IEEE P802.15

**Wireless Personal Area Networks**

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| Project | Dependable Interest Group |
| Title | **Meeting Minutes for March 2014**  |
| Date Submitted | March 20, 2014 |
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| Re: | Meeting Minutes |
| Abstract |  |
| Purpose | Minutes of Dependable Interest Group sessions |
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**Monday, March 17, 2014, PM2, 16:00**

* 1. Meeting called to order

By Ryuji Kohno at 16:02

* 1. Roll Call

Notepad for Attendance circulated.

* 1. Approval of previous meeting minutes

Minutes were approved.

* 1. Use cases and technologies for dependable Wireless

Doc #14-163-00: Presented by Ryuji Kohno (affiliation YNU/CWC-Nippon)

Quote from previous session: After Call for applications, several use cases and applications to Jussi Haapola and Ryuji Kohno are summarized.

Identified use cases are:

* Medical
* Car
* Factory automation
* Disaster prevention
* Indoor positioning
* Energy flow control
* Building and smart city management
* Public safety
* Personal information space
* Government information

Min Requirements for dependability

* Max BER, e.g. 0.01%
* max delay, e.g. 1 second
* max jitter, e.g. 5%
* network resilience
* max outage probability, e.g. 100 per year
* max power consumption
* recovering time, e.g. 5 seconds
* min lifetime
* Security and authentication
* constraints

In discussion, there are some comments that this IG should focus on a few specific applications such as dependable M2M sensing and controlling for automotive rather than too wide variety of applications.

However, dependable medical BAN application must be covered in another opinion.

* 1. Overview of Japanese IEICE SG-Reliable-Robust Radio-Control(RRRC)

doc. #14-165-01 Authored by Kouichi Kobayashi(JAIST) and Presented by Ryuji Kohno(YNU/CWC-Nippon)

In order to discuss on possible technologies to ensure dependability in wireless M2M and BAN, we should survey academic and industrial activities in its related field.

Then a few related activities have been introduced. The first one is overview of activity in IEICE SG-Reliable-Robust Radio-Control(RRRC).

IEICE study group on Reliable Robust Radio Control has been promoting research and development on dependable wireless systems for wide variety of life critical applications such as medicine, disaster, dependable sensing and controlling cars, buildings, smart grids, and smart city by extending BAN from human body to bodies of cars, buildings, and so on. These slides may offer opportunity to discuss on available technologies to perform dependability in radio sensing and controlling systems

1. History of IEICE SG-RRRC

May 2010: RRRC was established.

July 2010: The first workshop was held.

April 2012: The active period was extended to March 2014.

April 2014: RRRC will be renewed as RCC (Reliable Communication and Control).

1. Chairs

2010/5-2012/3 Ryuji Kohno (Yokohama National University)

2012/4- Masaaki Katayama (Nagoya University)

1. Special Sections in IEICE Trans. on Fundamentals

April 2012: Reliable Robust Radio Control Technology (6 papers)

May 2013: Networked Control Systems: Theories & Applications (10 papers)

Major covering applications of RRC systems are

1. Car M2M wireless sensing and controlling inside a car and vehicle to roadside

In particular, Hybrid and Electric Vehicles are right targets of dependable wireless

1. Medical remote feedback loop of sensing and controlling such as glucose sensor and insulin pump wireless link
2. Remote controlling robots
3. Smart building with ambient sensing and controlling
4. others

Major technologies to ensure dependability in these applications are

1. Parallel routing algorithm in network layer
2. Hybrid ARQ with priority control
3. Fault tolerant networking with network coding
4. Collaborative sensing for cognitive radio network
5. Encryption and authentication for portable terminals with ultra-low power and complexity
6. New design rule based on regulatory science
7. Others.

After the presentation, what is a major dependable technology corresponding to major technical requirements for dependability.

**Thursday, March 20, 2014, AM2, 10:30**

1. Meeting called to order

By Ryuji Kohno at 10:31

1. Roll Call

Notepad for Attendance circulated.

1. Overview of new Japanese radio regulation for MICS & MEDS

Doc #14-190-00: Presented by Ryuji Kohno (affiliation YNU/CWC-Nippon)

Ministry of Internal Affairs and Communications (MIC) in Japan has investigated a new regulation for medical data transmission system (MEDS). Then open call for public comments on this draft of new radio regulation in March 2014. The regulation is important to ensure dependability of radio systems for medical use in a sense of preventing electro-magnetic implant to human body while guaranteeing BER in radio communication links for sensing vital data and controlling surgery robots and manipulators.

This presentation introduces its draft in order to research and develop dependable wireless systems for wide variety of life critical applications such as medicine, by extending medical BAN. While keeping advantages of IEEE802.15.6, specifications of MAC and PHY may be revised to make it much more reliable, secure, fault tolerant, robust against undesired factors. This presentation may offer opportunity to discuss on further medical use cases in this standard.

The contents of this presentation are below.

1. Background
2. Investigation Items and Approach
3. System Overview and Current Situation in Other Countries
4. Baseline for Investigation of Necessary Technical Requirement in Japan
5. Current Status of Frequency Band for the Expected Systems and Spectral Share
6. Investigated Results for Frequency Share
7. Specification Draft of Necessary Technical Requirement for Medical Data Transmission System(MEDS)

The new radio regulation for MICS and MEDS has been established at the first week of March 2014 in MIC radio regulation committee of which a member is Prof. Ryuji Kohno and in charge of taking care of another regulation on medical devices in PMDA.

1. Overview of Japanese IEICE SG on Medical ICT

Doc #14-0188-00: Authored by Kohei Ohno(Meiji University) and Presented by Ryuji Kohno (affiliation YNU/CWC-Nippon)

IEICE study group on Medical ICT has been promoting research and development on dependable wireless systems for wide variety of medical monitoring and treatment including BAN. While keeping advantages of IEEE802.15.6, specifications of MAC and PHY may be revised to make it much more reliable, secure, fault tolerant, robust against undesired factors.

The contents of this presentation are below.

1. Introduction of IEICE SG on Medical ICT(MICT)
2. IEICE Transactions on Fundamentals, Special Issues on MICT
3. Update of ETSI Smart BAN Project

Doc.#14-0189-00: Authored by Hirokazu Tanaka(Toshiba/YNU) and John Farserotu(CESM) and Presented by Ryuji Kohno (affiliation YNU/CWC-Nippon)

ETSI Technical Committee on Smart BAN has been promoting research and development on dependable wireless systems for wide variety of applications of BAN such as radio controlling, automotive control etc by extending e-Health regarding medical BAN and so on.

The contents of the presentation are below.

1. Time Schedule
2. Acting Working Items
3. Technical overview
4. Terms of Reference
5. TB Structure
6. Major activities/deliverables

How important does ETSI SmartBAN see dependability and are there other more important criterion.

Has not been identified yet, currently establishing communication practices.

What are the targets for ultra-low-power PHY? Not defined yet.

1. Application Matrix Discussion

Participants are requested to send their envisioned use cases to start formulating the application matrix.

So far Identified use cases are:

 Refer to Table ‘Use Cases’ in doc #412r2

 Use Case

* Medical
* Car
* Factory automation
* Disaster prevention
* Indoor positioning
* Energy flow control
* Building and smart city management
* Public safety
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1. Adjourn

The meeting was adjourned at 11:47.