

# LEADING THE **FUTURE** OF **TECHNOLOGY**

2016 ANNUAL REPORT



## THE 2016 IEEE PRESIDENT'S COIN

In 2016, I personally presented my President's coin, which is modeled after the military challenge coin, to individuals who made significant contributions to IEEE. The background of the front-side of the President's coin depicts a map of the world. Over the world map is the IEEE Master Brand logo representing the global reach of IEEE with over 423,000 members in over 160 countries worldwide. At the top of the coin is the IEEE tagline: "Advancing Technology for Humanity." At the bottom of the coin are the words "Leadership, Excellence, Innovation" - all attributes of IEEE values and reasons for which the coin is given. The background of the back-side of the coin depicts time, moving from lower-left to upper-right are gold vectors on a white background representing movement from the past into the future. IEEE has a rich heritage dating back to the American Institute of Electrical Engineers (AIEE) in 1884 and Institute of Radio Engineers (IRE) in 1912 before their merger into the IEEE in 1963. Similarly, IEEE has a bright future. In the center is the IEEE Fellow pin, representing my elevation to IEEE Fellow in 2012. At the top of the coin is the position title: "2016 IEEE President and CEO" and at the bottom are my name and credentials. The inscription around the center is my mantra on leadership:

"Leadership is About Setting the Conditions  
So That Others Can Succeed."



**Barry L. Shoop**  
2016 IEEE President  
and CEO

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# MESSAGE FROM THE **IEEE PRESIDENT** AND THE **EXECUTIVE DIRECTOR**

Technology continues to be a transformative power on humanity, with a pervasive, worldwide influence over today's political, social and cultural domains. IEEE and its members remain at the forefront of all aspects of this technological revolution. Throughout 2016, we increased our connectivity and collaboration with industry, expanded our global reach and sharpened our focus on innovation and public policy issues. IEEE is truly leading the future of technology.

We continue to make great strides in our efforts to re-engage and strengthen our ties with industry. In 2016, we met with over 270 leaders from 70 companies in Canada, China, India, Israel, Japan, Singapore, South Africa, South Korea, Taiwan, the United Kingdom, the United States and Uruguay. We are committed to providing the products, tools and information that professionals in industry need to excel. One of our first successes was the acquisition of GlobalSpec and the Engineering360 platform, which delivers leading content about electronic components to the desks of today's engineers. This acquisition marked the first time in history that IEEE, as a not-for-profit professional organization, acquired a for-profit corporation.

In May, IEEE launched the International Roadmap for Devices and Systems (IRDS), an extension of the International Technology Roadmap for Semiconductors, that will build a comprehensive end-to-end view of the computing ecosystem, including devices, components, systems, architecture and software. In addition, through a partnership with IP.com, IEEE established InnovationQ Plus, building a powerful platform that combines IEEE content with IP.com's global patent and non-patent literature to aid innovators around the world. And we are opening application programming interfaces (APIs) for the

IEEE Xplore® Digital Library to enable personalized experiences based on second-generation analytics.

As IEEE's membership continues to grow internationally, we have expanded our global presence and engagement by opening offices in key geographic locations around the world. In 2016, IEEE opened a second office in China, due to growth in the country and to better support engineers in Shenzhen, China's Silicon Valley. We expanded our office in Bangalore, India, and are preparing for the opening of a new IEEE office in Vienna, Austria.

On a worldwide scale, IEEE continues to work to address public policy issues and build consensus through the development of new standards, codes of conduct and position statements. Our Global Public Policy Initiative enables IEEE to better serve as an international source of information to governments and to society-at-large about the social responsibilities and implications of technology. IEEE-wide global public policy achievements included a new IEEE Standards Association Industry Connections program, the IEEE Global Initiatives for Ethical Considerations in Artificial Intelligence and Autonomous Systems; the new IEEE TechEthics™ program, and the launch of IEEE's global public policy website. In addition, the IEEE Internet Initiative (3I) has helped place IEEE among the leading trusted authorities in the ongoing global evolution of the internet in the areas of internet governance, privacy and cybersecurity.

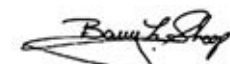
Throughout the year, with input from members around the world, we studied and considered future opportunities and requirements to create a nimble, flexible, forward-looking organization through changes in our governance structure. To succeed in any attempt to change, we must be willing to fail; but, more

importantly, we must be willing to rise again, learn from our experiences, and advance. As our members drive ever-faster technological revolutions, each of us must play a role in guaranteeing that our professional society remains relevant, that it is as innovative as our members are, and that it continues to evolve to meet the challenges of the ever-changing world around us.


From Big Data and Cloud Computing to Smart Grid, Cybersecurity and our Brain Initiative, IEEE members are working across varied disciplines, pursuing dynamic and pioneering research avenues, and helping to shape our world for the better. IEEE is truly at its best when we bring together the totality of our offerings – the rich diversity of our global membership, the dedication of our volunteers and the commitment of our professional staff – all to advance technology for the benefit of humanity.

Sincerely,



  
**Barry L. Shoop**  
2016 IEEE President  
and CEO



  
**E. James Prendergast**  
IEEE Executive Director  
and COO

# LEADING THE FUTURE OF TECHNOLOGY

"We must become the change we want to see."  
– Mahatma Gandhi

A century ago, when the foundations of IEEE were laid, the telephone was barely 10 years old and few people had one. Now, nine out of 10 Americans own a mobile phone and nearly half of Americans say they could not imagine living without their smartphone.

Cloud computing has changed the way we create, process, store and access information. Cars drive themselves. In the very near future, supercomputers will be contained in wristbands and T-shirts.

It's a brave new world we're living in. As it quickly grows more complex, it will increasingly require leadership to ensure that everyone reaps the benefits of technological innovation and progress.

IEEE is dedicated to this leadership role by embracing new skills and new modes of thinking.

All of our members—more than 423,000 in 160 countries—are committed to the constant pursuit of innovation and excellence for the benefit of all people everywhere.

As we move forward, new technologies will continue to arrive. Our world will become more complicated, more competitive and more quickly changing. We are evolving to provide the responsive and adaptable leadership needed to support our members, our professions and the public. IEEE will continue to do so in an environment of increasing strategic complexity, amid the uncertainties of a changing and dynamic world.

At IEEE, we believe deeply in setting the course for an emerging generation of technologists who will lead and succeed in our brave new world.



**423,000+**  
MEMBERSHIPS\*

TOP 5 COUNTRIES FOR  
MEMBERSHIP



\*Includes Student Members

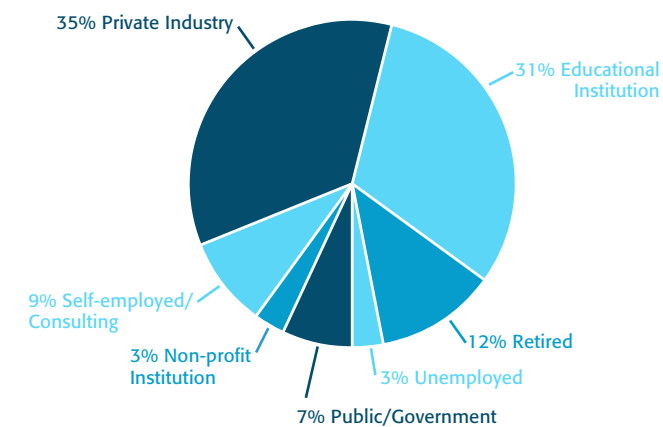


**117,000**  
STUDENT MEMBERS

TOP 5 COUNTRIES FOR  
STUDENT MEMBERSHIP



## MEMBER WORKFORCE



From the Member Use of Internet Survey, 2016

## IEEE SOCIETY MEMBERSHIPS

4,828	IEEE Aerospace and Electronic Systems Society
8,833	IEEE Antennas and Propagation Society
1,729	IEEE Broadcast Technology Society
10,505	IEEE Circuits and Systems Society
29,785	IEEE Communications Society
2,489	IEEE Components, Packaging, and Manufacturing Technology Society
7,053	IEEE Computational Intelligence Society
56,858	IEEE Computer Society
3,065	IEEE Consumer Electronics Society
9,004	IEEE Control Systems Society
2,178	IEEE Dielectrics and Electrical Insulation Society
3,452	IEEE Education Society
3,885	IEEE Electromagnetic Compatibility Society
10,446	IEEE Electron Devices Society
10,985	IEEE Engineering in Medicine and Biology Society
3,776	IEEE Geoscience and Remote Sensing Society
7,040	IEEE Industrial Electronics Society
14,020	IEEE Industry Applications Society
3,285	IEEE Information Theory Society
3,934	IEEE Instrumentation and Measurement Society
1,642	IEEE Intelligent Transportation Systems Society
3,017	IEEE Magnetics Society
11,143	IEEE Microwave Theory and Techniques Society
3,012	IEEE Nuclear and Plasma Sciences Society
1,841	IEEE Oceanic Engineering Society
6,441	IEEE Photonics Society
37,035	IEEE Power & Energy Society
8,680	IEEE Power Electronics Society
863	IEEE Product Safety Engineering Society
741	IEEE Professional Communication Society
1,756	IEEE Reliability Society
14,081	IEEE Robotics and Automation Society
17,834	IEEE Signal Processing Society
1,609	IEEE Society on Social Implications of Technology
10,208	IEEE Solid-State Circuits Society
4,700	IEEE Systems, Man, and Cybernetics Society
3,076	IEEE Technology and Engineering Management Society
2,373	IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society
4,468	IEEE Vehicular Technology Society

**331,670 Total Society Memberships**

49.4 percent of IEEE members belonged to one or more societies in 2016.

# GROWING GLOBAL AND INDUSTRY PARTNERSHIPS

"As we look ahead into the next century, leaders will be those who empower others."

-Bill Gates



IEEE builds partnerships to maintain connections with other organizations and with industry. In doing so, IEEE ensures that it addresses emerging needs while continuing to strengthen its leadership position. Through strong partnerships, IEEE also expands its mission into the future. In 2016, IEEE crossed new frontiers and extended its influence around the world.

## INDUSTRY ENGAGEMENT

### INDUSTRY TIES STRENGTHENED THROUGH MULTIPLE EFFORTS

This past year saw great strides in IEEE's efforts to engage with industry, coupled with an urgency to provide technical professionals the tools and information they need to excel. IEEE interacted extensively with industry representatives in its quest to develop products and services of value and importance to technical professionals in industry.

In 2016, IEEE leadership and members of the IEEE Ad Hoc Committee on Industry met with over 270 leaders from more than 70 companies in 12 countries: Canada, China, India, Israel, Japan, Singapore, South Africa, South Korea, Taiwan, the United Kingdom, the United States and Uruguay.



As a result of this outreach effort, IEEE was able to collect feedback on its current offerings to industry, identify needs in the marketplace and develop strategies to best serve industry professionals.

As part of its ongoing industry outreach campaign, IEEE worked diligently with industry professionals to understand their needs and provide key products and services to address them. As a result, the IEEE for Industry Portal was launched, serving as a single point of entry for industry practitioners to a wide range of IEEE resources. IEEE also delivered new products that provide targeted value to industry, such as second-generation analytics and open application programming interfaces for IEEE *Xplore*, which improve the platform's personalization and usefulness.



Above: Attendees for the first meeting of the IEEE Board of Directors Industry Outreach Delegation to Israel include from left to right: Costas Stasopoulous, 2016 Region 8 Director; Karen Bartleson, 2016 IEEE President-Elect; Patrick Russoniello, Corporate Activities Manager, Shmuel Auster, IEEE Israel Section Member; and Barry Shoop, 2016 IEEE President.

Left: From left to right: Itai Dabran, Yiftach Richter, Karen Bartleson, Barry Shoop, and Aleksey Dyskin met to discuss industry outreach efforts and local activities in the IEEE Israel Section.

### ACQUISITION OF GLOBALSPEC CREATES POWERFUL NEW RESOURCE FOR ENGINEERING COMMUNITY

For the first time in its history, IEEE acquired a for-profit company, GlobalSpec, a leading source of news, data and analytics that includes the widely known Engineering360, the world's largest online destination for engineers. GlobalSpec was acquired from IHS, a global information company with world-class experts in the pivotal areas shaping today's business landscape. The new for-profit subsidiary, named IEEE GlobalSpec, Inc., bolsters IEEE's offerings for engineers and strengthens its emerging position in research analytics, while building IEEE's value to industry with business-oriented, content-rich marketing platforms.

GlobalSpec is an industrial engineering marketing services business that produces engaging content as a means of creating an audience of engineering users. IEEE GlobalSpec is a valuable resource for industry-based engineers, technical professionals, manufacturers, distributors and service providers involved in technical research, product design and purchasing. IEEE GlobalSpec also provides webinars and forums for technical professionals to share and collaborate, as well as a full suite of content-marketing tools.

**IEEE GlobalSpec**

**Engineering  
360**  
Powered by IEEE GlobalSpec

### INNOVATIONQ PLUS ENHANCES PATENT DISCOVERY AND ANALYSIS

IEEE literature is cited three times more in patents than any other publisher, making it a critical source for those working in intellectual property. In 2016, IEEE and IP.com, a global leader in the intellectual property field, collaborated to launch InnovationQ Plus, a new, easy-to-use platform that combines the power of semantic search with a global patent database and critical engineering literature from the IEEE *Xplore* library to provide a unique IP discovery and analysis solution. Users now have a single tool to access nearly 90 million patents, applications and invention disclosures, plus more than three million published documents from IEEE journals, conferences and standards.

InnovationQ Plus aids innovators and patent professionals around the world by enabling users to quickly locate information that can be used to determine the potential patentability of ideas, discover opportunities and leverage patent intelligence to support critical portfolio-management decisions.

### INTERNATIONAL ROADMAP FOR DEVICES AND SYSTEMS LEADS CAMPAIGN TO CHART THE FUTURE OF COMPUTING

In May 2016, IEEE launched the International Roadmap for Devices and Systems (IRDS), a new IEEE Standards Association Industry Connections program and IEEE Rebooting Computing activity. With IRDS, IEEE took the lead in building a comprehensive view of the computing ecosystem—including devices, components, systems, architecture and software—and opened the door to innovative end-to-end computing solutions. The effort will help ensure alignment among industry participants to identify trends, develop a new roadmap for the computer industry and speed computing innovation.

### GLOBAL PUBLIC POLICY

#### IEEE HELPS SHAPE PUBLIC POLICY IN EUROPEAN UNION

Disruptive innovation has long been a hallmark of Silicon Valley, ushering in game-changing technologies from virtual reality to self-driving cars. In April 2016, the IEEE European Public Policy Initiative Working Group on Information and Communication Technology convened in Oxford, England, to discuss the nature of disruption. The group examined ways that the European Union could create a successful innovation and entrepreneurial ecosystem like that found in Silicon Valley.

Also part of EU activities in 2016 was the IEEE Artificial Intelligence (AI) and Ethics Summit, which attracted a broad spectrum of leading voices in the artificial intelligence space to consider AI and ethics, and pose the question: Who does the thinking? Gathering in Brussels in November 2016, the group of technologists, legal experts, philosophers, social scientists, manufacturers and policymakers considered the social, legal and philosophical questions associated with AI, such as whether certain applications should be tightly regulated (or even banned) and if it's possible to program ethical algorithms into machines.



Paul Nemitz, European Commission (left), and Mathias Vermeulen, European Parliament, attend the IEEE AI & Ethics Summit in Brussels. Photo Credit: Simon Pugh

### 3I SHAPES INTERNET POLICY AROUND THE WORLD

The IEEE Internet Initiative (3I), a community of technologists and policymakers around the world that works to increase IEEE's influence on global policy in the area of Internet governance, made meaningful progress throughout 2016.

3I organized a number of important conferences, including the "Experts in Technology and Policy Forum" in Delhi, India, to advance universal access for social and economic inclusion, as well as the "Experts in Technology and Policy Forum on Closing the Cyberspace Policy-Technology Divide" in Beijing. In April, 3I organized the standing room-only "Global Connect Stakeholders: Advancing Solutions" conference in Washington, D.C., held in conjunction with the World Bank, the U.S. State Department and the White House Office of Science and Technology Policy. The conference focused on finding solutions to help connect the next billion people on Earth. 3I built on the success of the event with a second "Global Connect" conference held in October that attracted nearly 200 experts from across the technical and sociopolitical spectrum.

3I was also involved in the Board of Directors' decision to approve IEEE's first position statement on universal access. More than half of all people still do not have access to the internet and action is required to repair this digital divide. With a position statement now in place, IEEE is taking steps to promote universal access and bring the internet to more people around the world.

#### IEEE POSITION STATEMENT ON UNIVERSAL ACCESS

"IEEE endorses the goal of universal access to the internet and supports national initiatives and international collaborations designed to expand access to the billions of people in both developed and developing countries around the world who do not have access to the internet."



Participants of the IEEE Virtual Events Program in Africa session hosted by the IEEE Nigeria Section

### AGREEMENT WITH FEDERAL ENERGY REGULATORY COMMISSION ADDRESSES ENERGY CHALLENGES

Virtually every crucial economic and social function now depends on secure and reliable operation of our electrical power and energy infrastructures, and yet these structures face increasing challenges due to significant changes in energy supply, demand and technology. In November, IEEE President Barry Shoop signed a Memorandum of Understanding (MoU) with the Federal Energy Regulatory Commission (FERC) to address these challenges. The MoU aligns efforts by the two organizations to address innovations in the areas of renewable generation, distributed energy, electric vehicles, energy storage and more.

The Memorandum of Understanding signing between the IEEE Power & Energy Society and the U.S. Department of Energy's (DOE) Office of Electricity Delivery and Energy Reliability also helped advance collaboration efforts in energy technology.



### GLOBAL EXPANSION

#### AFRICA EXPANSION GAINS MOMENTUM

IEEE launched the IEEE Virtual Events Program in Africa in 2016, which couples in-person viewing sessions with on-demand virtual access. The first event, in October, covered cybersecurity and included seven sessions in six countries: Ghana, Kenya, Nigeria, Rwanda, Uganda and Zambia. The second, in December, focused on communications for green technologies and included six sessions in five countries: Ghana, Kenya, Nigeria, Rwanda and Uganda. Additionally, an MoU enabling the adoption of IEEE standards as Rwandan standards was signed.

In July, IEEE President Barry Shoop kicked off the first official meeting of the Africa Area Committee in Cape Town, South Africa. Approved by IEEE Region 8 in March, the Africa Area Committee will provide support from IEEE for the more than 6,000 IEEE members on the continent to unite, discuss and coordinate future activities, share knowledge and provide section-development training to grow IEEE's presence in Africa.

### JAPAN OUTREACH EVENTS TARGET MEMBERSHIP GROWTH OPPORTUNITIES

The Japan membership plan has sought growth through improved member satisfaction, volunteer training and engagement, and targeted marketing throughout Japan. One success in 2016 included the Metro Area Workshop conducted in Japan's Kansai region in August. The workshop targeted industry professionals and connected researchers and students with engineers from local, small to medium electronics companies.

### NEW OFFICE OPENS IN SHENZHEN

In April, IEEE opened a new office in Shenzhen, China, an extension of the Beijing office opened in 2008. The new office in the Shenzhen Special Economic Zone, which is often referred to as the "Silicon Valley of China," will help IEEE develop membership, especially in the industry sector, support IEEE standards activities, develop IEEE/IET Electronic Library sales opportunities, organize industry events in collaboration with companies and identify opportunities to develop business in Hong Kong and Macau. IEEE also continued the expansion of its India office, particularly in the areas of IT and finance.



Attendees of Japan's Metro Area Workshop



Shenzhen, China

# ADVANCING TECHNOLOGY

"Innovation distinguishes between a leader and a follower."

-Steve Jobs



IEEE is the world's largest technical professional organization dedicated to advancing technology for humanity. IEEE and its members inspire a global community through IEEE publications, conferences, technology standards and professional and educational activities. In 2016, IEEE accelerated many new and emerging technologies that offer the potential to improve life for people everywhere.

## IEEE COLLABRATEC™ EXPANDS OPPORTUNITIES TO CONNECT

IEEE Collabratec is an integrated online community where technology professionals can network, collaborate and create – all in one central hub. The IEEE Collabratec online community offers a suite of productivity tools and is available to technology professionals around the world with exclusive features for IEEE members.

More than 80,000 people from around the world have signed up for IEEE Collabratec to connect with global technology professionals by location, technical interests or career pursuits.

Users can access research and collaborative authoring tools and establish a professional identity to showcase their accomplishments. The user population of IEEE Collabratec helps to facilitate interaction and relationships among members and non-members.

In 2016, IEEE Collabratec debuted powerful new features, including a mobile app, messaging and a mentoring platform that gives mentors and mentees a more effective way to connect and communicate. Participants can create their own private groups within IEEE Collabratec, providing them with a secure place to hold discussions and collaborate on projects using a variety of cloud-based services including Dropbox, Google Drive and Overleaf's LaTeX editor. Authors and potential authors also have access to the AuthorLab, an open forum where they can discuss the publication process with each other and with IEEE publications staff.



The IEEE Collabratec mobile app makes it more effective for users to connect and communicate.





### IEEE STRENGTHENS STANDARDIZATION ROLE IN CHINA

Throughout 2016, IEEE worked to expand its role as a worldwide leader in technology policy and enhance the global standardization environment. Among notable accomplishments was the progress made with Chinese policymakers and industry through a coordinated outreach effort. IEEE forged new contacts and opened dialogue with key stakeholders, including the Standardization Administration of China, the country's highest standardization policy authority; the Ministry of Industry and Information Technology, the Zhongguancun Standards Association, the China Robot and Industry Alliance and the National Development and Reform Committee.

### IEEE PUSHES INNOVATION AT SXSW

At the 2016 South by Southwest (SXSW) Festival in Austin, Texas, IEEE joined some of the world's leading tech innovators in exploring the impacts of medtech, body computing, biometrics, bionics, mixed reality and the Internet of Things. It was all part of the IEEE Tech for Humanity Series, which highlighted IEEE members and their innovative work.

From left: IEEE member Nolan Bushnell, Founder of Atari, and Jim Prendergast, IEEE Executive Director and COO, at SXSW Photo Credit: Jessica Klima



IEEE member Nolan Bushnell, founder of Atari, Chuck E. Cheese's and Brain Rush, spoke about the future of entertainment, gaming and fun. IEEE Fellow Ted Berger, director of the Center for Neural Engineering, talked with Eliza Strickland of *IEEE Spectrum*® about recording memories to chips and then transferring those memories to another person. Other topics included discussions on how medical devices are at risk of hacking and how hospitals and device makers can protect patients. The Humanity Series also featured a segment about how women can find "intrapreneurial" opportunity within their organizations. IEEE also hosted one of the top networking events at SXSW, with more than 700 attendees.

### 5G INITIATIVE MOVES FORWARD

5G is the next-generation wireless network technology that is expected to significantly increase data speeds, produce ultralow latency times, support the connection of many more devices and increase the energy efficiency of network elements. In 2016, IEEE launched the IEEE 5G Initiative to encourage participation by industry, academia and policymakers in solving challenges associated with 5G technology and laying the foundation for future success. IEEE also launched significant standardization projects in the areas of SDN (Software-Defined Networks) and Frugal 5G. Frugal 5G is an innovative means to help further realize next-generation communication technologies in parts of India and applications to many other parts of the world. Both projects reside under the IEEE Communications Society.

Attendees of the 5G Kickoff Meeting in Princeton, NJ





## ETHICS TAKE CENTER STAGE IN ARTIFICIAL INTELLIGENCE DEVELOPMENT

IEEE is committed to ensuring that every technologist is educated, trained and empowered to prioritize ethical considerations in the design and development of autonomous and intelligent systems. To that end, IEEE initiated further discourse by developing the new IEEE TechEthics program, which hosted its first event last August at The Hague, Netherlands. Titled "Conversations on Ethical and Social Implications of Artificial Intelligence," it featured presentations on key aspects of the AI debate and attracted an international audience of over 100 attendees from a wide variety of disciplines.

The IEEE Standards Association, in 2016, also published the inaugural version of *Ethically Aligned Design: A Vision for Prioritizing Human Wellbeing with Artificial Intelligence and Autonomous Systems*. The document was authored by more than 100 global thought leaders and experts in artificial intelligence, ethics and related issues and was presented to experts in the area to offer feedback and perspectives to keep the conversation going.

## IEEE SIGHT FOCUSES ON HUMANITARIAN CAUSES

In 2016, IEEE ramped up its effort to partner with underserved communities and local organizations to lead the way in leveraging technology for sustainable development. In particular, the IEEE Special Interest Group on Humanitarian Technology (SIGHT) added 23 new groups in 11 new countries and three new societies, bringing the worldwide total to 99 groups in 36 countries and seven IEEE societies. IEEE SIGHT also awarded project funding to a missing children emergency response system in Croatia, a school electrification initiative in Honduras and an overhead powerline safety awareness project in India, among others. IEEE awarded humanitarian grants in 2016, with projects taking place in Ethiopia, Haiti, India, Kenya, Malawi, Nepal, South Africa and the United States.

## IEEE EXPANDS ROLE AS GLOBAL LEADER IN TECH POLICY

Throughout 2016, IEEE devoted itself to expanding its role as a worldwide leader in technology policy and worked to enhance the global standardization environment. Notable accomplishments for the year included:

- Participation in White House MedX event where IEEE spoke to the economic impacts and considerations of blockchain technologies in healthcare and other key markets.
- Attendance at an ITU-T Telecommunication Standardization Advisory Group meeting to familiarize IEEE with preparation processes for the 2016 International Standardization Union (ITU) World Telecommunications Standardization Assembly where IEEE presented at the Global Standards Symposium on the role of standards in the future of security and privacy.
- Participation in the Global Standards Collaboration meeting in New Delhi and presentation of IEEE's activities in various panel sessions.

## 2017 NATIONAL ELECTRICAL SAFETY CODE PROMOTES HELPFUL NEW TOOLS

IEEE published the 2017 National Electrical Safety Code (NESC), an authoritative code for ensuring the continued practical safeguarding of people and utility facilities during the installation, operation and maintenance of electric supply and communication facilities. NESC is IEEE's best-selling standard. Important changes to the code include revised requirements for substation impenetrable fences and changes to accommodate new industry insulator ratings. The 2017 NESC is augmented with several tools to help engineers better understand and utilize the code. These include the Premier Edition NESC Handbook and the NESC mobile app.



**THE NATIONAL ELECTRICAL SAFETY CODE (NESC)® SAFETY IN NUMBERS**

**Changes to the 2017 edition of the NESC – HERE ARE SOME HIGHLIGHTS**

From adding definitions and making exceptions to revising and reorganizing – the 2017 NESC includes major updates for the continued practical safeguarding of persons and utility facilities during the installation, operation, and maintenance of electric supply and communication facilities. To learn more about the NESC, go to [standards.ieee.org/about/nesc/](http://standards.ieee.org/about/nesc/)

- 092, 096** (MILE 1) – Exceptions added to restrict the grounds-to-roadside requirement under specific limiting conditions.
- 110** – Revisions that address safety sign locations, adding fence conditions, and reorganize fence modifications.
- 124** (AI) – Revised to require Electric Supply Station clearance values in Tables 124.4 and 124.5 to have appropriate atmospheric correction factors applied for altitudes above 1000 m (3300 ft).
- 238** – New requires a 1.02 m (40 in) vertical clearance between overhead power lines and communication cables and equipment located in the communication space.
- 250** – Clarification that new materials and equipment to make them easier to understand and apply with the voltage transfer rules associated with guy insulators being removed.
- 261** (HI) – Replaced reference for outdoor wiring from NEC 7 to NEC 74.
- 354** (D) – Information added regarding tension reduction and mitigation methods.
- 410** (A3) – Exceptions added to exempt number of ground rods from the requirement under specific limiting conditions.
- 420** (K) – Revised to include new requirements and exceptions for protecting workers with arc-rated clothing and equipment.

**THE 2017 NESC AVAILABLE ON AUGUST 1**

For information on institutional and corporate subscription options, please visit [www.ieee.org/nesc-subscriptions](http://www.ieee.org/nesc-subscriptions)

# INCREASING AWARENESS

"Nothing in life is to be feared, it is only to be understood. Now is the time to understand more, so that we may fear less."

-Marie Curie



IEEE is devoted to advancing technological innovation and excellence—and increasing the impact of these innovations to solve our planet's most pressing problems. To that end, IEEE works every year to accelerate the awareness of our mission. In 2016, IEEE succeeded in raising our profile in the technology community and increasing the public's appreciation of the leadership role we play.

## IEEE TAKES CES ATTENDEES ON A MIND-BLOWING MISSION TO MARS

IEEE further established itself as a thought leader and a go-to source for consumer electronics media at the 2016 Consumer Electronics Show in Las Vegas. IEEE once again created an out-of-this-world interactive experience that proved irresistible to CES attendees, helping to drive public and industry conversations about top trends in consumer electronics. Technical experts IEEE Senior Member Yu Yuan and IEEE member Todd Richmond were on hand to lend

their expert commentary to daily videos and media opportunities.

To help demonstrate how the work of IEEE members helps drive innovation, IEEE used virtual reality to put CES attendees in the driver's seat of the Mars Exploration Vehicle (MEV). The mission: navigate the MEV across a Martian landscape to the safety of the IEEE Starship while outrunning a dangerous sandstorm. The virtual rover ride proved a huge hit, attracting more than 1,800 attendees for a test drive and generating nearly 400,000 social media interactions, which impacted IEEE by creating media buzz for all of the exciting work IEEE and its members are doing. IEEE was included in a featured spot in *Gamespot's* "The Coolest and Weirdest Stuff at CES 2016" recap video. In addition, the highly innovative exhibit was such a success that it received the coveted Sizzle Award, presented by *EXHIBITOR* magazine to the top five tradeshow exhibits of the year.

Tom Coughlin, 2016-2017 IEEE Public Visibility Committee Chair, takes flight to Mars at CES.



## LEADING MEDIA OUTLETS RELY ON IEEE EXPERTS

Journalists around the world need reliable sources and that's why they turn to IEEE subject-matter experts when seeking insight into trending technology topics. A concerted effort was made to expand the roster of IEEE technical experts, which resulted in 25 new IEEE members from various IEEE technical societies participating in numerous media opportunities addressing emerging technology topics. In 2016, IEEE continued to see great momentum in securing interest from top-tier media. IEEE experts were featured on *CNN*, the *BBC*, the *Boston Globe*, the *International Business Times*, *O Globo*, *Bloomberg BNA* and *Engadget*, among many other outlets.

In addition, IEEE made significant inroads in broadcast opportunities in both TV and radio. IEEE technical experts were featured on leading outlets including *Fox News* and *CBS Radio*. More than 30 national television and radio interviews were secured in the top 15 media markets, reinforcing IEEE's vast expertise in a variety of subjects. Social media was another bright spot with nearly two million people engaging with IEEE across all social channels in 2016, of which 450,000 were new followers.

## IEEE SOCIAL MEDIA IN 2016



**9,000,000+**

facebook LIKES  
ACROSS IEEE SOCIAL COMMUNITIES



**NEARLY 2,000,000**

PEOPLE ENGAGING WITH IEEE  
ACROSS ALL SOCIAL CHANNELS



**180,000+**  
FOLLOWERS



**80,000+**  
FOLLOWERS



**100,000+**  
FOLLOWERS



## IEEE WOMEN IN ENGINEERING HELPS WOMEN ADVANCE IN THE ENGINEERING PROFESSION

IEEE is on a mission to inspire, engage and advance women in engineering. In 2016, IEEE Women in Engineering (WIE) continued to transform the lives of girls and women around the world through pre-university outreach, technical seminars, humanitarian projects, networking events and educational programs. Over the course of the year, WIE held Leadership Summits in Costa Rica, India, United Arab Emirates and the United States. The annual WIE International Leadership Conference in San Jose, California, attracted more than 1,300 attendees and provided women with the opportunity to create communities, facilitate knowledge sharing, fuel innovation and engage in highly interactive sessions designed to foster discussion and collaboration.

The IEEE Women in Engineering International Leadership Conference in San Jose, California. On left, Takako Hashimoto, 2015-2016 WIE Chair.



The MOVE disaster relief vehicle in action

## MOVE PROJECT PROVIDES CRITICAL DISASTER RELIEF

The MOVE Community Outreach Initiative, a mobile emergency relief program that assists victims of natural disasters with short-term communications, computer and power solutions, was deployed to five different sites that needed assistance in 2016. Based at the University of North Carolina at Charlotte and staffed by a dedicated group of IEEE members trained as Red Cross volunteers, the MOVE vehicle helps disaster victims stay connected and makes sure they can access the help they need. The MOVE project, an IEEE-USA initiative, is funded in part by the IEEE Foundation.

The MOVE disaster relief vehicle was mobilized to Charleston, West Virginia, in early July to provide communications and internet connectivity to Red Cross personnel and case workers assisting citizens devastated by the heavy flooding that killed 24 people and destroyed more than 1,200 homes. In mid-August, the MOVE vehicle mobilized to southern Louisiana to provide communications and internet connectivity to aid people displaced by heavy regional flooding. It was then deployed to assist the Red Cross in Wilmington, North Carolina, in the wake of Hurricane Hermine. In mid-October, the MOVE vehicle provided emergency support for Red Cross operations in areas disrupted by Hurricane Matthew. In December, MOVE was deployed to Tennessee to help with wildfire relief efforts.

## IEEE SHINES AT WORLD MAKER FAIRE

IEEE had an expanded presence at the 2016 World Maker Faire, held in October at the Hall of Science in New York City. Co-sponsored by IEEE Region 1, IEEE-USA and the IEEE Educational Activities Board, the Faire had 100 IEEE volunteers in attendance, and an estimated audience of more than 95,000 attendees. IEEE's Maker Faire booth featured hands-on activities and demonstrations, including an LED Torch workshop sponsored by the Institution of Engineering and Technology, a "Learn to Solder" booth and a demonstration of a robot solving a Rubik's Cube, a project developed by IEEE member Soon Wan and his family.

In May, IEEE also exhibited at the Maker Faire Bay Area in San Mateo. Regional volunteers from groups including IEEE Region 6 and the IEEE Consultants' Network of Silicon Valley teamed up to promote entrepreneurship and discuss emerging technologies with attendees. The IEEE Maker Project, a "do-it-yourself" competition for aspiring makers, was also promoted onsite.

IEEE Bay Area volunteers at the 2016 Maker Faire in San Mateo, California

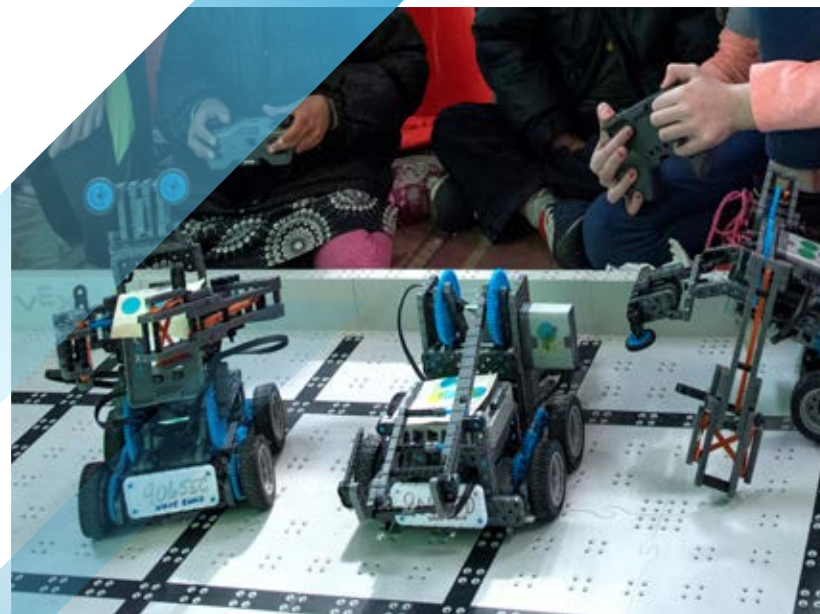




### FAMILIES FLOCK TO DISCOVER ENGINEERING

IEEE-USA was a major sponsor of Discover Engineering Family Day, an annual EWeek event held in February at the National Building Museum in Washington, D.C. Family Day attracted more than 8,000 parents, teachers and K-12 students interested in delving deeper into engineering and computing. Featured guests included former NASA Space Shuttle astronaut Roger Crouch and engineer/entrepreneur/TV celebrity Nate Ball.

IEEE was also an official partner of the USA Science and Engineering Festival held in April at the Washington Convention Center in Washington, D.C. A celebration of U.S. STEM, the festival drew more than 350,000 attendees, who were treated to thousands of hands-on exhibits and activities, along with 30 stage shows.



Above: Students learned about designing robots at Discover Engineering Family Day.

Left: Attendees of Discover Engineering Family Day 2016



Above: Attendees of IEEE N3XT event in Toronto

Top Right: Meshell Baker, Founder/Owner of Meshell Baker, speaks at IEEE N3XT event in Austin.

Bottom Right: Children in this classroom are provided resources to learn the effect of different technologies on various industries.



### IEEE REACHES OUT TO ENTREPRENEURS

IEEE made significant inroads with the entrepreneurial community in 2016, hosting several prominent events, developing specialized content and providing critical networking opportunities. The IEEE N3XT Events in Toronto, Canada, and Austin, Texas, attracted hundreds of attendees, including early-stage and seasoned entrepreneurs, as well as those working at startups, incubators and accelerators. Additionally, the new IEEE N3XT Virtual Events Series held six virtual events over the course of 2016. To further engage company builders, IEEE launched the IEEE Collabratec Entrepreneurship Exchange, which grew at an exponential rate of 2,000% in its first four months and now boasts over 8,500 participants. 2016 also saw the introduction of the IEEE.tv Entrepreneurship Channel and the IEEE.tv Event Showcase, both of which are populated with IEEE content.

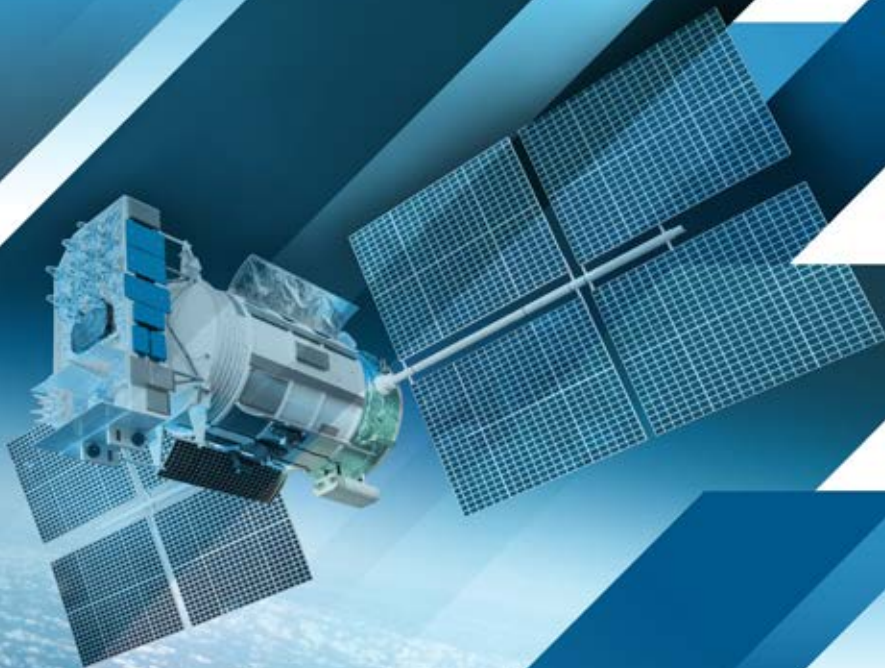
### REACH BRIDGES THE GAP BETWEEN TECHNOLOGY AND HISTORY

IEEE understands that technology and history are stronger together. That's why it launched the REACH (Raising Engineering Awareness Through the Conduit of History) program, which produces educational resources that educators can use to explain the history of technology and the roles played by engineers. REACH, an IEEE Foundation signature program, is being developed and managed by the IEEE History Center. The program debuted in 2016 with the unveiling of a new website and the piloting of two curriculum units. Resources include hands-on activities, videos and lesson plans on various technologies and their impact on society, economics, culture and politics.

# AWARDING EXCELLENCE

"If I have seen further than others,  
it is by standing upon the shoulders of giants."

-Isaac Newton



G. David Forney, Jr. (center) is presented with the 2016 IEEE Medal of Honor from 2016 IEEE President-elect Karen Bartleson (left) and 2016 IEEE President Barry Shoop (right).

In 2016, IEEE recognized the groundbreaking accomplishments and distinguished careers of its members in its diverse fields of interest. As it does every year, IEEE paid tribute to technologists whose achievements have made a lasting impact on humanity. Additionally, IEEE contributions in 2016 were singled out for distinction by a broad range of institutions and associations around the world.

## **G. DAVID FORNEY, JR. NAMED 2016 IEEE MEDAL OF HONOR RECIPIENT**

IEEE Life Fellow G. David Forney, Jr. received IEEE's highest award, the IEEE Medal of Honor. Sponsored by the IEEE Foundation, the award was presented at the 2016 IEEE Honors Ceremony, which was held in New York City and streamed live on IEEE.tv.

Forney has influenced virtually every major advance in the field of coding theory. He introduced concatenated codes in 1965, and his method became widely used for space communications. At Codex Corporation, he designed the first coding system to go into space, a convolutional code with sequential decoding for a NASA Pioneer deep-space mission in 1968. Considered the founder of the modern modem, Forney brought quadrature amplitude modulation (QAM) to the marketplace in 1970 by designing the first high-speed QAM telephone-line modem. Forney also introduced the now universally used concept of trellis diagrams to describe the Viterbi algorithm. His Forney algorithm is employed by all practical decoders for Reed-Solomon codes.

### IEEE XPLORE DIGITAL LIBRARY REACHES FOUR MILLION DOCUMENTS

In 2016, the IEEE *Xplore* Digital Library, one of the world's largest collections of technical literature in engineering, computer science and related technologies, reached a milestone with a total of over four million documents available in its vast repository.

Since its launch in 2000 with an initial collection of 500,000 documents, IEEE *Xplore* has seen significant growth, largely due to the rapid pace of technology innovation and the fact that authors in academia and industry from all corners of the world increasingly choose IEEE to publish their research. From the Internet of Things to cloud computing, hundreds of research papers are added daily. The IEEE *Xplore* online collection includes content from more than 180 IEEE journals and magazines, over 1,500 annual conferences, more than 1,300 active technology standards, 400 e-learning courses and 2,000 e-books.

### HEALTH INFORMATICS STANDARDS RECEIVE TOP AWARD FROM CHINA

Two IEEE standards took first place in the 2016 China Standards Innovation and Award competition. The prestigious national awards program further recognizes the contributions of a team led by IEEE member Professor Daidi Zhong, lending further credence to the global impact and importance of the IEEE 11073 Health Informatics/Medical Device Communication Standards family of standards, which is sponsored by the IEEE Engineering in Medicine and Biology Society.

The award-winning standards were recognized for enhancing the safety and quality of personal connected-health systems and enabling scalability and interoperability. IEEE 11073 standards are used to structure data and enable data transmission across multiple healthcare devices, ensuring effective interoperability and communication between medical, healthcare and wellness devices, as well as with external computer systems.

  
OVER  
**4,000,000**  
DOCUMENTS AVAILABLE IN  
IEEE XPLORE DIGITAL LIBRARY

**1,000**  
ARTICLES  
PUBLISHED ON IEEE ACCESS

### IEEE ACCESS® PUBLISHES 1,000TH ARTICLE

IEEE Access, the award-winning open access journal, published its 1,000th article in 2016. Since its launch in 2013, IEEE Access, which incorporates articles from all IEEE fields of interest and emphasizes applications-oriented and interdisciplinary articles, has steadily grown. IEEE Access articles continue to be among the top 10 most popular articles on *Xplore*, based on monthly downloads. The publication has been accepted into the Clarivate Analytics Web of Science (previously known as Thomson Reuters IP and Science Division) and has won numerous awards, including the Prose Award for Best New Journal in Science, Technology and Medicine. IEEE Access also launched a new website in 2016 to further raise awareness of the journal and assist authors in submitting articles.

### IEEE SPECTRUM WINS PRESTIGIOUS NEAL AWARDS

IEEE *Spectrum* captured two awards at the 62nd Annual Jesse H. Neal Awards Celebration, which recognizes and rewards editorial excellence in business publications. IEEE *Spectrum* won for Best Website in its category – the third time since 2010. IEEE *Spectrum* also took the honor for best infographic, "Lessons from a Decade of IT Failures."

### IEEE SOFTWARE MAGAZINE CAPTURES APEX AWARD OF EXCELLENCE

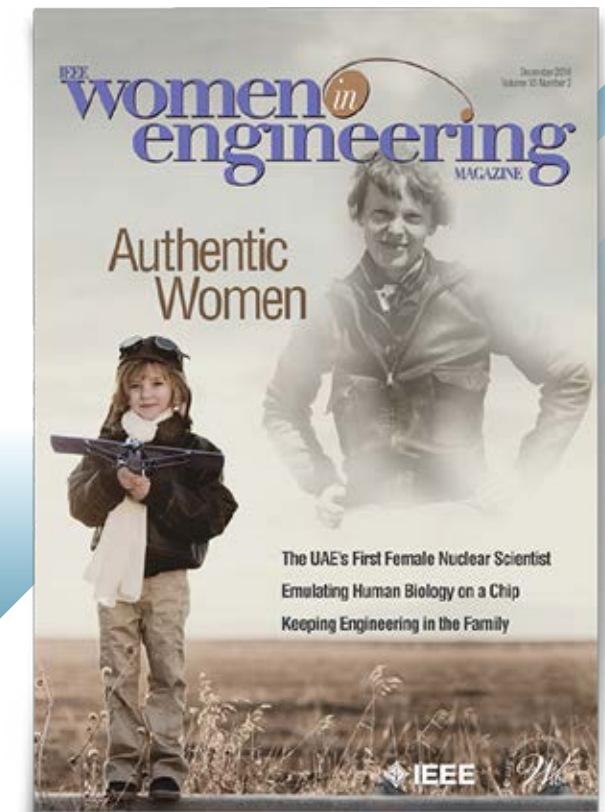
The IEEE Computer Society received the APEX 2016 Award of Excellence in the Magazines, Journals and Tabloids—Electronic category for IEEE *Software* magazine, which offers pioneering ideas, expert analysis and thoughtful insights for software professionals who need to keep up with rapid technology change. IEEE *Software* was recognized for its November/December 2015 issue, which focused on refactoring, the process of improving a program's source code without changing its external behavior.

From left: Mark Montgomery, Susan Hassler, Stephen Cass, and Glenn Zorpette of IEEE *Spectrum* display 2016 Neal Awards for best website and best infographics.



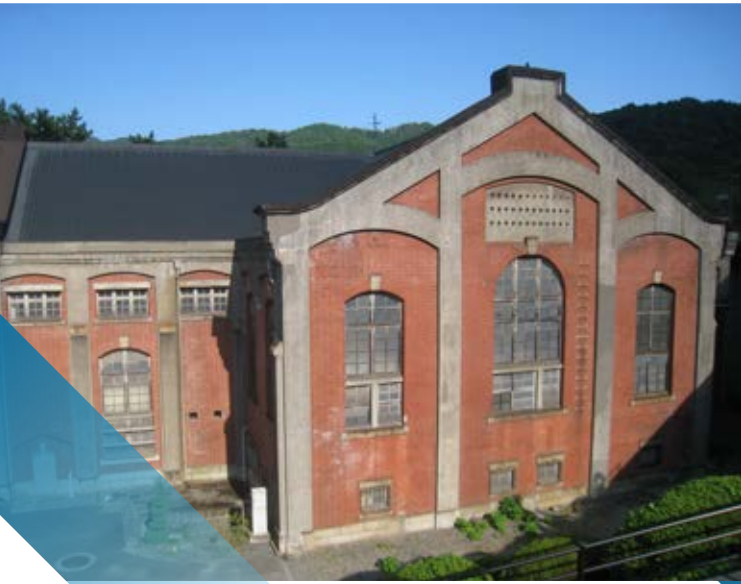
The APEX Awards for Publication Excellence is an international competition that recognizes outstanding publications from newsletters and magazines to annual reports and websites. All told, IEEE received a total of eight awards in the 2016 APEX competition. Other IEEE publications receiving recognition include:

- IEEE-USA *InSight* in the Newsletter—Electronic and Email category
- *The Institute* in the Magazines, Journals and Tabloids category
- IEEE *Women in Engineering Magazine* in the Technical and Technology Writing category
- IEEE-USA *Women in Engineering Compilation* — Volume 1 in the One-of-a-Kind Publications — Electronic category



## IEEE HONORS HISTORIC MILESTONES

Each year, the IEEE Milestones in Electrical Engineering and Computing program recognizes exceptional technical achievements that occurred at least 25 years ago. In past years, the program has acknowledged the work of landmark inventors such as Benjamin Franklin, Alexander Graham Bell and Thomas Edison. Among the IEEE Milestones recognized in 2016 were:



### KEAGE POWER STATION: JAPAN'S FIRST COMMERCIAL HYDROELECTRIC PLANT, 1890-1897, KYOTO, JAPAN

Keage Power Station achieved Japan's first commercial hydroelectric generation using water intake from the Lake Biwa Canal. Construction of the station began in 1890 and was completed in 1897 with a total capacity of 1,760 kW, pioneering the start of power generation. A second canal revitalized the station in 1936 with a capacity of 5,700 kW, contributing to Japan's technological modernization.

### FIRST BROADCAST TRANSMISSION FROM KONIGS WUSTERHAUSEN, 1920, GERMANY

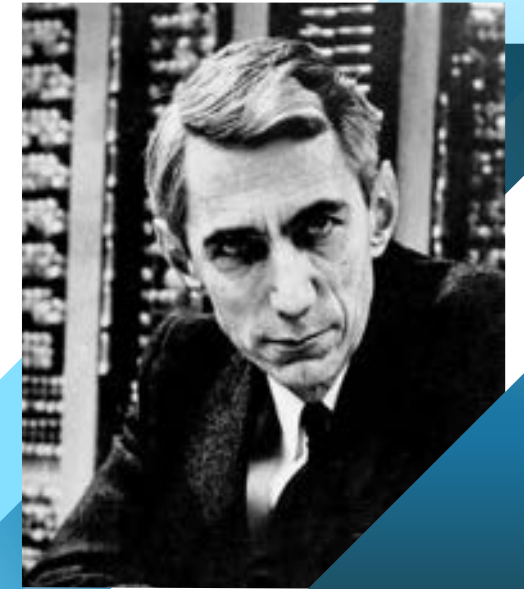
In early 1920, technicians of the Konigs Wusterhausen radio station, together with employees from the Telegraphentechnisches Reichsammt, began experiments to broadcast voice and music using an arc transmitter. By late 1920, tests had become successful enough to transmit an instrumental concert on 22 December—the so-called Christmas concert. This transmission is regarded as the birth of statutorily regulated broadcasting in Germany.



2016 President Barry Shoop (center) attends the dedication ceremony of the Konigs Wusterhausen milestone.

### SHANNON DEVELOPMENT OF INFORMATION THEORY, 1936-1967, BOSTON, USA

The mathematical principles of information theory, laid down by Claude Elwood Shannon over the period 1939-1967, set in motion a revolution in communications system engineering. They quantified the concept of information, established fundamental limits in the representation and reliable transmission of information, and revealed the architecture of systems for approaching them. Today, information theory continues to provide the foundation for advances in information collection, storage, distribution and processing.



### AMPEX VIDEOTAPE RECORDER, 1956, PALO ALTO, CALIFORNIA, USA

In 1956, Ampex Corporation of Redwood City, California, introduced the first practical videotape recorder for television stations and networks to produce and time-shift broadcasts, replacing the impractical kinescope movie film that was previously used to record TV. The Emmy Award®-winning Ampex VTR analog-video standard ruled broadcasting and video production worldwide for 20 years.

### OTHER IEEE MILESTONES RECOGNIZED IN 2016:

- **Weston Meters**, 1887-1893, Newark, New Jersey, USA
- **Grand Central Terminal Electrification**, 1906-1913, New York, New York, USA
- **American Standard Code for Information Interchange ASCII**, 1963, Middletown, New Jersey, USA
- **The High Definition Television System**, 1964-1989, Tokyo, Japan
- **Dadda's Multiplier**, 1965, Milano, Italy
- **Emergency Warning Code Signal Broadcasting System**, 1985, Tokyo, Japan
- **Trans-Atlantic Telephone Fiber-Optic Submarine Cable (TAT-8)**, 1988, Middletown, New Jersey, USA

# EXPANSION AND OUTREACH

"Do not follow where the path may lead.  
Go instead where there is no path and leave a trail."

-Ralph Waldo Emerson



IEEE improved its current products and services and created new programs and initiatives to increase the global reach of IEEE. It expanded its online presence and enhanced accessibility to IEEE standards and other helpful resources, while growing its publications lineup. IEEE also reached out to engineers and future engineers around the world through events like IEEE Day.



IEEE Day participants

## STANDARDS MADE ACCESSIBLE AT IEEE XPLORE

Over 1,000 IEEE standards were converted to HTML format and placed in the IEEE *Xplore* Digital Library, giving subscribers a more engaging and interactive experience. This was one in a series of updates aimed at enhancement and improvement of the IEEE *Xplore* user experience and it distinguishes IEEE as one of the first publishers to make its extensive collection of technical standards documents available in interactive HTML.

The interactive experience saves time and effort by enabling users to: quickly scan documents and find the information they're looking for; view a mini gallery of figures, tables and multimedia; explore the evolution and history of a standard in an intuitive and visual way; navigate long documents via a mini table of contents and floating navigation panel; and more easily read standards documents on tablets and smartphones.

### THREE NEW IEEE JOURNALS DEBUT

- **IEEE Robotics and Automation Letters** provides a timely and concise account of innovative research ideas and application results; reporting significant theoretical findings and application case studies in areas of robotics and automation.
- **IEEE Transactions on Intelligent Vehicles** publishes articles that provide innovative research concepts and application results, reports significant theoretical findings and application case studies, and raises awareness of pressing research and application challenges in areas of intelligent vehicles in a roadway environment, in particular automated vehicles.
- **IEEE Transactions on Sustainable Computing** is devoted to publishing high-quality papers that explore the different aspects of sustainable computing over a wide range of problem domains and technologies, from software and hardware designs to applications.



### IEEE MAINTAINS POSITION AS A TOP PUBLISHER

The year saw IEEE continue as a top publisher of science and technology journals. According to the 2015 Thomson Reuters Journal Citation Reports, released in June 2016 by the Thomson Reuters IP and Science Division (as it was then known), IEEE journals maintained their status as premier scholarly publications. The Thomson Reuters Impact Factor metric ranked 10 different IEEE journals number one in their categories. The report found that IEEE publishes 14 of the top 15 journals in the Telecommunications category and 17 of the top 20 journals in the Electrical and Electronic Engineering category.

Also singled out for distinction in the Thomson Reuters Journal Citation Reports was *Proceedings of the IEEE*, the leading journal providing in-depth tutorial and review coverage of the technical developments that shape the world in which we live. The 2015 Journal Citation Reports showed that *Proceedings* was the sixth most highly cited journal by Impact Factor in the Electrical and Electronic Engineering category. More notably, it was ranked number two by Article Influence Score.



IEEE Day participants

### GROUPS AROUND THE WORLD CELEBRATE IEEE DAY

The theme of IEEE Day 2016 was "Leveraging Technology for a Better Tomorrow." Celebrated worldwide on 4 October, this was the fifth annual IEEE Day and it demonstrated the many ways that the thousands of IEEE members in local communities can join together to collaborate on ideas that will improve our future.

Hundreds of events were organized by more than 500 groups around the world. Among the more notable happenings were outreach efforts to spark the interest of young women in engineering. For example, "Introduce a Girl to Photonics" sessions were held by dozens of groups at high schools and universities internationally. Hackathons were another popular way to celebrate IEEE Day, with one targeted to women held by the IEEE student branch at the Indira Gandhi Institute of Technology in New Delhi, during which participants were asked to present their ideas for software and hardware to solve real-world problems.



IEEE Day participant

# ELEVATING ENGAGEMENT

"Leadership and learning are indispensable to each other."

-John F. Kennedy



In 2016, IEEE strengthened its connection with students and young professionals around the world through competitions, conferences and community events.

## IEEEEXTREME® SEES ITS BEST YEAR YET

The IEEEExtreme 24-hour coding contest celebrated its 10th anniversary by rising to new heights. The competition, which brings together IEEE student members from around the globe to solve programming challenges they might be confronted with in the real world, welcomed over 6,000 participants in 2016, the most ever. They came from 76 countries and made up nearly 2,500 teams. The contest challenges teams to work collaboratively to solve a series of programming problems released at the same time globally over the duration of one day.

**IEEEEXTREME**  
PROGRAMMING  
COMPETITION 10.0  
22ND OCT 2016  
STARTING 00:00:00 UTC

**What is IEEEExtreme?**  
IEEEExtreme is a 24-hour online coding competition, within which a worldwide community of college and university students enjoy an engaging set of unique programming challenges.

**Who can compete?**  
• Teams up to 3 collegiate students who are current IEEE Student Members.  
• A local college or university can form multiple teams.

**Where will it be held?**  
IEEEExtreme is a virtual event, but teams often organize around their local Student Branches.

**What could I get?**  
• Earn Unlimited bragging rights and an item for your resume.  
• Experience The Grand Prize is a trip to the IEEE conference of your choice, anywhere in the world!

**Not an IEEE member?**  
If you are not a Student Member you can join both IEEE Computer Society for US \$35 or US \$40 depending on location.  
Current IEEE Student Members can add IEEE Computer Society Student Membership for just US \$4.

FOR MORE INFO VISIT  
[www.ieee.org/xtreme](http://www.ieee.org/xtreme)

FOLLOW  
XTREME ON

IEEE

## YOUNG PROFESSIONALS EXPAND SIGNATURE EVENTS

IEEE Young Professionals is an international community of members and volunteers who work together to elevate their professional image, expand their global network, connect with peers locally and give back to the community. An important driver in achieving these goals is the Signature Events series, which brings youth and energy to events inside and outside IEEE while providing meaningful member, volunteer and partner-development opportunities.

Signature Events enjoyed a number of successes in 2016. These included Regional Meetups at IEEE society conferences, two-day Technology Bootcamps in Bangalore, India, and Bogota, Colombia, and 33 STEP + Community Engagement Workshops. Other high-profile events included the IEEE Honors Ceremony, GlobeCom® and IEEE N3XT. Since January 2016, the Young Professionals have seen 15 new affinity groups formed, 44,305 unique visitors, 223,119 total visits to the YP.IEEE.org website, a 23% increase in Facebook followers and 10,227 participants in the IEEE Young Professionals IEEE Collabratec Community, up from 3,625.

Student members from the IEEE University of Peradeniya Student Branch from Sri Lanka participate in IEEEExtreme.



### SARAJEVO HOSTS IEEE STUDENT AND YOUNG PROFESSIONAL CONGRESS

The 2016 IEEE Student and Young Professional Congress, titled "Technology and Innovation for a Brighter Future," was held in Sarajevo, Bosnia and Herzegovina, and provided young people in the country with insight into the many opportunities that await them in IEEE.

The Congress, which had over 100 attendees, opened the door to ongoing collaborations, encouraging participants to think creatively, develop new ideas and work with the IEEE global community to realize their goals. Through a variety of technical and non-technical workshops, lectures from global experts, and professional networking and social events, students and young professionals made valuable new contacts and developed collaborative relationships with local industry and around the world.

IEEE Young Professionals volunteers meet face-to-face at a Regional meeting.



The centerpiece of the Congress was an Ideation-Innovation Hackathon, with 13 student groups from eight universities working with academic and industry advisors to develop innovative products and services with an eye toward transforming them into startups.

Five of the 13 student project ideas are now in the pre-incubation stage and at least two are poised to launch as startups.

### IEEE ADVANCES ACCREDITATION

IEEE has a strong and continuing interest in sustaining and improving the accrediting process for relevant degrees offered by universities and colleges worldwide. It advanced this interest in 2016 on a number of fronts. It held a seminar titled Accreditation of International Value in Peru in April, with more than 100 heads of accreditation offices and specialists from more than 30 higher education institutions in attendance. The primary topic was to share IEEE's perspective on international agreements and the challenges they pose to the quality of higher education and accreditation processes.

The Lima Accord is a breakthrough agreement facilitated by IEEE and signed in September by seven Latin American and Caribbean accrediting bodies. The accord means programs accredited by these bodies, and the graduates of programs accredited by any of the signatory bodies, can be recognized by the other bodies as having met the academic requirements for entry to the practice of engineering.



## IEEE BOARD OF DIRECTORS

- Back Row, left to right:** Jose M.F. Moura, James M. Conrad, William W. Moses, Timothy P. Kurzweg, Harold Javid, Hirofumi Akagi, John W. Walz, Thomas Coughlin, Robert C. Parro, Maciej Ogorzalek
- Middle Row, left to right:** Jerry L. Hudgins, Wai-Choong (Lawrence) Wong, Sheila Hemami, Theodore W. Hissey, Bruce P. Kraemer, Parviz Famouri, Celia L. Desmond, S.K. Ramesh, Rob Reilly, Antonio C. Ferreira
- Front Row, left to right:** E. James Prendergast, Ramakrishna Kappagantu, Ronald A. Tabroff, Howard E. Michel, Barry L. Shoop, Karen Bartleson, Peter A. Eckstein, Witold M. Kinsner, Ray Liu

## IEEE MANAGEMENT COUNCIL

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- Front Row, left to right:** Donna Hourican, Michael Forster, Cecelia Jankowski, E. James Prendergast, Cherif Amirat, Mary Ward-Callan



## MESSAGE FROM THE TREASURER

I am pleased to present the audited financial reports of IEEE. These reports indicate that the overall financial health of the organization continues to be strong as shown by total assets of \$598.7 million exceeding total liabilities of \$256.5 million.

The IEEE Statement of Activities reflects total revenues for 2016 of \$480.4 million, an increase of \$37.9 million, or 8.6% from 2015. Some of the key contributors that drove the increase in revenues are:

- IEEE GlobalSpec (acquired April 29, 2016)
- IEEE Power & Energy Society Transmission and Distribution Conference and Exposition
- Standards Membership, Registration Programs and Distributors and Resellers
- IEEE *Xplore* platform enhancements have contributed to an increase in revenues for IEEE/IET Electronic Library (IEL). Enhancements have included:
  - New article metrics and industry accepted Open Researcher and Contributor Identifiers (ORCID) for author names
  - Addition of nearly 3 million new patent references from the World Intellectual Property Office (WIPO)
  - Addition of two American Geophysical Union periodicals
  - Collaboration with IP.com to launch InnovationQ Plus, a Discovery and Analytics tool

In 2016, IEEE had total operating expenses of \$490.1 million. This represents an increase of \$37.7 million, or 8.3% from 2015. Some of the key contributors that drove the increase in expenses are:

- IEEE GlobalSpec (acquired April 29, 2016)
- IEEE Power & Energy Society Transmission and Distribution Conference and Exposition
- An increase in spending related to outreach and public awareness efforts to inform the public and members about technology and the engineering profession

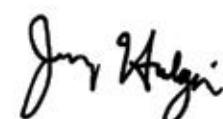
The above resulted in a \$9.7 million operating loss for

2016. This was offset by a \$27.4 million net gain from investments which includes realized and unrealized gains and interest and dividends, \$2.7 million pension related non-operating gain and \$2.2 million income tax benefit related to IEEE GlobalSpec. Overall, IEEE Net Assets increased \$22.6 million to \$342.3 million from the 2015 year-end balance of \$319.7 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, the review on the adequacy of IEEE's internal accounting controls, and the quality of IEEE's financial reporting prior to issuing the 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.



**Jerry L. Hudgins**  
2016 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, 2016 and 2015, and 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 auditor's 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 consolidated financial position of The Institute of Electrical and Electronics Engineers, Incorporated as of December 31, 2016 and 2015, and the changes in their net assets and their cash flows for the years then ended in accordance with accounting principles generally accepted in the United States of America.



Iselin, New Jersey  
April 13, 2017

## CONSOLIDATED STATEMENTS OF FINANCIAL POSITION

As of December 31, 2016 and 2015

ASSETS	2016	2015
<b>CURRENT ASSETS</b>		
Cash and cash equivalents	\$ 14,749,800	\$ 12,447,900
Accounts receivable, less allowance for doubtful accounts of \$1,767,800 in 2016 and \$1,937,800 in 2015	41,952,100	30,574,700
Prepaid expenses and other assets	18,637,800	17,121,000
Investments, at fair value	437,982,300	452,721,400
Investments - other	2,022,000	2,205,700
<b>Total current assets</b>	<b>515,344,000</b>	<b>515,070,700</b>
<b>NONCURRENT ASSETS</b>		
Long-term investments, at fair value	191,400	191,400
Land, buildings, and equipment, net	43,116,000	49,101,500
Goodwill	15,693,700	-
Intangible assets	24,378,900	-
<b>Total assets</b>	<b>\$ 598,724,000</b>	<b>\$ 564,363,600</b>
<b>LIABILITIES AND NET ASSETS</b>		
<b>CURRENT LIABILITIES</b>		
Accounts payable and accrued expenses	\$ 54,430,000	\$ 47,072,700
Capital lease obligations	330,700	458,300
Accrued pension and other employee benefits	683,400	717,100
Amounts held on behalf of IEEE Foundation, Incorporated	40,414,800	39,721,100
Deferred revenue	121,708,900	126,169,000
Income tax liability	5,900	-
<b>Total current liabilities</b>	<b>217,573,700</b>	<b>214,138,200</b>
<b>NONCURRENT LIABILITIES</b>		
Capital lease obligations, net of current portion	439,600	189,400
Accrued pension and other employee benefits, net of current portion	30,740,400	30,367,500
Deferred tax liabilities	7,704,800	-
<b>Total liabilities</b>	<b>256,458,500</b>	<b>244,695,100</b>
Commitments and contingencies		
<b>NET ASSETS</b>		
Unrestricted	340,498,900	317,675,900
Temporarily restricted	1,575,200	1,801,200
Permanently restricted	191,400	191,400
<b>Total net assets</b>	<b>342,265,500</b>	<b>319,668,500</b>
<b>Total liabilities and net assets</b>	<b>\$ 598,724,000</b>	<b>\$ 564,363,600</b>

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

## CONSOLIDATED STATEMENT OF ACTIVITIES

For the year ended December 31, 2016

	Unrestricted	Temporarily Restricted	Permanently Restricted	Total
<b>REVENUES</b>				
Memberships and public imperatives	\$ 67,923,700	\$ 284,400	\$ -	\$ 68,208,100
Periodicals and media	190,568,800	-	-	190,568,800
Conferences	181,431,400	-	-	181,431,400
Standards	39,613,900	-	-	39,613,900
Other income	537,200	-	-	537,200
Net assets released from restrictions	540,300	(540,300)	-	-
<b>Total revenues</b>	<b>480,615,300</b>	<b>(255,900)</b>	<b>-</b>	<b>480,359,400</b>
<b>EXPENSES</b>				
Program services:				
Memberships and public imperatives	116,897,700	-	-	116,897,700
Periodicals and media	179,410,400	-	-	179,410,400
Conferences	149,211,700	-	-	149,211,700
Standards	36,607,900	-	-	36,607,900
<b>Total program services</b>	<b>482,127,700</b>	<b>-</b>	<b>-</b>	<b>482,127,700</b>
Supporting services:				
General and administrative	7,957,800	-	-	7,957,800
<b>Total expenses</b>	<b>490,085,500</b>	<b>-</b>	<b>-</b>	<b>490,085,500</b>
Changes in net assets before nonoperating activities	(9,470,200)	(255,900)	-	(9,726,100)
<b>NONOPERATING ACTIVITIES</b>				
Investment gain, net	27,362,900	29,900	-	27,392,800
Pension and related benefits activity other than net periodic benefit cost	2,717,600	-	-	2,717,600
Changes in net assets before income tax	20,610,300	(226,000)	-	20,384,300
Benefit for income taxes	2,212,700	-	-	2,212,700
Changes in net assets after income tax	22,823,000	(226,000)	-	22,597,000
Net assets, beginning of year	317,675,900	1,801,200	191,400	319,668,500
<b>Net assets, end of year</b>	<b>\$ 340,498,900</b>	<b>\$ 1,575,200</b>	<b>\$ 191,400</b>	<b>\$ 342,265,500</b>

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

## CONSOLIDATED STATEMENT OF ACTIVITIES

For the year ended December 31, 2015

	Unrestricted	Temporarily Restricted	Permanently Restricted	Total
<b>REVENUES</b>				
Memberships and public imperatives	\$ 69,630,100	\$ 533,700	\$ -	\$ 70,163,800
Periodicals	168,377,000	-	-	168,377,000
Conferences	166,378,000	-	-	166,378,000
Standards	37,306,600	1,900	-	37,308,500
Other income	247,600	-	-	247,600
Net assets released from restrictions	402,600	(402,600)	-	-
<b>Total revenues</b>	<b>442,341,900</b>	<b>133,000</b>	<b>-</b>	<b>442,474,900</b>
<b>EXPENSES</b>				
Program services:				
Memberships and public imperatives	111,598,700	-	-	111,598,700
Periodicals	154,273,600	-	-	154,273,600
Conferences	141,512,700	-	-	141,512,700
Standards	35,529,100	-	-	35,529,100
<b>Total program services</b>	<b>442,914,100</b>	<b>-</b>	<b>-</b>	<b>442,914,100</b>
Supporting services:				
General and administrative	9,533,100	-	-	9,533,100
<b>Total expenses</b>	<b>452,447,200</b>	<b>-</b>	<b>-</b>	<b>452,447,200</b>
Changes in net assets before nonoperating activities	(10,105,300)	133,000	-	(9,972,300)
<b>NONOPERATING ACTIVITIES</b>				
Investment loss, net	(6,402,900)	(3,300)	-	(6,406,200)
Pension and related benefits activity other than net periodic benefit cost	3,004,900	-	-	3,004,900
Changes in net assets	(13,503,300)	129,700	-	(13,373,600)
Net assets, beginning of year	331,179,200	1,671,500	191,400	333,042,100
<b>Net assets, end of year</b>	<b>\$ 317,675,900</b>	<b>\$ 1,801,200</b>	<b>\$ 191,400</b>	<b>\$ 319,668,500</b>

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

## CONSOLIDATED STATEMENTS OF CASH FLOWS

For the years ended December 31, 2016 and 2015

	2016	2015
<b>CASH FLOWS FROM OPERATING ACTIVITIES</b>		
Changes in net assets	\$ 22,597,000	\$ (13,373,600)
Adjustments to reconcile changes in net assets to net cash provided by operating activities:		
Depreciation and amortization	19,405,100	15,802,600
Unrealized (gains) loss on investments	(7,538,700)	25,863,200
Gains on sale of investments	(12,230,900)	(13,044,100)
Bad debt expense	906,700	747,400
<i>Changes in assets and liabilities:</i>		
Accounts receivable	(10,268,500)	17,600
Prepaid expenses and other assets	(1,394,000)	(1,769,600)
Accounts payable and accrued expenses	5,965,800	(2,881,600)
Accrued pension and other employee benefits	339,200	1,378,900
Amounts held on behalf of IEEE Foundation, Incorporated	693,700	(913,400)
Deferred revenue	(5,340,500)	12,583,900
Deferred income taxes	(2,220,600)	-
<b>Net cash provided by operating activities</b>	<b>10,914,300</b>	<b>24,411,300</b>
<b>CASH FLOWS FROM INVESTING ACTIVITIES</b>		
Proceeds from sales of investments	381,596,200	290,442,500
Purchases of investments	(346,903,800)	(303,823,800)
Acquisition of GlobalSpec, Inc., net of cash acquired	(34,561,700)	-
Purchase of land, buildings and equipment	(8,843,400)	(10,592,800)
<b>Net cash used in investing activities</b>	<b>(8,712,700)</b>	<b>(23,974,100)</b>
<b>CASH FLOWS FROM FINANCING ACTIVITIES</b>		
Change in cash overdraft	550,600	860,300
Payment of capital lease obligations	(450,300)	(1,075,100)
<b>Net cash provided by (used in) financing activities</b>	<b>100,300</b>	<b>(214,800)</b>
Net increase in cash and cash equivalents	2,301,900	222,400
Cash and cash equivalents, beginning of year	12,447,900	12,225,500
<b>Cash and cash equivalents, end of year</b>	<b>\$ 14,749,800</b>	<b>\$ 12,447,900</b>
<b>SUPPLEMENTAL DATA</b>		
Interest paid	\$ 140,600	\$ 253,500
Purchases of fixed assets included in accounts payable and accrued expenses	\$ 689,600	\$ 516,700
Acquisition of equipment through capital lease obligations	\$ 572,900	\$ 77,600
Deferred tax liability associated with GlobalSpec, Inc. acquisition	\$ 9,925,400	\$ -

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

## NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

December 31, 2016 and 2015

### 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 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. Acquisition details are provided in Note 2.

Implementation of the Institute's objectives is performed through regions, sections, chapters, societies, and councils, all of which are not 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 these with the 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.

### 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. The consolidated financial statements include the accounts of IEEE, Inc., Global IEEE Institute for Engineers, 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.

#### 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:

*Unrestricted* – net assets that are not subject to donor-imposed stipulations. Unrestricted net assets may be designated for specific purposes by actions of the Board of Directors. Unrestricted net assets can be utilized to carry out any of the purposes of the Institute.

*Temporarily restricted* – represent amounts restricted by donors for specific activities of the Institute or to be used at some future date. The Institute records contributions as temporarily restricted 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,

temporarily restricted net assets are reclassified to unrestricted net assets 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 unrestricted net assets.

*Permanently restricted* – 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").

#### Acquisition of GlobalSpec, Inc.

On April 29, 2016, IEEE, Inc., a subsidiary of the Institute, acquired 100% of the outstanding shares of GlobalSpec, Inc. in a stock purchase agreement and accounted for the acquisition in accordance with FASB Accounting Standards Codification ("ASC") Topic 958-805 *Acquisition by a Not-for-Profit Entity*. GlobalSpec, Inc. is 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 the Institute has been renamed IEEE GlobalSpec, Inc. ("IEEE GlobalSpec") and will significantly complement 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.

The purchase price of \$34,906,300 was allocated to the net tangible assets acquired, based upon their estimated fair values as of April 29, 2016. Results of IEEE GlobalSpec have been included in the Institute's accompanying 2016 consolidated financial statements since April 29, 2016. The fair values assigned to assets acquired and liabilities assumed at the acquisition date were as follows:

Current assets, including \$344,600 in cash received	\$ 2,483,000
Property, plant and equipment	9,300
Intangible assets	28,200,000
Current liabilities	(1,554,300)
<b>Net assets acquired</b>	<b>\$ 29,138,000</b>
<b>Goodwill, excluding tax goodwill (see Note 12)</b>	<b>\$ 5,768,300</b>

Included in the purchase price allocation above is \$28,200,000 of identifiable intangible assets which primarily relate to registered users and internally developed internal-use technology. The Institute also recorded goodwill of \$5,768,300, relating to the difference between the estimated fair value of net assets acquired and the purchase price. The acquisition generated a deferred tax liability of \$9,925,500 arising from the goodwill and intangible assets that are not expected to be deductible for income tax purposes.

#### Cash and Cash Equivalents

Cash and cash equivalents are defined as cash balances held in bank accounts and 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 commingled funds that are not readily marketable are reported at fair value as determined by the respective investment manager as of the reporting date. Such valuations involve assumptions and methods that are reviewed by the Institute and which 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 for investment with original maturities greater than three months that are not debt securities and are carried at amortized cost.

#### Fair Value Measurements

The Financial Accounting Standards Board ("FASB") Topic 820, under the FASB Accounting Standards Codification ("ASC") defines fair value, establishes a framework for measuring fair value, and expands disclosures about fair value measurements. This standard provides a consistent definition of fair value, which focuses on an exit price between market participants in an orderly transaction. The standard 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. Also included in Level 2 are investments measured using a net asset value ("NAV") per share, or its equivalent, that may be redeemed at NAV at the date of the statement of financial position or in the near term, which the Institute has determined to be within 90 days.

**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. Also included in Level 3 are investments measured using a NAV per share, or its equivalent, that can never be redeemed at NAV or for which redemption at NAV is uncertain due to lock-up periods or other investment restrictions.

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.

#### Revenue Recognition

Revenues from membership dues and periodicals are recognized on a straight-line basis over the period to which they pertain. Amounts received in advance are included in deferred revenue.

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

Conference revenues and related expenses are reported in the year in which the respective conference occurs. Amounts received in advance and costs paid in advance by the Institute for conferences occurring in the following year are deferred.

Standards revenue primarily includes revenue from periodicals, publications, and standards working groups. Standards periodicals and publications revenues are recognized on a straight-line basis over the period to which they pertain. Working groups work to create and write the standards and strive for broad representation of global participation.

Contributions, including 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.

## 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 our fields of interest and/or positioning our 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	2016	Unaudited 2015*
Revenues	\$ 2,366,300	\$ 2,684,000
Expenses	14,069,600	10,563,500
Public Imperatives, net	\$ (11,703,300)	\$ (7,879,500)

\*During 2016, the Institute adopted a new definition of public imperatives activities. The revenues and expenses shown above for 2015, which are unaudited, reflect the application of this new definition.

## 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 \$1,500 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. In accordance with ASC 350, *Intangibles- Goodwill and Other*, 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 at the end of the first quarter (March 31) 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 as a basis to determine whether the two-step impairment step is necessary. The first step of the goodwill impairment test requires a determination of whether the fair value of each reporting unit is less than its carrying value. If the fair value exceeds the carrying value, goodwill is not impaired and no further testing is performed. The second step is performed only if the carrying value exceeds the fair value. The second step involves an analysis reflecting the allocation of fair value determined in the first step (as if it was the purchase price in a business combination). This process may result in the determination of a new amount of goodwill. If the calculated fair value of the goodwill resulting from this allocation is lower than the carrying value of the goodwill in the reporting unit, an impairment loss is recorded in the consolidated statements of activities.

## 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 long-lived asset (or asset group) 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 cash flow models, quoted market values and third-party independent appraisals, as considered necessary.

ASC 350 also requires that intangible assets with definite lives be 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 table presents identified intangible assets as of December 31, 2016:

	Amortization Period	Gross Amount	Accumulated Amortization (b)	Net Amount
<b>INTANGIBLE ASSETS</b>				
Registered users	5 years	\$ 12,600,000	\$ 1,680,000	\$ 10,920,000
Internally developed internal-use technology	4 years	11,700,000	1,950,000	9,750,000
Other (a)	3 - 20 years	3,900,000	191,100	3,708,900
<b>Total</b>		<b>\$ 28,200,000</b>	<b>\$ 3,821,100</b>	<b>\$ 24,378,900</b>

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

(b) Accumulated amortization is for the period April 29, 2016 through December 31, 2016.

The Institute recorded amortization of identified intangible assets of \$3,821,100 for the year ended December 31, 2016. 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
2017	\$ 2,520,000	\$ 2,925,000	\$ 286,700	\$ 5,731,700
2018	2,520,000	2,925,000	286,700	5,731,700
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

## Accounts Payable and Accrued Expenses

Cash overdrafts are included in accounts payable and accrued expenses. At December 31, 2016 and 2015, cash overdrafts amounted to \$1,410,900 and \$860,300, 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, pension and other employee benefit related activity other than net periodic benefit cost and other activities considered to be of a more unusual or nonrecurring nature, if any.

## Income Taxes and Tax Status

The Institute follows the provisions of FASB ASC 740, *Income Taxes*. ASC 740-10 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.

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 may be subject to tax on income unrelated to its exempt purpose, unless that income is otherwise excluded by the Code. As of December 31, 2016, management has determined that there are no significant uncertain tax positions that would require recognition or disclosure in the accompanying consolidated financial statements.

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.

#### New Accounting Standard

In November 2015, the FASB issued Accounting Standard Update ("ASU") 2015-17, Balance Sheet Classification of Deferred Taxes, which simplifies the presentation of deferred income taxes by eliminating the requirement for entities to separate deferred tax liabilities and assets into current and noncurrent amounts. Instead, it requires deferred tax assets and liabilities be classified as noncurrent in the statement of financial position.

This standard is effective prospectively for fiscal years beginning after

December 15, 2017, with early adoption and retrospective application permitted. The Institute elected to early adopt ASU 2015-17 in 2016 on a prospective basis. As a result, the Institute has presented its deferred tax assets and liabilities on a net basis as noncurrent deferred tax liabilities at December 31, 2016.

#### 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.

#### Subsequent Events

The Institute evaluated its December 31, 2016 consolidated financial statements for subsequent events through April 13, 2017, 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, except as disclosed in Note 5.

### NOTE 3. INVESTMENTS

As of December 31, 2016, the Institute's investments, at fair value, by level within the fair value hierarchy, consist of the following:

	2016			
	Level 1	Level 2	Level 3	Total
<i>Common stock:</i>				
Consumer	\$ 28,385,300	\$ -	\$ -	\$ 28,385,300
Technology	32,500,000	-	-	32,500,000
Financial services	41,021,800	-	-	41,021,800
Healthcare	25,106,600	-	-	25,106,600
Industrials	14,027,900	-	-	14,027,900
Energy	11,747,100	-	-	11,747,100
Other	7,057,600	-	-	7,057,600
<b>Total common stocks</b>	<b>159,846,300</b>	<b>-</b>	<b>-</b>	<b>159,846,300</b>
<i>Mutual funds:</i>				
Growth funds	24,814,600	-	-	24,814,600
Fixed income funds	104,906,800	-	-	104,906,800
Money market funds	39,196,400	-	-	39,196,400
Other funds	20,867,900	-	-	20,867,900
<b>Total mutual funds</b>	<b>189,785,700</b>	<b>-</b>	<b>-</b>	<b>189,785,700</b>
U.S. Government securities	18,468,400	-	-	18,468,400
Commingled funds	-	64,399,300	-	64,399,300
	<b>368,100,400</b>	<b>64,399,300</b>	<b>-</b>	<b>432,499,700</b>
Cash held for investment	5,846,000	-	-	5,846,000
Add: receivables for securities sold and accrued interest	870,200	-	-	870,200
Less: liabilities for securities purchased and accrued fees	(1,042,200)	-	-	(1,042,200)
<b>Total investments, at fair value</b>	<b>\$ 373,774,400</b>	<b>\$ 64,399,300</b>	<b>\$ -</b>	<b>\$ 438,173,700</b>

As of December 31, 2015, the Institute's investments, at fair value, by level within the fair value hierarchy, consist of the following:

	2015			
	Level 1	Level 2	Level 3	Total
<i>Common stock:</i>				
Consumer	\$ 30,933,700	\$ -	\$ -	\$ 30,933,700
Technology	36,160,200	-	-	36,160,200
Financial services	33,628,700	-	-	33,628,700
Healthcare	31,037,100	-	-	31,037,100
Industrials	15,636,400	-	-	15,636,400
Energy	9,552,000	-	-	9,552,000
Other	7,365,700	-	-	7,365,700
<b>Total common stocks</b>	<b>164,313,800</b>	<b>-</b>	<b>-</b>	<b>164,313,800</b>
<i>Mutual funds:</i>				
Growth funds	28,199,800	-	-	28,199,800
Fixed income funds	117,581,200	-	-	117,581,200
Money market funds	62,951,100	-	-	62,951,100
Other funds	22,746,800	-	-	22,746,800
<b>Total mutual funds</b>	<b>231,478,900</b>	<b>-</b>	<b>-</b>	<b>231,478,900</b>
U.S. Government securities	19,442,200	-	-	19,442,200
Commingled funds	-	33,795,500	-	33,795,500
	<b>415,234,900</b>	<b>33,795,500</b>	<b>-</b>	<b>449,030,400</b>
Cash held for investment	4,148,100	-	-	4,148,100
Add: receivables for securities sold and accrued interest	238,700	-	-	238,700
Less: liabilities for securities purchased and accrued fees	(504,400)	-	-	(504,400)
<b>Total investments, at fair value</b>	<b>\$ 419,117,300</b>	<b>\$ 33,795,500</b>	<b>\$ -</b>	<b>\$ 452,912,800</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.

Since commingled funds may not be 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, and the differences could be material. The values

assigned to these holdings do not necessarily represent amounts which might ultimately be realized upon sale or other disposition since such amounts depend on future circumstances and cannot reasonably be determined until the actual liquidation occurs. 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, as defined by ASC Topic 740.

The following table lists such investments by major category as of December 31, 2016 and 2015:

2016							
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.	\$ 64,399,300	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
2015							
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.	\$ 33,795,500	2	To be determined by the respective fund manager.	N/A	One fund permits redemption upon last business day of each calendar month; and, one fund has daily redemption upon notice.	N/A

The Institute's certificates of deposits total \$2,022,000 and \$2,205,700 as of December 31, 2016 and 2015, respectively, are 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 (loss) income, net, for the years ended December 31, 2016 and 2015, including investment returns related to amounts held on behalf of IEEF Foundation, Incorporated, that have not been reflected in the accompanying consolidated statements of activities, consists of the following:

TOTAL INVESTMENTS ACTIVITY	2016	2015
Interest and dividends, net	\$ 8,318,800	\$ 7,017,800
Net realized and unrealized gains (loss) on investments	21,594,500	(13,999,400)
<b>Total investment income (loss), net</b>	<b>\$ 29,913,300</b>	<b>\$ (6,981,600)</b>
IEEF FOUNDATION, INCORPORATED	2016	2015
Interest and dividends, net	\$ 695,700	\$ 604,900
Net realized and unrealized gains (loss) on investments	1,824,900	(1,180,300)
<b>IEEF Foundation investment income (loss), net</b>	<b>\$ 2,520,600</b>	<b>\$ (575,400)</b>
IEEF	2016	2015
Interest and dividends, net	\$ 7,623,200	\$ 6,412,900
Net realized and unrealized gains (loss) on investments	19,769,600	(12,819,100)
<b>IEEF investment income (loss), net</b>	<b>\$ 27,392,800</b>	<b>\$ (6,406,200)</b>

Investment expenses, which are netted with interest and dividends, amounted to \$1,351,100 and \$1,341,700 in 2016 and 2015, 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, 2016 and 2015 consist of the following:

	2016			2015		
	Cost	Accumulated Depreciation and Amortization	Net	Cost	Accumulated Depreciation and Amortization	Net
Buildings	\$ 17,956,600	\$ 13,742,900	\$ 4,213,700	\$ 17,956,600	\$ 13,306,200	\$ 4,650,400
Furniture, equipment, vehicles and computers	83,995,100	60,808,500	23,186,600	78,966,200	54,758,800	24,207,400
Software	17,945,500	15,022,400	2,923,100	17,796,300	14,891,800	2,904,500
Building improvements	18,548,800	12,704,900	5,843,900	17,534,400	7,780,600	9,753,800
	<b>138,446,000</b>	<b>102,278,700</b>	<b>36,167,300</b>	<b>132,253,500</b>	<b>90,737,400</b>	<b>41,516,100</b>
Land	873,000	-	873,000	873,000	-	873,000
Building improvements in progress	1,715,200	-	1,715,200	354,200	-	354,200
Information systems upgrade in process	4,360,500	-	4,360,500	6,358,200	-	6,358,200
<b>Total</b>	<b>\$145,394,700</b>	<b>\$ 102,278,700</b>	<b>\$ 43,116,000</b>	<b>\$ 139,838,900</b>	<b>\$ 90,737,400</b>	<b>\$ 49,101,500</b>

Depreciation and amortization expense amounted to \$15,584,000 and \$15,802,600 for the years ended December 31, 2016 and 2015, respectively, excluding amortization of intangible assets of \$3,821,100 and \$0 as of December 31, 2016 and 2015, respectively.

Furniture and equipment include assets acquired under capital leases of \$4,183,200 and \$5,501,500 as of December 31, 2016 and 2015, respectively. Accumulated amortization of assets recorded under capital leases amounted to \$3,401,800 and \$4,862,400 at December 31, 2016 and 2015, 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 consisted of \$20,000,000 with Wells Fargo Bank, N.A. (formerly "Wachovia Bank"), \$15,000,000 with JPMorgan Chase Bank, N.A. (previously "The Bank of New York"), and \$15,000,000 with HSBC Bank, N.A. USA (collectively, the "Lenders"), under an amended and restated revolving credit agreement dated September 27, 2011 that expired on February 1, 2016 (the "Agreement"). The Institute is charged commitment fees, which amounted to \$147,800 in 2016 and \$141,700 in 2015, on the unused portion of the credit facility. The credit facility was not utilized in 2016 and 2015; the Institute had no outstanding borrowings under the credit facility in either year.

A new credit facility agreement dated February 16, 2016 was secured with an expiration date of February 16, 2017. Subsequent to December

31, 2016 the credit facility was extended until May 17, 2017. The credit facility consists of \$30,000,000 with Wells Fargo Bank, N.A. and \$20,000,000 with HSBC Bank, N.A. USA.

The Institute is required to maintain certain financial ratios under the Agreement with its Lenders. At December 31, 2016, the Institute was in compliance with all financial ratios.

Interest expense, net of amounts capitalized of \$140,600 in 2016 and \$155,900 in 2015, amounted to \$139,500 in 2016 and \$97,700 in 2015.

#### NOTE 6. CAPITAL LEASE OBLIGATIONS

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

Year	Amount
2017	\$ 354,100
2018	239,500
2019	186,700
2020	9,300
2021	9,300
Total minimum lease payments	798,900
Less: Amount representing interest	(28,600)
<b>Present value of minimum lease payments</b>	<b>\$ 770,300</b>

**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, 2016, and a statement of the funded status as of December 31, 2016 and 2015:

	Pension Benefits		Other Benefits	
	2016	2015	2016	2015
<i>Reconciliation of benefit obligation:</i>				
<b>Obligation at January 1</b>	\$ 86,074,100	\$ 94,478,300	\$ 6,516,300	\$ 6,647,400
Service cost	240,000	255,000	234,700	273,500
Interest cost	2,769,400	3,397,700	190,900	247,000
Actuarial loss (gain)	3,630,500	(4,841,300)	(866,800)	(521,500)
Benefit payments	(2,761,100)	(2,060,100)	(136,200)	(130,100)
Settlements	-	(5,155,500)	-	-
<b>Obligation at December 31</b>	\$ 89,952,900	\$ 86,074,100	\$ 5,938,900	\$ 6,516,300

*Reconciliation of fair value of plan assets:*

<b>Fair value of plan assets at January 1</b>	\$ 65,738,400	\$ 75,282,000	\$ -	\$ -
Actual return on plan assets	6,220,900	(3,045,700)	-	-
Employer contributions	15,400	717,700	136,200	130,100
Benefit payments	(2,761,100)	(2,060,100)	(136,200)	(130,100)
Settlements	-	(5,155,500)	-	-
<b>Fair value of plan assets at December 31</b>	\$ 69,213,600	\$ 65,738,400	\$ -	\$ -

Funded status at December 31	\$ (20,739,300)	\$ (20,335,700)	\$ (5,938,900)	\$ (6,516,300)
Accumulated benefit obligation	\$ 89,952,900	\$ 86,074,100	\$ 5,938,900	\$ 6,516,300

At December 31, 2016 and 2015, the funded status of the plans is reported on the consolidated statements of financial position as follows:

	Pension Benefits		Other Benefits	
	2016	2015	2016	2015
Current liabilities	\$ (14,000)	\$ (16,400)	\$ (218,300)	\$ (247,300)
Noncurrent liabilities	(20,725,300)	(20,319,300)	(5,720,600)	(6,269,000)
<b>Net Amount Recognized</b>	\$ (20,739,300)	\$ (20,335,700)	\$ (5,938,900)	\$ (6,516,300)

Cumulative amounts recognized in changes in unrestricted net assets and not yet recognized in net periodic benefit cost as of December 31, 2016 and 2015 consist of:

	Pension Benefits		Other Benefits	
	2016	2015	2016	2015
Net loss	\$ 24,440,200	\$ 26,289,900	\$ 595,000	\$ 1,462,800
Prior service cost	-	-	-	-
<b>Total</b>	\$ 24,440,200	\$ 26,289,900	\$ 595,000	\$ 1,462,800

The following table provides the components of net periodic benefit cost for the plans for 2016 and 2015:

	Pension Benefits		Other Benefits	
	2016	2015	2016	2015
Service cost	\$ 240,000	\$ 255,000	\$ 234,700	\$ 273,500
Interest cost	2,769,400	3,397,700	190,900	247,100
Expected return on plan assets	(2,517,200)	(2,862,800)	-	-
Amortization of transition obligation	-	-	-	-
Amortization of net loss	1,776,500	1,905,100	1,100	102,300
Settlement loss	-	1,543,100	-	-
<b>Net periodic benefit cost</b>	\$ 2,268,700	\$ 4,238,100	\$ 426,700	\$ 622,900

Amounts recognized in changes in unrestricted net assets for the years ended December 31, 2016 and 2015 consist of:

	Pension Benefits		Other Benefits	
	2016	2015	2016	2015
Net (gain) loss	\$ (73,200)	\$ 1,067,100	\$ (866,800)	\$ (521,500)
Amortization of net loss	(1,776,500)	(3,448,200)	(1,100)	(102,300)
Amortization of transition obligation	-	-	-	-
<b>Pension related benefits activity other than periodic benefit cost</b>	\$ (1,849,700)	\$ (2,381,100)	\$ (867,900)	\$ (623,800)

The estimated amount of unrestricted net assets 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	\$ 1,559,600	\$ 3,700

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	
	2016	2015	2016	2015
<b>Weighted-average assumptions as of December 31</b>				
Discount rate	3.88%	4.06%	4.01%	4.18%
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	
	2016	2015	2016	2015
<b>Weighted-average assumptions as of December 31</b>				
Discount rate	4.06%	3.74%	4.18%	3.84%
Expected return on plan assets	4.00%	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 2016 under the Internal Revenue Service's ("IRS") minimum funding regulations. There was a required contribution of \$700,000 made to the plan in November 2015.

IEEE expects to contribute approximately \$14,000 to its nonqualified pension plan and approximately \$218,000 to its other post-retirement benefit plans during 2017.

## Expected Benefit Payments

	Pension Benefits	Other Benefits
2017	\$ 6,862,100	\$ 218,400
2018	3,251,300	221,200
2019	4,609,100	232,700
2020	4,034,600	240,600
2021	4,917,200	257,200
2022 to 2026	27,906,700	1,498,000

## 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 2016 and 2015, and the target allocation for 2016 and 2015 by asset category based on asset fair values are as follows:

Asset Category	2016 Asset Allocation	Pension Assets at December 31		Post-Retirement Assets at December 31	
		2016	2015	2016	2015
Equity securities	10%	14%	13%	N/A	N/A
Debt securities	90%	84%	85%	N/A	N/A
Cash and cash equivalents	0%	2%	2%	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 both 2016 and 2015. 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 diversification of asset types and investments in debt securities, domestic and international equities, and cash and cash equivalents.

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. At December 31, 2016 and 2015, approximately 90% of the plan assets were invested in corporate, municipal, and foreign bonds and U.S. government securities. These debt securities match the long-dated nature of the pension liabilities. At December 31, 2016 and 2015, approximately 5% of the plan assets were held in common stock and 5% in equity mutual funds. These equity investments should provide asset growth to offset required contributions. The Institute's policy is to reconsider the plan asset allocation investments regularly to ensure actual allocations are in line with target allocations.

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, 2016:

	2016			
	Level 1	Level 2	Level 3	Total
Cash and cash equivalents	\$ 3,200	\$ 1,003,600	\$ -	\$ 1,006,800
Common stock:				
Consumer	898,700	-	-	898,700
Technology	1,211,500	-	-	1,211,500
Industrials	520,700	-	-	520,700
Healthcare	687,400	-	-	687,400
Financial services	648,000	-	-	648,000
Energy	216,700	-	-	216,700
Other	297,200	-	-	297,200
<b>Total common stocks</b>	<b>4,480,200</b>	<b>-</b>	<b>-</b>	<b>4,480,200</b>
Equity mutual funds	4,954,200	-	-	4,954,200
Corporate bonds	-	54,029,400	-	54,029,400
U.S. Government securities	-	-	-	-
Municipal bonds	-	2,959,900	-	2,959,900
Foreign bonds	-	1,015,200	-	1,015,200
	9,437,600	59,008,100	-	68,445,700
Add: receivables for securities sold and accrued interest	794,700	-	-	794,700
Less: liabilities for securities purchased and accrued fees	(26,800)	-	-	(26,800)
<b>Total pension plan investments</b>	<b>\$ 10,205,500</b>	<b>\$ 59,008,100</b>	<b>\$ -</b>	<b>\$ 69,213,600</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, 2015:

	2015			
	Level 1	Level 2	Level 3	Total
Cash and cash equivalents	\$ -	\$ 571,300	\$ -	\$ 571,300
Common stock:				
Consumer	869,500	-	-	869,500
Technology	1,058,900	-	-	1,058,900
Industrials	487,200	-	-	487,200
Healthcare	865,900	-	-	865,900
Financial services	550,500	-	-	550,500
Energy	189,900	-	-	189,900
Other	226,400	-	-	226,400
<b>Total common stocks</b>	<b>4,248,300</b>	<b>-</b>	<b>-</b>	<b>4,248,300</b>
Equity mutual funds	4,091,700	-	-	4,091,700
Corporate bonds	-	37,759,100	-	37,759,100
U.S. Government securities	13,300,900	1,253,300	-	14,554,200
Municipal bonds	-	3,613,600	-	3,613,600
Foreign bonds	-	346,400	-	346,400
	21,640,900	43,543,700	-	65,184,600
Add: receivables for securities sold and accrued interest	702,000	-	-	702,000
Less: liabilities for securities purchased and accrued fees	(148,200)	-	-	(148,200)
<b>Total pension plan investments</b>	<b>\$ 22,194,700</b>	<b>\$ 43,543,700</b>	<b>\$ -</b>	<b>\$ 65,738,400</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, an 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, as defined by ASC Topic 740. The following table lists such investments by major category as of December 31, 2016 and 2015:

2016							
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.	\$ 1,003,600	1	Subject to the determination of the respective fund manager	N/A	Daily redemption, upon notice.	N/A
2015							
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.	\$ 571,300	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 eligible 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 \$4,760,400 and \$4,461,400 on behalf of eligible employees to the Plan in 2016 and 2015, respectively. Amounts payable at December 31, 2016 and 2015 totaled \$156,700 and \$148,000, 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 \$9,431,600 and \$8,653,300 to this plan in 2016 and 2015, respectively. Amounts payable at December 31, 2016 and 2015 totaled \$294,400 and \$305,400, 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 \$4,294,500 and \$3,779,200 pertaining to obligations due under the 457(b) plan are accrued and included in accrued pension and other employee benefits at December 31, 2016 and 2015, respectively, and the related 457(b) plan assets are included in investments on the accompanying consolidated statements of financial position.

## NOTE 8. 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, 2016 and 2015. This format differs from the accompanying consolidated statements of activities presented on pages 40 and 41 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.

	2016	Unaudited 2015
Net Revenues	\$ 477,993,100	\$ 439,790,900
Less: Cost of goods sold	227,184,400	207,206,400
<b>Direct Contribution to surplus (loss)</b>	<b>\$ 250,808,700</b>	<b>\$ 232,584,500</b>
Expenses:		
Selling	\$ 34,239,400	\$ 29,988,300
Marketing	32,121,800	30,234,300
Product design	7,697,700	8,154,500
Supporting services	174,772,600	166,300,200
<b>Contribution to surplus (loss)</b>	<b>\$ 1,977,200</b>	<b>\$ (2,092,800)</b>
Public imperatives, net	(11,703,300)	(7,879,500)
Nonoperating activities:		
Investment income (loss), net	\$ 27,392,800	\$ (6,406,200)
Pension credit	2,717,600	3,004,900
Surplus (loss) before tax	20,384,300	(13,373,600)
Income tax benefit	2,212,700	-
<b>Net surplus (loss) after tax</b>	<b>\$ 22,597,000</b>	<b>\$ (13,373,600)</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 40 and 41, 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 9. NET ASSETS AND ENDOWMENT FUNDS**

Temporarily restricted net assets are available for the following purposes at December 31, 2016 and 2015:

	2016		2015	
Grant funds held for specific purposes	\$	853,100	\$	1,090,500
Funds held for awards, medals and other specific purposes		722,100		710,700
	\$	1,575,200	\$	1,801,200

Net assets were released from donor restrictions by incurring expenses satisfying the restricted purposes for the years ended December 31, 2016 and 2015 as follows:

	2016		2015	
Grant funds released for specific purposes	\$	521,700	\$	388,900
Funds released for awards, medals and other specific purposes		18,600		13,700
	\$	540,300	\$	402,600

Permanently restricted net assets at December 31, 2016 and 2015 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 New York State Prudent Management of Institutional Funds Act ("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 permanently restricted net assets, unless otherwise stipulated by the donor: (a) the original value of gifts donated to its permanent endowment, (b) the original value of subsequent gifts to its permanent endowment and (c) accumulations to its permanent endowment made in accordance with the direction of the applicable donor gift instrument at the time the accumulation is added to the funds.

The remaining portion of the donor-restricted endowment fund not classified in permanently restricted net assets is classified as temporarily restricted net assets until such amounts are appropriated for expenditure by the Institute in a manner consistent with the uses, benefits, purposes and duration for which the endowment is established and the standard of prudence prescribed by NYPMIFA.

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 endowment assets which totaled \$516,000 and \$508,600 as of December 31, 2016 and 2015, respectively. This supports the objective of providing a sustainable and increasing level of 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 endowment investments and the changes in endowment net assets for the year ended December 31, 2016:

	2016			
	Unrestricted	Temporarily Restricted	Permanently Restricted	Total
Donor restricted endowment funds	\$ -	\$ 324,600	\$ 191,400	\$ 516,000
	Unrestricted	Temporarily Restricted	Permanently Restricted	Total
<b>Endowment assets, beginning of year</b>	\$ -	\$ 317,200	\$ 191,400	\$ 508,600
Dividends and interest	-	8,300	-	8,300
Net realized and unrealized appreciation				
in fair value of endowment assets	-	17,300	-	17,300
New gifts	-	-	-	-
Endowment return used for operations	-	(18,200)	-	(18,200)
<b>Endowment assets, end of year</b>	\$ -	\$ 324,600	\$ 191,400	\$ 516,000

The following table summarizes the Institute's total return on endowment investments and the changes in endowment net assets for the year ended December 31, 2015:

	2015			
	Unrestricted	Temporarily Restricted	Permanently Restricted	Total
Donor restricted endowment funds	\$ -	\$ 317,200	\$ 191,400	\$ 508,600
	Unrestricted	Temporarily Restricted	Permanently Restricted	Total
<b>Endowment assets, beginning of year</b>	\$ -	\$ 334,300	\$ 191,400	\$ 525,700
Dividends and interest	-	7,000	-	7,000
Net realized and unrealized depreciation				
in fair value of endowment assets	-	(10,700)	-	(10,700)
New gifts	-	-	-	-
Endowment return used for operations	-	(13,400)	-	(13,400)
<b>Endowment assets, end of year</b>	\$ -	\$ 317,200	\$ 191,400	\$ 508,600

## NOTE 10. COMMITMENTS AND CONTINGENCIES

### Operating Leases

At December 31, 2016, minimum rental commitments due under noncancelable operating leases for office space and computer equipment are as follows:

Year	Amount
2017	\$ 3,553,400
2018	3,345,100
2019	3,085,100
2020	2,921,800
2021	2,910,900
Thereafter	14,309,100
	<b>\$ 30,125,400</b>

The leases for the office space are subject to escalation. Total rent expense for noncancelable operating leases amounted to \$4,320,400 and \$4,060,800 in 2016 and 2015, respectively.

### Letters of Credit

At December 31, 2016, 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.

As of December 31, 2016, the Institute had issued standby letters of credit in relation to certain dealers agreements and VAT tax payments totaling \$107,500 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 11. 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 \$369,000 and \$356,500 in 2016 and 2015, 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 \$748,000 and \$712,200 during 2016 and 2015, respectively. The Institute provided fundraising administrative services (contributed services) during 2016 and 2015 that were not reimbursed by the Foundation, that were valued at \$1,235,500 and \$1,129,100 during 2016 and 2015, respectively.

The Institute held on deposit \$40,414,800 and \$39,721,100 from the Foundation at December 31, 2016 and 2015 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 \$1,368,300 and \$1,507,900 at December 31, 2016 and 2015, respectively, and other receivables of \$65,100 and \$221,100 at December 31, 2016 and 2015, respectively, and are included in accounts receivable on the accompanying consolidated statements of financial position. Amounts due to the Foundation of \$162,300 and \$150,500 at December 31, 2016 and 2015, respectively, are included in accounts payable and accrued expenses on the accompanying consolidated statements of financial position.

## NOTE 12. 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 judgements and estimates are required in determining the consolidated income tax expense.

For the tax year ending December 31, 2016, the total consolidated effective tax rate for IEEE, Inc. and IEEE GlobalSpec was 32.64%. Due to temporary differences between the tax basis of assets acquired in the IEEE GlobalSpec acquisition and the amounts reported in the financial statements, IEEE, Inc. recorded tax goodwill and a deferred tax liability of approximately \$9.9 million at the date of acquisition. As of December 31, 2016, 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 year ended December 31, 2016, the provision (benefit) for income taxes consisted of the following:

<b>Current:</b>	
Federal	\$ -
State	7,900
	<hr/>
	7,900
<b>Deferred:</b>	
Federal	(1,957,200)
State	(263,400)
	<hr/>
	(2,220,600)
<b>Provision (benefit) for income taxes</b>	<b>\$ (2,212,700)</b>

The effective rate differs from the statutory rate due to non-deductible expenses and state taxes. As of December 31, 2016, management has assessed that a valuation allowance is not required based on the long-range forecast of future taxable income.

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