QuickTime: Description

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TOPIC ---

QuickTime is a new system software architecture for the integration of dynamic media for Macintosh computers. QuickTime allows developers to integrate dynamic media -- such as sound, video, and animation -- in a consistent, seamless fashion across all applications. This article describes the software architecture in more detail.

DISCUSSION ---

QuickTime offers a standard platform for all Macintosh development, enabling developers to extend the capabilities of current applications as well as create entirely new categories of applications. These new categories include videoconferencing, store-and-forward video mail, low-cost video editing, and dynamic CD-ROM magazines.

The QuickTime architecture consists of four major components:

- System software
- File formats
- Apple Compressors
- Human Interface Standards

These components form a software architecture that is extensible, open, and offers cross-platform standards for dynamic data exchange.

System Software

QuickTime is the first software extension to System 7. To install it, drag the QuickTime extension into the System Folder. QuickTime enables developers to incorporate dynamic data in a consistent and seamless fashion across applications. The system software component of QuickTime incorporates three new pieces:

- Movie Toolbox
  Apple uses the term "movie" to denote dynamic data such as sound, video, and animation. The Movie Toolbox is a set of system software services

that make it easy for developers to incorporate support for movies in their applications.

- Image Compression Manager
  The Image Compression Manager (ICM) shields applications from the intricacies of individual compression and decompression schemes. The ICM allows software and hardware developers to take advantage of numerous compression schemes -- such as DVI, Group 3 fax and MPEG -- in their applications, without having to make modifications.

- Component Manager
  The Component Manager allows external system resources -- for example, digitizer cards, VCRs, and system software extensions -- to register their capabilities with the Macintosh system software so any application can access these capabilities. In the past, application developers who wanted to take advantage of features from a hardware product, such as a digitizer card, would have to write custom software for that card and update their software each time the hardware was updated. With QuickTime, the hardware is transparent to the software application, and developers can concentrate on the capabilities they would like to offer.

File Formats

File formats are standard descriptions for a piece of data such as text and graphics. These standard descriptions are supported by most applications, thus allowing users to "cut and paste" or "Publish and Subscribe" data between applications and documents.

- Movie
  With QuickTime, Apple is introducing a new file format, known as "Movie." Movie refers to all dynamic data, such as a presentation slide show or a dynamic graph of lab data. The Movie file format is a container for this time-based data. Apple is publishing the full specifications for the Movie file format, thus providing developers of cross-platform applications with a standard way of exchanging dynamic data from one computing environment to the next.

- PICT Extensions
  In addition to introducing the Movie file format, Apple is also extending the PICT file format. With QuickTime, the PICT file format will now support image compression, enabling users to open any compressed still image from within any existing application. The PICT file format will also offer preview support, allowing applications to save a small "thumbnail" of a picture along with the image itself. These thumbnails will allow users to quickly browse through still image libraries in the same way they currently browse through files in a folder.

Apple Compressors

The first release of QuickTime provides a basic set of software compression/decompression schemes that meet a range of compression needs for still images, animations, and video.

- Photo Compressor
  Apple is the first personal computer company to implement the Joint Photographic Experts Group (JPEG) compression scheme as a standard part of system software. JPEG is a high-quality still image compression scheme that offers compression ratios ranging from 10:1 to 25:1 with no visible picture degradation.

- Animation Compressor
  The Animation Compressor is based on run-length encoding principles to compress computer-generated sequences from 1 to 32 bits in depth. This compression scheme displays animations -- such as a presentation slide show or a dynamic bar chart -- at acceptable speeds on all Macintosh computers. In addition, the Animation Compressor allows complex animations -- such as 32-bit scientific visualization data -- to be previewed on any Macintosh, thus saving users the time and expense of having to lay the animation to videotape one frame at a time.

- Video Compressor
  Apple developed the Video Compressor to allow digitized video sequences to play back from a hard disk or CD-ROM in real-time with no additional hardware on any Macintosh with a 68020 or higher Motorola processor.

  The Video Compressor offers compression ratios ranging from 5:1 to 25:1. The video playback size is typically less than 1/4 of the computer screen size.

Human Interface Standards

Apple is also providing human interface guidelines for dynamic media. These guidelines will ensure ease-of-use and consistency across applications when dealing with dynamic media.

- Standard Movie Controller
  Apple designed a standard movie controller as part of QuickTime, providing users with a consistent way to control movies. The movie controller will allow users to:

  - Turn sound on and off
  - Play or stop a movie
  - Interactively move to different segments in the movie
  - Step-forward and step-reverse through the movie (provides an indication of where the user is in the movie at all times)

- Standard File Dialog Box
  Apple has extended the standard file dialog box to offer developers a preview option. Application developers can now incorporate a dialog box that includes a preview window for still images and movies into their products.

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