

IEEE SSCS Overview

Welcoming remarks and Role of Chapters

Jan Van der Spiegel
Chair, SSCS Chapters Committee

Lehigh University, Sept. 21, 2009



**IEEE SOLID-STATE
CIRCUITS SOCIETY**
Where ICs are in IEEE



2009 Celebrating 125 Years
of Engineering Future

Congratulations to the Lehigh Valley SSCS Chapter

Special thanks to Robert Peruzzi
and other founding members



Overview

- ▶ IEEE organization
- ▶ Solid-State Circuits Society (SSCS)
 - Brief History
 - Organizational structure, committees
- ▶ Chapters
 - Worldwide chapter growth
 - Role of Chapters
 - Support



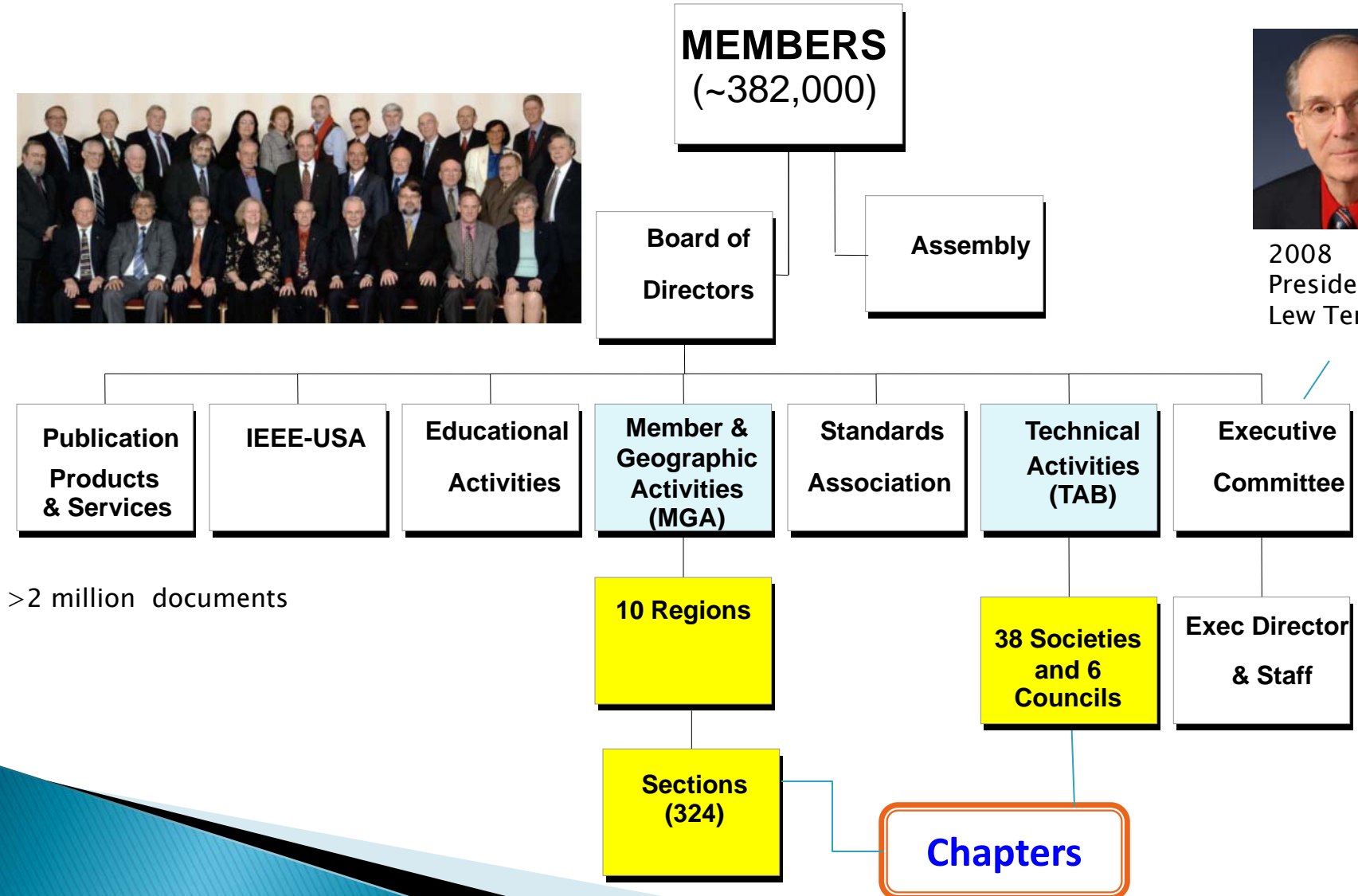
- ▶ IEEE is one of the world's largest volunteer organizations:
 - IEEE has about **382,000** members over 10 regions and 150 countries.
- ▶ It is through the work of volunteers in local **Chapters** that a lot meaningful member activities get organized in the various Societies.



IEEE Structure



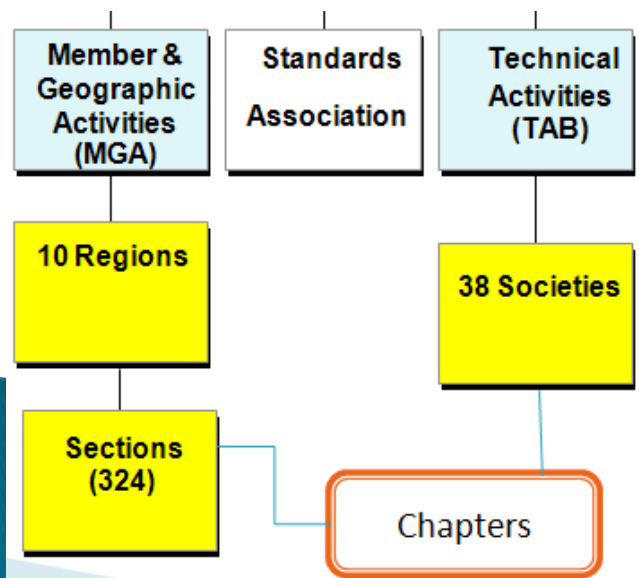
2008
President,
Lew Terman





IEEE Solid-State Circuits Society

One of the 38 IEEE Societies



IEEE Solid-State Circuits Society



- ▶ Founded in 1997 after it had been a Council
- ▶ The council was formed in 1966
- ▶ IEEE SSCS has over 10,000 members worldwide.

The Society's interests cover **all aspects of solid-state circuits: design, testing and application of circuits and subsystems, as well as closely related topics in device technology and circuit theory.**

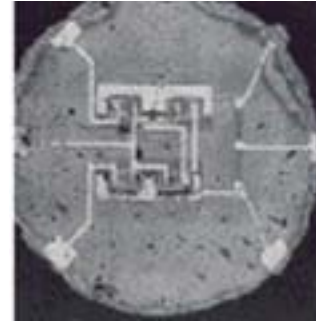
Technology Origins . . .



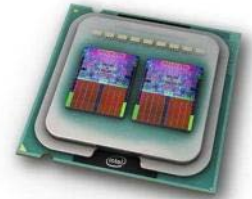
1947 Invention of the transistor (Bell Labs)



1954: First commercial transistor (TI)



1958: Invention IC (J. Kilby, TI & R. Noyce, Fairchild)



Intel

and the rest is history ...

1954: First *ISSCC*



Shockley (seated), Bardeen (left), and Brattain (right)

SESSION IV
Friday, 2:30 p.m. - 5 p.m.

Nonlinear Applications of Junction Transistors
Chairman: A. W. Lo, *RCA Laboratories, Princeton, N. J.*

15. Large-Signal D-C Behavior of Junction Transistors
J. J. Ebers and J. L. Moll, *Bell Telephone Laboratories, Murray Hill, N. J.*
(about 3:30 p.m., Thursday)

7. Neutralization of Transistor Bandpass Amplifiers
F. P. Keiper, Jr., *Philco Corp., Philadelphia*

This paper will discuss the utilization of surface-barrier and junction transistors in bandpass amplifier circuits.
The equivalent circuits useful in bandpass amplifier design will

ISSCC 1956

2:30 p.m.—5:30 p.m.—Irvine Auditorium
SWITCHING CIRCUITS
Chairman: H. E. Tompkins, *Burroughs Corporation*

2.1 Direct-Coupled Transistor Logic Circuitry in Digital Computers
J. R. Harris, *Bell Telephone Laboratories, Murray Hill*

Integrated Circuits are everywhere – Transformational effect on the way we live, work, play ...



(Source: C. Claeys, IMEC)

Life Changers

A World Transformed: What Are the Top 30 Innovations of the Last 30 Years?

Published: February 18, 2009 in Knowledge@Wharton



Of these 30 innovations, 10 are directly related to advances in Solid State Circuits;

Another 8 are the indirect results of ICs.

- 1. Internet, broadband, WWW (browser and html)
- 2. PC/laptop computers
- 3. Mobile phones
- 4. E-mail
- 5. DNA testing and sequencing/Human genome mapping
- 6. Magnetic Resonance Imaging (MRI)
- 7. Microprocessors
- 8. Fiber optics
- 9. Office software (spreadsheets, word processors)
- 10. Non-invasive laser/robotic surgery (laparoscopy)
- 11. Open source software and services (e.g., Linux, Wikipedia)
- 12. Light emitting diodes
- 13. Liquid crystal display (LCD)
- 14. GPS systems
- 15. Online shopping/ecommerce/auctions (e.g., eBay)
- 16. Media file compression (jpeg, mpeg, mp3)
- 17. Microfinance
- 18. Photovoltaic Solar Energy
- 19. Large scale wind turbines
- 20. Social networking via the Internet
- 21. Graphic user interface (GUI)
- 22. Digital photography/videography
- 23. RFID and applications (e.g., EZ Pass)
- 24. Genetically modified plants
- 25. Bio fuels
- 26. Bar codes and scanners
- 27. ATMs
- 28. Stents
- 29. SRAM flash memory
- 30. Anti retroviral treatment for AIDS

SSCS is your fit!

IEEE SSCS has 10,000 members and 72 chapters worldwide.



- 73% of our members work in industry
- 15% of our members work in education
- 65% of our members consider IEEE SSCS their primary IEEE Society
- 93% of our members recommend IEEE SSCS to their colleagues

Why join IEEE and SSCS?

Knowledge ...

staying current with the fast changing world of solid-state circuit technology

Community ...

local and global activities, unparalleled networking opportunities, chapter activities, electing IEEE SSCS leadership

Profession ...

empowering members to build and own their careers, mentoring, making the world a better place

Recognition ...

Best Paper Awards, IEEE Fellow, Service Awards, Student Predoctoral Fellowship...

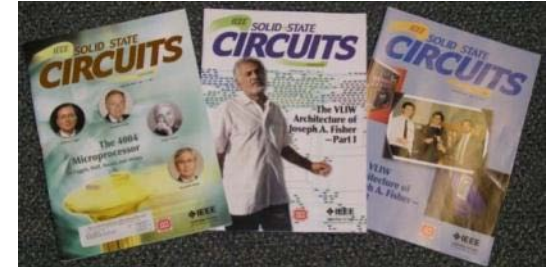


Why become an SSCS member?

Knowledge

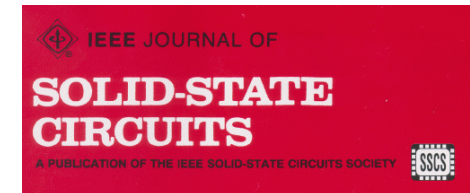
Solid-State Circuits Magazine

- Published quarterly, a resource for fundamental theories and practical advances within the field of solid-state Integrated Circuits (ICs)
- Features articles by leaders from industry, academia and government in a tutorial and narrative style
- Explains of historical milestones, current trends and future developments



JSSC: The Journal of Solid-State Circuits

- ❑ The #1 source for circuits
- ❑ The most downloaded IEEE journal articles
- ❑ The top-cited reference for US Patent applications



Local and International Conferences

- ❑ 4 International Sponsored Conferences
- ❑ Many Technically Co-sponsored and locally-organized conferences
- ❑ Symposia, short courses
- ❑ Workshops



IEEE Xplore Digital Library

- ❑ SSCS Members have free access to all SSCS publications and conference proceedings



Why become an SSCS member?

Community and Profession



Sections, Student Branches, and Technical Chapter Events

- ❑ Local, face-to-face technical and social meetings
- ❑ Engage peers through informative technical meetings

IEEE MemberNet

- ❑ Authoritative member directory of IEEE
- ❑ Opt-in privacy protection

IEEE Mentoring Connection

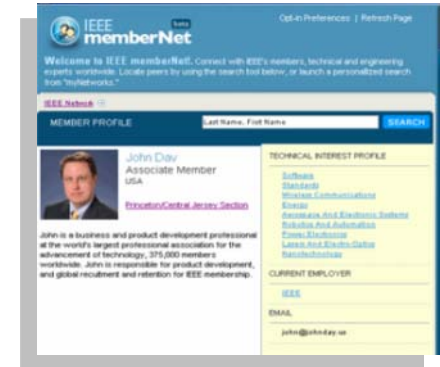
- ❑ Peer-to-peer advice and counsel

Volunteering

- ❑ Opportunities that build leadership skills and networking opportunities
- ❑ Chapters, Conferences, Society Committees

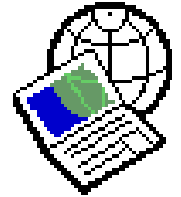
Design Contests

- ❑ Showcase your projects and award-winning IC Designs!



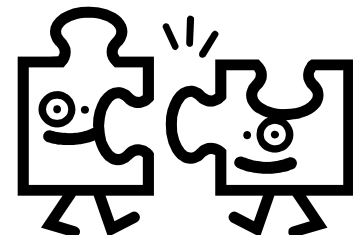
Why joining SSCS?

Advance global prosperity by fostering technical innovation



Allow IEEE SSCS to help you distinguish yourself in a global market.

- Attend chapter events and meet those with similar interests
- Volunteer to help your chapter
- Compete in a student design contest
- Submit your manuscripts to IEEE SSCS publications and conferences
- Volunteer to peer review



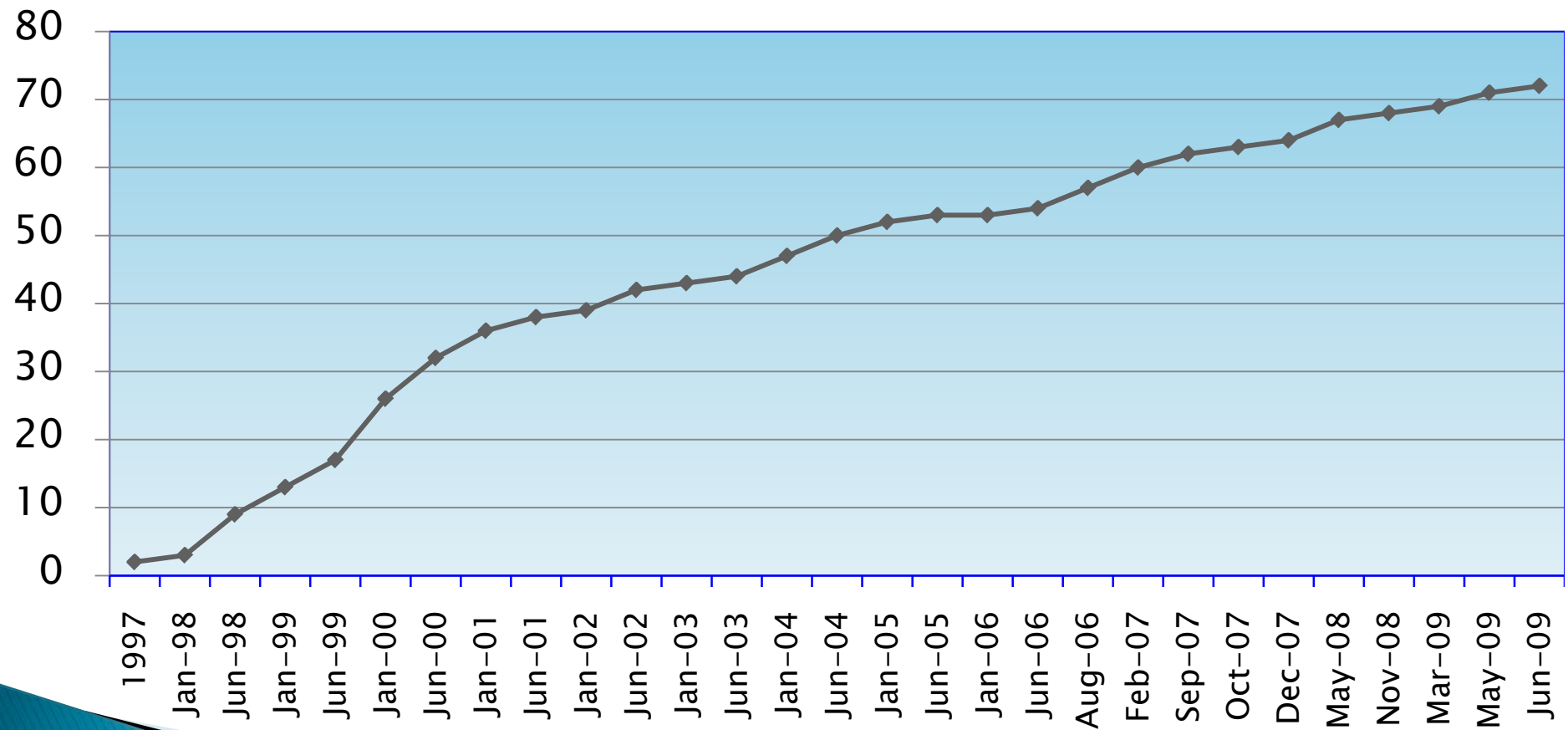
Chapters: one of the pillars of the SSCS

Chapters provide an important opportunity for local IEEE section members to meet & network, discuss current technical developments and organize educational events such as:

- Workshops, tutorials
- Presentations by Distinguished Lecturers
- Conference Highlights
- Ongoing university research
- Local Industry interests and efforts

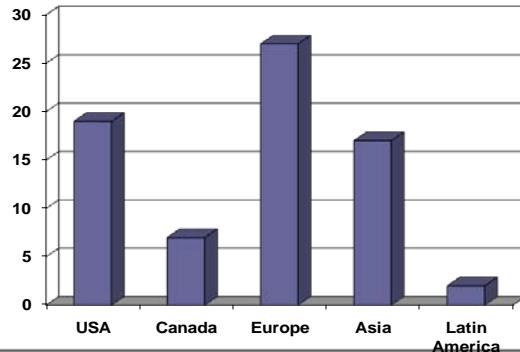
SSCS Chapters Growth

72 Chapters



Chapters Around the World

72 Chapters Around the World



USA – IEEE Regions 1- 6

19 Chapters



Canada - IEEE Region 7

7 Chapters

IEEE Canada



Europe & Africa – IEEE Region 8

27 Chapters



South America – IEEE Region 9

2 Chapters



Far East – IEEE Region 10

17 Chapters



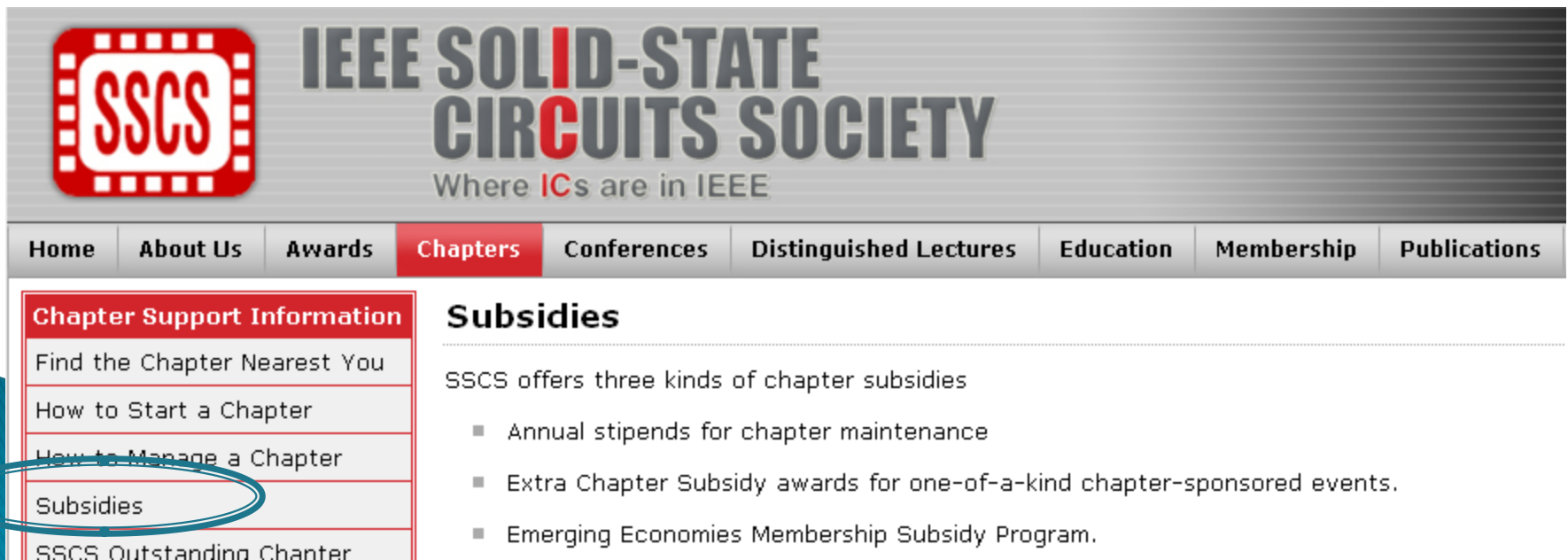
Chapter Support

Chapter support

- ▶ The SSC Society provides the following support for chapters:
 - Regular yearly subsidy (\$2,000 single chapter, \$1,000 joint; Sept 1 deadline)
 - Extra subsidies (up to \$5,000; Apr 1, Oct 1)
 - Educational materials (DVD of tutorials and short courses, Expert Now modules)
 - Distinguished Lecture program and regional DL tour
 - Regional Chapter meetings
 - Distinguished Chapter Award

Regular Subsidy

- ▶ Single chapters can receive up to **\$2000 every year**, in support of chapter activities.
- ▶ Joint chapters can ask for **\$1000 subsidy**
- ▶ Deadline is 1st of September
- ▶ For more information, see the SSCS website:
www.sscs.org



Chapter Support Information

- Find the Chapter Nearest You
- How to Start a Chapter
- How to Manage a Chapter
- Subsidies**
- SSCS Outstanding Chapter

Subsidies

SSCS offers three kinds of chapter subsidies

- Annual stipends for chapter maintenance
- Extra Chapter Subsidy awards for one-of-a-kind chapter-sponsored events.
- Emerging Economies Membership Subsidy Program.

Extra Subsidies

- ▶ Extra subsidies up to \$5,000 are available:
 - to support events such as workshops and mini-conferences that are not financed by the annual Chapter Subsidy
- ▶ Application Procedure:
 - 1 page description
 - Itemized budget
 - Other sources of support
 - Prepare press release for the SSCS Magazine
 - Two application cycles: **April 1st and October 1st**.
- ▶ Follow-up:
 - 1 page description of the actual event
 - Itemized actual expenses
 - Photographs
 - Short description for the **SSCS Magazine**
- ▶ Information available on the SSCS **chapter website**

Educational Support

ISSCC–SSCS DVD Offer



- ▶ **Tutorials DVD** – presentation visuals with audio and audio transcriptions for 10, 90-minute presentations.
- ▶ **Short Course DVD** – presentation visuals with audio, audio transcriptions and PDFs of selected references for 4 subtopics of the short course, each 90 minutes long. Example topics:
 - "Analog, Mixed Signal and RF Circuit Design in Nanometer CMOS"
 - "A/D converters"
 - "Embedded Power Management for IC Designers"

Contact the SCS office (Kathy Olstein: k.olstein@ieee.org to get any of these DVDs

SSCS Expert Now Modules

IEEE Expert Now offers a growing list of one hour online courses. These courses have been developed by recognized experts in a wide range of engineering and research technologies.

Topics of interest to the SSCS membership:

- ▶ "Dealing with Issues in VLSI Interconnect Scaling" by Ron Ho
- ▶ "Introduction to Statistical Variation and Techniques for Design Optimization" by Norman Rohrer
- ▶ "Nanotechnology 101 Part 1 and 2" by H.-S. Philip Wong
- ▶ "Organic Field Effect Transistors" by Ioannis (John) Kymissis
- ▶ "Practical Phase-Locked Loop Design" by Dennis Fischette
- ▶ "Wireless-LAN Radio Design (2 Module Course)" by Arya Behzad
- ▶ More to come

Expert Now Modules

IEEE Expert Now offers a growing list of one hour online courses. These courses have been developed by recognized experts in a wide range of engineering and research technologies. They aim to enhance local IEEE educational activities and further support the value of IEEE membership.

- ▶ Select one or more courses from the [IEEE Expert Now course catalog](#) which can be rented at the price of US\$99.95 per course per event.
- ▶ [Contact IEEE Educational Activities Staff](#) about organizing a local Section, Chapter, Region or Student Branch event.
- ▶ [Website:](#)
http://www.ieee.org/web/education/Expert_Now_IEEE/sc_program.html

Distinguished Lectures and Regional DL Tours

| | | | | | | | |
|----------------------|--------------------------|------------------------|--------------------------|-----------------------------|---|---------------------------|-------------------------|
| Home | About Us | Awards | Chapters | Conferences | Distinguished Lectures | Education | Members |
|----------------------|--------------------------|------------------------|--------------------------|-----------------------------|---|---------------------------|-------------------------|

Distinguished Lectures

- [DL Contact Information](#)
- [DL FAQs](#)
- [DL Travel Tips](#)
- [How to Arrange a DL Visit](#)
- [How to Fill Out and Submit a DL Expense Report](#)

Forms

- [IEEE 2009 Expense Report Form \(.xls\) \(xls\)](#)

Distinguished Lecturer Program

The SSCS DL Program provides experts in the Society's areas of interest to speak at chapter meetings and regional seminars.



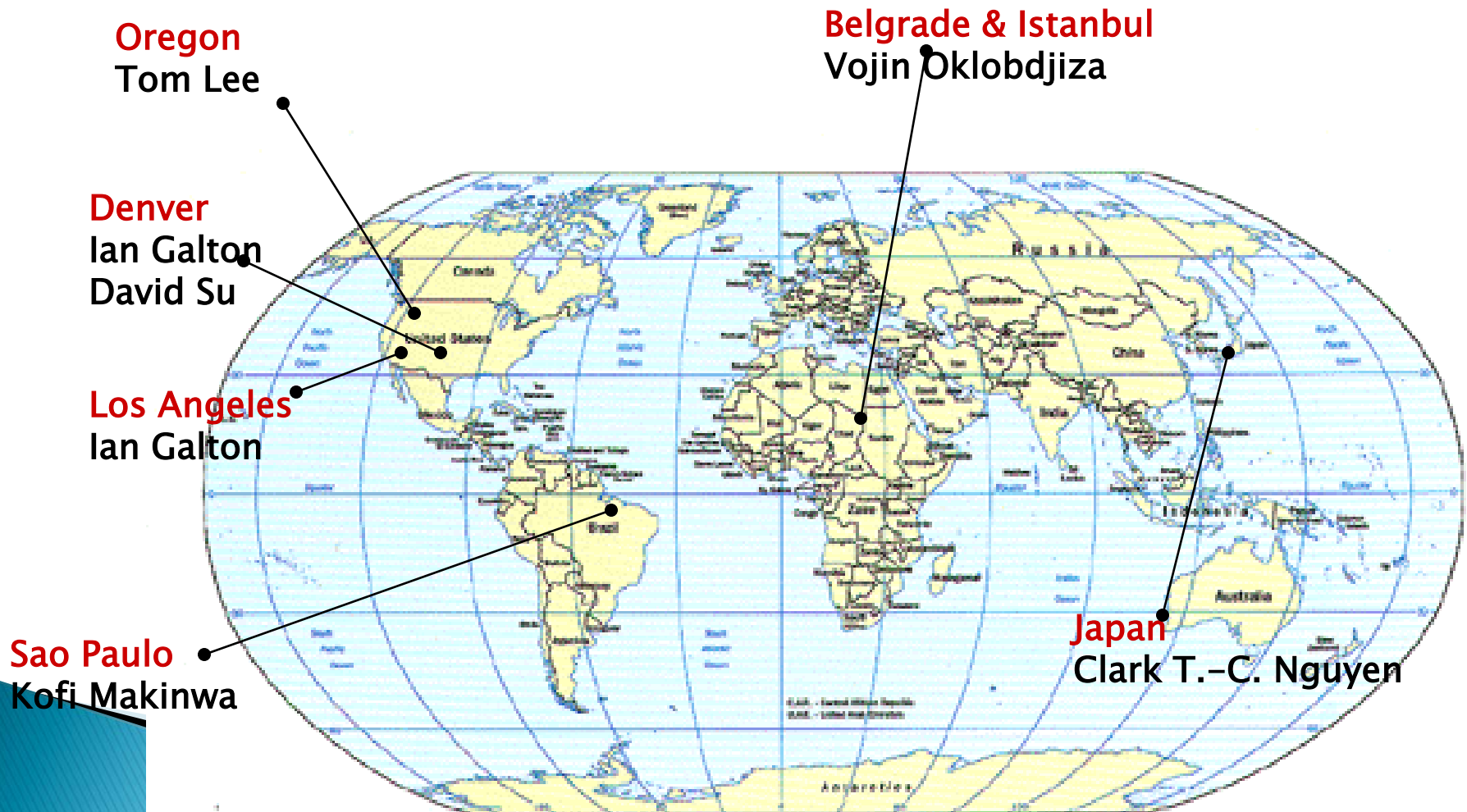
[24 Lecturers](#) (click each specialty area for lecturers)

- ADCs
- Analog & RF
- Data Converters
- Low Power
- Memories
- Technology Directions
- Wireless

An audience of 180 heard SSCS DL Behzad Razavi speak at the National University of Singapore in March.

SSCS Chapters

DL Presentations Around the World



Chapter meetings

International
Regional

International Chapters Meeting

Chapters

Conferences

Distinguished Lectures

Education

Membership

Publications

Governance

Panelists Reveal Best Practices at SSCS Chapter Chair Luncheon



In answers to a series of questions posed at the SSCS 2009 Chapters Luncheon by moderators, Anne O'Neill and Bruce Hecht, panelists Wei-Zen Chen (SSCS-Taipei), Alvin Loke (SSCS-Denver), Dan Oprica (SSCS-Santa Clara Valley), Mike Seningen (SSCS-Central Texas) and Kwang Sub Yoon (SSCS-Seoul) offered the following suggestions:

- ▶ In conjunction with the ISSCC, we have the yearly SSCS Chapters luncheon meeting in San Francisco.
 - Chapter chairs give short presentations
 - Share best practices
 - This year: [panel discussion](#)



Representatives of especially active chapters, Mike Seningen (Central Texas) , Kwang Sub Yoon (Seoul) , Alvin Loke (Denver) , Dan Oprica (Santa Clara Valley and Wei-Zen Chen (Taipei) responded to a series of questions prepared by moderators Anne O'Neill and Bruce Hecht.

SSCS Outstanding Chapter Award

To recognize a chapter that has consistently shown outstanding leadership and initiative

- ▶ The selection is based on:
 - the quality and quantity of activities and programs sponsored by the chapter
 - the accrual of practical benefits for local chapter members
 - demonstrations of successful outreach programs to the professional community
 - growth of chapter membership
- ▶ The award consists of a check for \$1,000 and a Certificate of Recognition for display.
- ▶ Deadline for application is October 1. Information is available on the SSCS chapter website



Chapter Responsibilities



- ▶ Organize a minimum of two technical meetings annually.
- ▶ Report meetings annually to the IEEE headquarters and your section using the L-31 form (<http://www.ieee.org/L31>)
- ▶ Report the officers (Chapter Chair) annually or when the Chair changes.
- ▶ Maintain a minimum of 10 members

Resources and References



- ▶ [SSCS Chapter website](#)
- ▶ [Chapter Reference Guide](#)
- ▶ Region 10 Chapters website (good resource):
http://ewh.ieee.org/reg/10/Chapter_Activity/ChapterActivityMain.html
- ▶ SAMIEEE online IEEE Member database:
<http://www.ieee.org/samieee>
- ▶ SSCS Executive Office and the Chapters Committee

Congratulations and Best of Luck

SSCS is proud to have the Lehigh Valley Chapter being part of the SSCS Chapters family.



**IEEE SOLID-STATE
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Thank you!