SOCIAL CONVENTION

Introduction to Digital Production for Live Performance

Social Convention co-founders Natalie V Hall and Cimeon Ellerton-Kay guide you through their hard-earned need-to-knows of streaming live performance.

Digital arts and culture experiences are being pushed to two ends of the spectrum.
- On the one hand we have a film and tv format: multi camera, high quality video, passive watching experiences.
- On the other hand there's immersive online experiences with a really high level of interactivity and complex digital journeys to enable that.

Competing for the time and attention of audiences that are more sophisticated and more demanding than ever can be tough. Furthermore, doing so without a huge tech team (or budget) can feel impossible.

This guide is designed to kickstart your journey into digital production for live performance.

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What is Live Digital Production?

LIVE

A lot of what we see as digital events are "as live" - aka PRE-RECORDED live and then edited and played to a ticketed audience. While that's totally valid, we are talking about the performance happening for the audience in real time.

When presented "as live" you get time to really polish the material to film or TV level, but this requires a lot of time and skill. We also believe that as live performance makers, what happens in the moment is a special magic that we want to capture. The risk is part of the joy of live performance for us and so we have been working on methods to deliver this effectively online.

INTERACTIVE

Another important part of attending a live performance is audience presence. Watching or participating in live performance is a collective and even social experience. So some level of interactivity or "presence" with your audience online is also important. But it may not be the same online as it would be IRL (in real life). We use chat boards and messaging; we sometimes encourage audiences to leave their audio on to react in real time; and we also offer the audience choices such as the option to experience one of two simultaneous performances in two online "rooms". Pop-ups of the GDPR opt-in sort can be used to offer the audience these choices at the right time.

PRIVATE

There are lots of ways to go live publicly, directly on YouTube, Twitch, or Facebook Live. This is totally valid! But you do give up a lot in how much you can control the audience experience, sell tickets or capture donations, and maximise quality. We are specifically interested in private, embeddable (on a website) streaming that allows you to create slick and custom audience journeys, maximise the AV (audio-video) quality, and most importantly - monetise appropriately!

💡You can think of this as *ticketed, interactive livestreaming*

The 4 Types of streaming technology

How to understand the many different offers

Over the past year we undertook a huge amount of research into the various platforms.

We found that **there are _a lot_ of platforms and technologies** (we tried over 50!). They all overlap in terms of functionality and simply reading the list of features won't tell you everything you need to know.

WEB EVENTS /
CONFERENCES
eg Hopin, Run The
World

OTT / VOD APPS
eg Vimeo,
Brightcove

VIDEO
WEBINARS /
MEETING
eg Zoom,
Livestorm

SOCIAL / LIVE
STREAM
eg Twitch,
FB Live

You have to try them to actually understand them - and know what tools and features you'll actually need. So we suggest narrowing down your search by considering which of the 4 types best suit your needs.

WEB EVENTS/CONFERENCES
These solutions tend to be "all-in-one" web based tools i.e. they work entirely from your internet browser. They are very much designed for conferences and similar types of events - to the point where functionality is even named after the physical item it is replacing ("stage", "booth", "green room"). With a bit of imagination you can turn these into more creative spaces for performances, but the residual corporate event feel tends to remain to some degree.

We always suggest having a play with tools before making a decision and one of the fastest growing and easy to use is <mark>Hopin</mark>. It has a good free level that should tell you everything you need to know if it is right for you.

VIDEO WEBINARS/MEETINGS

The difference between this category and the above is that video webinar/meeting solutions often have more sense of presence for the audience - especially in meeting mode. Audience members can be seen by artists/producers and other audience members. The downside to this equality of presence and presumption toward audience visibility is that in our experience, audiences can be fearful of how they look online to other people - the benefit to home-based digital engagement can be doing it in your PJs, but that may feel inappropriate if people can see you. The other major difference is that there is often a desktop or native application. This puts less strain on the internet connection and the web browser, but often leads to high levels of compression in the video or audio, leading to a noticeable reduction in quality - in particular because it is designed to improve speech not music.

<mark>Zoom</mark> seems to be the most widely used and is definitely the easiest one to test with and is very affordable to briefly upgrade for more advanced features or scale. You can get quite creative with break-out rooms - we hosted a multi-stage festival using this feature.

OTT / VOD

OTT[1] (Over The Top) and VOD[2] (Video On Demand) comes from traditional broadcast TV. The tech was developed for TV channels to start going online and on-demand as opposed to their normal fixed schedule broadcasts. This means they have a particular language and look and feel, as well as very limited interactivity or presence for the audience (although this is rapidly changing). They are also often very expensive, but if you're looking for a super high quality AV experience and slick design it is easy to create a very highly branded experience for audiences.

The cheapest and most flexible option we've found is <mark>Uscreen</mark> (probably because it has focused on the elearning market - yoga/fitness/cooking etc). It also has a good free trial period to test your ideas.

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[1] OTT stands for "Over-The-Top" and comes from TV when broadcasters started broadcasting over-the-top of the TV via the internet.
[2] VOD stands for "Video-On-Demand" i.e. watching content at a time of your choosing rather than when it is broadcast.

SOCIAL / LIVE STREAM

Many social media applications offer live streaming or "go live" capabilities and some are designed primarily for that, such as Twitch/YouTube. Going live on Facebook or Instagram is in our opinion a less than ideal way to deliver artistic events and content because it is so ephemeral by nature and almost impossible to monetise. We feel Twitch seems very under-utilised by the arts sector to reach a younger audience, but it can be very dominated by gaming and may not be the best place to reach your current audience. The creativity and interactivity possible is something that can't be ignored, and it is very cheap.

As mentioned, to really explore this approach, Twitch is the real leader in this space.

💡 Are you most interested in a Netflix style broadcast experience that people can stream on their TV, but that might have low to no interaction? Then Try OTT.
Or is it really important to see and hear audience reactions? If so, start with web conferencing.
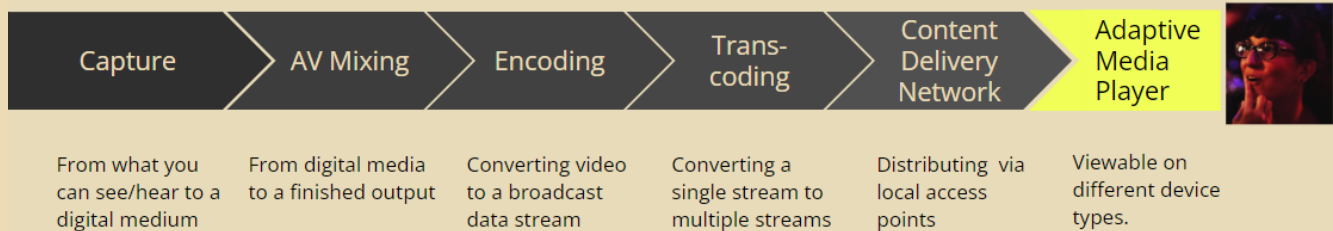
Quick comparison of the different approaches

4 Streaming Types	Pros	Cons
WEB EVENTS / CONFERENCE	- Easy to use for all - Good interactivity - Often good help articles/support - Low latency	- Mid level AV quality - Often very corporate looking and expensive to customise / brand - Often take a cut of sales - Computer/laptop only
WEBINAR / MEETING	- Very cheap for an annual licence - Highly interactive - Can include audience on-screen - Ver low latency	- Poor AV quality - Impossible to customise the look and feel - Audiences can lose the link - Poor mobile experience
OTT / VOD	- Superb AV quality - Often good help articles/support - Very easy to use - Full TV experience	- Expensive - Often take a cut of sales - Very limited interaction - Requires budget to design and integrate with website
SOCIAL / LIVE STREAM	- Eas to use all-in-one - Lots of tools available to add live AV mixing - Can pull in from and stream out to custom destinations (RTMP)	- Very difficult to monetise or collect audience data - Difficult to embed in your own site

How does live streaming actually work?

The technical steps that go into live streaming

It's really important to have a basic grasp of what's happening behind the scenes so you can understand what might be happening when it actually goes out there. And when you're trying to assess what sources to use and what platforms.

Capture & Create →Distribute & Interact → Sell & Communicate

Capture	AV Mixing	Encoding	Trans-coding	Content Delivery Network	Adaptive Media Player
From what you can see/hear to a digital medium	From digital media to a finished output	Converting video to a broadcast data stream	Converting a single stream to multiple streams	Distributing via local access points	Viewable on different device types.

Inside the Black Box

When we look at YouTubers and vloggers, it seems really simple to hold up a phone and go live online. But we're not making YouTube content, we're making art and theatrical work (insert jazzhands).

Thinking through this process will help you troubleshoot any problems and to further refine your working processes once you've chosen a platform.

Capture - create a digital recording/s of the performance
The capture part can happen anywhere using a wide range of equipment - from professional cameras to smartphones (now often in HD). But you have to be able to get that feed from your phone or camera into a studio where you can switch camera feeds, or add music or transitions.

💡 There are lots of ways of capturing very high quality video, but sound is often overlooked. Try to reduce echo with soft furnishings (swimming pool sound) and if you can afford a USB mic it's worth it.[3]

<u>AV Mixing - from what you can see/hear to a digital medium</u>
From the capture stage, you receive and composite multiple video and audio inputs, or in simple terms, turning lots of separate audio and video into one AV output. A single file with some branding, perhaps credits, stings, transitions. This is where you can re-invent and blend traditional theatre tech of lighting, set, and sound design. All the disciplines and skills that make live performance work - not just a camera pointing at something.

This is where you will need some software, either an online web app - such as <u>Restream</u> or <u>Streamyard</u> - or a native app on your computer (if it is powerful enough) - such as <u>OBS</u>.

💡 Think about how you can reimagine set, lighting, and sound design both physically (as part of what you capture with the performance) and digitally (at the mixing stage, with overlays and inputs).

<u>Encoding - the process of optimising the content</u>
Converting video to a broadcast data stream. Choosing the wrong encoder is like sending a gif as a jpeg. It won't have the desired effect. Encoding is much like converting from Wav to MP3. There are storage forms of encoding (eg MP3) and transfer forms of encoding. Common transfer protocols are:
- RTMP - Real Time Messaging Protocol
- WebRTC - Web Real Time Communication
- HLS - HTTPS Live Streaming

So when you see these terms, such as "custom RTMP/HLS" in the feature list, don't worry - it is just a way to send or receive AV content via the internet. A good example is using an AV mixing tool such as Restream (see above) to send a feed to a Zoom meeting[4]. This would be a good way for you to send a performance where you want the audience to see or hear each other, as well as seeing and hearing the performance.

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[3] A list of good value equipment is provided at the end of this guide
[4] To learn more, <u>read this article</u> about this Restream/Zoom use case

Transcoding - creates multiple versions of the stream

Transcoding is optimising for the audience, no matter what device they are on or how up to date their operating system is. Converting a single data stream to multiple streams of different bit rates i.e different quality levels This is the same as the encoding process, but multiple times in parallel. You don't need to worry about this unless you want to get super advanced.

Content Delivery Network - distributes the stream via local internet access points

The Content Delivery Network (CDN) makes the shortest route across the internet from the content to the viewer. At a sophisticated level, eSports use this so that everyone is experiencing the event together at the same time. Anyone who does live performance knows this is key to creating an atmosphere and a relationship between the performers and audience. Servers around the globe temporarily host the data from your stream at an intermediary stage somewhere close to viewers..

(Adaptive) Media Player - what your audience actually see

The media player gets it all to your audience in as high quality as possible, with great design and audience interactivity. An adaptive player ensures the stream works on any device and does it's best to maximise quality based on the speed on the internet and the device. The player is a small programme within the website that looks at the browser and computer/phone. An easy way to embed a pretty good media player is to use the YouTube embed code, which can still be made private so you can send people to your own website.[5]

> 💡 It's easy to gloss over all of these fiddly technical steps, but if you're combining things in the wrong way or leave it up to Zoom to do all the work, you can see how easy it is for the experience to suffer!

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[5] To learn more, read the YouTube guidance

Our 5 top tips for Digital Production

Image by Theo McInnes of Blunderland Variety Show

1. Match your platform to your requirements

4K video, deeply interactive, super affordable, easy to use? It can be difficult to hit all of the above without custom solutions, and oftentimes there are hidden compromises in quality or latency once you connect all your tools together. We suggest you think seriously and honestly early on about what your top priorities are, and what you're willing to let slide - or better yet, integrate and work with some of the digital quirks as part of the aesthetics or experience! For example, web meeting tools like Zoom are great for audience presence, but tricky for controlling audiovisual quality or customised audience journeys.

You may also need additional tools to get the most out of something - there are lots of plugins and services (like Cleanfeed for high resolution remote to remote audio) you can use. But in general, we recommend you focus on your key priorities and choose the tools that support those - for the rest, loosen up and lean into the "digital" of it all.

2. Design moments for audience presence and engagement

Here's the thing: making work to be experienced remotely is just not the same as making work to be experienced in person. People are most likely in their homes - maybe on their couch

streaming to the TV, maybe lying in bed on their phones. They won't act or interact the same as they might in the theatre. That can feel frustrating, but it's also an exciting opportunity.

Think about how you want your audience to feel, and how you ideally want them to interact throughout the piece, then spend time testing exactly how you bring them into those emotional spaces. Better yet - invite them to co-design those spaces with you.

Some things to think about:
- Invite the audience to keep their personal audio on if you work in web conferencing platforms.
- Plan for trolls, but not at the expense of freedom & engagement (another argument for ticketed events vs public livestreams!)
- Utilise normal tested conventions in unexpected ways - things like chat and pop ups can be used to great effect if you get creative.

3. Simplify the customer journey

We found that it was necessary to really simplify customer journeys to make things comfortable and easy to understand for audiences. For example, even with clear instructions, audiences sometimes struggled to find "where" they were supposed to go, and can be hesitant around how they are supposed to interact.

A good way to handle that is to create a series of introductory emails or videos to warm up attendees in advance of the event. You'll also want to think in detail about "onboarding": designing a real time pre-show greeting that welcomes audiences, gives any instructions necessary, and brings everyone into the same "room". Some things to think about:
- Have you made joining the event as simple as possible?
- Does the purchase confirmation / ticket give clear instructions on HOW and WHERE to join?
- "Onboarding" sequences is a huge area of potential creativity - make it part of the work, and then test it for feedback.

4. Think like a software product manager

Design experiences and journeys - not events! So many of the standard norms we accept as "the way things are done" should be examined to get the most out of live digital experiences. When people are joining from home (and not coming from work or the pub), is there a better time for things to start? Things like lobby drinks, audience chatter, and the lights dimming put audiences

in a mood. What can you do digitally to bring people into the right headspace to engage with the work?

Furthermore, don't be afraid to try new products or tools, but only IF you have the time to fully test them. However, if something is really not working with the tools you have, bring the team together to discuss if there are ways to redesign elements of the experience. You might be thinking of things with your "venue" hat on, and something much more interesting could arise with a little unconventional thinking.

5. Test, test and test again

We can't say this enough: TEST EVERY STEP OF THE EXPERIENCE. From ticketing and links to transitions to interaction - if something can go wrong, it will! You'll only know how to recover if you know the steps and potential weak points inside and out. Additionally, it's easy to forget some steps we might take for granted (audiences arriving, asking questions at the box office, knowing when to enter the performance space) are also elements of online performance.

We've found that it's necessary to have multiple active "stage managers" across a variety of tasks before and during live digital events to call the show, run the show, keep an eye on audience needs, engage in the live chat, support the performers, and troubleshoot major problems. It takes just as many hands to make something run smoothly and successfully.

Some things to think about:
- Ask friends and family to help try to break it.
- Have FULL technical rehearsals and run-throughs.
- Don't forget to test the audience journey from beginning to end.
- Have a back up plan (what do you do if your lead digital showrunner has a laptop malfunction?)
- Engage your audiences if things break down- silence is worse than laughter!

Choosing your tech

💡 AV Capture

Sound

For relatively static performances where you can get the microphone close to the performer, or they can hold it, we use the Behringer XM8500 (dynamic microphone) but this needs to be plugged into an audio interface such as the Behringer UMC22. Alternatively, a FIFINE K670 (condenser microphone) can be plugged straight into a laptop via USB, but don't touch it during the performance or you will hear the sound of you tapping it.

Condenser mics are more accurate in reflecting the tone of the voice. Dynamic mics are better at noise rejection and more forgiving of loud background sounds.

To use your phone as an HD camera (see below) and capture excellent sound at the same time, the Shure Motiv MV88 plugs into the mobile phone and points at whatever you point the camera at.

Video

By far the best option is to use a recent smartphone with an HD camera. A number of apps allow you to use the video (and audio) as a "virtual input" - this just means that if you set the app up as per instructions, Zoom, Restream or whatever you use will show an option to use the phone as the audio and video input.

Which app depends on your devices (Apple, PC, Android etc) and preference for bluetooth, USB or wifi connection. The best thing to do is test and work out by trial and error which combo works. We use Iriun but have also used DroidCam and Camo.
- Iriun (smartphone to camera - Android or iOS
- DroidCam (Android)
- Camo (iOS)

💡 AV Mixing & Encoding

The level of creativity you can put into your online event is highly constrained by the choice of AV mixing or "Studio" software that you choose. The native apps are more powerful and can do amazing things, but because these programmes run on your computer you will need a powerful machine and you will have a bit of a steep learning curve. You will also need a very good internet connection to push all the data of the video to the internet. There are some excellent free options.

The web applications are much easier to use, but you won't have as many creative options. You can get away with a *slightly* less fast/stable internet connection because the main processing happens in the cloud. They tend to require a monthly subscription, but you can pay for a month and then cancel.

Web Apps (no download)
- **Streamyard** (online) → SUPER EASY BUT SOME LIMITATIONS
- **Restream** (online) → BRILLIANT, BUT SOME LIMITATIONS

Native Apps (powerful computer required)
- **StreamLabs** (download) → HIGHER LEARNING CURVE
- **OBS** (download - FREE) → HIGHER LEARNING CURVE

Transcoding, CDN and Media Player
 IF you don't go the YouTube Live, Twitch, FB live route
- **Castr.io** - one of the most intuitive systems if you're handy with an iFrame
- **IBM Virtual Events Platform** - build your own YouTube channel
- **Agora.io** - more advanced but combines high interactivity with high quality AV
- **Wowza Media Systems** - again more advanced
- **Vimeo Live Streaming*** - a good all-round option but price scales sharply

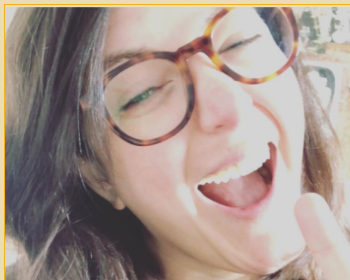*Can also do some simple AV mixing depending on subscription level

About the authors

SOCIAL CONVENTION is a creative studio and social enterprise on a mission to reimagine the way people experience art and culture.

We exist to nurture artists and audiences, and develop collections of original multi-artform performance work, experiences, and parties; setting them in experiential spaces that encourage the cathartic, the communal, and the transformative.

Natalie Hall	Cimeon Ellerton-Kay
• Producer, marketer, & promoter for venues across the US & UK. • Developed UK's first real-time volumetric scanning rig for theatre with immersive studio MEGAVERSE • Digital Catapult's second Creative XR cohort as the Producer for Rory Mullarkey's FLOOD with NYT • Trained at NY University's Experimental Theatre Wing & Royal Academy of Dramatic Arts, holds MA in Arts Administration and Cultural Policy from Goldsmiths College.	• Product manager, operations director and audience development consultant. • Holds a PG Cert. Creative Commerce (Greenwich University) and an MSc Business Innovation & International Technology Management (Birkbeck, UoL) • BMus and MMus Composition, Conducting and Music Tech (Trinity Laban and Guildhall), founded UK's first D&B orchestra (recorded Live @ Maida Vale for BBC Radio 1 and collaborated with Swedish House Mafia)

We believe in unconventional human magic.

Get in touch
hello@socialconvention.org
Unit 10, 4 Hoy St, Royal Docks,
Newham, London E16 1ZA