

Interactive Multimedia



Multimedia and the World Wide Web

Multimedia and WWW

What is Multimedia ?

why is it important ?

Who needs to know about Multimedia?

Interactive Multimedia

hypermedia, hypertext

media types in multimedia system

world wide web (www)

text for the web

image for the web

sound for the web

animation for the web



Multimedia and Shockwave

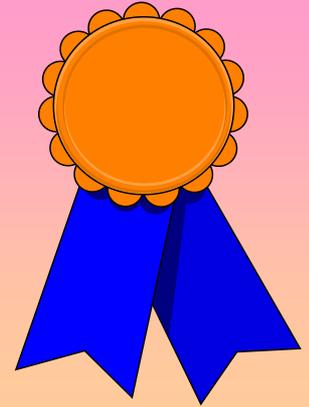
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What is Multimedia ?

Multimedia is the use of a computer to present and combine text, graphics, animation, audio, and video with links and tools that let the user navigate, create, interact, and communicate.

Why it is important ?

1. Multimedia is highly affective.
2. Multimedia will help in spread the information age.



Who needs to know about Multimedia ?

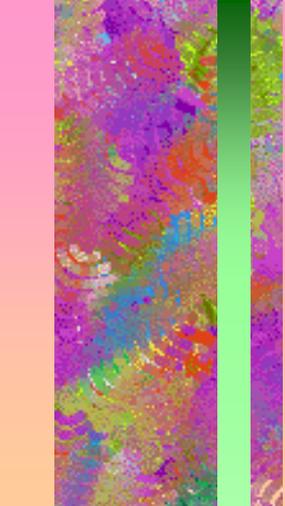
Anyone who plans to learn, teach, work, play, buy or sell in the information society needs to know about Multimedia!!!

Interactive Multimedia

when the end user (the viewer of a multimedia projects) need to control what elements are delivered it became *Interactive Multimedia*.

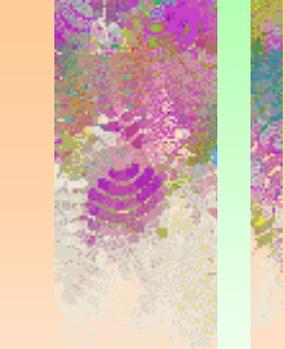
Hypermedia or Hypertext

Deff: ‘ when we provide a structure of linked elements through which the user can navigate, interactive multimedia became *hypermedia* .



Hypermedia provide a way of representing and managing information in flexible and non-linear way that is appropriate for many MM applications.

The most well-known hypermedia programs are hypercard for “Mac” and Toolbook for windows.



Media types in Multimedia system

1. Text ; Multimedia might be without text , but most multimedia use text because use it is such an effective way to communicate ideas and provide instructions to the users.

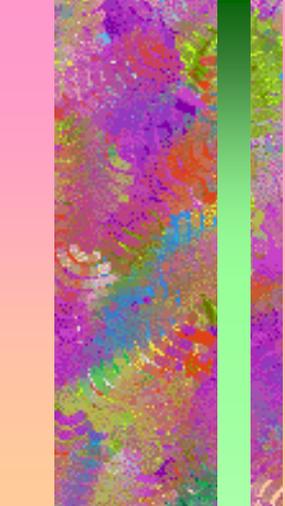
There are three kinds of text:

a. printed text

b. scanned text

c. hypertext: the text that has been linked.

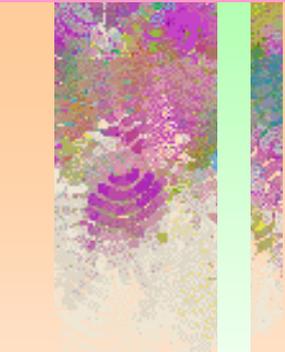
D. electronic text: refer to the text, which is available in machine (readable form).



2. Graphics: the native format for Microsoft windows environment is Bitmap with **.bmp** as extension. Bitmap files currently support color images at 1, 4, 8 and 24 bits.

The popularity of windows has made the bitmap format very popular as standard for multimedia applications.

Other formats : .gif .jpg and .pic



3. Digital video file format : AVI (audio video interleave) is the standard developed by Microsoft. The extension is (**.avi**) it is highly depending on the type of hardware used to playback the images.

For example :

a 486 machine can handle images with 320x240 pixel, while a Pentium Chip with accelerator graphics card can provide full screen 640x480 pixels.

Other formats: .mov and .mpg.



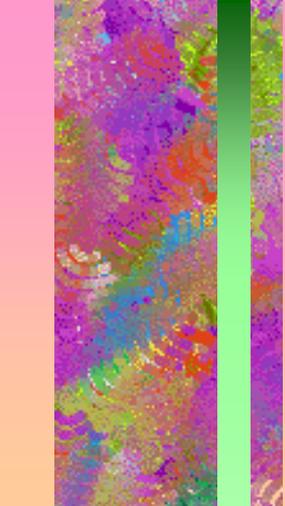
4. Animation

Basic rules of animation.

1- squash and stretch: made distortion to the shape . Ex; rubber ball.

2. Slow in- slow out : used to remove the sudden jerky motion.

3- stage the action properly: isolate the events, so one event at a time occupies the viewer attention.



4. Animation

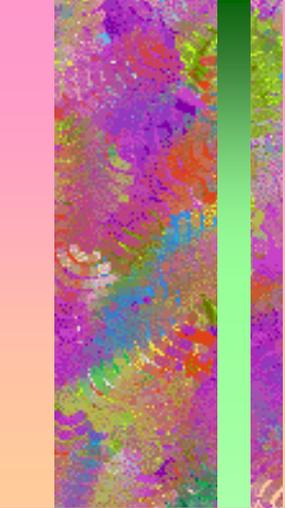


Types of animation:

1. Page flipping: (from book flipping, the frames can be deleted, rearranged and copied).

2. Cell animation: create one background, then arrange pieces of cells over it.

3. Object animation: moving unchanging object over a series of frames.



5. Audio



Wave is the standard developed by Microsoft and IBM with .wav as extension. It is used extensively for audio files transmitted over the Internet. Other formats: .mid, .ra, and .au

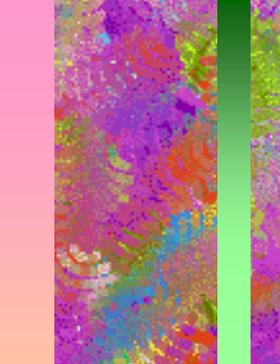
World wide web (WWW)

The world wide web is a collection of web pages that are relevant to the site or organization. Each of web pages is made up of text, graphics and some animation.

A web page is written in its own language known as HTML or Hypertext Markup Language. A hypertext document lets the user jump to another area in the same site or even to another site by clicking on a hyperlink.

Media considerations when used on the Web!

1. Text for the Web: viewers of your web site may not view the same “preferred” font that you used to design your web page because user preferences in the browser may alter the way text in your document looks and flows.



2. Image for the Web

Browsers typically recognize two image formats (GIF and JPEG). GIF images are limited to 8-bits color (256 colors). JPEG images contain 24-bits of color depth (million of colors). JPEG is powerful but “ Lossy” compression method . Furthermore, JPEG produces files as much as 10 times compressed as GIF.

When to use GIF and JPEG ?

- A. use GIF files for Logos, icon, line art and simple images.**
- B. use JPEG files for photos and complex images.**

Considerations of using images in the web!!!!

1. Physical size of inline images: most standard computer display at 640x480 on (13 -15) inch monitors.

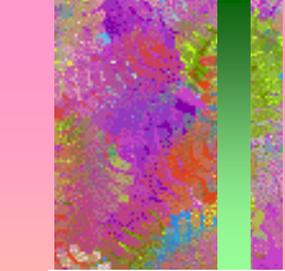
Netscape default to width of 500 pixels , so it must take in consider and keep the image smaller than this width.

2. Scanning images : most monitors are only capable of displaying at 720 dpi, so don't scan at 300, 1200, 2400,.....etc.

As this will increase the file size with no noticeable improvement in image quality and slow the loading time down.

3. file sizes for the image: the fewer colors in the image the smaller the file size.

Note: the entire page (image and text) should no take longer than 30 seconds to load- therefore aim at limiting a page to 30 KB size.

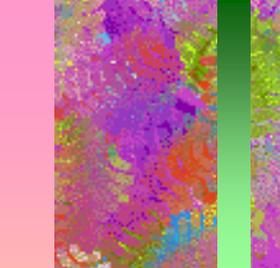


3. Sound for the Web

As the Web has developed, sound has become more important, and plug-in currently allow embedding sound into documents.

Microsoft Explorer offer the <BGSOUND> tag. To play on .au , .wav, and .midi in the background.

Streaming audio: is very important for the Web, where a sound files can start playing as soon as data begin coming in streaming audio is provided by the LiveAudio plug-in, like (Stream work) and (Real Audio).

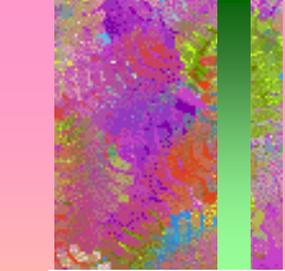


4. Animation for the Web

It is possible to make simple animation by putting multiple images or frames into a single file, and displaying them with programmable delay between them, that came through using some software like “Microsoft Gif animator ” . Then we can use tag to play that animation with Netscape navigator.

Ex:

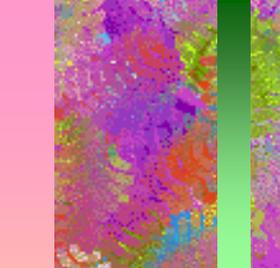
Macromedia introduced shockwave to allow the animation and interactivity of its tool, Director to be embedded into pages viewed by Netscape Navigator.



Multimedia and Shockwave

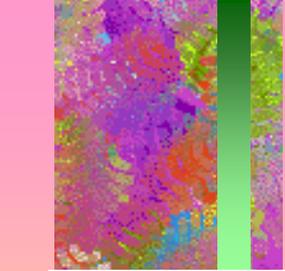
Macromedia developed Shockwave as a plug-in into Web browsers. Unlike Java, which require programming skills, shockwave is simply a piece of software that is used with your Web browser (like Netscape) to view Director movies, which should be embedded in your web site on the Net. Theses Web sites are called “Shocked” sites and Director movies embedded range from animation bullets and text in a Web page to interactive games.

Afterburner: animation that are created with Director can have a large file size. In order to view these animation in a Web page effortlessly , these files have to be compressed →



Multimedia and Shockwave

Shockwave works with a compression utility called Afterburner, it offers 40-70 percent ratio of lossless compression. This means that the animation created can go from its native format of about 50 KB down to about 4 KB. And with the current Internet bandwidth of 28.8 kbps, these animations can be played back within the Web pages easily.



Page Design Considerations

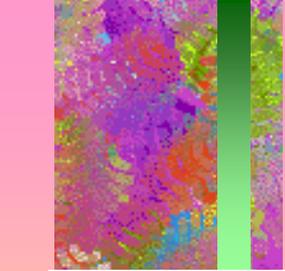
? when designing Web Pages consideration should be given to people with disabilities, especially for the people who are visually impaired and rely on the text readers to vocalize the information.

On line information on creating Web pages for people with disabilities may be found at the following sites:

-<http://trace.wise.edu/world>

-<http://www.direcsa.org.au>

? when creating graphics for the background and when using certain color combinations it is useful to check out how your pages are likely to appear on other platforms such as Mac and PC.

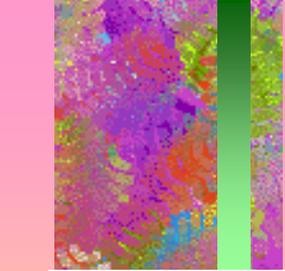


Multimedia and the bandwidth

Definition: bandwidth is how much data, expressed in bits per second (bps) you can send from one computer to another in a given amount of time.

Greater bandwidth  more speed to upload and download the media.

Lower bandwidth  less speed to upload and download the different media.

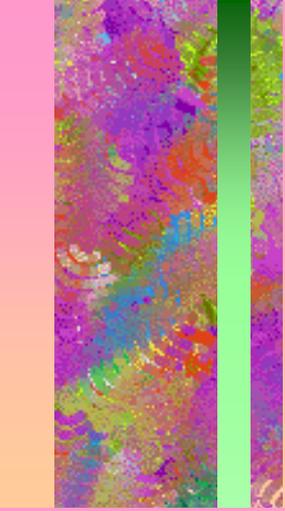


Multimedia and the bandwidth

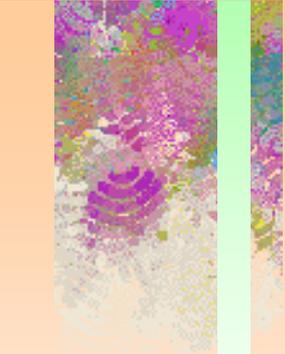
at low bandwidth a page of text with (3,000 bytes) can take less than a second to send, but an uncompressed color image about (300,000 bytes) can take a few minutes, and colour image with (900,000 bytes) size can take many minutes to send.

To work with the constraints of this challenging bottleneck, multimedia developers on the Internet have put a few options, like :

1. Compress data as highly as possible before transmitting.
2. Don't use color depth than absolutely needed.



Choosing the platform



Not all Web browsers support the latest HTML tags, it is therefore good to check your work on various workstations, Mac's and PC's at:

--different screen resolution levels.

--different memory capacities.

And try to use different Web Browsers.



Colours & screen size in Multimedia

Colours display or colours monitors measured along the diagonal. The most typical sizes of monitors ranges from 12 inch to 19 inch, larger monitors are very expensive and normally are purchased for classrooms where many people need to be able to see the display.

Dependent of the number of inches is the number of pixels your computer can display on the monitor. The minimum number for multimedia is (640x480) pixels. Other common pixels grids are 800x600, 1024x768, and 1360x1024; these high resolution monitors can also display the more common 640x480 graphics.



Colours & screen size in Multimedia

Colours:

older computers with VGA (video graphic array) can only display 16 colours on 640x480 pixels grid.

For multimedia we need SVGA (super VGA), which can display 256 colours chosen from palette of more than 16 million colours.

Colours principles:

- 1- use colour to increase the informational contents.
2. Consider the requirements of the task.
3. Consider the real world representation.