

CGT 141/CPT 141 Lecture 23 Wk 14

Flash – An Emerging Technology

Example Sites

Why Flash?

- What is the biggest technical limitation today?
 - Bandwidth!
- 3 methods for making the web faster
 - *More Internet connection paths*, that is, changing the hardware infrastructure to allow more data traffic due to a greater number of networks through which the data can travel.
 - *Improving the bandwidth of connections* (usually on the end-user side), by improving the throughput of existing technologies, or creating new technologies, the Internet can be made faster.
 - Ex1: ADSL, Cable Modems, etc.
 - Ex2: Totally new networks such as the Internet2
 - *Pushing less data through the Internet*. By improving compression technologies and by creating new, lighter weight file formats (or by using already existing technologies in a new way, such as vector in Flash) we can improve speed.
 - This is the cheapest method!
- Vector data provides a valid way to decrease the data requirements of web materials by *pushing less data through the Internet*. This is fundamentally due to the extreme differences in data requirements of vector versus raster data.
- What are the negative aspects of vector data?
 - Aliasing
 - Creation time
 - Lack of photo realism (or the amount of time required to create photo realistic vector images)
- What are the advantages of vector graphics?
 - Number 1: small file size
 - Resolution independence
 - Variable color depth
 - Deal with objects, not pixels (both a plus and minus)
- Flash provides these advantages, while overcoming many of the disadvantages typically associated with vector graphics
- Is Flash the only solution?
 - It is the one solution with the widest distribution. As of December 2001, NPD Research (MediaMetrix) showed that 98.3% of web users can view Flash content immediately. This does not take into account version, but it is significant nonetheless. This is greater than even Java, which weighs in at approximately 91%. Source: Macromedia Web Site.
 - Only other competitor “on the radar” is Adobe LiveMotion.
- Web Standards for Web Graphics (Source: <http://www.w3c.org/>)
 - Web Computer Graphics Metafile (WebCGM)

- ISO Standard Format, typical of workstation class
 - Metafile – can store vector and raster data
 - Supported by some workstation programs
- Scaleable Vector Graphics (SVG)
 - Jointly created by Microsoft, Adobe, Macromedia and W3C
 - Competes with PDF more than Flash
- Vector Markup Language (VML)
 - Microsoft Attempt at Standard
 - Appears to be a dead end.
- Major Features of Flash
 - Small file sizes (assuming there are not large sounds or bitmaps)
 - Automatic (configurable) antialiasing (both authoring and run-time)
 - Scaleable (stretchable in browser), resolution independent (conforms to output device) with no file size change
 - Animation, permits frame-by-frame, tweening and morphing
 - Sound, imports wide variety of formats and allows ADPCM or MP3 compression.
 - Interactivity, provides facilities to create wide range of interactive UI elements.
 - ActionScripting. Full-fledged scripting language conforming to the JavaScript Core Language specification. Is morphing into more of a Java-like language than remaining with the limitations of a scripting language.
- Limitations of Flash
 - Extensibility.
 - Version 5 is designed to be extensible on the web, but is rather limiting for standalone application development.
 - Does not have the Xtra capability of Director.
 - Some “extensibility” features don’t work properly.
 - Real Movie output does not work.
 - Imported QuickTime movies do not function at run-time.
 - ActionScript is not mature (yet!).
 - Version 5 is the first version to be modeled after a standard. Although it conforms to the JCPL specification, many of the objects, methods and properties inherent to the browser are not directly accessible from Flash.
 - Many of the objects, methods, and properties you’d like access to may or may not be available.
 - True 3D not available in Flash.
 - Although Flash can use vector and raster images from 3D environments, it does not have a 3D engine.
- Integration with Other Packages
 - Import vector from FreeHand (particularly nice with FH9), Illustrator and CorelDraw!.
 - Import bitmaps from Photoshop, PhotoPaint, etc.
 - Import sounds from Sound Forge or other programs.

- Flash movies are portable to other programs, such as Director, Authorware. However, version supported is often a version behind.
- Integration with Other Technologies
 - CSS and DHTML
 - Partially competes with these.
 - Not really direct integration. However if a page uses normal HTML elements, plus a Flash movie, Flash will cohabitate with the CSS and DHTML without any significant problems.
 - JavaScript, VBScript, Jscript and ECMAScript
 - Flash can communicate with these client-side scripting languages using the Flash Player Methods. There are some “gotchas” in Netscape, however.
 - Java
 - Flash can communicate with Java and could be integrated into Java applets if so desired.
 - CGI, ASP and JSP
 - Flash can be used with these server-side elements.
 - XML
 - Flash can import and manipulate limited amounts of XML data. However, b/c the XML object in Flash is written with ActionScript (internally) there are some significant limitations.