IEEE Computer Society

STC on Cybersecurity

November 3, 2022 Town Hall Webinar

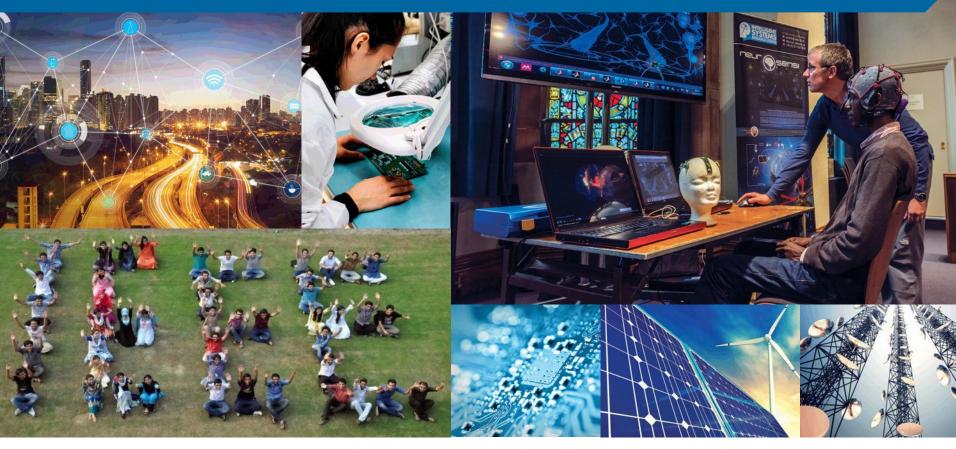
John D. Johnson
Chair, STC on Cybersecurity
Founder/President, Docent Institute















The Fuel of IEEE: Mission & Vision

IEEE is where forward-thinking technology professionals come together—in the spirit of collaboration—to discover the next technological innovation, develop international standards, and form communities to share research, education, and humanitarian goals.

Our Mission

The core purpose of IEEE is to foster technological innovation and excellence for the benefit of humanity.

Our Vision

IEEE will be essential to the global technical community and to technical professionals everywhere; and be universally recognized for the contributions of technology and of technical professionals in improving global conditions.







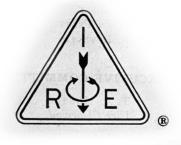
The Founding of IEEE

1884 1912 1963 TODAY



AIEE

American Institute
of Electrical Engineers



IRE Institute of Radio Engineers



Advancing Technology for Humanity

IEEE embodies the visions of its founders—applying them to the challenges of today and tomorrow.

Learn more: ieee.org/about/ieee-history.html





IEEE has...

Over 409,000 members in more than 160 countries, more than 60 percent of whom are from outside the United States

▶ More than **125,000** Student members

▶ 343 Sections in ten geographic Regions worldwide



▶ 3,565 Student Branches at colleges and universities in over 100 countries

▶ 3,182 Student Branch Chapters of IEEE technical Societies

▶ 608 affinity groups and growing



Youngprofessionals.

All figures stated above are current as of 12/31/2021.





IEEE...

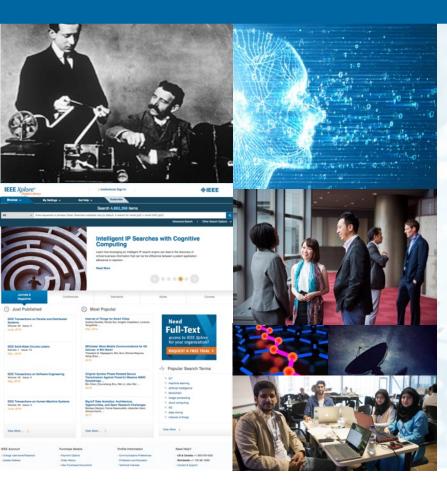
- Has 39 technical Societies and seven Technical Councils representing the wide range of IEEE technical interests
- ▶ Has more than 5 million documents in the IEEE Xplore® digital library, with more than 15 million downloads each month
- Has an active portfolio of 1,076 standards and more than 900 projects under development
- Publishes approximately 200 transactions, journals, and magazines
- Sponsors more than 1,900 conferences in 96 countries annually

All figures stated above are current as of 12/31/2021.









And...

- ▶ IEEE journals, conference proceedings, and standards, plus select content dating back to 1872
- Partnering with more than 1,400 non-IEEE entities globally
- Attracting more than 572,000 conference attendees
- ▶ IEEE publishes more than **1,900** leadingedge conference proceedings every year

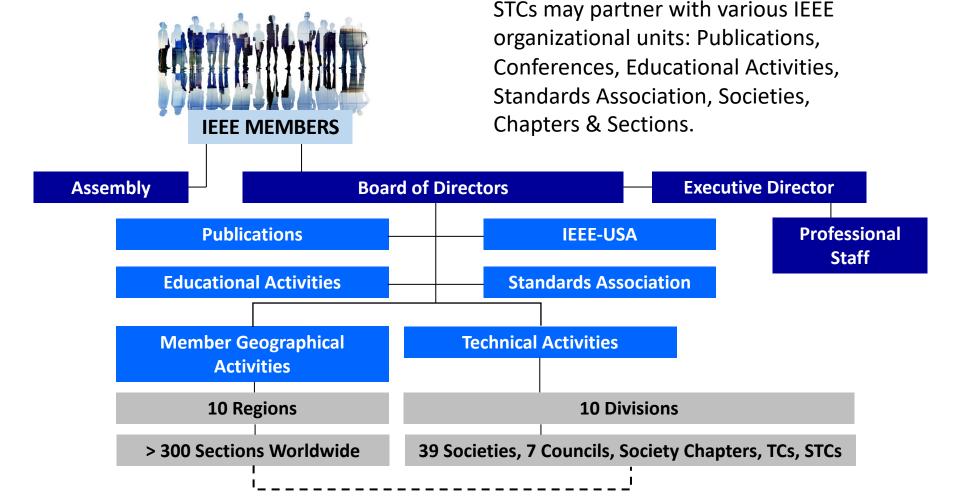


All figures stated above are current as of 12/31/2021.





IEEE Organization & Governance







Interaction is Key at IEEE

343 Sections in TEN geographic Regions worldwide

Self-organizing communities: cross- and inter-disciplinary networking via

- **2,615** Professional Chapters that unite local members with similar technical interests
- **39** Technical Societies
- More than 125,000 Student members
- 3,565 Student Branches at colleges and universities in 100 countries
- 3,182 Student Branch Chapters of **IEEE Technical Societies**
- 608 affinity groups and growing, including IEEE Young Professionals (YP), IEEE-USA Consultant's Network, IEEE Life Members (LM), IEEE Entrepreneurship, and IEEE Women in Engineering (WIE)



Learn more: ieee.org/about/at-a-glance.html



Data current as of Dec 2021





IEEE Societies

IEEE Societies allow members to network with colleagues and collaborate on projects with leading experts—while taking advantage of specialized opportunities.

IEEE Aerospace and Electronic Systems Society (AESS)

IEEE Antennas and Propagation Society (APS)

IEEE Broadcast Technology Society (BTS)

IEEE Circuits and Systems Society (CAS)

IEEE Communications Society (ComSoc)

IEEE Computational Intelligence Society (CIS)

IEEE Computer Society (CS)

IEEE Consumer Technology Society (CTSoc)

IEEE Control Systems Society (CSS)

IEEE Dielectrics and Electrical Insulation Society (DEIS)

IEEE Education Society (EdSoc)

IEEE Electromagnetic Compatibility Society (EMC-S)

IEEE Electron Devices Society (EDS)

IEEE Electronics Packaging Society (EPS)

IEEE Engineering in Medicine and Biology

Society (EMBS)

IEEE Geoscience and Remote Sensing Society (GRSS)

IEEE Industrial Electronics Society (IES)

IEEE Industry Applications Society (IAS)

IEEE Information Theory Society (ITS)

IEEE Instrumentation and Measurement Society (IMS)

IEEE Intelligent Transportation Systems Society (ITSS)

IEEE Magnetics Society

IEEE Microwave Theory and Techniques

Society (MTT-S)

IEEE Nuclear and Plasma Sciences Society (NPSS)

IEEE Oceanic Engineering Society (OES)

IEEE Photonics Society

IEEE Power Electronics Society (PELS)

IEEE Power & Energy Society (PES)

IEEE Product Safety Engineering Society (PSES)

IEEE Professional Communication Society (PCS)

IEEE Reliability Society (RS)

IEEE Robotics and Automation Society (RAS)

IEEE Signal Processing Society (SPS)

IEEE Society on Social Implications of Technology (SSIT)

IEEE Solid-State Circuits Society (SSCS)

IEEE Systems, Man, and Cybernetics Society (SMC)

IEEE Technology and Engineering Management

Society (TEMS)

IEEE Ultrasonics, Ferroelectrics, and Frequency Control

Society (UFFC)

IEEE Vehicular Technology Society (VTS)

Learn more: <u>ieee.org/communities/societies</u>





About IEEE Computer Society

Empowering Computer Science and Engineering Professionals to Fuel Continued Advancement

We are the largest global community of Computer Scientists & Engineers

 IEEE CS is the trusted organization dedicated to engaging the engineers, scientists, academia, and industry professionals from across the globe driving continued advancements in computer science and technology.







IEEE Technical Councils

Technical Councils are groups of Societies working together in broad areas of technology.

IEEE Technical Councils are usually focused on a single technology area and the opportunities stemming from it.

IEEE Societies collaborate on:

- technical meetings
- publishing research
- promoting educational activities
- developing standards



Learn more: <u>ieee.org/communities/societies/about-technical-councils.html</u>





Top Organizations Innovate with IEEE

Whenever technology happens, IEEE is there.



8 of Top 10

Communications Equipment Companies Worldwide



Top 10

Aerospace and Defense Companies
Worldwide



8 of Top 10

Telecommunication Companies Worldwide



7 of Top 10

Automobile Manufacturers Worldwide



9 of Top 10

Computer Hardware Companies Worldwide



97 of Top 100

Engineering and Technology Universities Worldwide



28 of Top 30

Semiconductor Companies Worldwide



All Top 100

Engineering Universities in the United States





IEEE Standards Association (IEEE SA)

IEEE nurtures, develops, and advances the building of global technologies.







IEEE Standards Association

IEEE Standards drive the functionality, capability, and interoperability of a range of products and services that affect the way people live, work, and communicate.

INDIVIDUAL MEMBERSHIP

7500+ individual members in 94 countries

CORPORATE MEMBERSHIPS

380+ member corporations in 25 countries

STANDARDS & RELATED ACTIVITIES

34,000+ global participants; all interested parties are welcome

2,000+ Standards & Projects

GLOBAL AGREEMENTS

180+ Global agreements

Standard Standard

Maintaining

the Standard

Balloting the

Gaining Final

Approval

Learn more: standards.ieee.org





Initiating the

Project

Drafting the

Mobilizing

the Working

Group

Enabling consumer connectivity through consensus building



ELECTRIC VEHICLE STANDARDS

IEEE 802™ Series IEEE 1901™

IEEE 1901.2™

IEEE 1609™ Series (Vehicular Communications)

IEEE 2030™

IEEE 2030.1.1™

IEEE 2030.5™

IEEE P2040™ Series

IEEE P2408.11™

HOME NETWORKING STANDARDS

IEEE 802™

IEEE P1901™

IEEE 1901.2™

IEEE 1905.1™ (Communication inside the home)

HOME NETWORKING STANDARDS

IEEE 802™

IEEE P1901™

IEEE 1901.2™

IEEE 1815™

SMART GRID INTO HOME DEVICES STANDARDS

IEEE 1547™ Series (Distributed Energy Interconnection Solar, Wind, Storage, etc.)
IEEE 2030™

SMART GRID INTO HOME DEVICES STANDARDS

IEEE 1675™

IFFF 1775™

IEEE 2030™

IEEE 2030.1™

IEEE 1901™

EEE 1901

IEEE 1901.2™

3D VIDEO STANDARDS

IEEE 1857.9™

IEEE P2048.2™

IEEE P2048.3™

IEEE P2048.12™

IEEE P3141™

SMART METERING STANDARDS

IEEE 1377™

IEEE 1701™

IFFF 1702™

IEEE 1703™

IEEE P1704™

MOBILE VIDEO STANDARDS

IEEE 2200™

IEEE 802.11™ (Intelligently Cached Mobile Content)

IEEE 1858™ (Camera Quality)

IEEE P2048.2™

IEEE P2048.3™

IEEE PW048.12™

Learn more: standards.ieee.org





Expanding the adoption of wearable devices through IoT and consensus building

SMART EYEWEAR

IEEE 802.11™ IEEE 802.15.4™ IEEE P2048™

NETWORK, WEARABLE DEVICES AND IOT INFRASTRUCTURE

IEEE 802®
IEEE 1451™ Series
IEEE 1588™
IEEE P360™
IEEE P1912™
IEEE 2413™
IEEE 2050™
IEEE P2144 Series
IFFF PS786™

SMART FABRIC

IEEE 802.15.4™ IEEE 1451™ Series IEEE 2700™ IFFF P2786™

MOBILE DEVICES

IEEE 802.11™
IEEE 802.15.4™
IEEE 802.15.6™
IEEE 2200™
IEEE 11073-20601™
IEEE P2721™

WIRELESS CONNECTIVITY

IEEE 802.11™ IEEE 802.15.4™

CLOUD COMPUTING

IEEE P2301™ IEEE PS302™

VIRTUAL REALITY & AUGMENTED REALITY

IEEE P1589™ IEEE P2048™Series IEEE P3141™



SMART WATCH

IEEE 802.11™
IEEE 802.15.4™
IEEE 802.15.6™
IEEE 2700™
IEEE 11073-20601™

SMART INSOLES

IEEE 802.11™ IEEE 802.15.4™ IEEE 802.15,6™ IEEE 1451™ Series IEEE 2700™

HUMAN AUGMENTATION

IEEE P2049™

ACCESSIBILITY

IEEE PS049™ Series IEEE P2843™

Learn more: standards.ieee.org





Advancing the technologies for connected vehicles through consensus building



INTELLIGENT TRANSPORTATION **SYSTEMS**

IEEE 1609™

A family of standards defining the architecture, services and standard interfaces for secure vehicle-to-vehicle (V2V) and vehicle-toinfrastructure (V2I) wireless communications.

IEEE 1616™

Standards for motor vehicle event data recorders.

IEEE 802.11™

WLAN to support communication between vehicles and the roadside and between vehicles while operating at speeds up to a maximum of 200 km/h for communication ranges up to 1000 meters.

IEEE P2020™

IEEE P2040™Series

DESIGN AUTOMATION

IEEE 2846™ IEEE 2851™

CONNECTIVITY

IEEE 802.3™

Defining the physical layer and data link layer's media access control of wired Ethernet, in local area networks and wide area network applications.

IEEE 802.1 TSN™

IEEE 2030.5™

VISION SYSTEMS

IEEE 2020™

CYBERSECURITY

IEEE 203.5™

COOPERATIVE, AUTONOMOUS AND AUTOMATED DRIVING

IEEE P2040™ SERIES

A series of standards for connected, automated and intelligent vehicles.

IEEE P7002™ IEEE P7009™

IEEE P2048.11™

Learn more: standards.ieee.org

TRANSPORTATION ELECTRIFICATION

IEEE 2030™ and its related standards are the first all-encompassing standards series providing alternative approaches and best practices for achieving smart grid interoperability.

IEEE 1547™ SERIES: A series of standards for distributed power to maximize the benefits of interconnection.

IEEE P1562™: Standard for array and battery sizing.

IEEE 1901™ SERIES: Standards relating to broadband connectivity over electric power lines.

TRAFFIC SAFETY

IFFF 1512™

Multiple standards for traffic safety, hazardous materials and public safety incident communications.

IEEE P2040™ SERIES

IEEE P2048.11™

SMART RAIL

A wide range of standards relating to electric rail operation including IEEE 11-2000, IEEE 16-2004, IEEE 1653.1, IEEE 1791, P1883, P1884, P1887, IEEE 1896, P2046, 1536, 1558, 1568, 1570, 1628, 1629, 1630, 1653 SERIES, AND 1698. As well as a series of standards relating to communication for rail transit systems, including IEEE 1473, 1474, 1475, 1476, 1477, 1482.1, AND 1483.





Improving personal health device communications through consensus building

GLUCOSE METER

IEEE P11073-10417™

INSULIN PUMP

IEEE 11073-10419™

CONTINUOUS GLUCOSE MONITORING

IEEE P11073-10425™

SLEEP APNEA BREATHING THERAPY EQUIPMENT

IEEE 11073-10424™

BLOOD PRESSURE MONITOR

IEEE 11073-10407™

BODY COMPOSITION ANALYZER

IEEE 11073-10420™

CARDIOVASCULAR FITNESS & ACTIVITY MONITOR

IEEE 11073-10441™

WEIGH SCALE

IEEE 11073-10415™

CONNECTIVITY TRANSPORTS

IEEE 802.11[™] (Often referred to as WiFi®)
IEEE 802.15.4[™] (Often referred to as Zigbee®)

IEEE 11073-30300™ (Often referred to as Infrared Communications)

IEEE 11073-30400™ Near Field Communications

IEEE 802.3™ (Often referred to as Ethernet)

IEEE P271™ Wireless Diabetes Device Security Assurance

CLOUD

IEEE 2301™ IEEE P2302™



PULSE OXIMETER

IEEE P11073-10404™

ELECTROCARIOGRAPH (ECG)

IEEE 11073-10406™

Learn more: standards.ieee.org





Participate in Standards Development

Getting involved in IEEE standards provides many benefits:

- Opportunities to network with industry peers
- Broaden your understanding of your industry and technology
- Gain familiarity with the content of standards in which you are involved
- Facilitate early compliance and anticipating market requirements

Learn more: standards.ieee.org

WAYS TO GET INVOLVED

- Standards Development
- Industry Connections Program activities

LEARN ABOUT:

- IEEE SA PRACTICES
- IEEE SA OPEN Open Source
- IEEE Conformity Assessment Program
- IEEE Alliance Management Services
- IEEE SA Global Engagement activities





Value to Companies & Workforces

Information that is reliable

Company value

 IEEE Xplore saves time and money by letting companies bring products to market sooner

Workforce value

 IEEE Xplore provides access to cutting-edge and trusted research via IEEE journals, transactions, and magazines, conference Proceedings, educational courses, and eBook collections

Company & Workforce value

 IEEE Standards ensures compliance from the start of any technology project

Education for the way the industry works

Company & Workforce value

 IEEE offers a wide range of learning opportunities, from practical training to online course series, helping individuals and companies keep up with the demands of changing technology



Global network of experts

Company value

 IEEE's global reach lets you connect across multiple markets and industries

Workforce value

- IEEE lets you collaborate with over 409,000 members across 160 countries and 39 technology-specific societies
- Network with global technology professionals by location, technical interests, or career pursuits via IEEE Collabratec or in the IEEE App





IEEE Communities

Information sharing is a cornerstone of productive collaboration. IEEE believes that even small ideas can develop into towering solutions.



Technical Communities

TCs help advance 31 technical disciplines.



Special Technical Communities

STCs help drive new technologies.



Women in Computing

Online resources for women in tech.



Sister Societies

Connect with 43 global partners.





Technical Communities & Councils *IEEE Computer Society*



- Business Informatics and Systems
- Cloud Computing
- Computational Life Sciences
- Computer Architecture
- Computer Communications
- Data Engineering
- Dependable Computing and Fault Tolerance
- Distributed Processing
- High Performance Computing
- Intelligent Informatics
- Internet
- Learning Technology
- Mathematical Foundations of Computing
- Microprocessors and Microcomputers
- Microprogramming & Microarchitecture

- Multimedia Computing
- Multiple-Valued Logic
- Parallel Processing
- Pattern Analysis and Machine Intelligence
- Real-Time Sensors
- Rebooting Computing
- Scalable Computing
- Security and Privacy
- Semantic Computing
- Services Computing
- Software Engineering
- Test Technology
- Very Large Scale Integration
- Visualization and Graphics





What is a Special Technical Community?

- ▶ IEEE Computer Society Special Technical Communities (STCs) are online networks of computing professionals who share a common technical, career, or other interest and can be created around any set of ideas that are relevant to the Computer Society.
- Membership is open to both members and non-members and available at no cost. Only STC officers need to be IEEE members. This encourages bringing in the best industry experts to collaborate on new technical areas.
- ▶ The STC can lead the way in new technical areas: IEEE encourages the creation of spaces for the discussion and advancement of emerging technologies, serving as a bridge between cutting edge research and the realities of industry and society.
- > STCs are not funded but may be technical co-sponsors of publications and conferences.
- The STC is an incubator and advocate for cross-society/OU activities that have a larger scope than just computer science and engineering. The STC may draw upon the broad IEEE resources and knowledge and may also partner with industry associations and other societies, globally.
- The STC may work with IEEE Societies and Councils and Standards Association to develop new technical standards.
- STCs look at the intersection of technology with policy, ethics and the benefit to society.
- STC activities carry the well-established and distinguished IEEE brand.





Special Technical Communities

IEEE COMPUTER SOCIETY

IEEE Computer Society

- Autonomous Driving Technologies
- Big Data
- Bio-inspired Computing
- Blockchain
- Broadening Participation in Computing
- Cybersecurity
- Dew Computing
- Education
- eGovernment
- Enterprise Architecture
- Internet of Everything
- IT in Practice

- Multicore
- Operating Systems
- Parallel Models and Systems: DataFlow and Beyond
- Reliable, Safe, Secure, and Time-Deterministic Intelligent Systems
- Smart Computing
- Smart and Circular Cities
- Social Networking
- Sustainable Computing
- Systems Engineering
- Wearable and Ubiquitous Technologies

https://www.computer.org/communities/special-technical-communities





Special Technical Communities



IEEE Computer Society

Top 15 STCs by membership (66 STCs total)

< 10% are non-IEEE members in Cybersecurity STC

IEEE Internet of Things Community	21,369
IEEE Computer Society Technical Community on Cloud Computing	12,805
IEEE Big Data Community	12,174
IEEE Computer Society Technical Community on Security and Privacy	10,118
IEEE Smart Grid Community	7,308
IEEE Life Sciences Community	6,331
IEEE Software Defined Networks Community	5,901
IEEE Sustainable ICT Community	5,715
IEEE Entrepreneurship Exchange Community	5,358
IEEE Smart Cities Community	4,212
IEEE Computer Society Technical Community on Pattern Analysis and Machine Intelligence	3,243
IEEE Computer Society Technical Community on Computer Communications	3,241
IEEE Computer Society Technical Community on Software Engineering	3,013
IEEE Computer Society Technical Community on Data Engineering	2,655
IEEE Computer Society Special Technical Community on Cybersecurity	2,589

STC on Cybersecurity





STC on Cybersecurity

Leadership

Leadership Team

Chair: John Johnson, President, Docent Institute

Vice Chair: Bobbie Stempfley, VP and Security Officer, Dell

Technologies

Vice Chair: Mike Coogan, Sr. Director Information Security,

Waste Management

Technology and Media Chair, Harshit Agrawal, Security

Researcher, Boston University

Steering Committee

Kate Kuehn, Board of Directors, RedShield

Chris Blask, Chair, ICS-ISAC

Gadi Evron, CISO-In-Residence, Team8

Rich Lindberg, CISO, JAMS

Randy Vickers, Deputy CISO, The National Student

Clearinghouse

Denny Dean, Principal Security Consultant, GuidePoint

Security

Bill Pelletier, Product Security Architect, ZOLL Medical

Corporation

Marc Sachs, Deputy Director for Research, McCrary Institute

for Cyber and Critical Infrastructure Security

https://www.computer.org/communities/special-technical-communities/cybersecurity









About Us

The Cybersecurity STC is the voice of the cybersecurity field, allowing the Computer Society to speak authoritatively and become a one-stop source of reliable information on the subject.

To do so, we must:

- become the premiere online community to connect cybersecurity experts from industry and academia working in different fields throughout the Computer Society Field of Interests and related IEEE Societies
- create a horizontal access mechanism to the information on the subject, which is currently spread across different sources
- create dedicated cybersecurity events, focusing on the growing need of practical, actionable information on cybersecurity by governments and industry
- support the creation of cybersecurity tracks in existing conference within and without the Society and the Institute

The mission of this STC is to address the growing need of practical, actionable information on cybersecurity expressed by governments, academia, and industry, as well as the general public.

The Computer Society already creates, disseminates and collects information which is highly relevant on this subject. This community aims to connect our members that are, or wish to become, cybersecurity experts, from industry and academia. It will help crossing the borders between different technical communities of the Society to create horizontal access mechanisms to all of the information on the subject, which is currently spread across different sources.





STC on Cybersecurity: Vision for 2023

Strategic Goals

Reboot Cybersecurity STC with Steering Committee



Gather Feedback from STC Members on Interests

Increase Collaboration Through Use of Online Platforms

Schedule Webinars on New and Impactful Topics

Engage and Expand Membership and Industry Partnerships

How We Get There Together

Collaboration

- Provide forums for STC members to share and collaborate on projects
- Make connections with other IEEE OUs and Industry Organizations to achieve practical outcomes

Action

- Take note of member feedback to improve
- Schedule frequent webinars

Communication

- Send quarterly newsletters to all members
- Increase use of social media





Online Collaboration: IEEE Collabratec® & Discord

Network, collaborate, and create with technology experts.

IEEE Collabratec is an online community where technology professionals can:

- Meet technology professionals
- Join and participate in communities
- Embrace career opportunities
- Work together in virtual workspaces
- Manage your personal library
- Discover IEEE events
- Open to non-IEEE members for free

Discord

- Free collaboration platform with threaded discussions, audio and video
- Commonly used in industry. Easy to use. Easy to create channels for topical discussions.
- This platform will be built out based on the needs of the STC members.
- STC on Cybersecurity → https://discord.gg/fgCVTGVGfr



Learn more: collabratec.ieee.org





Connect:

Facebook: https://www.facebook.com/ieeecyberstc/

LinkedIn: https://www.linkedin.com/groups/12700570

Discord: https://discord.gg/fgCVTGVGfr

John D. Johnson – j.johnson@ieee.org Chair, IEEE Computer Society Cybersecurity STC

https://www.computer.org/communities/special-technical-communities/cybersecurity







Open Discussion

Questions and feedback from attendees





