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Digital Editing with Audacity 2.0.0

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Content

Download: www.mediensyndikat.de
English Translation by Susan Jones and Jan Aniobi

1. The programme

Open-Source

Audacity is free open source software for editing sounds on several tracks. Audacity can record, play and edit words and music. WAV, AIFF, MP2, MP3, FLAC and OGG audio files can be imported and exported. It uses common operations such as Cut, Copy and Paste and unlimited Undo. It can mix and add sound effects and adjust volumes in a simple manner.

Versions

Audacity is being developed by a worldwide network of programmers. Currently, the latest version is 2.0.0. It is available for numerous operating systems and platforms such as Windows (98 up to and including Windows7), Mac OS X and Linux/Unix.

Support

See http://forum.audacityteam.org/

2. Download and installation

Download

You can download Audacity at http://audacity.sourceforge.net/download/, which also offers some basic information and instructions, specifically the source code. Make sure you download the version appropriate for your operating system. Installing Audacity for Windows and Mac OS follows the usual installation routines. Many Linux distributions include Audacity. Sometimes, however, they are older versions of Audacity.

Audio-Codecs

In order to generate mp3-files directly from Audacity, it is necessary to install the 'lame MP3 encoder' – for licensing reasons it is not preinstalled and needs to be downloaded separately. Go to http://audacity.sourceforge.net/download/, where you can find out about where to get lame for Mac OS and Windows; it's also possible to download and install the required encoder directly from Audacity by following the path `Edit > Preferences > Libraries`. Lame for Linux is easy to install, too. It can be found as a ready-to-use rpm package at http://packman.links2linux.de/. There you can also read up on the official license agreement and find important hints as to which package suits which Linux installation. For Ubuntu-Linux there is a lame package in the multiverse repository.

After installation of the FFmpeg libraries **(**`Edit > Preferences > Libraries`**),** Audacity will support various other formats and codecs, including proprietary formats such as AC 3 , WMA and M4A (MP4) .
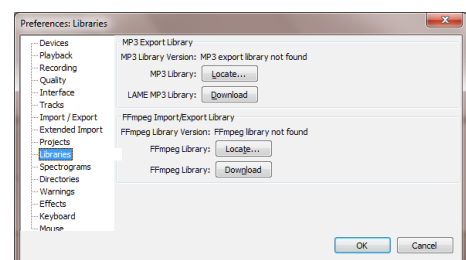
Adaptations

To work conveniently with Audacity, some adaptations should be made under `File > Preferences`:

➔ Under `Libraries` the lame MP3 encoder should be included by pressing the button `Find Library`. For Linux the file should be called libmp3lame.so, for Windows lame_enc.dll. It makes good sense to choose a rather high bit rate (e.g. 160/192/256) here so that you can save files on the local hard drive or on the local web in high quality. To publish productions on the internet a lower bit rate should be used, however (see chapter *Saving* for details).

➔ Before editing, the `Import/Export` options should be set to safer mode by ticking `Make a copy of uncompressed audio files before editing`. This ensures that audio files you are using – and that might be spread out across your hard drive, flash drives and an MP3 recorder – will be saved within the project. This prevents annoying data loss.

➔ When it comes to saving project data, similar settings should be chosen for the same reasons. Under `Projects` check `Always copy all audio into project`.

➔ Under `Tracks` check `Update display while playing`, so the current location of the cursor will always be visible.

➔ Under `Interface` you can choose a language for the menus to appear in. One of the advantages of Audacity: 30 languages are already included and more are added regularly.

➔ `Keyboard` allows you to select some useful keyboard commands, e.g. Plus and Minus for zooming in and zooming out. Many commands are preinstalled as keyboard shortcuts. For quick working, a look at the assignment of keys is recommended; you can find a list at the end of this handbook.

➔ Under `Tracks` the option `Enable cut lines` should be activated (see chapter 6) .

3. The first recording and playback

Recording and modulation

Audacity opens with the track area empty. As soon as recordings are made or already existing audio files are opened, new tracks are generated. If your computer has a working audio configuration, you can start recording by pressing the red `Record` button. The output level is controlled with the slider with the microphone symbol, input selection (e.g. Line, Mic, etc., depending on the soundcard) is done with the pop-down menu next to the output slider. Audio devices such as MD players should always be plugged into the Line In of the sound card, because plugging them into the mic input may easily lead to overmodulation. The quality of a recording can be checked conveniently on the modulation display, which should not be over -6dB. The monitor function also allows you to pre-listen: a click on the modulation display - before recording - shows you the input level. Click the `Pause` button to interrupt the recording, click `Stop` to stop recording. (Note: when the `Pause` button is pressed, Audacity is completely blocked!) Further recordings initially generate a new track, so that accidental erasing of previous recordings is ruled out. Press `Shift` and the `Record` button **or** `Shift + R` at the same time to continue recording at the current cursor location (can be done on the same track, but in this case be careful to position it after existing takes, at the end of the track).
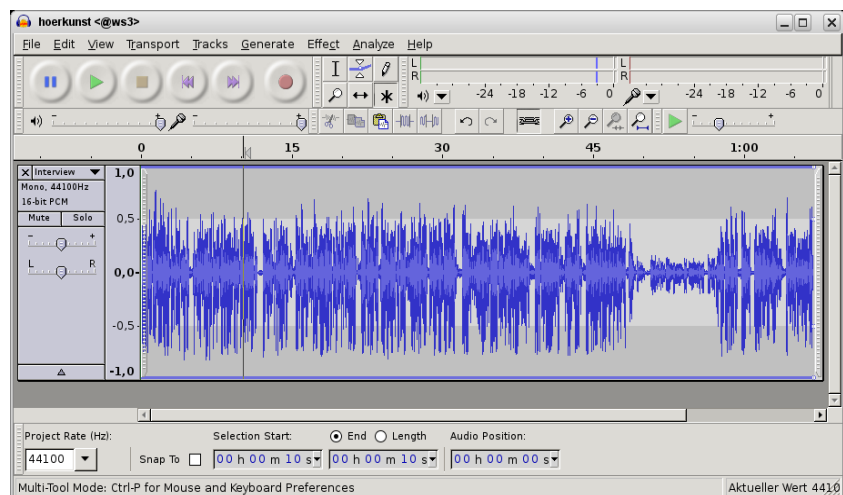
Playback

You can start, interrupt and stop the playback with the familiar symbols found in the playback tools taskbar at top. It is easier to start and stop by pressing the `Spacebar`, and for a pause in playback simply tap the `P` button on your keyboard. (Note: when the `Pause` button is pressed, Audacity is completely blocked!)
If it is necessary to quickly listen through the entire audio, click the ruler with the time allocation; Audacity will continue playback from the chosen cursor position.
Pressing `Shift` and `A` stops (and starts) playback without the cursor skipping back to the beginning of the track.

Rapid Playback

As described, by clicking the time line, playback can be started instantly without affecting selected playback areas.
Fast forward is possible as well. During playback, tap `Cursor right` on your keyboard to skip a few seconds. To adjust the length of the skipped intervals, go to `Edit > Preferences > Playback.`

Another convenient function is play-at-speed ("Mickey Mouse" effect): with the transcribing tool (which can be activated via `View > Toolbar`) you can accelerate (or slow down) the playback tempo. Set the desired playback speed with the slide bar and then start playback by clicking on the small green arrow button.

4. Importing Audio

| Importing | Audacity imports audio in the WAV, MP2, MP3; AIFF and OGG formats. Select `Project > Import audio` to integrate already existing material in a project window opened for that purpose. If new audio is imported, it automatically goes to a new track.
Since Audacity 1.3.6 ,the FFmpeg libraries allow the use of numerous other formats. See Chapter 2 for details. |

Select `File > Open` to open a new project window and copy back and forth between the project windows. This way you can edit raw material in a separate environment and then copy and paste it into the overall project. It is also possible to drag and drop audio files directly from the file manager of your operating system into Audacity projects.

5. Adjusting the view

Horizontal view

Before starting to work with audio, a suitable view should be chosen: press `F11` to switch to full screen. To adjust the audio along the horizontal axis (zooming in and zooming out) it is common to use the + and – keys on the number pad. See chapter 2 for keyboard commands. Alternatively you can change the horizontal scale with the mouse wheel while keeping `Ctrl` pressed. And finally you have buttons to zoom in and zoom out and fit the project or a selection into the window.
You can fit a selection into the window even faster by drawing the mouse over it while keeping the right mouse button pressed. Check the functions of all Audacity buttons by resting the mouse on them without moving or clicking. To find the ideal setting for the whole project, press `Ctrl` and `F.`

Vertical view

You can change the scale of a track along the vertical axis with the mouse. The mouse pointer takes the shape of a double arrow at the edge of the waveform and can change the size of the track along the vertical axis. Press `Ctrl + Shift + F` to optimise the adjustment for the overall project.
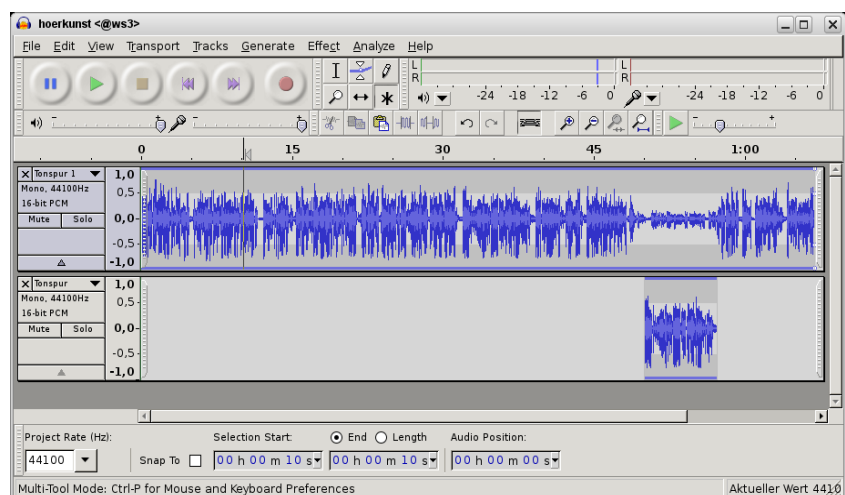
Each track has a small triangle symbol at the bottom of the label (heading), click on it to reduce or enlarge the view on the sound track .

You can increase the scale of a particular part of the waveform by mouse-clicking the vertical scale in the label. Hold down the `Shift` key to decrease the size step by step. For the actual levels open the track menu with the arrow in the label and choose `Waveform.`

Label track

A label track helps you to avoid getting lost in your own material. It can be used to set markers and to mark and assign names to entire passages of audio material. Select `Tracks > Add New > Label Track` (alternatively: `Ctrl + B`) to create a label track, if you want also setting a marker at the spot where the cursor was last standing. If an entire audio passage was highlighted, the marker will apply to that whole stretch of the label track. In either case, you can type in text relating to the spot or the passage. As long as the cursor is positioned in the label track, keyboard entries will directly generate text markers. You can also import content out of a text file into the label track. The text entries can later be moved around with the mouse. To erase a text marker, empty the text field completely.

During recording or playback use `Ctrl + N` to set a new marker. This can be used while recording to structure long recording sessions like press conferences or lectures in real time: you can type names or short notes about the content into the label track. But be careful : make sure that you are working in the label track, otherwise using the `spacebar` will stop the recording!

Toolbars

The overall view of Audacity can be modified. At the left side of each toolbar you can find a separate bar: resting the mousepointer on it will indicate the function of the tool. But you can also use it to detach and relocate toolbars.

6. Editing with the multi-functional toolbar

Multi-functional mode

[*]

For speedy and easy cutting, the multi-functional mode is essential: when it is activated, all common work steps can be realised without adjusting tools. The following explanations assume that the `Asterisk` button is activated. This means that, with the multi-functional tool, the mouse can perform three different functions – depending on its current position on the waveform. Using the remaining tool buttons, you can turn other editing functions on and off at will.

1ˢᵗ function:

Creating a range (serves as selection tool)

[I]

When the mouse pointer appears as an insertion point (in multi-functional mode on the waveform), click and drag to select a range of audio and edit it – "grabbing" as many tracks as you want. It is often necessary to adjust the boundaries of a clip at a later time. To do so, move the mouse to the edge of the clip. As soon as the insertion point changes to an arrow you can move the boundaries. Or simply `Shift + Click` a new point in the track to redefine the boundaries. `Shift + Pos1/Home` or `Shift + End` mark the selection up to the beginning or end of the track, just like in text processing programmes. The beginning, end and length of a selection are indicated in the status bar in the lower area of the Audacity window. Playback will only play the selected range.

A click in the empty grey background area in the label will mark the whole track. Double-click a clip to mark it. Mark the whole (multi-track) project with `Ctrl + A`. The area between the cursor position and another position can be marked with `Shift + Click`. Click on the timeline for playback from any position without deleting the selection.

Play Cut Preview

Using this function is very practical. If the `C` button is pressed (resp. the playback button while holding `Ctrl`) the cut is simulated: you can listen to a range of a few seconds before and after the cut region, omitting the marked section. To set the length of the cut preview area, go to `Edit > Preferences > Playback`.

Playback towards or from range border	It is possible to play to the range border or start from it by initiating playback with the `B` button. Depending on the current cursor position, playback starts at the range border or goes towards it.
Saving the position of a region	The exact position of a region on the time axis can be saved and restored. Go to the menu items `Edit > Region Save` or `Region Restore.`
Copy, paste, delete	The clip can only be edited with such standard commands as `Ctrl + C` to copy into the clipboard, `Ctrl + V` to paste, `Ctrl + X` to cut and the `Del` key as well the corresponding buttons in the upper window area. Deleting Audio with the `Del` key or `Backspace` does not generate any cutlines! If working with several tracks; a range can be marked and deleted across multiple tracks too. If it is necessary to delete particular segments – for instance in track one and track three without affecting track 2 – the following procedure is recommended: select the range in track one, select track 3 with `Shift + Click` within the label (heading), then delete with `Ctrl + X`. Audio can be pasted as described from the clipboard into any track, including tracks in other Audacity windows. However, the entire audio should be in the same sampling frequency, usually 44.1 kHz.
Align tracks	It often makes sense to edit in multiple steps, especially when working on a sophisticated production. To avoid accumulating more and more tracks and losing the overview, it is helpful to align audio from different tracks. Under `Tracks > Align` you can combine the entire audio of selected tracks into one track.
Cut lines	Working with the "cut lines" function activated provides the significant advantage that after you have deleted an audio section from a clip, a line indicates the location of your edit. Clicking on this line at any later time will undo the edit, so that the deleted material is restored. However, this function has to be activated in advance via `Edit > Preferences > Tracks.`

|	
2nd function: Moving audio around (changing location of segments) ↔	To move an audio segment from one spot to another, you can grab it (in multi-functional mode) while holding down `Ctrl` and move it around. Several segments on different tracks can be moved collectively if they have been selected as a group. The audio material of an entire track can be moved around when `Ctrl + Shift` are pressed. When moving a segment to the beginning of a track, it is easy to go too far, so that the material disappears into the "nirvana" left of the zero line. You can correct this via `Tracks > Align tracks > Align with zero`. To separate clips, use the function `Edit > Split` or the shortcut `Ctrl + T`; this creates a second clip beginning where the cursor was positioned. This also works in reverse: moving two clips together and then clicking on the contact line that separates them will make them into one clip.
Sync-Lock	The function `Sync-Lock Tracks` connects tracks along the time axis so that an action in one track (for example, an edit) will affect the others as well, and your timing remains intact. This means that if you delete or insert something in one track, the material on the other tracks will also be moved back or forth. Forming a group of tracks like this will work down as far as the label track, if you have one, and the tracks being treated synchronically are marked with a symbol in the header of the track.
3rd function: Volume points (envelope tool)	Volume points can be created on the border between the waveform and the slightly darker area. See the following chapter, *Volume regulation*, for details.

7. Volume regulation

Five options

The volume can be adjusted for a whole track, within a track on the waveform and automatically:

1.

Label

There is a volume slider in the label which adjusts the volume for the whole track in 3 dB steps. Hold `Shift` to make 1 dB steps.

2.

Volume points

If, as suggested in chapter 6, the multi-functional mode is activated, you can adjust the volume with volume points in the waveform. On the border between the lighter and the darker grey areas, the mouse pointer changes into two white triangles. Keep the mouse button pressed to create a point and modify the volume curve. You can shift the volume points at a later time or delete them by moving them outside the track area.
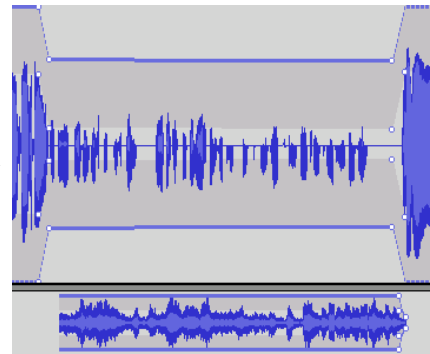
3.

Fading

It is common that an audio take – for instance a recorded quote – may begin or end with a fade. The quickest way to create a fade is going to menu point `Effect > Fade in` (`Fade Out`), after having selected the audio passage. The only disadvantage compared to fading with visible volume points: it is not possible to edit the fader curve at a later time.

4.

Auto duck

It's very practical to use `Effect > Auto Duck` when working with recordings in a foreign language: the fader curve within a selected range of a track is controlled by the audio on the track beneath. With just a few clicks the original language recording is faded low wherever a translation should be above it.
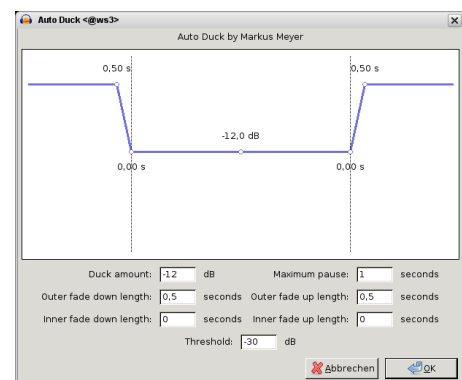
5.
Amplifying

With `Effect > Amplify` you can gradually increase the volume of marked ranges or a whole project. Mark a whole project with `Ctrl + A` . To be on the safe side, select a peak amplitude of approx. –1 dB for one-track projects, because some appliances react unpleasantly to fully amplified audio. Alternatively, choose `Effect > Normalize`, which has –3 dB pre-selected. To avoid overmodulation in multi-track projects, it often makes sense to stay several dB below full amplitude (0 dB) because levels from different tracks add up and the effect options only calculate the levels within the individual tracks.

All volume settings are maintained when exporting. But be careful: Tracks that are muted in the label (new as of version 1.3.4), can't be heard after export into a new file.

8. Saving and exporting

Several options

Initially, you can create and save (multi-track) projects with Audacity, then re-open them with Audacity at any time for further editing. But you can also export audio segments or an entire project into files that are in various other popular software formats.

Save project

`File > Save Project/As...` saves the current Audacity file. The directory stores a file with the name ending in *.aup. `File > Open` brings the project back onto your screen for further editing. The audio is stored as small linear audio files (*.au , Sun-audiofile) in a sub-directory of the same name.

Audacity 1.3.2 introduced the auto-save function: Audacity saves the project in the background at regular intervals. To enable this function or adjust the intervals go to `Edit > Preferences > Projects.` If Audacity or your computer crashes, the next time you start Audacity it detects that the project was not saved manually and asks you whether the project should be restored. If there are damaged files, Audacity repairs them on request.

Compressed saving

As of Audacity 1.3.7., projects can be saved in compressed form. Track by track, the audio is saved in *.OGG format at the chosen bit rate. The advantage: the project data will be reduced in size and usually requires a tenth of the original storage space, depending on the bit rate. The disadvantage: now the cascading effect (see next passage on 'Export') becomes significant on the project level, as well.

Export into MP3 , OGG M4A, WMA ...

The `File` menu also offers export functions. `Export as` mixes entire projects to an audio file, `Export` creates an audio file from the part of the project – in one or more tracks – that has been selected. You can export projects into WAV (in a linear fashion) and into data-reduced formats such as MP3 and OGG. The data reduction bit rate can be pre-selected in the `Export` dialog under `Options`. To create MP3 files, the lame encoder must be installed (see chapter *Installation*).

The open source code OGG is excellent from an audio-technical viewpoint, but playback and editing programmes are still not very common. It should be kept in mind that working with data-reduced formats can lead to cascading effects: audio which is encoded several times in a row loses quality every time a new format is generated. The lower the selected bit rate, the greater the loss of quality. Various other codes and formats – especially formats that are proprietary – are supported as of Audacity 1.3.6. after installation of the Ffmpeg plug-ins (see Chapter *Installation*).

Exporting into more than one file

Often, you may want to store a finished production in various ways – for example, saving it on the computer and also burning it onto an audio CD. Perhaps, on the CD, you want different chapters to be separated into a series of tracks. Or another variation: you might want to export a music album or a live recording into several separate MP3 files. For such operations, the `File` menu offers the function `Export Multiple`.

It is recommended to first create a label track with text markers at the separation spots. Each text markers should contain the name of the chapter or musical piece that follows. Then, using `Export Multiple`, you can generate individual files beginning at the locations of your text markers; if you want, the files names and MP3 tags will be derived from your text markers. This function is useful for handling longer programmes that are structured in topical blocks and can be broken down into several files.

Multi-channel audio

Audacity can save multi-track projects as multi-channel audio, enabling you to achieve striking effects on surround sound systems, for instance when producing radio plays. Go to `Edit > Preferences > Import/Export` and select the `Dialog box for multichannel mix`; in addition you have to chose a format for export that supports multi-channel audio (e.g. WAV).
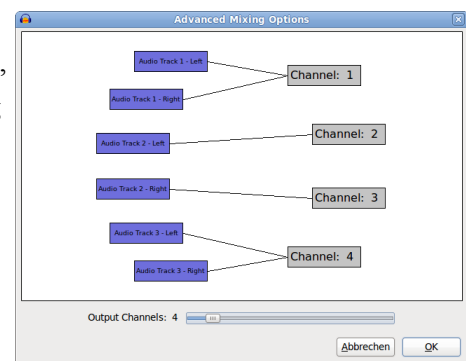
9. Keyboard shortcuts

The assignments

Several keys are already assigned upon installation, they allow for speedy working. In addition to these, further functions can be assigned to any keys or, if desired, existing assignments can be altered. It is recommended to have a look at `Edit > Preferences > Keyboard`.