



**IEEE**

*Advancing Technology  
for Humanity*

INTERACTION · INCLUSION  
**IMPACT**  
2018 ANNUAL REPORT

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# IEEE MEMBERS AND VOLUNTEERS CREATE GLOBAL IMPACT

## ●●●● INTERACTION. INCLUSION. IMPACT.

IEEE is the place where the next great technology breakthroughs are born—the result of the innovative work of our IEEE members and volunteers. IEEE is home to the best and the brightest who are actively shaping the future of technology—and the world—with their unique perspectives on artificial intelligence, autonomous vehicles, cybersecurity, robotics, the future of medical science and more.

Through their work in these emerging technologies, the engineers and technical professionals that comprise IEEE aren't just dreaming about the future, they are creating it. By contributing cutting-edge research, publishing thought-provoking papers, creating critical technical standards, strengthening professional connections and attending industry-leading conferences, they play an integral part in this thriving community where new ideas are initiated, shared and explored.

Through their collaboration, IEEE members and volunteers are in constant pursuit of innovation and excellence for the benefit of all people everywhere. With all of these bright minds regularly interacting and impacting the future of technology, the future is in good hands.



## MESSAGE FROM THE IEEE PRESIDENT AND THE EXECUTIVE DIRECTOR



As the world's leading technical professional organization, IEEE is well positioned to purposefully serve our membership and mission through the 21st century. The historic role of our organization has been informational and educational: facilitating the exchange of knowledge, advancing the technical state-of-the-art, promoting guidelines and standards for professional excellence and raising public awareness and recognition of members' contributions. IEEE is a distinguished organization, capable of significant impact, with breadth both in discipline and geography. The IEEE name has the power to open doors and open new opportunities—driven by recognition of our reputation for excellence and our important mission that members, potential members and the general public can all support.

IEEE is distinctive in that our members create so much of the organization's value. Whether they are writing papers, editing journals, organizing conferences and meetings, developing standards, promoting pre-professional and continuing education, building local professional networks or meeting policymakers in capitals around the world—IEEE members do it all.

### PROJECTING OUR VOICE

Our leadership position, built on the knowledge and insights of our engaged members, provides the foundation to promote change within our spheres of technical competence and professional interest. From our position spanning diverse fields of concentration, IEEE has a clear view of technical and societal trends, along with potential issues and disruptors.

IEEE continues to make great strides in informing global public policy and building industry connections by engaging and leveraging our international community. We believe that successful technology implementation often depends on the partnership of government and industry leaders with creative scientists and engineers and that wise technology-related policies are best developed through consultation between policymakers and technologists.

Through coordinated activities at the regional, national and international levels, IEEE provides accurate information and recommendations to advance the discussion of technology-related public policy issues. Our global perspective enables us to inform governments and society at large about the social responsibilities and implications of technology and the roles engineering innovations can play in enhancing quality of life and increasing well-being.

*“At IEEE, we examine the **world of tomorrow** and interpret trends that will be **important in the years ahead**”*

### APPLYING OUR KNOWLEDGE

At IEEE, we examine the world of tomorrow and both interpret and shape the trends that will be important in the years ahead—forging new ground on the implications of robotics, nanotechnology, or artificial intelligence, to name a few—ensuring our members have the knowledge and skills they'll need to succeed in an increasingly dynamic, ever-changing future.

IEEE adds value by curating and connecting members with relevant technical information, vetted for quality through peer review by experts. This curation assures that our conferences, forums and publications are providing high-value information pertinent to our members and society.

IEEE delivers professional development, leadership opportunities and educational programs spanning the member's entire professional life cycle—those just thinking about engineering or science as a career to those already studying, teaching, practicing, inventing or advocating for technology—and all with a clear focus on our code of ethics and conduct that includes our commitment to inclusion and diversity.

### MISSION-FOCUSED

IEEE is dedicated to advancing technology for the benefit of humanity. Through our humanitarian and philanthropic programs, there are many opportunities for members to contribute to improving the human condition worldwide.

At IEEE, we foster a culture of open inquiry in which our members bring together their diverse experiences, viewpoints and interests to yield extraordinary accomplishments. That is what unites us in a truly global community—as technical professionals and as IEEE members we share a professional connection through our commitment to advancing technology to benefit humanity.

### BUILDING OUR ENVISIONED FUTURE

There is significance in being part of a group of people with a shared purpose that goes beyond one's own personal interests and current career. Our years of membership and volunteer service at IEEE have reinforced for us the relevance and importance of IEEE's mission and global impact.

For those who believe in the power of technology to benefit humanity, this very compelling purpose drives our vision for IEEE's future.

Sincerely,



*James A. Jefferies*

**James A. Jefferies**  
2018 IEEE President and CEO



*Stephen P. Welby*

**Stephen P. Welby**  
IEEE Executive Director and COO

# IEEE BY THE

# NUMBERS

# 2018

**1,966**  
IEEE SPONSORED CONFERENCES  
IN **103 COUNTRIES**

**561,000+**  
CONFERENCE ATTENDEES

**147,600,000**  
TOTAL USAGE\* OF  
**IEEE Xplore®**  
Digital Library

**121**  
STANDARDS  
APPROVED FOR PUBLICATION

<b>NEW</b>	<b>REVISIONS</b>
51	70

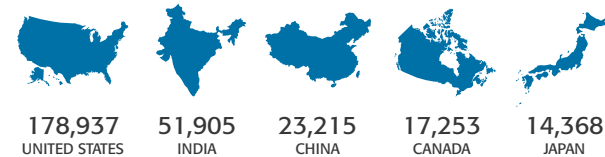
**195,954**  
CONFERENCE ARTICLES

**57,628**  
JOURNAL ARTICLES

**2,874**  
MAGAZINE ARTICLES

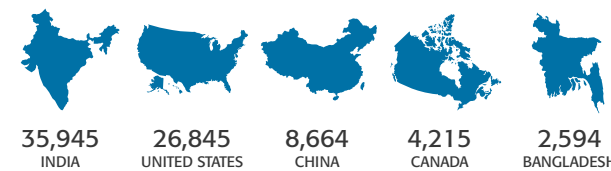
**422,460**  
TOTAL MEMBERS

TOP 5 COUNTRIES FOR  
MEMBERS



**123,508**  
STUDENT MEMBERS

TOP 5 COUNTRIES FOR  
STUDENT MEMBERS



**TEN GEOGRAPHIC  
REGIONS WORLDWIDE**

<b>SECTIONS</b>	<b>STUDENT BRANCHES</b>	<b>CHAPTERS</b>
339	3,284	2,430

## IEEE SOCIETY MEMBERSHIPS

- |   |  |
|---|--|
| <b>4,941</b> IEEE Aerospace and Electronic Systems Society      | <b>2,972</b> IEEE Magnetics Society  |
| <b>9,181</b> IEEE Antennas and Propagation Society              | <b>10,917</b> IEEE Microwave Theory and Techniques Society                   |
| <b>1,796</b> IEEE Broadcast Technology Society                  | <b>3,781</b> IEEE Nuclear and Plasma Sciences Society                        |
| <b>10,498</b> IEEE Circuits and Systems Society                 | <b>1,838</b> IEEE Oceanic Engineering Society                                |
| <b>27,477</b> IEEE Communications Society                       | <b>6,252</b> IEEE Photonics Society  |
| <b>7,961</b> IEEE Computational Intelligence Society            | <b>38,551</b> IEEE Power & Energy Society                                    |
| <b>49,941</b> IEEE Computer Society                             | <b>9,873</b> IEEE Power Electronics Society                                  |
| <b>2,754</b> IEEE Consumer Electronics Society                  | <b>861</b> IEEE Product Safety Engineering Society                           |
| <b>8,654</b> IEEE Control Systems Society                       | <b>690</b> IEEE Professional Communication Society                           |
| <b>2,128</b> IEEE Dielectrics and Electrical Insulation Society | <b>1,672</b> IEEE Reliability Society  |
| <b>3,370</b> IEEE Education Society                             | <b>14,824</b> IEEE Robotics and Automation Society                           |
| <b>3,769</b> IEEE Electromagnetic Compatibility Society         | <b>16,995</b> IEEE Signal Processing Society                                 |
| <b>10,355</b> IEEE Electron Devices Society                     | <b>1,727</b> IEEE Society on Social Implications of Technology               |
| <b>2,556</b> IEEE Electronics Packaging Society                 | <b>10,578</b> IEEE Solid-State Circuits Society                              |
| <b>10,122</b> IEEE Engineering in Medicine and Biology Society  | <b>5,505</b> IEEE Systems, Man, and Cybernetics Society                      |
| <b>4,233</b> IEEE Geoscience and Remote Sensing Society         | <b>3,094</b> IEEE Technology and Engineering Management Society              |
| <b>7,646</b> IEEE Industrial Electronics Society                | <b>2,239</b> IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society |
| <b>14,763</b> IEEE Industry Applications Society                | <b>4,846</b> IEEE Vehicular Technology Society                               |
| <b>3,263</b> IEEE Information Theory Society                    |  |
| <b>3,976</b> IEEE Instrumentation and Measurement Society       |  |
| <b>1,959</b> IEEE Intelligent Transportation Systems Society    | <b>328,558</b> Total Society Memberships                                     |

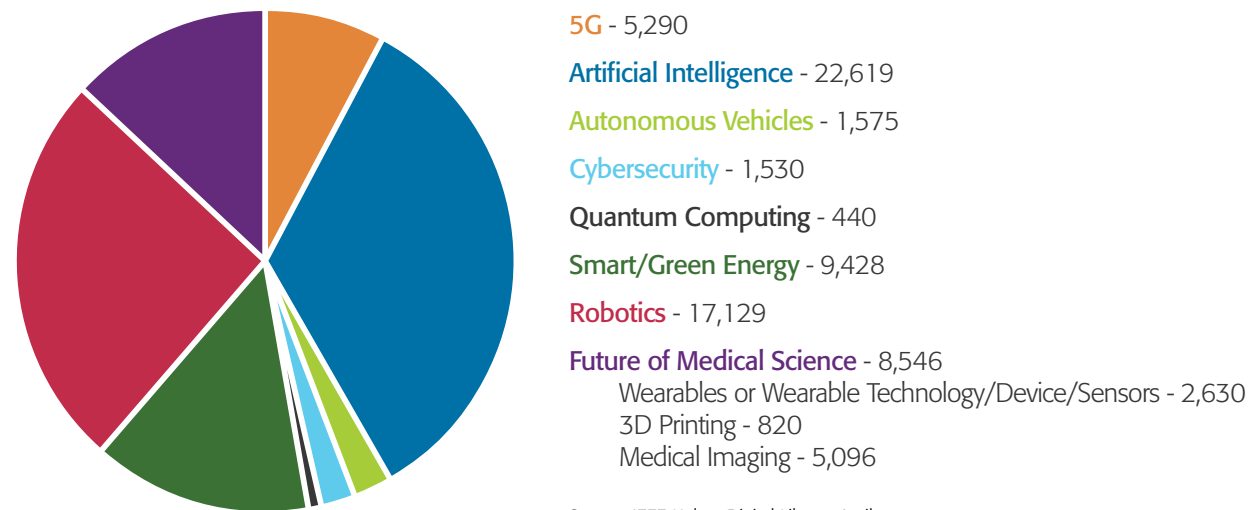
**49% OF IEEE MEMBERS**  
BELONGED TO ONE OR MORE SOCIETIES IN 2018

\*PDF downloads and HTML views

# SHAPING THE FUTURE OF EMERGING TECHNOLOGIES

In 2018, IEEE continued to deliver groundbreaking research in its industry-leading publications and share its technical expertise around the world on the technologies that will shape the future.

## KEY TECHNOLOGIES - TOTAL NUMBER OF PAPERS PUBLISHED IN IEEE XPLORE IN 2018



Source: IEEE Xplore Digital Library, April 2019

## IEEE JOURNALS HELP DRIVE ADVANCEMENT FORWARD

**23 OF THE TOP 25**  
IN ELECTRICAL AND  
ELECTRONIC ENGINEERING

**19 OF THE TOP 20**  
IN TELECOMMUNICATIONS

**4 OF THE TOP 5**  
IN COMPUTER SCIENCE –  
ARTIFICIAL INTELLIGENCE

**3 OF THE TOP 5**  
IN IMAGING SCIENCE AND  
PHOTOGRAPHIC TECHNOLOGY

Source: Top Journals by Journal Impact Factor; 2017 Journal Citation Report Study from Clarivate Analytics, released June 2018

Below: 2018 IEEE President Jim Jefferies speaks at the 2018 Global Energy Interconnection Conference held in Beijing, China.



## FUTURE OF MEDICAL SCIENCE

IEEE conducted its second study of millennial parents, which spotlighted healthcare-related artificial intelligence technologies—including everything from AI health trackers to chatbot doctors to robotic surgeons—and how they are impacting the lives of their Generation Alpha children. Review the full results at <https://transmitter.ieee.org/ai/>



## CUTTING-EDGE RESEARCH PRESENTED AT IEEE CONFERENCES



### IEEE GLOBECOM®: IEEE Global Communications Conference

Location: Abu Dhabi, United Arab Emirates

Topics: 5G, green internet of things, next-generation wireless communications systems



### IEEE International Conference on Artificial Intelligence and Knowledge Engineering

Location: Laguna Hills, CA

Topics: Machine learning, neural networks, deep learning and artificial intelligence



### IEEE International Conference on Vehicular Electronics and Safety

Location: Madrid, Spain

Topics: Intelligent vehicular electronics and safety, autonomous driving



### IEEE Power & Energy Society Transmission and Distribution Conference and Exposition

Location: Denver, CO

Topics: Renewable generation, smart grid technology, clean and reliable energy



### IEEE BioRob: IEEE Robotics and Automation Society/ IEEE Engineering in Medicine and Biology Society International Conference on Biomedical Robotics and Biomechanics

Location: Enschede, Netherlands

Topics: Rehabilitation robots, surgical robotics, bionic prosthetics



### 40th IEEE International Engineering in Medicine and Biology Conference

Location: Honolulu, HI

Topics: Biomedical signal processing, wearable sensors and systems

# IEEE CONVENES INDUSTRIAL, RESEARCH AND ACADEMIC COMMUNITIES



- • • ● IEEE has a **culture of being open to inquiry and innovation**, as well as bringing together diverse viewpoints in engineering and technology to yield extraordinary accomplishments. In 2018, IEEE provided unique opportunities for members, future members and organizations alike to interact and experience its breadth of offerings and learn how they can contribute to the IEEE mission.

Powered by IEEE



## TRYENGINEERING PROGRAMS INTRODUCE STUDENTS TO ENGINEERING

In 2018, IEEE worked with Cricket Media to launch TryEngineering Together, an innovative online e-mentoring and learning platform for third to fifth grade students. Aimed at students in under-resourced neighborhoods, this program helps to improve STEM skills through one-on-one support from mentors, including IEEE members from around the globe. IEEE further connected with students via the TryEngineering Summer Institute, an exciting two-week, on-campus engineering summer camp for high school students held at three universities in the United States. Students immersed themselves in hands-on activities, lectures, guest speakers, field trips and tours.



**Top:** The IEEE TryEngineering Summer Institute aims to spark enthusiasm in engineering and technology in the next generation of problem solvers and difference makers.

**Bottom:** Students in the TryEngineering Together online mentoring program from IEEE complete a hands-on design challenge.

**Below:** Students at the Vaughn College of Aeronautics and Technology, site of the IEEE TryEngineering Summer Institute, took an up-close look at aeronautical engineering work at LaGuardia Airport, in New York.



**Above:** Attendees at the 2018 IEEE WIE International Leadership Conference

## IEEE WOMEN IN ENGINEERING EVENTS ENCOURAGE PARTICIPANTS TO "LEAD BEYOND"

IEEE Women in Engineering (WIE) hosted the first-ever Tech Powered by Women Workshop, with artificial intelligence as the primary focus. Held in Vancouver, Canada, the event brought together diverse engineering and technology professionals in research and industry to explore the future of artificial intelligence technology, share success stories and discuss opportunities for women in leadership. The WIE annual Women in Engineering International Leadership Conference, held in San Jose, CA, continued to attract leading keynote speakers and offer an environment of inclusion.

*IEEE WIE International Leadership Conference:*

**1,000+** ATTENDEES

**30+** COUNTRIES

**100+** SPEAKERS





Above: Attendees of the IEEE Future Leaders Forum 2018 – IEEE-USA's two-day flagship event

**IEEE Future Leaders Forum**  
*named to TechRadar's list of*  
**Top Tech Conferences for 2018**

IEEE's Future Leaders Forum, held at the University of Texas in Austin, was named to TechRadar's list of Top Tech Conferences for 2018, alongside heavyweight events such as CES, Mobile World Congress and Google Cloud Next. An audience of mostly young professionals and students benefited from a program that featured interactive workshops and TED-style presentations, including one from Steven Sasson, inventor of the digital camera. The event, organized by IEEE-USA, included a panel discussion that stressed the value of a diverse workforce and provided best practices for promoting this topic.



Above: Over 100 attendees participated in the third edition of Young Professionals in Space in Barcelona, Spain.

**REACHING FOR THE STARS** 

IEEE members took flight at the Universitat Politècnica de Catalunya in Barcelona, Spain, as part of the IEEE Young Professionals in Space event. The five-day gathering featured hands-on lab sessions and presentations led by industry experts from academia, industry and government, with topics covering everything from nanosatellites to space exploration technologies. On the final day, participants even got the chance to launch rockets, which they personally designed over the course of the event.



**DRIVING MEMBER ENGAGEMENT AND GROWTH**

IEEE Collabratec, the integrated online community that connects technology professionals, reached several key milestones in 2018:

**180,000+**  
TOTAL REGISTRANTS

**68,000+**  
IEEE MEMBER REGISTRANTS

**50,000**  
MONTHLY ACTIVE USERS

**5,000**  
NON-MEMBERS ON IEEE COLLABRATEC CONVERTED TO IEEE MEMBERS

# IEEE MEMBERS ADVANCE TECHNOLOGY FOR THE FUTURE



- • • • • In 2018, IEEE continued to have a **strong voice in the area of technology ethics**, providing a variety of thought-provoking perspectives to encourage dialogue. IEEE members also shared insights during numerous events focused on emerging technologies and their role in helping to **advance technology for humanity**.

**Top Right:** 2018 IEEE President Jim Jefferies (top center) attends the IEEE Region 10 Student/Young Professionals/Women in Engineering/Life Member Congress in Bali, Indonesia.



Right: Angel Giuffria, bionic actress, describes her state-of-the-art prosthetic arm during the IEEE TechEthics virtual panel, *Is the Future of Humanity Bionic?*



## IEEE SHINES A LIGHT ON TECH ETHICS

IEEE is committed to providing a platform for addressing ethical and societal implications across a variety of technology areas. A core value of technology ethics is to encourage technological innovation while keeping ethical principles in mind. 2018 highlights included:

- ●●●●● **The Open Community for Ethics in Autonomous and Intelligent Systems (OCEANIS)** aims to foster cooperation in the development and use of ethically aligned standards in information and communications technology, particularly for autonomous and intelligent systems.
- ●●●●● **The Ethics Certification Program for Autonomous and Intelligent Systems (ECPAIS)** is one of the world's first programs dedicated to the creation of an autonomous and intelligent systems certification process supported by a global standards development organization.
- ●●●●● **Ten courses on Artificial Intelligence (AI) and Ethics in Design were produced in collaboration with The IEEE Global Initiative on Ethics of Autonomous and Intelligent Systems.** The courses cover everything from Responsible Innovation in the Age of AI to Economic Advantages of Ethical Design for Business.
- ●●●●● **The IEEE TechEthics™ Conversations Series featured six virtually moderated panel sessions of experts on different aspects of the technology ethics dialogue.** Topics included bionics, the impact of artificial intelligence on children, neurostimulation techniques, automation and more. Recordings were posted on the IEEE TechEthics channel on IEEE.tv (<https://techethics.ieee.org/videos>).

## IEEE Future Directions: Active Initiatives

**DIGITAL REALITY** BRAIN  
 SYMBIOTIC AUTONOMOUS SYSTEMS **REBOOTING**  
**BLOCKCHAIN** 5G AND **COMPUTING**  
 BEYOND

## INITIATING NEW TECHNOLOGY CONNECTIONS

IEEE Future Directions brought together IEEE members and volunteers from around the world to discuss and share their latest work through a series of conferences, summits and workshops focused on emerging technologies. Highlights include:



IEEE Digital Reality hosted an informative panel on virtual reality (VR), augmented reality (AR) and cross reality (XR) at the Augmented World Expo in Santa Clara, CA. Experts from a diverse range of areas spoke of the blend of VR, AR, mixed reality, immersive and other future reality spaces while addressing social, ethical, legal and policy implications.



The 2018 IEEE Global Blockchain Summit brought together thought leaders, decision-makers and technologists to discuss the challenges and opportunities of blockchain technology. Attendees from academia, government and industry presented on various topics including the current technology landscape, applications, use cases, policy and regulations.



IEEE Rebooting Computing Week brought together leaders in industry, academia and government to collaborate and explore new technologies. Computing topics included approximate computing, biological computing, brain-inspired computing, quantum computing, quantum machine learning and more.

## NEW GLOBAL CONNECTIONS IN IEEE STANDARDS HELP TO INSPIRE CHANGE

In 2018, IEEE successfully entered into cooperative agreements with the African Telecommunications Union, the Shenzhen Institute of Science and Technology in China and the Ministry of Economy in Mexico. Each organization will promote their respective collaboration efforts as well as IEEE's standards development opportunities, provide greater input to IEEE standards and promote their use and adoption. IEEE also contributed its expertise to the European Commission on autonomous and intelligent systems relative to ethical considerations, submitted input to the India National Standards Strategy and was a signatory on a joint call to Group of 20 (G20) leaders to reinforce the importance of open standards and multi-stakeholder governance. The G20 is an international forum that brings together the world's 20 leading industrialized and emerging economies to discuss world affairs and other issues.

# MEMBERS HELP EXPAND IEEE ACROSS THE GLOBE



Being part of IEEE allows members to be part of a rich history, giving them the ability to convene with other engineers and technologists from around the globe. In 2018, **IEEE continued its outreach to improve technology infrastructure where it is needed** through a number of collaborative projects.



**Right:** University of Puerto Rico Mayaguez employees implemented the "OASIS of Light," a project created to bring power to town squares in central Puerto Rico.

## EPICS IN IEEE

Engineering Projects In Community Service

### ENGINEERING PROJECTS IN COMMUNITY SERVICE IMPROVE COMMUNITIES AROUND THE WORLD

From powering villages with solar cells to developing mobile devices for better healthcare screening, EPICS in IEEE enables IEEE members, volunteers and students to make a real difference in the lives of people in their communities and around the world. EPICS in IEEE is a donor-supported, IEEE Foundation Signature Program. Highlights include:



**INDIA:** After his father was paralyzed by a stroke, IEEE student member Sunil Jacob developed a muscle machine interface to assist individuals suffering from paralysis.



**PUERTO RICO:** IEEE student members and volunteers developed charging stations for local communities without power after Hurricane Maria devastated the island. These charging stations allowed community members to charge small electronics and provided power to refrigerators used for storing medication.



**UNITED STATES:** IEEE student members from San Jose State University created an underwater drone and software application that can identify endangered fish species in urban streams. Based on the collected data, users can understand the behavior patterns of fish and make critical decisions that improve their population.



## IEEE SIGHT

Special Interest Group on Humanitarian Technology

### THE IEEE SPECIAL INTEREST GROUP ON HUMANITARIAN TECHNOLOGY SOLVES CRITICAL PROBLEMS IN UNDERSERVED COMMUNITIES

IEEE SIGHT is a global network of IEEE volunteers partnering with underserved communities and local organizations to identify and address critical problems. Some success stories from 2018 include:



**EL SALVADOR:** The IEEE SIGHT group based in El Salvador installed a photovoltaic system connected to the grid to reduce energy consumption. This project will benefit 1,600 people.

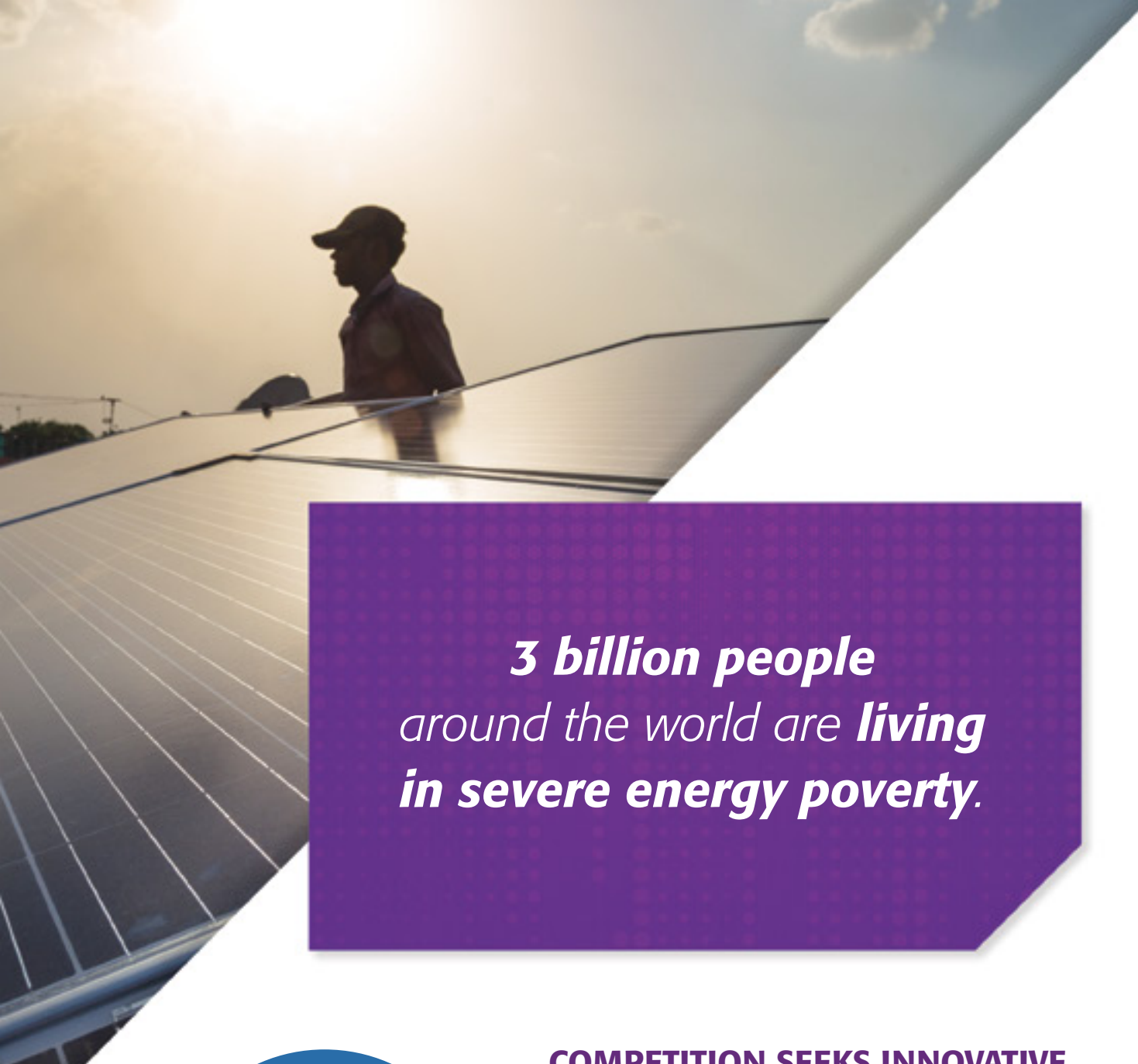


**CANADA:** Maskwacis, Canada, is a First Nations Community located on an indigenous reserve where there is little access or connection to the internet. Bruce Buffalo, a Maskwacis resident and self-taught engineer, founded the Mamawapowin Technology Society to bring free internet connection to Maskwacis. The project will ultimately impact approximately 8,000 residents over the course of three years.



**PARAGUAY:** Tilapia ponds have been implemented in Paraguay's indigenous communities as a source for food and economic enrichment. Due to insufficient knowledge and training, the production levels are not enough to provide for the communities. IEEE SIGHT Paraguay pooled knowledge from local resources to install new tilapia ponds equipped with solar water pumps, solar lighting and mechanized fish harvesting systems that help ensure the ponds become a beneficial resource.

**Top Left:** Volunteers of The IEEE El Salvador Section SIGHT group  
**Top Right:** Volunteers of the Pontifical Catholic University of Valparaiso Student Branch SIGHT group based in Valparaiso, Chile  
**Left:** Volunteers of the IEEE El Salvador Section SIGHT Group



**3 billion people**  
*around the world are living*  
**in severe energy poverty.**



### COMPETITION SEEKS INNOVATIVE ENERGY ACCESS SOLUTIONS

With 3 billion people around the world living in severe energy poverty, IEEE introduced the IEEE Empower a Billion Lives Competition, [empowerabillionlives.org](http://empowerabillionlives.org), a global contest aimed at fostering innovation to develop solutions to electricity access. The competition includes five regional rounds in Africa, the Americas, China, Europe and India, culminating with a final round in October 2019. Among the regional rounds and global final winners, a maximum US \$1 million prize will be distributed. More than 130 proposals were received during the inaugural online round of the competition. IEEE Empower a Billion Lives is supported by the IEEE Foundation.



**Left:** The IEEE Hurricane Florence MOVE team (from left): Brian Greene, Grayson Randall, John Balsam and Jay Diepenbrock

### IEEE MEMBERS ON THE MOVE

IEEE MOVE Community Outreach, an emergency relief program assisting victims of natural disasters with short-term communications, computer and power solutions, continued to spring into action in 2018. IEEE partnered with the American Red Cross on a national level to train IEEE members as Red Cross volunteers and deploy the MOVE vehicle around the country to help local communities prepare for, respond to and recover from emergencies. During Hurricanes Florence and Michael, MOVE disaster recovery volunteers and the vehicle were deployed for 40 straight days, providing critical communications and networking support to Red Cross field operations and shelters.

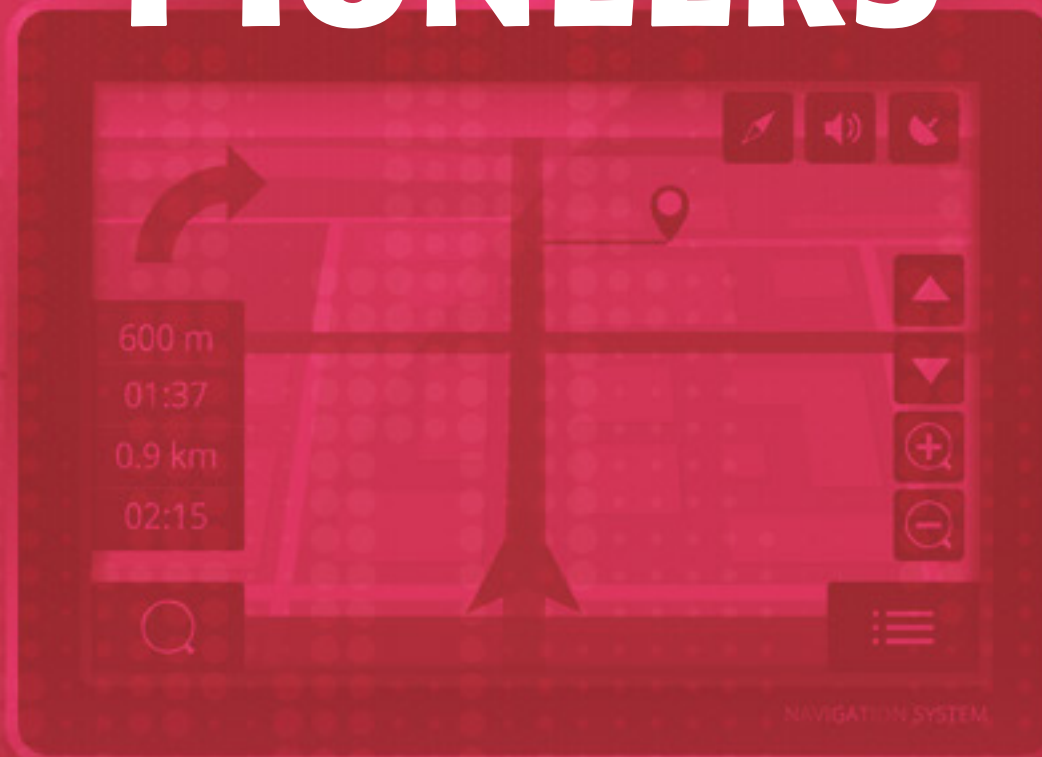


### AFRICA COUNCIL UNITES IEEE MEMBER ACTIVITIES

In 2018, the IEEE Africa Council was formed. The Council is designed to encourage collaboration with members across the continent, as well as explore opportunities with national associations, institutions and industry. These activities support the overall goal of building engineering capacity in underserved African nations. The first meeting of the IEEE Africa Council was hosted in June by the IEEE Tunisia Section, in conjunction with its 10th anniversary.

**Left:** Attendees of the first meeting of the IEEE Africa Council

# HONORING TECHNOLOGY PIONEERS



- • • • ● Since its formation in 1884, IEEE has consistently laid the foundation for the future by tirelessly **advancing innovation and technological excellence**. A critical part of that path forward is remembering the work that led to this stage. In 2018, IEEE honored leaders and members whose achievements sparked radical transformation and **changed the world for the better**.

**Top Right:** (from left) 2018 IEEE President-Elect José Moura, 2018 IEEE Medal of Honor Recipient Bradford W. Parkinson and 2018 IEEE President Jim Jefferies at the 2018 IEEE Honors Ceremony Gala

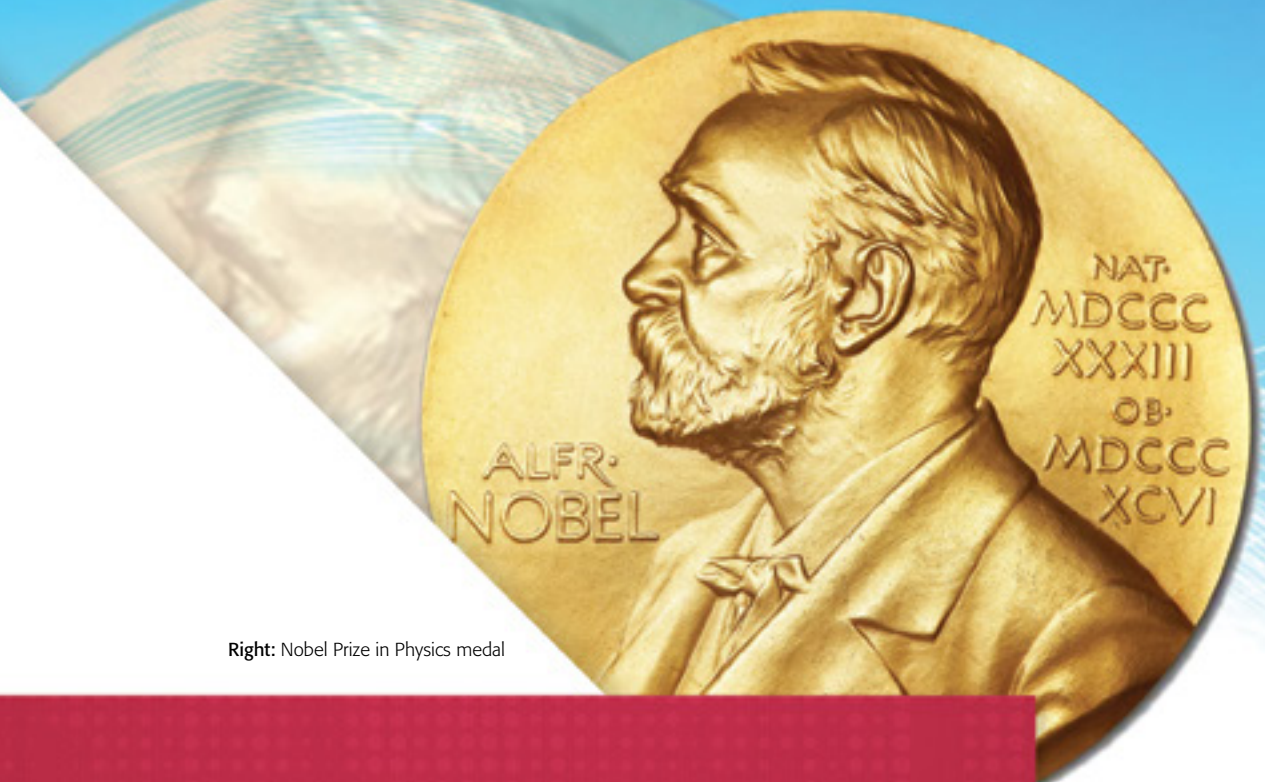
## BRADFORD W. PARKINSON RECEIVES IEEE MEDAL OF HONOR

IEEE awarded IEEE Life Fellow Bradford W. Parkinson with IEEE's highest recognition, the IEEE Medal of Honor, sponsored by the IEEE Foundation. As the chief architect of the satellite-based navigation system, now widely known as "GPS," Parkinson created world-changing technology that has impacted practically all aspects of modern living. Parkinson received his award at the IEEE Honors Ceremony Gala held at The Palace Hotel in San Francisco, CA. The Gala was preceded by the 2018 IEEE Vision, Innovation and Challenges Summit, a day-long event that brought together leading innovators who discussed how mixed reality, the future of medicine and robotics will impact our daily lives.

Bottom: IEEE Life Fellow and 2018 IEEE Medal of Honor recipient Bradford W. Parkinson



Below: The 2018 IEEE Medal and Recognition recipients at the Honors Ceremony Gala in San Francisco, CA



Right: Nobel Prize in Physics medal

*The work being done by IEEE members today **will shape the world of tomorrow.***

## TWO IEEE LIFE FELLOWS HONORED WITH NOBEL PRIZE IN PHYSICS

The work being done by IEEE members today will shape the world of tomorrow. Some IEEE members will even go on to receive the world's highest acclaim. In 2018, IEEE Life Fellows Dr. Arthur Ashkin and Dr. Gérard Mourou, with Dr. Donna Strickland, were awarded the prestigious Nobel Prize in Physics by The Royal Swedish Academy of Sciences for their groundbreaking work in laser physics. Dr. Ashkin was honored for his many crucial contributions to optical science, including his invention of optical tweezers that use beams of light to study microscopically small objects, such as biological molecules or living cells. Dr. Mourou was jointly honored with Dr. Strickland for developing a new technique that became a standard for high-intensity lasers used in millions of corrective eye surgeries conducted every year.



# HONORING HISTORIC TECHNOLOGY MILESTONES

Each year, the IEEE Milestones in Electrical Engineering and Computing program recognizes exceptional technical achievements that occurred at least 25 years ago. In 2018, eight Milestones were dedicated, spanning three continents and almost 100 years of history. Among the Milestones recognized were:



*1886-1888*

## **ELECTRIC LIGHTING OF THE KINGDOM OF HAWAII, HONOLULU, HI**

In November 1886, electric lights illuminated Iolani Palace's grounds for King Kalakaua's 50th birthday celebration. By March 1887, the Palace had 325 incandescent lights installed within its 104 rooms. The king's action promoted economic development and accelerated the implementation of the electric lighting of Honolulu in 1888.

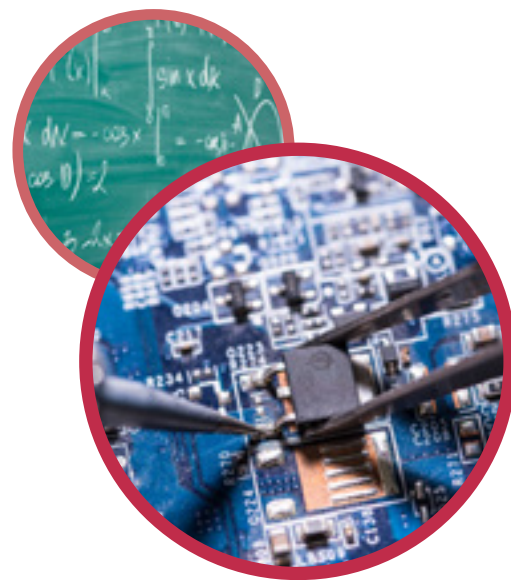
**Top Left:** (from left) IEEE Hawaii Section Chair John Borland, Sophie Tang, 2018 IEEE President Jim Jefferies and executive director of the Friends of Iolani Palace Kippen Alba de Chu with the IEEE Milestone Plaque



*1965*

## **MOORE'S LAW, MOUNTAIN VIEW, CA**

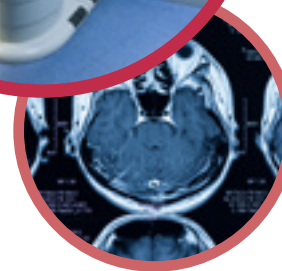
IEEE Life Fellow Gordon E. Moore, co-founder of Fairchild and Intel, famously predicted in 1965 that the number of components on an integrated circuit will increase exponentially with time while cost per function decreases. The prediction, now known as Moore's Law, has led to significant advances in digital electronics and computing over the past 50 years, although there has been debate about how long the "Law" will be sustained.



*1973*

## **THE FIRST TWO-DIMENSIONAL NUCLEAR MAGNETIC RESONANCE IMAGE (MRI), STONY BROOK, NY**

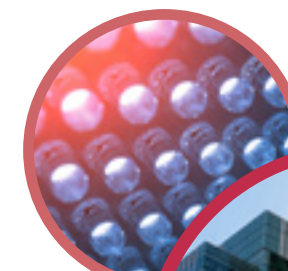
Researchers at Stony Brook University produced the first two-dimensional image using nuclear magnetic resonance in 1973. The proton distribution of the object, a test tube of water, was distinctly encoded using magnetic field gradients. This achievement was a major advance for MRI and paved the way for its worldwide usage as a noninvasive method to examine body tissue for disease detection.



*1980*

## **OUTDOOR LARGE-SCALE COLOR DISPLAY SYSTEM, NAGASAKI, JAPAN**

Mitsubishi Electric developed the world's first large-scale emissive color video display system and installed it at Dodger Stadium, Los Angeles, CA, in 1980. With increased dimensions and resolution, the system has entertained and informed millions of people in sports facilities and public spaces worldwide.



# PROMOTING THOUGHT LEADERSHIP



- • • • • IEEE is a **trusted voice for engineering and technology**, providing thought leadership, collaboration and education that inspires engineers and technical professionals around the world to create a better and brighter future.

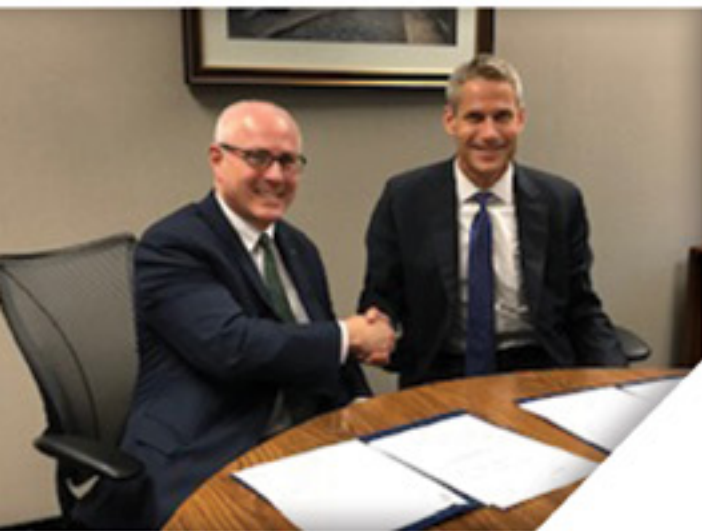
**Top Right:** (from left) 2019 IEEE President-Elect Toshio Fukuda and Yu Zhangguo, associate professor at the Beijing Institute of Technology, in a robotics lab on campus



Right: 2018 IEEE President Jim Jefferies speaking at 2018 India Mobile Congress

## 5G AND NEXT GENERATION NETWORKS

2018 IEEE President and CEO Jim Jefferies spoke at India Mobile Congress in October, where the Indian government announced an ambitious commitment to install 1 million public 5G Wi-Fi hotspots nationwide by December 2019. President Jefferies noted that IEEE supports this transformative project and, through its research and technical depth in standards developments, can help drive 5G technology globally.



## IEEE PARTNERS WITH LOCKHEED MARTIN

At a time of rapid technological change and digital transformation, IEEE formed a new alliance with global security and aerospace leader Lockheed Martin. As an IEEE Corporate Partner, Lockheed Martin will leverage the benefits of IEEE's global reach, technical expertise, authoritative information and membership opportunities to advance critical new technologies and support the development of its technical workforce.

Left: (from left) IEEE Executive Director and Chief Operating Officer Stephen Welby and Lockheed Martin Chief Technology Officer Keoki Jackson

## IEEE PRESIDENTS RESPOND TO NATIONAL STUDY: "HARASSMENT AND DISCRIMINATION OF ANY KIND UNDERMINE US ALL"

A 2018 report, "Sexual Harassment of Women: Climate, Culture, and Consequences in Academic Sciences, Engineering, and Medicine," found that sexual harassment affects not only the women who are targeted but also bystanders and the entire research enterprise. The report, which was released by the National Academies of Sciences, Engineering and Medicine, was covered in *IEEE Spectrum* and included an endorsement from 2018 IEEE President Jim Jefferies, 2019 IEEE President José M.F. Moura and 2017 IEEE President Karen Bartleson.

## IEEE INCREASES ACTIVITY ON PUBLIC POLICY ISSUES

As part of its growing focus on global public policy, the IEEE Board of Directors adopted multiple position statements in 2018, offering recommendations to policy makers around the world supporting the following topics:

- *Advancing Universal Access to the Internet*, with supporting statements on:
  - *The Role of Community Networks in Advancing Universal Access to the Internet*
  - *The Role of Public Internet Connectivity in Advancing Universal Access to the Internet*
- *Privacy Engineering*
- *Strong Encryption*

IEEE increased growth during 2018 in public policy activity by IEEE-USA, the IEEE Internet Initiative, the newly formed IEEE European Public Policy Initiative and the IEEE Standards Association's Ethically Aligned Design initiative. Updates can be found at <https://globalpolicy.ieee.org>.



## IEEE-USA MEMBERS LEAD LEGISLATIVE AND COMMUNITY OUTREACH EFFORTS

IEEE-USA, which promotes the careers and public policy interests of IEEE engineering, computing and technology professionals, also supported legislative efforts promoting quantum research, artificial intelligence and support for small tech business.

As part of Engineers Week in February, IEEE-USA co-sponsored Discover Engineering Family Day at the National Building Museum in Washington, DC. Over 6,500 students, parents and teachers participated in activities designed to introduce children to the world of engineering.

For highlights and information, visit <https://ieeusa.org/>





# ELEVATING ENGAGEMENT



• • • • • In 2018, IEEE members and volunteers engaged more deeply with the global community and **increased public recognition of our leadership role.**

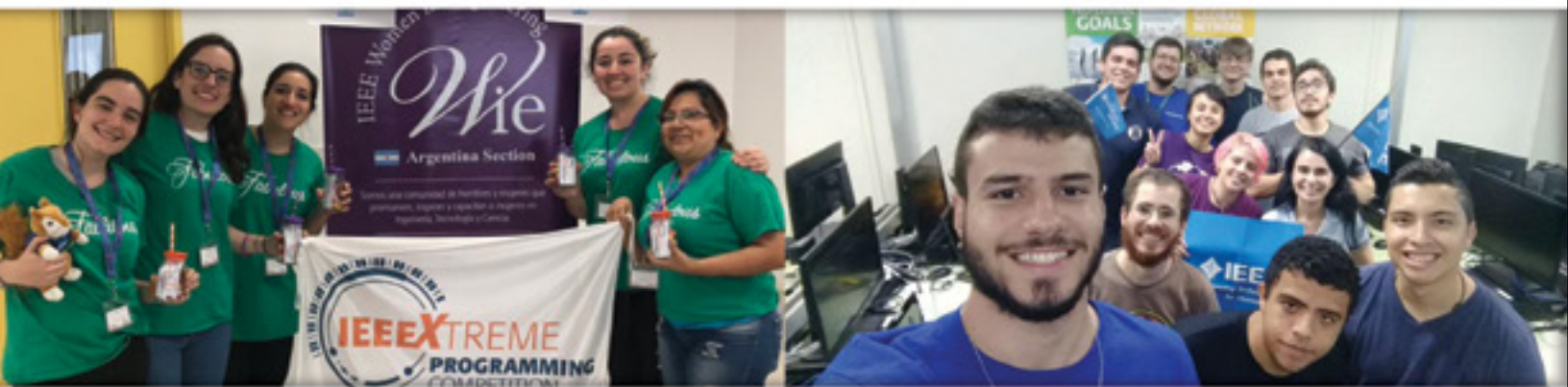
Left Page: IEEEExtreme 12.0 participants  
Top Right: IEEE Day Participants



Above: Attendees of the IEEE Young Professionals Rising Stars Conference

## IEEE YOUNG PROFESSIONALS COLLABORATIONS ON THE RISE

**227** GROUPS      **80+** COUNTRIES      **250+** MEETINGS AND EVENTS      **108,733** YOUNG PROFESSIONALS



Above: IEEEExtreme 12.0 participants

## IEEE XTREME EXPERIENCES EXPLOSIVE GROWTH

IEEEExtreme is a global challenge in which thousands of teams of IEEE student members—advised and proctored by an IEEE member—compete in a 24-hour time span to solve a set of real-world programming problems.

**9,494** STUDENTS      **4,024** TEAMS      **673** UNIVERSITIES

**+20%** PARTICIPATION      **+67%** VOLUNTEER SUPPORT

**76** COUNTRIES REPRESENTED



Top Right/Left: IEEE Day participants

## IEEE DAY CELEBRATED AROUND THE WORLD

IEEE Day, which celebrates the first time in history when engineers and IEEE members gathered to share their technical ideas in 1884, inspired more than 1,000 events worldwide. Connected by the theme of “Leveraging Technology for a Better Tomorrow,” events included technical talks, humanitarian projects and field trips. As part of the celebration, IEEE attracted hundreds of new members through various promotions, which included complimentary downloads of specially selected IEEE *Xplore* papers.

**+20%** NEW MEMBER JOINS DURING THE WEEK OF IEEE DAY      **1,053** TOTAL LOCAL EVENTS      **2,167** IEEE XPLORE PAPER DOWNLOADS

**238,414** TOTAL FACEBOOK REACH      **17,634** FACEBOOK ENGAGEMENTS      **4,514** TOTAL WEBINAR VIEWS



## ●●●●● 2018 IEEE BOARD OF DIRECTORS

### Back Row:

Katherine J. Duncan, Babak Beheshti, John W. Walz, Bernard T. Sander, Dejan Milojicic, Witold M. Kinsner, Susan K. Land, William P. Walsh, Gregg L. Vaughn

### 2nd Row:

Vijay K. Bhargava, Kukjin Chun, Martin Bastiaans, Maïke Luiken, Bruno Meyer, John Y. Hung, Alejandro "Alex" Acero, Robert C. Shapiro

### Front Row:

Jennifer T. Bernhard, Forrest D. Wright, Margaretha A. Eriksson, Samir M. El-Ghazaly, Toshio Fukuda, Renuka P. Jindal, Stephen P. Welby, Karen Bartleson, James A. Jefferies, José M.F. Moura, Kathleen A. Kramer, Sandra "Candy" Robinson, Teofilo Ramos, F.D. "Don" Tan, Joseph V. Lillie



## THE 2018 IEEE PRESIDENT'S COIN

The personally designed coin encourages members and volunteers to engage with IEEE's activities and initiatives, inspire participation from fellow colleagues and celebrate the work of IEEE.

IEEE President Jim Jefferies personally presented to volunteer leaders and staff the 2018 commemorative coin for their leadership to advance technology for the benefit of humanity.



## ●●●●● IEEE MANAGEMENT COUNCIL

### Back Row from left:

Chris Brantley, Cecelia Jankowski, Konstantinos Karachalios, Michael Forster, Karen L. Hawkins, Thomas R. Siebert

### Front Row from left:

Jamie Moesch, Donna Hourican, Stephen Welby, Mary Ward-Callan, Jack Bailey

### Not Pictured:

Cherif Amirat

## MESSAGE FROM THE TREASURER

I am pleased to present the IEEE audited financial reports. These reports indicate that the overall financial health of the organization remains strong, with total assets of \$658.3 million exceeding total liabilities of \$249.2 million.

The IEEE Statement of Activities reflects total revenues for 2018 of \$535.7 million, an increase of \$39.0 million, or 7.9%, from 2017. Key contributors that drove the revenue increase include:

- Enhancements to IEEE *Xplore* that have contributed to increased usage of the IEEE/IET Electronic Library (IEL) and IEEE Open Access. Key *Xplore* enhancements include:
  - Improved content search engine
  - New research productivity features like multi-PDF downloading and full-issue downloads
  - Conversion of high traffic pages to mobile-friendly designs
  - Improved indexing of IEEE content in external search venues such as Google and Google Scholar
  - New content from Oxford University Press
- Growth in the overall number of conference events as well as increased participation by authors, attendees and exhibitors
- Production of the IEEE Power & Energy Society Transmission and Distribution Conference and Exposition, a major biennial event

In 2018, IEEE had total operating expenses of \$503.7 million. This represents a decrease of \$8.2 million, or 1.6%, from 2017. Key contributors that drove the decrease in expenses include:

- Reduction in expenses related to IEEE Sections Congress, held every three years. The next Sections Congress will be held in 2020
- Reduction in supporting services

These reductions in expenses were offset by:

- Conference expenses, particularly those related to IEEE Power & Energy Society Transmission and Distribution Conference and Exposition, a major biennial event
- Program and admin support expenses related to strategic initiatives implemented by IEEE Standards Association

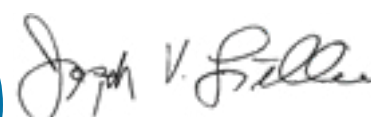
The above resulted in an operating income of \$32.1 million for 2018. Non-operating activities generated \$2.9 million in pension related gains and \$2.4 million in income tax benefit related to IEEE GlobalSpec. These gains were offset by a \$19.6 million net loss from investments (net interest and dividends).

Overall, IEEE Net Assets increased \$17.8 million to \$409.1 million from the 2017 year-end balance of \$391.4 million.

Grant Thornton LLP, the independent auditors for IEEE, met with the IEEE Audit Committee to discuss the scope and results of the financial statement audit, to review the adequacy of IEEE's internal accounting controls and to examine the quality of IEEE's financial reporting prior to issuing its opinion on the financial statements. IEEE received an unmodified opinion from Grant Thornton LLP in the Report of Independent Certified Public Accountants.

IEEE is tax exempt under Section 501(c)(3) of the Internal Revenue Code. IEEE GlobalSpec is a for-profit corporation and is required to pay applicable federal and state income taxes. The IEEE Foundation is a separately incorporated related organization of IEEE; accordingly, its audited financial statements are not included in the accompanying documents.

I submit these financial statements with confidence that IEEE continues to be a financially sound organization.



**Joseph V. Lillie**  
2018 IEEE Treasurer

## REPORT OF INDEPENDENT CERTIFIED PUBLIC ACCOUNTANTS

To the Board of Directors of: **The Institute of Electrical and Electronics Engineers, Incorporated**

We have audited the accompanying consolidated financial statements of The Institute of Electrical and Electronics Engineers, Incorporated (the "Institute"), which comprise the consolidated statements of financial position as of December 31, 2018 and 2017, the related consolidated statements of activities and cash flows for the years then ended, and the related notes to the consolidated financial statements.

### Management's responsibility for the consolidated financial statements

Management is responsible for the preparation and fair presentation of these consolidated financial statements in accordance with accounting principles generally accepted in the United States of America; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

### Auditor's responsibility

Our responsibility is to express an opinion on these consolidated financial statements based on our audits. We conducted our audits in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the consolidated financial statements. The procedures selected depend on the auditors' judgment, including the assessment of the risks of material misstatement of the consolidated financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the Institute's preparation and fair presentation of the consolidated financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Institute's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

### Opinion

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of The Institute of Electrical and Electronics Engineers, Incorporated as of December 31, 2018 and 2017, the changes in its net assets and its cash flows for the years then ended in accordance with accounting principles generally accepted in the United States of America.



Iselin, New Jersey  
May 7, 2019

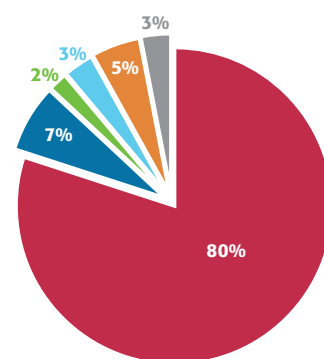
## CONSOLIDATED STATEMENTS OF FINANCIAL POSITION

As of December 31, 2018 and 2017

ASSETS	2018	2017
<b>CURRENT ASSETS</b>		
Cash and cash equivalents	\$ 18,106,600	\$ 16,055,600
Accounts receivable, less allowance for doubtful accounts of \$2,244,300 in 2018 and \$3,092,300 in 2017	35,917,200	37,902,000
Prepaid expenses and other assets	18,692,700	20,136,300
Investments, at fair value	523,772,300	508,701,300
Investments - other	3,460,400	2,102,800
<b>Total current assets</b>	<b>599,949,200</b>	<b>584,898,000</b>
<b>NONCURRENT ASSETS</b>		
Long-term investments, at fair value	191,400	191,400
Land, buildings, and equipment, net	42,984,300	43,015,100
Goodwill	2,289,700	2,289,700
Intangible assets	12,915,600	18,647,200
<b>Total assets</b>	<b>\$ 658,330,200</b>	<b>\$ 649,041,400</b>
<b>LIABILITIES AND NET ASSETS</b>		
<b>CURRENT LIABILITIES</b>		
Accounts payable and accrued expenses	\$ 56,606,000	\$ 54,324,000
Capital lease obligations	7,000	228,100
Accrued pension and other employee benefits	612,600	246,300
Amounts held on behalf of IEEE Foundation, Incorporated	42,188,300	45,435,400
Deferred revenue	120,258,800	124,862,700
<b>Total current liabilities</b>	<b>219,672,700</b>	<b>225,096,500</b>
<b>NONCURRENT LIABILITIES</b>		
Capital lease obligations, net of current portion	192,300	205,300
Accrued pension and other employee benefits, net of current portion	28,626,900	29,305,100
Deferred tax liabilities	711,500	3,070,200
<b>Total liabilities</b>	<b>249,203,400</b>	<b>257,677,100</b>
Commitments and contingencies		
<b>NET ASSETS</b>		
Without donor restrictions	407,330,000	389,491,300
With donor restrictions	1,796,800	1,873,000
<b>Total net assets</b>	<b>409,126,800</b>	<b>391,364,300</b>
<b>Total liabilities and net assets</b>	<b>\$ 658,330,200</b>	<b>\$ 649,041,400</b>

## 2018 ASSETS

IEEE net assets increased \$17.8, or 4.5%, to \$409.1M, as of December 31, 2018 from \$391.4M as of December 31, 2017. This is primarily due to operational gains in Periodicals and Media and Conferences, offset by investment related losses.



- CASH AND CASH EQUIVALENTS
- ACCOUNTS RECEIVABLE, LESS ALLOWANCE FOR DOUBTFUL
- PREPAID EXPENSES AND OTHER ASSETS
- INVESTMENTS (CURRENT AND LONG-TERM)
- LAND, BUILDINGS AND EQUIPMENT, NET
- GOODWILL AND INTANGIBLES, NET

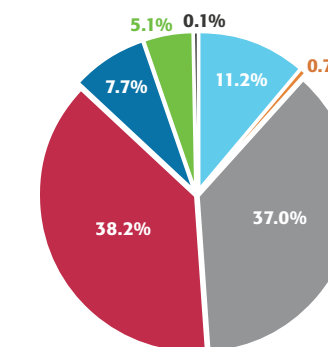
## CONSOLIDATED STATEMENT OF ACTIVITIES

For the year ended December 31, 2018

	Without Donor Restrictions	With Donor Restrictions	Total
<b>REVENUES</b>			
Memberships and public imperatives	\$ 63,838,600	\$ 160,500	\$ 63,999,100
Periodicals and media	225,513,500	-	225,513,500
Conferences	204,637,000	-	204,637,000
Standards	41,320,000	-	41,320,000
Other income	241,500	-	241,500
Net assets released from restrictions	222,500	(222,500)	-
<b>Total revenues</b>	<b>535,773,100</b>	<b>(62,000)</b>	<b>535,711,100</b>
<b>EXPENSES</b>			
Program services:			
Memberships and public imperatives	103,457,900	-	103,457,900
Periodicals and media	193,382,500	-	193,382,500
Conferences	158,339,400	-	158,339,400
Standards	38,482,100	-	38,482,100
<b>Total program services</b>	<b>493,661,900</b>	<b>-</b>	<b>493,661,900</b>
Supporting services:			
General and administrative	9,989,700	-	9,989,700
<b>Total expenses</b>	<b>503,651,600</b>	<b>-</b>	<b>503,651,600</b>
Changes in net assets before nonoperating activities	32,121,500	(62,000)	32,059,500
<b>NONOPERATING ACTIVITIES</b>			
Investment loss, net	(19,579,700)	(14,200)	(19,593,900)
Pension and related benefits activity other than net periodic benefit cost	2,875,100	-	2,875,100
Changes in net assets before income tax	15,416,900	(76,200)	15,340,700
Benefit for income taxes	2,421,800	-	2,421,800
Changes in net assets	17,838,700	(76,200)	17,762,500
Net assets, beginning of year	389,491,300	1,873,000	391,364,300
<b>Net assets, end of year</b>	<b>\$ 407,330,000</b>	<b>\$ 1,796,800</b>	<b>\$ 409,126,800</b>

## 2018 REVENUES

IEEE experienced an increase in revenue of \$39.0M to \$535.7M in 2018 from 496.7M in 2017. This is primarily attributable to increase in number of Conferences and continued strength in IEEE Xplore platform (IEL Package).



- MEMBERSHIP
- PUBLIC IMPERATIVES
- PERIODICALS & MEDIA
- CONFERENCES
- STANDARDS
- IEEE GLOBALSPEC
- OTHER INCOME

The accompanying notes are an integral part of these consolidated financial statements.

The accompanying notes are an integral part of this consolidated financial statement.



## CONSOLIDATED STATEMENT OF ACTIVITIES

For the year ended December 31, 2017

	Without Donor Restrictions	With Donor Restrictions	Total
<b>REVENUES</b>			
Memberships and public imperatives	\$ 63,258,500	\$ 625,000	\$ 63,883,500
Periodicals and media	210,943,100	-	210,943,100
Conferences	182,181,700	-	182,181,700
Standards	39,414,300	-	39,414,300
Other income	251,900	-	251,900
Net assets released from restrictions	579,300	(579,300)	-
<b>Total revenues</b>	<b>496,628,800</b>	<b>45,700</b>	<b>496,674,500</b>
<b>EXPENSES</b>			
Program services:			
Memberships and public imperatives	110,281,300	-	110,281,300
Periodicals and media	195,016,300	-	195,016,300
Conferences	149,939,500	-	149,939,500
Standards	34,626,000	-	34,626,000
<b>Total program services</b>	<b>489,863,100</b>	<b>-</b>	<b>489,863,100</b>
Supporting services:			
General and administrative	8,630,600	-	8,630,600
Goodwill impairment	13,404,000	-	13,404,000
<b>Total expenses</b>	<b>511,897,700</b>	<b>-</b>	<b>511,897,700</b>
Changes in net assets before nonoperating activities	(15,268,900)	45,700	(15,223,200)
<b>NONOPERATING ACTIVITIES</b>			
Investment income, net	55,972,400	60,700	56,033,100
Pension and related benefits activity other than net periodic benefit cost	4,079,100	-	4,079,100
Changes in net assets before income tax	44,782,600	106,400	44,889,000
Benefit for income taxes	4,209,800	-	4,209,800
Changes in net assets	48,992,400	106,400	49,098,800
Net assets, beginning of year	340,498,900	1,766,600	342,265,500
<b>Net assets, end of year</b>	<b>\$ 389,491,300</b>	<b>\$ 1,873,000</b>	<b>\$ 391,364,300</b>

The accompanying notes are an integral part of this consolidated financial statement.

## CONSOLIDATED STATEMENTS OF CASH FLOWS

For the years ended December 31, 2018 and 2017

	2018	2017
<b>CASH FLOWS FROM OPERATING ACTIVITIES</b>		
Changes in net assets	\$ 17,762,500	\$ 49,098,800
Adjustments to reconcile changes in net assets to net cash provided by operating activities:		
Depreciation and amortization	16,702,400	17,525,200
Goodwill impairment	-	13,404,000
Unrealized losses (gains) on investments	51,625,900	(33,247,900)
Gains on sale of investments	(20,937,600)	(13,920,000)
Bad debt expense	1,087,200	3,052,500
<i>Changes in assets and liabilities:</i>		
Accounts receivable	897,700	997,600
Prepaid expenses and other assets	1,443,600	(1,498,500)
Accounts payable and accrued expenses	444,300	1,095,500
Accrued pension and other employee benefits	(311,900)	(1,872,400)
Amounts held on behalf of IEEE Foundation, Incorporated	(3,247,100)	5,020,600
Deferred revenue	(4,603,900)	3,153,800
Income tax payable and deferred tax liability	(2,358,800)	(4,640,500)
<b>Net cash provided by operating activities</b>	<b>58,504,300</b>	<b>38,168,700</b>
<b>CASH FLOWS FROM INVESTING ACTIVITIES</b>		
Proceeds from sales of investments	348,078,700	281,062,600
Purchases of investments	(395,195,600)	(304,694,500)
Purchase of land, buildings and equipment	(10,716,000)	(11,563,400)
<b>Net cash used in investing activities</b>	<b>(57,832,900)</b>	<b>(35,195,300)</b>
<b>CASH FLOWS FROM FINANCING ACTIVITIES</b>		
Change in cash overdraft	1,613,700	(1,330,700)
Payment of capital lease obligations	(234,100)	(336,900)
<b>Net cash provided by (used in) financing activities</b>	<b>1,379,600</b>	<b>(1,667,600)</b>
Net increase in cash and cash equivalents	2,051,000	1,305,800
Cash and cash equivalents, beginning of year	16,055,600	14,749,800
<b>Cash and cash equivalents, end of year</b>	<b>\$ 18,106,600</b>	<b>\$ 16,055,600</b>
<b>SUPPLEMENTAL DATA</b>		
Interest paid for capital leases	\$ 225,600	\$ 121,800
Purchases of fixed assets included in accounts payable and accrued expenses	\$ 1,042,800	\$ 818,800

The accompanying notes are an integral part of these consolidated financial statements.

## NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

December 31, 2018 and 2017

### NOTE 1. THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INCORPORATED

The objectives of The Institute of Electrical and Electronics Engineers, Incorporated (the "Institute," or "IEEE") are (a) scientific and educational, directed toward the advancement of the theory and practice of electrical engineering, electronics engineering, computer engineering, computer sciences, and the allied branches of engineering and related arts and sciences and (b) professional, directed toward the benefit of the engineering community and the general public.

In 2016, the Institute, through its for-profit subsidiary, IEEE, Inc., expanded its activities in furtherance of these objectives with the acquisition of GlobalSpec, Inc., a leading source of news, data and analytics for the global engineering and technical community including the widely known brand name Engineering360. The new for-profit subsidiary of IEEE, Inc. was renamed IEEE GlobalSpec, Inc. ("IEEE GlobalSpec") (wholly owned by IEEE, Inc.) and significantly complements IEEE's already broad offerings for engineers as well as its emerging position in research analytics, further fueling the organization's value to the industry through its business-oriented, content rich marketing platforms.

Implementation of the Institute's objectives is performed by members and volunteer communities organized as regions, sections, chapters, societies, and councils (collectively, "units"), none of which are separately incorporated, and their financial results are incorporated in the Institute's accompanying consolidated financial statements. These units were formed to serve the technical interests of members and to coordinate local activities of the sections and the broader activities of the Institute. The societies and councils promote the technical interests of their members through symposia, conferences, various publications, and the development of standards.

The consolidated financial statements include the accounts of IEEE, Inc., Global IEEE Institute for Engineers, Inc., IEEE Global LLC, IEEE International LLC, IEEE Europe GmbH, IEEE Latin America SA, IEEE Broadcast Technology Convention LLC, IEEE Worldwide Limited, IEEE Asia-Pacific Limited, IEEE GlobalSpec, Inc., and IEEE Technology Center GmbH.

### NOTE 2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

#### Basis of Presentation

The Institute's consolidated financial statements are presented in conformity with U.S. generally accepted accounting principles ("U.S. GAAP") and have been prepared on the accrual basis of accounting. All intercompany accounts and transactions have been eliminated in the accompanying consolidated financial statements.

In August 2016, the Financial Accounting Standards Board ("FASB") issued Accounting Standards Update ("ASU") No. 2016-14, Not-for-Profit Entities (Topic 958): Presentation of Financial Statements of Not-for-Profit Entities ("ASU 2016-14"). The ASU amends the current reporting model for not-for-profit organizations and requires certain additional disclosures. The significant changes include:

- Requiring the presentation of two net asset classes classified as "net assets without donor restrictions" and "net assets with donor restrictions";
- Requiring the use of the placed in service approach to recognize the satisfaction of restrictions on gifts used to acquire or construct long-lived assets, absent explicit donor stipulations otherwise;
- Requiring that all not-for-profits present an analysis of expenses by function and nature in a separate statement or in the notes to the financial statements;
- Requiring disclosure of quantitative and qualitative information on liquidity;
- Presenting investment return net of external and direct internal investment expenses; and
- Modifying other financial statement reporting requirements and disclosures intended to increase the usefulness to the reader.

ASU 2016-14 is effective for the Institute's fiscal year beginning January 1, 2018, and the Institute has applied the amendments retrospectively as required by the standard. A presentation of net assets as previously reported as of December 31, 2017 and 2016, and as required under ASU 2016-14 follows:

	As Previously Presented	December 31, 2017 • Presentation under ASU 2016-14		
		Without Donor Restrictions	With Donor Restrictions	Total
<b>NET ASSETS</b>				
Unrestricted	\$ 389,491,300	\$ 389,491,300	\$ -	\$ 389,491,300
Temporarily restricted	1,681,600	-	1,681,600	1,681,600
Permanently restricted	191,400	-	191,400	191,400
Total net assets	\$ 391,364,300	\$ 389,491,300	\$ 1,873,000	\$ 391,364,300

	As Previously Presented	December 31, 2016 • Presentation under ASU 2016-14		
		Without Donor Restrictions	With Donor Restrictions	Total
<b>NET ASSETS</b>				
Unrestricted	\$ 340,498,900	\$ 340,498,900	\$ -	\$ 340,498,900
Temporarily restricted	1,575,200	-	1,575,200	1,575,200
Permanently restricted	191,400	-	191,400	191,400
Total net assets	\$ 342,265,500	\$ 340,498,900	\$ 1,766,600	\$ 342,265,500

#### Net Asset Classifications

The Institute's net assets, revenues, expenses, gains and losses are classified based on the existence or absence of donor-imposed restrictions. Accordingly, the net assets of the Institute and changes therein are classified and reported as follows:

*Without donor restrictions* - net assets that are not subject to donor-imposed stipulations. Net assets without donor restrictions may be designated for specific purposes by actions of the Board of Directors. Net assets without donor restrictions can be utilized to carry out any of the purposes of the Institute.

*With donor restrictions* - represent amounts restricted by donors for specific activities of the Institute or to be used at some future date. The Institute records contributions as net assets with donor restrictions if they are received with donor stipulations that limit their use either through purpose or time restrictions. When a donor restriction expires, that is, when a time restriction ends or a purpose restriction is fulfilled, net assets with donor restrictions are reclassified to net assets without donor restrictions and reported on the consolidated statement of activities as net assets released from restrictions. However, when restrictions on donor-restricted contributions and investment returns are met in the same accounting period, such amounts are reported as part of net assets without donor restrictions.

Another portion of net assets with donor restrictions include funds wherein donors have stipulated that the principal contributed be invested and maintained in perpetuity. Income earned from these investments is available for expenditure according to restrictions imposed by donors and consideration of the appropriation for expenditure criteria by the Institute pursuant to the New York Prudent Management of Institutional Funds Act ("NYPMIFA").

#### Cash and Cash Equivalents

Cash and cash equivalents are defined as cash balances held in bank accounts and highly liquid short-term investments held by the Institute for operating use with original maturities of three months or less from the date of purchase.

#### Investments

Investments in publicly traded debt and equity securities are recorded at fair value determined on the basis of quoted market prices as of the reporting date. Investments in alternative investments (e.g., commingled funds) that are not readily marketable are reported at fair value as determined by the respective investment manager as of the reporting date. The Institute follows guidance on measuring the fair value of alternative investments, which offers investors a practical expedient for measuring the fair value of investments in certain entities that calculate net asset value ("NAV"). Under this practical expedient, entities are permitted to use NAV without adjustment for certain investments which: (a) do not have a readily determinable fair value and (b) prepare their financial statements consistent with the measurement principles of an investment company or have the attributes of an investment company. Additionally, the Institute follows guidance that removes the requirement to categorize, within the fair value hierarchy, all investments for which the fair value is measured using NAV.

Such valuations involve assumptions and methods that are reviewed by the Institute and have been concluded to be reasonable and appropriate. Because such investments are not readily marketable, their estimated fair value is subject to uncertainty and therefore may differ from the value that would have been used had a ready market for such investments existed. Such difference could be material. However, the risk to the Institute is limited to the amount of the Institute's investment in each of the respective funds with respect to its ownership interests.

Purchases and sales of securities are reflected on a trade-date basis. Gains and losses on sales of securities are determined on an average cost basis and are recorded on the consolidated statement of activities in the period in which the securities are sold. Dividends and interest are recognized as earned.

#### Investments - Other

Investments - other consist of certificates of deposit held to maturity with original maturities greater than three months that are not debt securities and are carried at amortized cost.

#### Fair Value Measurements

The Institute follows guidance that defines fair value, establishes a framework for measuring fair value, and expands disclosures about fair value measurements. This guidance provides a consistent definition of fair value, which focuses on an exit price between market participants in an orderly transaction. The guidance also prioritizes the use of observable inputs and minimizes the use of unobservable inputs by requiring that observable inputs be used when available to determine the fair value of an instrument as of the reporting date.

Observable inputs are inputs that market participants would use in pricing the asset or liability based on market data obtained from independent sources. Unobservable inputs reflect assumptions that market participants would use in pricing the asset or liability based on the best information available in the circumstances. The hierarchy is broken down into three levels based on the transparency of inputs as follows:

**Level 1** - Quoted prices are available in active markets for identical assets or liabilities as of the measurement date. A quoted price for an identical asset or liability in an active market provides the most reliable fair value measurement because it is directly observable to the market.

**Level 2** - Pricing inputs are other than quoted prices in active markets, which are either directly or indirectly observable as of the measurement date. The nature of these securities include investments for which quoted prices are available but traded less frequently and investments that are fair valued using other securities, the parameters of which can be directly observed.

**Level 3** - Securities that have little to no pricing observability as of the measurement date. These securities are measured using management's best estimate of fair value, where the inputs into the determination of fair value are not observable and require significant management judgment or estimation.

The Institute follows guidance that removes the requirement to categorize with the fair value hierarchy all investments for which fair value is measured using the NAV per share practical expedient. Accordingly, investments for which fair value is measured using NAV per share as a practical expedient have not been categorized within the fair-value hierarchy, and certain related tables have been properly excluded from the notes to the consolidated financial statements.

Inputs are used in applying the various valuation techniques and broadly refer to the assumptions that market participants use to make valuation decisions, including assumptions about risk. Inputs may include price information, volatility statistics, specific and broad credit data, liquidity statistics, and other factors. A financial instrument's level within the fair value hierarchy is based on the lowest level of any input that is significant to the fair value measurement. However, the determination of what constitutes "observable" requires significant judgment by an entity. The Institute considers observable data to be that market data that is readily available, regularly distributed or updated, reliable and verifiable, not proprietary, and provided by independent sources that are actively involved in the relevant market. The categorization of a financial instrument within the hierarchy is based upon the pricing transparency of the instrument and does not necessarily correspond to the Institute's perceived risk of that instrument.

#### Revenue

The Institute generates revenues from multiple sources, primarily:

Membership revenues are primarily generated from IEEE and Society membership dues and are recognized over the period to which they pertain.

Periodicals revenues primarily include subscriptions and online products and content. Such revenues are recognized upon delivery of the online product or content or over the related subscription period.

Media revenue primarily includes advertising space sold in newsletters and periodicals and is recognized in the period the newsletter or periodical is issued and distributed.

Conference revenues primarily include registration and sponsorships, and the connected proceedings and articles produced by those conferences. Revenues from conference events are reported in the year in which the respective conference occurs. Revenues from conference proceedings and articles are recognized in the period in which they are sold.

Standards revenues primarily include subscriptions, publications and online products and content relating to technology standards. Such revenues are recognized upon delivery of the online product or content or over the related subscription period.

Public Imperative revenues primarily consist of grants and contributions, including unconditional promises to give. Grants and unconditional promises to give are reported as revenues in the period received. Conditional contributions are recorded as revenue when the conditions on which they depend are substantially met.

Amounts received in advance by the Institute are recorded as deferred revenues until earned.

#### Public Imperatives

Public imperatives are social good activities that are directed at the public and not an individual or small group of individuals. They are generally related to the promotion of the public's understanding and appreciation of the Institute's fields of interest and/or positioning the Institute's technical expertise in ways to benefit humanity. Typically these activities are not expected to create a financial surplus but rather are funded by the surplus of other activities.

Public Imperatives	2018	2017
Revenues	\$ 3,765,900	\$ 3,662,000
Expenses	(14,601,500)	(14,636,900)
Public Imperatives, net	\$ (10,835,600)	\$ (10,974,900)

\* Public Imperative Revenues primarily consist of IEEE-USA Assessments, History Center, and Foundation-related activities.

\* Public Imperative Expenses consist of History Center, grants, certain IEEE-USA activities, and educational activities, initiatives, honors ceremonies, presentations and some Society activities.

#### Accounts Receivable and Allowance for Doubtful Accounts

Accounts receivable are recorded at the invoiced amount and do not bear interest. The Institute reviews a customer's credit history before extending credit. The Institute maintains allowances for doubtful accounts against certain billed receivables based upon the latest information available regarding whether the receivables are ultimately collectible. Assessing the collectability of customer receivables requires management's judgment. The Institute determines its allowance for doubtful accounts by specifically analyzing individual accounts receivable, historical bad debts, customer creditworthiness, current economic conditions, and accounts receivable aging trends. Valuation reserves are periodically re-evaluated and adjusted as more information about the ultimate collectability of accounts receivable becomes available. Upon determination that a receivable is uncollectible, the respective receivable balance and any associated reserve are written off. Any payments subsequently received on such receivables are recorded as income in the period received.

#### Land, Buildings, and Equipment

Land, buildings, and equipment are stated at cost, including interest expense capitalized during the period of construction, or period of development, until the time that it is ready for its intended use, as in the case of internal-use software. Additions and improvements costing more than \$5,000 and with useful lives greater than three years are capitalized. Maintenance and repairs are expensed as incurred.

Assets acquired under capital lease agreements are depreciated over the term of the respective lease agreement to which they pertain. Leasehold improvements are amortized over their useful lives or lease period whichever is shorter.

Depreciation and amortization is provided on a straight-line basis over the following estimated useful lives:

	Years
Buildings	20 - 40
Building improvements	10 - 15
Furniture, equipment and vehicles	5 - 10
Software	3-5
Computers	3

#### Goodwill

Goodwill represents the excess of the purchase price over the fair value of net tangible and intangible assets acquired in a business combination and is not amortized. The Institute evaluates goodwill for impairment at least annually and more frequently if certain indicators are encountered that may indicate that the carrying value of goodwill may not be fully recoverable. Goodwill is tested at the reporting unit level with the fair value of the reporting unit being compared to its carrying amount, including goodwill.

The Institute performs its annual impairment test as of March 31st each year. The Institute first assesses qualitative factors to determine whether it is more likely than not that the fair value of a reporting unit, related to such goodwill, is less than the carrying amount. If the fair value exceeds the carrying value, goodwill is not impaired and no further testing is performed. However, if the carrying amount exceeds the fair value, the Institute should recognize an impairment charge for the amount by which the carrying amount exceeds the fair value, not to exceed the total amount of goodwill allocated to that reporting unit.

The Institute completed its annual impairment test of goodwill as of March 31, 2018. The Institute used the carrying value of the reporting unit (IEEE GlobalSpec), inclusive of the assigned goodwill to compare to its fair value. The fair value of the reporting unit was determined using a combination of income approach (discounted cash flow method) and market approach (public company method) techniques. These valuation techniques use estimates and assumptions including, but not limited to, the determination of appropriate market comparables, projected future cash flows, discount rate, growth rate, and projected future economic and market conditions (Level 3 inputs). Upon completion of the annual impairment testing, it was determined that the carrying value of the reporting unit did not exceed its fair value and therefore there was not any impairment as of March 31, 2018.

The Institute completed its annual impairment test of goodwill as of March 31, 2017. The Institute used the carrying value of the reporting unit (IEEE GlobalSpec), inclusive of the assigned goodwill to compare to its fair value. The fair value of the reporting unit was determined using a combination of income approach (discounted cash flow method) and market approach (public company method) techniques. These valuation techniques use

estimates and assumptions including, but not limited to, the determination of appropriate market comparables, projected future cash flows, discount rate, growth rate, and projected future economic and market conditions (Level 3 inputs). Upon completion of the annual impairment testing, it was determined that the carrying value of the reporting unit exceeded its fair value. As such, the Institute recorded a goodwill charge of \$13,404,000 which was reported as an operating expense in the accompanying 2017 consolidated statement of activities and a reduction of goodwill on the accompanying 2017 consolidated statement of financial position. The goodwill impairment was due to not meeting revenue expectations. Changes in the net carrying amount of goodwill were as follows:

Balance at December 31, 2016	\$ 15,693,700
Impairment adjustment	(13,404,000)
Balance at December 31, 2017	\$ 2,289,700

#### Impairment of Long-Lived Assets and Intangible Assets

Long-lived assets, including land, buildings, and equipment, and intangible assets, are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of the asset may not be recoverable. If the carrying amount of the reporting unit exceeds its fair value and the carrying amount is not recoverable, an impairment charge is recognized. An impairment loss is measured as the amount by which the long-lived asset (or asset group) exceeds its fair value. Fair value is determined through various valuation techniques including discounted or undiscounted cash flow models, quoted market values and third-party independent appraisals, as considered necessary.

Intangible assets with definite lives are amortized over their estimated useful lives. The Institute amortizes intangible assets on a straight line basis over periods ranging from three to twenty years and records amortization expense as part of supporting services in its consolidated statement of activities. The weighted average useful life of intangible assets is estimated at six years.

The following tables present identified intangible assets as of December 31, 2018 and 2017:

	2018			
	Amortization Period	Gross Amount	Accumulated Amortization	Net Amount
<b>INTANGIBLE ASSETS</b>				
Registered users	5 years	\$ 12,600,000	\$ 6,720,000	\$ 5,880,000
Internally developed internal-use technology	4 years	11,700,000	7,800,000	3,900,000
Other (a)	3 - 20 years	3,900,000	764,400	3,135,600
<b>Total</b>		<b>\$ 28,200,000</b>	<b>\$ 15,284,400</b>	<b>\$ 12,915,600</b>

	2017			
	Amortization Period	Gross Amount	Accumulated Amortization	Net Amount
<b>INTANGIBLE ASSETS</b>				
Registered users	5 years	\$ 12,600,000	\$ 4,200,000	\$ 8,400,000
Internally developed internal-use technology	4 years	11,700,000	4,875,000	6,825,000
Other (a)	3 - 20 years	3,900,000	477,800	3,422,200
<b>Total</b>		<b>\$ 28,200,000</b>	<b>\$ 9,552,800</b>	<b>\$ 18,647,200</b>

(a) Represents the value associated with trade name, long-form content and customer relationships.

The Institute recorded amortization of identified intangible assets of \$5,731,700 for the years ended December 31, 2018 and 2017. The following table presents annual amortization of identified intangible assets for each of the five succeeding fiscal years:

YEAR	Registered Users	Internally Developed Internal-Use Technology	Other	Total
2019	\$ 2,520,000	\$ 2,925,000	\$ 242,200	\$ 5,687,200
2020	2,520,000	975,000	220,000	3,715,000
2021	840,000	-	220,000	1,060,000
2022	-	-	220,000	220,000
2023	-	-	220,000	220,000

#### Accounts Payable and Accrued Expenses

Cash overdrafts are included in accounts payable and accrued expenses. At December 31, 2018 and 2017, cash overdrafts amounted to \$1,693,700 and \$80,200, respectively.

#### Concentration of Market and Credit Risks

Cash, cash equivalents and investments are exposed to interest rate, market, and credit risks. The Institute maintains its cash and cash equivalents in various bank deposit accounts that may exceed federally insured limits at times. To minimize risk, the Institute's cash accounts are placed with high-credit quality financial institutions, and the Institute's investment portfolio is diversified with several investment managers in a variety of asset classes. The Institute regularly evaluates its depository arrangements and investments, including performance thereof.

#### Operating Measure

The Institute classifies its consolidated statement of activities into operating and nonoperating activities. Operating activities include all income and expenses related to carrying out the Institute's mission. Non-operating activities include interest and dividends, realized and unrealized gains (losses) on investments, and pension and other employee benefit related activity other than net periodic benefit cost.

#### Income Taxes and Tax Status

The Institute is qualified under Section 501(c)(3) of the Internal Revenue Code ("Code") as an organization exempt from federal income tax and applicable state income tax and is classified as a publicly supported charitable organization under Section 509(a)(2) of the Code. Nevertheless, the Institute is subject to tax on income unrelated to its exempt purpose, unless that income is otherwise excluded by the Code.

The Institute has historically generated unrelated business income activities and filed a federal Form 990-T as well as filing for a few states equivalent unrelated business income tax returns. As a result of its acquisition of IEEE Globaspec, Inc. in 2016, the Institute is generating new streams of unrelated business income and has started utilizing its federal Net Operating Losses (NOLs). For the year ending December 31, 2018, the Institute would utilize approximately \$1,836,000 of its existing NOLs with carry forward balance of \$2,543,300 to future years.

As of December 31, 2018 and 2017, the Institute recognized deferred tax assets of \$504,600 and \$331,800, respectively. The Institute's

deferred tax assets are netted with deferred tax liabilities on the accompanying 2018 and 2017 consolidated statements of financial position.

On December 22, 2017, the Tax Cuts and Jobs Act ("TCJA") was enacted, instituting fundamental changes to the federal tax system. Our financial statements for the current year now reflect the effects of the TCJA based on current guidance, including the U.S. corporate income tax rate reduction from 34% to a flat rate of 21%, elimination of the corporate alternative minimum taxes, change in the manner in which unrelated business income is computed, limitation on deductible interest expense and certain executive compensation, NOLs generated beginning January 1, 2018 can carry forward indefinitely, as well as various provisions impacting other items of income and deduction.

In the absence of guidance on various uncertainties and ambiguities in the application of certain provisions of the TCJA, we will use reasonable interpretations and assumptions in applying the TCJA, but it is possible that the U.S. Internal Revenue Service ("IRS") as well as state tax authorities could issue subsequent guidance or take positions on audit that differ from our prior interpretations and assumptions, which could have an adverse effect on our cash tax liabilities and financial condition. We will continue to evaluate the effects of the TCJA on the Institute as federal and state tax authorities issue additional regulations and guidance, and if and when amendments and technical corrections are enacted with respect to the TCJA, which could cause our consolidated financial results to differ from previous estimates and could materially affect our financial position.

Deferred income taxes are recognized for the temporary differences between the tax bases of assets and liabilities and their financial-reporting amounts at each year-end on the basis of enacted tax laws and statutory tax rates applicable to the periods in which the differences are expected to affect taxable income. Valuation allowances are recognized if, based on the weight of available evidence, it is more likely than not that all or some portion of any deferred tax asset will not be realized. The benefit or provision for income tax represents the income tax benefit or payable for the year and the change in deferred tax assets and liabilities during the period.

The Institute follows guidance that clarifies the accounting for uncertainty in tax positions taken or expected to be taken in a tax return, including issues relating to financial statement recognition and measurement. This section provides that the tax effects from an uncertain tax position can be recognized in the financial statements only if the position is "more-likely-than-not" to be sustained if the position were to be challenged by a taxing authority. The assessment of the tax position is based solely on the technical merits of the position, without regard to the likelihood that the tax position may be challenged. As of December 31, 2018 and 2017, management has determined that there are no significant uncertain tax positions that would require recognition or disclosure in the accompanying consolidated financial statements.

#### Use of Estimates

The preparation of consolidated financial statements in conformity with U.S. GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the consolidated financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates.

#### Pronouncements

In May 2014, the FASB issued ASU No. 2014-09, *Revenue from Contracts with Customers*, which supersedes most of the current revenue recognition requirements. The underlying principle is that an entity will recognize revenue consistent with the transfer of goods or services to customers at an amount that the entity expects to be entitled to in exchange for those goods or services. The guidance provides a five-step analysis of transactions to determine when and how revenue is recognized. Other major provisions include capitalization of certain contract costs, consideration of time value of money in the transaction price, and allowing estimates of variable consideration to be recognized before contingencies are resolved in certain circumstances. The guidance also requires enhanced disclosures regarding the nature, amount, timing and uncertainty of revenue and cash flows arising from an entity's contracts with customers. In August 2015, the FASB issued ASU No. 2015-14, *Revenue from Contracts with Customers: Deferral of the Effective Date*, which deferred the effective date of ASU 2014-09 by one year. The guidance is effective for the interim and annual periods beginning on or after December 15, 2018 (i.e. fiscal year 2019 for the Institute). The guidance permits the use of either a retrospective or cumulative effect transition method. The Institute is currently evaluating the new guidance and has not determined the impact this standard may have on the financial statements nor decided upon the method of adoption.

#### NOTE 3. INVESTMENTS

As of December 31, 2018, the Institute's investments, at fair value, by level within the fair value hierarchy, consist of the following:

	2018		
	Level 1	Net Asset Value	Total
<i>Common stock:</i>			
Consumer	\$ 18,268,200	\$ -	\$ 18,268,200
Technology	35,282,800	-	35,282,800
Financial services	28,191,400	-	28,191,400
Healthcare	25,643,700	-	25,643,700
Industrials	13,858,800	-	13,858,800
Energy	8,954,700	-	8,954,700
Other	9,477,100	-	9,477,100
<b>Total common stocks</b>	<b>139,676,700</b>	<b>-</b>	<b>139,676,700</b>
<i>Mutual funds:</i>			
Growth funds	30,353,400	-	30,353,400
Fixed income funds	127,273,800	-	127,273,800
Money market funds	95,005,800	-	95,005,800
Other funds	33,113,700	-	33,113,700
<b>Total mutual funds</b>	<b>285,746,700</b>	<b>-</b>	<b>285,746,700</b>
U.S. Government securities	22,600,700	-	22,600,700
Commingled funds	-	65,712,900	65,712,900
	<b>\$ 448,024,100</b>	<b>\$ 65,712,900</b>	<b>\$ 513,737,000</b>
Cash held for investment			10,239,900
Add: receivables for securities sold and accrued interest			328,500
Less: liabilities for securities purchased and accrued fees			(341,700)
<b>Total investments, at fair value</b>		<b>\$</b>	<b>523,963,700</b>

In February 2016, the FASB issued ASU No. 2016-02, *Leases (Topic 842)*, which requires organizations that lease assets (lessees) to recognize the assets and related liabilities for the rights and obligations created by the leases on the statements of financial position for leases with terms exceeding 12 months. ASU No. 2016-02 defines a lease as a contract or part of a contract that conveys the right to control the use of identified assets for a period of time in exchange for consideration. The lessee in a lease will be required to initially measure the right-of-use asset and the lease liability at the present value of the remaining lease payments, as well as capitalize initial direct costs as part of the right-of-use asset. ASU No. 2016-02 is effective for the Institute for fiscal year 2021. Early adoption is permitted. The Institute is in the process of evaluating the impact this standard will have on the financial statements.

#### Subsequent Events

The Institute evaluated its December 31, 2018 consolidated financial statements for subsequent events through May 7, 2019, the date the consolidated financial statements were available to be issued. The Institute is not aware of any material subsequent events which would require recognition or disclosure in the accompanying consolidated financial statements.

As of December 31, 2017, the Institute's investments, at fair value, by level within the fair value hierarchy, consist of the following:

	2017		
	Level 1	Net Asset Value	Total
<i>Common stock:</i>			
Consumer	\$ 23,422,300	\$ -	\$ 23,422,300
Technology	41,436,800	-	41,436,800
Financial services	37,284,500	-	37,284,500
Healthcare	28,783,200	-	28,783,200
Industrials	15,761,200	-	15,761,200
Energy	10,183,900	-	10,183,900
Other	10,925,700	-	10,925,700
<b>Total common stocks</b>	<b>167,797,600</b>	<b>-</b>	<b>167,797,600</b>
<i>Mutual funds:</i>			
Growth funds	32,349,700	-	32,349,700
Fixed income funds	109,372,800	-	109,372,800
Money market funds	64,549,400	-	64,549,400
Other funds	27,013,300	-	27,013,300
<b>Total mutual funds</b>	<b>233,285,200</b>	<b>-</b>	<b>233,285,200</b>
U.S. Government securities	18,803,500	-	18,803,500
Commingled funds	-	87,648,400	87,648,400
	<b>\$ 419,886,300</b>	<b>\$ 87,648,400</b>	<b>\$ 507,534,700</b>
Cash held for investment			1,455,900
Add: receivables for securities sold and accrued interest			467,800
Less: liabilities for securities purchased and accrued fees			(565,700)
<b>Total investments, at fair value</b>		<b>\$</b>	<b>508,892,700</b>

The Institute's policy is to recognize transfers in and transfers out of levels at the end of the reporting period.

The categorization of the investments within the fair value hierarchy presented above is based solely on the pricing transparency of the respective instrument and does not necessarily correspond to the Institute's perceived risk associated with the respective investment security.

The Institute uses, as a practical expedient for fair value, a NAV per share or its equivalent for purposes of valuing certain investments which:

(a) do not have a readily determinable fair value and (b) prepare their financial statements consistent with the measurement principles of an investment company or have the attributes of an investment company.

The following table lists such investments by major category as of December 31, 2018 and 2017:

2018							
Type	Strategy	NAV in Funds	# of Funds	Remaining Life	\$ Amount of Unfunded Commitments	Redemption Terms	Redemption Restrictions
Commingled funds	One fund seeks to outperform the Russell 2000 Index over a 1 to 3 year period; and one fund seeks to maximize portfolio returns while minimizing risk through an asset allocation based on measurements of the investible universe of institutional real estate.	\$ 65,712,900	2	To be determined by the respective fund manager.	N/A	One fund has daily redemption upon notice; and, one fund has quarterly redemption with 60 days notice.	N/A
2017							
Type	Strategy	NAV in Funds	# of Funds	Remaining Life	\$ Amount of Unfunded Commitments	Redemption Terms	Redemption Restrictions
Commingled funds	One fund seeks to achieve total return in excess of the Morgan Stanley Capital International. All Country World ex USA Index through investing in a diversified portfolio of international equities; and, one fund seeks to outperform the Russell 2000 Index over a 1 to 3 year period; and one fund seeks to maximize portfolio returns while minimizing risk through an asset allocation based on measurements of the investible universe of institutional real estate.	\$ 87,648,400	3	To be determined by the respective fund manager.	N/A	One fund permits redemption upon last business day of each calendar month; one fund has daily redemption upon notice; and, one fund has quarterly redemption with 60 days notice.	N/A

The Institute also held investments, which included certificates of deposits and term deposits, totaling \$3,460,400 and \$2,102,800 as of December 31, 2018 and 2017, respectively, that were classified as investments - other on the accompanying consolidated statements of financial position. These investments do not qualify as securities, as defined by relevant guidance, and as such, fair value disclosures are not provided.

Investment income, net, for the years ended December 31, 2018 and 2017, are reflected in the accompanying consolidated statements of activities and consist of the following:

	2018	2017
<b>IEEE</b>		
Interest and dividends, net	\$ 11,094,700	\$ 8,865,200
Net realized and unrealized (losses) gains on investments	(30,688,300)	47,167,900
<b>IEEE investment income, net</b>	<b>\$ (19,593,600)</b>	<b>\$ 56,033,100</b>

For the years ended December 31, 2018 and 2017, investment returns related to amounts held on behalf of IEEE Foundation, Incorporated, that have not been reflected in the accompanying consolidated statements of activities, consist of the following:

	2018	2017
<b>IEEE FOUNDATION, INCORPORATED</b>		
Interest and dividends, net	\$ 910,800	\$ 793,500
Net realized and unrealized (losses) gains on investments	(2,750,800)	4,376,400
<b>IEEE Foundation investment income, net</b>	<b>\$ (1,840,000)</b>	<b>\$ 5,169,900</b>

Investment expenses, which are netted with interest and dividends, amounted to \$1,479,100 and \$1,598,000 in 2018 and 2017, respectively.

#### NOTE 4. LAND, BUILDINGS, AND EQUIPMENT, NET

Land, buildings, and equipment, carried at cost, net of the related accumulated depreciation and amortization, at December 31, 2018 and 2017 consist of the following:

	2018			2017		
	Cost	Accumulated Depreciation and Amortization	Net	Cost	Accumulated Depreciation and Amortization	Net
Buildings	\$ 17,956,600	\$ 14,596,800	\$ 3,359,800	\$ 17,956,600	\$ 14,169,900	\$ 3,786,700
Furniture, equipment, vehicles and computers	89,685,500	67,449,700	22,235,800	84,903,700	63,650,400	21,253,300
Software	18,215,000	13,584,800	4,630,200	18,297,900	14,589,700	3,708,200
Building improvements	22,473,500	16,172,800	6,300,700	19,314,900	13,737,100	5,577,800
	<b>148,330,600</b>	<b>111,804,100</b>	<b>36,526,500</b>	<b>140,473,100</b>	<b>106,147,100</b>	<b>34,326,000</b>
Land	873,000	-	873,000	873,000	-	873,000
Building improvements in progress	145,700	-	145,700	3,151,800	-	3,151,800
Information systems upgrade in process	5,439,100	-	5,439,100	4,664,300	-	4,664,300
<b>Total</b>	<b>\$154,788,400</b>	<b>\$ 111,804,100</b>	<b>\$ 42,984,300</b>	<b>\$ 149,162,200</b>	<b>\$ 106,147,100</b>	<b>\$ 43,015,100</b>

Depreciation and amortization expense amounted to \$10,970,700 and \$11,793,500 for the years ended December 31, 2018 and 2017, respectively, excluding amortization of intangible assets of \$5,731,700 as of December 31, 2018 and 2017.

Furniture and equipment include assets acquired under capital leases of \$617,600 and \$1,823,000 as of December 31, 2018 and 2017, respectively. Accumulated amortization of assets recorded under capital leases amounted to \$287,000 and \$1,330,300 at December 31, 2018 and 2017, respectively.

#### NOTE 5. DEBT OBLIGATIONS

The Institute maintains a credit facility to borrow up to an aggregate amount of \$50,000,000. The credit facility consists of \$35,000,000 with Wells Fargo Bank, N.A. and \$15,000,000 with HSBC Bank, N.A. USA and matures on June 1, 2019. The commitment fees charged amounted to \$147,000 and \$139,000 in 2018 and 2017, respectively. The credit facility was not utilized in 2018 and 2017; the Institute had no outstanding borrowings under the credit facility in either year.

The Institute is required to maintain certain financial ratios under this agreement with its Lenders. At December 31, 2018 and 2017, the Institute was in compliance with all financial ratios.

#### NOTE 6. CAPITAL LEASE OBLIGATIONS

The approximate annual rental payments due under capital lease obligations for equipment are as follows:

Year	Amount
2019	\$ 200,900
2020	9,300
2021	9,300
2022	800
Total minimum lease payments	220,300
Less: Amount representing interest	(21,000)
Present value of minimum lease payments	\$ 199,300

#### NOTE 7. PENSION AND OTHER POST-RETIREMENT BENEFITS

The Institute sponsors two qualified pension plans and one nonqualified pension plan and other post-retirement benefit plans for its employees. In November 2006, the Board of Directors approved the freezing of its qualified employee benefit plans as of June 30, 2007 and the implementation of a defined contribution plan effective July 1, 2007. Accordingly, as of June 30, 2007, no further benefits will accrue under the qualified employee benefit plans after that date.

The following tables provide a reconciliation of the changes in the plans' benefit obligations and fair value of assets over the two-year period ended December 31, 2018, and a statement of the funded status as of December 31, 2018 and 2017:

	Pension Benefits		Other Benefits	
	2018	2017	2018	2017
<i>Reconciliation of benefit obligation:</i>				
<b>Obligation at January 1</b>	\$ 92,200,100	\$ 89,952,900	\$ 6,695,200	\$ 5,938,900
Service cost	240,000	240,000	253,900	212,500
Interest cost	2,705,200	2,800,700	206,700	201,500
Actuarial (gain) loss	(8,102,900)	2,884,400	(663,200)	504,500
Benefit payments	(2,007,400)	(3,677,900)	(181,400)	(162,200)
Settlements	(4,464,800)	-	-	-
<b>Obligation at December 31</b>	<b>\$ 80,570,200</b>	<b>\$ 92,200,100</b>	<b>\$ 6,311,200</b>	<b>\$ 6,695,200</b>

*Reconciliation of fair value of plan assets:*

<b>Fair value of plan assets at January 1</b>	\$ 74,494,100	\$ 69,213,600	\$ -	\$ -
Actual return on plan assets	(5,111,400)	8,940,400	-	-
Employer contributions	16,500	18,000	181,400	162,200
Benefit payments	(2,007,400)	(3,677,900)	(181,400)	(162,200)
Settlements	(4,464,800)	-	-	-
<b>Fair value of plan assets at December 31</b>	<b>\$ 62,927,000</b>	<b>\$ 74,494,100</b>	<b>\$ -</b>	<b>\$ -</b>

Funded status at December 31	\$ (17,643,200)	\$ (17,706,000)	\$ (6,311,200)	\$ (6,695,200)
Accumulated benefit obligation	\$ 80,570,200	\$ 92,200,100	\$ 6,311,200	\$ 6,695,200

At December 31, 2018 and 2017, the funded status of the plans is reported on the consolidated statements of financial position as follows:

	Pension Benefits		Other Benefits	
	2018	2017	2018	2017
Current liabilities	\$ (13,700)	\$ (15,000)	\$ (254,400)	\$ (231,300)
Noncurrent liabilities	(17,629,500)	(17,691,000)	(6,056,800)	(6,463,900)
<b>Net Amount Recognized</b>	<b>\$ (17,643,200)</b>	<b>\$ (17,706,000)</b>	<b>\$ (6,311,200)</b>	<b>\$ (6,695,200)</b>

Cumulative amounts recognized in changes in net assets without donor restrictions and not yet recognized in net periodic benefit cost as of December 31, 2018 and 2017 consist of:

	Pension Benefits		Other Benefits	
	2018	2017	2018	2017
Net loss	\$ 17,676,200	\$ 19,859,300	\$ 404,800	\$ 1,096,800
Prior service cost	-	-	-	-
<b>Total</b>	<b>\$ 17,676,200</b>	<b>\$ 19,859,300</b>	<b>\$ 404,800</b>	<b>\$ 1,096,800</b>

The following table provides the components of net periodic benefit cost for the plans for 2018 and 2017:

	Pension Benefits		Other Benefits	
	2018	2017	2018	2017
Service cost	\$ 240,000	\$ 240,000	\$ 253,900	\$ 212,500
Interest cost	2,705,200	2,800,700	206,700	201,500
Expected return on plan assets	(2,922,100)	(2,977,100)	-	-
Amortization of net loss	1,135,900	1,502,000	28,700	2,700
Settlement loss	977,800	-	-	-
<b>Net periodic benefit cost</b>	<b>\$ 2,136,800</b>	<b>\$ 1,565,600</b>	<b>\$ 489,300</b>	<b>\$ 416,700</b>

Amounts recognized in changes in net assets without restrictions for the years ended December 31, 2018 and 2017 consist of:

	Pension Benefits		Other Benefits	
	2018	2017	2018	2017
Net (gain) loss	\$ (69,400)	\$ (3,078,900)	\$ (663,200)	\$ 504,500
Amortization of net loss	(2,113,700)	(1,502,000)	(28,700)	(2,700)
<b>Pension related benefits activity other than periodic benefit cost</b>	<b>\$ (2,183,100)</b>	<b>\$ (4,580,900)</b>	<b>\$ (691,900)</b>	<b>\$ 501,800</b>

The estimated amount of net assets without restrictions to be recognized as a component of net periodic benefit cost in the next fiscal year is as follows:

	Pension Benefits	Other Benefits
Net loss	\$ 1,024,600	\$ 750

The prior service costs are amortized on a straight-line basis over the average remaining service period of active participants. Gains and losses in excess of 10% of the greater of the benefit obligation and the fair value of plan assets are amortized over the average remaining service period of active participants.

The assumptions used in the measurement of the Institute's benefit obligation are shown in the following table:

	Pension Benefits		Other Benefits	
	2018	2017	2018	2017
<b>Weighted-average assumptions as of December 31</b>				
Discount rate	4.06%	3.42%	4.13%	3.51%
Rate of compensation increase	N/A	N/A	N/A	N/A

The assumptions used in the measurement of the net periodic benefit cost are shown in the following table:

	Pension Benefits		Other Benefits	
	2018	2017	2018	2017
<b>Weighted-average assumptions as of December 31</b>				
Discount rate	3.42%	3.88%	3.51%	4.01%
Expected return on plan assets	4.10%	4.00%	N/A	N/A
Rate of compensation increase	N/A	N/A	N/A	N/A

The health care plan benefits are a flat dollar reimbursement to the retirees toward health care premiums. An increase in the reimbursement amount is not assumed.

## Contributions

There are no required contributions due to the qualified pension plans during 2018 under the Internal Revenue Service's ("IRS") minimum funding regulations.

IEEE expects to contribute approximately \$14,000 to its nonqualified pension plan and approximately \$254,000 to its other post-retirement benefit plans during 2019.

## Expected Benefit Payments

	Pension Benefits	Other Benefits
2019	\$ 4,281,400	\$ 254,400
2020	3,695,700	257,200
2021	3,956,000	267,400
2022	5,106,000	284,200
2023	6,062,000	292,600
2024 to 2027	24,441,400	1,648,000

## Plan Assets

IEEE determines its assumptions for the expected rate of return on plan assets for its retirement plans based on ranges of anticipated rates of return for each asset class. A weighted range of nominal rates is then determined based on target allocations for each asset class. IEEE considers the expected rate of return to be a longer-term assessment of return expectations and does not anticipate changing this assumption annually unless economic conditions change significantly. The expected rate of return for each plan is based upon its expected asset allocation. Market performance over a period of earlier years is evaluated covering a wide range of economic conditions to determine whether there are reliable reasons for projecting forward any past trends.

IEEE's pension and post-retirement plan asset allocation at the end of 2018 and 2017, and the target asset allocation for 2018 and 2017 by asset category based on asset fair values are as follows:

Asset Category	Target Asset Allocation	Pension Assets at December 31		Post-Retirement Assets at December 31	
		2018	2017	2018	2017
Equity securities	10%	10%	10%	N/A	N/A
Debt securities	90%	89%	86%	N/A	N/A
Cash and cash equivalents	0%	1%	4%	N/A	N/A
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>N/A</b>	<b>N/A</b>

Third-party investment professionals manage IEEE's pension plan assets, rebalancing assets as the Institute deems appropriate. IEEE's investment strategy with respect to its pension plan assets is to maintain a diversified investment portfolio across several asset classes targeting an annual rate of return of 4% in 2018 and 2017, respectively. To develop the expected long-term rate of return on assets assumption, the Institute considered the historical returns and the future expectations for returns for each asset class, as well as the target asset allocation of the pension portfolio.

IEEE's pension and post-retirement funds' investment strategies are to invest in a prudent manner for the exclusive purpose of providing benefits to participants. The investment strategies are targeted to produce a total return that, when combined with IEEE's contributions to the funds, will maintain the funds' ability to meet all required benefit obligations. Risk is controlled through liability driven investing. The majority of the assets are matched against the pension liability.

The Institute's investment objectives for the pension plans are to minimize the volatility of the pension assets relative to pension liabilities and to offset the required contributions. The current target asset allocations are 10% equity securities and 90% debt securities. The investment guidelines further allow the managers to keep up to 5% in cash and cash equivalents.

Investment strategies and policies for the pension plans reflect a balance of risk-reducing and return-seeking considerations. The objective of minimizing the volatility of assets relative to liabilities is addressed primarily through asset-liability matching.

All plan assets are externally managed. Investment managers are not permitted to invest outside of the asset classes or strategy for which they have been appointed. The Institute uses investment guidelines to ensure investment managers invest solely within the investment strategy for which they have been retained.

The following table prioritizes the inputs used to measure and report the fair value of the Institute's pension plan assets at December 31, 2018:

	2018			
	Level 1	Level 2	Net Asset Value	Total
Common stock:				
Consumer	\$ 415,400	\$ -	\$ -	\$ 415,400
Technology	1,035,400	-	-	1,035,400
Industrials	354,200	-	-	354,200
Healthcare	395,900	-	-	395,900
Financial services	450,100	-	-	450,100
Energy	119,200	-	-	119,200
Other	254,300	-	-	254,300
<b>Total common stocks</b>	<b>3,024,500</b>	<b>-</b>	<b>-</b>	<b>3,024,500</b>
Equity mutual funds	3,098,600	-	-	3,098,600
Corporate bonds	-	54,017,000	-	54,017,000
Municipal bonds	-	658,900	-	658,900
Foreign bonds	-	1,110,700	-	1,110,700
Collective trust fund	-	-	307,600	307,600
	\$ 6,123,100	\$ 55,786,600	\$ 307,600	\$ 62,217,300
Cash held for investment				1,400
Add: receivables for securities sold and accrued interest				708,300
<b>Total pension plan investments</b>				<b>\$ 62,927,000</b>

The following table prioritizes the inputs used to measure and report the fair value of the Institute's pension plan assets at December 31, 2017:

	2017			
	Level 1	Level 2	Net Asset Value	Total
Common stock:				
Consumer	\$ 606,800	\$ -	\$ -	\$ 606,800
Technology	1,352,500	-	-	1,352,500
Industrials	444,200	-	-	444,200
Healthcare	423,200	-	-	423,200
Financial services	593,900	-	-	593,900
Energy	151,800	-	-	151,800
Other	309,600	-	-	309,600
<b>Total common stocks</b>	<b>3,882,000</b>	<b>-</b>	<b>-</b>	<b>3,882,000</b>
Equity mutual funds	3,799,600	-	-	3,799,600
Corporate bonds	-	61,891,300	-	61,891,300
Municipal bonds	-	639,500	-	639,500
Foreign bonds	-	1,058,800	-	1,058,800
Collective trust fund	-	-	1,815,300	1,815,300
	\$ 7,681,600	\$ 63,589,600	\$ 1,815,300	\$ 73,086,500
Cash held for investment				668,200
Add: receivables for securities sold and accrued interest				739,400
<b>Total pension plan investments</b>				<b>\$ 74,494,100</b>

The Institute's policy is to recognize transfers in and transfers out of levels at the end of the respective reporting period.

The Institute uses, as a practical expedient for fair value, a NAV per share or its equivalent for purposes of valuing certain investments which: (a) do not have a readily determinable fair value and (b) prepare their financial statements consistent with the measurement principles of an investment company or have the attributes of an investment company. The following table lists such investments by major category as of December 31, 2018 and 2017:

2018							
Type	Strategy	NAV in Funds	# of Funds	Remaining Life	\$ Amount of Unfunded Commitments	Redemption Terms	Redemption Restrictions
Collective trust fund	Seeks the highest level of current income possible consistent with the preservation of capital and maintenance of liquidity.	\$ 307,600	1	Subject to the determination of the respective fund manager.	N/A	Daily redemption, upon notice.	N/A
2017							
Type	Strategy	NAV in Funds	# of Funds	Remaining Life	\$ Amount of Unfunded Commitments	Redemption Terms	Redemption Restrictions
Collective trust fund	Seeks the highest level of current income possible consistent with the preservation of capital and maintenance of liquidity.	\$ 1,815,300	1	Subject to the determination of the respective fund manager.	N/A	Daily redemption, upon notice.	N/A

The Institute also has a defined contribution 401(k) Savings and Investment Plan (the "Plan") for employees, who are eligible to participate after the start of the next pay period following 30 days of employment. Under the Plan, employees may generally contribute between 2% to 16% of their salary; however, not in excess of IRS limitations. The Institute provides a 100% matching contribution up to 4% of each employee's salary. The Institute contributed \$4,814,300 and \$4,683,400 on behalf of eligible employees to the Plan in 2018 and 2017, respectively. Amounts payable at December 31, 2018 and 2017 totaled \$17,100 and \$0, respectively, and are included in the current portion of accrued pension and other benefits in the accompanying consolidated statements of financial position.

The Institute has established a Defined Contribution Retirement Plan under which it makes contributions to accounts established for each employee according to a predetermined schedule of contributions. The employee's retirement benefit is the value of the account. All contributions under the Defined Contribution Retirement Plan are made by the Institute and are not funded through salary deductions (employee contributions). Vesting occurs at the completion of each year of service at a rate of 25% per year until 100% after four years. The Institute contributed \$10,174,400 and \$9,280,200 to this plan in 2018 and 2017, respectively. Amounts payable at December 31, 2018 and 2017 totaled \$327,400 and \$0, respectively, and are included in the current portion of accrued pension and other benefits in the accompanying consolidated statements of financial position.

Effective September 1, 2002, the Institute implemented a 457(b) plan for those highly compensated employees who have reached the IRS maximum 401(k) contribution for the year. These employees have the option of continuing their contributions up to the maximum dollar amount under section 457(e) (15) of the Internal Revenue Code of 1986, as amended. All other criteria for eligibility follow the same guidelines as the 401(k) plan. The amounts of \$4,940,600 and \$5,150,200 pertaining to obligations due under the 457(b) plan are accrued and included in accrued pension and other employee benefits at December 31, 2018 and 2017, respectively, and the related 457(b) plan assets are included in investments on the accompanying consolidated statements of financial position.



**NOTE 8. NATURAL EXPENSES**

The following table summarizes the Institute's natural expense classification presented below for the year ended December 31, 2018.

	2018					
	Program Services				Supporting Services	Total
	Memberships and Public Imperatives	Periodicals and Media	Conferences	Standards	General and Administrative	
People costs and related expense	\$ 47,320,400	\$ 91,988,500	\$ 33,411,900	\$ 19,482,400	\$ 3,497,500	\$ 195,700,700
Conference event and related expense	656,000	-	97,702,400	18,200	259,300	98,635,900
Commission, licensing, and royalty	391,100	42,699,200	755,600	139,700	174,800	44,160,400
Travel, meeting, and accomodation	12,809,300	7,774,800	4,962,200	5,975,700	1,114,100	32,636,100
Printing publishing expense	7,419,500	9,909,800	2,165,900	740,800	8,800	20,244,800
Depreciation and amortization	1,839,100	10,099,500	2,153,300	595,400	2,015,200	16,702,500
Consultants and contractors	2,445,500	5,444,700	1,547,700	4,771,700	663,300	14,872,900
Maintenance expense	2,041,300	3,947,600	3,076,200	664,400	886,700	10,616,200
General office expenses	4,415,300	3,786,000	610,900	227,000	320,200	9,359,400
Computer software and related expense	1,592,600	4,080,700	2,136,700	917,400	192,100	8,919,500
Professional fees	2,076,400	3,969,600	1,234,000	276,600	13,700	7,570,300
Grants, awards, scholarships, and others	6,162,900	118,600	503,700	117,600	252,700	7,155,500
Marketing and promotions	1,912,900	4,377,100	534,200	1,400	206,900	7,032,500
Operating leases and related expense	2,530,000	1,925,000	1,494,600	440,200	119,100	6,508,900
Bad debt expense	5,300	1,352,100	-	-	33,200	1,390,600
Communication related services	318,500	679,500	217,000	89,000	3,400	1,307,400
Insurance expense	106,900	208,800	421,200	142,400	228,700	1,108,000
Various other expenses	9,414,900	1,021,000	5,411,900	3,882,200	-	19,730,000
<b>Total</b>	<b>\$ 103,457,900</b>	<b>\$ 193,382,500</b>	<b>\$ 158,339,400</b>	<b>\$ 38,482,100</b>	<b>\$ 9,989,700</b>	<b>\$ 503,651,600</b>

Management has reviewed all overhead costs and determined that it is appropriate to allocate the majority of these costs to the program services. There are a number of allocation methodologies that are used focusing on the location where the costs are incurred along with staffing levels and program service cost incurred prior to allocations. Included in these allocations are \$57 million of Society administrative, committee, and executive expenses, and \$58 million of indirect corporate overhead charges.

**NOTE 9. ADDITIONAL INFORMATION PRESENTED BY ACTIVITY**

The following presents the Institute's consolidated financial results presented in a traditional surplus or loss format for the years ended December 31, 2018 and 2017. This format differs from the accompanying consolidated statements of activities presented on pages 44 and 45 which present the financial results by the types of products and services sold. The surplus and loss presents the same data pertaining to the nature of activities.

	2018	2017
Net Revenues	\$ 531,945,200	\$ 493,012,500
Less: Cost of revenues	237,659,400	232,594,600
<b>Direct Contribution to surplus</b>	<b>\$ 294,285,800</b>	<b>\$ 260,417,900</b>
Expenses:		
Selling	\$ 41,438,900	\$ 37,547,200
Marketing	32,277,700	33,443,500
Product design	7,155,200	8,025,600
Supporting services	170,518,900	172,245,900
Goodwill impairment	-	13,404,000
<b>Contribution to surplus (loss)</b>	<b>\$ 42,895,100</b>	<b>\$ (4,248,300)</b>
Public imperatives, net	(10,835,600)	(10,974,900)
Nonoperating activities:		
Investment (loss) income, net	\$ (19,593,900)	\$ 56,033,100
Pension credit	2,875,100	4,079,100
Surplus before tax	15,340,700	44,889,000
Income tax benefit	2,421,800	4,209,800
<b>Net surplus after tax</b>	<b>\$ 17,762,500</b>	<b>\$ 49,098,800</b>

A description of each line item is discussed below:

**Revenues:** Net earnings from the sales of products and services.

**Cost of Goods Sold:** Direct costs incurred in producing or providing products and services that are sold and generate revenue.

**Selling:** Expenses incurred in the effort to sell products or services, includes commissions and other related expenses.

**Marketing:** Expenses incurred in an effort to possibly generate additional sales of existing products or services, including brand awareness, promotions, displays, and media.

**Product Design:** Expenses incurred in relation to developing new products and services to be sold in the future.

**Supporting Services:** This is also referred to as general and administrative expenses. This caption includes operational support and shared services. Operational support includes expenses that are indirectly related to the sale of products and services which generate revenue (e.g., costs associated with conference and event management, volunteer engagement and executive or governance functions). Shared services include general overhead such as Human Resources, Finance, Information Technology, Facilities and other related expenses. The presentation of supporting services, as reported on pages 44 and 45, reflects an allocation of such costs amongst the lines of operation specifically benefited.

**Public Imperatives:** Public imperatives are outreach and public awareness efforts to inform the public and members about technology and the engineering profession.

## NOTE 10. LIQUIDITY RESOURCES

The Institute's primary source of operating funds is derived from sale of products and services for its memberships, periodicals, conferences and standards. These activities are intended to advance technology for humanity. The Institute has various sources of liquidity at its disposal, including cash and cash equivalents, investments, and a credit facility with an aggregate borrowing amount of up to \$50,000,000.

The following table reflects the Institute's financial assets as of December 31, 2018 reduced by amounts that are not available to meet general expenditures within one year of the statement of financial position date because of contractual restrictions or donor restrictions.

	<b>2018</b>
Cash and cash equivalents	\$ 18,106,600
Accounts receivable, less allowance for doubtful accounts	35,917,200
Investments, at fair value	523,772,300
Investments - other	3,460,400
<b>Total financial assets available within one year</b>	<b>581,256,500</b>
Less:	
Amounts held on behalf of IEEE Foundation, Incorporated	42,188,300
Amounts subject to expenditure for specified donor purposes	1,262,800
Amounts relating to endowment funds with donor restrictions	534,000
<b>Total amounts unavailable for general expenditures within one year</b>	<b>43,985,100</b>

<b>Financial assets available to meet cash needs for general expenditures within one year</b>	<b>\$ 537,271,400</b>
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## NOTE 11. NET ASSETS AND ENDOWMENT FUNDS

Net assets with donor restrictions are available for the following purposes at December 31, 2018 and 2017:

	<b>2018</b>	<b>2017</b>
Grant funds held for specific purposes	\$ 856,600	\$ 902,400
Funds held for awards, medals and other specific purposes	406,200	405,400
Donor-restricted endowment funds, including accumulated unspent appreciation of \$342,600 and \$373,800	534,000	565,200
	<b>\$ 1,796,800</b>	<b>\$ 1,873,000</b>

Net assets were released from donor restrictions by incurring expenses satisfying the restricted purposes for the years ended December 31, 2018 and 2017 as follows:

	<b>2018</b>	<b>2017</b>
Grant funds released for specific purposes	\$ 206,300	\$ 575,700
Funds released for awards, medals and other specific purposes	16,200	3,600
	<b>\$ 222,500</b>	<b>\$ 579,300</b>

Donor-imposed endowment net assets at December 31, 2018 and 2017 consist of assets that have been restricted by donors to be invested in perpetuity to provide a permanent source of income. The Institute's donor-restricted endowment consists of eleven (11) individual funds established principally for awards.

On September 17, 2010, the State of New York passed the NYPMIFA, its version of the Uniform Prudent Management of Institutional Funds Act ("UPMIFA"). All not-for-profit organizations formed in New York must apply this law. The Institute classifies as net assets with donor restrictions, unless otherwise stipulated by the donor: (a) the original value of gifts donated to its donor-restricted endowment, (b) the original value of subsequent gifts to its donor-restricted endowment and (c) accumulations to its donor-restricted endowment made in accordance with the direction of the applicable donor gift instrument at the time the accumulation is added to the funds.

In accordance with NYPMIFA, the Institute considers the following factors in making a determination to appropriate or accumulate donor-restricted endowment funds: the purpose, duration, and preservation of the endowment fund; expected total return on endowment investments; general economic conditions; the possible effects of inflation and deflation; other resources of the Institute; and, the investment policy of the Institute.

The Institute has adopted investment management and spending policies for its donor-restricted endowment assets which totaled \$534,000 and \$565,200 as of December 31, 2018 and 2017, respectively. This supports the objective of providing a sustainable and increasing level of donor-restricted endowment income distribution to support the Institute's activities while seeking to maintain the purchasing power of the endowment assets. The Institute's primary investment objective is to maximize total return within reasonable and prudent levels of risk while maintaining sufficient liquidity to meet disbursement needs and ensure preservation of capital.

To satisfy its long-term rate-of-return objectives, the Institute relies on a total return strategy, the objective of which is to achieve a return consisting of a combination of current income and capital appreciation, without regard to an emphasis on either, recognizing that changes in market conditions and interest rates will result in varying strategies in an attempt to optimize results. The endowment portfolio is diversified among various investment classes and strategies to help reduce risk.

The following table summarizes the Institute's total return on donor-restricted endowment investments and the changes in donor-restricted endowment net assets for the years ended December 31, 2018 and 2017:

	<b>2018</b>		
	<b>Without Donor Restrictions</b>	<b>With Donor Restrictions</b>	<b>Total</b>
Donor restricted endowment funds	\$ -	\$ 534,000	\$ 534,000

	<b>2018</b>		
	<b>Without Donor Restrictions</b>	<b>With Donor Restrictions</b>	<b>Total</b>
<b>Endowment assets, beginning of year</b>	\$ -	\$ 565,200	\$ 565,200
Dividends and interest	-	12,100	12,100
Net realized and unrealized appreciation in fair value of endowment assets	-	(27,500)	(27,500)
New gifts	-	-	-
Endowment return used for operations	-	(15,800)	(15,800)
<b>Endowment assets, end of year</b>	<b>\$ -</b>	<b>\$ 534,000</b>	<b>\$ 534,000</b>

	<b>2017</b>		
	<b>Without Donor Restrictions</b>	<b>With Donor Restrictions</b>	<b>Total</b>
Donor restricted endowment funds	\$ -	\$ 565,200	\$ 565,200

	<b>2017</b>		
	<b>Without Donor Restrictions</b>	<b>With Donor Restrictions</b>	<b>Total</b>
<b>Endowment assets, beginning of year</b>	\$ -	\$ 516,000	\$ 516,000
Dividends and interest	-	10,000	10,000
Net realized and unrealized appreciation in fair value of endowment assets	-	42,400	42,400
New gifts	-	-	-
Endowment return used for operations	-	(3,200)	(3,200)
<b>Endowment assets, end of year</b>	<b>\$ -</b>	<b>\$ 565,200</b>	<b>\$ 565,200</b>

**NOTE 12. OPERATING LEASES**

At December 31, 2018, minimum rental commitments due under noncancellable operating leases for office space and computer equipment are as follows:

Year	Amount
2019	\$ 4,000,500
2020	3,445,000
2021	3,300,300
2022	2,829,600
2023	2,762,500
Thereafter	8,803,900
	<b>\$ 25,141,800</b>

The leases for the office space are subject to escalation. Total rent expense for noncancellable operating leases amounted to \$4,429,100 and \$4,919,300 in 2018 and 2017, respectively.

**NOTE 13. RELATED-PARTY TRANSACTIONS****IEEE Foundation, Incorporated**

The Institute has transactions with IEEE Foundation, Incorporated (the "Foundation"), a related organization, which performs activities in support of the scientific and educational functions and programs of the Institute. The Institute made cash contributions of \$395,000 and \$382,000 in 2018 and 2017, respectively, to the Foundation.

The Foundation has no staff and thus, receives certain accounting and administrative services from IEEE. The Foundation reimbursed IEEE for the cost of such services, which amounted to \$790,900 and \$773,100 during 2018 and 2017, respectively. The Institute provided fundraising administrative services (contributed services) during 2018 and 2017 that were not reimbursed by the Foundation, that were valued at \$1,273,300 and \$1,256,500 during 2018 and 2017, respectively.

The Institute held on deposit \$42,188,300 and \$45,435,400 from the Foundation at December 31, 2018 and 2017 respectively, and is separately reported on the accompanying consolidated statements of financial position. The Institute invests these amounts on behalf of the Foundation. Receivables due from the Foundation include grants receivable of \$2,057,900 and \$2,078,900 at December 31, 2018 and 2017, respectively, and other receivables of \$152,500 and \$74,100 at December 31, 2018 and 2017, respectively, and are included in accounts receivable on the accompanying consolidated statements of financial position. Amounts due to the Foundation of \$135,600 and \$116,800 at December 31, 2018 and 2017, respectively, are included in accounts payable and accrued expenses on the accompanying consolidated statements of financial position.

**Letters of Credit**

At December 31, 2018, the Institute had irrevocable standby letters of credit with Wells Fargo Bank, N.A., in the amounts of \$583,000 and \$45,100, which serve as security deposits as required by the terms of its lease agreements with Three Park Avenue Building Company, LP and 2001 L Street, LLC, respectively.

At December 31, 2018, the Institute had issued standby letters of credit in relation to certain dealers agreements and VAT tax payments totaling \$116,300 with HSBC Bank USA, N.A. The Institute is charged 2% of the face amount, upon issuance, of the standby letters of credit.

**Litigation**

The Institute, in the normal course of its operations, is a party to various legal proceedings and complaints, some of which are covered by insurance. While it is not feasible to predict the ultimate outcomes of such matters, management of the Institute is not aware of any claims or contingencies, which are not covered by insurance, that would have a material adverse effect on the Institute's consolidated financial position, changes in net assets or cash flows.

**NOTE 14. INCOME TAXES**

IEEE, Inc. and IEEE GlobalSpec, subsidiaries of the Institute, are considered for-profit entities under the Code. For these subsidiaries, income tax expense, deferred tax assets and liabilities, and liabilities for unrecognized tax benefits reflect management's best assessment of estimated current and future taxes paid. Significant judgments and estimates are required in determining the consolidated income tax expense.

For the tax years ending December 31, 2018, and 2017, the consolidated effective tax rates are 23.67% and 20.12%, respectively. As of December 31, 2018 and 2017, deferred tax liabilities were reported due to temporary differences between reported amounts in the financial statements and amounts reported for tax purposes which relate primarily to net operating losses and intangible assets.

For the years ended December 31, 2018 and 2017, the benefit for income taxes consisted of the following:

	2018	2017
<b>Current:</b>		
Federal	\$ -	\$ -
State	(20,100)	25,900
	(20,100)	25,900
<b>Deferred:</b>		
Federal	(1,853,000)	(4,031,400)
State	(400,000)	(204,300)
	(2,253,000)	(4,235,700)
<b>Benefit for income taxes</b>	<b>\$ (2,273,100)</b>	<b>\$ (4,209,800)</b>

2018's tax benefit was \$1.9 million lower than 2017 because it was primarily attributed to 2017's financial activities included the effects of TCJA's one-time tax rate change true up benefits of the U.S. corporate tax rate which were reduced from 34% to 21%. As of December 31, 2018, IEEE Inc. and IEEE GlobalSpec, Inc. had total gross federal NOLs of about \$9.0 million, of which \$7.9 million can be carried forward up to 20 years, while \$1.1 million can be carried forward indefinitely.

During 2018, IEEE Inc. and IEEE GlobalSpec were selected for audit by the IRS for tax year 2016. The IRS audit was closed in early March 2019 resulting in an audit adjustment of the gross NOL reduction by \$241,000.

The effective tax rate differs from the statutory rate due to non-deductible expenses, change in corporate tax rate and state taxes. As of December 31, 2018 and 2017, management has assessed that a valuation allowance is not required based on the long-range forecast of future taxable income.

For the year ended December 31, 2018, the Institute's consolidated benefit for income tax is \$2,421,800, comprised of \$2,273,100 from IEEE Inc. and IEEE GlobalSpec for-profit business income activities and \$148,700 from the Institute's unrelated business income activities. For the year ended December 31, 2017, the consolidated benefit for income tax was \$4,209,800 comprised from IEEE Inc. and IEEE GlobalSpec for profit business income activities.

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