JOURNAL

The Future is Automated

The landscape ahead for M+E looks uncertain. Automation can ease the journey.

WORKFLOWS AND THE CLOUD From cloud-based productions to unprecedented storage demands, the supply chain has

never been more challenging

SMART CONTENT

The questions around AI, metadata, and analytics are endless. But we do have many of the answers already

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P. 20 Creating a More Connected Future for Creators Automation is encroaching on every aspect of our jobs. It means cost savings, fewer headaches, and more efficiency. It means a more equal playing field for a global pool of undiscovered talent. The media industry is democratizing every day, and automation is a key part of that story. By Matt Cimaglia @ Alteon.io

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Immediate benefits of automation in digital content processing include faster completion, tackling a higher volume of work, fewer errors, and the ability to rely on a consistent process. Automation means the elimination of repetitive manual work, allowing for resources to be reallocated, and with decreased human intervention, security and confidentiality is significantly increased.

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Synchronizing different tech stacks is clunky, creates risks and costs, and prevents you from staying ahead in the connected world. Integrating and automating your contracts, avails, and financials in a single platform limits risk and makes you more money. By Michael McGuire @ FilmTrack

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IT'S (FINALLY) TIME TO 'SET IT **AND FORGET IT'**

By Guy Finley, President, MESA



Guy Finley is the president of MESA. guy.finley@MESAonline.org @MESAlliance

Legendary inventor and pitchman Ron Popeil — whose "set it and forget it" slogan helped put millions of "O-Matic" branded and other automated products into homes — would be a big fan of where the media and entertainment industry is headed.

There's no doubt that automation is the key to this industry's future. The reality is we've already begun an unending march toward "push-button" everything. If the first stage was moving from a very physical, hand-stitched world to a very digital, connected ecosystem, the second is automation and transforming your workforce.

A dozen years ago at our Hollywood IT Society (HITS) event it was interesting hearing from all those CIO teams about what their thoughts for the future were. It involved automation. They knew it already, long before the technology existed to make it a reality. The truth has remained the same: to march with the pace of innovation and change, we must embrace workflows that can be automated. It'll be impossible to keep up otherwise.

Look at the Entertainment ID Registry (EIDR), a fundamental DNA building block for our supply chain, a perfect example of automation in action benefiting every corner of our business. Metadata is the grease on the wheels of the automation engine Whether it's a smart contract or automatically knowing this is the right version of a "Harry Potter" that I'm sending to Taiwan. We recognized early at MESA how important the metadata piece was, how precious a commodity. Studios should control it, own it, and integrate it across all their business.

Things can be authenticated without a human being involved, like the fundamental basics of delivering a piece of video content. But when we extrapolate

between humans and machines: they may think faster than us, but we're capable of creativity and thinking around corners. And it's creativity that makes Hollywood stand out from other industries.

that to smart contracts, take it to a place where rights are determined far before we know where content's going to be played, that's the Holy Grail of the automated world, where we don't have to worry about checking some avails list. We'll continue to build more onto the automation chain and people are already experiencing this with their own CRMs, their own social media approaches, their own platform approach to their business. And it's only going to get crazier ... and better. Much like how APIs transformed our landscape and microservices and how platforms and workflows talk to each other, automation will do the same with addressable pings in that chain.

BUT WAIT, THERE'S MORE.

Part of the promise of automation resides with AI, transforming the workplace in a way that allows us to spend our hours on more meaningful (read: creative) things. If a robot can easily do it, chances are it's beneath you as a human. Automation is the key to operating at scale. We've previously learned how to scale by hiring a lot of hand-stitchers, but with automation, you

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MESA is a community dedicated to shaping the media and entertainment industry's future. MESA's 150-plus members and content advisors collaborate to advance change management, new workflow solutions, and production/ supply chain efficiencies. Launched in 2008 as Media & Entertainment Services Alliance, MESA produces quarterly events (in-person and hybrid), daily email newsletters, webinars, and the M&E Journal on behalf of its members. MESA is the management company responsible for the community efforts of Media & Entertainment Data Center Alliance (MEDCA), Hollywood IT Society (HITS), Smart Content Council, and Women in Technology: Hollywood (WiTH), as well as the business operations of the Content Delivery & Security Association (CDSA), the Entertainment ID Registry (EIDR) and the WiTH Foundation.

For more information, visit mesaonline.org

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AUTOMATION IN UNCERTAIN TIMES

By Hollie Choi, Managing Director, EIDR



Hollie Choi is the executive director of the Entertainment ID Registry (EIDR). During her 15-plus years in media and entertainment she's become an expert in supply chain automation, metadata governance and workflows, and digital and media asset management systems. <u>hchoi@eidr.org</u> @eidrdotorg It's an understatement to say that the entertainment industry has been having a tough time these past few months. Many of the biggest companies are dealing with layoffs, some on a major scale. By my count, in the past 18 months, the industry has seen more than 80,000 people laid off. In 2021, entertainment jobs accounted for 1.1 million employees in California, plus four million jobs in companies who directly support entertainment. That's a significant piece of the California economy. Seeing our colleagues leaving our companies can create a months-long anxiety-inducing trauma that can plague us long after those initial cuts are made.

I'm going to invoke the pandemic, even though I know it tends to result in an eye roll from many. We just passed the threeyear mark of that first lockdown. I know we forget how hard those early days and weeks were. I remember having to explain to my (then six-year-old) child that I did not know when we would be able to buy groceries because the stores were empty. In the Los Angeles area, we felt like Daryl Dixon going on a supply run after the zombie apocalypse had begun. Now that our supply chains are less impacted, the uncertainty and fear from those early days have passed. We are psychologically still impacted, though. I only mention it because it's important to remember that we are all at various stages of recovery from that traumatic experience. The recent reductions in force have stirred up anxieties that were just beginning to heal.

If we find ourselves in a situation where our employer has had to make the awful decision to let workers go, there are some things we can focus on to help the company and ourselves recover more quickly. The number one focus area should THE NUMBER ONE FOCUS area should be automation. Reevaluate your pipeline and ruthlessly prioritize. On top of having fewer teammates, you will likely be dealing with a shrinking budget. Make the hard decisions. What absolutely must be done to keep the lights on? Which things can you defer?

be automation. Reevaluate your pipeline and ruthlessly prioritize. On top of having fewer teammates, you will likely be dealing with a shrinking budget. Make the hard decisions. What absolutely must be done to keep the lights on? Which things can you defer?

Next, look for ineffective or overly complex workflow processes. Are there gaps created by a newly created absence due to a layoff? Duplication of effort anywhere? Are there workflows that when mapped out, seem to fork, or fall off a cliff? Maybe there is a spreadsheet (or 10) that is kept offline? Do you have a mountain of technical debt? Are you unable to automate because of a broken process or a technological limitation?

Create a new, skinnier roadmap. Make sure you communicate these decisions and renegotiate outcomes. Look across functional silos to see where the workflows are breaking down and develop a cleaner repeatable workflow. Look at your post-cleanse

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AUTOMATING SMART CONTENT

By Mary Yurkovic, Director, Smart Content Council, MESA



Mary Yurkovic is the director of MESA's Smart Content Council. She has more than 15 years' experience in the publishing, entertainment, and technology sectors. mary.yurkovic@mesaonline.org @chicagoMY

The media and entertainment industry is changing faster than a DJ's beat drop, thanks to digital transformation, smart content, workflows, and automation with AI. It's like watching a movie in fast forward, with smart content leading the charge as the Hollywood A-lister.

Smart content is the chameleon of content, adapting to any situation with metadata and making it easy to find, manage, and distribute assets. Like having your own personal content butler, it takes care of everything while you sit back and enjoy the show.

AI acts as the industry's superhero, swooping in to save the day by automating laborious tasks and reducing costs faster than a speeding bullet. It knows how to do everything, from video editing to transcription to metadata tagging. Who needs a human assistant when you have AI? It may be frightening for some people, but the reality is who actually enjoys manually adding metadata to content? I'm pretty sure there are no "endof-the-year bonuses" for adding a million data tags. Allowing AI to tag content allows creatives to be more creative.

AI and smart content are a match made in heaven, creating personalized content tailored to individual users like a bespoke suit. Call it a personal genie, granting your content wishes. Who needs a magic lamp or David Copperfield when you have AI and smart content working together?

Of course, with great power comes great responsibility. The adoption of AI and smart content has presented new challenges, like the need for upskilling and reskilling. It's like trying to learn a new dance move while the music is still playing. But with the right training, industry professionals can learn to tango like a pro. This is where change can be very hard for people and organizations. We tend to complain about doing mundane or repetitive tasks but still don't want to change, do things differently or learn new things. Change is hard. And learning new things can be as frightening as an episode of

the adoption of AI and smart content has presented significant opportunities for the M&E industry. Smart content can be used to create new revenue streams like a money tree that never stops growing. And Al can be used to personalize content for individual users like a digital cupid, making content more engaging and compelling.

"Svengoolie."

Another challenge surrounds the ethical implications of AI and smart content. With AI, it's like having a digital clone that can create content that's virtually indistinguishable from reality. Kind of like living in The Matrix, but without the cool slow-motion effects. It's up to us industry professionals to use AI and smart content for good and not evil. Over the past 10-plus years, the MESA community has always encouraged positive, innovative, and ethical solutions to push the industry forward.

Despite the challenges, the adoption of AI and smart content has presented significant opportunities for the M&E industry. Smart content can be used to create new revenue streams like a money tree that never stops growing. And AI can be used to personalize content for individual users like a digital cupid, making content more engaging and compelling.

Digital transformation has also impacted workflows, making them more automated, Continued on page 148

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RUSTED



THE GOOD, THE BAD, AND THE NEXT

By Eric Rigney, Vice President, MEDCA

The mission of the Media & Entertainment Data Center Alliance (MEDCA) is to advocate the adoption and implementation of data industry standards within media and entertainment digital infrastructure. Within its first year, MEDCA succeeded in introducing important conversations among some significant leaders in both the data industry and media and entertainment. MEDCA member companies such as PacketFabric, Coresite, and Keycode Media are individually promoting the importance of data industry standards to the community via social media, panel discussions, and marketing. This is a very encouraging and prideful start.

As the message spreads, the next challenge becomes getting facilities and services to implement the standards so proudly advertised. While manufacturers, vendors, and clients realize the importance of adoption, they have difficulty breaking habits and implementing the "new way" within their organizations.

Sadly, a quick survey by any qualified digital infrastructural professional of nearly any of today's M&E operation's digital infrastructure will present a gross lack of understanding and often negligent installation practices. This is in part because, ironically, the "new way" is anything but new, arguably even older than the audio/video standards they are asked to set aside when supporting data centric pipelines. "It worked before" or "if it glows it goes" only worked because the acceptable margin for error in the past allowed it. Those margins are exponentially thinner now. A/V engineers and technicians place blame on the new hardware instead of sub-standard digital infrastructure. That's why manufacturers and data service providers are jumping on board MEDCA faster than M&E operations and service providers.

SMPTE, AES/EBU, and other A/V standards will continue to have their place, but alongside TIA, IEEE, and other data industry standards when it comes to data pathways. How much electro-statically charged dust can high-performance graphics tolerate? When is it okay to zip tie fiber optic cables? What's a nine-staged uninterrupted power supply appropriate for an M&E operation? What is a NINE-stage UPS anyway? Cable

It's not enough to talk the talk. Learning and implementing good digital infrastructure practices is the best way to break bad habits. MEDCA continues to look for companies and individuals within them to identify the data industry standards most suited to support M&E today. In the digital world, tomorrow is already here.

management, environmental controls, hardware selection, redundancy, power, monitoring, and maintenance, are just a few areas that differ greatly when comparing A/V and data industry standards.

Two answers remain unaddressed: what specific data industry standards best serve specific verticals within M&E and what needs to happen before decision makers, both management and technical, decide to make the investment in education and capital expenditure? These, in addition to continuing the effort to build awareness and support, are what MEDCA and its members will begin to tackle.

So, while important and valuable progress has been made over a short period of time, save a few exceptions, implementation has not. Next steps require member leadership to bring MEDCA members together to begin the process of parsing existing data industry standards to support specific M&E verticals, and then finding those operations less harden in tradition and tribal knowledge willing to invest in education, planning, and Continued on page 148



Eric Rigney, executive vice president of MEDCA, is lead instructor of virtual production for Mo-Sys Academy. He is the former VP of multiple post service operations for Sony Pictures, including localization, sound archive, and equipment rental and support, spending 20-plus years with the studio. He is a contributing member of SMPTE, HPA, and ETC, active in virtual production educational initiatives, LED panel and lighting technologies, color analysis, and sound reverberation and noise mitigation on volume stages. <u>eric.rigney@medcaonline.org</u>

THE JOURNAL 14

SECURITY MATTERS FROM CAMERA TO GLASS



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AI: FOR GOOD AND EVIL

By Richard Atkinson, President, CDSA



Richard Atkinson is president of CDSA, and his experience covers more than 15 years in classified defense and 23 years in M&E senior leadership positions, driving profound business revenue and change for Northrop Grumman, Disney, EA, and Adobe. ratkinson@cdsaonline.org In my many years in various businesses, one consistent thing I have seen — especially in the media and entertainment business — is a tendency for teams to be highly reactive and keep trying to address way too much. Especially in going after things that might have emotional aspects but mean little to the actual business. Certainly, in the areas of fraud prevention and anti-piracy, but in many other areas as well.

Before you call BS, let's talk about a few examples. I've consistently seen (meaning over and over and over, whether it is the inhouse teams, or the vendors trying to support them and make a compelling difference) the situation where a team is trying to address all the geographies of the world. As if all the geos were worth the same to the business.

Letting specific markets like China or Russia or other small but problematic markets get way too much attention and resources is the issue. If we looked at the current revenue of your business by market, most will likely be about 33 percent domestic (USA/ Canada) and the remaining 66 percent from other markets. If we looked at the top 10 in rank order, most likely it will be something like this: USA, UK, Germany, France, Canada, Japan, Australia, Netherlands, Nordics, Benelux ... or something similar. What is key is that the top five far outweigh the bottom five, and after the top 10 (or 15 if you have a strong level of business in countries like Mexico, China, Russia, New Zealand, Brazil) the rest of world is just noise.

You could spend huge resources trying to make a difference in a market, and even if you were highly successful, the business in that market might grow dramatically but would be a blip to the overall global business. Sure, at times the business is going to prioritize these regions and put very aggressive and demanding leaders in charge that pull on you hard to help them. But, again, for the overall

WITH CHATGPT, EVEN

someone with poor English skills can easily craft amazing English-based communications, whether directed as a phishing attack against an individual or as a way to improve a social-engineering attack against a customer service agent.

business in terms of your value, you should focus first on those top five markets.

You say that the business already has those markets, so why spend time, effort, and money on a market that has low percentages of fraud/piracy when there are other markets with much higher need? The answer requires me to connect a few dots.

First, it is highly likely that your top three markets are all "mature," with relatively low fraud rates and a culture of higher brand trust and low aspects of black-market/ alternative distribution. There is also likely a moderate amount of "customer-facing fraud" where customers are sold products and services that they believe are genuine but are not. If your team can address even a moderate amount of this activity, those customers — who are already paying for the product but just from the wrong people will shift to legitimate business sales at high levels. Lastly, in terms of scale and opportunity, even though the rates of fraud are low the market/revenue is large. Meaning even if you can only impact a 15 percent rate by a few percent, it adds up to a LOT of value to the business. And, because these custom-

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THE FUTURE IS AUTOMATED

Creativity is what drives our industry. But it's technology that makes it all happen. And automation is essential to the future. The sheer volume of assets being moved to facilitate the mountain of content being created requires quicker completion, less chance for error, the end of repetitive manual labor, and fewer openings for security flaws. Automation is the answer.





CREATING A MORE CONNECTED FUTURE FOR CREATORS

The result of media and entertainment is art. But the process is technology

ABSTRACT: Automation is encroaching on every aspect of our jobs. It means cost savings, fewer headaches, and more efficiency. It means a more equal playing field for a global pool of undiscovered talent. The media industry is democratizing every day, and automation is a key part of that story.

By Matt Cimaglia, CEO, Co-Founder, Alteon.io

Automation is essential to the future of the media and entertainment industry, because, on a fundamental level, all content is just a series of media files, arranged and organized in a precise way. The result is art, but the process is technology.

Nowhere is this more evident than in digital asset management. The thousands of individual video, audio and animation files that comprise any production must be sorted, organized, and tagged before an editor can even begin stringing them together. And as media companies produce ever-increasing amounts of content, leveraging new media and embracing higher resolutions, the challenge of digital asset management will only intensify. DAMs that can automate basic tasks such as uploading and transcoding content natively in the cloud are dramat-

ically saving time and reducing the risk of errors that can occur during manual processes.

But that world is only the beginning. Many industry leaders are envisioning a media-creation future that relies on automation for significantly more than just asset management. Indeed, a DAM that does little more than organize your media files is already outdated, or else needlessly expensive.

We are seeing an increasing number of startups including my own, Alteon.io — focus on performing numerous tasks into a platform that is greater than just a DAM. Integrating time-stamped comments for review and approval, searchable metatags and speech-to-text transcriptions is the immediate future — and all these are features that are appearing right now around the world, while companies specializing in these technologies are teaming up across the industry. Transcription is a prime example of a task that used to take hours for a human to do, until AI replaced it, albeit while maintaining a hefty price tag. Now the technology has evolved, improved, and become more mainstream, allowing multiple platforms — including virtual recording studios and DAMs — to integrate transcription into their pre-existing products with no additional charge to users.

Those tools can be combined into something even greater, too. Transcription is useful for a myriad of reasons, not least of which is that humans tend to search through documents by text. A logical conclusion is to combine searchable metadata with automatic transcription: the computer will transcribe your file, scan the visuals, and automatically generate descriptive keywords that you can search for. Filmmakers can search for lines of spoken dialogue, or for scenes shot with a certain camera during a certain day. Broadcast journalists can search for choice quotes without combing through entire interviews. This is the vision we have at Alteon — creating a truly comprehensive hub for creation and collaboration, on top of the fundamentals of a secure, cloud-based DAM.

This future is more convenient for media professionals, of course — but it's also more lucrative. Jobs will change without being replaced, and content creators will simply be able to handle more work. If you're saving 10 hours per job without waiting for processes like uploading, transcoding, tagging, or transcribing, that's 10 extra hours your team has to work on a new project. As well, by accurately



Matt Cimaglia is the CEO and co-founder of Alteon.io, an award-winning platform that streamlines creative workflows for content creators of all backgrounds. An expert in cutting-edge technologies with more than two decades' experience running his own creative agency, Matt stakes his reputation on a relentless commitment to every project he takes on. <u>matt@alteon.io</u> @alteon io



THE HARDEST PART OF REALIZING THIS AUTOMATED FUTURE will not be the technology; most of what I've described so far is either currently possible or right around the corner. The challenge is industry adoption.

tagging digital assets, it becomes easier to retrieve old assets for future projects or drum up work from past clients.

And yet, this is all still on the topic of asset management and creation. There are broader applications for automation in the media and entertainment industry that can address critical interpersonal pain points — such as social networking.

Computers have already succeeded in automating matchmaking, either for networking professionals or those looking for a life partner. The idea is even easier to process once resumes, portfolios and rates are added to the standard matchmaking mix of geography and descriptive keywords. Directors, producers, editors, and cinematographers could simply search for the kind of help they need down to the type of camera owned — and find new ways to connect with their perfect fit. The old-school ways of networking by word-of-mouth, while still pervasive, will eventually be replaced by a method that is ultimately more equitable, efficient, and easy.

The hardest part of realizing this automated future will not be the technology; most of what I've described so far is either currently possible or right around the corner. The challenge is industry adoption. Data migration to the cloud has proven an uphill battle all on its own. Many media professionals still transfer large files by shipping drives. Industry veterans, larger companies and those skeptical of new technology will always be wary of changing their ways.

However, in the end, this will be the future of our industry. Automation is encroaching on every aspect of our jobs. As professionals in the creative space, we should embrace it: more automated small tasks mean less time worrying about administration and more time thinking about the art we're creating. It means cost savings, fewer headaches, and more efficiency. It means a more equal playing field for a global pool of undiscovered talent. The media industry is democratizing every day, and automation is a key part of that story. 🎛

THE VALUE IN AUTOMATING THE FUTURE

Тheге аге immediate benefits upon automation implementation

> **ABSTRACT:** Immediate benefits of automation in digital content processing include faster completion, tackling a higher volume of work, fewer errors, and the ability to rely on a consistent process. Automation means the elimination of repetitive manual work, allowing for resources to be reallocated, and with decreased human intervention. security and confidentiality is significantly increased.

By Eric Collins, President, CEO, and Mark Wright, Manager, Automation, LADB

For any business to thrive, change must happen. Companies must adapt to a wide range of factors, but it primarily revolves around the processes of how it gets work done. Everyone in the working world is familiar with automation, but most of us relate to it as something that replaces manual work with computers or new equipment with the ultimate goal of cutting costs. With the proliferation of cloud-based service offerings and a multitude of technological advancements in the content processing space, automation is quickly becoming a priority for businesses in the entertainment industry with implementation justifications exceeding beyond cost efficiency.

Successful automation initiatives have mostly been welcomed by companies to boost profits at the expense of employees whose roles have been eliminated. This is usually the case for automation projects where the scope of planning is not expanded enough to cover the entire business operations within the company, or if there are employees who refuse to broaden their skills become involved. However, a win-win situation for employers and employees can be achieved with a comprehensive planning strategy coupled with proactive involvement in implementing specific automation process changes.



As with any organizational change, disruption is expected. Upper management will usually be motivated by the promised results, while rank and file employees will usually be disappointed with routine changes, or worse, the elimination of their positions. A competitive company's workforce should be primed and retrained to keep up with the evolution of internal workflows. Although management and employees who refuse to adapt to change are a lost cause, we intend to consider the value of automation in this article along with the goal of enlightening readers to the fact that process automation will be a large part of any successful company's initiative for long-term survival.





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ALONG WITH THE ELIMINATION of repetitive manual tasks, comes the opportunity for employees to be assigned higher value and more meaningful work. This is where the continuous training of employees as well as promoting an atmosphere of learning within the workplace are crucial. Most employees welcome the opportunity to learn in exchange for advancement.

Automation has immediate benefits upon implementation. Faster job completion will be apparent arising from the reduction or even the elimination of manual job intervention. Multiple tasks performed with a computer will be completed faster if separate tasks are connected through automation without the limitations from the involvement of an employed human operator. Quicker job turnaround will naturally result in the completion of a higher volume of work. Achieving higher capacity means a company can reach economies of scale without increasing headcount or capital expenditures. Minimal human intervention also results in error reduction with the assumption that properly automated process exception handling and adequate instruction testing protocols are in place.

Automation will also produce inherently consistent and reliable processes. The common tendency of computers to fail with trivial omissions or coding mistakes will force the creation of complete and accurate automation instructions. This requirement also forces all workflows preceding and following the automated processes to be consistent as well as reliable.

Along with the elimination of repetitive manual tasks, comes the opportunity for employees to be assigned

Continued on page 144

AUTOMATE FOR YOUR BOTTOM LINE

System automation is the key to better profits, security, and analytics in rights management



ABSTRACT: Synchronizing different tech stacks is clunky, creates risks and costs, and prevents you from staying ahead in the connected world. Integrating and automating your contracts, avails, and financials in a single platform limits risk and makes you more money.

By Michael McGuire, COO, FilmTrack

Nothing adversely impacts rights management profits more than two things:

1. Spending more than necessary on soft or hidden costs 2. Failing to recognize opportunities

Without employing a rights management system that provides adequate security, your transactions, creative assets, and industry reputation are threatened. This can be rectified by using a powerful platform that integrates into business systems and lets you automate processes.

SOFT AND HIDDEN COSTS

Soft costs can severely hinder what you can accomplish and can cause outright issues. Some of the soft or hidden costs that can eat into rights management profits include:

Administrative costs. Spreadsheets and basic legacy software that require multiple administrators have traditionally been used to manage film rights. However, these systems create costly problems due to inefficiencies, siloed processes, and human error.

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WHILE MANY RIGHTS MANAGEMENT SYSTEMS CLAIM to have financial capabilities, very few can make high-level calculations informed by contracts to ensure correct amounts are being paid and collected at the right times. Automated solutions integrate with critical business systems like accounting platforms, ERP, CRM, scheduling systems, and more.

Multiple interfaces. Many businesses rely on Microsoft Excel, QuickBooks, NetSuite, Oracle Financials, or SAP. Unfortunately, these platforms can result in employee confusion, decreased productivity, wasted resources, and increased legal risk.

Double data entry. People doing double data entry into multiple systems leads to duplicate work, potential errors, and wastes valuable time. This lack of organization opens the door to missed opportunities and lost revenue.

Companies routinely miss out on profitable opportunities because they do not employ an integrated rights management system. For example, even though they have a platform in place, they might still be using spreadsheets for financials because their system doesn't account for the financial complexities of digital distribution. In addition, when distribution data is separate from financial data, these two systems must be cross-referenced for every deal, opening the door to costly human error and lost revenue.

MISSING OPPORTUNITIES

Rights management opportunities are missed for various reasons, such as:

Poor data integrity. Sub-par or nonexistent analytics leads to questionable data integrity. Without reliable analytics, sales teams cannot see future avails, be able to bundle opportunities, and avoid exclusivity collisions.

To avoid missing opportunities, contract and avails data must be readily available to check for conflicts with an automated view of contractual availabilities by territory, rights, formats, and languages.

Payout issues. There's more to financial management in the entertainment industry than just crunching numbers; you need more than a calculator. Besides managing billing, receipts, currencies, exchange rates, and bank accounts, a rights management system provides crucial granularity that traditional accounting software cannot deliver. Because rights and finances are tightly related, they must be handled under one system to avoid problems with a clunky interface.

Lack of analytics. You can't test the waters of opportunity when your data lake has run dry. Data analytics gives media companies a way to evaluate the overall performance of their digital assets. Rights management systems that feature business intelligence help companies make sense of the data to provide valuable, real-time insight into trends in sales, collections, and other KPIs.

Entertainment rights and distribution is a tumultuous and competitive industry. An automated rights management platform built with flexibility ensures your company has the foundation and tools to move quickly to keep pace with the industry's direction—and keep in front of the competition.

RISKS AND SECURITY

A secure system seamlessly protects creative assets, stays on top of industry standards, and manages organizational permissions. It provides greater control over profits in the following ways:

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Michael McGuire is the COO of FilmTrack. He has more than 20 years of experience working with enterprise software, services, and hardware companies. As COO, he is responsible for business continuity across the company with a focus on driving sustainable growth and operational efficiencies. <u>info@filmtrack.com</u> @filmtrack



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HOW SMART AUTOMATION CAN TURBOCHARGE YOUR MEDIA SUPPLY CHAIN

Too many people are engaged in onerous and unrewarding work throughout the media supply chain. It's time that changed

ABSTRACT: As streaming services face a period of consolidation, the ever-present search for value and efficiency in the media supply-chain has increased in intensity – and thankfully due to automation there are plenty of efficiencies to be found.

By Andrew Holland, **Director, Data Services, Fabric**

As streaming services face a period of consolidation, the ever-present search for value and efficiency in the media supply-chain has increased in intensity - and thankfully due to automation there are plenty of efficiencies to be found.

While a huge amount of focus and investment has rightly been poured into improving the asset side of the media supply-chain, the metadata side of the business can often still present numerous challenges in the form of antiquated legacy systems and inefficient manual processes. Slow manual processes cause delivery bottlenecks, but they also present the

ideal scenario for smart automation, and the great leaps in productivity, accuracy, and efficiency that automation can deliver.

At present, there are large numbers of people engaged in onerous and unrewarding work throughout the media supply chain — matching IDs, manually creating image and asset placeholders, cutting and pasting metadata attributes, or laboriously enriching content metadata, field by field. This is slow, costly, and riddled with the potential for human error that can have costly repercussions further down the supply chain.

The media supply chain itself is filled with a multitude of individual 3rd party companies, often performing one task, or delivering one link of the supply chain in a siloed way, without talking to other systems. This lack of communication is the source of considerable inefficiency and delay. The absence of visibility also frustrates delivery and informed decision-making.

A unified data architecture that can integrate with the various supply chain service partners and MAM systems is an essential but often overlooked form of automation. By integrating with a multitude of systems and bringing back key information it is possible to gain unparalleled insights, with reporting across titles, rights, schedules, assets and languages to get ahead of delivery.

As processing power has increased exponentially, so has the possibility for process automation. What is more, anything that can be automated can be moved to the cloud, offering the possibility of immense flexibility and scalability. Once tasks are automated, it becomes possible to quantify time and cost in bulk in ways that were previously impossible. Thus, efficiency breeds even greater efficiency.

The virtuous circle is expanded by the insights that become available from these automations, providing supply-chain transparency and visibility on a level hitherto impossible – allowing for intel-driven decision making on a new level. Numerous real-world examples can follow - automated reports on delivery readiness, automated metadata enrichment, automated duplicate-finding, automated quality reporting etc., or even automated workflow notifications about content readiness.

Cloud deployment of automated processes means that with a properly conceived workflow it is possible to



Andrew Holland is VP of data services at Fabric, where he has had role in launching Fabric Origin, a new data service for content owners which won NAB Streaming Product of the Year at NAB Show 2023. Andrew has been with Fabric since 2018 and was a lead author of the Cloud Localization Blueprint in 2022. <u>ah@fabricdata.com</u> @fabricdata



WHILE A HUGE AMOUNT OF FOCUS and investment has rightly been poured into improving the asset side of the media supply-chain, the metadata side of the business can often still present numerous challenges in the form of antiquated legacy systems and inefficient manual processes.

provision architecture so that it can spin up a complex software tool, data enrichment workflow or function (i.e., MAM placeholder creation), deploy it for the duration of a task or process, and then spin it back down again once the task is complete. A scalable cloud platform will give you the elasticity to run this kind of infrastructure.

The direct cost savings of automation are clear - as manual tasks are removed, wage bills can be reduced delivering headline efficiency gains. But the impact of automation is much more far-reaching. For instance, many of the manual tasks will be carried out on outdated legacy systems. Sometimes the efficiencies available from automation will only be accessible via a systems upgrade or a new data architecture that can enable the new automated workflows. Thus, as manual processes are phased out, legacy systems can also be deprecated, removing the need for their subscription fees, support packages or specialized training.

Without a doubt automation is the answer — as evidenced by some of the workflow automation that Fabric has carried out for clients such as Warner Bros. Discovery or Fox — taking manual supply chain processes such as placeholder creation, or EIDR and IMDb metadata enrichment workflows that originally took as long as 75 minutes to complete manually and reducing these processes to a matter of seconds with automation. The efficiency savings are counted in the millions of dollars, with a corresponding increase in accuracy and reliability.

Automated workflows can be deployed or created for a huge array of time-saving processes, for instance: catalog Continued on page 140 AN AUTOMATED FUTURE



WHY TESTING MERITS A STARRING ROLE **IN M&E AUTOMATION**

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Often overlooked for its ability to help get content out the door faster, testing is going automated and opening the door to fast, streamlined global delivery at scale

ABSTRACT: Testing isn't what you think of first when you think automation in media and entertainment. Yet with the media supply chain under duress as companies struggle with heavier workloads amid intense cost cutting, testing at scale opens the door to streamlined global delivery. Simply, it has the ability to help companies get content out the door faster.

> By Jeff Davidson, Chief Architect, Cognizant

After years as an ensemble player, testing is ready for its close-up thanks to automation. With the media supply chain under duress, and content providers struggling with heavy workloads and intense pressure to cut costs, automated testing enables the fast, streamlined global delivery that's essential to every media company's business model. But first content providers need to understand what automation can — and can't — do for their testing function.

Make no mistake that testing is crucial all through the supply chain, from the A/B experimentation that helps determine what viewers see, to the source code validation of CI/CD pipelines that ensure application code is



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TESTING IS A COMPLEX, ITERATIVE PROCESS even before you factor in automation, with plenty of potential for missteps along the way. Because media files pass through so many hands, it's common for QC to be run multiple times on the same files, representing redundant costs that waste time and budget.

bug-free. Quality control of content, however, occupies a pivotal role in the supply chain. Because it tests the media files themselves, QC of content is responsible for the ultimate experience of what the viewer sees and hears. While storytelling is the primary driver of viewer engagement, testing and validation ensures the quality of the audio/visual media. QC of content plays a vital role in the value viewers perceive. As a result, it's critical to media companies' ability to compete.

Content and media testing is also the least sexy, most problematic activity in today's media supply chain — and the area in which automation can provide the greatest advance for content providers. Anything seen on screen can benefit from automation to check on errors, whether it's validating the integrity of video and audio signals, ensuring subtitle graphics sync properly with the actor's voice, or using natural language processing to facilitate translation.

As media and entertainment companies seek to become less reliant on those checks being performed by costly "eyes and ears"— the term for manual QC — they're wrestling with how far automation's role can go. Many are in a continual evaluation mode as they assess the maturity of emerging technology to enhance or replace traditional methods. Not all automation is ready for prime time out of the box: An automated check for image distortion, for example, can return multiple false positives for manual operators to sift through — requiring more of their time in some cases than watching the full show in real time.

Testing is a complex, iterative process even before you factor in automation, with plenty of potential for missteps along the way. Because media files pass through so many hands, it's common for QC to be run multiple times on the same files, representing redundant costs that waste time and budget.

In addition, suppliers, and receivers of content—from production companies and internal supply chains to third-party distributors — regularly tussle over their roles and responsibilities for remedying issues identified in testing. Topics such as rejection policies, stakeholder communication and expectations, and how to design loosely coupled technical capabilities so they can be leveraged from multiple points within the chain, are all critical to supply chain management — and constant sources of industry debate and planning.

The goal of a single, comprehensive QC, performed early in the supply chain to eliminate the need for downstream validation, is universal yet still elusive due to the additional processing and customization carried out "after-market," or after a show delivers its initial masters from a production. Whether the single QC-to-rule-them-all will ever be fully achieved, progress towards this goal is widely viewed as critically important, even as companies grapple with tough decisions such as which steps in the supply chain make the best fit for automation and which areas are the most advantageous places for its insertion.

THREE MYTHS — AND REALITY CHECKS — OF AUTOMATED TESTING

Successfully automating the function of content QC requires understanding what automation can—and can't—do for testing. Here are three myths about automated testing that can help guide companies' efforts:

Myth No. 1: Automated testing is one and done

The reality: Some automated checks work well but new requirements are rapidly emerging, and automation takes time to catch up. For example, subtitles are evolving into a hot topic as creators seek to distribute video content into dozens of markets around the world. Automated testing is emerging to validate many aspects of subtitling that affect the viewer experience, from read speeds to audio sync to language translations.

Similarly, growing into a big issue for catalog owners is forced narrative, the text overlay that clarifies onscreen communications or alternate languages. (Think of the talking rocks in Everything, Everywhere, All at Once.) The text needs to be removed before *Continued on page 150*



Jeff Davidson is chief architect for Cognizant's Communications, Media and Technology practice. During his 25 years in media and entertainment, he has been heads down unlocking transformational insight through supply chain modeling and value-driven strategy execution. He's an expert in digital media management systems and operations, and an industry thought leader in business architecture. <u>inquiry@cognizant.com</u> @Cognizant

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AUTOMATION IS NOTHING NEW. SO WHY ISN'T EVERYONE USING IT?



ABSTRACT: While automation can bring efficiency gains to tasks and workflows such as digital asset management and postproduction, the industry's multi-faceted nature and the need for high-quality outputs make it challenging to implement. However, designing wellthought-out automation workflows and using task-specific tools can enhance efficiency and productivity.

By George Rausch, Chief Product Officer, Blu Digital Group

Automation debuted nearly 2,000 years ago, when the Chinese developed the waterwheel to automate such activities as grinding grains and raising water. Over the two millennia since, mechanization, computers and software, robotics, and now AI and ML have become part of humanity's toolbox to relieve itself from the toils of repetitive tasks.

As we look across the present media and entertainment landscape, cost-cutting and productivity improvements are on everyone's minds. In theory, automation can potentially transform the media and entertainment industry. But in practice, technological complexities and human factors impede an expeditious transition to utilizing more automation.

Automation can be broken down into two categories: tasks and workflows. A task is a single process (e.g., detecting moments of black and silence in the video), and a workflow is a string of many tasks (e.g., detecting moments of black and silence in the video AND validating those values against video platforms ad break specs AND then delivering the output to a rights management system). Today, some amazing AI/ML tools are having a major impact on digital asset management (DAM) and postproduction:

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MOVING BEYOND single-function automation tasks, real efficiency gains exist in workflow automation.

DAM: With the help of automation, DAM systems can quickly and accurately tag, categorize, and organize assets, making them easier to find and use in future projects.

Postproduction: Automated editing tools and software speed up the post-production process. For example, AI-powered video editing software can analyze footage and automatically suggest cuts and transitions, reducing the time and effort required for manual editing.

However, as we head deeper into automating away the most laborious human tasks (i.e., time-consuming, tedious) in the M&E industry, the technology isn't quite ready for prime time. To name three items: high-quality AI-generated translations (as well as complex transcriptions with multiple speakers), compliance video editorial, and performing qualitative video QC.

While many AI/ML tools exist to do translations, transcriptions, and find compliance issues, they're only "good enough" and not the same as if a human were to do it. In many cases, a human must do a conform pass as no one would dare use the output "as is" because it could sacrifice the consumer experience. For qualitative video QC, there are many high-quality tools out there that can detect issues and print a report. Still, they can't form an opinion and tell you if something is truly an issue or a non-issue like a human QC operator can. With time, these items will improve to the point wherein they can "form an opinion" that is trustworthy-or at least closer to the desired outcome.

Moving beyond single-function automation tasks, real efficiency gains exist in workflow automation. A well-designed workflow seamlessly orchestrates all the tasks to form a desired output, increases productivity, and lowers costs. In many other industries, automation workflows have been used to great effect. "Why can't the M&E industry get its act together!" exclaims every executive in charge of reigning in costs. The main issue is that media is multi-faceted (e.g., audio, video, artwork, text, and so on it, with seemingly infinite format variations); media is "made for humans," meaning the outputs are either right or "not quite right" with minimal room for error (e.g., a bad translation, badly placed ad break, poorly mixed audio,

continuity issues, etc.). And creating media can be done in a million different ways (i.e., there is no "one way" or "right way" to do it).

Conversely, automation likes uniform processes and clean, organized data that can be analyzed and provide results which is the opposite of how the M&E industry works. As a result, designing a media automation workflow can feel like an exercise in insanity. Let's contemplate the process of creating a movie from post-production through delivery to a theater or video platform. Individuals often perform many tasks in tandem (i.e., stop to start the next task), which delays others from starting their work. To design efficient automation, one needs to start thinking about breaking down larger items into smaller parts to be worked on in parallel and potentially out of sequence.

At Blu Digital Group, we have designed solutions that empower and enhance M&E workflows so that many users can work on complex projects agilely. The missing link between today's veritable toolbox of automation applications is the project management and seamless integration between those tools to increase efficiency. Our cloud-based BluConductor application acts as the project management hub for all other tools (or modules) that one would want to integrate. For example, title/rights management system, cloud storage, transcoders, automated QC, and almost anything with an API. Secondarily, we created task-specific tools within BluConductor to bring common workflows to the cloud, such as finding ad breaks for AVOD/FAST using our BluSpot tool, BluTranscode for media conformance, normalization, and transcoding, and BluQC, the world's first fully cloud-based, interactive QC tool which allows users to perform QC remotely and securely and then share reports with real-time component switching during playback.

While the creation of AI/ML tools do the fancy, futuristic automation of human tasks are still on the horizon, a well-designed automation workflow in conjunction with task-specific automation is possible today. It requires thinking differently about current processes, questioning everything, giving up tasks that machines can do infinitely better than humans, and letting humans do the things they excel at while making them more productive.



George Rausch is the chief product officer for Blu Digital Group and is responsible for managing Blu's expanding suite of video distribution, qualification, and operational solutions for the entertainment industry. He was part of the launch team at Pluto TV as their founding director of content. george@blu-team.com @bludigitalgroup



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VERSION CONTROL: THE FOUNDATION FOR AUTOMATION IN VIRTUAL PRODUCTION



The benefits are enormous are larger productions

ABSTRACT: This article explores the theme of automation through the lens of version control systems (VCS). As the single source of truth for all digital assets, VCS provides a foundation for continuous integration and delivery systems, enabling the automation of content creation, submission, building, and rendering. This piece emphasizes the critical role that VCS plays in streamlining workflows and facilitating innovation in the digital landscape.

Jase Lindgren, Solutions Engineer, Helix Core, and Ryan L'Italien, Director, Solutions, Perforce

There are a lot of moving parts involved in making a virtual production today — dozens of digital content creation tools (DCCs), multiple pieces of software that track assets and progress, and many team members across various departments. Establishing a pipeline that keeps your production on track requires tight control of digital assets, teams, and workflows.

That's where version control comes in. At the most basic level, version control software stores and tracks changes to all your digital assets. Without it, your team members must manually transfer files to each other, communicate who can be working on an asset at a certain time and exactly what changes they're making, and rely on each other to maintain very strict file naming conventions so they can keep track of which asset is which. Without version control, pipeline engineers must also write custom tools to prevent people from deleting or overwriting each other's files, to limit users' access to files, and to automate the updating of complex file paths.

These manual processes might be feasible for a small project with only a handful of digital assets. Once you take on a larger production — for example, one that involves an Unreal environment with hundreds or thousands of 3D assets — version control software becomes an absolute necessity. Collaborat-

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Michael McKenna **CEO of Final Pixel**

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ing on all these files manually isn't feasible in the long run.

Helix Core, Perforce's industry-leading version control system, goes a step further than other version control tools by storing every version of every asset centrally. Storing everything centrally gives your entire team a single source of truth, one place where all your teams work and all of your assets live. Here's what that looks like for your team:

When someone submits a change to a file, it's instantly available to every other team member.

Vour team will know when a file is checked out and being worked on by someone else, so they won't duplicate effort.

The set crew can access the latest version of a file instantly, making it possible to adjust creative in real-time.

STREAMLINING YOUR VIRTUAL PRODUCTION **PIPELINE WITH VERSION CONTROL**

Working with multiple tools and large teams can be cumbersome because it involves so many manual processes which, in addition to being time-consuming, leave a lot of room for human error, i.e., even more time wasted trying to remediate mistakes.

In addition to giving your team a single source of truth, Helix Core offers many ways to automate within your virtual production pipeline with custom scripts, extensions, and visual tools. TDs and pipeline teams can streamline the production pipeline further thanks to freely provided APIs and the ability to add custom triggered events and custom tools. What do these things mean for your team?

HELIX CORE APIS

With Helix Core, you not only have access to a vast library of plugins and integrations; you also have access to the API (Application Programming Interface) library, allowing you to extend Helix Core to meet your team's needs or work with any piece of software. To make it easier to write

THESE MANUAL PROCESSES might be feasible for a small project with only a handful of digital assets. Once you take on a larger production — for example, one that involves an Unreal environment with hundreds or thousands of 3D assets — version control software becomes an absolute necessity. Collaborating on all these files manually isn't feasible in the long run.

powerful integrations and scripts that function within other programs, Perforce provides APIs for Python, PHP, Ruby, Java, C/C++, .NET, and Perl, which provide access to all the functionality of Helix Core with outputs that are easier to parse in those languages. These APIs make up the backbone of existing integrations — such as the source control engine built into Unreal Engine — and are used by teams to make tools specifically tailored to their workflows.

Server extensions

Helix Core offers the ability to run custom actions based on events. For example, a script could be triggered every time a file change is submitted to your Helix Core server, which then sends a Slack notification or updates a task status based on the user, the files being changed, or a custom description provided with the submission.

CUSTOM TOOLS AND PANELS

Helix Visual Client (P4V) is a free add-on for Helix Core Continued on page 147



Jase Lindgren is the solutions engineer for Helix Core at Perforce. Passionate for all things VFX, he has been involved in the film and TV industry for more than a decade and has worked on projects that have been viewed by people around the world. With Perforce, Lindgren is helping transform workflows, providing VFX, animation, virtual production, and game developers with the tools to improve productivity and quality-of-life in future projects. <u>jlindgren@perforce.com</u> @perforce



Ryan L'Italien is the gaming and M&E evangelist for Perforce. Coming into Perforce with 15 years of full stack developer experience, he is excited to solve workflow and integration DevOps challenges for companies of all sizes. Being a video game and film enthusiast, it's a seamless fit. <u>rlitalien@perforce.com</u> @perforce





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BALANCING MACHINE EFFICIENCY WITH THE HUMAN TOUCH IN **QUALITY CONTROL**



ABSTRACT: Automation greatly benefits quality control and the preparation of files for final delivery. However, the advantages of bringing to bear the gifted eyes and ears of seasoned quality control professionals on M&E content cannot be undervalued. Balancing machine efficiency with the human touch is key when designing workflows and preparing services for clients.

By Ramón Bretón, Chief Technology Officer, **3rd i Digital**

Automation has become an increasingly important aspect of media and entertainment workflows. It allows for more efficiency and quicker turnaround times while taking responsibility for routine tasks, enabling employees to focus on what humans do best. This holds true when it comes to quality control, the last chance to catch potential distractions before content is released to consumers.

At a quality control facility, as in other areas of post-production, automated processes manage file ingest and egress, inter- and intranetwork transfers, offline file testing, work scheduling, as well as other aspects of typical workflows. These processes can be triggered



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using various methods — for example, via hot folders, by file types, or by a closer examination of file metadata.

Additionally, during the quality control phase of post-production, automated quality control tools play a significant role in determining a file's viability for release. These software QC systems are constantly being developed and have a robust set of tests available. These tests can be divided roughly into two groups: tests that are suited for automated, offline systems and tests that need human oversight for final review of discovered issues.

There are two main tests that fall squarely in the "let the computer do it" category: photo-sensitive epilepsy (PSE) compliance, and overall audio loudness readings.

PSE testing ensures that video content will not contain sequences that may trigger a seizure in sensitive individuals. Although a human could point out sections of flashiness that may approach or cross acceptable thresholds, automated systems have been developed to accurately test video content against the latest set of PSE compliance standards, which can differ by region.

Similar to PSE compliance, there are various standards describing the acceptable overall average volume level of a feature or episode to ensure consistency in audio volume between different programs, commercials, etc. Although this began as a broadcast standard, streaming platforms have now adopted these specifications, requiring that their content falls within acceptable limits. Although overall loudness values can be generated during file playback, there are numerous tools that can derive these values offline, faster than real time. In sum, although humans can collect these values during linear playback, there is no need to assign them this responsibility; if a computer can reliably perform a task, it should.

There are many other additional impairments that can be reported by an automated quality control system such as audio mutes, black frames, and some video and audio glitches. However, these issues cannot simply be reported to the content owner or client — they must first be reviewed by an experienced quality control operator for accuracy. There are other tests that can be THERE ARE MANY OTHER ADDITIONAL impairments that can be reported by an automated quality control system, such as audio mutes, black frames, and some video and audio glitches. However, these issues cannot simply be reported to the content owner or client — they must first be reviewed by an experienced quality control operator for accuracy.

performed by an automated system that often generate many false positives, such as dead pixel detection. While software quality control toolmakers are constantly refining their algorithms, if a human operator must spend a great deal of time reviewing reported issues and rejecting most of them, the balance of efficiency has likely tipped towards allowing the expert human operator to determine these issues in a real-time review of the file instead of assigning this to an automated system.

Expert quality control operators, who have honed their eyes and ears over years- or even decades-long careers, can detect a slew of impairments and distractions that are either not consistently detected by automated systems or cannot be detected at all. As of now, a computer cannot reliably report the reflection of production equipment in a passing car window, for example. When a popular program is released, the hive mind of the collective audience is quick to report any incongruities, and no content owner wants to be responsible for the coffee cup in a medieval drama.

One obvious benefit of using automated quality control systems is cost-effectiveness, which can be passed along to clients. Balancing the level of quality control needed with budgetary considerations can determine the level of human engagement required,

Continued on page 146



Ramón Bretón serves as chief technology officer for 3rd i Digital, a pioneering company in the field of quality assurance for the media and entertainment industry. Prior to his 20 years at 3rd i Digital, Ramón spent a decade in the music industry as an audio mastering engineer, giving him 30 years of experience contributing to quality entertainment for consumers. <u>ramon@3rdiqc.com</u>

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Not every film is a blockbuster. And not every film needs human dub work

A VOICE FOR AUTOMATION

ABSTRACT: Dubbing is the most labor and cost intensive type of media localization, aiming to reproduce the original experience for the target language audience. Automatic video dubbing aims to automatically revoice videos to make them more easily accessible to audiences in other languages at just a fraction of the time and cost.

By Volker Steinbiss, Managing Director, AppTek GmbH

It is no secret dubbing is the most labor and cost intensive type of media localization, aiming to reproduce for the target audience an experience identical to that of the source language audience.

The dubbing workflow is a complex one involving first a translation of the script in the target language and then its adaptation to fit the time constraints of the video at hand and at the same time achieve synchronicity with the lip movements of the actors on the screen. This script is then used in a recording session with one or multiple actors, depending on the requirements of the video in question, to generate speech that reproduces the emotions of the source speakers, coherent with the body language of the actors on the screen while matching their lip movements.

Automatic video dubbing aims to automatically revoice videos to make them more easily accessible to audiences in other languages at just a fraction of the time and cost. Coming from Germany, traditionally a dubbing country, I understand studio quality dubbing is akin to film production and the acting performances that go with it, and I admit I do enjoy such dubbed content for my favorite blockbusters. Yet not everything we watch online



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NOT EVERYTHING WE WATCH online is a blockbuster. The long tail of content is where I believe automatic video dubbing can make a difference.

is a blockbuster – in fact very little of the video content people watch online is. It is the latter use cases, the long tail of content that is available and possibly not localized in as many languages as it could, where I believe automatic video dubbing can make a difference.

AI systems today have superhuman abilities in many ways. With regards to language, no human speaks 50 languages, yet computers do. They do so less than perfectly, but when it comes to, say, broadcasting news in 50 languages simultaneously with a negligible delay from the original broadcast so people around the world can get the gist of what is being discussed in almost real time, this is something that a machine is ideal for. Especially when the decision is to localize such a piece of content at a last minute's notice, or where one's budget does not allow for the costs involved in hiring highly skilled simultaneous interpreters in all the languages in question. There is other ephemeral content for which the same applies, such as some types of user generated content, reality TV and so on.

AppTek's fully automatic dubbing pipeline provides an efficient and scalable solution for such content. It consists of a cascaded pipeline of automatic speech recognition (ASR), machine translation (MT) and text-to-speech (TTS) technologies, that are enhanced by features such as automatic speaker grouping and feature extraction, isochronous machine translation that considers the length of source utterances, and speaker-adaptive TTS that mimics the characteristics of the voices of the source speakers.

The results are further enhanced when the ASR and MT components of the pipeline are adapted beforehand to the domain of the video content and the lexicon is updated. When a fully automatic solution is your only choice, due to budgetary or other reasons, it is important to go for the highest quality possible that you can achieve with machines alone, to minimize the number of errors in the final content. In other words, if you have the data, use it so the system learns from it!

When the content requires an even higher level of accuracy, such as media archives and informational videos,

or less-than-premium entertainment content, telenovelas, documentaries or the FAST streaming channels that are the focus of everyone's attention of late, a post-editing workflow is recommended to close the quality gap. In such a scenario, a professional is involved to provide the necessary corrections to the ASR or MT output, or an existing, manually created script file can be used as an alternative. The resulting TTS output can also be post-edited for more natural, emotional flowing speech via an interface that allows users to change the pitch, intonation, speed, and emotion of utterances at the sentence, word or even phoneme level, and which is also available via API for interested customers.

As with all new technologies that reach a satisfactory level of technical quality, they beg the question on how to use them until such time when they become perfect and can replace any manual workflows that existed prior to their development. At present time our automatic dubbing technology is best suited for content that requires a fast turnaround time and has a limited budget. But as the technology continues to evolve, it has the potential to become a viable alternative to manual dubbing workflows. Such development requires partnerships with professionals in the field to ensure the industry's quality standards are consistently met during this journey.

At AppTek, we pride ourselves in helping companies understand where they can make a dent in the technology that would have a significant impact in their business or in the lives of the professionals who do the actual work. This is why we are offering our technology in a modular manner, where users can choose to post-edit any or all the technology outputs in the pipeline, or simply use existing transcripts or translations to achieve the quality standards of their sector. Our goal is to develop user-friendly AI that works and to do so with partnerships in the sector.

Learn more about AppTek's automatic dubbing by scheduling a consultation today (info@apptek.com) and give us your feedback on what is most important to you so we can make sure to take it into account in our roadmap.



Dr. Volker Steinbiss is the managing director at AppTek GmbH and staff member at RWTH Aachen University. He holds a PhD in mathematics and worked on speech recognition at Philips Research in the late 1980s, before his interests broadened into more fields of human language technology, such as speech translation, synthetic speech, and natural language processing. <u>vsteinbiss@apptek.com</u> @AppTek_McLean



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AUTOMATION AND CONTENT PRODUCTION: CRACKING 'THE FIRST MILE'



ABSTRACT: Many leading media organizations have taken steps to transform (at least part of) their content distribution ecosystem tackling upstream workflows, however, has proven to be more challenging. This article will outline a strategic approach for media and entertainment organizations to crack what I call the "First Mile" problem — giving your content production workflows the wheels they deserve to achieve comprehensive transformation across the value chain.

The how, the why and the costs associated with automating workflows

By Kishlay Baranwal, Head of Transformation, Advisory, Media, Entertainment, Tech Mahindra

Many leading media and entertainment organizations have taken steps to transform (at least part of) their content distribution ecosystem — although digital transformation does seem to frequently carry different meanings when it comes to its interpretation and adoption across the industry. At times, and more often than I would like to see, the focus can remain on the consumption side where visually-enamoring user experience and impressive at-your-fingertips functionality can dominate the narrative — but organizations would do well to look at their entire business value chain from a transformation lens (instead of acting at just the periphery) to derive tangible benefits.

Nevertheless, it is heartening to see that, more or less, the larger or more strategically-organized players in the media and entertainment industry have demonstrated a reasonable understanding and desire to move forward with their digital transformation initiatives on the distribution side with a structured plan, and an acceptable team set up for implementation (often, with the right partners — who are critical to the mix — but alas, sometimes the wrong ones as well).

Tackling upstream workflows, especially when it comes to content production, has proven to be more challenging, however.

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Now you could be part of a distributed artists workforce and partners to make a feature film (or TV series), or an author writing the next New York Times bestseller, or in the news production team of a cable news network, or even an instructor creating and delivering your next biology lecture. And each one of you may be wondering how to get your content early into the system, how to derive at least a portion of the myriad benefits that your friends in Tech are always talking about at the water cooler and coffee machines (or, unhappily, but so often in recent years – on a Zoom meeting or equivalent).

Or you may be unconvinced that such efforts would be worthwhile, for you don't believe that those benefits being touted are real and practical and such.

SO. LET'S GET THAT OUT OF THE WAY AND UNDERSTAND ...

The why

Looking at the book publishing industry, to start with, one can see manuscripts typically sent across by authors to development editors via email, a few (or sometimes just one) chapters at a time. There is always the possibility of a rushed author, well past the committed timelines (whooshing, as Douglas Adams would say) getting the email address incorrect in their note with the manuscript copy (one can hope it does not end up with another publisher!).

While that's going to have your content security team up in arms (if you ever tell them, that is), there's also the sheer volume of conversations with the author over email, texts, and phone calls which, despite the best efforts of those nifty email tools these days, are a significant tracking and management overhead. Not to speak of the confusion when something was supposedly sent out but wasn't really — and those fun chats to figure out where the ball dropped (without upsetting a touchy author — good luck with that). And your annotations to suggest changes on a manuscript which has already since changed at the author's end is not something your Microsoft Word skills can smoothly address either.

Let's look at another segment, say filmmaking (or TV series production) where again, content security can be critical. So, leaving behind copies of content on location is exposure to loss owing to equipment failure, or theft, or the like. And imagine a world where all your fresh on-location content is very-close-to-immediately available to your post teams distributed just about anywhere, who can start working on the content, checking artistic possibilities and even give a heads up if something needs to be reshot before the set is dismantled and while the crew and cast are still around.

So, you get the drift here. It's quite useful if you can get your content into your systems early, so hopefully we've crossed that out which gets us to ...



Kishlay Baranwal is the head of transformation and advisory for media and entertainment at Tech Mahindra. He is renowned for his ability to drive powerful transformational change in the media and entertainment industry. With more than 24 years of consulting and advisory experience across multiple global markets, he has become a leading expert in his field. <u>kishlay.baranwal@techmahindra.com</u> @tech mahindra

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SURE, THINGS WILL COST A BIT (you can even look at approaches like reducing capex by automation and operational efficiencies to invest into setting this up) and will take a tad bit of time to iron into your business. Like all things transformation and automation. But you will reap the rewards.

The how

Let's go back to book publishing and imagine a wonderful, little portal app (well, not little but it gives that warm, fuzzy feeling to those tech-averse don't-get-me-started-ontechnology authors — wonderful people in their own right, but you do find your development and copy teams dealing with them on an everyday basis just reaching out for that aspirin once in a while; or worse still, asking you for a raise; or even worse still — saying they have had enough — oh what will you do when that happens!).

So, this lovely portal allows the author and the publisher's arsenal of helpful staff (egging on a timely and robust manuscript completion) to see a dashboard of the book very elegantly with the chapters already submitted (through the portal), the ones which are pending beyond their due date, an ability to flag and send a little nudge of a message upstream, and sometimes downstream as necessary. You know, a really nice, comprehensive app which eliminates all attachments and tons of other email/ furiously typed texts/ frantic phone calls besides and brings it all together into a neat little tech-enabled system of producing a book. The manuscript of the book — now that's early.

As the chapters are submitted, layout, pagination, creative and rights/permissions teams will get their act together and get busy doing everything they do to help take that book to the finish line, but with the added advantage of being able to now compress timelines reasonably, often significantly.

Now I am not going to get into specific recommendations here on how best to get this portal system all built/ installed/ set up but suffice to say that you have options. To take another example, let's turn again to TV production/ filmmaking: imagine all your dailies which you have painstakingly shot through the day (and often nights) are auto-uploading into your backend system while you are taking your well-deserved coffee (with a little something in it) break. And they are big files — so you don't have to stand next to that awful, black machine and hold that wire that particular way to do this. You can get this content into your backend system (the cloud if you prefer) from the shoot location itself. Which allows your post teams to kick in their work early and have a go at the content and start doing wonderfully dreamy things for a slightly earlier production schedule as well. And everyone is happy. No, they really are — no catch.

And again, you have options here though you'll have to catch me at that coffee shop around the corner to allow me to outline them for you (admittedly though, slightly downstream on the post-production/NLE side there are a few things being worked out – but at this stage, you'll be all set as the solution is relatively smooth).

So, you have the why, and have a decent hang of the how, but are you worried about ...

HOW MUCH WILL IT COST AND WHAT ABOUT ALL MY PEOPLE?

And to that I say, (with fast-expiring real estate limits here on this page): fear not. Well, at least, not that much.

Sure, things will cost a bit (you can even look at approaches like reducing capex by automation and operational efficiencies to invest into setting this up) and will take a tad bit of time to iron into your business. Like all things transformation and automation.

But you will reap the rewards of the time-to-market advantages, the process streamlining, safeguarding content security, and several other efficiencies, like seldom before. Your teams (will all continue to have their jobs but will be much more efficient on their upstream cycles) and partners will be happy (and may even throw you that extra party in the holiday season).

And they will have that glint in their eye when you see them — and you will know it was worth it. \blacksquare

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DON'T NEGLECT GLOSSARIES WHEN AUTOMATING LOCALIZATION

Reduce linguistic ambiguity, enable information extraction, and enhance the accuracy of automated translations with automated glossaries

ABSTRACT: Glossaries are essential in localization, but often neglected in automation. Automating glossary creation and management offers efficiency and consistency benefits, reduces linguistic ambiguity, enables information extraction, and enhances quality and accuracy of automated translations in fields with specialized terminology.

By Bartosz Adamczewski, Director, Research, Innovation, and Allan Dembry, Chief Technology Officer, lyuno Speech synthesis is a technology that has been in the forefront of many discussions recently in the media and entertainment industry, with a strong media presence and funding spree. It is already a large part of our lives in the form of Siri, Alexa, and other digital assistants, found in call centers, embedded in modern automobiles, or as assistive technology for the blind.

It Automating glossary creation and management offers efficiency and consistency benefits, reduces linguistic ambiguity, enables information extraction, and enhances the quality and accuracy of automated translations in fields with specialized terminology.

A glossary is a document that contains a list of terms and phrases and their definitions, often used in a particular brand, show, or field.

Glossaries serve as a reference guide for key terms and phrases, ensuring that everyone involved in the project is on the same page and

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	8		e
0	EN .	PL	DE
1	Tom Hardy	Tom Hardy	Tom Hardy
2	Tomas Nook	Tomasz Nook	Tomas Nook
1	Poland	Polska	Polen
	Warsaw	Warszawa	Warschau
	Supervillain	Super Złoczyńca	Superschurke
	Palace of Culture and Science	Pałac kultury i nauki	Palast der Kultur und Wissenschaft
7	Old Town	Stare Miasto	Altstadtstraße

Figure 1: Glossary.

understands the terminology being used. In the field of automation, glossaries are essential in streamlining processes, improving accuracy, minimizing errors, and enabling suggestions in subtitling and translation systems. They enhance and improve the quality of all downstream processes that must do any processing with text and dialogue.

Of course, one of the primary benefits of using a glossary is that it can help to eliminate ambiguity. If different people use different terminology or have different definitions of the same term, this can lead to confusion and errors in the translation. By using a glossary, everyone involved in the project can refer to the same set of terms and definitions, eliminating confusion and ensuring that everyone uses the same language, thus making it essential in providing consistency in the localization process.

Another key benefit of using a glossary is that it can improve the accuracy of the script translation process, and this is true of both traditional translation and machine translation. When working with scripts, it's easy to make

spelling and form mistakes, and clients often require specific terms to be used in a translation or editing process. However, if everyone involved in the project uses the same set of terms and definitions, this can help reduce the risk of errors and rejections. Enforcing a glossary and providing validations and suggestions can in turn be used to return greater accuracy and more effective automated translation. Historically machine translation engines had a lot of trouble with translating terminology correctly; however, an NMT engine can use a glossary such that when doing the translation process, it uses the correct term spelling and translation from the glossary.

By using tools that integrate the glossary into the script review and translation process, you can gain the benefit of automatically highlighting all inflected terms in the script by using a set of algorithms and machine learning models. Other types of suggestions then become possible whereby the system will inform the user that a better or more suitable term or phrase exists and should be used instead, and that a term should be applied in a specific piece of dialogue but was not. This not only accelerates the process but delivers greater accuracy at the same time. Glossaries can also have metadata; this provides insights so that if the user is unsure whether to use a specific phrase or term in the text, the system can also provide rich metadata and context-specific descriptions of the term or phrase for research purposes as illustrated in figure 2.

Glossaries are also an integral part of the script approval process; when clients want specific terms and phrases to be used, the glossary and highlights terms that were used can

Tomes Rook	* * 1	Tomas Nook	■ + 1
You wan't believe what happened to me yestenday, I see Ston Hardy on Bauchess Street ?		Die winst nicht glauben, was mir gestern passiert ist. Ich habe <mark>fom Ukritys</mark> in der Bainbew Street gesehent	
 ne ecuryos 	60:00.00,006	000000000	40.60 (c),200
Friend		Friend	
No why! Did you talk to him?		Auf keinen fallt Hast du mit ihm gemdet?	
000002123	08:00.01.000	+ 00002333	0000003300
Tomas Nook	- ++	Tomas Nook	
No, but I have him up close while he was filming looked so interce.	for his new movie. He's playing a dependence and he	Nein, aber ich habe ihn aus der Nähe gesehen, als e einen <mark>Geperschurken</mark> , und er sah so intensiv aus.	er für seinen neuen Führ gedreht hat. Er spielt
* (#0.9000,24%)	935949-130	- 000000.000	100.0079-4, 830

Figure 2: Terms matching, typos, and suggestions.



Allan Dembry is the chief technology officer of Iyuno. He oversees all aspects of the company's information technology. Since joining Iyuno in 2019, Dembry has been focused on developing industry-leading information technology practices and work streams that will underpin the continued growth at Iyuno, the largest and leading media localization partner with the widest range of technology-driven, end-to-end solutions. <u>allan.dembry@iyuno.com</u> @iyunohq



Bartosz Adamczewski is the director of research and innovation of Iyuno. He is responsible for leading and directing research and innovation initiatives at Iyuno. With more than a decade of experience writing fast and scalable big data systems, and natural language technology, Bartosz is primarily focused on driving innovation and applying the latest advancements in artificial intelligence to provide new and improved solutions for media localization and content creation. bartoszadamczewski@gmail.com @iyunohq

definitions of the same term, this can lead to confusion and errors in the translation. By using a glossary, everyone involved in the project can refer to the same set of terms and definitions.



Figure 3: Script approval using a glossary.

be loaded, displayed to the user, and then display warnings about any terms that have not been used or any other potential problems.

Maintaining and keeping glossaries up to date can be a complicated and time-consuming process, and one that is prone to error. Glossary management systems can help with this task, but it's quite a challenge to keep all the terms, phrases, translations, and metadata filled in and up to date; fortunately, again, automation can help here.

Historically, people created glossaries and maintained them in excel spreadsheets and other file types. This presents a challenge with using the correct glossary and correct metadata in the editing or translation systems. Glossary management systems help with this task, but even then, data must be imported into the system. This is where machine learning models can be leveraged to automate glossary imports as well as picking the correct glossary for a given task.

Machine learning models can be used for automatic glossary creation, both for generic glossaries and client and brand-specific glossaries, from a set of scripts and documents; this reduces the time it takes to create a glossary

Toesas Nook	_*·:
You won't believe what happened to me yesterday. I	saw Tem Harey on Rainbow Street I
00.0001300	#0:20:02,205
Friend	
No way! Did you talk to him?	
0000202323	00:00:01,100
Tomas Rook	
No, but I saw him up close while he was filming for h looked so intense.	is new movie. He's playing a <mark>Supervillain</mark> and he
000003300	300004,330





IF DIFFERENT PEOPLE USE DIFFERENT TERMINOLOGY or have different

1	A .	0	c
•	EN	PL _	DE
	Tom Hardy	Tom Hardy	Tom Hardy
2	Tomas Nook	Tomasz Nook	Tomas Nook
	Poland	Polska	Polen
4	Warsaw	Warszawa	Warschau
	Supervillain	Super Złoczyńca	Superschurke
	Palace of Culture and Science	Palac kultury I nauki	Palast der Kultur und Wissenschaft
	the second se		

Figure 5: Automatic glossary extraction.

and helps with consistency and quality.

Similarly, relationship extraction models can be applied to extract term metadata and relationships to other terms to enhance the existing glossaries, something that is far more challenging to achieve manually in a timely manner. This automatically generated information can then be used for research when editing or translating.

In summary, the most beneficial aspect of having glossaries is that nearly every piece of automation starts by having an initial glossary, then subsequently building machine learning models and other automation tools based on these data sets. Glossary automation becomes a self-referencing feedback loop of operational and technical improvements and brings even more efficiencies to what can be a long, complex process. 🖽



Figure 6: Relationship extraction using existing terms.



Figure 7: Self-enhancing feedback loop.

AUTOMATION IN POST-PRODUCTION: MAXIMIZING EFFICIENCY AND CREATIVITY



ABSTRACT: In today's post-production environment, automation is becoming more critical to the success of a project. Automation is no longer a concept, but a reality that can help streamline the entire post-production workflow. It can help teams save time, money, and resources, while freeing up staff to focus on the creative aspects of our art.

By Ryan Gladden, Director, **Emerging Formats, Mastering, IDC-LA**

The field of media and entertainment has undergone a remarkable transformation over the last few years. With advancements in technology and the increasing demand for high-quality content, automation has become an integral part of the post-production workflow. It has not only made the entire process more efficient but has also enabled teams to focus on the creative aspects of their work.

Automation has played a significant role in streamlining our workflows. One of the most significant benefits of automation is that it saves time and resources. It allows teams to focus on the more complex aspects of their work, such as creative tasks that require a human touch. By automating simple, tedious, and repetitive workflows, post-production teams can reduce errors, increase productivity, and ensure that projects are delivered on time and within budget.

Some examples of the areas that have benefitted the most from

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solutions designed to help seamlessly.

automation, would be automation of source pre-qual to ensure there is no corruption or spec errors present before an operator even touches the assets. The creation of proxies or other simple transcodes without the need of encoding operators means files can go out minutes after the source is received. Large batch conforms of video, audio and text elements can now be done in hours instead of days. Data management tasks like moving assets to lower tiers of storage or archival to the cloud are based on parameters which are set based on the client or show. As well as the creation of complex and detailed metadata assets. Taking all these monotonous tasks away from operators allows staff to focus on the part of our work that needs human intervention.

All the examples given here are just the tip of the iceberg of what is possible, but there are some things that, while close, still need some work. Translation services have come a long way and there are some good tools out there that can do a passable job, but they are still nowhere near as good as using a translator. Script services like audio description, script creation and recording are still best done by hand even though there are tools out there that can translate a script and record a somewhat realistic but still synthetic voice. De-duplication and version control workflows could also benefit greatly from more automated tools and while there are some out there that can help with this, we feel it could still use a bit more refining. We have also reviewed a few tools that will do automated editorial work to clean up masters so all textless inserts can be applied to a master or removing commercial blacks and coming up bumpers from unscripted shows, and while almost ready, they still need a bit more time to mature. Many of these types of automation will or are already driven by machine learning models and as with most machine learning tools, it's just a matter of time before they become indistinguishable from magic.

Here at IDC, we are investing heavily in both the workflows that are easy to automate and in the tools that are still maturing but that we feel will one day be magic. We are either testing, building or already invested in tools for automation for media processing and data management, tools, and workflows to better automate VFX pulls,

ONE OF THE MOST IMPORTANT THINGS about automation is taking the time to look through all the workflows you have in place or have coming in and trying to find the best candidates to be automated.

machine learning based cloud tools to automate tedious editorial tasks, and connecting project management tools with asset creation tools for real time updates of work and capacity.

One of the most important things about automation is taking the time to look through all the workflows you have in place or have coming in and trying to find the best candidates to be automated. Finding the commonality between different workflows and researching tools that can automate those workflows is the key to truly being able to take advantage of the new technologies we have at our disposal. We make sure that automation is a topic of discussion every time we start a new project. We look at what parts we may already have automated, what parts need new workflows to automate, and what parts are best done manually by operators. This methodology will allow for smaller teams to be able to take on much larger projects than they would have using manual methods. It can allow for higher levels of quality and consistency improving metrics with our clients by using tools that can review the files and flag issues as soon as they are finished encoding. It allows our workforce to be more spread out using cloud based automation tools or even on-prem systems that can be kicked off with a simple file movement.

The combination of these factors enables operators to allocate more time for tasks that require human creative expertise, enhancing their ability to undertake creative responsibilities, and hence improving the quality of their work. 🎛

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Ryan Gladden is the director of emerging formats and mastering for IDC-LA. He is a 23-year veteran in post-production with more than 18 years focused on digital media. Gladden specializes in building workflows in emerging technologies, streamlining legacy workflows, building out automation and training skilled teams developed to achieve exceptional results. Ryan joined the IDC-LA team in 2021 to support and expand the company's digital media capabilities. <u>ryan.gladden@idc-la.com</u> @idcdigital

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BECOME AGILE WITH INTELLIGENT **TEST AUTOMATION**





Automating the future of post production

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ABSTRACT: As companies advance on creating new revenue streams to reach a promise of delivering more functionality to end users through Agile DevOps, QA's Agile Testing is becoming ever so relevant. QA being the last step in the development process, having fast, reliable tests is now indispensable.

By Jorge Zarur, Business Development Manager, Media, Entertainment, Softtek

As a society, we've long sought ways to reduce our workload and gain more leisure time. In the past, we imagined that robots would do our work for us, freeing us from the burden of labor. While this vision remains elusive, the development of automation during the industrial revolution paved the way for what would eventually become artificial intelligence (AI). By combining automation and AI, we've been able to optimize processes and achieve new levels of efficiency.

However, this is only the beginning. With the emergence of virtualization, we can take automation to new heights. Virtualization represents a turning point in the future of automation, where the convergence of automation and AI reaches its highest peak. We can now create virtual versions of hardware of software, and even virtualize processes themselves. This allows us to simulate, test, and optimize processes in a virtual environment before implementing them in the real world. As a result, we can reduce the potential for errors while improving performance.





NOT EVERYTHING WE WATCH online is a blockbuster. The long tail of content is where I believe automatic video dubbing can make a difference.

In the past decade, IT companies delivering services in the media and entertainment industry have been competing to develop solutions that address the latest trends in the market. In this short read, we will explore how Softtek has embraced AI and automation to innovate virtual solutions in the QA space that change the game for testers and help organizations keep up with evolving market demands

AGILE METHODOLOGY AND AUTOMATION: THE PERFECT SYNERGY FOR QA

To keep up with the constantly evolving media industry and support the rapid creation of new communication channels that lead to new revenue streams, IT companies have adopted Agile methodology. Agile involves breaking up projects into several phases and collaborating closely with stakeholders to deliver more functionality, more quickly, to end users. While manual testing is still a crucial part of the QA process the growing need for speed in the QA phase has led to the adoption of Agile in QA as well.

Agile has set a new standard for user experience, but it has also introduced significant challenges for QA engineers. In this fast-paced environment, sprints can last as little as two weeks, and QA engineers must ensure that not only does new functionality work, but also that previous functionality has not been impacted by new launches. How can they balance the manual tasks and tight deadlines, increase their productivity and efficiency, and open opportunities to provide value beyond their day-to-day work? Automation is the answer that comes to mind.

MEETING THE DEMANDS FOR HIGHER QA VELOCITY

Despite advancements in technology since the 2000s, QA automation processes have not evolved much, with the main shift being from enterprise-level to open-source tools such as Selenium, which is widely used in API testing. However, this shift alone is not sufficient to meet the growing demands for higher velocity and better results that enhance user experience.

To address this challenge, we developed FRIDA Intel-

ligent Test Automation (ITA). With ITA, QA engineers can simply type user requirements to a chatbot and let the entire testing process be handled through automation. Traditionally, a human verifies that those requirements are met, but with our platform, what used to take days is now down to minutes with no human supervision needed. More time for leisure—or in the case of QA engineers, more time to focus on other key aspects of testing.

At a glance, FRIDA ITA takes a digital user story, identifies the different scenarios or branches that need to be analyzed to fully test the application's functionality, and creates automated test scripts that can be executed in minutes. It supports web applications on any browser, APIs, and Android and iOS mobile applications.

Our solution is focused on the lowest level of the automation pyramid, called "field level," where production occurs. By automating the testing process, our solution has been able to incorporate our test engineers into a tailored process that adjusts to the development team's requirements, ultimately adding value to end users by getting products into end users' hands more quickly with zero sacrifice to quality.

Our desktop version leverages AI and a machine learning algorithm to review not only desktop components but also analyze images. This allows us to build test cases from videos, screenshots, and mockups of the functionality. Additionally, we can interface with popular DevOps and test management tools such as Jira, Jenkins, Zephyr, and Maven, which allows us to better serve our clients who may already have test or project management tools in place.

CONCLUSION

The emergence of virtualization and the ongoing evolution of automation and AI have opened new possibilities for optimizing processes and achieving higher levels of efficiency. As the demand for speed and quality in the media and entertainment industry continues to grow, companies must find innovative ways to help their QA teams stay productive and deliver quality in this new and Agile environment. 🎛



Jorge Zarur is the business development manager of media and entertainment for Softtek. He's a problem solver visionary and strategic leader that translates business strategies into maximum profits commensurate with the best interest of shareholders, customers, employees, and the public. jorge.zarur@softtek.com @Softtek

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BRINGING **PLATFORM POWER TO AUTOMATION**

Workflow Proliferation is **Collapsing Under Its Own Weight**

> ABSTRACT: The benefits of automation are undeniable, but it is expensive and inefficient for each media company to undertake a custom design/build workflow initiative. With a multi-tenant SaaS platform that is already operating at scale, Signiant is uniquely positioned to deliver ecosystem leverage via reusable, productized workflow building blocks. Easily connectable with modern APIs, these next-generation media process automation modules will provide optionality, scalability, short time to value, and high resiliency/ availability.

By Rick Capstraw, Chief Growth Officer, Signiant

As file-based media workflows became a reality in the mid-2000s, a new class of technical solutions emerged to enable easy creation of custom workflows. These tools were fit for purpose in the relatively static world of large-scale linear playout centers, where a single set of workflows can service an entire media business. It's practical to build and support a highly customized, one-off "high volume, low mix" factory to perform the complicated, high-value task of linear broadcast.

In today's fast-moving, cross-platform world, this legacy approach to workflow is collapsing under its own weight. Easy customization leads to out-of-control workflow proliferation, duplication of effort, and fragile systems that are far too complex and brittle to operate efficiently. The modern media factory is "high volume, high mix" and must be extremely flexible and agile. Layering more and more bespoke workflows on top of each other does not result in a scalable and sustainable system.

WORKFLOW PROLIFERATION IS COLLAPSING UNDER ITS **OWN WEIGHT**

Cloud technology came along just as cross-platform distribution was gaining traction.

Moving workflow automation to the cloud can be helpful from a technical perspective — we can build lighter weight, loosely coupled processes using microservices. But unfortunately, lift-&-shift cloud deployments are no panacea. A single-tenant, bespoke "cloud-based supply chain" has the same core challenge: hundreds of custom workflows piled on top of each other are expensive and inefficient to maintain.

"Different technology, same paradigm" did not save the day. In fact,

resiliency and availability can be even harder to realize in the cloud — and escalating cloud costs quickly become problematic.

RE-THINKING THE SOLUTION — A NEW PRO-CESS AUTOMATION VISION

It's time to step back and assess whether removing friction from the process of creating new workflows is really the problem to be solved. What if we came at it from the other side, focusing instead on how to leverage the high levels of commonality across the media sector to produce an off-the-shelf starting point? From our discussions with industry leaders, there's an emerging understanding that a modern media factory solution requires these attributes:

Productized, out-of-the-box common workflow cores

Building block framework-mix and match functional modules, with no need to commit to an end-to-end system

Comprehensive APIs for configurability and extensibility

Codified delivery specs from common distribution partners to enable automated essence conversion and validation, as well as metadata schema translation and validation

Holistic view of the interactions between people and systems, with dynamic role-specific user interfaces to deliver well-defined work to the right parties

Cleanly architected, off-the-shelf 3rd-party integration components

Lightweight work order model to efficiently deliver system instructions

Integrated metadata conduit to unify disparate sources of structured and unstructured metadata-no need to re-ingest assets into a MAM

Simple utilization-based pricing that is correlated with value delivered

Excitement is building around this new vision, which promises to bring efficiency and cost-effectiveness to



Rick Capstraw is the chief growth officer for Signiant. He leads the global strategic sales and alliances organization of the company, focused on accelerating worldwide growth. With a proven track record of leadership, he has built a career in delivering technology solutions in global markets that help to transform the way we use and consume media. <u>rcapstraw@signiant.com</u> @Signiant



IT'S TIME TO STEP BACK and assess whether removing friction from the process of creating new workflows is really the problem to be solved. What if we came at it from the other side, focusing instead on how to leverage the high levels of commonality across the media sector to produce an off-the-shelf starting point?

companies of all sizes. With this model, media companies still have the opportunity to customize workflows in areas where unique functionality is needed, but reinventing the wheel and gratuitous roll-your-own initiatives can be eliminated.

THE FOUNDATIONAL SAAS PLATFORM EXISTS TODAY

Why is Signiant the obvious choice to lead the way? Simply put, it's because we have already done much of the heavy lifting. Our rock-solid platform provides the connective tissue for all sectors of the global media & entertainment ecosystem. Years of innovation and massive investment have produced a true enterprise SaaS platform with these key elements:

Patented multi-tenant hybrid SaaS architecture-cloud control plane with a distributed on-prem/cloud data plane

Fast file access–underpinned by the proven network optimization technology that the media industry relies on to send, share, and access large files over IP networks

Content exchange framework–designed to broker both inter- and intra-company connections

Support for distributed, diverse storage-connected to on-premises and/or cloud storage

Powerful search and preview–via acquired technology that has been integrated into the Signiant platform, users

AN AUTOMATED FUTURE

can find and act on media assets on any storage, anywhere, in any format

Built-in platform elements-roles/personas, APIs, security model, user interfaces, etc. are all established and in use today

SaaS business framework–utilization-based subscription pricing, 24/7 SRE support, 'no surprises' customer success engagement

Perhaps most importantly, this platform is already operating at scale throughout the global media ecosystem. The Signiant Platform connects 50,000 media companies and over one million end users — it's the de facto standard.

Signiant technology is already out there, busily orchestrating lightsout tasks related to file movement. It's logical to extend this foundation into adjacent process automation areas and build a modern media factory on the Signiant Platform. In 2021 we took a major step forward with the acquisition of Reach Engine by Levels Beyond. The technical talent and know-how of the Reach Engine team are accelerating our ability to bring the new vision to life, and we all share the conviction that simplification and productization are the right way to tackle workflow complexity.

THE POWER OF PLATFORMS

The word "platform" is broadly used by technology companies, but all platforms are not created equal. The Signiant Platform meets a very

specific set of criteria, in that it serves as the core of an ecosystem, allowing platform participants to benefit from the presence of others, and is already operating at critical mass. Such a platform offers very tangible customer benefits including:

Optionality. Use any kind of storage, extend/configure via modern API's, easily connect to your choice of 3rd-party technologies, mix and match best of breed from Signiant and other companies.

Scalability. When you add users or workloads, we'll automatically scale up and out to accommodate the load. This is the magic of multi-tenancy.

Time to value. With enough time and money, anybody can build anything in the cloud. But why would you? The ability to be up and running quickly, and to turn on a dime when change inevitably happens, is extremely valuable in today's media world.

Resiliency and availability. Because we're operating at scale, Signiant can invest in building and maintaining a highly robust system.

The world has changed. Endless creation of custom workflows isn't an efficient way to support hundreds of distribution partners, and it isn't necessary. The power of platforms will allow Signiant to provide a shared common core that can be leveraged by thousands of media companies, in turn enabling content creators to do more with less.





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WORKFLOWS & THE CLOUD

Traditional production workflows no longer work, not in today's world of media and entertainment. Cloud-based distribution, unprecedented storage demands, a need for instant streaming quality control feedback ... the media supply chain has changed permanently, and for the better. Read on for ideas on how to keep pace.

Ⅲ+E JOURNAL 72



EVERYTHING, EVERYWHERE: FINDING SUCCESS IN THE NEW CLOUD-BASED **DISTRIBUTED MEDIA ECOSYSTEM**



ABSTRACT: The way entertainment media is created, distributed, and consumed has changed so dramatically, the age of traditional post-production workflows is over, and the age of cloud-based distributed media has begun. Multiple sources, in multiple formats from multiple locations now converge to create new media for global distribution. This transformative field requires new workflows and an altogether new ecosystem.

By Jason Deadrich, CTO, Vision Media

The entertainment industry has undergone a dramatic transformation in recent years, driven by the rise of cloud-based distributed media. This new ecosystem has revolutionized how entertainment media is created, distributed, and consumed, replacing the traditional post-production workflows that have been in place for decades. This new digital environment presents unique challenges and opportunities for media professionals who want to succeed in this field.

Traditional post-production workflows involved a linear process in which media was created, edited, and distributed sequentially. This workflow was characterized by a centralized production system in which media was created in a single location and then distributed to audiences worldwide. This process was slow, expensive, and needed more flexibility to meet the demands of today's fast-paced content consumption landscape.

In contrast, the new cloud-based distributed media ecosys-

tem is characterized by a decentralized, collaborative process in which media is created, edited, and spread across multiple locations and formats. This new system is built around cloudbased technologies and tools that allow media professionals to collaborate and share content in real-time, regardless of their physical location.

THE RISE OF THE CLOUD

Over the past two years, the distributed cloud sector has proven that it has benefited from the pandemic. Virtual work has become standard, and cloud management has been an easy fit based on the nature of dispersed teams and the ways in which they must collaborate. Navigating the recent years has been possible thanks to cloud-based media, and digital productivity and collaboration tools. While distributed cloud technologies were not new to global businesses, they have become integral

THIS NEW SYSTEM IS BUILT AROUND CLOUD-BASED TECHNOLO-GIES and tools that allow media professionals to collaborate and share content in real-time, regardless of their physical location.



to how we work. In fact, the global distributed cloud market size is expected to reach \$13.4 billion by 2028, rising at a market growth of 20.3 percent CAGR throughout the next seven years.

One of the key advantages of a cloud-based distributed media ecosystem is the ability to bring together multiple sources of content, in various formats, from multiple locations to create new media for global distribution. This ecosystem allows media professionals to access a wide range of content from diverse sources and to integrate this content into new and innovative media products.

For example, a media producer in New York can collaborate with a video editor in Los Angeles, a music producer in London, and a special effects artist in Sydney, all in real-time, to create a high-quality media product that can be distributed globally. This process is made possible by using cloud-based technologies that allow media professionals to access and edit content from anywhere in the world, using various devices and platforms.

Another advantage of a cloud-based distributed media ecosystem is the ability to support new and innovative workflows optimized for the cloud. This includes using cloud-based project management tools, automated



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workflows, and secure video streaming that can help media professionals manage their workflows more efficiently and effectively.

STANDING OUT FROM THE CROWD

A critical factor in finding success in the cloud-based distributed media ecosystem is the ability to create high-quality content that stands out from the competition. With the rise of cloud-based distributed media, there is an increased demand for high-quality content that is innovative, creative, and engaging. It is no longer enough to rehash known stories and tropes and expect audiences to clamor to watch. Media professionals must be able to create content that resonates with their target audience and that is optimized for the different distribution channels available in the cloud-based ecosystem.

MANAGING UNCERTAIN RISKS

Another critical factor in finding success in the new cloudbased distributed media ecosystem is the ability to manage risks effectively. The cloud-based ecosystem presents new risks, such as cyber threats and data breaches, that media professionals must be aware of and mitigate. Media professionals must be able to implement robust security measures and technologies to protect their data from unauthorized access. Key risk and opportunity areas for 2023 include Zero Trust security, avoiding shortcuts in your content management strategy, and minimizing vulnerabilities when securing sharing or screening video content.

FINDING CONSISTENT SUCCESS

The rise of cloud-based distributed media has transformed the entertainment industry, presenting new challenges and opportunities for media professionals. To succeed in this unique ecosystem, media professionals must adapt to modern technologies and tools, develop new skills, create high-quality content, stay up to date with the latest trends and developments, manage risks effectively, and manage the financial aspects of their projects efficiently. By embracing these strategies, media professionals can succeed in the new cloud-based distributed media ecosystem and thrive in this exciting and dynamic industry. **H**

HOW CLOUD STORAGE SERVES THE DEMANDS OF **MODERN MEDIA PRODUCTION**

ABSTRACT: Wasabi's Global **Cloud Storage Index showed** that 74 percent of media and entertainment respondents will increase the amount of data they store in the public cloud in 2023. This article presents the key ways media and entertainment can benefit from this cloud adoption to unlock new possibilities for the industry.

Here's what's driving the adoption of cloud storage in the industry



By Whit Jackson, VP, Media, Entertainment, Wasabi Technologies Few industries have experienced digital transformation quite like media & entertainment. From the emergence of virtual production, 3D capture, high resolution and frame rate, entertainment production has never been more data generating — and data demanding. At the same time, projects are under increasing time and budget pressure, requiring raw data and work in progress to be immediately accessible from almost anywhere to meet deadlines. These developments have combined to put enormous strain on the IT infrastructure in place to manage and store the mountains of data being produced.

To accelerate production workflows and effectively manage all the data generated, the industry is leaning more and more on cloud storage. In fact, new data from Wasabi's Global Cloud Storage Index shows that 74 percent of media and entertainment executives plan to increase the amount of data they store in the public cloud in 2023. The older methods of recording to servers and drives and physically transferring devices to artists, vendors and customers is no longer up to the industry's needs. The Wasabi Index findings are evidence of the industry's growing adoption of the MovieLabs' "2030 Vision," which emphasizes the importance of technological innovation in the industry for the future of media production.

Cloud storage unlocks new possibilities for media and entertainment producers by offering a flexible and readily available storage reservoir that can be

accessed by editors, artists and vendors located around the world. A cloud-first strategy also eliminates the considerable duplication and physical transfer of files that would typically happen with a production project - all of which are time consuming, costly, difficult to track and prone to loss by human error or malicious attack.

Here is a closer look at what is driving the adoption of cloud storage in the M&E industry:

New production paradigms and tighter timelines require on-demand data access

The increasing pace of production and the requirements for rapid delivery of finished content to viewing platforms have forced vendors and partners to re-imagine new ways of completing projects and getting content to the waiting audience. James Cameron's new blockbuster, Avatar: The Way of Water, completely reinvented how movies are made by employing new camera, virtual production, and effects technologies to capture CG characters in both CG and live environments - completely bending and blending reality like never before. As one of the most complex films ever made, The Way of Water also generated massive amounts of data which had to be transferred to post vendors and specialists to work toward a final product. Then came the herculean effort to deliver the many versions of the final film to digital cinemas around the world in near simultaneous fashion which was accomplished using cloud storage, compute infrastructure and automated workflows. In the end, over 1,000 versions of the movie in 51 languages were created and delivered worldwide in a little over two weeks — an impossible task if not for cloud resources and automation.

Cloud storage also is increasingly coming into play projects are safer from any catastrophic file corruption in the world of sports. Beyond the live broadcast of an or hardware failures since they are stored in highly redundant storage arrays and not on local infrastructure. event, there is also the need to aggregate all the camera footage shot, graphics, pre-rolls, etc. into a storage repository for later use. With UHD and 4K as the norm, Cloud-based storage protects valuable work a single game or match can generate tens of terabytes of We all know the infamous story of *Toy Story 2* and its data while large multi-day events, like a tennis tournaaccidental deletion that almost jeopardized the entire ment or World Cup soccer, can go into the hundreds of film. Luckily it was able to be restored from a team terabytes or petabytes of data. Sports teams themselves member's backup copy and went on to extreme box are also keen to capture all their game footage for re-Continued on page 140



Whit Jackson is vice president of media and entertainment at Wasabi Technologies. He has worked at the forefront of innovation in television production and distribution for 25-plus years. Among his career achievements, Whit served as the business development lead for cloud solutions at Motorola/ARRIS and was VP of business development at SecureMedia, working with the Hollywood studios and leading content owners on digital distribution strategy, policy and security. wjackson@wasabi.com @wasabi cloud



THE MEDIA AND ENTERTAINMENT INDUSTRY is charging ahead to deliver the technologies, tools and processes that allow creatives to build bigger, innovate more, and deliver higher-quality content faster than before.

view and training as well as for publishing highlights to broadcast, web and social outlets. In these cases, cloud storage can effectively play the role of an "active archive" where broadcasters, rights holders and team members can readily access clips, replays, and images.

Centralized content storage powers remote work With hybrid and flexible work schedules remaining prevalent in the post-pandemic world, many entertainment organizations are still fine-tuning remote-work processes to keep their workforce productive, engaged, and interactive with one another. Deploying cloud storage turns typical remote workflow barriers into advantages. For example, centralizing a production project in the cloud means there is one place where the content lives, it's accessible from anywhere and less time is spent searching across storage silos or waiting for a file transfer to come through.

Today, there are a variety of project collaboration tools, cloud-based editing, finishing platforms and multi-party application integrations to expedite media workflows and keep teams working together no matter where they are located. More importantly, cloud-based



THE CHANGING LANDSCAPE OF **OTT PLATFORM TESTING**



OTT testing and benchmarking can alleviate the biggest challenges facing content firms

ABSTRACT: In an environment of viewing anything, anytime, anywhere, how do OTT players maintain customer engagement, and how can they keep up with a constantly shifting landscape? We will explore how automated testing and benchmarking services support OTT providers in avoiding or remedying poor application performance, compatibility issues, and consistency of content delivery. Thus, minimizing sub-par experiences for the consumer.

By Kevin Lebre, Senior Information **Technology Project Manager, Giant Worldwide**

In a constantly shifting marketplace, new OTT streaming providers are entering the market, subscriber churn continues to be high, the number of devices that OTT platforms run on is increasing, and consumers continue to drive an environment of viewing anything, anytime, anywhere. OTT providers face great challenges when it comes to catering to their current and prospective consumer audiences, and this means ensuring that their streaming platform is stable, performs at its best, and is free of glitches.

How can OTT platforms ensure that functionality remains the same irrespective of the device that it is accessed from? How can platform performance be measured across industry standard KPIs? OTT testing and benchmarking can alleviate these challenges by supporting a quality customer experience by testing for security, connectivity, consistent and high-quality delivery, data transfer rates, compatibility with all playback devices, and more — essentially validating all functions of an app while it is performing.



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Charting Efficiencies

Successful platforms test and benchmark for everything, including connectivity, delivery, data transfer rates, compatibility and more.

BENCHMARKING FOR THE ENHANCED USER EXPERIENCE

A core element of testing is benchmarking, whereby essential metrics help an OTT provider know where its app stands, unlocking insights to help make it successful. Benchmarks compare an app's performance to the industry average, track key metrics and performance indicators, and can quickly identify red flags. These key metrics give OTT providers an opportunity to see where they might be underperforming compared to other streaming companies. However, manually benchmarking more than a few systems or devices at a time quickly becomes time-consuming, mundane, and challenging. Automated benchmarking makes this much easier, quicker, and often more accurate.

AUTOMATED ANALYSIS

With automated performance analysis, service providers can leverage benchmarking to pin-point certain areas of an application that may need further testing, or areas of an app that may benefit from automated testing, providing a health analysis of how a platform is performing. An automation framework should support all known browsers, set-top boxes, mobile and smart tv devices. Regardless of whether benchmarking and testing services are in-house, or offered in a fully managed, hybrid-managed, or remote-hosted environment by a service provider, a typical remote framework will allow users (OTT platform provider testing and automation team) to remotely access live devices and create/manage/schedule automation scripts.

Automation QA teams (in-house or 3rd party testing service providers) ideally should work closely with app development teams to challenge each other, build out automation frameworks for new and interesting test use cases, and develop their own best practices for the best possible end-user (consumer) experience.

AUTOMATION STRATEGIES

How do we identify a sensible approach to which types of testing can or should be automated? Here are just a few use cases that are appropriate for automation; if tests result in human error, tests that are labor-intensive to run, tests that need to be performed on many hardware and software platforms, and tests that simply cannot be performed manually.

Navigating manual vs. automated processes and testing asks us to analyze the types of scripts and scripting techniques that should be used, what automation is capable within a desired tool or framework, and what types of performance measurements are usable in automated testing scenarios. Plus, building an automation strategy around what tools to use, what frameworks to select, what automation mistakes to avoid, and how to leverage an existing in-house testing infrastructure all play a role.

The wide range of OTT devices across the whole Continued on page 146



Kevin Lebre is the senior information technology project manager for Giant Worldwide. He joined the company in 2019 to lead automation research and implementation across projects. With his passion and background in digital entertainment and technology, Kevin brings industry standard technology and marries it with custom internal tooling to provide automation services to OTT providers and more. <u>kevin.lebre@testroniclabs.com</u>



Automating voice privacy compliance of dubbing & voiceover workflows.

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SETTING THE STAGE

How the Academy modernized its processes for membership administration and awards management



ABSTRACT: For more than a decade, the Academy of Motion Picture Arts and Sciences and Slalom have partnered to modernize and streamline the organization's processes, from award submissions to the red carpet. By replacing many systems with single, integrated enterprise architecture, Slalom helped the Academy accelerate its ability to empower and advance the media and entertainment industry.

By Igor Mandrosov, Technology Strategist, Delivery Leader, and Steven Polster, Managing Director, Media, Entertainment, Slalom The Academy of Motion Picture Arts and Sciences is a nonprofit organization dedicated to the advancement of the arts and sciences of motion pictures. Today, the Academy is one of the most recognized names in the entertainment industry, comprising more than 10,000 motion picture professionals.

In 2010, the Academy approached Slalom to modernize its processes for membership administration and awards management. As an organization that had been operating for nearly a century, the Academy sought to embark on a transformation. It required a deeply collaborative and comprehensive approach — something that could stand the test of time, much like the Academy itself.

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ANOTHER OF SLALOM AND THE ACADEMY'S most impactful implementations is the new RAISE platform, which rolled out in 2021 to facilitate the Academy's Representation and Inclusion Standards for Best Picture consideration.

"We share a profound respect for the Academy and its impact on its members, the film industry, and audiences around the globe," said Slalom CEO Brad Jackson. "No matter how beneficial, changes to such an iconic organization require building and embedding a deep sense of trust. The mutual respect between Slalom and the Academy has been fundamental to the success of our partnership."

THE DIGITAL TRANSFORMATION JOURNEY

Slalom introduced a comprehensive solution to manage the membership and award process data. However, the technology itself would only go so far.

The missing piece was visionary technology leader Beverley "Bev" Kite. Hired in 2014, Kite is the Academy's first CTO and the driving force behind the digital overhaul.

"When I came in, the Academy had made some changes to become more digital, but there wasn't a unified approach to technology or data," Kite said. "What it needed was a real digital transformation."

Among Kite's initial ideas were self-service solutions for managing award submissions and Academy member management. Powered by a centralized source of truth, this core initiative allowed the Academy to integrate its membership, awards submissions, and awards data and processes, eliminating loads of manual work.

"Bringing everything together was a key piece in helping the organization innovate and expand," said Slalom senior delivery principal Charina Palma. "A lot of processes are

being streamlined because the data is now at the Academy's fingertips."

This move would ultimately revolutionize the awards industry and lay down the foundation for a bigger vision that included automating the entire awards process.

"Academy IT worked to automate nearly everything, from submissions to the red carpet," said Igor Mandrosov, a senior principal at Slalom. "We are extremely proud that most of what everyone knows about the Academy processes has the Slalom footprint somewhere in it."

"All these changes have internationalized the organization — connecting our members worldwide — and sped up and streamlined our processes," Kite said.

A HISTORY-MAKING PARTNERSHIP

After working through the initial hurdles and developing a mutual sense of trust, the partnership between the Academy and Slalom took off. Today, it remains one of Slalom's most enduring and active client relationships.

"These are not just projects. It is a partnership," Mandrosov said. The work is not divided between Slalom and the Academy, he says. Instead, it's the result of ongoing collaboration.

This powerful sentiment is shared not only by Mandrosov but the group of Slalom consultants who have been working with the Academy for at least seven years each. When Slalom initially recommended a technological solution to manage the Academy's membership, its senior Continued on page 142



Igor Mandrosov is the technology strategist and delivery leader for Slalom. He started his Management Consulting career in 1996 serving multiple industries as a technology strategist, process engineer and an enterprise architect, leading delivery of global innovative digital transformation initiatives. Mandrosov joined Slalom in 2012 focusing on media and entertainment and has been responsible for Slalom's partnership with the Academy for more than a decade. igorm@slalom.com @Slalom

Steven Polster is managing director of Slalom's media and entertainment industry team in Los Angeles, and leads Slalom's work with global studios, gaming giants, iconic sports franchises, and technology service providers and partners to solve the industry's biggest problems. <u>steven.polster@slalom.com</u> @Slalom



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WORKFLOWS & THE CLOUD

IT'S ALL ABOUT OPERATIONAL EFFICIENCY

Why cloud-native low-code, no-code environments are key to media supply chain efficiency



ABSTRACT: Modern digital media supply chains like Ateliere Connect facilitate content packaging and delivery instructions through simplified tag-based templates. The no-code, tag-based templates automate microservices such as transcoding, metadata transformation, asset collection (including artwork and documents) QC, and delivery. Each title stores media components, allowing simplified packaging recipes and deliverables.

By Dan Goman, Founder, Chief Executive Officer, **Ateliere Creative Technologies**

With major shifts in video consumption habits, customer demand has forced broadcast and streaming companies to change their production and distribution models. This brings business challenges that then turn into technology challenges.

Anyone familiar with delivering media knows that digital media supply chains are built using many different systems: one dedicated to transcode, another as a metadata system of record, another for quality control (QC), another for delivery. Not to mention the manual processes needed to confirm receipt and ensure that all these systems are working correctly.

Some vendors have attempted to provide "orchestration" services to tie these systems together, but the reality is that this is a band-aid fix for an industry-wide problem. The disjointed systems continue to need monitoring beyond whatever top-level management platform is used. This



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type of legacy operation also relies on defining each vendor system separately (a separate transcode profile, a separate metadata transformation schema, a separate artwork definition, a separate delivery setup, etc.). It's a broken environment that does not support the new era of content demands.

Media supply chains need to orchestrate and automate everything necessary to successfully make a delivery, publish content and maximize monetization. This includes transcode, metadata transformation, delivery instructions, QC and delivery confirmation (where available).

YOUR MEDIA SUPPLY CHAIN IN THE CLOUD

To operate in the new content era, media companies need to connect the dots across all of their traditional fragmented silos. An integrated media supply chain connects each process and each team, so that data flows smoothly. Integration delivers continued, uninterrupted content workflows for an exquisite customer experience.

In the business of producing content, this should start at content ideation, continue through capture, packaging and distribution, and flow efficiently to the consumer. Gathering key data across the chain is vital to making strategic improvements quickly and often.

Cloud infrastructure enables this connectivity through speed, flexibility, and centralization. When we talk about a unified global supply chain that's cloud-centric and cloud-native, we also refer to the implementation of advanced services that enable the retention of customers — for any business.

These are the key benefits of implementing an Ateliere-powered content supply chain in the cloud:

• Operational islands are connected through a proactive technology platform that allows the business to pivot based on their needs.

The business back-end and user experience front-end are integrated, enabling a better customer journey that increases retention.

Actionable data is gathered and analyzed meaningfully, so that you can understand your viewers' habits (what they watch, when, where, on what devices). This data is critical to developing content recommendation strategies to retain your audience.

Continued on page 146



Dan Goman is the founder and CEO of Ateliere Creative Technologies, a pioneering technological force that's transforming the post-production and OTT industries with groundbreaking innovations, from digital supply chain solutions to unique, customizable video apps. Goman has helped media companies such as Microsoft, Lucent Technologies and AT&T Wireless advance their technology. <u>dgoman@ateliere.com</u> @TeamAteliere



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MITIGATING THE IMPACT OF CHANGE



ABSTRACT: Remote collaboration, virtual production, cloud workflows, and the inclusion of AI, ML and ChatGPT technologies are all market-changing factors facing media and entertainment today. But while technology can mitigate some of the pressures facing filmmakers, it's how you employ them that will determine who will not only thrive, but survive.

By Chuck Parker, CEO, Sohonet

There are several market-changing factors facing media and entertainment. Filmmakers face pressures due to significant cost inflation in key areas of production. The burden on producers has grown acute after a decade of cheap debt, with the wage inflation associated with scarce talent exacerbating the effects. Crew shortages at all levels pose a threat to the sector, with indies struggling to compete with larger international productions.

Technology can mitigate the effects of some of these pressures, but hurdles remain. Here are a few key trends to keep in mind as we navigate towards the future.

REMOTE COLLABORATION SAVES REAL MONEY WITH TRIED AND TESTED TOOLS AND WORKFLOWS

Remote collaboration slashes the cost of travel and accommodation from the estimated 30 percent cost to every production. The tools to enable remote content collaboration are battle-hardened and will only get better. Decisions about hybrid or entirely remote editorial are now embedded into discussions at the point creatives on-board a project, offering a better work-life balance. The benefits are not all one way. Certain creatives (showrunners, directors) want their editor close to set, even during principal photography. Reading the room with all its nuances in gesture and mood is something that remains tricky if not



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impossible to replicate when video streaming. Therefore, workflows should still support in-person collaboration when appropriate.

VIRTUAL PRODUCTION IS ACCELERATING — BUT CREATES ITS OWN TIME AND COST **CHALLENGES**

Virtual production (VP) offers significant savings on travel, and subsequently on carbon footprint. As volume stages crop up everywhere to satisfy the demand to shoot locally, they are often booked out as soon as they launch. VP is also the fastest developing area in our industry, although the techniques and best practices are still emerging. While the crew tasks and skill sets required for a VP shoot may differ to conventional production, the actual number of crew involved may not, in its current phase, be markedly different. Consequently, the cost per day of shooting remains high for VP.

The complexity of virtual production needs to improve for it to become the first choice for production, with location shooting an aesthetic choice for those with the highest budgets or most prestigious creative talent. However, capacity and pricing are impacting the decisions as much as the changes in pre-production required to be successful in this creative approach.

CLOUD WORKFLOW ADOPTION REMAINS HAMPERED

The ability to push raw original camera files (OCF) from set to cloud for instant access by creative talent anywhere will bring sweeping benefits to production, condensing time scales and enabling real-time geographically dispersed creative collaboration. However, we're not there yet! Proxy streams speed editorial and shot reviews, but only true OCF pushed from set to cloud can truly revolutionize post. There are still cost challenges to tackle. Migration to public cloud workflows is still slow, with larger scale projects finding end-to-end cloud production problematic to manage on top of exorbitant penalties for egress between cloud providers.

Studios would like their productions to be able to hop seamlessly from provider to provider, following the sun, taking advantage of economies of scale to render creative vision across multiple cloud providers, but such workflows remain stymied.

AS THE INDUSTRY MOVES PAST THE PANDEMIC, charts the course of the large-scale return to the cinema, and fights for the hearts and eyes of audiences, the challenges facing entertainment companies are not just to thrive but, in some cases, to survive.

AI. ML AND CHATGPT PROMISE PRACTICAL BENEFIT AND A RADICAL FUTURE

The automation of workflows and jumpstarting the creative process using artificial intelligence/machine learning (AI/ML) are fast entering the equation. AI/ML is already in the wild all over the industry, and media companies are adopting AI tools for everything from storyboarding in pre-production to streamlining asset management and powering search and recommendation engines for service subscribers. AI is already proficient at tackling time-consuming tasks like de-noising, rotoscoping, and motion capture tracking removal. Footage restoration, colorization, categorization, facial recognition, and metadata enhancement are other areas that AI/ML can tackle effectively in the near-term.

STREAMERS CUT THEIR CLOTH TO LOOK LIKE TV

The squeeze on cost of living translates into constant cancellation or rotation of streaming services and has caused major SVODs to rush to offer cheaper ad-supported alternatives. The goal for most is to reduce churn and increase revenues to sustain multi-billion-dollar content costs without decimating the existing linear TV and cable subscriber base, while the hard-core streamers (Apple, Amazon, Netflix) have no legacy revenue streams to protect.

Netflix estimated 7.7 million unique viewers for its Basic with Ads tier by the end of 2022 and anticipates this tier could generate \$1.9 billion in ad revenues by 2027 in

Continued on page 140



Chuck Parker is the CEO of Sohonet. He's a hands-on, innovative industry leader with the ability to excite and engage people at all levels in the organization to deliver results. Parker has successfully launched two software-based start-up technology divisions within a Fortune 1000 media entertainment company and has a proven track record of growth developed through strong customer relationships. <u>chuck.parker@sohonet.com</u> @Sohonet





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MANAGING THE QUALITY ASSURANCE PROCESS

Quality assurance is a critical aspect of media workflows

ABSTRACT: Quality assurance is a critical aspect of media workflows. OOONA has developed a new tool to manage the QA process of media assets. Additional tools such as SynCheck complement the granular QA features of the OOONA toolkit. These provide a complete solution to ensure media content is accurate, meets clients' expectations and only needs to be delivered once.

II+E JOURNAL

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By Alex Yoffe. Product Manager, **000NA**

Quality assurance (QA) is a critical aspect of the media industry, as it ensures that content is error-free and meets the expectations of the client and the target audience. Television networks and streamers will not allow a show to air without the pass grade of a quality control (QC) report and there are plenty of factors that could cause a video or audio asset to be rejected. Similarly, localization providers need to QC their localized assets before delivery to their clients, ensuring translation accuracy, consistency and compliance with relevant specifications and style guides. The aim is to achieve the highest possible quality.

Linguistic quality assurance (LQA) is considered the key to success in any localization workflow. It was originally a laborious and often very technical process handled manually by internal staff at media localizers. It is no surprise that automation in professional subtitle editing software began with LQA. OOONA's toolkit includes

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ONE OF THE BIGGEST CHALLENGES IN HIGH-SCALE LOCALIZATION workflows is to maintain consistency and accuracy across multiple language streams and platforms where the content is delivered.

many inbuilt checks that allow media localizers to easily identify and fix a host of errors. Examples are timing issues, empty subtitles, character limit and reading speed violations, text formatting, alignment and positioning issues and punctuation errors. These and many more are part of a long list of checks media localization providers typically run as a final step before delivering a file (figure 1). Such automated checks significantly reduce the time and effort involved in the QC of subtitle and caption files, ensuring errors are identified and fixed easily and quickly. Moving forward, OOONA is now working on providing automated checks via API integrations as well.

One of the biggest challenges in high-scale localization workflows is to maintain consistency and accuracy across multiple language streams and platforms where the content is delivered. OOONA offers project managers and users the ability to simply set the specifications of file assets at the onset of a project and define a set of automated checks as a custom preset. Relevant errors are then flagged as a file gets created before it even gets to the LQA team. Project managers are also provided with a bird's eye view of multiple language streams for a given project on their timeline (figure 2), so they can easily and quickly run comparisons, check for consistency across files, and query and fix errors before content is released.

As files get passed back and forth between different staff members and teams, it is important to be able to easily see the changes that have been performed during QC or that a client has requested. Tracking such changes is possible in the OOONA Review Tool with its intuitive color-coding interface (Figure 3).

Where subtitle or caption files are already available for a given video, one of the most frequent operations performed by production teams is a sync check of the file against the video to ensure that the subtitles or captions play smoothly. A three-point or five-point check has been customary in media localization. As files get redelivered in different formats, for different platforms or to

different video versions, such workflows account for a large volume of files undergoing a QC step.

To help providers streamline and automate such QC workflows OOONA developed a dedicated tool called SynCheck. This solution is favored by broadcasters as well. With SynCheck, one can drop any number of videos and subtitle files in a folder and the tool will automatically check subtitle files against videos of corresponding file names. Manual matching is also possible when the file names do not bear enough similarity for the system to match them automatically. The tool will then check if a given subtitle file is in the appropriate language and in sync with the corresponding video by automatically examining a configurable number of checkpoints. If a file is failed, it is tagged with an error flag and users get the option to open the file in OOONA's Create Tool to fix the errors identified.

Taking this a step further, OOONA facilitates QA workflows by providing broadcasters and language service providers alike with an intuitive management system to keep track of all their QA work. Originally designed for HOT Telecommunications, Israel's largest cable TV and internet service provider, OOONA QA is now available to all enterprise clients.

The OOONA QA tool manages the quality assurance process of any type of asset, be it video, audio, subtitle file or other; all descriptive fields in the tool are customizable, typical to the OOONA philosophy. The content for QA can be populated manually or via the simple import of an Excel file. After logging a piece of content for QC, a ticket can be raised including the issue type, source, and description, as well as notes on its severity and other data fields to clarify and pinpoint the exact location and origin of the error or problem (Figure 4). Intuitive controls are provided for communication between teams that need to work on fixing the errors flagged until the asset passes QC and is approved on the system. The team that Continued on page 146

Alex Yoffe is the product manager of OOONA Tools, a suite of web-based localization tools for media content. He studied industrial engineering and management at Technion, the Israel Institute of Technology, having previously worked in media content management, IT, and video transcoding. <u>alex@ooona.net</u> @Ooona13

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SMART CONTENT

Where will generative AI fit in the future of the media and entertainment industry? What are we doing right when it comes to collecting and parsing metadata? How much of our localization work should we be handing over to technologies? Are we making the most of data analytics to enhance our workflows and improve ROI? The questions around smart content are endless. But we do have many of the answers already.



SMART CONTENT

FROM SCIENCE FICTION TO REALITY

Al as an Exoskeleton for Media Entertainment Automation

ABSTRACT: This article explores the potential of generative AI to revolutionize the media and entertainment industry, blurring the lines between human creativity and machine intelligence. By viewing AI as an exoskeleton, we can unlock new levels of innovation and collaboration. enhancing storytelling, optimizing workflow management, and improving security and compliance. The future of media and entertainment depends on the early adoption and effective integration of these Al-powered tools.

Stable Diffusion v2.1 (768px) - Generative AI image prompt:

"in 2023 diverse people wearing sleek, robotic exoskeletons while interacting with a holographic media and entertainment control room screen displaying a collage of tv screens. intricate details, HDR, beautifully shot, hyper realistic, sharp focus, 64 megapixels, perfect composition, high contrast, cinematic, atmospheric, moody."

By Jonathan de Armas, Founder, Chief Solutions Architect, Island Pitch

Envision a world where storytelling transcends the boundaries of science fiction, and artificial intelligence seamlessly augments our reality, unlocking new horizons for creativity. This once-futuristic notion is now on the cusp of transforming the media and entertainment industry. Let's delve into the exciting opportunities and challenges that generative AI offers, as we navigate the evolving landscape of creativity and technology.

Today, we stand on the threshold of a creative revolution driven by generative AI, which holds the potential to redefine the media and entertainment industry. Let's explore the exhilarating opportunities and challenges that lie ahead.

AI AS AN EXOSKELETON FOR MEDIA AND **ENTERTAINMENT AUTOMATION**

The fear of AI replacing jobs is a common concern, but let's shift our perspective. When expertly harnessed, AI can serve as an exoskeleton that amplifies our creativity, enabling us to achieve more with less. This approach offers a unique opportunity for professionals to push the boundaries of what's possible and reimagine the media and entertainment landscape.

T+E JOURNAL 100

By integrating AI into our creative processes, we can not only automate mundane tasks but also unlock our potential to innovate and explore new ideas. The exoskeleton metaphor suggests that AI should be viewed as an empowering tool that extends our capabilities, rather than a threat to our livelihoods. The key is finding the right balance between human ingenuity and machine intelligence, ensuring that they complement each other and work in harmony.

This symbiotic relationship between humans and AI will lead to the rise of hybrid creative teams, where AI tools enhance human creativity and free up time for professionals to focus on higher-level tasks. As AI becomes more sophisticated and intuitive, it will enable us to refine and expand our creative processes, fostering collaboration between humans and machines in ways we've never seen before.

In this new era, creative professionals will no longer be limited by the constraints of traditional tools and techniques. Instead, they can leverage the power of AI to break through barriers and explore uncharted territories in media and entertainment. By embracing AI as an exoskeleton, we can unlock the full potential of human creativity and usher in a new era of unprecedented innovation.

OPTIMIZING SCHEDULING AND WORKFLOW MANAGEMENT

One area ripe for AI-driven transformation is the optimization of scheduling and workflow management. AI algorithms can analyze data and make predictions to help companies better manage resources and improve employee work-life balance, ultimately leading to higher-quality final products and increased customer satisfaction.

For instance, students will learn less about the process of creation and be able to focus on the description of the intended result. This shift in the workforce will reduce the need for traditional management roles while enhancing the creative reach of teams with existing experience.

ENHANCING SECURITY AND COMPLIANCE

AI also promises to improve security and compliance within the media and entertainment industry, particularly regarding intellectual property and content protection. Real-time monitoring and analysis of secu-



Jonathan de Armas is the founder and chief solutions architect for Island Pitch. A visionary entrepreneur and tech enthusiast, de Armas has years of experience in the media and entertainment industry. His current endeavor helps companies respond to waves of innovation in harmony, supporting brands who want to "Do Cool Things the Right Way!"<u>jda@islandpitch.com</u> @CubanJon

rity threats become possible with AI-based solutions, enabling companies to swiftly identify and address potential issues. This not only fosters employee job satisfaction and peace of mind but also cultivates customer trust and reinforces brand reputation.

IMMERSIVE STORYTELLING ELEVATING CUS-TOMER ENGAGEMENT

AI technology, like ChatGPT, has opened new possibilities for enhancing customer support and engagement in the media and entertainment industry. By leveraging the power of AI-driven chatbots and immersive storytelling, we can create personalized experiences that not only respond to customer needs but also tap into the unique data of each audience member, elevating the level of interaction and deepening connections to the content.

Imagine chatbots powered by ChatGPT that are not only equipped to handle customer service inquiries but also designed to immerse users in the world of their favorite stories or brands. These AI-driven conversationalists can follow creative storylines that blend seamlessly with audience members' unique data, allowing for a more engaging and customized experience that transcends traditional customer support boundaries.

In the realm of media and entertainment, where OTT streaming, production, post-production, and digital asset management are critical components, AI-enhanced customer support using ChatGPT can create opportunities for brands to extend their stories beyond the screen, further increasing brand awareness and loyalty. By incorporating augmented reality into these interactions, we can create truly immersive experiences that bridge the gap between the digital world and the audience's reality.

AI-POWERED CREATIVE INNOVATIONS: BLURRING THE LINES BETWEEN HUMAN AND MACHINE

The rapid advancements in AI technology have led to groundbreaking innovations in media and entertainment, with ChatGPT being a prime example. By blending the capabilities of creative minds and these new digital counterparts, we are witnessing a new era where AI-generated content is virtually indistinguishable from human-created work.

Continued on page 140



ABSTRACT: Automation is a key component of the media industry's use of digital workflows, particularly those in the cloud. Processes are being automated at every step of the supply chain. Whether in post-production or content distribution, automation and orchestration of data workflows create operational efficiencies. Video delivery providers still require greater automation in processing and managing the metadata that is crucial for their efforts to manage, promote, monetize, and deliver video content.

> By Peggy Dau, Marketing Director, **MetaBroadcast**

If there is one thing we know, it's that delivering video to consumers requires an integrated supply chain of technologies. Each technology addresses a unique requirement in the overall workflow. From content packaging to rights management to content distribution, technology continues to evolve. With the adoption of digital workflows and the migration of those workflows to the cloud, the focus is now on automation.

Why automation? Operational efficiency. Effective workflow orchestration. Lower costs. Ability for humans to focus on more complex issues rather than repetitive mundane tasks. Automation in media workflows establishes rules for what, when and how tasks are



performed. By visualizing the end-to-end workflow, identifying interdependencies, and understanding parallel processes we can create more effective and more efficient workflows.

Examples of automation have existed in the media space for decades. We have all used the VCR or DVR to record our favorite programs. In this case, the rules require a combination of date, time, and channel to trigger an action, the recording, to take place. While this now seems quite simplistic, this type of automation is the precursor to today's love affair with video-on-demand services.

With increased demand for operational efficiencies, the media sector has adopted many levels of automation. The cloud enables automated IT centric processes such as CPU provisioning while on-premise automations include file migration across storage tiers. Automated media centric operations include establishing encoding quality levels, asset tagging and speech-to-text transcriptions.

One of the biggest challenges across the media supply chain is still metadata. Metadata is present at every stage of the media supply chain. As content is created, technical metadata is captured and associated with the resulting file(s). As the assets are edited and transformed, additional metadata is added to the file. The importance of metadata shifts within each stage of the supply chain. During post-production it is a necessity for retrieving, editing, and storing relevant files, particularly with increased adoption of cloud-based workflows. Many tools exist to automate the edit workflow itself. Artificial intelligence-based solutions are now facilitating the creation of scene specific descriptive metadata.

As media owners pursue various delivery models (e.g., linear, on-demand, FAST or other video delivery models yet to be defined), they face challenges of managing the different types of metadata required by each of these services. Video service providers know they have siloed data residing in various internal platforms. Automation is the key to helping them efficiently con-When content is ready to be delivered to consumers, solidate and cleanse internal data and create a unified automation simplifies metadata ingest by broadcasters metadata repository to support any delivery platform. and streaming providers. APIs automate the transfer Continued on page 143



Peggy Dau is the marketing director for MetaBroadcast and has been connecting the dots for tech companies enabling the media supply chain for 20-plus years. Her experience spans roles and projects with companies such as Hewlett-Packard Enterprise, Amino Communications, Avid, Grass Valley, Quantum Corporation and Microsoft.. <u>peggy@metabroadcast.com</u> @MetaBroadcast



THE KEY OBJECTIVE IN AUTOMATING METADATA MANAGEMENT is to help

of data files with predefined fields from source to destination. However, this is not enough. Once service providers have acquired the data, it must be reviewed for completeness, quality, and adherence to defined metadata schemas. High quality descriptive metadata is critical to the long-term value of those services delivered by broadcasters and streaming providers.

Video service providers need data that helps consumers identify programs they want to watch. For example, car aficionados may want to watch movies with classic cars. Details about the specific cars will have been captured during the post-production process and reside in a MAM or DAM. This is the data that will drive enhanced personalization. Service providers will seek platforms which are leveraging algorithms to identify the necessary descriptive fields and which are using APIs to manage data transfer.

This use case reinforces the existing challenge of unifying metadata from multiple sources. For example, scheduling data may come from one source while synopses, cast and crew data, images or deep links will come from others. At a minimum, the collation of metadata from different sources into a single source of truth for the organization creates a challenge related to mapping Content IDs. Automation is the solution for addressing this challenge and others.

MAKING GENERATIVE AI — LIKE CHATGPT — WORK FOR MEDIA AND ENTERTAINMENT

Content companies must continue to define their partnership between AI and human ingenuity

ABSTRACT: The media and entertainment industry has always pushed the boundaries of human creativity. Now, as the public is becoming more aware and curious about generative Al and specifically ChatGPT, it's time to discover how this technology can automate workflows and enhance human capabilities, especially in film, broadcasting and sports.

By Sean King, SVP, GM, SVP, Commercial Enterprise, Veritone

When the world woke up to a huge development in the tech space, OpenAI's launch of ChatGPT, in late 2022, the news was groundbreaking — and it's easy to see why. Although the artificial intelligence (AI) world has been making use of large language models (LLMs) and domain-specific large language models (DSLLMs) for many years, this is the first instance of an LLM being available for mass consumption, as well as mass experimentation.

Despite this surge in conversation surrounding the subject, many organizations and individuals are still trying to discover what this technology can mean for them, especially for those in the media and entertainment industry.

THE BASICS: WHAT IS GENERATIVE AI?

To garner a better understanding of how generative AI can be used in film, broadcast, and sports, it's important to have a solid grasp of what generative AI is and entails.

In an article published by AdWeek, Veritone describes generative AI as "a category of AI models that generate new outputs based on the data on which they have been trained. It uses a type of deep learning called generative adversarial networks (GAN) and has a wide range of



While a technical understanding of generative AI serves as a solid foundation, applying it is something that is still very much in the air — especially for those in creative fields who are not sure of whether to reject or welcome it.

For the media and entertainment industry, generative AI shows promise for content creation, advertising, and accessibility. As early adopters of AI, the media and entertainment industry has already seen increased efficiency, improved user experiences and reduced costs. Now, these companies must continue to define their partnership between artificial intelligence and human ingenuity. With generative AI, the industry can explore creative and technological capabilities that could only be real in science fiction — all while remaining in the driver's seat.

HOW GENERATIVE AI CAN ACCELERATE CRE-ATIVITY IN MEDIA AND ENTERTAINMENT

The media and entertainment industry has always adopted new technologies early on, especially in enhancing audience experiences, streamlining production, and tapping into previously unexplored revenue opportunities. In recent years, the potential of AI and generative AI for media and entertainment has undergone greater exploration, presenting opportunities for content creators, talent, advertisers, producers, and everyone in between to utilize AI-based technologies that can automate various tasks in real-time.

Generative AI is providing new ways of approaching creativity, enabling those in media and entertainment to expand the scope of what's possible, including the volume of content creation, maximizing revenue streams and more. In the same Adweek article, Veritone explains that "this provides extensive opportunities to enable net-new, predictive AI-generated content that brands can leverage for greater audience engagement, enhanced human experiences and communications, and the introduction of new revenue opportunities."

With generative AI's assistance, media and enter-



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AS EARLY ADOPTERS OF AI. the media and entertainment industry has already seen increased efficiency, improved user experiences and reduced costs.

tainment organizations can use specific, new content and data extension to a previously impossible scale that goes beyond human capabilities — all without removing humans from the equation. Generative AI can help those in various fields in the industry do the following:

Film and TV:

- Create assets for a long-awaited new season of a TV show.
- Produce custom voiceovers and trailers for an upcoming film.
- Build assets in multiple languages to reach global audiences more effectively.

Broadcasting and sports:

- Enable LLMs for content creators and rights
- holders that audience members can interact with.
- Deliver AI-generated text or voice in real time.
- Personalize content for fans and audiences at scale.

While all these automation opportunities are exciting and impressive, they won't remove media and entertainment employees from the process. Creatives and marketers will still need to be involved. But rather than starting from a blank page, generative AI acts as a catalyst for content creation that is on-brand, scalable and more accessible across languages and formats.

CLOSING THOUGHTS

The tech industry is always evolving, and with the actual application of generative AI, the industry can now achieve more than ever before, on and off the screen. Generative AI is helping creatives in TV, film, sports, and broadcasting accomplish truly remarkable things — some capabilities approach what we've seen in our favorite sci-fi shows and films. But instead of a plot device, generative AI shows promise for real-world applications as a tool with marketability, commercial appeal, revenue potential and the power to propel untapped creativity. 🎛

GENERATIVE AI MEETS MULTI-MODAL AI FOR VIDEO-BASED CONTENT **CLASSIFICATION** AT SCALE

The remarkable benefits of generative AI have yet to be fully explored

ABSTRACT: Today, humans are central in screening video content for localization. Spherex AI not only automates the detection, interpretation, and classification of objectionable content, but it also processes videos at scale. This article discusses how Spherex turned a cultural playbook into a regulatory platform, opening borders for content.

> By Pranav Joshi, Director of Product Management, AI, and Todd Landfried, **Corporate Communications Manager, Spherex**

Text-based indexing peaked in the late 1990s and early 2000s, and companies leveraged keyword optimization to promote their brands, products, and services. In 2007, the iPhone's launch enabled developers to reach new audiences with mobile apps. Shortly after that, cloud computing began with Amazon Web Services (AWS), Google Cloud, and Microsoft's Azure, leading to new accessibility of information/data anytime and anywhere. As a pattern, we have seen disruptive technologies that move first and fast survive to headline most of the innovation that happens in the ensuing 5 to 10 years. This decade the 2020s — is all about artificial intelligence (AI).

AI METAMORPHOSIS

Although AI has existed for over 50 years, most recognize it in services recommending shows to watch, products to buy, routes to take, and more. These types of AIbased systems are a reactive form of AI and are capable of ingesting substantial amounts of data and using that combined knowledge to perform tasks at a large scale. Multi-modal AI is a paradigm shift in which image, text, speech, and audio components are combined with multiple deep learning algorithms to solve real-world problems (the world we live in is multi-modal). Examples include content classification and language translations.

THE INDUSTRY IS AT AN INFLECTION POINT on the multi-modal AI and generative AI timeline, where most software with human-computer interaction (HCI) will see considerable augmentation of these two innovative capabilities.

On the other hand, generative AI is a machine's ability to create or edit text and images with minimal human input. The new frontier of generative AI is going mainstream. Well-known examples like ChatGPT, DALL-E, Scalability.AI, and similar technologies showcase these new generative capabilities. What changed for generative AI is that open-source alternatives to the proprietary models launched in quick succession towards the end of 2022. For instance, Eleuther.ai's GPT-NeoX-20B competes with OpenAI's GPT-3 for text generation, and Stability AI's Stable Diffusion competes with OpenAI's DALL-E2 for generating images and video. In all these innovations, one thing remains constant. There's an intense focus on creating platforms that serve as the foundation for industries to develop applications, thereby creating new ecosystems and economies.

Generative AI is a remarkable new technology, and it's easy to see why people get excited when considering its potential benefits. Media entities in the value chain imagine many advantages of its use. Content creators could, for example, use it to help get past writer's block, create plot twists, compose musical scores, or assist with post-production tasks. Marketing professionals could leverage text-to-image tools to create poster artwork or generate trailers for any market and in any language. Distribution groups could employ AI to create overlays on content that aid promotions and advertising-related campaigns for local audience targeting.

Content classification assigns age ratings and warnings to help families make informed choices about the content they watch and protect children from harm. One The industry is at an inflection point on the approach to classifying content is managing the media multi-modal AI and generative AI timeline, where most asset around events that contain attributes of violence, software with human-computer interaction (HCI) will sexuality and nudity, profanity, alcohol and drug use, dissee considerable augmentation of these two innovative crimination, horror, politics, morality, etc. For decades, capabilities. The area under which these two technologies humans have manually annotated content concerning



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intersect could potentially change the end-user experience for consuming media and entertainment content. Streaming platforms and devices provide asset-level overlays with features such as subtitles and closed captions, frame/scene-level cast information, age ratings and advisories, and more. Multi-modal AI explains when and where culturally sensitive events occur at various timestamps in the media asset. For example, acts of violence occur at 5 minutes 15 seconds, and nudity occurs at 10 minutes 35 seconds. Viewers can choose what treatment such scenes should receive when presented with filter options. For example, hide the mouthed f-word in addition to muting/bleeping the spoken aspect, blur the explicit sexuality detailing graphic nudity, change the color of alcohol, or reduce the amount of blood shown on the screen.

These treatments for objectionable scenes are some of the use cases where generative AI excels, as confirmed by the initial prototypes developed by Spherex AI. The possibilities are exciting as they empower global viewers to personalize their entertainment experiences for greater cultural relevance. Similar opportunities for innovation exist in content classification and compliance.

STATE OF CONTENT CLASSIFICATION

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TRANSFORMING THE FUTURE OF WORK



ABSTRACT: From cost-efficiency and scalability to increased speed, the impact of AI on the workforce is undeniable. Al impacts how we work, and its continued advancement will shape new use cases. Get ready to learn how AI is shaping the future of work and transforming media and entertainment localization.

By Tim YH Jung, CEO, XL8

Over the past few decades, technology has revolutionized the way we live and work. The industrial revolution saw the rise of factories and assembly lines, which significantly increased productivity and output. The use of machines and automated processes made it possible to produce goods at a much faster pace and with greater precision, leading to mass production and lower costs.

As technology has evolved, so has automation. Robots and other advanced machinery have been developed to perform tasks that were once too dangerous, tedious, or complex for humans. This has resulted in significant improvements in workplace safety and efficiency, as well as lower costs for businesses.

Artificial intelligence (AI) is a rapidly evolving technology that enables machines to learn from data and make decisions based on that information. AI has come a long way through its conceptual inception, when pioneers like Alan Turing first envisioned creating machines that could perform



tasks requiring human intelligence, and then in the 1950s, when early efforts to implement the idea were made. However, progress was slow due to limited computing power and data availability.

In recent decades, significant breakthroughs in AI have been made possible by advances in computing power and the availability of vast amounts of data. There are a few AI projects well-known to the public. One of the most notable examples of AI's capabilities was IBM's Deep Blue, which defeated the world chess champion in 1997. Since then, AI has achieved many other groundbreaking achievements, such as Watson, IBM's natural language processing AI, and Google's AlphaGo, which defeated a human champion in the ancient Chinese board game of Go. Currently, the prevailing impression about AI is that it can perform some tasks remarkably well. This is exemplified by the widespread use of OpenAI's ChatGPT, a large language model that operates through a chat interface.

AI opens new possibilities for automation in all industries, including the M&E industry. In some areas of M&E, AI has already been used to make work more efficient. One of the most notable examples is content localization. Since 2018, a few pioneering localization companies have started using AI that can translate content with a 60 percent-plus accuracy. The development of AI, accumulation of curated data, and augmented workflows to incorporate AI have enabled a 80-90% accuracy in translation before post editing. Now, major localization companies work under an increased workload with tighter delivery requirements. AI is now able to further accelerate the workflow through multimodality, context-awareness, and personalization. More study is needed to determine how local language models (LLMs) will further impact localization for media and entertainment and the accuracy of translations.

On top of translation, there are also other technologies being developed for content localization, such as automated consistency checking and automated quality



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control, which we've recently been asked by our customers to develop. Automated Q&A systems are being developed to assist localization professionals in recalling and comprehending the content they are translating by using AI to answer any questions about the content. Furthermore, the emergence of AI-powered synthesized voice technologies has led to cost reductions and increased accessibility when used for audio description. While advances are still needed to create voice inflection and emotion, the technology continues to advance at a rapid speed with natural-sounding voices already available.

Apart from localization, AI can also be used to automate many other tasks in the M&E industry, from content creation to distribution and marketing. For example, AI can be used to generate personalized content recommendations based on user data, or to create customized advertisements that target specific audiences. Post-production is another area where AI has been actively adopted. Super-resolution (upscaling a video's resolution), automatic color grading (adjusting color palette for mood or coherency), censorship and redacting (preventing inappropriate content), and rotoscoping (image tracing) are just a few examples of automation that we can expect to see more of soon.

Although, currently, a significant part of content production is still manual, there have been recent efforts to fully automate content generation. There have also been recent efforts made to generate synopses and storyboards based on a few keywords as well as generating short movie clips based on a given synopses. In 5-10 years, we should expect to see more content automatically generated by AI than manually by humans, including movies, TV series, and audiobooks. Capabilities once thought exclusive to human creation are changing rapidly. To thrive in the future of M&E, the time to embrace AI-driven automation is now.

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SMART CONTENT

LEVERAGING THE POWER OF CLOUD IN THE MEDIA CONTENT SUPPLY CHAIN



ABSTRACT:An overview of how cloud-based virtual production, distribution, and monetization can address both economic and competitive challenges, including higher demand for original and live content, high inflation, and lack of highly skilled resources. Plus, how it lays the foundation to leverage AI, ML and data analytics to enhance workflows and improve ROI.

By Brajesh Jha, SVP, Global Head, Media, Publishing, Entertainment, Genpact

Pre-pandemic, the idea of using cloud services for content production was on a slow burn, with broadcasters preferring a cautious approach to adoption due to security and reliability concerns. These were quickly overcome as the increased need for elasticity (up and down), scale, performance, collaboration, and evolving consumption patterns have turbocharged cloud adoption across the content supply chain.

Cloud-based virtual production, distribution, and monetization can address both economic and competitive challenges, including higher demand for original and live content, high inflation, and lack of highly skilled resources. Plus, it lays the foundation to use artificial intelligence, machine learning and data analytics to enhance workflows and improve ROI.



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The M&E business cycle that was once all facility-based now needs to include cloud services components. This new digital business model mandates all internal workflow orchestration to also be on-demand. The need for collaboration across a distributed workforce, a global footprint, and distribution to web and mobile and connected TV (CTV) all are driving cloud services. The challenge is unifying and testing facility-based systems with cloud services to facilitate hybrid environment applications.

INDUSTRY CHALLENGES AND OPPORTUNITIES

As M&E business models adapt to a direct-to-consumer (DTC) world, it has become increasingly necessary to reorient all intermediate workflows to be orchestrated with customer experience in mind. This has resulted in multiple challenges to revenues and the cost of operations.

■ Pay TV cord cutting. The pay TV market continues to shrink. As cord-cutting continues, over-the-top (OTT) distribution will grow, including new OTT services, DTC video services, virtual pay TV services, and existing OTT offerings. The industry understands the future is based on OTT services rather than legacy pay TV and consumers are willing to pay for multiple OTT subscriptions which will drive market growth, support multiple winners, and keep video spending strong.

Delivering high-speed connectivity. Continued cord cutting in pay TV has turned the attention of the industry to broadband internet services to provide consumers high bandwidth connectivity to support their appetite for OTT video streaming services.

■ Increased content licensing fees. As spending on streaming content skyrockets in the media and entertainment industry, a new formula is needed to drive a sustainable return on investment. The surge in consumer demand for streaming video content is yielding blockbuster deals as well as a steep increase in the cost of sports rights — set to reach \$15.4 billion in 2023 according to Bloomberg. To overcome these high costs for programming, the industry must think THE TRANSITION TO CLOUD SERVICES allows the industry to rethink its current workflows and innovate by leveraging advancements in AI, ML, and data analytics.

differently about everything from more cost-efficient ways to produce content to improved distribution and monetization processes. This includes migrating to SaaS-based cloud services combined with AI/ML and data analytics to facilitate workflows and create more value to offset higher programming costs.

Content creation and production cost containment vs. cloud services and content delivery fees. Remote workflow concepts are increasing in popularity as higher demand for original and live content, compressed timelines for content creation and delivery, high inflation, and lack of highly skilled resources has blown up budgets. These software-defined workflows (SDW) span the media ecosystem allowing assets, systems, and processes to be joined and run together. They handle repetitive tasks and can optimize pipelines by allowing content to be processed frequently and quickly. The major cloud service providers including Amazon AWS, Google Cloud, Microsoft Azure, and others are investing heavily in IaaS, PaaS, and SaaS at all levels to address increased demand while also addressing security, latency, and workflow efficiencies using advanced AI/ ML and data analytics to create smarter solutions. But not all vendors provide an end-to-end cloud-based solution that covers all aspects of work meaning production teams often must move from service to service.

The future of streaming. The future of streaming will not be limited to subscription business models. It will include a scaled approach that has tiers including subscription-only, hybrid, and ad-supported models that allow for an increase in the overall total addressable market. It will include revenue coming from subscriptions, advertising, and eCommerce with the introduction of contextual actionable advertising where an immediate transaction can take place on the connected device.



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APPLYING AI/ML AND DATA ANALYTICS TO

THE BUSINESS CYCLE (cloud production, distribution, and monetization)

According to IABM, about a quarter of the M&E industry had already deployed AI/ML technology by the end of 2021 and most companies with media content business models are planning to deploy AI/ML over the next few years.

The primary drivers of the adoption of AI/ML include the opportunity to automate routine workflows and gain increasing insights into audiences, which are important in direct-to-consumer models. On the front end, AI/ML is used to help content creators make decisions that maximize ROI whereas most use cases of AI/ML in content creation and production are to automate production and post-production processes. The same applies to content management where AI/ ML is used to automate routine tasks such as metadata tagging, image recognition, audio/video recognition, and speech to text.

Use cases include:

Media companies equip camera systems with more advanced AI/ML edge features to capture more context and intelligence from the content that they are creating.

End users leveraging AI/ML to automate operations to produce higher quality sports and entertainment content with fewer resources as the demand for live content increases.

Syncing and grouping video clips and automating mundane time-consuming tasks in post-production to save time and avoid bottlenecks.

Automating matching content delivery to destination profiles to improve reliability and quality of service (QoS) and quality of experience (QoE). Metadata tagging in content management to

improve the level and detail of metadata and the value of content through search, discovery, personalization, and content performance.

Augmenting rights management, content planning/scheduling, subscriptions, and data analytics to support advertising in content monetization.

Predicting viewer behavior and turnover, analyze renewal history, and provide valuable insights for QoS, QoE, and proactive viewer retention and acquisition strategy, decisioning, and management.

AI script analysis can make decisions on the best content genre for a particular script

From content creation, production, and publishing to distribution and monetization, AI/ML is still at its infancy regarding the complete orchestration of the entire business cycle. The importance of laying the breadcrumbs everywhere along the content and consumer journey and then using them collectively to synchronize and optimize the demand and supply cannot be understated.

A MEDIA FACTORY IN THE CLOUD

The M&E industry is at an inflection point in the transition to live and on-demand cloud services. The ultimate goal is to have a complete 100 percent media factory of the future with lean and real-time characteristics across the value chains that comprise the entire business cycle including production, distribution, and monetization. Meanwhile, the industry is taking a cautious approach by adopting a hybrid model where some processes remain facility-based while others are transitioned to the cloud. The transition to cloud services allows the industry to rethink its current workflows and innovate by leveraging advancements in AI/ML and data analytics. 🎛



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SECURITY & CONTENT PROTECTION

When it comes to cybersecurity and content protection, media and entertainment companies are at a disadvantage. After all, they're the ones constantly on defense, trying to anticipate threats before they even show up. That means employing absolutely any and every technology that can help, including AI, DRM, and, yes, automation.



AUTOMATING THE WAY TO BETTER SECURITY OPERATIONS



ABSTRACT: Automation in film and TV production is increasing rapidly whether in visual effects and animation, AI in localization, motion capture or analyzing viewer reactions. Invariably automation involves cloud workflows and web facing applications where stringent security is paramount but not always configured correctly.

By Nipun Mehta, CTO, CISO, and Jason Shea, Application Security Lead, **Convergent Risks**

The advancements in technology have brought about unprecedented changes in the way businesses operate. The media and entertainment industry has also undergone a paradigm shift, where not only the creation but also the distribution and consumption of content have been transformed. It is hard to predict where this will ultimately lead, with a lot of potential yet to be unlocked.

Due to efficient workflows, content owners can speed up process, reduce costs and enhance the quality of products. The distribution of content can now reach a wider global audience with similar efficiencies and effectiveness.

However, the technological complexity and scale of production pose a significant challenge. As content and information security professionals, our primary objective is to safeguard the critical assets and the ecosystem through which they flow, from creation to distribution, "script to screen."

As technology advances security measures must keep up. How can you safely manage the increasing complexity when your security capabilities are limited?

Automation! Security operations must keep up with the need for speed, flexibility, excellence, and cost-effec-

CLOUD SECURITY AUTOMATION CAN IMPROVE THE EFFECTIVENESS and efficiency of an organization's security operations, reduce the risk of security incidents, and improve the overall security posture within a cloud environment.

tiveness. Security automation is essential, covering all the critical stages of security operations, from monitoring to analysis, reporting, and remediation. It's vital to use automation tools and techniques that don't disrupt the creative process. The mission to safeguard the "confidentiality, integrity, and availability" of content, systems, and workflows that support it, making automation a top priority.

What are the opportunities for automation and what will make the biggest impact?

Efficiency, consistency, and standardization: Automation in isolation is not a silver bullet for mitigating risks, using the best security tools and technologies is not always enough. Secure deployment, configuration, and response must be consistently managed to maintain efficiency, consistency, and standardization. Human error or malicious acts remain significant causes of security incidents and breaches. Automation can help prioritize and complete security tasks quickly, reducing risk and freeing up resources to complete critical security tasks that automation cannot perform. Automation provides opportunity for the consolidation of resources, reducing complexity and cost. By minimizing the likelihood and impact of human vulnerabilities being exploited, automation ensures that security tasks are executed according to established policies and standards, reducing the potential for compliance violations. This applies to legal, regulatory, or contractual obligations.

Enhanced visibility: Automated security tools offer improved visibility into security events, enabling swift



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identification and response to incidents. This helps prevent security breaches from escalating, crucially protecting internal networks and critical assets across all environments. As security professionals, we must assume that breaches WILL happen and should prioritize comprehensive protection rather than focusing solely on creating an impenetrable perimeter.

Improved compliance: Scanning systems via automation can identify compliance violations, generate reports, and trigger remediation. Given the increasing scale of cloud-based infrastructure, services, and workflows it is no longer feasible to follow manual processes to ensure that systems stay compliant.

Scalability: Automated security enables scalable security operations as business grows. Automated tools can help to manage security for large and complex environments, without the need for additional staff or resources.

What are some of the key specific areas where we can apply automation to ensure that our reach continues to align with our grasp?

Real-time threat detection and response: Automation can quickly identify and respond to security threats using machine learning algorithms that analyze network traffic. Automated responses may include isolating compromised systems or blocking incoming traffic from harmful IP addresses.

Automated identity and access management (IAM):

Automating user access ensures appropriate access levels to systems and data, and prompt revocation of access when necessary.

DevSecOps: Security should be integrated into the software development lifecycle (SDLC) from the start, rather than waiting until the end. Automation is crucial for seamlessly and comprehensively integrating security into development workflows.

How can automation be applied to DevSecOps?

Continuous integration and continuous deployment (CI/CD): can create a continuous integration and continuous a deployment pipeline that incorporates security testing. Automation can include code analysis, vulnerability scanning, and penetration testing to identify and address security issues as you develop.

Static code analysis: application security tools can analyze source code for common security issues such as buffer overflows, SQL injection, and cross-site scripting.

Dynamic application security testing (DAST): application security testing tools scan running applications to identify vulnerabilities. DAST tools can simulate attacks on the application and identify vulnerabilities such as injection flaws, broken authentication/authorization, and insecure cryptographic practices.

Configuration management: configuration of infrastructure components e.g., servers, databases, and networking equipment can be automated to ensure that systems are configured securely, with appropriate access controls, encryption, and logging.

IMPLEMENTING AUTOMATION FOR CLOUD ENVIRONMENTS AND SAAS APPLICATIONS

Cloud security: Cloud security automation involves tools and processes to manage security in cloud environments. With the increasing use of cloud infrastruc ture, automation has become essential for securing cloud-based systems.

Cloud security monitoring: cloud security automation tools and processes secure cloud environments, this is essential to the growing use of cloud infrastructure.

Cloud security posture management: Cloud security

posture management automates security configuration settings for consistent security settings across multiple cloud services and regions.

Infrastructure as code (IaC): infrastructure automation that involves using code to manage and provision infrastructure resources. IaC can improve security by enabling consistent and repeatable infrastructure configuration and reducing the risk of configuration drift.

Compliance automation: used to manage compliance with regulatory requirements and industry standards in the cloud environment. Automated tools scan cloud infrastructure for compliance violations, generate reports, and trigger remediation actions.

Vulnerability management: automated vulnerability management is crucial in today's environment where numerous systems require patches. It automates the detection, patching, and remediation of vulnerabilities in cloud infrastructure, ensuring it remains secure and protected from known vulnerabilities.

Incident response: automated incident response workflows ensure that incidents are properly triaged, and appropriate responses are taken to mitigate the impact of the incident.

SaaS security posture management (SSPM): As businesses increasingly adopt SaaS applications, security teams face new challenges in ensuring the security of pre-release content. SaaS offers benefits such as cost savings, scalability, and automatic updates, but can also create visibility gaps. SaaS security posture management (SSPM) can help address these challenges by providing visibility into where pre-release content is stored and controlled by third-party entities and assisting in protecting pre-release content through various security measures.

Improved visibility: SSPM provides organizations with a comprehensive view of their SaaS applications, including which applications are being used, who is using them, and how they are being used.

Enhanced security: SSPM helps to identify and address security vulnerabilities and misconfigurations within SaaS applications, thereby reducing the risk of data breaches and other security incidents. **Regulatory compliance:** SSPM can help organizations comply with regulatory requirements by identifying Continued on page 138

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DRIVING DOWN CONTENT FRAUD WITH AUTOMATION

Fighting scale with scalability

ABSTRACT: At the current pace of digitalization, the problem of rapid large-scale data processing becomes ever more pressing. In video security and anti-piracy, searching for illicitly redistributed streams across ever increasing number of websites, apps and devices has become a task that is not possible to deal with successfully if a significant level of scalability and automation is not present.

By Nik Forman, Marketing Director, Friend MTS

As the amount of video content that is created, captured, distributed, and watched continues to increase at phenomenal rates, the volume of data that it represents is likewise increasing at a speed never seen before.

Technology industries in general are discovering the opportunities that this data can afford them and how it can help them tackle current and future business challenges. However, these opportunities are accompanied by challenges, one of the biggest of which is how to deal with processing increasing volumes of data. It's clear that without rapid, automated data processing capabilities, we are constantly playing catchup, struggling not just with day-to-day operations but also strategically.

In the field of content security and fraud prevention, the ability to process huge volumes of data in real-time plays a key role in enabling swift and comprehensive detection and disruption of instances of illegal content redistribution.

Today, content fraud has reached epic proportions; the sheer volume, high quality, and speed of redistribution of pirated content present a real and significant threat to legitimate revenues, so much so that some would even argue it has become an existential threat to legal providers. With one in 10 adults in the U.S. consuming pirated TV, movies, or live sports in 2022 (according to a YouGov survey conducted for Variety) it's clear that demand remains high, and the fight to protect content creators and rights owners from the hugely damaging effects of content fraud continue.

It is impossible to fight these threats to the sports and M&E industry without automated content protection and anti-piracy operations, including piracy detection (or content monitoring) and takedown (also known as legal piracy enforcement). These processes contain several steps, and the requirement for automation is common to them all. Automating metadata-based search processes is an obvious and relatively easy to implement – but to genuinely create the ability to analyze and process the sheer scale of data required for effective anti-fraud operations, all the subsequent steps must also be automated, from video search and capture through to content identification and legal enforcement.

The scale of some content monitoring operations is vast. As part of our daily operations at Friend MTS a vast amount of piracy sources are crawled automatically to detect stolen content, with a typical day producing several million suspect links. Obviously, a search task of this scale is impossible to perform manually, even if you employ thousands of people to look for the content; it is simply not realistic to manage and coordinate.

NO EFFECTIVE DISRUPTION WITHOUT AUTO-ΜΔΤΙΟΝ

Once suspect videos are detected, they need to be automatically verified with highly accurate yet lightweight fingerprinting content identification technology. Again, we're talking about significant numbers here, a few hundred thousand shortlisted videos per day that need to be verified to avoid erroneous takedowns or other enforcement. This is not a trivial exercise, and again requires significant, automated processes and technology to accomplish any significant result.

One may argue that it is indeed possible to verify even thousands of videos if cheap labor is enlisted but, logistical problems of organizing and managing these huge teams aside, how much could they realistically achieve? How much time is needed to complete the verification process, which, remember, is just one of several steps? Owners or distributors of live content, whose value rapidly diminishes with each second that passes, require extremely rapid detection and enforcement; in the live environment, content protection is only effective during the event, and piracy needs to be taken down well before the final whistle — in as close to real-time as possible.

And with manual resourcing comes the issue of



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AUTOMATED PROCESSES LARGELY ELIMINATE false positives and produce a far smaller pool of instances requiring additional verification.

human error. Automated processes largely eliminate false positives and produce a far smaller pool of instances requiring additional verification. Effective, high-confidence identification is far easier to achieve with automated processes that aren't subject to fatigue or distraction.

Next, we come to legal enforcement. Whilst it's doubtful that even the least-automated monitoring and enforcement service issues DMCA notifications manually, there is much more to enforcement than that. The illegal distribution of high-value, premium content requires more than simple notice-issuing to provide effective disruption — rates of non-compliance to notices is high — and this is where it's important to partner with a service that has the experience and expertise to deploy other remedial measures, such as escalation to and direct communication with platforms and infrastructure providers. Once again, this depth of understanding of the most effective processes enables automation to be applied, greatly increasing the ability to deploy enforcement actions in real-time, at huge scale. And this, after all, is the goal: to find and disrupt as many instances of content fraud as possible, with the highest degree of accuracy, as quickly as possible.

CONCLUSION

Content fraud is a global issue — it respects no boundaries. Video in general, and in particular premium quality video content that costs huge amounts to create, license and distribute, needs to be protected to safeguard the future of those whose livelihoods depend on it. But with a global audience comes a global amount of data, which must be processed, analyzed, identified, and acted upon, in real-time and with pinpoint accuracy. Operations at this scale are only feasible with highly automated processes, that are built on a deep understanding of how piracy works, and a familiarity with the landscape that can only come from many years of spending time there. Simply put, without automation it's just not possible to detect and disrupt at any scale that can be considered effective. **H**



ABSTRACT: High-profile data and security breaches are a hot topic in the news as more companies transition their teams from on-premises environments to cloud computing solutions. Risk, compliance, and technology managers have a looming list of concerns when determining if adopting a cloud solution will open their organization to cybersecurity attacks. In this article, LucidLink discusses the precautions, controls and assurances content owners need to keep in mind when moving to a cloud-first production workflow.

By Randy Magiera, Director, Information Security, Privacy, LucidLink

High-profile data and security breaches are a hot topic in the news as more companies transition their teams from on-premises environments to cloud computing solutions. Risk, compliance, and technology managers have a looming list of concerns when determining if adopting a cloud solution will open their organization to cybersecurity attacks.

Nevertheless, business leaders understand the importance of the cloud. In a recent poll by Accenture, 80 percent of executives look to the cloud as a means of mitigating business uncertainty and lowering risks. While no security is perfect, many concerns with cloud security stem from a misunderstanding of what causes an organization to be left open to attacks.

Managers and tech executives must understand this to

help prevent their company from being targeted. By 2025, 99 percent of cloud security failures will be due to the cloud service providers' customer's actions, which can be easily prevented.

IT'S NOT THE CLOUD. IT'S ...

Cybersecurity concerns leave IT and risk management executives hesitant to consider adopting and implementing cost-saving, efficient cloud-based technologies. However, contrary to popular belief, the root cause of most cybersecurity breaches is not the cloud itself. It's human error.

Moving to a cloud-based storage solution can be highly secure and beneficial for an organization as such solutions provide cost-effective enterprise storage, which is almost

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CONTRARY TO POPULAR BELIEF. THE ROOT CAUSE OF MOST CYBERSECURITY breaches is not the cloud itself. It's human error.

infinitely scalable. Many of the fears executives have surrounding migration to cloud-based solutions stem from misconceptions, resulting in missed opportunities for improving productivity and cutting costs.

According to Gartner, nearly all cybersecurity attacks result from human error, not cloud providers. The security issues behind these attacks frequently result from the customer improperly configuring their cloud environment. There are several reasons for this, but one of the most common reasons for a misconfigured environment is the failure of a company to provide proper training and education to its employees. Gartner's report states that by 2025, 99 percent of cloud security failures will be due to the cloud service providers' customer's actions, which can be easily prevented.

UNDERSTANDING SHARED RESPONSIBILITY

Cloud services are not inherently insecure. Ensuring a secure cloud environment requires shared responsibility of the customer and the cloud storage or service provider being aware of what they're accountable for. Understanding this responsibility and customer expectations can help organizations properly configure and adopt cloud strategies.

The AWS Shared Responsibility Model outlines the aspects of cloud computing for which Amazon Web Services (AWS) is responsible versus the responsibilities of the customers. Understanding this shared responsibility helps customers better understand their roles and obligations when using AWS, and what they can expect AWS to manage on their behalf. In exchange, the customer is responsible for configuring and managing their data properly within the cloud and managing permissions.

For example, when new customers set up an account with a cloud service provider, they are responsible for their own Identity and Access Management (IAM). This means the customer is responsible for creating



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accounts to log into their environment and ensuring those accounts are secure. The cloud service provides tools to help companies secure their accounts, such as Multi-Factor Authentication (MFA), but it is ultimately up to the customer to configure and enforce MFA. Correctly configuring MFA can keep company data safe and prevent avoidable data breaches.

A SECURE SOLUTION FOR CLOUD STORAGE

As a cloud-native NAS storage provider, our job at LucidLink is to offer high-performance companies a solution that improves scalability, is reliable, and ensures data durability while enhancing team collaboration and productivity. One of the fundamental principles of our product's design is having a strong focus on security to provide a best-in-class solution for highly sensitive workloads. We work with customers to help them better understand their needs and security concerns and ensure that our solutions help them use the cloud cost-effectively and securely.

Our "zero-knowledge" guarantee is one way we approach keeping our customers' data secure. We use a strong end-to-end, full-system encryption to ensure all data is encrypted on the customer's device. The encryption keys remain only in the hands of the customer. In addition, the recent release of single sign-on (SSO) implementation makes LucidLink Filespaces 2.0 even more secure by adding a new security feature, the LucidLink Filespace Key. The Filespace Key enhances our zero-knowledge guarantee and ensures that neither LucidLink, the cloud service provider, nor any third parties can access customers' data.

Security starts with you. A space for your entire team to collaborate securely on the most massive media projects with insanely fast, easy file access starts with LucidLink. 🎛

NO LAUGHING MATTER: COMEDY IS TOP OF THE BILL FOR PIRATES

It's not sports or superhero movies attracting the most piracy

> **ABSTRACT:** It's no joke: comedy is the most pirated genre of video. Our research with Ampere Analysis reveals entertainment piracy is 300 percent greater than sports. With insight into how consumers would behave if piracy was blocked, streamers can have the last laugh and recoup billions of dollars in lost revenue.

By Simon Brydon, Senior Director, Security, Sports, M&E, Synamedia

High-profile events always attract uninvited guests. So with the streaming party in full swing, it is no surprise that gate-crashing pirates are keen to get in on the action.

But, given the spotlight on sports piracy and superhero movies, it might be surprising to find that comedy is the most pirated genre of video. Perhaps less shocking is that streaming pirates are laughing all the way to the bank as they siphon off billions of dollars rightfully belonging to video providers and content owners.

Our research conducted by Ampere Analysis across Brazil, Germany, India, Italy, Thailand, UK and U.S. examines the financial impact of sport, movie and TV piracy on the entertainment and subscription TV business by analyzing how consumers of illegal content would behave if piracy was blocked at every buying decision.

Put simply, piracy is costing video service providers in the seven surveyed markets over \$30 billion in potential revenue per year. And this data is straight from the mouths of the people who steal it.

THE DEVIL IS IN THE DETAIL

There have been several surveys on the scale of TV and video piracy using broad-brush extrapolations which calculate how much piracy costs the industry based on the number of pirate viewers. But this Ampere Analysis survey took a much more targeted and nuanced approach to achieve more accurate predictions.

Examining household demographics for each of 16,000 respondents and delving into what pirate consumers watch — including specific titles in U.S. — the research uncovers what consumers of pirated content would do if they could no longer access illegal streams, and how many would buy services legally based on the availability and cost of specific content in their local market.

So, instead of simply counting the cost of piracy for all users, the survey drills down to uncover the true convertible value if piracy stopped. For example, our sample of 4,000 US users found that 3,211 pirated content, 2,057 pirated sport, and 3,164 movie and entertainment. Of these, 597 watching pirated sport said they would be prepared to pay legally, with 1,631 illegally watching movies and entertainment willing to do the same.

As well as the immediate revenue derived from a new subscription to a service or channel, the research also takes into account the customer value over years using accurate churn information.

ENTERTAINMENT BEATS SPORTS FOR TOP PIRACY BILLING

The research finds that stopping sports piracy in the seven surveyed markets would create \$9.8 billion in new revenues with a further \$21.8 billion up for grabs by converting movie and TV pirates to legal services. And, by measuring the impact of individual movie titles and TV shows on consumers' interest in signing up, the survey also reveals how piracy of some of the biggest movies robs studios and content creators of long-term

With a massive proliferation and fragmentation value. in video services, households - even those on much Stopping piracy of a single Hollywood major movie release can trigger revenues of between \$130 million higher incomes - are increasingly looking for more and \$280 million in the U.S. alone, with a super-hero aggregated pirate entertainment services in a bid for a blockbuster like Spider Man: No Way Home leading one-stop shop that helps cut costs. This is especially true to potential revenue for a studio streaming service of for younger, less affluent, and more geographically moover \$400 million, based on the true annual lifetime bile viewers in 16-25 age bracket who feel alienated by Continued on page 138





WITH MORE COLLABORATION across the industry, including working with legislators and law enforcement authorities to gather the evidence required to orchestrate technical and legal takedowns, we've got the perfect party bag to keep the streaming party swinging with its invited guests while all gatecrashers are effectively barred.

value of streaming subscribers.

With a relatively limited volume of top end live sport, most Hollywood studios would not bat an eyelid with the survey findings that entertainment piracy is bigger than sports piracy but exceeding its value by over 300 percent is definitely an eyebrow raiser.

While most of the noise is around superhero movie piracy, it was surprising to find that half of all pirate viewers stream comedy illegally, driven by titles including Ghostbusters: Afterlife, and "Ted Lasso." This is followed by the action and adventure genre, and the crime and thriller category respectively. The survey uncovers that a greater proportion of viewers using both free and paid for pirated aggregated content are parents with young children, whereas, for live sports, the pirate viewers are more likely to be higher income households.

PIRACY PARTY SPOILERS

The survey provides food for thought on the big issues — namely how to deliver content to the intended audience using the appropriate business model at which price point.

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STRENGTHENING YOUR CONTENT'S PROTECTION: GO BEYOND DRM

The evolving nature of video security threats means an 'on your toes' approach

ABSTRACT: You might be surprised to learn DRM with token-based authentication can still be hacked. Breaches to delivery and device environments are outside the scope of what DRM can protect. To fully thwart hackers and pirates, additional tools are needed, and comprehensive best practices should be followed.

By Jon Samsel, Global VP, Marketing, Verimatrix

The protection of valuable video content clearly remains paramount - and even more so than yesteryear due to the vast media consumption choices demanded by viewers today. However, it's also now clear that digital rights management (DRM) no longer comes close to addressing today's ever-advancing threats that accompany these news ways of viewing and subscribing to content.

The fast rise in sophisticated piracy threats and cybersecurity breaches in streaming and broadcast means that the solitary use of DRM isn't even designed to take on non-DRM related threats. DRM technology is decades old, and the bad guys have become far cleverer and patient in their endeavors. They're finding ways to bypass DRM using exploits that were likely unimaginable just a few short years ago. Thus, DRM needs to be retrofitted with modern security approaches that come much closer to closing all of today's security gaps.

As a cautionary note, the need for newer technology is not meant to diminish DRM's role. Make no mistake that DRM is far from worthless. It still plays an essential role in protecting video content. It simply must now need to be paired with additional security solutions. Think of DRM as a lock on a door. It can deter burglars, but if they find a way to bypass it, it's no longer effective. A lock is an old technology that is still needed, but it cannot do it all. DRM is the same, it has an important role if used correctly.

Relying on numerous connected processes and devices, today's delivery of entertainment content demands an ecosystem type of approach. It's this interconnectedness that makes a comprehensive new set of countermeasure-like approaches so clearly needed to combat today's video security and piracy threats. Any video security solution that's largely just off-the-shelf DRM technology is far from adequate. Don't be fooled by DRM-only technologies that tout their simplicity as a reason for their deployment — quite the contrary.

In 2023, DRM has inherent complements. An obvious accompaniment for many might be forensic watermarking. Additionally, organizations can look to not only fortify the execution environment, but also ensure the keys and key-exchange process is properly obfuscated. Another simple yet often overlooked step is to be sure that technology providers deliver all relevant documentation needed to help make sure that everything is configured correctly and secured as it should be. That means a reliance on any default parameters or settings is a big red flag.

Persistence and focus play a big role for those tasked with ensuring video security. Although there may be its software consistently tracked? a need, for example, to look to new chipsets and other hardware deployments, those efforts almost assuredly **Examination.** Does an adequate lab-like environment take more time than initially planned. It can be that time exist to allow for testing which is separate from the when a new threat can emerge, just as new hardware is production environment? This way, challenges can be recreated and evaluated to fix them in a timely fashbeing adopted. An example of the benefits associated with a comprehensive security approach then shines ion. Are all documented services use case tested? And through — are tools that are already in place, such as fodo qualified personnel test all software updates before rensic watermarking, which can identify and link specific implementation? Same with new hardware? services with specific devices and create a much-needed Continued on page 149



Jon Samsel is the global vice president of marketing for Verimatrix. The chief storyteller for the company, he has three decades of experience working with leading brands such as Bank of America, Apple, and Ford. He has also founded two startups that had successful exits, RoadLoans, a directto-consumer auto finance lender acquired by Banco Santander, and Heardable, a brand analytics platform acquired by Hatcher+. jsamsel@verimatrix.com @VerimatrixInc



RELYING ON NUMEROUS CONNECTED PROCESSES and devices, today's delivery of entertainment content demands an ecosystem type of approach.

trail when it's thought that piracy either is or was under-

Providers will benefit greatly from regularly scheduled surveys of their environment that take a continual look at technical requirements that typically spawn from perhaps ever-changing strategic business requirements and industry norms. By going back and looking at defenses in this way, it's often easier to map out what works and what doesn't in an infrastructure — including all types of flows as well as protection tools and general techniques that all come together to make their service possible in the first place.

By maintaining a heightened sense of familiarization surrounding one's current platform, it's that much easier to be sure that the technical teams align with executive management and their objectives and concerns. A thorough and diligent audit can greatly improve security over the long haul as well as during any smaller adjustments. Although a few of the below items could be construed as being rather obvious, it's not uncommon to find them unaddressed even among sizable institutions. Be sure to look at your:

Important documentation and tracking. Is the endto-end platform documented adequately, and are current versions of every item in the platform and the versions of

LEVERAGING AITO FIGHT STREAMING PIRACY

Digging into the data can improve our protection efforts

ABSTRACT: In today's video streaming landscape, protecting our favorite TV shows and movies from piracy requires rigorous analysis of data. A daunting task considering that associated data grows by billions of records each month. This article explores how AI and ML can greatly improve the effectiveness of anti-piracy efforts in the industry.

By Werner Strydom, Head of Advanced Technology, Innovation; Rodrigo Fernandes, Product Director, OTT; and Jessica Alecci, Senior Data Scientist, Irdeto

The U.S. Defense Advanced Research Projects Agency (DARPA) informs us that we are currently experiencing the third wave of the evolution of artificial intelligence, which is characterized by the development of systems that can reason and learn in much the same way that humans do.

This wave is powered by several key technological advancements that create the perfect conditions needed for smarter, more contextually aware autonomous systems. Although there is much debate as to exactly which advancements have played the greatest role, we can at least agree that we now have access to more sophisticated AI algorithms, significantly more powerful, inexpensive, and ubiquitous computing resources, and large amounts of data that can be used for training AI systems.

The third wave of AI is also having a significant impact on cybersecurity, primarily by enhancing the speed and accuracy of threat detection and response. Cybersecurity solutions that make use of a combination of rule- and machine learning based algorithms have the potential to greatly improve the effectiveness of anti-piracy efforts in the video streaming industry. By automating



repetitive tasks, providing new tools for identifying and tracking pirated content, and finding subtle patterns in complex data sets that indicate new forms of piracy, these technologies can help rights holders to better protect their content and ultimately benefit the entire streaming industry.

DRM LOG ANOMALY DETECTION

According to Grandview Research, the video streaming market size is expected to expand at a compound annual growth rate (CAGR) of 21.3 percent by 2030. To secure content and protect valuable revenue, the industry regularly uses a variety of technologies such as digital rights management (DRM). DRM is widely used within the pay media industry to ensure that video content is stored and transmitted in encrypted form, so that only authorized users and devices can play it back. When a user attempts to play back a protected video, the video player must first request a DRM license from a DRM server. The interaction between the DRM agent in the video player and the DRM backend — the DRM protocol — makes it possible to collect a host of valuable data about how the platform is being used.

But DRM systems are not entirely foolproof. Pirates continuously find ways to circumvent security technologies to steal and illegally rebroadcast licensed content. This is where artificial intelligence (AI) comes in. AI can be used to detect the difference



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Jessica Alecci is a senior data scientist within Irdeto's advance technology team. She has a background in computer science and has worked in the data science field for the past six years. As part of the advance technology team, she collaborates with other teams, both within the company as well as with external clients, to brainstorm about, implement and validate new ideas that employ AI technologies. info@irdeto.com @Irdeto

Rodrigo Fernandes is the product director for OTT products at Irdeto. He started at Irdeto in 2012 as product manager for Irdeto's multi-DRM solution. Prior to that, he worked for more than 14 years in the telecom industry in different roles. Currently, he is focused on growing and enhancing existing video streaming security capabilities, including multi-DRM cloud services, client security and the use of AI/ML for service abuse and piracy detection. info@irdeto.com @Irdeto



between normal – and legitimate – use of a streaming platform, and abnormal usage that could indicate piracy. Traditionally, detecting this type of activity would require resource intensive and time-consuming manual analysis of the data. In particular for "big data" sets with multiple billions of records added to it each month. Although rule-based detection methods can go some way towards automating this process, it is less effective at detecting all threats. Especially if they are not encountered beforehand or if the abuse pattern is very subtle. The best solution is to complement the rule-based approach with an AI algorithm.

The exact nature of the data may differ slightly from one pay media operator to the next. But typically, it includes a timestamp of when the DRM interaction took place, the content that was being accessed, the data that identifies the device/player that was used in accessing the content, the IP address of the device, and often an identifier that can be traced back to the subscriber using information in other backend systems.

For an initial test of an AI solution, our team chose an auto-encoder architecture model, which makes semi-supervised learning possible despite lacking enough labeled data. Using cleansed data for training, the goal is for the encoder to learn how to interpret the input and compress it to an internal representation. This is done while the decoder attempts to recreate the original input from the output of the encoder.

The original input and the reconstructed input are compared through a distance measure. This allows a threshold to be set, whereby all inputs with a distance value higher than the set threshold are identified as anomalous data points.

The following workflow explains how the AI solution works in practice:

Data are pre-processed and summarized to ensure that training and inference operations are cost and computationally effective.

The model ingests the data that represents "normal" activity, which is identified through a set of rules. It pro duces a binary prediction (anomaly vs not anomaly).

A report with detected anomalies is shared with the customer.

The customer validates the predicted anomalies and provides feedback. The model is re-trained based on the customer's feedback (e.g., confirmed anomalies are removed from the training set) to ensure that model's quality is up to date.

This approach allows for customer-specific AI models, where the model only learns from the usage patterns of the target customer's platform. This ensures that one customer's data is not exposed to the models of other customers. It is also important that differences in business models are correctly reflected. Additionally, the AI model can also be specifically tailored for different DRM types such as Widevine, PlayReady, and FairPlay, to detect DRM specific anomalies.

The solution is currently being validated with targeted customers and has already yielded valuable results. Interestingly, it also flagged up anomalous behavior that, once investigated, proved to be a buggy DRM implementation. A combination of both ruleand machine learning-based detection of anomalous behavior yields much better results than one based only on rules.

Looking forward, the AI model must be continuously evaluated and improved upon based on content piracy evolution. We also plan to advance the current periodic anomaly detector to be a real-time alerting system to further mitigate piracy and fraud. **H**

5 Steps to Establish an Anti-Piracy and Cybersecurity Management Program

By Mark Mulready, Vice President, Cyber Services, Irdeto

Cyberattacks have become increasingly sophisticated and frequent and the need to manage cyber risks to ensure business continuity has been consolidated on every leadership agenda. According to data from Microsoft's 2021 Digital Defense Report, 24 trillion threat signals had been identified by the company around the world, a significant increase from the three trillion signals from the 2019 report.

In the entertainment industry, it is no different. Content piracy is one of the biggest issues plaguing the video-streaming and the OTT (over-the-top) industry worldwide. By the end of 2022, piracy cost all industries a total of \$51.6 billion, \$6.7 billion for video entertainment alone.

There are multiple reasons for the rise of digital piracy. First, access to cheap (or free) content can appear lucrative to many. The advent of new technology has made pirated content readily available to those whose geographical locations otherwise restrict them from accessing it.

Piracy can impact the consumption of original content through password and credential sharing, sending files over the internet, and purchasing illegal streaming devices and services. These are available at just a fraction of the cost to the consumer but impose mounting

revenue losses and reputational harm on the original creators.

As content consumption and digital access continue to grow, stakeholders must collaborate to form effective anti-piracy strategies as it is not enough to install anti-piracy software. An effective program requires not only the right tools but also the right mindset and awareness throughout the entire organization. It is also essential for companies to drive discussions in their local markets, promote campaigns and support government action to improve the piracy landscape and pave the way for a brighter future.

Based on our experience as a global leader in video security and beyond, from "lens to screen," and from "production to consumption," here are our recommended five steps to establish a successful anti-piracy and cybersecurity management program.

Prevent and protect

Using multi-DRM and conditional access, an industry standard, is the first step in preventing piracy and protecting valuable content. An effective multi-DRM system provides a frictionless viewing experience, while at the same time protecting and maximizing content revenue. It keeps infrastructure costs in check and helps untangle and simplify DRM deployments across various players, streaming

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MESA

H2 2023 SCHEDULE

- 14 June LAS VEGAS CDSA Reception @Licensing Expo
- 21/22 June LONDON **CLC: Vendors Behind Closed Doors** - CDSA Security Meeting
- MESA Summer Party UK
- 15/16 September AMSTERDAM - ITS Automation! (event) - LAmsterdam (member reception @IBC)
- 26 September AUSTIN MEDCA Reception BDCAC
- Los Angeles
- 4 October NEW ORLEANS MVP Reception @UnrealFest
- 24 October NEW YORK CITY MESA Reception @NAB New York
- 3 November LOS ANGELES WiTH SoCal Women's Leadership Summit @Infinity Festival
- 5 December LOS ANGELES SA Content Protection Summ

Learn more at: MESAonline.org/events

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UPCOMING EVENTS



GET SMARTER WITH YOUR SECURITY RESPONSE TO SMART DEVICES

The adoption of IoT personal tech has opened up new avenues of attack

ABSTRACT: What happens when your "dumb" water bottle becomes a "smart hydration vessel"? There are services and functions that benefit consumers and our growing demand for new sources of information. Each of these new elements becomes a security risk, and only through automation can operators keep up with the growing threat landscape.

By John Jacobs, Field Chief Information **Security Officer, Fortinet**

What happens when a "dumb" water bottle becomes a "smart hydration vessel?" Growing adoption of IoT personal tech allows consumers to engage in immersive entertainment and powers greater business insights to drive personalized content, next best offers, and to continuously improve experiences that keep people coming back. But now the water bottle has an IP address, and the accelerated increase of IoT elements is a security risk. Only through automation can operators keep up with the expanding threat landscape.

Collecting high volumes of private information across a swath of IoT devices, such as fitness details or location information inside smart parks, drives service innovation but also complexities around data generation, transport, and storage as it's shared between providers and services, creating new avenues for hackers to obtain and exploit that data or impact the online user experience.

A watch used to communicate zero bits of data. Now the devices we wear have embedded firmware and operating systems that transmit data to your phone and cloud-based services, meshing them into a giant software ecosystem. Often these devices are in constant sync, silently plugged into the larger ecosystem, posting data that's no longer in a person's control and extends beyond the walled garden—it's sold, extracted, manipulated, and replicated—creating a data explosion.

Within media and entertainment businesses, security operators are struggling to maintain existing processes and procedures with

the continuous rise in IoT data volume. But just as technology has transformed the consumer experience, the solution to manage your security response to that data is also technology. Security information and event (SIEM) platforms and services scale well as volume builds, but that can add cost, and without automation does not reduce the workload. Without the consideration of tooling and systems, the staffing for an around-the-clock SOC can hover near one million a year. Add to that investment the cost to manage growing assets and devices and you need to ask the question: how do you direct your resources for the best security effectiveness?

The typical SOC process involves four stages for a triggered event:

- 1. Event classification and triage
- 2. Prioritization and analysis
- 3. Remediation and recovery
- 4. Assessment and audit

SOC teams have previously had the ability to process event stages properly, adjusting time spent depending on severity. With the advent of IoT, operators are overwhelmed with events and notifications, making it difficult to act on what's truly important. This leads to setting less sensitive thresholds to trigger fewer events, or removing sources from the triage process, for example, ignoring failed admin logins. These and other attempts to reduce notifications can create risk.

This is where machine learning (ML) and artificial intelligence (AI) can help. ML can build historical records, such as learning that user logins are higher on Monday mornings, which can lead you to reduce the alert threshold during that window. But responses such as that can be quickly learned and circumvented by hackers. ML alone is not enough. But coupled with AI, you can refine your results and build a model of overlying information to reach more logical conclusions that reduce SOC overhead without compromising security. ML plus AI can help you take more parameters into account for nuanced responses that attackers struggle to respond to:

Has the user account logged in elsewhere? Does that account normally fail at attempts? What device is it being attempted from?



John Jacobs serves as the field CISO for Fortinet. Before this role, he has held numerous technical leadership positions at Fortinet covering varied geography and industry exposures, including the formation of our cloud consulting services organization. jjacobs@fortinet.com @Fortinet



THE ACQUISITION OF MULTIPLE SECURITY TOOLS has resulted in fragmented workflows, often stitched together by third-party systems, that can slow or interrupt notification and response.

Applying this kind of logic processing as a service or added to a SOC solution can refocus analyst skills on the investigations that matter.

Another pillar of evolution to handle the influx of IoT data is task automation. The acquisition of multiple security tools has resulted in fragmented workflows, often stitched together by third-party systems, that can slow or interrupt notification and response. Security orchestration automation and response (SOAR) platforms offer several important features, including a user-friendly interface to conduct logical "if-this-then-that" workflow connections, often referred to as playbooks or runbooks. By grouping known actions with their workflow steps, a mundane task can be scripted once and run as long as needed with predictable outcomes. This reduces analyst workload so they can look at new automation opportunities or deeper event correlation. Other key SOAR features include ingesting different log or event sources and performing structured correlations, centralized reporting, and coordinated incident response. By eliminating manual processes, you can reclaim precious time to process additional workload or continue to improve procedures to better detect and block more complex attacks.

Layered security is the most effective means to prevent and detect breaches in your digital environment. As your ecosystem grows, remember that security operations are an important focus and can greatly benefit from modern advancements in ML/AI to better the user interface, accelerate effective triage, and act as a smart platform to help secure IoT ecosystems and incoming data from consumer devices.

DIGITAL CONTENT PROTECTION **AMIDST INDUSTRY TRANSFORMATION**

By Joanna Pontin, **EVP**, Communications, **Fortium Technologies**

We ushered in 2023 with a renewed sense of optimism after the turbulent COVID years. As we hit mid-year, we take a moment to appreciate the steadfast organizations that have weathered the storm and continue to drive the media and entertainment industry forward.

There are several momentous industry anniversaries this year, notably both Disney and NAB celebrating their centennials. This year, Fortium will be celebrating its 24th anniversary, and since its inception in 1999, it has consistently been at the vanguard of digital content protection, earning a reputation for innovation, adaptation, and imagination.

FROM DISC TO DIGITAL

Fortium's journey with film began with the creation of disc protection products Patronus and Blulock in 2004. These solutions were designed to safeguard digital content from piracy, illegal distribution, and unauthorized use by employing state-of-the-art encryption and watermarking technologies. At that time, the film industry was witnessing a major shift from analogue video to digital, from VHS tapes to optical discs, driven by higher-quality video and audio, greater durability, and convenience. Fortium's disc protection products emerged as a timely response to the changing landscape.

In 2007, Fortium continued its tradition of innovation with Cogo, a secure file transfer and collaboration platform. Its user-friendly interface and robust security features quickly made Cogo a popular choice among organizations in the



innovation and adaptation

ABSTRACT: We have all welcomed 2023 as a new start after the disruption caused by the pandemic, but as we embrace the new, we also celebrate the established and steadfastness in our sector. As familiar organizations hit milestones, Fortium reflects on 24 years of helping organizations protect content and the concept that evolution, adaptation and imagination are essential to securing longevity.

entertainment, healthcare, and finance industries. Around this time, the rise of high-speed internet connections and digital platforms began to reshape the film industry, with streaming services emerging as a new way to distribute and consume content.

2010 marked the introduction of MediaSeal, a file encryption and decryption tool providing advanced protection for digital content. MediaSeal's compatibility with other digital content management systems made it an ideal choice for large enterprises and it soon became the industry go-to for safeguarding content.

ADAPTING TO CHANGING MARKET NEEDS

Fortium's unwavering commitment to customer satisfaction and its ability to adapt to changing market needs has been critical to its success. The company's solutions have evolved, incorporating emerging technologies and addressing new threats. Throughout the past two decades, the film industry has undergone significant transformations. The advent of digital technology has altered the way content is created, distributed, and consumed. From the early days of DVDs to the rapid growth of streaming services like Netflix, Amazon Prime, and Disney+, Fortium has been at the forefront of providing digital content protection solutions.

As we witness the exponential growth of digital content, the need for robust and reliable content protection solutions only intensifies.

EMBRACING CHANGE: THE KEY TO LONGEV-ITY

Companies that stand the test of time often showcase a remarkable ability to adapt and grow with changing circumstances. They embrace change rather than resist it and constantly seek ways to improve their products or services. Investing in innovation allows them to stay at the forefront of their industry.

Moreover, these companies prioritize employee



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IN THE FILM INDUSTRY, this ability to adapt has been crucial in response to evolving technologies, such as the transition from film to digital, the adoption of 3D and virtual reality, and the rise of streaming services.

development, encouraging them to learn new skills and adapt to new technologies. This fosters a culture of innovation and agility, enabling them to thrive even in challenging economic conditions.

In the film industry, this ability to adapt has been crucial in response to evolving technologies, such as the transition from film to digital, the adoption of 3D and virtual reality, and the rise of streaming services. Companies like Fortium have been successful in navigating these changes by remaining agile and responsive to the needs of the industry.

THE NEW ERA

As we embrace this new era, it is essential to celebrate and recognize the established organizations that have played a crucial role in our lives. Fortium's 24-year journey is a testament to the importance of innovation, adaptation, and imagination in securing longevity in the industry, and it is poised for continued growth and success in the coming year.

Fortium's achievements also serve as a reminder of the critical role that digital content protection plays in our increasingly digital world. As the amount of digital content created and shared continues to grow exponentially, the need for robust and reliable content protection solutions will only increase. Moreover, the film industry's transformation has been marked by the rise of digital platforms and the decline of traditional Continued on page 146

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As we move toward a future where AI is more prevalent in the M&E industry, there are concerns that creativity will be lost. However, AI can be used to enhance creativity rather than stifle it. AI can help content creators with ideation, research, and audience analysis, allowing them to create more engaging content. In the future, we can expect AI to be used to create content that is customized for specific audiences, making it more personal and engaging.

AI is not without its challenges. One of the biggest challenges is the need for curated data. Without enough quality data, AI cannot learn and improve. LLMs writes and translates at a higher level of complexity. Still, more study is needed to determine its accuracy, capabilities around context awareness, and scalability for media content

In conclusion, the adoption of AI in the M&E industry is inevitable. While some jobs may disappear, humans are adaptive, and technology is never perfect. AI can bring efficiency and scalabili-

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a business model which requires committing to multiple ongoing subscriptions.

Because streaming pirate organizations have no content or rights costs to shoulder, they can offer a super-aggregated illegal premium content service at a winning price point. And by easily exploiting loopholes in streaming delivery technology, they can steal content directly from a legitimate provider's CDN, adding insult to injury by having the legal service provider foot the bill to deliver the pirated content to the pirate viewer.

PIRACY – THE UNCOMFORTABLE TRUTH

Pirates have always been in the game to make money, but this doesn't address why piracy is now so ubiquitous and pirated content so accessible. The reason: pirates' methods have advanced considerably since they simply exploited "the analogue hole" and stole content from the HDMI ports of set-top boxes. And the shift to streaming technology, which was never designed with security top of mind, means it is incredibly easy for pirates to exploit streaming technology loopholes to steal, aggregate, sell and deliver content illegally.

beIN's outspoken battle against beoutQ brought the issue into sharp focus and now it has drifted into the murky realms of cybercrime. Just as organizations are proactively protecting their systems against malware, ransomware and other hacks, video operators and content owners needs to work on the assumption that their technology will be compromised.

ty, allowing for the creation of more engaging content. As more high-quality data is curated, especially across new language pairs, engines will continue to improve in their accuracy and be applied to more M&E use cases.

The future of the M&E industry is bright, and AI-based automation will be a key part of it. As AI continues to advance, we can expect to see more automation and new possibilities in content creation, localization, distribution, and marketing. Embracing AI-driven automation will be crucial for businesses to stay competitive in the industry. While there are concerns about job displacement and loss of creativity, AI can also enhance human creativity and help content creators to produce more engaging and personalized content, thereby increasing capacity, workflow, and output. With careful planning and implementation, AI has the potential to transform the M&E industry for the better. **H**

THE ULTIMATE PARTY CHECKLIST

For some providers security is merely a compliance or contractual issue but the silver lining is, by taking effective action, it is very much a money-making issue with a huge potential upside.

By accurately pinpointing the true cost of piracy, an operator can calculate clearly how much tackling it is worth to the business and what to invest in, while we continue to ensure we're delivering the technologies to disable and disrupt piracy to help providers recoup lost income.

As the most successful party planners know, paying close attention to every detail in the run up, during, and after the main event is critical. Having beefy bouncers on the door to throw out undesirables is essential, but it's vital to keep a very close eye on both your possessions and your boundaries at all times to ensure gatecrashers don't find other ways in.

Likewise, the most secure OTT service needs to take a multi-faceted and holistic approach to security to stop revenue leakage. From proactive and protective securities such as headend watermarking to track the content across the distribution chain and optimizing CDN security, through to human operational intelligence teams with eagle expert eyes and ears on the ground to track and disrupt pirate hackers.

And with more collaboration across the industry, including working with legislators and law enforcement authorities to gather the evidence required to orchestrate technical and legal takedowns, we've got the perfect party bag to keep the streaming party swinging with its invited guests while all gatecrashers are effectively barred. **H**

CONVERGENT Continued from page 120

and addressing potential compliance issues within SaaS applications.

Cost savings: SSPM can help organizations optimize their SaaS usage and avoid unnecessary subscriptions, resulting in cost savings.

Better risk management: SSPM helps organizations identify and mitigate security risks associated with their SaaS applications, reducing the likelihood of security incidents and associated costs.

In summary cloud security automation can improve the effectiveness and efficiency of an organization's security operations, reduce the risk of security incidents, and improve the overall security posture within a cloud environment.

We hope this article provides insight and thought leadership on how automation can help us constantly improve our ability to secure pre-release content, the crown jewels of our industry.

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office success. However, the whole incident underscores the importance of backup copies of work in progress — which is even better to do in the cloud.

Mistakes happen. Natural disasters are an increasing occurrence. Hardware fails. The 3-2-1 rule of data backup has been standard across many industries and is equally relevant to M&E. Three copies of your data, two storage mediums, one copy off-site. And for the off-site copy, it makes little sense to do things the old way and ship a tape off to a remote vault where it sits on a shelf and is essentially unusable. The major cloud storage providers offer eleven-9s of data durability which provides extreme data protection while the stored files remain accessible for download when needed.

Ransomware attacks are also on the rise in the M&E sector, at both high-profile companies and smaller post and effects companies When ransomware strikes, it's not just data that's at risk, but your whole creative output and business. A robust data protection strategy with immutable off-site backups can be the difference between business continuity and operations grinding to a halt. Most cloud storage services now offer data immutability – meaning the data stored cannot be altered or deleted by anyone for a set period. With a proper backup strategy, the content in the cloud is both impenetrable and recoverable should your business come under attack.

The media and entertainment industry is charging ahead to deliver the technologies, tools and processes that allow creatives to build bigger, innovate more, and deliver higher-quality content faster than before. These new practices result in the generation of vast amounts of data which must be managed in efficient, robust, and highly accessible storage ... and that's where cloud storage comes in.

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Western Europe alone. Virtually everyone agrees Netflix's ad play will be successful. But will getting into advertising change the brand and DNA of a company which has closely guarded its own data and prided itself on forging a distinct path in the cutthroat world of entertainment?

The shift from pure SVOD into ads brings streaming TV closer to broadcast TV models. The popularity of linear free ad-supported TV (FAST) channels is another move in this direction, as is the shift toward aggregation. Consumers prefer one place to access live sports, music, gaming and news alongside premium TV and film. While Netflix has bolstered its gaming division, the other tech giants are jostling to bundle an array of digital entertainment in one place. The major difference between broadcast and streaming remains interactivity. Expect applications utilizing ultra-low latency at the network edge such as gaming and VR to begin to take off from 2023.

As the industry moves past the pandemic, charts the course of the large-scale return to the cinema, and fights for the hearts and eyes of audiences, the challenges facing entertainment companies are not just to thrive but, in some cases, to survive. While the domestic box office in 2022 is expected to land around \$7.8 billion which is up from 2021, it's still 35 percent less than 2019. The economic impact of WFH may not be the overall solution, but it does offer creative and financial opportunities that will play a critical role in the delivery of content as well as an improved work-life balance for most creatives and support teams in our industry.

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A shining example of this integration is the recent episode of South Park, "Deep Learning," which was co-written with ChatGPT. This collaboration demonstrates the impressive capabilities of AI to not only understand human creativity but also contribute to it. The seamless partnership between the South Park creators and ChatGPT showcases how AI can enhance storytelling and add a unique perspective to the creative process.

Moreover, AI tools in popular software suites like Adobe, Microsoft Office 365, Google Workspaces, and Canva are reshaping how we approach content creation. By providing automated editing, generative images, and video production features, these tools enable creators to focus on their vision while the AI handles the more technical aspects. This newfound freedom allows for greater experimentation, leading to innovative content that pushes the boundaries of media and entertainment.

As we continue to explore the possibilities of AI-powered creative innovations, it's clear that the lines are becoming increasingly blurred. This exciting development promises a future where AI and human creativity work in harmony, elevating the media and entertainment industry to new heights.

EMBRACING THE GENERATIVE AI REVOLUTION: IT'S TIME TO PUT ON THE EXOSKELETON

As we've explored the transformative potential of generative AI in the media and entertainment industry, it's clear that the future is now. The time has come for creators, professionals, and visionaries to put on the metaphorical AI exoskeleton and harness the power of these cutting-edge tools to stay ahead of the curve and elevate their abilities.

By embracing AI as a force multiplier, you can streamline your creative process, enhance your storytelling capabilities, and deliver immersive, personalized experiences to your audience. The early adoption of these technologies will not only give you a competitive edge but also allow you to shape the future of media and entertainment as we know it.

As you ponder the possibilities of generative AI and its impact on your work, consider this: How much of this article do you think was written with AI assistance, and when during your reading did the possibility first occur to you? In the not-so-distant future, you may find it increasingly challenging to differentiate between human and AI-generated content, as we all come together to shape a new, collaborative creative landscape. 🖽

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title matching, third party ID retrieval, record enrichment sequences, draft content localization, localization management and orchestration, image, and asset placeholder creation, third party lookups, and many alternatives.

Looking forward, the inclusion of AI tools such as Chat GPT into automated workflows offers even greater potential for automation. In a landscape filled with such an array of potentiality, it is doubly important to deploy a cutting-edge, world-class title metadata management platform - such as Fabric Studio - to master your entire media catalog, integrate with your supply chain systems and provide the access and visibility that automation can offer.

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director of applications development, Nick Amparano, was immediately put at ease by the team's professionalism and expertise.

"It's very symbiotic," said Slalom senior consultant Stacy Scherer. "We work seamlessly together."

For Les Jin, vice president of IT infrastructure at the Academy, "innovation" is the first word that comes to mind when reflecting on the partnership with Slalom.

"It was the mutual investment in the organization's long-term goals and desire to take risks that created such a profound level of trust," Kite said. "It's been an incredible journey. We've all worked together for nine or 10 years at this point, so there is a sense of trust. I have confidence that the Slalom team will always express their opinions and be a challenger."

A LEGACY ORGANIZATION WITH A GLOBAL IMPACT

In 2017, the Academy launched a program called Academy GOLD — an industry talent development initiative focused on underrepresented communities. Slalom helped automate the process and shape the user experience, allowing the Academy to provide program participants with resources to better pursue careers in filmmaking.

Another of Slalom and the Academy's most impactful implementations is the new RAISE platform, which rolled out in 2021 to facilitate the Academy's Representation and Inclusion Standards for Best Picture consideration. While the primary use of the platform is to facilitate the Academy's awards process, it also provides

insight into current trends in the industry related to representation and inclusion that can help stimulate positive change in the industry.

But like many organizational changes, the work doesn't end at implementation — it requires an ongoing, collaborative process.

By the 96th Academy Awards in 2024, all films submitted for awards consideration must meet inclusion standards to be eligible in the Best Picture category, and the RAISE platform will be essential in this review.

"All these changes have internationalized the organization connecting our members worldwide — and sped up and streamlined our processes," Kite said.

Now, the Academy's IT department is a strong and future-forward team working on more than 50 projects yearly. The organization's growth, scalability, and ease of use are top priorities.

"We've made some impactful decisions in the past decade since working with Slalom," Amparano said. "Now it's time to shift to a self-service model and start giving ownership back to the business."

The Academy's IT department has its sights set on the future with a clear vision for improving and building on its successes, focusing primarily on audience strategy and digital media services.

"It wasn't an easy transformation, but we're in a place now where it's so natural," Kite said. "Natural for our staff to use the technology, natural for our members to expect the technology, and natural for us to execute and show what can be done." **H**

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formats, devices, and platforms.

Forensic watermarking should also be an industry standard. Fortunately, encoder, packager and CDN standards and integrations have made watermarking content significantly easier.

Concurrent stream management limits credential sharing and allows operators the ability to upsell additional streams. Finally, the final line of piracy defense involves code protection and obfuscation to protect software from unwanted attacks.

Platform hardening

The second step in fighting piracy involves hardening your platform to minimize the risks from hacking attempts targeting your content or back-end systems. The industry has seen countless examples where hackers have gained access to a platform and, through that vulnerability, wreaked havoc on other systems.

A good example of platform hardening is penetration testing – or pentest — an in-depth security assessment on a specific system or component within an OTT environment, OTT application or even an important server for the OTT platform. During this test, the security team simulates an attack by a malicious person on a selected (web) application, infrastructure, or device. For example, a pentest on an Android OTT application includes testing the app on a mobile device but also focuses on communication with the backend.

Monitor and detect

Our third important step in anti-piracy and cybersecurity management involves monitoring and detecting threats. The business strategy benefits from the recognition of the type of threats the business may encounter. Effective tools such as online piracy detection (OPD) and brand protection make it more difficult for pirates to find alternative sources, devices and subscriptions.

Tools that should be used include threat intelligence to monitor information gathered via proprietary web crawling, deep and dark web mining; live, VOD and P2P content discovery using crawlers built to discover where infringements happen on the internet;

METABROADCAST *Continued from page 103*

Yet, consolidating internal data is just the tip of the iceberg. They seek external data to enrich their current databases while acknowledging the limitation that not all platforms allow ingest from multiple sources. Cloud-based metadata management provides the tools to aggregate and manage data from multiple sources. Tasks are automated to accelerate the processing and delivery of high-quality metadata — all aligned to the data schema defined by each video service provider.

Cloud-based metadata management platforms, such as Meta-Broadcast's Atlas, use APIs to manage file ingest, and automate processes to consolidate, cleanse and map data into a unified metadata repository. Algorithms automatically resolve and/or link content IDs, while de-duplicating data. Incomplete or inaccurate files are identified, and new processes are initiated to heal these files.

Workflow orchestration governs these event driven processes. By loosely coupling a series of events, a video service provider gains flexibility to introduce new service features without impacting existing



brand protection measures and anti-fraud management.

Investigate and analyze

Investigation and analysis is an important step in any anti-piracy program. This is where companies and cybersecurity vendors need to operate on the offensive, as opposed to the defensive stance of the previous steps. It is where you will find out exactly how pirate applications and devices work.

It should include threat investigation and reverse engineering service to be applied to customer applications to test the robustness of the application against a variety of attack types, intelligence analysis and forensic evidence collection.

Report and enforce

Finally, companies and cybersecurity vendors must report and enforce in collaboration with international partners. There is no silver bullet to piracy and the fight against piracy cannot be done alone. Collaboration with partners can include measures such as payment disruption, IP blocking and takedowns, but also insights, managed services, consultations, and training others in the anti-piracy/ content protection community. We are in this together and can certainly learn from each other.

Whether it is movies, high-profile series or live sports events, video content continues to be one of the most valuable intellectual property forms in the world. Increased screen options for consumers (phones, tablets, smart TVs, etc.) have facilitated the growing consumption of video content over the years. It is crucial to ensure that these assets are adequately protected.

As mentioned, there is no magic cure for piracy. As video entertainment delivery and consumption evolve, pirates continuously find new ways to circumvent security technologies and steal valuable assets. Rights holders and content owners must use every tool at their disposal to continuously prevent these emerging threats and protect their revenue. An end-to-end approach combines stateof-the-art security technology with expert piracy oversight, cyber investigations, intelligence analysis and targeted enforcement.

ones. Orchestration also defines dependencies between automated and manual tasks, automatically monitoring progress and providing alerts to trigger required tasks.

The future of automation lies in machine learning and artificial intelligence. Examples of machine learning today are evident in Amazon Prime Video's ability to identify actor names in real-time, while streaming a program or movie. This capability, called X-Ray, uses the Amazon Rekognition API to automate image recognition, leveraging the IMDb database and machine learning models.

The key objective in automating metadata management is to help video service providers promote their content and engage consumers. The future will advance existing levels of automation through adoption of machine learning to improve content matching, hierarchy healing and genre classification. Poor metadata will be replaced by continuously enhanced and enriched data — supporting evolving business models and elevating the consumer experience.
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higher value and more meaningful work. This is where the continuous training of employees as well as promoting an atmosphere of learning within the workplace are crucial. Most employees welcome the opportunity to learn in exchange for advancement. An automation initiative should include a plan to reallocate displaced resources to existing or newly created business processes. In addition, the elimination of employees handling sensitive content significantly reduces the risk of content leaks or theft. The additional boost in security and confidentiality from any automation initiative reduces the cost of implementing physical security measures while simultaneously taking advantage of the company's existing cybersecurity infrastructure.

Similarly, other benefits and opportunities exist for the further development of service offerings as well as business process enhancements. For example, the continuous availability of automated systems will allow for the creation of an on-demand self-service portal for clients. This service offering enhancement will virtually eliminate the need to maintain a company's hours of operations and removes the restrictions associated with working across different time zones. The integration of various cloud and software services also presents the opportunity of leveraging additional capabilities from such services for further business process improvements or even the creation of additional service offerings.

The current state of technologies enables access to cross platform development resources through application programming interfaces (APIs) as well as software development kits (SDKs). In addition to building upon core business operation processes, such development efforts can be focused on increasing business intelligence capabilities. Similarly, relevant metrics and data can be extracted from automated business processes with the goal of interpreting the collected information to discover new service offerings as well as to further develop process improvements.

The maturity and proven capabilities of cloud-based offerings have made software as a service and all other related solutions, accessible to all service-based companies. Like how e-commerce has permanently changed the way physical goods are sold, integrated cloud-based solutions will change the way digital content processing services are performed and delivered. The availability of disparate service offerings with open integration capabilities is the perfect opportunity for the creation of a unified automated workflow system. 🎛



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ecosystem presents an ongoing challenge to development teams, and automation is now able to support all these platforms and devices under one umbrella offering key performance metrics across the board. This can be where automated benchmarking can truly shine, helping to identify a platform's defects before a customer does!

Automation software frameworks can be suitably customized, offering capabilities far beyond standard automation. Plus, automation software with its associated dashboards offers developers, as well as executives, a more visually pleasing way to analyze performance indicators, areas to improve, and provides a good competitive landscape.

As organizations continue to build out their IP video service offerings, OTT testing and benchmarking is a vital step before going to market. However, building out an in-house testing infrastructure may be cost-prohibitive. Automated benchmarking services provide an opportunity to build resilient automation scenarios, run parallel test scenarios, offer a visual toolset on a framework that removes the need for extensive coding, and provides meaningful results that ensure a quicker time to market, reduction in long-term QA costs, and the seamless delivery of content. 🖽

OOONA *Continued* from page 96

fixes the error also logs its cause for future reference.

"To support our operations, we need to QC hundreds of files on a daily basis," said Aviran Barley, content operations director at HOT Telecommunications. "We were looking to replace our current labor-intensive and time-consuming workflows with a streamlined QA solution. OOONA quickly reacted to our request, providing a high-end scalable QA platform that perfectly fit our needs. We have now rolled out the OOONA QA system across all channels."

At OOONA, we firmly believe that project management and quality assurance are the two areas that make a difference in language operations. We expect to continue tackling both by providing more solutions enabling our customers to address any challenge they face. Our ecosystem provides a powerful advantage to any media company looking to improve their QA process and deliver high-quality media content to their end clients and audiences.

ATELIERE Continued from page 88

Competitive advantage: given the dynamic nature of the industry, where one day you're offering just SVOD and the next day you need to roll out AVOD, the right technology infrastructure becomes your business enabler.

In other words, you'll have a better handle on your consumer, allowing you to run your content warehouse more efficiently and deliver the goods (i.e., the right content) to the right viewers, at the right time, on their preferred devices, across any geography when they're ready to buy!

GAIN OPERATIONAL EFFICIENCY WITH NO CODE LOW CODE

Ateliere's integrated supply chain includes built-in package templates that allow end users to orchestrate microservices quickly and easily without the hiccups. The Ateliere Connect platform manages microservices such as transcoding, metadata transformation, QC, and delivery instructions, through one simplified tag-based template. These templates allow you to easily automate deliveries by providing factory-level automation of the entire distribution supply chain.

Ateliere has created package templates for the most common over-the-top (OTT), broadcast and cable delivery destinations, including Netflix, Hulu, Disney+, Amazon Prime, HBO Max, Peacock, Sky, Star and more.

Delivery requirements are constantly changing. Whether a platform has updated its video spec or a metadata schema, or if there's a new requirement altogether, the ability to adjust or create new distribution workflows is critical. On Ateliere's Connect platform, users can create additional package templates on their own. You can easily add pre- and post-rolls, specify detailed video instructions to burn in or embed captions, add audio configurations, as well as adhere to specific naming conventions. Ateliere allows you to automate the different delivery requirements quickly and easily by creating tag-based packages.

The best part? All of this is doable without the need for heavy technical expertise or a large headcount. 🖽

3RD I Continued from page 44

from a light-touch spot-check to numerous full passes on a variety of video monitors, speaker systems, and video and audio scopes and measurement tools.

As automated systems continue to evolve, they will be increasing ly integrated into media and entertainment workflows. In a file's journey to the consumer, because of the importance of the quality control stage, it is essential to not overlook the contributions of a skilled human quality control operator in preventing distracting impairments from reaching the viewer. Ideally, nothing should detract from the vision of the creative team behind the content. A quality control strategy which balances automated tools with human expertise can help meet this goal. 🖽

FORTIUM Continued from page 137

distribution methods. This has opened new opportunities for independent filmmakers, enabling them to reach a global audience. However, this growth has also created new challenges in terms of protecting intellectual property and combating piracy. The Fortium team's solutions have been instrumental in helping filmmakers, studios, and distributors safeguard their valuable assets, and will continue to innovate in line with the industry needs.

In conclusion, as we look ahead to the future of the film industry, we must acknowledge the vital role that we all play in shaping the landscape. By celebrating milestones and anniversaries, we recognize not only achievements but also the importance of embracing change and driving innovation in the ever-evolving world of media and entertainment. \blacksquare

SPHEREX Continued from page 107

classifiable events. However, these annotations were subjective and did not necessarily meet local requirements.

Additionally, it is a time-intensive process to annotate content manually. Manually annotating a full-length title takes three or four times the total runtime. Then there is the time necessary to classify events according to territory-specific rules and make editing recommendations for compliance.

There are three significant considerations to this approach when applying it to real-world, high-volume tasks, such as rating large title catalogs:

- 1. What if a classifiable event is missed (involves rework)?
- 2. Apart from the events that require local compliance, what other occurrences could have been annotated to improve content recommendations, search and discovery, and advertising-related business use cases?
- 3. Lastly, but most importantly, how scalable can this process be, e.g., can hundreds or thousands of video assets be assessed daily?

The unprecedented growth in global content distribution draws our attention to the scalability challenges of content classification. Scalability is more than the method to ensure large volumes of assets can be ingested, processed, and delivered. When a media asset seeks simultaneous release worldwide, it is no longer a phased approach. It is more analogous to the big bang—everywhere, all at once. Spherex is solving this problem by tokenizing the context of cultural events and scenes to address scalability, a multi-layer problem.

Global content demand pressures media and entertainment companies to ensure that titles are linguistically correct, culturally relevant, locally compliant, and age appropriate. Humans have been central to those efforts because of the careful observation needed of events within a title, understanding nuance, and the ability to assess country-specific regulations. That is about to change. The promise of generative AI is making complex, data-centric tasks easier and faster. Spherex AI not only automates the detection, interpretation, and In storytelling, context can be examined by characters, plot, and classification of objectionable content, it does it at scale. For the first setting, which, combined, form the story's narrative aspect. Location, time, proper classification of any content, whether first-run or catalog historical, situational, emotional, cultural, linguistic, physical, and content, film, or TV, long- or short-form, is affordable and fast. This literary elements of storytelling create the context of a scene, the plot, is only possible with multi-modal and generative AI's intersected or the overall theme that defines the content's genre. capabilities. 🎛

PERFORCE Continued from page 40

that provides an intuitive graphical interface for your Helix Core server. It's highly customizable and makes it possible to add your own functionality through custom tools and HTML panels.

Custom tools are similar to server triggers in that they can execute any type of program that can run on your client computer, except instead of being triggered by events on the server, they can be run by users through context menus directly inside of Helix Visual Client. For example, a custom tool could be used to create custom reports, alert other users, or any other automation.

To truly be able to innovate, you need to choose a version control In addition to custom tools, it is also possible to create custom panels tool that provides the basis for automating within your workflows. for Helix Visual Client that display information from Helix Core visu-What would your team achieve if they could cut down on rote tasks? ally. For example, you could create a panel to bring up a custom HTML You probably have a ton of ideas — now imagine having more time for page whenever a user is submitting changes so that they can link them them. 🎛 to their task tracking software, log hours, or provide other information.



SPHEREX AI AT WORK (DETECT, INTERPRET, AND CLASSIFY)

Spherex organizes and aligns these aspects of storytelling with contextual tokens, which are then detected and interpreted in terms of their relevance in an event and scene-based setting and classified according to a territory's regulatory policies. Spherex's approach allows detecting the not safe for work (NSFW) events using its proprietary training and fine-tuning foundational AI models. It can integrate third-party tokens/events and uses its Events Transformer to transform those tokens/events into Spherex's taxonomy. Spherex's Culture Knowledge Graph organizes these mappings, and the MLbased rules engine classifies the content based on the business use case. Spherex uses its multi-modal AI to classify content for age-rating use cases, thereby reducing the costs associated with manual labor by over 80% while processing thousands of assets daily.

Humans are still essential in AI-generated content classifications as artificial intelligence is a work in progress, and accuracy is not guaranteed in interpreting context. Spherex's multi-modal AI has deployed expert-in-the-loop processes to fulfill the exceptions when the output does not provide the necessary confidence and processes the relevant feedback to the AI for improvements.

THE FUTURE IS NOW

BETTER DIGITAL ASSET MANAGEMENT IS THE FOUNDA-**TION FOR INNOVATION**

Maintaining tight management of digital assets is one of the most important things virtual production teams can do to keep projects on track. It gives them a single source of truth, enabling better communication, easier collaboration, and faster development. Frankly, it's a necessity for any teams who are looking to scale production and keep meeting deadlines.

FINLEY Continued from page 8

can keep on as many hand stitchers as you want ... they're just going to be hand stitching different parts of your workflow or concentrating on a more mind-intensive endeavors.

That's the separator between humans and machines: they may think faster than us, but we're capable of creativity and thinking around corners. And it's creativity that makes Hollywood stand out from other industries. Content remains king and that will always require creatives. But the reality is 80 percent of the work backing them up can be automated.

Automation is the future also because we must change so many

things we once did with a wink or a handshake or a pat on the back. We always talk about vendor lock and how your vendor relationships need to be a win. You got to deliver great product ahead of schedule and exactly to the client's wishes.

Yes, we're a relationship-based business but automation reinforces those relationships and allows us to spend our precious hours working on the business part of it, not on the nuts and bolts behind it.

That's the promise. When you see it working, when you see that weird rotisserie chicken oven doing its job without manual help, you know automation is the future.

Let set it and forget it. 🖽

YURKOVIC Continued from page 12

streamlined, and efficient. Like employing a digital personal assistant that knows exactly what you need before you even ask, we now can focus on higher-level tasks and be more creative and strategic than ever before.

Digital transformation technologies is like watching a never-ending movie franchise, with new and exciting developments popping up all the time. And just like any good movie franchise, industry professionals will need to keep up with the latest developments to remain competitive and stay ahead of the curve.

With the right attitude and a willingness to learn, you can join the industry's digital revolution and be a part of something truly exciting. With the entire MESA community offering solutions that prove change isn't that hard, we're seeing new technologies create a self-driving train of innovation. Buckle up, grab your popcorn, and get ready for the ride of your life. **H**

RIGNEY Continued from page 14 effort to reap the many rewards of digital infrastructure standards: interoperability, technical alignment, reliability, security, and more.

M&E in its current state cannot imagine a world where digital equipment from one company can be plugged into another company's infrastructure and work seamlessly. Technicians cannot imagine a world where "unforeseen" issues are not a daily occurrence, or WiFi dropouts. CFOs cannot imagine a world that doesn't require a major infrastructural upgrade every 3-5 years. Customers cannot imagine a world without downtime due to a "glitch in the system," an untended reboot, excruciatingly long render times, or corrupted media files.

It's not enough to talk the talk. Learning and implementing good digital infrastructure practices is the best way to break bad habits. MEDCA continues to look for companies and individuals within them to identify the data industry standards most suited to support M&E today. In the digital world, tomorrow is already here.



FILMTRACK Continued from page 26

Ensures secure transactions. A secure system tracks financials and creative assets to maintain customer trust and business reputation. When equipped with built-in automated sub-ledgers, these agile systems enable teams to account for every financial transaction – all in one place.

Prevents financial losses due to data breaches or cyberattacks. Not all cyberattacks target a specific company – they often resemble a burglar trying different doors to find one that's unlocked. Secure rights management systems that comply with SOC 1 and SOC 2 and don't commingle data allow you to sleep well at night, knowing all the doors are locked, the alarm is on, and your data is safe.

Complies with industry regulations and standards. Staying ahead of the evolving security threats in the digital entertainment industry requires role-based security, a simplified user experience, and superior data segregation that complies with industry standards.

Provides secure, role-based access and data loss prevention. Automation is critical for enterprises seeking to protect sensitive data and

CHOI Continued from page 10

roadmap and your broken workflows and see where they intersect. Work with others to find inventive and innovative ways to solve the problems of the company. Look outside your organization and borrow ideas from others.

Make sure you involve business teams as well as technology teams in all your planning. Create unofficial cross functional teams to tackle the biggest challenges first. Don't forget to get buy-in from your leadership team. Sometimes asking for forgiveness instead of permission works best, but when things are incredibly uncertain, it's better to make your case instead of going completely rogue.

Automation saves time and money. Automation, however, is only realistic if your workflows are clean and repeatable without human interaction. It can also help to align the organization around a common metadata taxonomy. Imagine the following scenario: the title management system uses a three-digit country code, the rights management system uses a two-digit country code, the marketing systems use a territory code which is almost always the same as the other systems, except when it comes to Latin America and the Nordic countries, which it lumps together under another code which neither of the other systems uses.

One of the first steps toward automation is standardization. The Language Metadata Table (LMT) and EIDR are great places to start. Both are workflow automation tools. They provide a standard taxonomy and process flow for media and entertainment digital supply chains and distribution workflows.

It is important to take care of yourself in times like these, but all is not lost. Help is available, so don't be afraid to ask for it.



quickly onboard people (and, more importantly, off-board them) with just one click.

It's far too easy to forget about an application that is not integrated into the company's user domain management system. Automation provides the security that managing digital rights in the entertainment industry requires.

THE BENEFITS OF AUTOMATION

As digital channels continue to become the primary means of distribution, there isn't enough time to manually manage the accompanying complex financials. As a result, businesses in the entertainment and media industries are adopting more powerful and flexible management software solutions that can automate royalty calculations in seconds.

A single robust platform that integrates into business systems allows you to automate processes, reduces the time spent managing numerous systems, and employs strong security to streamline processes so your software can scale as you do. If you manage digital rights in today's modern environment, you need a scalable solution that will meet your current and future needs. **H**

VERIMATRIX Continued from page 129

Destination information. Are the platform's sources and destinations known, and are they comprehensively protected? Are the interchange points across the platform (APIs) properly implemented? When a session is opened, does the platform check whether the request is from a known or knowable source? And are sessions managed and ended in an efficient manner?

The evolving nature of video security threats means an "on your toes" approach is inevitable if an organization seeks to remain one step ahead of the bad guys. One step further would be to implement a more comprehensive video protection, as DRM alone is not enough.

ATKINSON *Continued from page 16*

ers are already poised to pay, that revenue comes through existing channels and directly to the bottom line. You are a hero. But make sure you baseline things BEFORE you start ramping up. You want the results of your effort to be attributed properly, and not attributed to a marketing campaign or other activity.

The example I gave was specific to geos/markets, but this approach to linking your efforts to those most valuable to the business also include channels, products, or other aspects. You will not have to make these up, just go see your CFO and tell them that you want to link your activities to the areas of the business that are most valuable and therefore you can actually contribute the most (note: I expect that you will have to educate them on this approach as it is totally logical but counterintuitive since they tend to think that your efforts should be focused on high-piracy but low value markets).

So, get focused. Even if you just focus on one top market to "prove you can make a real difference," I am confident from my own experience and others I see doing this, that it works. **H**

COGNIZANT Continued from page 32

subtitles in local languages are applied to avoid colliding graphics. For programmers with extensive catalogs, detecting the presence of forced-narrative text is the kind of expensive, multilayered problem that AI can help mitigate.

What's more, new formats and technical specifications have the potential to impact tools, processes and costs related to QC. For example, high-resolution formats like ultra-high definition (UHD) increase the load on infrastructure, making it more difficult to execute effectively from the cloud. High dynamic range (HDR) introduces challenges in the ability to automate down-converts to standard formats, requiring a second master to be delivered and QC'ed for each show, a repeat of a problem that was solved years ago for HD-to-SD conversion.

Myth No. 2: Automation solves all problems

The reality: Identifying a problem isn't the same as fixing it. Testing finds problems but remediation is another matter — and it often involves nuance and judgment. Is the issue that's been flagged a problem, or is it creative intent, from a mixing decision to the look of a video filter or color grading? While the goal may be to solve as many problems as possible programmatically, some fixes involve editorial review by creative or studio stakeholders. For automated testing to fulfill its potential, it needs to combine finding anomalies

with ways to solve them. QC is really about performance management: Finding and fixing.

Myth No. 3: Eventually all testing will be automated

The reality: Content is touched, processed, customized and transformed many times across the course of the end-to-end supply chain, and by many stakeholders, both internal and external to a given organization. Maintaining quality across this complex, often fragmented set of processes is a constant challenge, involving not only the testing methods themselves but also an accessible audit trail of the checks that have been performed. (As yet there is no blockchain-backed, immutable ledger for this information to be stored with the content wherever it resides.) While machine learning and other advances will increase the reach and effectiveness of QC automation, it's the eyes and ears of the viewer that we are testing for, and most industry participants believe that those same sensors will continue to be utilized in the testing process, hopefully in an increasingly machine-assisted manner.

As a result of advances in automation, testing is ready to step into the spotlight. Technology, however, is only part of the change. Successful implementation takes education, preparation, and a big dose of reality. 🎛



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