

# Bishop's Stortford u3a Hybrid Meetings

## Introduction

The u3a ran its monthly members' meetings over Zoom during the lockdown and reverted to in-person meetings from October. The committee was unconvinced of the need for hybrid meetings but things have changed, to the point that we plan to hold our next monthly meeting as a hybrid.

This case study (brain dump?) describes the current state of planning of that meeting and knowledge of the equipment available. It will be updated as we improve our experience.

## The Venue

The venue is Bishop's Stortford Methodist Church. During lockdown they improved their AV setup and have been successfully live streaming Sunday services. Some time ago the church offered to meet the u3a and show us how to use their equipment, but it proved so hard to set up the meeting that we began to question whether it would ever happen. Eventually a meeting did take place and was, from the u3a's point of view, very successful. We are free to use the church's impressive equipment – so long as we don't leave things in a reconfigured state.

We have now had a second tutorial from the church, attended by a wider u3a tech team, hastily assembled once it became clear that running large hybrid meetings is not trivial. In fact it is close to impossible using just one, inexperienced, person.

## Room layout

The room is rectangular with a control area at the rear. All connections are near the control desk with the exception of a USB socket on the side wall at the front of the room. This is convenient for connecting USB PowerPoint slide advance receivers.

There is a small first-floor gallery at the rear.

## Audio

The church already had a sound mixer, an Allen and Heath ZED24.



There are several sound sources; in fact just about all of the mixer's audio inputs are connected. The channels are clearly labelled. The inputs the u3a is likely to use are Lectern 1, the pulpit to the left of the stage; Lectern 2, the stand used for readings on the right of the stage, and radios 1 and 2, the wearable microphones.

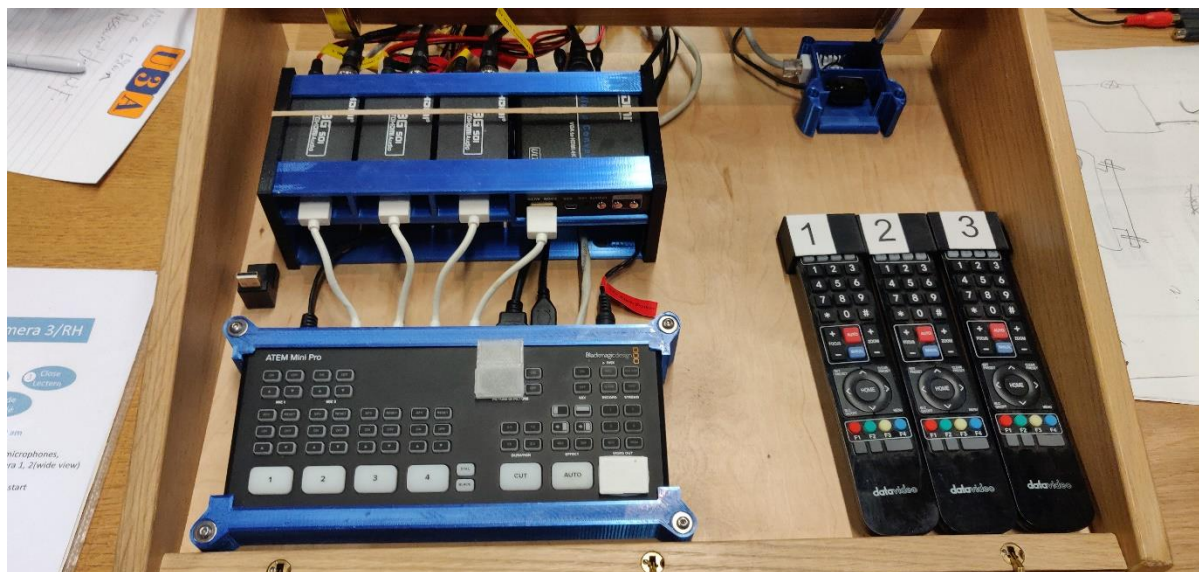
The audio mixer is configured to send a pre-fader auxiliary channel to the camera switcher (q.v. later) and hence the output stream.

There's a pair of speakers at the front of the auditorium. I THINK they're powered by an amplifier in the control area.

## Video

Over lockdown the church has installed three fixed cameras. Two are on the side walls, one nearer the front than the other, and the third is mounted on the front of the gallery. Each camera has full pan, tilt and zoom (PTZ) using the remote controls labelled 1, 2 and 3 in the image below<sup>1</sup>.

There are two ceiling-mounted projectors displaying to lowerable screens at each side of the front of the church, the centre space being occupied by an illuminated cross. The remote controls for the screens are stored at the control area. Each projector has its own remote control and can, in theory, be operated independently. In practice only a split VGA source is considered reliable by the church admins.



The church has a video switcher, a Blackmagic ATEM Mini Pro. This is at the front left of the cabinet in the photograph above. The devices above the switcher convert the SDI signal from the cameras into HDMI which is then fed into the switcher<sup>2</sup>. HDMI cannot be run all the way to the cameras as the distances involved exceed that supported by the HDMI standard.

Alongside and to the right of the three SDI-HDMI converters is a fourth protocol converter. This takes a VGA feed from a PC, split from the church's projector feed, and converts it to HDMI. Its use is described later.

The switcher can operate as a standalone device. The button on the top right is 'on air'. Once the credentials for YouTube, Twitch or Skype have been configured (via a PC) then this button is all that's required to live-stream, and that's exactly what the church does. The u3a's preferred streaming platform is Zoom so this technique is not available to us. We need to use the device in conjunction with a PC.

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<sup>1</sup> It was noted that the remote controls are slightly clumsy and not really suitable for use on the live camera. Composition should take place when the camera is not in use.

<sup>2</sup> It can happen that input from a camera is not being received by the switcher. The solution is often to power cycle the relevant converter.



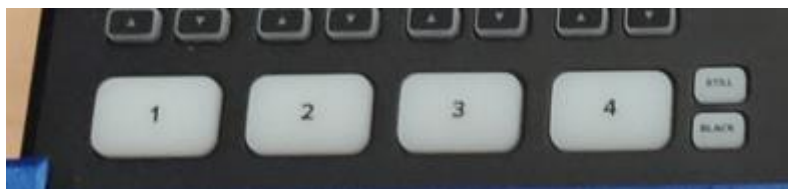
The switcher supports an external monitor.



The monitor shows the input from the three cameras as well as from the PC, seen here as Camera 4 and showing a u3a slide. The large window at the top right, labelled Program, is the camera stream that is live. That on the top left, Preview, is used to view the camera that is intended to be used next. The image being captured by the Preview camera can be composed in the Preview window and only made live once it is correct.

Below the Program and Preview windows the stream from all cameras can be seen, as well as controls showing received audio levels, recording settings (the switcher can record to USB memory), an image received from a PC for display and other features that may warrant further study.

The switcher can be used in such a way that you simply use the four white buttons, labelled 1, 2, 3 and 4, to switch between cameras.



The church has configured it a better way which makes use of the preview feature. As explained above one camera is live (Program) and one is in preview. The button on the switcher relating to the live camera is illuminated red, and the camera's thumbnail on the monitor has a red border. The preview camera has its button and thumbnail border coloured green.

The pair of large white buttons at the lower right of the switcher make the preview become live. The button labelled CUT immediately switches the Program and Preview cameras, making the camera that had been set up in Preview become live and vice-versa. The button labelled AUTO applies a transition instead of a jump cut. The transition is configurable<sup>3</sup> but has been set up by BSMC as a 1 second fade.



Pressing an unilluminated camera button places that camera into preview.

#### Camera Presets

It has been noted that the cameras have full PTZ and that there are remote controls for this purpose. Using the controls on the remote is slightly clunky. It is also unnecessary most of the time because each camera supports 10 presets (saved combinations of PTZ). The church has configured some of them as follows.

- Preset 0 – General view, presented upon power on
- Preset 1 – Close view of the left part of the stage
- Preset 2 – Wide, central view
- Preset 3 - Close view of the right part of the stage

To choose a preset just use one of the numbered buttons on the camera's remote control. Presets 4 – 9 have not been set up and the u3a could configure them if required, but it seems unlikely that we'd ever need a shot other than one of the existing presets, perhaps with a manual tweak if necessary<sup>4</sup>.

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<sup>3</sup> Please don't!

<sup>4</sup> We must absolutely not reconfigure presets 0-3 as they are relied on for church services. That doesn't stop us from making manual adjustments so long as they aren't saved

## Displaying PC content.

A PC's graphics output is connected to the switcher as camera 4. This is a converted VGA image from the PC's video adaptor. There is a limitation to the VGA-HDMI conversion as the aspect ratio is altered<sup>5</sup>. The church has solved this problem by making use of the switcher's Picture In Picture (PiP) features. The church has configured PiP to display the PC as a full-screen overlay, suitably resized. The practical effects of this are as follows:

- Any (VGA) output from a PC can be fed to the switcher
- The camera 4 button should not be used to display this output because the image would be stretched. Just press the ON switch in the Picture in Picture part of the switcher to display the PC output on top of whatever you're currently showing. Press the OFF switch to return to the Program camera.



- Never, ever, peel back the white tape in the above image and try to improve anything or add any PiP effect of your own devising.

## Zoom

The setup described above is ideal for a live stream on YouTube but cannot support a Zoom hybrid meeting. However the switcher's output can be sent to a PC/Mac over USB. By this means the video and audio output from the switcher becomes available to Zoom as a camera and microphone, both labelled Blackmagic. That is how we intend to use the device.

## Network

The church has installed new mesh wifi APs and inform us that the speed is good (but unquantified). Several RJ45 connectors are available so are to be preferred.

## Computers

The church has an Acer laptop used to send slideshows, images and videos to the switcher. They will allow us to use this.

It is recommended that we use the Acer for presentations etc. but use another machine as the Zoom device. We need to further consider how this works. In particular we need to think further about Zoom screen share. Do we need ever use screen share, when we can instead send the images via the switcher? How about when we wish to present a presentation that has audio?

## Personnel

The church has three people running its streaming services. Now that the u3a has established its tech team it should be able to support this level of effort, but further familiarity with the setup is required.

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<sup>5</sup> And, of course, no sound is carried

## Next Steps

A trial meeting is planned for 13<sup>th</sup> December 2021. No rehearsal has yet been planned, but the church has offered to attend.

## Acknowledgements

Bishop's Stortford u3a is extremely grateful for the help provided to us by Bishop's Stortford Methodist Church. The setup looks daunting at first but I now think we'll get there. We could never have done so without their help.