

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)

- 6 July 2021
- Teleconference

Attendance

- Attendance is important for determining voting rights, so please remember to “check in”. This document shows attendance of current and previous calls <https://tinyurl.com/yc3oxg6q> (link in the chat window).
- **For today: mark your attendance at <https://tinyurl.com/yc3oxg6q> with a 0 if you are non-voting or a 1 if you are a voting member, or put your name and affiliation in the chat window to “check in”**
 - If your name is not listed in <https://tinyurl.com/yc3oxg6q>, or if you are joining only via phone, please email simona@openmhealth.org with “P1752 WG call” as subject
- If you attended a previous call and your attendance was not noted, please email simona@openmhealth.org

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

Slide #4

IEEE SA Copyright Policy

IEEE SA Copyright Policy (November 2019)

- **By participating in this activity, you agree to comply with the [IEEE Code of Ethics](#), all applicable laws, and all IEEE policies and procedures including, but not limited to, the IEEE SA Copyright Policy.**
 - Previously Published material (copyright assertion indicated) shall not be presented/submitted to the Working Group nor incorporated into a Working Group draft unless permission is granted.
 - Prior to presentation or submission, you shall notify the Working Group Chair of previously Published material and should assist the Chair in obtaining copyright permission acceptable to IEEE SA.
 - For material that is not previously Published, IEEE is automatically granted a license to use any material that is presented or submitted.

IEEE SA Copyright Policy

- The IEEE SA Copyright Policy is described in the IEEE SA Standards Board Bylaws and IEEE SA Standards Board Operations Manual
- IEEE SA Copyright Policy, see
 - Clause 7 of the IEEE SA Standards Board Bylaws
<https://standards.ieee.org/about/policies/bylaws/sect6-7.html#7>
 - Clause 6.1 of the IEEE SA Standards Board Operations Manual
<https://standards.ieee.org/about/policies/opman/sect6.html>
- IEEE SA Copyright Permission
- <https://standards.ieee.org/content/dam/ieee-standards/standards/web/documents/other/permissionltrs.zip>
- IEEE SA Copyright FAQs
- <http://standards.ieee.org/faqs/copyrights.html/>
- IEEE SA Best Practices for IEEE Standards Development
- http://standards.ieee.org/develop/policies/best_practices_for_ieee_standards_development_051215.pdf
- Distribution of Draft Standards (see 6.1.3 of the SASB Operations Manual)
- <https://standards.ieee.org/about/policies/opman/sect6.html>

Policies & Procedures

P1752 Policies & Procedures (P&P)

- No change from P&P for 1752.1 <https://tinyurl.com/syp89ce3>
- Draft update for EMB Society currently under review
- When finalized P1752 WG will adopt it

P1752 P&P Main Points

- Responsibilities of Chair and Secretary
- Voting membership
 - Voting rights are granted according to the P&P after **attending two consecutive calls and by explicit request** to the Secretary (Simona)
- Subgroups
 - Established by formal vote of the WG membership

Attendance

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Determination of Quorum

<https://tinyurl.com/rnaacvsz>

Approval of Agenda

1. Attendance
2. Call for Patents, Code of Ethics, Copyright Policy
3. Approval of agenda and minutes (if quorum present)
4. Overview of IEEE 1752 family of standards
5. P1752.1: summary of work
6. P1752.2: scope and plans
7. Other business

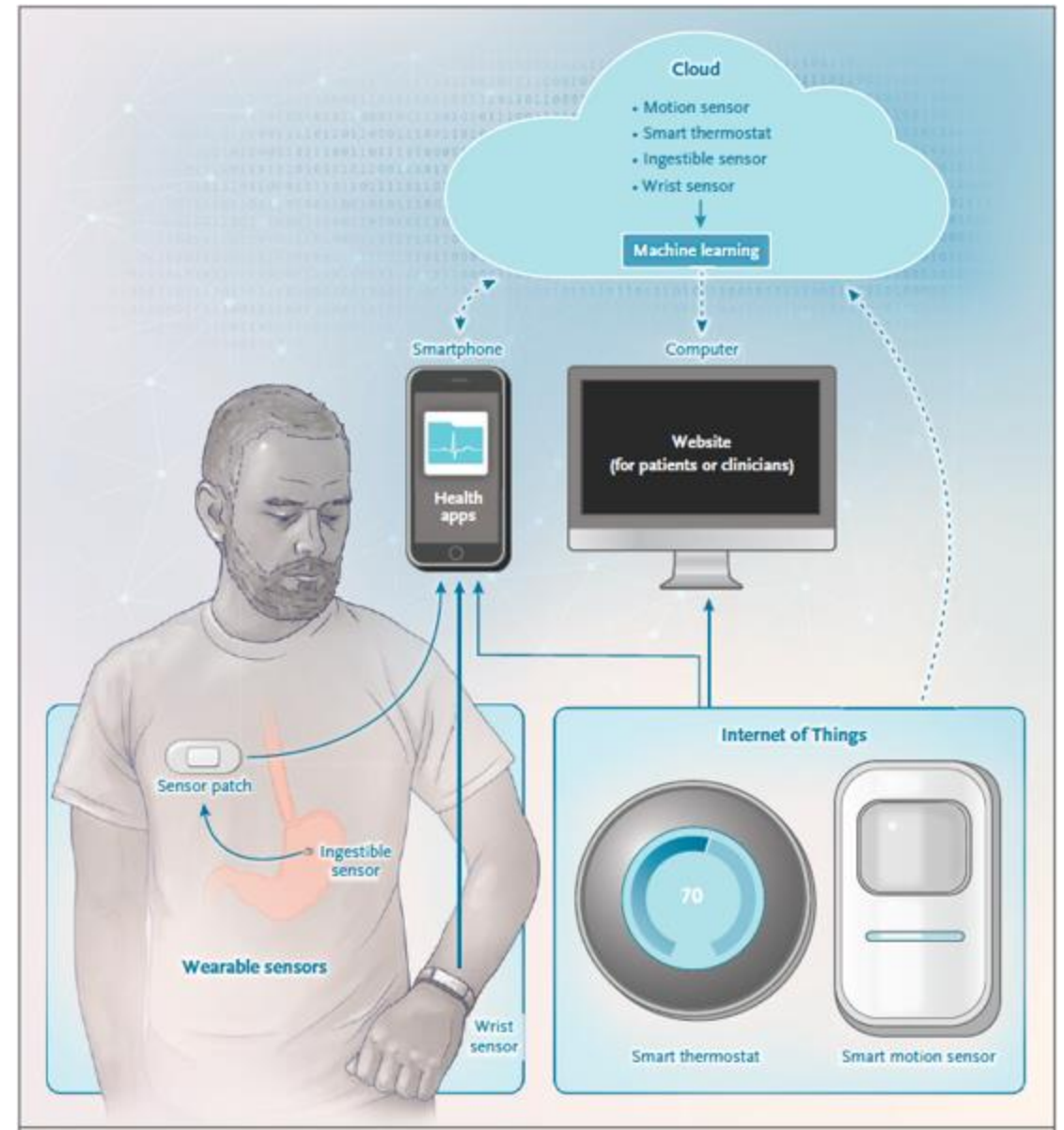
Approval of Prior Minutes

(June 1, 2021)

Overview of 1752 Family of Standards

Digital Biomarkers

- Digital biomarkers are physiological and behavioral measures collected by means of digital devices such as portables, wearables, implantables or ingestibles that characterize, influence or predict health-related outcomes
 - e.g., steps, total sleep time, heart rate variability



Sim I. Mobile Devices and Health. N Engl J Med 2019;381:956-68.

Digital Biomarkers: Assumptions

- Many new digital biomarkers will be defined
- From new sensors and new patient-reported outcomes (PROs)
- Continually changing hardware and software
- Increasingly digital biomarkers will combine output from multiple sensors/sources
- **Data will flow far and wide to multiple actors for multiple purposes**

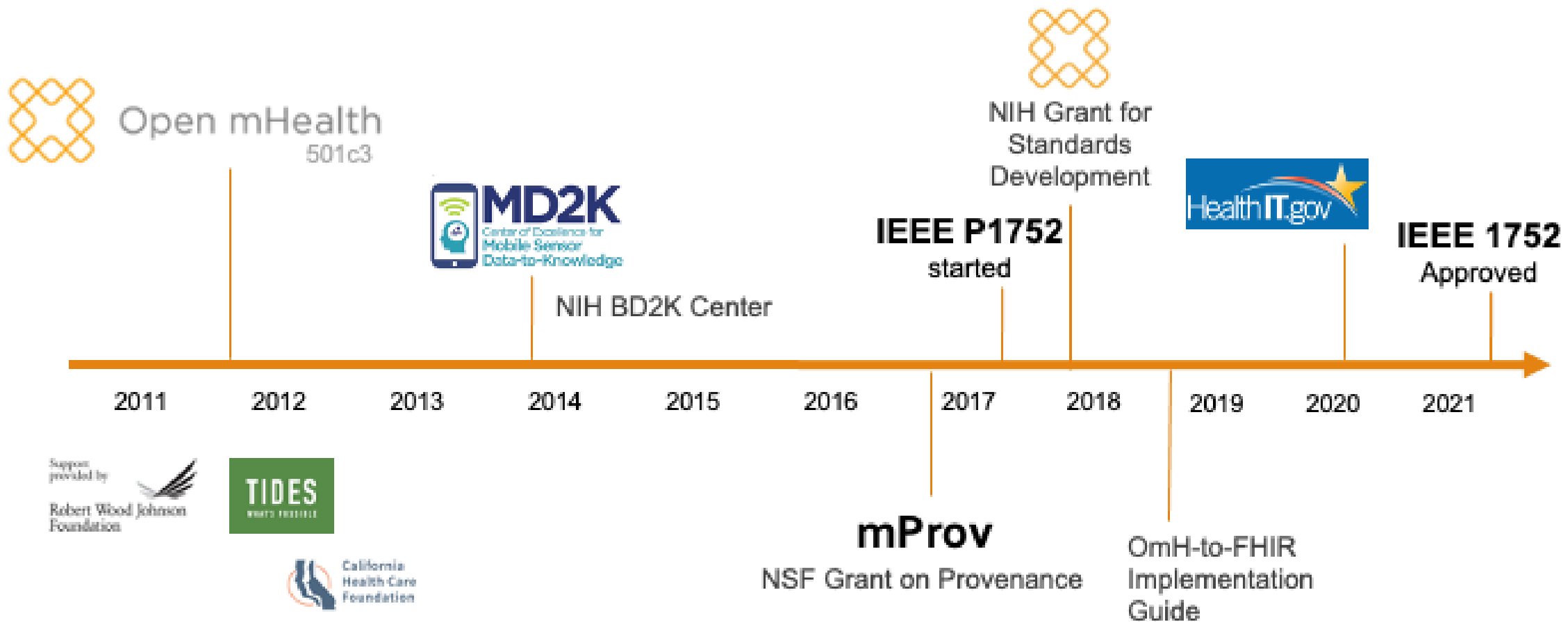
Standardizing mHealth data and metadata will

Make data exchange and reuse **predictable** and **consistent**

Make data aggregation across multiple sources easier and more accurate

Facilitate development and validation of digital biomarkers

Reduce costs of using mHealth data for care and research



Estrin D, Sim I. Health care delivery. Open mHealth architecture: an engine for health care innovation. Science. 2010 Nov 5; 330(6005):759-60.

80+ Schemas



1752.2

Physiologic, e.g.,

- BMI, height, weight
- body temp, BP, BG, HR, RR interval

Medication, e.g.,

- med prescription, adherence percent
- patient med schedule



Utilities, e.g.,

- time, units
- descriptive statistics



Physical activity, e.g.,

- physical activity, activity name
- step count
- minutes of moderate activity



Environmental, e.g.,

- ambient temp



1752.2

Respiratory, e.g.,

- O2 sat
- inspiratory time, expiratory time
- breath carbon monoxide



1752.2

Metadata, e.g.,

- device name, model



Sleep, e.g.,

- total sleep time
- sleep episode
- time in bed

Open mHealth schemas <https://github.com/openmhealth/schemas>

IEEE 1752.1 <https://gitlab.com/IEEE-SA/omh/1752>

Gaining Traction for Research...

Participant Technology Systems Center



Research Opportunity Announcement

OTA-21-015A

Post-Acute Sequelae of SARS-CoV-2 Infection Initiative: Clinical Science Core, Data Resource Core, and PASC Biorepository Core

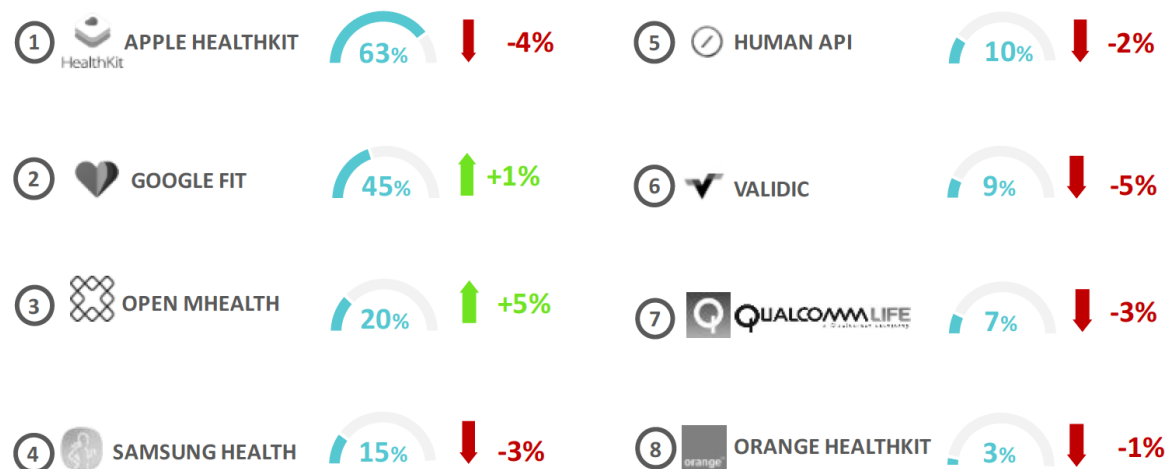
- The Data Resource Coordinating Center is strongly encouraged to use OMOP model (<https://www.ohdsi.org/data-standardization/the-common-data-model/>) and Open mHealth schemas (<https://www.openmhealth.org/documentation/#/schema-docs/schema-library>) when applicable.

...and for clinical care integration

Mapped to FHIR via the Open mHealth to FHIR Implementation Guide
<https://github.com/openmhealth/OMH-on-FHIR>

APPLE HEALTHKIT IS THE MOST POPULAR API AGGREGATION SERVICE USED BY 63% OF MHEALTH APP PUBLISHERS

Which API aggregation services do you use?



Changes since last year



©Research2Guidance 2018

Source: Research2Guidance - mHealth App Developer Economics study 2017/2018 - n = 2,400

IEEE 1752 Family of Standards

- Started as P1752, for a broad scope of schemas
 - Completed schemas for sleep and physical activity
- Gaining traction, IEEE standardization needed for additional data types
- IEEE 1752 is umbrella for Open mHealth-related Working Groups on mHealth schemas



Ida Sim, MD, PhD
Chair, P1752
Co-Founder Open mHealth
Professor of Medicine, UCSF



Simona Carini
Secretary, P1752
Data Scientist, Open mHealth
Research Scientist, UCSF

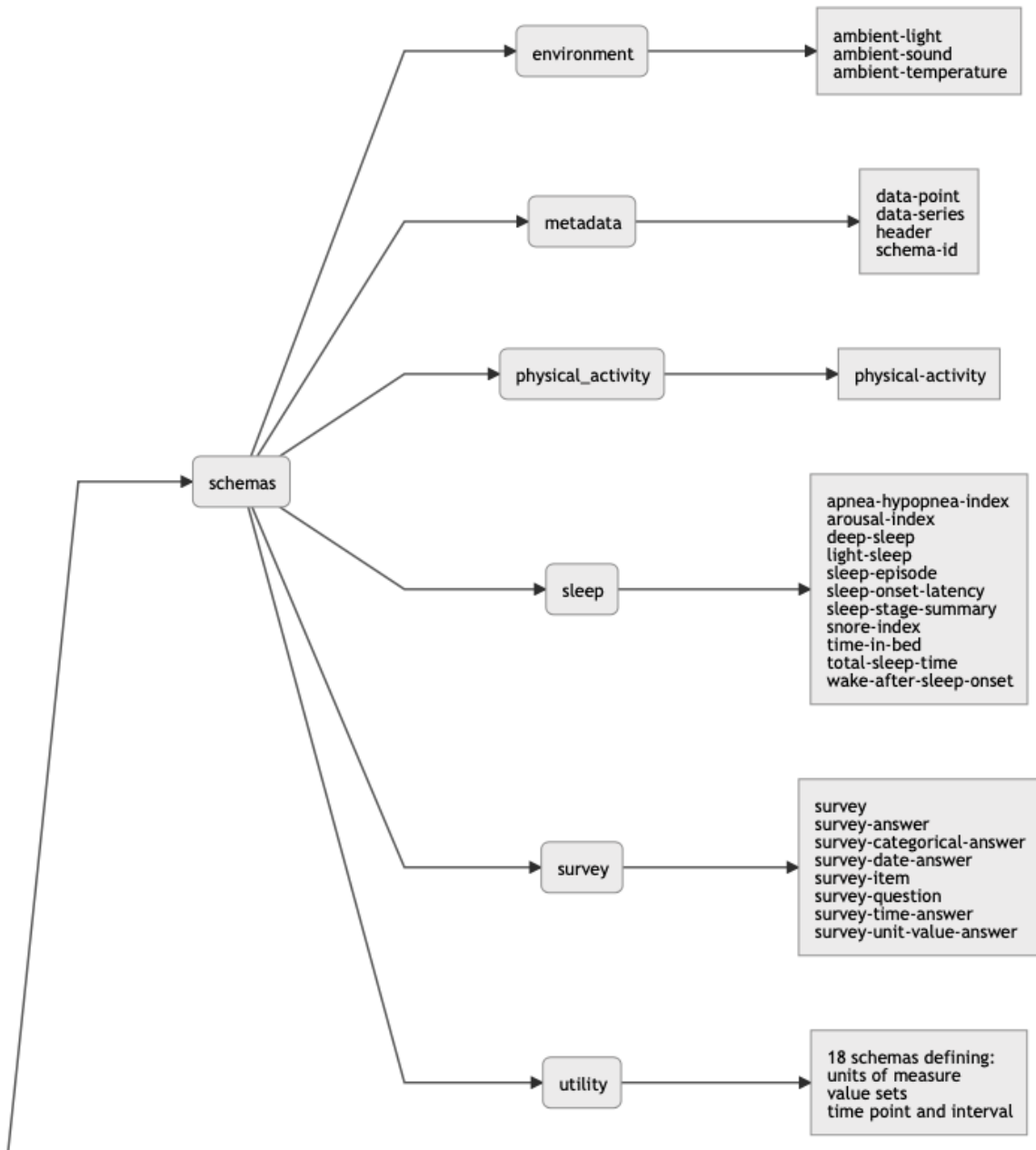
P1752.1: Summary of Work

P1752.1 Scope

- **Scope:** This standard will define specifications for standardized representations of mobile health data for a set of health measures pertaining to sleep and physical activity measures and a minimum set of metadata. Mobile health data encompasses personal health data collected from sensors and mobile applications.
- **Stakeholders:** Wearable device makers, medical device makers, health data aggregators, health information technology systems managers, health information infrastructure providers, mobile health app developers, biomedical researchers, clinicians, data scientists, government.

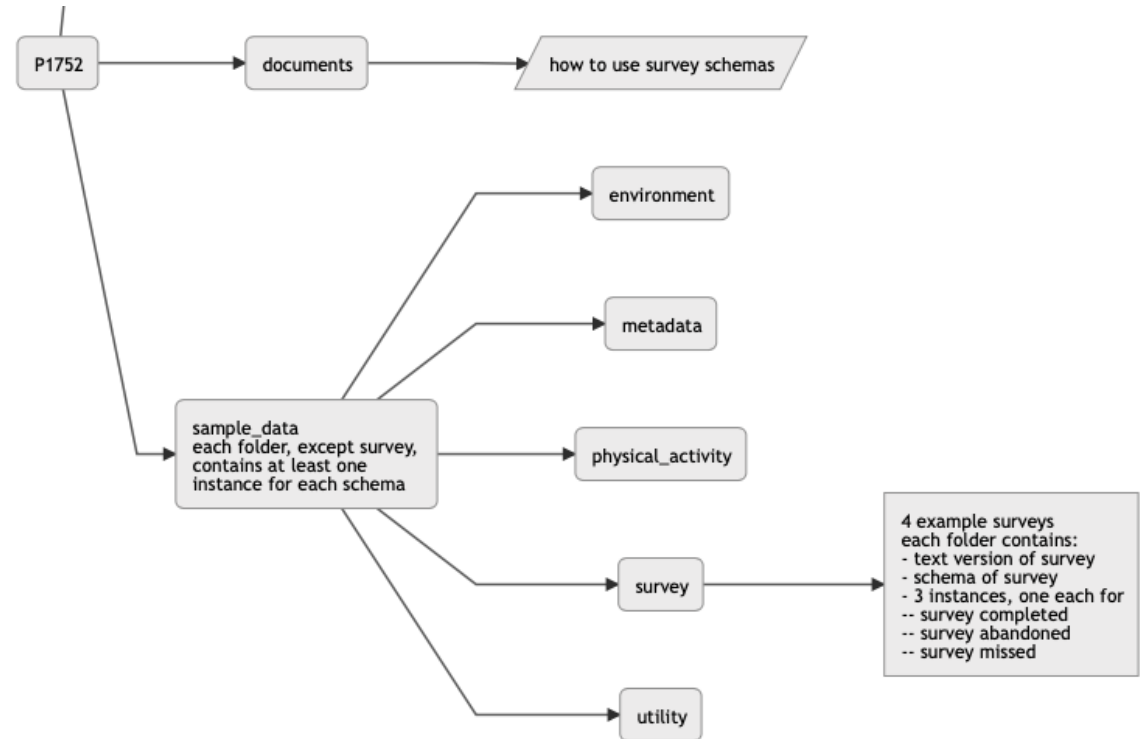
P1752.1 Timeline

- PAR approved Feb 17, 2017
- First Working Group meeting: Feb 5, 2018
- Subgroups
 - Sleep: Chaired by Charlotte Chen, Philips
 - Physical Activity: Chaired by Shiv Hiremath, Temple U.
 - Metadata: Chaired by Ida Sim, UCSF
- Draft standard <https://tinyurl.com/me8t2y7c> approved on June 16, 2021



IEEE GitLab site for 1752

<https://opensource.ieee.org/omh/1752/-/tree/main>



Current Status

- Approved standard currently under editing prior to official publication
- [Schemas in repository](#) to be renumbered 0.1 → 1.0
- Upcoming tasks:
 - Make all the changes in branch (including updates/additions of documents)
 - Establish site governance to triage and manage future updates
 - Share with WG for review
 - WG Vote

P1752.2 Scope & Plans

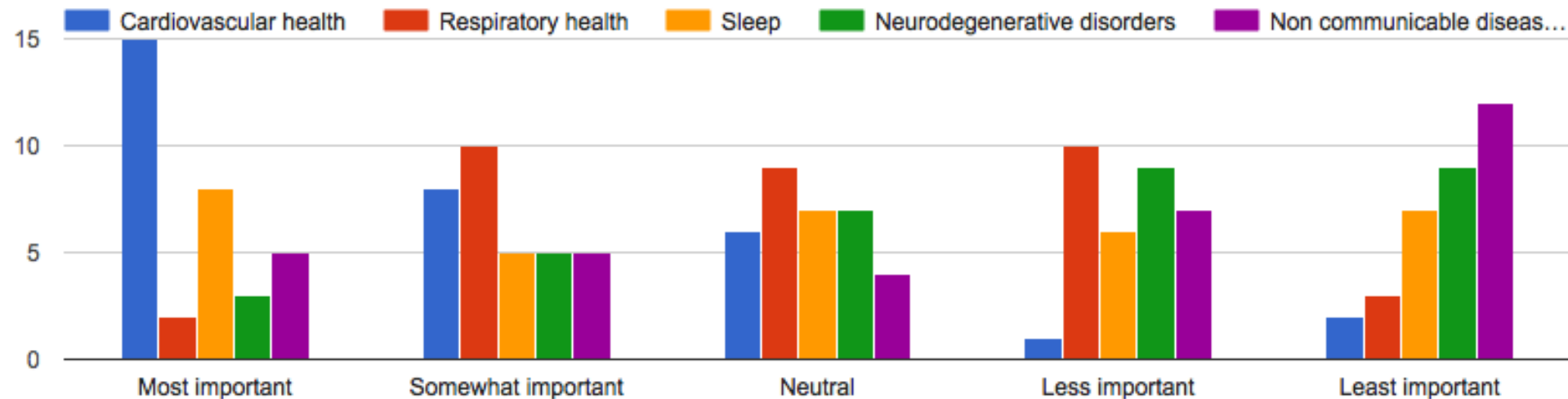
P1752.2 Standard for Mobile Health Data: Representation of Cardiovascular, Respiratory, and Metabolic Measures

- **Scope:** This standard **defines specifications for standardized representations for mobile health data and metadata for a set of health measures, pertaining to cardiovascular, respiratory, and metabolic measures.** Mobile health data encompasses personal health data collected from sensors and mobile applications.
- **Purpose:** The purpose is to provide standard semantics to enable meaningful description, exchange, sharing, and use of mobile health data pertaining to cardiovascular, respiratory, and metabolic health measures. Data and associated metadata need to be sufficiently clear and complete to support analysis for a set of consumer health, biomedical research, and clinical care needs.

https://standards.ieee.org/project/1752_2.html

P1752.2 Scope: why?

- Poll of 1752.1 WG member interest in 2018



- Subgroups launched for Sleep and Physical Activity
- P1752.2 to address cardiovascular, respiratory and metabolic measures, and metadata

Subgroups: Policies and Procedures

5.0 Subgroups of the Working Group

The Working Group may, from time to time, form subgroups for the conduct of its business. Voting Membership in the subgroup is granted to any participant of the Working Group. Such formation shall be explicitly noted in the meeting minutes. **At the time of formation, the Working Group shall determine the scope and duties delegated to the subgroup and may decide to allow participation of persons who are not Working Group members and specify the terms and conditions under which they participate in the subgroup.** Any changes to its scope and duties will require the approval of the Working Group. Any resolution of a subgroup shall be subject to confirmation by the Working Group.

Subgroups Details

- Seeking volunteer subgroup chairs for
 - Cardiovascular measures (e.g., BP, HR, HRV)
 - Respiratory measures (e.g., respiratory rate, O2 sat)
 - Metabolic measures (e.g., blood glucose, weight)
- Each subgroup will have
 - a page on the website, dedicated mailing list, named space on iMeet Central for sharing documents
- The subgroup can organize itself to work as deemed best by members
- At each main WG call, the subgroup chair will report back to the WG about progress, ask questions, solicit comments, etc.

P1752.2 Cardiovascular Subgroup

- **Scope:** The P1752.2 Cardiovascular (CV) Subgroup will review Open mHealth schemas related to CV measures and propose updates and additional schemas as needed. **The scope includes but is not restricted to the following measures of CV health: blood pressure, heart rate, heart rate variability, RR interval.** The focus of this Subgroup's work is on modeling data pertaining to CV function, not on current or future individual devices or apps that measure various aspects of CV health.
- **Duties:** By reviewing the clinical aspects of cardiovascular health and existing relevant devices and apps, the Subgroup shall **deliver a list of common attributes as well as a list of clinically important attributes in the cardiovascular domain as scoped above.** The Subgroup shall **propose modified and new schemas relating to CV health, 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 CV schemas.**
- **Chair:** TBD

Respiratory Subgroup: Scope

- **Scope:** The P1752.2 Respiratory Subgroup will review Open mHealth schemas related to Respiratory measures and propose updates and additional schemas as needed. The scope **includes but is not restricted to the following aspects of respiratory health: respiratory rate, O2 saturation.** The focus of this Subgroup's work is on modeling data pertaining to respiratory function, and not on current or future individual devices or apps that measure various aspects of respiration.
- **Duties:** By reviewing the clinical aspects of respiratory health and existing relevant devices and apps, the Subgroup shall deliver **a list of common attributes as well as a list of clinically important attributes in the respiratory health domain as scoped above.** The Subgroup shall **propose modified and new schemas relating to respiratory health, 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 respiratory schemas.**
- **Chair:** TBD

Metabolic Subgroup: Scope

- **Scope:** The P1752.2 Metabolic Subgroup will review Open mHealth schemas related to Metabolic measures and propose updates and additional schemas as needed. The scope **includes but is not restricted to the following aspects of metabolic health: blood glucose, body weight.** The focus of this Subgroup's work is on modeling data pertaining to metabolic functions, and not on current or future individual devices or apps that measure various aspects of metabolism.
- **Duties:** By reviewing the clinical aspects of metabolic health and existing relevant devices and apps, the Subgroup shall **deliver a list of common attributes as well as a list of clinically important attributes in the metabolic health domain as scoped above.** The Subgroup shall **propose modified and new schemas relating to metabolic health, 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 metabolic measure schemas.**
- **Chair:** TBD

Resources for Subgroup Work

- WG has “been there, done that” – institutional experience
- Open mHealth modeling principles
- 1752 Open-source site includes [schemas and sample data](#)
- Relevant Open mHealth schemas, e.g.,
 - https://www.openmhealth.org/documentation/#/schema-docs/schema-library/schemas/omh_heart-rate
 - https://www.openmhealth.org/documentation/#/schema-docs/schema-library/schemas/omh_respiratory-rate

Call for Subgroup Chairs

- Seeking volunteers:
 - opportunity to lead and help define mHealth data standards in high-priority clinical domains
 - subgroup meetings typically every 2-4 weeks, for 6-12 months
 - iMeet Central tools for subgroup work
 - support (and gratitude!) from WG Chair Ida Sim, WG Secretary Simona Carini, IEEE Program Manager Tom Thompson, and EBMS Standards Committee Chair Carole Carey

Questions? email WG Secretary simona@openmhealth.org

Interested to volunteer? email WG Chair ida@openmhealth.org

Summary of Action Items

Action Items

- Update Gitlab site, propose OS site governance model for WG review and vote
- Volunteer to be a subgroup chair!

Future Meetings

Upcoming Meetings

- P1752.2 WG call
 - July 20, 8 am Pacific

Meetings will be announced no later than 2 weeks beforehand via P1752 listserv

Adjournment