Tutorial 1 : Basic multichannel configuration and usage in NUENDO/Cubase SX

Nuendo and Cubase SX have been the first multitrack software to offer a true support for multichannel composition :
integrated surround module, multichannel busses and native support for multichannel audio files, from 6 channels for Cubase SX to 12 channels for Nuendo.
Nuendo includes today the largest quantity of tools that suit all the aspects of a multichannel composition, even with more than 12 channels (in "multi-surround" mode thanks to the Acous*Modules*).

needs : Nuendo 2/3 or Cubase SX 2/3, SpatSurround 12
This tutorial can be easily adapted for the other spatialization Acous*Modules* plugins.

A. Replacement of the native surround module

01 First you must have an audio card that have multiple audio outputs and assign an Output Bus to the physical outputs of your audio interface.
The exemple is 8 channels, so, in the VST connections :

Bus Name	Speakers	ASIO Device Port
⊟ 8 channels	8.0 Music	
◁ᴱ Gauche		1 1 Analog MF (1)
◁ᴱ Droite		2 2 Analog MF (1)
◁ᴱ Centre		3 3 Analog MF (1)
◁ᴱ Surround Gauche		4 4 Analog MF (1)
◁ᴱ Surround Droit		5 5 Analog MF (1)
◁ᴱ Centre Surround		6 6 Analog MF (1)
◁ᴱ Bord Gauche		7 7 Analog MF (1)
◁ᴱ Bord Droit		8 8 Analog MF (1)

02 Create an audio track which can support **the number of outputs that you need**, for exemple 8 outputs :
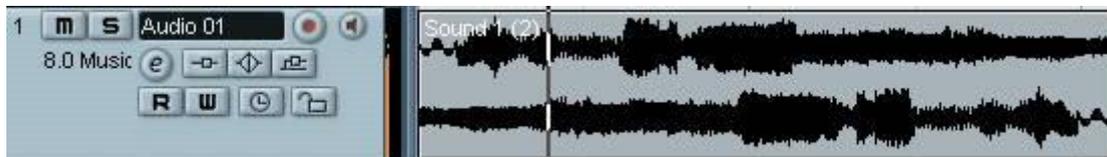
Assign the output of the track to the **Output Bus** that you have created :

(The Input has no importance since we don't record anything.)

Important : this track can play all interlaced files from mono to the number of channels that you have selected.
Here a stereo file is played in the 8 channels track, only the two first channels are used.

03 Insert a multichannel plugin, here the SpatSurround 12 :

Since you have an 8 channel track, you can insert 8 (or more) channels plugins.
If you insert a 12 channels plugin, only the first 8 inputs / ouputs will be used.
So no need to use stero tracks + sends + groups...

You can see that the track has no panner, which is quite logical : the native surround module or the stereo panners are made only for mono/stereo tracks.

But the SpatSurround 12 acts now like a standard surround module : **it takes the first two inputs and spatializes them on its 12 ouputs**.

The principle is exactly the same for all the plugins up to 12 channels, which is the limit of the NUENDO busses (6 for Cubase).
If you need more, go to the tutorial "MultiSurround Mode in Nuendo/Cubase"... or buy Podium ! (32 channels busses)

B. Basic usage of the SpatSurround and Spat3D Acous*Modules*

Since there is no help or manual for now, here are some basic tips for using the spatialization tools.
I use for this purpose the "SpatSurround 12" because it has all the features that you can find in the first category of spatialization Acous*Modules* ("Surround" modules).
For the others (Multiple Inputs, Automatic and programmable movements, Level controls) the concept is the same but there are other functions that will need some more explanations...

Here is a description of a few things that you can do that are not possible with standard surround modules :

 free placement of the speakers that correspond to their real position in the acoustic space :

simply move the numbered "spots" to the desired positions (relative scale)

 selection of the number of channels that you are using :
- to show the speakers : clic on the blue numbered buttons in the **View** column (in this plugin from 5 to 12)
- to active or mute the speakers : clic on the green/red buttons in the **Mute** column (red = mute)
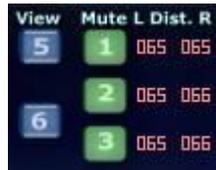
 Setting of the attenuation of the loudness due to the distance between the virtual sources (the
Blue and the Red Rings) and the speakers :
This is one of the most important and delicate feature of all the AcousModules.
The value at the right edge of the plugin (see the last picture above) sets **the individual distance attenuation value** for each input/output :
one value for the left and onr for the right.
"0" means the shorter distance and "100" the longer (the "real" distance depends also on the "Global" value, the "Curve" choice and is not the same for all the AcousModules...)
The **resulting level** for each output is showed near each numbered speaker :

In this picture, the intensity of the sound will be at 92 % on the speaker 02, 64 % on the 03, and 42 % on the 01, and the perception must be the visual position of the blue Ring.
However, this may be different according to the place from which you listen to, the acoutic characteristics of the room and, don't forget, the nature of the sound !

You can show or hide the values for the left (blue) or right (red) inputs with the little **L/R button** at the bottom and hide them with the **VU button**.


The settings depends on the distance between the speakers and the result that you want.
A typical setting for a particular speaker will be an intensity of "100" when the ring is on it and "0" when it is on the nearst speaker.
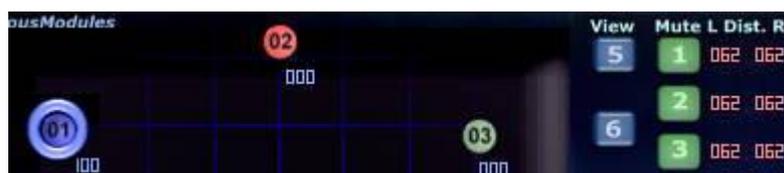
But in practice, a small overlapping will generally be better, for example a value of "10" when the input is

on the near one, which can be done here by setting up the distance value of the second channel :
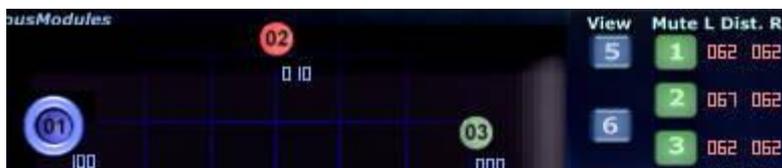
The value for ALL channels can be changed with the **Global** setting, which is also very useful for dynamically changing from "points" to "areas" (kind of "spatial crescendo") :

Global is a +/- offset so **it keeps the individual relative values** for each channel. The effective result depends also on the **VCA curve** choice...
In order to help with these settings, a Test signal is included in some AcousModules, here on the right input, so you can also control with the vu-meter of Nuendo :


But the best tool is always the ears !

 Separate or linked right channel :

Activation of the right input : **Mono/Stereo button**
it can be positioned freely or linked to the movements of the left input : **Free / Linked button**
In **Free** mode, **the right input is completely independant** of the left one and can be positioned, moved and automated.
In **Linked** mode, you can select the **offset** of the right input from the left one :
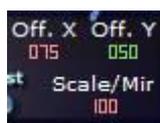
With an offset of "50", the two are superimposed (so the channels of a stereo input are "mixed" and treated like mono).

A value of "100" or "0" corresponds to the full size of the space (inverted in the case of 0). When combining these values to the **Scale/Mir** (for Mirror) you can make all kind of symmetry, dissymetry etc. that you want, a little like the stereo modes of Nuendo surround module, but which can be continously changed.

07 **Automation and MIDI control** :

All parameters are automatable or you can assign them to MIDI controllers (via a MIDI track) with the MIDI Learn function :
- clic on **Learn**
- move an object / value
- move your MIDI controller
- that's all

> **IMPORTANT : for automation inside Nuendo/Cubase, I recommand to use the SpatSurround 12LE (smaller, faster) instead of the SpatSurround 12, or NOT to use the LINKED mode.**
> **Due to the way that the linkage is programmed inside Synthedit, this produces huge amounts of undesired automation params/tracks.**
> **The SpatSurround is thus more suited for MIDI recording.**

Thanks to Franck NEWMANN for his precious help !