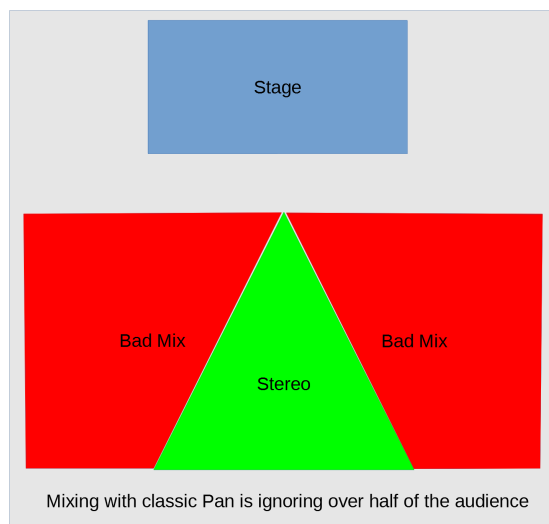


Delay-Panorama: Live Stereo und best mix for everyone

Problem

When you do a stereo mix with classic volume panorama, the situation inevitably arises that only that part of the audience who is located where they can hear both sides of the PA hears a clean mix.



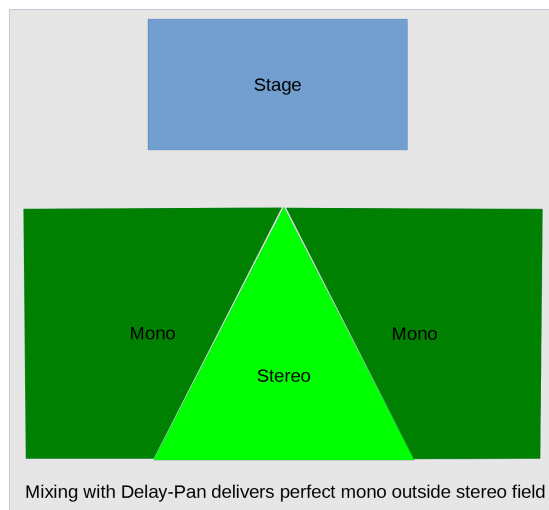
Any signal that is stronger on one side of the panorama will be weaker on the other side. This then leads to the fact that there are sound engineers who mix mono, there was a report in Production Partner about how one of the stars of the mixer scene explained to a world musician who wanted to be heard a little from the middle that he would then half of the audience would hear too quietly.

Solution

I solve this problem by replacing volume panorama with delay panorama.

Our hearing perceives the direction of an event only minimally through differences in the volume of the ears. The difference in running time is much more important for determining the direction.

So I mix all signals to both sides of the PA at the same volume and delay the opposite side according to the desired distance from the center. This is perceived in the stereo triangle as a very locatable mix and for the audience, who can only hear half of the sound reinforcement, the volume ratios of the mix are the same as in the middle.

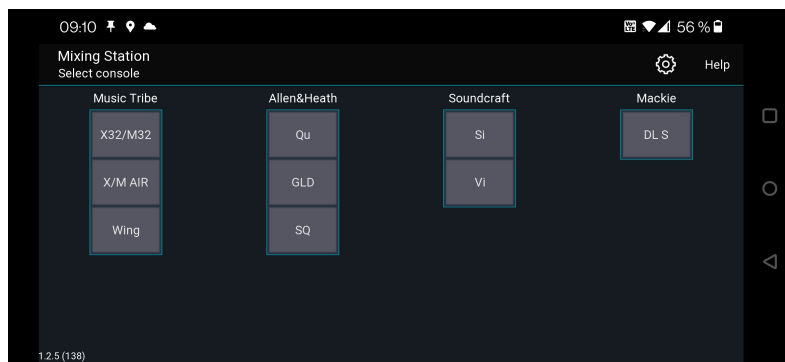


HowTo

Unfortunately, since none of the manufacturers of digital live consoles I know have a solution for this, it costs channels and a little brain power:

With the **Soundcraft Vi Console**, I solve this by routing the channels post-fader DirectOut via Dante to the lower-level inputs. There I then only set the value of the delay. The transmitting channel is 100% on its side in the panorama, the receiving channel on the opposite side. This has the advantage that it is even possible to make runtime corrections on stage in the transmitting channel, for example to time-align the percussions from the backline to the front.

After initially copying the channels of an **X32/M32**, the ingenious developer of the Mixing Station remote interface then implemented a soft link, with which I can individually determine the parameters that are linked for each link group and can therefore also set the delay channels to the end. The software supports 4 manufacturers and 9 console types:



If not enough channels are available, a possible solution is to use mix groups, which then get a position on the stage through delay. However, this will be a rather rough grid.

I haven't mentioned yet that this of course only works with **mono subs**, the signal of which can then come exclusively from the non-delayed sources. If you've read this far, you probably know that anyway ;-)

How much delay?

If you are wondering in which value range the delay should now play out, I have a simple support for you:

Hopefully most of you are aware of the Haas effect that is so important for delay lines. To put it simply, one can say that a sound delayed by around 20ms is assigned to the original by our hearing.

As a result, if something is to be filed entirely on one side, the other side must be **20ms** later. But make up your own mind, try it out!

Lots of work, lots of new sources of error

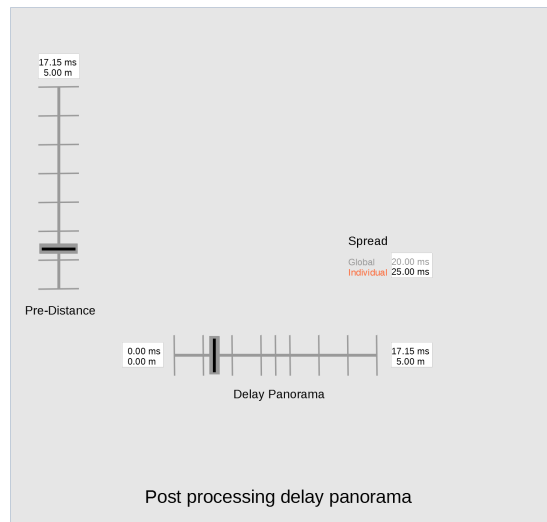
It's correct. But it's worth it. It's fantastic when you have 3 backing vocals on the left side of the stage and you can actually locate them.

You also gain headroom in the PA, since the energy of each signal is distributed evenly.

Since I've been doing this, the number of positive comments about my sound has increased significantly.

Excitation

Should this document ever get into the hands of a console developer (copy it, it's free!) I have a draft for a channel delay interface here:



Questions, suggestions, criticism welcome: wh@sound-light-projects.de