

**Project: IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs)**

**Submission Title:** [Overview of Japanese IEICE SGs on Medical ICT]

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**Abstract:** [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. 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. These slides may offer opportunity to discuss on use cases and applications of this standard.]

**Purpose:** [The discussion on use cases and applications will lead definition and requirement of current ongoing research and development on dependable wireless networks.]

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# Overview of Japanese IEICE SG on Medical ICT(MICT)

20<sup>th</sup> March, 2014 Beijing

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# Agenda

1. Introduction of IEICE SG on Medical ICT(MICT)
2. IEICE Transactions on Fundamentals, Special Issues on MICT

# 1. Introduction of IEICE SG on Medical ICT(MICT)

Kohei Ohno(Meiji University)  
Ryuji Kohno(YNU, CWC-Nippon)

# 1.1 Recent MICT Conferences

## 2011 MICT Conference

April, 2011: 5 presentations

July 2011: 14 presentations

January, 2012: 8 presentations

## 2012 MICT Conference

June, 2012: 8 presentations

October 2012: 8 presentations

January, 2013: 17 presentations

## 2013 MICT Conference

May, 2013: 12 presentations

July 2013: 8 presentations

November, 2013 : 9 presentations

January, 2014: 12 presentations

## **1.2 IEICE 2014 Annual General Conference**

### **BS-5. Medical Information and Communication Technology**

BS-5-1 A Method of Calibration for BAN Over-The-Air Testing Using a Fading Emulator with a Dynamic Phantom

Kun Li · Kazuhiro Honda · Koichi Ogawa (Toyama Univ.)

BS-5-2 Directional characteristics of shadwings of antennas on human body from external systems during walking in WBAN

Takahiro Aoyagi, Minseok Kim, Jun-ichi Takada (Tokyo Tech.)

BS-5-3 Consideration of Biological Information Detection using UWB Radar

Aya Suzuki, Kento Kawamura ,Tetsushi Ikegami (Meiji Univ.)

BS-5-4 Performance Evaluation on Joint RSSI/TOA-based Localization for Wireless Capsule Endoscope

Takahiro Ito, Masafumi Yamanaka, Daisuke Anzai, Jianqing Wang (Nagoya Tech.)

# 1.3 IEICE 2014 Annual General Conference

## BS-5. Medical Information and Communication Technology

March 18, 2014

BS-5-5 Throughput Performance of Local Frequency Offset Receiver Diversity with Multi-Level Modulation for Implant Communications, Takashi Koya, Daisuke Anzai, Jianqing Wang (Nagoya Tech.)

BS-5-6 Real-time Vital Data Collection System for Soccer Players — Performance Improvement with the Antenna Height Diversity —  
Toui Kanda, Tetsuo Tujioka, Shinsuke Hara, Hajime Nakamura, Takashi Kawabata  
Masanao Ise, Kenji Watanabe, Noah Arime, Hiroyuki Okuhata  
(Osaka City Univ., Kansai Univ., Synthesis Corporation)

BS-5-7 Study on Transmission Suppressing Interference with Channel Information for UWB-BAN  
Yuya Obinata, Kotaro Yamasue, Chika Sugimoto, Ryuji Kohno (Yokohama National Univ.)

BS-5-8 Performance Evaluation of the Heart Rate Monitoring Method in Different Types of Exercise  
Takunori Shimazaki, Shinsuke Hara (Osaka City Univ.)

# 1.4 IEICE 2014 General Conference

## BS-5. Medical Information and Communication Technology

BS-5-9 Real-Time Vital Data Collection from Athletes during Exercise

- Prototype of the Wireless Vital Sensor Node -

Shin Okamoto, Shinsuke Hara, Tetsuo Tsujioka, Hajime Nakamura, Takashi Kawabata,

Kenji Watanabe, Masanao Ise, Noa Arime, Hiroyuki Okuhata  
(Osaka City Univ., Kansai Univ., Synthesis Corporation)

BS-5-10 Real-time Vital Data Collection System for Athletes during Exercise

- Experimental Measurements of Packet Loss Rate in Relay Transmissions Using 920MHz and 2.4GHz Bands for Wireless Data Collection in a Soccer Games -

Kouhei Tezuka, Shinsuke Hara, Tetsuo Tsujioka, Hajime Nakamura, Takashi Kawabata,

Hiroyuki Okuhata, Masanao Ise, Kenji Watanabe, Noah Arime  
(Osaka City Univ., Kansai Univ., Synthesis Corporation)

BS-5-11 ROI Tracing : An Emerging Video Coding Technology for Remote Healthcare

Morsalin Uz Zoha • Toshitaka Tsuda (Waseda Univ.)



## 1.5 IEICE Society Conference 2013

### BS-9. Medical Information and Communication Technology

BS-9-1 Design of UWB-IR Receiver for Implant Body Area Communications  
Yuto Shimizu, Kenta Katsu, Daisuke Anzai, Jianqing Wang (Nagoya Tech.)

BS-9-2 Multiplexing and Error Control Scheme Considering the Different QoS for  
Wireless BAN  
Kento Takabayashi, Hirokazu Tanaka, Chika Sugimoto, Ryuji Kohno  
(Yokohama National Univ.)

BS-9-3 Relaying performance and simulation study on interference avoidance of IEEE  
802.15.6 based BAN  
Ichirou Ida, Tatsuya Kikuzuki, Teruhisa Ninomiya, Takeshi Umemoto, Kazuhiro,  
Muraoka(Fjitsu)

BS-9-4 Performance of Link Budget on /4-DQPSK Local Frequency Offset Receiver  
Diversity  
for Implant Communications  
Takashi Koya, Jingjing Shi, Daisuke Anzai, Jianqing Wang (Nagoya Tech.)

BS-9-5 Basic study for optical communication through human body  
Daisuke Seki, Takeshi Namita, Yuji Kato, Koichi Shimizu (Hokkaido Univ., Kyoto Univ.)

# 1.6 IEICE Society Conference 2013

## BS-9. Medical Information and Communication Technology

BS-9-6 Real-time Vital Data Collection System for Soccer Players

— Comparative Experiment of the Frequency for the System —

Toui Kanda, Tetsuo Tujioka, Shinsuke Hara, Hajime Nakamura, Takashi Kawabata, Masanao Ise, Kenji Watanabe, Noah Arime, Hiroyuki Okuhata  
(Osaka City Univ., Kansai Univ., Synthesis Corporation)

BS-9-7 A Heart Rate Detection Scheme from ECG Signal at Waist Part during Exercise

Masayuki Ichikawa, Tetsuo Tujioka, Shinsuke Hara, Hajime Nakamura, Takashi Kawabata, Masanao Ise, Kenji Watanabe, Noah Arime, Hiroyuki Okuhata  
(Osaka City Univ., Kansai Univ., Synthesis Corporation)

BS-9-8 An Application of Load Sensors Buried in The Step Platform for Slow Step Exercises

Keishi Matsuno (JuKen Co.,Ltd.)

BS9-9 Bio-information Monitoring Sensor System Using Ultra-wideband Radio

Ryohei Nakamura, Akihiro Kajiwara, Isamu Matsunami (Kitakyusyu City Univ.)

BS-9-10 Imaging for Detecting Breast Cancers Using UWB Radar System

Yuta Okuyama, Pham Thanh Hiep, Kotaro Yamasue, Chika Sugimoto, Ryuji Kohno  
(Yokohama National Univ.)

# 1.7 IEICE Society Conference 2013

## BS-9. Medical Information and Communication Technology

BS-9-11 Preparation of voxel models for wave propagation simulations of wireless body area networks

Takahiro Aoyagi (Tokyo Tech.)

BS-9-12 Simulation Analysis for Propagation Characteristics on Intrabody Communication

with Small Electrodes

Kazuhiro Inoue, Takafumi Ohishi (Toshiba)

BS-9-13 Electrically Isolated Measurement System for MHz-Band Near-Field Coupling Communication

Tomonori Nakamura, Mami Nozawa, Masaki Ishida, Yuichi Kado (Kyoto Tach.)

BS-9-14 K-factor Dependent Multipath Characterization for BAN-OTA Testing Using a Fading Emulator

Kun Li · Kazuhiro Honda · Koichi Ogawa (Toyama Univ.)

## 1.8 IEICE Society Conference 2013

### BS-9. Medical Information and Communication Technology

BS-9-15 Effects of noise in HBC system using HF band

Takehiro Sugo, Shinsuke Ishida, Roslina Binti Abdul, Razak Toshiyuki (Takusyoku Univ.)

BS-9-16 Human Movement Classification for Body Area Networks using Signal Level Fluctuation via Neural Network

Sukhumarn Archasantisuk · Takahiro Aoyagi (Tokyo Tech)

BS-9-17 Effect of Resin Hardener on Dry -Phantom Model for Device Development of Body Area Network -

Tetsuyuki michiyama, Shuzo Kuwano (Nihon Univ.)

BS-9-18 Improvement of electrical properties of high hydrous gel phantom in low frequency band

Takahiko Yamamoto, Kohji Koshiji (Tokyo Univ. of Science)

# 1.9 IEICE Society Conference 2013

## BS-9. Medical Information and Communication Technology

BS-9-19 A Study of Performance Improvement for Particle Filter-based Capsule Endoscope Location Tracking

Takahiro Ito, Daisuke Anzai, Jianqing Wang (Nagoya)

BS-9-20 Development of Wireless Vital Monitor and its Further Discussions on Wireless Technology

Hirokazu Tanaka, Takuji Suzuki, Shigenobu Minami (Toshiba)

BS-9-21 BER Analysis of a BAN Antenna Mounted on the Wrist

Kazuhiro Honda, Li Kun, Koichi Ogawa (Toyama Univ.)

BS-9-22 Effects of Floor on the Radiation Pattern Characteristics of BAN antennas

Kazuhiro Honda, Li Kun, Koichi Ogawa (Toyama Univ.)

BS-9-23 Fundamental study of RFID antenna for removing drip injection by patient

Hiromasa Nakajima, Masaharu Takahashi, Kazuyuki Saito, Koichi Ito (Chiba Univ.)

## **2. IEICE Transaction B Special Issue**

2009: Medical Information and Communications Technologies

2010: Information and Communication Technology for  
Wellness and Medical Applications

2011: Information Communication Technology for Highly  
Reliable Human Health Care Services

2012: Medical Information and Communication Technology for  
Disaster Recovery and Human Health Care Support

2013: Special Section on Information and Communication  
Technology for Medical and Healthcare Applications in  
Conjunction with Main Topics of ISMICT2013

2014: Innovation of Medical Information and Communication  
Technology for Dependable Society

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## **2.1 IEICE Transaction Special Issue**

### **Special Section on Information and Communication Technology for Medical and Healthcare Applications in Conjunction with Main Topics of ISMICT2013**

1. Interval Walking Training for Middle-Aged and Older People: Methods and Evidence

Hiroshi NOSE (Shinsyu Univ.)

2. Targeting Morbidity in Unreached Communities Using Portable Health Clinic System

Ashir AHMED Andrew REBEIRO-HARGRAVE Yasunobu NOHARA  
Eiko KAI, Zahidul HOSSEIN RIPON Naoki NAKASHIMA (Kyusyu Univ.)

3. A Priority-Based Temperature-Aware Routing Protocol for Wireless BANs  
Christian Henry Wijaya OEY Sangman MOH (Chosun Univ.)

4. Mobility Support in IEEE 802.15.4 Based Mobile Sensor Network  
Pranesh STHAPIT Jae-Young PYUN (Chosun Univ.)

5. Multiplexing and Error Control Scheme for BAN Employing IEEE 802.15.6  
Kento TAKABAYASHI Hirokazu TANAKA Chika SUGIMOTO Ryuji  
KOHNO(Yokohama National Univ.)

6. Performance Improvement by Local Frequency Offset Spatial Diversity Reception

with  $\pi/4$ -DQPSK in Implant Body Area Networks

Daisuke ANZAI Takashi KOYA Jingjing SHI Jianqing WANG (Nagoya Tech.)

7. Performance Evaluation on RSSI-Based Wireless Capsule Endoscope Location

Tracking with Particle Filter

Takahiro ITO Daisuke ANZAI Jianqing WANG (Nagoya Tech.)

8. Wireless Self-Powered Urinary Incontinence Sensor for Disposable Diapers

Ami TANAKA Takakuni DOUSEKI (Ritsumeikan Univ.)

9. Fundamental Study on UWB Radar for Respiration and Heartbeat Detection

Huan-Bang LI Ryu MIURA (NICT)



IEICE SG on Medical ICT will be a Regular  
Study Group since May, 2014

URL of  
IEICE SG on Medical ICT  
<http://www.ieice.org/~mict/>