CGT 353 Lecture 6

Video Integration with Flash

Introduction

- Previous versions of Flash didn't allow you to do much with video
- Could import the video frames and convert them to vector representations
- Video in Flash is now quite powerful and a major force on the Web.
- This will have practical applications with the Web site project.
- Once again, students are not expected to become video experts in this class, but since it is such a prominent tool it must be discussed.
- Remember the "garbage in, garbage out" theory - if the ingredients are bad, the soup will be bad

Codecs

- **Sorenson Spark**, is used with FP6-7
- **On2 VP6**, is used with FP8 and FP9
- New codec **H.264** – built into Flash Player v9.0.r115
- H.264 works best with **F4V** video format. It provides a significantly better quality-to-bitrate ratio than previous codecs
- **H.264** is more computationally demanding than the Sorenson Spark and On2 VP6 video codecs released with Flash Player 7 and 8.

Import Formats

- As long as you have Quicktime or DirectX installed on your computer you can import:
  - .avi
  - .dv
  - .flv, .f4v
  - .mov, .qt
  - .mpg
  - .mpeg
  - .mp4, .m4v
  - .3gpp, .3gpp2 (mobile devices)
  - .asf

New Features

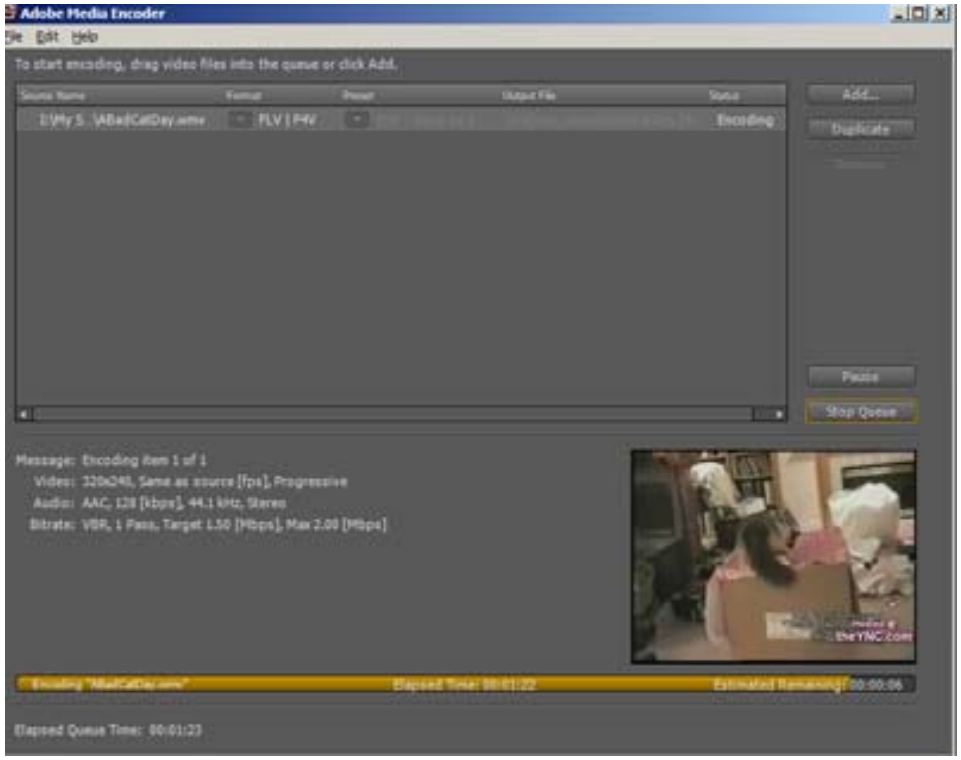
- **Adobe Media Encoder** – can now deinterlace video during encoding, which reduces artifacts
- **Flash 9 skins**
- **Cue points** – can embed directly into FLV file and trigger events during playback.
- **Better Quicktime exports –** can export AS-generated animations to .mov. Can also export content with nested movie clips and effects

Native Video Formats

- The **FLV** format lets you import or export a static video stream with encoded audio.
- Intended for use with communications applications using files that share encoded data from the Flash Communication server.
- FLV Audio is compressed using **Audio Stream** settings in publish settings
- **F4V** is the newest and uses the **H.264**

Adobe Media Encoder

- Based off the original **Flash Video Encoder** introduced in CS3



- Relatively new feature that allows you to batch encode videos

Cue Points

- **Cue points** cause the video playback to trigger other actions within the presentation.
- Learn how to incorporate this in your videos and text.
- If you need to use either video with alpha channel support for compositing, or cue points to trigger synchronized events with video playback, you must use the On2 VP6 video codec.
- **F4V does not support alpha video channels.** Cue points can be embedded in the XMP metadata of an F4V file, but parsing that data requires custom ActionScript code

Attributes of Digital Video

- Easier to add video for the Web today because:
  - people have faster connections
  - compression technologies are getting better

- *** Like audio, prepping digital video is what takes the most work

Image Attributes - File Formats and Compression

- Should use uncompressed or lossless video in Flash
- Do this to avoid the "double whammy" compression as with JPEGS
- Strive to use digitally recorded footage

Frame Dimensions

- For modem connections, should never exceed 160 pixels by 140 pixels
- Faster connections such as T1 and modems can utilize 320 x 240
- **Dial-up Modem NTSC 4 x 3 -**162 x 120
- **Dial-up Modem PAL 4 x 3 -** 160 x 120
- **T1/DSL/cable NTSC 4 x 3 -** 648 x 480
- **T1/DSL/cable PAL 4 x 3 -** 768 x 576

Audio Attributes

- Use 22 kHz, 16-bit mono for the Web
- Anything more is usually just wasted

Video Components to Consider

- **Length**
- **Frame Dimensions**
- **Frame Rate**: higher frame rate, more frames, bigger file size
- **High Movement:** Web video can be bumped down to 12-15 fps
- Talking head type of movies - 10 fps or less

Compression

- Two types of basic compression besides lossy and lossless:
  - **Spatial (intraframe)**
  - **Temporal (interframe)**

Spatial (intraframe)

- Occurs within an individual frame of a clip
- Looks for redundant pixel colors within the frame
- Best for video with a lot of movement with significant changes across multiple frames

Temporal (interframe)

- Based on unchanging data that occurs between frames
- Areas between the frames that do not change are omitted
- Uses keyframes to serve as the basis for frame comparison
- **Delta frames** are the frames in between that are compressed
- The more keyframes utilized, the better the accuracy but results lower image quality
- Best for video without a lot of movement

Prepping Video for Use

- Two basic methods:
  - Video capture
  - Direct download - using a digital camera with a USB or FireWire connection

Importing the Video – Step 1 – Select Video

- On your computer
- On a server, streaming service, or Flash Media Server

Importing the Video – Step 2 Deployment

- Progressive download from server
- Stream from Flash video service
- From Flash Media server
- As mobile device bundled into swf
- Embed video in swf
- Link Quicktime video

- **Note:** Make sure you are familiar with the specific nature of these options for your examinations

Embedding vs Streaming vs Linking

- **Embedding** integrates the movie into your swf
- **Streaming** requires Flash Media Server or a service running it
  - Here, each user opens a unique connection with a unique speed (requires much less bandwidth when people have slower connections)
- When **Linking** you have to export the movie as a Quicktime file (.mov)
  - **Linking Video:**
    - Have to publish the Flash file as a QuickTime version of the file

Problems arise with linking because

- Some ActionScript and other Flash objects will not work

- End user now requires the QuickTime player

Video Settings

- **Video Codec:** Sets either compression using either H.264, ON2 Vp6, or Sorenson Spark
- **Frame rate:** # frames that display for every second of playback
- **Key frame placement** – sets either custom or automatically placed intervals
- **Key frame interval** – Specifies the number of keyframes per frame of actual movie

Keyframes

- Determines how often a full, high quality frame will be captured and stored in the final file
- **Higher the value in the keyframe interval field, the fewer the keyframes you will have in the compressed video**
- Ex. At 24, Flash will import a full frame every 24th frame.

Keyframes

- If computer's processor is too slow to play all the frames in the movie, the playback will skip frames until it hits a keyframe
- The lower the keyframe value, the more keyframes are imported
- More keyframes allow users to fast forward or rewind more quickly
- Increasing keyframes also increases image quality through interframe compression
- Careful: The more you have, the larger the movie will become

In summary

- Greater the keyframe value:
  - fewer the keyframes
  - smaller the filesize
  - poorer the image quality
- Lower the keyframe value:
  - More keyframes
  - Increased filesize
  - Higher image quality
- **Note:**
  - Video on the Timeline can be removed as frames when embedded
  - Can also add frame labels if you wish

Video Clip Properties

- Do not resize the video inside Flash as it will not affect file size but can affect quality
- Swapping video clips allows you to create template files then swap them out with other video
- Be careful because swapping will not change the length of the timeline
- Can also update, import, and export clips in the library

Using the Adobe Media Encoder

- A problem with the video wizard
  - It can take a long time if you have a lot of clips to encode

- Use the **Adobe Media Encoder** to batch process your clips and add cue points

Revisiting Cue Points

- Again, established markers in the video that you can use to trigger other actions
- **Navigation cue points** insert a keyframe at that point in the video clip – used for navigating or locating the specified point in the clip
- **Event cue points** are used to trigger AS methods
- **Parameters** are sets of key/value pairs that get sent to the ActionScript methods triggered by the cue point
- We will discuss video more when we get further into ActionScript

Tips from Adobe

- http://help.adobe.com/en_US/Flash/10.0_UsingFlash/WS9222D73A-676D-41cd-9222-A4884858BBA3.html
- **Work with video in the native format of your project until your final output**
- **Strive for simplicity -** Avoid elaborate transitions—they don't compress well and can make your final compressed video look "chunky"
- **Know your audience data rate**
- **Select the proper frame rate**
- **Select a frame size that fits your data rate and frame aspect ratio**
- **Stream for best performance**
- **Know progressive download times**
- **Remove noise and interlacing**
- **Follow the same guidelines for audio**

For video tutorials about working with video in Flash, see the following

- Using video in Flash: www.adobe.com/go/vid0136
- Creating FLV and F4V files: www.adobe.com/go/lrvid4097_xp
- Using Adobe Media Encoder: www.adobe.com/go/vid0138
- Creating content for Adobe After Effects: www.adobe.com/go/vid0139
- Working with Flash and After Effects: www.adobe.com/go/lrvid4098_xp