

eXpressDSP™ Real-Time Software Technology

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eXpressDSP Platform Manager

What is eXpressDSP™ ?

Code Composer Studio

Powerful, integrated
development tools

DSP/BIOS II

Scalable, real-time
software foundation

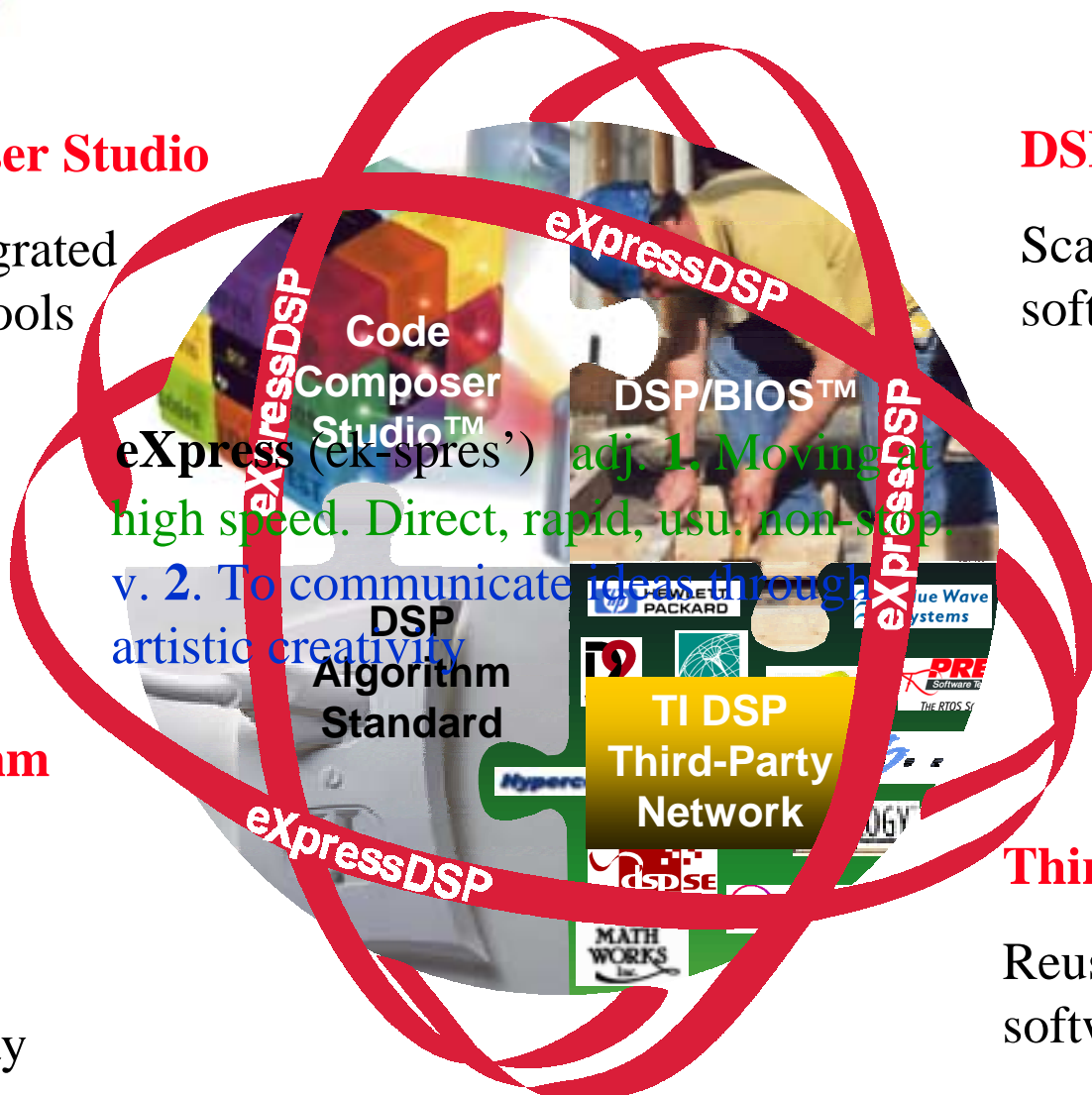
eXpress (ek-spres') adj. 1. Moving at
high speed. Direct, rapid, usu. non-stop.
v. 2. To communicate ideas through
artistic creativity

DSP Algorithm Standard

Standards for
application
interoperability

Third-Party Network

Reusable, modular
software and support



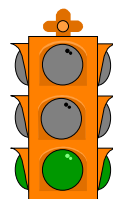
Why eXpressDSP ?

No Moore's Law !!

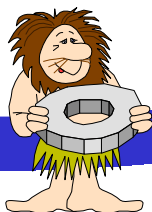


innovation

HARDWARE



SOFTWARE

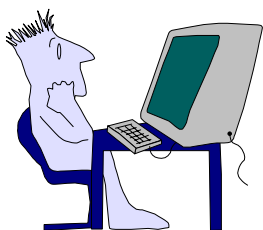


1980

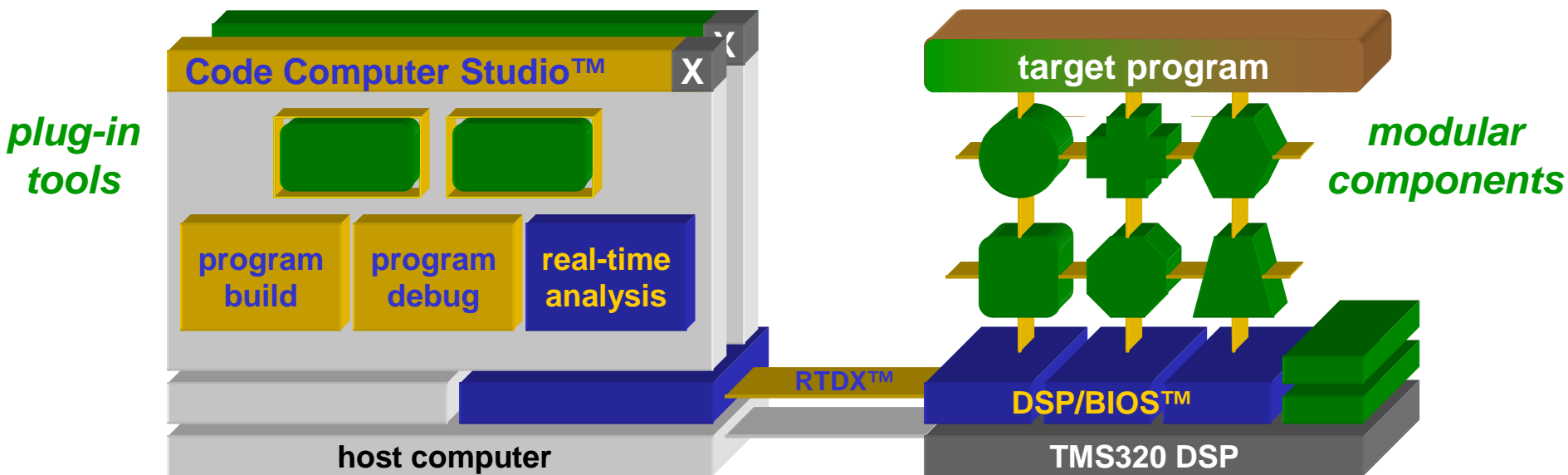
1990

2000

The Real-Time Software Foundation



- ✓ integrated program development tools - CCS
- ✓ scalable, real-time software foundation - DSP/BIOS
- ✓ standards for application interoperability - XDAIS
- ✓ third-party & university partners network



Our Vision

eXpressDSP™,
our *premier open* software
environment,
will drive TI products
to be pervasive in every DSP
application

During 1999

Code Composer Studio

Launched CCS 1.0/1.1
FIRST full integration
of acquisition strategy

DSP Algorithm Standard

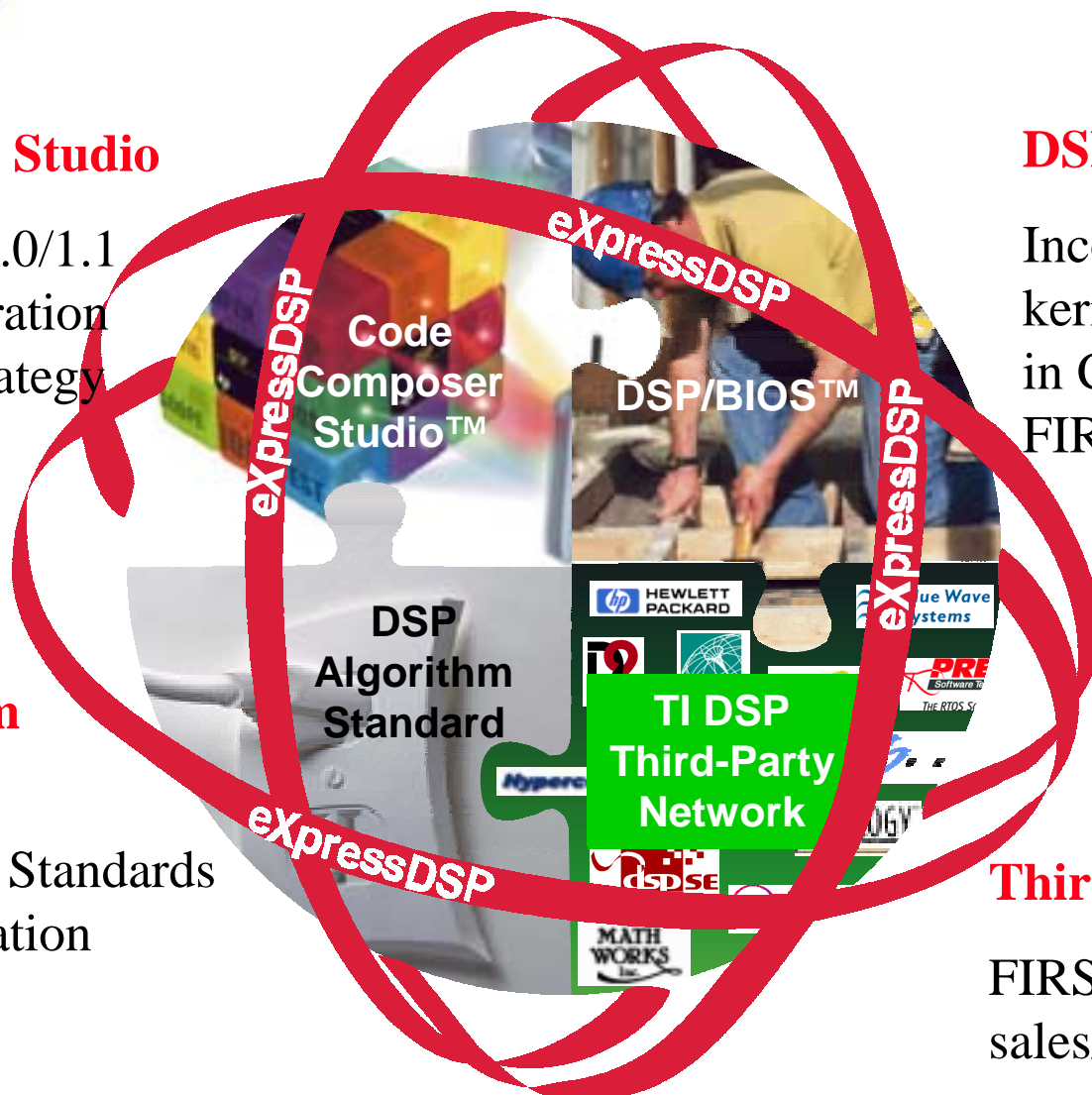
Created FIRST Standards
for DSP application
interoperability

DSP/BIOS II

Incorporated as DSP
kernel SW - included
in CCS - industry
FIRST

Third-Party Network

FIRST Dedicated
sales/FAE force





2000 Policy Deployment

▶▶ Drive eXpressDSP SW Adoption

▶▶ Create Compelling New Products and Technology that delivers Time-To-Market advantage to our customers

Accelerating eXpressDSP™ Adoption

2000 Goals



Code Composer Studio

- ▶ Double 320 developers
- ▶ Launch v1.2
- ▶ Develop v2.0
- ▶ Strategic Plug-ins

DSP/BIOS II

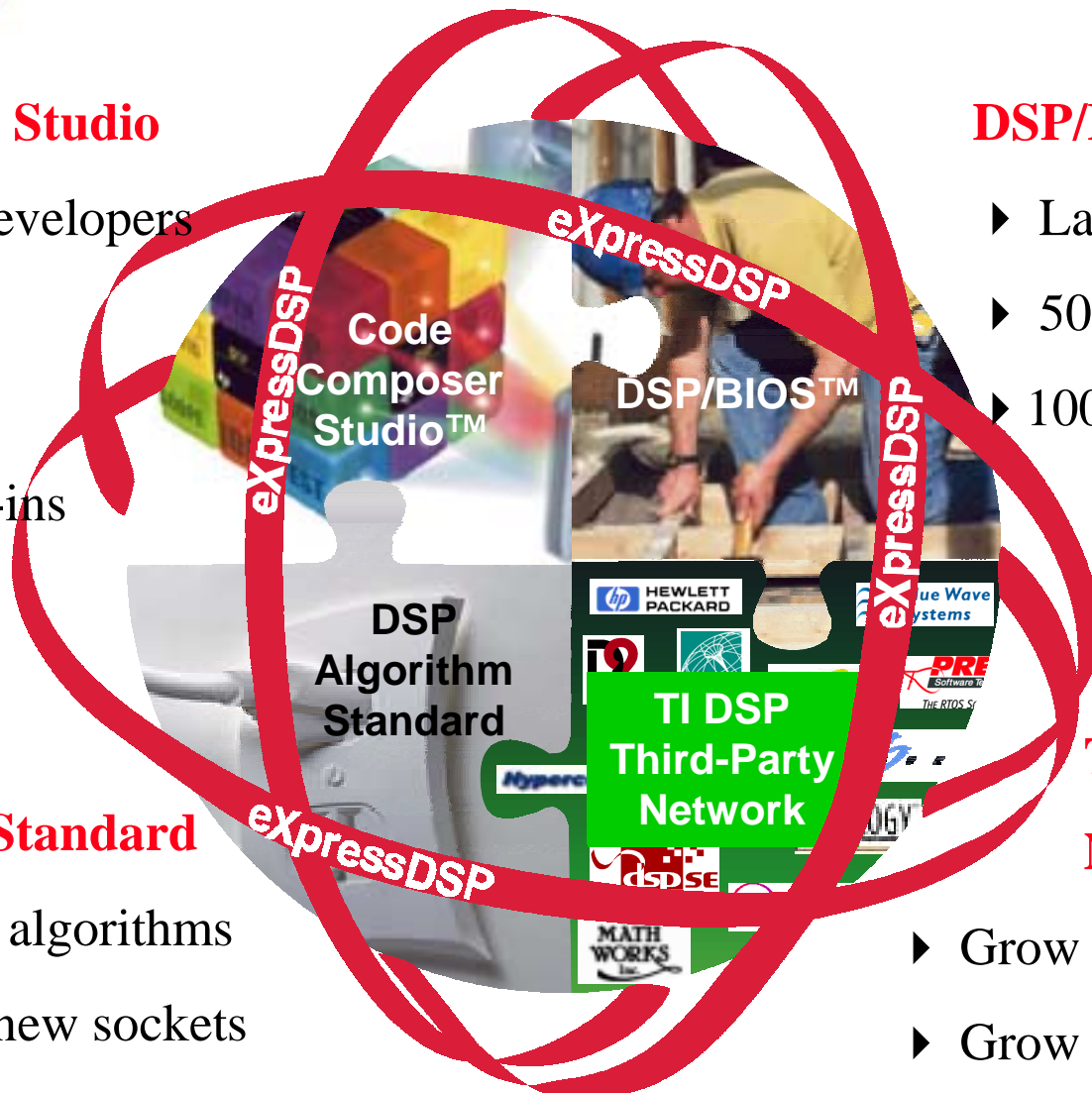
- ▶ Launch DSP/BIOS II
- ▶ 50% customer usage
- ▶ 1000s of customers

DSP Algorithm Standard

- ▶ 250 compliant algorithms
- ▶ 100s winning new sockets

Third-Party Network

- ▶ Grow SW providers
- ▶ Grow eXpressDSP brand



Industry leading real-time tools reduce cost, risk and development time

Enhancements

In Code Composer Studio 1.2

DSP/BIOS II

Flexibility, scalability and ease of implementation

New Compiler Tools

Visualize and optimize for maximum productivity

New Cores

All customers can start today!

Slash product development time over 50%

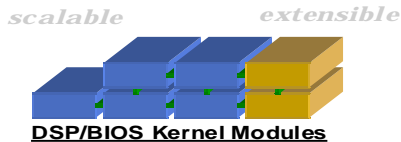


Code Composer Studio™ v1.2

Complete integrated DSP Kernel

DSP/BIOS II — Managing Time, MIPS and Memory

Scalable, extensible real-time kernel optimized for TMS320™ DSPs



NEW AND ENHANCED SOLUTIONS IN DSP/BIOS II

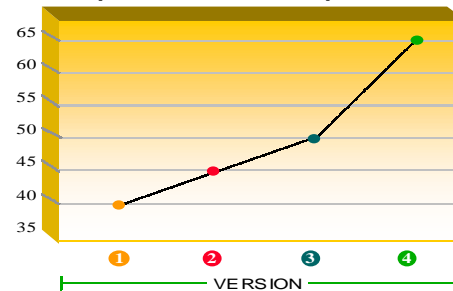
- Increased level of scalability
 - Consumes minimal MIPS and memory
 - Individually selectable modules
- Extensibility with 3rd-party plug-ins such as communication stacks/protocols
- Dynamically reconfigure system priorities
- Visibility of kernel integrated into Code Composer Studio

Industry leading Compilers:

Compile Tools

#1 DSP Compiler Extends Performance Lead

Out-of-the-box Compiler Performance Improvement



- Achieves 80-90% performance vs. hand coded assembly
- Performance statistics backed up with real code examples downloadable today
- Out-of-the-box C code focus has produced more than 20% performance improvement
- Support for C++

Industry first Profile Based Compiler

New C6000™ Compile Tools

Visualize and optimize code size and performance trade offs

SOLUTIONS FOR THE C6000™ DSP: A Unique Profile-Based Compiler

- Build and profile multiple build option sets
- Automatically plot a 2D graph of code size vs performance
- Graphically select the optimum combination of size and speed for your application
- Click to build desired performance and code size trade-offs in seconds

Industry first Visual Linker

New C5000™ Compile Tools

Visualize and simplify system memory allocation

SOLUTIONS FOR THE C5000™ DSP: The Industry's First Visual Linker

- Drag-and-drop components into multiple memory types and areas
- Obtain immediate visual feedback on memory allocation
- Choose from a library of standard C5000™ device memory maps
- Use "Linker Wizards" to upgrade from existing text to a graphical environment

CCS / eXpressDSP™ WINS!

semiconductor BUSINESS NEWS

“TI offers new kernel, compiler tools to cut DSP development costs, time-to-market”

EETIMES

“Tool sets shorten time from algorithm development to silicon --”



The Center of the Electronics Universe
ChipCenter SM

“New real-time DSP tools from TI increase developer productivity -- enhanced kernel gives DSP system developers greater flexibility, scalability and ease of implementation”



“Blue Wave’s FACT™ resource development kit benefits from Texas Instruments new DSP/BIOS II kernel”

EDN's 1999 Innovation of the Year Award

EDN®



The Center of the Electronics Universe
ChipCenter SM

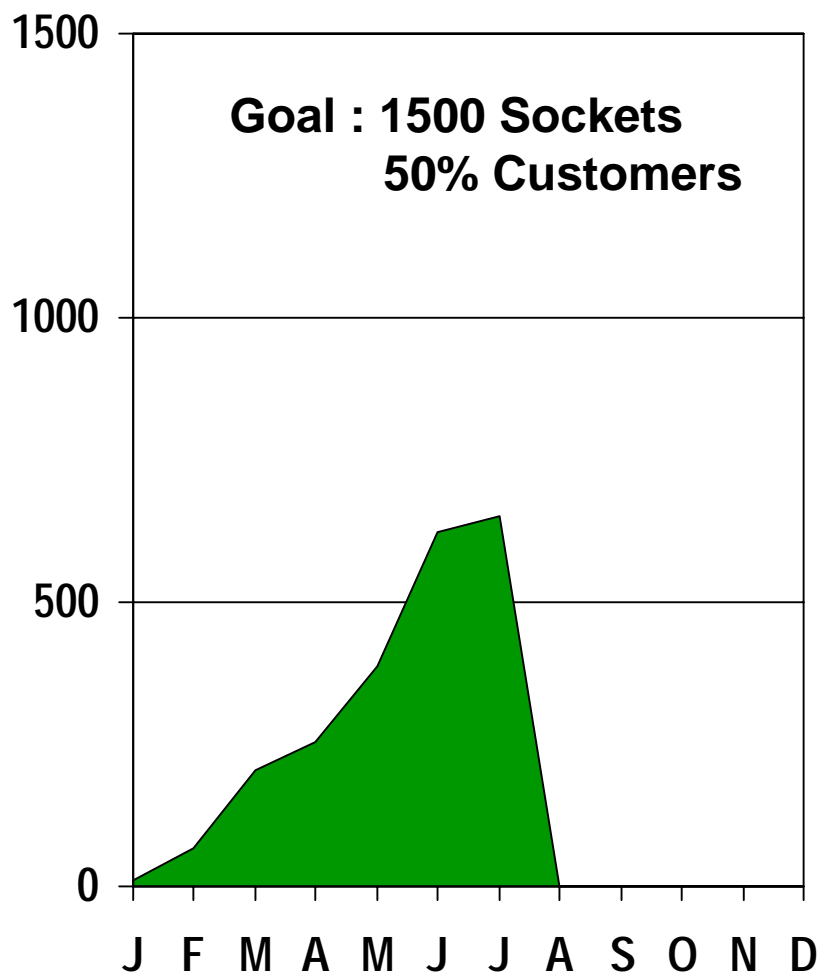
“Texas Instruments leading DSP technologies take home two EDN Innovation of the year awards”

eXpressDSP, an open software-development environment for Texas Instruments DSPs, gives users a real-time make-versus-buy choice for DSP algorithms.

THE WORLD LEADER IN DSP AND ANALOG

**TEXAS
INSTRUMENTS**

Attaching to 50% of the new designs



- ▶▶ DSP/BIOS II launched on 4/3
- ▶▶ Boot-camps for TSRs/FAEs completed
- ▶▶ DSP/BIOS featured as FIRST DSPVillage discussion group
- ▶▶ Featured in WW seminar series reaching 3000+ customers
- ▶▶ Customer training available - 1 & 3 days classes, web
- ▶▶ Customers are using it TODAY!

DSP Developers Village - opened April 3

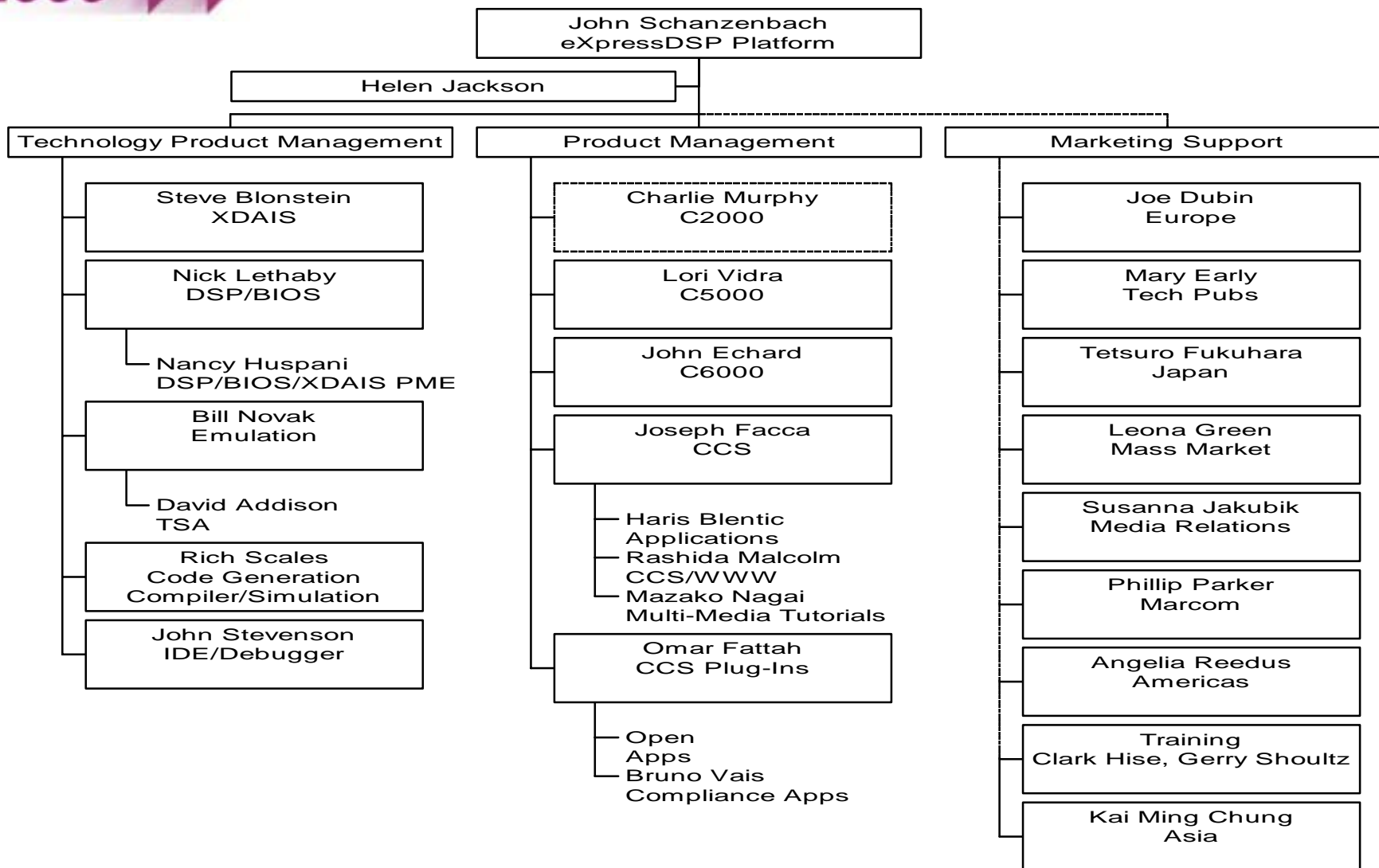
- ▶ For DSP developers to find the latest information about TI DSP tools, SW, and 3rd parties
- ▶ Improve quality and efficiency of the TI SW experience
- ▶ Create a community-like experience to address the needs of TI DSP designers
- ▶ Software content merged into Village
- ▶ Currently averaging 40,000 hits/wk

e-Store opened July 1, 2000

- ▶ Located "inside" DSPVillage
- ▶ TI and 3rd Party DSP product offerings
- ▶ Initially focus on Software solutions
- ▶ First for US, Canada and Europe
- ▶ eXpressDSP compliance required

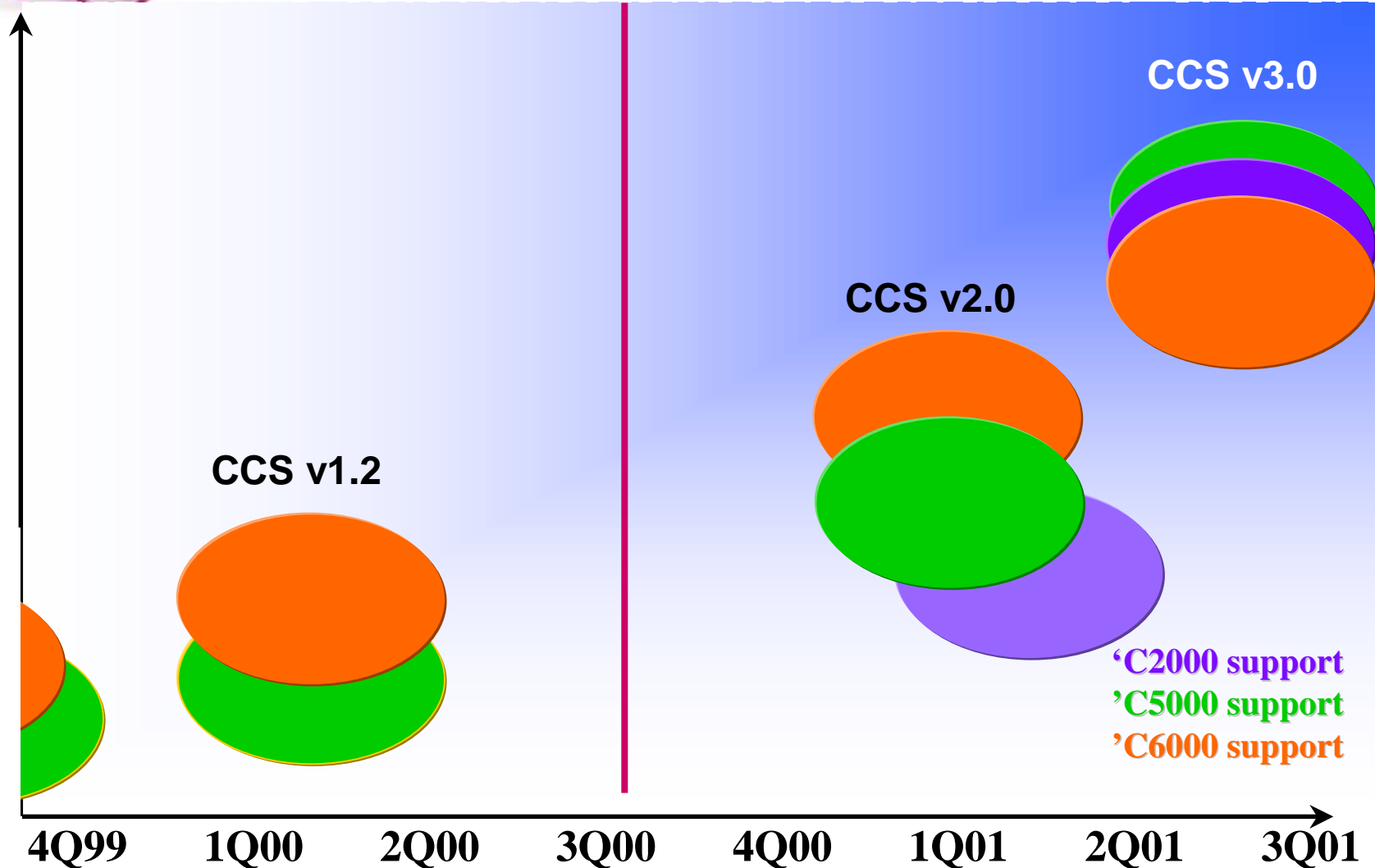
The screenshot shows the Texas Instruments DSP Developers' Village website. At the top, the Texas Instruments logo is on the left, and the tagline "THE WORLD LEADER IN DSP AND ANALOG" is on a red background. Below the logo is a search bar with a "GO" button. To the right of the search bar are links for "Advanced Search", "TI Home", "TI Employment", "Tech Support", "Comments", "Site Map", and "TI Global". The main header area is blue with the text "DSP Developers' Village" and a graphic of a circuit board. Below this is a blue banner with the text "Where DSP software comes together". The main content area is divided into several sections: "DSP Developer Resources" with links to Discussion Groups, Technical Support, Application Notes, User Manuals, Datasheets, General FAQs, Application Software, Device Drivers, Errata, Application Block Diagrams, Tools Price/Availability, Training, TMS320 DSP Product Catalog, Compatible Analog Products, and Feedback; "eXpressDSP™ Real-Time Software Technology" with a description of the technology; "Purchase Tools" with links to Getting Started, Evaluation Bundles / DSP Starter Kits, Free Evaluation Tools, TMS320 DSP Tools Catalog, Third Party Program, and Third Party Resource Catalog; and "eXpressDSP™ Components" with links to Overview, Code Composer Studio, DSP/BIOS, TMS320 DSP Algorithm Standard, Third Party Products, eXpressDSP Compliance Program, eXpressDSP demo CD-ROM, New Compliant Products, and New Products in the e-Store. A "Featured Documentation" section at the bottom left lists Application Notes and Benchmarking DSP/BIOS II on the C2000. The Texas Instruments logo and tagline are repeated at the bottom of the page.

eXpressDSP Team



What does the future hold?

DSPS Fest
2000



'C2000 support
'C5000 support
'C6000 support

DSPS Fest
2000

Code Composer Studio™

CODE Composer
studio



- ▶ Premier, Open, Real-Time Integrated Development Environment
- ▶ Ease-of-Use : Dramatic Improvements in the things DSP developers do every day
- ▶ Creating compact and high speed code quickly
- ▶ Supporting the entire life cycle of DSP systems development
- ▶ Maturing the requirements gathering process
- ▶ Bringing Leadership Technology to DSP Developers

Code Composer Studio™ v2.0

►► Compelling new capabilities

- ▶ **IDE** : Large project, version control editor enhancements,.....
- ▶ **WWW** based Update Advisor
- ▶ Heterogeneous Multiprocessor debug support (RTDX/BIOS)
- ▶ **BIOS** supported in simulation - RTA
- ▶ **CSL** Integration into GConf
- ▶ **Compiler** performance improvements for C55x and C64x
- ▶ **Full C++** compile and debug support (C6000 / C5000)

►► Schedule

- ▶ Beta Program begins in late 4Q
- ▶ Production shipments in 1Q01

►► Major Quality Focus

- ▶ 95+% of known bugs to be fixed
- ▶ Focused 8 week customer Beta program - register via DSP Village
- ▶ Utilize new automatic regression test system

►► O.O.B.E. must be flawless

- ▶ Improve Install sequence
- ▶ Flow usability improvements
- ▶ Solid Project Migration
- ▶ 100% customer conversion
- ▶ Host OS Support:: Win98, Win2000, WinNT (no Win 95)

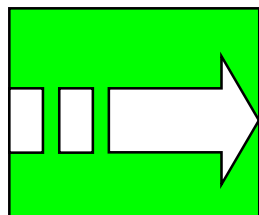
►► **Compelling new capabilities**

- What are the 3 big capabilities that will make creating high performance/dense DSP systems easier to design??
- Give us your inputs this week

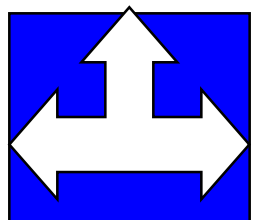
►► **Schedule**

- Requirements closed 4Q00
- Beta Program 2H01
- Production shipments 1H02

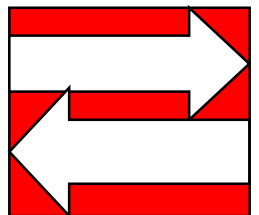
Emulation - Real-Time visibility into tomorrows applications



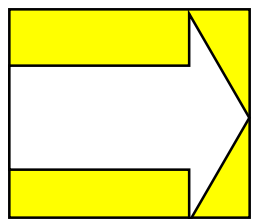
Real-Time
Emulation



Advanced
Event
Triggering



RTDX



Real-Time
Trace

20 MB

XDS5100

XDS560

XDS510

20 KB

- NTSC Raw
- T3/E3
- HDTV MPEG-2
- Videocon Raw

- ADSL
- HDD
- 24 Ch Vocoder
- 20 Ch V.90

- CD Audio
- Low End Videocon
- Audio Telephony



- ## ▶▶ DSP Algorithm Interoperability Standard

- ▶ New target support across ISAs
- ▶ New XDAIS generation tools
- ▶ New configuration tools

DSPS Fest
2000

eXpressDSP™ - Supporting all ISAs

C2000™

CCS	1H01
DSP/BIOS	1H01
XDAIS	2H00
3P	NOW

C5000™

NOW
NOW
NOW
NOW

C6000™

NOW
NOW
NOW
NOW

Success is created with eXpressDSP™

DSPS Fest
2000

- ▶▶ The TMS320 market is accelerating
 - ▶ 10,000s of CCS developers
 - ▶ 1,000s of DSP/BIOS projects
 - ▶ 100s of XDAIS compliant SW
 - ▶ 10s of exciting new plug-ins
- ▶▶ Attend the SW Strategy session
 - ▶ Demo of CCS v2 tonight
- ▶▶ Develop eXpressDSP Compliant algorithms and plug-ins
- ▶▶ Participate in our market creation and eStore activities
- ▶▶ Be a driver in the exploding TMS320 DSP market

