

MPEG-4 Explained at SMPTE Seminar

By Andrew Morris

The traditional Saturday SMPTE Seminar, held every year at the spring convention, explained the MPEG-4 standard in scrupulous detail. MPEG-4 is a set of object-oriented coding technologies used for the representation of multimedia content.

Chaired by Richard Mizer and Rob Koenen, the session featured a variety of speakers, including representatives of Apple Computer, AT&T Laboratories, C-Cube, Microsoft, Philips, Sony, and Sarnoff Corp. They explained various aspects of the MPEG-4 standard, including both low and high bit-rate applications, ranging from video delivered to a cell phone to video delivered to a 35-in. television receiver.

Filling a Need

Rob Koenen of InterTrust explained that MPEG-4 was developed to fill "the need for a common multimedia technology that offers solutions to the three main service paradigms. These are broadcast, peer-to-peer communication and user-to-host retrieval." MPEG-4 offers tools for coding content ranging from mobile devices, such as cellular phones and personal digital assistants (PDAs), to streaming services, such as video delivered over IP networks and broadcast of high-quality video content. "Nobody believes MPEG-4 will replace MPEG-2 due to the current investment in MPEG-2 equipment," Koenen said, "but MPEG-4 content can be carried over MPEG-2 systems."

For low bit-rate applications, such as wireless delivery to handheld devices, MPEG-4 provides technologies for error recovery. Jack Donner of Packet Video said, "Wireless environments are too error-prone for today's multimedia delivery methods. MPEG-4 offers robust solutions for delivering multimedia content in this type of environment."

Didier LeGall of C-Cube Microsystems discussed the requirements for higher bit-rate applications, "My concern is with the ability to deliver broadcast-quality video at

about a 1 Mbit/sec compression rate to a 35-in. television receiver and not to a display that is the size of a postage stamp. The last thing you want to see is blocking effects on a 35-in. TV," said LeGall.

LeGall added, "Despite the success of MPEG networks in the satellite and cable industries, video over IP will not go away and we will only see more and more over time." LeGall anticipates delivery of broadcast quality video to television receivers via the Internet.

Choose Your Object

The object-oriented nature of MPEG-4 allows a host of interesting possibilities. These include the transmission of individual MPEG-4 coded objects that can be assembled at the client location. A viewer could choose whether or not he or she wanted a stock ticker or sports scores parading across the lower third of the TV set.

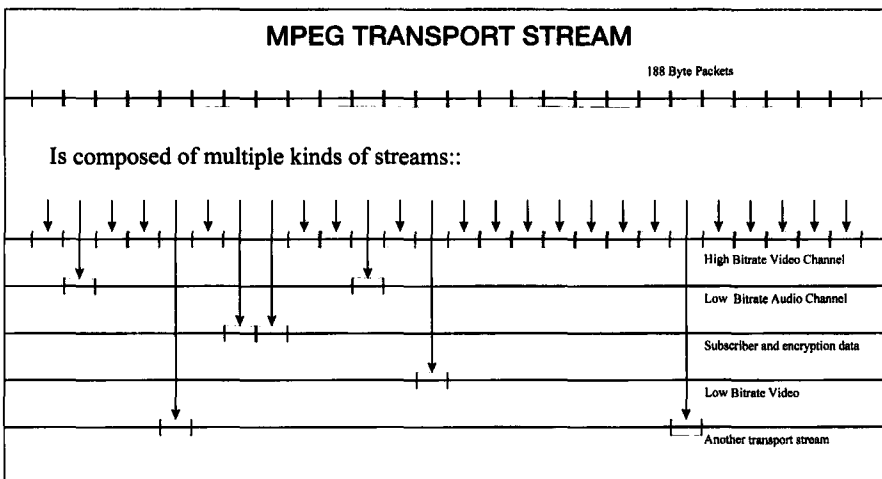
Isabelle Corset of Philips jokingly held out the possibility of transmitting video of a soccer match with all the video available to the viewer except the ball—if the viewer is willing to pay, the coded object representing the soccer ball would suddenly become available.

Jordi Ribas-Corbera, Microsoft, struck a discordant note when he said, "MPEG-4 is a little like the Energizer Bunny of standards — it offers a large set of tools." He seemed to be saying that the standard keeps going and going and has become too unwieldy to implement. Ribas-Corbera indicated that there is a lot of support for Windows Media Player and that it is installed in a lot of handheld devices. "I'm not sure if MPEG-4 makes sense from a business standpoint," he added.

Corset and Koenen pointed out that Microsoft's Windows Media Player technology has an MPEG-4-compliant video coder, but is not compliant with MPEG-4 audio coding and is also not compliant at the system level. In essence, they said, Windows Media is not compliant with the MPEG-4 standard in any meaningful way. Corset said,

"MPEG-4 is a standard and we are not at the stage of ensuring interoperability. The support of hundreds of companies assures content longevity."

Soon it will be up to the marketplace to decide the place MPEG-4 has in the worlds of broadcast and streaming media.



Andrew Morris is a consulting engineer based in New York City. He writes an irregular column for TV Technology magazine and is also working for NBC on the broadcast of the 2002 Winter Olympic games from Salt Lake City. This article appeared in NAB2001's Show Daily, and is reprinted with permission from NAB2001.