

# IEEE—Advancing Technology for the Benefit of Humanity

David Green  
R3 Pre-Meeting  
12 March 2012



# Our Heritage

**AIEE (1884) – American  
Institute of Electrical  
Engineers**

**IRE (1912) – Institute of  
Radio Engineers**

**IEEE (1963) Institute of  
Electrical and Electronics  
Engineers formed from  
merger of AIEE & IRE**



The badge of the new IEEE combined the right hand rule from the IRE with the kite from the AIEE

# IEEE Governance Organization



**MEMBERS**

**Assembly**

**Board of Directors**

**PSPB**

**Educational  
Activities Board**

**Standards  
Assoc. Board**

**IEEE-USA  
Board**

**Member & Geo  
Activities Board**

**Regions &  
Sections**

**Technical  
Activities Board**

**Societies &  
Tech. Councils**

**PSPB**

Publication Services, and  
Products Board

# Governance: Conducting the Meeting “What are the Rules?”

- New York State
- IEEE Constitution
- IEEE Bylaws
- IEEE Policies
- OU Governing Documents
  - Technical Activities Operations Manual
  - Society Constitution and Bylaws
- Roberts’ Rules of Order
  - Primarily for Issues **NOT CODIFIED** in other Governing Documents

# IEEE Volunteers



- Gordon Day (2012), President and CEO
- Other corporate officers
- Board of Directors
- Major Boards
- Committees
- Other OU Leaders – like in sections and chapters
- Reviewers
- 50,000 – 200,000 people

# Region 3 at Sections Congress in San Francisco, 2011



# IEEE Staff



- Led by Jim Prendergast, COO and Executive Director
- Over 1000 employees
- Most in the IEEE Operations Center in Piscataway, NJ
- Also Bangalore, Tokyo, Singapore, Canada, Washington DC, New York, California, others

# 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

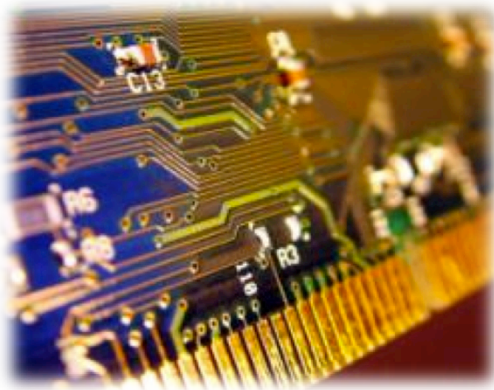
**MGA**

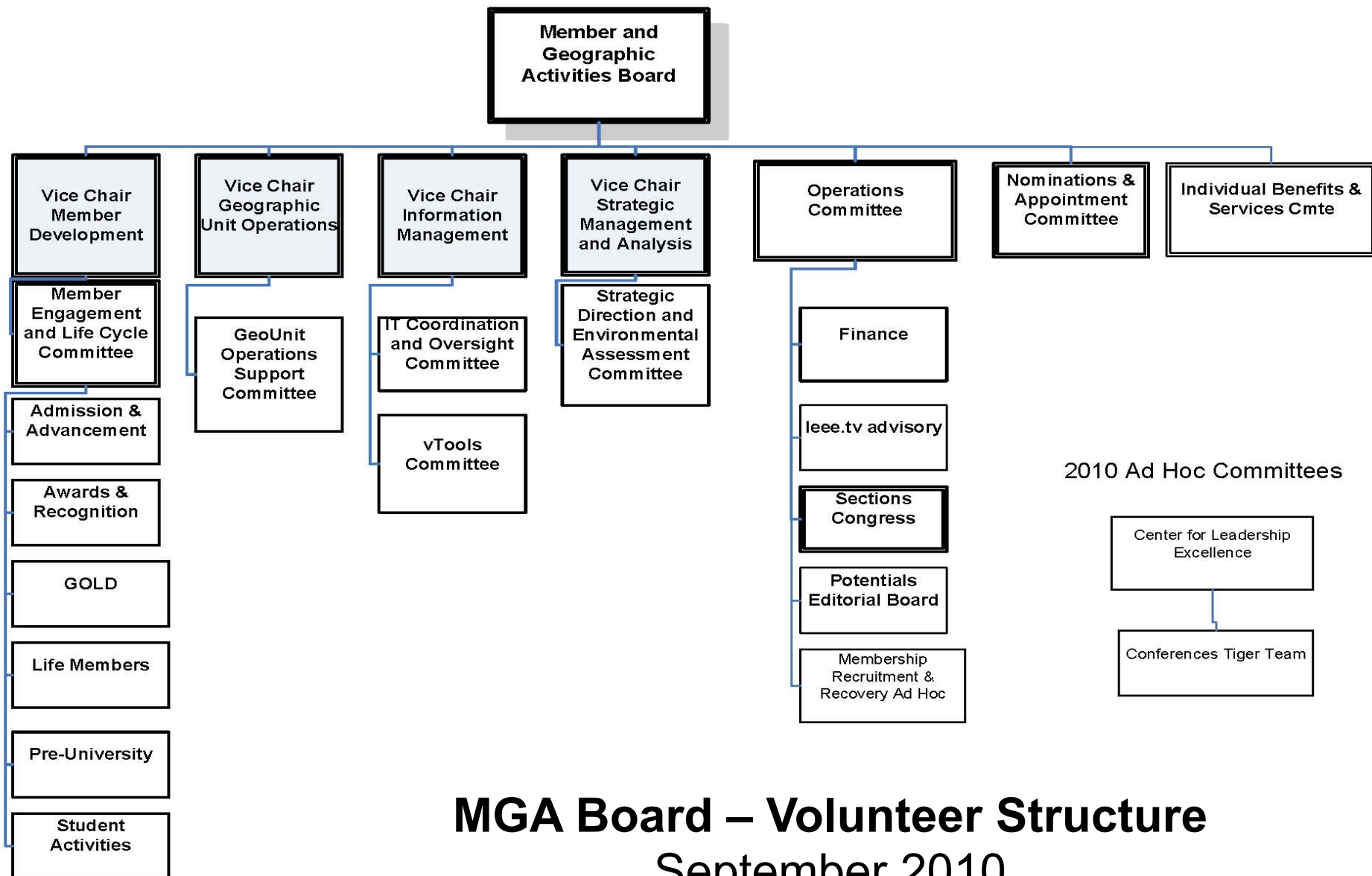
Member &  
Geographic  
Activities

■ **...and technical areas based on our fields and interests**

– **38 Societies and 7 Technical Councils**

- 2,081 Chapters (within local Sections)

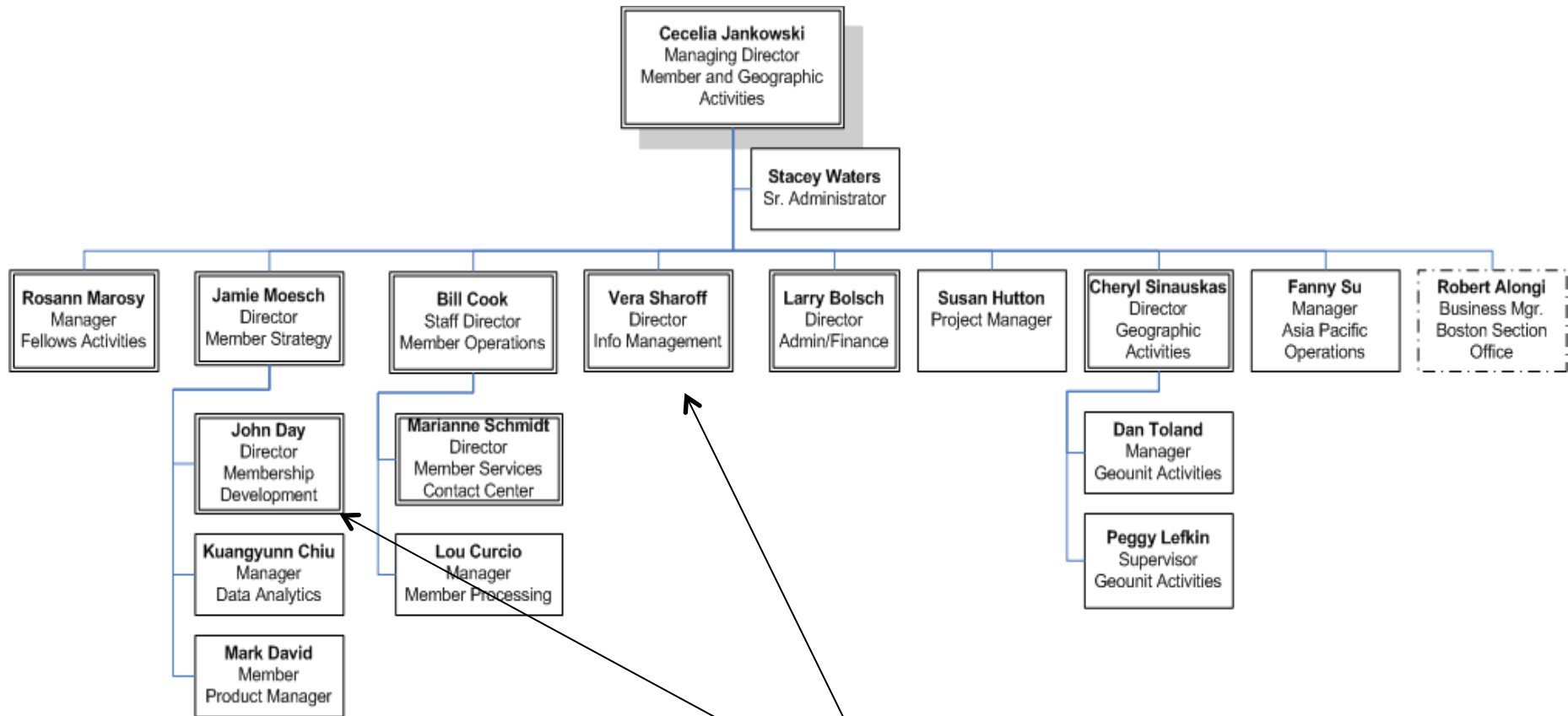




## MGA Board – Volunteer Structure

### September 2010

# IEEE MGA - Staff Organization



Attending

# Geographic Organization

## MGA

- Region
- Area
- Section → Council
- Chapter ← Society
- Student Branch
- Student Branch Chapter



# IEEE REGION 3

- 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**

# IEEE-USA Mission



- “shall be to recommend policies and implement programs specifically intended to serve and benefit the members, the profession, and the public in the United States in appropriate professional areas of economic, ethical, legislative, social and technology policy concern.”
- “IEEE-USA shall be the organizational unit that represents the professional interests of the IEEE before U.S. governmental bodies”

*Source: IEEE-USA Bylaw I-303(8); IEEE-USA Policy 1.1*

# IEEE-USA – Major Areas

- Career & Member Services  
<http://www.ieeeusa.org/careers/>
- Communications & Public Awareness  
<http://www.ieeeusa.org/communications/>
- Government Relations  
<http://www.ieeeusa.org/policy>
- Professional Activities  
<http://www.ieeeusa.org/volunteers/pace/>

# Region 3 Professional Activities Operations

- Chair: George McClure
- PACE: John Montague
  - Section PACE Chairs
- SPAC: Mary Lynn Smith
- Employment and Career Services: Ed Kirchner
- Career Enhancement / Jobs Board: Ed Kirchner
- K-12 STEM Literacy: Ralph Russell

**PACE**

Professional  
Activities  
Committees  
for Engineers

**STEM**

Science,  
Technology  
Engineering  
Mathematics

# Societies & Technical Councils

- **Bring members together with similar technical interests**
- **Sponsor conferences, workshops tutorials, seminars, etc**
- **Develop publications: Journals, Magazines, Newsletters**
- **Recognize member accomplishments**

**TAB**

Technical  
Activities  
Board

# 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**

# 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**

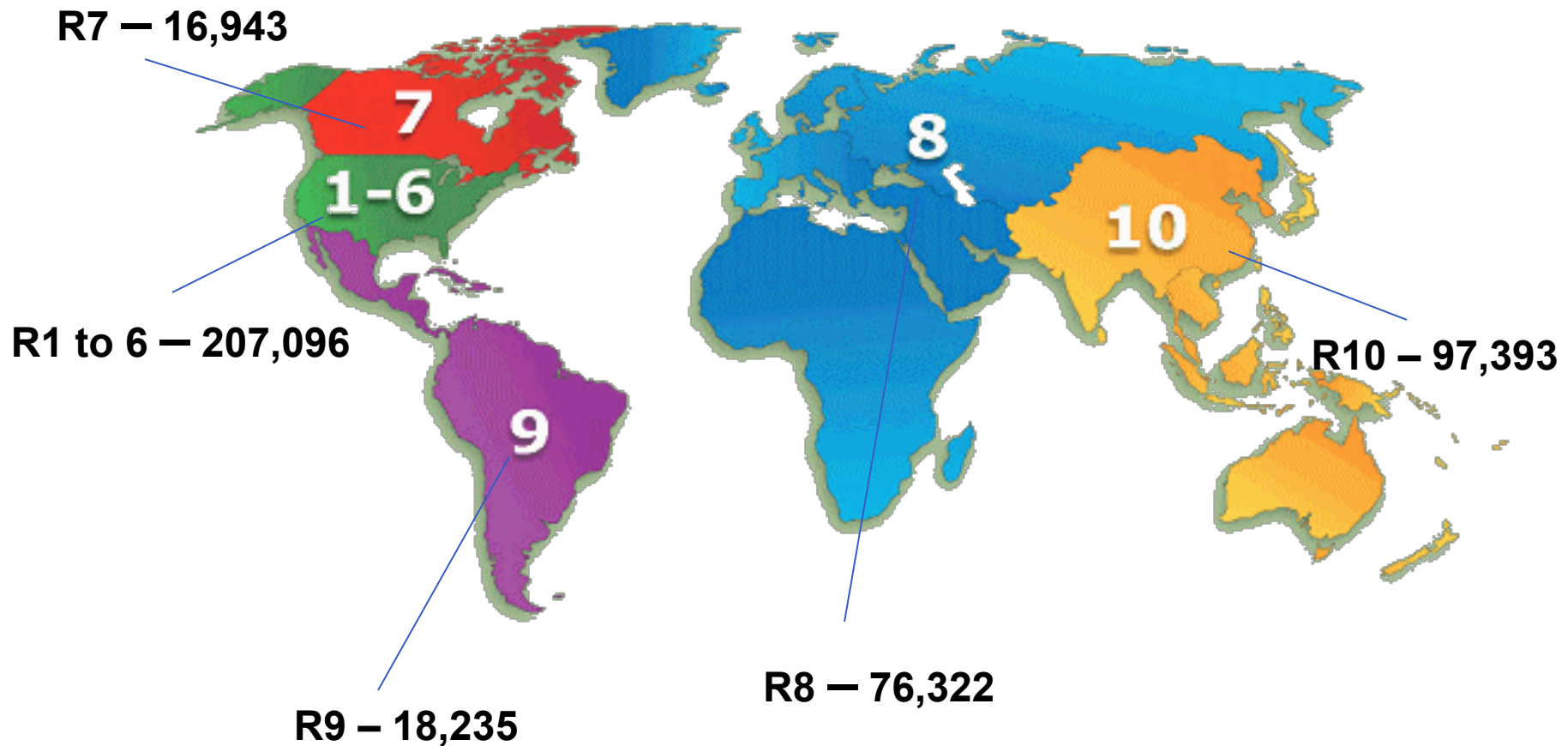
- **Systems, Man, & Cybernetics**
- **Ultrasonics, Ferroelectrics & Frequency Control**
- **Vehicular Technology**

## **Technical Councils**

- **Biometrics**
- **Electronic Design Automation**
- **Nanotechnology**
- **Sensors**
- **Super Conductivity**
- **Systems**
- **Technology Management**

# IEEE Membership By Region

31 December, 2011



**TOTAL MEMBERSHIP – 415,989**

# Region Membership

## (As of 29 February 2012)

Geographic IEEE Membership Summary - February 2012

REGION	Higher-Grade w/o GSM				Graduate Students				Undergraduate Students				TOTAL MEMBERS			
	2012	2011	Change		2012	2011	Change		2012	2011	Change		2012	2011	Change	
			#	%			#	%			#	%			#	%
1	25,854	26,663	(809)	-3.0%	1,661	1,759	(98)	-5.6%	1,547	1,491	56	3.8%	29,062	29,913	(851)	-2.8%
2	22,811	23,538	(727)	-3.1%	1,595	1,677	(82)	-4.9%	1,567	1,530	37	2.4%	25,973	26,745	(772)	-2.9%
3	20,111	20,670	(559)	-2.7%	2,071	2,194	(123)	-5.6%	2,444	2,406	38	1.6%	24,626	25,270	(644)	-2.5%
4	15,315	15,753	(438)	-2.8%	1,581	1,665	-84	-5.0%	1,694	1,791	-97	-5.4%	18,590	19,209	(619)	-3.2%
5	19,979	20,577	(598)	-2.9%	1,634	1,700	(66)	-3.9%	2,030	1,961	69	3.5%	23,643	24,238	(595)	-2.5%
6	40,514	41,614	(1,100)	-2.6%	2,592	2,875	(283)	-9.8%	2,959	2,689	270	10.0%	46,065	47,178	(1,113)	-2.4%
R 1-6	144,584	148,815	(4,231)	-2.8%	11,134	11,870	(736)	-6.2%	12,241	11,868	373	3.1%	167,959	172,553	(4,594)	-2.7%
7	10,477	10,616	(139)	-1.3%	1,774	1,753	21	1.2%	1,225	1,208	17	1.4%	13,476	13,577	(101)	-0.7%
8	40,434	40,429	5	0.0%	9,452	9,672	-220	-2.3%	6,647	6,127	520	8.5%	56,533	56,228	305	0.5%
9	6,357	5,986	371	6.2%	1,156	1,316	(160)	-12.2%	3,113	3,054	59	1.9%	10,626	10,356	270	2.6%
10	39,874	38,731	1,143	3.0%	8,541	8,322	219	2.6%	16,760	16,117	643	4.0%	65,175	63,170	2,005	3.2%
R 7-10	97,142	95,762	1,380	1.4%	20,923	21,063	-140	-0.7%	27,745	26,506	1,239	4.7%	145,810	143,331	2,479	1.7%
TOTAL	241,726	244,577	-2,851	-1.2%	32,057	32,933	(876)	-2.7%	39,986	38,374	1,612	4.2%	313,769	315,884	(2,115)	-0.7%

# Region 3 Membership

- Region 3 is currently the sixth largest IEEE region. At the end of February 2012 the Region had 24,626 total members:
  - Region 3 represents 7.8% of IEEE's total membership.
  - The Region has 20,111 Higher Grade Members, 2,071 Graduate Student Members and 2,444 Student Members.
- Membership in the Region is down by 2.5% from February 2011, representing a loss of 644 members.
- Higher grade membership is down by 2.7% from February 2011, representing a loss of 559 members.
- Graduate Student Membership is down by 5.6% from February 2011, representing a loss of 123.
- Student membership is up by 1.6% from February 2011, representing a gain of 38 members.

## Service Deactivations – 2012

Deactivations as  
a % of total  
membership,  
prior month  
(Jan)

REGION	# Service Deactivations Feb '12	Total Membership Jan '12	Deactivation % of Jan '12	% of '11	% of '10	% of '09	% of '08	% of '07	% of '06
R-1	7,285	36,558	19.9%	17.7%	17.7%	18.9%	19.6%	18.3%	18.5%
R-2	6,681	32,718	20.4%	18.4%	18.4%	18.0%	19.6%	18.0%	18.2%
R-3	7,319	31,412	23.3%	20.2%	20.2%	20.1%	22.0%	19.5%	20.6%
R-4	5,357	23,859	22.5%	19.1%	19.1%	19.3%	21.7%	20.0%	19.9%
R-5	6,644	30,050	22.1%	19.6%	19.6%	20.4%	20.8%	20.3%	20.5%
R-6	12,416	58,157	21.3%	19.4%	19.4%	20.4%	20.2%	19.7%	20.1%
R 1-6	45,702	212,754	21.5%	19.0%	19.0%	19.6%	20.5%	19.3%	19.6%
R-7	3,990	17,209	23.2%	20.2%	20.2%	20.7%	20.6%	22.2%	20.7%
R-8	23,233	75,138	30.9%	26.0%	26.0%	25.8%	24.3%	25.5%	26.0%
R-9	8,546	17,429	49.0%	44.4%	44.4%	48.0%	48.3%	47.9%	50.3%
R-10	42,747	95,353	44.8%	37.7%	37.7%	37.2%	34.5%	36.3%	37.0%
R 7-10	78,516	205,129	38.3%	32.2%	32.2%	32.2%	30.5%	31.8%	32.4%
TOTAL	124,218	417,883	29.7%	25.2%	25.2%	25.4%	24.9%	24.7%	24.9%

Year-over-Year  
Deactivations  
by Region /  
Grades

YoY Service Deactivation - Higher Grade* Members				
Region	2012	2011	Change	
			#	%
1	5,584	5,408	176	3.3%
2	4,951	4,847	104	2.1%
3	5,120	4,835	285	5.9%
4	3,639	3,440	199	5.8%
5	4,904	4,578	326	7.1%
6	9,649	9,183	466	5.1%
R 1-6	33,847	32,291	1,556	4.8%
7	2,899	2,829	70	2.5%
8	14,498	12,634	1,864	14.8%
9	3,345	2,794	551	19.7%
10	16,033	13,517	2,516	18.6%
R 7-10	36,775	31,774	5,001	15.7%
TOTAL	70,622	64,065	6,557	10.2%

\*not including graduate students

YoY Service Deactivation - Student Grade* Members				
Region	2012	2011	Change	
			#	%
1	1,701	1,585	116	7.3%
2	1,730	1,557	173	11.1%
3	2,199	1,869	330	17.7%
4	1,718	1,495	223	14.9%
5	1,740	1,629	111	6.8%
6	2,767	2,575	192	7.5%
R 1-6	11,855	10,710	1,145	10.7%
7	1,091	1,025	66	6.4%
8	8,735	8,428	307	3.6%
9	5,201	4,970	231	4.6%
10	26,714	24,295	2,419	10.0%
R 7-10	41,741	38,718	3,023	7.8%
TOTAL	53,596	49,428	4,168	8.4%

\* including graduate students

# Region 3 Membership

(as of 29 February 2012)

## Region 3 Membership by Section

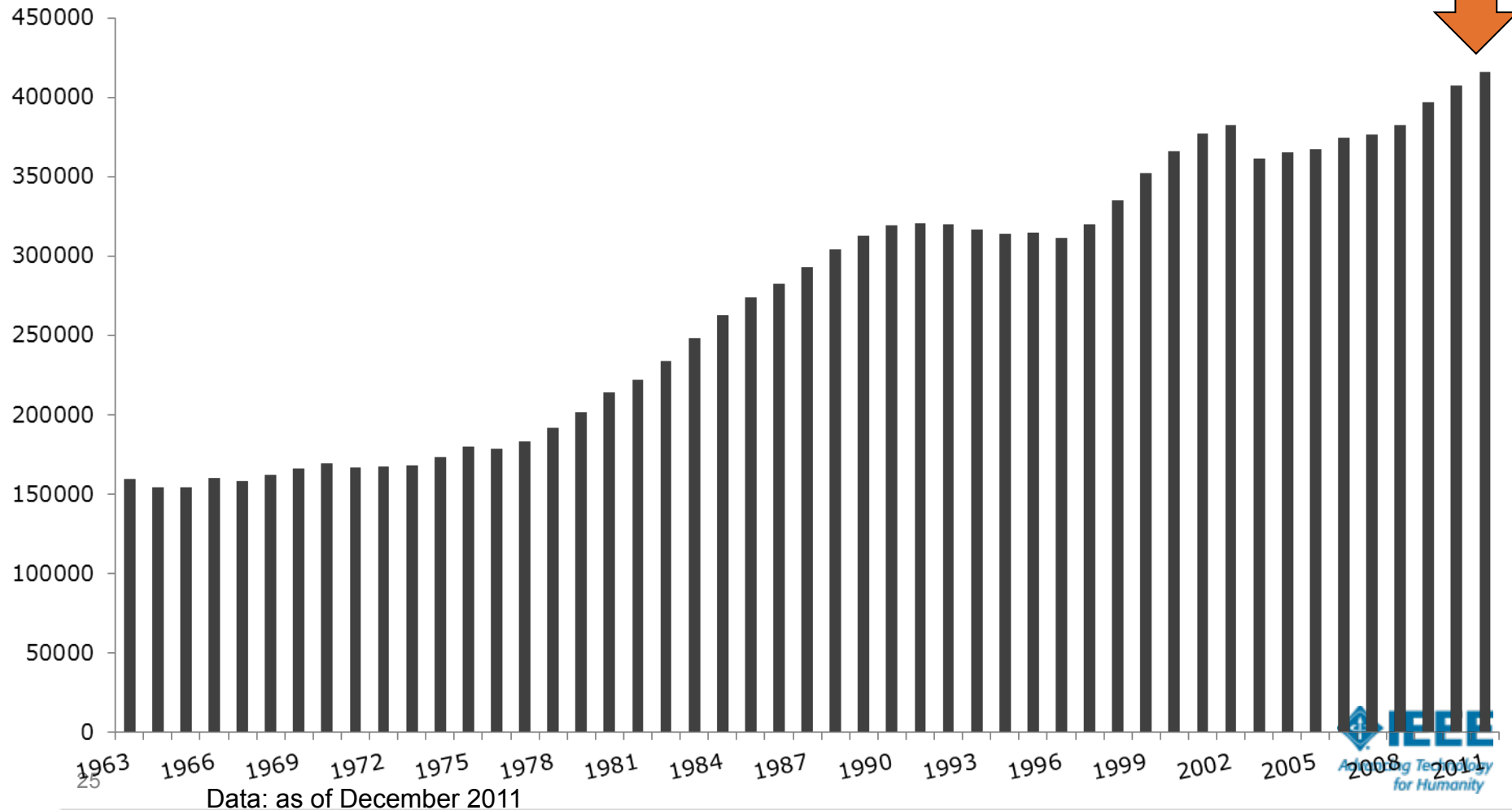
Section Name	Total Members
Alabama Section	875
Atlanta Section	3503
Broward Section	470
Canaveral Section	169
Central Georgia Section	246
Central North Carolina Section	276
Central Savannah River Section	172
Central Tennessee Section	682
Central Virginia Section	547
Charlotte Section	651
Chattanooga Section	313
Coastal South Carolina Section	400
Columbia Section	384
Daytona Section	184
East Tennessee Section	865
Eastern North Carolina Section	2580
Evansville-Owensboro Section	191
Florida West Coast Section	1790
Gainesville Section	453
Hampton Roads Section	683

Section Name	Total Members
Jacksonville Section	347
Jamaica Section	140
Lexington Section	379
Louisville Section	354
Melbourne Section	590
Memphis Section	393
Miami Section	527
Mississippi Section	423
Mobile Section	177
Northwest Florida Section	290
Orlando Section	1098
Palm Beach Section	650
Piedmont Section	456
Richmond Section	686
Savannah Section	199
Tallahassee Area Section	273
Tri Cities Section	95
Virginia Mountain Section	592
W North Carolina Section	299
Winston-Salem Section	145

## Region 3 Membership by Grade

REGION 3- MEMBERSHIP TOTAL BY GRADE				
Feb-12				
Grade	Jan-12	Jan-11	# Change	% Change
Honorary	0	0	0	0.0%
Fellow	557	542	15	2.8%
Senior Member	3,009	3,108	-99	-3.2%
Member	15,753	16,191	-438	-2.7%
Associate	792	829	-37	-4.5%
GSM	2,071	2,194	-123	-5.6%
StM	2,444	2,406	38	1.6%
<b>Total</b>	<b>24,626</b>	<b>25,270</b>	<b>-644</b>	<b>-2.5%</b>

# Total IEEE Membership 1963 to 2011

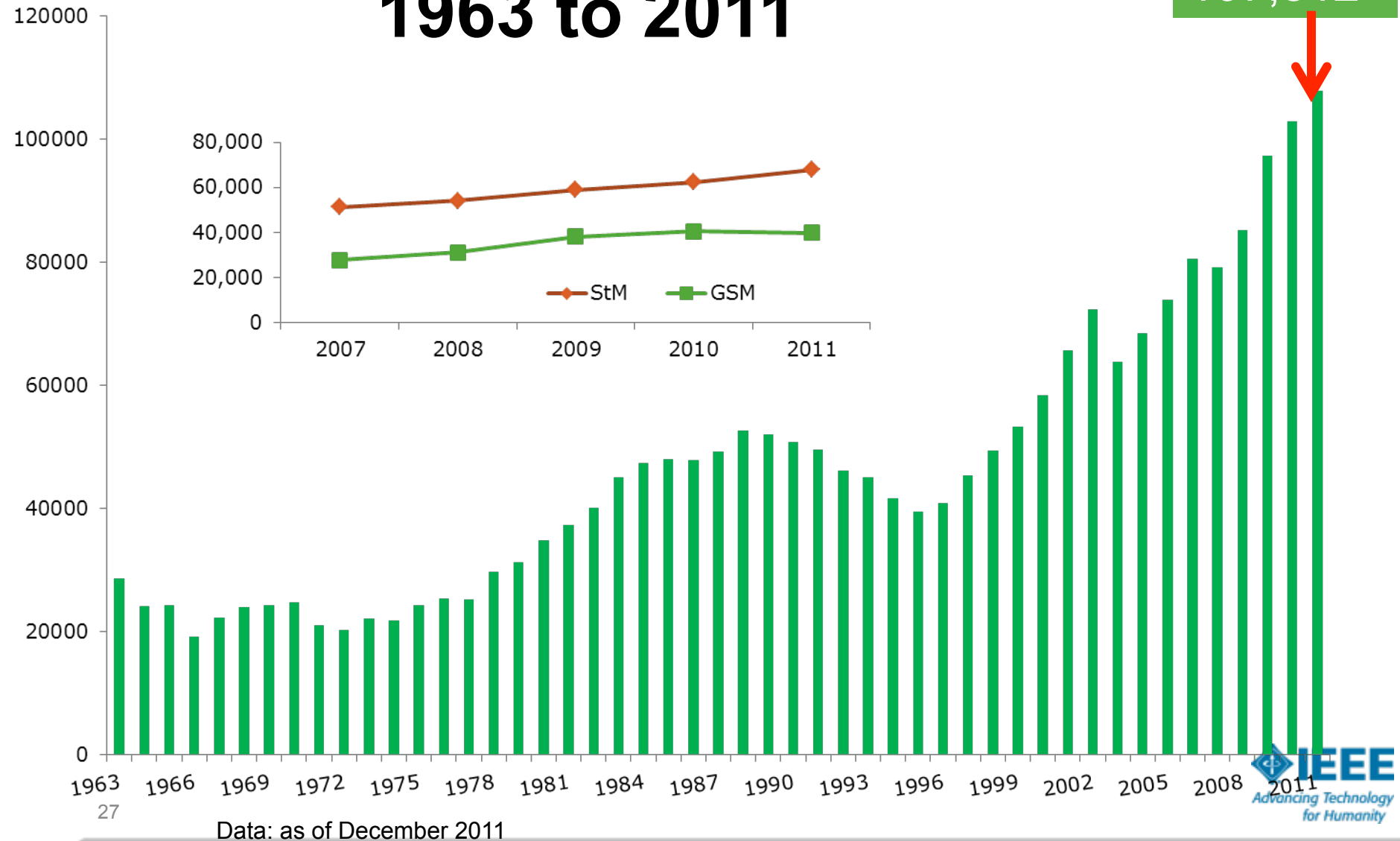


**Bill Williams, Chair**  
**R3 Member Recovery and Recruitment**  
**[billwill@ieee.org](mailto:billwill@ieee.org) - 336-749-4156**

The Section's Membership Development Chair is *the* key point person for establishing rapport with present and potential members including those eligible for elevation to Senior Member. Someone with an outgoing personality who enjoys dialogue, discussion and mentoring is an ideal candidate for Membership Development.

I encourage all Chairs to meet with me as a group in order to share our ideas, coordinate action plans and analyze our membership data to organize strategies and bring about positive and successful efforts in recovering and recruiting members. I can meet with you at your convenience.

# IEEE Student Membership 1963 to 2011



# R3 Student Team

## SAC

Student  
Activities Chair  
(or Committee)

- SAC Regina Hannemann  
<r.hannemann@ieee.org>
- RSR Josh Shank <Joshua.Shank@ieee.org>
- Vice Chair and SPAC Mary Lynn Smith

## RSR

Regional  
Student  
Representative

- Past Chair Eric Ackerman
- Mentor Bruce Walcott

## SPAC

Student  
Professional  
Activities  
Conference

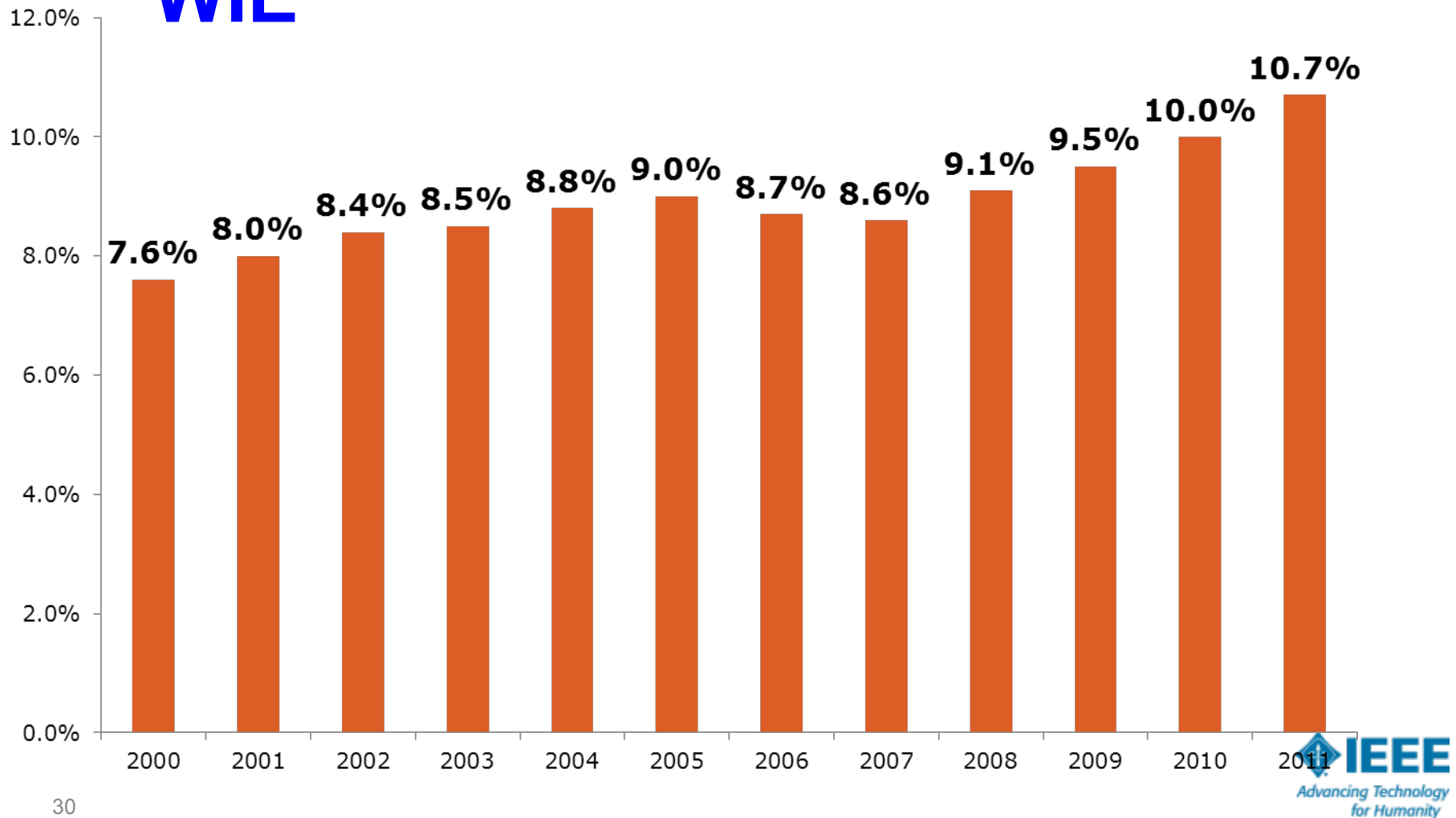
- Region 3 Student Conference (parallel with other events)
  - Contests: Hardware, Software, Ethics, Website, T-Shirt
  - Training
- Training and other engagement support during year

## 2011 Female Membership by Region

	HIGHER GRADE w/o GSMs			STUDENTS			TOTAL MEMBERS		
REGION	IEEE	Female		IEEE	Female		IEEE	Female	
			%			%			%
1	31,126	2,033	6.5%	4,298	489	11.4%	35,424	2,522	7.1%
2	27,548	1,913	6.9%	4,225	490	11.6%	31,773	2,403	7.6%
3	25,038	1,584	6.3%	5,642	707	12.5%	30,680	2,291	7.5%
4	18,817	1,092	5.8%	4,404	429	9.7%	23,221	1,521	6.6%
5	24,623	1,554	6.3%	4,712	537	11.4%	29,335	2,091	7.1%
6	49,461	3,169	6.4%	7,202	785	10.9%	56,663	3,954	7.0%
R 1-6	176,613	11,345	6.4%	30,483	3,437	11.3%	207,096	14,782	7.1%
7	13,334	878	6.6%	3,609	415	11.5%	16,943	1,293	7.6%
8	54,442	4,185	7.7%	21,880	3,806	17.4%	76,322	7,991	10.5%
9	9,487	855	9.0%	8,748	1,535	17.5%	18,235	2,390	13.1%
10	54,301	5,035	9.3%	43,092	12,869	29.9%	97,393	17,904	18.4%
R 7-10	131,564	10,953	8.3%	77,329	18,625	24.1%	208,893	29,578	14.2%
TOTAL	308,177	22,298	7.2%	107,812	22,062	20.5%	415,989	44,360	10.7%

# Women in IEEE

**WIE**



\* Based on those reporting gender to IEEE

# R3 Women in Engineering

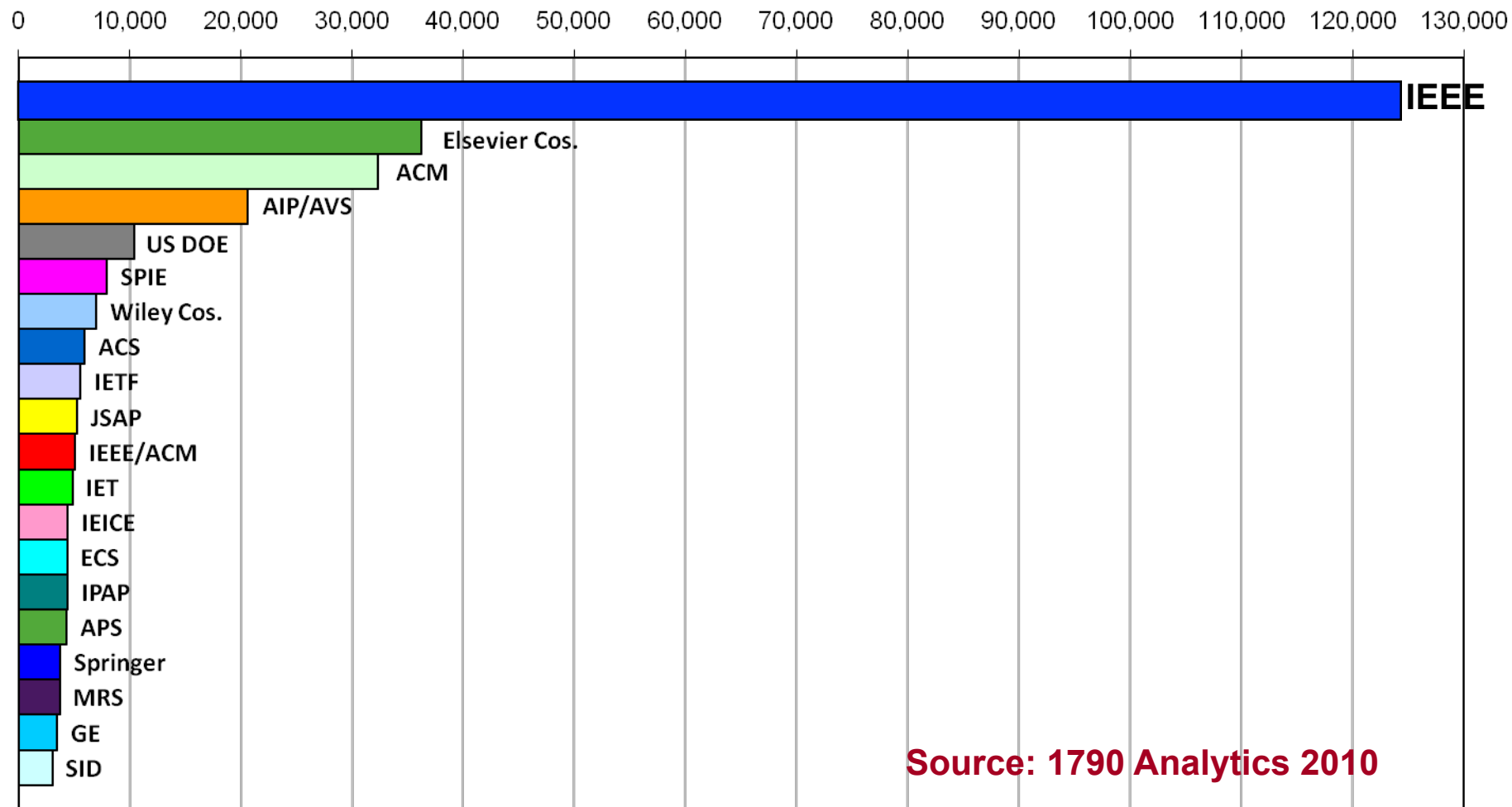


- Liaison: Anastasia Davis  
anastasia.davis@ieee.org
- Meet and Greet – Saturday 5:30pm in Orlando
- Coordinating chairs in Sections for sharing of ideas, best practices, and projects

# “Indicate all of fields in which you hold a degree” – 2008 Member Study

<b>Electrical or electronics engineering</b>	<b>66%</b>	<b>68%</b>
<b>Computer science/engineering</b>	<b>27%</b>	
<b>Physics</b>	<b>10%</b>	
<b>Mathematics</b>	<b>7%</b>	
<b>Business or Finance</b>	<b>8%</b>	
<b>Systems engineering</b>	<b>3%</b>	
<b>Mechanical engineering</b>	<b>3%</b>	
<b>Industrial engineering</b>	<b>2%</b>	
<b>Materials science/ engineering</b>	<b>1%</b>	
<b>Medicine</b>	<b>1%</b>	
<b>Other</b>	<b>10%</b>	

# Technology Patent References to STM Publishers



- U.S. patent references from the top 25 patenting organizations in 2009 to top publishers
- Based on number of references to papers/standards/conferences from 1997-2009
- 33% of the sci-tech citations by the top 25 patenting organizations are to IEEE

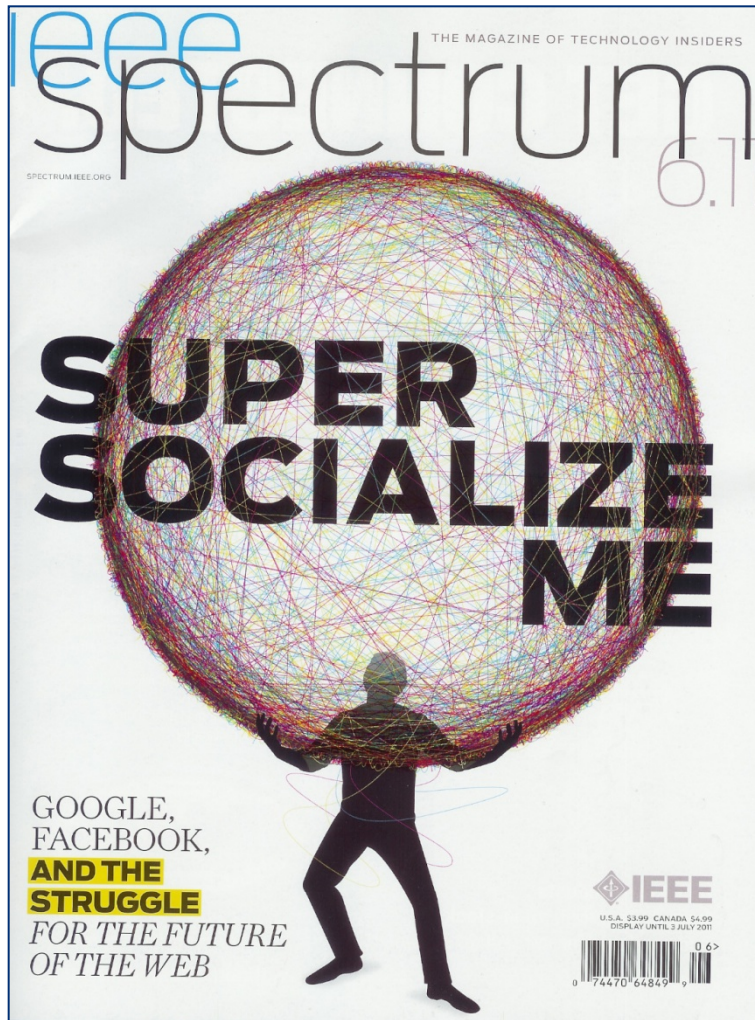
<b>Area</b>	<b>IEEE Top Journals (out of 20)</b>
<b>Electrical and Electronics Engineering</b>	<b>16</b>
<b>Telecommunications</b>	<b>14</b>
<b>Computer Hardware and Architecture</b>	<b>10</b>
<b>Automation and Control</b>	<b>9</b>
<b>Artificial Intelligence</b>	<b>8</b>
<b>Software Engineering</b>	<b>7</b>
<b>Optics</b>	<b>5</b>
<b>Biomedical Engineering</b>	<b>2</b>
<b>Medical Informatics</b>	<b>2</b>
<b>Mathematical and Computational Biology (Bioinformatics)</b>	<b>1</b>
<b>Nanoscience and Nanotechnology</b>	<b>0</b>

# Publications

- **More than 3 million articles in IEEE digital library**
  - 7M+ articles downloaded per month
- **More than 2M engineers, scientists and students have free access**
- **150+ journals, transactions and magazines**
  - 17 of the 20 top-cited publications in electrical and electronics engineering



# IEEE Spectrum Uses Social Media To Gain Visibility for IEEE



- **Facebook**
  - 18,000 fans
- **Twitter**
  - 12,000 followers
- **LinkedIn**
  - >200 in group
- **YouTube**
  - 11.5 million views
  - 4,100 subscribers

# Standards

- **IEEE is the leading developer of global industry standards**
  - Over 900 published standards; 500 in development
  - Portfolio of development programs, products, and services
- **Enhanced global adoption of IEEE standards -- IEC, ISO, and ITU.**

## IEEE-SA

IEEE Standards  
Association



# IEEE Global Conference Business\*

- More than 1,330 conferences sponsored

- 81 countries
- More than 387,000 attendees
- Acquired more than 1,300 conference proceedings\*
- Partnered with more than 1,100 non-IEEE entities



# Region 3 Conferences



**IEEE SoutheastCon 2012**

*Innovating for a Better Tomorrow*



**March 15 – 18, 2012**

**Wyndham Orlando Resort Hotel, Orlando, Florida**

- SoutheastCon
- Other conferences
  - Partnering with others
  - Section/Council Conferences

# Education Programs

- IEEE E-Learning Library
- Education Partners Program
- Skills Certifications
- IEEE Pre-University Programs
- Pre-University Teacher In-Service Program (TISP)
- TryEngineering.org
  - TryComputing.org currently in development
- Accreditation



# Ken Pigg, Chair

## R3 Educational Activities

[j.k.pigg@ieee.org](mailto:j.k.pigg@ieee.org) 405-463-4495

- A primary objective of the Educational Activities Committee in 2012 is to enhance member engagement.
- We will be working to discover the things that the members in your sections need and seeking ways to accomplish them inside and outside of the section resources.
- We expect this to include continuous technical improvement and soft skills.
- I will be reaching out shortly to 2012 Section Educational Activities Chairs and Section Chairs to help recruit one, or contact me directly as noted above.

# Relationships With Other National Societies

- **Spans more than 40 countries**
- **49 national society agreements**
- **25 “sister society” agreements : ex. IEEE Computer Society and U.K. org.**
- **Common interest, mutual benefit**
- **Agreements extend back several decades**

# IEEE Humanitarian Activities

- **IEEE volunteers and staff members improving the standard of living of under-privileged populations through...**
  - Creation or adaption of technology to benefit those in need
  - development of technology policy and business models that support affordable, scalable, sustainable and long term application of such appropriate technology solutions

# IEEE Humanitarian Activities Include...

- IEEE Engineering Projects in Community Service (EPICS)
- Engineering for Change
- IEEE Presidents' Change the World Competition



# EPICS in IEEE

## ■ EPICS (Engineering Projects in Community Service)

- Conceived and championed by IEEE 2007 President Leah Jamieson of Purdue University
- University and high-school students work on engineering-related projects with local area non-profit organizations
- Empowers student branches and IEEE GOLD groups to work with high school students on community service-related engineering projects



# Humanitarian Technology Focus “Engineering for Change”

- **IEEE-ASME Joint Endeavor**

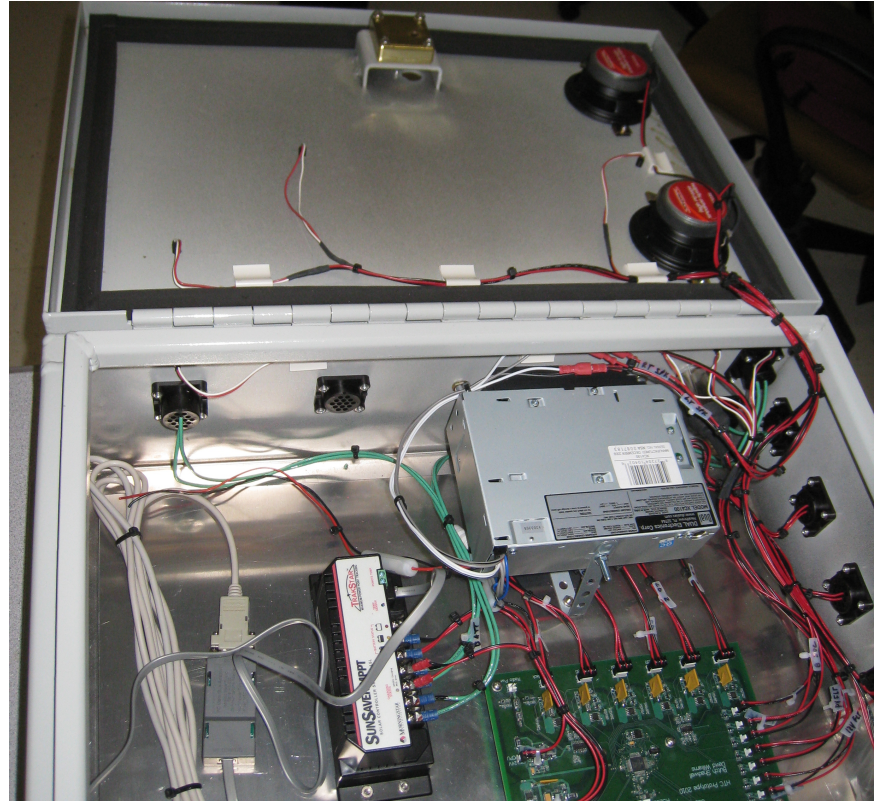
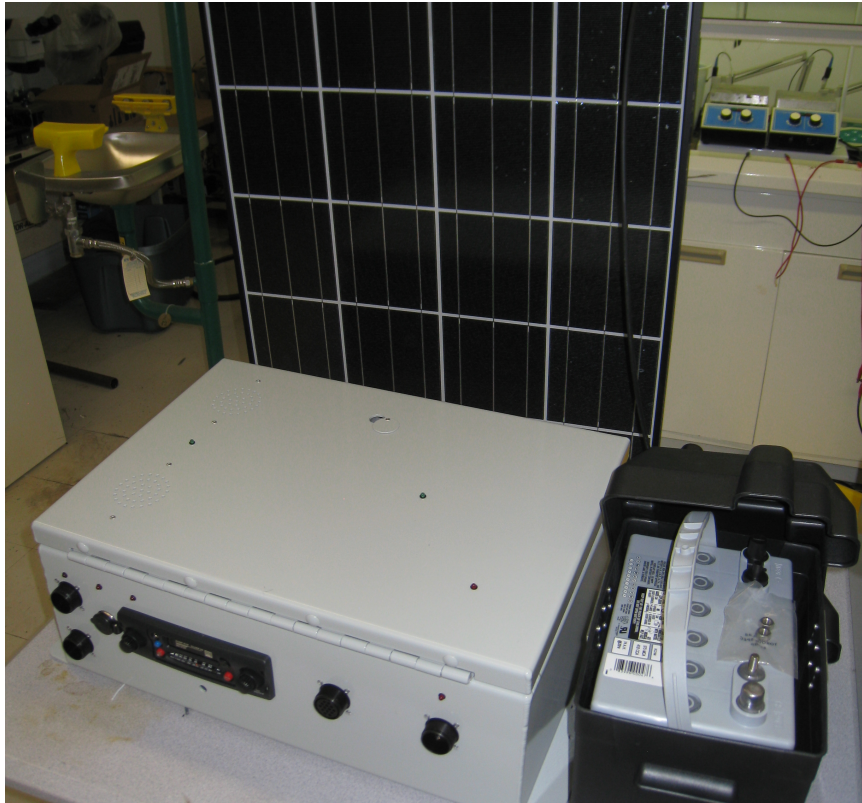
- Engineers Without Borders

- **Online environment**

- Bring together engineers and other problem solvers with NGOs and local communities
- Address basic quality of life issues such as access to clean water, electricity and proper sanitation



# Some of R3's Butch Shadwell's Contribution



# Looking to the Future

- IEEE is bringing a more systematic, comprehensive approach to applying technology to help solve world problems
- Developing global solutions for critical need areas
- Encouraging local IEEE members to create solutions
- Providing information on funding sources, other support



# Region 3 Meeting

**16-18 March 2012**  
**Orlando FL**

# Friday

- 5:30 pm – 7pm Open Reception (Conf.)
- 7 – 9pm Areas, Councils
- 9 – 11pm Area/Council Chairs meet with Director, Director-Elect

# Saturday

- 8 am Welcome, Introductions, Focus (Green)
- 9am – noon, Member Engagement Workshop (Ratcliff, Randall)
- Noon lunch (IEEE-USA Presidential Candidates)
- 1pm – 1:45pm, Reporting from Member Engagement Breakouts
- 2pm – 4pm, Section Reports
- 4pm – 4:30pm, Member Segmentation Survey Results
- 4:30pm – 5:00pm, Day 1 Wrap Up (Green)
- 5:30 – 6pm WIE Meet and Greet (Davis)
- 6:00 pm – 9pm, Awards Banquet

# Sunday

- 8:15 am – noon Region 3 Meeting
  - Actions
  - Finances
  - Committee Reports
  - Guest speakers
  
- 12:30 – 2:30pm Conference Debrief

# Non-R3 Attendees

- Gary Blank, Consultants Network, IEEE-USA VP
- Stella Oduyela, IEEE Controller
- Matt Loeb, Staff Executive
- Vera Sharoff, MGA Information Management Director
- John Day, Director Membership Development
- Howard Michel, IEEE VP - MGA



*Advancing Technology  
for Humanity*

