

Digital and Streaming Video: The Eccles Library Digital Video Studio

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So you want to make digital video?

- ◆ First decision: do you need it?
- ◆ Second decision: who is your audience?
- ◆ Third decision: what is your delivery method?
- ◆ Fourth decision: what format is most suitable?

Digital Video: Necessary?

- ◆ Digital video production is extremely time consuming
- ◆ Digital video can add value when visual information is necessary
 - ◆ Exam procedures or interview techniques
 - ◆ Dissection or surgical procedures
 - ◆ Lectures and demonstrations

Digital Video: Audience!

- ◆ Who are your viewers?
 - ◆ Attention span?
- ◆ Where are your viewers?
 - ◆ On campus - high speed network
 - ◆ Off campus - slower connection
 - ◆ In classroom - no network connection

Digital Video: Delivery

- ◆ How will you deliver your video?
- ◆ Internet
 - ◆ Streamed or not
- ◆ CD-ROM
- ◆ DVD

Digital Video: format

- ◆ QuickTime (MOV)
- ◆ RealMedia (RM)
- ◆ MPEG (MPG)
- ◆ Windows Media (ASF)
- ◆ Video for Windows (AVI)
- ◆ Others

QuickTime (.mov)

- ◆ Well suited for Web, CD, or DVD
- ◆ Mac and Windows
- ◆ Interactive features
- ◆ Client is also editing and production tool
- ◆ Streaming capabilities
- ◆ Scalable with “alternate” movies
- ◆ High quality is possible

RealMedia (.rm)

- ◆ Well suited for Web
- ◆ Mac and Windows
- ◆ Streaming capabilities
- ◆ Scalable
- ◆ Very small files sizes
- ◆ Quality variable

MPEG (.mpg)

- ◆ MPEG 1, 2, 4
- ◆ Well suited for CD or DVD
- ◆ Multi-platform
- ◆ Streaming capabilities
- ◆ Medium to very high quality
- ◆ Generally requires high data rates
- ◆ Not good for general Internet use

Windows Media (.asf)

- ◆ For delivery via Web or CD
- ◆ Streaming capabilities
- ◆ Scalable
- ◆ Scripting features
- ◆ Large file sizes

Video for Windows (.avi)

- ◆ Best for CD
- ◆ Windows only
- ◆ Large files
- ◆ Medium to high quality
- ◆ No longer supported by Microsoft

Demonstration

- ◆ Quicktime
- ◆ RealMedia
- ◆ MPEG
- ◆ AVI
- ◆ Comparison

File sizes for various formats

- ◆ 10 second animation:

RM - 327 KB

MOV - 379 KB

MPG - 1.3 MB

ASF - 10 MB

File sizes for various formats

- ◆ 17 second clip:

RM - 545 KB

MOV - 1.5 MB

File sizes for various formats

- ◆ 2 minute, 50 second clip:

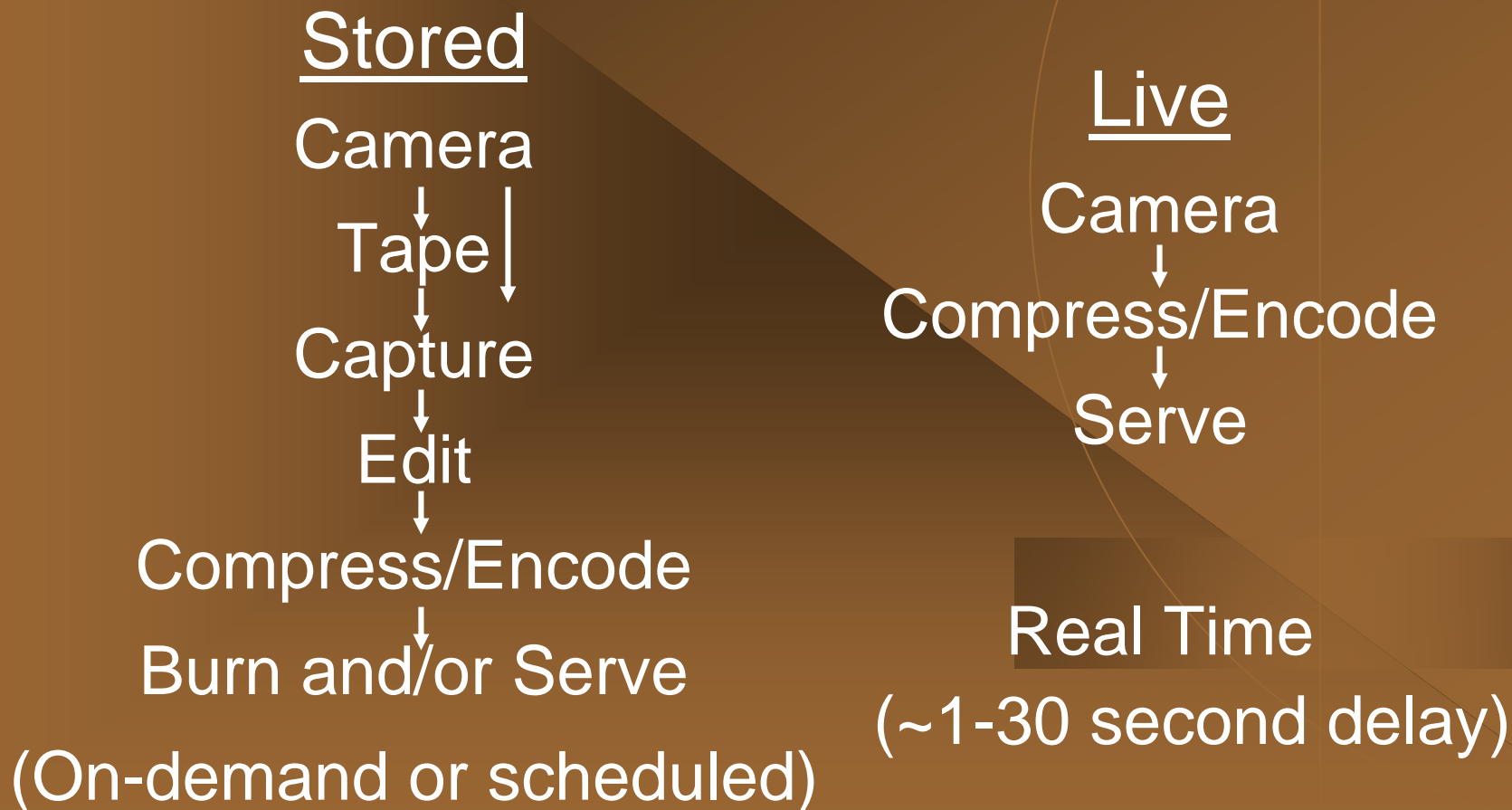
RM - 5.3 MB

MOV - 14 MB

What is "streaming" video?

- ◆ To "stream" video, the client (video player) on the user's PC continually requests video data from a server
- ◆ The user does not have to wait for the entire file to download before viewing
- ◆ View as a continuous data stream
- ◆ Unicast vs multicast - requires network support, router configuration

Overview of the digital video creation process



Digital video creation: source

- ◆ GIGO - Garbage in, garbage out
- ◆ Start with highest quality original
- ◆ Ideally, shoot original with digital camera
- ◆ Can encode from 1/2" or 3/4' VHS

Digital video creation: capture

- ◆ Requires PC or Mac with video capture card
- ◆ Converts analog video signal to digital signal
- ◆ Requires software - Adobe Premiere, MovieRecorder
- ◆ Raw capture footage is ENORMOUS!
 - ◆ 1 - 20 MB per second
 - ◆ Must be compressed (encoded) to deliver

Digital video creation: edit

- ◆ Requires fast PC or Mac with large storage drive
- ◆ Requires video editing software
 - ◆ Adobe Premiere, Avid Cinema, or Strata's VideoShop
 - ◆ Use time line to order clips, add transitions and effects
 - ◆ Export for later compression
 - ◆ Archive pre-compression video

Digital video creation: compress

- ◆ Requires fast PC or Mac with large storage drive
- ◆ Requires video compression software (encoder)
 - ◆ Media Cleaner Pro
 - ◆ Select format
 - ◆ Set appropriate settings
- ◆ Very time consuming
 - ◆ 1 minute clip - 10 -30 minutes to compress

Digital video creation: deliver

- ◆ Depending on your needs:
 - ◆ Mount on server and link to Web page
 - ◆ Burn to CD to play on your computer
 - ◆ Burn to DVD (requires building of interface)
- ◆ Viewer must have appropriate software (client) to view the video

Demonstration

◆ Summer Student Projects

- Neurologic Exams

Intro exam, Eye Exam

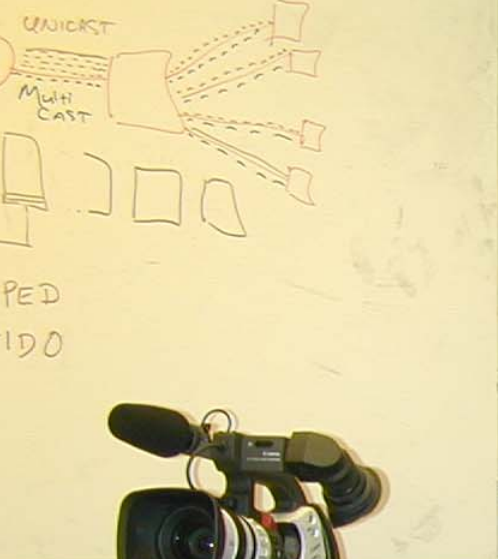
- NeuroOphthalmology - Eye Movement Disorders

◆ Lectures

- Infofair 2000

◆ Coming soon:

- Diabetes education program
- Patient education workshop
- Clifford Lynch at the Priscilla Mayden Lecture 11/9/00



Eccles Library Video Studio

SGI WebFORCE Mediabase VideoServer

Real Media Server 7

Minerva VNP 151 Encoder

Canon XLI Digital Video Camcorder

IBM Intellistation Video Editing workstation

Various input devices

Facilitate Creation of Video Content

◆ Goal: Provide tools for experimenting with video content creation

- Create specialized visual content
- Broadcast of special events/speakers
- Storing and Replay events/speakers
- Distance & Continuing Education
- Supplement to existing curriculum
- On-demand review
- Other...

Mediabase Hardware Components

- ◆ SGI Origin 200 server
- ◆ Dual processors 180 MHz w/2 MB Cache
- ◆ RAM: 512 MB
- ◆ 172 GB storage
- ◆ Approx 200 hours MPEG-1 video



Mediabase Software Components

- ◆ Irix OS (Unix)
- ◆ MediaBase 4.0.1
- ◆ Informix - relational database system
- ◆ Netscape FastTrack Server
- ◆ RealNetworks G2 server
- ◆ Unlimited streaming capability – actuality, about 100 simultaneous streams

MediaBase server not currently running

THE TECHNOLOGY DEMO

THE SOFTWARE
ISN'T 100%
COMPLETE.

www.dilbert.com scottadam@ari.com

IF IT HAD A USER
INTERFACE YOU
WOULD SEE SOME-
THING HERE...
HERE...AND SOME-
TIMES HERE.

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AND THEN YOU'D
BE SAYING, "I
GOTTA GET ME
SOME OF THAT."

ANY
QUESTIONS?

Minerva VNP 151 Encoder



- ◆ MPEG Encoding
- ◆ Encode from tape or live camera
- ◆ Real time capture and distribution
- ◆ Web administration tool

Canon XLI Digital Video Camcorder



- ◆ Interchangeable lens Mini DV camcorder
- ◆ Highly accurate color reproduction and detail
- ◆ Four Channel Digital Audio System
- ◆ Firewire port for direct video capture from MiniDV tape to editing station

RealServer Hardware Components

- ◆ Dell PowerEdge 1300
- ◆ Dual Pentium III 500MHz w/512K Cache
- ◆ RAM: 256MB
- ◆ 18GB Storage

RealServer Software Components

- ◆ Microsoft Windows NT Server 4.0
- ◆ RealServer 7.0 - Streaming media server
- ◆ RealProducer - software to prepare streaming audio and video
- ◆ RealPresenter - converts PowerPoint slides to streaming video and audio

Video Editing Components - Hardware

IBM Intellistation Video Editing Workstation

Video capture card / firewire port

70 GB Disk Array

CD and DVD burners

1/2", 3/4" VHS player/recorders

Videodisc player

DVC Pro tape player/recorder

Video Editing Components - Software

Adobe Premiere - video editing

Media Cleaner Pro - video compression

Minerva Impression - DVD authoring

Adobe Photoshop - image editing

Questions?