Establishing the Technical Activities and Technical Committees of IEEE Consumer Technology Society

Department: Head

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***Abstract*—The IEEE Consumer Technology Society (CTSoc) is the oldest technical society: it was part of IRE 1920, which merged with AIEE to form IEEE in 1963. As CTSoc claims to be an IEEE Technical Society and is actually one of the 39 IEEE Societies operating under the IEEE Technical Activities Board, it was essential for its recent organizational re-structure to include a Technical Activity (TA) area. This article summarizes the efforts that have been put recently in place over slightly more than two years (since September 2019) by a group of volunteers under the guidance of CTSoc's President and with the help of VP of TAs to establish the TAs area and its 15 Technical Committees (TCs).**

UNTIL A COUPLE OF YEARS AGO, the activities of IEEE Consumer Technology Society (CTSoc) in the education and technical fields were handled under a single area, named Educational & Technical Activities. In September 2019, during the ICCE Berlin conference, a group of volunteers led by CTSoc's President Prof. Wahab Almuthadi started to explore the idea of creating a "tool" aimed – at least initially – to support the management of CTSoc next conferences, helping, e.g., in the building of Organization Committees, Technical Program Committees (TPCs), technical tracks, sessions, and technical topics of conference call for papers (CFPs). The concept of *Society Conference Technical Committee* (SCTC) was launched at that time operating and reporting to the VP Conferences. The CTSoc's Board of Governors (BoG) formalized the SCTC creation in its January 3, 2020 meeting, and appointed Prof. Fabrizio Lamberti as the Chair.

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TECHNICAL STREAMS, INITIALLY

In the months that followed, a process was developed to establish the so-called *Technical Streams*

(TSs). The idea was to have a number of TSs representing the main directions falling in the field of interest of CTSoc, and endow each TS with an initial number of volunteers willing to help into them.

To this purpose, data regarding CTSoc conferences of the preceding five calendar years were analyzed.

First, topics in the CFPs and tracks in the final programs of the said conferences were extracted, and a summarization step was performed aimed to remove duplicates and limit overlaps. As a result, 14 broad titles were identified, which were used as names for the TSs being created.

A database was then produced hosting information about 14,291 individuals who had been involved in these conferences as General Chairs, Program Chairs, Track Chairs, authors or reviewers. In total, 791 chairing services, 22,351 authorships, 7,211 papers, 4,149 reviewers, and 16,353 reviews were recorded. The number of each individual's contributions was calculated in terms of number of chaired conferences and tracks, number of submitted papers, and number of performed reviews. An overall indicator was thus obtained, used to obtain a list of individuals ranked based on their level of contribution to CTSoc's conference activities over the considered time period.

At the same time, a natural language processing approach was used to automatically assign a certain number of pre-defined labels (*tags*) to the above individuals based on the titles of chairing services, contributed papers and/or reviewed papers. Each TS was assigned a certain number of labels, which were then used for the initial allocation. A round-robin approach was adopted to allocate approximately the same number of individuals to each TS, thus guaranteeing, in principle, a balancing of TSs' sizes. A balance between experienced contributors and newcomers, geographic distribution, gender diversity, etc. was pursued as well. The above methodology and the obtained results were presented to the BoG in its May 7, 2020 and July 9, 2020 meetings.

By leveraging the achieved results, the process of inviting individuals to join the assigned TSs was started. First, dedicated invitations were sent by emails to the highest ranked contributors. In this way, each TS was assigned three Co-Chairs. Then, between July and August 2020, approximately 2,900 emails were sent to highly ranked individuals, inviting them to join the TSs as members. The process was managed through an online application created ad hoc. Approximately, 600 individuals accepted to join the assigned TS. The newly established TCs featured an initial set of approximately 30 to 50 members. A kick-off meeting of the SCTC was organized on October 19, 2020, participated by the Co-Chairs of the 14 TSs.

FROM STREAMS TO COMMITTEES

In its November 6, 2020 meeting, the BoG decided to initiate a process to transform the TSs into the Society's *Technical Committees* (TCs). The process outcome is illustrated in Fig. 1.

As can be seen, the *Technical Activities* (TAs) area was separated from the Educational Activities area, and a VP of TAs role was created. The TCs report to the TC Board. Under the TA, the Future Directions Committee (FDC) was also established. The responsibilities of the TCs, TC Board, FDC and VP of Technical Activities were included in the new version of the CTSoc's Bylaws and Constitution.

The TC Board has a supervisory role for the TCs, supporting organization, quality control, and management of TAs. It is Chaired by the VP of TAs, and consists of the Chairs of all the TCs, the VP of Conferences, the VP of Publications, the VP of Industry and Standards Activities, and the President as Ex-officio member. Detailed *Policies and Procedures* (P&Ps) for the TAs were also drafted and approved by the TC Board, and are expected to be brought to the attention of the BoG in the coming months.

Three separate officer roles were defined for each TC, namely Chair, Vice-Chair and Secretary, and founding Co-Chairs were invited to discuss and agree on the role to cover for the first two-year term. After the first terms, officers will be elected. According to the P&Ps, IEEE and CTSoc membership is required to have voting rights, but not for being a member of

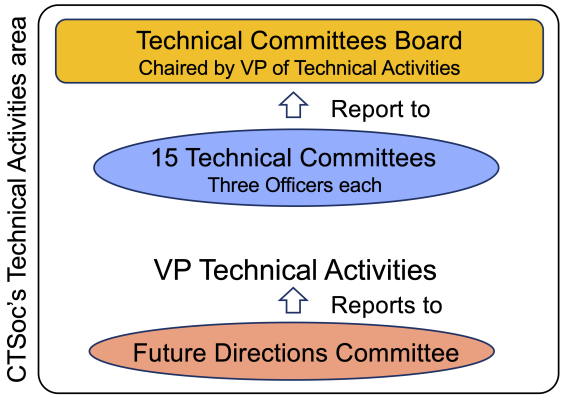

Figure 1. Organization of the TAs area.

a TC (at least for 2022). After roughly one year, the process of TCs creation was finally completed.

TECHNICAL COMMITTES RAMP-UP

The TC Board started to meet every two months to discuss the status of activities, approve TC's P&Ps, evaluate proposals for new TCs, etc. The first meeting was held on March 19, 2021.

Between November 2020 and January 2021, the officers of each TC were invited to organize the first meeting with their members. As per the TA's P&Ps, the TCs shall meet at least every six months to support the management of their business.

Technical Committees may form Subcommittees and Special Interest Groups (SIGs), and appoint liaison positions. Existing Technical Committees may be merged, modified, or dissolved as necessary to ensure continued relevance and effectiveness.

New TCs can also be created (e.g., on proposal by the BoG or by CTSoc members). For instance, after the establishment of the initial 14 TCs, a new TC focusing on Quantum technologies has been proposed by the BoG in summer 2021, given the growing relevance of this field for CTSoc. The establishment of the 15th CTSoc's TC has been recently completed.

Thus, currently the following 15 TCs are active: Application-Specific CE for Smart Cities (SMC); Audio/Video Systems and Signal Processing (AVS); Automotive CE Applications (CEA); Consumer Power and Energy (CPE); Consumer Systems for Healthcare and Wellbeing (CSH); Entertainment and Gaming (ENT); Human-Machine Interaction and User Experience (HMI); Internet of Things, Internet of Everywhere and Edge Computing (IOT); Machine learning, Deep learning and AI in CE (MDA), Quantum in Consumer Technology (QCT); Security and Privacy of CE Hardware and Software Systems (SPC); Sensors and Actuators (SEA); Smartphone and Mobile Device Technologies (MDT); Virtual Reality, Augmented Reality and Displays (VAR); and Wireless and Network Technologies (WNT).

Each TCs has a dedicated page on CTSoc website, with information about officers, scope, P&Ps, membership information, and minutes of meetings.

GOALS, ACTIVITIES AND RESULTS

After the completion of the launch phase described above, the TCs started their business implementing the necessary actions according to the objectives in the P&Ps. Objectives include: supporting CTSoc's technical activities in the areas of conferences, publications, standards, and education, and history; investigating, evaluating, promulgating and fostering current and emerging technologies and applications of interest to CTSoc; creating additional TCs for technologies of interest to CTSoc and conduct periodic and special technical meetings as directed by the BoG; supporting development of new cross-cutting initiatives in collaboration with other TCs of CTSoc, and, as appropriate, with other IEEE Society/Council Technical Committees and IEEE organizational units; defining new areas of technology focus and encourage formation of new initiatives through the CTSoc's FDC.

For instance, as with regard to conferences, the TCs are expected to: invite qualified individuals from both industry and academia to consider joining the TPCs; review and approve, as recommendations for approval by relevant CTSoc's Committees and Boards, the CFPs; offer support by contributing papers and providing reviewers; provide publicity for submission of papers and other participation modes; recommend technical positions (e.g. TPC Chairs, Publications Chairs, Workshops Chairs and Tutorials Chairs); provide conference Track and Session Chairs; collect proposals for the hosting of conferences as well as for academic and industry conference speakers. Since from the TCs creation, the CFPs of ICCE Las Vegas and ICCE Berlin started to feature technical and industry tracks aligned with the 15 TCs; moreover, members of the TCs have been invited to serve in technical positions, started to propose workshops and volunteered to host conferences.

TCs contribution to CTSoc is not limited to the Conferences area. For instance, with regards to publications, TCs's officers and members have been nominated and/or supported in their application for Associate Editor positions in IEEE Transactions in Consumer Electronics, IEEE Consumer Electronics Magazine, IEEE Access (Consumer Technology Section), etc. Moreover, TCs supported the Educational Activities area by collecting proposals for webinars to be delivered onto CTSoc's media channels as well as of volunteers willing to serve as Distinguished Lecturers. TC's officers and members have also been involved into activities being organized with other Societies, Councils, etc., both within and outside IEEE (e.g., IEEE Signal Processing Society, Audio Engineering Society, and IEEE Future Directions' Digital Privacy initiative, so far).

More information on the TAs and TCs is available at https://ctsoc.ieee.org/technical/. Volunteers willing to get involved should fill in the application form.

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