

MICROPROCESSOR
8TH ANNUAL
FORUM
5

Conference Materials

Fairmont Hotel, San Jose
October 10-11, 1995

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MICRODESIGN
RESOURCES


DAY ONE Tuesday, October 10

- 8:30 **WELCOME** *Michael Slater*
- 8:40 **KEYNOTE: SEMICONDUCTOR TECHNOLOGY AND THE GROWTH OF THE PC INDUSTRY**
Craig Barrett, Intel
- 9:20 **X86 MICROPROCESSORS** *Moderator: Michael Slater, MicroDesign Resources*
Shifting Sands in the x86 Landscape
Michael Slater
P6: The Myths and Realities
Robert Colwell, Intel
- 10:00 **BREAK: SPONSORED BY NEC ELECTRONICS**
AMD-K5 Performance and Microarchitecture Tradeoffs
David Witt, AMD
Optimizing the M1 for Windows 95
Mark Bluhm, Cyrix
Overview of the Nx686 Processor
Greg Favor, NexGen
Q&A Panel
All Speakers above
- 12:00 **LUNCH**
- 1:10 **Market Trends for x86 Microprocessors**
Aaron Goldberg, Computer Intelligence InfoCorp
- 1:30 **PROCESSORS FOR MULTIMEDIA** *Moderator: Yong Yao, MicroDesign Resources*
Implementation Strategies for Multimedia
Yong Yao
Architecture of a Broadband Mediaprocessor
John Moussouris, MicroUnity
A VLIW and SIMD Vector Processor for PC Multimedia
Stephen Purcell, Chromatic
The TriMedia VLIW-Based PCI Multimedia Processor
Gerrit Slavenburg, Philips Semiconductors
- 2:50 **BREAK: SPONSORED BY LSI LOGIC**
- 3:10 **M.F.A.S.T: A Highly Parallel, Scalable, Single-Chip DSP**
Gerald Pechanek, IBM Microelectronics
UltraSPARC's Instruction Set Extensions for Multimedia
Marc Tremblay, Sun Microsystems
A Multimedia 586 Processor for Consumer PCs
Forrest Norrod, Cyrix
Q&A Panel
All speakers above
- 5:00 **MICROPROCESSOR REPORT AWARDS**
Nick Tredennich, Tredennich, Inc.
- 5:30 **RECEPTION/LITERATURE & DEMONSTRATION CENTER OPENING**
- 8:30PM-10:30PM **AFFINITY SESSIONS**
- | | |
|---------------------------------|---------------------------------------|
| Open Session on Cryptography | Benchmarks & Workloads Roundtable |
| Packaging Technology Directions | The Issue of Branding Microprocessors |

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DAY TWO Wednesday, October 11

- 8:30** **EMBEDDED PROCESSORS**
Moderator: James L. Turley, MicroDesign Resources

 - Ubiquitous Computers: The New Embedded Applications**
James L. Turley
 - Bringing RISC Technology to Communications**
Robert O'Dell, Motorola
 - An Integrated i960 to Enhance Server and Network I/O**
Elliot Garbus, Intel
 - SH-DSP & SH-FPU: Optimized Communication & Consumer Microprocessors**
Jim Slager, Hitachi
 - StrongARM Reaches for Ever Higher Performance**
Rich Witek, Digital

- 10:20** **BREAK: SPONSORED BY FUJITSU MICROELECTRONICS**

 - A Scalable 64-bit RISC for Custom Designs**
Bob Caulk, LSI Logic
 - A PowerPC Core for Cost-Sensitive Consumer Applications**
Kim O'Donnell, IBM
 - A Next-Generation DSP Solution for Communications Applications & Beyond**
Roman Robles, Motorola
 - Q&A Panel**
All speakers above

- 12:00** **LUNCH**

- 1:10** **HIGH-PERFORMANCE RISC MICROPROCESSORS**
Moderator: Linley Gwennap, MicroDesign Resources

 - RISC Processors: Generations**
Linley Gwennap
 - PA-7300LC: A Highly Integrated System on a Chip**
Tom Meyer, Hewlett-Packard
 - The Performance of PowerPC 603e and 604e Microprocessors**
Kaivalya Dixit, IBM
 - Colorado 4 Extends 32-bit SPARC Performance**
Mitch Alsup, Ross Technology

- 2:30** **BREAK: SPONSORED BY MIPS TECHNOLOGIES**

 - UltraSPARC2: Advancing SPARC Performance**
Anant Agrawal, Sun Microsystems
 - Alpha 21164A: Continued Performance Leadership**
Pete Bannon, Digital Semiconductor
 - Q&A Panel**
All speakers above

- 4:10** **PANEL: FUTURE OF MICROPROCESSOR SYSTEM ARCHITECTURE**
Moderator: Michael Slater

<i>Dirk Meyer, Digital</i>	<i>Richard Oehler, IBM</i>
<i>Lin Nease, Hewlett-Packard</i>	<i>Fred Pollack, Intel</i>
<i>Don North, Apple</i>	<i>George White, Corollary</i>

- 5:00** **WRAP-UP** *Michael Slater*

- 5:10** **CONFERENCE ADJOURNED**

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Michael Slater, moderator

Founder and President of MicroDesign Resources, Michael Slater serves as the Editorial Director and Publisher of *Microprocessor Report* and Director of the Microprocessor Forum. He is internationally recognized as a leading authority on microprocessor technology and system trends. Michael has lectured at Stanford University, Santa Clara University, and National Technological University. He has presented hundreds of seminars and consults regularly for companies including IBM, Apple, Sun, Intel, Motorola, AMD, Amdahl, Digital, and Tektronix. He is a columnist for *Electronic Engineering Times*, *Nikkei Electronics Asia*, and *Computer Shopper*, and he has written for many computer publications.

Linley Gwennap, moderator

is Editor-in-Chief of *Microprocessor Report* and Director of Product Development for MicroDesign Resources. He joined MDR in 1992 after eight years at Hewlett-Packard working on RISC systems. His positions at HP included Product Manager for the HP PA7100 microprocessor, Program Manager for the HP9000 model 815, and System Designer for the HP9000 model 870. He currently consults on microprocessor developments and strategies for leading processor and system vendors.

James Turley, moderator

Senior Analyst and Senior Editor of *Microprocessor Report*, specializing in high-performance embedded microprocessors, Jim joined MDR in 1994 after devoting more than a dozen years to design engineering, engineering management, product marketing, and program management. He has designed embedded processors into a variety of products and developed both hardware and software for leading companies around Silicon Valley and in Europe. He has also conducted numerous seminars and training courses.

Yong Yao, moderator

Director of the Technology Roadmap Service and Senior Analyst for PC technology for *Microprocessor Report*, is the most recent addition to the MicroDesign Resources staff of analysts. Prior to joining MDR, Yong was with Vitesse Semiconductor, where he was the director of product planning as well as the designer of the multiprocessor V-Bus.

Craig Barrett, keynote speaker

is Executive Vice President and Chief Operating Officer of Intel Corporation, having corporate-wide responsibility for internal operations of the company. He joined Intel in 1974 and served in various technical and business management positions. In 1984 Dr. Barrett was named a Vice President, and he became General Manager of the Components Technology and Manufacturing Group in 1985. Dr. Barrett was named a Senior Vice President in 1987 and became comanager of the Microcomputer Components Group in 1989. He was promoted to the post of Executive Vice President in 1990. Dr. Barrett was elected to the Board of Directors in 1992 and was named Chief Operating Officer in January 1993.

Anant Agrawal is Vice President of Engineering for Sun's SPARC Technology Business. He has been involved in the design and development of the SPARC microprocessors at Sun since 1984.

Mitch Alsop is ROSS Technology's Chief Architect for its SPARC CPU product line. Mitch joined ROSS in 1991 from Motorola, where he was the Architect of Motorola's 88000.

Peter Bannon is a Consulting Engineer with Digital Semiconductor, Pete has participated in the design or verification of several microprocessor chips and was a member of the Alpha 21164 architecture team.

Mark Bluhm is the Chief Architect of Cyrix's M1 as well as director of engineering responsible for all future superscalar processors. As one of Cyrix's initial design engineers, Mark helped define and design several generations of wholly original x86 processors and math coprocessors.

Bob Caulk has spent the last six years at LSI Logic leading architecture definition and product development for LSI's MIPS RISC processor family of embedded cores and derivative products.

Robert Colwell manages the P6 architecture organization at Intel. Bob joined Intel in 1990 as a Senior Architect on the P6 project, and became manager of the architecture group two years later. Prior to Intel he was a CPU architect at Multiflow Computer.

Kaivalya Dixit is IBM's Director of Performance. Previous to joining IBM, he was Engineering Program Manager at SUN Microsystems.

Gregory Favor is NexGen's Director of 686 Processor Development. Previous to his appointment to the Director position he was the Chief Processor Architect.

Elliot Garbus is Strategic Development Manager in Intel's Semiconductor Products Group. Elliot has participated in the definition of the three generations of 80960 microprocessor products. He is currently working on products to enhance the I/O performance of servers.

Aaron Goldberg is Executive Vice President of Computer Intelligence InfoCorp. Prior to joining InfoCorp in 1992, Aaron was Senior Vice President of the Desktop Computing Group at International Data Corporation.

Dirk Meyer is the Lead Architect of Digital's third-generation high-end Alpha microprocessor. Dirk was a co-microarchitect of Digital's first-generation Alpha 21064 microprocessor and an original member of the Alpha CPU team.

Tom Meyer is currently a member of Hewlett-Packard's Systems Technology Division and Project Manager for the PA7300LC integrated memory and I/O controller. Previously he worked on the PA7100LC and the memory controller for several of the HP9000 Series computers.

John Moussouris is President and CEO of MicroUnity Systems Engineering, which he founded in 1988. Prior to that John was Vice President of VLSI Development at MIPS Computer Systems.

Lin Nease has been a System Architect for several of Hewlett-Packard's UNIX server products, including the G-, H-, and I-class midrange/low-end systems. He has been involved in the development of HP's commercial UNIX servers since the advent of that product line.

Forrest Norrod is Program Manager and Principal Architect of the multimedia 586 CPU at Cyrix. Prior to joining Cyrix in 1993, Forrest was with Hewlett-Packard, where he designed advanced 3D graphic systems.

Don North has been associated with the Advanced Technology Group at Apple since its inception in 1985, and currently manages a systems architecture research group. His current research interests include high-performance system interconnect issues and multiprocessor systems architecture.

Richard Oehler is the Director of Systems Software in the Power Personal Systems Division at IBM. In over 20 years with IBM he has been involved in development of the 801, the first RISC machine, was lead architect for the the RISC System/6000, and is responsible for all dealings on PowerPC. In 1994 Rich became an IBM Fellow.

Robert O'Dell has played a significant role in the definition of Motorola's integrated communications controller family of products. Robert is currently the Applications Manager for the Data Communications Operation in the High Performance Embedded Systems Division of Motorola's Semiconductor Products Sector.

Kim O'Donnell, as Senior Engineering Manager for IBM, is responsible for the design and development of the IBM PowerPC 400 Series of Embedded Controllers.

Gerald Pechanek, at IBM Microelectronics Mwave group, is involved in the research and development of parallel computer architectures for graphics-, video-, neural-, and signal-processing multimedia applications.

Fred Pollack is director of the group responsible for all Intel platform architecture and performance analysis. He also directs the planning for Intel's future microprocessors. Prior to this, he was the manager of the P6 architecture. In January of 1993 he was promoted to an Intel Fellow, one of nine in the company.

Stephen Purcell is co-founder of Chromatic. He was previously a founder and Chief Architect at C-Cube Microsystems where he created the architecture for four generations of video CODECs, including the VideoRISC processor.

Roman Robles is manager of Motorola's 24- and 32-bit DSP applications group. He has worked in Motorola's DSP applications group for the past five years, focusing primarily on Motorola's industry-standard 24-bit DSP56000 architecture and applications.

Jim Slager specializes in microprocessor and multimedia products, Jim is Director of Advanced Product Planning at Hitachi Micro Systems. He participated in the design of the 286, 386, and 486 at Intel and was involved in SPARC design at Sun Microsystems.

Gerrit Slavenberg, Chief Scientist, TriMedia technology, for Philips Semiconductors, Gert is responsible for development of current and future TriMedia products.

Nick Tredennick is President of Tredennick, Inc. He created the logic design for the 68000 at Motorola and for the Micro/370 microprocessor at IBM.

Marc Tremblay, as a computer architect involved in the research and development of high-performance processors at Sun Microsystems Marc's main contributions have focused on the microarchitecture definition and performance evaluation for the 64-bit UltraSPARC Processor.

George White, a cofounder and President of Corollary, George has pioneered a new category of computer, the PC-compatible multiprocessor system. He was instrumental in the development of the NuBus and was the chairman of the IEEE committee that standardized the NuBus.

Rich Witek, a principal designer of the Alpha architecture and co-architect of the first Alpha chip, Rich is currently the Chief Architect for the StrongARM microprocessor family at Digital.

David Witt is a Product Development Manager at AMD, where he is in charge of the Argon/K7 processor development. David was in charge of the K5 development effort at AMD, where he has been working for the past 11 years.

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