

Ligos claims software encoding does work for real-time MPEG-2

Ligos Corporation, drawing on a close association with Intel, claims it can out-perform hardware-based encoders with a software solution running on a desktop PC. The cost benefits are obvious to broadcasters in need of real-time MPEG-2 delivery, but not everyone believes it can work



Robert Saint John,
director of marketing,
Ligos Corporation

A ccepted thinking has always been that only hardware-based encoders, using Digital Signal Processors (DSPs), can deliver the processing power needed to compress video for real-time broadcasting. Software-based encoding might be able to cope with non real-time applications, where the general purpose processors found in the computing world have more time to perform the complex calculations required of compression standards like MPEG-2. But if you want live, broadcast-quality pictures, you need hardware.

However, San Francisco-based Ligos Corporation is challenging these assumptions. The company, which is part-owned by Intel, has been demonstrating a PC-based MPEG-2 ATSC/DVB encoder that it claims can not only match the performance of hardware-based solutions, but provide better picture quality at equivalent bit rates.

MediaRig Encoder is a software programme, delivered on a CD with interface card, that runs on a Pentium 4 processor within an Intel Dual Xeon 2.4 GHz Personal Computer. It delivers MPEG-2 (MP@ML and 4:2:2P@ML) at constant or variable bit rates between 1.0 and 50Mbps, and can simultaneously encode dual video inputs, and output MPEG-2 transport streams to DVB-ASI, to file or to UDP multicast via IP.

According to George Mancuso, VP of broadcast business development at Ligos, the industry is changing. "Initially, after the MPEG-2 standard was released, the only effective way to do this [real-time encoding] was to use

DSP-based technology.

"The performance and price of video DSPs has stayed relatively constant, but the performance of general processors has been increasing exponentially while prices have been decreasing exponentially. General processors have reached the point where they are on a par, or surpassing, what can be achieved on a DSP-based platform."

Nick Flaherty, an analyst with California-based InsideChips.com, says the new generation of Intel processors have significant amounts of Digital Signal Processing that allow them to handle compression algorithms. "They are still general purpose processors, used in the vast majority of desktop PCs shipped today, and that is where cost benefits would come from."

Robert Saint John, Ligos' director of marketing, says his company achieved real-time MPEG encoding from live source in 1999. Since 2001 the focus has been on meeting the expectations of the broadcast market in terms of quality, features and reliability. "With more software optimisation and faster CPUs, we have been able to maintain the real-time feature, and add other necessary elements such as 4:2:2@ML and 4:2:2."

Ligos claims its software/general purpose processor approach is more cost-effective than using DSP-based hardware encoders. But we spoke to encoding specialists (not necessarily independent ones!) who hotly dispute the assertion that software encoding is sufficient for real-time, professional broadcast environments.

Saint John declares: "MediaRig

software absolutely performs real-time, low latency, broadcast-quality encoding from a live analogue or digital source. That is exactly what we were showing at IBC last September.

"We've certainly run into this argument before, but I think that it is based on impressions set by extremely slow, off-line transcoder software products in the mid-90s."

Ligos points to tests it conducted, using the Tektronix PQA200 (which generates an objective picture quality rating) that showed that the MediaRig encoder "consistently meets or exceeds that of the leading DSP-based encoders in the market."

"Regardless of other vendors' opinions of the efficiency of general purpose CPUs, or the software that runs on them, they cannot argue the point that MPEG encoding algorithms and their resulting quality have no inherent advantage when processed by a DSP, an ASIC or an FPGA," states Saint John.

"There is, however, a great deal of flexibility and price advantage that a general purpose CPU-based software encoder can bring to the market."

As for PC-based reliability? Saint John admits: "I think there is an issue of confidence about the reliability of the PC itself to either take the place, or stand alongside, certain standard black boxes. But latest versions of Windows and XP PRO are incredibly reliable and not subject to the same kind of fears of two years ago. Most of the world runs on Windows-based server products, including the financial markets."