

Satellite & Space Communications Technical Committee Charter & Operating Procedures

December 2020

1 Charter

The Satellite and Space Communications (SSC) Technical Committee (TC) of the IEEE Communications Society (ComSoc) facilitates technical interchange in the field of satellite and space communications and networking. It explores the evolution of new satellite and space-based systems and the application of new and emerging technologies, at all layers of the network protocol suite. The TC maintains a keen interest in the development and maintenance of standards in this area and facilitates nomination of suitable candidates for IEEE awards, the ComSoc Distinguished Lecturer Program, and IEEE Fellow elevation among its members.

Specific technologies of current interest include:

- Satellite and space Communications and Networking topics including: Earth-space communications; MIMO satellite communications; MANET, VANET and wireless sensor networks; maritime communications; AIS applications; Coding, modulation and synchronization schemes; Access Schemes; Demand Assignment Multiple Access (DAMA); Random Access; Non-orthogonal multiple access (NOMA) schemes; Precoding; Cross-layer air interface design; Channel models; Navigation services; Reliable multicast protocols; Transport protocol performance over satellite; IP over satellite; Routing protocols; On-board switching and processing technologies; QoS and performance; Call admission control schemes; Dynamic bandwidth allocation; Adjacent and terrestrial interference; Fade mitigation techniques; Security, privacy, and trust; IT application in Space Communications; Emerging and current standards: CCSDS; DVB-S2, DVB-RCS2; DVB-SH; DVB-Sx; S-MIM interface; 3GPP-NTN; IP over Satellite, Cognitive satellite networks; Delay Tolerant Networking; optical feeder link; optical inter-satellite links;
- Convergence of satellite and terrestrial networks in the context of 5G and beyond systems and thus including: end-to-end network slicing; end-to-end network orchestration; NFV/SDN concepts applied to the satellite infrastructure;
- New Space communication and networking topics applied to: High Altitude Platforms (HAPs), High Altitude Pseudo Satellites (HAPS), Balloons, drone and UAV connected via satellite; nano/pico-satellites, swarm of satellites; pico-satellites.
- Geographic Information and applications topics including: Earth observation; Global positioning systems; Digital terrain modeling; GNSS; Inertial and multi-sensor integrated navigation systems; Wireless/satellite positioning technologies and applications; Modern tracking systems; Satellite navigation.
- Satellite/space communications-based applications issues such as: Satellite-based disaster recovery; Satellite-based large-scale sensor-networks; Satellite-based power grids monitoring and control; Satellite-based remote e-Health; Satellite based alarm systems; Satellite-based weather forecast; Satellite-based earthquake/environmental surveillance; Satellite-based solutions for aeronautical applications.
- Interplanetary and exploration missions communications concerning: Planetary exploration management; Space astronomy advances; Human exploitation of space resources.

Antennas for Satellite Communications issues such as: Antenna design and communications; Adaptive antenna and phased arrays for radar and communications; Smart antennas; active antennas.

2 Operating Plan

1. Technical Committee Vision

- There are new and revolutionary developments taking place in the field of satellite communications. First, narrowband systems using L/S-band frequencies and non geostationary satellite constellations are being introduced. These systems will provide cellular like services to hand-held satellite terminals. In addition, wideband systems using Ka/Q/V band frequencies and some also using non-geostationary satellite constellations are emerging. These systems will provide multi-media type services to very small aperture satellite terminals. Both the narrowband and wideband systems will make state-of-the-art communications services available virtually anywhere in the world.
- The SSC TC's long-term objective is to be actively on top of these new developments and insure that they are made visible to the IEEE ComSoc community via the various conferences and media. Towards this objective, we are in the process of formulating plans to attract new members particularly from the industries and organizations at the forefront of these new developments.
- We are also interested in attempting to establish a more active relationship with important international journals in the field of communications and networking aimed at placing special issues in the field of Satellite and Space Communications and Networking.
- Continue to meet twice annually at the ICC and GLOBECOM conferences.
- Continue to organize and chair technical sessions at ICC and GLOBECOM.
- Continue to participate in standardization activities.
- Develop plan for a new membership drive and campaign to improve the participation of the international satellite communications industry.

2. Working Policies and Procedures

2.1 Organisational Structure

The Technical Committee reports to the Technical Committees Board.

Technical Committee officers and are defined in Clause 2.2 of the present document.

TC Members shall:

- be ComSoc members in good standing
- be those members who have been active in the TC activities for the past three years.
- participate in TC meetings
- cast informed votes on TC business
- be willing to assist in the conduct of TC business

In addition to TC members, collaborators are also envisioned, whose role is defined as follows: Collaborators – individuals who are not ComSoc members may participate in TC activities as collaborators.

2.2 Definition of Elected and Appointed Officer Positions

The SSC TC has three elected officers: Chair, Vice-Chair, and Secretary, each of whom must be members of the IEEE Communications Society, an IEEE Communications Society Affiliate, or member of a Sister Society. Student Members and Graduate Student Members are not permitted to serve as elected TC officers.

The Officer Duties are:

- Chair is responsible for
 - Represents the Technical Committee on the Technical Committees Board
 - Provides guidance and direction to Technical Committee members in the conduct of their responsibilities
 - Appoints Chairs of Subcommittees and Special Interest Groups as necessary
 - Coordinates with ComSoc Staff in the conduct of his/her responsibilities
 - May assume leadership for specific projects, as delegated by the Technical Committee
- Vice-Chair:
 - Replaces the TC Chair in case of his/her absence
 - Assists the TC Chair and Secretary in his/her activities
 - Prepares and distributes the SSC TC newsletter.
- Secretary:
 - Coordinates the TC meetings, arranging the meeting time schedule, managing the meeting room reservation and other logistics, and informing the members via the e-mail list.
 - Prepares reports for the TC and Technical Committees Board meetings
 - Provides an annual written report, which shall be distributed to the VP-TEA-C, the Director-Technical Committees, and TC members prior to each meeting held at ICC/GC.
 - Records the minutes of the TC meetings
 - Maintains contact with the TC members and Chair
 - Sends announcements to the TC e-mail list
 - Maintains and updates the TC website

The nominal term for Chair, Vice-Chair(s) and Secretary is two years. Any officer can be elected to the same position for one additional, contiguous term (i.e., continuously serve in any particular officer position for a maximum of four years). TC officers can be elected to a different officer position, but in no case can one person continuously serve as a TC officer within the same TC for more than eight years.

If a TC officer position becomes vacant before the normal conclusion of his/her term, the remaining term shall be filled by special election of the TC. If such a special election is not held before the next regularly scheduled meeting, the VP-TA, in consultation with the President, appoints someone to serve the remaining term.

Positions filled shall be for completion of the interrupted term.

At the discretion of the TC, there may be additional appointed (non-officer) positions such as liaisons. There may be as many appointed positions as is necessary for proper operation of the TC.

Nomination and Election Procedures

To facilitate the election of officers, the TC employs an *ad hoc* Nominations & Elections (N&E) Committee, made up of members of the TC.

The N&E is composed of three members, consisting of the outgoing Chair and two past (but still active) chairs, and is formed six months before the start of new terms. If one, or more, proposes his/her candidature, more past chairs (still active) are involved to have three N&E Committee members. This committee nominates a N&E coordinator and, under his/her management, prepares a recommended slate of officers for the next two-year term.

The N&E Committee comes into existence at the TC meeting first preceding the actual election and is dissolved after the election and installation of officers.

It is desirable that the N&E Committee identifies at least two candidates for each officer position. The N&E Committee announces its slate of candidates at least two weeks before an election is to be held. Such announcement is sent via the TC mailing list. At any point, members shall be able to submit nominations via email by communicating to the current Chair, Vice-Chair, Secretary, or directly to the N&E Committee. It is desirable that such “write-in” candidates receive three or more supporting signatures from TC members.

During an election, actual nominations from the floor shall also be invited. All candidates, however they are identified, will have consented to being nominated and will have shown a willingness to serve, if elected. Again, it is desirable that extemporaneous, from-the-floor nominations, receive support from three or more members at the meeting.

TCs elections may be held electronically by using the TC mailing list. Approval of this measure is by simple majority. It is necessary:

- to register to vote.
- two-thirds of those registered must vote. If the two-third threshold is not reached the election is repeated until it has been matched.

An officer, usually the outgoing Secretary, of the TC shall take responsibility of managing the election operations and reporting election results to the TC Chair who will communicate the election output to the TC membership, VP – TA, and ComSoc headquarters in New York City.

It is desirable that biographies and position statements of candidates be available to members. Candidates are permitted to “advertise” their candidacy on the TC email distribution list. All candidates are informed of election results and are permitted to appeal the outcome.

TC elections shall be administered by the TC Chair, or in his/her absence, any other elected officer.

In the case of two candidates for a position, election is by simple majority. For the case of more than two candidates, selection proceeds through a series of elections: at each stage, the individual garnering the fewest votes is eliminated, until only two remain. In the event of a tie, votes shall again be cast until the tie is broken. If that is not possible, the TC person running the election (any of the elected TC officers) casts a tie-breaking vote.

TC elections are normally open. If managed with the TC mailing list all votes can be seen by all members of the list. However, upon the request of any member, the election shall proceed by secret ballot (i.e., in case of electronic vote, a dedicated email address will be set up). Votes will be counted by at least one officer of the TC, usually the Secretary, and another member (officer or not). A record of votes cast must be retained for post-election audit purposes.

A TC voting member shall be any individual who has: 1) “attended” (physically present, by teleconference, or via electronic means for virtual TC meetings) two or more of the prior five regularly scheduled TC meetings; or 2) contributed substantially to the TC activities (such as by chairing symposia, organizing special issues, submitting papers to the TC related Symposia/Tracks of ICC and GLOBECOM or conferences co-sponsored (at least technically) by the IEEE Communications Society in the area of interest of the TC and following all the typical activities of the TC independently of the meetings attendance).

The TC Secretary shall maintain an attendance list for each meeting. That attendance list shall be part of the Meeting Minutes prepared and issued by the Secretary. A list of members shall also be maintained and appended to Meeting Minutes. Moreover, each year the officer team establishes a list of the members that actively contribute to the TC activities.

In addition to the above, TC voting members must be an IEEE Communications Society Member, IEEE Communications Society Affiliate member, Sister Society member, IEEE Communications Society Student Member, or IEEE Communications Society Graduate Student Member. In case of electronic vote, when a member registers to vote, he/she must communicate their affiliation and the related membership number.

After each election of officers, the TC Chair shall provide an Election Report to the Director-Technical Committees and the VP-TEA within two weeks.

The Election Report shall contain:

- An outline of the election process
- Name of the person preparing the ballot
- The candidates for each office and how the candidates were selected for the ballot
- The IEEE member number for each candidate
- The method of voting (in person, electronically, by teleconference, etc.)
- The method used to determine which members are entitled to vote.
- A list of those members who voted in the election
- The actual vote tally by candidate.

Election results shall be authorized by the Director - Technical Committees upon consultation with the VP-TEA. Election results become valid when approved by the Director – Technical Committees and the VP-TEA. The Director of Technical Committees or the VP-TEA shall accordingly notify the serving TC chair within two weeks after receipt of the Election Report.

If the Director – Technical Committees does not authorize the election results, the Director shall organize a new election on behalf of the TC.

Newly elected TC officers assume their positions from the July 1st of the year in which the elections are held. Understandably, an election must be planned compatibly with the date of assumption of the new TC officer position.

2.3 Planning, Announcement and Conduction of TC Meetings

SSC TC meetings are held at every ICC and GLOBECOM conference. This fact is advertised in the SSC TC Newsletter which is published semi-annually and distributed to the membership through

the mailing list.

Meetings are announced at least two weeks in advance on the committee mailing list. Meetings are open to any conference attendee. Each first-time attendant becomes a member of the TC. Alternatively, to join the TC it is sufficient to contact the Secretary.

The TC Chair or a designated substitute, typically another TC officer, will chair meetings. Any TC member can suggest items for the agenda.

The TC Secretary will take minutes. These minutes should be made available within one month of the meeting. Their availability is announced on the TC mailing list. Minutes are posted on the TC web site and are public.

2.4 Budget and Expense Policies and Procedures

The VP – TA will inform each Technical Committee (TC) of its budget.

When a TC feels that funds are needed to accomplish its mission, a proposal will be prepared by one or more TC Officers for discussion and approval at a TC meeting. Such discussion can also be carried out via the TC's email list. The proposal should contain sufficient detail about the activity for which funds are sought and justification for funds being requested.

If the TC membership agrees to the proposal, it will be submitted to the VP-TA for his/her approval. If approved, funds will be used in accord with ComSoc procedures. The Secretary of the TC will maintain a record of expenses. Invoices are sent to the VP-TA for approval, and then to ComSoc headquarters for payment or reimbursement.

Expenses will normally be incurred for maintaining the TCs information infrastructure or showing appreciation for volunteer support. Recognition will not include awarding money, nor are TC funds to be used for travel purposes.

2.5 Support for ComSoc Activities such as Publications, Conferences, Educational Services, Standards Activities, Membership Development, etc.

The SSC TC is active in all of ComSoc's activities. This will include ComSoc conferences (such as ICC, GLOBECOM, INFOCOM, MILCOM, and OFC) by providing representatives to their respective Technical Program Committees (TPC), by providing for professional review of submitted papers (by soliciting such assistance among its membership) and by organizing mini-conferences, symposia, panels, short courses, tutorials, etc., as deemed appropriate by the Society and the Committee.

Concerning ICC and GLOBECOM, traditionally, the SSC TC nominates at least three representatives of the TC: one for the dedicated SSC track usually planned in the technical program of the aforementioned conferences, one for the symposium dealing with wireless communications and one for the symposium dealing with wireless networking. In more detail, considering the recently applied nomenclature of the ICC/GLOBECOM symposia:

1. a representative for the role of Symposium Co-Chair of the Selected Areas in Communications Symposium as leader of the Satellite and Space Communications Track;
2. a representative for the role of Symposium Co-Chair of the Wireless Communications Symposium;
3. a representative for the role of Symposium Co-Chair of the Wireless Networking Symposium.

Further, the TC can individually organize workshops and conferences. Also, because of the broad nature of committee activities, collaborative sessions with other committees will be sponsored and heartily encouraged. As new technologies and application areas emerge, the TC will seek to address aspects of these topics relative to its charter, and work with both the Strategic Planning Committee and the Emerging Technologies Committee.

The SSC TC moreover supports ComSoc journals, magazines, and standards activities by soliciting volunteers as authors and editors, and submitting proposals. The TC will seek ways to increase active participation of its members in information exchange related to the charter of this TC, such as: stimulating feature topics and special issues of ComSoc journals and magazines and by sponsoring workshops, tutorials, short courses, panel sessions, etc. on special topics.

2.6 Information Dissemination Activities such as Newsletters and Web Pages

The SSC TC maintains a web page. This web page is accessible from the main ComSoc website. Announcements distributed to the TC's membership, notably meeting agendas and meeting minutes, opportunities for membership participation in Committee-sponsored activities, as well as election-related issues, will be made available on the TC web page. The TC also provides one email exploder as an alternative for timely dissemination of information, and to welcome useful information from others (i.e., the aforementioned mailing list).

The SSC TC Secretary develops and maintains the SSC TC web page. The content of the web page is determined by joint collaboration among the SSC TC officers.

The SSC TC also publishes a SSC Newsletter twice a year. The Chair writes the "Message from the Chair" column, the Vice Chair writes the "Scanning the World" column, and the Vice-Chair prepares the "News and Events" sections. The Vice-Chair edits, publishes, and distributes the Newsletter.

Membership List

As described in the *Nomination and Election Procedure* Section, the Secretary maintains the membership list. It is currently listed on the SSC web page. Members may request that their contact information not be posted on the web. Long-inactive members are periodically eliminated.

2.7 SSC Awards

Two awards are assigned on a yearly basis by the SSC TC in order to recognise outstanding contributions to the SatCom community and the important support activities to the overall TC workplan. In more words, the two awards are the following (and further detailed in the following subsections):

- Satellite Communications Distinguished Service Award;
- Satellite Communications Technical Recognition Award

SSC TC will follow the TC Common P&Ps (B.5.6.4.4.e) for election of Awards Subcommittee which will conduct the awards selection procedure.

2.7.1 Satellite Communications Distinguished Service Award

Purpose:

This award aims to promote research and development activities in the area of satellite communications within industry and the academic research community. The award is established as part of the SSC-TC activities in involvement in the new and revolutionary developments taking place in the field. Moreover, the award is a recognition to the outstanding SSC service contribution to the technical committee, in the form of leading editorial initiatives, chairing of satellite-specific

tracks, overall support to the TC activities, just to cite a few.

The award also aims to motivate the increase, in number of research and publications, in the field as well as the number of researchers in this field and the TC membership.

Frequency:

One award will be given in each calendar year. If no suitable candidate is proposed in a given year, the award will not be presented for that year. The award will be announced and given during the IEEE GLOBECOM conference.

Eligibility:

An individual researcher or a team of researchers (not to an institution, department or laboratory), that has met the following criteria, may be nominated or may apply for receiving the award:

1. Must be an IEEE Communications Society Member or Student Members or Graduate Student Members at the time of application. In case of a team, at least one of the members of the team must be an IEEE Communications Society Member or Student Members or Graduate Student Members.
2. Must have research related to the field of satellite and space communication and networking, including research involved in any layer of the network stack.
3. Must have significant contribution in the field in the form of one or both of the followings:
 - Publication of one book, or one book chapter, or one journal paper, or one international conference paper in the field of satellite communications. The journal paper and the international conference paper must be peer reviewed based on full paper submission. The publications are not required to be within IEEE journals and conferences but must be published in high-level publications, as defined by the award selection committee.
4. Must have significantly contributed to the activity of the TC, according to the workplan and more precisely have been involved in some of the following activities:
 - Leading or participation to the editorial initiatives related to SatCom, promoted within the TC or having different effect on the enhanced visibility of the TC
 - Involvement in the official activities of the TC (working groups) with outstanding results
 - Outstanding service in the position of chair in the past mandates.
5. Must be ready to attend the GLOBECOM conference in the year of award. In case of a team, at least one member of the team must be ready to attend. If the selected person (people) for the award cannot attend the conference, a representative must be nominated to receive the award at least four weeks before the conference date or the award will be given to the second person (team) that has been selected by the award committee as the reserved.

Nomination:

All applications must be sent to the SSC TC Secretary by the closing date of September 15th of the year of the prize. The applications could be:

- From individual researchers or a team of researchers on a self-nomination basis, or
- Nomination by other people.

The application must include a letter of application (or nomination) and any document showing that the application has met the award eligibility criteria and any other support.

Selection:

Upon conclusion of the assessment process and overall selection procedure, the Chair of the selection committee shall prepare an Awards Selection Report containing the following information for each award:

- the process conducted to select the award recipient,
- the names of all candidates for the award,
- the name of the recipient of the award and associated justification

In turn, the SSC Chair shall send the Awards Selection Report to the Technical Committees Director for approval. Finally, upon approval from the TC director, the selected main awardee will be informed by the SSC Secretary (or directly by the SSC chair) together with a letter of award offer. The selected main awardee must accept the offer (including condition 4 of eligibility) or the offer will be sent to the reserved awardee.

Announcement:

The official announcement of the award for each year will take place during the SSC TC meeting held at IEEE GLOBECOM. The award will be also published in the SSC TC web page including pictures of the award ceremony, if available.

Content:

The award is presented as a plaque.

Recognition:

The award is recognized by the IEEE and the IEEE Communications Society and will be funded under IEEE Communications Society annual budget for the Technical Committees.

2.7.2 Satellite Communications Technical Recognition Award

Purpose:

This award aims to promote research and development activities in the area of satellite communications within industry and the academic research community. The award is established as part of the SSC-TC activities in involvement in the new and revolutionary developments taking place in the field. The award is aimed at recognising very relevant contributions to SatCom domain, although not necessarily pertaining to the SSC TC activities.

The award also aims to motivate the increase, in number of research and publications, in the field as well as the number of researchers in this field and the TC membership.

Frequency:

One award will be given in each calendar year. If no suitable candidate is proposed in a given year, the award will not be presented for that year. The award will be announced and given during the IEEE ICC conference.

Eligibility:

An individual researcher or a team of researchers (not to an institution, department or laboratory), that has met the following criteria, may be nominated or may apply for receiving the award:

1. Must be an IEEE Communications Society Member or Student Members or Graduate Student Members at the time of application. In case of a team, at least one of the members of the team must be an IEEE Communications Society Member or Student Members or Graduate Student Members.
2. Must have research related to the field of satellite and space communication and networking, including research involved in any layer of the network stack.

3. Must have outstanding record of contributions in the field in the form of one or both of the followings:
 - Publication of one book, or two book chapters, or two journal papers, or five international conference paper in the field of satellite communications within five years prior to the award year. The journal paper and the international conference paper must be peer reviewed based on full paper submission. The publications are not required to be within IEEE journals and conferences but must be published in high-level publications, as defined by the award selection committee.
 - Major invention (patent) received within five years prior to the award year.
4. Must be ready to attend the ICC conference in the year of award. In case of a team, at least one member of the team must be ready to attend. If the selected person (people) for the award cannot attend the conference, a representative must be nominated to receive the award at least four weeks before the conference date or the award will be given to the second person (team) that has been selected by the award committee as the reserved.

Nomination:

All applications must be sent to the SSC TC Secretary by the closing date of February 15th of the year of the prize. The applications could be:

- From individual researchers or a team of researchers on a self-nomination basis, or
- Nomination by other people.

The application must include a letter of application (or nomination) and any document showing that the application has met the award eligibility criteria and any other support.

Selection:

Upon conclusion of the assessment process and overall selection procedure, the Chair of the selection committee shall prepare an Awards Selection Report containing the following information for each award:

- the process conducted to select the award recipient,
- the names of all candidates for the award,
- the name of the recipient of the award and associated justification

In turn, the SSC Chair shall send the Awards Selection Report to the Technical Committees Director for approval. Finally, upon approval from the TC director, the selected main awardee will be informed by the SSC Secretary (or directly by the SSC chair) together with a letter of award offer. The selected main awardee must accept the offer (including condition 4 of eligibility) or the offer will be sent to the reserved awardee.

Announcement:

The official announcement of the award for each year will take place during the SSC TC meeting held at IEEE ICC. The award will be also published in the SSC TC web page including pictures of the award ceremony, if available.

Content:

The award is presented as a plaque.

Recognition:

The award is recognized by the IEEE and the IEEE Communications Society and will be funded under IEEE Communications Society annual budget for the Technical Committees.