

IEEE Executive Director's Report

Region 8 Committee Meeting

6 November 2021

Stephen Welby, IEEE Executive Director & COO



Inspiring a Global Community of Innovation

Where forward-thinking technology professionals collaborate

- ▶ Discover what's next in technological innovation
- ▶ Create international standards
- ▶ Build technical communities
- ▶ Shape and share research

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
1 improving global conditions.



GLOBAL REACH



396,007
MEMBERS



160+
COUNTRIES



46
TECHNICAL SOCIETIES
& COUNCILS



107,618
STUDENT
MEMBERS

TECHNICAL BREADTH



1,900+
ANNUAL
CONFERENCES



5M+
TECHNICAL
DOCUMENTS



200
TOP-CITED
PERIODICALS



1,300+
ACTIVE
STANDARDS

SOCIAL IMPACT

**GLOBAL**

PUBLIC POLICY

**GLOBAL**HUMANITARIAN
EFFORTS**CONTINUING**

EDUCATION & CERTIFICATION

**ETHICS**

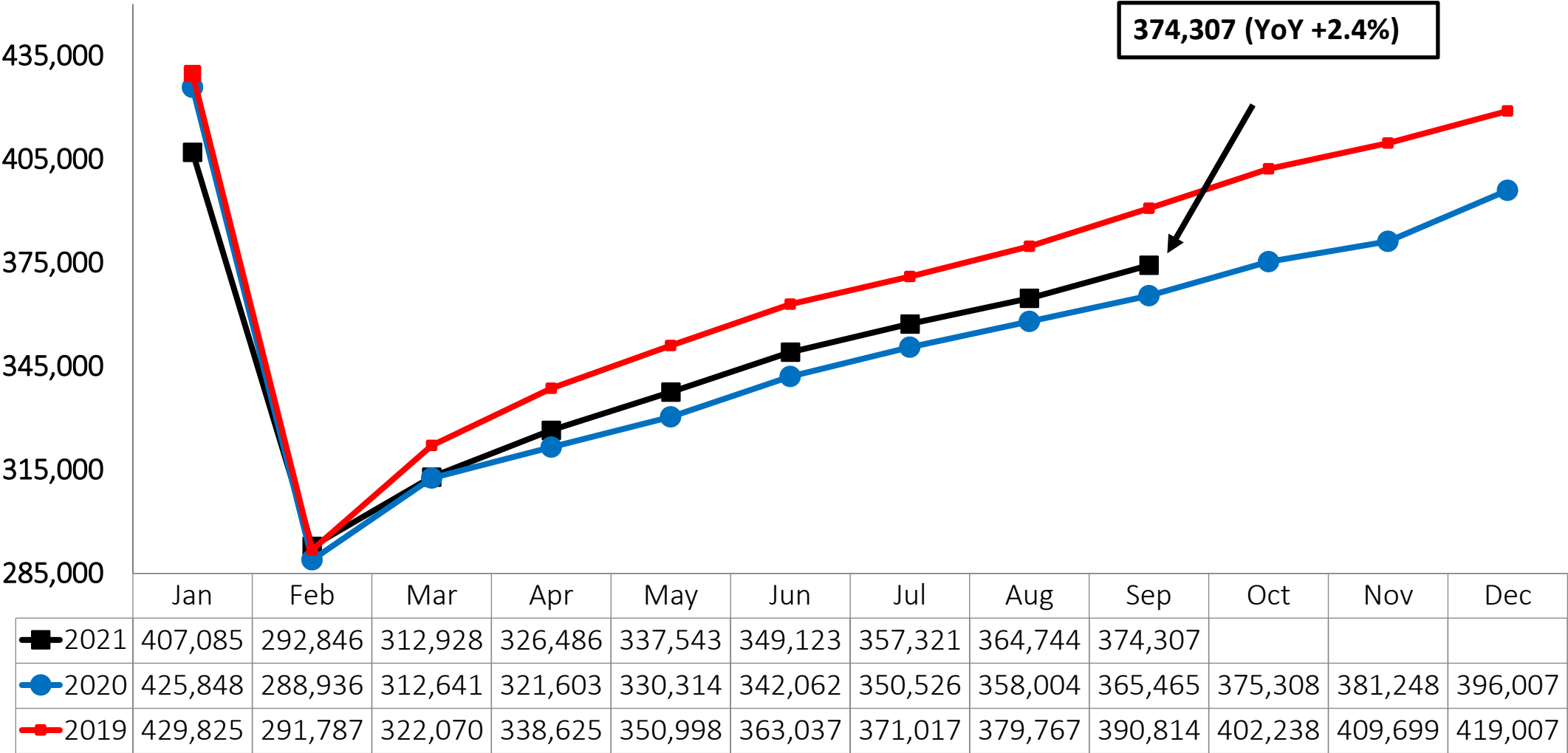
IN TECHNOLOGY

IEEE Membership

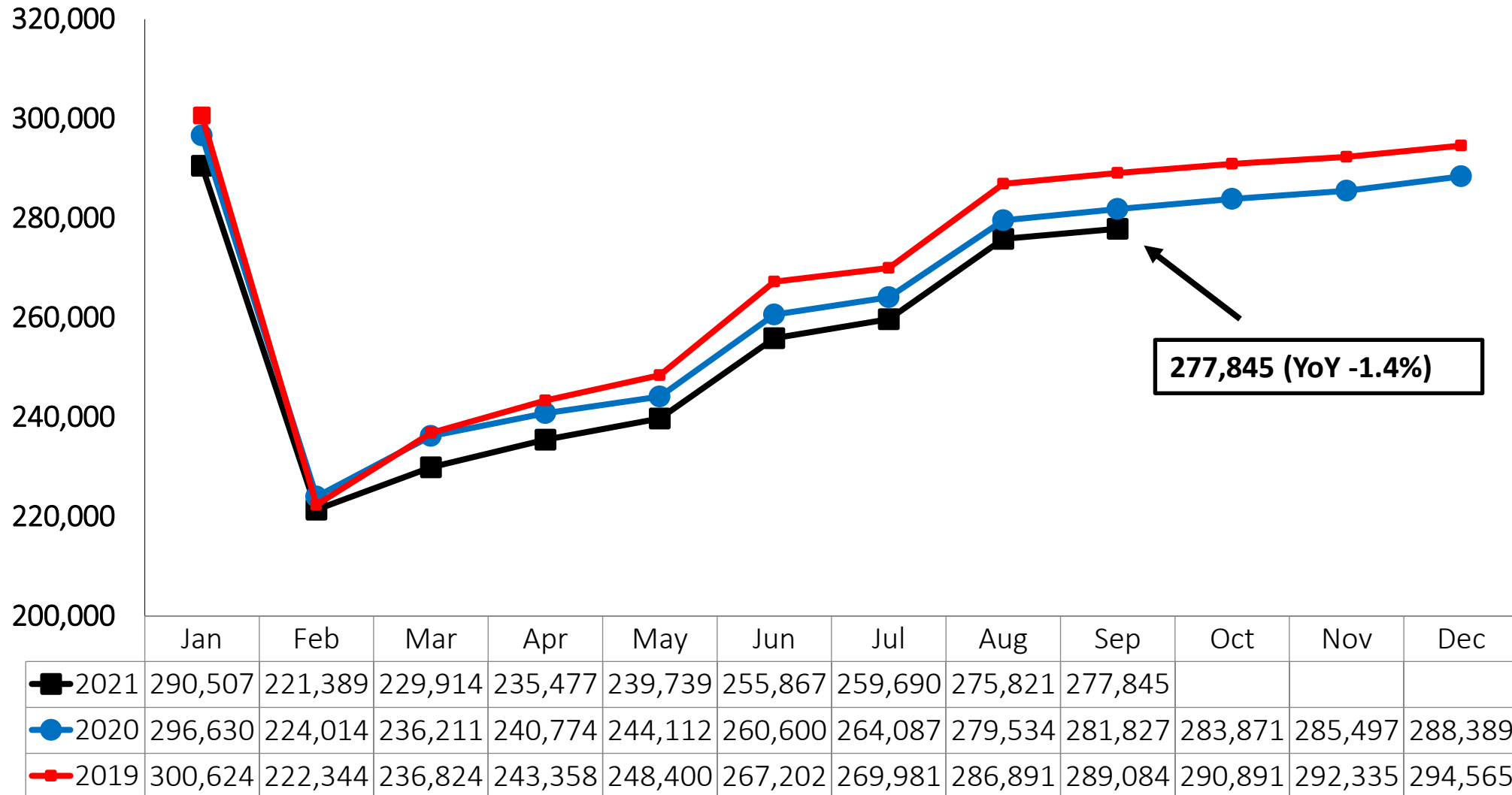
- ▶ Total Membership: 374,307 members
 - Change from September 2020: 2.4% increase
 - Higher Grade Membership (without GS): 277,845 members
 - Change from September 2020: 1.4% decrease
 - Undergraduate Student Membership: 56,892 members
 - Change from September 2020: 19.8% increase
 - Graduate Student Memberships: 39,570 members
 - Change from September 2020: 9.4% increase



Total IEEE Membership

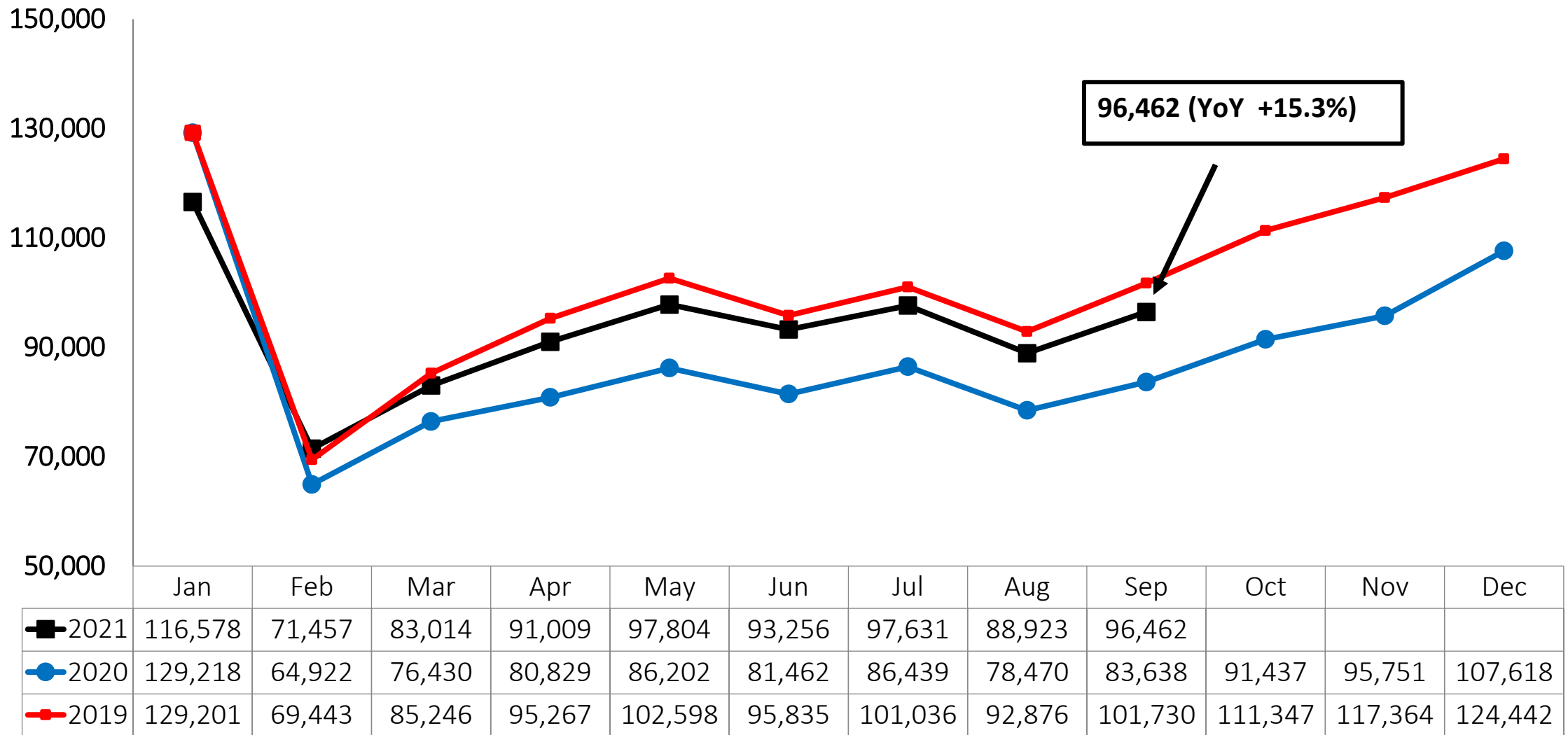


Total IEEE Higher Grade Membership

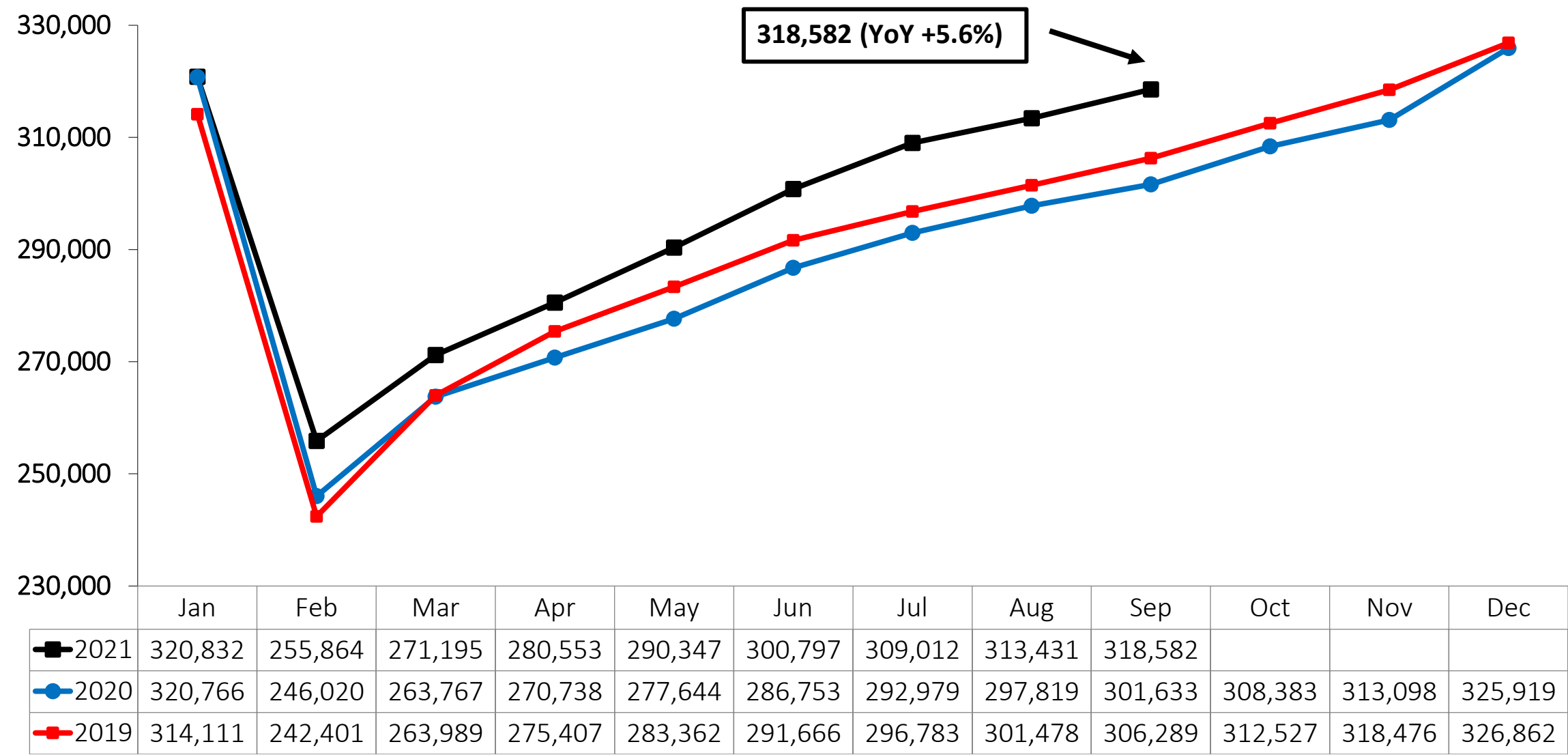


All figures are end of September 2021

Total IEEE Student Membership



Total IEEE Society Membership



All figures are end of September 2021

Society Membership

Total Society Membership excluding affiliates: 318,582 members

- Change from September 2020: 5.6% increase
 - 24 societies increased by more than 1%
 - 9 societies decreased by more than 1%
 - 6 societies saw increases or decreases of +/- 1%

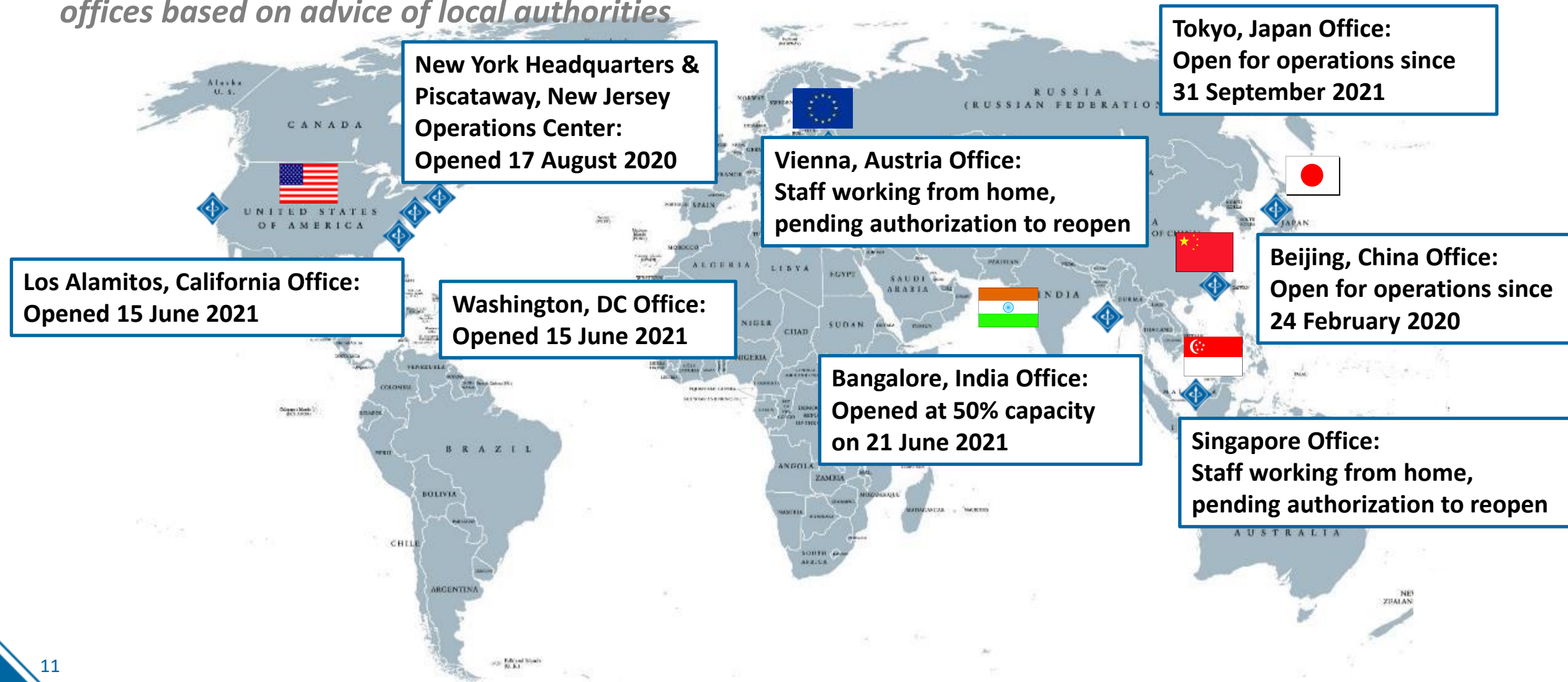
IEEE-Standards Association Membership: 8,369 members

- Change from September 2020: 12.1% increase



IEEE Global Operation Status - We Remain Agile

Global offices have all adopted periods of work-from-home to protect staff; returning to offices based on advice of local authorities



Recent Cybersecurity Events in IEEE

Cyber Security threats and sophistication have increased. Ransomware crimewave has been hitting multiple businesses. Attackers evolved their techniques and ways to escape IT detection, evade defenses and exploit known vulnerabilities.

► At IEEE and during 2021:

- Our firewalls blocked over 31B attempts from approximately 50M IP addresses
 - Our Intrusion Detection and Protection Systems (IDS/IPS) detected 479M suspicious attempts and blocked 240M known malicious attempts
 - We processed over 330M email messages - 28% of these messages were spam and were blocked and 1% of the messages contained malware and were blocked
 - Anti-malware solutions on endpoints prevented 2K malware infections
 - Successfully detected and mitigated “Brute Force” attacks
 - Fraudulent email scams targeting IEEE Members have increased
 - Scammers use readily available online contact information to impersonate Volunteer leaders to send fraudulent messages requesting assistance, invoice payments or issuance of gift cards and appear as urgent requests
- No known financial loss resulted from these attempts



Working Remotely – Reinforced Endpoint Security

Protections for Servers and Devices



Defenses

- Anti-Malware
- Malicious activity prevention
- Endpoint Firewall
- Endpoint Intrusion Prevention System
- Application and Device Control
- Data Leakage Prevention
- Disk Encryption
- Secure Web Gateway



Identity and Access

- Staff Directory
- Staff Identity Management System
- Federated Authentication and Single Sign-On
- Multi-Factor Authentication
- Virtual Private Network



Vulnerability Management

- Vulnerability & Risk Assessments
- Asset Management
- Configuration Management
- Operating System Hardening
- Patch Management
- Configuration Management Database
- Breach Attack Simulation



Monitoring

- Endpoint Detection and Response
- Threat Intelligence
- Security Information and Event Management
- Tuning



Revisions to IEEE Code of Ethics and Member Conduct

To help standardize and reinforce IEEE's commitment to professional ethics

- ▶ Approved revisions to the [IEEE Code of Ethics](#)
 - Changes incorporate high-level principles intended to focus members on key elements of the Code, a commitment not to engage in harassment, and the protection of the privacy of others
- ▶ [Centralized location](#) for reporting misconduct of both member and nonmember violations of professional ethics
- ▶ Updated procedures to streamline the reporting, evaluating, managing, and tracking of violations which will allow for the early identification of trends
- ▶ Reporting time frame increased from two years to five years from the date of the incident



Author Portal

A critical piece of IEEE's Open Access strategy

- ▶ Creates the best possible experience for submitting authors— **faster & easier**.
- ▶ Allows authors to immediately post research as a preprint at **TechRxiv**.
- ▶ Integrates disparate parts of the **research life-cycle** (preprints, conference papers, journals).
- ▶ Provide a place for authors to **connect and manage** their research output with IEEE.
- ▶ Portal **went live in May** with first journal: *Transactions on Technology & Society*

IEEE
Author[™]
Portal

The screenshot shows the 'IEEE Author Portal' interface for 'IEEE Transactions on Technology and Society'. It includes a navigation bar with links for 'JOURNAL HOME', 'AUTHOR GUIDELINES', and 'EDITORIAL CONTACT', and a 'Powered by Atypon BeX' label. The main section is titled 'Upload Manuscript' and contains instructions for file uploads. It lists 'Required Files' (Main Document in MS Word or PDF) and 'Optional Files' (Image, Conflict of Interest, Previously Published Statement, Previously Published Files, and Supplementary Material for Review).

IEEE Author Portal

IEEE Transactions on Technology and Society

JOURNAL HOME AUTHOR GUIDELINES EDITORIAL CONTACT Powered by Atypon BeX

← [Back to Progress Board](#)

Upload Manuscript

Drag-and-drop (or browse for) your manuscript and related files. More information about the kinds of files you can provide are listed below.

Required Files

- Main Document - MS Word: Your Main Document should adhere to all journal guidelines and requirements. It may include embedded figures and tables, but should not include any supplementary materials.
- Main Document - PDF: If accepted, this PDF will be displayed online ahead of final publication. The PDF should be formatted in double-column, camera-ready style. The content in your PDF must match your source file exactly.

Optional Files

- Image: You may provide figures separately if they aren't embedded in your Main Document. Accepted file types: Most image files.
- Conflict of Interest: A completed conflict of interest statement. Potential conflicts of interest must be disclosed within your manuscript. Accepted file types: Most document files.
- Previously Published - Statement: A document detailing how your submission differs from the earlier publication(s). You may provide up to 1 of this file type.
- Previously Published - Files: All earlier publication files. You may provide up to 10 of this file type.
- Supplementary Material for Review: Other files related to your research that aren't part of your Main Document, but will be available to Peer Reviewers and

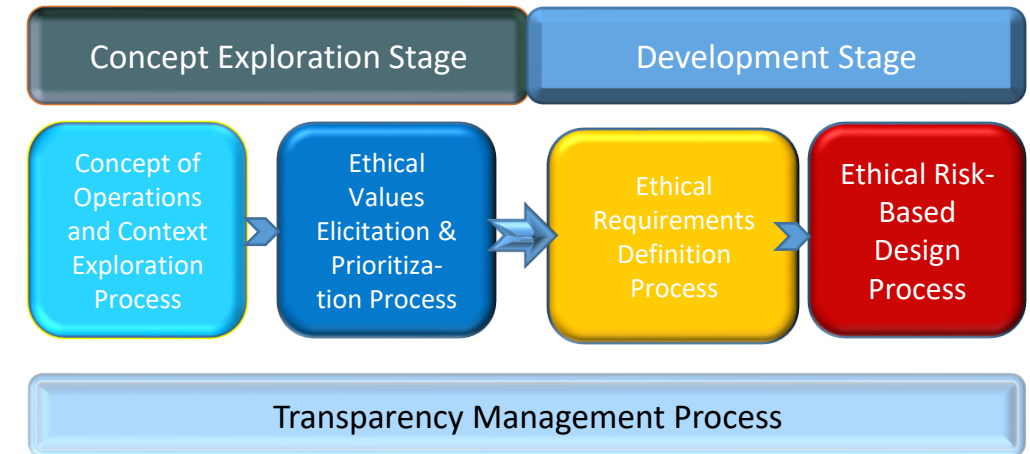


IEEE 7000™ Model Process for Addressing Ethical Concerns During System Design

Advancing technology for humanity via value-based engineering

First global standard of its kind that:

- ▶ Provides activities and tasks for a human-centric and ethically founded value elicitation (going beyond lists of principles)
- ▶ Provides the processes for engineers to translate stakeholder ethical expectations (principles) into system requirements and design (practices)
- ▶ Provides a systematic and transparent approach to address regulatory and socio-technical best practice in the design of autonomous intelligent systems
- ▶ Took more than five years of passionate discussions and iterations; 100 individuals from all continents (1/3 women) involved
- ▶ Approval rate 95 %



IEEE DataPort™



2021 Objectives:

1,400,000 Users

3000 Total Datasets

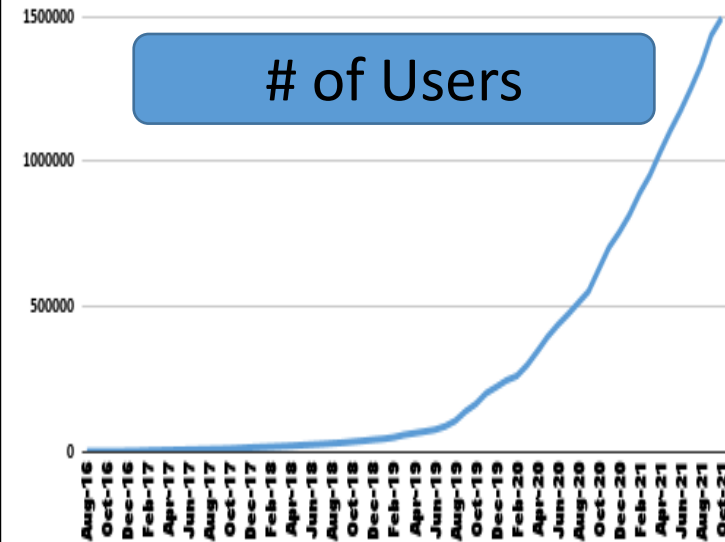
1,493,008 Users as of Oct 18, 2021

2672 Datasets as of Oct 18, 2021

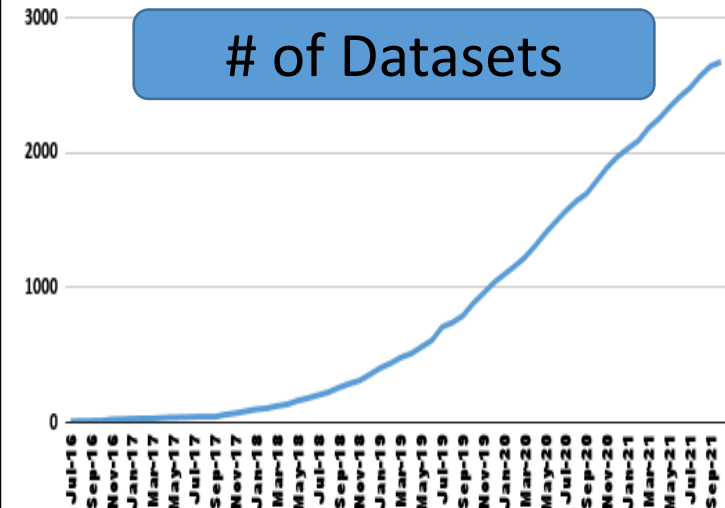
- IEEE DataPort usage continues to grow; surpassed 1.49M individual users
- IEEE and Edge (sales dealer established for US) are initiating efforts to sell IEEE DataPort institutional subscriptions – no sales to date, but a pipeline of opportunities is growing
- IEEE received 577+ unsolicited inquiries from institutions across the globe
- 607 authors have submitted data & linked data to their Xplore article IEEE
 - 23% of all datasets are from IEEE authors
- IEEE support services are ramping up as IEEE DataPort usage grows

IEEE DataPort is an important component of IEEE's product line
It will meet the growing data needs of authors and researchers

IEEE DataPort Cumulative Users
(as of 10/18/2021)



Cumulative Dataset Entries
(as of 10/18/21)



IEEE Volunteering Platform

Offering flexibility to volunteering within IEEE

- ▶ Advertise and search for volunteering opportunities, be it short- or long-term, local or remote, or requiring different skills
 - Simplify the process to start to volunteer
 - Provide flexible volunteering opportunities
 - Recognize volunteering efforts, regardless of duration or intensity
 - Create a “IEEE Volunteering resume”
 - Encourage project-based, skill-based, and remote volunteering
 - Enable a recommendation and feedback process



<https://volunteer.ieee.org/>

IEEE Future Directions Small Projects

Opportunities to address new emerging technology areas within IEEE



- ▶ Low Earth Orbit satellites operate 500 to 2,000 km above Earth traveling ~7.5 km/s, completing a full orbit in 90 to 120 minutes, staying in contact every few minutes with a ground station.
- ▶ Applications: Communications, connectivity, advanced knowledge.
- ▶ Discovery Week held with indigenous high school students and teachers, 16-21 May 2021, Winnipeg, Manitoba, Canada (8 team-building activities, 14 tutorials and workshops, and 20 instructors and assistants).

19 ▶ bit.ly/LEO_SatS



- ▶ Artificial light generation is an inherent need of society, consumes huge amounts of energy and resources, impacts our performance, security, health, and environment.
- ▶ Representation from IAS, Smart Cities, and Smart Village with external representation from Brazil, Sweden, and UK.
- ▶ Support other IEEE activities, e.g. International Symposium on the Science and Technology of Lighting (LS:17).
- ▶ bit.ly/IEEESmartLighting



- ▶ Enable a user's remote presence at a different physical location
- ▶ Focus on teleoperations, accelerate missing technology components and encourage integrated telepresence systems
- ▶ **Telepresence Competition**
 - Robots/drones at a location in California Desert.
 - Competitors drive their robots remotely.
 - Live transmission, multiple cameras.
- ▶ bit.ly/IEEETelepresence

IEEE Academies

*Coming soon from the IEEE Ad Hoc Committee on
Continuing Education and Lifelong Learning*

An experimental new approach to continuing education focused on practitioners.

Learning pathways using eLearning combined with existing Assets like videos, society journal/magazine articles, & more.

Initial IoT and Smart Grid learning paths planning to be released in December 2021.

IEEE Academy™
Internet of Things



Educator in Chief

Chonggang Wang, FIEEE

Founding Editor, IEEE IoT Journal

Technical Areas

- Communication Standards
- Computing Platforms

IEEE Academy™
Smart Grid



Educator in Chief

Pete Wung

Chair, IEEE Smart Grid

Technical Areas

- Distribution Automation
- Microgrid

IEEE Academy™
Artificial Intelligence



Educator in Chief

Phillip Sheu

UCI Samueli School of Engineering

Technical Areas

- Modern AI - Machine Learning, Deep Learning

IEEE Continuing Education for Engineering Professionals in Africa

sponsored by the IEEE New Initiatives Committee: 2021-2023 (renewable annually)

Vision: Develop IEEE continuing education resources **relevant to the needs of technical professionals and their employers in Africa.**

Goals

- Make courses **accessible, affordable and effective**
- Satisfy **professional engineering CEU requirements**
- Establish **local IEEE Section support and ownership**
- Develop leadership & partnerships for **sustainability**

Target Countries

- Year 1: Kenya, Zambia
- Year 2: Uganda, Rwanda, Ghana
- Year 3: Nigeria

Recent Progress

Course Pilot Bundle on ILN has been identified (17 courses)
Pilot parameters have been established

- Year 1: organizations in Kenya and Zambia with a significant number of working engineers are offered a free, 4-month trial of the Course Pilot Bundle
- When pilot concludes, organizations will provide IEEE with feedback on applicability of content to local needs

Africa Stakeholder Specialist, Lucy Muchira, based in Nairobi has been engaged and is working with local IEEE members to engage organizations to participate in the pilot.

Currently 6 companies registered in Kenya and 3 companies in Zambia, with 343 users in the trial

Africa Sections

■ Africa Sections

■ Africa Sub Sections



<https://www.ieee.org/education/continuing-education-africa.html>

IEEE REACH Raising Engineering Awareness through the Conduit of History (reach.ieee.org)

IEEE History Center Program provides teachers and students with education resources that explore technology and engineering's complex relationship with society through the lens of history.

Under the MoU between IEEE and UNESCO & with assistance from the IEEE Africa Council

New Pilot Program in Uganda

- ▶ Adapted to Uganda curriculum standards and delivered to students (predominately girls) both in the classroom, and by way of a traveling classroom trailer reaching under-served rural communities
- ▶ Partnered with local NGOs to present the program to 40 teachers from 8 school districts at a UNESCO STEM mentorship workshop
- ▶ Upon completion, more than 70 teachers and approximately 1,000 students impacted. Local assessment found significant student impact and that REACH provides a new STEM education pathway.
- ▶ UNESCO and the Uganda Ministry of Education are exploring program expansion.



“REACH is not just history, it’s inspiration!”...Video testimonial from Maryanne Karamagi, CEO of Silver Bolt
<https://vimeo.com/ieeereach/testimonial>

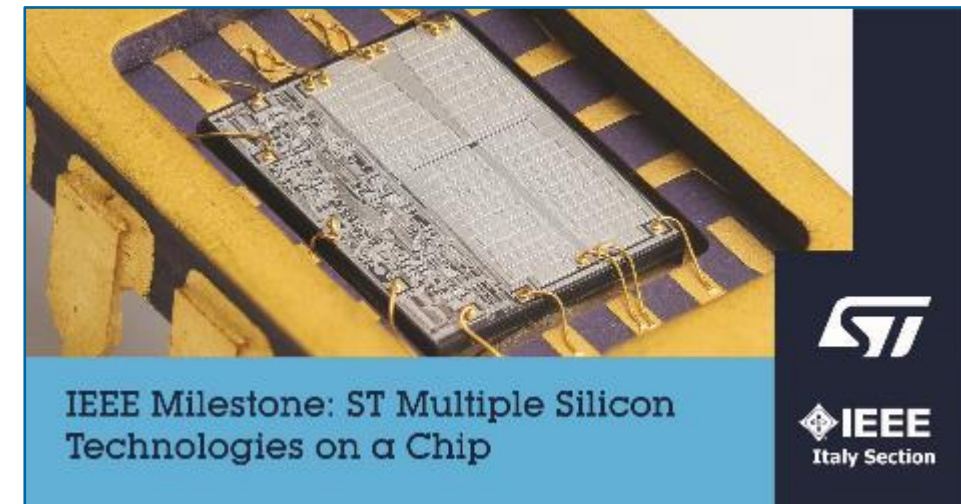


Multiple Silicon Technologies on a Chip Milestone

52nd milestone for Region 8



- ▶ Recognizes the pioneering work that enabled engineers to combine high-power components, precise analog functions, and the complex digital logic to control them onto a single piece of silicon, a capability that has now been sold in 40 billion chips
- ▶ President Kathy Land participated virtually in live/virtual ceremony held at STMicroelectronics's plant in Agrate Brianza, Giambattista Grusso, Italy on 18 May 2021



Special Citation to the Heinz Nixdorf MuseumsForum

Dedication ceremony held in Paderborn, Germany on 23 October



- ▶ Recognizes events or institutions that have contributed to the professions in electrical, electronic, and computer engineering and the associated sciences.
- ▶ One of the largest computer museums in the world, the Heinz Nixdorf MuseumsForum presents 5,000 years of computing history from the emergence of numbers and lettering circa 3000 B.C.E. to the modern digital age.
- ▶ Through presentations, workshops, seminars, and exhibitions, the HNF provides the insights and perspectives required to navigate a world that is increasingly shaped by digital technology.



IEEE Day 2021 Rallying IEEE Members and Volunteers Globally

Held 5 October 2021

- ▶ Nearly 900 events around the globe
- ▶ Announced the inaugural IEEE Education Week
- ▶ Joint celebration of Young Professionals 25th Anniversary
- ▶ Debut of IEEE Sections, Raise Your Flags!
- ▶ Thank you to all our Volunteers & participants



IEEE Day 2021 Region 8 Core Team and Region Leads



Karim Fakhfakh

VIDEOGRAPHER - REGION 8, TUNISIA SECTION, TUNISIA, STUDENT



George Michael

WEBMASTER - REGION 8, CYPRUS SECTION, CYPRUS, SENIOR MEMBER



Muhammed Ömer Keskin

EVENT LEAD ASSISTANT - REGION 8, TURKEY SECTION, GRADUATE STUDENT MEMBER



Rayan Hanna

REGIONAL LEAD FOR REGION 8 (MIDDLE EAST) - KUWAIT SECTION, MEMBER



Samantha Niyoyita

REGIONAL LEAD FOR REGION 8 (AFRICA) - 08 COUNTRIES OUTSIDE SECTIONS, MEMBER



New Section Toolkit Available to Support IEEE Sections

Demonstrate the IEEE Brand throughout our global technology community

- ▶ New Section identifier options, IEEE flags that unify our global presence
- ▶ IEEE Geographic Communities:
 - Includes brand treatments for IEEE Regions, Sections, Technical Chapters, Student Branches and Chapters, and Affinity Groups
 - Print and digital promotional materials, website templates, editable presentations, events banners and posters, flyers, brochures, certificates, ads, email blasts as well as the IEEE WordPress theme

IEEE Germany Section



26th UN Climate Change Conference of the Parties (COP26)

31 October – 12 November 2021 Glasgow, Scotland

- ▶ To accelerate action towards the goals of the Paris Agreement and the UN Framework Convention on Climate Change (UNFCCC)
 - IEEE holds Observer status in the UNFCCC
- ▶ On 8 November, IEEE will participate in a side event on Actions for Clean Energy, Clean Materials & Energy Efficiency to Advance Ambitions & Solutions
 - In collaboration with the International Council for Sustainable Energy and the European Business Council for Sustainable Energy
 - Moderated by Anna Freeman, Clean Energy Council of Australia
 - IEEE speakers: Bruno Meyer and Tariq Duranni



**UN CLIMATE
CHANGE
CONFERENCE
UK 2021**

IN PARTNERSHIP WITH ITALY



Amid Global Uncertainty, IEEE Looks to the Future

- ▶ IEEE made a successful pivot in the face of a global pandemic, with a continued focus on member and stakeholder engagement.
- ▶ We distributed operations and found new ways to engage virtually.
- ▶ We leveraged networking, computing, communications, and video signal processing technologies that IEEE communities helped foster.
- ▶ We focused on keeping our members engaged, through education and outreach, and found new ways to support research communities.
- ▶ As we look forward to a return to “normal” we believe some of the innovations stress tested during the pandemic will continue, positioning us to better serve our global audience.





IEEE

*Advancing Technology
for Humanity*