



INTERNATIONAL ELECTROTECHNICAL COMMISSION

TECHNICAL COMMITTEE NO 100: AUDIO, VIDEO AND MULTIMEDIA SYSTEMS AND EQUIPMENT

PT 100-10 Stage 0 project on wearable systems and equipment

Meeting held on May 15, 2017, at IEC-APRC Singapore

1. Roll call of participants

China: Xiaoying Zhao; Zhigang Zhang

Germany: Ulrike Haltrich

Japan: Junichi Yoshio, Satoshi Terasaki, Hiroo Tamura, Shin Eguchi, Satoshi Ouchi, Takayuki Fujiwara, Tadayoshi Kosaka, Shuji Hirakawa, Hiroyuki Ishii, Masotake, Toshihiro Inokuchi

Korea: Jongho Chong, Juyong Park

UK: Kate Grant

US: Mark Levine, Veronica Lancaster, Colin Whitby Stevens

2. Agenda approved

3. PT 100-10 Report Frankfurt: Action points reviewed:

Merger PT 100-10 and PT 100-13 (100/2854/INF)

Consider formation new TA (possibly merge 100-10 with TA16 rather than a new TA);

Circulation draft TR User Comfort

Request for additional members for project on assistive hearing

JTC 1 TTR to be circulated for comment

(follow up on all these (see below))

4. Proposal re-organization SS 8 and TA 16

- Consider merging all wearables technology under TC 100 TA16. Would need to change title and scope slightly, justify this because of close connection between TA16 and wearables.

- **Proposed new Title:** Active Assisted Living (AAL), wearable electronic devices and technologies, accessibility and user interfaces

- **Proposed new Scope:**

To develop international publications addressing aspects of active assisted living (AAL), **wearable electronic devices and technologies**, accessibility, usability and specific user interfaces related to audio, video and multimedia systems and equipment within the scope of TC 100. Specific aspects related to audio, video and multimedia systems and equipment to be addressed include:

- User requirements for accessibility and usability
- Requirements for systems and equipment for active assisted living, *including* **wearable electronic devices and technologies** *smart-devices*
- Standardization to address the identified requirements for active assisted living, accessibility and usability
- User Interfaces, interfaces, protocols and control mechanisms for systems and equipment for active assisted living, **wearable electronic devices and technologies**, accessibility and usability
- Comment Inokuchi-san: Normally study sessions are only set up for 2 years.
- Formation of IEC TC 124 may lead to further changes to scope etc.
- Close PT 100-7 (Stage 0 project on Ambient Assisted Living (AAL)) IEC TR 62907 was published

- Assign PT 100-10 (Stage 0 project on user comfort and evaluation of smart textiles and wearables) to TA 16 after the scope of TA16 will be revised
 - Continue to collect use cases
 - **Agreed to propose this reorganisation to AGM.**
- 5. Report IEC TC 124 Wearable Devices (U. Haltrich)**
- Background to establishment of IEC TC124, new TC formation agreed by SMB 158
 - Scope of TC124 as proposed by SG10 to SMB
 - Current membership of TC 12 P-members and 7 O-members
 - Rationale: market trends show emergence of new industry
 - Highlight areas for standardization identified (as per SG10 report)
- 6. Report from 2017 International Standardization Forum on Wearable Smart Device (hosted by KATS on 28 April 2017) (K. Grant)**
- The detailed report was presented. **Action: it was agreed to make the presentations available through TA 16**
- 7. Report from JTC 1 Wearables (K. Grant)**
- Brief overview of TTR (produced in 2016) and the proposal to form a SG in the new SC41 (having their first meeting in Seoul 28-May to 2nd June.
 - TC100 will need liaison with SC 41 (see also TA16 recommendations to AGM.)
- 8. Update wearable standardization activities in other regions**
- 8.1 US - CTA activities:
- Health and fitness Sub-committee
 - Sleep Monitors Working Group
 - ANSI/CTA-2052.1 Glossary of terms for Sleep Wearable: specifies terms and definitions for sleep wearable devices, to include wearable device specific definitions and laboratory definitions
 - ANSI/CTA-2052-2 Methodology of Measurements for Features in Sleep Tracking Consumer Technology Devices and Applications: outlines performance requirements for Wearable Sleep Monitors (consumer products)
 - Next project could address performance against measurement methodologies and a possible self-certification/logo program
 - Physical Activity Monitoring Working Group
 - WG work on intensity of physical activity;
 - ANSI/CTA-2056 Physical activity monitoring; definitions and performance standards for physical activity monitoring devices eg – step counting: standard creates definitions and performance criteria for measuring step counting on consumer wearable or app-based physical activity monitoring devices and creates common testing conditions for validation of various devices or apps that have a step-counting feature.
 - Consumer EEG data working group
 - ANSI/CTA-2057 Interoperability standards series for consumer EEG data – Local transmission: standard to enable real-time processing and storage of collected data by synchronous transmission of multiple data streams, each potentially sampled at a different rate, on a local network. Each data streams may also have a different type, e.g. real numbers or strings, or have an irregular sampling rate (e.g. events).
 - ANSI/CTA-2058, Interoperability Standards Series for Consumer EEG Data - Event Description: Standard to harmonize the way that events are described, i.e. various aspects of them are represented and transmitted. (*Events capture changes in the real or virtual world that are potentially relevant to understanding the data collected from the user. User actions (e.g. pressing a button or starting to walk), changes in state (surprise, detection of targets or errors, receiving positive or negative feedback) and presentations of various stimuli (e.g. audio and visual elements in a game) can potentially induce changes in recorded EEG, heart rate and other biosignals.*)
 - ANSI/CTA-2059, Interoperability Standards Series for Consumer EEG Data - User State Description: standard is to (a) define a list of terms that are used to describe User State, clearly explaining the meaning of each term (b) define the numerical and/or categorical

value ranges associated with each term, e.g. using values between one (1) and zero (0) for focused user state, with the value one (1) referring to a fully focused user state. (*Estimation of User State (e.g. sleepy, alert or surprised) is the main focus of most Brain Computer Interface (BCI) applications*)

- ANSI/CTA-2060, Interoperability Standards Series for Consumer EEG Data - File Storage: Standard specifies a file format for storing several data streams in a single, self-describing, file, with each stream potentially sampled at a different rate, or having a different type (e.g. real numbers and strings). *It will allow this data to be provided in an efficient and temporally accurate manner to analysis and visualization applications. **Work now complete on this***
- ANSI/CTA-2061, Interoperability Standards Series for Consumer EEG Data - Group-level meta-data encapsulation: Standard to (a) define the minimum set of information (metadata) required to process EEG and associated data collected from a group of users and (b) adopt a schema to encapsulate this information and make it available for automated processing.
- ANSI/CTA-2065, Physical Activity Monitoring for Heart Rate and Related Measures: Standard to create definitions and performance criteria for consumer technology that measures heart rate or related parameters; it will include sample Tests for the Lifestyle and Interval Protocols, new Proposed Assumptions Section for the Standard, Accuracy Threshold Section, Control Device Section
- Consumer stress monitoring technologies
 - New WG, measure breathing, and other sensors
 - ANSI/CTA-2068 Definitions and Characteristics of Consumer Stress Monitoring Technologies: will include definitions and characteristics of consumer stress monitoring technologies to define terms related to stress and stress indicators that are relevant for stress monitoring technologies and will describe performance standards for the measurement of stress-related characteristics by consumer stress monitoring technologies.
- Mobile Health Applications working group
 - New WG, yet to launch with meetings, need to brainstorm projects and priorities, expect many projects
- Challenges:

Medical community want to know that devices transmitting good information (reliability, privacy, security etc)
- IEEE work not directly shared with CTA, but have general information
- Personal Sound Amplification WG
 - Devices assist with hearing
 - ANSI/CTA 2051 Personal Sound Amplification Performance Criteria: describes technical performance metrics and associated target values for personal amplification products that meet the baseline technical performance requirements for characterization as a CTA certified device. Description of performance baselines has been divided into feature specific sub-sections that identify target performance values and the relevant measurement method for each performance feature specified within a sub-section

Recommendation that CTA have direct liaison with TC100 to simplify exchange of documents

Question: is PDSO with IEEE relevant to TC 100 work? Need to investigate relevant projects and liaison status

8.2 UK: Energising Health: A review of the health and care applications of smart meter data. **Action: report to be circulated.**

9. Report of use case studies JP NC (J. Yoshio)

Possible NP of Wearable Device with Assortment Work in Logistics

Japanese presentation on XR technology (includes AR, VR) and focus on industrial use

- Potential areas for standardization
 - System models including servers and terminals as TS;
 - Specification and evaluation method for XR systems as IS
 - System interfaces between servers and terminals as IS

- AR system example:
 - Work support system in logistics using AR and VR eg worker with glove providing bar code reader and smart glasses. Provide system schematic
 - Work support system in logistics using AR and VR eg worker with inspection task and smart glasses. Provide system schematic
 - Simulation system to predict difficulties in construction workplace
- AR communication work support system and VR work simulation system
- Outline of XR specification and evaluation method (for aspects such as delay response, space perception and tracking and marker recognition)
- Delay response in terminal: time delay between sensing and displaying in a terminal; related parameters are kind of smart glasses, AR engine perceiving space around user, display conditions eg definition, frame rate
- Delay response between AR terminal and PC, related parameters identified
- Delay response between camera and VR terminal, related parameters identified
- Tracking ability for moving distance, turning around or moving speed
- Experimental results of various delays presented

Comments: How does it impact SS11 which wants to cover conceptual model of VR systems?

Potential overlap of work additional parameters being identified in SS11 and this proposal needs to be considered; **topic will be discussed in AGS**. Clearly clarifies some important requirements.

10. Status report, NP on Listening Functionality (J. Yoshio) (100/2804/RVN)

Currently at WD. Hearing aids handled by IEC TC 29. Will progress to CD version at next meeting.

11. Status report, DTR IEC 63071 Power supplying scheme for wearable system and equipment (J. Yoshio) (100/2816/RVC)

TR Document published in 2016. **Send information on this publication in LS to TC124.**

12. Status report, Stage 0 Project Wearables user comfort and evaluation (U. Haltrich)

Changes to document highlighted and circulated for review by PT members, will also be circulated to TA 16.

13. Recommendations:

- **Request that CTA have direct liaison with TC100 to simplify exchange of documents**
- **Liaison to TC 124 informing of the publication of TR 63071**
- **Assign PT 100-10 (Stage 0 project on user comfort and evaluation of smart textiles and wearables) to TA 16 after the scope of TA 16 will be revised**
- **Assign IEC TR 63071 Power supplying scheme for wearable systems and equipment to TA16 after the scope of TA 16 will be revised**
- **Actions:**
- **WD user comfort and evaluation of smart textiles and wearables distributed for 8 weeks commenting, including also to TA16 members (July 7, 2017).**
- **It was agreed to make KDIA workshop presentations available through TA 16**
- **It was agreed to circulate *Energizing Health: A review of the health and care applications of smart meter data* to PT members**

14. AOB: none

15. End of meeting: 12 noon