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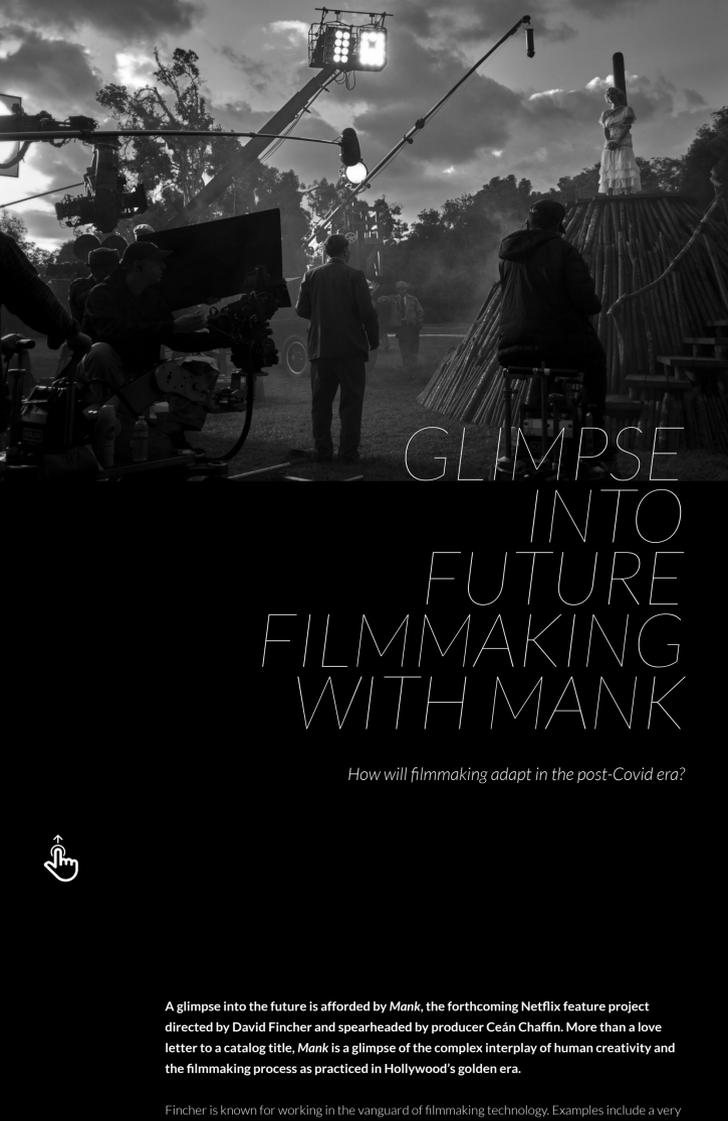
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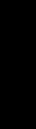
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GLIMPSE INTO FUTURE FILMMAKING WITH MANK

How will filmmaking adapt in the post-Covid era?



A glimpse into the future is afforded by *Mank*, the forthcoming Netflix feature project directed by David Fincher and spearheaded by producer Ceán Chaffin. More than a love letter to a catalog title, *Mank* is a glimpse of the complex interplay of human creativity and the filmmaking process as practiced in Hollywood's golden era.

Fincher is known for working in the vanguard of filmmaking technology. Examples include a very early digital intermediate on *Panic Room* – the first ever in a facility designed for the purpose – and *Zodiac*, one of the first major features to be shot almost entirely digitally. The remote collaboration envisioned by futurists at the dawn of the internet era was already common practice for his team long before the pandemic.

"Fortunately, we have not missed a beat," says Chaffin. "We are working now exactly how we mostly could have been working the past ten years, which is working from home during post."

But the virus and its requirement to remain physically apart may constitute a final push for the industry at large. All the attributes of true remote connectivity – reduced travel time and its attendant benefits in terms of stress, pollution and time savings, enhanced with rapid feedback, superior organization and a centralized database – will still be applicable when health concerns subside.

A canvas of the top pros on David Fincher's team indicates that while the pandemic naturally raises stress levels, the need to work separately has been essentially a non-factor in terms of their ability to collaborate efficiently and keep the production on track.

Fincher came to the project with a mandate that the production work with the PIX production hub. Chaffin, who has made nine films with Fincher, says that the system is an essential tool for collaboration and input.

"This is how we have worked for a long time," says Chaffin. "David feels the team is making the film with him, sharing in the problem-solving. Even when we were in the same building, David was often responding exclusively through PIX. His preferences and concerns are there for everyone to refer to. You don't have to go find that one email, or remember a comment someone made on their way out the door."



Ceán Chaffin, Producer



Gary Oldman on the *Mank* set

"We tell everyone right away, if you want direct communication with Fincher, PIX is the way," she says. "We do not want to make any director go through multiple drop boxes or myriad emails to find something he or she needs. Many of our collaborators are working in a variety of locations and countries, and David needs to be available to them, and them to him. We produce visual effects in-house with Fincher as our free VFX supervisor. We laugh about this, but it's true – on *Benjamin Button*, whenever Digital Domain sent a clip, the average response-time from Fincher was 120 seconds. Like many directors, Fincher has multiple projects. Having all his work on one system, where he can jump from one project to the next, is a huge time saver."

"WE TELL EVERYONE RIGHT AWAY, IF YOU WANT DIRECT COMMUNICATION WITH FINCHER, PIX IS THE WAY."



David Fincher, Director

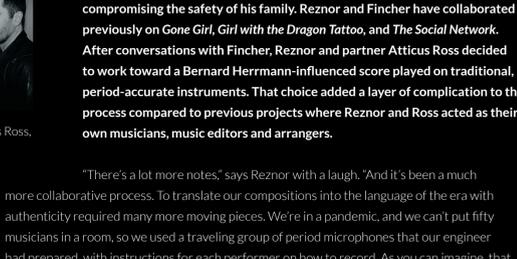
Of course, on time-starved productions, a tool that promotes speed is a blessing. But Fincher says that's a short-sighted way of gauging the real value. The key improvement, he says, is not finishing early but more opportunities for iteration.

"All technologies that have been invented in the past 50 years to aid and abet linear chronological storytelling promised to make it faster," says Fincher. "But in reality, the value of what they've done is allow us to iterate faster. You just get to your next conversation more quickly. Essentially, a spotting session is the same whether it's over Zoom or in-person. It's about getting more bites at the apple. You can look at a scene and vivisection it seven times as opposed to four."

More bites at the apple equals more creative filmmaking. "The reason most movies fall into a 'master, alternate master, two-shot, two-shot, single, single, moving, on!' formula is not that people are not imaginative," says Fincher. "It's because there is so much pressure to decide what you're going to do with the day's work. So, people revert to the familiar dim sum menu. The beautiful thing is to give people a little extra time to experiment themselves, the time it might take to say: 'I've seen it that way a million times. I would like to try this...'" It means that instead of 'How do we finish as soon as possible,' the conversation can be 'How do we make this moment as good as it can possibly be?'"

"...IT WILL ENABLE US TO MOVE REALLY QUICKLY BEYOND THE REFLEXIVE DECISIONS..."

"So my ultimate goal in working with a production spine like PIX is not to make days shorter," says Fincher. "I'm hoping it will enable us to move really quickly beyond the reflexive decisions that are a by-product of 'hurry, hurry, hurry, hurry.' Imagine if we could take out all that bloat, the running around, finding people, searching for that moment of resonance we liked in the temp dub. It's right there – now how do we find our way back to it?"

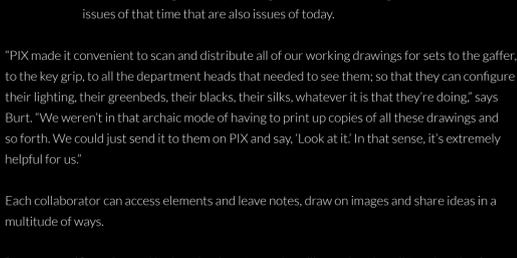


Scene from *Mank*

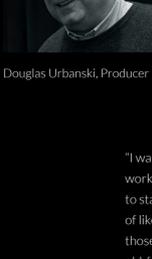
***Mank* editor Kirk Baxter would still prefer to be in the room with Fincher, but he appreciates the director's ability to communicate his intentions in spite of working remotely.**

"I find that PIX is so clear and accurate with the information," says Baxter. "Of course, it's only as good as you make it. You can use it poorly or even scratch the surface of what we're doing with it. As an editorial tool, or tracking approvals with music and visual effects or grading, it's so far beyond that. The information is flowing to David, but I can keep track. Who's seen it, and when? Did they like it? I've worked on projects where this type of tool was not embraced, and it's a mess. What did they mean by that comment? Which version were they seeing? I find it insane that a technology like this is not used universally."

For Baxter, PIX has obviated the need for extensive video conferencing. "In the three months it took to lock the picture after we were separated, I think we had three Zoom calls in total," says Baxter. "One was to talk the music, the next was a complete assembly with a rough mix, and a few weeks after that, we spotted a trailer. Other than that, everything was done through PIX. We don't have to video conference each day – it's just not needed. It's a waste of everyone's time."



"I FIND THAT PIX IS SO CLEAR AND ACCURATE WITH THE INFORMATION."



Trent Reznor & Atticus Ross, Composers

From the perspective of composer Trent Reznor, the ability to work remote seamlessly allowed him to take on a challenging project without compromising the safety of his family. Reznor, and Fincher have collaborated previously on *Gone Girl*, *Girl with the Dragon Tattoo*, and *The Social Network*. After conversations with Fincher, Reznor and partner Atticus Ross decided to work toward a Bernard Herrmann-influenced score played on traditional, period-accurate instruments. That choice added a layer of complication to the process compared to previous projects where Reznor and Ross acted as their own musicians, music editors and arrangers.

"There's a lot more notes," says Reznor with a laugh. "And it's been a much more collaborative process. To translate our compositions into the language of the era with collaboratively required many more moving pieces. We're in a pandemic, and we can't put fifty musicians in a room, so we used a traveling group of period microphones that our engineer had prepared, with instructions for each performer on how to record. As you can imagine, that resulted in lots and lots of files. We're not what I would call highly organized people. It has tested the limits of our organizational skills, and our sanity."

Reznor was introduced to PIX on *The Social Network*, at a time when the entire filmmaking process was new to him and "semi-impennetrable."

"PIX has become a pretty invaluable tool," he says. "It feels like an integral and elegant solution. If there's a rough assembly, I can just walk over to my projector and watch it. We have a constant, direct line to David, and he can make quick, frame-specific comments. It's well thought-out and secure, and it lets us get down to our job – writing music – rather than navigating a myriad of other tools. Going into a project without it feels like working with one hand tied behind your back – it's like working through a translator who knows the language but doesn't really get the gestures. Having come into the film world when we did, with our first project being PIX-based, we don't know how you would make a film without it. We don't see it as merely a dailies tool. It's the central hub of the entire operation. How would you do it if you didn't have that hub?"

"WITH OUR FIRST PROJECT BEING PIX-BASED, WE DON'T KNOW HOW YOU WOULD MAKE A FILM WITHOUT IT."

Production designer Don Burt has worked with Fincher on more than a half-dozen projects going back to *Zodiac*. On *Mank*, he decided to hand-draw many of his designs in keeping with the spirit of the period.

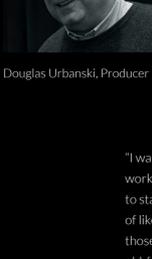
"What interested me about the project, besides the fact that I always enjoy working with David, was that it was an intelligently written screenplay that was factual and period," says Burt. "sort of the antithesis of leotards and capes, as all David's projects are. As I read it, I felt it was something that needed to be made, because there's a purposefulness behind it that doesn't beat you over the head. In addition to telling the story of this great character writing *Citizen Kane*, it involved issues of that time that are also issues of today."

"PIX made it convenient to scan and distribute all of our working drawings for sets to the gaffer, to the key grip, to all the department heads that needed to see them; so that they're doing their lighting, their greens, their blacks, their silks, whatever it is that they're doing," says Burt. "We weren't in that archaic mode of having to print up copies of all these drawings and so forth. We could just send it to them on PIX and say, 'Look at it.' In that sense, it's extremely helpful for us."

Each collaborator can access elements and leave notes, draw on images and share ideas in a multitude of ways.

"We can say, 'Go to PIX and look at that location and you'll see what I'm talking about,' or 'I think this will interest you, see the notes that I've put on there for you,'" says Burt. "It's a way of communicating when I have a department of set designers and art directors and assistant art directors and so forth. I can leave them an assignment, and they can access all the research and respond in the way that's most comfortable and appropriate."

"On a project like *Mank*, the research can become almost infinite," he says. "For me, PIX primarily facilitates keeping organized, and it's a conduit of information. I've used it before with David, and the PIX people are gracious in allowing me to use their services during the early prep of other projects, too. It allows me to have one central place where I can bring in my different files, all my research, all my location photos, set dressing photos, all the prop photos."



Don Burt, Production Designer

Producer Douglas Urbanski is the producing partner of *Mank* lead actor Gary Oldman. He also has extensive experience as a theatrical producer on Broadway and in London. He likens the shift to production backbones like PIX to the advent of Zoom and other video conferencing tools.

"For me, Zoom started becoming a really useful tool in about 2017," says Urbanski. "I love it. At that point, half the meetings we were doing required me to fly back and forth from the UK, on short notice. But now, with the pandemic, we are using Skype and Zoom here in town, especially for a reading or a pitch meeting. If you're going from Santa Monica to Beverly Hills for a 3:00 pm meeting, you're not going to be back until 7:00 or 8:00 pm. I just hated that."

"I was instantaneously spoiled by PIX," he says. "We're not using it on another project I'm working on at the moment. You're flipping back and forth, looking for files and emails and trying to stay on top of your own email filing and trying to organize the many moving parts. It's kind of like driving a car without GPS or a rear-view camera. You don't know how you did it without those tools. So here I am, plodding along on a very expensive television series. We're doing it the old-fashioned way, where I have to toggle back and forth and look for whose department said what and where we are."

With PIX, you send everything to everyone who needs to know, and each person has access to the files they need, comprehensively and forever for the duration of the production. You don't need to reload a dozen different passwords only to find that things are expired. The breadth of the information is vast, from the screen tests to the location information, including drone footage. The lists, the details, the hours you need to be there, whether we need police. Call sheets, preproduction schedules. Budgetary information, contracts. It's like having your own Google that is specific to your movie, with email notification that is designed to avoid long, confusing chains to scroll through. You're not looking piecemeal for things, which is really fantastic.

"Once you start using it, you realize how much time you lose by simply looking for your data and information," he says. "You're constantly digging through stuff. You don't have that problem with PIX. It's all right there."

Post-production supervisor Peter Mavromates brings 30+ years of experience in filmmaking, having worked with Fincher on *Panic Room* and *Zodiac*. He says that poped his stint at Marvel, the operation mounted for *Mank* was a "mom and dad shop."

"I don't like to see the visual effects vendors any paperwork," says Mavromates. "At Marvel, we needed layers and layers of documentation. Here, it's not even on paper. I actually load a scene or a series of shots up on PIX, and based on notes and conversations I've accumulated from David, I mark it up, drawing on the frame and attaching notes letting them know what we need. I number the shots on PIX and I send it to them. They go through my markups, put it in their bidding software, and send me estimates."

"One of the great things about working that way is that there's a visual record of what's being requested," he says. "If something is still a little bit confusing, it's easy to send it back and ask for clarification. On *Mindhunter*, a round of color notes on an episode would often include about 200 notes. Eric would address those 200, and post it, and get about 200 more. For David to sit in a room with the colorist and address those 200 notes would take weeks. Eric can casually execute without someone looking over his shoulder. You don't go down the rabbit-hole and spend 30 minutes on a shot. With 3000 shots in a movie, you'd never get finished. It's great."

"It's easy for David to get opinions and feedback from the people that he trusts because they're only a click away, even if they're a world away physically," says Mavromates. "Sometimes he doesn't even filter the feedback. He actually forwards it to me or to Kirk or another relevant person. Information is flowing. And every department is using PIX. And it's also a great way for people who have ideas is going on. All our on-set still photographs are there, so if I need a bit more visual information, it's there."

"For example, in the film, there was a photograph in an office with the wrong person. Do we have access to an image of the correct person from the correct angle? Earlier, we shot portraits of the actors, and there was all this existing footage of the correct person. I found it quite easily. It gives me an opportunity to raid the files of other departments in ways that I just can't in more traditional movies. It just makes sense to have everything centralized. I find myself searching for the equivalent in my personal life – an answer to the question of where to store everything accessibly."



Eric Messerschmidt, ASC, Cinematographer

Director of Photography Erik Messerschmidt, ASC, has previously worked with Fincher on *Mindhunter*. With extensive testing, he and the director determined that the right visual strategy for *Mank* was to shoot in black and white using the RED Monochrome camera. That decision, along with the optics they chose, required a lot of further research to determine how every actor, set and prop would photograph in terms of contrast and texture.

"Communication is key to success in the cinema," says Messerschmidt. "On this project, it was so important to disseminate that information to the crew. We had used PIX extensively on *Mindhunter*. It's great for distributing dailies, but that's just a fraction of the services it can provide to filmmakers. It's remarkable. It's gotten so seamless. We could take stills of the various textures or period light bulbs and share them with the production designer. Very often, we're not all in the office. David's in a rehearsal or something, and you need to ask him a real quick question. He can glance at his phone and weigh in, and we can keep working on it with that guidance. That interaction is documented, and can be referred to later, which is a huge benefit when you're making a thousand decisions every day. It's given David greater control and it gives us the immediate feedback we need."

Connectivity was especially helpful during the first few weeks of production, when front-loaded decisions were still being made while the crew was working on location around Southern California.

"We were getting drawings and renderings sent via PIX," says Messerschmidt. "One scene depicts an Upton Sinclair rally, a night exterior that takes place in a parking lot in Pasadena. We scouted it, but we didn't really have any frame of reference for how it was going to be approached. Don (production designer Don Burt) sent over some concept art, which he'd drawn with certain lighting in mind. I got it immediately and could see what he envisioned. I shared it with the gaffer, and he and I got together on the set and designed a lighting scheme around that concept art. He made a lighting plot, which he shared with the rigging gaffers via PIX. All this information resides in the cloud, which meant we could share it with the location department and ask for access to a certain window or rooftop. The toolset for communicating means that we can evaluate things visually, get a reaction from David, and spread it down the chain once it's approved. Security is important to the production, but for us, but the ability to keep everything in one place, and access it from any device, is what's fantastic."

"...THE ABILITY TO KEEP EVERYTHING IN ONE PLACE, AND ACCESS IT FROM ANY DEVICE, IS WHAT'S FANTASTIC."

Director: David Fincher
DP: Eric Messerschmidt, ASC
VFX supervisor: Peter Mavromates
Camera: RED RANGER
Lenses: Leica Summilux-C
Format: REDCODE RAW
Resolution: 6560 x 3100 Open Gate

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PIX

cinematic whichever way you view it



Smartphone | Tablet | Desktop | Large Screen



STREAMING PRE-RELEASE SCREENERS

It's that time of year when all of the writers, directors, and creative talent get excited about the pending award nominations.



This is when the Hollywood marketing teams step up and push to have as many critical reviews shared about the projects they are promoting. One of the big investments in this process are screeners. Beautifully packaged DVD's sent off to voting members of the academy and associated guilds. Managing, organizing, and distributing publicity screeners isn't an easy job. Although the industry has taken "baby steps" towards a digital shift, most studio marketing departments still rely on DVD screeners for publicity channels. For many movie studios and television networks, ensuring that publicity screeners are delivered in the most consistent, cost-effective, and straightforward method is a constant challenge.

Why make the change? - Costs

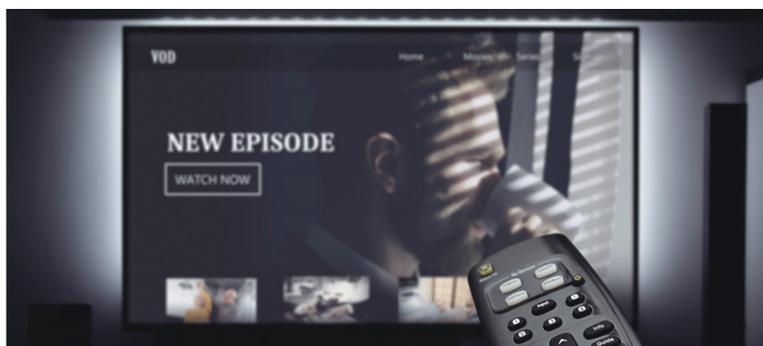
One of the greatest challenges studios and networks are faced with in managing a screener program are the rising costs. The process of producing and distributing DVDs isn't cheap. For example, during awards season, studios and networks are expected to mail upwards of 70,000+ screeners every year, and this number is expected to rise considering membership in guilds is increasing.

Take into account all of the added costs in distributing DVD screeners—disc production, fulfilling orders, shipping (most likely overnight express) and added watermarking to protect against piracy and it's becomes clear why costs can quickly climb into six figures.

On top of rising costs, there are numerous "hidden" risks associated with traditional DVD screeners, most notably the challenge of piracy. In a recent report from MUSO, an anti-piracy technology firm based in London, nearly 63 billion accounts of television content piracy were documented worldwide in 2016, up from 45 billion in 2015. HBO, the Walt Disney Co. and Netflix have all dealt with security breaches that saw their content leaked online for the world to download.

How to improve on Security?

By diving into how DVD screener programs are traditionally processed and distributed, it is easy to see how the risk of piracy continues to grow year after year. First, it is difficult to track all of the physical DVDs sent out to various publicity outlets. Sending screeners on a disc via any third-party delivery service runs the risk of the discs getting lost or "misplaced." Just think about it, do you know who is handling your screener once it is dropped off with a delivery service and, eventually, at its final destination?



Entertainment agents alone have hundreds of publicity screeners stacked up on their desks. Once your screener is delivered successfully to its end destination, who handles the screener or views the content? This process is incredibly difficult to track and in the long run it could potentially be costly if the material ends up on the internet. Besides, physical DVD screeners last forever, and there's no guarantee where the content will end up once it is viewed. Once the DVD's pile up, who makes sure these copies are destroyed properly and not simply given away to "get rid of the clutter". From a business perspective, this is a difficult challenge for any studio or network to track and mitigate.

Is Viewing Quality Important?

Another challenge that continues to be present in delivering pre-release screener content is viewing quality. With the rise of many HD streaming services such as Netflix and Hulu, digital viewing quality has significantly improved over the years. In turn, distributing screener content on DVDs means sacrificing content. DVD content will forever be "trapped" in a certain quality, most likely being low-resolution standard definition. For higher quality options, such as HDR Blu-ray, cost remains high and adds more to overhead to the marketing expenses.

As studios and networks continue to produce new content at a rapid pace, it will become increasingly essential to navigate from the traditional physical DVD screener model to a proven and robust digital approach. Indeed, a fully digital approach to managing pre-release content distribution will provide a broad-ranging publicity network comprised of publicists, television shows, distributors, and content creators the best combination of cost-effectiveness, efficiency and most importantly peace-of-mind.

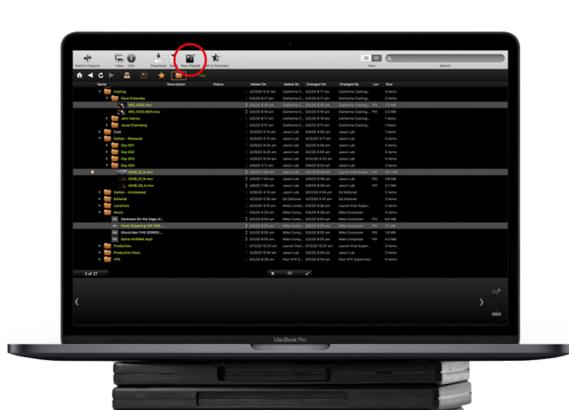
PIX, part of the X2X Media Group, has provided digital publicity network screener services to the leading studios and television networks for well over ten years and understands that security, speed, and efficiency are of the utmost importance to our clients. PIX's publicity screener network, consists of over 2,500 users who are journalists and bloggers, talk show and entertainment producers, and asset owners to the MPAA for all internal reviews. All users benefit from a digital solution that eliminates the time needed to produce physical DVDs, courier fees, and the uncertainty of compromised content.

Time for a change?

There's no question that a continued shift to a digitally based platform is the next step in the challenging world of delivering pre-release content, but it's important to consider that the digital delivery solution checks off all the critical boxes before making the change.

That's why the PIX platform offers flexible item permissions that let you control who can view, edit, delete, download, and administer an item. Finally, look for a solution that streamlines the process and saves you time and that can address what happens to your content after viewing. Files that time-out after being viewed provide yet another layer of security. For example, with the PIX platform you can ensure that your screeners or content are made available for a pre-determined period, whether it is a week, month, or year. It is also vital to ensure that your solution can provide the option to send a private and password protected viewing link.

PIX's playlist feature allows the marketing department to group together related files to share across different network nominated shows or users, thus making the process of setting up and disseminating screeners much more accessible. Making the shift from packaged DVD screeners to a digital pre-release publicity content management and communication solution can seem daunting, but that doesn't mean it has to create more challenges in delivering and securing your content. With the PIX platform we make it easy to make the transition and we believe provide a better vehicle for marketing content and screeners for the award season.



It's a challenging time in our industry at present with Covid-19 limiting access to theaters and driving content viewing towards OTT streaming services but technology continues to make considerable impacts on how we create, view and distribute content. More studios and networks are embracing the technological advantages of digital screeners and reaping the benefits of secure solutions, streamlined processes and considerable cost savings. PIX is proud to be at the forefront of providing innovative content management solutions and will continue to work with our clients and partners to ensure the most cost efficient and secure applications in a fast-paced, constantly changing industry.

A version of this article originally appeared in M&E Journal.

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CVP UNLOCKS THE MEDIA VAULT

CVP is Europe's most dynamic broadcast and professional video solutions provider with offices and showrooms in multiple locations across the UK.



As a partner for CODEX in sales of ARRI Cameras and CODEX workflow products, CVP has been at the forefront of new and existing production technology in support of content creation. To help promote and market these partnerships, CVP has an in-house production team to capture and create compelling use case studies. In an effort to manage this internal content being generated daily, CVP turned to CODEX for a shared storage solution to help store and share the departments content across multiple projects. X2X had a chance to talk to Joe Cannon from CVP, to talk about their experiences with the CODEX MediaVault.

What workstation platforms do you have connected to MediaVault?

We currently have MediaVault hooked up to two custom Windows workstations, an Apple MacPro and a MacBook Pro.

What applications are you running on these platforms?

Generally, we spend the majority of our time in Adobe Premiere Pro and Blackmagic Design daVinci Resolve, along with other applications such as REDCINE-X, Adobe Photoshop and After Effects are also being used daily.

“MEDIA VAULT HAS BEEN A SOLUTION THAT’S RESOLVED EVERY PROBLEM WE HAD WITH OUR PREVIOUS SET-UP.”

How big is the CVP Marketing team and how does MediaVault fit into your workflow?

The CVP media and creative team is actually relatively small. Currently there are four of us who are immediately involved with creating and delivering content. This includes everything from videos and photos to print ads and web assets. Where the MediaVault really plays a key part is in our video delivery workflow. It’s actually become the central library for our video projects both ongoing and an archive for completed projects; a sort of hybrid solution for hot and cold storage, although we do offload much older projects to other existing RAID’s. Although there are many times when we have to edit from mobile SSD’s for speed and portability needs, all projects always come back to MediaVault as our centralized system – it is home to everything we do.

How important is it to have access to all of your content in one easy to access shared storage offering like MediaVault?

When we have multiple projects on the go, some with very quick turn-around requirements, it’s fundamental that we can all work collaboratively to complete the set-out tasks on time. With the MediaVault you can have one person ingesting pick-up shots, another person colour grading b-roll, and someone else generating title graphics simultaneously. The fact that we can do it all from one centralized location makes our workflow a lot more efficient.

How does MediaVault improve on your previous workflow?

I think it’s unjust to call our previous set-up a “workflow”. Due to it not working particularly well and because there was no flow. Critically that was a result of a set-up that didn’t evolve very well from the onset as we went from one person handling and delivering all the media, to a small team of people collaborating on multiple projects. There was no central shared storage system, or at least not one that we could all access at once. There was however a lot of plugging and unplugging of hard drives, a lot of duplicating of projects, and a lot of waiting for things to transfer.

We spent several weeks exploring different solutions, exploring various desktop NAS and rackmount storage options, and reviewing the process we required. There were many boxes we were trying to tick, but we weren’t sure if we were looking at one or two solutions. We needed accessible storage that multiple users could access at once that was fast enough to handle multiple streams of RAW video. We wanted a solution for all of our live projects that were being collaboratively worked on. We also needed somewhere to archive completed projects in a way that still gave us quick access to them in case we needed to reference old files. When looking at rackmount storage options we realised that it wasn’t the most practical with concerns to space and noise. It was also a solution that seemed to require more specialist knowledge for server administration, something we didn’t have. We knew that could become a problem when it came to maintain any system further down the line. This is why we ended up choosing MediaVault, because it ticked all of the boxes, and it’s by a brand known for reliability and great support.

“ALL PROJECTS ALWAYS COME BACK TO MEDIA VAULT AS OUR CENTRALIZED SYSTEM – IT IS HOME TO EVERYTHING WE DO.”

How easy is it to use MediaVault?

MediaVault has been a solution that’s resolved every problem we had with our previous set-up. Having a quick, reliable, high capacity, compact, centralised storage system that we can all uncompromisingly work from has made our day to day way more streamlined. Our technical knowledge on networked storage was not that great, which became even more apparent upon setting up MediaVault. Thankfully the CODEX Support team were very quick to assist remotely in getting us started. Network attached storage is obviously not as ‘plug-and-play’ when it comes to attaching new devices, but with the way we are set-up with MediaVault it’s never been something of a concern for us.



About CVP

For more than 30 years, CVP has been one of the leading Broadcast and Professional video solutions providers in the United Kingdom and Europe, with a comprehensive UK sales and support infrastructure. The company prides itself on maintaining close relationships with key manufacturers such as ARRI, Sony, RED and Canon, and uses its unrivalled experience to listen to customers, understand their needs and deliver the right solution with first class service. CVP offers creative consultation, sales advice, technical service provision and training. For more information visit: CVP.com

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A SOUND CHOICE WITH PIX

The Mank sound team make extensive use of PIX Session to synchronize playback.



In early 2020, more than 30 years after *Pretty Hate Machine* shocked the ears of the world, Trent Reznor's impact on popular music was recognized with Nine Inch Nails' induction into the Rock and Roll Hall of Fame. While the rock cognoscenti was acknowledging his influence, Reznor was deep into his current assignment – scoring the forthcoming David Fincher film *Mank*. Writing for and recording period-accurate instrumentation for the 1930s-set feature film wasn't the only major adaptation required – the advent of the Covid-19 pandemic had Reznor, Fincher and their colleagues taking remote collaboration software to another level to achieve their goals safely and efficiently.

Fincher and Reznor go back as least as far as 1995, when the director used elements of NIN's "Closer" in the opening credits of his landmark film *Seven*. Fincher also directed the music video for NIN's single *Only* and brought Reznor and his collaborator Atticus Ross on to compose the music for *The Social Network*, an endeavor that earned an Oscar for best score. Since then, they've also worked on 2011's *The Girl with the Dragon Tattoo* and *Gone Girl*.



Trent Reznor & Atticus Ross, Mank composers

At the time of *The Social Network*, about a decade ago, Reznor found the entire filmmaking process "semi-impenetrable." Reznor and Ross composed mostly on synths and acted as their own musicians, music editors and arrangers. On *Mank*, Fincher and Reznor imagined a Bernard Herrmann-influenced score played on traditional orchestral instruments. That choice added layers of complication.

"THE PIX PLATFORM PROVIDES A SAFE, SECURE AND UNIFIED WAY TO MANAGE THE AUDIO PROJECT."

"There are a lot more notes," says Reznor. "It's been a much more collaborative process. Translating our compositions into the language of the era with authenticity requires a lot more moving pieces. Also, we're in a pandemic, and we can't put fifty musicians in a room, so we used a traveling group of period-accurate microphones that our engineer had prepared, with instructions for each performer on how to record. As you can imagine, that results in lots and lots of files. We're not what I would call highly organized people. It has tested the limits of our organizational skills, and our sanity."

One invaluable tool, according to Reznor, is PIX – a suite of remote collaboration tools that make a connected production a reality. Originally an acronym for Production Information Exchange, PIX is fundamentally changing how feature films and television productions are made. In a perfect example of artists and technologists working together to advance the toolset, the system has evolved into a way of streamlining the flow of information across the complex webs of human talent. Media and metadata are shared between approved members of a team, who can review image files and add notes. The virtues of dependability, security and convenience that led to the wide adoption of the PIX Dailies system are now facilitating communication in every other aspect of production, from script to screen. Meanwhile, the distancing required by the pandemic has made PIX indispensable. There's no longer any need to be in the same room, or to waste time on the 405 between meetings. Fincher can review and respond to any query in a matter of seconds.

Reznor and Ross made extensive use of PIX Session to synchronize playback of the score for final review with Fincher and team, and to communicate quickly throughout their creative process.



Location for Skywalker Sound and award-winning supervising sound editor, Jeremy Molod.composers

"PIX has become a pretty essential tool," Reznor says. "It feels like an integral and elegant solution. If there's a rough assembly, I can just walk over to my projector and watch it. We have a constant, direct line to David, and he can make quick, frame-specific comments. It's well thought-out and secure, and it lets us get down to our job – trying to write music, rather than navigating a myriad of other tools. Having come into the film world when we did, with our first project being PIX-based, we don't know how you would make a film without it. We don't see it as merely a dailies tool. It's the central hub of the entire operation. How would you do it if you didn't have that hub?"

"IT'S WELL THOUGHT-OUT AND SECURE, AND IT LETS US GET DOWN TO OUR JOB – TRYING TO WRITE MUSIC..."

Ross agrees that it's difficult to conceive working on a project without PIX. "In terms of communication with the director, it must feel like having one arm tied behind your back," he says. "David can guide us and give us notes to address without getting a conference call together. The organizational aspect of this project in particular, with microphones being sent out to a multitude of individual musicians, is suddenly much more complicated, and that extends to the mix as well."

Jeremy Molod, an award-winning supervising sound editor at Skywalker, also has a long history with Fincher, and served as supervising sound editor on *Mank*. His duties involve selecting, polishing, and assembling three primary elements – recorded dialogue, sound effects, and music – into a complete, integrated soundtrack. Molod used PIX to manage sound review throughout the project.

"PIX HAS BECOME A PRETTY ESSENTIAL TOOL... IT FEELS LIKE AN INTEGRAL AND ELEGANT SOLUTION"

"We utilize the PIX platform from production to final delivery on David's shows," says Molod. "For instance, on *Mank*, we would present David with sound options every day including dialogue, sound effects, sound ideas and ADR changes. He reviewed each of these options and commented back with a ton of notes. We can export these notes directly from PIX, and I can distribute them to each of the sound department editors, mixers, and sound designers to confirm that the changes have been made. David will comment on each take and will sometimes ask that we cut sound from one part of a take and edit into a different take. We can build a playlist in PIX of these changes and send to David for review. There are always last-minute picture changes, for example, when VFX start to drop. This back-and-forth with the ability to track the notes and changes in PIX allows us to sculpt the project directly with David up until the final deliverable."

The PIX platform provides a safe, secure and unified way to manage the audio project. "The other big benefit is in file transfer," Molod says. "We transfer everything in the PIX platform, from our production calendars, to the ADR playlists, and the score for the music editor and mixers to review. Most recently I have been able to mix QuickTime files in 5.1 surround for David to listen to. Normally these are just with a stereo mix. Now David is connected to the Smyth Research's A16 Realiser, which allows a spatial audio experience representing up to 24 speakers during playback. If David moves his head to the right or left, the playback adapts the audio tuning to simulate how the sound would be in a theater. It allows for a DOLBY ATMOS mix to be realized with stereo headphones."

Fincher hears the mix as the sound pros meant it to be heard. There are no headaches with glitchy remote collaboration, according to Molod. "Due to COVID-19 we can't all get in the same room to listen to a final score or a sound effect," he says. "Most recently I was able to use PIX Session to control the synchronous playback of a mix that I could listen to with David and Ren Klyce. It was so easy to use. One person drove the playback and we were all able to watch the picture and sound in sync together."



A SECOND EMMY FOR CODEX

Back in October 2020, CODEX were delighted to announce that they won a second engineering Emmy in the space of 2 years. The award recognises the engineering excellence behind the CODEX RAW Workflow with High Density Encoding (HDE). Read how this technology arrived at such an accolade.



A project that started, as so many projects do, with notes and diagrams on a beer mat in the pub, grew legs and sprinted all the way to a most prestigious finishing line... the Engineering Emmy Awards.

These awards, presented by the National Academy of Television Arts & Sciences, honor development and innovation in broadcast technology, and recognize companies, organisations and individuals for breakthroughs in technology that have a significant effect on television engineering.

Our first Engineering Emmy, in 2018, was awarded for the development of a robust and efficient solid-state digital equivalent of a film camera magazine. This time, the CODEX RAW Workflow with High Density Encoding (HDE) has been honored for its engineering excellence and ubiquitous use in TV production.



Brian Gaffney, Vice President of Business Development at CODEX, said, "We would like to thank the Television Academy for this engineering recognition. We would also like to thank the cinematographers who have demanded a RAW master and for the digital imaging technicians, data managers, and post partners who have quickly adopted HDE into their workflows. We are absolutely thrilled to receive a second Engineering Emmy Award in recognition of our continuing work to evolve the production pipeline from capture to the cloud."

CODEX RAW Workflow with HDE explained

Vice President of Imaging Services, James Eggleton, tells us how it came about, "We delivered our first RAW workflow in 2006, combining 4K capture, fast data transfer, and flexible file delivery. Over time, our recorders evolved from rack-mount units to on-camera, and by 2013 were integrated inside the ARRI ALEXA XT. HDE continues this theme of miniaturization, halving data storage requirements, and making ARRIRAW accessible to a broader range of productions."

...HDE CONTINUES THIS THEME OF MINIATURISATION, HALVING DATA STORAGE REQUIREMENTS, AND MAKING ARRIRAW ACCESSIBLE TO A BROADER RANGE OF PRODUCTIONS.

Let's consider James' explanation in a little more detail. We've all watched reruns of old TV favorites and marvelled at their dodgy quality, often due to low resolution video sources. For modern TV shows, crisp clear images are the order of the day and the demand for better quality is growing as we move into the world of ultra-high definition and a high dynamic range viewing experience. Even though most of us don't yet have the hardware in our homes to take full advantage of these high resolutions, the people making TV shows are looking to the future. Camera manufacturers have stepped up to the mark in recent years and are producing cameras that capture much higher resolution images. For example, the ARRI ALEXA 65 records up to 6.5K uncompressed.

Higher resolution equals more pixels, and more pixels mean more data and longer transfer times. More space is needed to store the data, and more bandwidth is needed for uploads to the cloud, for example. You can now use HDE from CODEX to address this issue. HDE uses a lossless compressed image format to save space, so you can still capture the best images without sacrificing image quality. This probably isn't the place to take a deep dive into the underlying science of HDE, but here's what you need to know:

HDE is an encoding technique that is optimized for Bayer pattern images. ARRIRAW images encoded with HDE are typically around 50% of their original size. HDE is completely lossless because it doesn't use a compression technique like JPEG2000, but a reordering schema of the file generated upon copy. Unlike a ProRes file, when an HDE file is decoded, it is a bit-for-bit perfect match to the original file.



Altered Carbon

Some of our favorite television shows have deployed a CODEX RAW Workflow with HDE; these include, *Altered Carbon* (Netflix), *Big Little Lies* (HBO), *Daybreak* (Netflix), *Good Omens* (Amazon Studios and BBC Studios), and *The Mandalorian* (Disney+).

The production of *Daybreak* was supported by FotoKem, who wanted to safeguard their digital negative and reduce the size of the data footprint without adding any onerous data transformation tasks to their already busy schedule. Fotokem's head of software engineering, Freddy Goeske, said, "We were able to integrate HDE seamlessly into our nextLAB system, and build that into our dailies software platform so that the data could be ingested from the CODEX Capture Drive. We had one person doing color and all the dailies work, so it was important that this person be able to go about their day and not even think about it. HDE had to happen on the fly, without reducing the speed of the process. And the net effect was the reduction of the data footprint by about 45%."



The Mandalorian

In combination with our free offload tool Device Manager, we now offer ARRI ALEXA Mini and AMIRA camera users the advantage of using HDE using any CFast 2.0 card reader with our licensing plans.

Imagine then, that you're significantly older than you are now and you're nostalgic for bygone days when you used to watch back-to-back episodes of *Big Little Lies* or *The Mandalorian*. As you sit back and enjoy your old favourites on your fancy High Dynamic Range (HDR) home entertainment system, you'll comment, not, this time, at the shoddy quality, but at the clarity of the colorful images captured all those years ago; this is the value of using technology to future-proof today's TV shows.

In conclusion, it may not be as glitzy and high profile as the Primetime and Daytime Emmy Awards, and, of course, we couldn't physically get together to celebrate, but when James Eggleton accepted the award on October 29th, everyone at CODEX raised a glass to his ingenuity, to the super talented and hard-working teams that made HDE a reality, and to winning a SECOND ENGINEERING EMMY!

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BREWING BEAUTIFUL IMAGES WITH CODEX MEDIA VAULT

CODEX, part of the X2X Media Group, has partnered with The Future Store in the Netherlands to bring MediaVault to market.



The Future Store, led by co-owner Paul van Asseldonk, is the main technical partner for video production and media workflows in the Netherlands. Whether it concerns shared storage and media workflows or the necessary hardware and software to connect up the MediaVault storage solutions, the Future Store team is always able to recommend and consult on the best solution for any production or post workflow.

CODEX met up with Paul to learn more about their latest customer, Rinie Jansen, owner of MacGyver Media Production, who use MediaVault in their facility to connect their creative team.

Tell us about MacGyver and the type of services the team provides and who their clients are?

At MacGyver Rinie Jansen leads a creative team of Directors and Photographers and they provide a 'one-stop-shop' for production and post-production or any part of the process where they can provide creative value. They cater to the Dutch marketplace and provide production and post services for the leading global advertising agencies such as VMLY&R, Publicis, BBDO, Ogilvy, McCann, GUC, Fitzroy, and Joe Public with their marketing campaigns.

“IT HAS BEEN VERY EASY TO USE AND IT IS QUIET. IT’S BEEN RELATIVELY PLUG AND PLAY.”

“Let’s brew something beautiful together.” Rinie Jansen at MacGyver has been quoted as saying.

MacGyver provides fast, creative and a cost-effective range of production and post-production services. MacGyver has a first-class creative team of directors and photographers that can write, consult, provide production crews and production assistance. MacGyver’s services also extend to post-production with picture editing using Avid Media Composer, including online conform. MacGyver also provides visual FX and compositing services plus motion graphics and 3D design, sound design, and color correction. MacGyver is a full service facility with a compact professional team that can assist across all of stages of the production process. MacGyver gets involved in conceptual work as well as production supervision. Being involved on the front-end allows their team to efficiently guide any project through the post process up to completion. Jansen says “We pride ourselves on the ambience of our suites. We have placed great emphasis on comfort, building a creative space with light and airy cutting rooms and comfortable furnishings throughout the place. At MacGyver we maintain an open and friendly environment and you can be assured that our commitment to helping you realize your vision, whatever the requirements, is our main focus.”

Paul van Asseldonk from The Future Store, was able to ask Rinie Jansen about the experience with MediaVault in use at MacGyver.



Are the creative demands of your customers across all of the multi-media platforms you service?

“MacGyver services clients in the advertising industry for high-end productions across all media platforms including Streaming TV, Radio and Online Social marketing.

Does MacGyver Media Productions provide bespoke services to clients or are the creative concepts in support of multi-media campaigns?

“In the Netherlands marketplace, most of the agency clients are producing content with about 50% of the jobs being cross platform and the other 50% of the projects being fully online campaigns that are mobile and social media based in design.”

How big is the MacGyver team?

“For all of the services we offer, our team is relatively small, with just nine core team members. Of course, as projects come and go, based on the size of the advertising campaign, the production crews scale up but the creative team at MacGyver is usually the same group.”

“IT IS EASIER TO TRANSPORT AND HAS LESS POWER CONSUMPTION SO NO NEED FOR IN-ROOM AIR COOLING.”

Do you manage all projects in-house or do you scale out of house with remote freelancers?

“All of our projects are done in-house with our team. With the multi-media deliverables, it’s so important to have all of the project assets in one easy to access, shared storage solution, like MediaVault. This has been key to delivering projects on time. Based on the large storage density of MediaVault, we were able to migrate and consolidate all of our projects into one central location and get them into the “vault” so we could share the media with our post-production team of editors, colorist and visual effects artists.”

What creative applications are you utilizing in-house and on what platforms? Do you have a mixed creative platform with macOS and Windows applications being used with MediaVault?

“MacGyver was the first totally Mac based post-facility in The Netherlands. It’s literally in our name...“MAC”Gyver. Everything is macOS based. The Future Store, our technical partner has been a great help in getting us set-up. Paul at the Future Store recommended MediaVault which we purchased and have proceeded to connect up and use with our full suite of creative tools including AVID Media Composer, Adobe Creative Suite with After Effects and Photoshop. We use Blackmagic Design DaVinci Resolve for color correction and are excited that MediaVault supports the BMD collaboration tools. This will help our team manage projects even faster. Our 3D and VFX teams are accessing MediaVault for 3D design and compositing using Autodesk Maya and The Foundry’s Nuke software.”



How has the MediaVault improved on your previous workflow? Any feedback on how to make the product better?

“It has been very easy to use and it is quiet. It’s been relatively plug and play. We could use a few more features and I am glad that we are able to talk directly with CODEX to provide this feedback and hope these Amsterdam become incorporated into the products. We have a very stable power network in this Amsterdams but this year we have had our power shutdowns already. It would be great if MediaVault had a data-connection to a UPS battery; in case the power is lost, it would shut itself down automatically when it runs on the UPS. MediaVault is much smaller than previous SAN solutions we have had in-house. It is easier to transport and has less power consumption so no need for in-room air cooling. We also very much like the 4 x 10GB onboard connections which make it easy to connect up our creative team. MediaVault offers everything in one box. Due to Coronavirus, more and more reviewing will be done externally.”

“Easy remote access via 3rd party tools would be useful. It will be great when we can use MediaVault storage as the backbone for this type of work, so we won’t have any storage limits. I look forward to what’s coming and learning more from The Future Store and CODEX, and what they are planning for cloud-based workflows.”

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SHOOTING BLACK & WHITE WITH RED

Cinematographer Erik Messerschmidt, ASC, reflects on the Mindhunter HDR workflow to shoot in black and white.



According to director of photography Erik Messerschmidt, ASC, David Fincher has been trying to get *Mank* made for almost 30 years, and one of the major roadblocks has been his insistence on making the film in black and white.

"We don't recreate any scenes from *Citizen Kane*," says Messerschmidt. "And I'm certainly not trying to give the impression that I'm anywhere near capable of doing work like Gregg Toland did! But that's a high benchmark, and I'm proud of the work that we did."

The testing period was exhaustive, but most of that time was spent finding lenses with the ideal deep focus subtleties, which in *Mank* do echo the iconic approach used so effectively by Toland and Orson Welles. Messerschmidt says that they looked at just about every lens at Panavision and Keslow.

"At first we considered shooting color for black and white, but not for long," he says. "We found that the Monochrome was so spectacular and yielded such preferable results that it was absolutely the choice. Also, it happens to be very fast, because the color filters are stripped off the sensor, which can then capture the full spectrum of available light. We shot most of the film at T8, and we rated the camera at 3200 ASA, which really helped the deep focus, for obvious reasons. And we quite liked the texture and noise that pushing the camera produced. By slightly underexposing and embracing a little of the noise, we found that it looks quite a bit like film grain."

"THE MONOCHROME WAS SO SPECTACULAR AND YIELDED SUCH PREFERABLE RESULTS THAT IT WAS ABSOLUTELY THE CHOICE."



Cinematographer Erik Messerschmidt, ASC, on location with Mank.

The RED RANGER camera brain is equipped with a HELIUM 8K MONOCHROME sensor that can record 8192x4320 resolution at up to 60 fps. The files came off the camera in REDCODE RAW format and do not require de-Bayering. The result is a more pure and precise image than can be achieved by shooting color and eliminating the saturation in post.

The workflow built on the procedures Messerschmidt and Fincher developed on *Mindhunter*, their previous project. "We had very successfully used a completely holistic ACES HDR workflow on *Mindhunter*, with HDR on-set and in dailies, and it worked great for us," says Messerschmidt. "We wanted to do that again, but in black and white, which I was very excited about, because HDR in black and white is amazing. We built a couple of LUTs to get the HDR to work off the log output of the camera, basically with the goal of making sure that what we saw on set was replicated in dailies. When our colorist, Eric Weidt, pulled the footage up in DI, it was very close to what we had signed off on at the set. That's very important to me – the subtle lighting choices that David and I are making at the monitor need to be perpetuated all the way through the chain."

The final aspect ratio is 2.2:1 – a frame that comes from 70mm cinematography, and the same ratio that was used on *Mindhunter*. "David and I have gotten quite used to framing for that," he says. "*Citizen Kane* is not 'Scope – it's not really period-accurate, and 16x9 felt a little too normal. So we used 2.2, which is right between. You might call it 'Finch-o-Vision.'"



Behind the Scenes Images courtesy of Netflix. All other images courtesy of their respective owners.

X2X would like to thank all contributors to this article.

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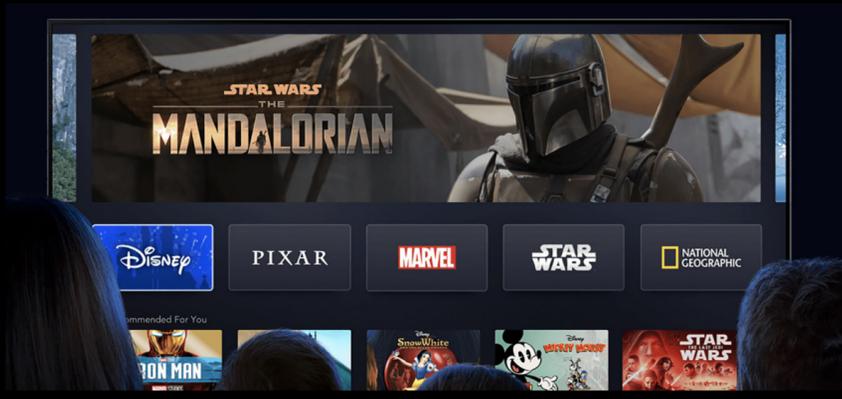
STREAMING CONTENT DEEMED ESSENTIAL

Over this past year, with the world in flux and businesses and people's lives being transformed by "Stay at Home" declarations due to the COVID-19 virus, the foreseeable future looks like we will be continuing to work from home remotely.



This has created a new type of "water cooler" to sit around and ingest the news of the day. The television has again become the center piece of our content information input. Thankfully due to the rise of streaming services like Netflix, Amazon Studios, and Disney +, television is not only providing us all of the news and information of the day we need but it is also providing new viewers the chance to explore content from documentaries on the Tiger King, to the latest cinema releases now being released on these streaming platforms. Over the last two years, the rise in these streaming services has led to many of the most creative projects now being made for the small screen rather than the movie theater.

Let's look at the big winner of last year's Academy Awards, *Parasite*. Most viewers watched *Parasite* on Amazon Prime Video versus the theater upon release. Then it was brought to Netflix on April 8th, where it was viewed online by millions of more viewers. If we have learned anything over the past year with streaming content it is that it might as well be deemed "essential".



A recent survey showed that during the COVID-19 pandemic, an increasing number of streaming media services have thrived and, according to a J.D. Power survey, Americans for example now subscribe, on average, to four streaming services, up from three when the pandemic began. That translates to 24% more in subscription fees, for an average consumer outlay of \$47 per month in December, up from \$38 in April. Netflix and Disney+ have surged, and newcomers HBO Max and Peacock have also done well.

We have learned too that viewers want to continue watching characters and plot's they enjoy, which has freed creators from the bounds of a traditional two-hour movie and how that movie is presented. Streaming shows are now combining multiple genres (comic book styling, animated story transitions, characters singing) with the movie broken into multiple episodes of varying length. Streaming television shows have turned into an 8 to 10-hour long story that can be watched almost continuously as one show.

With entire seasons being released on the same day, binge-watching has already become the norm. Now streaming is a way to relieve stress and escape the reality of the daily news. And all this change has accelerated over the past year with more projects than ever being green lit for these new streaming platforms.

According to J.D. Power's survey, 81 percent of those recently surveyed on streaming media platform choice, already subscribe to Netflix; Amazon Prime Video came in second at 65%, "followed by Hulu at 56%, Disney+ at 47%, HBO Max at 22%, Peacock at 18%, and Apple TV+ at 14%." The survey also found that *The Mandalorian*, captured on Codex, was viewed on Disney+ and "the most-watched TV show on streaming platforms in December 2020."

What does this mean for production? Well, because of Covid-19 restrictions on set and the need for remote access to view the production, below the line costs are up by 20-25%. How does one offset these costs but maintain the best image quality and capture in a large format like *The Mandalorian*?



Managing all this data is a challenge but also an opportunity. CODEX has introduced High Density Encoding (HDE) in response, allowing productions to capture the full uncompressed camera data but store it at 50-60% of the original size with no loss in image quality. Despite the increase in data generated at the shoot, the production team and the studio still want to see dailies as soon as possible. Companies like PIX, part of the X2X Media Group, provide secure video collaboration systems for collaborative workflows, so that an executive in Los Angeles can be at their desk and see what was shot that day wherever in the world the production is located. PIX viewers can stream this secure content on their iPhone, iPad, Apple TV, or desktop set-up.

Production editorial teams don't have to spend much time preparing executive dailies - they can focus on the creative tasks rather than the more mundane. It's very easy with PIX to distribute reels or screeners to the production crew, other content collaborators, and the marketing department as their work progresses. This streamlining of secure content can even begin in pre-production. VFX teams, for example, can share real-time previz materials to the Director for review and then deliver the higher resolution files as their work progresses.

Content collaboration systems such as PIX streamline production and post-production workflows and make it possible for Netflix, Amazon Studios, Disney +, and all of the other streaming services to rapidly ramp up their production slates when production resumes. In the meantime, sit back around the television and be inspired by the amazing content available on these platforms. Hopefully more incredible stories will be inspired and written and the cycle of production and content delivery on these streaming platforms will get back on track with the help of PIX and CODEX.

Learn how PIX and CODEX can help your next project. Call us on +1 (415) 357-9720 or email sales@x2x.media to set up a demo and learn more!

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CODEX

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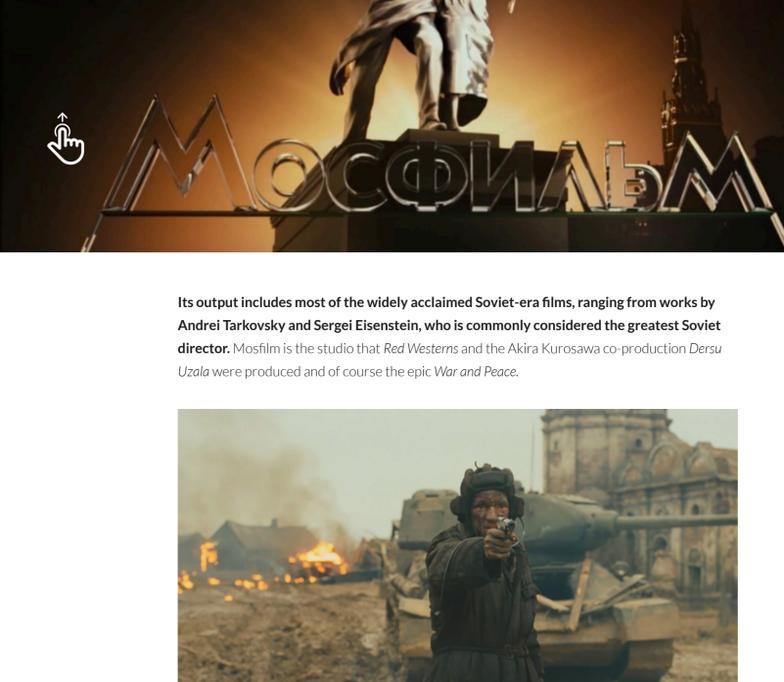
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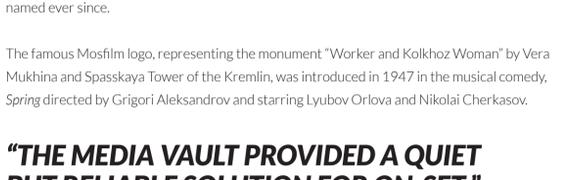
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LET THE DATA SOAR

Mosfilm is a film studio which is among the largest and oldest in the Russian Federation and in the whole of Europe.



Its output includes most of the widely acclaimed Soviet-era films, ranging from works by Andrei Tarkovsky and Sergei Eisenstein, who is commonly considered the greatest Soviet director. Mosfilm is the studio that *Red Westens* and the Akira Kurosawa co-production *Dersu Uzala* were produced and of course the epic *War and Peace*.



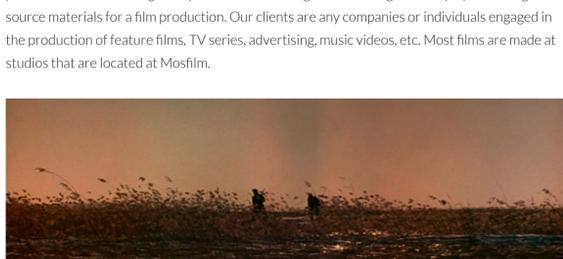
White Tiger (2012)

The Moscow film production unit with studio facilities was established in November 1923 by the motion picture mogul Aleksandr Khanzhonkov and I. Ermolev. The first movie filmed by Mosfilm was *On the Wings Skyward* directed by Boris Mikhin. In 1927 the construction of a new film studio complex began on Mosfilmovskaya Street in Sparrow Hills of Moscow. In 1934 the film studio was renamed to Moskinokombinat, and in 1936 finally to Mosfilm, which it has been named ever since.

The famous Mosfilm logo, representing the monument "Worker and Kolkhoz Woman" by Vera Mukhina and Spasskaya Tower of the Kremlin, was introduced in 1947 in the musical comedy, *Spring* directed by Grigori Aleksandrov and starring Lyubov Orlova and Nikolai Cherkasov.

"THE MEDIA VAULT PROVIDED A QUIET BUT RELIABLE SOLUTION FOR ON-SET."

Since its formation, Mosfilm had produced well over 3,000 films. Many of the film classics shot at Mosfilm throughout its history were granted international awards at various film festivals. By 2005, the company had expanded to over ten independent studios, spanning 13 sound stages and occupying an area of 13,000 sq. meters. Tours of this "Russian Hollywood" have become increasingly popular due to a well-kept inventory of Mosfilm's enormous depot featuring 170 tanks and 50 vintage period cars. The biggest sound stage is leased annually to hold the Golden Eagle Awards. In 2011, Mosfilm released a selection of its classic films online for free streaming keeping the content library relevant.

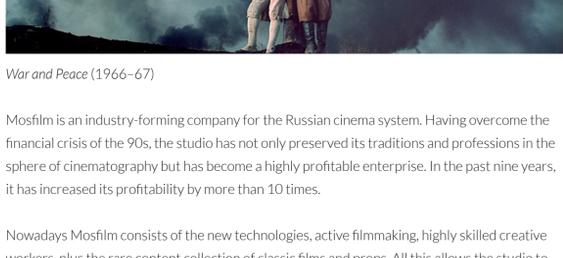


Spring (1947)

X2X had the fortunate opportunity to speak with Alexey Senkovsky, Director of the Camera Equipment Department at Mosfilm Studios about what Mosfilm's has been up to in 2020. Alexey has been working directly with X2X partner, Sfera Video Ltd. in Moscow on upgrading their onset workflow support. Sfera Video, led by Vassily Lunev, recently provided a complete CODEX workflow solution, including a MediaVault shared storage system, to support the on-set data back-up and augment the dailies workflows.

Tell us about Mosfilm and the type of services you provide and who your clients are?

Mosfilm is the leading Russian film company producing almost all the film, television and video content in the country. The studio's production capacity is more than a hundred films per year. Mosfilm also produces, distributes, and sells the film, television and video products. It also provides services relating to all phases of filmmaking - from writing a screenplay to making source materials for a film production. Our clients are any companies or individuals engaged in the production of feature films, TV series, advertising, music videos, etc. Most films are made at studios that are located at Mosfilm.



Dersu Uzala (1975)

In recent years Mosfilm has been actively involved in the modernization of its production and technical capabilities. A great deal of work has been done on the reconstruction of stages and studios and on equipping them with updated studio and lighting equipment and latest cameras that meet the highest modern-day standards. The most advanced digital equipment is installed in Mosfilm Sound Studio, in the TV-cinema department, and of course the Camera Equipment department that I manage.

Mosfilm provides all kinds of work on productions from the editing of films and video, to creation of the telecopying and computer graphics. All of this work is carried out using the most advanced equipment. The Studio has created a unique museum of historical costumes, props, and vintage cars. The tour is quite popular for the community. Mosfilm is the only studio that has preserved its film archive and carries out a great amount of work on the restoration of films from its golden collection at its own expenses. Mosfilm is actively involved in Russian film festivals in many countries and runs retrospective shows and screenings in Russia, as well as in other countries. We have even now made these classic films available for streaming.



War and Peace (1966-67)

Mosfilm is an industry-forming company for the Russian cinema system. Having overcome the financial crisis of the 90s, the studio has not only preserved its enterprise, and the past nine years, it has increased its profitability by more than 10 times.

Nowadays Mosfilm consists of the new technologies, active filmmaking, highly skilled creative workers, plus the rare content collection of classic films and props. All this allows the studio to be considered the leading enterprise of the Russian film industry and to contribute highly to the revival of Russian cinema.

What kind of content does Mosfilm create? Is it for TV, Cinema, etc.?

Mosfilm provides a wide variety of services affecting all stages of the production of feature films, TV series, commercials, TV shows, music videos, etc. In addition we provide rental of pavilions, costumes, props, transport, digitization of material, rental of filming equipment, storage of film archive material, plus post-production of DCPs, etc. Mosfilm does not produce its own content, except for the digital restoration of Soviet films.

What cameras does Mosfilm work with and what are the typical file types that need to be stored and archived? (i.e. film scan, RAW, ProRes)?

ARRI ALEXA Mini LF, ALEXA Mini, ALEXA SXT, ALEXA Plus, RED EPIC/Dragon, with file format support for RAW MXF, ProRes 4444XQ, ProRes 422, Proxy, DPX from film scans and .MOV files that we create and store. Basically, any camera that the cinematographer chooses to shoot with.

Does Mosfilm work with only Russian productions or do they work internationally as well?

Almost 100% of our work is in support of productions for the local Russian market and restoration of classic Soviet films.

How big is the team using the CODEX MediaVault?

The current team is just two or three people who work on-site in support of productions.



Do you manage all projects in-house or do you scale out of house with remote freelancers?

We manage all projects in-house with our team and the production DIT.

Why was there a need for a CODEX MediaVault shared storage system?

We have recently started to involve DIT specialists in our workflows for the on-set image analysis while capturing and managing the storage backups, editorial conversion and archiving of this material. The MediaVault provided a quiet but reliable solution for on-set.

How important is it to have access to all of your content in one easy to access shared storage offering like the MediaVault?

For us it was the total workflow we were considering. We own a CODEX Vault S for data management and most importantly to quickly analyze and review the quality of the incoming content. We use the MediaVault as the primary backup, and it is 10GbE connected to the Vault S workstation. With this set-up on-set we can directly organize the RAW material, convert the files for editorial and archive to LTO. It sounds complex but is quite simple.

"CODEX HAS CONTINUED TO PROVIDE US WITH THE MOST COMPLETE PRODUCTION WORKFLOW SOLUTION IN SUPPORT OF MOSFILM PRODUCTIONS."

What creative applications are you utilizing in-house and on what platforms? Do you have a mixed creative platform with macOS and Windows applications being used with the MediaVault?

Normally we are using on set the CODEX Production Suite software running on the Vault S (Linux OS) and the MediaVault is connected via 10GbE with Apple macOS workstations. We use other applications for editorial and visual effects.

How does the CODEX MediaVault improve on your previous workflow?

We have owned the Codex Vault S for the last 5 years. Many small Russian film production company usually works with less expensive solutions based on simple PC's. But for Mosfilm's projects this isn't acceptable at all. We recently upgraded our Vault S to have removable storage with the SSD based Transfer Drive. With the ability to connect the older Vault S with a 10GbE card to the MediaVault and then connect this over 10GbE to an Apple Mac workstation with Thunderbolt connectivity, allowed us to augment the Vault S workflow with the new Capture Drive and Transfer Drive Dock, and with the new modern drive adapters for the ALEXA Mini LF Compact Drive proves Mosfilm has the most professional approach and proper treatment, storage and delivery of captured material.

How easy is the CODEX MediaVault to use?

It was very easy to set up the network interconnection between all our equipment with the Vault-S system and MediaVault as the shared storage. Sfera Video and Vassily Lunev were great help in helping to educate and define what CODEX and X2X were offering with the MediaVault. The overall bandwidth performance is fantastic and with the Apple macOS connected systems, and Thunderbolt connectivity of the new Transfer Drive dock, CODEX has continued to provide us with the most complete production workflow solution in support of Mosfilm productions.

Stalker (1979)

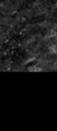
Battleship Potemkin (1925)

Mirror (1975)



MAKING THE MANK WORKFLOW

Collaborative remote working during the making of Mank.



Making a movie during a pandemic requires a little innovation. During the production of *Mank*, David Fincher's team needed to work remotely while retaining the ability to collaborate and also to consult with Fincher at a moment's notice. In addition, they needed secure access to footage and associated metadata.

X2X engineered a bespoke solution to streamline the production and post-production workflow. Craig Mumma, Director of X2X LABS, summarized the requirements, "Our original remit was first and foremost to securely collect and store all data from pre-production through to the completed movie. Then, because of the pandemic, the *Mank* team needed to work remotely but still wanted to have super easy connections between themselves and with third-party contributors. The final piece of the puzzle was to upgrade an existing VFX turnover process and automate it."

Mank was an LA-based production that was shot across multiple locations throughout the region, including sets staged at the fabled Paramount Studios. The near-set dailies and in-house post-production team were stationed at No. 13, and assistance was also engendered from third-party post-production company, Fotokem.

"WE ARE NOW STARTING TO SEE THE OUTCOME OF BLENDING THE TECHNOLOGIES OF CODEX AND PIX..."



Cinematographer Erik Messerschmidt, ASC, on-set

The workflow saw data from the RED RANGER cameras transferred on shuttle drives from production to post, where the near-set team used Fotokem's nextLAB to manage the image QC, sound synchronization and metadata updates. They generated deliverables for the editor, who could then assemble the timelines in Adobe Premiere Pro. When the editorial timelines were complete the original REDCODE RAW camera files and sound files, plus the editorial deliverables were synchronised onto a CODEX MediaVault. This real-time on-set server stored the entire production in a high-resolution proxy format along with associated metadata for each take. The upload to the MediaVault was achieved using a proof-of-concept CODEX Connect service, which also synchronized all data with the PIX cloud. Finally, the system mirrored itself to a back-up server to safeguard against any point of failure during production.

Running alongside the main workflow and also feeding into the CODEX MediaVault, PIX software allowed contributors to upload information and share it with the team. X2X Labs installed a tablet based on-set PIX application for entering notes. This allowed the camera department, the script supervisor, the director and the cinematographer to immediately review any take that was connected to the system. They were able to add shot specific information and annotations that were relevant to the scene for editorial and visual effects, and for visual reference with the post-production team located at No. 13. The tablet also provided the camera department with their own playback unit, independent of the traditional video assist set-up typically providing playback to video village.



X2X has worked closely with David Fincher and his No. 13 production company since *Panic Room* in 2001, PIX tools and services have fundamentally changed how feature films and television shows are made. Fincher and his team are constantly redefining technology as they seek to blur the line between production and post-production and strive to automate the mundane and more clearly communicate their creative vision.

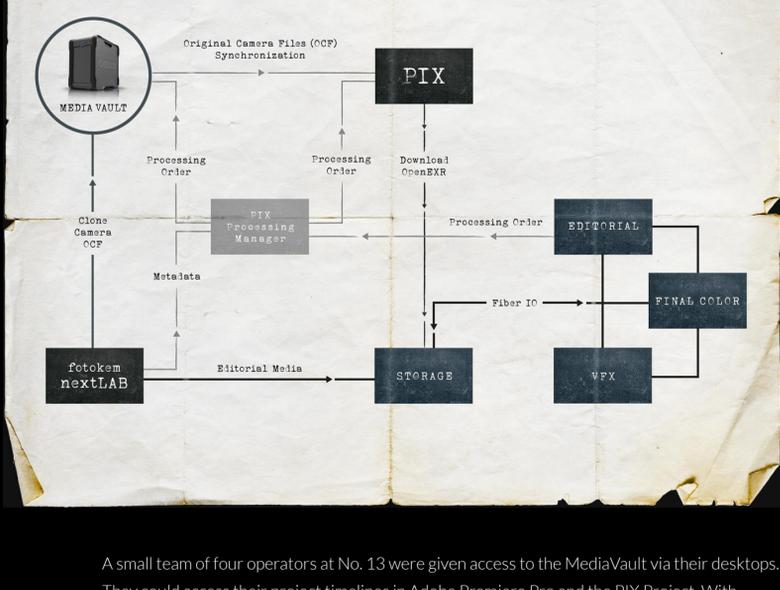
PIX built a proof of concept that makes a Connected Set a reality. PIX RT (Real-Time) creates media that is immediately available to the director so that he or she can make annotations and notes on the image right after it has been captured. This media and metadata are synchronized to PIX to all the approved members of the production who can review them along with image files. Other approved production crew – for example, DP Erik Messerschmidt – can also add their own notes. These notes are securely conveyed through to editorial and post-production along with the image file and other metadata. The thoughts and ideas of the creative team are recorded in real-time immediately after the take. This ensures that their vision and ideas are communicated clearly and without change through the many lines of communication to the rest of the production team, reducing the potential for misunderstanding.

"THE CODEX MEDIA VAULT STORED THE ENTIRE PRODUCTION IN A HIGH RESOLUTION PROXY FORMAT"

The cinematographer and camera department always had reference playback to any shot along with detailed shot notes, including those from the director, lens information and key metadata. This all-important reference material, attached to the playback, was available to the camera department throughout production. Mumma noted, "The ability to connect the director's intent and feedback into the production process while in the moment, led to an invaluable collaborative experience across all departments.

"We are now starting to see the outcome of blending the technologies of CODEX and PIX to provide solutions that enable greater creative collaboration, the filmmaking process is rapidly evolving."

Besides story editorial services, the in-house post team at No. 13 had early access to X2X visual effects plates turnover services. After discussion, X2X LABS understood No. 13's pipeline, including preferred post-production and editing tools; they were then able to design an enhanced workflow through MediaVault.



A small team of four operators at No. 13 were given access to the MediaVault via their desktops. They could access their project timelines in Adobe Premiere Pro and the PIX Project. With everything secure in one location and backed up in the cloud, the team was able to quickly and efficiently deliver VFX turnovers, preview them and manage the distribution to remote VFX vendors. These same vendors also had access to the PIX notes management and editorial reference. This back-and-forth process is the PIX notes management and editorial reference. This back-and-forth process is the PIX notes management and editorial reference. This back-and-forth process is the PIX notes management and editorial reference. Due to the time savings realized using the tools provided by X2X LABS, the post-production team was able to keep up with this large-scale project. The team in fact had an editorial assistant that would conduct and dispatch the timeline information relevant to the VFX shots and auto-cut these VFX shots directly into the editorial timeline. As editorial changes were made, so too were the visual effects that corresponded with these changes. Rendition after rendition, the auto-cut tools helped speed up and simplify this tedious but necessary editorial process and tasks that used to take hours of an editor assistant's time could now be done in seconds.

Throughout the post process, X2X LABS also provided consultative support and a managed service.

X2X are currently working closely with leading third-party application and service providers to standardize the tools used in the making of *Mank*. The intent is to integrate the tools with third-party open APIs, making them available, as standard, to anyone working on a PIX project.