XR audio Guide

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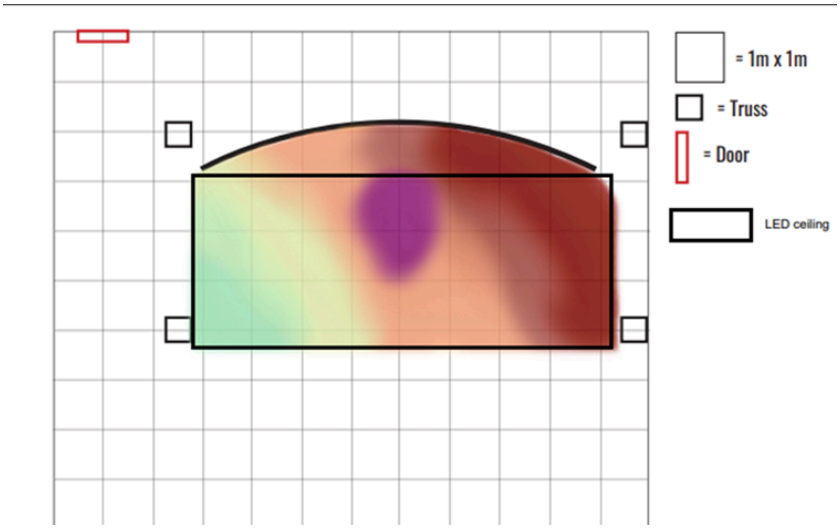
Introduction

This guide is compiled based on the findings of my capstone project. It aims to provide insights into the importance of understanding reverberation and acoustics, along with practical applications of this knowledge. By accessing information from my capstone project, the findings regarding reverberation are converted into a heatmap. Understanding these concepts is crucial for optimizing audio recording conditions within XR stages, ensuring clear sound quality, and enhancing the overall immersive experience.

reverberation



The colors represent reverberation levels within the XR stage.
Red: very noticeable reverberation
Orange: noticeable reverberation
Green: Almost unnoticeable reverberation
Purple: Potential acoustic dead zone, this area can sound flat.

Reverberation occurs when sound waves bounce off surfaces in an enclosed space, such as a room or stage, before reaching our ears. In the XR stage, certain areas may have more reverberation due to the way sound waves interact with surfaces like walls, floors, and ceilings.

For example, when someone speaks or makes a sound in the XR stage, the sound waves travel and bounce off different surfaces. In areas where there are more surfaces for the sound waves to bounce off, like corners or walls, there tends to be more reverberation. This means the sound can linger longer and overlap with the original sound, creating a kind of echo effect.

Additionally, the shape and materials of the surfaces can affect how sound waves behave. Smooth, hard surfaces like glass or concrete tend to reflect sound waves more, increasing reverberation. On the other hand, soft materials like curtains or acoustic panels can absorb sound waves, reducing reverberation.

So, areas with more surfaces and hard materials in the XR stage are likely to have more reverberation, while areas with fewer surfaces and softer materials may have less reverberation. Understanding these factors helps us identify where reverberation is likely to occur and how to manage it for clearer sound quality in XR productions.

background noise

Background noise is hardly noticeable during production in the XR stage because the silent reading test showed that it remained consistent and relatively low throughout. We used something called LUFS to measure how loud the background noise was. LUFS helps us understand how loud noise sounds to people, not just how intense it is.

The readings we got ranged from about -50 to -60 LUFS, which means the background noise was pretty quiet. This is important for making sure recordings sound clear and aren't messed up by other sounds. It's like being in a quiet room where you can focus better because there's not much noise around.

However, it's important to note that we can't control the noise outside of the XR stage because it's a public area. Since the XR stage is part of a larger public space, there's always the possibility of noise from outside activities or people passing by.

handheld microphones

When using handheld microphones, it is essential to minimize electronic interference by avoiding the presence of excessive electronics in the recording room. Additionally, adjusting microphone and speaker volumes to moderate settings prevents audio distortion and ensures clear sound reproduction. These guidelines apply to both boom and lavalier microphones, with the latter exhibiting slightly less reverberation in some areas but still noticeable overall.

This guide serves as a valuable resource for students and coworkers involved in XR stage productions, offering practical insights and recommendations for optimizing audio recording conditions and enhancing overall sound quality.