PANEL: Design Challenges for Next-Generation Multimedia, Game and Entertainment Platforms

Chair
Bryan Lewis, Gartner Dataquest
San Jose, CA

Organizer
Andrew B. Kahng, UC San Diego
La Jolla, CA

John Cohn
IBM Corp., Burlington, VT

Jeong-Taek Kong
Samsung Electronics Co., Ltd.
Giheung, KOREA

Chris Malachowsky
NVIDIA Corp., Santa Clara, CA

Richard Tobias
Pixelworks, Inc., Campbell, CA

Brendan Traw
Intel Corp., Hillsboro, OR

ABSTRACT

Modern multimedia, gaming and entertainment devices epitomize high-growth, consumer-driven applications for silicon. 2006 has been a year that launched several high-profile gaming systems, and major changes in home networking. This year has also witnessed the emergence of the digital home and the ePC, as well as continued struggles for control of the home gateway. Mobile-digital convergence has continued with the fusion of media, telephony, and digital-mobile TV. The industry's ability to rapidly evolve such consumer-centric systems brings to bear all of the technology competencies required for cutting-edge IC designs, as well as for tools and methodologies that support those designs.

Multimedia and gaming chips are pushing the leading edge of EDA technology forward on fronts that include architectural synthesis, high-speed clocking, power management, verification, and IP reuse. As just one example, GPU operations per second are growing significantly faster than desktop CPU operations per second, while at the same time, GPU design teams often place less emphasis than microprocessor teams on circuits and layout, and more emphasis on architecture and design enablement. The confluence of these trends leads to design and CAD solutions that are unique in the market space.

In this panel session, the panelists have been selected to represent five key "constituencies": the digital home (Intel), mobile digital TV (Samsung), graphics engines (NVIDIA), advanced displays (Pixelworks), and gaming/multimedia processing (IBM). The panel will address such questions as:

- What are the underlying chip architectures and roadmaps for key multimedia/entertainment platforms?
- What are the key design and technology challenges (or "brick walls") for next-generation products, and how will these challenges be addressed?
- Where will we see the next "convergence" in devices and platforms?
- What other challenges arise from complex supplier and competitor relationships, standards, and other aspects of a globalized market?

Other design challenges to be discussed include design enablement (compilers, programming models, etc.), design for IP reuse (configurability, derivatives), and IP management in a world of increasing "co-opetition".

Categories and Subject Descriptors

J.6 [**Computer-Aided Engineering**]; B.7.2 [**Integrated Circuits – Design Aids**].

General Terms: Design, management.

Keywords: Multimedia, gaming, entertainment, design methodology.

DAC 2006, July 24-28, 2006, San Francisco, California, USA.
ACM 1-59593-381-6/06/0007.