5.2 HYPER MEDIA MESSAGING

Messaging is one of the major multimedia applications. Messaging started out as a simple text-based electronic mail application. Multimedia components have made messaging nuch more complex.

We see how these components are added to messages.

5.2.1 Mobile Messaging

Mobile messaging represents a major new dimension in the users interaction with the messaging system. With the emergence of remote access from users using personal digital assistants and notebook computers, made possible by wireless communications developments supporting wide ranging access using wireless modems and cellular telephone links, mobile messaging has significantly influence messaging paradigms.

Handheld and desktop devices play an important growth area for messaging, require complementary back-end services to effectively manage communications for large organizations.

Hypermedia messaging is not restricted to the desktops; it is increasingly being used on the road through mobile communications in metaphors very different from the traditional desktop metaphors.

Hypermedia Message Components

A hypermedia message may be a simple message in the form of text with an embedded graphics, sound track, or video clip, or it may be the result of analysis of material based books, CD ROMs, and other on-line applications. An authoring sequence for a message based on such analysis may consist of the following components.

1. The user may have watched some video presentation on the material and may want to attach a part of that clip in the message. While watching it, the user marks possible quotes and saves an annotated copy.
2. Some pages of the book are scanned as images. The images provide an illustration or a clearer analysis of the topic
3. The user writes the text of the message using a word processor. The text summarizes the highlights of the analysis and presents conclusions.

These three components must be combined in a message using an authoring tool provided by the

messaging system. The messaging system must prompt the user to enter the name of the addressee forthe message.

The message system looks up the name in an online directory and convert it to an electronic addresses well as routing information before sending the message. The user is now ready to compose the message. The first step is to copy the word processed text report prepared in step 3 above in the body area of the message or use the text editor provided by the messaging system. The user then marks the spots where the images are referenced and uses the link and embed facilitites of the authoring tool to link in references to the images. The user also marks one or more spots for video clips and again uses the link and embed facilities to add the video clips to the message.When the message is fully composed, the user signs it (electronic signature) and mails to the message to the addressee (recipient). The addressing system must ensure that the images and video clips referenced in the message are also transferred to a server "local' to the recipient.

Text Messages

In earlier days, messaging systems used a limited subset of plain ASCII text. Later, messaging systems were designed to allow users to communicate using short messages. Then, new messaging standards have added on new capabilities to simple messages. They provide various classes of service and delivery reports.

Typical Electronic mail message

Other capabilities of messaging systems includ~ a name and address directory of all users accessible to the messaging system.

Rich-Text Messages

Microsoft defined a standard for exporting and importing text data that included character set, font table, section and paragraph formatting, document formatting, and color information-called Rich Text Format (RTF), this standard is used for storage as well as Import and export of text files across a variety of word-processing and messaging systems.

When sections of this document are cut and pasted into another application, the font and formatting information is .retained. This allows the target application to display the text m the nearest equivalent fonts and formats.

Rich-text messages based on the RTF formats provide the capability to create messages in one word processor and edit in another at the recipient end. Most messaging systems provIde richtext capability for the field of a message.

Voice Messages

Voice mail systems answer telephones using recorded messages and direct the caller through a sequence of touch tone key operations until the caller is connected to the desired party or is able to leave a recorded message.

Audio' (Music)

The Musical Instrument Digital interface (MIDI) was developed initially by the music industry to allow computer control of and music recordings from musical instruments such as digital pianos and electric keyboards. MIDI interfaces are now being used for a variety of peripherals, including digital pianos, digital organs, video games with high-fidelity sound output, and business presentations.

Full-Motion Video Management

Use of full-motion video for information repositories and memos are more informative. More information can be 'conveyed and explained in a short full-motion video clip than can be conveyed In a long text document. Because a picture is equivalent to thousand words.

Full Motion video Authoring System

An authoring system is an important component of a multimedia messaging system. A good authoring system must provide a number of tools for the creation and editing of multimedia objects. The subset of tools that are necessary are listed below:

1. A video capture program - to allow fast and simple capture of digital video from analog sources such as a video camera or a video tape. .

2. Compression and decompression Interfaces for compressing the captured video as it is being captured.
3. A video editor with the ability to decompress, combine, edit, and compress digital video clips.
4. Video indexing and annotating software for marking sections of a videoclip and recording annotations.

Identifying and indexing video clips for storage.

Full-Motion Video Playback Systems

The playback system allows the recipient to detach the embedded vIdeo reference object, Interpret its contents and retrieve the actual video clip from a specialized video server and launch the Playback application. A number of factors are involved in playing back the video correctly. They are:

1. How the compression format used for the storage of the video clip relates to the available hardware and software facilities for decompression.

2. Resolution of the screen and the system facilites available for managing display windows. The display resolution may be higher or lower than the resolution of the source of the video clip. 3. The CPU processing power and the expected level of degradation as well as managing the degraded output on the fly.

4. Ability to determine hardware and software facilities of the recipient's system, and adjusting playback, parameters to provide the best resolution and perfonnance on playback.

The three main technologies for playing full motion video are microsoft's video for windows: Apple's Quicktime, and Intel's Indeo.

Video for Windows (VFW): It is the most common environment for multimedia messaging.

VFW provides capture, edit, and playback tools for full-motion video. The tools provided by VFW are: The VidCap tool, designed for fast digital video capture.

The VidEdit tool designed for decompression, edition, and compressing full-motion digital video. The VFW playback tool.

The VFW architecture uses OLE. With the development of DDE and OLE, Microsoft introduced in windows the capability to link or multimedia objects in a standardized manner. Hence variety ::,windows based applications can interact with them. We can add full-motion video to any windows-based application with the help of VFW. The VFW playback tool is designed to use a number of codecs (software encoder/decoders) for decompressing and playing video files. The default is for A VI files.

Apple's QuickTime

An Apple QuickTime product is also an integrated system for playing back video files. The QuickTime product supports four compression methodologies.

Intel's Indeo

Indeo is a digital video recording format. It is a software technology that reduces the size of un compressed video files through successive compression methodologies, including YUV sub sampling, vector quantization, Huffman's run-length encoding, and variable content encoding. Indeo technology is designed to be scalable for playing back video; It determines the hardware available and optimizes playback for the hardware by controlling the frame rate. The compressed file must be decompressed for playback. The Indeo technology decompresses the video file dynamically in real time for playback. Number of operating systems provide Indeo technology as standard feature and with other software products (eg. VFW).

Hypermedia Linking and Embedding

Linking and embedding are two methods for associating multimedia objects with documents. This topic deals with

❖ Linking as in hypertext applications. Hypertext system associate keywordsin a document with other document.

❖ Linking multimedia objects stored separately from the document and the link provides a pointer to its storage.

❖ Linking and embedding in a context specific to Microsoft Object linking and Embedding.

Linking in hypertext documents

Hypertext documents are indexed to locate keywords within the text component of the hypermedia document. An extension of this capability is to locate information within the linked component.

There are two types of links passive links and active links

Active Links- performs functions on theoir own based on readers customization. Active links are more intelligent and may use artificial intelligence technologies to monitor the nature of tasks performed by the user.

Passive Links- allow associating one document with another in a number of ways including the author to name the subject of a link and access it based on the content.

Linking and Embedding:

Linking and embedding are two ways of associating multimedia objectswith a hypermedia document or a database record. Let us discuss it in detail.

Linking Objects

When an object is linked, the source data object, called the link source, continues to stay whenever it was at the time the link was created. This may be at the object server where it was created, or where it has been copied.

Only reference is required in the hypermedia document. The' reference is also known as link. This link reference includes information about the multimedia object storage, its presentation parameters, and the server application that is needed to dIsplay/play or edit it. When this document is copied, the link reference is transferred. But the actual multimedia document remains in its original location. A linked object is not a part of the hypermedia document and it does not takeup storage space within the hypermedia document. If the creator, or authorised user edits the original stored multimedia object, subsequent calls to the linked object bring the copy.

Embedded Objects

If a copy of the object is physically stored in the hypermedia document, then'the multimedia object :3 said to be embedded. Any changes to the original copy of t4at object are not reflected in the embedded copy. When the hypermedia document is copied, the multimedia object is transferred with it to the new locations.Graphics and images can be inserted in a rich-text document on embedded using such techniques as OLE Voice and audio components can be included in a text message; or they can be part of a full voice-recorded message that has embedded text and other components.