UiO **: Department of Musicology**
University of Oslo

USER MANUAL

THE DUNGEON
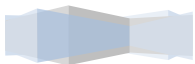
MCT PORTAL 2

May 2021

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Chapter 1: Extended Classroom

Section 1.1 Main Zoom connection

In the Dungeon, The "main" Zoom is the PC connected to the Samsung TV and the Logitech GROUP Video Conferencing Meetup System. The speaker and microphone on the Logitech Meetup are a back-up solution in case of no connection with the Mackie mixer and will work by simply turning on the PC and TV screen. The meetup system is always on and connected. See Subsection 1.1.A for more details on using the mixer connection.

The Zoom PC is connected to the Logitech Conference Camera and also to the Minrray PTZ camera, identified as "USB camera". The user can change between the cameras at any point during a meeting. Both cameras can use the green wall as a green screen to add a virtual background. See Section 1.1.B for details about using the green screen.

Login details for the Zoom PC can be found under its keyboard. For some basic troubleshooting ideas, see Section 1.4. For a quick setup guide go to Appendix 1: Quick Setup of Main Zoom.

Subsection 1.1.A Mixer connection

The Zoom PC has a connection to the mixer and can be used with the Beyer stereo pair of microphones and the main Genelec speakers. This connection is always active and no cabling is necessary. For more details about the audio setup in the room go to Appendix 4: Audio Diagram.

To use the main speakers, the user has to select "Headphones" as the speaker output in Zoom audio settings. The audio output of the Zoom PC is transmitted to the mixer and in turn from the mixer to the main speakers. To use the Beyer stereo pair microphones, the user has to select "Line in" as the microphone input in Zoom audio settings. The audio input from the microphones is routed to the mixer and then to the Zoom PC.

On the mixer, channels 9-10 are the Beyer microphones input. These have to be routed to the bus channels 1-2, dedicated to Zoom-send. Control how much of the audio signal picked up by the microphones is sent to the Zoom PC with the faders. Control how much mixed signal is sent to the Zoom PC with the mix bus channels' 1-2 faders. To control how much audio signal is received from the Zoom PC and routed to the main speakers, use the faders for channels 23-24, dedicated to Zoom-receive.

<u>Subsection 1.1.B Green Screen for Zoom</u>

Both the Minrray PTZ and the Logitech cameras support a green screen on Zoom for a better Virtual Background. To activate it, go to Background & Filters in Zoom settings and check the "I have a green screen" box. If the detected color is not accurate, manually pick the color of the wall. To improve the quality of the virtual background, use medium-bright to bright light conditions in the room. Alternatively, or for better lighting, use the two white Cameo lights.

The two Cameo lights are serially linked. They can be controlled with the LightKey software installed on the Mac Mini (positioned on the left on the control desk). You can choose the color of the lights, as well as their brightness. For better results when using the green screen, use medium-bright white lights. Too bring lights create white focus areas on the wall and result in non-uniform color shade and low quality virtual background.

Section 1.2: Alternative zoom connection

The "alternative" Zoom is the Mac Mini, located on the left side of the control desk. It is always connected to the projector as an extended screen to the left (it is not duplicating the monitor display). Join the same Zoom meeting as the "main" Zoom to use the projector as a second screen for Zoom. There is no camera connected to this computer.

The projector is always plugged in and connected. To use it, switch on the power on the side of the projector and press on the on/off button. To adjust the zoom of the image, the keystones, the position of the projection or more, use the projector's menu. There is no remote for the Projector. The Mac Mini is always connected to the projector as computer input 1.

Due to the lower resolution of the projection, it is recommend to use it to have a gallery view or a view of the speaker while in a Zoom meeting, and pin the shared content on the Samsung TV which has a higher resolution. The login details are under the keyboard. For a quick setup guide see Appendix 2: Quick Setup of Alternative Zoom.

Section 1.3: additional features

If the user wishes to share audio from a personal device, a mini-Jack is setup for this and already connected to the mixer. The input signal goes to channels 7-8. To have sound on the main speakers, make sure the main fader is up. To send the audio signal to the Zoom

PC (and Zoom meeting), route the signal from channels 7-8 to mix bus channels 1-2 (allocated for Zoom-send).

In the event of a presentation when the user wishes to have free movement around the room, a Sennheiser head-mic (mosquito) is already setup. The input signal goes to channel 2. To have sound on the main speakers make sure the main fader is up and to send the audio signal to Zoom, route the signal from channel 2 to mix bus channels 1-2 (dedicated to Zoom-send).

On the control desk there is a McONE switcher. The Mac Mini audio output is routed as input into the switcher. If the output of the McONE switcher is set to A, then the audio signal is sent to the wall-mounted speakers above the control desk. If the switcher's output is set to B, the audio signal is sent to channels 20-21 on the mixer. This feature is useful in case the user wishes to share any sound from the Mac Mini (in the room, or to Zoom).

Section 1.4 Tips and Tricks

Subsection 1.4.A Tips

To use a separate monitor mix in the Dungeon, on the mixer, remove the input signal from the L/R mix and turn up the desired level in the B-mix. The B-mix is sent to the main output at unity level. In this case, the B-mix level controls how loud the signal is in the Dungeon and the channel fader will control how much signal is sent to the mix (Zoom, LoLa or JackTrip).

Before leaving the Dungeon it is important to reset the mixer. If input and/or output connections have been changed, recreate initial setup according to the audio diagram (Appendix 4) and mixer chart (Appendix 5). Put all faders all the way down.

The mixer is only able to send stereo sub-mixes, so signals have to be hard panned to either left or right and sent on one channel each. This is relevant for multitrack sessions. For example, in case the user wants to send a guitar on RME 3 and a piano on RME 4, route both tracks to mix bus channels 3-4, then hard pan the track receiving guitar to the left and the track receiving piano to the right to ensure that they are on separate channels.

Subsection 1.4.B Troubleshooting

In case of encountering problems, make sure that:

- the power supplies are turned on;
- the cables are fully connected to the devices and not only half-way;
- the mixer is turned on (power switch located at the bottom of the left rack in the control desk);
- the PTZ camera is turned on (use remote);
- the speakers are turned on;
- Zoom is using the correct input and output audio devices;
- the relevant mixer channels are not muted;
- the main fader is turned up on the mixer.

Note that it is possible to send the microphones' input signal to multiple bus channels at the same time (e.g., both Zoom and LoLa).

Note that channels 9-16 are phantom powered.

Appendix 4: Audio Diagram, Appendix 5: Mixer chart and Appendix 6: Light and Video Diagram provide additional information about the room setup and might help when troubleshooting.

Chapter 2: Telematic performances

Section 2.1: Video (on Zoom)

The "main" Zoom PC has to be used for transmitting video signal. Both The Minrray PTZ and Logitech camera are connected to the Zoom PC. See Section 1.1 for more details about connecting and using a green screen to setup a Virtual Background and Section 1.4 for tips and tricks. For telematic performance purposes it is recommended to use Zoom video, but Zoom audio only until a higher quality audio connection is established over LoLa.

After LoLa connection is established, mute the Zoom channels on the mixer by moving the faders for the send and receive channels down. For a quick setup guide see Appendix 3: Zoom (Video) and LoLa (audio).

Section 2.2: Audio (on LoLa)

LoLa is a LOw LAtency audio-visual transmission software that allows "Portals" to connect among themselves. By "Portals" it is understood all locations that have a LoLa machine. In the Department of Musicology at Oslo University there are two such machines: one in the MCT Portal and one in The Dungeon.

In the Dungeon, the LoLa PC is on the right side of the control desk (and the PC unit is under the desk). On the desktop there are icons for two versions of LoLa. Version 1.5 allows connection with only one other LoLa machine, whereas version 2.0 allows a three-way connection (e.g. NTNU Portal, (UiO) MCT Portal, and Dungeon). The LoLa PC is already connected to the main speakers and the Beyer stereo pair microphones. For more details on the mixer setup see Subsection 2.2.A, Appendix 4: Audio Diagram and Appendix 5: Mixer chart.

Login details are under the keyboard. See Appendix 3: Zoom (Video) and LoLa (audio) for a quick setup guide. Appendix 4: Audio Diagram provides additional information about the audio setup in the room.

Subsection 2.2.A Mixer connection

The basic mixer setup for Lola is similar with the Zoom setup (Section 1.1.A) and is always active, so no additional cabling is necessary for the basic communication setup.

On the mixer, channels 9-10 are the Beyer microphones input and these have to be router to the bus channels 3-4 (dedicated for LoLa 1-2 send channels). Route to LoLa-send (bus channels 3-4) all other input signals that should be sent over LoLa (e.g., mini-Jack, the talk-back microphone). To control how much audio signal is sent to LoLa, use the faders for the bus channels 3-4.

To control how much signal is received from LoLa and routed to the main speakers, use the faders for the LoLa-receive channels 25-26. Turn the main fader up to control the sound in the main speakers.

Subsection 2.2.B Additional audio inputs

In a telematic performance several more instruments and microphones are used than the basic communication setup described in the previous two sections. To use additional inputs, connect them to any free channels. Note that channels 9-16 are phantom powered. After connecting to the desired channels, route the signal to mix bus channels 3-4 to send over LoLa (dedicated channels for LoLa-send).

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Section 3.1 Green Screen shooting

For Green Screen Video Shooting, use the two Cameo lights to create ideal lighting conditions besides the room lights. It is recommended to use white light and not color light. To avoid a focus point on the wall, adjust the brightness accordingly (lower brightness works better). The Samsung TV, desks and other furniture should be moved to improve the quality of the virtual background. Consider using the Sennheiser head-mic (mosquito) for recording audio with improved movement flexibility.

Section 3.2 Voice-over recordings

In case of voice-over recordings, it is recommended to use the SM7B microphone above the mixer. It is routed on channel 1 on the mixer. It is not recommended to route the audio signal to the speakers, due to possible background noise and feedback. Instead, use headphones to monitor the audio signal while recording. The signal is routed to the Mac Mini with a RME (fireface) cable through mix bus channels 1-2 (dedicated for Zoom) and 3-4 (dedicated for LoLa 1-2).

Section 3.3 DAW on Mac Mini

On the Mac Mini there are two DAWs installed – Ableton and Reaper. It is possible to connect a midi keyboard to the computer and edit the sound signal through a DAW (e.g., add effects or change sound). The processed audio signal can be sent to the wall-mounted speakers above the control desk or to the mixer on channels 20-21 using the McONE switcher. For a telematic performance, consider routing the signal to the mixer and sending it over LoLa together with the other instruments.

Section 3.5 Additional suggestions to be implemented

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The Dungeon is setup to be a flexible room that allows for multiple use cases. In this section two suggestions are presented for future implementation.

Subsection 3.5.A Live streaming

In the Dungeon, in the left rack of the control desk, there is a Dell PC currently not in use. The plan is to set it up to be the "multimedia" PC. One of the features of this PC is planned to be the possibility to live stream, using OBS Studio, audio-visual signal from anywhere in the Musicology Department. This is possible due to a digital video patch and analogue audio patch connected through (green) SDI cables along the department. The network is up and running and misses only the installation of the applicable Blackmagic software on the "multimedia" PC.

Subsection 3.5.B JackTrip server

JackTrip is a command line program created for high-quality audio network (telematic) performances over the Internet, as it supports bidirectional, uncompressed audio streaming with any number of channels.

Preliminary tests showed that the audio connection is comparable with LoLa in terms of quality, speed and (very low) latency. Using such a system would allow participants from home to join telematic performances hosted in the portal. There is a server set up on the NREC network that can be accessed from anywhere at any time. More tests are needed to use this system reliably. Below see three possible setups for telematic connections.

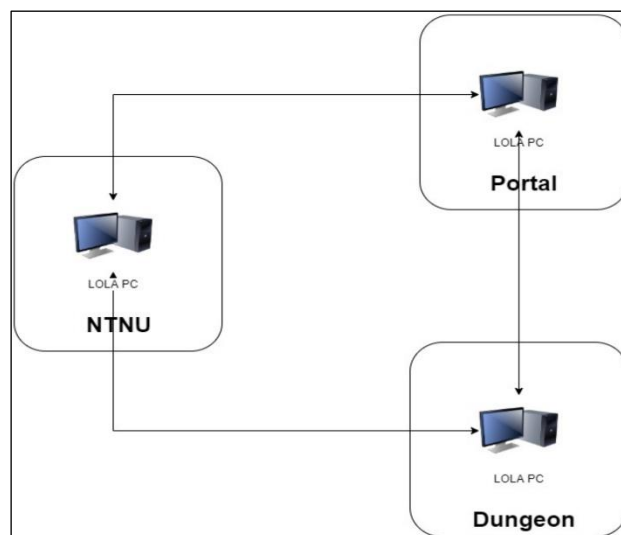See the Appendix 7: Network diagram for more information about the current setup.

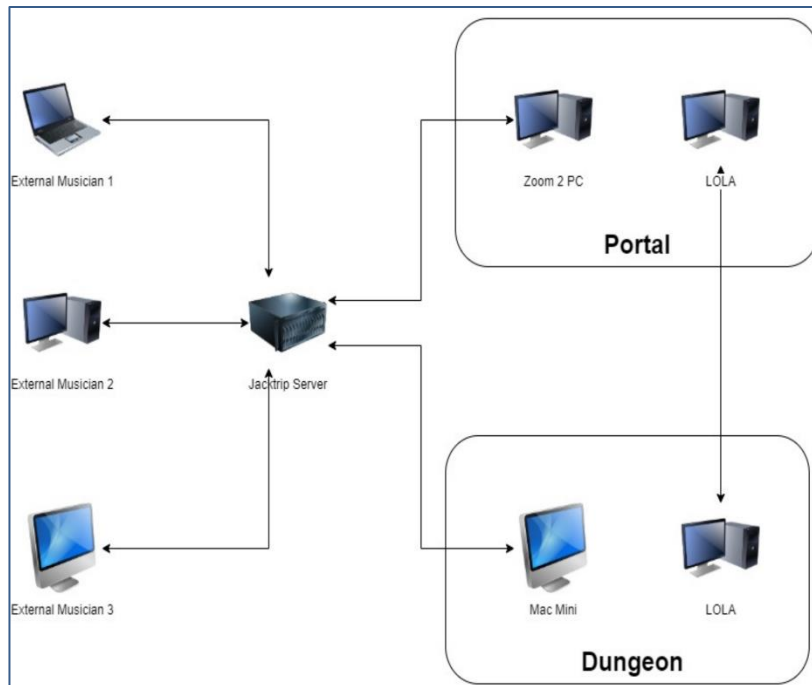*Figure 3.5.B.1: LoLa only telematic connection*

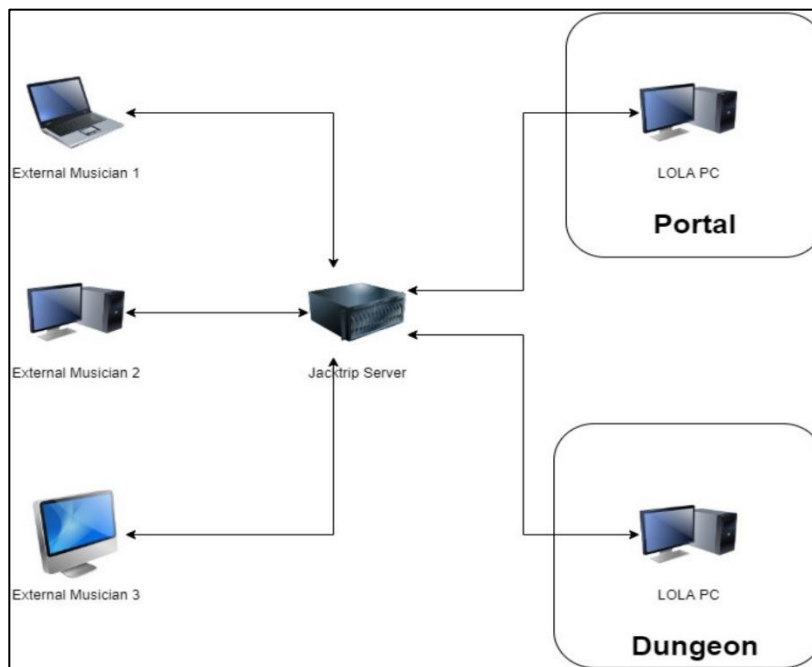*Figure 3.5.B.2: Hybrid telematic connection – LoLa and JackTrip*

Figure 3.5.B.3: JackTrip only telematic connection

Appendix 1: Quick Setup Guide for main Zoom

Turn on Main Zoom

The Dungeon - MCT Portal 2
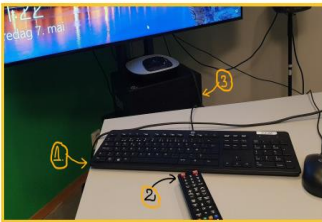
1   Switch on power supply. Turn TV on. Turn on Zoom PC and join the Zoom meeting.

*Login info under keyboard.
**Turn on PTZ camera if you want two cameras on Zoom.
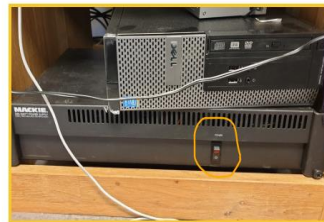
2   Turn on mixer power (bottom of left rack on the control desk).

3   Turn on main speakers.

4   On the mixer, route stereo room mics to Zoom (channel 1-2 on). Fader should be up.

5   On the mixer, make sure the Zoom receive fader is up.

6   On the mixer, make sure the Zoom send fader is up, and the main fader is up too.

Appendix 2: Quick setup guide for alternative Zoom

Turn on alternative Zoom

The Dungeon - MCT Portal 2

1 Turn on Mac Mini. Join the Zoom meeting.

*The login info is under the keyboard.
**The projector is always connected as an extended screen.

2 Turn on projector. Make sure the switch is on. Adjust image if necessary by going to menu.

*Mac Mini is always connected as computer input 1.

Appendix 3: Quick Setup Guide for LoLa and Zoom

LoLa and Zoom

The Dungeon - MCT Portal 2

1 Connect with Zoom. Once LoLa is connected, mute Zoom (send receive and send fader down).
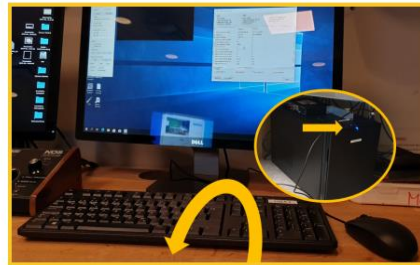
2 Turn on LoLa computer. Using LoLa 1.5 or 2.0 (icons on desktop) connect to another Portal.

3 On the mixer, turn up the LoLa send and receive faders, as well as the main fader.

4 On the mixer, output all relevant channels (e.g. mics, mini-Jack audio, instruments) to LoLa-send (mix bus channels 3-4).
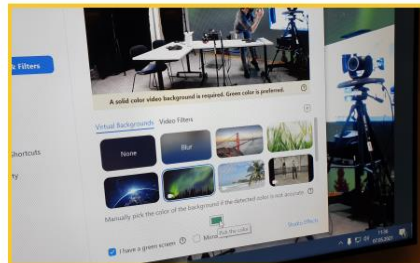
5 To use green screen, manually select the color of the wall (Zoom->Background seetings). Both cameras support this.

6 Additionally, use Cameo lights. Power them on. Control with LightKey software (on Mac Mini).

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Appendix 4: Audio Diagram

Chn 21-22: Out - B

Out - A

Chn 25-32: RME 1-8 receive

AUX-send 1-4: RME 5-8 send

Submix 3-6: RME 1-4 send

Submix 7-8: MacMini send

In - A

Main Mix

RME fc 800

MacMini

MacOne
- monitor switch

Mackie 32-8 Mixer

LoLa computer

Chn 1: Shure SM7B

Chn 2: Sennheiser EW-100 Headmic

Chn 7-8: AUX - Line

Chn 9-10: ORTF Pair

Chn 23-24: Zoom Out

Submix 1-2: Zoom In

Zoom Computer
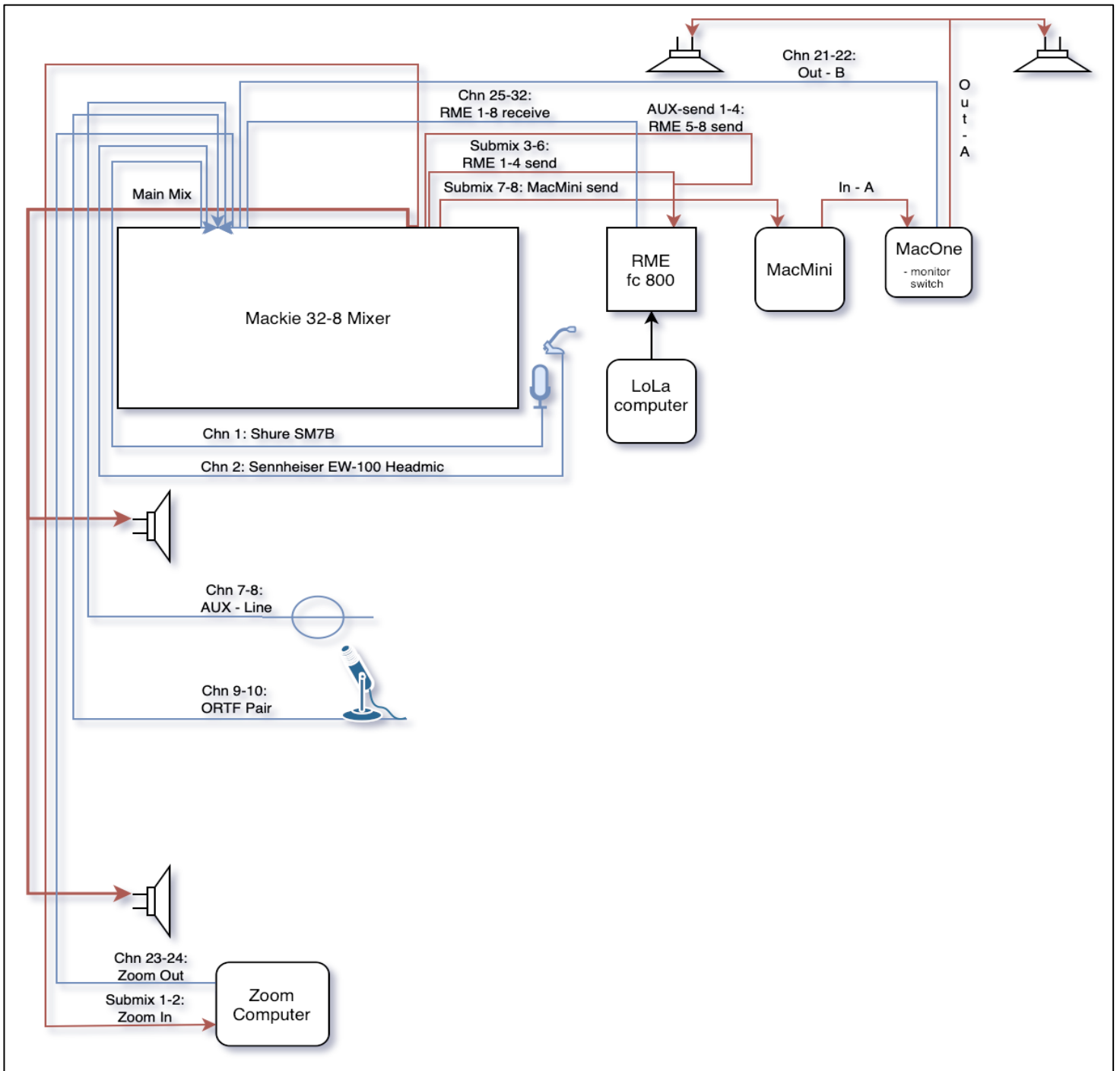
Appendix 5: Mixer chart

	CHN #	NAME	MIX	EQ	LOW CUT	EQ HI MID	LO MID	HI	LO	PAN
	1	Shure SM7B	1-2, 3-4	-	X	-	-	-	-	C
	2	Sennheiser EW-100	1-2, 3-4	X	X	900Hz, -6dB, 5Q	300Hz, -4dB	1dB	1dB	C
	3	User	L/R	-	-	-	-	-	-	C
	4	User	L/R	-	-	-	-	-	-	C
	5	User	L/R	-	-	-	-	-	-	C
	6	User	L/R	-	-	-	-	-	-	C
	7	AUX L	1-2, 3-4, L/R	-	-	-	-	-	-	L
	8	AUX R	1-2, 3-4, L/R	-	-	-	-	-	-	R
P	9	Beyerdynamic MC530 L	1-2, 3-4	-	X	-	-	-	-	L
H	10	Beyerdynamic MC530 R	1-2, 3-4	-	X	-	-	-	-	R
A	11	User	L/R	-	-	-	-	-	-	C
N	12	User	L/R	-	-	-	-	-	-	C
T	13	User	L/R	-	-	-	-	-	-	C
O	14	User	L/R	-	-	-	-	-	-	C
M	15	User	L/R	-	-	-	-	-	-	C
	16	User	L/R	-	-	-	-	-	-	C
	17	User	L/R	-	-	-	-	-	-	C
	18	User	L/R	-	-	-	-	-	-	C
	19	User	L/R	-	-	-	-	-	-	C
	20	User	L/R	-	-	-	-	-	-	C
	21	MacMini (MacOne) L	L/R	X	-	-	-	-	2dB	L
	22	MacMini (MacOne) R	L/R	X	-	-	-	-	2dB	R
	23	Zoom L	L/R	X	-	-	-	-	2dB	L
	24	Zoom R	L/R	X	-	-	-	-	2dB	R
	25	RME 1	L/R	-	-	-	-	-	-	L
	26	RME 2	L/R	-	-	-	-	-	-	R
	27	RME 3	L/R	-	-	-	-	-	-	L
	28	RME 4	L/R	-	-	-	-	-	-	R
	29	RME 5	L/R	-	-	-	-	-	-	L
	30	RME 6	L/R	-	-	-	-	-	-	R
	31	RME 7	L/R	-	-	-	-	-	-	L
	32	RME 7	L/R	-	-	-	-	-	-	R
	Submix1	Zoom L	-	-	-	-	-	-	-	-
	Submix2	Zoom R	-	-	-	-	-	-	-	-
	Submix3	RME 1	-	-	-	-	-	-	-	-
	Submix4	RME 2	-	-	-	-	-	-	-	-
	Submix5	RME 3	-	-	-	-	-	-	-	-
	Submix6	RME 4	-	-	-	-	-	-	-	-
	Submix7	MacMini L	-	-	-	-	-	-	-	-
	Submix8	MacMini R	-	-	-	-	-	-	-	-
	Aux send 1	RME 5	-	-	-	-	-	-	-	-
	Aux send 2	RME 6	-	-	-	-	-	-	-	-
	Aux send 3	RME 7	-	-	-	-	-	-	-	-
	Aux send 4	RME 8	-	-	-	-	-	-	-	-
	Main Mix L	Genelec L	-	-	-	-	-	-	-	-
	Main Mix R	Genelec R	-	-	-	-	-	-	-	-

Appendix 6: Light and Video Diagram

Appendix 7: Network Diagram