

Audio on the Web

Web Design in a Nutshell, Third Edition

Chapter 33

Audio as internet medium

- If you start listening to an audio clip, it will be usually be finished downloading before you have finished listening to it.
 - Low cost of entry, e.g. the software is mostly inexpensive or free. A basic microphone and sound input on a computer will get you started.
 - Can be a very compelling medium that conveys ideas that pure words alone can't.
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Digital Audio Basics

- **Sampling Rate** — number of samples taken per second. Measured in kilohertz, with 8kHz being the worst quality and 48kHz being the best.
 - **Bit Depth** (sampling resolution) — the resolution of the amplitude or volume of the sound file.
 - **Channels** — usually mono (one channel) or stereo (left and right channels); can also be 5.1 or greater with left, center, right, rear right and rear left along with a subwoofer channel.
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Digital Audio Basics

- **Bit Rate** — Number of bits per second devoted to storing audio data. Examples include 56kps (modem) and 256 kbps (dsl), which are essentially how quickly someone can download the files over those types of connections.
 - The length of the clip, the number of channels, the bit depth or quality, the sample rate and the format all contribute to how large the files and thus their overall bit rate.
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Streaming Audio Formats

- **Quicktime** — Introduced by Apple in 1992, Quicktime started off as a video format for CD-ROMs, and is the default plug-in used by Macs to play audio files. Quicktime is also the engine behind iTunes on both Macs and PCs.
 - **Windows Media** — Although Windows had long been able to play audio formats, Microsoft borrowed code from Apple that let them get the jump on Real in the streaming audio markets.
 - **Real Audio** — the original streaming audio format, it is rarely used today because of the high price of its servers.
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Non-Streaming Audio Formats

- **WAV/AIFF** — High quality uncompressed audio formats that are suitable for original sound, but not for publishing on the web in most cases.
 - **MP3** — MPEG-1, Layer III files, which are part of the MPEG standard. Most popular format for both downloadable audio and streaming audio because of its high compression rates that result in smaller file sizes.
 - **MIDI** — Not exactly an audio format, Musical Instrument Digital Interface files are instructions for playing back musical notes using computer instruments or special musical instruments.
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Non-Streaming Audio Formats

- **AAC** — Advanced Audio Coding format that was developed by the MPEG group as an improvement on MP3. Part of the MPEG-4 standard, it is the default format for iTunes and the iPod with both standard (m4a) files and copy-protected (m4p).
 - **RA** — Real Audio was the first audio format where the file sizes were small enough to be played back over a modem connection. It still requires a special plug-in to play back in a browser.
 - **WMA** — Windows Media Audio files are Microsoft's answer to Real and to Quicktime, but generally only play back on Windows without installing extra software.
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Delivering Audio via the Internet

- As noted previously, all computer platforms have mechanisms for playing standards-based audio in the browser.
 - If you have a relatively short static clip, such as a greeting, background noise, etc., then a static downloadable mp3 file is probably the way to go.
 - If you have a recurring audio program, such as a radio broadcast, then a streaming server is the way to go.
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Downloadable Audio via the Internet

- To add downloadable audio to your site, copy the file to your directory and then link to it using a standard anchor:

```
<a href="path/to/someaudiofile.mp3">My Audio  
File</a>
```

- For that to work, the server must be configured correctly for mp3 files, but today all servers come configured that way.
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Background Audio On A Web Page

- Downloadable files can be configured to play via a plug-in:

```
<embed src="path/to/someaudiofile.mp3"  
autostart="true" hidden="true"></embed>
```

- The embed tag has been deprecated on the Windows platform because of its problems with computer viruses and malware and so you should avoid using it.
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Streaming Audio On A Web Page

- Streaming files pointing to a server that play via a plug-in:

```
<object width="425" height="350"><param name="movie" value="path/to/someaudiofile.mp3"></param><param name="wmode" value="transparent"></param></object>
```

- That's a YouTube example, but similar coding could be used to point at a Quicktime, Real Media or Windows Media streaming audio server.
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Digital Rights Management

- In addition to legal copyright restrictions, some online music you purchase has restrictions on how it can be used that is required by record companies before the music can be sold.
 - All major formats have some DRM restrictions, including Quicktime/MPEG-4/iTunes, Real Audio and Windows Media.
 - These restrictions limit your ability to copy the audio files, make copies on CD or share with other computers in your house or on your network.
 - In general, DRM is a mess.
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Apple's iLife Suite

- iLife has been upgraded and enhanced over the last several years. It includes these applications that we'll be working with in this class:



iTunes



iPhoto



GarageBand

Apple's iLife Suite

- It also includes these applications:



iMovie HD



iWeb



iDVD

- Of those, we'll look at iMovie HD in the next class. iWeb isn't appropriate for our use and iDVD has nothing to do with this class.
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iTunes



- iTunes originally was an MP3 organizer called SoundJam that Apple bought from a third party developer in 2001 so people could rip their CDs into MP3 format and copy them to MP3 players made by companies like Creative Labs.
 - Later, in 2001, Apple introduced the iPod and iTunes was the default way to manage content on the iPod. On the Windows platform, iTunes only works with the iPod.
 - On April 28, 2003, Apple introduced the iTunes Music Store for Mac users; it was such a hit that they later made it available for Windows users in 2004.
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iTunes



- In July 2005, Apple added support for Podcasts so that you could subscribe to audio files that were automatically downloaded when new files appeared.
 - In September 2005, video was added to iTunes so you could buy TV shows and watch them on the new video capable iPods.
 - In September 2006, Apple added support for higher resolution video so that you could buy near-DVD quality movies.
 - In 2007, Apple added the iPhone and iPod Touch so you could play music via wireless internet connection.
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iTunes



- As of September 2007, iTunes had been downloaded more than 600 million times, more times than Firefox.
 - As of Tuesday, The iTunes Music Store is now the second largest music retailer behind only Wal-Mart with 50 million customers.
 - The iTMS offers 6 million songs with more than 4 billion songs sold since it was launched in 2003, including a billion songs in just the last six months.
 - In January, the iTMS began offering movie rentals from all the major studios with more than 1000 titles, including 100 in HD via the Apple TV device. The service also offers Ringtones for the iPhone, games for iPods and will soon offer software for the iPhone and iPod Touch.
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A Few Popular Podcasts

Wordpress Podcast — News About Wordpress

[Go there in iTunes](#)

Left, Right and Center — Politics from KCRW in Santa Monica

[Go there in iTunes](#)

O'Collegian Podcast — Newspaper

[Go there in iTunes](#)

iPhoto



iPhoto

- In January 2002, Apple introduced iPhoto as a free download from Apple's site.
 - iPhoto is an application for managing and publishing digital photographs.
 - Each year since 2002, it has been upgraded as part of the annual iLife suite of applications with new and improved features coming each year, including photocasting, a sort of podcast for digital photos.
 - It is a great tool for keeping your web graphics organized.
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Garageband



- In January 2004, Apple introduced Garageband as part of the iLife '04 suite. It was designed as software for amateurs to easily create music.
 - In January 2005, it was upgraded to add more polish to the package.
 - In January 2006, a "Podcast Studio" was added to allow people to more easily publish podcasts on the internet. This version includes 200 effects and jingles and it also integrates with iChat so that you can record audio interviews on the net and publish them as a podcast.
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