

Audio on the Web & for your Class Audacity



Introduction to Audio on the Web

Description:

Listen Up: Audio on the Web and for your Class

Do you know what podcasting is? Do you want to be able to find and listen to audio in areas you're interested in? Do you want to be able to create audio lectures to post on the Web for your students? Learn the basic formats of audio and how to create your own audio recordings using Audacity, a free software application. Then learn how to share that audio with others.

Prerequisites:

Familiarity with surfing the Web

Objectives:

Participants will:

1. Explore online sources for audio and podcasts
2. Record and perform basic edits to an audio file in Audacity
3. Export the recording to mp3 format

Resources:

The following programs are available for Windows or Macintosh OS X operating systems

Applications

- Audacity (free download): <http://audacity.sourceforge.net/>
- iTunes (free download) : <http://www.apple.com/itunes/download/>
- iPodderX (only Lite version is a free download) : iPodderX Lite v. 2.2.9 is still available at Version tracker (<http://www.versiontracker.com>). As of June 3, 2005 iPodderX 3.0 is \$24.95

Headphones & microphones:

- Koss CS/95 Computer Communication Headphones \$10 - \$20
- Koss M-18 microphone \$9 - \$20
- iSight can also be used to record sound on a Macintosh

Short Audacity Tutorial

On Educause find a tutorial on Audacity – Requires free Educause Login
<http://www.educause.edu/Screencasts/Audacity/Untitled.html>

Podcasting:

What is a Podcast?

Podcasting" is making audio files (most commonly in MP3 format) available online in a way that allows software to automatically download the files for listening at the user's convenience (Wikipedia:

http://en.wikipedia.org/wiki/Main_Page

Where do I find Podcasts?

1. Podcast Alley <http://www.podcastalley.com>
2. Podcast Directory <http://www.podcastdirectory.com/>
3. Podcast Net <http://www.podcast.net/>
4. Alachua County Library District – Free Audiobooks in wma format with DRM - <http://www.acl.d.lib.fl.us/> (need library card to login)
5. Creative Commons - <http://creativecommons.org/>

6. OYEZ - U.S. Supreme Court Multimedia
<http://www.oyez.org/oyez/resource/nitf/273/>
7. Lawrence Lessig's Free Culture Book as downloadable mp3
<http://akma.disseminary.org/archives/001256.html>
8. Lawrence Lessig's Free Culture Book as streaming mp3 (m3u)
<http://www.turnstyle.org/FreeCulture/>
9. Digital Media: Instructional Technology Podcasts
<http://blogs.dmit.asu.edu/podcasts/>
10. Speech Accent Archive - <http://classweb.gmu.edu/accent/> A sample of 435 speech samples to hear the accented speech of speakers from different language backgrounds read the same sample paragraph in English. An audio project from George Mason University. Also linked from the Creative Commons Website.

**** Example from Podcast Net

Home > Learning & Instruction > Education
http://www.podcast.net/cat_47_#23 – Learn to Sing

**** Compare to

San Francisco Chronicle Podcast http://www.podcast.net/cat/219_#5
Plays in Quicktime and you can control where it downloads

If you go to <http://sfchroniclebiz.blogspot.com/2005/05/from-d-all-thingsdigital-chat-with.html> Downloads then play on your machine

Using Aggregators:

Aggregators are news feed readers such as AmphetaDesk and Newsgator (Win) or Netnewslite (Mac). RSS (Really Simple Syndication) feeds will give you a quick read of the latest news. An example of an aggregator designed to pull audio, rather than just text files to your desktop, is iPodderX
<http://ipodderx.com/>



How do I make a podcast?

There are two major steps to making a podcast.

1. Record your own mp3
2. Post that mp3 on a blog or webpage for others to retrieve

File formats Matter:

An extensive list of file formats are available at The Sonic Spot

<http://www.sonicspot.com/guide/fileformatlist.html>

Below are some current file extensions related to music, sound that you would see in 2005. Listed alphabetically (except for the first one):

AAC vs. WMA

.AAC = Macintosh open standard with licensing fees; the audio portion of the mpeg4 codec. Has a fairplay DRM mechanism. Currently can be converted to another format (i.e. mp3) with effort.

WMA = Microsoft, not open standard. Contains **DRM (digital rights management)** iPod does not play WMA. The embedded DRM prevents

wma from being converted to another format such as mp3.

.aiff = audio Interchange Format File (or aif) Macintosh default sound file

.asf = Microsoft advanced streaming format

.au = Sun/Next audio file

.avi = Microsoft audio video interleave file

.cda = CD Audio Track

.mid = standard midi song/track info

.mpeg = moving picture experts group (.mp1, .mp2, .mp3)

.mp3 = most likely to play on any player or computer; The file extension for MPEG, audio layer 3. Layer 3 is one of three coding schemes (layer 1, layer 2 and layer 3) for the compression of audio signals. Layer 3 uses perceptual audio coding and psychoacoustic compression to remove all superfluous information (more specifically, the redundant and irrelevant parts of a sound signal. The stuff the human ear doesn't hear anyway). Because MP3 files are small, they can easily be transferred across the Internet.

.mp4 or mpeg4 = QuickTime or Windows Media Player will play

.m4a = mpeg4 offshoot

.m3u = **MPEG audio stream**, a metafile. Essentially text files that list one MP3 on each line with full path or URL to the file. If the .m3u file is loaded to an MP3 player, the player normally plays the list of media files in the order they are listed.

.ogg = Ogg Vorbis – requires special players or plugins for playing depending if you are using Windows, Mac, Palm OS, Pocket PC or Linux operating systems. Comparable to mp3 and aac formats in quality.

PCM = Pulse Code Modulation - a sampling technique for digitizing analog signals, especially audio signals. PCM samples the signal 8000 times a second; each sample is represented by 8 bits for a total of 64 Kbps. There are two standards for coding the sample level. The Mu-Law standard is used in North America and Japan while the A-Law standard is use in most other countries.

.ram = RealNetworks RealAudio Metafile
.rm = Real Media; needs Real Media Player; cannot be played on mp3 players
.snd = PCM raw audio, Macintosh Sound Resource
.wav = Windows native sound file
.wma = Windows Media Audio – Digital Rights Management DRM 10
.wmv = Windows Media Video

How does audio get digitized on your computer?

Your computer has a soundcard - it could be a separate card, like a SoundBlaster, or it could be built-in to your computer. Either way, your soundcard comes with an Analog-to-Digital Converter (ADC) for recording, and a Digital-to-Analog Converter (DAC) for playing audio. Your operating system (Windows, Mac OS X, Linux, etc.) talks to the sound card to actually handle the recording and playback, and Audacity talks to your operating system so that you can capture sounds to a file, edit them, and mix multiple tracks while playing.

Rules of Audacity

1. One clip per track

A clip is simply a piece of audio material. Imported, recorded, split or duplicated from another track, one track can only carry one piece of audio at a time. You can extend it by pasting material or inserting silence in to it, or cut a piece away, but it will always be one continuous piece of audio.

2. Audacity always records to a new track

This new track is opened at the bottom. You'll have to zoom out and then resize the track view of the bottom most track to see what is recorded. You can actually use the window sliders at the bottom and right to do this after starting to record, but this way no performance will be lost to the windowing system.

I suggest hitting CTRL+F to get an overview of the entire project as well. This only affects the horizontal zoom by the way(left-right zoom). There is no way to zoom out vertically without using the mouse yet.

3. Edit/Duplicate will not create a new audio file

This may not seem a big deal, but it is if you're editing a large live recording.

What Audacity does is reference the original audio material until you actually perform some kind of edit on it, such as cutting a piece away, or using any effect on it. One thing to remember is the **UNDO** function. You can undo/redo stuff as many times as you like, and yes, even after you have saved your project.

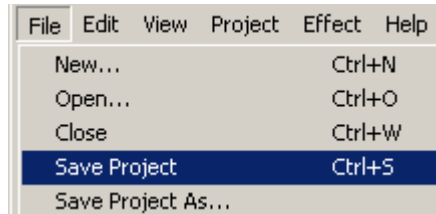
You may ask what happens if you do, for example, cut away a piece or mark off a 30 minute piece and split it to a new track. It only writes changed data to disk. Since Audacity works with chunk of audio data of around one megabyte in size, this happens quite fast. Rest assured that the only big waiting period might be the importing of large audio files.

Setup, Audio Import and Playback

1. Create a new project

This is very important!

Audacity writes all the changed and recorded audio to a directory called **Projectname_data**, which is located right where you saved the project file itself.



Thus, select **Save Project** and choose a location and filename for your project.

Please note that when you startup Audacity fresh, only the **"Save As..."** menu option is available.

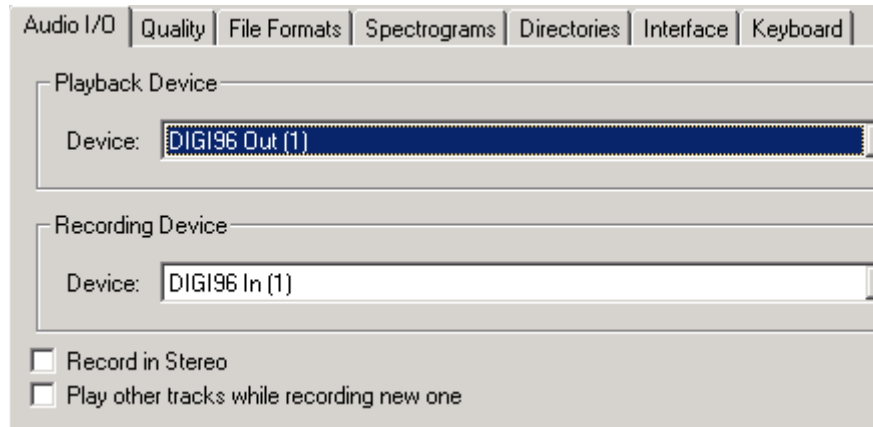
To save your project later on, you can also use the keyboard shortcut : CTRL+S

2. Check the Preferences

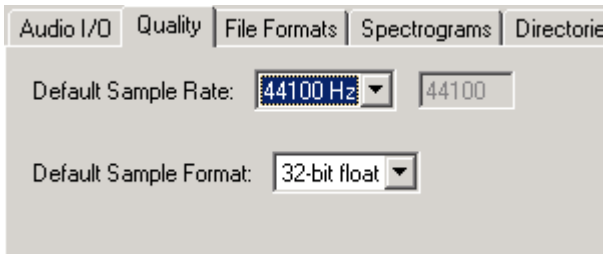
Again, this is very important!

Press CTRL+P or go to ...

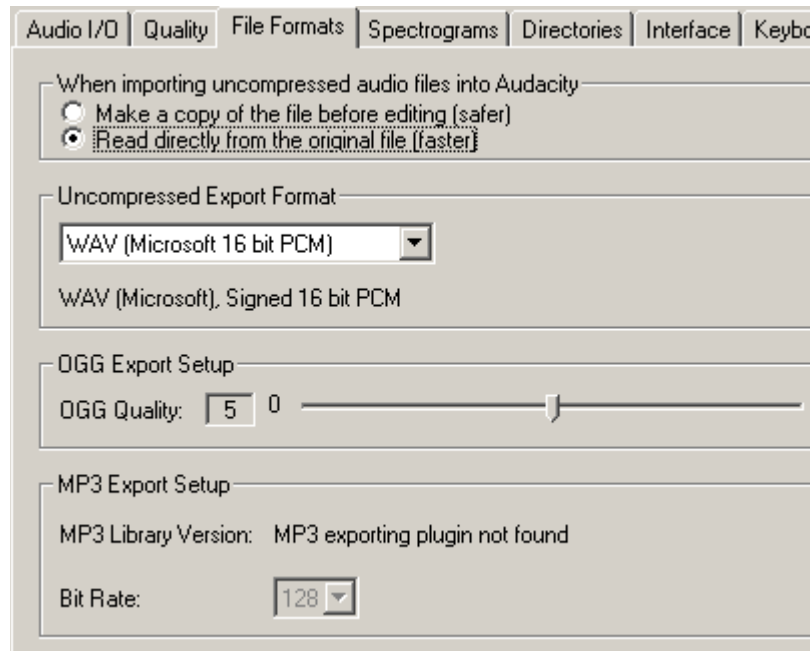
...then check if the right output is selected :



...set the sample rate of your choice...
(44.1 kHz is the default)



...and here's a crucial screen :



The *File Formats* settings need discussing at this point.

When importing uncompressed audio, there are two ways to do it. "*Make a copy of the original before editing*" means, that Audacity actually copies the entire audio file that you imported in to its project data directory and in the process sets up the little overview graphics, whose descriptions get stored in the project data directory too.

The second way is to use the original imported audio. You may think we're actually editing this file, but no we aren't. In fact, Audacity will now read the imported file once and simply create the graphics overviews for them in to the data directory, and subsequently write to disk all the audio data that you change. The original file is only used for playback. All audio that remains unchanged will be played from the original file.

The advantage of choosing to make a copy of the original is that you avoid trouble, should **anything** in the original file change.

For example, should you accidentally delete the original file, you're lost.

You have to make up your mind before you start a project. Choose to make a copy of all imported files, and you'll use more space on your harddisk(s), but it will be easier to back up the project too, because all files that have anything to do with your project will be in the project data directory.

The *Uncompressed Export Format* can be set to WAV or AIFF for now.

We'll ignore the *Spectrogram* settings for now. The *Directories* setting can be ignored as well for now, because all it sets is the directory to use for recordings, undo data and other stuff, if you haven't yet saved your project. Since we already saved our project, this setting is of no importance to us, though you may want to set it properly later on.

3. Import an audio file

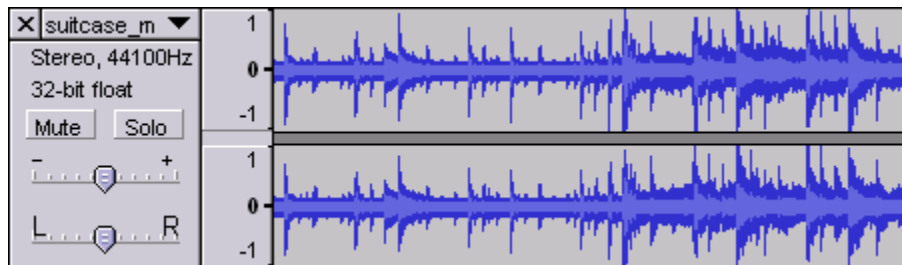
There are three ways to do this:

1. Simply drag and drop the audio file in to the Audacity window. (If you're using Mac OS 9 or X, drag the audio file to the Audacity icon instead...)
2. Select *Import Audio ...* in the Project menu.
3. Use the keyboard shortcut : CTRL+I

Audacity can import WAV, AIFF, AU, IRCAM, MP3 and OGG files. Please refer to the [fileformats page](#) for further reference on these audio formats.

4. Playback


The imported file should now be displayed in an audio track. The track will look a little like this, depending on what you imported :



Trackpanel and Waveform Overview of the imported Track

If you're not sure where to find audio material, simply rip some off a CD, or in Windows, check the Media folder in the directory of your Windows installation.



Now click on the green Play button  at the top and you should hear the file you have just imported

Let's Get Busy!

- Open the file *Gettysburg1.wav* and listen to the file.
- Let's cut out the intro as we will create our own later.
- Click on Main Menu bar PROJECT, and then IMPORT AUDIO
- Let's open the second half of the address by opening the file *Gettysburg1a.wav*
- Mute the first track and listen to the second.
- Select the whole second track and copy.
- Put the cursor at the end of the first track and paste.
- Select the knock at the door section and delete it (right before 1:15 on the timeline)
- Close second track.
- We will now open the background music file.
- Click on Main Menu bar PROJECT, and then IMPORT AUDIO
- Select the Battle Hymn Of The Republic.wav
- Use the ←→ Time shift tool to move the beginning of the Battle Hymn to begin at 30 seconds.
- We will now record our own intro.
- Hit the record button (a new track will automatically be created) and introduce yourself and the presentation and then click the stop button on the toolbar.
- Once you have made a satisfactory recording, we will edit the first track to begin after the intro.
- Use the time shift tool to move track 1 over so that your intro will be heard first.
- Move the second track over so that it begins to play 30 seconds after the address begins.
- Listen to the timeline from the beginning to be sure the timings are correct, adjust as necessary.
- We will now save the project so that we can come back in and edit later if necessary (like a psd file in Photoshop).
- Click on Main Menu bar, FILE, SAVE PROJECT AS
- It will create a master folder for the project data.
- Now that we have our master project file saved, we can export as a wav file to use in a PowerPoint presentation.
- To save as MP3 for the web; click MAIN MENU BAR, FILE, EXPORT AS MP3

There are many other features built in to Audacity and plug-ins are available on the web as well. We have at least covered some of the most common uses of audio files. For additional tutorials, go to the Audacity website at:

<http://audacity.sourceforge.net>