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The Media & Entertainment Services Alliance was founded in 2008 to create efficiencies in the creation, production and distribution of physical and digital media & entertainment. Representing over 120 member companies worldwide, the organization produces events, newsletters, research, as well as this journal publication. Its industry initiatives include workgroups in digital and physical supply chain, 2nd screen, IT, content protection and anti-piracy. MESA is the management company responsible for the efforts of Content Delivery & Security Association (CDSA), Hollywood IT Society (HITS), Women in Technology:Hollywood (WiTH) and 2nd Screen Society.

M&EJOURNAL 3

The Top 10 Challenges Hollywood IT Organizations Face Now

By Devendra Mishra, Executive Director and Founder, Hollywood IT Society



Collaboration can lead to our industry becoming more secure, nimble and effective.

n unveiling a proposal for the complex and unwieldy state budget of California earlier this year, Governor Jerry Brown described the document as an attempt to address some challenges with no ready solutions at hand. "These are the challenges," he said. "They are challenges within my own family. I don't have all the answers...I don't know if anybody does."

This sentiment reverberates with me as I think about my industry family in Hollywood, where CIOs and CTOs face unprecedented, complex and unwieldy challenges to transform their businesses for the new information-driven economy. The founding principle of the Hollywood IT Society (HITS) is to promote collaboration among the stakeholders committed to enhancing the growth and profitability of the entertainment industry. It is in that spirit of collaboration that I offer my thoughts on the 10 most urgent challenges facing M&E in 2015, and my hope that you will participate with us in an ongoing dialog to identify potential solutions.

1. Right-sizing technology-stacks and aligning with business demands

"When faced with a threatening disruptive technology, people and processes in a mainstream organization cannot be expected to allocate freely the critical financial and human resources needed to carve out a strong position in the small, emerging market. It is very difficult for a company whose cost structure is tailored to compete in high-end markets to be profitable in low-end markets as well...It is very difficult to invest adequate resources in disruptive technologies – lower-margin opportunities that their customers don't want – until their customers want them."–Clayton M. Christensen in "The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail"

So, this fundamental question comes to mind: How relevant is the existing technology stack of a studio in order to meet the demands of disruptive technologies? Remember how new systems were bolted on to existing platforms over generations, making the stack cumbersome and inefficient in the long run? The implied challenge to right-size the technologystack and align it with the emerging demands of the business is huge. In that IT landscape of Hollywood studios, the new requirements of digital, mobile and social media, to name a few disruptions, have to be factored in for the necessary makeover of systems overall.

Opportunities may exist to find the trapped value by freeing up certain legacy systems to enable the adoption of what is required to support the new business realities. While a few proprietary systems—maybe fewer than 30 percent– remain critical to an enterprise, commoditization of many other functions exacerbates the problem and suggests their divestiture or outsourcing. In addition, while the exponential evolution of disruptive innovation has devalued the legacy systems, one wonders how SaaS services can be vital enablers. Reconfiguration of the systems has to begin with a sense of urgency to remain relevant today.

2. Systematization of internal and external collaboration

The paramount question is not whether to collaborate; it is how to. Several technologyenabling collaborative solutions and services for enterprise have come to our rescue in areas from filmmaking to the distribution of content. A fundamental road block to be overcome within studios, however, is the culture that fortifies the silos for entrepreneurial creativity and protection.

Meanwhile, the "Gang of Four" – Amazon, Google, Apple and Facebook – has demonstrated that tolerance, openness, and fairness toward potential partners, developers, vendors and third parties make the size of the pie grow.

Technologies for collaboration that will secure our assets and provide values untold to the shareholders are being tried with success. Deploying a new collaborative IT governance model is also an essential step in breaking down silos and creating cross-enterprise solutions.

3. Restructuring information and technology organizations

"Business is likely to be loaded down with yesterday's promises. These include products and services that no longer contribute....A ship that spends long periods of time at sea needs to be cleansed of its barnacles or their drag will deprive it of speed and maneuverability." —Peter F. Drucker in "Managing in Turbulent Times"

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Editorial Director of the M&E Journal and Chief Strategist for MESA, Devendra Mishra is recognized as an eminent thinker and practitioner of supply chain management. An adjunct Professor of Decision Sciences at Pepperdine University, he has previously served as President/COO of such companies as LIVE Entertainment, VCL-Carolco, Lieberman Entertainment, and Technicolor Worldwide Media.

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HIGHDYNAMICRUSH

No More Wars... If content is truly king there would be no format wars By Guy Finley, Executive Director, MESA



he history of home entertainment is an ongoing story of protracted battles between hardware manufacturers, each with their own technology and customer driven agenda, backed by licensees armed with their own patents, who ultimately are making the big bet that their engineering feat is better than everyone else's – and that consumers will see (and hear) the difference.

And like every war it's about building alliances – bringing together various stakeholders with a promise that they will get their share of the spoils if their side wins. Unfortunately, the content industry rarely wins.

Was Beta vs. VHS good for home entertainment – with its multiple SKUs, packaging, manufacturing, authoring, QC? Did it sell any more videocassettes because the consumer was confused about which to buy? What was the cost to Hollywood in redundant supply chain systems?

We also know the result of the Blu-ray vs. HD DVD debacle – an accelerated decline for physical media. The two sides fought it out, unaware that a new upstart called 'digital' was creating an ultra-tight window for market introduction and that the DVD itself would be its own enemy. And of course there is digital/ mobile/etc. How many billions of dollars are being wasted due to lack of production and delivery standards by the e-retailers?

Ultimately, what is it costing Hollywood to reinvent itself?

If content is truly king, couldn't the king just say NO? Couldn't the monarch proclaim he would sit out the battle and even accelerate armistice by saying to the hardware guys: "what's in this for me?" I bring this all up because the content industry (creators/holders and their supply chain partners) is in the middle of another war – HDR (high dynamic range) – and if we take to heart the ultimate power of content here, we can help the industry get it right; we can accelerate adoption and create production efficiencies, while protecting the original creative intent of our authors and creatives.

On the hardware side there's been acrossthe-board HDR support with Samsung, Sharp, TCL, Sony, LG, Panasonic and Vizio, all either announcing or releasing sets capable of handling HDR. And the Blu-ray Disc Association's (BDA) finalization of specifications for Ultra HD Blu-ray could prove to be the biggest benefit yet for HDR.

The stakes are high with this one. HDR, which delivers a true spectacle of better blacks and whites, really looks better on almost any screen size. Unlike 4K UHD, which everyone knows has been a bit of a stretch in terms of a "true" HD upgrade, HDR will deliver something that retailers can truly sell, consumers will easily appreciate, and content creators will value and embrace. Look at a 4K UHD set and you'll see a great looking, regular TV. Look at an HDR monitor and you'll see something special. No doubt HDR will be the next magic bullet that will send consumers back to the store. For Hollywood, hopefully it will breathe a longer life into physical media (through discs and/or drives) and offer us a premium digital delivery alternative. But, in the process this will cost Hollywood studios and TV networks billions of dollars in infrastructure development and upgrades.

Granted many industry trade groups are working toward standardizing what is required of HDR, and what consumers should expect from the technology. The UHD Alliance, the International Telecommunication Union, the Advanced Television Systems Committee, and the Society of Motion Picture & Television Engineers are among those weighing in on HDR, and the standards that may be needed for it.

But while standards are being agreed on, there's a bevy of both non-proprietary and company-specific HDR technologies being introduced. Dolby, Philips and Technicolor have all debuted different HDR offerings. Samsung, Sony and Panasonic are among the TV manufacturers that have debuted unique versions of HDR. In short, the HDR gold rush has become very crowded and very diverse, very quickly.

Assuming, based on our industry's history, that there will be multiple formats at least in the early years of HDR then what does that mean for compression, authoring and QC? What about menus, titles, subtitles and extras? And, further upstream in the content creation process, what does this all mean to the director and his DP? Who will protect the original creative intent (OCI) of the movie's creator?

Of course, MESA members will help figure it all out. We always have and always will.

However, we need to work more tightly together to build a more integrated, flexible and enduring HDR production chain. Why waste time and the studios' money – once again?

And while we're at it – let's collectively flex a bit of muscle here. Without Hollywood's content and our technology there will be no HDR. This is going to cost money. And who's going to pay for it?

At first glance, the hardware manufacturers have all the upside here. Will they drive consumers to another "holy grail" entertainment experience without our aligning and defining the most effective systems to enable the efficient delivery of assets through the entire content distribution chain? Will the King fight yet another war without first having his castle and dominion in order? Or did Shakespeare say it best, through a morose and finishing Lear, "When we are born we cry that we are come to this great stage of fools."

Guy Finley is Executive Director of MESA and the 2nd Screen Society.



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Upcoming Events

Sept 12	Event: When: Produced by: Location: Website:	Content Access & Rights Management Forum September 12, 2015 MESA Europe & MESA US Park Hotel, Amsterdam www.mesaeurope.org
Sept 24	Event: When: Produced by: Location: Website:	THE Summit (Transforming Home Entertainment) September 24, 2015 DEG & MESA Luxe Sunset Hotel, Los Angeles www.thesummitla.com
Oct 8	Event: When: Location: Website:	HITS: Data, Marketing & Analytics Summit October 8, 2015 Hyatt Regency Century Plaza Hotel, Los Angeles www.hollywooditsociety.com/dmasummit2015
Nov 11	Event: When: Location: Website:	HITS: Broadcast IT Summit November 11, 2015 @CCW, Javits Center, NYC www.www.hollywooditsociety.com/nyc-2015
Dec 2	Event: When: Produced by: Location: Website:	Content Protection Summit December 2, 2015 CDSA and HITS (Co-located with Cloud Security Alliance SoCal Summit, December 3) Marina del Rey Marriott, Los Angeles www.contentprotectionsummit.com/2015

MESA's mission is to support entertainment service providers in building efficiencies in the creation, production and distribution of physical and digital media & entertainment.

www.MESAlliance.org

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MYTHBUSTER

Grasping the Business Opportunity in Piracy

Some consumers of non-genuine products may also be victims

By Richard Atkinson, Global Director, Piracy Conversion, Adobe Systems Inc. and Chairman, Content Delivery & Security Association (CDSA)



Abstract: Our customers are the victims of piracy. This is a controversial statement that runs contrary to years of claims that the "consumers" were the pirates, and the "owners of the IP" were the victims. While not true in every case, let me provide some perspective as to what is going on and how we can begin to look at things differently to turn piracy from loss and theft into a focus on unrealized demand and opportunity for business growth.

his perspective shift starts with recognizing that many customers are in the market for genuine products. They follow a path of acquisition where they believe the products they seek to acquire are genuine - but in fact, they may not be. I am not saying that all consumers of non-genuine products are well-intentioned victims, but what I am saying is that there are a lot of victims, and taking the position that most consumers of non-genuine software are pirates is not at all accurate.

To better understand this, let's take a look at who – based on research – is using non-genuine software. We break this non-genuine community into three groups:

■ **Pirate-Inclined:** These are the users that get all the blame. They are the pirates, they know they have non-genuine software, and they have little inclination and/or ability to pay for it.

■ **Opportunistic:** These are users (let's start to call them customers) that wanted genuine product, but at a discount. They know non-genuine software is out there and that they need to avoid deals that are "too good to be true," but generally believe that they effectively navigated these pirated waters of fakes and counterfeits and have acquired genuine software. Through this process, they may well have been victimized.

■ Legally-Inclined: These are customers that wanted genuine software, and mistakenly bought from a seller that they thought was legit. Unfortunately, they too have been victimized. (See Myth 2 below)

The fact that these three types of consumers exist is by now not a point of controversy, but what is often misunderstood is their distribution within a market. This is what makes some markets a better conversion opportunity (meaning that users are aligned with the concept of paying for software at a fair price) than other markets where a product might have very deep market share and user base, but it is incredibly difficult to get anyone to pay even a reasonable discounted price.

Turning again to research, the chart shows how these three demographics are represented within key markets of the world. This begins to provide some insights into the software industry's struggle to build both viable businesses and

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This chart shows the three types of consumers commonly found to be using non-genuine products, and their relative distribution in many countries of the world. Source: Microsoft and Adobe

also try to respond to piracy. It is a lot harder to convert piracy usage (let's call it victimization usage) into sales of genuine software in markets where the prevailing culture is not inclined to pay for software.

As a next step in our path toward understanding, let's focus on what I call the "Three Great Myths of Software Piracy," which are common misconceptions that consistently drive the wrong belief structures and corresponding behaviors from leaders in our businesses:

Myth 1: Pirate-users did not and will not pay

■ Myth 2: Well-intentioned customers can easily find their way to genuine products

■ Myth 3: Piracy goes away with the move to Cloud

Let's look at these myths in detail, to understand what's really going on and why.

Myth 1: "Pirate-users did not and will not pay" is a fallback to the old assumption that all non-genuine users are "Pirate-Inclined", where they have little inclination to pay. (I say "little" inclination, but not none, as even the community of pirate-inclined users is generally willing to pay something. As an example, past pirate-inclined users now make up a large portion of iTunes and other music streaming subscription services). The key is that the other two types of users did pay, but just paid someone else. The fact that they paid,

E

Richard Atkinson currently leads Adobe's global business strategies and response related to piracy. With 25+ years in C-level roles (CTO, CSO, CIO) for companies including Disney, Northrop Grumman, Electronic Arts, and Adobe, Atkinson is a passionate leader who builds world-class teams that are recognized for their innovation and success. He has also served as a White House and NSC briefer to multiple U.S. presidential administrations and top foreign leaders. yet the authentic business did not capture the sale, is more an indication of a failed business process than it is a user that is inclined not to pay. Again, let's focus where the problem is...not where the misconception wrongly places blame.

Myth 2: "Well-intentioned customers can easily find their way to genuine products" is a bit more complicated. This is because we, as general consumers, have a lot of trouble telling real from fake, especially online. Part of the issue comes from the mistaken belief that using online search engines and marketplaces can be trusted more than they should be. Counterfeit sellers commonly lurk right next to legitimate sellers, looking as legitimate as possible and often with prices that are discounted just 10 percent to 20 percent—enough that they get attention but not enough that they raise concern. The solution is not to have the consumer be trained to be more alert, as there are so few clues that the consumer has no chance of

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consistent success. Instead, the responsibility falls on our industry to remove the bad guys and keep them removed. For example, the top two pages of search results from major search engines – across both paid ads and organic results – will protect the vast majority of your well-intentioned and opportunistic customers from being victimized, and your business will in turn get the sale. Non-genuine consumers do pay; you just have to clear out the bad guys so that they pay you. This might seem like a daunting task, but the team here at Adobe has been doing this consistently now for the past 12 months. It's not hard; it just takes the right focus and approach.

Myth 3: "Piracy goes away with the move to Cloud" (or streaming, or any other shift in product delivery/architecture) is the future-looking myth. While it is true that many of these newer delivery or architectural approaches do reduce piracy (or at least shift it to an alternate form), that is not really the myth. The issue is a related twist: that it does not really matter what you are selling, but instead what matters most is what customers want. Said another way, even if you do shift to a new model and exit the "legacy" market in favor of your new model, if your customers do not shift with you and instead search for that legacy product, the counterfeiters will respond with it. In many cases, your customers will believe it is legitimate product.

So, there are a few lessons here. Shifting your business model or product before your customers are ready creates a gap that increases piracy and that will continue for as long as it takes for the bulk of your customer base to catch up. These counterfeit operations are multi-billion dollar multinational enterprises. In some cases, they are actually larger than the legitimate business entities that they fake. These counterfeiters are not going to easily be impacted by a shift to an alternate model...and will simply shift themselves. We have seen this in the movie industry where DVD piracy has shifted to online streaming piracy (in many cases looking legitimate) as the industry has made the same shifts. For us in the software business who are shifting to cloud and hosted/ entitlement/subscription models, we are already seeing shifts of the bad guys toward compromised accounts and other techniques that leverage the shift while skimming the money, victimizing customers in the process.

While it was easy in the past to blame our customers for winding up with non-genuine products, as I have demonstrated, that is not necessarily where the blame lies. Instead, we should be seeing them as consumers who are demonstrating demand for our products and might have been victimized in the process. They might have even paid others in good faith, thinking they were paying us for legitimate product.

As stewards of companies with brands that people trust and desire, it is up to us to protect them from the bad guys out there, and enable them to establish genuine relationships with our brands.



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INSIDERTHREAT

The Enemy You Know

Defenses against inside adversaries include prevention, deterrence and mitigation

By Ted Harrington, Executive Partner, Independent Security Evaluators



Abstract: Many organizations in the industry are already cognizant of the fact that there are security threats originating from the inside, beginning with their own trusted employees and partners. However, many organizations do not necessarily differentiate between the various types of internal adversaries, and may also be unaware that a uniform defense posture is not effective, as different defense strategies are required to thwart each type of adversary. In this article, we will analyze the different types of internal threat actors, and discuss how each is defended against. We will consider both technology and psychology solutions.

ny discussion of security strategies would be incomplete without an understanding of how those strategies relate to an organization's threat model. Each company must define its threat model, which effectively articulates assets, adversaries and architecture. When considering assets, the organization must understand not only which assets are worth protecting, but must also quantify those assets in terms of both the downside to the company and the potential upside to the adversary in the event of asset compromise. It is important to note that those two metrics are not necessarily the same. Once an organization understands the value of its assets, they can then clearly understand who the adversaries are that would be interested in attacking in order to compromise the assets. Once assets and adversaries are understood, the organization is then best able to articulate the defense architecture that is most effective.

Adversaries

In order to fully understand internal adversaries, we must first consider external adversaries. In the context of the media & entertainment industry, there are four primary categories of external adversaries:

■ Casual hackers are motivated by notoriety; they steal content so they can brag about it and obtain credibility from their peers.

Hacktivists, including groups such as Anonymous, attack content owners in order to make political statements.

 Organized crime makes business decisions, and steals content in order to make money.
Nation states attack to pursue geopolitical and economic interests.

As we analyze the difference between external adversaries and internal adversaries, it is important to remember that these terms are not opposite in this context; rather the difference between external and internal lies in conditions of trust and access. Internal adversaries could be extensions of the external adversaries discussed above, but they have additional trust and access typically granted to employees and other insiders. Internal adversaries are broken into three different types of actors: accidental, opportunistic, and determined. The defenses against these, by way of technology and psychology solutions, break down into prevention, deterrence, or mitigation.

Accidental Insider

The accidental insider harms the company not with malicious intent, but simply as a result of poor decision making. Fundamentally, people are an organization's weakest link. People create weak passwords and reuse them across different services; people lack discretion when clicking links in emails or inserting random thumb drives; and people are notoriously susceptible to social engineering attacks. All of these conditions lead to otherwise trusted employees unwittingly turning into the accidental insider.

Organizations best defend against the accidental insider through prevention, whereby the organization mitigates damage in the event that the trusted insider unwittingly

INSIDERTHREAT

compromises assets. Encryption and multifactor authentication are a few good examples of technology solutions that are effective in minimizing the damage done by the accidental insider. Training is an effective psychology solution against this type of adversary.

Opportunistic insider

The primary defining characteristic of the opportunistic insider is that he or she will compromise an asset when there is no repercussion for doing so. The opportunistic insider may not initially set out to harm the company, but over the course of performing his job duties might be granted access to a valuable asset, from which he may benefit by compromising the asset, perhaps by achieving financial gain by selling it or by obtaining notoriety for being the first person to leak it. Without a disincentive in place, this employee may choose to pursue these gains.

Organizations can best defend against the opportunistic insider through deterrence, because if this type of adversary thinks he will be caught, he is far less likely to compromise the asset. Logging, monitoring, and digital rights management are a few examples of technology solutions that are effective against this type of adversary, because such tools create a trail that leads back to the adversary. The most effective psychology solution against this type of adversary is awareness. It is important to make the distinction between training and awareness: while training seeks to educate employees about their individual actions, awareness seeks to galvanize the group of employees to protect assets together. If the opportunistic adversary thinks she is being observed by her colleagues, she is less likely to compromise assets.

A great example of this comes from psychologist Thomas Moriarty through his experiment colloquially referred to as "the Beach Blanket experiment." In this landmark study of group dynamics, Moriarty researched how bystander involvement affects theft deterrence. Researchers found that when bystanders were asked to be involved in the protection of an asset, the instances in which they took action skyrocketed. This premise readily applies to the concept of awareness, whereby teaching employees about how and why to be observant of their workplace, coworkers and assets will reduce the instances of attacks by the opportunistic insider.

Determined insider

The determined insider is the most dangerous category of internal adversary, because the



Separation of Privileges

When done properly, privilege separation sets us a large number of weak roles and can mitigate the opportunity afforded a determined insider.

determined insider is motivated to harm the company. There are two notable subgroups within this adversary category: disgruntled insider and malicious insider. The disgruntled insider has become dissatisfied with the company for reasons such as being passed over for a promotion or by becoming disillusioned with the corporate mission. The malicious insider is an agent for one of the external threats previously mentioned. What makes the determined insider especially dangerous is that because he is motivated by malice, the aforementioned technology and psychology solutions against the other internal adversaries are ineffective. For instance, the disgruntled insider knows what he is doing will harm the company but proceeds anyway. Training, and even awareness, will not necessarily stop him.

Mitigation is the best defense against the determined insider, whereby the organization assumes the posture that the adversary has already compromised an asset, and makes it difficult for the adversary to compromise additional assets. One effective solution against this type of adversary is separation of privileges. Through privilege separation, an organization reduces any particular user's privilege to the absolute minimum that still enables him to be successful at his job. When done properly, privilege separation sets up employee roles like a chessboard: a large number of weak user roles (pawns), a small number of semi-powerful management roles (rooks) and a very limited number of all-powerful admin roles (queen). By limiting the power of most roles, this decreases the likelihood that the determined insider adversary would be powerful.

The internal threat is a real adversary who can do significant damage to most organizations. By understanding the distinctions between the different types of internal adversaries, organizations can design and implement an effective suite of defenses to counter each type of foe. ■



Ted Harrington drives thought leadership initiatives for Independent Security Evaluators, the elite organization of security researchers and consultants most commonly recognized for being the first company to hack the iPhone. He was recently named one of "40 Under 40" by SD Metro Magazine, where he was one of the youngest members of the class and the only honoree from the field of information security.

THWARTINGTHEFT

Early Security as Insurance Policy

Report shows that pre-release piracy costs 19 percent more than post-release theft

By Mathew Gilliat-Smith, CEO, Fortium Technologies



Abstract: Given statistics that show 10 percent of all movies may be subject to pre-release piracy, pre-release security should be thought of as a form of insurance, a concept so well established in all of our business processes. But that is not always the case. was inspired to contribute to this season's M&E Journal after reading the excellent "An Empirical Analysis of the Impact of Pre-Release Movie Piracy on Box-Office Revenue" produced by Carnegie Mellon University in July, 2014. It claims to be the first empirical research into the area of pre-release piracy, measuring the financial effect on those movies released suffering prerelease piracy against those without. The take away is that, on average, pre-release piracy causes a 19.1 percent decrease in revenue compared to piracy that occurs post-release. The report estimates that pre-release piracy occurs on about 10 percent of all movies.

At Fortium we have specialized in prerelease security solutions for the film and TV industry over the last ten years. So, from our perspective, it's interesting to attempt to analyze the psychology behind the industry's approach to spending (or not) on security in the specific area of pre-release.

Traditionally, the pre-release sector has not been a target for the large security companies because it is a very low volume business and content producers put only limited budgets toward pre-release security. That may be because during post production and during the creation of marketing materials to promote the movie release, the number of files or discs produced, and therefore their potential to leak, is small.

Until the Carnegie Mellon report, there has been very little published analytical in-



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THWARTINGTHEFT

The most important objective is to prevent a high quality leak because that content will last a long time on the Internet and satisfy most of the audience that views it. (A poor quality leak is more likely to deter those who are prepared to wait and pay for the full quality movie.)

formation about the financial impacts on prerelease piracy. As a result, it admittedly can be difficult to measure the financial impact of piracy across different movies, since piracy is only one of many factors—including critical review, general popularity, director appeal, star rating, genre and so on—that influence box office revenue.

Inside security psychology

We would argue, however, that pre-release security should be thought of as a form of insurance, a concept so well established in all of our business processes. It would be unthinkable to run a company without insurance even though we hardly ever claim on the policy – it's just one of those items you budget for because one day it will save your skin.

There is no magic wand to solve the piracy problem and there are new threats arriving all of the time. Particularly noticeable in the last year, even for those outside of the industry, were the high profile leaks of big name movies, some of which happened before the movies showed in the cinema. Add on to that the increased incidence of cyber-attacks and security breaches generally, and everyone seems to be on heightened alert.

Fortunately, there are good solutions for certain workflows or the piracy problem would be a lot worse. The most important objective is to prevent a high quality leak because that content will last a long time on the Internet and satisfy most of the audience that views it. (A poor quality leak is more likely to deter those who are prepared to wait and pay for the full quality movie.)

Let's look at how return on investment for spending on security is rationalized. According to the Carnegie Mellon report, across a sample of 533 movies, about 10 percent suffered pre-release piracy. The mean box office revenue across this selection was U.S. \$53 million and those movies were shown to have lost 19.1 percent more revenue than movies with post release piracy - a considerable dollar value wiped off the profit line. So, if the losses are that identifiable, how closely aligned is the thinking between the studio CFO who is focused on year-end profits and the post supervisors who are focused on their ever tighter production budgets? Any extra expenditure is not welcome but is that just an attitude of mind? What about the holistic view?

Recently Marsh & McLennan, one of the world's largest insurance brokers, stated that the majority of large firms lacked insurance that could help them recover from a serious cyber-attack even though most had suffered security breaches in the last 12 months. A separate security survey released in 2014 suggests that the average cost for the most serious security breach that large U.K. firms face every year to clean up and remedy is \$1 million to \$1.8 million. For small firms costs are around \$100,000.

In the case of insider incidents

One observation in the 2013 "Global Encryption Trends Study" by Thales e-Security discussing the general market is that "employee mishap is considered the main threat to sensitive and confidential data". It goes on to say, "Concerns over accidental data leakage outweigh fears about attacks by malicious insiders or hackers by almost a factor of two. " It is common to hear that, when a pre-release leak has been forensically detected, no action will be taken against the culprit because it was wasn't intentionally leaked by them.

In busy post production and marketing environments you can't put extra hurdles in the way of doing the job and there must be a certain bond of trust for the teams that work so hard on these productions. Does it sound logical that someone being paid to work on a digital asset, i.e. an authorized recipient, would be motivated to leak something that could later be attributed to them? More logical perhaps is that someone else who is not authorized to view the content but 'happened' to come across it is the more likely one to leak it.

Prevention is better than cure, which is why encryption is more and more widely used, and it means you are going a long way to putting assets out of harm's way. Better still is encryption at-rest, which means the encryption stays with the digital asset while it is being worked on.

Assuming it was practical, applying encryption across the board on all content would perhaps be similar to taking out an insurance policy that covers the typical causes of loss, provided however that those premiums were reasonably priced.

Voila, the psychology has changed.



Mathew Gilliat-Smith co-founded Fortium in 1999 and has been responsible for establishing it as a respected provider of anti-piracy software solutions to blue chip film and entertainment businesses. He works closely with studio content security teams to develop customized solutions that secure disc and file based content during post production and after release. Before joining Fortium Mathew held senior management positions in leading publishing, print, logistics and new media companies including Haymarket Publishing and St Ives.

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MIS

SCREENSCENE

The New Rules and Realities of a Multi-Screen and Multi-Focus TV World

A real opportunity exists in inviting viewers to participate inside the show By Gavin Douglas, CEO, iPowow



Abstract: When are two screens not two screens? While not meant to be a trick question, the answer may surprise many: When they're all part of one TV viewing experience. Television executives are embracing the notion that the application of multiple screens can truly create one enhanced TV-viewing experience. Rapidly disappearing is the horrific myth that the target millennial audience is too distracted by social media and otherwise disengaged from what's happening on that big TV screen in front of them. he reality is that a growing number of savvy programmers, producers and sponsors are no longer having any concerns about multiple screen competition. Instead, an increasing number of companies recognize that the experience Web-enabled mobile devices create are "second" to nothing. Anyone looking to engage audiences, and keep them tuned in longer, can offer a two-way bridge between the program show and the viewers—one where the audience interacts with and, often influences, what's on the air.

At iPowow, we believe that the fundamental principles of firmly engaging viewers in a multi-screen, multi-focus TV world can be applied to nearly any TV program.

So while earlier ideas about the so-called "second screen" experience had viewers posting comments to social media sites or searching for information related to the show on various websites, we quickly came to realize that the real opportunity was in taking the audience inside the show, giving them a chance to participate actively in what they're watching. The closer you can bring viewers 'into' what's on

SCREENSCENE

The closer you can bring viewers 'into' what's on their screen, the closer you are to making television viewing a truly participatory activity. This creates a consistently greater affinity with what they're watching and, consequently, they watch a program longer.

their screen, the closer you are to making television viewing a truly participatory activity. This creates a consistently greater affinity with what they're watching and, consequently, they watch a program longer.

But first, you need to have a two way mechanism and process in place that connects the show and the viewer with one another. Consider the following genre approaches:

■ Live Sports: Did the refs make the right call? Was the runner safe at home? Who will win the Stanley Cup/World Series/NBA Championship/Super Bowl? Sports fans are passionate about all of this, and are eager to be heard, which they can do by pushing just one button on our app. And since we're talking about competitions here, it makes sense to add a gamification element; trivia challenges, knowledge quizzes or games testing predicting power can all feature prizes and recognition. People are thrilled to see their names onscreen on a leaderboard and this is a perfect opportunity to engage sponsors too.

■ Competition Reality Shows: Viewers can do more than throw shoes at their TV when the judges make the wrong call; they can let the judges know exactly how they feel. This participation lets them play games, enter contests, possibly win prizes, and enjoy exclusive and original content, underwritten by sponsors. It's true engagement for them.

Morning News and Talk: These programs are full of consumer information, celebrity appearances and topical conversation. All are ripe for immediate, spontaneous feedback from the audience. Just by clicking on a thumbs-up or thumbs-down on their mobile device, they can weigh in on the subjects being discussed, and become part of the program. Engaged viewers are loyal viewers.

■ Live News: Public officials, news directors, involved citizens all are curious about what people who watch the news really think. To answer that question, we've had instant polls embedded in local newscasts that drive viewer participation around newscast topics seamlessly. A quick "yes" or "no" answer from thousands effectively informs the broadcast and can even influence public policy.

■ Scripted Dramas and Comedies: Viewers can play games built around the program, participate in polls and quizzes and in other ways more fully engage with what they're watching. People have strong opinions about characters, story arcs and plot twists, and when given an option to weigh in on them, they will express their opinions enthusiastically and ideally during commercial breaks. On-air advertisers can sponsor the content on the mobile device as well, so they get more than their money's worth. This even works for reruns and classic shows, since the element of active engagement and participation can make even old programs feel fresh.

We're not talking here about what some call "social TV," which typically means having viewers write social media posts about something they've just seen. That kind of interaction involves conversations around the



Gavin Douglas is a multi-award winning media producer and TV format developer with 17 years of experience in both content production and new format development. He wrote, produced, directed or edited more than 30 television series in 10 countries, and worked on multi-platform projects that link linear media with future media and technology.

programming, conversations that take viewers away from the show, and once they're gone, they almost never come back. What we refer to as Participation TV instead brings the viewer into the show, where with just a few clicks their voice can be heard, their opinions can be registered, their focus on the show can be preserved.

Participation in storytelling

This effort to encourage engagement is important because viewers really care about where the story is going on their favorite shows. They want to go on a journey with those programs. Whether they're watching "Sports Center," "Project Runway" or "Good Morning America"; they want to be a part of that narrative. Engaging viewers in these types of stories is not only possible, but successful.

The engagement platform should be looked at as a storytelling tool; segments are like a short story, with a beginning, middle and end, and the jeopardy is that nobody knows what the viewers are going to decide next. At a live event, even the producers in the booth don't know what the audience will say, any more than they know who will win the game/race/contest. Those fundamental storytelling techniques work, because if you make viewers feel they're impacting the show, they'll remain engaged.

Face it, the audience has spoken, and what they're saying is that, in ways not even conceived just a decade ago, they want to be part of the programming they're watching. Viewers now are ready to lean in and be engaged. How many shows does it take to meet that desire? The answer is as many as can make TV a truly engaging, participatory experience. And that's no joke. ■

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TOPDOWNDATA

The New Data Paradigm of Taking Your Business Over the Top

New metrics demonstrate how accurately social media conversations reflect viewer sentiment

By Robert Moss, Ph.D., Partner Technology Platforms, and Tim Padilla, Senior Manager Media & Entertainment, Optimity Advisors



Abstract: When broadcast media companies go "over-the-top" (OTT), they transform their sales model from a business-to-business to a direct-to-consumer model where the viewers, not media buyers are the customers. While this transformation is an important part of today's sales strategy, it creates a new set of realities that transforms the type and volume of accessible data. All of these changes add up to one thing: media companies need to adopt advanced data management strategies when taking their organization OTT.

s traditional content creators like CBS and NBC go over-the-top, they are taking a big risk of biting the hand that feeds them. While traditional distribution channels have been an effective solution for years, these companies are making the transition in part because they believe it is crucial that they tap into the analytic value that OTT's Big Data can provide.

OTT: Why big data matters

In the old world, broadcasters had minimal insight into the viewing behavior of individual customers, and there was no way to tailor personal viewing experiences. However, with the transition to OTT, media companies now have access to an explosion of user data. For example, former HBO CIO Michael Gabriel told IDG Enterprise that with the launch of HBO Go and other direct-toconsumer initiatives, the amount of usage data increased a thousand-fold, growing from 2,500 rows a day to 2.5 million.

Similarly, one of Optimity's media clients found that as it transitioned to a new online delivery platform, its hosting vendor was generating clickstream data of 10 billion rows per year.

With effective strategy and execution, OTT broadcasters can mine these huge volumes of viewing data and use it to inform every part of the business—the development and purchasing of content, the delivery of that content and the marketing of it.

Content development

Big Data promises to revolutionize a media company's ability to understand and shape the content it develops and licenses. With the move to OTT platforms, broadcasters suddenly have access to a wealth of detailed interactive data, which opens the door to a range of analytic approaches that were not possible before:

"All the Data": By analyzing aggregate data that comes from all of their consumers instead of a small sample, broadcasters get a complete view of the likes and dislikes of entire demographic segments.

■ Correlation Analysis: With a sufficient body of data and the proper analytic techniques, companies can identify the characteristics in a particular show or type of content that



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correlates with sales and viewer engagement.

External Enrichment: With external sources like social media and Open Data, broadcast companies can access powerful new bodies of real-time viewer data.

These approaches enable previously unattainable views into channel analysis, detailed profiles of individual user preferences and the ability to mine the data to uncover meaningful insights. For example, Netflix CEO Reed Hastings is banking on the idea that the company's access to online viewer data will allow it to become the next HBO-style content creator.

Content delivery

OTT flips the notion of linear channels on its head; in an online, on-demand model, viewers determine their own paths through a vast network of available choices. Recommendation engines can leverage user behavior data to create tailored suggestions that ensure the viewer stays engaged and comes back for more. These same viewer profiles can be used to personalize the viewing experience—including the all-important ad placement and delivery optimization.

Marketing and advertising

In the digital economy, every tweet and post is a potential lead generator, and it becomes possible to directly tie individual clicks and the sales they generate back to the marketing campaign that initiated them. Analytics can reveal the optimal days and times for each type of message and the optimal frequency and number of touches to maximize click-throughs.

In an OTT world, data is an integral part of advertising. Cable providers like Time Warner have already started making inroads into cross-platform data analytics, merging information from cable set-top-boxes (STB) with data from online solutions, video-on-demand and interactive television. This analysis allows them to identify the best networks to use to reach their target audiences so they can better place their own ads for on-demand content as well as optimize rate cards for their advertisers. But this sort of analysis is only a drop in the bucket compared to the data that online streaming platforms offer to OTT content distributors. A typical cable STB generates between 50 and 100 raw events per day, but the apps on Netflix's streaming platform collectively emit more than 1.5 million events per second during peak hours. Locked away in the tens of billions of events generated per day is an immense potential for understanding the finest nuances of viewer behavior.

Getting started with Big Data can be a daunting task. However, there are a few rules of thumb that can get you off on the right foot.

Think big, start small

As with any technology initiative, media companies diving into Big Data for the first time face the risk that, in trying to do too much, they end up doing nothing at all. Instead of trying to create the ultimate analytic playground, consider one or two focused, clearly defined initiatives that will get your teams up to speed with new technologies and approaches, and will allow them to create something useful in a matter of weeks.

Start with problems, then apply technology

Too often, we want to start by selecting the most powerful or most innovative technology and then try to figure out what we might do with it. A better approach is to start with the problems you need to solve and then select the tool best suited to solving them.

Data is precious

Even if you are starting small, the harvesting and retention of as much data as possible is key, even if you don't yet know exactly how you are going to use it. Part of the beauty of Big Data technologies like Hadoop and document-oriented databases is that you don't necessarily need to understand the full structure of the data to be able to store it. So, take advantage of that power and be data greedy now: it will pay off down the road.



Robert Moss leads the Technology Platforms practice at Optimity Advisors. He helps organizations understand and adapt to the new technologies that are disrupting traditional business models. Tim Padilla leads the Media & Entertainment practice at Optimity Advisors. He helps clients with strategy through implementation of wide-ranging technology, data and organizational initiatives

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Use your existing structures

Existing data sets such as IP records, master data and descriptive metadata can be the keys to understanding the vast amounts of data being collected and stored. Master data management (MDM) initiatives are in their second and third generations and the ability to use this structure to "connect the dots" between your Big Data and hidden insights should not be ignored.

Keep privacy and security in the foreground

As media companies gather detailed consumer data, the prospect increases that there will be a legislative push to implement stricter privacy regulations, especially as they relate to marketing activity and global presence. As the amount of data collected and the sources from which it is collected grow, it becomes all the more important to monitor and control who has access to that information and how it is being used. Enterprise-strength security must be baked into each and every initiative to protect companies from the risk of regulation changes and data security breaches.

The road ahead

Most media companies are just getting started on their journey into the new world of OTT programming. The key thing to remember is this: we're still in the very early stages, and no one really knows how all that data will end up being used in the long term. At this stage there is no one single proven approach or set of technologies for tapping into the value of this data, but all the companies getting in the OTT game are now working to figure it out, and those that do stand to have a considerable competitive advantage over their less datadriven peers.

It is, in short, a very different world today for media companies, and the ability to manage data is not just a technology problem. As media companies go OTT and transform themselves into data-driven enterprises, the use of Big Data is no longer a supporting function but rather a mission-critical component of their overall operations and must be supported as a core competency. You can't run a 21st century broadcast media business that isn't founded on data. For many media companies, that's the entire reason they are going over-the-top in the first place. ■

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Ad-ID Why Everyone Needs To Use Ad-ID

Universal Ad-ID Adoption Will Drive Digital and Measurement Innovation

Ad-ID Background

What is Ad-ID?

Ad-ID is the industry standard for identifying advertising assets (broadcast, print, and digital) across all media platforms.

How Does It Work?

The Ad-ID system generates a unique identifying code for individual advertising assets across all media. Ad-ID ensures each asset is uniquely identified, improving the workflow between agency, advertiser, distributor, and medium.

Who Is Using Ad-ID?

SAG-AFTRA requires Ad-ID for all broadcast advertising assets that feature union talent, and more than 2,000 advertisers are currently using the system. Additionally, more than a dozen major trade organizations representing the broadcast, advertising, and market research industries have endorsed Ad-ID as the universal coding system for advertising assets across all media. Ad-ID is also integrated with a growing list of more than 15 industry vendors.

Foundation for Digital and Measurement Innovation

How Does Ad-ID Help Drive Digital Innovation?

To leverage digital and scale across all screens, the industry needs greater transparency and standardization. The industry has to be able to efficiently identify, manage, and track creative assets. In today's landscape, digital video asset data, coding, and distribution are extremely fragmented, with no standards or processes in place. Ad-ID simplifies workflow and makes it easier for media and advertisers to measure performance, especially cross-platform performance.

What Are File-Based Workflows? Why Should I Care?

A file-based workflow is the process of moving digital files through the supply chain by integrating different business systems to automate the process as much as possible. The asset files in this type of workflow contain all the required components: the audio/video content, format (HD, SD, 3D), aspect ratio, closed captions, and other descriptive information such as the ad slate. As file-based workflows proliferate across the media landscape, they enable a tremendous new level of accuracy, efficiency, and cost savings.

Why Is Ad-ID Important for Audience Measurement?

Unique asset identification improves speed and accuracy of audience measurement. Additionally, a recent Coalition for Innovation in Media Measurement (CIMM) study stated that widespread adoption of Ad-ID will enable increased speed, transparency, and accountability in media measurement. All these together lead to more efficient markets and higher overall marketing spend, driving agency, media, and vendor revenue.

The Value of Universal Adoption

- Asset identification must be universally recognized and used for the industry to see the full benefits.
- ISCI No Longer Exists. ISCI is a non-standard system and requires media, measurement, and other advertising companies to develop costly workaround practices. It is not encouraged by the major networks, any workflow groups, the ANA, or 4A's. If you are using what you consider "ISCI codes," you are not working efficiently.
- *Home-Grown IDs Are Bad For the Industry.* These kind of IDs do not account for what happens when the ad leaves the advertiser's domain. It causes confusion among the rest of the advertising community and leads to wasted time and money. When everyone has their own methods to track, execute, and measure, it takes everyone involved increased time and effort to move things forward.

Industry Benefits

- *Guarantees Unique Codes:* This foundation is vital for the digital era and needed by the entire advertising ecosystem, including advertisers, agencies, vendors, and media.
- *Improves Reporting Accuracy:* The Ad-ID system allows for enhanced evaluation of advertising assets.
- *Removes Rekeying and Duplication of Efforts:* Without Ad-ID, an asset's identifying information is rekeyed up to 20 times from when an advertiser gives approval to create an ad to the time the ad is actually published and invoiced. This is currently a huge duplication of effort, resulting in human error and increased costs.
- Streamlines Workflow via Integration with Vendors: When advertising systems work together, the whole industry benefits. Ad-ID is integrated with a growing list of industry vendors driving advertising interoperability and simplifying processes throughout the industry.

For more information, contact Harold Geller, Ad-ID's Chief Growth Officer, at <u>hgeller@ad-id.org</u>, or you can reach Ad-ID's customer service team at <u>cs@ad-id.org</u>.

Powerful new workflows are being implemented in every corner of the M&E business. Many are anchored in the cloud. Their purpose: to streamline production and distribution processes; secure content throughout its lifecycle; reduce costs; increase agility; and develop more sophisticated connections between consumers and their content...

WORKFLOWS

"Media companies are now using cloud solutions for the entire media workflow, from contribution through distribution, for live and on-demand content. Looking forward, the cloud will enable new paradigms in media production and distribution that will increase efficiency and agility, provide more choice, and lead to collapsing cost structures." —Amazon Web Services, Page 29

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INSIDE



Content Gravity Pulling Media Workloads into the Cloud

The cloud can provide 4K production and distribution with more efficiency and choice, at less cost

By Mark W. Ramberg, Head of Media & Entertainment, Amazon Web Services

Abstract: The M&E industry is at an inflection point with regards to digital content creation and distribution. The move to create and broadcast more 4K content is increasing overall data volumes and file sizes by as much as 10 times when compared to today's 1080p High Definition. Because of these large data volumes and file sizes the industry is grappling with exponentially increasing infrastructure requirements in the face of shifting market dynamics that are driving media companies to increase agility and drive down operating cost.

edia industry companies have traditionally used on-premises infrastructure due to two primary factors: performance requirements and requirements around compliance with industry imposed security controls. However, the industry as a whole is no longer able to keep up with the ever-increasing infrastructure requirements, nor does it want to—companies would prefer to focus on their core competencies of content production and distribution.

To date, cloud-based solutions have primarily been leveraged for media distribution scenarios, but due to a number of enabling factors, media companies are now using cloud solutions for the entire media workflow, from contribution through distribution, for live and on-demand content. Looking forward, the cloud will enable new paradigms in media production and distribution that will increase efficiency and agility, provide more choice, and lead to collapsing cost structures.

Why the cloud?

Industry factors contributing to the exponential growth in IT requirements include: complexity of rendering visual content, managing the vast number of assets that comprise a production, increasing size of content (SD, HD, 3D, 4K, 8K, etc.), complexity associated with proliferation of distribution devices and fragmentation of formats, and complexity associated with new consumer experiences (second screen, content discovery, etc.).

Storage vs. Compute vs. Network

Cloud-based solutions can help address these issues by providing a global, scalable, elastic infrastructure platform that is available in minutes not months, with a better security profile than media companies may be able to provide internally, and pay-as-you-go pricing that lets companies shift capital expenditures to operating expenses. Furthermore, media company executives are unable to ignore the rapidly dropping costs of the cloud due to the economies of scale that cloud providers can achieve.

The cloud enables media companies to spend more time growing and less time worrying about the logistics of growth. Business decisions are no longer constrained by physical infrastructure availability. Traditionally, media companies would plan release schedules based on solving business problems in a linear or serial manner dependent upon the time that it would take to process the content with the available hardware they had in their data centers. With a scalable cloud infrastructure you can make a business decision to provision the right amount of capacity for your current infrastructure needs, and scale that up or down as needed, enabling you to solve business problems in scalable, non-linear ways.

What about security?

The Motion Picture Association of America (MPAA) Best Practices for Content Security have been established to provide specific recommendations for security of media content. These requirements typically dictate that a third party audit is performed on the content infrastructure to ensure compliance with those security controls prior to storing, processing, or distributing any premium content on that infrastructure. There are often additional security controls imposed by specific content owners that go above and beyond the MPAA controls.

Security is a top priority for Amazon Web Services (AWS). The AWS infrastructure has been designed and managed in alignment with international regulations, standards, and best-practices including ISO 27001, PCI, and SOC, as well as industry specific security con-



Processor performance and magnetic disk density are increasing faster than networking connection speeds. As files get bigger, they may run into networking limitations. Source: Amazon Web Services

trols such as FISMA, HIPAA, and MPAA.

Beyond certifications and alignment with security control sets, AWS provides services that customers can use to secure content and applications. This includes content encryption during transfer and at rest in storage, an Identity and Access Management (IAM) service which allows companies to define security access for individuals or groups, while at the same time managing access to specific resources as well as services such as CloudTrail that let companies log and review user activity at the API level. This allows enterprises to run comprehensive security analysis, and better manage their governance and compliance efforts.

Paradigm shift: Content gravity leads to access

You may be familiar with Moore's Law, which states that processor performance will double every 18 months. That law has held true for decades. There are similar laws for storage and networking. For storage, Kryder's Law says magnetic disk density is increasing significantly faster than processor speed. For the sake of this illustration, let's just say that it is doubling every 12 months. Similarly for network connection speeds, Nielsen's Law states that connectivity will increase 50 percent per year, or double every 21 months. The graph shows the relationship between these trends over time.

It's pretty easy to extrapolate this over time and see that network connectivity is likely to be the gating factor. As files get bigger they may run into networking limitations. This will be true for source assets in film production and broadcast source feeds, as well as for distribution scenarios.

Consequently, you need to look at what you have to do with the content. The goal should be to minimize the movement of the content by placing it into a service that is surrounded by all the technology needed to transform the content into a monetizable asset. So, rather than the traditional model of transferring large content files through each stage in media production and distribution workflows, instead store the content in cloud



Mark Ramberg focuses on enabling the media industry to leverage the power of the AWS cloud for content creation, storage, processing, and distribution. He is a long-time veteran of the software industry, having held various technical, business, and leadership roles at companies ranging from startups to the Fortune 100. Throughout his career he has demonstrated a passion for digital media technologies and has been influential in the media industry.

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Use of the cloud may have been a competitive advantage initially, but the impending arrival of 4K content means that it is fast becoming a core competency for media companies in order to remain competitive.

storage and bring each stage of the processing to the platform where the content lives. This is the concept of content gravity. It is similar to the concept of data locality, which states that you should have your data near the processing resources, but in the media industry the data is SO large that it tends to have a gravity to it.

To that end, as media industry companies look to the cloud as a solution to their infrastructure needs, one of the key determining factors revolves around storage considerations – large content libraries are often slow and expensive to move, potentially taking months to transfer into cloud-based storage. From there you need scalable, tiered storage for current catalog, back catalog, and archive. You need ways to manage across those tiers to promote and demote content in order to take advantage of monetization opportunities. Because of this, selection of a cloud storage provider will likely be one of the first and biggest cloud infrastructure decisions media companies will make, since content libraries will likely stay in that initial storage provider's infrastructure for decades.

How are media companies leveraging the cloud?

With that perspective in mind, the sweet spot for utilizing cloud infrastructure has been in B2C video distribution at scale. If we explore media distribution workloads that utilize cloud-based processing at scale, the primary compute task is transcoding of video into the myriad distribution formats in order to reach consumer devices such as set-top boxes, PCs, tablets, phones, connected TVs, and so on. Once content is transcoded and packaged, it is often distributed via a global content delivery network. Examples of this are Netflix, Amazon Instant Video, and Vessel, all of which utilize Amazon Web Services.

However, companies are looking for ways to further utilize the cloud for media aspects further upstream in the media production workflow (broadcast operations, content creation, post production, etc.). As we move up the media workflow to content production scenarios, the primary use of the cloud has been rendering farms where visual effects and entire scenes are generated. However, content production companies are looking for ways to further leverage the cloud for the entire production workflow, but many of these scenarios have infrastructure requirements related to specific hardware needs and/or performance characteristics that can be difficult to meet. For example, editing and post production of 4K video can require extremely high-speed storage and low latency network connectivity-upwards of 1Gbps for uncompressed 4K source and ~300Mbps for lossless compressed editing formats. Broadcast scenarios may require signal acquisition from satellite or component connectivity via SDI. The question comes down to how to bridge these physical world requirements with the virtual world of the cloud.

Increased availability of high speed fiber connectivity has begun to enable these scenarios. For example, companies such as All Mobile Video are now providing signal acquisition (satellite, private fiber rings, etc.) as a service and directly connecting via high speed fiber into cloud service providers. This allows content to be pushed over dedicated fiber into cloud platforms for processing at scale and global distribution, and enables media companies to get out of the capital intensive business of buying and maintaining expensive satellite dish hardware, IRDs, and monitoring equipment.

Additionally, application virtualization technologies are enabling content production scenarios to be more secure and more agile. Traditionally, content creation and manipulation applications such as video editing or 3D modelling require very high-end expensive desktop machines with powerful processors, lots of memory, and GPUs. Application virtualization technologies enable these applications to be run in the cloud, but the end user experience and UI are streamed to client devices. By running the applications in the cloud and streaming the UI you can get the rich thickclient experience on any device that's capable of rendering the UI stream, which is typically about the same bandwidth as watching a normal streaming video, meaning that you can use laptops and tablets to run those highend application experiences. Another benefit of this model is that it keeps all of the source content centrally stored so security and access is much more tightly and centrally controlled. And finally, this model also makes it very easy to spin up contract workers since they can use just about any device to work on the content vs. having to have a high-end machine provisioned and set up for them.

As media companies evaluate use of the cloud, having a rich ecosystem of solutions available on the cloud platform is a critical consideration. Whether it is point solutions such as transcoding, asset management, or DRM, or integrated end-to-end video production and distribution workflows, companies expect the trusted solutions that they've used for years, but want those solutions to leverage the power and scale of cloud-based platforms.

A developing industry trend has media companies shifting from wanting (or needing) to understand and control all levels of the technology stack to instead looking more for managed solutions. As the complexity of the scenarios and technologies to address those scenarios continues to increase, it is often no longer tenable for media companies to build and maintain IT infrastructures and applications themselves.

What does the future hold?

The size or gravity of 4K content will continue to drive new paradigms in content production and distribution. Media companies need to find ways to tame complexity, increase agility and drive costs down. Use of the cloud may have been a competitive advantage initially, but the impending arrival of 4K content means that it is fast becoming a core competency for media companies in order to remain competitive, enabling them to spend more time growing and less time worrying about the logistics of growth. ■

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Melding Digital Asset Management

Hybrid on-premise and cloud platforms allow for flexibility, security By David S. Miller, Chief Operating Officer, Empress Media Asset Management, LLC

Abstract: Digital assets are the most valuable properties a modern organization owns, so their management is essential. Economies of scale, flexibility, and accessibility push organizations to consider cloud-based solutions, but limitations restrict the feasibility of this approach. Hybrid platforms using both on-premise and cloud systems may be the most prudent approach to meet current needs while allowing organizations to rapidly capitalize on future improvements in cloud offerings.

apes migrated to hard drives and solid state media, paper gave way to electronic media, and files shifted from closet shelves to centralized storage. Today, information floods in, and moves at blinding speeds. Unfiltered and unorganized, it is as good as wasted. What good is all the content in the world if you cannot find it?

Challenges of the digital world

1. Content is king

RKFI ON

Digital assets are a key value of any organization in the information age. The ability to maximize the value of digital assets is a key challenge for modern organizations. Internal operational processes and best practices including training, compliance, and business intelligence are encoded in documents, diagrams, and videos. As the era of long term employees has gone, progress can only be made by preserving each employee's contributions to the organization. Each organization must further express its mission, brand, and value proposition to potential investors or stakeholders and to its customers. Digital assets are the heart of organizations in the business of producing and distributing content: broadcasters and production companies.

A picture is worth a thousand words, but video is worth the entire story. Organizations have evolved from traditional print and still messages to video. In a competitive marketplace for hearts and minds (i.e. eyeballs), there is great demand for high quality video content. In order to compete, organizations must be able to quickly find and share video across departments and geographic areas, between internal staff and external customers, stakeholders, and the general public.

2. Bigger pieces from more sources

Information is increasingly digital, coming from computers, computerized devices, the Internet, amateur and professional





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digital cameras, tablets, smart phones, and even surveillance systems and smart appliances (the "Internet of things").

With HD in handhelds, 4K on TV & 100 Mbps on edits, a single file could be hundreds of megabytes up to terabytes in size. UHD 4K and 8K content is upon us and will cause dramatic bottlenecks in bandwidth and increased storage requirements—it takes more to store and longer to move. Storage requirements thus increase exponentially, raising the questions about where to store content, how to use it, and how much of it to keep.

3. Find it quick, get it anywhere

Efficient search for all of the digital assets in an organization is an imperative. Information today is spread over different locations, in different formats, on different systems resulting in "Isolated Informational Silos". Employees spend one third of their time searching and reusing files, so the labor costs of inefficiency are tremendous. Quite often it is easier to recreate a document or reshoot a video – further exacerbating the inefficiency.

Assets found must be easy to use and easy to access anywhere. Far too often, manual, repetitive processes limit efficiency. Multiple redundant and isolated systems results in wasted money for infrastructure, training, and support.

Solutions for the digital world

1. Management

Introduction of a management system can improve search, control security and access permissions, and facilitate processes including browse, approval, editing, distribution, and deletion. It streamlines multiple repetitive processes, automating workflows across the lifecycle of an asset from planning, drafting, editing, review, distribution, to final storage/archive.

Management systems can provide information for business intelligence. This includes dashboards for monitoring internal processes and tasks as well as analytics to measure external use of digital assets.

2. Metadata

Metadata is the key to any organizational and search system. In addition to the digital asset

(essence) is the information about the asset, including: source, digital attributes (frame rate, etc.), rights and use permissions, asset category, descriptive information, which projects use that asset, versioning, and relationships with other assets. Careful planning and strict adherence to standards ensure that search can quickly provide the best results. User behavior patterns should align with organizational best practices to ensure that sufficient metadata is associated with each asset while users are not unduly burdened with metadata entry. Metadata can be entered at ingest and then further appended during the life cycle of the asset.

3. Centralization

a. Locally = good

Centralizing content allows an organization to ensure physical and electronic security of key assets (behind firewalls, with key card access in secure data centers, etc.). Internal staff can most efficiently organize the information into appropriate storage and processing systems, connected with appropriate network infrastructure. Versions can be controlled, with immediate access to the most recent files. Duplicate storage of multiple unneeded copies can be eliminated if multiple users can access the same content simultaneously.

Centralization is quite feasible in a small environment where high speed connections between the elements of the infrastructure are typical. However, centralization is inherently problematic or limited with a large organization spread in different locations. Standard Internet connections may be too slow for transmitting large quantities of information. High speed connectivity between locations can be prohibitively expensive.

b. *To the cloud* = *better*

Inherent in the problem of centralization and standardization of content and its management is the globalization of the staff and stakeholders, as well as the worldwide demand for organizational content. Cloud based systems offer a compelling answer to the demand for rapid worldwide access and distribution.

Major organizations can deploy systems in their own dedicated worldwide data centers or infrastructure. Whether the organization owns the infrastructure or has third party vendors (e.g., RackSpace) to provide it, these private cloud systems can be scaled to provide localized/regional access worldwide to centralized systems.

The massive investment into public cloud systems from vendors like Microsoft, Amazon, and HP means that small and medium sized organizations can now afford cloud infrastructure. The scale of the public cloud systems continues to drive down costs. These public cloud systems offer:

State-of-the-art physical and digital security

- Rapid deployment
- Scalability as needed
- Commitment to innovation

Swift and systematic hardware and software upgrades

Pay-as-you-go pricing

This can allow organizations to save investments in the infrastructure needed to meet daily and peak capacity demands.

On-premise or smaller private cloud platforms will face obsolescence over time and may have significant downtime during system upgrades or delays in deploying the newest technology. The cost to buy, deploy, and train for new on-premise technology may result in companies not using the latest technological innovations.

Public cloud platforms offer all the advantages of system centralization, with the added benefit of access from all stakeholders in all locations. Economies of scale continue to improve as cloud systems continue to scale, so processing and storage prices will continue to improve.

With communications driven by the marketing and sales departments, many technology companies are excited to capitalize on the cloud marketing buzz, but significant challenges still remain for the "centralize to cloud" model.

Continued on page 81



David S. Miller studied biology and education before entering business. He is one of the founders of Empress Media, Inc., which has provided professional tape stock and consumables since 1998. As the industry went tapeless, Empress Media Asset Management, LLC was started in 2006 to help.

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Creative Collaboration in the Cloud

Three cases of cloud-based file sharing for businesses show advantages By Mike Trigg, Chief Operating Officer, Hightail

Abstract: In 1996, Bill Gates claimed that "content is king." Today, the Microsoft co-founder's belief that the Internet's biggest winners would be information and entertainment companies is truer than ever. Superfast broadband and the huge number of digital broadcast channels makes video the king of kings, but the media and entertainment companies that stand to gain the most still face a major challenge in creative collaboration.

reative collaboration—the key factor in producing successful content—is often hindered because crucial production technologies have not kept up with three important shifts in the industry.

First, the rise of HD video, and now 4K, has seen typical digital file sizes go way beyond what traditional sharing tools like FTP, email and consumer cloud services can handle. Second, the increasingly global nature of the media and entertainment industry (70 percent of Hollywood revenue now comes from international markets), specialization of production skills, and new remote working practices mean videos are no longer made by teams huddled together in a studio. Finally, the more valuable content becomes the more at risk it is from piracy.

The importance of creative collaboration

Dealing with these shifts is vital for all media and entertainment companies. The power of social networks can turn any piece of content into a worldwide sensation in a matter of hours. But success is fleeting as the world moves on to the next big thing, so delays in getting video to market can be

Companies that lack the agility to capitalize on a trend and move ideas through production and publication quickly will continually find themselves losing out to competitors.

costly. Companies that lack the agility to capitalize on a trend and move ideas through production and publication quickly will continually find themselves losing out to competitors.

The digital age has broken down the media industry's barriers to entry. The market is awash with nimble and technologically savvy content producers that have solved the problems of connecting dispersed teams and transferring 50GB HD files from shoot to post production, or sharing the latest cut with clients. Cloud-based file sharing is a great solution for these problems. But, not all file sharing providers are created equally.

The consumer file sharing service you use to share holiday photos is not the way to share the latest cut of a TV show, at least not without giving up control of the possibility that it will end up on The Pirate Bay. Some of the world's most popular consumer file sharing services have had their security reputations tarnished by high-profile hacks.

Being hacked, however, isn't even the biggest danger. USA Today recently reported that 43 percent of companies had experienced a data breach in the past year: 80 percent of those breaches "had a root cause in employee negligence." Content leaks from company insiders represent a far more common and damaging threat to business assets and revenues. For the media industry, where content drives revenue, the lack of user and back-end controls in most consumer services is a serious risk.

Choosing which of the many providers out there is best suited to media file sharing can be tricky. The best way to start thinking about it is to see how other companies in the industry use cloud-based file sharing so you'll understand the capabilities you need to look for. The following three real world use cases are great examples of large studios and small production houses can overcome the challenges outlined above.

Increased content production with fast HD file sharing: VSI TV

As broadband speeds get faster, more and more

people are able to watch high quality online video content. Current demand for HD is huge, while 4K technologies are set to raise standards further. But the price of superior picture quality is greater file sizes. As John Gubba, owner of VSI TV notes: "A 60-minute HD show is about 50GB."

These inflated file sizes increase the strain on already-struggling traditional tools. The majority of email services simply won't send attachments that large, and FTP remains an overly complex alternative, especially for nontech savvy users and clients.

Cloud-based file sharing makes the process fast and reliable for HD videos, presentations, high-res photography, audio and other files as large as 500GB. Using it is as easy as sending an email so people intuitively know how to use it, while clients just click a simple link to download or view the shared file.

While working with MUTV, the official TV network for one of the world's biggest soccer teams, Manchester United, on a major breaking news story, Gubba recalls that: "I filmed interviews late at night and sent the files via Hightail. MUTV was able to broadcast the footage the next morning."

Less wasted time and better collaboration: Echo Entertainment

Video production is often considered the most collaborative art. From on-set crews and post production teams to the background producers, distributors and broadcasters, many people have a hand in creating the final product. If the process for getting feedback isn't effective, projects can get held up.

LA-based studio Echo Entertainment works under extremely tight deadlines producing the World Series of Poker shows for ESPN. When any delay could mean disaster, getting timely feedback on the latest cut from three different producers based across the country was a challenge.

Using the cloud not only makes sharing files faster but teams can also work in shared folders so that all previous versions and other relevant files are available to everyone. Mobile apps allow content to be accessed on the go helping to ensure that feedback is provided in a timely fashion.

Echo Entertainment's senior editor, Brian Davids, has seen the effectiveness of file sharing confirmed by other studios. "We did a shoot recently and the production company we were working with used Hightail as well. It's becoming so commonplace now."

Reduced risk of unauthorized access: Sesame Workshop

When content drives revenue, securing it from potential pirates and leaks is crucial. Recent high profile hacks of major media companies have highlighted the need for protection. But when sharing material with clients, marketing partners and distributors, traditional services like email and FTP offer little control. And many of the modern cloud solutions are consumer-grade and have questionable reputations when it comes to security.

Sesame Workshop has thousands of worldwide partners for its Sesame Street TV shows and related characters but the company realized that every time it shared files by FTP, it was losing control of valuable assets. The organization chose Hightail because it offered sharing controls like passwords and identity confirmation in order to add extra layers of protection from human error or deliberate *Continued on page 81*



Mike Trigg manages all marketing, lead generation and e-commerce activity at Hightail. His background includes a variety roles from start-ups to Fortune 500 companies across both enterprise and consumer segments. Prior to Hightail, Mike founded an online gaming company called Spitball Entertainment and was VP of marketing and business development at hi5 (sold to Tagged), one of the world's largest social networking sites.

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Managing Emerging Global Digital Workflows

Cloud-based solutions produce a powerful tool for M&E companies By Scott Spector, Global Leader, Entertainment & Media Vertical, Verizon Enterprise Solutions



Abstract: As M&E companies look for scalable global solutions to support production of compelling digital content, feature film, feature animation, live events and episodic television series, media-focused cloud architecture is rapidly becoming the central core of operations enabling truly global workflow management.

echnology drives and defines today's M&E industry, emerging business models and the way content is produced, transported, managed and distributed.

To be globally competitive, M&E companies are embracing rapidly changing technology ecosystem environments, new digital distribution channels and emerging business models. They are also embracing advanced analytics to accurately measure success across OTT and enterprise digital ecosystems. Many M&E companies incorporate agile business and technology development process models to take full advantage of emerging technologies, including: cloud computing, digital asset management (DAM), cloud transcoding, digital rights management, content delivery networks and big data analytics.

Key M&E industry challenges

M&E companies face distinct challenges to produce, transport, manage and distribute digital content to global users, on-demand. The challenges break down into the following areas:

Production — Content creation/production cuts across broad areas of the industry, touching everything from acquisition, principal photography (TV/film), feature animation, rendering farms, linear/nonlinear production and post production global workflows.

Transport — M&E companies need to securely transport high-value digital content from remote locations around the world to local studio locations for TV/film production, live events, etc. M&E companies need network topologies that support on-demand, high-bandwidth secure networks with capacity for video transport of compressed and uncompressed live and file-based workflows.

Management — M&E company's store, protect, manage, transcode, and refine digital content for varied applications, audiences and delivery platforms. M&E companies require ways to integrate complex process functions across global cloud-centric environments. This demands use of scalable infrastructure increasing operational efficiency and trimming costs and moving technology investments from capital expense (capex) to operational expense (opex) categories.


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Supporting globally managed workflows requires scalable, on-demand cloud infrastructure and networking that enables fast efficient delivery and retrieval of digital content.

Distribution — Clients demand highquality digital distribution and customized user experience across any platform, anytime, anywhere in the world. This includes everything from studio executives reviewing digital dailies remotely for movie production, to finished content for digital cinema distribution. Live event digital distribution examples include multi-camera OTT streaming of events like awards shows on mobile devices all the way up to high-definition delivery of live concerts using 4K digital cinema projectors. Broadcast companies are deriving immediate benefits from OTT distribution using advanced content delivery networks (CDN) to reach millions of clients worldwide, supporting the unbundling of cable channels and the transition to channel delivery on an a la carte basis.

The media-focused cloud

The media-focused cloud concept combines two primary areas of cloud based technology: Infrastructure-as-a-Service (IaaS), which includes the application of servers and digital storage.

■ Software-as-a-Service (SaaS), which includes the use of cloud-based applications.

The combination of these two technology solutions produces a powerful tool for M&E companies supporting global media workflow platforms and end-to-end-content solutions; production through distribution.

Content, including principal photography, is often produced at locations around the world: from Prague to New York, and London to Auckland. To create an end-to-end digital ecosystem, studios need to move large mezzanine master files securely to other cities like Los Angeles and Vancouver for post production and VFX processing. Supporting globally managed workflows like this requires scalable, on-demand cloud infrastructure and networking that enables fast efficient delivery and retrieval of digital content.

The media-focused cloud architecture can employ the aggregation of the common cloud combined with digital asset management (DAM), cloud transcoding (Compute), global workflow management (distant production/ post production), identity access management (IAM), digital rights management (DRM) and storage and resolution options using content management systems (CMS).

Another important component of the media-focused cloud architecture is "object storage." This allows unstructured data and media files to be stored as objects and tied directly to digital content, allowing all production elements to be transported, stored and accessed together. Object storage combined with a robust CMS provides a way to manage all digital content elements in a distributed or centralized location supporting global workflow management.

Additionally, DAM in the cloud derives significant benefits from object storage since it can offer open architecture and a multitenancy framework allowing global content version control, metadata management, replication and search.

Cloud transcoding supports global production on an as-needed basis supporting post production workflows, editing and the creation of an edit decision list (EDL). The media-focused cloud could be used to create completely new versions of finished content driven by EDLs compiling new content versions in the cloud and then distributing them for review.

Cloud latency can be a factor when ad-



Scott Spector manages Verizon's global entertainment and media vertical strategy, solutions, innovation, technology and partnerships as they apply to the major studios, music labels, videogame, broadcast, digital cinema, production, post production, visual effects, feature film, feature animation and audio/ video/music streaming services. dressing post production workflows on highend uncompressed television and feature film content. Several companies offer file based acceleration solutions like Aspera and Signiant that can be integrated with media-focused cloud solutions. However, one of the best ways to mitigate cloud latency is with fast high-bandwidth on-demand secure network topologies.

Building the media-focused cloud

Developing and implementing a media-focused cloud technology ecosystem strategy is a multi-step process. It is difficult to create one production, application or service environment that addresses all the needs of the M&E industry from content creation to distribution. Many companies have already invested in core parts of a media focused cloud IT architecture. Unlocking the value of those investments requires making sure a company has invested in the appropriate technology infrastructure elements and adopts a cloudcentric approach that fully integrates these technologies in an efficient, effective core ecosystem. The key components to a successful media-focused cloud solution include:

On-demand, global, secure network — A fundamental component of the enterpriseclass media-focused cloud is an ecosystem that supports the production of mezzanine master files using uncompressed video transport. This same network can also support live events, file-based transport and on-demand access to all digital content.

Cloud storage and infrastructure — Central to media-focused cloud architecture is secure storage at the core tied to global networks, meeting on-demand requirements. Flexible, scalable, secure cloud infrastructure is essential, built on a dynamic cloud platform to expand and contract quickly and outsource IT cost and maintenance associated with infrastructure.

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From DAM to Digital Backbone

Collaboration behind the scenes for a better DAM experience By Steve Cronan, Founder and CEO, 5th Kind

Abstract: Time spent on wrangling together a host of digital asset partners could be better spent on the back end, identifying content management needs, and on the front end, working with internal stakeholders to ensure digital tools are effective and adopted across your teams. That adoption is critical to your ROI – the more full usage you have of a tool, the more efficient your spend.

s the world of Digital Asset Management continues to evolve and mature, the question for asset managers isn't should I invest in a DAM tool of some kind, but rather how do I find the right tool or suite of tools that can be a digital backbone for my organization. With a host of point-to-point offerings, the task of navigating and curating the most cost effective, secure and easy to use tool can be time consuming and painstaking.

Like any organizational or workflow tool, users want to know a DAM application works; that it is simple to use and gets the job done. Asset managers have enough on their plates working with senior information technology leadership to ensure digital tools deliver the right functionality for the task at hand. Their mandate requires:

More functionality, higher ROI, with fewer partners to manage.

Wide range of functionality on demand that can be filtered for a more streamlined user experience. Digital supply chain providers who will partner with best of breed solutions and provide a comprehensive, secure digital backbone vs a point solution that must be woven together piece by piece.

Comprehensive, cost efficient, connected solutions that will help simplify the procurement process and speed up time to deployment.

DAM new collaboration

The concept of securely ingesting, managing, sharing and archiving content has taken hold across the entertainment and enterprise spaces. But the expectation of rapid, secure access to any file on any device at any time can be easier said than done. This expectation is prompting a new era of collaboration – a collaboration of collaborative workflow tools, plug-ins, applications and supporting services to create a best of breed end-to-end digital backbone solution.

This "behind the scenes" collaboration should deliver a higher performing end product, and save valuable time for asset managers. A prime example is 5th Kind's CORE collaborative DAM integration with file transfer accelerator Aspera and Sohonet's low latency high speed network offering a streamlined



and technology-transparent solution for clients. It also offers a turnkey integrated infrastructure that sits at the heart of a highspeed network connecting most of the major studios and partners, with best of breed file acceleration to outside vendors. With highspeed storage providers like Open Drives, clients have very high performance file transport and storage.

A DAM bright future for clients

So, if all the elements of a comprehensive digital eco system align, what does it look like?

- Rapid & fluid asset ingestion with minimal effort
- Seamless workflow that is simple to use and enable fluid communication across departments
- Airtight security automated based on metadata to service multiple workflows
- Anytime, anywhere access with designated access controls
- Hyper collaboration: Integration of functionality across multiple teams
- An integrated hub with an API supporting integration of 3rd party solutions

This seamless and connected digital ecosystem will be orchestrated by forward looking digital providers like 5th Kind, which provide a visual brain for indexing, searching, viewing, approving, distributing and archiving using all these technologies. ■

Steve Cronan has been involved in feature film production since 2001 when he transitioned from Web and systems engineering to become the Digital Asset Manager for The Matrix sequels. Cronan continues to develop new standards to automate asset and metadata processes for feature film production. In 2012 Steve was awarded the 2012 DAMMY of the year.

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WORKFLOWS



Balancing the efficiency and convenience of automated QC with the precision and intellect of the human operator By Ken Kiers, Executive VP Post Production Services, and Mel Waddell, VP Post Production Services, My Eye Media

Abstract: Significant advancements in quality control technology have made it possible for computer automation to play an active role in the QC process. Automated QC is an efficient way to verify specifications, conduct a Harding test and identify freeze frames and dropouts. However, there are certain technical checks and balances — audio sync, text placement, proper content, correct language and the presence of production equipment, for example — that are best performed by a highly trained and experienced human being. Therefore, an intimate understanding of the advantages of both workflows is needed to produce a more strategic and comprehensive quality assurance solution.

elcome to the age of machines. The thermostat can learn your habits and adjust accordingly. Cars can drive and park themselves. Computers can now perform quality control on your content! It may seem as though society is well on its way to robot Armageddon, but it is possible to harness this world of automated QC for the greater good of all humankind.

The feature sets of most automated QC platforms are extensive. It is tempting to turn on all the features and let it rip; however, with

each additional parameter tested, the processing burden intensifies — tying up resources and requiring more time. It then becomes necessary to review every flagged issue and filter the true errors from non-issues. The greatest advantage of adding automated QC to a particular file-based workflow is efficiency. The key to unlocking its benefits is to find what the machine does well.

Harnessing the machine

Specification checks are where automated QC excels. With the increase in digital distribution avenues, there are a greater number of similar

but different mezzanine files for QC operators to navigate. In the automated QC template, operators can set up simple checks to verify codecs like ProRes, MPEG2 and J2K as well as corresponding bit rates. At the same time, the appropriate containers like .mov, mxf, .avi, .ts, .ps can be verified. With this process, criticalfail assets can be flagged before wasting any operator time. Requesting replacement assets will make the flow of other jobs continue with minimal effect on production deadlines.

During a full linear pass, QC operators can add luminance and resolution checks to

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AUTOMATED with HUMAN QC

the video template that can help them review flagged areas. Another major benefit of an automated QC workflow is the ability to run a photosensitive epilepsy (Harding) test. This is a specific test for flickers, patterns and luminance shifts over a period of frames that could induce seizures in people who are susceptible to this type of stimulus. More and more territories are beginning to require this test for compliance, which makes automated QC an extremely useful tool.

Audio checks and analysis layered with multiple configurations, channels and streams can be time-consuming and confusing tasks for operators. For instance, the typical eight-channel (5.1 + 2.0) audio configuration presents a lot of possibilities. Within the .mov container this can be configured as eight discrete audio channels. It can also be configured as two streams: one stream with six discrete channels and the second stream with two channels interleaved. Similarly, it can technically be four streams with two channels interleaved in each one. In all possible cases, the audio will look correct on a scope of a playback device. However, issues can arise downstream if the packaging is not properly identified prior to entering the transcoding pipeline.

Additionally, audio peaks and averages can be checked based on a client's specs as well as compliance with loudness regulations. A file-based workflow analyzing audio for ATSC 85 or EBU-R128 is faster than real-time, which is invaluable when processing a large number of files.

Each use case will be different depending on what stage of the process operators are currently working on. Integrating automated QC into high-level mezzanine file evaluations can provide a comprehensive set of spec checks that will improve the overall product. Even with these advancements in technology, there are still numerous human-centric qualities that are unmatched by automated QC.

Advantages of human touch

While automated QC is extremely effective in providing a preliminary analysis of file metadata and technical specifications, it cannot always accurately interpret some of the most complex data. Additionally, automated QC cannot investigate beyond the initial flagging of anomalies. Although it would appear to be more time and cost efficient to eliminate human QC altogether, its automated counterpart simply cannot replace a



Finding the balance between technologies (left), human perception and judgment (right) is the key to a more efficient workflow.

human being's knowledge and experience.

One example where automated QC falls short is in accurately assessing audio sync. Even the most advanced automated QC system cannot verify audio sync down to the frame. Such systems also cannot accurately determine when audio sync drifts from scene to scene or, in some cases, shot to shot, as is often the case. A skilled human QC operator is capable of not only recognizing asynchronous audio within a single frame tolerance, but also providing individual and detailed examples, including a scene description, line of dialog, or both.

Automated QC also relies on the accuracy of the metadata track labeling at the time of the file creation for audio configuration analysis. Automated QC does not inherently distinguish between English or foreign audio, nor is it capable of deciphering dialogue from music and effects tracks. An automated QC system cannot actually listen to a file to know the dialogue is French instead of English. Automated QC will also not flag something such as dialog leak on an M&E-only track.

Human QC still plays a key role in text sync and accuracy verification. Automated QC can verify that closed captioning is present in a file, but not text that is burned into picture. Furthermore, automated QC cannot yet analyze whether text is correctly positioned or timed with picture and audio. Spelling and grammatical checks are also outside the realm of automated QC capability. Plot-pertinent building signs, newspaper headlines, graphics or other creative choices that include misspelled or foreign language text cannot be validated in automated QC either. Human QC operators also often rely on prior creative notes from clients to assess text accuracy. This type of information cannot be fed into an automated QC program.

As a result, creative content analysis cannot yet be integrated into the automated QC process. The integral part of human QC is verifying that the content is as it is intended to be. Unlike automated QC, these are questions operators can accurately answer: Is this the correct episode or version of a feature? Is it the correct aspect ratio? Subtle color correction and framing discrepancies require the finely trained eye of an experienced human operator. Similarly, automated QC cannot detect visible production crew and equipment.

It is true that automated QC can be programmed to find many anomalies. Systems can be set up to analyze for digital hits, blanking errors, black frames and freeze frames. However, this analysis relies on setting a series of parameters and tolerances to flag changes in picture and audio. No matter how much time is spent fine-tuning these parameters, even the most advanced systems still miss certain anomalies and/or misinterpret creative elements as errors. Thus, any automated QC report still needs to be reviewed by a human operator for both accuracy and to subjectively rate anything flagged.

Balance is key

Without debate, technology has aided in the exponential growth of human productivity. In the case of QC, finding the balance between technologies, human perception and judgment is the key to a more efficient workflow and provides the most thorough and best results.



Ken Kiers has over 20 years of post production expertise. He leads My Eye Media's development of new digital workflows, including the integration of 4K and HDR technologies. Mel Waddell has 10 years of experience in post production, focusing on quality control and digital workflows.



The Content Provider's Guide to Success in the New Digital-First Era

5 smart tips for expanding online content as more viewers ditch cable and Blu-ray By Mary Kay Crocker, VP Marketing, Verizon Digital Media Services



1 in 4 millenials are cable cutters or have never had cable at all.

Abstract: To continue engaging and growing audiences, plus expand revenue streams, OTT providers have to always keep viewers happy. They have to anticipate what viewers want and influence them to adopt new viewing and purchasing habits. Then they must learn to future-proof their current business models.

he TV and movie viewing landscape is rapidly evolving, and content providers are working around the clock to meet viewers' appetite for everything digital. A majority of millennials are consuming premium media on the go, on all their connected devices. Recent studies by ComScore and Experian show that nearly one in four millennials have cut their cable cords or never had cable at all. Instead, around 44 percent of millennials are watching movies and TV shows online. They're downloading, using video on demand (VOD) and subscribing to streaming services like Hulu Plus or Netflix. Today, 10 million American homes with Internet access have chosen to completely ditch cable.

Surprisingly, inflated cable package costs were not the main reason viewers gave for cutting the cord. Viewers wanted more convenience. They wanted to watch anytime, anywhere, and they wanted fewer, more relevant commercials.

There's no excuse for today's content providers to do business as usual. The world is changing, and that calls for some immediate action! For a start, providers need to adjust their workflows to accommodate over-thetop (OTT) content, and more of it. HBO is a good example to follow. For years, HBO fans with no cable access were forced to wait for the DVD or Blu-ray release of their favorite shows. With the recent launch of HBO Now, cordless viewers can access online all 2,700 hours of original programming and back catalog content. They can even stream their favorite show at the same time it's being aired. More and more streaming services are partnering with providers to stream original content and even live broadcasts. Soon, viewers won't even need cable at all to watch live sports.

Here, we explain how OTT providers can successfully compete and even thrive in the rapidly approaching digital-first era.

Tip 1: *Deliver more digital content, everywhere, every hour, every day* Traditionally, content providers have relied



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Digital downloads currently account for more than 44 percent of 2014's total digital revenue. That's about double what it was in 2010.

on cable packages and physical DVD and Blu-ray sales as sources of high-margin revenue. But as viewer demand grows for digital streaming and downloads, content providers need to integrate OTT content delivery into their existing workflows. Then they must adapt their business models to properly monetize their content. A growing number of viewers want to play their favorite movies and shows everywhere, not on just one TV set. So, how do OTT providers ensure that viewers get what they want while minimizing risks to entrenched revenue streams?

Providers used to play a guessing game to figure out what viewers wanted and how to grow their profits. Did viewers want to download, stream at whim or subscribe? Or did they like cable more? Were they still buying Blu-rays and DVDs? Past studies by DEG: The Digital Entertainment Group showed that viewers new to OTT content actually preferred VOD options. But this alarmed providers who, after doing the math, realized that more VOD meant lower revenue for them. Providers purposefully priced VOD affordably for viewers, but they didn't yet know how to use digital advertising as a revenue stream. Now, providers understand that VOD represents a great opportunity for advertising dollars, especially because viewers can't fastforward through ads like they do with their DVRs.

Recent studies also indicate a shift in viewer behavior. Digital downloads currently account for more than 44 percent of 2014's total digital revenue. That's about double what it was in 2010! What this boils down to is simple: Not only do viewers crave more digital content in all forms, they're growing more comfortable without cable and maybe one day physical media. It's just a matter of time.

OTT providers have an exciting challenge on their hands to preserve their entire business: encourage more viewers to embrace more digital content. Only recently, viewers gave up their VHS tapes; now they're starting to give up their physical Blu-rays and DVDs. Providers can jump-start this reality by making more digital content available and on different platforms and services.

Tip 2: Deliver exclusive content

One way that providers can draw more OTT viewers is by providing exclusive content or content windows. For example, Hulu Plus, a joint venture between Fox, NBC and Disney, is popular for making hit TV shows available within 24 hours of airing. And rather than provide the same content that another service like Netflix offers, it provides content from its owners, as well as other networks. Hulu Plus knows that viewers want top-tier content offered on a variety of platforms, so this mode of thinking works with what viewers want.

Here's a scenario: Hulu Plus is airing the new episode of Shark Tank today. But your viewer also desperately wants to watch today's big game. He could play the game on his iPad via ESPN's Sling TV streaming service and watch Shark Tank at the same time without leaving his downstairs couch. He chooses to watch both just because he can. Upstairs, his wife watches a Parks and Recreation marathon on demand via the master bedroom TV's Xbox One. And just a few doors away from her, the kids are watching a new cartoon show on their tablet.

As an OTT service operator, there are limitless content creation and partnership opportunities available. Operators need to choose what, when and where they make content available, and leave it to the viewers to decide the rest. Then they can adjust their offerings and pricing based on what the viewers want.

Tip 3: Bring viewers the best digital picture quality available

Another challenge for providers is keeping up with advanced picture-quality standards, more specifically 4K. Everyone is racing to bring 4K content closer to viewers: TV manufacturers are pushing new 4K models out every day; the Blu-ray Disc Association is publishing its 4K format extension later this year, and Samsung is going to provide an ultra high-definition (UHD) video pack – a physical drive for downloadable content to reside in.

OTT providers and streaming services like Hulu Plus and Netflix will need to make sure their digital picture quality looks as good as 4K. Viewers expect picture that's larger, brighter, more colorful and with higher resolution. They want that flawless picture quality both on their TV and on their connected devices. Providers will need a solution/partner that displays OTT content beautifully, on all devices.

Tip 4: Defend digital content against piracy to protect revenue streams

Monitoring and enforcing digital piracy, also known as "digital infringement of copyright", is a top concern for OTT providers who are expanding their online offerings. Digital piracy is a unique market as many digital suppli-*Continued on page 83*



Mary Kay Crocker leads Verizon Digital Media Services' go-to-market strategic planning, branding and execution. She has spent the last two decades representing companies focused on technology, specializing in the Internet, media and entertainment, and business. Crocker owned Radi8 Creative in Salt Lake City, a new breed of agency offering public relations, marketing and advertising services to companies that were changing the face of media, and worked at Ancestry.com.

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EST as a Growth Strategy for MVPDs

CaaS can help build required infrastructure

By Anupam Gupta, Executive Vice President Cloud Services, Vubiquity

Abstract: By providing transactional VOD, linear video and broadband services, cable operators have existing relationships with their potential base of EST users, which gives them a leg up on competing services from large retail or online competitors. With CaaS platforms, service providers of all sizes can get off the sidelines and into the lucrative EST game.

lectronic sell-through (EST) crossed the Rubicon last year when the purchase of digital movies and shows reached close to \$1.6 billion in revenue, which was a 30 percent growth spike over the previous year, according to DEG: The Digital Entertainment Group. As further proof of the shift by consumers towards buying digital entertainment to store in their own private lockers, 2014's increase was the largest year-over-year jump in EST sales, according to Rentrak Corp.'s Digital Download Essentials.

While transactional video on demand (VOD) is currently a bigger piece of the revenue pie, new platforms and revenue models are now entering the digital landscape. For EST, thanks to the combination of earlier release windows by content owners, continued growth of connected devices, and the 'digital mom' now seeing the value of digital ownership for kids' content, spending is growing. Leading studios and film distributors have long realized EST's revenue potential and the value it offers by shortening the early release windows while also making more digital video available. Consumers are purchasing digital versions of popular shows and movies at an increasing rate and top EST sellers such as iTunes, Amazon, VUDU, Comcast and Verizon are prime examples of consumers building their own digital video lockers or libraries. The end result is more purchasing and downloading of content for viewing across a wide range of devices both in and out of consumers' homes.

The growth of digital ownership has been spurred along by the increased availability of digital content and the size of the libraries available. As of December 2013, 94 percent of the most popular and award-winning films were legally available for streaming or downloading in the U.S. through online services,

EST Breakdown



With more blockbusters available, movies are growing as a percentage of EST transactions and revenue.

Source: The NPD Group/VideoWatch/VideoWatch Digital

service across all levels.

In the same vein as Software-as-a-Service offerings, Content-as-a-Service companies charge their customers monthly subscriptions for their services. The CaaS video content is managed and hosted in a company's cloud, providing economies of scale with the costs distributed across multiple service providers via a multi-tenant ecosystem, which in turn reduces the cost. CaaS platforms feature a modular approach that allows MVPDs to take advantage of pay-as-you-go or pay-as-yougrow services.

In addition, CaaS-based services eliminate the need for MVPDs to construct, test, maintain and scale the services themselves, all of which in turn lowers operational support labor and costs.

With customers continuing to clamor for more video content anywhere, anytime and on any device, the CaaS solution not only enables new revenue streams from EST purchases, but also serves as a strong deterrent to keep those subscribers from churning away to competing services from over-the-top (OTT) providers.

Along with speeding up time to market for new revenue generating multiplatform services, CaaS also increases distribution efficiencies. On the encoding side, an end-to-end CaaS platform eliminates the need for costly in-home gateways that re-encode video content prior to distributing shows and movies to iOS and Android tablets and phones, gaming consoles and smart TVs.

Metadata authoring and management are key for multiplatform usage rights that are in turn crucial to digital curation of video content. CaaS metadata can be used to keep track of the maximum number of simultaneous streams, maximum number of registered users and approved devices within users' homes, which provides peace of mind to the content owners that their video is being paid for and used by the correct customers.

By using metadata authoring and management, CaaS ecosystems also eliminate the complexities inherent in garnering licensing agreements including complex in-home and out-of-home rights with studios and other video content owners. Instead of continually negotiating those rights, MVPDs can tap into a deep library of pre-licensed content from a CaaS provider. Additionally, the end-to-end CaaS platform provides royalty measurements for the content owners as well as user metrics and billing for the service providers.

Continued on page 83



Anupam Gupta leads all aspects of Vubiquity's cloud-based business, to which he brings more than 15 years of product leadership and general management experience. Prior to joining Vubiquity, he was CEO and part of the founding team of Mixpo. He also spent eight years at Microsoft. Gupta is a mentor to early stage startups via 9Mile Labs, a high tech accelerator in Seattle focused on B2B software and cloud technologies.

according to study "Film and TV Title Availability in the Digital Age" by KPMG. The report also found that 85 percent of the most popular and critically acclaimed television titles were available in the U.S. through online video services.

In particular last year, blockbuster hits such as *Frozen, The Hunger Games: Catching Fire* and *The Lego Movie* were among the top-ranked movies for digital streaming and purchases, according to Rentrak.

Today, Comcast and Verizon are the two MVPDs offering EST. Comcast, which introduced EST two years ago as part of its Xfinity On Demand Digital Store, has recently publicly acknowledged the success of its EST efforts. In a recent blog post, Matt Strauss, Executive VP and General Manager, Video Services for Comcast Cable, said its subscribers have embraced building their own movie and TV collections since 46 percent of the customers who own a movie or TV show on Xfinity own more than one and, on average, own at least two movies and/or four TV episodes.

Since its debut, Comcast has built up its formidable EST library through agreements with Warner Bros., Paramount Pictures, Sony Pictures, and MGM among others.

CaaS platforms enable EST services

EST represents a burgeoning revenue opportunity for multichannel video programming distributors (MVPDs) as well as content providers, but implementation requires investment in infrastructure, including building out networks, providing storage and developing digital storefronts. This can be overwhelming to all but the largest service providers.

To solve this, as well as to take advantage of the monetization opportunities, MVPDs are looking at alternative ways to launch their own EST services in order to deliver digital video content for purchase to both set-top boxes and other IP-connected devices in homes and on the go. Content-as-a-Service (CaaS) solves the challenges of building and deploying an EST

The Time for Advertising Interoperability Has Come

The registration of ads with a central authority can serve as the foundation of process improvement By Harold Geller, Chief Growth Officer, Ad-ID



Abstract: The key to commercial success in the broadcast industry is the shift to digital file-based workflows. The dream of improved efficiency and multi-platform campaign measurement cannot be achieved at scale without multiple technologies working together in concert to provide the best information. Other industries have paved the way by placing interoperability at the center of logistics. It's time for the advertising ecosystem to embrace standardized, single-source metadata as an important foundational layer. n the world of video advertising, smooth and automated workflows have been one of the most neglected areas in our business for years. Practices that have been in place for decades have stubbornly remained. Manual re-entry of data has been accepted as "the way it's always been," and something that simply couldn't be avoided. There have always been short-term fixes and stop-gap solutions. We throw labor at our problems—tons and tons of checking and error-correcting. But our workarounds have become institutionalized bad habits that have evolved into permanent practices that are a barrier to innovation and creativity. There has been consensus throughout our industry that this is an area desperately in need of solutions.

In order to enable change, particularly something as dramatic as the replacement of manual advertising-related workflows with automated ones, the proper motivation is needed. This doesn't come from vendors, or a few people with a good idea. Motivation must come from those who feel the pain the most: the users.

When more must be done with fewer resources, it's necessary to examine automating processes. The economic situation of the past several years has led to resources being reduced, with those that remain being stretched to their limits.

In addition, there has been pressure for broadcasters to employ their assets more profitably. Advances in alternative methods of delivery to consumers, such as mobile DTV and over-the-top television, have opened up new avenues for broadcasters. However, advertising is a key element in monetizing these new channels.

So the flow of advertising from creation to consumption to billing is actually increasing in volume, but there are fewer resources to manage it. To some, this may sound like a looming disaster, but to others it has meant an opportunity.

Bob Liodice, President of the Association of National Advertisers (ANA), encapsulates the situation perfectly: "Workflows are critically important. The simpler we make the workflow, the more efficient we're going to be, the more capable we're going to be, and the more productive we're going to be. That's what frees up dollars to be reinvested in the plethora of new and emerging media."

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Explosive growth in the number of channels available to consumers has created a vastly more complex advertising ecosystem.

issue that they face."

That same NABA survey resulted in a report that distilled the following "user stories" that outline the importance of the transition to file-based advertising workflows, and the centrality of metadata to those workflows:

Ad Agency: I want to be sure that the commercials I produce are seen by the right consumer, in the best quality possible, on the correct channel, and during appropriate programming using the metadata that I input into the Ad-ID system, so that clients will make more money, sell more products, and spend more on advertising.

Commercial Distribution Vendor:

I want the establishment of an industry-wide high-definition file format for ad delivery with Ad-ID metadata embedded in it, so that file handling and delivery can be more efficient, saving time and reducing errors for everyone.

Media Outlet: I want the establishment of an industry-wide high-definition file format for ad delivery with Ad-ID metadata embedded in it, so that file handling, transcoding, and cross-platform delivery can be more efficient, saving time and effort and reducing errors for everyone.

Today, metadata about ads gets rekeyed up to 25 times, and is distributed in a variety of analog and digital formats. In some cases, the metadata about ads is received secondand third-hand through many different parties. This institutionalized chaos needs to be straightened out and simplified.

The registered metadata about ads must be available to all those who need it for operational purposes, but in such a way that it can't be rewritten every time it's touched by new hands.

Advertising metadata can be exchanged two ways: as a "digital ad slate" embedded into the file that contains the finished ad, and through application programming interfaces (API), or Web services, developed and distributed by Ad-ID, which facilitate machineto-machine communications.

"Digital ad slates" are a central element of fully digital file-based advertising workflows. The ad file itself contains all required components, such as the audio and video content and information about displaying the ad, like the format (HD, SD, 3D), aspect ratio, and closed captions. The descriptive business Continued on page 84

Harold S. Geller speaks and writes extensively regarding interoperability, digital workflow and metadata in advertising and is the co-author of six white papers on the subject. His advertising career spans over 30 years, in the U.S. and Canada. He has worked in media buying/planning, account management, financial, and technology roles at MindShare, Ogilvy & Mather, McCann Erickson, and the now defunct Ted Bates and Foster Advertising.

Metadata central to workflows

Advertising workflows can be categorized into four areas: operations, administration, residual management, and measurement.

When just a few media platforms were available, there were a few hundred channel choices and nearly all media was consumed on a linear basis. Now, media is also consumed on an on-demand basis, through a multitude of media platforms and tens of thousands of channel choices. This explosive growth in the number of channels has created a vastly more complex ecosystem. But we're still using the same manual, analog, labor-intensive processes that we developed more than 20 years ago.

We are at a historic juncture in our supply chain's history. The entire advertising supply chain sees the need to increase speed and efficiency in the production process, enable multiplatform campaigns, and reduce cost. We must also enable interactivity and addressability, and improve cross-platform measurement.

To take full advantage of the technologies that are available, new processes, procedures, and standards must be leveraged to gain maximum efficiency.

The registration of ads through Ad-ID as the central authority establishes a source for standardized metadata, and is the foundation of process improvement. This registration is generally done by the creative agency or the advertiser. The metadata about ads (advertiser name, product name, commercial title, length, and so on) is exchanged and recorded inconsistently today. A variety of analog methods are used, and on most digital platforms it is non-existent. Where the metadata does exist, it often bears little resemblance to the information associated with it at asset inception.

Why is there a need to register metadata about ads? In a 2014 survey of media outlets and vendors in the cross-platform video space, the North American Broadcasters Association (NABA) found overall that "Metadata management was the most challenging

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Optimizing Transmedia for Scalable Discovery and Personalization

Strategy includes artistic development and ideation, smart content and socially connected viewers

By Daniel Kenyon, CEO, Furious M



Abstract: Transmedia productions are big business. Success is everywhere; from *Gone with the Wind* to Marvel Comics, from *Harry Potter* to *Halo*. While the benefits of transmedia are clear for major entertainment projects, can transmedia productions work for low budget and independent projects? ccording to Wikipedia, "Transmedia storytelling (also known as transmedia narrative or multiplatform storytelling, cross-media seriality, etc.) is the technique of telling a single story or story experience across multiple platforms and formats including, but not limited to, games, books, events, cinema and television." Augmented and virtual reality (AR/VR) should be included on this list.

Almost by definition, transmedia is the manifestation of the long tail, the wide tail and even the franchise. Logically, low budget or independent productions could greatly benefit



from a planned, proactive transmedia strategy that adheres to budgetary constraints while effectively targeting the global market.

While most shows end up in digital, the lack of a transmedia strategy during project development means that repurposing for transmedia later in the media lifecycle expands project scope, adding time and cost to the equation. Few low budget or independent transmedia projects however are planned from inception, creating a wall between transmedia and the viewer for low budget or independent projects, ultimately preventing success. Tearing down the wall is difficult, the barriers are high, and include the time consuming and expensive tasks of repurposing media for playout across hundreds of different devices and channels.

When a repurposed transmedia work is eventually released, the delay in the release time due to repurposing means the wall between production, distribution and delivery can be even higher. The resulting loss of momentum brought about by the lack of coordinated windowing, is magnified for low budget or independent projects.

This lack of coordinated release timing is a downside of unplanned transmedia projects. But the wall creates other impediments by blocking viewer engagement and consumption data as well as analytical insight from

Daniel Kenyon leads a team of innovative new talent and industry veterans, revolutionizing the creative production process through on-demand cloud services. His 25 years' executive management experience include VP, Automated Media Processing Solutions; Industry Director Media & Entertainment, Oracle; VP Communications Industry Strategy and VP CRM Industry Strategy, at PeopleSoft; Co-founder & VP, SBI, Inc.

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Producers may face impediments such as added time and costs, pictured here as a "wall," when trying to deliver transmedia.

reaching the distribution team. Walled gardens of 'closed' delivery services tend to disrupt the ability of key data like interactive viewing from reaching distribution teams, a fact that is disabling for small and major studios alike.

The viewer

For viewers, a transmedia 'work' differs from other media experiences. The art of transmedia storytelling is extended across multiple platforms, enabling the experience to take on multiple dimensions and generate varied cognitive experiences, potentially leading to intense emotional connections for viewers.

Professor Henry Jenkins at USC's Annenberg Innovation Lab wrote in an April 2011 article for *Fast Company*: "Many stories are told perfectly well within a single medium, and the audience leaves satisfied, ready for something else. Transmedia represents a strategy for telling stories where there is a particularly diverse set of characters, where the world is richly realized, and where there is a strong backstory or mythology that can extend beyond the specific episodes being depicted in the film or television series."

If done correctly the 'art' of a transmedia 'work' can be greatly enhanced through the facilitation of a comprehensive transmedia strategy. The resulting impact of properly planned and produced transmedia project can be highly impactful, with long lasting and deep emotional links to the work.

A comprehensive transmedia strategy also provides clear benefits to production and distribution teams. A well planned and executed strategy can help drive viewer engagement at an emotional level and further the narrative by bridging the gap between the film, live events, music, games, AR/VR and interactive social media. This essentially creates an ongoing process of engagement with viewers.

A comprehensive transmedia production strategy is complex to develop and execute. Delivering targeted, personalized transmedia selections, individualized on-demand, is even more complex, and represents the final goal in a fully executed transmedia strategy. If it can be achieved, it has the potential to engage viewers for decades or even a lifetime. The payoff is obvious. If a transmedia project is to succeed and achieve long-term viewer engagement, the notion of personalized transmedia must become an essential part of the artistic expression of the 'art-work' itself.

A comprehensive transmedia strategy in-

cludes artistic development and ideation, smart content and socially connected viewers.

Artistic development and ideation

The expanding goal of transmedia is to create an artistic expression through the purposeful release of the media elements. By following a planned approach, productions can be developed from inception with the idea of impacting the viewer via transmedia throughout an extended engagement lifecycle.

Planned from the start, transmedia productions can more easily weave a narrative that complements and promotes the primary release, whether it's theatrical or broadcast. Thoroughly planned transmedia projects can utilize contextually relevant adjunct stories depicted through



In a closed loop integration, viewer data flows back to transmedia producers and distributors in the form of view interaction, engagement and sentiment.

Almost by definition, transmedia is the manifestation of the long tail, the wide tail and even the franchise.



Metadata drives smart content from development and inception through title performance analysis.

teasers, trailers, graphic novels, music, film shorts, AR/VR, and integrated sponsorships to inspire viewers to further engage.

Smart content

Beginning with development and inception through distribution and delivery, metadata plays the key role in defining and classifying content. Contextual metadata drives relevance and enables targeted personalization via external systems such as social media. By creating and meta-tagging content as it is being crafted, efficiencies are built into the transmedia production process.

Contextualization drives relational pairing, matching the right media to the right moment. Orchestration and contextualized delivery of transmedia elements are dependent upon technical or machine generated metadata (camera/color/fps/geometry), and creative or manually generated metadata (crew, editing, CGI, VFX).

Metadata

Business metadata

Business metadata consists of intellectual property rights, regional and time dependent avails, Blu-Ray entitlements, EIDR, IMDB, and IAB AD-Id guidelines as well as specific definitions of monetization rules.

Descriptive metadata

Descriptive metadata consists of data relat-

ing to the meaning of the content, the setting, story timeline, interrelated scenes, characters and backstories. Descriptive metadata seeks to identify and correlate contextually relevant matches to other transmedia content. Metadata created from inception will undergo several transformations as the work evolves, is edited and finally mastered. Generating metadata from a project's first days of development and inception throughout the entire production is essential to maintaining organizational integrity.

Transaction metadata

Transaction metadata contains transactional rules related to transmedia consumption. This form of metadata is both historic and real-time, enabling systematic decisioning to drive viewer engagement for one transmedia element or another. Transactional metadata is a true enabler of transmedia storytelling. By maintaining a record of consumption of the story elements of a particular viewer at a given point in time and then relating that data to the history of the same viewer's engagements, a composite of the viewer's interaction is created. For example, transaction metadata drives which story components should be offered and/or related to a repeat viewer.

Socially connected viewers

Social networks connect to viewers through algorithms designed to enforce relationships

with other social network members. Personalization and contextual relevance takes place when metadata about transmedia is correlated via social networks to the interests and desires of a social network's linked members.

By integrating smart content metadata, transmedia storytelling gains the ability to contextually relate story elements to one another while maintaining a history of a viewer's engagement(s) to other elements of the transmedia story. This data is used to personalize the experience by correlating contextual situations, demographic, psychometric detail and volunteered metadata to create a compelling transmedia viewer profile.

In this context, brand-advertising can easily layer into the transmedia playout in the same way that other transmedia content is displayed. Using contextual relevance, brand ads can positively impact the viewer while monetizing the experience.

With unique metadata identifiers embedded at the elemental level, transmedia ultimately becomes more discoverable. In a world with 1 billion digital channels, discoverability is critically important. Through the utilization of available social network algorithms and standardized ID systems including EIDR, IAB, and standards like XMP, low budget and independent production and distribution teams can bypass existing systemic impediments to increase transmedia content discoverability to drive discovery and view engagement.

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Secure Design in a Hyperconnected World

4 principles that are more essential than ever By Ian Hamilton, Chief Technology Officer, Signiant

Abstract: In the realm of media processing technology, hyperconnectivity allows us to easily share resources, exchange files and electronic communications, and to collaborate on projects with remote partners like never before. Yet, the same interconnectedness that empowers advances in the industry also creates ample opportunity for cyber criminals, making the wisdom of security experts more important than ever to the way we design media software.

he technological landscape of media production and distribution has transformed over the last decade, moving from mostly isolated to highly interconnected networks. Earlier media processing systems were purpose-built and confined to a particular organization, with the only interactions implemented through physical media transfer or over dedicated audio and video connections. In contrast, modern systems are hyperconnected networks of media processing software that span the globe and mostly run on commoditized IT infrastructure.

Hyperconnectivity refers to the increasing digital interconnection of people and devices around the world. Cisco recently predicted that there will be 50 billion networked devices by 2020. This level of connectivity will impact our lives at many levels, and the expanding use of commodity IT is largely driving its spread.

Because commodity IT is mass-produced, standardized and widely interchangeable



with similar types of hardware, it significantly reduces costs and supports far more numerous Internet Protocol based interactions. Being broadly compatible and interchangeable, commodity hardware can function on a plug and play basis and form the foundation for new connected technologies. The Internet of Things, for example, in part resulted from the reduced cost of WiFi interfaces and the ability to add them to a wide variety of devices; now everything from refrigerators and alarms to heart monitors and traffic lights are connected to the Internet.

Secure by design

Security experts have long advised designing software with security in mind from the start. However, many software vendors are overly dependent on "testing in" security after development through "black box" penetration testing. In fact, many vendors do not seriously consider security until third parties identify vulnerabilities during penetration testing.

Applying secure design principles from the start can greatly improve security in hyperconnected systems. Similarly, the effectiveness of penetration testing can also be enhanced by how it's conducted. Contrasting "white box" vs. "black box" penetration testing, "white box" testing starts with a detailed understanding of the implementation, where "black box" testing treats the internal implementation as a mystery and typically utilizes a standard set of tests. A "black box" approach to "testing in" security is insufficient because it typically only finds well-known vulnerabilities. Understanding how a system is designed and targeting attacks based on that understanding is a far more effective way to validate the security of a system.

On the organization side, many do not scrutinize the security designed into their software and instead rely on building a single impenetrable barrier around their network. However, in a world where cyber criminals are getting more and more sophisticated while network connectivity is increasing, the perimeter of an organization's network is very hard to define and can be compromised through side channels that no one ever considered.

The recent cyber attack on Target's network that stole millions of credit and debit cards is a good example. According to published accounts of the incident, the hackers got in through an email phishing attack on Target's heating, ventilation and air conditioning (HVAC) subcontractor, an



Why stop at just three dimensions?

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The same interconnectedness that empowers advances in the industry also creates ample opportunity for cyber criminals.



unsuspected inroad that's one of many ways an opportunistic cyber criminal can exploit hyperconnected systems.

"Secure by design" or the application of secure design principles during software development is more important than ever for modern, hyperconnected media processing systems. Here are four secure design principles that are especially critical today:

1. Psychological acceptability

"Physiological acceptability" is a secure design principle that emphasizes the importance of users buying into the security model of your software. But, because connectivity has created a plethora of software choices easily downloaded off the Internet, modern users have very high expectations around usability and features.

If people can't easily understand the security protection features of your software, they will likely make mistakes when trying to implement them. And if your software's security mechanisms are inhibiting people from doing their jobs or are even a bit too tedious, users will find ways to bypass them or use alternative solutions that are not IT sanctioned.

In fact, the number of unsanctioned and unsecure apps is on the rise. Netskope's April 2015 Cloud Report indicated that organizations have an average of 730 cloud apps in use; and over 90 percent of those do not have enterprise class security. Even for smaller media organizations, enterprise grade security is necessary when dealing with hyperconnected, global systems.

In essence, it's important to choose media processing software that is both user friendly and secure.

2. Defense-in-depth

In hyperconnected systems, the concept of a perimeter is no longer relevant. Defensein-depth is a secure design principle that advocates building in layers of defense rather than relying on a single barrier surrounding a system. That way, if one layer of defense is breached, another is there to protect assets and information.

For assets being transferred, this can involve end-to-end encryption of data as well as encryption during transit over each network segment and at rest in intermediary storage. Equally important is how associated encryption keys are generated and protected.

3. Fail secure

One way nefarious hackers try to breach a system is to find ways to cause it to fail or crash and exploit the resulting failed state. Within hyperconnected systems, there are more ways for cyber criminals to try and make systems fail.

"Fail secure" is a secure design principle that ensures that if a system or component of a system fails it fails in a secure state that can't be compromised rather than an insecure state that can be easily compromised. Basically, you have to make sure that if your software does fail, it fails in a secure state.

4. Open design principle

Businesses that depend on obscurity of their software implementation for security are increasingly at risk in a hyperconnected world. It's much easier to access information, so it's getting harder and harder to keep secrets.

The "open design" principle states that the security of a system should not rely on keeping its design or implementation a secret. Rather, it encourages designing security functions that maintain security even if the design is known.

For example, how various encryption algorithms work is well known, but a specific application of an encryption algorithm depends on an external key to perform the encryption. Keeping the encryption algorithm a secret isn't important, but keeping the external key used for a particular application of the encryption algorithm is.

In our hyperconnected world where media companies are handling highly valuable assets that have proven to be targets for cyber criminals, it's essential to make sure that the software you use has been developed using secure design principles. And while all secure design principles should be considered, these four stand out as being particularly applicable. ■



Ian Hamilton is a founding member of Signiant, where he has led the creation of Emmy award-winning software solutions to address the challenges of fast, secure content distribution over the public Internet and private intranets for many of the media and entertainment industry's largest companies. Having previously worked with ISOTRO Network Management, Bay Networks and Bell Northern Research, Ian has been developing internetworking infrastructure and applications for more than 20 years.

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Consumers Rule the Marketplace, But Content is Still King

IP rights management has moved out of the back office to make information available in real time

By Amos Biegun, Global Head of Rights and Royalties, Vistex Inc.



Abstract: Even in the era of digital delivery systems that customize content selection to match the unique interests of individual consumers, intellectual property (IP) is still where the true value lies in the M&E industry. Managing its associated rights efficiently so that it can be widely and legally leveraged is a challenge we've all seen test even the strongest IT infrastructures. When rights are exploited, calculating royalty and participations payments can be equally taxing, especially as volumes of digital transactions continue to climb to unprecedented levels.

emember the adage, "Content is king?" Now, we're told, the consumer is king and those of us in the technology supply chain are all part of the machine that is expected to support content wherever, whenever, and however individuals want it. The new reality in the media and entertainment industry is about serving the individual; not groups of folks gathered around their televisions in their living rooms, which fit neatly into easily-defined demographics and watch mostly linear programming. Today, content is specialized and individualized to match the unique interests and consumption preferences of disparate individual consumers. And, while legacy systems are in place to support the development and delivery of traditional content, rapid changes in production and consumption models have left companies scrambling to find ways to fortify the enterprise and withstand whatever is now coming their way.

The new terms of engagement

On the distribution side, new delivery methods have opened up a treasure trove of existing content to be reimagined, repackaged, and redelivered across platforms; while new content is being developed, distributed, consumed and socialized in record time. To expedite this process at reduced cost, producers and distributors are consolidating to shrink the supply chain; while the studio system faces the disruptive threat of independent networks and channels with their fingers on the pulse of both millennials and Generation Z, who are invited to break through the proverbial fourth wall armed with up to four screens (smartphone, TV, laptop and tablet) of technology to appease their insatiable appetites.

So the terms of engagement with consumers have changed significantly, and the content is better tar-



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The key object containing the rights is still the IP itself, and the vehicle through which rights are exchanged and participations in the content are set up is the contract.

geted, but what haven't changed for decades are the laws that govern how content is exploited as intellectual property. Intellectual Property (IP) is still where the true value lies in the media and entertainment industry, [just ask director, writer, and producer James Cameron about the top grossing films of all time, Avatar and Titanic] and managing its associated rights efficiently so that it can be widely and legally leveraged is a challenge we've all seen test even the strongest IT infrastructures. When rights are exploited, calculating royalty and participations payments can be equally taxing, especially as volumes of digital transactions continue to climb to unprecedented levels.

Consumer purchasing patterns drive the market

For over two decades, I've watched the industry – and the systems that support it - evolve. As the Global Head of Rights and Royalties for Vistex, Inc. (formerly Counterpoint Systems), I continue to marvel at the direction consumers have driven the market through their changing purchasing patterns. I've witnessed profound organizational changes within the companies we serve, as the lines separating previously distinct silos blur as content moves through the enterprise. The complex rights picture that now surrounds IP is being leveraged broadly across an organization to inform sales, operations and finance, and additionally feedback to content and strategy teams, all supported by robust and timely analytics of each product's performance and potential earnings. In short, better decisions are being made faster with systems that can evolve at the speed of consumer demand.

As mentioned previously, there is a vis-

ible scramble in the industry to respond appropriately to the current set of changes and challenges. While some in the industry are desperately trying to reconfigure their existing tools, force-fitting new concepts through old methods and processes to meet highly specific analytical and reporting needs, others are taking a more holistic and scalable approach to the business of producing and distributing content, by selecting technology partners and adopting solutions that evolve as they do.

One example is in the area of non-linear or non-traditional usage in TV content. Those companies that kept faith with rights management systems based only on linear exploitation, in which channels, transmissions and runs are the primary variables of interest, are now counting the cost as VOD and sell-through add more complexity than these systems can handle. Similarly, with so many new avenues for film content to reach global markets at lower cost, distribution companies need an avails solution that allows them to take advantage of these platforms today and into the future, rather than be tied to the outdated rights models of vesteryear.

More generally, a system that will survive the M&E industry's changing winds needs to account for concepts that are fundamental to the business differently from those that shift more often. And that is why today's consumer-centric media world is not such a steep change in the rights and royalties space: to the rights holder, content is still

king. The key object containing the rights is still the IP itself, and the vehicle through which rights are exchanged and participations in the content are set up is the contract.

The future calls for flexible fundamentals

When recently implementing our flagship Media Maestro solution at a major studio to manage the ingestion and calculations for their digital sales, we again learned that what rights holders of all kinds are looking for is a system that reflects these fundamental business truths, but is flexible enough to capture both nuances in the rights picture and the changing patterns of global consumption. It should support new types of agreements and ways of interfacing with downstream and upstream partners, reflecting standards where appropriate but also supporting custom exchanges. It should also integrate fully and openly with scheduling, playout, asset management and other systems, on-premise and in the cloud, to allow business-critical data to flow seamlessly among them.

Through these and many other recent implementations, we've learned that the systematic management of rights that had traditionally been thought of as a "back office" function, has now moved front and center to make rights information (including their associated metadata) available to the enterprise in real time so that every department can react to the push of the button by the industry's new royalty: the consumer.

Amo. of Ca comp

Amos Biegun is a 25-year veteran of the rights and royalties business. As CEO of Counterpoint Systems (acquired by Vistex in February 2014), he drove the company to extraordinary growth and spearheaded the organization's expansion across the music, media and the brand licensing industries.

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Securing Production Workflows Without Compromising Speed or Flexibility

Private connected cloud services provide a seamless digital workflow

By Chuck Parker, Chairman & CEO, Sohonet, and Chairman Emeritus, 2nd Screen Society

Abstract: Ensuring the security of prerelease production assets can be a difficult proposition. Challenges include connecting with multiple collaboration partners quickly and securely; moving large video files with delivery assurance; parking and landing large video projects during the production process, often in remote locations; providing remote collaboration tools that are usable by editors, creative talent, and others who are often geographically dispersed; providing disaster recovery archival capabilities; and providing quick and secure access to cloud compute and storage resources. Global private media networks can help meet all of these challenges.

ver since the Sony Pictures hack, I get asked in meetings and at cocktail parties why the security of prerelease production assets seems to be so difficult. It's not a simple question to answer. The challenge is not unlike that described by experienced execs from Silicon Valley. A tech start-up needs to lease office space to get started, hire the smartest people it can find, leverage as much cloud and virtual infrastructure as possible to grow with as little cash outlay as possible, and often develop a product in a virtual cloud-based environment to allow to access tal-

ent located around the world in real-time.

Movie productions do behave like tech start-ups in many regards: they lease temporary production and post production space, they certainly hire the best people, they either rent equipment (common with Avids, etc.) or leverage media service providers where possible to reduce their cash outlay, and they have to develop workflows that allow them to collaborate with talent around the globe–though admittedly this is often not in a "cloud" environment but is often based on a "sneaker net"/messenger bike approach even when those col-

What is today's modern producer supposed to take into account when picking his or her next post production location?

laboration partners are in the same city.

However, what is distinctly different between the start-up nature of a technology company and that of a movie production is how they plan for their future. The start-up is hoping for a buyer (financial or strategic) and thus there is a decent possibility that all of the tools and processes developed along the way will be used after the founders exit. The movie production, however, sells the result of its hard work to a studio distributor (i.e. Disney, Lionsgate) and then often "winds-up" or closes the legal entity of the production itself. In other words, most of the process improvement and tools built along the way are discarded or thrown away at the end of the production, with little capability of reuse on the next production (often funded by other means with a different team, etc).

This fundamental difference in approach puts security posture on the movie production at a disadvantage from the start. As all of us know, building in security upfront isn't easy and often makes the steps we take as a part of the normal creation process (regardless of code or scene edits) harder and longer to perform. Combine that with the job of movie studio executives, who are often managing many different independent productions at once, and they have a Herculean task of either learning a different "security protocol" for each production or working hard to reduce them to a common (and often much less secure) approach.

Add to that dynamic the challenges that release dates create, increasing the risk level. While the full cast and crew may have been shooting in an exotic location or on modern sound stages around the world, the skeletal crew left behind after the shoot to edit and finish the feature has a release date looming overhead like the Sword of Damocles.

So, the post production team sets out to meet the deadline of perfecting its work of art with only two levers to use if it falls behind: work more hours, or reduce the complexity of any workflows to get more done in the same amount of time. Each of these approaches reduces the security posture of the team. Add to that the now frustrated studio executives who are buying the rights to the finished product and are already dealing with a myriad of frustrating "blocking technologies" on other features, and you can quickly see how content might be moved from point A to point B without the right security protocols.

To add an accelerator to this fire, throw into the mix a process in which third party collaboration partners are chosen through a bidding process that often results in 10 to 15 parties being awarded contracts for various parts of the post production process (visual effects, sound mixing, color grading, subtitling, etc.) on a Friday, with an expectation that they will keep the production on schedule by starting work on their elements the following Monday.

Exacerbating the process and workflow challenges these "production startups" face, is the "big data profile" of modern film and TV production, with requires video footage data storage ranging from 25 terabytes to a full petabyte.

In addition to the challenges outlined above, possibly the most impactful decision affecting the security posture of the production and post production workflow is the decision about where to physically locate the post production team. While there certainly are many production companies that select specialized media park locations with access to modern post production technology services like those offered by Pinewood, Lantana and Tribeca West, others choose to work directly on the "studio lot" of their rights holder (with similar access to technology and bandwidth). Many production companies chase tax credits, however, and end up in locations that have been designed to optimize the cost of the space, rather than the

cost of accessing the required post production technologies.

Sounds grim. What is today's modern producer supposed to take into account when picking his or her next post production location?

High-speed bandwidth availability on an uncontended network (i.e. not the Internet);
Responsive security services to establish private collaboration between multiple partners;
File transfer services to share large video assets with multiple partners seamlessly;

Digital storage service options for post production workflow needs as well as the parking, landing, DR and short-term archival of projects;
Real-time, high quality remote collaboration capabilities.

Seems like a short enough list; however, in the fast-paced production world, one or more of these key considerations has not been planned into the production and as a result, the productions spends a lot of its time loading tapes or hard drives with content, handing the highly valuable media to messengers to ferry across town to another location for review. Then they put the burden of the short schedule on the to the movie executives and creative talent (director, cinematographer) by forcing them to travel to the same location to work together for an extended period (resulting in thousand of dollars spent on hotels and flights).

Want to have a better experience? Incorporate your networking, media transfer and security requirements into your production and post-production planning process. Put together your video data collaboration strategy before you start choosing your post production vendors. Reach out to industry experts who can you trust with your valuable content and seek best practice advice.



Chuck Parker is an innovative digital media industry leader who has held various senior executive roles at Technicolor over a 15-year period including Division President, Chief Commercial Officer and CIO. More recently, he helped lead some of the foundational efforts in the digital video advertising and 2nd screen technology markets at start-ups Unicorn Media and 2nd Screen Society and he continues to advise start-ups in the space.

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Broadcast Performance Monitoring: From Flawed to Flawless

Digital audio watermarking accurately monitors and identifies music tracks

By Larry Logan, Chief Marketing Officer, Digimarc



Abstract: It's estimated that 60 to 80 percent of the music we hear while watching TV at home is production music. Composers and publishers must be skipping happily to the bank, right? Not exactly. Complex licensing protocols and archaic reporting systems are letting revenue slip through the cracks. But an updated technology can help to pinpoint whenever a track is used in an entertainment program, even if said track is renamed, remixed, used only briefly or lacks audio fidelity.

roduction music proliferates across the gamut of media productions, from television programs to network promos to theatrical movie trailers. Tracks are typically used in very short durations and mixed with sound effects and voice-overs. Additionally, it's increasingly more common in today's production music environment that the same piece of music can be licensed by different suppliers. Together, these realities present significant identification challenges for prevailing monitoring and reporting systems.

Until now, the organizations charged with collecting royalties for music played on the ever-expanding array of media outlets, ASCAP, BMI, and SESAC (known as performing rights organizations or PROs), have relied on labor-intensive, manual reports known as cue sheets, or audio-fingerprint solutions that are prone to false positive identifications. Cue sheets are typically prepared and submitted by the producer of the media program to the PROs. Since there are no standards for cue sheets, they arrive at the PROs in many disparate formats, from Excel spreadsheets to PDF documents to exported reports from homegrown or published software programs. Because cue sheets can touch many hands in the process, they are often late and error-prone before the tedious process of matching them to song and airing schedule information to distribute royalties by the PROs ever begins.

As such, the PROs have taken steps towards adopting

more automated tracking solutions. One approach has been audio fingerprinting. In this scenario, music signals are matched against audio within large reference databases. But the efficacy of fingerprinting is not fully reliable, resulting in false positives and missed performances. Moreover, fingerprinting cannot distinguish different payees on a track that has been licensed on a non-exclusive basis by multiple suppliers. As this trend has become more common, fingerprinting has become an even less viable solution for PROs in making accurate royalty distributions.

What is needed now is a system that can accurately monitor and unequivocally identify music tracks. Digital audio watermarking fits this bill. Unlike fingerprinting, advanced digital identification technology is deterministic, meaning that the ID in the track is read directly versus the probabilistic matching against an external database. This approach provides extremely robust and more accurate performance information. And, unlike watermarking solutions in the past, the latest technology is imperceptible and does not distort the original audio file.

Recognizing the unparalleled performance of digital audio watermarking, SourceAudio, the leading music licensing search and distribution platform, is working with Digimarc to deliver an accurate and comprehensive broadcast performance monitoring and reporting platform for music suppliers.

The solution, SourceAudio Detect, empowers music rights holders to verify their royalty collections from PROs and more accurately substantiate track title identification, track ownership, and license authority. It provides the widest monitoring coverage available for production music in programs and advertisements on network, cable and local television.

"Digital identification solutions help solve today's top issues in royalty verification and formance licensing supply chain, including publishers, composers and their performing rights organizations (PROs), ASCAP, BMI and SESAC," said Hunter Williams, Executive Vice President, IP and Business Development at SourceAudio.

collection for all stakeholders in the per-

When music suppliers host their catalog on SourceAudio and choose SourceAudio Detect, SourceAudio embeds a unique identity in versions of every file that is uploaded. The system then reports where, when and how the tracks are used with respect to programs versus commercials.

The intuitive dashboard allows rights holders to search, filter and export usage reports as they review their broadcast performance data. The monitoring system initially covers more than 150 national broadcast and cable channels, and approximately 100 local broadcast stations, with expanded coverage to be added in the future.

Digital audio watermarking is an exciting development for songwriters, composers, publishers, labels and music libraries that are dissatisfied with the accounting of their current distribution models. Through better monitoring artists stand to gain the recognition they deserve.



Larry Logan's eclectic background runs from his role as VP Creative Director at PLAYBOY to CMO of the technology company that developed Street View for Google. As the VP Marketing & Communications at Healtheon/WebMD he drove one of Silicon Valley's most noted IPOs. He enjoys many firsts; such as producing the first live video webcast from Mount Everest and the first live 360-degree video broadcast from the Olympics on behalf of NBC.



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Reducing the Cost of Procurement

Media companies can gain a competitive edge by shifting suppliers to a self-service model

By Kedar Patwardhan, Media Account Director,

Invenio Business Solutions



Abstract: As the M&E industry moves through a transition to digital, there is an increased focus industrywide on cost management, particularly in the area of procurement. Content creators may be able to reduce costs and increase efficiency by outsourcing procurement administration.

ith the M &E industry in the midst of its digital transformation, the balance of power seems to have shifted, for now at least, in favor of content distributors rather than content creators. The battle against piracy wages on with varying degrees of success in movies, music and publishing industries. What is more interesting is to observe, is how companies are reacting to this disruption.

With revenues becoming more uncertain and in some cases, showing outright decline, there is an increased focus on better cost management. One of the most common areas targeted for cost management or reduction is procurement.

Companies are setting targets for cost reduction and putting pressure on vendors to supply highest quality goods and services at the lowest possible prices. But this approach is doomed for a failure as the relationship with suppliers itself is undergoing a sea change. Some vendors with distinct technical skills have a higher bargaining power and will not yield to any negotiation pressures.

In this industry transformation, one area that is consistently gaining attention is 'cost of procurement' or the administrative costs related to procurement. There is a disproportionate amount of time and effort spent in simply ensuring routine transaction processing in a compliant manner.

Enterprise resource planning (ERP) systems like SAP are great for generating intelligence and spending analysis reports; but they only add more workload to procurement staff. They demand entering and re-entering of the same data for requisition, purchase orders and invoices for com-

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pleting the same transaction. Paper invoicing reduces the visibility of spend during the process and level of spend against budgets. As the inefficiencies in the procurement process mount and visibility reduces, vendors become more and more unhappy, reducing the potential to negotiate better pricing with them. The result is often unhappy vendors, an unhappy procurement department and unhappy management because of missed cost reduction targets.

Empower outside vendors

The solution to this complex problem can be a simple one. How about making vendors an integral part of the procurement cycle? Let them own their master data and maintain it themselves. One can even go a step further and allow them to effectively transact on a corporate ERP system. The advantages are twofold: it reduces the administrative load on internal staff and drastically reduces discrepancies, which often arise during the procurement cycle.

One might question how vendors will react to this shifting of workload onto them. Quite positively, experience shows. In return for a little work, they gain better visibility on the status of their documents, one repository for all their transactions with a customer and better control of the procurement process. Importantly, the trust displayed by the enterprise makes the vendor feel more important and improves the satisfaction index drastically.

Challenges specific to content creators

The procurement cost is especially an important factor for content creators. Firstly, content creation typically requires procurement of many specialty items and services from one-off suppliers from all around the world. Maintaining a relationship with every vendor comes at a cost and automation of the process delivers significant enterprise value in aggregate.

Secondly, the nature of the industry requires employing many freelance creative contractors and agents who need to be handled as vendors through an IT system. Finally, the industry also experiences a relatively high proportion of maverick and impulse spending without prior authorization. All of these together require a stronger self-service procurement system with appropriate organizational control.

A large music company used this approach to generate significant savings in its 'cost of procurement'. The administrative burden of the procurement process has come down, saving thousands of hours of administrative tasks for the business, which can now be utilized better within the organization. Supplier relationships have also improved by providing them with better visibility throughout the process. With all global purchasing data in one place, they get a much better visibility on spend, enabling tighter budgetary control and more effective supplier management.

It's certainly worth a look at what it can do for you! ■



Kedar Patwardhan manages key media strategic accounts for Invenio. He successfully led implementation of Invenio's proprietary P2P solution in the U.S. for a large media company. Invenio's P2P Solution allows organizations to manage a large vendor base for structured and unstructured procurement using an online portal, reducing huge administration costs.

Proud to Protect Your Content

The Content Delivery and Security Association is the worldwide forum advocating the innovative and responsible delivery and storage of entertainment, software, and information content.



www.CDSAonline.org

RIGHTS&RESPONSIBILITIES

Is It Time for the Internet to Grow Up?

Web 4.0 should do more to support content creators' rights

By Robert Steele, Chief Operating Officer and Chief Technology Officer, Rightscorp



By Robert Steele, Chief Operating Officer and Chief Technology Officer, Rightscorp

Abstract: The status quo on the Internet is that songwriters, authors, filmmakers and application developers find their work distributed on multiple platforms, without their permission and in violation of our laws. Web 4.0 should do more to empower a content creator's right to choose have his or her content distributed.

t seems like every day we hear about all of the amazing things that the Internet will do for us. We are told to look forward to "The Internet of Things" and the "Semantic Web." A future where "technology and human become one" is coming quickly, according to Nils Muller, CEO of TrendOne, a German micro trend analysis firm.

The one thing that the Internet apparently will never be able to do, however, is stop people from consuming music and movies without permission. John McDuling of the blog Quartz wrote, "The music industry wants to fight the Internet again—and it's probably going to lose." Techdirt calls creative people's attempts to protect their financial interests on the Web "quixotic." How can it be that we can have self-driving cars, stream music from our cell phones at 65 mph and yet we can't have a Web that makes sure that creative people get paid?

According to Sandvine, 27 percent of all upload traffic on U.S. ISPs was peer-to-peer file sharing in the first half of 2014. According to Netnames, the great majority of file sharing traffic violates copyright. The majority of the content on the file sharing networks and many streaming sites is there against the wishes of the people who made the content.

It is technically possible to stop most copyright infringement

Beginning in 2010, one ISP began to send notices to its subscribers detailing the repeated receipt of copyright infringing material by their IP addresses. These communications provide five days for the subscriber to contact the ISP prior to a potential interruption in service. The ISP suspends service to some of these subscribers who have repeated copyright complaints and do not make contact. It does this because the Digital Millennium Copyright Act says that an ISP must have a policy that calls for the termination of repeat infringers in appropriate circumstances. The ISP still receives millions of copyright complaints. We believe that is simply because its program doesn't actually result in enough suspensions to change user's behavior. The process shows,
RIGHTS&RESPONSIBILITIES

On the Internet today, billion dollar tech corporations deny creators their right to choose whether their work is distributed or not, and often profit from this distribution without sharing the gains.

nonetheless, that copyright infringement can be technologically addressed.

It is also possible to eliminate infringing content from streaming audio and video sites and cyber lockers. The Shazaam audio recognition technology has existed since 2002. I have used it many times and I am often amazed at how well it works with obscure music and even with background noise. In the U.S., the copyright law says that the owner of the copyright has the exclusive right to determine who may distribute their copyrighted work. So, if it has been easy to electronically identify audio copyrights since 2002, why are streaming audio and video sites full of other people's copyrighted works without their permission?

In our opinion, it is because the sites have made a decision to ignore the law first, putting the onus on the copyright owner to take them to court to enforce the copyright, rather than for any technological reason. On the Internet today, billion dollar tech corporations deny creators their right to choose whether their work is distributed or not, and often profit from this distribution without sharing the gains. That sounds more like the behavior of a schoolyard bully than a good corporate citizen. I say it is time for the Internet to grow up and obey our laws without requiring individual creators to somehow sue giant corporations.

Part of the problem is that otherwise well respected Silicon Valley investors keep dumping money into companies whose business models are built on unethical copyright infringing assumptions. Almost all earlier file sharing companies were sued and stopped: Napster, Grokster, Bearshare, Kazaa, Aimster and Limewire. And yet, Silicon Valley venture capitalists continue to fund the most recent incarnations of peer-to-peer file sharing software. Combined investment to date in just two such companies surpasses \$100 million.

We would like to see less investment in technologies that enable copyright infringement, such as peer-to-peer file sharing software and user uploaded streaming sites. We would like to see more capital flow into companies that help protect intellectual property on the Internet.

Breaking the law is not innovation or free speech

One of the arguments that groups that oppose copyright protection on the Internet use is that because there is now "zero cost" to transferring digital files on the Internet, content creators need to accept that their work will be distributed without their permission and they need to find other ways to generate income. Another argument is that preventing copyrighted digital files from being distributed is somehow a violation of free speech. Anti-copyright advocates also like to say that copyright is a "barrier to innovation" and that a "frictionless Web" is somehow some new social ideal that we are all supposed to value above all else.

When an Internet subscriber file shares Game of Thrones in the U.S., he or she is violating HBO's exclusive right of distribution under federal law. When Grooveshark distributed a music file in the U.S. without the songwriter's permission, it broke federal law. Did prior waves of innovation require mass violation of our laws?

Automobiles replaced the horse and buggy when they became better a solution for transportation. Automakers didn't have to break the law to convince consumers that the Model T was better than the horse. Automobiles wiped out many jobs and a huge business that had been in place for centuries, but society was better off.

The first Apple and IBM PCs replaced dedicated word processors, because they were better and cheaper. This wiped out a multibillion dollar business in dedicated word processors, but it was good for society because the supremacy of the product provided more value.

The mass copyright infringement enabled by today's tech companies not only requires that laws be broken, it actually hurts people. That is why it is illegal. According to Michael Smith at Carnegie Mellon, 28 studies have shown that piracy reduces revenue to content creators. For example:

According to Nashville Songwriters Association International, the number of fulltime songwriters in Nashville has dropped 80 percent since 2000.

According to the WGA West, screenwriters' earnings were down nearly 25 percent in 2013 from 2009.

According to the Bureau of Labor Statistics, there were 39,260 people in the U.S. qualified as musicians and singers in 2014. This is down 27 percent from 53,940 in 2002.

So why does piracy continue to grow?

The data volume of file sharing in the United States grew by 18 percent from 2010 to 2013 and Cisco forecasts that it will grow by 42 percent by 2018. In our opinion, piracy prospers primarily due to an unwillingness to respect the law and a lack of ethics passed off as part of the culture of disruption and innovation. We do not believe that legitimate innovation and economic disruption require mass violation of federal laws.

Joseph Schumpeter coined the term "creative destruction," and many venture capitalists and technology entrepreneurs hold this as a high ideal. In *Capitalism, Socialism, and Democracy* (1942), the

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Mr. Steele is the architect of Rightscorp's anti-piracy technology. He has more than twenty-five years' experience as a technology entrepreneur. He has been the CEO of two different technology companies in the mobile and digital imaging space.

LISTEN&LEARN

How Social Media Analysis Will Reshape TV Content and Marketing

To produce effective advertising, it is important to track user behavior

By Emanuela Zaccone, Co-Founder and Social Media Strategist, Tok.tv



Abstract: The data collected from social media demonstrates how and why content consumption and production is changing. Monitoring how users interact and talk about TV-related content can be extremely helpful in designing new products, predicting their success and improving advertising investments.

ccording to the latest Deloitte research, 90 percent of users multitask while in front of the TV. Accenture agrees, reporting that 87 percent of consumers use a second screen while watching. Television, traditionally at the center of our living rooms, is no longer the first choice for consuming shows.

We live in a multiscreen environment, dominated by on-demand content and representing a challenge for advertisers: How can I know where people watch TV content? Who are they? What do they like?

Traditional focus panels are not enough to answer these questions. Classic marketing research methods have a lack of strategic information: To make advertising effective – both in its sales objectives and development – it is important to track users' behaviors.

Social media data as fuel for programmatic ads

The data collected through social media offer a window into how users interact and talk about TV-related content, and as such can be extremely helpful to design new products, predict their success and improve advertising investments.

There is indeed an increasing attention towards programmatic advertising, which is, according to Rany Ng and Anish Kattukaran in a "Think with Google" article on the Evolution of TV, "a technology-automated and data-driven method of buying and delivering ads against TV content. This includes digital TV ads served across the Web, mobile devices, and connected TVs, as well as linear TV ads served across set-top boxes."

In this environment, monitoring users' conversations online around TV shows should translate to better advertising

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Watching experience is the combined result of content consumption (the one provided by broadcasters) and content production (social media content generated by users).

and production strategies. There are at least five reasons why:

1. Automation: When building social media listening and monitoring strategies, one of the main objectives is to be able to collect data and analyze it in order to provide real time insights. This can help build advertising campaigns according to the observed users' behavior, which means a higher chance to reach the right target.

2. Real time: Monitoring data stemming from running campaigns and comparing it with a constantly evolving users' behavior, means being able to eventually reinvest money or change advertising strategies. Now. Not at the end of the campaign, when all the allocated budgets have run out.

3. Machine learning: Programmatic advertising requires less human efforts to be run. Most of the traditional processes – accounts, selling, negotiations, etc. – are now run by software. It makes sense to think that the more information that can be acquired, the more accurate and predictive programmatic advertising can become.

4. Improve investments: From a financial point of view, this is definitely the most important reason why social media conversations analysis can change the future of marketing. Major social platforms such as Facebook and Twitter (not to mention Google), built a business empire based on user profiling and tailored advertising. It is time for TV to optimize investments too, being conscious that watching experience is the combined result of content consumption (the one provided by broadcasters) and content production (social media content generated by users).

5. Better programming: Broadcasters and content producers can leverage their shows by knowing better their audience and its habits. Both factors can lead to a more successful TV product, generating buzz on social media (and eventually expanding the long tail consumption of the show).

A process like this involves not only advertisers, but also content producers and the social TV and second screen communities. While advertisers can indeed see data analysis as an opportunity to improve investments, producers have the possibility to monetize their content in a more effective way.

A virtuous connection between advertising, content production

If data is power, then its collection and real time analysis are the core objective of any social TV player. What indeed represents a huge opportunity to improve investment for advertisers, can also be the most concrete possibility to monetize the second screen.

We cannot click on TV, but we can do it on our second screen. And in this sense, synced advertising can definitely represent the future of (social) TV, establishing a perfect relationship between what we see and what we consume.

Audio content recognition technology allows apps to identify what users are watching and provide tailored content, including advertising. So, if a car ad is on air we could book a test drive on our smartphone, thanks to a clickable banner popping up exactly in the moment in which we are seeing that product on TV. It is (even more) true if we are consuming content on a mobile device, with a convergence between the first and second screens.

Thanks to an increasing amount of ana-



Emanuela Zaccone has seven-plus years of experience as a consultant in social media marketing and analysis. In 2011, she completed her Ph.D. with a thesis about social media marketing and social TV.

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lyzed data, it is easier for app developers and broadcasters to collect useful information that can be aggregated and sold for advertising purposes.

Traditional TV could deliver a message, but there was almost no clue about which users were actually buying what they saw on TV. Now, it is possible to track the complete funnel leading a TV watcher to be interested in a product and eventually buy it. Even better, we exactly know who that person is, what he/she likes, which social networks he/she uses, and how many of his/her friends act in the same way.

It is a huge, powerful difference—something that changes the equilibrium between the audience itself, content providers and advertisers. Advertising must follow and adapt to users' habits, not the opposite.

Market research company Millward Brown stated in its 2015 Digital & Media Predictions report, "For 2015, we expect controlled second-screen syncing to increasingly appear on media plans."

Along with logistics implications (storage needs for data, analysis capability), privacy issues are the most discussed challenges to the kind of social media data collection, analysis and use that we describe. To make sense out of data though, it is necessary to cluster and aggregate what is observed, minimizing individual privacy concerns for the moment.

The true challenge is instead to understand how fast broadcasters will adapt to a future which could be shaped by programmatic advertising: TV ad spending in the US should reach \$84 billion annually by 2018.

Applying a social media analysis approach could yield more value for that investment and reshape the future of TV. ■

CONSUMERCONNECTIONS

OTT Take Over

Technologies like audio content recognition have the ability to gather and create in-depth profiles of viewers

By Laurel Hoffman, Marketing Executive, Axwave



Abstract: Today, 85 percent of the TV viewing population is also using a mobile device. This creates significant opportunities for companies that are enabling omnichannel solutions. With the assistance of certain content recognition technologies, key consumer insights can be gathered and analyzed to give in-depth information about consumer media usage behaviors.

> s we are well aware, the television viewing environment is constantly evolving. The families of the postwar era, with their frozen dinners in front of the set, undoubtedly would have been shocked to hear the news of our viewing habits today. The gap between mobile and television has never been as narrow as it is in 2015.

Current Nielsen studies have confirmed that 85 percent of the young TV viewing population is also using a mobile device. Tablets greatly outweigh the use of mobile phones for certain activities. These include surfing the Web, shopping, and social media related to the specific programming (Nielsen Connected Devices Report 2014.) Mobile phones serve another purpose; these statistics show phones are used to send texts or emails to friends and family about the program being viewed in real time.

These powerful numbers show the importance of tracking these habits. As other industry leaders have defined it, this is a shift from passive viewing to interactive viewing. This interactive TV experience is filled with abundant potential for the engagement ecosystem as a whole, from middleware and sync tech to large Hollywood Studios.

Tools for changing ad and data collection models

The models for advertising and data collection have inevitably shifted to compensate for the change in viewing habits. The key here is to find and utilize relevant tools in order to track these behaviors for appropriate action. Certain technologies, like audio content recognition have the ability to gather and create in depth profiles of viewers. They are capable of pushing the limits with the ability to capture Wi-Fi locations and out-of-home consumption.

The audio sound recognition piece of the puzzle connects the dots between the consumer-facing content of applications as

CONSUMERCONNECTIONS

By yoking the power of consumer habits on a much more detailed scale, the whole web of media has the ability to know relevant consumer demographics in a more intimate way than ever before. What some might find intrusive, others will welcome.

well as the messages of ad agencies and networks that are communicating to the user. In turn, drawing the linear correlation should provide more exciting and engaging experiences for the viewer, rather than intrusive ones. Pinpointing these exact habits of those using audio content recognition can help do just that.

What are users doing daily? We now know that the average user spends 2.22 hours on a desktop computer consuming media and about three hours on mobile doing this as well, as well as about five hours watching television in the US. (Source: eMarketer) In relation to total hours of the waking day, the majority of the population that has a smart phone device, keeps this with them all but two hours of their day. This fact alone shows the opportunity automatic content recognition devices have and the feasibility of integration into everyday life.

The swarm of different media a user comes in contact within a day can be measured by Axwave's SDK. Whether it is a commercial on a tablet while watching Netflix or a song playing on an episode of *Girls*, this technology has the capability to get the specifics of location, whether it is out of home, and the time of day, among other key factors of interest.

This can solve challenges on the app

developer and content creation side, with content enhancement and re-engagement being paramount. Maximizing these two facets strengthen the rest of the ecosystem providing more interaction, usage, call to action, and overall buzz. Additionally, realtime crowd sourced TV user data is used to understand who is watching TV ads in realtime and info on out of home, and in home viewing, and how the DVR is being used for data analytic interests.

Content recognition queries grow

This March, Axwave logged more than three billion content recognition queries in the U.S. alone. These recognition queries represented more than 60 million minutes of user content recognition per month. This is only expected to grow. This technology has been downloaded over one hundred million times in a wide variety of different mobile applications.

Given this, Axwave was able to draw specific conclusions about various users on a broad level from their data. Unique viewership numbers have shown that almost 30 percent of all television content watched in the U.S. is on steaming over-the-top services. These services include Netflix, Amazon Instant Video, Hulu, Google Play, AppleTV, and HBO Go. Even more, over 40 percent of television households in the U.S. subscribe to OTT services. What would the Cleavers think of that? Talk about a national shift.

Going a step further, this data allows the network of media to understand how much time viewers are spending on OTT compared to standard linear television. This is the definition of Pandora's Box, only scratching the surface of what can be discovered inside.

So what does it this mean for viewers? By yoking the power of consumer habits on a much more detailed scale, the whole web of media has the ability to know relevant consumer demographics in a more intimate way than ever before. What some might find intrusive, others will welcome. What could be better than a more edited and appropriate experience for an opted-in user?

Food for thought: Instead of annoying, irrelevant advertisements, push- notifications, pop ups, etc., let's provide a tailored package of media content that will not only engage, but create a reverse pull demand. The only way to do this is to give users the exact ingredients they want. There is no room for blind guessing or improvisations that have the potential to discourage or even deter users altogether.

Because OTT has become dominant, we are already beginning to see these higher expectations become reality. Again, this is a change is from the "taking what is given" to "to a genuine bespoke experience." Let's tap into this potential. ■



Laurel Hoffman is experienced in media marketing ranging from editorial print to technology communications. Axwave, Inc. delivers a free and easyto-integrate software development kit (SDK) that allows app developers to efficiently recognize live TV, TV ads, DVR, OnDemand Video (including Netflix) music and other audio files.

MODERNMODELING

From Grid to Graph

Limitations of the relational data model and benefits of graph databases

By Demian Hess, Director of Digital Asset Management & Publishing Systems, Avalon Consulting LLC



Abstract: Metadata has been modeled and managed as interconnected tables in relational databases since the 1970s. This paradigm is now changing with graph databases emerging as an important alternative. Highly visible examples of enterprises managing information as graphs include social networking sites such as Facebook and LinkedIn, as well as large search providers such as Google. In addition to precisely modeling networks, graphs are well suited for metadata that cross system domains, are varied and rapidly changing. This article examines the limitations of the traditional table model and the value of graph-based models for managing metadata. hen you think of a database, you probably think of tables. This paradigm is so ingrained in our thinking that it is easy to forget that there were many competing models for databases in the early days of computing. It was not until Edgar F. Codd published a series of papers in 1969 and 1970 that tables began to gain traction as the best way to organize information in a database. Codd used the table model to create a relational calculus that separated the way information was queried from the way it was physically stored. This led to the codification of Structured Query Language (SQL) and eventual dominance of relational databases like Oracle, SQL Server, Postgres and MySQL.

A similarly profound change in database design is occurring today. Rather than use tables, data scientists are increasingly turning toward graphs to organize information. If you have ever created a mind map as a brain storming exercise, then you are familiar with the fundamental concepts of the graph data model: information is represented as a web of nodes connected by lines. Graphs are ideal for representing interconnected data, whether social networks or

Representing Interconnected Data

Graph databases make it possible to track and analyze complex relationships.

the semantic relationships between abstract concepts. Native graph databases like Neo4J and OrientDB exploit the efficiency of graphbased analysis and querying, while semantic databases (also known as "triple stores") such as MarkLogic, Ontotext, and AllegroGraph use a graph-based information model to support drawing logical inferences from relationships.

Many large enterprises, including LinkedIn, Twitter, Facebook and Google, are now using graph databases and triple stores to manage information and perform analytics. These types of databases are gaining adherents because they offer solutions to three problems that are not well served by traditional relational databases: changing business requirements, the importance of relationships, and the need to share data across different domains.

Changing business requirements

Relational databases require a fixed schema that defines what tables will be used and what columns will appear in those tables. This means that you need to know exactly what data you are going to collect when you are designing a relational database. For a system holding contact information, for example, you need to decide ahead of time whether people will be allowed to have just one or multiple phone numbers. If people will only have a single phone number, then you would design your database to have a single column in an existing table to hold that data



point. However, if people can have multiple numbers, then you need to create a separate table just for that purpose.

Fixed data schemas create challenges for all businesses. This is certainly true in M&E, where the continual emergence of new formats, distribution channels, and business models regularly impose new data requirements. No database designer before 2006 ever thought to include tables for Twitter accounts and hash tags. Databases being designed today must be able to accommodate the data requirements for the next killer app that redefines the way businesses engage with their customers. Graphs free enterprises from the constraints of fixed schemas because there are no tables to define. In a graph, new types of nodes and relationships can be added at any time as the need is discovered. The addition of new types of data will, of course, require changes to application-layer code–particularly updates to queries and reports. Fortunately, application changes can usually be completed in days or weeks, whereas database changes and data migration projects can take months or even years.

Importance of relationships The emergence of social and professional net-



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Graphs are ideal for representing interconnected data, whether social networks or the semantic relationships between abstract concepts.

works has placed a premium on understanding the relationships between people and the things that interest them. Media companies have also discovered that complex relationships exist within their own metadata, particularly in regard to interconnections between people, titles, markets, contracts, and distribution channels. The ability to track and act on these relationships is becoming a critical factor in how well media and entertainment companies can create new products, attract viewers, and arrange new deals.

Unfortunately, relational databases do not make it easy to analyze relationships because the table-based model is primarily focused on rows of data and not the connections between them. I discovered this first hand when I worked as a developer for a publisher that was creating a product for government lobbyists. The product needed to capture as much information as possible about past and former government staff in order to identify key players and ways to gain access to decision makers. Storing all this varied information in a relational database was extremely challenging since it did not fit into a fixed schema. It was even harder to query the data for meaningful connections. Finding friends-of-friends and other indirect relationships required a SQL syntax that was extremely difficult to write and maintain. These types of queries also performed poorly as the size of the dataset increased from thousands to millions of records.

By contrast, graphs make it easy to query for relationships, since that is a fundamental part of the data model. Here at Avalon, I was part of a project that exemplifies how companies can use interconnected metadata. Avalon's client, a large media company, had decades of video from popular shows and wanted to create a compelling user experience that went beyond a top ten list of most watched scenes. The project team realized that users were interested in the relationships that existed within the videos and that arose from user interaction with the content. Which characters were parts of which scenes and who did they appear with? How often did a topic occur and what was the context? What other scenes would users be interested in given their past viewing history and social network? We were able to answer these questions by utilizing a semantic triple store, which allowed us to query the relationships between videos, users, events and characters.

Sharing information across domains

When I was in graduate school studying information systems, my professors referred to relational databases as "mini-worlds." The implication was two-fold. First, each relational database was only an approximation of the real world. Second, each database was a world unto itself, with its own set of unique identifiers, column names, and table structures. It is not possible to write an SQL query that arbitrarily combines data from multiple databases. If you need to analyze information from different systems, you must export the data, clean the datasets to conform to a new schema, and import them into a data warehouse.

Graphs help break down the information silos created by relational databases. Since information can be added to graphs easily, the cost of merging information from multiple sources is greatly reduced. Graph databases that follow Semantic Web standards (in other words, triple stores) can also be queried without consolidating all the data into a single system. With the Semantic Web, data can exist as a distributed "super graph" across multiple triple stores. In order to query this information, each database simply needs to be connected to the internet and support a semantic query language called SPARQL.

Enterprises have started to realize the value

of these distributed information graphs. For example, Avalon Consulting recently worked with a major studio that extracted metadata from multiple relational databases, converted it to a graph-based information model, and exposed the information via SPARQL so that it could be queried across the enterprise.

Moving from grid to graph

Graph databases are not the best solution for all problems. Metadata that are highly transactional, such as for orders, invoices, and other point-in-time events, tend to fit inside tables and are best stored in relational databases. Metadata that are highly varied and interconnected, however, are good candidates for a wide range of graph-oriented technologies. For example, if your company is interested in batch processing large volumes of interconnected metadata, then an open source, big data platform like Giraph or Pegasus might be the best choice. If your enterprise needs to draw inferences in real time from a distributed graph of metadata, then a semantic triple store such as MarkLogic, AllegroGraph, or Onto-Text might be a good option. If semantic web standards impose too much abstraction and learning overhead, then proprietary and open source graph databases like Neo4J or OrientDB deserve consideration.

Whichever graph database you choose, you will be in good company. Google's trend analysis tool shows that the term "graph database" has grown in popularity every year since 2008 and has not yet reached its peak. Underpinning this interest is the fact that graph databases are providing real value. As the analysts at Gartner reported in September 2014, "graph analysis is possibly the single most effective competitive differentiator for organizations pursuing data-driven operations." If you have not previously considered using graph and semantic databases, it is definitely time to take a look.

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TCO Challenge: Dedicated long term cloud storage and processing is generally more expensive than on-premise systems. A large video archive system may be 100 TB, which has a list price in Amazon S3 storage of \$12,000 per month. That is the outright purchase price of some of the simplest archive systems.

Staying Connected: If an individual or organization loses its Internet connection or can only get limited bandwidth, then there is no access to cloud storage. If mission-critical assets are only available there, then users must scramble to find alternative media or use other processes to maintain operations.

Last Mile: The interconnectivity of heterogeneous cloud based systems is very strong, but organizations can have major issues with the bandwidth of the "last mile" connecting users in various locations to the cloud. For smaller files, especially text and simple graphics, this is usually not an issue. Single high definition video files however, can be extremely large. Especially problematic is the requirement for rapid connectivity to native resolution content for video editing. Transferring a 4K file over 1.5Mbps upload speed could take more than 800 Hours.

Security Woes: The final and most severe issue with the cloud is security. With

high profile data leaks repeatedly in the news, this has become an increasingly pressing issue. Organizational security teams will naturally want all mission critical content tightly secured behind the organizational firewall.

c. Hybrid deployment = best

Organizations can maximize the advantages of centralization and cloud based systems using a hybrid system, getting the "best of both worlds". Lightweight proxy copies, especially for large video assets, allow for more efficiently using and sharing content. With universal accessibility, the key elements of the system are in the cloud: the metadata, the database, and the proxies. The history, logging information, versioning, and other information can help users to optimize their use of assets. The proxy copies allow quick access across all locations. None of these elements are large, so cloud storage and processing is minimized.

■ The native resolution content can be stored in local storage or archive systems. With tiered storage, content can be stored on-premise wherever best suited for the organization: balancing availability (how quickly it is needed) and cost. With an effective management system, the organization can optimize storage tiers. Management systems based on cloud proxies can minimize cloud storage, processing, and transmission: native resolution content need to only be moved when absolutely required (e.g. video editing).

Even more powerful is a system than can link together multiple locations, so organizations can process and store native resolution content only where needed.

Some organizations may not approve even partial deployment in a public cloud for security reasons. Others can address security based on watermarking, encryption, and discrete permission settings for asset access and use.

Deployment of a system based on a service oriented architecture and flexible configuration settings will allow for such a hybrid deployment.

Conclusion

A good management system, rich metadata, and a solution that can use the best of both locations (on-premise and cloud) gives organizations a powerful solution to meet their current needs with the flexibility to quickly adapt to changing needs and to changing technology, especially improvements in cloud technology and bandwidth.

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data leaks. They also wanted to give IT administrators complete oversight of all material being shared and the ability to set mandatory controls in accordance with company policies.

According to the organization's head of IT, "we were impressed by the ability to provide a view into daily activity and to manage users and set policy."

The future of collaboration

While secure sharing of large files using the cloud is the beginning, we are moving to a future where more and more of the creative process will live in the cloud. Teams will brainstorm, gather feedback, manage revisions and get approvals online, increasing efficiency further and helping companies meet market demands faster than ever. Key to this is developing collaboration tools that fit the spontaneous and unpredictable nature of the creative process. Existing tools tend to be highly structured and often complex, unsuited to creative impulses that often lead to more dead ends than successes. Nor are creative professionals made up of uniform types. The disparate disciplines that make up a production team—from camera operators to editors, graphic artists to voice actors—mean that a truly effective collaboration service must work for everyone, even the executive producer.

One of the first changes on the horizon is how feedback is collected. The creative process thrives on feedback, but because we're still stuck working in email, comments and approvals are easily disassociated from the work – especially for image and video files. Soon you'll not only be using the cloud to share files but your recipient will be able to directly annotate and comment on image, audio and video files and record every piece of feedback in one place.

These are just some of the ways that the cloud will irrevocably change how content is originated, produced and published. The digital age is a hugely exciting time for media and entertainment companies with low barriers to entry and unfettered access to audiences. Moving to the cloud will help firms share files more effectively, work together better and secure their valuable assets, so they can make the most of the opportunities on offer. Don't let your company remain grounded while the rest of the media and entertainment industry is taking off through the clouds.

Supporting globally managed workflows requires scalable, on-demand cloud infrastructure and networking that enables fast efficient delivery and retrieval of digital content.

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Cloud compute/infrastructure — M&E companies have requirements to manage multiple resolution versions and copies of digital content for various applications including digital dailies, online/offline editing and regional content distribution. Cloud transcoding options, IP rights management and smart storage/filing provide these types of options quickly and easily.

Security — Secure infrastructure (network and cloud) is vital to mitigate risk associated with an open-world and global environment where many individuals, inside and outside the M&E organization, interact and work on digital content. M&E companies need to protect against leaked content, piracy and proprietary information.

Applications — Industry specific applications delivered as services on top of cloudbased infrastructure are becoming increasingly important as part of a complete open solution stack. As previously mentioned, these applications include DAM, DRM, CMS, IAM, cloud transcoding and many others. In some cases, advanced applications supporting cloud rendering for animation studios, monetizing content, IP rights management and administration of digital payment platforms can also be integrated into the cloud applications portfolio, supporting the entire digital ecosystem as content moves from production to digital distribution.

The solution for global workflow management

Building a media-focused cloud end-to-end solution that effectively manages the complete production process – from content creation to distribution – is not an easy task. M&E companies need to look for solutions providers that put cloud at the center, coupled with cloud-based networks and managed security services, as well as relationships with key industry application providers to create enterprise-grade technology solutions that help M&E companies improve operations and grow revenue.

Cloud infrastructure and storage — In the past, M&E companies have resorted to highrisk methods of shipping digital content on hard drives around the world via global courier services to locations for finishing work, placing content at high risk of theft or piracy. A global media-focused cloud digital workflow paradigm addresses all of these important issues, helping accelerate production cycles and control costs while maintaining a secure workflow environment. M&E companies need a partner that provides this – including secure compute infrastructure, object storage and comprehensive security – through a single cloud console.

Global networks

A cloud solution is only as good as the network that supports it. M&E companies need to make sure their media-focused cloud is coupled with global high-speed high-bandwidth on-demand networks (10G-100G), CODECs, and MPLS-based private IP plus 4G LTE, so M&E companies can connect global networks with high levels of security, reliability, and performance.

Secure cloud-to-cloud connection — There is no one-cloud-fits-all solution. M&E companies need to be able to manage multiple cloud provider platforms through one intuitive easy-to-use enterprise dashboard. They require pre-integrated network, wireless and IP data networking capabilities to create a high-performance multi-cloud partner environment. Managed security services — Protecting operations, digital content, data, and reputation are all fundamental when creating a broad security program. M&E companies connect with clients, suppliers, vendors, and partners from anywhere in the world on cloud-enabled, satellite and mobile systems that have unique customer requirements for securing shared digital content. The trust required for these interactions depends on the ability to provide robust digital content, data, operations, and physical security solutions. This is a must-have for any media cloud-focused approach.

Professional services — Many M&E clients find themselves using a complex mix of new technologies/applications, legacy technologies, platforms and solutions. They need to partner with a service provider that has deep expertise in all of the areas required to create leading-edge digital ecosystem environments and enterprise-class solutions.

Getting started — First, do some fundamental research. Talk to technology infrastructure companies and ask if they can provide complete end-to-end solutions supporting all M&E digital content ecosystems, applications, media cloud and management of global workflow environments. Very few technology companies have the proper mix of products, services and expertise encompassing network, cloud, security, etc. to create an ideal technology ecosystem for managing digital content production, transport, management and distribution around the world.

Whether you are moving compressed video and data or petabytes of uncompressed digital content, you want a technology provider that supports comprehensive M&E technology ecosystems and helps companies improve efficiency and drive new revenue.

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ers steal content without any profit intentions. This makes detection and enforcement very difficult and sometimes more costly than the efforts are worth.

Providers need to be hyper-vigilant to protect against any potential revenue loss. A stolen live broadcast of a highly anticipated boxing match could mean a huge loss of revenue and potential viewers. Providers must implement standards-based digital rights management (DRM) schemes that protect their content to reduce digital piracy occurrences. And because copy protection schemes may seem onerous to some viewers, consumer education and awareness from providers are key to ensure viewer satisfaction. Failure to do so will only lead to viewer flight and even more lost earnings.

Tip 5: Choose one solution to easily and instantly deliver digital content to viewers

Finding a faster, better way to deliver broadcast-quality digital content is the biggest problem for all OTT providers. We're talking about high-definition content that plays instantly and optimally across all connected devices. Some providers are choosing to build the infrastructure in-house, but this is often a time-consuming and costly endeavor. The other option is to piece together multiple products from multiple vendors, which is not only expensive, but complicated and inefficient.

That's why OTT providers need a simplified solution/partner that can encode video into multiple formats to simultaneously reach different devices, platforms and services. Imagine one video encoded for an Apple TV, Roku, Xbox One – all at once!

This same solution needs to accelerate the content delivery process, streamline the digital advertising process and provide the right analytics and insights to understand and predict viewer behavior and content performance.

Verizon Digital Media Services has developed its next-generation platform to simplify the entire digital content distribution process from preparation, delivery and display. Verizon's Video Lifecycle Solution supports all leading consumer devices, reducing complexity for content distribution, DRM, analytics, playback, advertising and a host of other workflow components that are points of failure for other providers, and even some competitors. Linear ads from broadcast content can be replaced with digitally targeted ads inserted server-side. Server-side ad insertion is more effective in increasing viewer awareness and response, and it also provides a seamless, TV-like experience.

"The future of digital content preparation, delivery, monetization and display lives within our next-generation platform," said Ted Middleton, chief product officer at Verizon Digital Media Services.

Overall, it's an exciting time for both viewers and OTT providers as they all move full speed into the digital future. With viewers demanding everything digital, providers should expect to deal with even more new technologies, more evolving viewer habits and more undiscovered opportunities.

The growth of digital ownership has been spurred along by the increased availability of digital content and the size of the libraries available.

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On the digital rights management (DRM) front, CaaS offerings can keep track of the evolving DRM keys that are in play to ensure broad device coverage. The CaaS platform also includes adaptive bit rate (ABR) preparation that insures the best multiplatform experience for end users based on the available bandwidth.

By utilizing the cloud, CaaS can offer burstable capacity to scale as well as the flexibility to evolve the services without getting caught in a legacy environment. Through economies of scale, the cloud reduces storage costs for the various tenants while also reducing the software and hardware CAPEX maintenance and licenses.

In addition to reducing the complexities surrounding sourcing, ABR preparation, metadata management and cloud storage, CaaS provides end users with their own digital video lockers for the content they've purchased. Through EST, each member of a household can store and manage their online video purchases from an MVPD's digital storefront.

Final thoughts

In order to further promote transactional purchases, last year Comcast, among other digital service providers, added a preorder feature to its digital stores. Other methods for promoting digital video purchases include offering bonus features that aren't available elsewhere and gift giving, which could, for example, entail bundling 20 family movies together at a discounted price during a holiday season.

In the face of the proliferation of devices, content rights issues and increasingly complex delivery architectures, a third-party CaaS platform leverages a shared environment in order to deliver a cost effective, consumer-grade service that can be quickly launched, managed and monetized. CaaS is a win/win for MVPDs and their customers.

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THE STEPS TO ADVERTISING INTEROPERABILITY



The registration of ads is the foundation of process improvement.

metadata related to the ad, like the advertiser, product, brand, commercial title, commercial length, and language, are metadata in the digital ad slate component of the file.

These digital ad slates are standardized formats that are vetted by engineering and production associations. They must become ubiquitous over the next 18 to 24 months, in conjunction with API access to standardized advertising metadata, if we are to solve the workflow problem. There are two such standards: **1.** The Society of Motion Picture and Television Engineers "MXF Ad-ID Digital Ad Slate" (SMPTE RP 2092-2:2014) and **2.** "Ad-ID Schema for XMP," which was developed by Ad-ID in conjunction with the Interactive Advertising Bureau.

This universal metadata availability enables supply chain partners to establish standardized and repeatable processes that promote supply chain excellence, which is when partners have fulfilled their roles, adhered to industry best practices, and made way for the other members of the supply chain to focus on their own roles.

Supply chain excellence relies on a company's ability to make decisions quickly and effectively. Furthermore, these decisions must be based on what is best for the entire supply chain rather than just for one specific organizational component.

There are a variety of advertising industry initiatives calling for more granular, more timely, and cross-platform audience measurement, which requires the ubiquitous availability of ad metadata. These projects include:

The Association of National Advertisers' "Measurement Mandate,"

 Making Measurement Make Sense (3MS),
Coalition for Innovative Media Measurement — Trackable Asset Cross-Platform Identification (CIMM-TAXI) and
SAG-AFTRA's Commercials Contracts.

Innovation linked to automation

Consumers have a multitude of choices in relation to content, including subscription and ad-supported. The ability to innovate in the ad-supported space is inescapably linked to automation, which makes processes more simple.

The trend towards programmatic platforms continues to grow. These platforms enable dynamic and targeted ad insertion, which underpin one-to-one targeting of relevant advertising through automated and connected systems that use a consumer's preferences and historical media consumption. In order for these platforms to scale, they must embrace standardization and supply chain excellence.

If we develop standard industry operating procedures regarding how to get information into order entry, asset management, workflow, and measurement systems, then innovative business models will emerge, and cost savings will be generated — possibly even additional revenue.

We need to shift responsibility to the right place in the supply chain, away from downstream parties who have no ownership or primary knowledge of the accuracy of the information. We must move from fixes and make-goods to improved accountability and transparency, which allow more robust measurement and real-time placement of ads that are precisely targeted.

We must adopt this as a mantra: "If you can't identify it, you can't operationalize it or measure it; if you can't measure it, you can't monetize it. Identity is a key enabler for operational orchestration and measurement as well as management."

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Austrian economist wrote:

"The opening up of new markets, foreign or domestic, and the organizational development from the craft shop to such concerns as U.S. Steel illustrate the same process of industrial mutation—if I may use that biological term that incessantly revolutionizes the economic structure from within, incessantly destroying the old one, incessantly creating a new one. This process of Creative Destruction is the essential fact about capitalism."

This August will be the twentieth anniversary of the Netscape IPO on August 9, 1995. Fortune, Time and NPR have all written pieces citing this one event as the moment when the Internet moved from the domain of early adopters and into the public consciousness. It was in 1995 that many people learned about AOL for the first time.

Since 1995, many businesses have experienced the creative destruction that Schumpeter spoke about. When the tech community writes about Internet copyright, a major theme is related to Schumpeter's idea that the destruction of old ways of doing things is inevitable. What is missing from their narrative is how the destruction of the old media business model is going to create new opportunities for all stakeholders in our society the way that copyright enforcement has done for centuries.

In our opinion, at 20 years old, it is time for someone to grow up. We believe that any vision for the future of the Internet should now include a serious effort to return the power of choice to content creators regarding the distribution of their work. We believe that the technology exists to treat content creators fairly on the Internet, as do the laws. What is needed is for technology companies that are part of the digital distribution system to behave ethically and obey the law. ■





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For an IT executive at a studio it takes an inordinate amount of due diligence, fraught with risk, to select a vendor today for a digital technology solution.

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Our enterprises-particularly the IT organizations, which have weathered turbulent timesare overdue for a makeover. Considering the disruptive innovations of the Internet, networks and digital technologies, how should the IT function now be organized?

In most studios, the CTO implements technology to enhance the process of storytelling by offering new production methods. Many of them even have the responsibility to store and secure the intellectual property assets of the studio. The CIO, on the other hand, enables the business units to carry out their management functions with efficiency, timeliness, control and customer service. The CTO often reports to the studio production chief while the CIO reports to the CFO or COO. The digital world is blurring the divide between the responsibilities of the CTO and the CIO.

Furthermore, in the Information Age, the transformational value of big data and analytics is being realized by all the stakeholders.

Development of a seamless interface between technology and business will be the primary area of focus for it determines how best the industry can seize the opportunities for transformation.

Gartner analyst Laura McClellan's prediction that by 2017 CMOs will spend more on IT than CIOs has important implications for how the relationship between the CMO and CIO will change as marketing becomes more technology-intensive. How confident are we of the nature and quality of the IT resource to meet the needs of the marketplace? What percentage of the IT workforce consists of Millennials, for instance? The studios recognize that they must each attract their fair share of the best and the brightest in IT. This may require that we also change our mode of operations in terms of administrative practices.

4. Adopting agile methodologies for system development and implementation

To say that the speed of change as driven by technology is exponential is not an over statement of reality. How do IT teams shift from a waterfall application development process to an agile development process? Today, getting the competitive edge is about speed to market and failing fast if the change implemented is inappropriate. New economy companies like Amazon, Apple, Facebook and Google experiment freely at the closest point of contact with customers, while building upon their success and learning from their failures. What will it take to incorporate this culture in the studios if we deem it to be a requirement of the information economy? We cannot afford to maintain the historical practices of multi-year business plans, long project cycles and mega dollars of investment for large scale projects when the obsolescence of technology and skills loom large.

5. Deployment of big data and capture of metadata

"Data has become the new factor of production, like labor, land and capital." –Larry Downes and Paul Nunes in "Big Bang Disruption –Strategy in the Age of Devastating Innovation"

I do not think there can be any debate about the intrinsic value of data analytics, particularly when consumer behavior impacts the monetization of products and services. We are also reminded that metadata-data about data-is essential for search engines to deliver instant gratification to consumers, in addition to achieving efficiency within an enterprise.

There is a natural barrier in organizations today when the production team has no incentive to capture metadata. Further, data mining is not a natural and spontaneous endeavor in creative organizations. The intrinsic business value obtained by stitching together and analyzing data remains to be universally recognized. So how do we motivate production executives to record metadata for the benefit of enhancing consumer engagement? Imagine the impediment faced in furthering sales to a new territory when localized information is not available and digital rights management systems are often not integrated! The amount of third party industry data purchased by a studio is often for data they have supplied in the first place. The gold here has to be mined with unprecedented organizational effort and expertise.

6. Connecting with billions of consumers and delivering content

Hollywood studios are trying to evolve from historically B2B enterprises to become B2C marketers, which is a Herculean task. Today however, Hollywood benefits from its new customers having instant access to "near complete market information" at their fingertips, anytime, anywhere and on any personal device. Social media companies, like Facebook and Twitter, have tapped into a deeply rooted instinct for humans to collaborate with and improve on the work of others. The multiplicative networking effect, first enunciated by technologist Bob Metcalfe, has produced a peer-to-peer sharing reality which is being harnessed by producers of entertainment. The challenge of intelligent deployment of mobility may prove to be the greatest opportunity for sales growth of the industry.

7. Seeding the cloud to be a rainmaker The Cloud over the industry is welcome for its ability to handle surges in transactions, make content available anywhere and at any time, facilitate new business models and generate economies of operation where cost and usage are synchronized in time. Cloud computing has the potential to become a utility that IT folks have dreamed about for a long time.

A business no longer requires large finan-

AGENDA2015

Development of a seamless interface between technology and business will be the primary area of focus, for it determines how best the industry can seize the opportunities for transformation.

cial outlays in hardware and human resources to deploy Internet-driven service. The elasticity of resources, without paying a premium for large scale, is unprecedented. It holds the promise to transform a large part of the IT industry by making software even more attractive as a service and shaping the way IT hardware is designed and acquired.

The industry has to clear away the clouds from the true potential and obstacles inherent in any technology bringing about a paradigm shift. Numerous issues have to be addressed, including:

Business continuity and service availability;
Easy extraction of data and programs from one site to run on another;

Data confidentiality and auditability;

Scalable storage from low to infinite capacity on demand;

Restrictive software licensing practices;

Security and protection of intellectual property.

The technology enablers and service providers will formulate solutions with their customers.

8. Navigating a plethora of digital technologies

It is amazing how the new digital technology enablers are often startups or companies of smaller size. We are at the early stages of their evolution and consolidation of this technology industry is distant on the horizon. While these emerging companies offer solutions for digital workflow, data analytics, mobile apps and cloud computing, they do not dominate like SAP or Oracle, which had ERP solutions that multi-national companies had to have. For an IT executive at a studio it takes an inordinate amount of due diligence, fraught with risk, to select a vendor today for a digital technology solution. I have noticed the creation of positions for technology-savvy executives in the strategic sourcing department of studios facilitate the difficult decisions of technology identification.

It appears that most of the enterprise vendors have the unique opportunity to take a leadership role in helping their customers transition to this new environment at the expense of their legacy hardware and software license revenues. Companies like Salesforce, Workday and NetSuite are leading this new charge with the incumbents SAP, Oracle, HP, IBM and Microsoft forced to reluctantly follow. There is also a shift from a license-based sales model to a subscription based sales model. Peer-to-peer learning has become paramount for studio CIOs and CTOs.

9. Building company platforms

"People need simple, secure, powerful, integrated and user-friendly ways to create, consume, purchase, share and manage their content. They need to connect with other – easily and often. For all these reasons, they need a platform."— Phil Simon in "The Age of the Platform"

These platforms are rooted in technology. The most vibrant platforms embrace third party collaboration to seek and foster symbiotic and mutually beneficial relationships with users, customers, partners, vendors, developers, and the community at large. The Gang of Four has demonstrated how the platform is instrumental in building the new economy. For example, through the Google platform, millions can compose email messages, listen to music, make phone calls, do research, make purchases, create Web pages, field Web-based surveys, create spreadsheets; and do about 100 other things. I believe that with the numerous avenues for entertainment offered by a studio, whether it is film, TV, home entertainment, theme park, cruise line, interactive, publishing or video game, building a platform is highly desirable.

10. Protecting intellectual property and the enterprise

The recent malicious hack attack of Sony Pictures is a testimony to how vulnerable an organization is against threats of evil in cyberspace. The threat that traumatized Sony Pictures is a "black swan" event in which a hacker systematically worked through the entire organization's computer network with untrammeled access, and proceeded to extort and seek revenge. The combination of the Internet, networks, social media, mobility and digital content has made organizations porous in order to provide instant gratification to consumers. This is the world we desire but the inherent threat to security and privacy is the exorbitant price we pay. I will not be surprised if the lion's share of capital investment for IT at studios in the years ahead is allocated to protecting their assets. Selection of technologies, building of system architectures, integration with existing systems, establishing the necessary governance and ensuring safe practices are some of the gargantuan challenges where a clear path is yet to be envisioned. Collaboration can lead to our industry becoming more secure with optimal investment.

In closing, I wish to leave you with the thoughts of Geoffrey A. Moore, the visionary who wrote "Crossing the Chasm: Marketing and Selling High-Tech Products to Mainstream Customers."

Moore wrote, "Every decade there is a game-changing wave of innovation in IT. In the 1980s, it was the PC and automation. In the 1990s, it was about the Internet and connecting up all those PCs into client-server applications to create systems of record. For the past decade, it has been consumer applications running on smart phones and tablets....In the coming decade, it will once again be about connecting up the digitally empowered end users, this time through what we call systems of engagement. As with each of the prior decades, this calls for new standards and protocols, new architectures and development methodologies, a new talent pool, and a new approach to managing."

Let the exchange of ideas continue with vigor and a sense of urgency!

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The advertising industry has a new, voluntary initiative, the Trustworthy Accountability Group (TAG), that helps advertisers keep their good ads off bad sites.

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and Amazon Prime have been widely embraced by consumers, while new streaming apps such as HBO Now and CBS All Access provide easy access to programming without a cable or satellite subscription. On a near daily basis, new innovative options for legally consuming creative content are being introduced to audiences and new titles are being added.

On the advertising front, because of the complex way online advertising is sold, marketers have previously been unable to prevent their ads from appearing on sites that profit from stolen creative works. The advertising industry has a new, voluntary initiative, the Trustworthy Accountability Group (TAG), an innovative program to provide technical tools to help advertisers keep their good ads off bad sites. This makes it more difficult for pirate sites to profit from stolen creative works – and helps advertisers protect the integrity of their brands.

Is anyone paying attention?

Yes. Non-profit coalition CreativeFuture is mobilizing the creative community to speak up about the value of creativity—and speak out against the harm caused by piracy. By advocating for policies and solutions that will stop the flow of money to pirate site operators, CreativeFuture is leading the effort to take the profit out of piracy and protect the fundamental rights of all creators to determine how their works are distributed.

For example, CreativeFuture recently rallied more than 100 members of the creative community to sign a letter to U.S. Senator Patrick Leahy (D-VT) thanking him for his leadership in urging the credit card industry to implement voluntarys steps that can prevent their services from being misused to fund pirate sites. In addition, Creative-Future is a very active participant in the festival circuit, such as Sundance and SXSW, meeting face-to-face with creatives across all disciplines to educate and mobilize the community on matters of piracy and the advocacy role creatives can play.

Youth outreach is also critical to CreativeFuture's mission. By supporting a nonprofit organization called iKeepSafe and their "BEaPRO" K-12 curriculum, CreativeFuture is raising awareness among youth about the cultural, ethical, and economic implications of creative ownership—instilling a greater respect for artists and the creative process.

What can I do?

The for-profit theft of creative works jeopardizes the rights of creative individuals, puts jobs at risk, and undermines the creative economy. The creative community needs to mobilize and take part in the conversation. To learn more about the role you can play and what's being done, visit www.creativefuture.org.

The job you save could be your own.



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PIRACYFORPROFIT

How—and Why—For-Profit Piracy Works

Advertisers and major credit card companies unintentionally help pirate sites look legit By Chris Ortman, VP Communications & Corporate Affairs, CreativeFuture



Abstract: In an industry where it can take years for a project to move from page to screen, there is one thing that moves at lightning speed – piracy. You may be surprised to learn that most major films are uploaded to a pirate site within days of their theatrical release. And when it comes to television, shows are often uploaded within minutes of airing. A very common misconception about piracy is that it's just a bunch of kids sharing files from their basements. In reality, nearly every pirate website is run by a criminal enterprise operating to make a profit.

iracy is a problem that affects the creative communities: major studios and networks, mini-majors and independents, distributors and exhibitors, book publishers, major and independent record labels, businesses that service the industry (caterers, florists, stylists, travel agents, etc.), as well as producers, directors, actors, writers, musicians, composers, recording artists, songwriters, authors, set builders, and every individual creative professional. Independent films are especially vulnerable to piracy's impact because their production budgets are smaller. When pirates profit from stolen creative works, creatives lose their fundamental right to be compensated for their work.

So how do pirate sites make money?

Illegal pirate sites make millions of dollars from advertising or by selling monthly "premium" subscriptions that are processed by major credit cards. The statistics are astounding—a recent study looked at a sample of nearly 600 for-profit pirate sites and estimated \$227 million in annual advertising revenue, a significant portion coming from major brands. Another study that looked at the top 30 subscription-based cyberlockers found that major credit card companies contributed to nearly \$100 million in annual profits.

Many pirate sites appear legitimate because they feature ads from well-known brands and major credit card companies are processing their subscription payments. This seemingly legitimate veneer can attract well-intentioned consumers who want to do the right thing, but are confused about which sites are legal and which ones host pirated content.

What's being done?

In today's digital age, audiences demand more control and choices over how, when, and where they view creative content. As technology evolves, creative industries are responding and embracing new digital distribution models that provide simple, convenient, and legal access to content.

For example, services such as Hulu, Netflix *Continued on page 88*



Chris Ortman has more than ten years of experience in progressive American politics. He spearheads communications for CreativeFuture, a coalition made up of more than 400 companies and organizations – encompassing film, television, music, and book publishing – that promotes the value of creativity, expanded digital access to legitimate content, and the fundamental right of creators to determine how their works are distributed.



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