

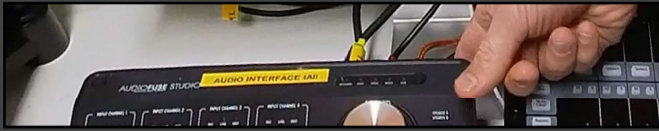
# MAKERSPACE

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## AUDIO BOOTH USER GUIDE

## Powering On Equipment

Learn how to power on the equipment within the Audio space.



### 1. Power on Audio Interface

Locate the power button on the REAR RIGHT hand side, press the button in until it clicks. Note the LED lights will light up when the device is on



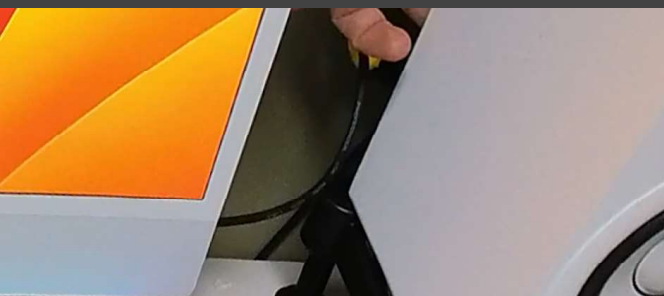
### 2. Enable Phantom Power (48V Button)

Press the first button on CHANNEL ONE to enable Phantom power to ensure the vocal microphone is ready for use.



### 3. Power On The Apple M1 Computer

Press the power button once on the REAR LEFT hand side of the Apple M1 computer. You will hear a chime as it powers on.



### 4. Power On The Speakers

Locate and press the switch on the LEFT side of EACH speaker. You will see the LED light on the front light up.

## Makerspace | Audio Audio Guide



### 5. Power On The Control Surface

Locate and press the switch on the REAR RIGHT side of the Control Surface. You will see all of the LED lights, light up when the device is fully powered on.



### 5. Power On Midi Controllers

Arturia Midi Keyboard: (Does not have a power button, will always be on while plugged in).

Drumbrute Drum Machine: Press the power button on the LEFT hand side at the REAR of the unit.

The LED lights will light up when the device has finished powering on.

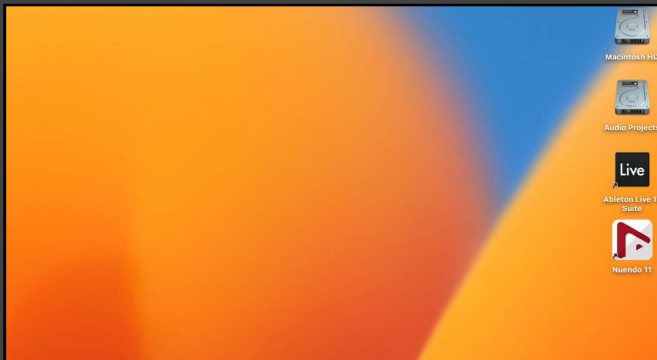


### 6. Power on Line 6 Pod Go (Guitar FX)

Locate the power button on the REAR LEFT hand side, press the button in until it clicks. Note the LED lights will light up when the device is on

# Nuendo: Create A Project

Here is a basic guide to creating a new audio project in the Nuendo Digital Audio Workstation Software. This guide will cover the basics of getting started with Nuendo.



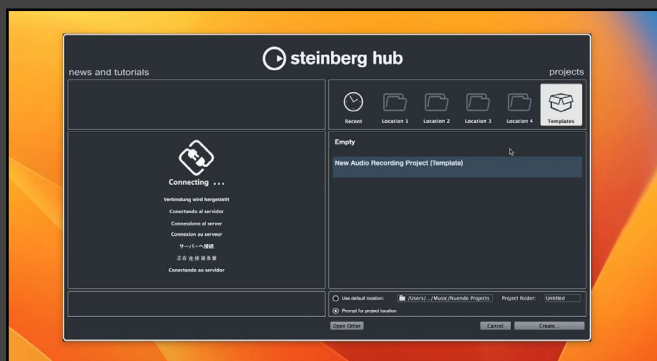
## 1. Locate And Launch Nuendo

Locate and double click on the “Nuendo 11” shortcut to launch the application.



You should see the Nuendo 11 application launch window. This can take up to 30seconds to launch the application.

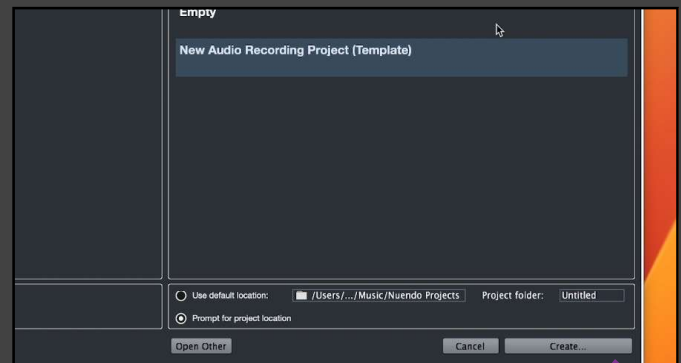
**TIP:** If you do not see this launch window Nuendo may already be open in the dock and need to be closed first.



## 2. Select The Project Template

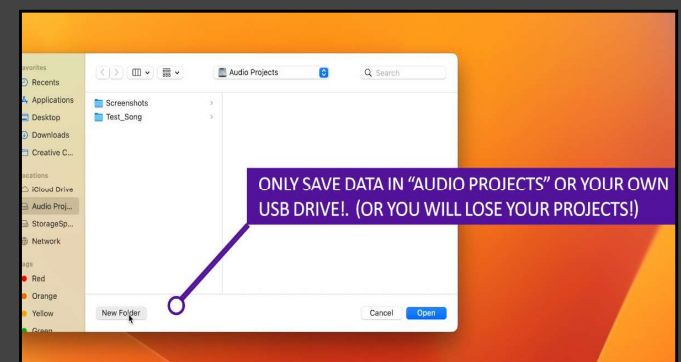
- Select the “New Audio Recording Project Template” option. It is located in the “Templates” tab.

# Makerspace | Audio Audio Guide



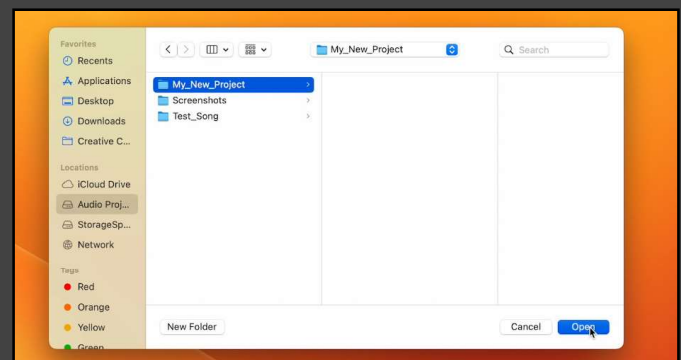
## 3. Select Create To Create Your Project

- Select the “Create” option at the **BOTTOM RIGHT** of the Project Template window.



## 3. Locate Audio Projects Drive

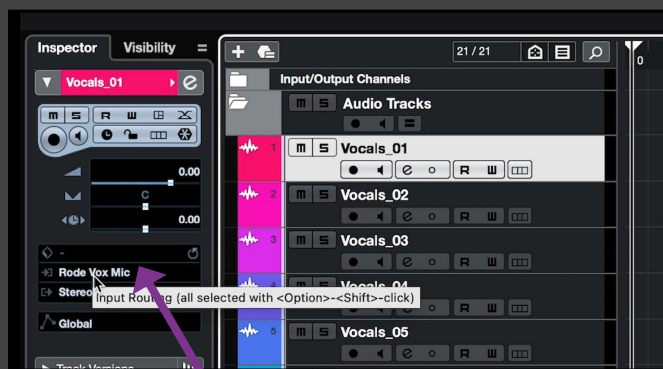
- Ensure you have the “Audio Projects” drive selected in the location window.
- Press the “New Folder” button to create a new folder for your project.
- Give your project folder a name, here we are using “My New Project” as an example.
- Press the “Open” button to continue.



- The project you have created will now open and we can start exploring the Nuendo Digital Audio Workstation.

## Understanding Inputs & Channels:

Here is a basic guide to understanding inputs and outputs in the Nuendo Digital Audio Workstation Software. This guide will cover the basics of getting started with Nuendo.

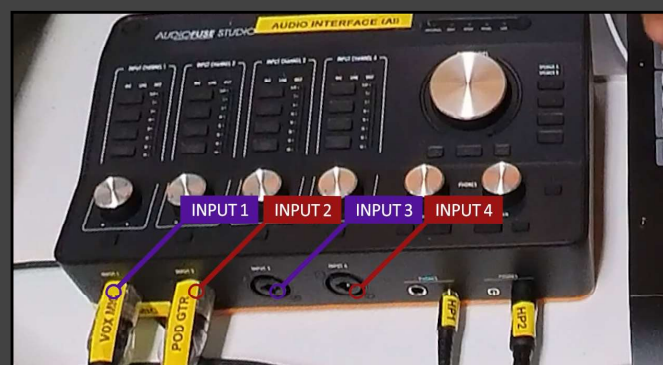


### What Is An Input Bus?

An input bus is like a bus that carries people. It allows audio to flow from hardware such as a microphone, to the audio interface then to the recording software (Nuendo).

### Why Do We Use Input Buses?

For each track, whether vocals, guitar, bass etc, in order to record, you first must assign an input to the channel. This is so the software knows which device you would like to record.



### Vocal & Guitar Inputs

When we look at the front of the Audio Interface we can see that the Rode microphone (for Vocals) is plugged into INPUT1. So in order to record this device, we would select INPUT 1 from within Nuendo.

For ease of use, we have labelled the inputs inside of Nuendo as follows:

Rode Vocal Microphone: Is called "Rode Vox Mic"

Line6 Pod Go Guitar FX Unit: Is called "Pod Go GTR/Bass"

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#### How To Select An Input

Select any AUDIO track in nuendo by left clicking on it. Locate the Input strip and click on it to select the device you would like to record. In this example the "Rode Vox Mic" has been selected.



### Vocals & Guitar Channels

The vocals and guitar channels have been pre-created in the project template and have been already been assigned inputs.

Vocals: Uses "Rode Vox Mic" as their input.

Guitar: Uses "Pod Go GTR/Bass" as their input.



### Virtual Instruments & FX Channels

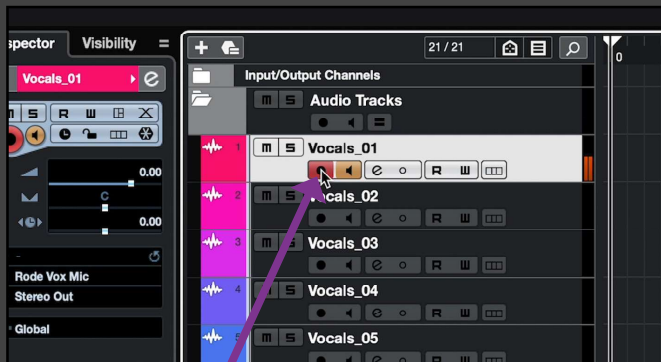
The virtual instrument channels will receive input (key or pad presses) from the midi keyboard. You can use these to create all different sounds, music and FX.

The FX channels are shared FX that can be assigned to any AUDIO channel.



## Basic Recording - Audio

Here is a basic guide to recording audio in the Nuendo Digital Audio Workstation Software. This guide will cover the basics of getting started with Nuendo.



### 1. Select And Record Enable An Audio Track

The “Record Arm” button will turn red when engaged. This opens up the microphone input and readies it to be recorded.

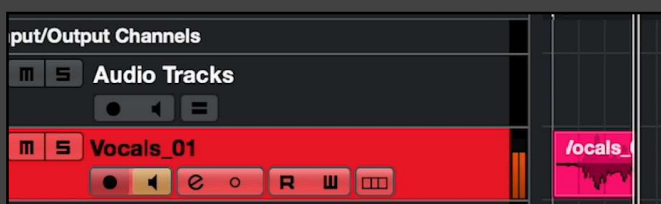
- Press the “Record Arm” button on the first audio track in the project.



### 2. Press The Record Button

The “Record Button” starts the recording process. A visual waveform of the audio will begin displaying on the channel you have set to Record Enable.

- Press the “Record” button on the transport bar (located at the bottom of the screen).



### 3. Sing/Speak/Play!

- If recording Vocals: Sing or speak into the Rode Microphone.
- If recording Guitar: Play the instrument.
- To stop the recording, press the “STOP” button, located next to the PLAY and RECORD buttons.

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### Microphone Input Troubleshooting

On the AudioFuse Studio Audio Interface perform the following to ensure everything is set correctly:

- Enable the 48V button (or the microphone will not be powered on correctly)
- Ensure the Inst/PAD/Phase Invert buttons are all disabled. They should be unlit.
- Adjust the “Gain” knob/dial and ensure the audio signal stays within the green / orange and not in the red or it will distort/clip.
- In Nuendo ensure the Vocal Channel you have record enabled is using the input “Rode Vox Mic”.



### Guitar Input Troubleshooting

On the Line 6 Pod Go Guitar FX unit, perform the following to ensure everything is set correctly:

- Ensure the volume dial is turned up (see arrow above) on the Pod Go Fx unit.
- Ensure your guitar/bass is plugged in and the input/output turned up to full.
- Ensure the audio signal in Nuendo stays within the green / orange and not in the red or it will distort/clip.
- In Nuendo ensure the Vocal Channel you have record enabled is using the input “Pod Go GTR/Bass”.

# Virtual Instruments

Here is a basic guide to recording virtual instruments in the Nuendo Digital Audio Workstation Software. This guide will cover the basics of getting started with Nuendo.



## 1. Record Enable Your Instrument Track:

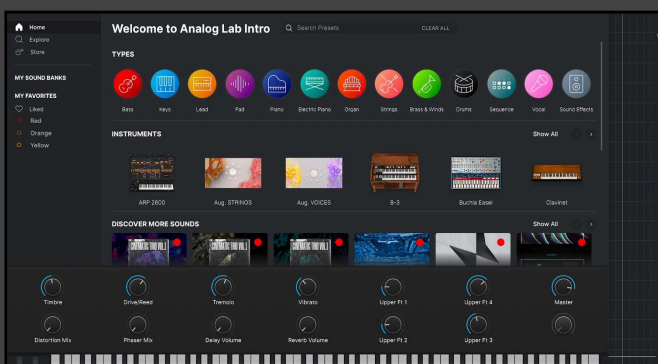
The “Record Enable” button will turn red when engaged.

- Press the “Record Arm” button on the instrument track of your choice in the project.



## 2. Choose “Edit Instrument”

Select an instrument, in this example we are using “Analog Lab V” and then press the “Edit Instrument” button to open up the instrument editor.



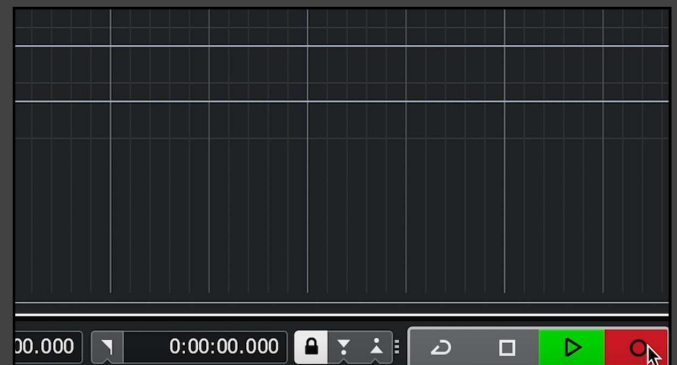
## 3. Customize Your Instrument Settings

Select an instrument, in this example we are using “Analog Lab V” and there are many choices of instruments that can be selected in Analog Lab. You can also adjust and tweak many parameters.

To Preview: Simply press any key on the Arturia Midi Keyboard and you can hear the instrument play.

# Makerspace | Audio

## Audio Guide



## 4. Press The Record Button

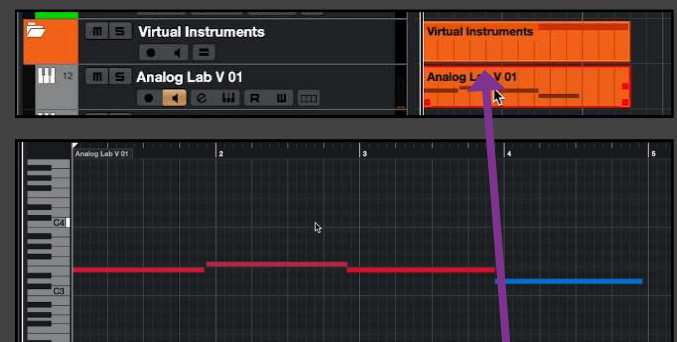
The “Record Button” starts the recording process. A visual waveform of the midi notes will begin displaying on the channel you have set to Record Enable.

- Press the “Record” button on the transport bar (located at the bottom of the screen).



## 5. Play Your Instrument

- On the Arturia Midi keyboard, begin to play so that midi notes are recorded.
- To stop the recording, press the “STOP” button, located next to the PLAY and RECORD buttons.



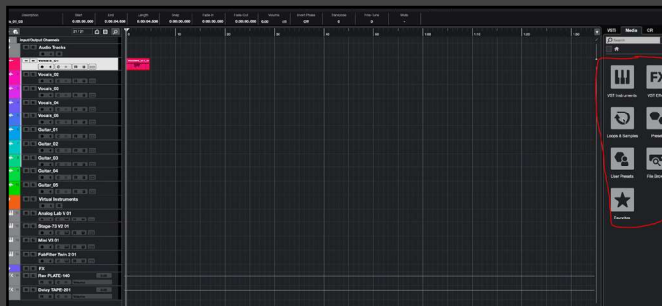
## 6. Editing Midi Notes

Double click on the recorded Midi notes (waveform).

- The midi editor window will open.
- You can now move your midi notes up and down and assign them to different notes in a scale, or adjust the length by dragging the left and right handles on a note.
- This makes it easy to fix up a performance and make creative changes without re-recording.

# Using Loops In Nuendo

Here is a basic guide to using loops in the Nuendo Digital Audio Workstation Software. This guide will cover the basics of getting started with Nuendo.



## About The Nuendo Media Library

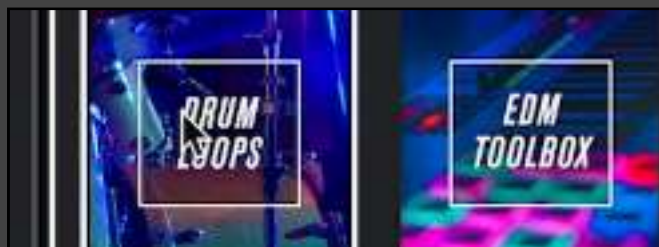
The Nuendo media library contains many high quality assets you can use within your project to get started quickly.

- In this example we will be using loops.
- You will need to experiment with loops and spend time learning how to cut them in accordance with the timing of your song.



## 1. Adding Loops & Samples

- Press the “Loops & Samples” button on the right hand side of the screen.
- This will open up a submenu with a variety of content to select from the media library.



## 2. Choose A Loop Category

- In this example we have selected “Drum Loops”.
- A submenu will open up where you can select from a library of drum loops.

# Makerspace | Audio

## Audio Guide



## 3. Previewing Loops

You can press the play/stop buttons to preview the loop you have selected in the library. You can adjust the volume with the volume slider (to the right of the stop button).



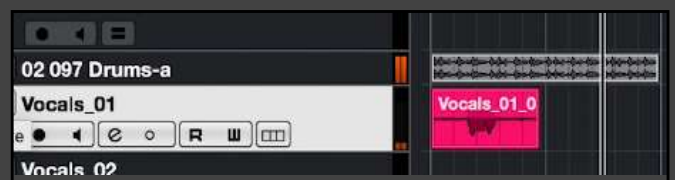
## 4. Select A Loop To Use

- In the media library, select a loop you would like to use.



## 5. Drag Loop, Create A Track

- In the media library, drag your selected loop in between any existing tracks on the LEFT of the screen. NOTE: you will see a green line to indicate a new channel will be created in this location, containing the loop.

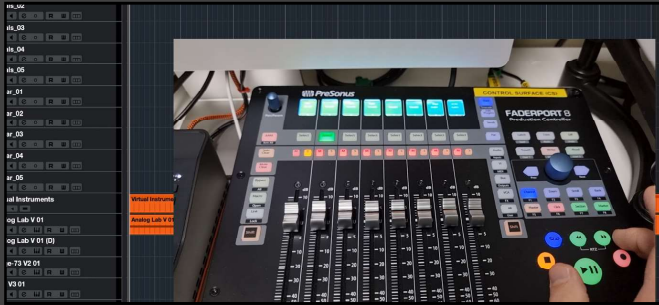


## 5. Preview Your Track

- Press play on the transport bar (bottom of the screen) or using the shortcut key SPACEBAR.
- You can now edit the loop as you require and create your own unique song.

## Using The Control Surface

Here is a basic guide to using the control surface in the Nuendo Digital Audio Workstation Software. This guide will cover the basics of getting started with Nuendo.



### 3. Editing Automation Curves

- Right click on your audio channel and choose “Show All Automation”.
- You can now edit the automation curves manually without using the control surface, or alternatively tweak the curves you have written.



### 4. Enable Read Automation Mode

- Press the “W” button to disable write enable. We do this to ensure we do not make any accidental changes while previewing them.
- Wiggle the fader or do an intentional movement so you can hear a change in volume.



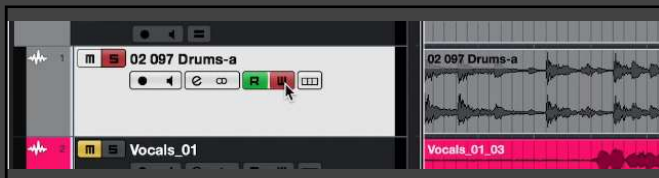
### 5. Previewing Automation

- Press play and you will see that your fader on the control surface moves up and down EXACTLY as you recorded it.
- Experiment and do this with FX and panning and other things. You can use automation for so many things and it is one of the tools that make your mixes come truly come alive.

### About The Control Surface / Automation

The control surface allows you to have hand on controls in Nuendo (without a mouse) and also write “Automation” with greater accuracy (and far easier).

- Automation is where you want to save live movements of volume, FX, panning and many other things in your music tracks.
- Automation brings life to our music tracks and once it has been “Written”, the control surface will play it back each time the song is played. This can look like invisible hands moving the faders! as the movements you have made will be played back with precision.



### 1. Enable Write Automation

- Press the “W” button on your audio channel, it will turn red. This stands for “Write Automation”.
- This will open up a submenu with a variety of content to select from the media library.



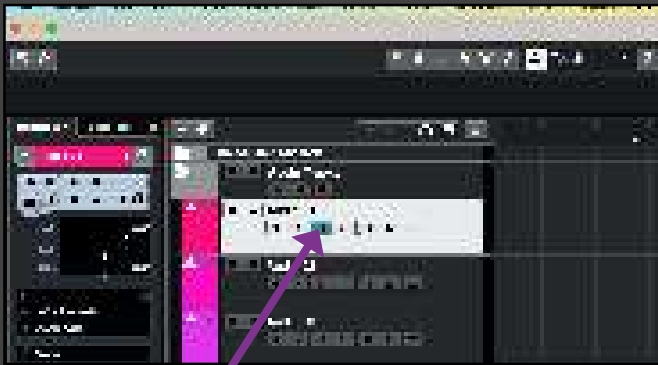
### 2. Writing Your First Automation Pass

- Press the play button on the control surface (or use the transport in Nuendo).
- Wiggle the fader or do an intentional movement so you can hear a change in volume.



## Adding FX To Audio

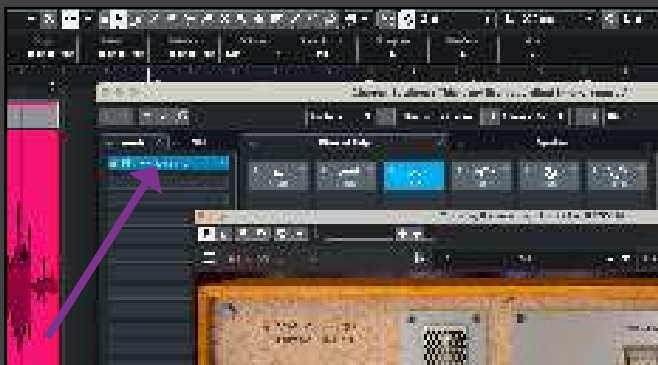
Here is a basic guide to creating a new audio project in the Nuendo Digital Audio Workstation Software. This guide will cover the basics of getting started with Nuendo.



### 1. Locate The E Button

The “E” button in Nuendo will open the “Channel Settings Window” where you can add FX, set inputs and other common settings.

- Locate and click on the “E” button on the first “Audio Channel” inside the project you have created.
- The “Channel Settings” window will now open.



### 2. Add FX After Recording (Pre-Fader)

Inside the “Channel Settings” window perform the following tasks:

- Click once on the first empty slot within the “Inserts” pane.
- From the list locate and for this example we will choose the effect called: “Rev-Plate 140”.
- This is a classic high quality reverb effect.

### What Are VST Effects?

- VST stands for “Virtual Studio Technology” and are a software recreation of a real life piece of hardware. The Rev Plate 140 description says: “The original 60s unit weighed more than 4 people, and cost more than a house.”
- VST FX are exclusive to Digital Recording only.

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### Audio Guide



### Basic Reverb Controls (Rev-Plate 140)

- Drive (Accenuates the tone of the reverb and increase the preamp volume, adding more “dirt”/”grit”.
- Plate Models (Adjust the “plate” decay times and dampen them to be less present).
- Mix Controls (Add width, dry/wet balance to finalize the sound of your track).
- Pre-Delay & Pre-Filter (How quick the reverb starts and carve the part of the signal you want most affected).
- Chorus (Add a rich chorus effect either pre or post to enhance the tone of the sound)
- Post EQ (Adjust the EQ of the sound and limit the EQ to a specific set of frequencies).

### So Many Controls Where Do I Start?

- As you can see there are a number of controls for FX that you must take the time to understand. The best way is to PLAY. Always look at the instructions for the specific effect (Most will have a help menu on the same page as the plugin). But take the time to play and have fun. You will soon develop your own techniques and tricks to add great life to your recordings using these FX.



### Add FX During Recording (Post Fader)

- VST FX can be heard during recording (for the performer) and can be easily switched off (known as Post Fader).
- To add an FX simply choose on of the last 3 slots in Nuendo and choose your effect and it will be post-fader.

## Basic Recording 101 Tips

Here are some recording tips that will help you understand common pitfalls and some good practices to adhere to. Recording takes time to learn! Be patient and practice!



### Understanding Digital Peak & Metering

- There are many subtle differences between the traditional Analog recording studio (think no computers, large analog consoles, lots of racked hardware and tape / valve equipment) and Digital recording (computer, digital Audio interface, software plugins etc).

### So what Is The Difference?

- The image above shows a “Digital Peak Meter” from the AudioFuse Studio. Notice how the green level starts to turn to orange at around -8db (All the values are minus under zero by the way). After the orange comes red, which indicates danger. Danger of “Clipping”. Clipping is where digital signals turn from an audible sound of quality into distortion (effectively destroying the sound). In Digital land, once you hit 0DB this clipping occurs. It is maxing out the signal and not what you desire for recording.
- We call this area between the red starting and ending “headroom”.

### So what Is Headroom?

- Headroom is a safe space to operate within before we start to max out and clip our signal. In the world of Analog it is far more forgiving, and in fact when we reach above this level it can create a pleasant warmth “Harmonic Distortion” if we are careful. A form of saturation that helps glue things together in a mix. Digital has no harmonic distortion and is very sterile, so adding this to your mix can truly make a sterile digital recording sound warm like a traditional recording!

### What Is Our Goal Then With Recording?

- With Digital recording, our goal is to attempt to record with the “Loudest” possible volume in the safest possible way. If we underrecord something, we have lost that beautiful signal that we desire, we need to capture as much as possible without “Peaking the meters” or so to speak. The best way to do this for those new to recording is by proper “Gain staging” of the signal.

## Makerspace | Audio

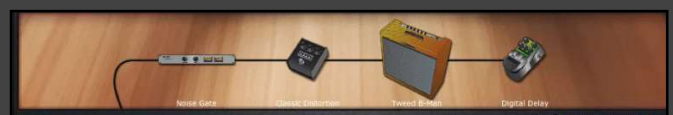
### Audio Guide



### How To Set The Gain Like A Professional

The BIGGEST mistake many aspiring recordists or engineers make is the lack of understand of proper gain staging. This is easily understood and is one of the secrets of making everything sound more “expensive” with a little bit of consideration for our equipment. Here is how you do it.

1. Turn down your speakers / headphones (because things are about to get loud).
2. Ask the performer to turn up their instrument to full volume (e.g if a guitar, turn up the pedal or DI to max output volume, same if a vocal microphone).
3. Ask the performer to play or sing or make noise as loud as they possible would during a recording.
4. Now pay attention to the peak meter.
5. Turn the gain down on the soundcard (in our case it is the AudioFuse Studio gain dials above) until the peak meters are only occasionally clipping. (not frequently, just here and there).
6. You have now reached the maximum possible volume you would want to record at.
7. Now give yourself a slight buffer. Turn the gain down a little bit more (just a small turn), enough incase your performer decides to overdo it.
8. When you record, it will now be loud, but there will be no peaks. You still need to watch the peak meters during recording, but you can relax knowing you have set the proper “Gain staging” for your recording session.



### Should You Record With FX?

The best recordings are not always “technically perfect”. The engineers role is to do what we can to have the performer play their best. So the best advice here is, keep things simple. Do not try to fix it later, capture it correctly. Allow the performer to hear whatever FX they need to perform their best.

A little reverb for a singer goes a long way, or guitar FX for a rock guitarist is essential.

To get started: Refer to the “Digital FX (VST) Guide” on how you can use “Post-Fader FX” during a recording session.

## Learning Resources

Here are some additional learning resources that will allow you to understand how to use Nuendo effectively for recording.



### 1. Basic Layout Overview In Nuendo (Switching From Pro Tools)

URL: <https://youtu.be/Fgj1n2Y-Er0>



### 2. Basic Routing And Recording In Nuendo

URL: <https://youtu.be/njJ-sblobN0>



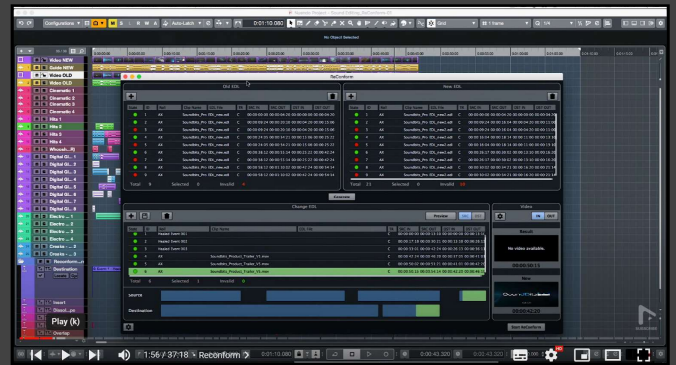
### 3. Basic Editing And Automation

URL: <https://youtu.be/jcihRVtsVqg>

## Makerspace | Audio Audio Guide

### About Learning Audio Fundamentals:

Basic sound recording, design, mixing and mastering can be learned using any software. Nuendo is just a tool, therefore in your journey, focus on learning the fundamentals and the tool will simply become the method.



### 4. Exclusive Features For Audio Editing (Nuendo)

URL: <https://youtu.be/6rva77TsmNQ>



### 2. Exclusive Features For Mixing (Nuendo)

URL: <https://youtu.be/Kgim6xERloA>



### 3. Exclusive Features For Sound Design (Nuendo)

URL: <https://youtu.be/XBCne9doKw8>