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An Overview of VTS Technical Committees

As you read in our last issue, we are excited to see what 2024 holds for the field of vehicular technology. In this article, we showcase the IEEE Vehicular Technology Society (VTS) technical committees in the fields of land transportation, motor vehicles, and mobile communications and networks. Follow along at https://vtsociety.org/about/standing-committees#technical and get involved!

Land Transportation

We have two technical committees in the field, the Land Transportation Committee and the AdHoc Committee on Electric Railways. The former provides support for the rail standards committees, manages and publicizes the Joint Rail Conference (JRC), grows membership within the VTS, and contributes knowledge about rail and land transport technologies and industries. It is led by David Thurston (Canadian Pacific Railway) as the committee chair and Lamont Ward (Amtrak, USA) as the JRC chair. In 2023, the committee successfully co-organized the JRC held in Baltimore, USA, in April and actively supported the VTS standards committees in rail electrification and signaling. This year, the committee will recruit new volunteers to fill all the leadership positions and continue to assist the JRC organization. The conference has the theme of Smart Technologies for Safer Railroads, to take place at the University of South Carolina, USA, from 13 to 15 May 2024. Further, the committee will work to expand the VTS standards committees with the addition of a rail car interface group.

The purpose of the AdHoc Committee on Electric Railways is to support and grow an electric railways system community. It enables a range of different activities to help VTS members learn about, explore, and expand the current state of the art of this rapidly emerging technology. Under the leadership of the committee chair, Jianhua Feng (CRRC Zhuzhou Institute, China), the committee actively participated in organizing the Intelligent and Green Railway Development Workshop in Zhuzhou in December 2023. It will continue the efforts of supporting the eighth IEEE Symposium on Emerging Technologies of Transportation Electrification to take place in April or May 2024 in China and a workshop in Europe that is being planned before or after InnoTrans Berlin 2024. The committee plans to increase railway technical activities and to grow its member base.

Motor Vehicles

There are two standing technical committees. One is the Motor Vehicles Committee, which covers the areas of vehicular electronics and electrical engineering ordinarily identified with the automotive industry. In 2023, under the leadership of the committee chair, Loïc Boulon (University of Quebec at Trois-Rivières, Canada), the committee organized the Motor Vehicle Challenge (MVC) and two special sessions at the 2023 IEEE Vehicle Power and Propulsion Conference (VPPC). More than 40 teams participated in the annual MVC. In 2024, the committee chair has been transitioned to Ricardo Pinto de Castro, a professor at the University of California, Merced, USA. He and the committee will stimulate more engagement between the technical committee and the VTS standards groups in motor vehicles. In addition, they will continue supporting the MVC to be jointly launched by the University of Nottingham, the Hanoi University of Science and Technology, and the University of Cagliari.

The other committee, namely the Vehicular Power and Propulsion Committee, covers the technology related to electrical and/or electronic aspects of electrically propelled road vehicles. Under the leadership of the committee chair, Giambattista Gruosso (Polytechnic University of Milan, Italy), a steering committee was established, and 39 new members joined the technical committee in 2023. The committee successfully organized the 2023 VPPC (24–27

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October in Milan, Italy), which had 269 attendees. In 2024, the committee's objectives include engaging more VTS members in its activities. It will support young researchers and Ph.D. students through summer schools and events. Furthermore, it will call for ideas and organize a workshop on new propulsion solutions for combating global climate change.

Mobile Radio

The VTS has been supporting various technical activities in mobile communications and networks, taking advantage of its five technical committees. The Propagation Committee encompasses radio wave propagation issues. It provides publications and services to VTS members and beyond, under the leadership of the committee chair, David Matolak (University of South Carolina, USA). Last year, researchers in the committee jointly coauthored publications that focus on channel modeling challenges for integrated sensing and communication in vehicular environments and on challenges for future mobile–mobile channel models. The committee has been organizing a workshop on mobile–mobile channel modeling for the IEEE Vehicular Technology Conference (VTC) 2024-Spring to be held in Singapore. In 2024, the committee will actively recruit VTS members for more activities, such as a workshop at VTC2024-Fall and a special issue on mobile propagation in *IEEE Vehicular Technology Magazine*.

The AdHoc Committee on Mission Critical Communications focuses on how to achieve highly reliable, secure, and low-latency communications in supporting critical missions. The committee is chaired by Hichan Moon (Hanyang University, Korea). With more members in the leadership team from both academia and industry, the committee has been planning to organize a workshop on mission-critical communications at VTC2024-Fall.

THE VTS HAS BEEN SUPPORTING VARIOUS TECHNICAL ACTIVITIES IN MOBILE COMMUNICATIONS AND NETWORKS, TAKING ADVANTAGE OF ITS FIVE TECHNICAL COMMITTEES.

The AdHoc Committee on AI in Wireless Communications aims to establish a technical community to explore how deep learning can be applied to develop future wireless communication systems. Chaired by Li-Chun Wang (National Chiao Tun University, Taiwan), the committee participated in the organization of the VTC2023-Fall Track 5 on machine learning and artificial intelligence (AI) for communications and Track 10 on unmanned vehicle communications, vehicular networks, and telematics. It also organized workshops on intelligent communication network technologies at VTC2023-Spring and on smart spectrum sharing and in-band coexistence for nonterrestrial networks at VTC2023-Fall. Currently, the committee plans to continue its efforts in recruiting more members and to participate in VTC2024-Spring and VTC2024-Fall, such as delivering tutorials and organizing tracks or workshops.

The purpose of the AdHoc Committee on Drones is to promote research in this important technical area within the VTS community. In 2023, led by the committee chair, Kamesh Namuduri (University of North Texas, USA), the committee organized a tutorial, "From 1 to 100: Standardization in the Communication Industry," at VTC2023-Fall. With a new leadership team in 2024, chaired by Qingqing Wu (Shanghai Jiao Tong University, China), the committee plans to lead a track at VTC2024-Spring, host bimonthly seminars on emerging topics, and establish partnerships with the industry and community in advanced air mobility.

The newly established AdHoc Committee on Space-Air-Ground-Water Integrated Communication Systems aims to serve VTS members in this emerging technical area. The topics of interest include space–air–ground-water communication networks, space–air–ground-water green communication, satellite communication, unmanned aerial vehicle communication, ground communication, underwater sensor networks, and especially, the cooperation and integration among them. Led by cochairs Yan Zhang (University of Oslo, Norway) and Jianping Pan (University of Victoria, Canada), jointly with the IEEE Communications Society, the committee organized a seminar on large models and future communication networks through Zoom/Bilibili in December 2023, with approximately 450 participants. In 2024, the committee will organize special issues in IEEE journals and workshops at VTS conferences and provide support for the VTC2025-Spring organization to be held in Oslo, Finland.

Call for Proposals of Ad Hoc Technical Committees

The VTS encourages proposals for new ad hoc technical committees on important or emerging topics in the Society's fields of interest. Learn more about submitting a proposal at https://vtsociety.org/post/announcement/call-new-ad-hoc-technical-committees.

Join a Technical Committee

Are you interested in joining one of the existing VTS technical committees? If so, please submit the online interest form (https://vtsociety.org/form/contact-technical-committees).

As always, I would like to know how the VTS can better serve you. Please do not hesitate to contact me with your ideas, suggestions, comments, questions, or concerns. If you have not already engaged in one of these committees listed here, I hope you will consider doing so in 2024! ***VT***