

IEEE Communications Society
Emerging Technologies Initiatives on
Smart Grid Communications

IEEE ICC 2018

Westport, Westin Kansas City

Monday, May 21st, 2018

15:00-17:00

Agenda

- Welcome and Introduction
- Reports on Appointment of Officers
- Reports on Member Development
- Reports on Special Interest Groups (SIGs)
- Reports on Position Paper
- Conference and Journal Reports
- Policies and Procedures
- Any Other Business

Mission Statement

- Support the IEEE Smart Grid Initiative
- Promote ComSoc's position in the development and promotion of smart grid related technologies
- Ensure that ComSoc members play a decisive technological role in smart grid communications, control, and computing
- Website: <http://sg.committees.comsoc.org/>

History

- Started as an Ad-Hoc Smart Grid Communications Committee in 2010.
- Renamed as Emerging Technical Committee on Smart Grid Communications in 2013.
- Past Officers
 - 2014-2017: Vincent Wong (Chair), Lutz Lampe (Vice Chair), Hamed Mohsenian-Rad (Vice Chair), Stephen Bush (Vice Chair), George Michailidis (secretary)
 - 2012-2014: Petar Popovski (Chair)
 - 2011-2012: Stefano Galli (Chair)

Officers

- Chair: Yingjun Angela Zhang, CUHK, Hong Kong
- Vice Chair: Hamed Mohsenian-Rad, UCR
- Vice Chair: Hans-Peter Schwefel, Aalborg
- Secretary: Christian Wietfeld, TU Dortmund

- Member Relations Chair: Liping Qian, ZUT

Advisory Board

- Vincent Wong, UBC, Canada
- Petar Popovski, Aalborg, Denmark
- Lutz Lampe, UBC, Canada
- Steven Low, CalTech, USA
- Jianhui Wang, SMU/Argonne, USA
- Hartmut Schmeck, KIT, Germany

Member Development

- Our ETC has 219 registered members as of May 2018.
- To become a member, sign up the ETI-SG mailing list at <https://comsoc-listserv.ieee.org/cgi-bin/wa?SUBED1=asgcc&A=1>
- To become a **voting member**, attend at least **two** out of the last five ETI-SG meetings
- ETI-SG meetings are held twice a year at IEEE ICC and IEEE SmartgridComm.

Special Interest Groups

- Based on the research interests of our members, we are initiating 8 SIGs led by experts and active researchers in each area.
 - Communications and Networks to Enable the Smart Grid
 - Cyber Security and Privacy for the Smart Grid
 - Active Distribution Grids and Microgrids
 - Smart metering, Demand Response and Dynamic Pricing
 - Big Data Management and Analytics
 - ICT-Enabled Transactive Energy and Grid Economics
 - Energy Storage and Electric Vehicles
 - Energy Internet and Energy System Integration

SIG: Communications and Networks to Enable the Smart Grid

- Chair: Andrea Tonello, U. of Klagenfurt
- Scope:
 - Wireless, wireline, power line and optical communication systems for smart grids
 - Communication protocols optimized for low latency control applications
 - Physical and medium access control protocols and algorithms
 - Signal processing and coding techniques for energy related sensor information
 - Physical layer security aspects
 - Resource management and cross-layer optimization
 - Capacity and network planning, resource and service discovery
 - Distributed network protocols and hybrid communication technologies
 - Scalable network and system architectures
 - Coexistence, convergence and interoperability mechanisms
 - Solutions for substation automation and control of distributed energy resources
 - Lightweight IP networking stacks for constrained devices
 - Data models and communication-aware data management solutions for smart metering and smart grids
 - Integration of smart meters (including gas and water meters) in smart grid ICT networks
 - Field trials and results of smart metering and smart grid communication solutions

SIG: Cyber Security, Privacy, and Resilience for the Smart Grid

- Chair: Chen Chen, Argonne, USA
- Vice Chair: Kevin Dong Jin, IIT, USA
- Scope:
 - Cyber security, privacy, and resilience issues spanning from planning to operation, and involving investment, preparation, prevention, response, mitigation, and recovery.
 - Multi-disciplinary: power engineering, operation research, computer science, data analytics, communications, and transportation

SIG: Active Distribution Grids and Microgrids

- Chair: Zhao Xu, PolyU, Hong Kong
- Vice Chair: Junhua Zhao, CUHK Shenzhen, China
- Scope:
 - Collaborative control of distributed generation, distributed energy resources, and microgrids
 - Planning and operation of active distribution grids
 - Reliability and security of active distribution grids

SIIG: Smart metering, Demand Response and Dynamic Pricing

- Chair: Sid Chau, Masdar Institute, UAE
- Vice Chair: Hossein Akhavan-Hejazi, UC Riverside
- Scope:
 - Smart metering
 - Demand response
 - Dynamic pricing

SIG: Big Data Management and Analytics

- Chair: Hamed Mohsenian-Rad, UCR
- Vice Chair: Marco Levorato, UC Irvine
- Scope:
 - Strategies for BD visualization in smart grids
 - Software and cloud architectures for BDA in smart grids
 - Reliable and privacy-preserving data storage to support BDA in smart grids
 - Communications technologies to support BDA in smart grids
 - Data mining and machine learning for BDA in smart grids
 - Applications of BDA in state estimation, event detection, resource aggregation, etc.

SIG: ICT-Enabled Transactive Energy and Grid Economics

- Chair: Lijun Chen, Colorado
- Vice Chair: Emiliano Dall'Anese, NREL
- Scope:
 - Control and economic mechanisms to enable distributed, reliable, and secure market and grid operations
 - Control and economic mechanisms to balance volatile supply and responsive demand at the fast time scales
 - Control and economic mechanisms to mediate interests of various shareholders, including individual prosumers to utility companies to state and federal regulators

SIG: Energy Storage and Electric Vehicles

- Chair: Chris Develder, U. Ghent, Belgium
- Vice Chair: Hamid Nazaripouya, UC Riverside
- Scope:
 - Electro-mobility integration in the power grid
 - EV charging
 - V2G services
 - Energy storage for smart grid applications
 - Microgrid applications
 - Grid services
 - Electricity markets

SIG: Energy Internet (EI) and Energy System Integration

- Chair: Qinglai Guo, Tsinghua, China
- Vice Chair: Hao Zhu, UT Austin, USA
- Scope:
 - Modeling, simulation and design of EI
 - Planning, operation and control of EI
 - Emerging key facilities of EI, such as energy router, energy Hub, energy storage, electrical vehicles, wireless energy transfer, DC networks, plug-and-play technologies.
 - Enable techniques on information and communication for EI, such as cloud computing, big data, Internet of things and blockchain.
 - Business model, market and corresponding energy policies for EI
 - Demonstrations of EI

Journal Special Issues

IEEE Communications Magazine

- Special Issue on Emerging Technologies for Connected and Smart Vehicles
- Submission deadline: Feb. 1, 2018
- Publication date: Oct. 2018
- Guest editors:
 - Syed Hassan Ahmedm, U. Central Florida, USA
 - Jalel Ben-Othman, U. of Paris 13
 - Jaime Lloret (ETI member), Polytechnic U. of Valencia, Spain
 - Wael Guibene, Intel
 - Ashfaq A. Khokhar, Iowa State U.
 - Raheem Beyah, Georgia Tech.
 - Antonio Sánchez-Esguevillas, Telefonía, Spain

IEEE Communications Magazine

- Special Issue on Internet of Electric Vehicles and Smart grid
- Submission deadline: April, 2018
- Publication date: Dec. 2018
- Guest Editors
 - Wei-Yu Chiu, National Tsinghua U.
 - Hongjian Sun, Durham U.
 - Kiyoshi Nakayama, NEC, USA
 - Shunqing Zhang, Shanghai U.
 - Vincent Wang (ETC Advisor, Past Chair), UBC

IEEE Transactions on Smart Grid

- Special issue on Theory and Application of PMUs in Power Distribution Systems
- Deadline: March 1, 2018
- Guest Editors
 - Hamed Mohsenian-Rad, (ETI Vice Chair, SIG Chair) UC Riverside
 - Mario Paolone, EPFL
 - Vassilis Kekatos, Virginia Tech
 - Omid Ardakanian, U. Alberta
 - Yan Xu, NTU Singapore
 - Di Shi, GEIRINA
 - Reza Arghandeh, Florida State U.

IEEE Transactions on Sustainable Computing

- Special Issue on Intersection of Computing and Communication Technologies with Energy Systems
- Submission Deadline: 15 Dec. 2018
- Publication: Oct.-Dec., 2019
- Guest Editors:
 - Sid Chau (SIG Chair), Masdar Institute
 - David Irwin, Umass Amherst
 - Minghua Chen, CUHK
 - Sarvapali Ramchurn, U. Southampton

Hindawi Journal on Security and Communication Networks

- Special Issue on Cybersecurity in Distributed Smart Systems
- Submission Deadline: 18 May, 2018
- Publication Date: Oct. 2018
- Guest Editors
 - Drago Žagar, University of Osijek, Croatia
 - Krešimir Grgić, University of Osijek, Croatia
 - Andrea Tonello (SIG Chair), U. of Khagenfurt
 - Matej Zajc, University of Ljubljana, Slovenia
 - Carolyn McGregor, University of Ontario, Canada

Hindawi Journal of Optimization

- Special issue on Optimization for Electric Power System Resilience
- Submission Deadline: 25 May 2018
- Publication Date: Oct. 2018
- Guest Editors:
 - Chen Chen (SIG Chair), Argonne
 - Pirathayini Srikantha, Western U.
 - Yin Xu, Beijing Jiaotong
 - Chau Yuen, SUTD
 - Robin Roche, U. Bourgogne Franche-Comté

IET Journal on Cyber-Physical Systems

- Special Issue on Cyber-Physical Systems in Smart Grids: Security and Operation
- Guest Editors:
 - Qinglai Guo (SIG Chair), Tsinghua
 - Kevin Dong Jin (SIG Vice Chair), IIT
 - Lin Zhang , Tsinghua
 - Ian A. Hiskens, Michigan
 - Wencong Su, Michigan-Dearborn
- Publication date: 4th Quarter, 2017

ACM Transactions on Modeling and Computer Simulation (TOMACS)

- Special Issue on Principles of Advanced and Distributed Simulation (PADS)
 - The special issue is based on significantly extended, selected papers of the 2017 ACM SIGSIM Conference on PADS
 - Paper submission deadline: Nov. 15, 2017
 - Publication date: Oct. 2018
 - Guest Editors
 - Dong Kevin Jin (SIG Vice Chair), IIT, USA
 - Philip Wilsey, U. of Cincinnati, USA

Springer Journal on Protection and Control of Modern Power Systems

- Special issue on Big Data Applications in Modern Power Systems
- Scope:
 - Big data operation and management platform
 - Customer usage patterns and demand side management
 - Data-driven energy internet
 - Data-based probabilistic prediction of equipment failures and defects
 - Data-driven renewable energy forecasting
 - Load forecasting with multiple time scales
 - Predictive data-based asset management in electric utilities
 - Risk assessment and management of power system operation
- Guest Editors
 - Canbing Li, Hui Liu, Qiuwei Wu, Dunnan Liu, Chen Chen (SIG Chair)

Workshops

Workshop on Future Smart Grid Technologies

- Scope
 - Integration of renewables
 - Communication-control-monitoring technologies
 - Electromobility and its impact to the grid
 - New paradigms for a fully connected and electrified world
 - Energy market in new transactive energy paradigms
- Time: 26-27 Feb., 2018
- Venue: Klagenfurt, Austria
- Chair: Andrea Tonello (SIG Chair)
- Technical Committee:
 - Reinhard Pannold
 - Khaled Ahmed
- 70 participants; good industry participation

Workshop on Smart Energy Distribution and Utilization

- Time and Venue: May 28-29, 2018, Hong Kong
- 80+ participants, heavy involvement of industry and NGOs
- Organizers:
 - Yingjun Angela Zhang (ETI Chair)
 - Zhao Xu (SIG Chair)
 - Minghua Chen
 - Jianbin Xu
 - Yi-Chun Lu



ACM SIGSIM Conference on PADS 2018

- PhD Colloquium (Poster and Presentation)
- May 23, 2018
- Rome, Italy
- Chair: Dong Kevin Jin (SIG Chair)

Panels

IEEE PES General Meeting 2018

- Panel on Big Data Analytics for Emerging Power Sensors and Internet-of-Things
 - Participants: PingThings, NuGrid Power Corp, CPS Energy, RPU
 - Organizers
 - Hamed Mohsenian-Rad (ETI Vice Chair, SIG Chair), UC Riverside
 - Emma Stewart, Lawrence Livermore National Lab
- Panel on Best Practices in Sharing of Big Data in Power Systems
 - Participants: Better Grids, Oncor, ISO-NY, BPA
 - Organizers
 - Hamed Mohsenian-Rad (ETI Vice Chair, SIG Chair), UC Riverside
 - Ning Zhou, Binghamton University

IEEE SmartgridComm 2018

- Panel (planned): Electric vehicles in the smart grid, a reality check from real-life deployments
 - To provide a reality check, and discuss real-world studies and deployments of EV charging infrastructure and aforementioned smart grid concepts.
 - To present from actual deployments, synthesize lessons learnt, and discuss next steps
 - Organizer: Chris Develder (SIG Chair), U. Ghent, Belgium

Conferences

Nominations

- IEEE SmartGridComm 2018 Dana Analytics and Computation Symposium: György Dán, KTH
- IEEE Globecom 2018 SAC Smart Grid and Power Line Communications: Giacomo Verticale, Politecnico di Milano
- IEEE ICC 2019 SAC Smart Grid Communications: Kemal Akkaya, Florida International University, USA
- IEEE Globecom 2019 SAC Smart Grid Communications: Suzhi Bi, Shenzhen U, China
- IEEE ICC 2020 SAC Smart Grid Communications: Anna Scaglione, Arizona State University, USA
- If you are interested in co-chairing future conferences, please let one of the ETC officers know.

IEEE ICC'18

- Selected Areas in Communications (SAC) Symposium, Communications for the Smart Grid Track
- May 20 – 24, 2018, Kansas City, MO, USA
- Chair: Vincent Wong
- Number of TPC members: 36
- Number of papers submitted: 33
- Number of papers accepted: 12
- Acceptance rate: 36.4%

IEEE GLOBECOM 2018

- Selected Areas in Communications (SAC) Symposium, Smart Grid and Power Line Communications Track
- Dec. 9-13, 2018, Abu Dhabi, UAE
- Chair: Giacomo Verticale, Politecnico di Milano, Italy
- Number of TPC members (confirmed): 30
- Number of papers submitted: 31 (about 24 from Smart Grid area and the rest from PLC area).

IEEE SmartGridComm 2018

- Renamed as IEEE International Conference on Communications, Control, and Computing Technologies for Smart Grids
- Oct. 29 – Nov. 1, 2018, Aalborg, Denmark
- General Chair: Petar Popovski (Aalborg U.)
- TPC Co-Chairs:
 - John Thompson (U. of Edinburgh)
 - Hamed Mohsenian-Rad (UC Riverside)
 - Deepa Kundur (U. of Toronto)
 - Linus Thrybom (ABB Corporate Research)

IEEE SmartGridComm 2018: Technical Tracks

- Communications and Networking
 - Chairs: Woo Hau Chin (Toshiba Research Europe, UK), Deniz Gündüz (Imperial College London), Melike Erol-Kantarci (U. of Ottawa, Canada), Walid Saad (Virginia Tech., USA)
- Control and Operation
 - Chairs: Mahnoosh Alizadeh (UCSB), Hossein Akhavan-Hejazi (UCR), Hongjian Sun (Durham University, UK)
- Data Analytics and Computation
 - Chairs: Emre Can Kara (Stanford), Manish Marwah (HP Lab, USA), György Dán (KTH)
- Cyber Security and Privacy
 - Chairs: Rakesh Bobba (OSU), Lalitha Sankar (ASU), Saman Zonouz (Rutgers)

IEEE SmartGridComm 2018: Tutorials

- Theoretical foundations for designing an autonomous power grid: PMU data science for blackout and cyber attack early warning
 - Edward Jonckheere (USC), Paul Bogdan (USC), Laith Shalalfeh (German Jordanian University)
- General and powerful flexibility modeling and management with flex-offers
 - Torben Bach Pedersen (Aalborg), Laurynas Šikšnys (Aalborg), Bijay Neupane (Aalborg)
- Smart meter privacy-by-design
 - Deniz Gunduz (Imperial College London), Tobias Oechtering (KTH)

IEEE SmartGridComm 2018: Tutorials

- Introduction to reliable control using unreliable communication media
 - Masaaki Katayama (Nagoya, Japan)
- Convex relaxations and combinatorial optimization of alternating current (AC) electric power systems
 - Sid Chau (Masdar Institute, UAE), Majid Khonji (Masdar Institute, UAE)
- Smart battery pack
 - Remus Teodorescu (Aalborg)

IEEE SmartGridComm 2018: Workshops

- AI in Energy Systems
- Quo Vadis Blockchain in Energy?
- Future Low and Medium Voltage Distribution Grids
- Communication in Energy Grids in the Era of Tactile Internet
- Data, Analytics, and Synchrophasors for Transparent Distribution Networks
- Next Generation of Reliable Power Electronic-based Smart Grids
- Smarter Buildings in Smarter Utility Grids.

IEEE International Symposium on Power Line Communications (ISPLC)

- Time: 08-11 April, 2018
- Venue: Manchester, UK
- General Chairs:
 - Bamidele Adebisi, Manchester Metropolitan University
 - Haris Gaćanin, Nokia Research Lab, Belgium
- TPC Chairs:
 - Xavier Mestre, CTTC, Spain
 - Masaaki Katayama (ETI member), Nagoya University, Japan
- Industry Track Committee Co-Chairs:
 - Andrea M. Tonello (SIG Chair), Alpen-Adria-Universität Klagenfurt, Austria
 - Andrew Wells, Jaguar Landrover, UK
 - David Pitcher, Power Plus Communications, UK
- 80 participants, Smart grid topics well covered

ACM E-Energy 2018

- Time: 12-15 June, 2018
- Venue: Karlsruhe, Germany
- General Chair:
 - Hartmut Schmeck, Karlsruhe Institute of Technology
- TPC Chairs:
 - David Irwin, Umass Amherst
 - Sid Chau (SIG Chair), Masdar Institute
- Accepted full papers: 20
- Acceptance rate: 22%
- Accepted note papers: 20
- Accepted posters 40
- Accepted workshop papers 30+
- ACM E-Energy will be the flagship conference of ACM EIG Energy

Position Paper

Position Paper

- Title: Emerging Technical Committee 'Smart Grid Communications': Information Technology for Smart Utility Grids
- Purpose:
 - Define the scope of ETI-SG and of Special Interest Groups
 - Act as a living document to be adjusted according to the developments in ETI-SG

Position Paper: Process and Status

- Drafting of Paper by ETI-SG officers
 - Utilizing input from SIG chairs
- Reviewed by ETI-SG Advisory Board
 - Update based on review
- Submission to SmartGridComm 2018 as a position paper
- Open a discussion forum or 'open review' type of system for interaction with ETCSG members
- Use in ETI-SG work as a living document
 - Use as a guideline to update best reading list
 - Update every 6-12 months based on comments/discussions

Position Paper: Table of Contents (As of May 20)

- **SCOPING OF SMART GRIDS FOR THE EMERGING TECHNICAL COMMITTEE**
 - The scope of the ETC Smart Grid Communications (ETC-SGC) is delimited to Utility Grids, including in particular electricity, gas, heat, and water grids, and the intelligent systems that are connected to it, (...).
- **THE PAST 8 YEARS: HYPE AND CONSOLIDATION**
- **THE PATH TO THE FUTURE**
 - Emerging topics 1 – top-down
 - Transactive Energy
 - Multi-Energy Systems and Interdependencies of Grids
 - Emerging topics 2 – bottom up – enabling technologies
 - Data analytics/Big Data
 - Novel distributed approaches for secure transactions
 - Scalable computing architectures
 - IoT platforms for heterogeneous data and control
 - Communication as a sensor
 - Structure of Research Agenda
 - 8 SIGs (see earlier)
 - Relation to Neighboring Societies
- **SUMMARY AND CONCLUSIONS**

Policy and Procedures

- Drafted in May 2018
- ToC
 - Name
 - ETI-SG Charter
 - Membership Requirements
 - Elected and Appointed Officers
 - Nomination and Election Procedures
 - Conduction of ETI-SG Meetings
 - Supporting Activities
 - ETI-SG Awards
 - ETI-SG Information Dissemination
- Can be viewed at
<http://sg.committees.comsoc.org/files/2018/05/Policies-and-Procedures.pdf>

Elected and Appointed Officers

- Three categories of elected officers
 - Chair, Vice Chair, Secretary
 - Must be IEEE ComSoc members, excluding student members
 - Term: two years
- Appointed officers
 - Advisory Committee, Member Relations Chair, etc.
 - Term: coincident with that of the elected officers
- Nomination and Election Committee
 - Chair: Current ETI-SG Chair
 - Members: Past ETI-SG Chair, 2nd Past ETI-SG Chair, an ETI-SG Advisory Board member appointed by the current Chair, and ETI-SG member representative appointed by the current Chair
 - Members of the nomination committee are not eligible to become a candidate.

Nomination and Election

- First call announced at the ETI-SG semi-annual meeting at ICC in the second year of the current officers' nominal term.
- Second call announced via email list four weeks before SmartgridComm starts.
- Open call closed two weeks before SmartgridComm starts.
- Election is held at the semi-annual meeting at SmartgridComm.
- Each Active Member has one vote. The candidates with the most number of votes are elected. There is no quorum for election.

Awards

- Two internal awards every year
 - Outstanding Service Award
 - Technical Achievement Award
- Awards Committee
 - Composed of no less than 3 active members
 - The ETI Chair appoints the Awards Committee Chair.
 - The Awards Committee Chair appoints the other members
 - Term: one year, renewable for a maximum of one year.
 - Awards Committee members cannot be nominated.
- Nomination solicited by emails from the ETI-SG members, and also generated by the committee

Thank you!