



IEEE - the Future

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IEEE History

AIEE 1884

IRE (1907 / 1908) 1912

- ▶ **AIEE**
 - Novin Green (*Medical graduate*), 1884-86 AIEE President
 - 1893: 717 members , *Edwin J Houston, 1893 AIEE President (Petition)*
 - Exhibitions, Conferences
 - Students Activities, Student Branches 1903, Eta Kappa Nu 1904
 - Engineering Education
 - Technical Committees (50 by 1962), Grouped into 6 Divisions
 - Electrical Engineering and 3 Journals

- ▶ **IRE**
 - 1912: 46 members Robert H Marriott 1912 IRE President
 - *1941, Frederick E Terman, IRE President (petition)*
 - Exhibitions, Conferences, Technical Publications
 - Engineering education
 - Student Branches 1947
 - Proceedings of the IRE
 - Publications : Professional Groups <100 members> publish Transactions

IEEE History contd

- ▶ **AIEE / IRE** Focus Areas
 - Technical Conferences and Exhibitions
 - Publication of peer reviewed technical papers
 - Engineering education and Educational activities
 - Students Activities
 - Standards
 - Life Member groups
- ▶ **IRE**
 - International (Sections): Canada 1925 Buenos Aires 1939,
Japan 1955, India 1959
 - Vice Presidents : Australia (1949), India (1953) Japan(1957)
- ▶ *No Focus : Professional Activities, Young Professionals, Women in Engineering,*

“Future of any professional society rests on those entering it from schools”

IEEE & Profession - Half Century ago

- ▶ 1963: IEEE was born ... already recognized and respected
 - * Total membership 153,978 (139550 + 13610 + 818)
 - * Membership 91% in US, ~ 8% outside
 - * Region 10 did not exist ... was part of Region 9
- ▶ World: Traditional hardware based technology
 - Computers occupied a whole building
 - Automobiles needed servicing 4 to 8 times a year
 - Engineers and mechanics required for operation and maintenance
- ▶ Secure job market & Steady career
 - Engineer YP to Manager to Director
- ▶ Women engineers – few

IEEE CONSTITUTION

- ▶ Purposes of the IEEE
 - Scientific and educational, directed toward the advancement of the theory and practice of electrical engineering, electronics, radio and the allied branches of engineering and the related arts and sciences
 - Professional, directed toward the advancement of the standing of the members of the professions it serves

IEEE Now

- ▶ **IEEE** - Vibrant and Worldwide
 - * Top Quality Technical Publications, Conferences, Standards
 - * 423,566 total members (187,215 + 236,151)
 - * 306,259 hg members (159,639 + 136,620)
 - * 117,307 Student Members (27,576 + 89,731)
 - * 55% of total membership and 76% Student Members live in Regions 7-10
 - * Total Yearly Revenue / Expenses ~ US\$ 500 million
- ▶ **IEEE** - YPs, WIE and LMs crucial special interest groups
- ▶ The world we live is Information Technology dominated
 - Robotics , automation, AI, self-driven cars / trains
 - Use and discard products / technologies
 - Declining number of 'Salaried jobs'

“The world needs to adapt to what is happening and what we know is coming”

IEEE - Issues for Now and Future

Education

Industry

Membership Growth

Student Members

Other

IEEE - Issues for Now and Future

MEMBERSHIP

- ▶ 2018 President-elect Moura's target - 1 million members
- ▶ Membership in Regions 1-6 declining
 - Total steadily declined from 218,260 to 187,215 during 2005 - 2016
 - Student Membership (incl GSM) remained ~ 27,000 to 32,000
- ▶ Membership in Regions 7-10 increasing
 - Total increased from 149,135 to 236,315 during 2005-2016
 - Student Membership (incl GSM) increased from 46,488 to 89,731
- ▶ *Will this trend continue?*
- ▶ *What are the imperatives?*
- ▶ *What are IEEE's reactions and actions?*

IEEE - Issues for Now and Future

Student Members

- ▶ Total Student membership in Regions 1-6 steady at ~ 25000
 - ▶ Student membership growth in Regions 7-10
 - 2,003 in 1964 46,488 in 2005 89,731 in 2016
 - Many countries, languages, academic practices and standards
 - ▶ *Some implications / opportunities*
 - *Quality improvement and harmonization of teaching-learning*
 - *Interactive programs to prepare IEEE St M ... better for the profession*
 - *Programs and products designed for IEEE St M ... to give an edge*
- “Future of any professional society rests on those entering it from schools”**

IEEE - Issues for Now and Future

Education

- ▶ Learning is a life-long process – so is Education
 - Necessary ... rapid changing technologies and job requirements
 - Continuing education tools for practicing engineers
 - Peer reviewed, quality products and services
 - *Current IEEE offerings are inadequate*
- ▶ Mid-career transfers
- ▶ Self-employment
- ▶ Entrepreneurs
 - Economics, Business Plans & Marketing, Human Relations

IEEE - Issues for Now and Future

Industry – engagement with

- ▶ Exhibitions / Technical Conferences
- ▶ Standards
- ▶ Educational Programs
- ▶ Partner with industry develop products and services
- ▶ IEEE : scientific and technical society with vast human resources
- ▶ IEEE's Mission : to serve the academia, industry, community, and
Institute's members

IEEE - Issues for Now and Future

Several Other

- ▶ Interests of Focus Groups - *YPs, WIE, LMs*
- ▶ Technical Publications
- ▶ Engineering Standards
- ▶ Outreach
- ▶