

New Technology for Sending High-Quality Digital Images

Cutting-edge technology for sending high-quality digital images over data networks is making live digital surveillance possible from personal computers (PCs) and the Internet, thereby enhancing security at schools, electronic-commerce equipment sites, public transportation venues, and other locations. The video compression and decompression (codec) technology was developed by Cubic Video Technologies, Inc. (San Diego, Calif.) with co-funding from NIST's Advanced Technology Program (ATP). Codecs condense the large amounts of data in images, making transmission practical over limited-capacity networks, and reconstitute the images at the receiver. Traditional codec research focused on sending images over switched-circuit and broadcast networks with a time delay used to enhance picture quality. In the two-year ATP project, which ended in 1997, Cubic developed a new concept based on wavelets (a basic research result believed to offer superior compression) and wrote and tested algorithms and network-management techniques that enable high-quality images to be sent almost instantly to authorized (including remote) PCs, overcoming the common problem of lost or misplaced data that is common on data networks. The technology would not have been developed without the ATP funding, company officials say.

The new codec has provided the basis for three commercial products: a Web video streaming software package; a video electronic mail system that has sold 70,000 units; and the surveillance system, now Cubic's primary focus. About 100 dealers nationwide are selling the surveillance technology, which can send images from 16 cameras to a PC while simultaneously allowing playback of recorded images stored indefinitely on a hard drive. The system is credited with deterring student misbehavior in Indiana schools and improving on videotape security technology in terms of image quality, ease of access to images, and archiving. Genuity, a Massachusetts firm descended from the contractor that designed the network that became the Internet, chose the Cubic system to watch over the e-commerce infrastructure it provides for clients such as large banks. The system is installed at 12 Genuity sites (a number expected to grow rapidly), where it eliminates the hassles of changing videotapes frequently and the time delays and personnel costs associated with locating and shipping taped incidents to headquarters for review. The Cubic system is also used at six sites along the Panama Canal, providing backup and rapid deployment capabilities and enabling military officials and others to watch the transit of their vessels over the Internet.

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