

## CAST Introduces Low-Power, Ultra-HD Capable Video Compression Cores

**WOODCLIFF LAKE, NJ — July 21, 2016** — Semiconductor intellectual property provider CAST, Inc. recently introduced the newest generation in its eighteen-year-long series of IP cores for video and image compression.

The new 2016 [Video and Image Compression Cores Family](#) includes encoders and decoders covering a wide range of features and capabilities. Members of the family are each optimized for today's most in-demand applications, from ultra-low-power for Internet of Things (IoT) devices; to cost-effective yet high-quality industrial vision and video streaming systems; through ultra-high-definition (UHD) and ultra-low-latency streaming allowing real-time video interaction in applications like remote surgery or drone control.

The new cores make it easier than ever for system designers to integrate video processing in superior yet less expensive products. Best-in-class features include:

- **Unmatched Performance/Size** — Tiny silicon area requirements make the H.264 Video Compression Encoders half the size of most cores on the market, yet they're still able to process 4K UHD video in ASICs and higher-end FPGAs and Full-HD in lower-end FPGAs.
- **Highly Economical Video** — The Motion JPEG cores offer compressed video quality that matches that of AVC/H.264, HEVC/H.265, and JPEG2000 encoders for the moderate compression levels practical for many applications, yet they require tremendously less power and silicon area and can operate without power-hungry off-chip memory.
- **Scalable Performance** — The video encoders' and decoders' throughput can scale to readily handle 4K, 8K, or higher frame sizes and high frame rates even in modest FPGAs.

These hardware encoders and decoders operate much more efficiently than software or software/hardware codecs, saving considerable power over those options. They use industry-standard ARM® AMBA® AHB, AXI, and AXI-Stream interfaces, and they work in standalone mode, meaning once they are initially programmed they need no ongoing interaction from a system processor. The encoder cores are also quite flexible, and capable of either Constant (CBR) or Variable Bit Rate (VBR) operation.

“These new media compression cores are revolutionary, providing video streaming capabilities in the lowest-cost, lowest-power silicon exactly when designers need more such capabilities for IoT and other rapidly growing product areas,” said Nikos Zervas, chief executive officer for CAST. “Never before, for example, could designers deliver 720p on an Altera<sup>®</sup> MAX 10, or 1080p on a Xilinx<sup>®</sup> Zynq<sup>®</sup>-7020, or full-duplex UHD/4K H.264 encoding *and* decoding in under 400K ASIC gates.”

The AVC/H.264 Encoder Cores are optimized for low bit rates and low-latency video streaming. Adjusting quantization multiple times with a frame and using an artifacts-free intra-refresh coding method, these encoders produce CBR video streams of great video quality. The five encoders in the family provide low-power through ultra-fast AVC/H.264 single or multi-channel processing with support for different profiles. Also in the H.264 group are a surprising small matching decoder—occupying just 75K gates—and a fully-complaint Constrained Baseline profile decoder.

The JPEG Encoder and Decoder Cores include 8-bit Baseline and 12-bit Extended support, with variations aimed at low-power or high-performance operation. The cores are able to process JPEG Still-Image and Motion-JPEG payloads, and feature rate-control capabilities, which are essential for video streaming applications.

Completing the current family is an HEVC/H.265 Main Profile decoder that supports a wide range of video formats (i.e. 8 to 12 bit per color with 4:2:2 and 4:2:0 chroma subsampling) and is able to decode UHD/4K streams in high-end FPGAs and ASICs.

Though new to the CAST product line, all of the Video and Image Family Cores are mature and have been proven in customer products by our technology partners. The H.264 encoders and decoders are sourced from [Ocean Logic](#), the HEVC/H.265 decoder from [Fraunhofer HHI](#), and the JPEG encoders and decoders from [Beyond Semiconductor](#).

The best way for potential customers to explore the opportunities of the new compression cores is to try them in-house. CAST makes this easy, with options from precompiled RTL models to bit-accurate simulation models through physical reference design kit boards. Contact CAST Sales to learn more.

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