Module 4: Transformative Potential of Community Radio
Session 2: Sound Editing with Audacity (Enhancing Media Skills)

Duration: 45 minutes

Introduction:

Sound Editing can be very expensive especially for a community radio that runs on very limited funds. The 45-minute session on Sound-Editing with Audacity, introduces the participants to the skill of sound editing with the use of a computer and the benefits of using free and open software. At the end of the 45-minute session the participants would have been able to:

- Convert sound recordings from other sources like: tape, minidisk, CD or DVD to audio formats such as MP3 using a computer
- Manipulate audio recordings by removing unwanted sounds and adding sounds such as music and sound effects
- Mix different sound tracks together as desired

Session Topics:

- Introduction to FOSS
- Introduction to Sound Editing with Audacity
    - o Requirements

Infrastructure:

Computer, multimedia projector, microphone, blackboard/whiteboard, whiteboard marker, music CD, music cassette tape, cassette player, audio cable Presentation files: foss_intro.odp Audacity_install.odp

Preparation:

- Download the latest version of Audacity from the Internet as well as the lame.dll file and burn it on CD. This is in case you do not have Internet connection at the workshop venue.
- Ask the participants to bring their own music on CD and cassette tape.

Session Plan:

Topic / Activity	Duration	Teaching Aids/Material
Topic 1: Free Open Source Software (Lecture Demonstration)	5 minutes	multimedia projector, computer, Impress presentation
Topic 2: Sound Editing with Audacity	10 minutes	multimedia projector, Internet connection, computers for participants, Use presentation material if Internet connection is not available
Activity 1: Record sounds (Hands on Exercise)	10 minutes	multimedia projector, microphone, blackboard/ whiteboard, whiteboard marker, music CD, music tape recorder/mini disk
Activity 2: Manipulating Sound Recordings (Hands on Exercise)	20 minutes	multimedia projector

Introduction to Free Open Source Software (FOSS)

FOSS gives users the freedom to use the program for any purpose, (either for commercial or personal use) redistribute copies of the original or modified program, (you can make copies of the software and give to whoever you want to without being sued for piracy) study how the program works, (You can look at the source code of the software and see how the program works step by step. If you are a programmer, you would be able to see if there are modules in the software that are not supposed to be included. Modules which do tasks which are not related to the software like getting and sending information about the user or the computer where the program is installed); and modify the program to suit their own needs. (You can customize the program and add some features that address your needs if you have the capability. You do not have to wait on the software maker and you don't have to recode the software from scratch. You just add modules to enhance the program and add the features that you need)

Following are list of popular proprietary operating system and application software and their FOSS equivalent. You can visit their respective website to learn more about the software, its capabilities and cost-effectiveness and download the installation files. Try them out to begin to put FOSS to work in your organization. All application software runs on Windows.

Type of software	Proprietary	FOSS
Operating system	Microsoft Windows	Linux http://www.linux.org/ http://www.ubuntu.com/
Web browser	Internet Explorer	Mozilla Firefox http://www.mozilla.com/firefox/

E-mail Client	MS Outlook	Mozilla Thunderbird http://www.mozilla.com/thunderbird/
Office Productivity Suite	MS Office	OpenOffice.org http://www.openoffice.org/
Graphics Editor	Adobe Photoshop	GIMP http://www.gimp.org/
Desktop Publishing	Adobe Pagemaker	Scribus http://www.scribus.net/

Why use FOSS?

FOSS usage is license free. You can use the software on any number of computers without paying any royalty to the maker. Proprietary software on the other hand requires you to pay a license fee for each computer you install the software to. Installation files for FOSS can be downloaded free from the Internet. Another option is to get a CD installer wherein you pay a minimal cost. Upgrades are also posted on the Internet.

People might think that FOSS is more vulnerable to attacks than proprietary solutions because they are given for free so less effort is given to secure the software. The opposite is actually true. Because the source code is available and the collaborative efforts of the community of software developers who volunteers to maintain the program and community of users who submit bugs, security holes, software bugs and enhancements are addressed quickly.

Documentations, manuals, FAQs and tutorials are also available from the Internet. Forums and mailing lists are also available on the Internet where you can ask questions to a community of experts about technical problems on installation and use and get responses quickly. All these support are for free.

The web is dominated by open source software solutions. Linux is one of the dominant operating system for web servers and Apache is the most popular web server. The most widely used language for web programming is Perl and the leading mail server is Sendmail. All of them are free open source software. Some of the most popular web sites such as yahoo.com, amazon.com, google.com, and mp3.com use open source software one way or the other.

Downloading and Installing Audacity

Audacity is free open source software that allows users to create and manipulate audio files. It is available for Windows, Mac and Linux/Unix operating systems.

You have to have a copy of the Audacity installer program in order to install Audacity into your computer. The installer can be downloaded from the Internet and is found at http://audacity.sourceforge.net/download.

Downloading the Audacity installer file

Follow the instructions below to download Audacity.

1. Open your web browser. Enter http://audacity.sourceforge.net/download at the address bar and then press Enter. The Audacity: Download page will be displayed.
2. Select and click on the operating system of the computer where you want Audacity to be installed under the stable releases. If you click on the *Windows* link, the *Audacity: Windows* page will be displayed. (Slide 3)
3. Click on the Audacity installer file (e.g. Audacity 1.2.6 installer) link to download the latest version of the program.

Facilitator's Note:

The version number may be higher when you download since the software is regularly updated). The next screen will contain a list of several locations that you can download from. (Slide 4)

4. Choose a location that is closest to you and click on the Download link. (Slide 5)
5. Save the file. Remember where you saved the file (Slide 6 and 7)

Installing Audacity

Follow the instructions below to install Audacity.

1. Locate the installer file that you have downloaded.
2. Double-click the file to start installing Audacity. The Setup window will be displayed. (Slide 10)
3. Click on the Next button to proceed with installation.
4. Read and accept the License agreement then click the Next button. (Slide 11)
5. Read the information presented then click on the Next button. (Slide 12)
6. Accept the suggested Destination Location then click the Next button. (Slide 13)
7. Accept the suggested tasks then click the Next button again.
8. Click the Install button to install the program.

Facilitator's Note:

Use the presentation material included in this module (audacity_install.odp) if Internet connection is not available. Otherwise, do the actual demonstration from your Internet connected computer.

Downloading LAME MP3 encoder

The most commonly used sound file format is the mp3 format. You will need the LAME MP3 encoder in order to save your sound files to mp3 format.

Follow the instructions below to download LAME MP3 encoder.

1. Open your web browser. Enter http://audacity.sourceforge.net/download/windows at the address bar and then press Enter. The Audacity: Windows page will be displayed.
2. Click on the *LAME MP3 encoder* link under the Optional Downloads section.
3. Click on the *LAME download page* link under Windows.

4. The next screen will present a list of choices depending on the operating system. Click on the *libmp3lame-win-3.97.zip* link. This version is for Windows.
5. Save the file. Remember where you saved the file.

Installing LAME MP3 encoder

Follow the instructions below to install LAME MP3 encoder.

1. Locate the LAME MP3 encoder zip file that you have downloaded.
2. Unzip the lame_enc.dll from the zip file and place it where the Audacity program resides, usually "C:\Program Files\Audacity."

You can put the lame_enc.dll file anywhere but it is suggested that it be saved where the audacity program files are installed to avoid accidental deletion.

Using Audacity

Recording and Basic Editing

A. Recording from the CD drive of your computer
1. Insert CD on the CD or DVD drive
2. Launch Audacity. Click on *Start->Programs->Audacity.* The Audacity window will be displayed.
3. Change the Input by selecting "Wave Out Mix" in the drop down list
4. Click the *Record* (red circle) button on Audacity to start recording. A track will appear with the playhead (red line) moving to the right which shows that recording is taking place. If you want to record in stereo and only one track appeared in Audacity, stop recording by clicking the *Stop* (Yellow Square) button. Delete the entire track that just opened and go to *Edit>Preferences*. Set the Channels drop down to 2 Stereo, click *OK*, and repeat recording.
5. Play the CD. You should see the top right meters moving with the sound, as well as waveforms appearing in the track. Don't worry about the silence at the beginning, you can delete that later. Capture more than you want to use with the intent of trimming later. If no waveform is shown and the Audio CD is playing, it's possible that your sound card has certain settings muted. See the *Sound Card Control* section in the handout for participants.
6. Adjust the volume avoiding sound clipping.
   Clipping occurs when the recording is too loud and therefore distorted. The peaks of the waves goes beyond the maximum level and appears flat as if they were cut or clipped with scissors
7. Capture around 10 seconds of music and then click on the *Stop* button to finish recording.
8. Listen to what you have recorded. Click on the waveform to select a place from which to start listening. You can also click on *Edit->Move Cursor...->to Track Start* or click the double triangle with vertical line on the left button to start playback at the beginning. Click the *Play* (green triangle) button, or use the Spacebar as a shortcut. You can also play just a portion of the track by selecting or highlighting the desired portion before clicking the *Play* button. Note: To pause, playback, click *Pause* (blue double bar) button. To resume playback, click *Pause* button again. Press the *Shift* key without releasing it then click the *Play* button to loop the playback.

9. Click the *Stop* (red circle) button or use the Spacebar again, which toggles between *Play* and *Stop*
10. Name the track. Click on track drop down list and select *Name...* Enter "music" on the track name
11. Export the sound to MP3 format by following the instructions in Exporting to MP3 section below. Name the file music.mp3.
12. Close the Audacity program. Click on *File->Exit* then click the *No* button in the *Save changes?* window

B. Recording from the Microphone
1. Connect the microphone on the microphone port (pink/red) of your sound card
2. Change the *Input* by selecting "Microphone" in the drop down list
3. When you are ready to begin recording, click the *Record* button
4. Start talking on the microphone. Make adjustment on the volume if needed. The sound must not be clipped.
5. Once you get the right volume setting, stop the recording.
6. Delete the recently created track of voice recording by clicking on the *Close* track window or the x button at the upper left-corner of the track window.
7. Click *Record* button again and say 1 2 2 3 5 6 7 9 8 10 on the microphone with short pauses after each number.

Facilitator's Note:

You can ask a participant to volunteer and say the numbers on the microphone to have some audience participation.

8. Click on the *Stop* button when finished recording.
9. Listen to the recording you've made.
10. Show the participants how to do basic editing of cutting and pasting. You will correct the number series recorded to create 1 to 10 number series. Make sure that the *Selection tool* is enabled. Select the sound wave of number 2 by highlighting the desired sound. Use the *magnifying glass tool* to zoom in to the area if you have problems selecting the desired segment.
11. From the *Edit* menu select *Cut* or press *Ctrl-X* or click the *Scissor* button or press the *Delete* button on your keyboard. Do not worry if you make a mistake. You can use the *Undo* command from the *Edit* menu.
12. Select the sound wave of number 9 and cut it. Move the cursor in between the numbers 8 and 10 then from *Edit* menu select *Paste* or press *Ctrl-V* on your keyboard.
13. Make a recording of number 4. Click the Record button. A new track will be created. Record 4 then cut and paste it in between the numbers 3 and 5.

Facilitator's Note:

When you listen to the new track, you will notice that you will hear the other track as well. You can prevent this by clicking the *Mute* button on the track that you do not want to hear or click the *Solo* button on the track that you want to hear.

14. Name the track, "voice". You should have a track that counts from 1 to 10.
15. Export the sound to MP3 and close Audacity. Name the file voice.mp3.

C.   Transferring from an external sound device (e.g. tape recorder, minidisc players, radios) to a computer

1.   Connect the external device to the computer using an audio cable. Connect one end of the cable to the input port (blue) of your sound card and the other end to the phone port of the external sound device.
2.   Change the *Input* by selecting "Line In" in the drop down list
3.   Check the recording volume and make the necessary adjustments.
4.   When you are ready to begin recording, first, click the *Record* button on Audacity and then press the *Play* button on the external device.
5.   Click on the *Stop* button when finished recording.
6.   Listen to the recording you've just made.
7.   Name the track "external device".
8.   Export the sound to MP3 and close Audacity.

Exporting to MP3

1.   From the File menu, select *Export As MP3…*. The *Save MP3 File As* window opens.
2.   In the *Save in list*, select a location for the file (for example, Desktop or My Documents). Provide a name for the music track. If this is the first time you will export as mp3, the system will require you to provide the location of the LAME library.
3.   Answer *Yes* to the question, *"Would you like to locate lame_enc.dll now?"* Navigate through the folder to find the folder where you saved the lame_enc.dll file and click *Open* button.
4.   In the *File Name* box, type the name of the file (for example, mymusic.mp3; do not use spaces or special characters) and click *Save* button.
5.   Enter ID3 tags information as desired. This is optional but a good practice.
6.   Click *OK* button. The file is exported.

Facilitator's Note:

The algorithm to encode or create MP3 files is patented so verify if you are in compliance with any licensing restrictions imposed by MP3 encoders. Exporting the file to MP3 format will flatten the file, meaning, all tracks will be combined into one track.

Multi-track

Audacity allows you to record sounds directly or import Ogg Vorbis, WAV, AIFF, MP3 and other sound formats. You can mix any number of tracks of varying lengths. The numbers of tracks are only limited by the size of your hard disk.

Now, we are going to combine 2 sound files into one project. We will combine the music and voice recording that we made earlier.

1.   Launch Audacity.
2.   Open music. Mp3 file. Click on *File->Open…* Navigate through the folders until you find the MP3 file. Select the file and click the *Open* button. The music track will be displayed.
3.   On the same window, open voice.mp3 file. (recording of numbers 1 to 10) You will now have two tracks.

4. Move the voice track so that it starts 5 seconds before the music ends. Click the *Time Shift* (double arrow) tool. The cursor will change from an I-beam to a double arrow. Click and drag the music track to move it to the desired position.
5. Save the file. Select *File->Save Project* then navigate where you want to save the project. Provide a filename and click the *Save* button.
6. Listen to the whole recording. Notice that the music and voice overlaps towards the end of the music.
7. Use the *envelope tool* to "fade out" the segment of the music where the music and the voice overlapped. Click the *envelope tool*, and then click on a point along the track to create a node and drag the node up or down to adjust the level. Create as many nodes as you need to have "fade out" effect. Dragging a node up and off the track will delete it.
8. Close Audacity but do not save the changes made to the file.

Sound effects

Audacity features a few simple effects such as amplify, echo, fade in/out, changing pitch, tempo and speed and others. Show the participants how to use some of these effects in audacity.

1. Open the voice.mp3 file.
2. See the *Advanced Editing Options* section of the participant's handout for instructions on how to apply effects.
3. Try different effect such as echo, amplify and change pitch, change speed and others on each of the number.

Using the Help File

The Help files contain lots of detailed information and explanation about all the features of Audacity. Users can refer to them if they want to know what a certain effect does to the sound or forgot how to do certain things such as using the envelope tool.

Facilitator's Note:

This module is based on a situation where computers are not enough for each participant to have a hands-on training. Therefore, if the workshop facilities can accommodate actual hands-on training, time should be allotted for such activity.

We recommend combining the audio editing training with an interview or radio plug training, so the participants can do hands on while editing the interview, radio feature or a radio plug. Hopefully the participants will be able to air what they have produced.

The duration of activity 2, Downloading and Installing Audacity will also vary if there's Internet connection. Should there be Internet connection, you should do the actual download of Audacity from the Internet.

References:
Audacity Manual, http://audacity.sourceforge.net/manual-1.2/index.html