**IEEE P802.15**

**Wireless Specialty Networks**

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| Project | IEEE P802.15 Working Group for Wireless Specialty Networks (WSNs) |
| Title | **Additional information for PAR discussion** |
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| Re: | Amendment to IEEE Std 802.15.6 Wireless Body Area Networks |
| Abstract | In preparation for PAR and CSD of SG 15.6a |
| Purpose | For discussion in SG 15.6a |
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# Review of 802.15.6-2012 PAR

Extraction of *scope, purpose* and *need for the project* from the 802.15.6-2012 PAR:

**“5.2 Scope of proposed standard:** This is a standard for short range, wireless communication in the vicinity of, or inside, a human body (but not limited to humans). It can use existing ISM bands as well as frequency bands approved by national medical and/or regulatory authorities. Support for Quality of Service (QoS), extremely low power, and data rates up to 10 Mbps is required while simultaneously complying with strict non-interference

guidelines where needed. This standard considers effects on portable antennas due to the presence of a person (varying with male, female, skinny, heavy, etc.), radiation pattern shaping to minimize SAR\* into the body, and changes in characteristics as a result of the user motions.

\*SAR (Specific Absorption Rate) measured in (W/kg) = (J/kg/s). SAR is regulated, with limits for local exposure (Head) of: in US: 1.6 W/kg in 1 gram and in EU: 2 W/kg in 10 grams. This limits the transmit (TX) power in US < 1.6 mW and in EU < 20 mW.”

**“5.4 Purpose:** The purpose is to provide an international standard for a short range (i.e. about human body range), low power and highly reliable wireless communication for use in close proximity to, or inside, a human body. Data rates, typically up to 10Mbps, can be offered to satisfy an evolutionary set of entertainment and healthcare services. Current Personal Area Networks (PANs) do not meet the medical (proximity to human tissue) and relevant communication regulations for some application environments. They also do not support the combination of reliability (QoS), low power, data rate and noninterference required to broadly address the breadth of body area network applications.”

**“5.5 Need for the Project:** There is a need for a standard optimized for ultra-low power devices and operation on, in or around the human body to serve a variety of applications including medical and personal entertainment. Examples of the applications served by the proposed standard are: Electroencephalogram (EEG), Electrocardiogram (ECG), Electromyography (EMG), vital signals monitoring (temperature (wearable thermometer), respiratory, wearable heart rate monitor, wearable pulse oximeter, wearable blood pressure

monitor, oxygen, pH value, wearable glucose sensor, implanted glucose sensor, cardiac arrhythmia), wireless capsule endoscope (gastrointestinal), wireless capsule for drug delivery, deep brain stimulator, cortical stimulator (visual neuro-stimulator, audio neuro stimulator, Parkinson's disease, etc...), remote control of medical devices such as pacemaker, actuators, insulin pump, hearing aid (wearable and implanted), retina implants, disability assistance, such as muscle tension sensing and stimulation, wearable weighing scale, fall detection, aiding sport training. This will include body-centric solutions for future wearable computers. In a similar vein, the same technology can provide effective solutions for personal entertainment as well. The existence of a body area network standard will provide opportunities to expand these product features, better healthcare and well-being for the users. It will therefore result in economic opportunity for technology component suppliers and equipment manufacturers.”

# Ben comments

One Ben’s comment was about if the scope of the 15.6a PAR is intended for a ***revision*** to 802.15.6 rather than an ***amendment***. What is the difference?

## Standards Board Operations Manual, 2020

**“8.1.2 Amendments and corrigenda**

Amendments and corrigenda are processed with separate PARs and balloted independently in accordance with the requirements of these procedures, including submission to the IEEE-SA Standards Board. A corrigendum may not extend the scope of the existing standard. An amendment may extend the scope of the existing standard, but if the proposed scope of the amendment PAR or the changes made in the draft amendment are found to be excessive by the IEEE-SA Standards Board, the Standards Committee shall initiate a revision PAR to replace the amendment PAR.”

## Answer

I believe Ben’s comment meant that 15.6a PAR is broadly described. So many changes/explanations in the “Scope” that it looks like a *revision* rather than an *amendment*. Hence, we revised the text for scope, purpose, need for the project; simplifying the description but keeping the intention based on:

### The IEEE Standards Style Manual

“**12.2.3 Scope**

For amendments and corrigenda, there is normally no scope in the draft. Therefore, on the PAR, the scope shall state what the amendment/corrigendum is changing.”

“**12.2.4 Purpose**

A paragraph describing the purpose of the standard is not mandatory in the draft. However, if included, the purpose of the standard and its intended application shall be included in a separate subclause (1.2). The purpose shall explain why the standards project is needed.

For new and revision projects, the purpose (if included) of the draft shall be within the parameters of the purpose given on the PAR, as determined by the balloting group voting on the draft.

For amendments and corrigenda, there is normally no purpose in the draft standard. Therefore, on the PAR form, the purpose shall state why the changes are being made.”

### myProject PAR submission

“The need for the project details the specific problem that the standard will resolve and the benefit that users will gain by the publication of the standard. The need statement should be brief, no longer than a few sentences.”

# Kamran comments

 Kamran mentioned to feel uncomfortable with the so-called VBAN, because vehicles are not human and that use case was not considered in the scope of 15.6-2012 PAR. Hence, vehicles should not be considered in the amendment.

## Answer

The PAR scope of 802.15.6-2012 does not limit the use of BAN to only humans. Hence, the PAR scope of amendment 802.15.6a does not change the original PAR scope of 802.15.6; and requesting to extend/add 802.15.6 BAN support for vehicles complies with clause 8.1.2 “Amendments and corrigenda” of the Standard Board Operations Manual, December 2020.