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MAY 2010 VOLUME 58 NUMBER 5 IEEE MAY (ISSN 0098-4778)

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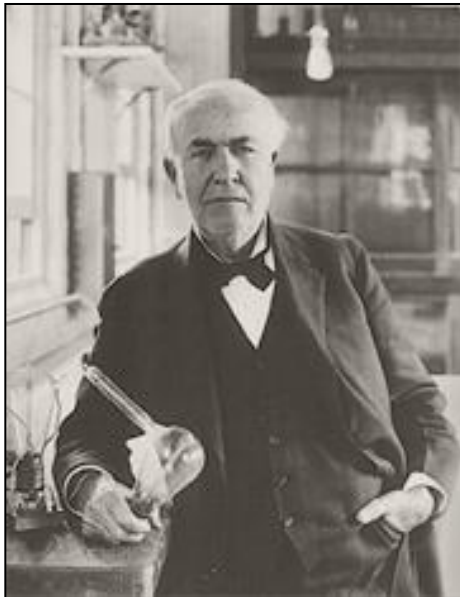


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# American Institute of Electrical Engineers

*Founding officers of the American Institute of Electrical Engineers in 1884:*



**Thomas A. Edison**



**Alexander Graham Bell**

# The Institute of Radio Engineers

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**1912**

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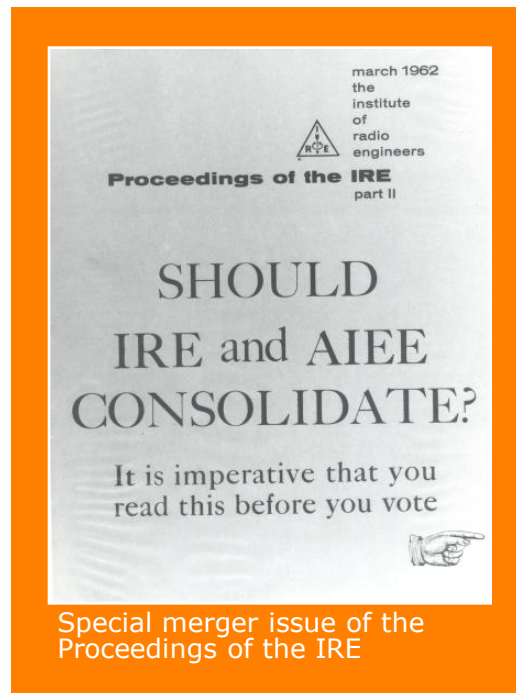
The idea that there should be one organization for all electrical engineers was an old one, and became more powerful as the profession expanded beyond its separate roots in power and radio.

In 1962, the boards and memberships of the two institutes agreed to merge. On **January 1, 1963**, the Institute of Electrical and Electronic Engineers was born with **150,000** members.



**1962**

Symposium on the proposed merger, IRE National Convention

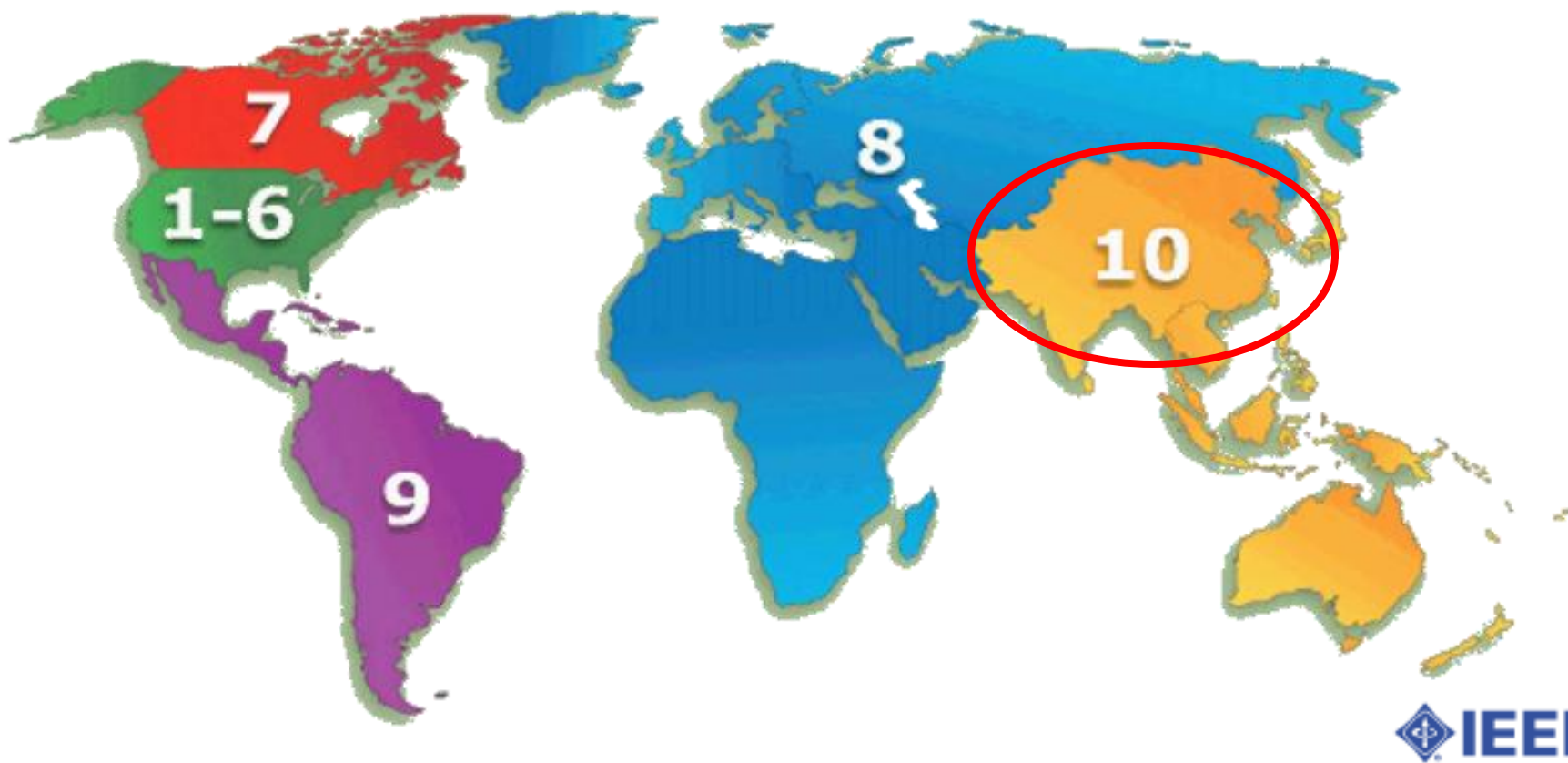


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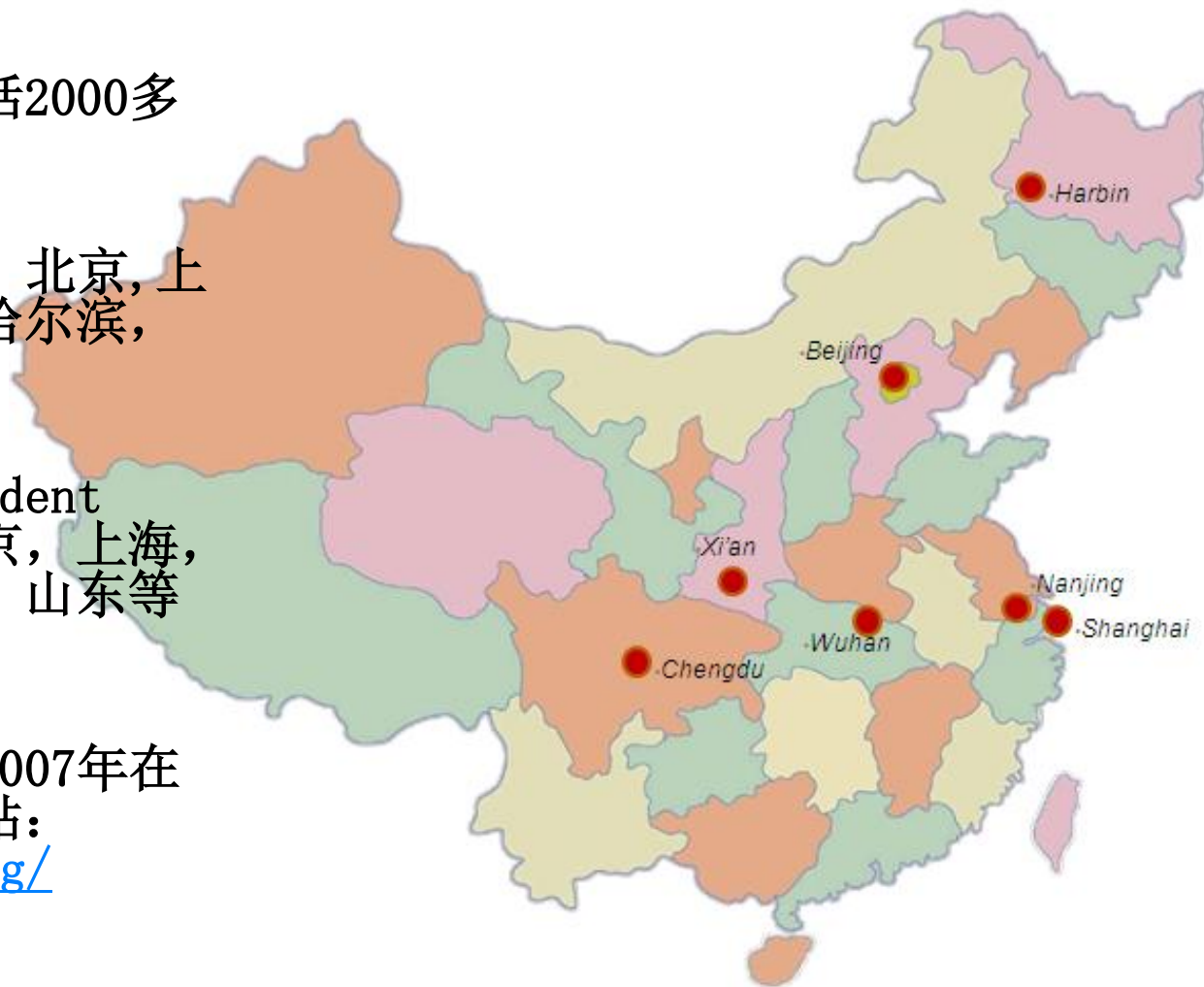
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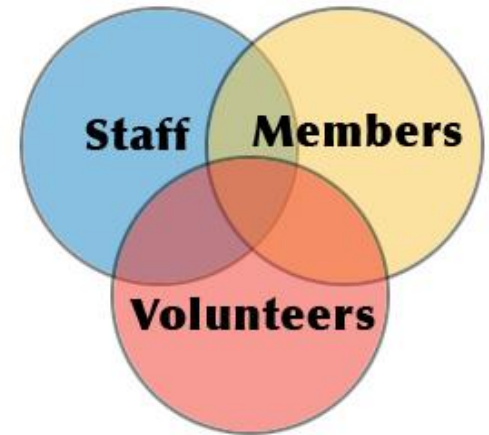
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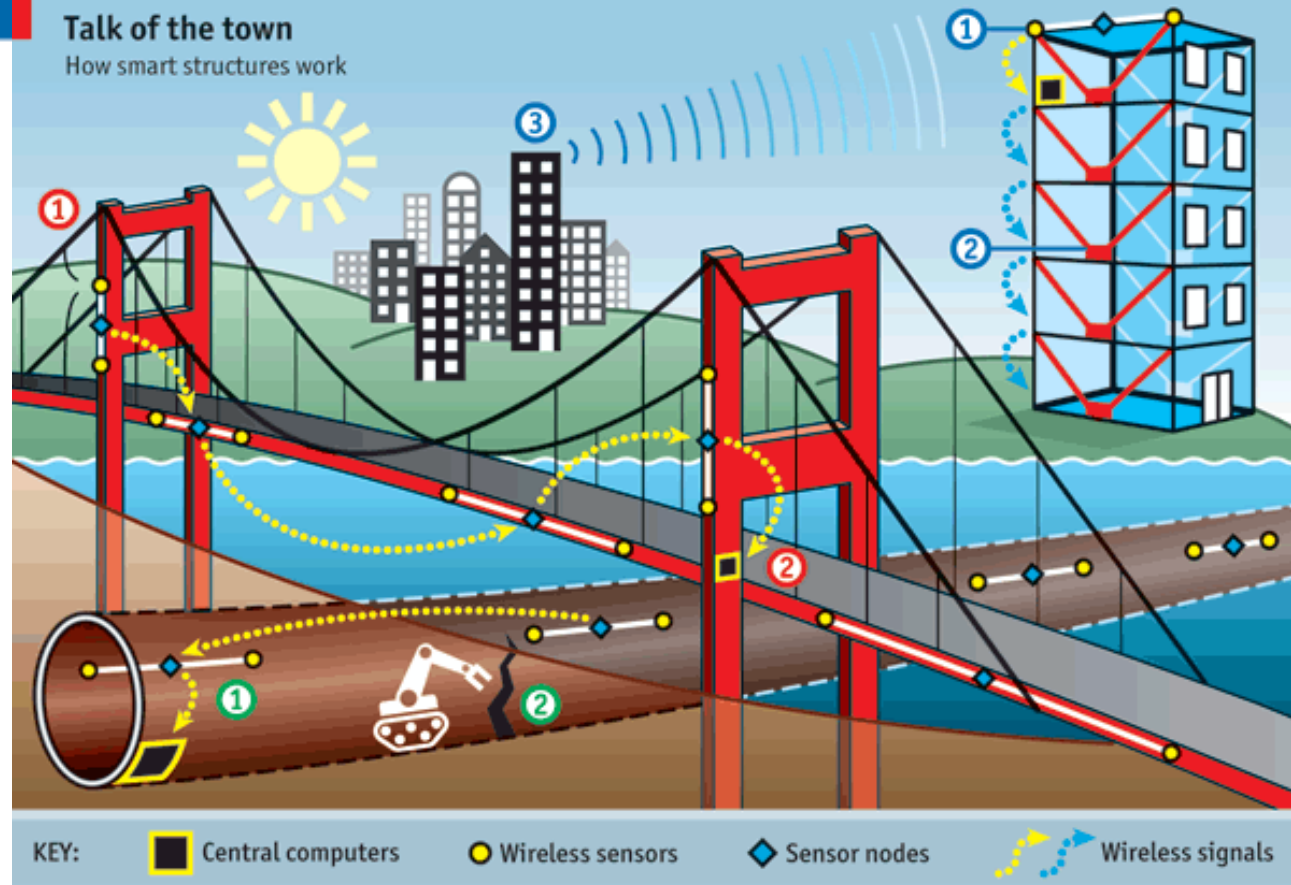
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Sensor  
networks

Energy  
Harvesting

Talk of the town  
How smart structures work



#### SMART BUILDING

1. Sensors in a building monitor the building's movement in response to strong winds or earthquake tremors.
2. Shock absorbers (hydraulic dampers) can then be made to stiffen or relax and heavy weights (mass dampers) can be moved to reduce oscillations in strong winds, or minimise damage in the event of an earthquake.
3. Buildings that detect an earthquake tremor could even warn other buildings nearby of the approach of a shockwave, so they could sound an alarm and prepare themselves accordingly.

#### SMART BRIDGE

1. Wireless sensors mounted on the bridge monitor vibrations, displacement and temperature. This information then "hops" across the network of sensor nodes to a central computer for analysis.
2. If a problem is detected, such as a loose bolt or cable, or the beginning of a crack, a warning can be sent by SMS.

#### SMART TUNNEL

1. Wireless sensors mounted on the walls of a tunnel monitor displacement, temperature and humidity. This information then "hops" across the network of sensor nodes to a central computer for analysis.
2. If a problem with the tunnel lining is detected, appropriate maintenance can be carried out. In future, a smart tunnel could even use robots to perform some maintenance tasks automatically.



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### Scheduling Sleeping Nodes in High Density Cluster-based Sensor Networks

Jing Deng, Yunghsiang S. Han, Wendi B. Heinzelman and Pramod K. Varshney

From the issue entitled "Special Issue: Energy Constraints and Lifetime Performance in Wireless Sensor Networks"

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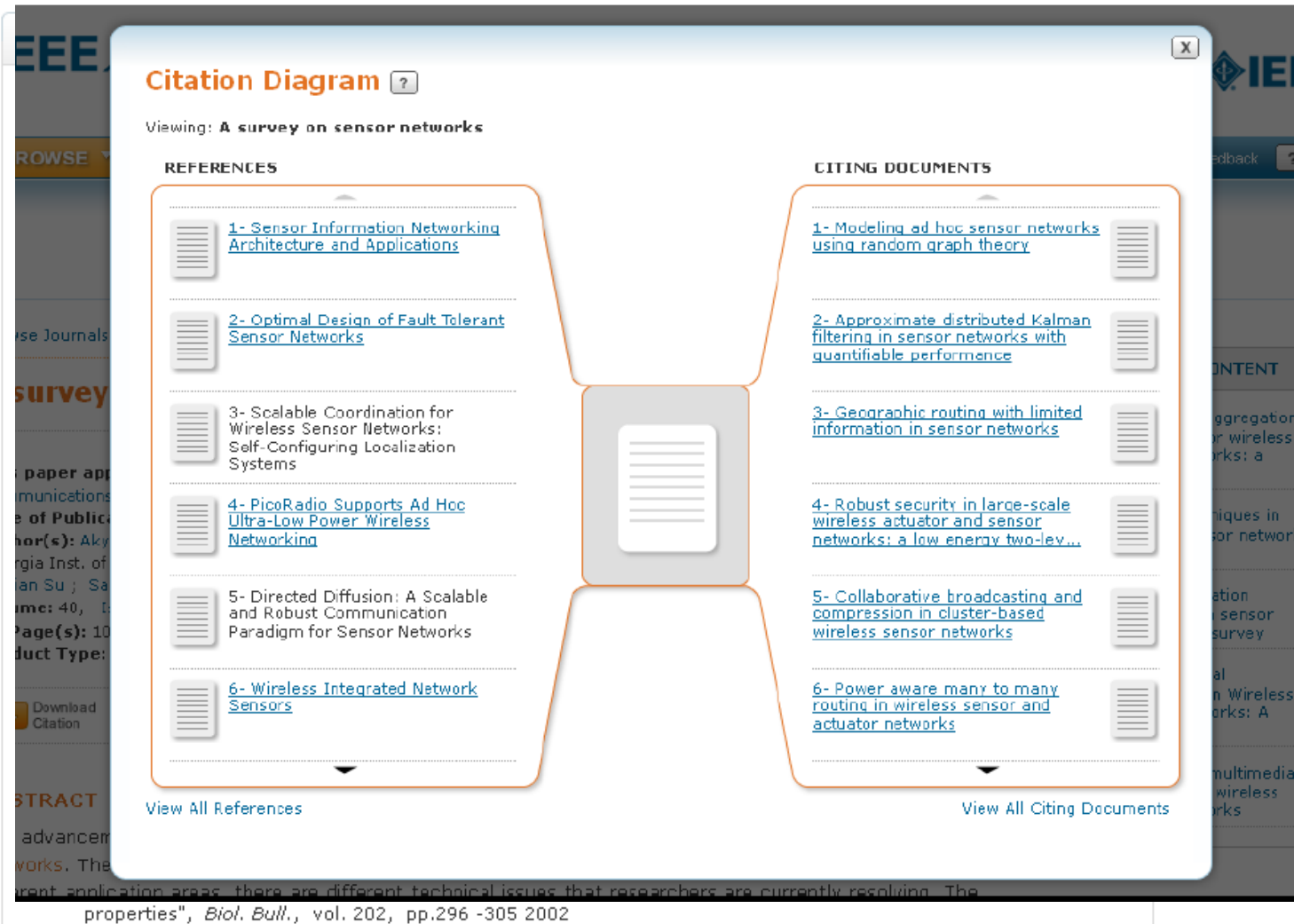
article presents a whirlwind survey through **energy harvesting**, spanning historic and current developments.

## CITED BY OTHER PUBLISHERS

1. Ren, Wei "Formation Keeping and Attitude Alignment for Multiple Spacecraft Through Local Interactions", *Journal of Guidance Control and Dynamics*, Volume.30, Issue.2, pp.633, 2007, ISSN: 07315090, [\[CrossRef\]](#)
2. Li, Wei Wang, Xiaofan "Adaptive velocity strategy for swarm aggregation", *Physical Review E*, Volume.75, Issue.2, pp.021917, 2007, ISSN: 15393755, [\[CrossRef\]](#)
3. Yang, Bo Fang, Huajing "Stability analysis of stochastic swarm systems", *Wuhan University Journal of Natural Sciences*, Volume.12, Issue.3, pp.506, 2007, ISSN: 10071202, [\[CrossRef\]](#)
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**Yisheng Xue** (M'08) received the Ph.D. degree in electronic engineering from Tsinghua University, Beijing, China, in 2002.

From August 2002 to October 2004, he was a Postdoctoral Researcher with the University of Duisburg–Essen, Duisburg, Germany. From November 2004 to June 2005, he held a research associate position with the Department of Electrical and Computer Engineering, McGill University, Montreal, QC, Canada. Between August 2005 to August 2007, he was a Senior Research Scientist with Siemens

Corporate Technology, Beijing. He was with the Motorola Labs, Beijing, between August 2007 and September 2008. Since September 2008, he has been with Qualcomm Wireless Communication Technologies, China Ltd. His research interests include protocol design and signal processing for wireless communications.

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Yisheng Xue, *Member, IEEE*, and Harry Leib, *Senior Member, IEEE*

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acquaint you with the scope of J-SAC, the people involved in the management of J-SAC, and a list of upcoming issues. Also contained herein is the complete Guide to J-SAC Operations, which is required reading for all Guest Editors and for those anticipating submission of a proposal for a J-SAC issue.

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#### **Guest Editors:**

Prof. Yiqing Zhou, Advanced Wireless Center, ICT/CAS, China (zhouyiqing@ict.ac.cn)

Prof. Fumiyuki Adachi, Tohoku University, Japan (adachi@ecei.tohoku.ac.jp)

Prof. Xiaodong Wang, Columbia University, USA (wangx@ee.columbia.edu)

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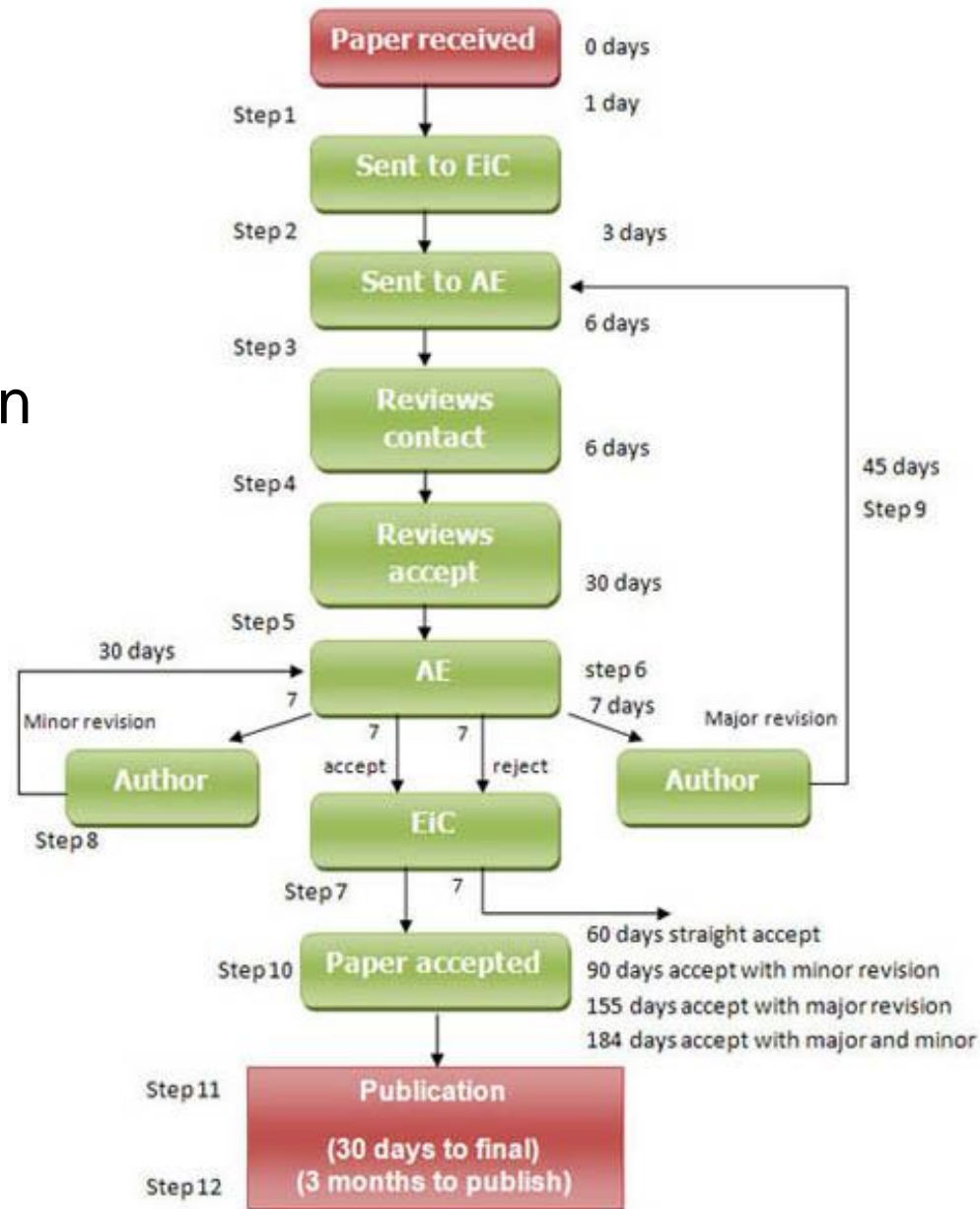
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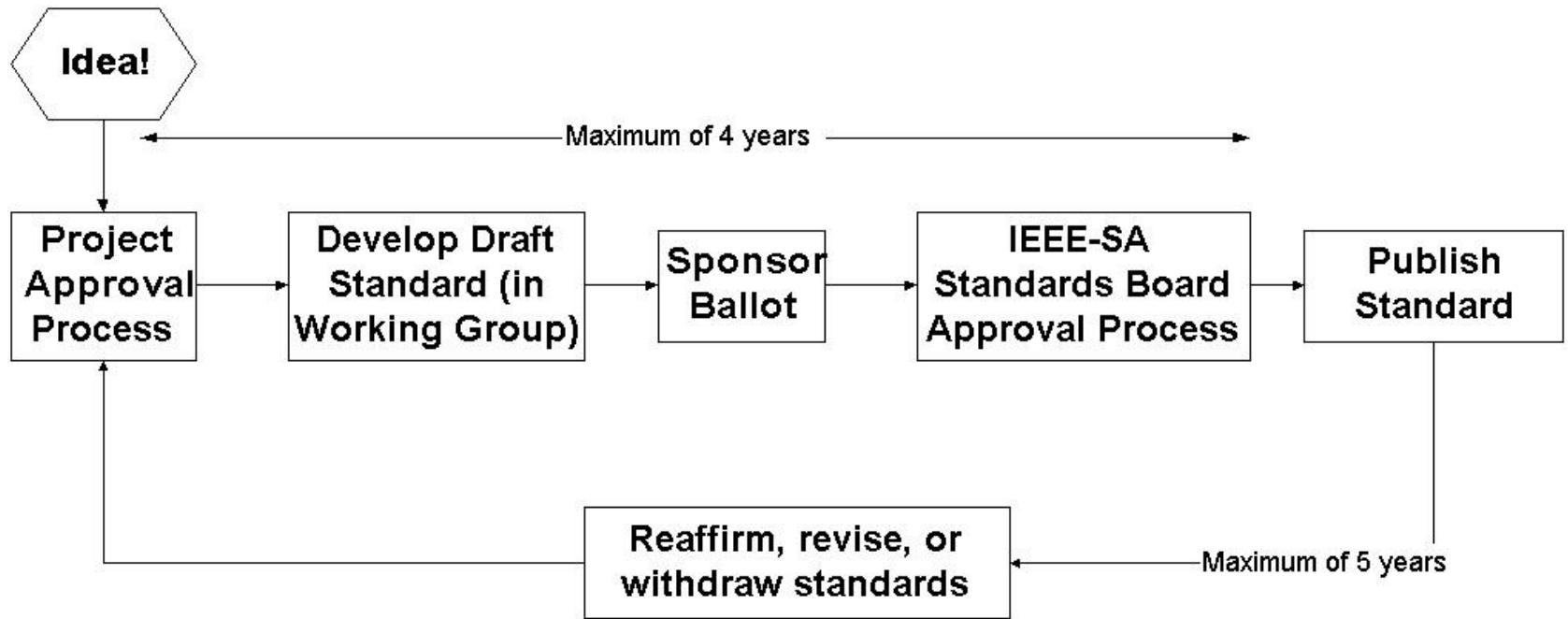
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#### ■ antenna factor

A factor that when multiplied with the linear voltage reading of the measuring instrument yields the electric field strength in volts/meter or the magnetic field strength in amperes per meter.

#### Notes:

1. The factor includes the effects of antenna effective length and mismatch, and it may include transmission line losses.

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  - Quantity relating the strength of the field in which the antenna is immersed to the output voltage across the load connected to the antenna. (Antenna factor is independent of measurement geometry. Antenna is aligned with field polarization.)
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  - Antenna factor when all influences from adjacent objects have been removed.
- [ground plane](#)
  - A conducting surface or plate used as a common reference point for circuit returns and electric or signal potentials.
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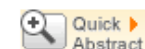
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Registration Entity.

~~3.2.2 compatible: Paints and coatings on plastic parts are proven to be compatible with recycling processes if they do not significantly impact the physical/mechanical properties of the recycled resin. "Significant impact" is defined as >25% reduction in notched Izod impact at room temperature as~~

~~declaration by manufacturer: This is the~~ Procedure by which a manufacturer declares that a product meets the environmental performance criteria by following specific steps defined by a Product Registration Entity and submitting them to a Product Registration Entity.

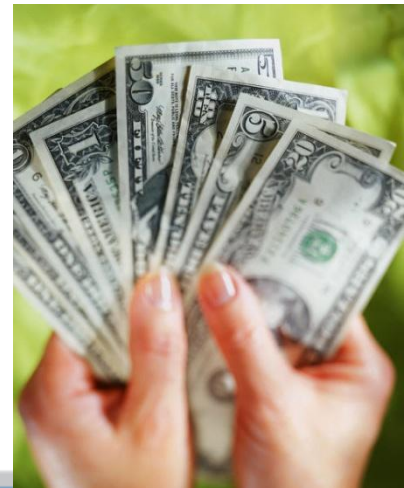
~~3.2.4 first, second, and third tier recyclers: first tier recycler is the organization that contracts with, or otherwise works directly with, the manufacturer, to receive and tear down product; second tier recycler is an organization that receives material from the first tier recycler and performs further processing, but has no direct relationship with the manufacturer; and third tier recycler is an organization that receives material from the second tier recycler and generally produces a commodity for sale and use, but has no direct relationship with the first tier recycler~~

institution: A governmental, quasi-governmental, or non-governmental organization that establishes centralized agreements, which enable the entire organization and/or any of its parts to purchase electronic products.

~~3.2.5 homogeneous material: European Union documentation [B2] provides the following guidance for homogeneous material: homogeneous material refers to a material that can not be mechanically disjointed into different materials. Examples of "homogeneous material" are individual types of: plastics, ceramics, glass, metals, alloys, paper, board, resins, and coatings. The term "mechanically disjointed" means that the materials can, in principle, be separated by mechanical actions such as: unscrewing, cutting, crushing, grinding, and abrasive processes~~

# IEEE Mini-Grants and Student Application Papers

- SEC is offering Mini-Grants to students and faculty mentors
- Help with graduate and undergraduate last-year design projects that contain an industry standards component
  - \$500 grants for students
  - \$300 grants for faculty advisors





# Final student papers are now posted on the following topics:

- Applications of IEEE 802.11b Wireless Standards in the Realization of a New Service Paradigm for New Jersey's Garden State Parkway
- Dynamic Backoff for IEEE 802.15.4 Beaconless Networks
- Wireless Body Area Networks for Healthcare: A Feasibility Study
- Wireless Wearable Motion Sensor for Use in Medical Care
- Environment Temperature Control Using Modbus and RS485 Communication Standards
- Wireless Telemedicine as Part of an Integrated System for E-medicine
- Build an IEEE 802.15.4 Wireless Sensor Network for Emergency Response Notification for Indoor Situations
- <http://standardseducation.org/applications>

# IEEE Student Branches in China

- 目前中国的学生会员已经超过2000人。
- 通过学生分会通过开展特定的项目、活动，开拓青少年的科学眼界，培养其工程素养
- 迄今为止，中国学生分会的数目已达25个
  - IEEE 河北大学学生分会
  - IEEE 中国科学院研究生院学生分会
  - IEEE 清华大学学生分会
  - IEEE 哈尔滨工业大学深圳研究生院学生分会
  - IEEE 北京邮电大学学生分会
  - IEEE 北京交通大学学生分会
  - IEEE 北京大学学生分会
  - IEEE 北京大学深圳研究生院学生分会
  - IEEE 北京航空航天大学学生分会
  - IEEE 重庆大学学生分会
  - IEEE 电子科技大学学生分会
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  - IEEE 西安电子科技大学学生分会
  - IEEE 山东大学学生分会
  - IEEE 天津大学学生分会
  - IEEE 中国科技大学学生分会

# IEEE Student Activities

- IEEE学生分会组成：主席，副主席，秘书，指导老师，学生会员
- 获得IEEE学生奖项（多项奖学金，论文大赛，各种竞赛活动等）
- 获得会议差旅资助
- 参观著名企业/科技机构实验室
- 参与国际/国内学生分会间交流活动
- 免费参加各种学术交流活动
- 免费参加IEEE网上学生专题讲座
- 免费参加职业发展主题活动，和企业会员面对面沟通
- 获得志愿者证书，提升职业能力



# IEEE Webinars

- Spectrum免费讲座，涉及最新科技：  
<http://spectrum.ieee.org/webinar/>
- Communication Society免费讲座，涉及通信领域热点技术：  
<http://www.comsoc.org/webinars>
- GOLD社团免费讲座，涉及职业发展，人文，科技等内容：  
[http://www.ieee.org/membership\\_services/membership/gold/events/index.html](http://www.ieee.org/membership_services/membership/gold/events/index.html)
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# More Resources For You

## ■ IEEE Fellowship/Scholarship

- IEEE Charles LeGeyt Fortescue Fellowship
- IEEE Computational Intelligence Society Conference Travel Grants
- IEEE Computational Intelligence Society Summer Research Grant
- IEEE Components, Packaging, and Manufacturing Technology Society Graduate Fellowship for Research on Electronic Packaging
- IEEE Computer Society Merwin Scholarship
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## ■ IEEE Competitions

- Presidents' Change the World Competition
- IEEE Computer Society Simulator Design Competition
- Student paper contest
- ..... [http://ieee.org/membership\\_services/membership/students/awards/index.html](http://ieee.org/membership_services/membership/students/awards/index.html)





# Exciting Contest!

## IEEE Xtreme Programming 极限编程大赛

Worldwide, 24-hour programming challenge for IEEE Student Branches

**Top prize is a trip anywhere in the world to the IEEE event of the top team's choice!**

[http://www.ieee.org/membership\\_services/membership/students/competitions/xtreme/index.html](http://www.ieee.org/membership_services/membership/students/competitions/xtreme/index.html)

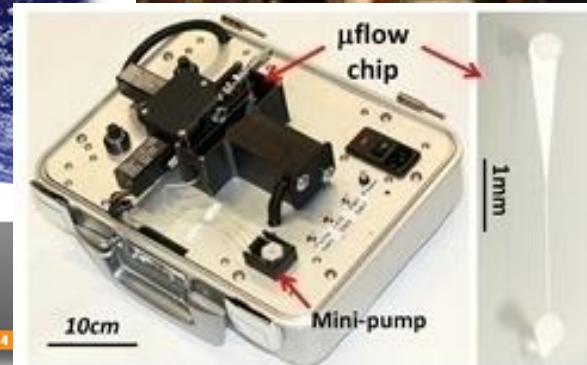


# Exciting Contest!

## IEEE President's "Change the World" Competition

Recognizes students or teams of students who develop unique solutions to real-world problems using engineering, science, computing and leadership skills to benefit their community or humanity

**Opportunity to win US \$10,000**  
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# 成为IEEE会员

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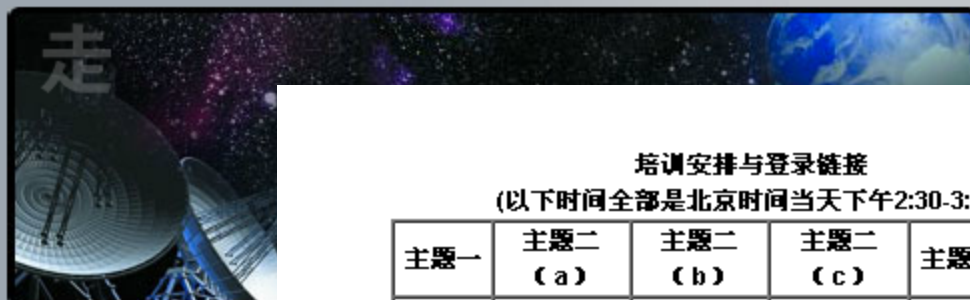
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## 新闻资讯

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2012年3月11日

IEEE预见全球云计算应用  
3月11日

IEEE会员在OFC/NFOEC201  
的预言 2012年3月11日

通知：由于系统升级，IEE  
于3月1-2日和3月29-4月1  
进行会员交费 and 续费工作。

IEEE在微软研发大楼进行  
月27日

## 培训安排与登录链接

(以下时间全部是北京时间当天下午2:30-3:30)

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# New IEEE Xplore 4月1日已发布!

The screenshot shows the new IEEE Xplore Digital Library interface. At the top, the IEEE Xplore logo is on the left, and the IEEE logo is on the right. A navigation bar includes 'BROWSE', 'MY SETTINGS', and a search bar. The 'BROWSE' menu lists categories like Books & eBooks, Conference Publications, Education & Learning, Journals & Magazines, Standards, and a 'By Topic' dropdown. A sidebar on the left promotes subscriptions with a 'LEARN MORE' button and lists 'QUICK LINKS' such as 'Manage Alerts', 'Training & Tools', and 'IEEE Xplore Mobile'. The main content area features a large search bar with the text 'Search 3,151,489 items' and a 'SEARCH' button. Below the search bar are links for 'Advanced Search', 'Preferences', 'Search Tips', and 'More Search Options'. A 'Highlights' section shows a featured article titled 'Computer Society Certification Courses Now Available in the IEEE eLearning Library' with a thumbnail image of three people. At the bottom, a link says '»Learn more about the CSDP training courses'.

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