

Advanced Internet Tools

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Types of Media

- Pictures (.gif, .jpg, .tiff)
- Documents (.ps, .pdf)
- Virtual Reality (.vrmf)
- Audio (.au, .aiff, .wav, .ra, .mpa)
- Video (.qt, .avi, .mpg, .rm, .vdo)
- Multimedia - Shockwave
- Interactive (NetMeeting, IM, ICQ)

Netscape Plugins

- Some forms of media are built into Netscape/Explorer
 - gif, html, jpg, ...
- Others require a “Plug-in” or helper application
 - Download the installation package
 - Exit Netscape/Explorer, Install application, and Re-start Netscape

Pictures

- Sources
 - Scanner or Camera
 - From the screen - Capture
 - Off the net (Right Click and Save)
- Programs to manipulate pictures
 - LVIEWPRO (www.windows95.com)
 - Paint Shop Pro (www.windows95.com)
- Quality color is “cheap” on the net

Documents

- Postscript Printer Language (.ps)
 - Designed for printing, not viewing or searching
- Postscript Display Format
 - Compressed, searchable, viewable, and printable
- Viewer is free
- Encoder is not free

PDF

- Can “print to PDF in Windows” - \$50.00
- Can “Distill” Postscript into PDF - \$500.00
- Viewer is free
- www.adobe.com

Virtual Reality

- Objects are placed in a virtual world - Virtual Reality Markup Language
- VRML is downloaded and the viewing is done locally
- Moving around VRML is very CPU intensive
- VRML files can be very large

Raw Audio

- Formats
 - .au - 8KHz - 8 bit samples = 64000 bps
 - One second = 3 seconds download
 - Floppy = 4 minutes
 - CD mono - 44kHz - 16 bit samples = 704000 bps
 - One second = 30 seconds download
- Simple to record and play

Raw Video

- Massive Bandwidth
 - Broadcast Quality 90Mb/sec - 40GB/Hour
 - Floppy = 0.1 second
 - VHS Quality 16Mb/Sec - 7GB/Hour
 - Quarter Frame 4Mb/Sec - 1.8GB/Hour
- We generally don't work with raw video with computers

Compressed Video

- Quicktime
- AVI
- MPEG - Motion Picture Experts Group
- RealVideo - Internet Video

Video - MPEG

- Formats for both video and audio
- "Motion Picture Experts Group"
- MPEG encoding does "motion estimation"
- Used in the small satellite dishes
- Wide range of compressions
 - MPEG-1 1.5 Mb/sec (floppy = 8 seconds)

More MPEG

- Currently need hardware for real-time encoding
- Faster processors may change this
- Can decode in real-time
 - www.xingtech.com
 - Streamworks
- MPEG-4 audio can compress to 28.8

QuickTime

- Quicktime - .qt .mov
 - Earliest format for audio and video
 - Sacrifice quality
 - Apple format used for Macintosh
 - Designed for CD-ROM
 - Simple compression for slow CPUs
 - Floppy = 10 seconds
 - www.apple.com

Video - AVI

- The native video format for Windows
- Software compression and decompression
- Sacrifice quality
- Designed to be played on slower CPUs
- Floppy Disk = 10 seconds

Real Media

- RealNetworks
 - Focus is on modem delivery
- Several different speeds
 - Audio 5Kb/sec - 56Kb/sec (Floppy = 50 minutes)
 - Video 28Kb/sec - 128Kb/sec (Floppy = 10 minutes)
- More bits = better quality

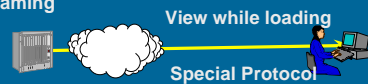
Media in Real-Time

- In order to compensate for network delays, player must buffer data ahead before playing it.
- After 2-15 second delay, can keep up in real time
- First successful streaming media was (www.real.com)

Normal Viewing



Streaming



Pseudo Streaming



The Floppy Summary

Broadcast	0.1 Seconds
MPEG-1	8 Seconds
Quicktime/AVI	10 Seconds
RealAudio	50 Minutes
RealVideo	10 Minutes

Multicast Backbone

- Ultimately the Internet is a very poor way to broadcast media
 - CNN Live
 - HBO
 - PASS
- It is superb at on-demand media
- MBONE is the broadcast solution

Streaming Media



Multicast



■ = MBONE Router

Macromedia Shockwave

- Shockwave is a network version of a multi-media experience
 - Data retrieved over the net as needed
- Originally developed on a Macintosh - Hypercard / Macromind Director
- Can be quite slow on modem lines
- www.macromedia.com

Microsoft PowerPoint

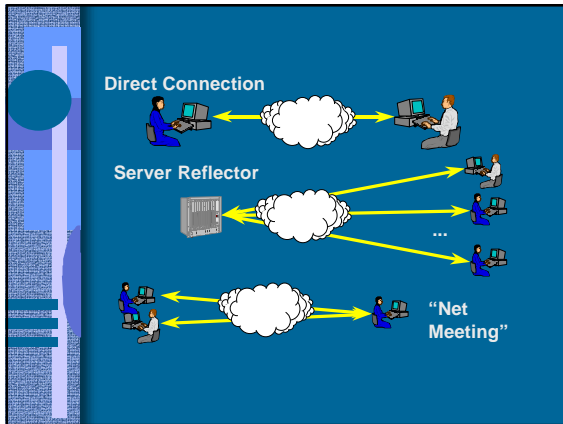
- Very popular presentation tool
 - Used in this class:)
- Multimedia
 - Text/Pictures
 - Audio/Video
- Can export to the Web
 - Creates HTM and GIF or JPG files

PowerPoint-97

- Automatic narration capability
- Animation of images
- Compressed file format
- Free player
- Audio compression is not as good as RealAudio
- RealPresenter can extract audio

Microsoft NetMeeting

- Part of Microsoft Internet Suite
 - Audio / Video / White Board / Text Chat / Shared Applications
- Can be used several ways
 - Direct connection
 - Reflector
 - “Net Meeting” - A user system becomes the reflector



Instant Messages

- Pop-Up Instant conversations
 - UNIX "talk" command
 - AOL - www.aol.com
 - ICQ - Internet Chat - www.icq.com
- Folks know when and where you log on

Summary

- While the World-Wide-Web got its start with integrating text, graphics and sound, there are many forms of media on the net
- The largest challenge is the lack of high-speed access to the home for these types of media to be truly successful