IEEE COMMUNICATIONS SOCIETY
Radio Communications Committee (RCC)

IEEE ICC 2019
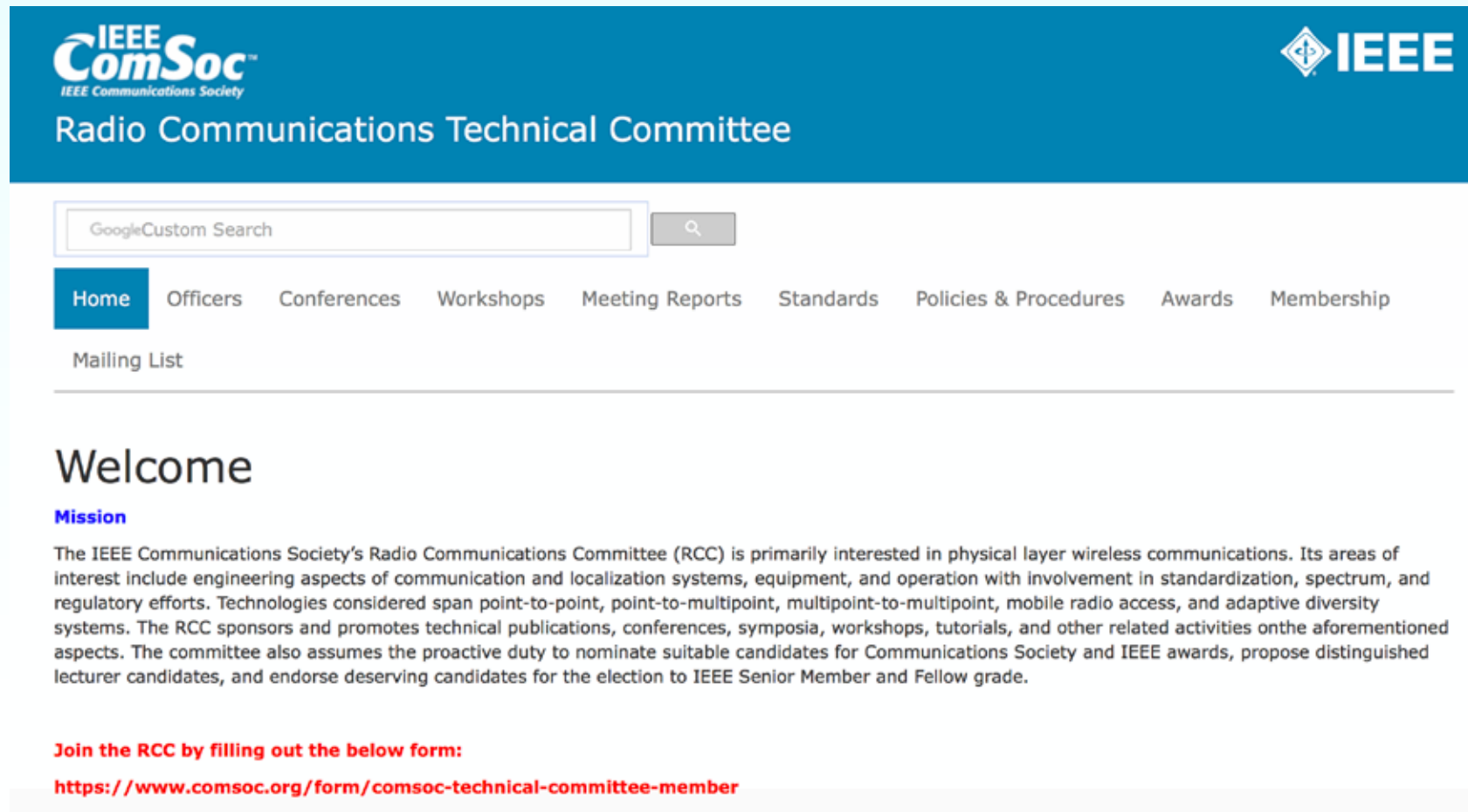## Shanghai, China

May 23, 2018, 12:30 – 14:00

Chair: Yuan Shen
Vice Chair: Jemin Lee
Secretary: Julian Cheng

Agenda

1. Welcome

2. Approval of Agenda

3. Approval of GC'18 RCC Meeting Minutes (available on the website)

4. Report on Conference/Workshop activities

5. Standardization Activities

6. New Business Items

7. Conferment of 2019 IEEE ComSoc RCC Outstanding Service Award

8. Conferment of 2019 IEEE ComSoc RCC Early Achievement Award

9. Invited talk: "Ultra-Reliable and Low-latency communication in 5G and Beyond"

10. Adjourn

Approval of GC'18 RCC Meeting Minutes

available at http://rc.committees.comsoc.org

RCC Mission

The IEEE Communications Society's Radio Communications Committee (RCC) is primarily interested in physical layer wireless communications. Its areas of interest include engineering aspects of **communication and localization systems, equipment, and operation with involvement in standardization, spectrum, and regulatory efforts.** Technologies considered span point-to-point, point-to-multipoint, multipoint-to-multipoint, mobile radio access, and adaptive diversity systems. The RCC sponsors and promotes technical publications, conferences, symposia, workshops, tutorials, and other related activities on the aforementioned aspects. The committee also assumes the proactive duty to nominate suitable candidates for Communications Society and IEEE awards, propose distinguished lecturer candidates, and endorse deserving candidates for the election to IEEE Senior Member and Fellow grade.

Supported conferences

The following conferences received

Technical Sponsorship from

IEEE Communications Society

based on RCC recommendation

Conference Reports

- **GLOBECOM 2018:** Yuan Shen (WC)

- **ICC 2019:** Julian Cheng (WC)

- **GLOBECOM 2019:** Enrico Paolini (CT), Fauzi Bader (CR)

- **ICC 2020**: Mark Flanagan (CT), Yuan Shen (WC), Santiago Mazuelas (SPC)

- **GLOBECOM 2020**: Julian Cheng (CR-AI), Marco Chiani (CT), Jemin Lee (SPC), Dania Marabissi (SPC)

- *Other endorsed conferences:*

  - *ICT, ASMS/SPSC, WCSP, WiSEE, IINTEC, ICSPCS, BSC*

GLOBECOM 2018 –Wireless Communications Symposium

When: *09.12.2018 – 13.12.2018*   Where: *Abu Dhabi*

Symposium/Track: *Wireless Communications Symposium*

Co-chairs: Yuan Shen (Lead), Sheng Zhou, Hyunbum Kim, Athanasios Iossifides, Daniele Tarchi

RCC representative: *Yuan Shen (shenyuan_ee@tsinghua.edu.cn)*

Total Submissions: 394

Acceptance Rate (final/expected): 39%

#TPC members: 335

Avg number of reviews/paper =   4   Rebuttal process

Keynote/Invited Speakers: Marcus Weldon (Bell Labs), Gerhard P. Fettweis (TU Dresden), Ibrahim Gedeon (TELUS), Guru Parulkar (Stanford)

ICC 2019– Wireless Communications Symposium

When: *20.05.2019 – 24.05.2019*   Where: Shanghai, China

Symposium: *Wireless Communications*

Co-chairs*: Xu (Judy) Zhu, Harpreet Dhillon, Feifei Gao, Julian Cheng, Andreas Knopp*

RCC representative: *Julian Cheng (Julian.Cheng@ubc.ca)*

Total Submissions: *136*

Acceptance Rate (expected): *39%*

#TPC members: *53*

Avg number of reviews/paper = 4   Rebuttal process: *No*

Keynote/Invited Speakers: Zhengmao Li (China Mobile), Vincent Poor (Princeton), Wen Tong (Huawei), Lajos Hanzo (Southampton), Hai Tang (OPPO), Xinhui Wang (ZTE), Edward Tiedemann (Qualcomm)

Globecom 2019– Communication Theory Symposium

When: *9.12.2019 – 13.12.2019*   Where: *Waikoloa Village, HI United States*

Symposium: *Communication Theory*

Co-chairs*: Wei Yu, Enrico Paolini, Andrea M. Tonello*

RCC representative: *Enrico Paolini (e.paolini@unibo.it)*

Total Submissions: 144

Acceptance Rate (expected): *<40%*

#TPC members: *139*

Avg number of reviews/paper = 5   Rebuttal process: *No*

Globecom 2019– Cognitive Radio & Networks

When: *9.12.2019 – 13.12.2019*   Where: *Waikoloa Village, HI United States*

Symposium: *Cognitive Radio & Networks*

Co-chairs*: Daniel Benevides da Costa, Faouzi Bader*

RCC representative: *Faouzi Bader (faouzi.bader@supelec.fr)*

Total Submissions: *93*

Acceptance Rate (expected): *<40%*

#TPC members: *281*

Avg number of reviews/paper = 4   Rebuttal process: *No*

ICC 2020

When: *07.06.2020 – 11.06.2020*   Where: Dublin, IE.

Symposium: *Wireless Communications Symposium (WC)*

Co-chairs: *Yuan Shen* *(shenyuan_ee@tsinghua.edu.cn)*

Symposium: *Communication Theory Symposium (CT)*

Co-chairs: *Mark Flanagan* *(mark.flanagan@ieee.org)*

Symposium: *Signal Processing for Communications (SPC)*

Co-chairs: *Santiago Mazuelas* *(smazuelas@bcamath.org)*

Prospective TPC members may contact to RCC representatives.

GLOBECOM 2020

When: *07.12.2020 – 11.12.2020*   Where: Taipei, Taiwan

Symposium: *Cognitive Radio & AI-Enabled Neworks Symposium (CR-AI)*

Co-chairs: *Julian Cheng (julian.cheng@ubc.ca)*

Symposium: *Communication Theory Symposium (CT)*

Co-chairs: *Marco Chiani (marco.chiani@unibo.it)*

Symposium: *Signal Processing for Communications (SPC)*

Co-chairs: *Jemin Lee (jmnlee@dgist.ac.kr), Dania Marabissi (dania.marabissi@unifi.it)*

Prospective TPC members may contact to RCC representatives.

ComSoc Standards Board Technical Committee Liaisons Report

RCC Standard Liaisons Officer: *George Chrisikos (gchrisikos@ieee.org)*

- ComSoc SB Objective:
  - Discussion of IEEE/ComSoc Standards Development Projects
  - New Standardization Initiatives
  - Procedures
  - Operational Issues
  - In partnership with the IEEE-SA Standards Board

IEEE Communications Society (ComSoc) Standards Development Board (SDB)

◆**Approved standards:**

- IEEE 661-1979: IEEE Standard Method for Determining Objective Loudness Ratings of Telephone Connections
- IEEE 1902.1-2009: IEEE Standard for Long Wavelength Wireless Network Protocol
- IEEE 1329-2010: IEEE Standard Method for Measuring Transmission Performance of Speakerphones
- IEEE 269-2010: IEEE Standard Methods for Measuring Transmission Performance of Analog and Digital Telephone Sets, Handsets, and Headsets
- IEEE 269a-2012: IEEE Standard Methods for Measuring Transmission Performance of Analog and Digital Telephone Sets, Handsets, and Headsets – Amendment 1
- IEEE 1652-2016: IEEE Standard for Translating Head and Torso Simulator Measurements from Eardrum to Other Acoustic Reference Points

◆**Active projects:**

- P269: Standard for Measuring Electroacoustic Performance of Communication Devices
- P2784: Guide for the Technology and Process Framework for Planning a Smart City

Dynamic Spectrum Access Networks Standards Committee (DySPAN-SC)

◆ **Approved standards:**

- IEEE 1900.1-2008: IEEE Standard Definitions and Concepts for Dynamic Spectrum Access: Terminology Relating to Emerging Wireless Networks, System Functionality, and Spectrum Management
- IEEE 1900.2-2008: IEEE Recommended Practice for the Analysis of In-Band and Adjacent Band Interference and Coexistence Between Radio Systems
- IEEE 1900.4-2009: IEEE Standard for Architectural Building Blocks Enabling Network-Device Distributed Decision Making for Optimized Radio Resource Usage in Heterogeneous Wireless Access Networks
- IEEE 1900.4a-2011: IEEE Standard for Architectural Building Blocks Enabling Network-Device Distributed Decision Making for Optimized Radio Resource Usage in Heterogeneous Wireless Access Networks Amendment 1: Architecture and Interfaces for Dynamic Spectrum Access Networks in White Space Frequency Bands
- IEEE 1900.5-2011: IEEE Standard for Policy Language Requirements and System Architectures for Dynamic Spectrum Access Systems
- IEEE 1900.6-2011: IEEE Standard for Spectrum Sensing Interfaces and Data Structures for Dynamic Spectrum Access and Other Advanced Radio Communication Systems
- IEEE 1900.1a-2012: IEEE Standard Definitions and Concepts for Dynamic Spectrum Access: Terminology Relating to Emerging Wireless Networks, System Functionality, and Spectrum Management Amendment 1: Addition of New Terms and Associated Definitions
- IEEE 1900.4.1-2013: IEEE Standard for Interfaces and Protocols Enabling Distributed Decision Making for Optimized Radio Resource Usage in Heterogeneous Wireless Networks
- IEEE 1900.6a-2014: IEEE Standard for Spectrum Sensing Interfaces and Data Structures for Dynamic Spectrum Access and Other Advanced Radio Communication Systems – Amendment 1: Procedures, Protocols, and Data Archive Enhanced Interfaces
- IEEE 1900.6-2011/Cor 1-2015: IEEE Standard for Spectrum Sensing Interfaces and Data Structures for Dynamic Spectrum Access and Other Advanced Radio Communication Systems – Corrigendum 1
- IEEE 1900.7-2015: IEEE Standard for Radio Interface for White Space Dynamic Spectrum Access Radio Systems Supporting Fixed and Mobile Operation
- IEEE 1900.5.2-2017: IEEE Approved Draft Standard Method for Modeling Spectrum Consumption

◆ **Active projects:**

- P1900.1: Standard Definitions and Concepts for Dynamic Spectrum Access: Terminology Relating to Emerging Wireless Networks, System Functionality, and Spectrum Management
- P1900.5.1: Standard Policy Language for Dynamic Spectrum Access Systems
- P1900.6b: Standard for Spectrum Sensing Interfaces and Data Structures for Dynamic Spectrum Access and other Advanced Radio Communication Systems. Spectrum Database Interfaces Amendment.

Power Line Communication Standards Committee (PLC-SC)

◆ **Approved standards:**

- IEEE 1775-2010: IEEE Standard for Power Line Communication Equipment – Electromagnetic Compatibility (EMC) Requirements – Testing and Measurement Methods – co-sponsored with the IEEE Power and Energy Society (PES) Power System Communications Committee (PSCC)
- IEEE 1901-2010: IEEE Standard for Broadband over Power Line Networks: Medium Access Control and Physical Layer Specifications
- IEEE 1905.1-2013: IEEE Standard for a Convergent Digital Home Network for Heterogeneous Technologies
- IEEE 1901.2-2013: IEEE Standard for Low Frequency (less than 500 kHz) Narrow Band Power Line Communications for Smart Grid Applications
- IEEE 2030.5-2013: IEEE Adoption of Smart Energy Profile 2.0 Application Protocol Standard
- IEEE 1905.1a-2014: IEEE Standard for a Convergent Digital Home Network for Heterogeneous Technologies Amendment 1: Support of New MAC/PHYs and Enhancements
- IEEE 1909.1-2014: IEEE Recommended Practice for Smart Grid Communications Equipment — Test Methods and Installation Requirements
- IEEE 1901.2a-2015: IEEE Standard for Low-Frequency (less than 500 kHz) Narrowband Power Line Communications for Smart Grid Applications – Amendment 1

◆ **Active projects:**

- P2030.5: Standard for Smart Energy Profile Application Protocol
- P1901.1: Medium Frequency (less than 15 MHz) Power Line Communications for Smart Grid Applications
- P1901.1.1: Standard Test Procedures for IEEE 1901.1 Standard for Medium Frequency (less than 15 MHz) Power Line Communications for Smart Grid Applications

Communication Technology May Change the World Student Competition

RCC representative: *Jemin Lee (jmnlee@dgist.ac.kr)*

The competition Communication Technology May Change the World, by the IEEE Communications Society – Member Relations, recognizes students or teams of students who demonstrate the capacity to improve the lives of people, through the application of communication technology and the development of projects that meet the human needs of people. http://www.comsoc.org/communications-technology-changing-world

Deadline: Sept. 2018

Number of evaluated projects: 33

Prizes

• 1st: USD $2000 + plaque

• 2nd: USD $1000 + plaque

• All other projects judged meritorious by the evaluation committee will receive honorary certificates of appreciation by the IEEE Communications Society.

STUDENT COMPETITION 2018 RESULTS

FIRST PRIZE

Passenger Flows: Crowd Mobility Analytics with Edge Computing in Public Transport
 Kai Bitterschulte, Stephanie Althoff, Keng Yip Chai, Lucas Döring, Damian Grabarczyk, Yunfeng Huang, Lidong Mao
TU Dortmund University, Germany

SECOND PRIZE

iDriveSense: Towards Efficient Road Information Services
 Amr El-Wakeel, Aboelmagd Noureldin, Hossam S. Hassanein
Queens University, Canada

https://www.comsoc.org/education-training/student-competition/student-competition-winners

IEEE 2018 Newly Elevated Fellows
91 nominee and 28 elevated

- **Neelesh Mehta (Indian Institute of Science (IISc))**
- **Dong In Kim (SKKU)**
- Yi Qian (University of Nebraska-Lincoln)
- Walid Saad (Virginia Tech)
- Meixia Tao (Shanghai Jiao Tong University)
- Murat Uysal (Ozyegin University)

1 candidate is endorsement by RCC in 2019

Selected Distinguished Lecturers endorsed by RCC

- Luiz DaSilva, Trinity College Dublin (renewed, 2nd term)
- Andreas Molisch, University of Southern California
- Davide Dardari, University of Bologna
- Tony Q. S. Quek, Singapore University of Technology and Design

Call for nominations 2019 DL, Mid Jul. 2019

Best Readings

Website: www.comsoc.org/best-readings

List of papers (w/commentary and hyperlinks) online.

Topics include: power line communications; cognitive radio; broadband access; green communications; multi-tier cellular networks (Andrea Conti, RCC);

New Best Readings proposed by RCC on Localization

Editorial members:

- Michael Buehrer (Virginia Tech), Andrea Conti (University of Ferrara), Santiago Mazuelas (BCAM), Yuan Shen (Tsinghua University), and Moe Win (MIT)

Updates: sent to the EiC of Best Reading for approval

IEEE Communications Society's Best Readings¶

Network Localization and Navigation¶

. Introduction¶

The availability of real-time high-accuracy location awareness is essential for current and future wireless applications, particularly for the Internet of Things and 5G networks. Since the paradigm of *network localization and navigation (NLN)* was proposed [Overview.1], it has soon become apparent as it is a critical component for various applications including connected communities, smart environments, vehicle autonomy, home automation, asset tracking, medical services, military systems, and wireless sensor networks. The coming

Special Interest Group (SIG): Wireless Localization

Committee: Santiago Mazuelas (Chair), Javier Prieto, Stefania Bartoletti, …

Technical Scope:

- The goal of the SIG is to solicit the development of new positioning strategies that leverage the wealth of wireless communication technologies as well as of new location-aware procedures to enhance the efficiency of communication networks.

Conference/Workshop:

- 8th Workshop on Advances in Network Localization and Navigation (ANLN) in IEEE ICC 2020, Dublin
- Possible workshop co-located with the PAAMS and related conferences organized next year by the University of L'Aquila and sponsored by the IEEE Systems, Man and Cybernetics and ComSoc Spanish chapters

Workshop endorsed by RCC

7th Workshop on Advances in Network Localization and Navigation (ANLN)

IEEE ICC 2019

- May 24, 2019, Shanghai, China

- Website: http://rc.committees.comsoc.org/workshops

- Workshop Co-Chairs:
  - Santiago Mazuelas (BCAM, Spain)
  - Andrea Giorgetti (Univ. Bologna, Italy)
  - Florian Meyer (MIT, USA)
  - Stefania Bartoletti (Univ. of Ferrara, Italy)

- 23 submissions, 11 papers accepted, 48% acceptance. 4 technical sessions

- 2 Keynotes:
  - "Localization of Things" Prof. Andrea Conti, University of Ferrara
  - "Key Technical Measures To Make Indoor Navigation Correct and Usable" Yang Zhang, PALMAP CEO

SIG: Propagation channels for 5G and beyond

- Chair: Andy Molisch (USC), calling for volunteers for vice chairs
- Motivation:
    - Propagation channels are basis on which systems are designed and tested
    - Need to account for new deployment scenarios and frequency ranges
    - 5G and B5G have many scenarios that are insufficiently covered (e.g., mm-wave V2V, UAV channels, THz, Cloud-RAN channels, factory IoT channels,....)
- Goals for SIG:
    - Establishment of webpage for information exchange, pointing to new papers
    - Organization of tutorials and lectures
    - Organization of workshops/symposia at ComSoc conferences

IPIN International Standards Committee

RCC representative: *Andrea Conti (a.conti@ieee.org)*

IPIN (Indoor Positioning and Indoor Navigation) [http://ipin-conference.org/]
➢Location information of devices in indoor environments has become a key issue for many emerging applications. However, there is no overall and easy solution.
➢IPIN brings together researchers, system developers, and service providers in the area of indoor positioning and navigation.
➢IPIN is one of the largest and very active community working in indoor positioning and navigation worldwide with hundreds of participants, both from academia and industry, during the annual IPIN conference.
➢First annual IPIN conference hosted by ETH Zurich in 2010.
➢IPIN 2018 conference will be at Nantes, France, September 24-27, 2018. (http://ipin2018.ifsttar.fr/)

IPIN International Standards Committee
➢Part of IPIN organization
➢Develops standards through the collaboration of academia, industry and government organizations.
➢Developed standards
–Vendor neutral
–technology-agnostic
–open architecture standards based on the OSI model.

Meetings
➢regularly scheduled conference calls
➢face-to-face during annual IPIN conference

IPIN International Standards Committee

Vision

➢Ubiquitous indoor navigation: Anytime, Anywhere, Anyone

Mission

➢Enable seamless indoor navigation around the globe by defining open architecture and technology agnostic standards.

Committee Structure

1. Architecture Subcommittee
2. Industry Liaison Subcommittee
3. IPIN Liaison Subcommittee
4. Map Subcommittee
5. Membership Subcommittee
6. Publication Subcommittee
7. Standards Organization Liaison Subcommittee
8. Cyber Security Subcommittee
9. Technology Subcommittee
10. User Interface Subcommittee
11. Evaluation Subcommittee

IPIN International Standards Committee

1. Architecture Subcommittee

➢ Develops an open architecture based standard which conform to the OSI model.

➢ Reviews and evaluates other published works regarding indoor navigation standards

2. Industry Liaison Subcommittee

➢ Maintains liaison with other industry groups to promote the standards developed by the Committee

3. IPIN Liaison Subcommittee

➢ Maintains liaison with the IPIN

4. Map Subcommittee

➢ Renamed from Mapping to Map to highlight that the focus is on indoor map formats/standards, rather than the process of creating maps

➢ Evaluates the relevant published standards for indoor maps

➢ Recommends appropriate data format for storage and transmission of the indoor maps

5. Membership Subcommittee

➢ Promotes membership and reviews new membership requests

6. Publication Subcommittee

➢ Reviews and approves publications

➢ Maintains the IPIN International Standards Committee webpage

IPIN International Standards Committee

7. Standards Organization Liaison Subcommittee
> Investigates the best ways to publish the standards
> Interacts with other standards organizations

8. Cyber Security Subcommittee
> Researches cyber security issues related to IPIN systems and recommend mitigation methods

9. Technology Subcommittee
> Researches new and emerging technologies
> Tracks the advances of the existing technology which will improve the localization systems

10. User Interface Subcommittee
> Investigates the machine-to-human Interface and machine-to- machine interface methods and procedures
> Recommends appropriate methods for adoption.
> Promotes consistent phraseology and user interface, i.e. same look and feel, used by the indoor navigation systems around the globe for better user experience (UX).

11. Evaluation Subcommittee
> New Subcommittee

IPIN International Standards Committee – Recent Activities

1. **Hosted a special session on Standardization and Indoor Navigation for the Blind at IPIN 2017 Conference in Sapporo, Japan**

- Presentations are posted at http://www.ipin2017.org/program.php

2. Formed a new Evaluation Subcommittee

- Researches, develops and publishes new benchmarks and evaluation metrics for comparing indoor localization technologies

IPIN International Standards Committee – Map Subcommittee

1. Goals

- Produce Use-Case reports on
  - Requirements for each type of use-case
  - Implementation issues including (i) production of indoor maps, (ii) discovery of maps, and (iii) re-use of existing maps
- Comparative Study on Indoor Maps
  - Study indoor map data formats (including proprietary formats)
    - Candidate formats include OGC IndoorGML and CityGML, IFC, ISO/TC 211, ISO/TC 204, IEEE/RAS MDR (robot), OpenStreetMap, KML, Google Indoor Map, Micello, ESRI, Aisle411 among others
  - Examine conversion from one format to another
  - Compare pros and cons of each format for different applications
  - Provide application-specific recommendations for indoor map formats

2. Recent Activities

- Prepared background information video on indoor map formats
  - OGC IndoorGML video - https://youtu.be/DB-cqC2t0Jc
  - IEEE MDR, ISO TC204, and ISO TC211 document
  - CityGML 2.0 video - https://youtu.be/wJsxVYZpjtE

If you are interested in any type of contributions, you may contact with Ki-Joune Li (lik@pnu.kr)
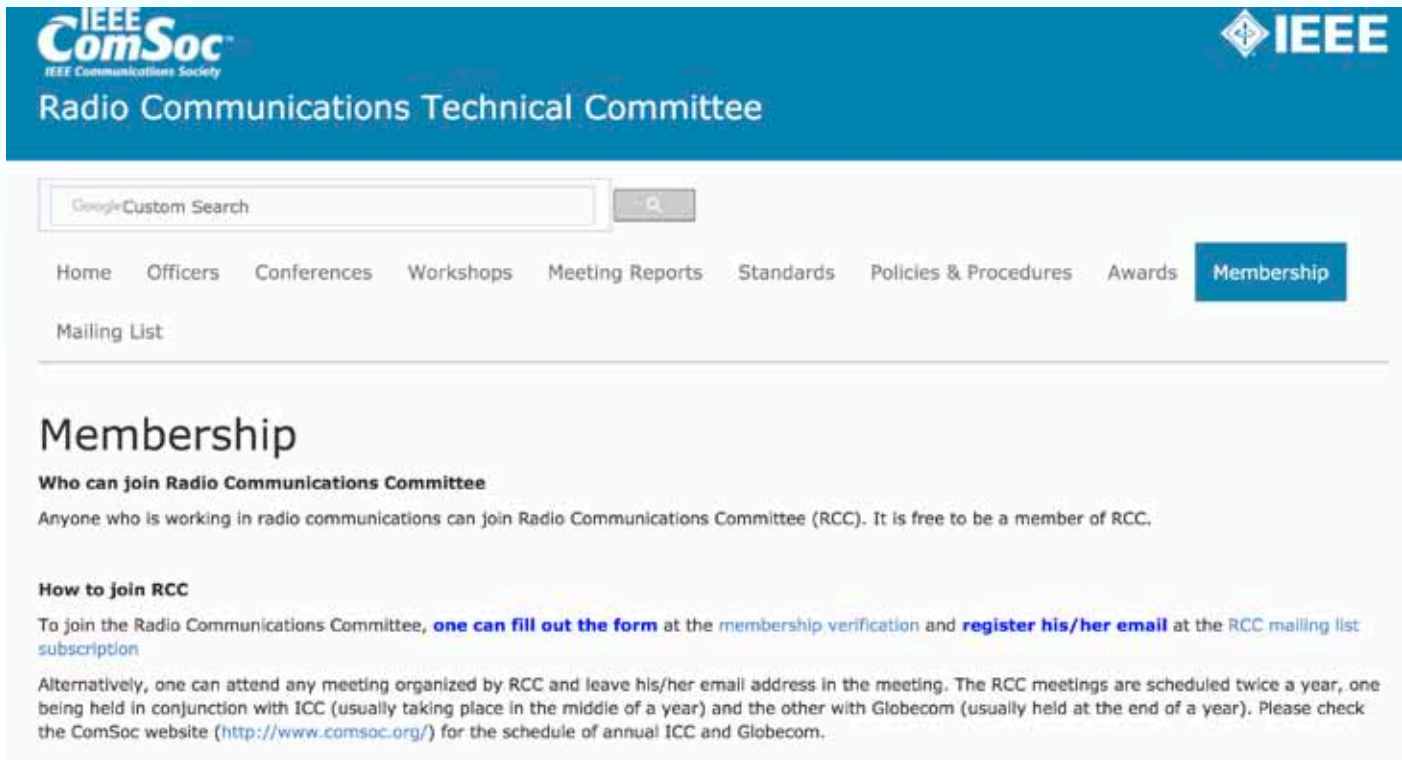
Contact:

**Christos Laoudias, IPIN-ISC Secretary
laoudias@ucy.ac.cy**

IPIN Conference: http://ipin-conference.org/

New Business Items

- TC Membership (please sign up by deadline May 30, 2019)
  https://www.comsoc.org/form/comsoc-technical-committee-member
    - Member: ComSoc member
    - Collaborator: Non-ComSoc member
    - Active (voting) Member

New Business Items

- TC awards procedures
  - Subcommittee: Award chair + 4 members (at least one current officer, unless CoI); approved in TC meeting
  - Awards are restricted to the scope of the technical committees
  - Award selection report submitted to and approved by TCB director
  - Committee Members name on TC website
  - Terms, 2 years?

- **RCC current P&P:** The TC Awards Committee consists of the TC officers (Chair, Vice-Chair, and Secretary) and two other TC members nominated by the TC Chair

- **Award Selection Committee:** chaired by a past RCC chair. The committee also consists of the current RCC officers (Chair, Vice-Chair, and Secretary) plus one additional RCC member nominated by the Award Selection Committee Chair.

New Business Items

- Emerging Technology Standing Committee
  - new ETI: Full Duplex communications
  - new ETI: Machine Learning for Communications
  - Elevated to TC: Smart Grid Communications
  - Elevated to TC: Molecular, Biological and Multi-Scale Communications
  - Disband: IoT and SDN (absorb/merge in other TC/SIG)

- Educational Service Board:
  - 2019 ComSoc Spring school: WCNC 2019 (Morocco), 60 attendees
  - 2019 ComSoc Summer school: Austin TX, Jul 16-19
  - 2019 ComSoc Autumn school: Barcelona, Oct/Nov 2019

New Business Items
Updates from TEA-C

- Distinguished lecturer Selection Committee
  - Call for nominations to TCs and ETCs: Mid July
  - Nominations due: end of September
  - Evaluation: Oct/Nov 2019
  - Notification: GC 2019

New Business Items

Soliciting nominations for the 2019 Technical Recognition Award (Aug. 15)

The Radio Communications Committee (RCC) Technical Recognition Award aims to promote radio communications research and development activities in both the academic and industrial community. This award is established as part of the RCC activities in which research and development takes place in areas related to radio communications. The award recognizes members of the IEEE Communications Society (ComSoc) who have made outstanding contributions to the technological advancement of radio communications.

Past recipients:

2018- Thomas Kailath

2018- Arogyaswami J. Paulraj

2017- Fumiyuki Adachi

2017- Gordon L. Stüber

2016 - William C. Lindsey

2015 - Larry Greenstein

2014 - Vincent Poor

2013 - Lajos Hanzo

2012 - Desmond Taylor

2011 - Norman Beaulieu

2010 - Marco Chiani

2009 - Jack Winters

2008 - Moe Win

2007 - Robert A. Scholtz

New Business Items

Soliciting nominees for ICC/GC Technical Program Symposium CoChairs

SIG proposals !

TC meeting: More technical discussions? SIG presentations?

Publicity: Newsletter? SIG? Interview of Awardees?

Send an email to us
     Chair: Yuan Shen, shenyuan_ee@tsinghua.edu.cn
     Vice Chair: Jemin Lee, *jmnlee@dgist.ac.kr*
     Secretary: Julian Cheng, julian.cheng@ubc.ca

2019 IEEE ComSoc RCC Outstanding Service Award

The Radio Communications Committee (RCC) Outstanding Service Award is established to recognize members of the RCC who have a distinguished record of service to the RCC community, including organization of RCC endorsed symposia and workshops, providing exceptional leadership within the RCC, and promotion of RCC activities and interests in the broader research community.

Conferment of

2019 IEEE ComSoc RCC Outstanding Service Award

Prof. Andrea Giorgetti

IEEE COMMUNICATIONS SOCIETY
RADIO COMMUNICATIONS TECHNICAL COMMITTEE

2019 OUTSTANDING SERVICE AWARD

Presented to

ANDREA GIORGETTI

for outstanding service to the Radio Communications Committee

KHALED B. LETAIEF
President 2018-2019

NELSON FONSECA
VP Technical & Educational Activities

2019 IEEE ComSoc RCC Early Achievement Award

The Radio Communications Committee (RCC) Early Achievement Award aims to promote radio communications research and development activities in both the academic and industrial community. This award is established as part of the RCC activities in which research and development takes place in areas related to radio communications. The award recognizes members of the IEEE Communications Society (ComSoc) who have achieved early career visibility in the field through research and service to the RCC.

Conferment of

2019 IEEE ComSoc RCC Early Achievement Award

Mehdi Bennis

For contributions to radio communications

IEEE COMMUNICATIONS SOCIETY
RADIO COMMUNICATIONS TECHNICAL COMMITTEE

2019 EARLY ACHIEVEMNET AWARD

Presented to

MEHDI BENNIS

for contributions to radio communications

KHALED B. LETAIEF
President 2018-2019

NELSON FONSECA
VP Technical & Educational Activities

RCC Invited Talk

Ultra-Reliable and Low-latency communication in 5G and Beyond

Dr. Mehdi Bennis

Next RCC Meeting

**The next RCC meeting will be scheduled in
GC 2019, Waikoloa, HI**

THANK YOU AND
SEE YOU THEN!

Officers Contacts

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RCC Website:
http://rc.committees.comsoc.org