

## CAST IP Cores for Motion Processing Enable MPEG-2 and MPEG-4 Designs

*Flexible MoPro core available now with software encode/decode;  
fast, compact cores for hardware MPEG available soon*

**October 5, 2002 (EDA and Test Expo) Hsinchu, Taiwan** — Semiconductor intellectual property (IP) provider CAST, Inc. today announced a new series of motion processing cores for high-performance video compression and decompression. These cores enable the quick and cost-effective development of real-time video systems such as digital video recorders, wireless communication devices, sophisticated surveillance systems, and other products employing the popular MPEG-2 and newer MPEG-4 standards.

The CAST MoPro motion estimation/compensation core is available now for ASICs or programmable devices. It provides a hardware implementation handling 90% of the computational processing necessary for real time video using encoding standards such as MPEG-1, MPEG-2, MPEG-4, and H263+. Meant to work with an embedded processor and algorithm-specific software, the MoPro core frees designers from the most challenging aspects of video compression while offering system design flexibility. Reference design software layers for MPEG-2 and MPEG-4 are available as options for this core.

Upcoming MPEG cores go even further, providing complete hardware implementations of specific video compression algorithms. An MPEG-4 core available by the end of this year is expected to offer full video processing (640 x 480 pixels frames at 30 frames per second) and to require just 100,000 gates. A similar high-performance, low-area MPEG-2 core will be available early next year.

“Video is fast becoming an expected part of the digital lifestyle,” said Hal Barbour, president of CAST. “Our MoPro core gives graphics system developers a powerful engine to drive all their video applications, while our MPEG cores will provide the benefits of specific algorithms in ready-to-roll IP, bringing full motion video to a wider range of smaller, cheaper products.”

## About the MoPro Motion Processing Core

The MoPro core accepts a video stream and outputs the motion vectors and transformed, quantized prediction error data needed for further video processing. It includes an IEEE-1180 compliant discrete cosine transform (DCT) quantizer and inverse DCT dequantizer, which perform most of the computation required for video compression. A processor interface allows control of the core through the selection of options such as image resolution, data format, and search criteria, and the core has a glueless interface to SDRAM for frame storage.

The core's significant yet flexible processing capability makes it suitable as the central element in a variety of video processing applications. Designers need only implement the lossless stage of their chosen compression algorithm (Huffman encoding, run length decoding, etc.) to form a complete standard-based solution. Reference design software packages that implement the MPEG-2 and MPEG-4 standards are available as options for the MoPro core.

The MoPro core is a synchronous design, and is available in VHDL or Verilog for ASICs or netlists for programmable devices from Altera and Xilinx. Sample implementations include:

<u>Technology</u>	<u>Approx. Area</u>	<u>Speed</u>	<u>Video Throughput</u>
ASIC 0.18 $\mu$ process	35K gates and 17.5 Kbits RAM	> 100 Mhz	> 800 x 600 frames at 25 fps
Xilinx Virtex II	3,500 slices and 8 RAM blocks	> 70 Mhz	up to 640 x 480 frames at 30 fps

See the CAST web site for more information (<http://www.cast-inc.com/cores/motion>). The MoPro core is developed by CAST partner Ocean Logic, Pty Ltd. In Australia. ([www.ocean-logic.com](http://www.ocean-logic.com)).

## About CAST, Inc.

CAST provides general purpose IP (gplP), a broad range of popular and standards-based cores that includes processors, interfaces, and application-specific functions for multimedia and encryption. Designers use these cores so they can concentrate on the more unique, creative aspects of their system designs, or to quickly incorporate technology beyond their normal expertise. Privately owned and operating since 1993 with a focus on making IP practical and affordable, the company has established a reputation for high-quality products, simple licensing, and responsive technical support. CAST is located near New York City, and works with an international network of IP developers and distributors.

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