

**details on**

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# signal processing

**inside**

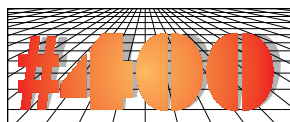
TI DSP SOLUTIONS



15 YEARS OF LEADERSHIP

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Lecture Series.



## TI & DSPs—through the years

*A winning combination*

Fifteen years ago, TI introduced the first commercial DSP. Today, these sophisticated ICs are the muscle behind innovations in nearly every electronic arena. Modems, wireless communications, hard-disk drives, speech recognition, audio/video and imaging, set-top boxes, automobiles, industrial control and navigation systems—just to name a few. And in the next

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## 15 years of DSP

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century, TI DSP Solutions will be the catalyst for a myriad of applications that connect users with the digital world.

### Why DSP Solutions from TI?

It's no secret in the electronics industry: when you talk about DSP Solutions, you're talking about Texas Instruments. TI's multiple TMS320 DSP generations now offer the industry's widest selection of programmable DSPs, and application-specific and customizable processors extend the company's DSP technology into specialized areas to meet customers' needs. In 1996, TI supplied almost half of the programmable DSPs in use, or twice as much as the nearest competitor, according to leading industry analysts.

Products like the recently introduced TMS320C6x generation reinforce TI's technology commitment to its customers. A combination of TI's highly advanced very-long instruction word (VLIW) architecture and the industry's most efficient C compiler, this device is 10 times more powerful than any previous DSP. The 'C6x speeds up new product development,

shortens time-to-market, and eases software development so significantly that it is shifting the DSP engineering paradigm from hardware to software.

Beyond DSPs themselves, TI also delivers total solutions. Optimized mixed-signal, analog, memory and software tools help designers get cost-effective DSP designs to market quickly. Add unparalleled support, like a web site with downloadable data sheets, on-line labs, and the industry's widest array of third-party developers and it's easy to see why TI has more than 30,000 customers building breakthrough products with TMS320 DSP Solutions.

And TI has the technology to take DSP design into the next century. TI's 125-million-transistor-on-a-single-chip Timeline™ technology increases by an order of magnitude very-large-scale-integration (VLSI) design for DSP solutions and other logic components. And foretelling the future of low-power, high-performance computing, TI demonstrated at the International Solid-State Circuits Conference (ISSCC) in February, 1997, the industry's first successful programmable DSP that performs all the functions of a standard commercial device at 1 volt and below.

Each of these innovations repre-

sents the culmination of a significant development effort based on TI's belief in the future of DSPs. This faith goes back to the 1970s, when digital signal processing was seen as a niche technology, useful primarily for intense number crunching applications such as missile guidance and speech recognition. TI undertook fundamental research in DSP technology, leading to applications as diverse as military systems, on the one hand, and consumer products such as the Speak & Spell™ learning aids for children, on the other. TI also pioneered the DSP university program to encourage engineering faculty and students at major universities to broaden the horizons of the new DSP technology.

Imagination is the fuel for innovation. For the past 15 years, TI DSP Solutions have given both industry leaders and students the ability to make their design dreams a reality. It's the technology that has allowed them to breathe new performance possibilities into existing designs as well as create applications previously unimagined. And the next 15 years? TI DSP Solutions will be there—to help you create a future only you can imagine. The future of technology is DSP. The future of DSP is TI.

## GREAT MOMENTS IN DSPS HISTORY

**1976:** TI develops a forerunner of the DSP to simulate voice in an educational product called "Speak & Spell."

**1979:** DSPs gain serious consideration as a new product from TI.

**1982:** Pioneering the DSP market, TI discloses the first commercially-viable DSP, the TMS32010. It executes about 5 million instructions per second (MIPS).

**1983:** Customers receive the first production quantities of the TMS32010.

**1985:** TI offers the industry's first PC-based tools for DSP development. Also introduces the first 24-hour technical support hot line for DSPs.

**1985:** For the first time, a DSP is used in a modem.

**1986:** Lotus uses a DSP-based system for active suspension and noise abatement in its racing cars.

**1987:** World of Wonder's "Julie Doll" is the first consumer toy using DSP technology. TI becomes an early supplier to the new digital cellular telephone market.

**1988:** World's first DSP hearing aid goes to market.

**1991:** TI sponsors the first Educator's Conference to help introduce university programs to DSPs.

**1993:** Cadillac introduces the Allante with a DSP-based ride-control system.



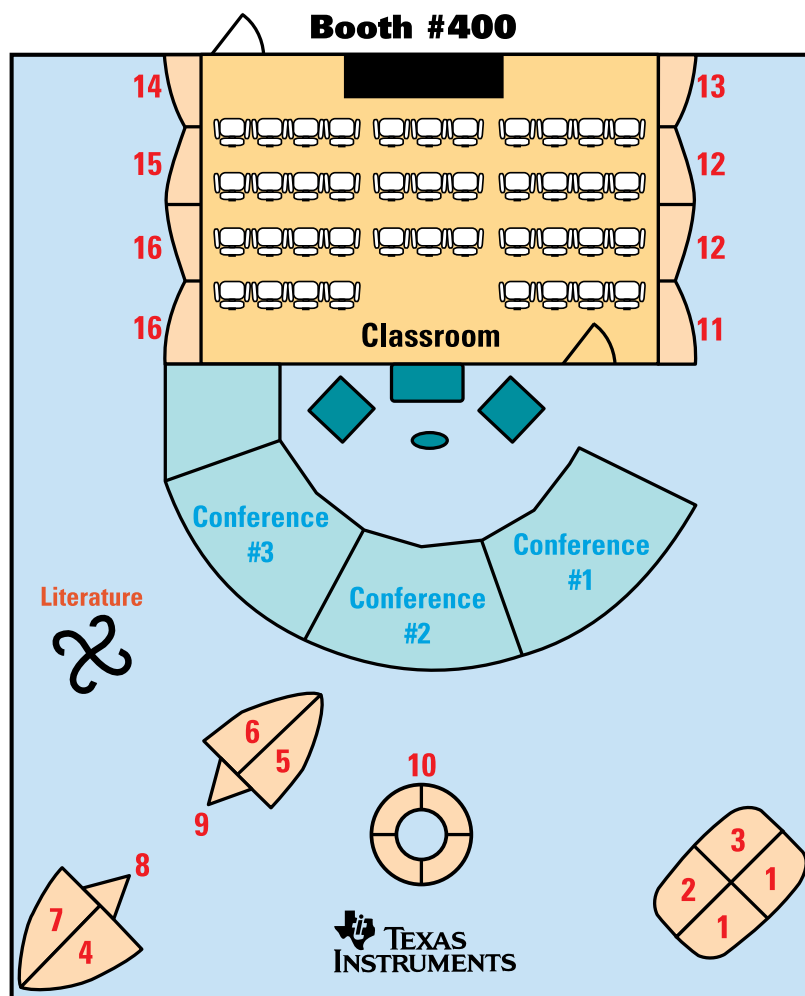
**1994:** The TMS320C80 becomes the basis for the first full-duplex, interactive videoconferencing system.

**1995:** TI implements the first On-Line DSP Lab™, an electronic lab for testing DSP applications via the World Wide Web.

**1996:** The introduction of Timeline technology, the first process capable of putting 125 million transistors on one chip, opens new possibilities in DSP integration.

**1997:** TI celebrates 15 years of DSPs with the introduction of the TMS320C6x family of DSPs, boosting performance to 1,600 MIPS, 10 times that available in other DSPs. New design tools make the devices practical immediately. TI also breaks the one-volt barrier in power consumption.





## Key

- 1 'C6x:** The world's highest-performing general-purpose DSP showcasing industrial imaging applications.
  - 2 'C54x:** This demo, from Telogy Networks, illustrates the use of 'C54x in voice-over-packet applications.
  - 3 'C54x:** The 'C54x is utilized to perform speaker-independent speech recognition with a comprehensive vocabulary set from four different languages.
  - 4 'C54x – Wireless:** TI's standard independent single-chip digital baseboard platform—the 'C54x core is optimized for digital wireless applications.
  - 5 'F206 – Flash DSP:** See how the 'F206 can be used in applications such as POS terminals, security systems, and automatic meter readers.
  - 6 Data converters**
  - 7 'C24x:** Technosoft's MCK240, motion-control kit, featuring the 'F240, is a complete stand-alone system that allows the user to experiment with digital motor-control applications.
  - 8 Military products display**
  - 9 x2 Modem:** Highlighting x2 technology's TI DSP Solution chipset.
  - 10** Come get your picture taken at the Information Center where we're showcasing the Vivitar Vivicam 3000 digital camera featuring the **TMS320C203**.
- "The Village"*
- 11 Spectron – BIOStation:** Getting started with real-time analysis capabilities.
  - 12 HotHaus – HausWare:** A comprehensive DSP software suite for telecommunications.
  - 13 University of Sherbrooke – 'C5x "Bikeman":** Demonstrating guidance control and trajectory stabilization.
  - 14 Tundra – Bridging PCI to TI DSPs:** Featuring the 'C6x, 'C54x, and 'C8x.
  - 15 Pentek – DSP data acquisition digital receivers:** VME, VXI, PCI, and PMC.
  - 16 TMS320 technical documentation and Third-Party Guide CD-ROMs:** DSP Solutions information has never been easier to access.

*Don't miss ...*

## TI's DSP Solutions lecture series

Get the latest information on leading-edge DSP technology by registering for the following lectures in Texas Instruments' DSP World booth #400.

**DSPing:** The fundamental concepts of digital signal processing, focusing on the value and practical applications of DSPs. The only prerequisite is a basic interest in DSPs.

**DSP/BIOS:** Come find out about the origins of DSP/BIOS and the extensions to it. Also covered are capabilities of baseline DSP/BIOS—signals, timers, and pipes.

**Mixed Signal Products:** Data Converters—explore several different architectures for implementing ADCs, explain the key perfor-

mance specifications, and get an overview of TI's Data Converter product line.

**TMS320C3x:** The floating-point story ... it's not over.

**Motor Control:** An overview of TI's digital control system (DCS) applications. Topics covered: the DCS product line, targeted end equipments, key differentiators, and the advantages of a DSP-based DCS solution over existing microcontroller solutions.

**Wireless Overview:** How TI DSP Solutions can be used to improve the performance and efficiency of wireless handset and base station applications while enabling OEMs to get to market faster with more competitive products.

### Monday, September 15

4:00–5:00 DSPing

### Tuesday, September 16

12:00–11:00 DSPing

11:30–12:30 DSP/BIOS

1:00–2:00 Mixed Signal Products

2:30–3:30 TMS320C3x

4:00–5:00 Motor Control

### Wednesday, September 17

10:00–11:00 Motor Control

11:30–12:30 TMS320C3x

1:00–2:00 Wireless Overview

2:30–3:30 DSP/BIOS

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