**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

## Amendment versus revision

The initial Ben’s comment was about the scope of the PAR was for a ***revision*** to 802.15.6 instead of an ***amendment***. What is the difference?

### Standards Board Operations Manual

**“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.”

### 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.”

### Conclusion

I believe Ben’s comment is towards 15.6a PAR is broadly described. So many changes/explanations look like a *revision* rather than an *amendment*. We should simplify the arguments for an amendment in the scope, purpose, need for the project.

# Kamran comments

 In so-called VBAN, vehicles are not included on the scope of 15.6-2012 PAR. Hence, it should not be in the amendment.

Defining/implementing a 15.6 ad hoc network not used by a human is within the scope of 15.6 PAR. Moreover, the scope of 15.6 is not restricted to medical applications. Hence, an extension of 15.6 PAR to include a vehicle is within the scope of 15.6a amendment.