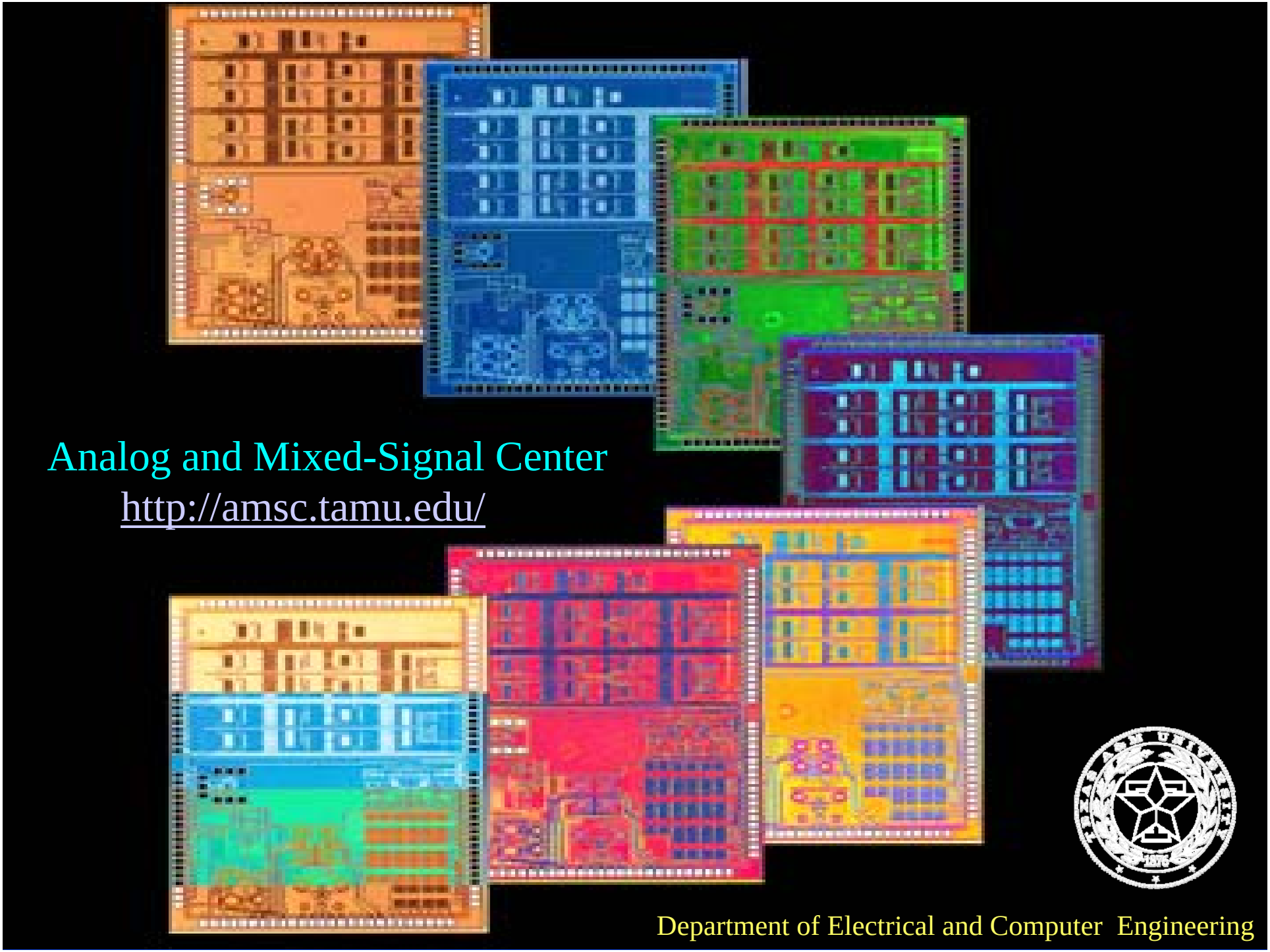


Analog and Mixed-Signal Center

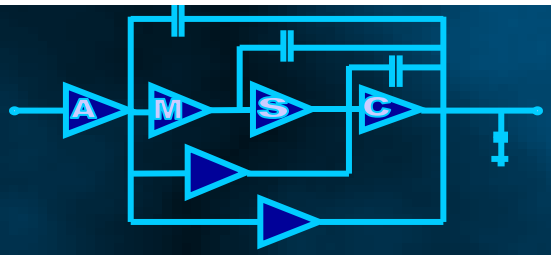
http://amsc.tamu.edu/

Department of Electrical and Computer Engineering

Outline._

This power point presentation addresses the following points:

- What is the Analog Mixed Signal Center (AMSC) at Texas A&M University ?
- Who are the students and faculty of the AMSC ?
- What research the AMSC has done and what is the current research interest?
- What are the benefits of companies in partnering with AMSC?



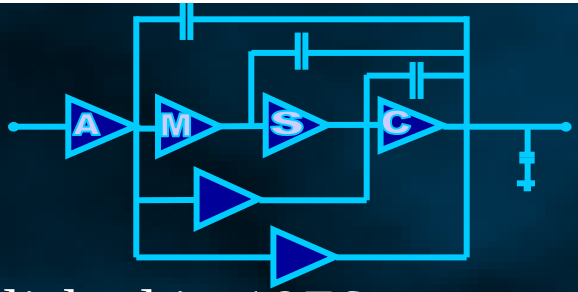
AMSC: Mission

• To contribute to the advancement of the state of-the-art in the area of analog mixed-signal circuits and systems.

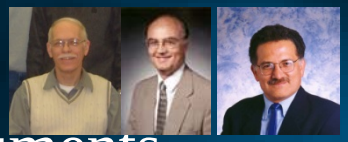
• Education and training of highly qualified engineers for design, testing and manufacturability of RF, analog and mixed-signal, biomedical integrated systems.

• To attract high tech industries to join the center in mutually beneficial projects.

Brief History of the Analog Group

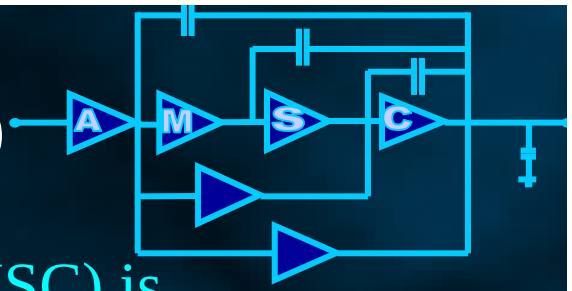


- The Analog and Digital VLSI group is established in 1976
- In 1980 the first integrated circuits designed in this group were fabricated by Texas Instruments



- In 1985 the integrated circuits were first fabricated by MOSIS, a foundry initially sponsored by NSF/DARPA
- In 1990 five textbooks were already authored by members of of this group. Our group did pioneer contributions on Switched-Capacitors and Continuous-Time Circuits
- In 1998 TI engages a $5.1 million gift for this group

Brief History of the Analog Group (continues)



- In 1999 the Analog and Mixed-Signal Center (AMSC) is formally created
- In 1999-2000 the AMSC had three faculty members and at one point only one.

- In November 2005, MOSIS announced that will not provide free access to silicon, a new phase is open for our AMSC

- In Summer 2007(Spring'08) we have about 36 Ph D students and 15 M Sc (36 Ph D and 17MS students) and an undefined number of ME students.
- The AMSC has currently two Assistant professors, two Associated Professors and one Full (Chair) Professor. We have one opening for an Assistant Professor.

A Brief History:

1979 — The Analog and Digital VLSI Group is established

1980 — **Jack Kilby** was the Key Speaker of the 23rd Midwest Symposium on Circuits and systems, held in Puebla Mexico and organized by members of TAMU's analog group

1983 — Integrated circuits were fabricated by MOSIS, a foundry managed by NSF/DARPA

The first integrated circuits designed in this group were fabricated by Texas Instruments

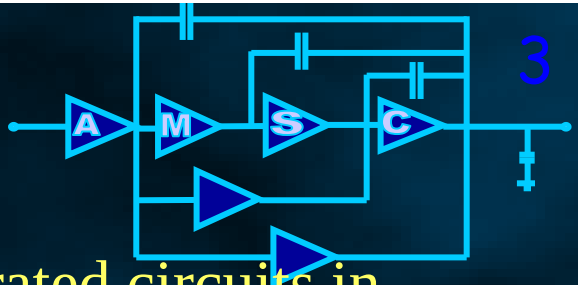
1985 — Our group did pioneer contributions on Switched-Capacitors and Continuous-Time Circuits

1990 — **TI** provides a $5.1 million gift for this group and two chair professorships

1998 — positions are created

1999 — The AMSC is formally created

The AMSC's greatest strengths



- More than 25 years designing and testing integrated circuits in a host of applications. Remarkable Publication record, i.e 10 papers in JSCC in 2006 to 2007. 38 total Journal papers in 2006 and 2007

- Faculty members are well recognized by professional societies (IEEE) and industry. The group has done pioneer work in some key areas.

- Our graduated students are well received by industry, including TI, Motorola, Analog Devices, Intel, Maxim, IBM, AMD , Linear Technology, Agere, Qualcomm, Cadence, Cypress, SiRiFiC, Marvell, Broadcom, Silicon Labs, Micron, Linear technology, Lecroy, Raytheon, Intersil, Pulsewave RF, NXP and Medtronics.

- Recently some effort in placing our students in academic careers, has occurred i.e., U of Texas at Austin, University of Seville, Spain, University of Yonsei, Korea, and Washington State University.

Faculty Members 2008

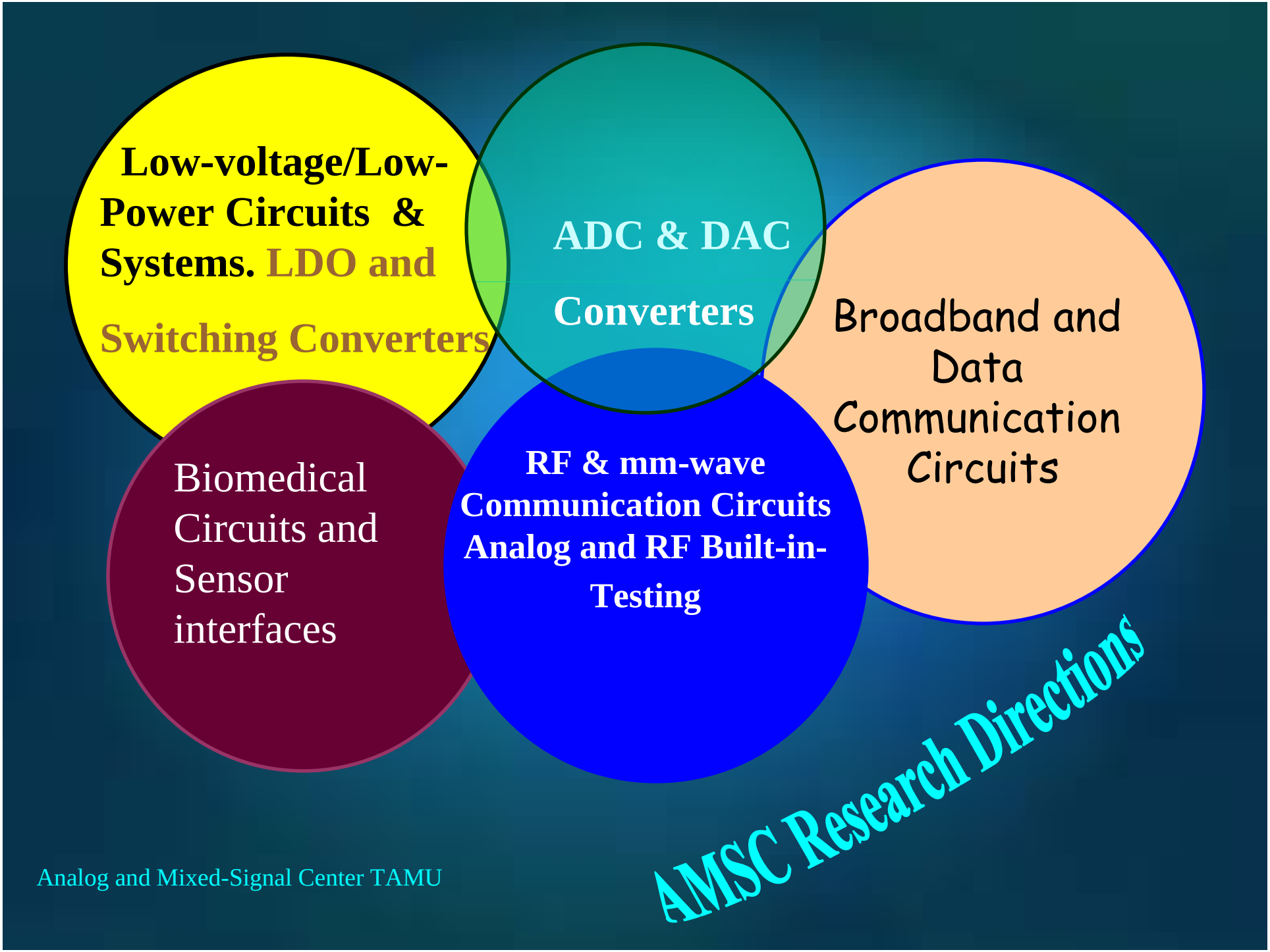
Aydin Karsilayan

Edgar Sánchez-Sinencio,

Kamran Entesari .

Sebastian Hoyos

José Silva-Martínez, .


Low-voltage/Low-Power Circuits & Systems. LDO and Switching Converters
ADC & DAC Converters
Broadband and Data Communication Circuits
Biomedical Circuits and Sensor interfaces
RF & mm-wave Communication Circuits
Analog and RF Built-in-Testing
AMSC Research Directions

What research has been done on wireless systems in AMSC ?

- Bluetooth Receiver in 0.35um CMOS technology. (2001-2002) 6 Ph.D. students and one faculty were involved.
- Chameleon: Bluetooth/Wi-Fi (802.11b) Receiver in 0.25um in SiGe IBM technology; (2002-2003) 7 Ph.D. students and one faculty were involved.
- Ultra Wide Band Receiver in 0.25um SiGe IBM technology (2004-2005) with 4 Ph.D. students and two faculty members were involved.
- Zigbee Transceiver in 0.18um TSMC (through SiLabs) (2004-2006) 1 MSc and 6 Ph D and one faculty are involved
- MICS Transceiver in 0.13 um UMC (2007-2008) 4 Ph D, one visiting faculty and one faculty.

What are the benefits of companies in partnering with AMSC?

- Access to a pull of talented IC designers for internship and/or full time jobs.
- Education of our students in areas of research of mutual interest.
- Participating in Circuit Design Reviews for mutual benefit.
- Potential short courses tailored for the company needs

AMSC students and faculty: # Students Ph D = 36 MSc= 17

Spring 2008

Thank you for your attention

Common interests?