

Signal Drift Archive

Michele Gatti

Esame di applicazioni digitali per l'arte

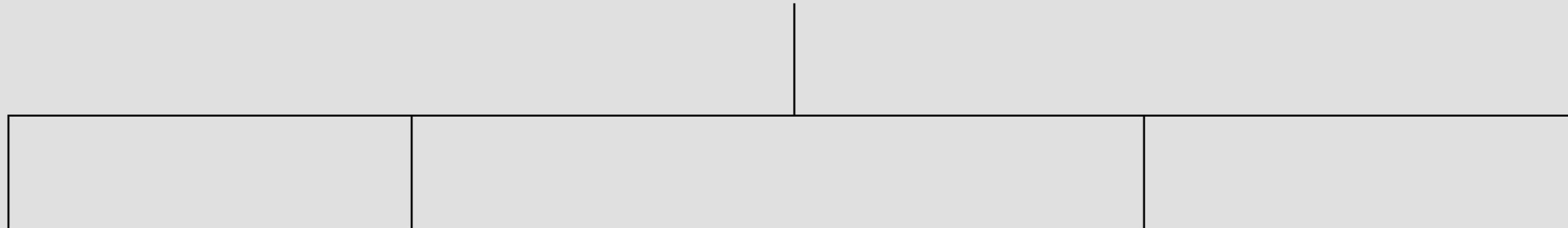
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This is a project about...

Shortwave radio

Shortwave radio transmits signals in the high-frequency (HF) spectrum (3–30 MHz), with wavelengths of 100 to 10 meters. These signals can bounce off the ionosphere, enabling long-distance transmission beyond the horizon, a phenomenon called skywave or "skip" propagation. While once vital for global broadcasting, shortwave's importance has declined with the rise of satellite, cable, and internet-based communication.

Shortwave zapping



Number stations

Number stations are shortwave broadcasts used by intelligence agencies to send encrypted messages to spies. These messages, delivered via voice, Morse code, or digital signals, often use one-time pad encryption—adding random numbers to cleartext for unbreakable security.

Examples:

Lincolnshire Poacher

Named after the English folk song it used as its interval signal, this station was believed to be operated by British intelligence.

Swedish rhapsody

Operated by the Ministry of Public Security featured a childlike voice reading numbers, accompanied by a music box playing "The Swedish Rhapsody."

The Spanish Lady

A female voice reading numbers in Spanish, believed to have been operated by Spanish intelligence.

Cherry Ripe

Another station thought to be of British origin, it used the interval signal of the traditional English song "Cherry Ripe."

Variety radio show

Shortwave radio still hosts a variety of transmissions. Some stations feature people having casual conversations about everyday topics. Others are used by religious preachers who promote fervent beliefs, including fanatical prophecies.

Examples:

Radio China International

"Round Table" is a Beijing-based radio and podcast show covering internet trends, lifestyle, and daily life in China. It features diverse hosts discussing contemporary Chinese culture.

"Takeaway chinese" is a weekly Chinese language teaching show which covers the most frequently used Chinese words and expressions, dialogues, language tips, and stories behind the idioms.

World's Last Chance

WLC Radio is an online Christian station linked to the WLC ministry. It focuses on end-time prophecy, the Lunar Sabbath, and anti-Trinitarian beliefs, urging listeners to prepare for Yahushua's (Jesus') return.

Data modes

Several different types of modulation are used to incorporate information in a short-wave signal.

RTTY

RTTY (Radio Teletype) is a communication mode used in amateur, military, and commercial radio to send text over radio frequencies. It operates through Frequency Shift Keying (FSK), where two distinct frequencies represent binary states (0 and 1), enabling reliable text transmission.

SSTV

SSTV (Slow Scan Television) is a method used by amateur radio operators to transmit still images over radio frequencies. It works by converting images into audio tones, which are sent via radio waves and decoded back into pictures by receiving equipment.

Propaganda

Shortwave radio stations have been key tools for propaganda, especially during war, reaching global audiences with both subtle and overt messages. During the Cold War, these stations were widely used to spread ideologies and disinformation. To counter this, opposing sides often resorted to jamming—deliberately interfering with broadcasts to prevent enemy messages from being heard.

The project includes the retrieval of recordings from old wars, such as the Vietnam War and the Egypt-Israel conflict. These recordings capture broadcasts from shortwave radio stations, featuring propaganda, war reports, and speeches from UN members.

AV Production

This AV project is designed to deliver a dynamic visual experience using three synchronized screen projections. Each screen will display distinct yet complementary content, creating an immersive and panoramic visual storytelling environment. The project involves editing the footage in Adobe Premiere Pro, where precise alignment and timing are key to ensuring seamless playback across all three screens. After the editing, the next step is projection mapping in Resolume Arena, where the final visuals will be mapped and adjusted to fit the physical projection surfaces accurately, enhancing the overall immersive experience.

Broadcast recordings

A WebSDR is an online Software-Defined Radio receiver that lets multiple users tune in and listen to broadcasts at the same time. Using just a web browser, you can explore the radio spectrum remotely. For my project, I used the WebSDR at the University of Twente's amateur radio club ETGD. Unlike traditional web-controlled receivers, this one allows multiple users to adjust frequencies simultaneously. Thanks to this technology, I spent many evenings recording shortwave transmissions from my PC. At night, propagation improves as the ionosphere changes, allowing distant signals to travel farther with less interference, making it easier to capture a variety of broadcasts.

Archive

I used archive footage to creatively visualize the recorded transmissions. Although the transmissions were recorded recently, radio is often perceived as a timeless medium. This perception allows the audio to blend seamlessly with the archive footage, which is entirely sourced from the Prelinger Archive, including both professional and home movies.



Prelinger archive

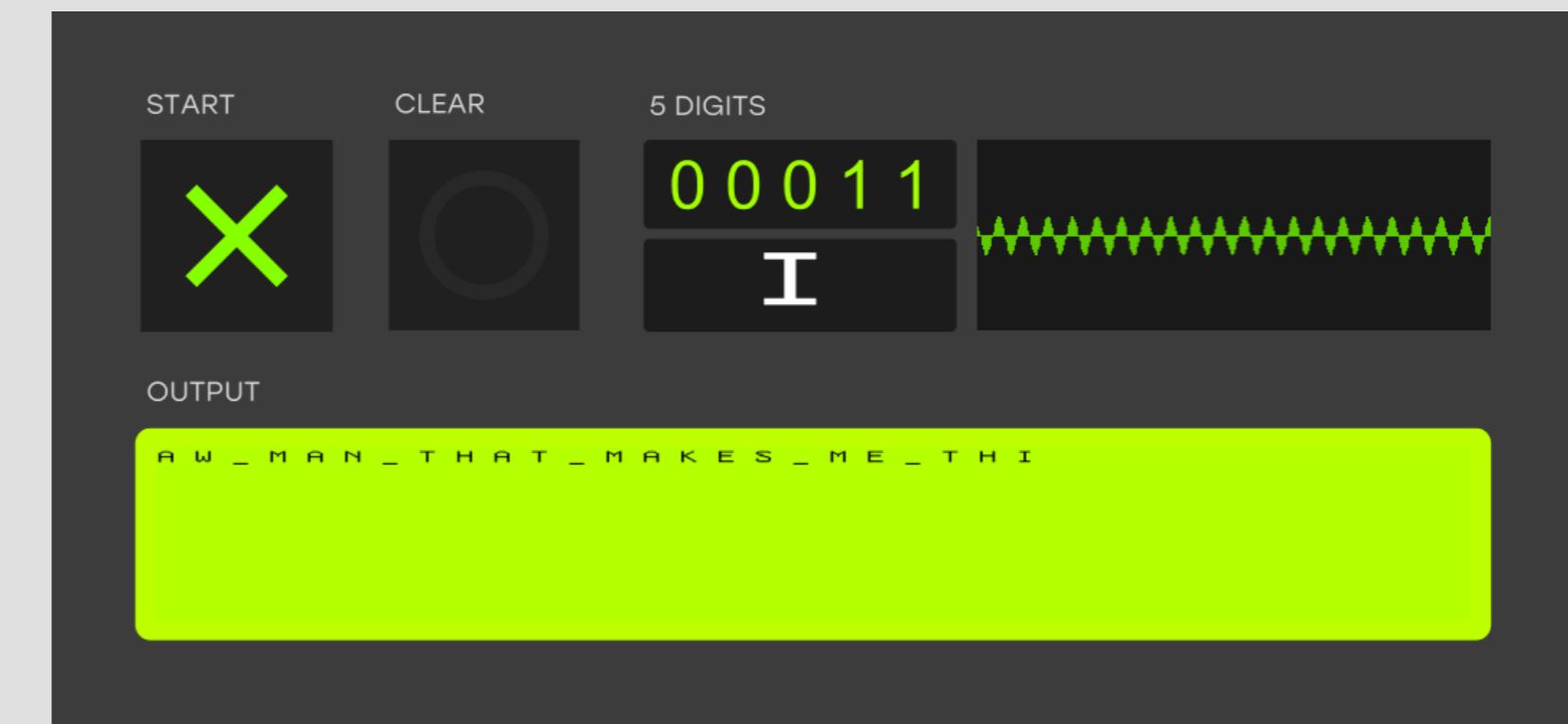
<https://archive.org/details/prelinger>

Tools in MAX MSP

I created tools to generate visuals and audio, like SSTV and RTTY simulations.
I developed these tools specifically to integrate them into the audio-visual installation



Create you MeteoFax tool implements a simulation of an SSTV transmission using MaxMSP



RTTY decoder implemented in MaxMSP using a 5 digits Baudot table conversion

Setup Design

Technology list

2 Optoma projectors used in stack (Positioning the projectors on top of each other to project the same image but with greater power) with 5000 ansi lumen power and a projection ratio of 0.5.

(From 100 cm distance of the projector from the projection screen, the base of the projection area will be 200 cm. We will position the projector 200 cm away cover the 400 cm base of each screen).

2 Audio speakers

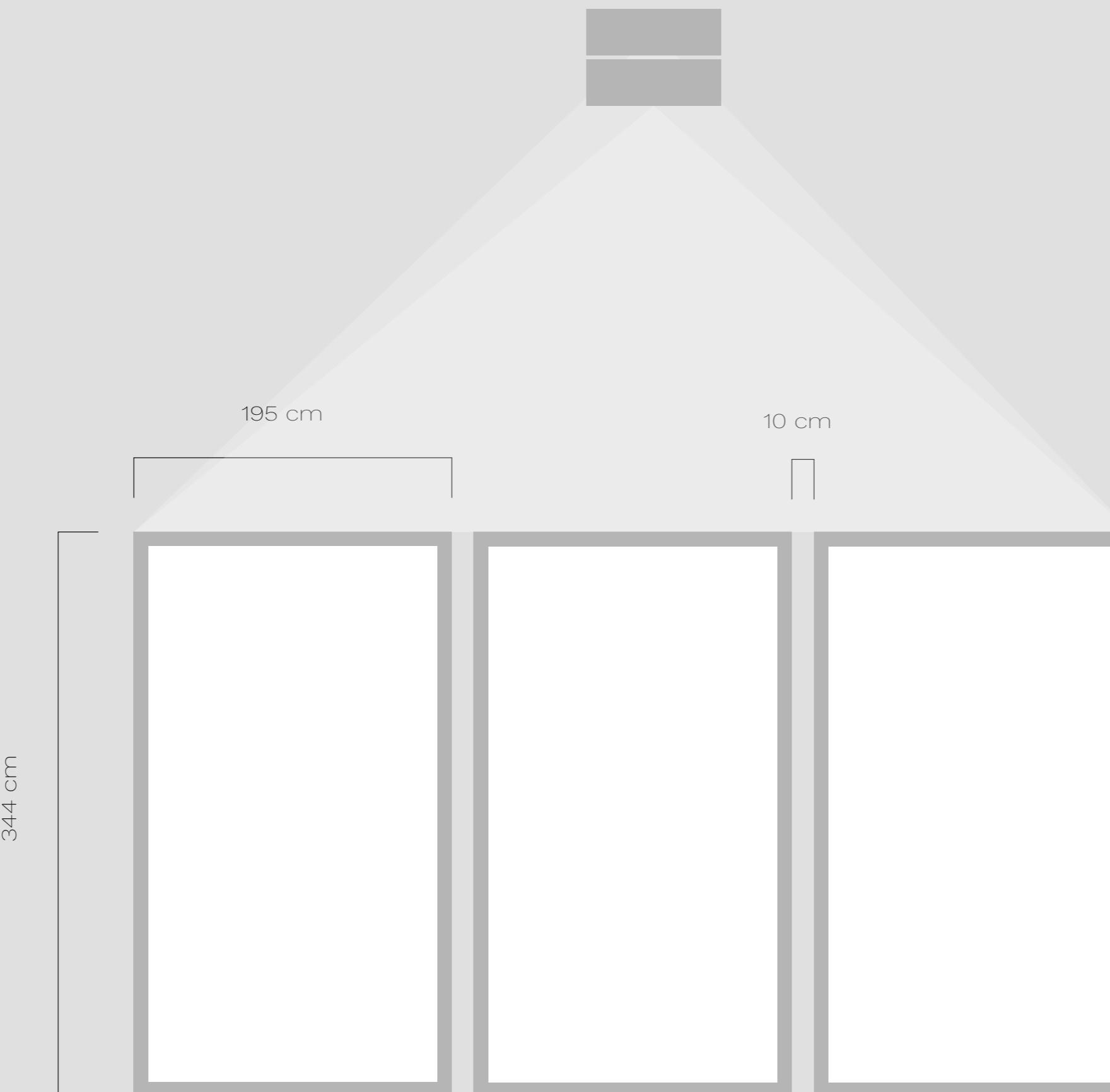
1 audio mixer

1 PC with Resolume Arena installed

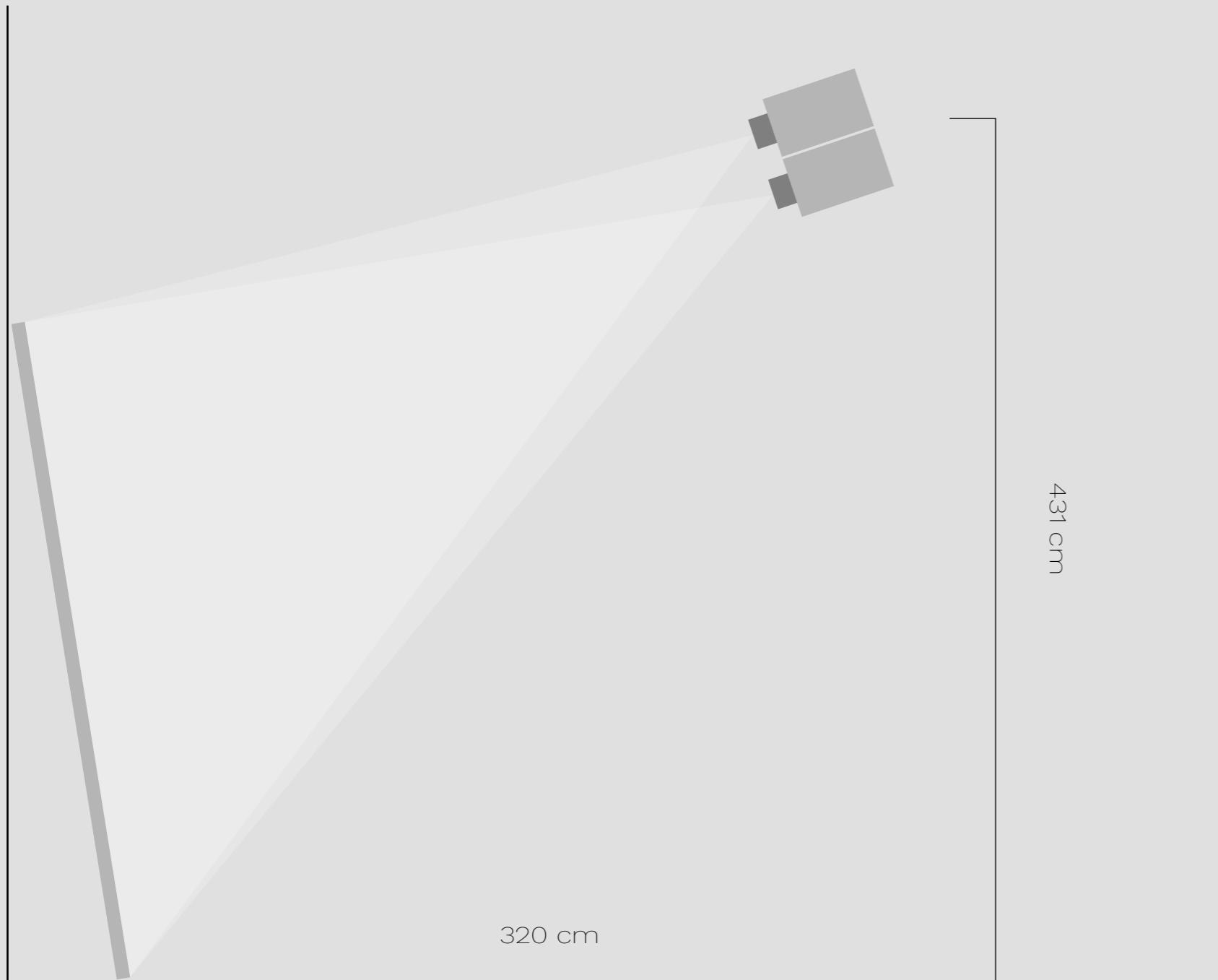
Configuration

The projectors will be connected to the broadcasting PC with two fibre optic HDMI cables. The speakers will be connected to the audio mixer, from which the equalisation can be adjusted, which in turn is connected to the broadcast PC via USB.

Front view



Side view



Top view



Spatial Sound

Spatial audio was implemented using two speakers with panning between the left and right channels. This technique creates a sense of movement and depth, enhancing the immersive experience by making the sound feel more dynamic and enveloping for the audience.

