IEEE

Advancing technology for humanity

Region 3 Meeting

April 10-11, 2015

IEEE
Advancing Technology for Humanity

Our Mission:

To foster technological innovation and excellence for the benefit of humanity.

Our Vision:

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

IEEE

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Our History

Our story of innovation begins with our spirit of collaboration.

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The Founding of IEEE

1884 ━━━━━━━━━━━━ **1912** ━━━━━━━━ **1963** ━━━━━━━━━━━━ Present

AIEE
American Institute
of Electrical Engineers

IRE
Institute of Radio
Engineers

The ... n, Alex Pioneers of wireless technologies an ... bles and electronics founded the A ... ut **Institute of Radio Engineers**.

AIEE and IRE merged to become the Institute of Electrical and Electronic Engineers, or **IEEE**.

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IEEE Today

1884 ▬▬▬▬▬▬▬ 1912 ▬▬▬▬▬▬▬ 1963 ▬▬▬▬▬▬▬ **Present**

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

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Technical Breadth and Depth

› IEEE facilitates the cross-pollination of ideas, giving people access to ideas developed in other disciplines.

IEEE information is more than just electrical engineering and computer science

IEEE TECHNICAL AREAS:

Aerospace	LTE Wireless
Biomedical Engineering	Broadband
Circuits	Nanotechnology
Cloud Computing	Optics
Communications	Renewable Energy
Electronics	Semiconductors
Imaging	Smart Grid
Information Technology	And more…

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IEEE at a Glance

Our Global Reach

| 426,000+ Members | 45 Technical Societies and Councils | 160+ Countries |

Our Technical Breadth

| 1,600+ Annual Conferences | 3,800,000+ Technical Documents | 160+ Top-cited Periodicals |
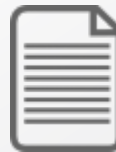
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IEEE: Changing Our World...

> Chemistry
- Irving Langmuir (1932)

> Medicine
- Willem Einthoven (1924)

> Physics
- Isamu Akasaki 2014
- Hiroshi Amano 2014
- Shuji Nakamura 2014
- Willard S. Boyle 2009
- Charles K. Kao 2009
- George E. Smith 2009

> Physics
- Zhores I Alferov 2000
- Jack S. Kilby 2000
- Herbert Kroemer 2000
- Norman F. Ramsey 1989
- Leon M Lederman 1988
- Nicolaas Bloembergen 1981
- Arthur Schawlow 1981
- Arno Penzias 1978
- Robert W. Wilson 1978

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...For Over a Century

› Physics

– Leo Esaki 1973

– Brian Josephson 1973

– John Bardeen 1972

– Charles Townes 1964

– Walter Brattain 1956

– William Shockley 1956

– Edward Appleton 1947

– Robert Andrews Millikan 1923

– Guglielmo Marconi 1909

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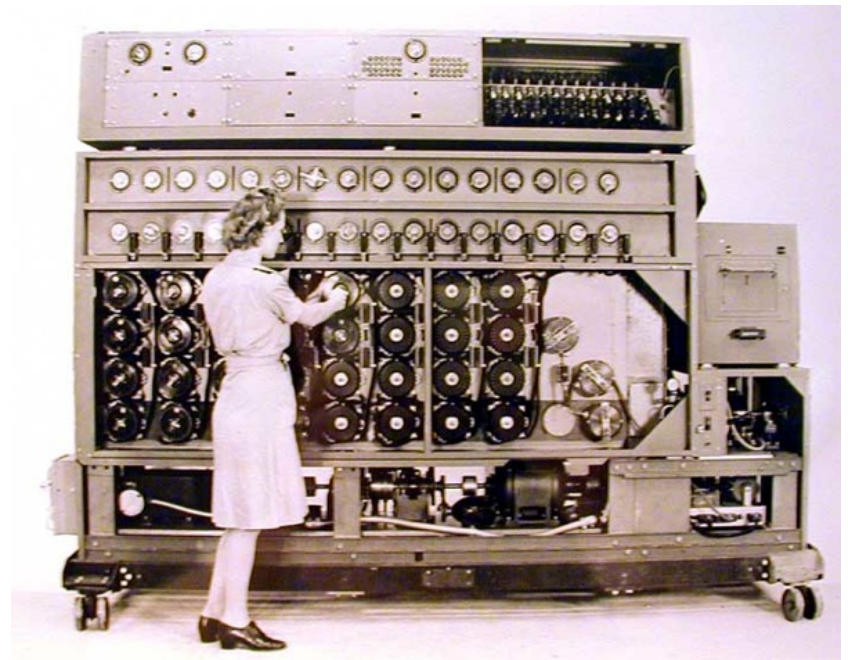
Advancing Technology Today, Building a Promising Tomorrow

› Fellow **Lisa Su** was named president of Advanced Micro Devices, a semiconductor manufacturer, based in Sunnyvale, Calif.

› Su, who joined AMD in 2012 as senior vice president and general manager, recently became CEO, responsible for overseeing the company's business operations, sales, and global groups.

Sources: (Text) The Institute; (Photo) Advanced Micro Devices

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Advancing Technology Today, Building a Promising Tomorrow

> Fellow **Chris Toumazou** received the European Inventor Award from the European Patent Office. This annual award is presented to inventors who "use their technical, scientific, and intellectual skills to make a real contribution to technological progress and economic growth and to improve people's daily lives."

> Toumazou was honored for developing the SNP-DR, a portable, low-powered device that uses silicon microchips to identify genetic mutations that determine a person's predisposition to certain hereditary diseases. Rather than sending DNA specimens to a laboratory, doctors can use the SNP-DR to generate test results on-site.

> A professor of circuit design at Imperial College in London and founder and CEO of DNA Electronics, a developer of genetic testing devices in London, Toumazou is a member of the IEEE Circuits and Systems Society.

Sources: (Text) The Institute; (Photo) Wikimedia Commons

How We Impact

IEEE drives the technologies that improve the quality of life.

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Where You Will Find IEEE

98 of Top 100
Eng & Tech Universities Worldwide

All Top 100
Engineering Universities US

All Top 10
Aerospace & Defense Companies Worldwide

28 of Top 29
Semiconductor Companies Worldwide

7 of Top 10
Telecommunication Companies Worldwide

9 of Top 10
Automobile Manufacturers Worldwide

9 of Top 10
Comms Equipment Companies Worldwide

9 of Top 10
Computer Hardware Companies Worldwide

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IEEE Standards

› Consumers around the world enjoy the benefits of IEEE's standards.

Here are a few you may recognize...

WiFi ↔ IEEE 802.11

Bluetooth® ↔ IEEE 802.15

FireWire ↔ IEEE 1394

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IEEE Standards Association

› Individual Membership

- Engage in an unlimited number of Individual Projects

- IEEE-SA Newswire, eTools

- Standards Insight Blog

- Member discounts

- Participate in IEEE-SA Board of Governors and Elections

› Corporate Membership

- IEEE-SA Corporate Advisory Group

- Unlimited Sponsor Balloting of Corporate Projects

- Tiered number of complimentary IEEE-SA Individual Memberships

- Participation in & nomination of employees for IEEE-SA Corporate Advisory Group (CAG) and Board of Governors (BOG) Elections

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Facilitating Connectivity

Mobile Video Standards

Smart Grid into Home Devices Standards
IEEE 1675 / IEEE 1775
IEEE 2030 / IEEE P2030.1
IEEE 1901 / IEEE P1901.2

Home Networking Standards
IEEE 802
IEEE 1901
IEEE P1901.2
IEEE 1815

IEEE P2200
(Intelligently Cached Mobile Content)

Smart Metering Standards
IEEE P1377
IEEE 1701
IEEE 1702
IEEE P1703
IEEE P1704
IEEE P1705

Smart Grid into Home Devices Standards
IEEE 1547 Series
(Distributed Energy Interconnection Solar, Wind, Storage, etc.)
IEEE 2030

Mobile Video Standards

IEEE P1907.1
(Real Time Mobile Video)

3D Video Standards
IEEE P3333

Mobile Video Standards
IEEE P2200 / IEEE 802.11
(Intelligently Cached Mobile Content)

Home Networking Standards
IEEE 802 / IEEE 1901
IEEE P1901.2 / IEEE P1905.1
(Communication Inside the Home)

Electric Vehicle Standards
IEEE 802 Series / IEEE 1901
IEEE P1901.2 / IEEE 1609 Series
(Vehicular Communications)
IEEE 2030 / IEEE P2030.1

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Improving Personal Health

Insulin Pump
IEEE 11073-10419™

Glucose Meter
IEEE 11073-10417™

Weigh Scale
IEEE 11073-10415™

Blood Pressure
Monitor
IEEE 11073-10407™

Electrocardiograph (ECG)
IEEE 11073-10406™

Cardiovascular Fitness
& Activity Monitor
IEEE 11073-10441™

Body
Composition
Analyzer
IEEE 11073-10420™

Sleep Monitor
IEEE 11073-
10423™

Sleep Apnea
Breathing Therapy
Equipment
IEEE 11073-10424™

Connectivity
Transports

IEEE 802.3™
(Often referred to
as Ethernet)

IEEE 802.11™
(Often referred to
as WiFi®)

IEEE 802.15.1™
(Often referred to
as Bluetooth®)

IEEE 802.15.4™
(Often referred to
as Zigbee®)

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

IEEE 11073-30400™

Near Field
Communications

Cloud
IEEE P2301™
IEEE P2302™

Health Care
Manager

Physician

World Wide Web

IEEE Conferences

> Bright minds share the latest research at IEEE sponsored and co-sponsored conferences around the world.

1,600+ Annual Conferences

Research	Collaboration	Publications

IEEE
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IEEE Publications

› IEEE advances author ideas by publishing research for delivery to key technical audiences.

IEEE is the premier source of journals in our fields of interest.

160+ top-cited periodicals

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IEEE Publications

❯ 2013 JCR® study reveals IEEE journals continue to maintain rankings at the top of their fields.
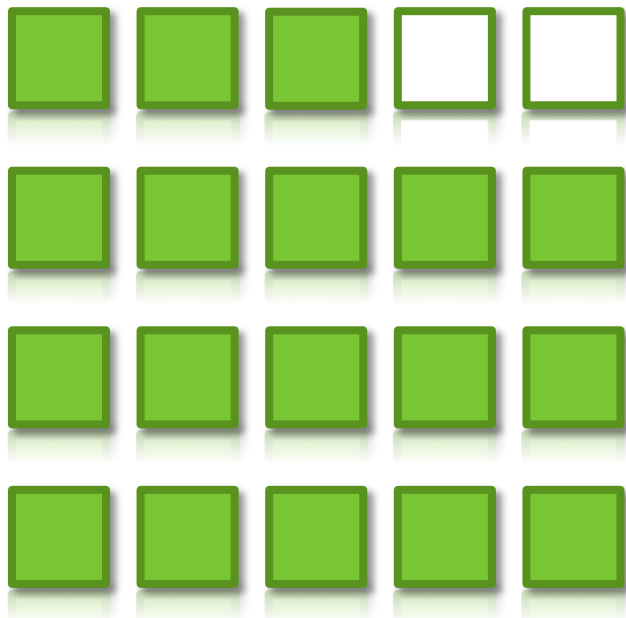
18 of the top 20

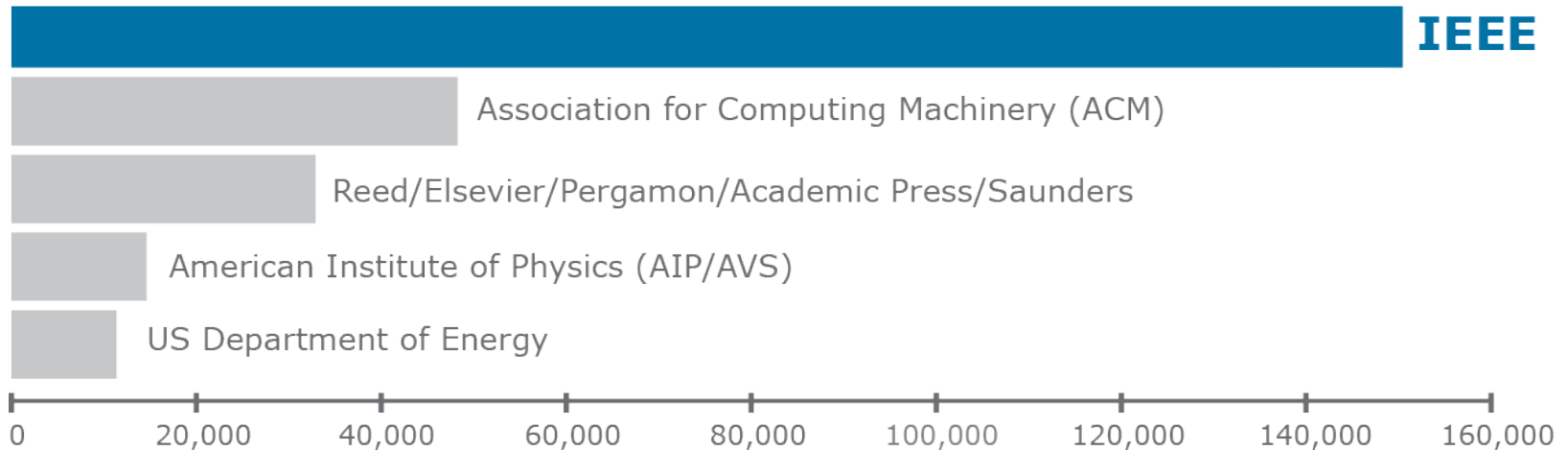journals in electrical engineering are published by IEEE.

Source: 2013 Thomson Reuters Journal Citation Reports® (JCR)

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IEEE Patent Citations

› IEEE leads as the most-cited publisher in new patents from the top patenting organizations.

Bar chart (values in citations):
- IEEE: ~150,000
- Association for Computing Machinery (ACM): ~47,000
- Reed/Elsevier/Pergamon/Academic Press/Saunders: ~33,000
- American Institute of Physics (AIP/AVS): ~15,000
- US Department of Energy: ~11,000

Horizontal axis: 0, 20,000, 40,000, 60,000, 80,000, 100,000, 120,000, 140,000, 160,000

Publishers compiled from all journals referenced 100+ times
from organizations in 2011 US Patent Office Filings.
Source: 1790 Analytics LLC. Copyright 2012.

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IEEE *Xplore*® Digital Library

> IEEE intellectual property, all searchable in one place.

- – Powerful search tools
- – Nearly 4 million full-text articles and papers
- – Users download more than 8 million documents per month

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IEEE Open Access

› Authors gain maximum exposure for their research and application-oriented articles with open access publications, freely available to readers.

IEEE OPEN

Hybrid Journals	**Mega Journal**	**Fully Open Access Journals**
Subscription-based and Open Access	Multidisciplinary Open Access	Devoted to One Technology Topic

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Educating for Success

› IEEE educational programs enable students and professionals to achieve their goals.

IEEE Educational Programs and Resources:

- Career Preparation
- Continuing Education
- iTunes U
- Pre-University Programs
- Professional Certification Programs
- and more

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IEEE: The Next Generation

› IEEE programs open the eyes of youth to the possibilities of today's and tomorrow's technologies.

IEEE supports programs such as:

- TryEngineering.org
- TryComputing.org
- Teacher In-Service
- and others
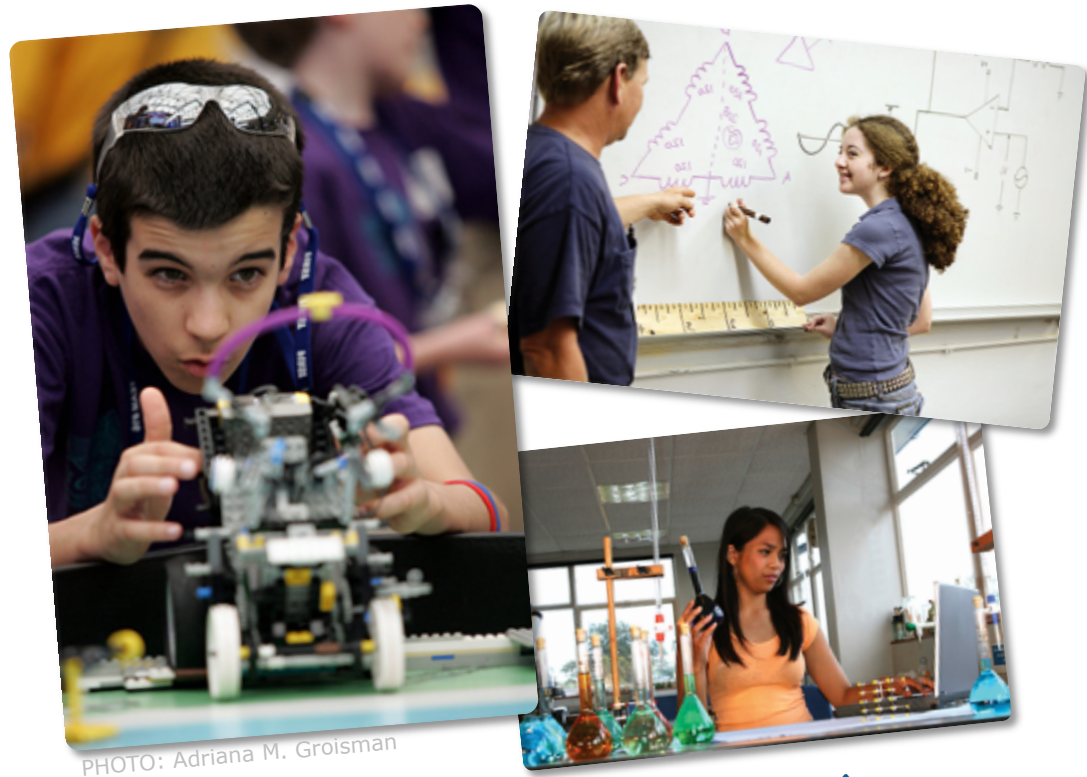
PHOTO: Adriana M. Groisman

Collaboration is Our Foundation

IEEE brings people and technology together for mutual benefit.

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In Academia

In Industry

In The Field

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Emerging Technologies

❯ IEEE focuses on what's next—enabling innovation and the creation of new technologies.

Internet of Things

Renewable Energy

Smart Grid

Cloud Computing

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Expanding Global Outreach

› IEEE collaborations around the world inspire innovation for those who develop and deliver technology solutions.

New Markets

Local Programs

Product Innovation

Global means doing what is needed **locally**, everywhere.

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Improving Quality of Life

> IEEE programs apply technology to improve conditions for people around the globe.

E-Health Program

India — RFID Individual Tracking and Records Management Solution (RFID-ITRM)

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IEEE Governance Organization

MEMBERS

Assembly

PSPB
Publication Services, and Products Board

Board of Directors

PSPB

Educational Act. Board

Standards Assoc. Board

IEEE-USA Board

Member & Geo Activities

Technical Activities

Regions & Sections

Student Branches

Societies & Tech. Councils

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Societies & Councils

- Aerospace & Electronic Systems
- Antennas & Propagation
- Broadcast Technology
- Circuits & Systems
- Communications
- Components, Packaging & Manufacturing Technology
- Computational Intelligence
- Computer
- Consumer Electronics
- Control Systems
- Dielectrics & Electrical Insulation

- Education
- Electromagnetic Compatibility
- Electron Devices
- Engineering in Medicine & Biology
- Geoscience & Remote Sensing
- Industrial Electronics
- Industry Applications
- Information Theory
- Instrumentation & Measurement
- Intelligent Transportation Systems
- Magnetics
- Microwave Theory & Techniques

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Societies & Councils

›   **Nuclear & Plasma Sciences**

›   **Oceanic Engineering**

›   **Photonics**

›   **Power Electronics**

›   **Power & Energy**

›   **Product Safety Engineering**

›   **Professional Communication**

›   **Reliability**

›   **Robotics & Automation**

›   **Signal Processing**

›   **Social Implications of Technology**

›   **Solid-State Circuits**

›   **Systems, Man, & Cybernetics**

›   **Ultrasonics, Ferroelectrics & Frequency Control**

›   **Vehicular Technology**

Technical Councils

›   **Biometrics**

›   **Electronic Design Automation**

›   **Nanotechnology**

›   **Sensors**

›   **Super Conductivity**

›   **Systems**

›   **Technology Management**

Organization

Grouped into geographic areas reflecting where we live and work ...

- **10 Geographic Regions**
  - 333 Sections within Regions
  - 1,855 Student Branches at universities in 80 countries

MGA

Member & Geographic Activities
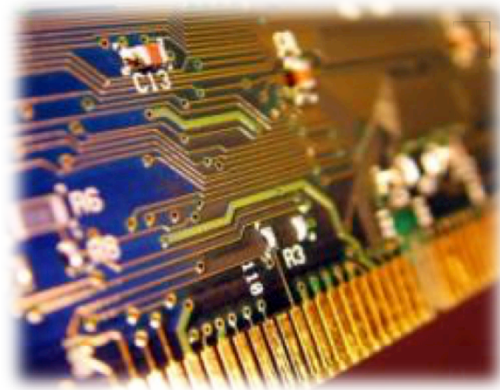
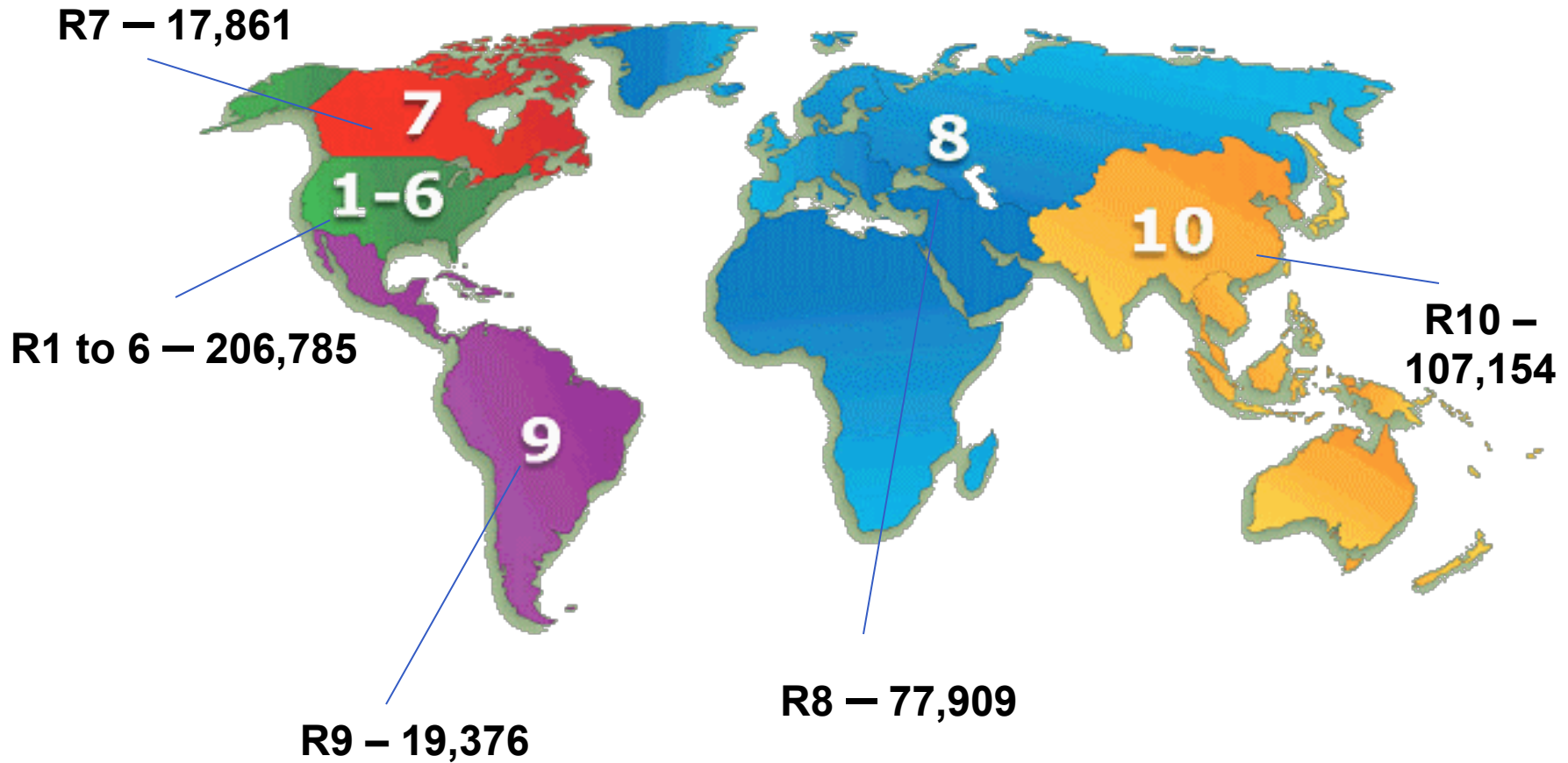**...and technical areas based on our fields and interests**

- **38 Societies and 7 Technical Councils**
  - 2,081 Chapters (within local Sections)

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IEEE Membership By Region

31 December, 2012

R7 — 17,861

R1 to 6 — 206,785

R10 – 107,154

R9 – 19,376

R8 — 77,909

TOTAL MEMBERSHIP – 429,085 (EOY 2012)

- Area 1 - Virginia

- Area 2 – North Carolina (Council)

- Area 3 – Georgia

- Area 4 – Florida (Council)

- Area 5 – Tennessee (Council)

- Area 6 – Alabama, Mississippi

- Area 7 – South Carolina (Council)

- Area 8 – Kentucky, Indiana (portion)

- Area 9 –Jamaica

Sections

- **Provide a community of colleagues**

- **Members build a network through local Section, Chapter, Student Branch activities**

- **Volunteer leaders develop new skills**

  - **Gain management, teamwork and leadership experience**

- **Provide local professional and technical activities**

- **Recognize achievements of members and others**

MGA Mission & Vision

Vision: Ensure Quality Member Opportunities Through Continuous Engagement

Mission: **I**nspire, **E**nable, **E**mpower and **E**ngage Members of **IEEE**

For the purpose of…

- Fulfilling the mission of **IEEE**

- Enhancing the member's growth and development through their life cycle

- Providing a professional home

Region 3

Vision

Focus on the growth and development of the member throughout the life cycle of the individual. Every member is an active participant, an informed and a satisfied member.

Mission

The Region shall fulfill the Member and Geographic Activities (MGA) strategic objectives at the local level by ensuring the enabling of the sections, chapters, and student branches to engage the member.

Region Focus

- **Help Sections Be Successful (Engaged Members)**
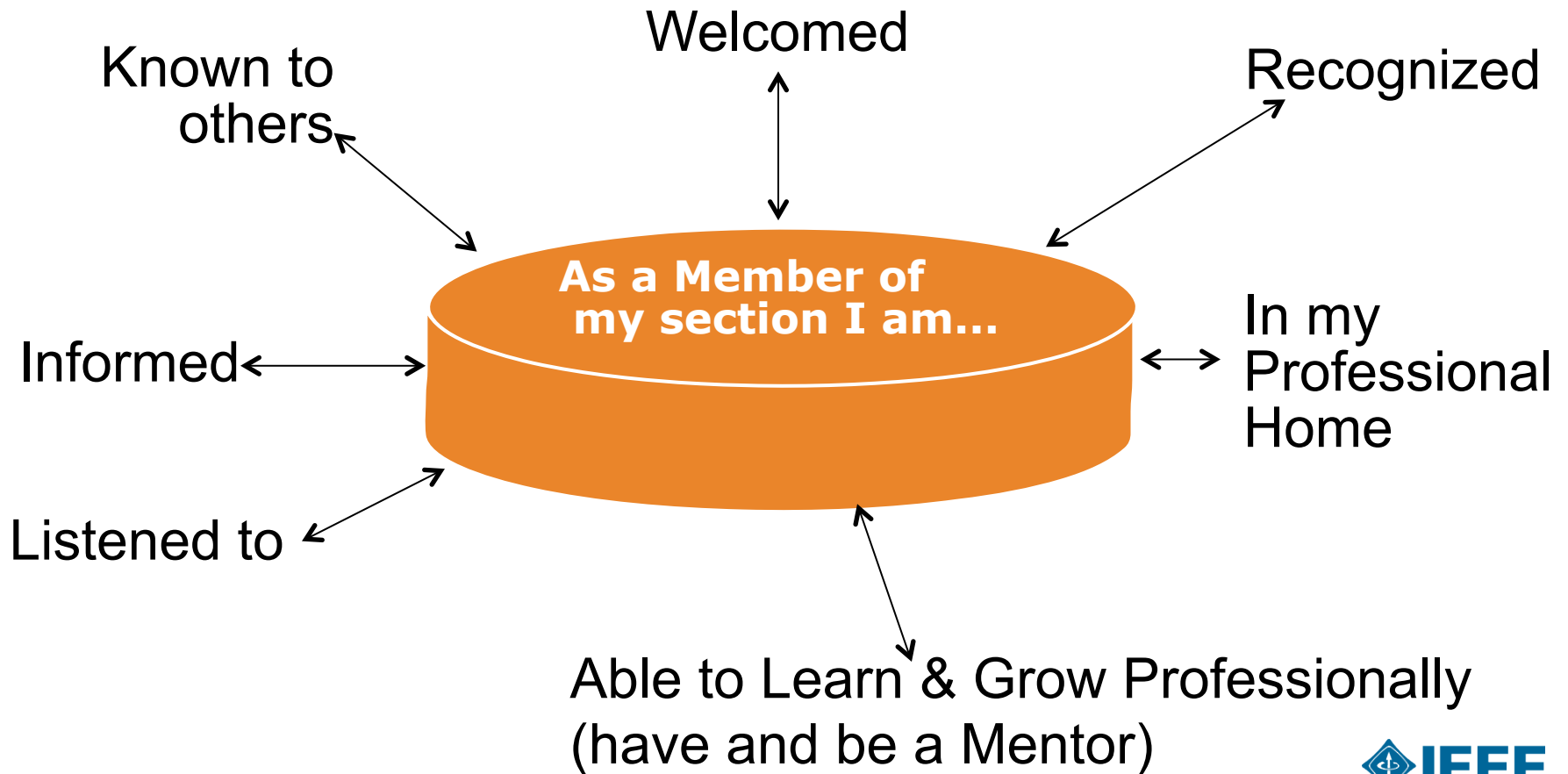
  - **Area/Councils**

    are part of this too!

- Secondary: Represents Sections (and associated members) to MGA, …

  - We have done this part pretty well for a long time (at least relative to participation)

Geographic:
Section Vitality Focuses on a Positive Member Experience at the Local Level

Welcomed

Known to others

Recognized

As a Member of my section I am...

Informed

In my Professional Home

Listened to

Able to Learn & Grow Professionally (have and be a Mentor)

Sections

- Sections (Chapters, Affinity Groups)

- Point of member contact

- Where engagement opportunities exist in GeoUnit aspect of IEEE

- 41 Sections in Region 3
  (A few without web presence)

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Together, we engineer a brighter future.