IEEE P1752.2 CardioRespiratory Measures Subgroup
Minutes of conference call held on April 28, 2022

Conference call started at 15:00 UTC (8:00 AM Pacific Time) on IEEE Webex
Attendance: 13 Attendees

Shivayogi	Hiremath	Temple University
Conner	McGraw	Wake Forest
Simona	Carini	UCSF / OmH
Josh	Schilling	Vibrent Health
Sakshi	Sardar	Critical Path Institute
Stephanie	Battista	Humanity Innovation Labs
M. Sabarimalai	Manikandan	Indian Institute of Technology Palakkad
Hamid	Mcheick	Université du Québec à Chicoutimi
Paul	Petronelli	PALM Associates, Inc.
Vishnu	Ravi	Stanford Byers Center for Biodesign
Koichiro	Matsumoto	Nihon Kohden Corp.
Banu	Rekha	PSG College of Technology Coimbatore, India
Paul	Steiner	Dartmouth College

Agenda**:**

- Attendance and introductions, review of prior minutes
- Topical presentation: "1752 Metadata Schemas" by Simona Carini
- Topical presentation: "Quantified Self" by Stephanie Battista, Connor McGraw, Josh Schilling
- Discussion of next steps (tasks)
- Other business
    - Repository of references, resources, drafts.
    - Next monthly meeting time preferences.
    - Other

A presentation entitled "1752 Metadata Schemes" was shared with the subgroup to help with understanding the JSON schema developed during the development of P1752.1 deliverables that is applicable to the entire family of P1752.2 schemas, including those yet to be developed or in development. This presentation included a summary about the minimum metadata set necessary for each data point (or series) instance, and also elucidated optional elements that in the schema header and body used to help further describe instances.

Next, initial work on 'The Quantified Self" was presented. A spreadsheet was shared that framed considerations under discussion, along with a couple of references that were used to inform the work (including a reference to the DiMe Society Playbook). Additional aspects of the healthcare use case paradigm were fleshed out in their framework (in particular noting the categories of public health, clinical care, and clinical research).

During the ensuing discussion, a point was raised on data collection, in particular noting the potential relevance of triggered data collection. Indeed, in the detection of cardiorespiratory data, triggering is a common technique employed for facilitating a pragmatic and more light weight data burden, otherwise taking advantage of edge computing methodology for sensor data processing (with the regularly sampled data not accessible, and otherwise not retained by the detection equipment). Considerations for how this issue best might be handled were discussed. It yet may be possible to leverage the existing data element structure to address this (as described in today's metadata presentation). If that proves to be unwieldy or otherwise suboptimal, the Cardiorespiratory Subgroup can bring the matter to the attention of the Main Working Group for oversight consideration in case alternatives otherwise might be identified to address this issue more effectively (for example, revising one or more attributes in the data element header, which might provide another alternative for the "modality" and/or the "acquistion_rate"). This matter is noted today for additional consideration in subgroup future meetings.

Additional discussion occurred regarding the type of data elements to be considered, with consideration of placing an emphasis on utilizing "validated" measures of desired data types to be identified. It was pointed out that in some instances, a measure may be taken with 100% accuracy, but yet provide a different result from another applied methodology that also simultaneously has been applied with 100% accuracy. An example of this would the heart rate. A heart rate based on sequential latencies of successive electrocardiographic QRS complexes may differ from the heart rate detected by plethysmography or via a modality that determines the heart rate from the mechanical impulse; not all ventricular electrical activations result in a detected mechanical pulse, particularly when there is considerable a rhythm irregularity present with short coupling intervals. Rhythm regularity makes it substantially less likely that there will be any disparity, but it raises questions about how a schema best might address this matter in order to be most useful across the various descriptive paradigms previously presented (note presentation of March 31, 2022). A determination will be necessary as to the perceived significance of such disparities. With that noted, less relevant disparities identified will not necessarily require alteration of the associated data schema specification, and the determination of relevance will depend on the group of use cases the cardiorespiratory subgroup seeks to prioritize and address for P1752.2 purposes (otherwise, selective use of sensors specific to a purpose and/or metadata filtering may be sufficient).

This brought the discussion back around to the next steps of the subgroup: identifying and describing a range of use cases, and then prioritizing those which are to be addressed in the work of the subgroup. From that, data types and related attributes then also can be selected and prioritized, from which a schema design can be developed for submission to the P1752.2 Main Work Group.

Submission of use cases going forward is strongly encouraged by subgroup members, considering important examples from across the use case paradigm previously emphasized, and further expanded upon today:

- Athleticism (fitness & performance)
- Self-care (health maintenance, wellness, quantified self)
- Healthcare chronic disease monitoring, post-intervention recovery)
  - *Public health*
  - *Clinical care*
  - *Clinical research*

Finally, there was discussion about a repository for the documents being generated, and supporting reference materials. This is entirely up to the preferences of the subgroup. Other P1752 subgroups have utilized the IEEE iMeet resource for this purpose. A Google workspace with version controls is a possibility (the spreadsheet shared today is a shared Google document set up earlier this month). During the next meeting, members of the group will try to arrive at a consensus decision on this for work involving the full subgroup, although individual and small group efforts otherwise should proceed with whatever is most useful and individually preferred for each supportive effort.

The P1752.2 Cardiorespiratory Subgroup prior meeting minutes and some shared presentation slides from prior meetings have been posted to the group's web page at https://sagroups.ieee.org/1752/cardio-respiratory-subgroup/.

Action Items:

- Preparation of use case presentations addressing "fitness / performance / athleticism"
- Preparation of use case presentation addressing "health / wellness" (the quantified self)
- Request for specific use case proposals fitting the Health Care paradigm
- Group communication through email & iMeet regarding to start to form small group focused on developing specific proposed use case types, along with preparation for presentation to the subgroup.

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Next meeting: May 26, 2022 at 15:00 UTC (8:00 AM Pacific Time)
Minutes taken by Paul Steiner (Dartmouth)