

# IEEE SSCS Overview

## Welcoming remarks and Role of Chapters

Jan Van der Spiegel  
Chair, SSCS Chapters Committee

Rutgers Univ., September 17, 2009



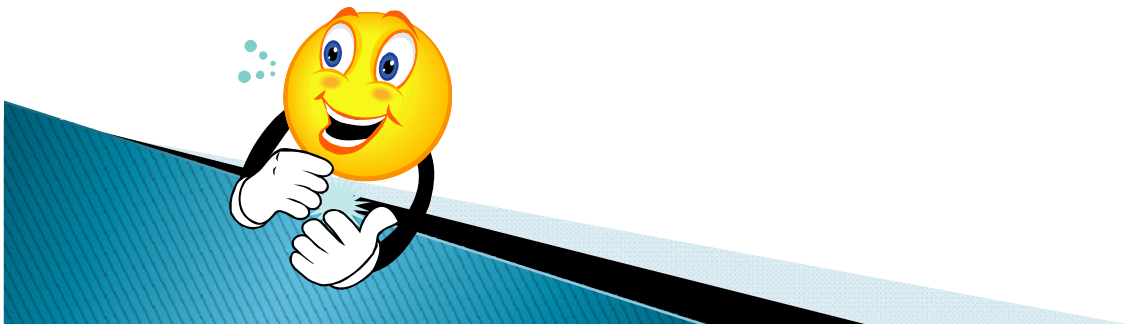
**IEEE SOLID-STATE  
CIRCUITS SOCIETY**  
Where ICs are in IEEE



2009 Celebrating 125 Years  
of Engineering Future

# Congratulations to the Princeton /Center New Jersey SSCS Chapter

Special thanks to Naganathan  
Subramian and other founding  
members



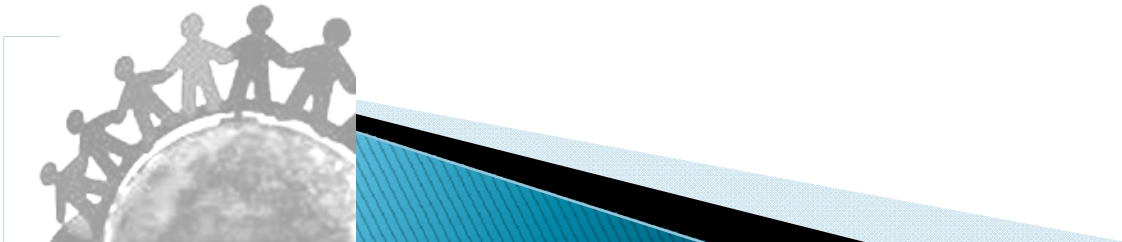
# Overview

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

# IEEE



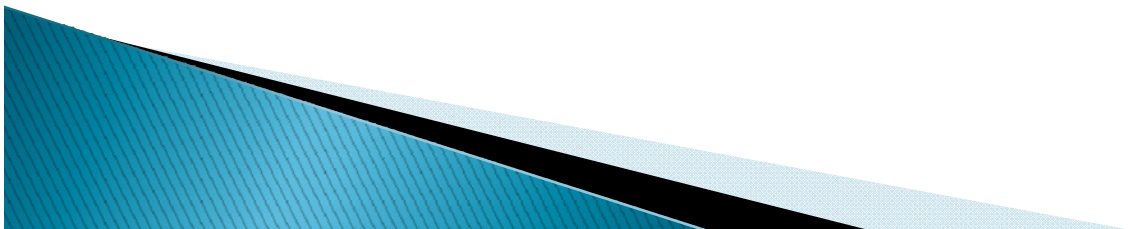
- ▶ IEEE is one of the world's largest volunteer organizations:
  - IEEE has about **382,000** members over 10 regions and 150 countries.
- ▶ It is through the work of volunteers in local **Chapters** that a lot meaningful member activities get organized in the various Societies.



2009 **Celebrating 125 Years**  
*of Engineering Future* 4

# IEEE Vision

To advance global prosperity by  
fostering technological innovation,  
enabling members' careers and  
promoting community worldwide



# IEEE Structure



**MEMBERS**  
(~382,000)

**Board of  
Directors**

**Assembly**



2008  
President,  
Low Terman

**Publication  
Products  
& Services**

**IEEE-USA**

**Educational  
Activities**

**Member &  
Geographic  
Activities  
(MGA)**

**Standards  
Association**

**Technical  
Activities  
(TAB)**

**Executive  
Committee**

>2 million documents

**10 Regions**

**38 Societies  
and 6  
Councils**

**Exec Director  
& Staff**

**Sections  
(324)**

**Chapters**

2009

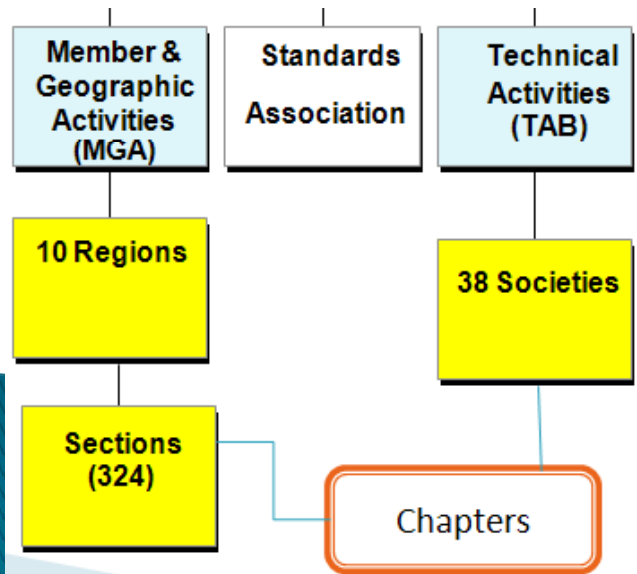




**IEEE SOLID-STATE  
CIRCUITS SOCIETY**  
Where ICs are in IEEE

# 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 covers **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.**

<http://www.sscs.org>



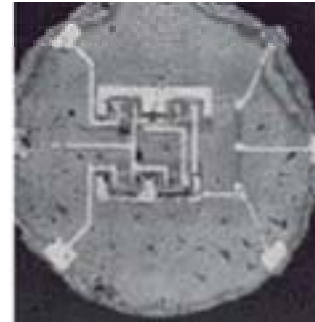
# Technology Origins . . .



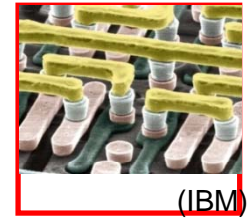
1947 Invention of the transistor (Bell Labs)



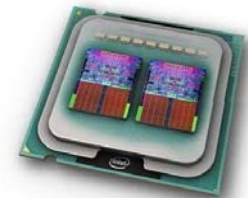
1954: First commercial transistor (TI)



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



(IBM)



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

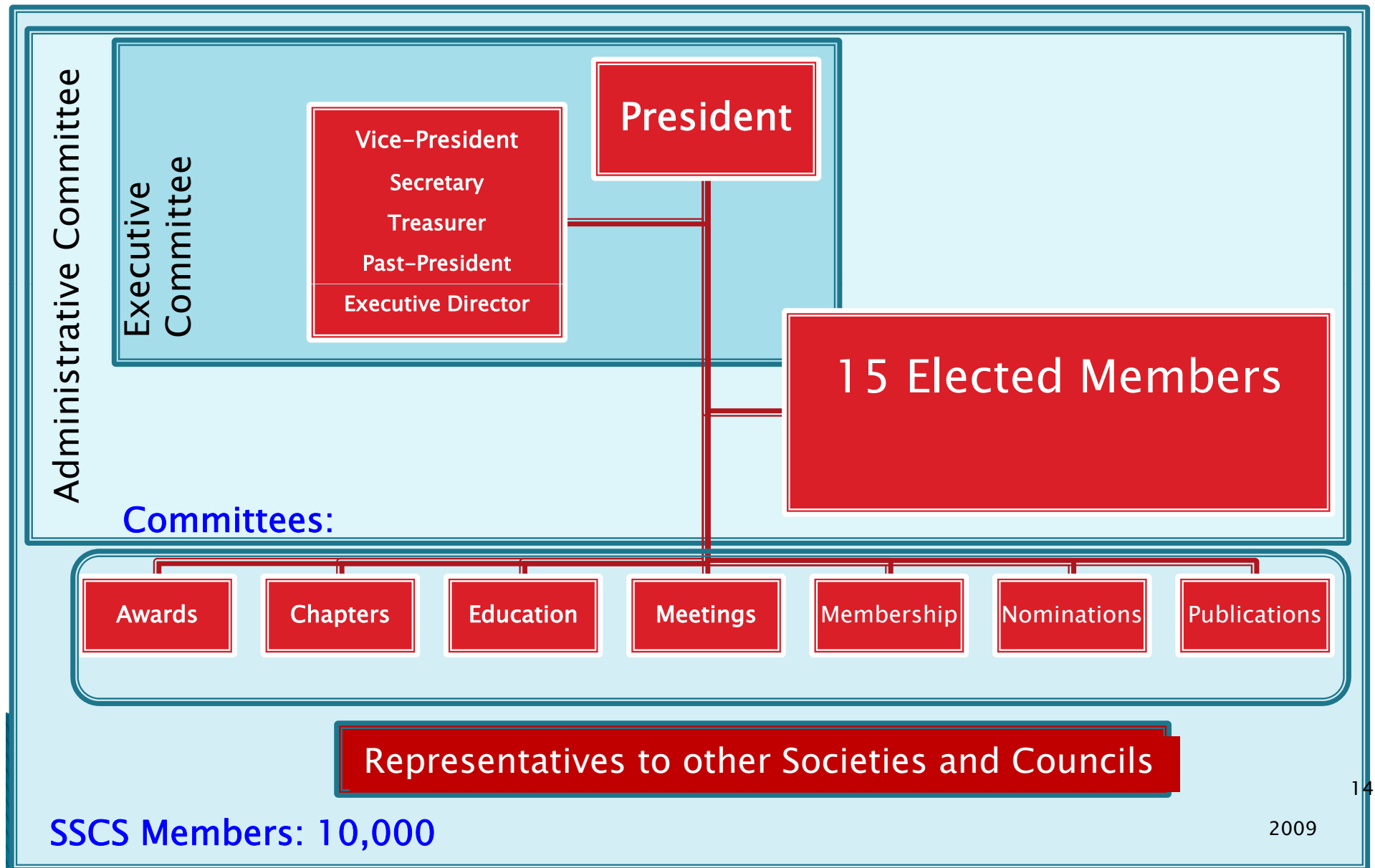


Of these 30 innovations, 10 are directly related to advances in Solid State Circuits;

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 Organization





# Why joining 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?

## Stay Technically Current

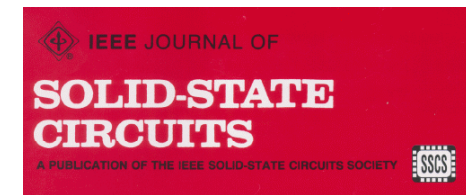
### Solid-State Circuits Magazine

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



### JSSC: The Journal of Solid-State Circuits

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



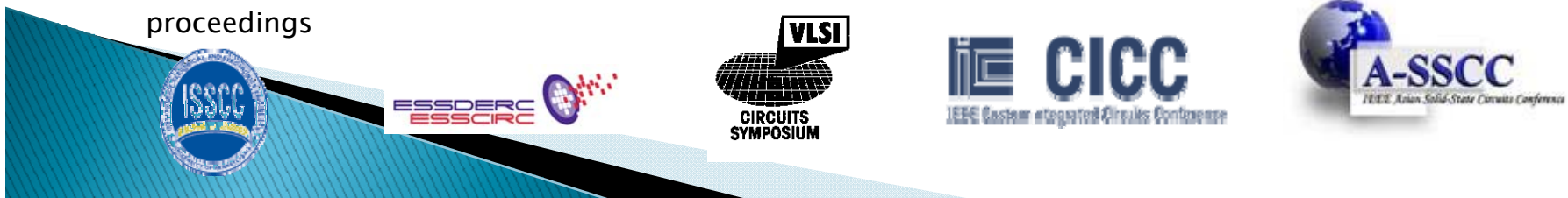
### Local and International Conferences

- 4 International Sponsored Conferences and many Technically Co-sponsored and locally-organized conferences, symposia, and workshops



### IEEE Xplore Digital Library

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





# Why become an SSCS member?

## Develop Your Career



### 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

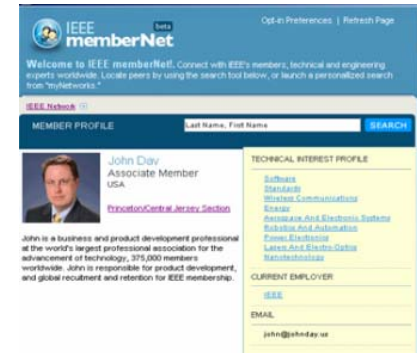
- ❑ Peer-to-peer advice and counsel

### Volunteering

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

### Design Contests

- ❑ Showcase your projects and winning IC Designs!



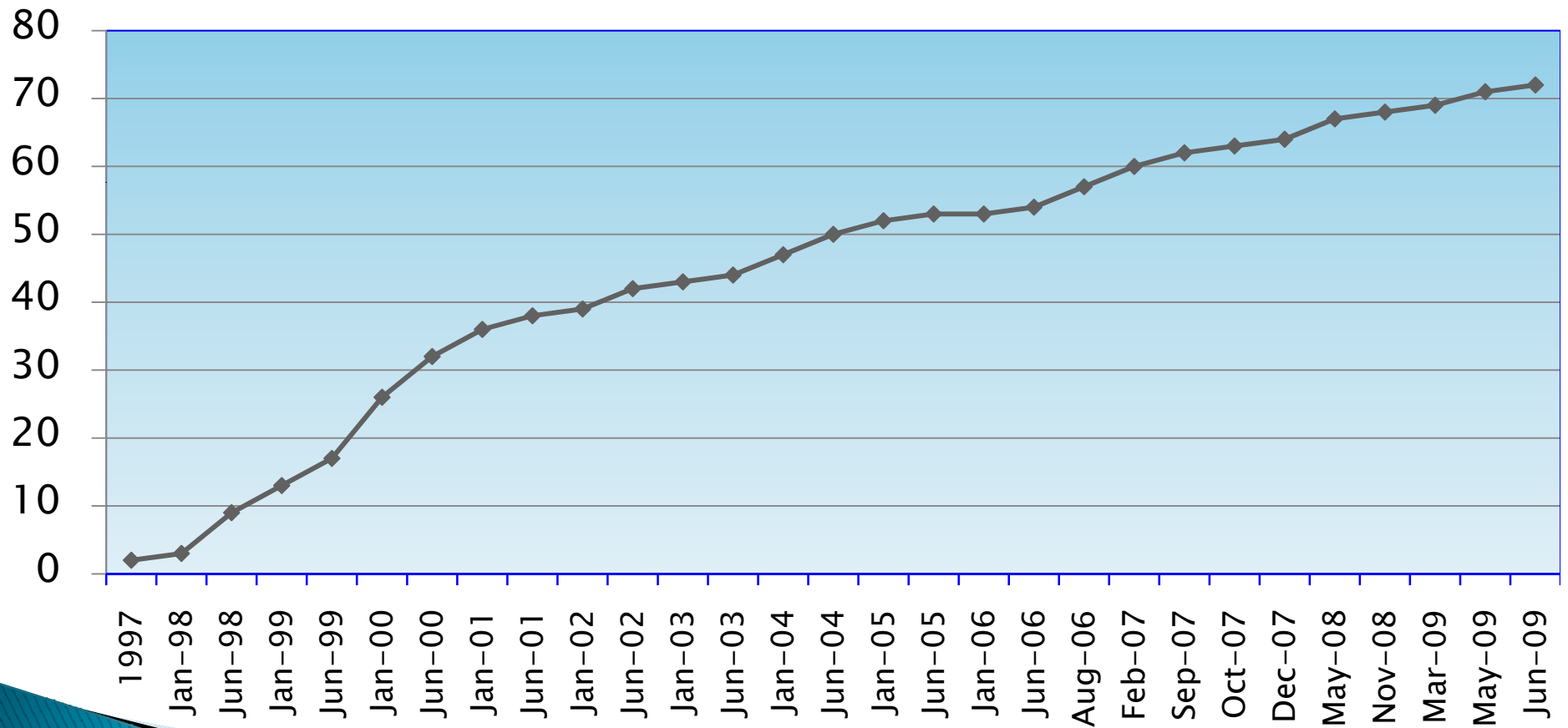
# Chapters: one of the pillars of the SSCS Society

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

- the results of local industry efforts,
- ongoing university research,
- reports on the highlights of conferences,
- workshops, tutorials
- as well as the work of Distinguished Lecturers.

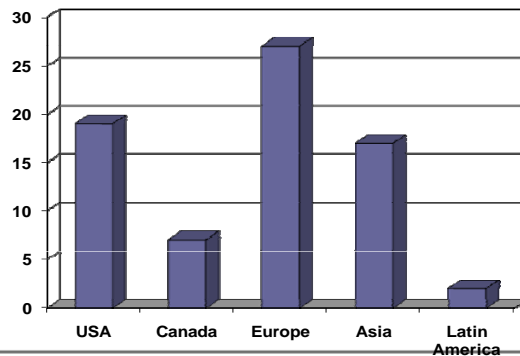
# SSCS Chapters Growth

**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 chapters activities.
- ▶ Joint chapters can ask for **\$1000 subsidy**
- ▶ Deadline is 1<sup>st</sup> of September
- ▶ For more information, see the SSCS website:  
[www.sscs.org](http://www.sscs.org)

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

Home About Us Awards **Chapters** Conferences Distinguished Lectures Education Membership Publications

**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 1<sup>st</sup> and October 1<sup>st</sup>**.
- ▶ Follow-up:
  - 1 page description of the actual event
  - Itemized actual expenses
  - Provide Photographs
  - Write 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 SSSC office (Kathy Olstein: [k.olstein@ieee.org](mailto:k.olstein@ieee.org)) to get any of these DVDs

# 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.
- ▶ Section, Chapter, Region, Student Branch [contact IEEE Educational Activities Staff](#) about interest in organizing a local event.
- ▶ [Website:](#)  
[http://www.ieee.org/web/education/Expert\\_Now\\_1EEE/sc\\_program.html](http://www.ieee.org/web/education/Expert_Now_1EEE/sc_program.html)

# SSCS Expert Now Modules

one hour online courses

## 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 ...

# Distinguished Lectures and Regional DL Tours

<a href="#">Home</a>	<a href="#">About Us</a>	<a href="#">Awards</a>	<a href="#">Chapters</a>	<a href="#">Conferences</a>	<b><a href="#">Distinguished Lectures</a></b>	<a href="#">Education</a>	<a href="#">Membe</a>
----------------------	--------------------------	------------------------	--------------------------	-----------------------------	---	---------------------------	-----------------------

**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

**Oregon**  
Tom Lee

**Denver**  
Ian Galton  
David Su

**Los Angeles**  
Ian Galton

**Sao Paulo**  
Kofi Makinwa

**Belgrade & Istanbul**  
Vojin Oklobdjiza

**Japan**  
Clark T.-C. Nguyen



# Chapter meetings

International  
Regional

# Yearly International Chapters Meeting

- ▶ In conjunction with the ISSCC, we have the yearly SSCS Chapters luncheon meeting in San Francisco.
  - Chapter chairs gives 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](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

IEEE SSCS is proud to have the  
Princeton/Central New Jersey Chapter  
as part of the IEEE SSCS Chapters  
family.



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

