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Synopsys and Peking University

NELVT Utilizes Complete Hardware + Software HAPS FPGA-Based Prototyping Solution for HDTV 1080P Encoder Design

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We trust the HAPS system to provide reliably high performance. Because Synopsys' solution includes an integrated hardware plus software flow and great technical support, we save time and money."

Dr. Huizhu Jia
SoC team leader of the National Engineering Laboratory for Video Technology (NELVT) at Peking University.

Business

The National Engineering Laboratory for Video Technology (NELVT) at Peking University is a research group dedicated to the research and contribution of technologies to the AVS/MPEG-4 video coding international standard in the areas of fine granularity scalability, rate control, and sprite coding. This group has also provided the industry with optimized reference software for the AVS/MPEG-4 standard.

Challenges

▶ Implement and verify AVS HDTV 1080P real-time encoder prototype
▶ Ease prototype bring up to reduce cost and time
▶ Accelerate software development

FPGA-Based Prototyping Solution

▶ HAPS-52, HAPS-61, HAPS-62 systems
▶ Synplify Pro® Certify™ Multi-FPGA partitioning and Identify® RTL debugger software tool flows

Benefits

▶ High performance and flexible FPGA-based prototyping system
▶ Software flow optimized for HAPS® systems for a simplified design process
▶ Ease of use with fast porting time from ASIC design to FPGA-based prototype

Overview

The NELVT SoC team under Dr. Huizhu Jia provides R&D expertise advancing China's Audio Video coding Standard (AVS). In a recent project, the team needed to implement and verify an HDTV1080P real-time encoder prototype targeted at 65nm technology. Long time HAPS system users, they chose to set up their codec demo system using first the HAPS-52 system and then transition to HAPS-61 Virtex-6 based systems for greater capacity.

Leading FPGA-Based Prototyping Solution

Synopsys' integrated HAPS system and tool flow including synthesis and debug software reduced design time. Because of the HAPS system's modular flexibility and the software tool flow's ease of use, the team quickly migrated the ASIC design to the FPGA-based prototyping system. They found that the Identify software gave them the high level of visibility and control necessary to effectively debug the design. Synopsys' technical support team offered valuable insight and great service.

The NELVT team was able to validate the performance and functionality for the design ahead of schedule with the HAPS systems' reliably high performance.

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