" version of 2nd batch of quantitative sleep schemas + qualitative sleep schemas*
    - *By Jan 21: distribute 2nd version metadata schemas*
- January 28 WG call
  - DISCUSSION: 2nd version metadata schemas
  - PRESENTATION/DISCUSSION: rest of draft ballot, processes for review, GitLab readiness, etc.
  - Voting rolls and procedures
    - *By Feb 4: distribute "final" entire ballot*
- Presentation of full draft ballot and voting, after IEEE editorial review and approval to move to ballot

P1752 WG Next Steps

- Review and comment on schemas presented today, submit comments to iMeet Central by **November 19**
  - Contact simona@openmhealth.org if you need assistance getting onto iMeet
- Sign CLAs and provide them to IEEE
- Let Simona know you have obtained CLA number (do not share the #)
- As CLAs are signed, IEEE/GitLab site manager will provide access to site

Summary of Action Items

Future Meetings

Upcoming Meetings

- Main WG
  - November 26, 2019: 8 AM (Pacific)
- Sleep subgroup
  - November 19, 2019 8:30 am to 9:30 am (Pacific)
- PA&M subgroup
  - November 14, 2019 11 to 11:45 am (Eastern)
- Metadata subgroup
  - November 26, 2019: 9 AM (Pacific)

Adjournment