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Collaborative Workflows for Live Production

By: Loren Barton

Much is documented and celebrated about shows in their final form. Glossy photos and slick concert films reveal polished productions firing on all cylinders, highlighting the work of so many in support of a unified vision. Unlike artistic disciplines that rely on the skills and talent of an individual, theatre—and, by extension, all live events—can present such complex work because it takes a whole team of creatives, artists, technicians, and professionals to pull it together. As a kid, part of the draw for me of working in theatre was precisely this need to contribute to something larger than myself. Theatre is a team sport. When we each get better at our roles, the team is stronger as a result. As rewarding as it is to develop hard skills within our own disciplines, it's equally important to develop the soft skills of working as a team. Finding efficient ways to communicate across departmental lines is essential—and the tools to help facilitate this are changing fast.

Regardless of the genre, everyone working on a live event bears some responsibility for what the team presents to the audience—whether it's 100 theatregoers in a black box, 3,000 attendees in a ballroom, 60,000 fans in a stadium, or a global audience of millions. We are collectively generating the outward expression for the brand, project, or artist. The genre I'll be discussing here is based on a concert touring workflow, but there are similarities and universal lessons that can be applied to all manner of live and televised events.

As a project begins, the creative team typically has a kickoff meeting, followed by early stages when team members do much of their work independently based on the initial direction. There may be check-in meetings along the way, providing guidance and course corrections, but, largely, the start of a project isn't tremendously collaborative, compared to what comes next.

As timelines compress, technology advances, and goals become more ambitious, we should re-evaluate how we spend our time during the most critical period: rehearsals. Let's look at tools that can be leveraged to optimize the rehearsal period, maximizing effectiveness for all departments and ensuring everyone has the information needed to deliver to their highest potential.

Band and dance rehearsals often take place in smaller studios at a fraction of the cost of full-size rehearsal venues. The playback engineer can share sample time-coded tracks via Dropbox or other cloud platforms. iPhones have made sending choreography reference videos easier than ever. Even though everyone is working separately, the fruits of everyone's labor are being used by multiple departments to keep making progress.

Simultaneously, 3D visualizers like Syncronorm's Depence enable design prep work to advance in a previz studio ahead of time. Programming on lighting consoles and displaying realistic lighting, automation, video, and special effects on large monitors allows weeks of work to be completed by the first day of in-person rehearsals. Because everything can be built with real-world dimensions, set construction issues, sightlines, prop sizes, and timings can all be evaluated and adjusted before setting foot in the venue.

Reference video and audio assets are extremely useful; in their raw form, however, they remain a one-way data stream. Managing updates, communicating changes, and streamlining workflows around these assets can quickly become a full-time job. The challenge isn't just capturing rehearsal footage; it's creating a framework that allows teams to collaborate around that content, adding layers of metadata and notes that transform raw recordings into actionable creative tools. Two software solutions have emerged to address these workflow challenges directly.

CuePoints

At its core, CuePoints software for Mac and Windows (free reader, $170 pro license) allows markers to be placed on ingested media. Once rehearsal audio or video is imported, notes and cues can be added for various departments: lighting cues, choreography changes, spot notes, stage automation cues, wardrobe notes, camera shots, media content observations, and anything useful to track.

When rehearsal media is added to the project, it creates a track organized as a timeline with various custom sub-tracks where different types of cues or notes can be added. Part of setting up the project involves choosing names, colors, and types of sub-tracks that you want available.

As video plays back, cues are added by pressing number keys, dropping them in at that point. For lighting and media programmers, this is incredibly useful for breaking down songs into component pieces. Lighting directors can track spot cues, stage managers can track automation moves and entrances, and creatives from various departments can take notes to review later. All layers can be toggled on and off within the project to filter what you see in the playback window.

One of CuePoints' most powerful

features is the ability to export timing data directly to formats readable by commonly used industry tools such as grandMA, Pixera, Adobe, and as CSV for spreadsheets. For MA2/3 console users, the software will generate an MA macro based on a timeline and completely build sequences, stamping out all timecodes to match the CuePoints tracks. This makes it easy to build out complete songs using only your laptop, tracks, and this software—ready to go when you get console time in previz or at the show. Once cues are stored in the MA, they're not connected to the CuePoints project any longer. Edits made in the desk don't automatically reflect in CuePoints but can be manually imported.

Ryan Tanker, a lighting programmer working on *America's Got Talent*, explained that when they lost a day in the room, he needed a way to regain that work time. Using audio from the show, Ryan can break down tracks, stamp in lighting cues, build out the MA3 timecode pool and sequences, and export cue sheets via CSV for the lighting directors—all from home. Being able to make meaningful progress from anywhere with a laptop is now critical for his workflow.

Other integrations exist with OSC control, allowing the lighting desk to control CuePoints playback functions without touching the laptop. There is also native support for the Elgato Stream Deck: a configurable button panel that allows users to control multiple devices from their Companion software.

Timecode from files can be managed in two ways: either with split mono/LTC tracks or multitrack files with up to four tracks. When working with split audio/timecode files, the software remembers your routing preferences per audio interface—sending music to your headphones or speakers while routing LTC to connected timecode devices. This prevents the distinctive "timecode chirp" from accidentally playing through speakers during programming sessions, a common frustration when working with rehearsal files containing embedded timecode tracks.

If timecode doesn't exist yet for imported audio or video reference, CuePoints has an on-board timecode generator. It allows you to program with "fake" timecode and then adjust the offset once you get the actual files.

When updates come in from rehearsal, lineup media mode allows you to adjust the starting point of audio or video files to a known sync point, so all cues remain in sync even if the media aren't the same length.

CuePoints is primarily a single-user solution, but multiple users can collaborate by storing files in a cloud file-sharing location such as Dropbox or a local network location. Each department starts with a base copy, then sync settings are configured so each department file can "push" updates to the cloud for the given tracks. Other

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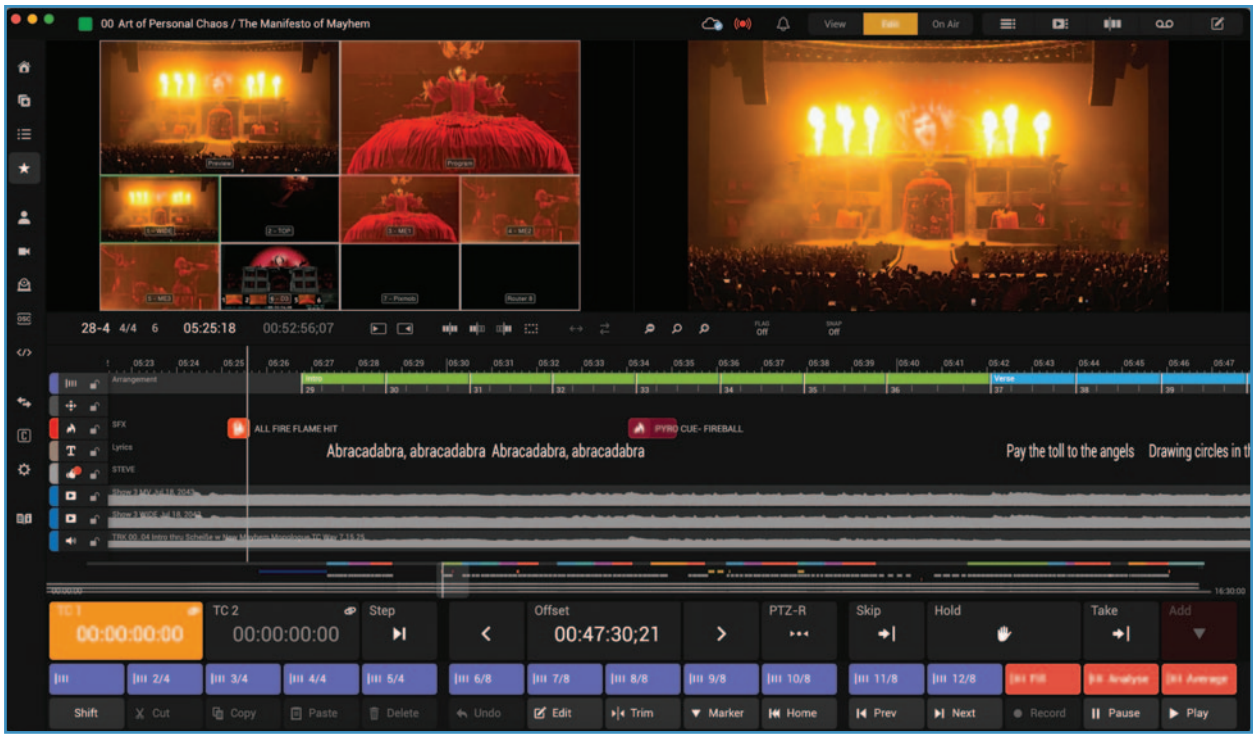

CuePilot provides a more comprehensive ecosystem suited for productions requiring integrated recording, real-time collaboration, and extensive team coordination.

department projects "listen" for these updates. When the lighting designer updates lighting tracks, everyone else gets those updates. When the choreographer puts in new notes, everyone else's file updates with the new information.

CuePoints excels as a desktop-focused cue management solution, but it currently requires manual media import and doesn't yet offer real-time timecode sync during shows. For productions requiring more integrated recording workflows and real-time collaboration, CuePilot takes a different approach.

CuePilot

Where CuePoints focuses on desktop cue management and integration with other products, CuePilot built its platform around integrated recording and cloud-based collaboration from the ground up. CuePilot began in Denmark in 2004 as a broadcast camera cueing solution to help camera directors plan shots offline and then communicate those shots and timings to camera operators, with the option to control the switcher as well. Over the years, it was developed into a fully featured suite that found its way into live production.

CuePilot is cloud-hosted software for Mac and PC. It operates on a subscription model with pricing tiers based on project complexity and team size, making it accessible for both small productions and large-scale tours that require extensive collaboration features. Once you make a user account, you can create a project or join an existing one. A CuePilot project is broken down into component pieces, borrowing names from the television world where it started. A rundown is a collection of Items. In the concert world, we would think of this as a setlist with songs. A base project can have multiple rundowns, each containing different Items.

Within an Item, there can be multiple types of tracks. Like CuePoints, these tracks can contain various types of parameters customized to fit production needs. Common track types are Vision (switcher control), Bars/Beats (music breakdown), Notify (cues/reminders for different departments), Feedback (text notes), Lyrics, and Playback (device control).

As rehearsal videos and audio are delivered, they can be manually added to the project and placed on the correct Item/song. Up to four different videos with embedded audio can be added to each Item. Once ingested, they can be uploaded to the cloud, so other users on the project can download them locally.

Songs can be broken down into bars/beats with different time signatures per section. Lyrics can be pasted into the track and added as the song plays by clicking on each line. As cues and notes are added to different tracks within an Item, they sync to the cloud. Once the media and basic structure are organized, other team members can join remotely and download the assets they need, filling in the areas they're responsible for. Audio routing settings are built into the preferences for easy offline work with just audio playback.

Recording rehearsals and capturing different perspectives are ongoing

projects that I've worked on throughout my career. Breaking the virtual box at front of house, where creative teams can sometimes get stuck, helps make a better show for more people. By placing multiple cameras around the room, we can experience the show from more locations in the venue without physically going there. This helps everyone make more educated design decisions by viewing the production from angles we don't normally experience as show creators.

On the current Lady Gaga *Mayhem Ball* arena tour, media manager James Gallo oversaw the CuePilot rehearsal recording and playback workflow. Once in-person rehearsals started, the power of the CuePilot workflow was evident. Using network device control, the local CuePilot server remotely controlled three BlackMagic HyperDeck hardware video recorders. These recorders took in locked-off camera feeds as well as their own LTC timecode stream, which striped that metadata into the video files. When the song finished, the media automatically uploaded first to the local machine, then to the cloud.

When rehearsals concluded for the day, James double-checked the lineup of new media files on each Item timeline, ensuring that the latest media was visible so the rest of the team could download and review everything from one place. Notes could be taken on specific tracks for each design discipline. These notes can be assigned and replied to when complete.

During rehearsals, laptops running CuePilot, fitted with a simple USB timecode reader, could follow along with the show so notes could be typed in real time onto the track. This ability to watch rehearsals live and respond with either color-coded shortcut blocks or full text feedback streamlined the process. Notes could even start being addressed during rehearsal.

Another feature of CuePilot is called CueScreens. These hardware video outputs allow for customized heads-up displays that show selected tracks of the current Item. This allows a camera director or show caller to see things coming up with a countdown to each event, to assist with calling cameras and show cues. Lyrics, automation moves, and other show elements can all be viewed on these screens. In addition, CuePilot has a companion iPad app designed to be attached with a mini-clamp to a camera tripod or Steadicam, configurable for operators to see when their cues or shots are coming up.

For shows where timecode control of the switcher is desired, CuePilot already has that functionality. Paired with the CuePilot App, camera operators can quickly learn the show, and the director can focus on getting each camera framed correctly before the shot goes to the line.

Once rehearsals with talent wrap for the evening, the process converts from capturing data to playback mode, so notes can be completed. Because every CuePilot machine has full recordings with audio and timecode, anyone with an audio output routed to the servers and consoles could run playback. As each Item plays back, the current video from rehearsal plays, and notes from the run-through are displayed where they were taken on the timeline. This makes addressing notes easier as the reference footage with correct timecode and audio can be viewed while watching the physical rig (or visualizer) play along.

By managing the entire process in one ecosystem, from choreographer videos and band rehearsal recordings to dress rehearsals, everyone could focus on the tasks at hand instead of comparing a list of spreadsheet notes to a full-length rehearsal wide shot recording. While this system requires some significant hardware and infrastructure, the system can be rented and deployed for only the rehearsal period. On our show, it became part of the media manager's scope to operate and maintain the CuePilot system for the group. The efficiency we gained was well worth it.

For projects utilizing the heads-up display and iPad app functionality throughout the tour, this can be achieved with a much smaller portable system when recordings are no longer needed. Then the CuePilot server can simply chase timecode and display information to the network of screens or iPads.

Choosing the right workflow

Both CuePoints and CuePilot represent significant steps forward in collaborative workflows, but they serve different production needs. CuePoints offers an accessible, desktop-focused approach ideal for smaller teams that need powerful cue management with direct console integration. CuePilot provides a more comprehensive ecosystem suited for productions requiring integrated recording, real-time collaboration, and extensive team coordination.

The choice often comes down to scale and workflow priorities. Smaller productions with established media capture workflows may find CuePoints' focused approach more efficient. Large-scale productions with complex rehearsal schedules and multiple departments benefit from CuePilot's integrated recording and cloud-based collaboration.

Regardless of the platform, the fundamental shift is clear: The days of managing rehearsal notes through spreadsheets and Slack channels are becoming obsolete. These tools don't just organize information—they create collaborative frameworks that let teams focus on creativity instead of coordination. In an industry where rehearsal time is precious and coordination is critical, that focus can make the difference between a good show and a great one.

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