



# **HOT Chips 8**

*Stanford University, Stanford, California*

## **Evening Panel Session**

### **Software or Silicon: What's the Best Route to Java?**

**Moderator: John Wharton, Consultant/Analyst, Applications Research**

Java has taken the Internet and the client/server networking world by storm; soon Java may begin expanding into the embedded systems marketplace as well, appearing in applications ranging from cell phones and printers to household appliances and even air-traffic control monitors. Sun is responding with a line of custom processors optimized for this next generation of Java-based consumer products, peripherals, and servers.

Clearly it can be advantageous to custom-tailor new processors to target a particular class of applications. New functionality can be brought on-chip, while the vestigial appendages of legacy architectures can be shed. And software translation or interpretation seems clearly less efficient than the direct execution of a processor's native instruction set.

But are custom devices really needed? In what ways could Java-intensive applications benefit from dedicated silicon? How do hardware implementations of the Java Virtual Machine compare with conventional software approaches? Are there less radical solutions than implementing the full Java Virtual Machine as a "native-mode" architecture? What can be learned from language-specific CPUs of the past?

This panel brings together experts from all sides of the Java-processor controversy to discuss the performance and system-integration advantages of custom silicon, and to debate whether these advantages are sufficient to justify undertaking an all-new design.

#### **Panel members:**

**John Banning**, Member of the Technical Staff, Silicon Graphics Computer Systems, Inc.

**Brian Case**, Consultant

**David S. Hardin**, Senior Design Engineer, Rockwell

**Martin Hopkins**, IBM Fellow, IBM Watson Research Center

**John Novitsky**, Director, CPU Product Group, MicroModule Systems

**Marc Tremblay**, Chief Architect for Java Chips™, Sun Microelectronics