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M AND E JOURNAL
Media & Entertainment
Strategies. Solutions.

The New Digital Supply Chain

Built with data, it begins at content's inception and stretches to infinity–from the cloud to consumers and back again

Bringing Creativity to Content Workflows

Increasing Collaboration and Savings with Cloud

Delivering Personalization that Consumers Crave

Special Issue • Winter 2014

M&E JOURNAL
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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 100 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 the Content Delivery & Security Association (CDSA), the Hollywood IT Society (HITS), Women in Technology:Hollywood and the 2nd Screen Society.

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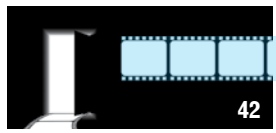

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Welcome to a whole new style of entertainment.

The media and entertainment industry is transforming. New demand for rich media content is creating endless opportunities for engagement. That means you can anticipate and react to what your audience really wants—and truly wow them right here, right now. See how industry leaders are leveraging this shift and driving innovation in the HP Media & Entertainment ezine at **www.epageflip.net/t/117355**.

Make it matter.

Personalizing and Globalizing the Entertainment Experience: Hollywood's Work In Progress

By Devendra Mishra, Chief Strategist, MESA, Founder & Executive Director, HITS

Hollywood is confronting the digital revolution, where personalization of content is truly empowering.

The pace of Hollywood's transformation to exploit the potential riches of the digital world has gained significant momentum in the last three years. As the Internet has become the mode of universal distribution of content and the smartphone the lightning rod for the consumer, studios are extending the user experience like never before. The promise of overcoming the digital pennies with dollars appears to be less elusive with the growing service offerings in the smartphone-driven marketplace globally.

Considerable help is coming from unprecedented sources as well. For example, Alibaba could give Hollywood studios a new pipeline into China. Alibaba, whose IPO raised $25 billion, is a jack-of-all-trades in China. In addition to its enormous e-commerce businesses, the company has interests in banking, maps, cloud computing, online payments, music streaming, and TV and film production. The growth of smartphones in China and India, where craving for Hollywood is insatiable, augurs well with an expanding connected world.

Furthermore, numerous technology companies, mainly small and mid-sized, have begun to provide hardware and software links and layers to help build Hollywood's digital supply chain, which is consumer-centric. Others are emerging to provide unique services for data analytics, digital marketing, apps for smartphones and cloud computing, to name a few. "Old order changeth, yielding place for new" is beginning to ring true as monolithic systems for enterprise management are replaced by SAS and nimble solutions. As a matter of fact, the technology choices are so varied that the emergence of a purchasing officer for technology is becoming prevalent in a few studios.

The traditional world of entertainment, born out of Hollywood more than a century ago, has grown domestically to include direct to consumer company behemoths like Google, Apple, Amazon, Netflix and Facebook. The M&E industry is riding the coattails of the new information economy in terms of distribution. Leichtman Research Group notes that "47 percent of U.S. households currently subscribe to Netflix, Hulu Plus, Amazon Prime or a combination of these services, while 49 percent have at least one Internet-connected TV (up from 24 percent four years ago)."

Today, Hollywood benefits from the new customer having instant access to "near complete market information" at his or her fingertips, anytime, anywhere. 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 Bob Metcalf, has produced a peer-to-peer sharing reality that is being harnessed by producers of entertainment.

The content may get parsed out for consumption on small screens with multitasking consumers having shorter attentions spans. In addition, the window between film release and availability of digital content may experience a significant compression.

Hollywood is aggressively confronting the digital revolution, where personalization of content is truly empowering. The first step in embracing disruptive technologies is to structurally change the organization and slough off outdated legacy systems. Alignment of film and home entertainment businesses of the studios is ongoing while TV networks are expanding their global business. Management information systems and technology platforms are being integrated to support the new structure and to exploit the value of content over its life cycle as well over the life cycle of the customer in all channels available. The domestic operations are being consolidated with international, allowing greater monetization of intellectual property. In order to maximize realization of riches in content, executives from international markets are running domestic home entertainment divisions of some studios as well.

Finally, innovation in the entertainment industry is being spurred by one of the findings of Larry Downes and Paul Nunes presented in their book, "Big Bang Disruption—Strategy in the Age of Devastating Innovation." The declining cost of innovation, the declining cost of information, and the declining cost of experimentation, have shortened and skewed the life cycle of industry change and Hollywood is taking advantage of it. ■

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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What is Smart Content?

(And why should you care?)

By Guy Finley, Executive Director, MESA

What is Smart Content? (And why should you care?) This was the opening comment I posed to a recent assembly of studio executives in Hollywood who, quite honestly, stared at me blankly in response. The conversation started to pick up momentum, however, when I talked about how we (MESA and its membership) have been involved in the entertainment/data conversation for quite some time and how:

1) Discussions have taken place in a variety of business units within the studios and hand-off points to vendors in the evolving entertainment supply chain.

2) The advancement of metadata is a slow but steady process that seems to have gotten its biggest boost at the distribution end of the supply chain but needs to move further upstream to production, or even idea inception.

3) Other parties beyond IT, supply chain and security need to get involved in the conversation. Production software/tools, marketing, change management and business process leaders all need to get involved.

4) Once you've got everyone's attention, there is the statement that appeals to every corporate CFO, "We can use metadata to eliminate waste, inefficiencies and run a smarter, more profitable business."

This dialog was the catalyst and we arrived at a name for it all: Smart Content.

Smart Content is a new term that applies to what we used to call the "digital" supply chain and how machines/data/artificial intelligence will impact business processes moving forward....how data, metadata and identifiers are being embedded...how tracking and recognition software are being written and coded...how storage and archives are using new tools to become auto-recognized, logged and classified...and how our industry will utilize and store the tremendous amount of user feedback, once our media & entertainment products have been delivered into the consumer's devices/living rooms/ecosystems.

In essence, Smart Content is enabling a brave new era for companies that are now able to leverage new content intelligence tools to streamline their productions and supply chains, while gaining unprecedented marketing data and analytics about how their content is being consumed.

The cultivation of Smart Content needs to span the content lifecycle from beginning to end or, as I prefer to say it, from "inception to infinity" because we don't know what's coming next down the distribution pipeline. (Movies for iWatch anyone?)

Though we can no longer identify the end of the supply chain (infinity), we at least know where it begins (inception). Smart Content workflows need to begin at the earliest phase.

Silos are eroding in today's advanced digital workflows – and increased collaboration and access is breaking down traditional barriers between business units. Nowhere is this more evident than in distribution. In the 'good old days' we only had to (physically) get the films into movie theaters and through home entertainment distribution...and now we have online video, which is growing the complexity of the process in scope and breadth:

- Where and when is the content being made available?
- Where and when is it being watched?
- How are we are going to generate the most money on these assets?
- How are we going to grow consumer reach on all platforms?

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

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■ When do you start archiving the data? Most importantly, what do you keep? And what information do you need to collect around that archive so you can search across and access?

We are on this precipice of change and Smart Content can help lead the way. Smart Content will not only enable efficiencies throughout the creation process but will also give marketers the instant feedback loop they need to make critical (and costly) marketing decisions. If consumer feedback is a sidecar that will ride along with the Smart Content on a continual basis, just think of the way we can continue to monetize that content, on a global scale, over decades of changing consumer preferences and buying patterns.

Smart Content makes our assets future-proof.

It all sounds easy, right? Not quite. For Smart Content to transform our businesses, it will take clear direction and investment

The "smarter" your content is, the more likely you are to be future-proof in your content strategies.

from the top. The C-suite execs will need to see Smart Content as integral to their overall business and content strategies and also be willing to invest in technologies and systems that may not generate immediate ROI. They will demand a singular strategy throughout the organization – especially as the creative and business processes become increasingly dispersed geographically – and throughout our circles of business partnerships.

Smart Content will demand a smarter business organization, which will recognize its long-term benefits and instill the responsibility for generating both user- and machine-generated metadata every step of the way. At a time of streamlining systems and downsizing organizations this becomes an even bigger task—one that may take many years to accomplish, but one that is well worth the effort and wait.

Let's all get smarter about creating Smart Content. Let's celebrate even the smallest achievements and developments. We're not going to get there overnight (especially not in this turbulent business climate) but we can't give up. The future of our entertainment industry depends on it. ■

Next-Generation Blu-ray: Let's Get it Right

The road to a standard is long and winding – but is worth the effort

By Jim Bottoms, Executive Director, MESA Europe

Anyone with a vested interest in making UHD happen has a role to play.

When Gerry Rafferty sang "If you get it wrong, you'll get it right next time," could he have been referring to the home entertainment industry?

Let's start with the premise that we got it wrong on Blu-ray, at least so far. (I for one still believe it is not too late and more can be done to drive demand, but let's come back to that another time.)

What exactly did we get wrong? Where do I start?

We didn't educate the consumer. In the main, they still do not know what cable to use to get the full benefit. They are still confused over whether it plays DVDs. Some don't even know that it is a high definition disc.

We didn't fully support the format. Why, once prices started to come down did hardware manufacturers continue to make and sell DVD players? As BD players can also play DVD, why not expand the ownership by just offering the backwards compatible device? It tends to be what other sectors do.

We made the investment in BD replicating almost impossible to justify. This is perhaps a more controversial point but is highly relevant if we, as an industry, are serious about trying to establish an Ultra HD disc. (The fault here lies with no one group or organization, but it is important that we look at the issues.)

The investment cost for the new equipment was high and initial yields were low. With very few exceptions, it was virtually impossible to justify the cost and with replication prices falling almost before the first disc rolled off the line it didn't get easier. I lost count of the number of times I had conversations with even established pressers who said that the numbers simply didn't work.

We didn't bring along the independent content companies. Particularly in Europe, the small guys helped create the business. But for a number of reasons (lack of investment from the independent replicators, minimum order quantities, AACS not being in Europe or small company friendly) they mainly sat out the early days of BD, and many are still not fully engaged.

The consumer education point is one that is increasingly being heard when it comes to new technologies, and quite right too. The days of studios having big enough budgets to create generic TV campaigns are largely a thing of the past. Meanwhile, the studios blame the retailers, the retailers blame the content community and the hardware manufacturers, and while this is going on, little is really being done to talk to the consumer.

OK, enough of analyzing the problems. This only really helps if we commit to the Gerry Rafferty ethos and determine that we are going to get it right this time.

So, if Ultra HD BD is to be a success, what can we do to right the mistakes above?

We need a format (and very soon). This time last year we all thought that we might even see something for Christmas 2014. As we approach the holiday season, I think we should be saying that if we do not have something in the shops by Christmas 2015, maybe we should pull the plug now.

We need a genuine all-party buy-in to telling the consumer what UHD is. So broadcasters, TV manufactures, content distributors and anyone else involved needs to make it clear that next-generation-quality content is accessible across every single delivery platform. But let's also broaden the net. Anyone with a vested interest in making UHD happen, whether you make packs, discs, raw materials or movies, has a role to play.

We need a commitment to making it work for everybody. That means sharing the risk of the investment in equipment and sharing the output from those investment dollars or euros across the content community. Whether those manufacturing lines are in Mexico, Indiana or Alabama does not matter. What is important is that there is a manufacturing investment. No single replicator will be in a position to drive this alone and investment from multiple manufacturers is just not going to happen.

In short, the industry wants and needs this, and the only way that UHD BD is going to happen is if we start collaborating now and have a clear and concerted cross-industry commitment to making it work.

If not, let's abandon plans for a new disc now, promote upscaling players and get behind making more of the existing BD format.

I think this is a very real alternative. I would love to get your views. ■

Jim Bottoms has been closely involved in the home entertainment sector for more than three decades, helping companies around the globe to develop strategies aimed at creating a successful product launch and driving consumer adoption. As Executive Director of MESA Europe he is an industry advocate working with member organizations whose range of business activities span the entertainment supply chain.

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One MESA

What's going on with our many special interest groups?

Since you are reading this *M&E Journal,* undoubtedly you know who we are. The Media & Entertainment Services Alliance (MESA) reaches you either electronically (email, social) or in person (at nearly 34 annual events) year-round in the U.S. and Europe. But you might not realize that MESA is really an alliance of several well-known special interest groups (SIGs) and professional communities that activate their own series of targeted industry events and information initiatives that include:

- Hollywood IT Society (HITS), including HITS Broadcast
- Women in Technology: Hollywood (WiTH)
- 2nd Screen Society (S3)
- Content Delivery & Security Association (CDSA)
- Entertainment Supply Chain Academy (ESCA)
- Smart Content Council (SCC)

Over the past year, as the industry continued to transform and our association expanded, we noticed something happening. There was increasing overlap between the participants in our various SIGs/communities. We first saw it develop between the IT execs in HITS and their interest in content protection, which led them to CDSA. Meanwhile, WiTH was a direct outgrowth of HITS, which itself was an outgrowth of our work with IT executives in the early period of ESCA and the digital supply chain. This year we created the Smart Content Council which has increasing interaction with the IT and supply chain groups, while there is a growing conversation between them and the 2nd Screen Society as social and multiscreen strategies are integrating into the production workflow. In short, we've really become one association with several distinct constituencies—all of whom benefit from an increasingly diverse but equally open and interactive membership.

For this reason, we have made a significant change in our membership policy moving forward: If you are an Advisory Board member of MESA, you're part of them all.

This will provide an ever-broadening dialog about how entertainment is going to transform itself and its business model in a digital world.

MESA

Media & Entertainment Services Alliance

What's going on with the many faces of MESA?

Here's a quick rundown:

HITS HOLLYWOOD IT SOCIETY

Hollywood IT is making its mark worldwide. Our HITS Europe launch in London was (dare we say?) a hit. HITS Broadcast is in the process of building its first board of Content Advisors and recently launched its inaugural NYC summit at CCW in cooperation with NAB.

WiTH women in technology | hollywood

A group of women executives in IT have formed the nucleus of an expanding assembly of female technology and entertainment executives in Hollywood. Two luncheon meetings have each drawn 100+ women (and men, too) talking openly about professional development and career issues.

2nd SCREEN SOCIETY

A new board of Content Advisors is being formed by our new Society chairman, Alan Wolk. In between three core industry events (CES, NAB, IBC) S3 will be concentrating on smaller, executive focus groups that are each targeted at a key segment of the value chain.

CDSA Content Delivery & Security Association

The Board of Directors for this non-profit security group is reevaluating its structure with the intent to expand membership throughout the entire M&E business—movies, television, games and software. Stay tuned for details in 2015.

smart content council

We recently launched the Smart Content Council under the direction of Mary Yurkovic. The council will be opening up work exchanges between the various industry segments to facilitate a broader, more open dialog about the integration of data, metadata and content as it moves throughout the entertainment media supply chain.

Ultimately it is your support and active participation in MESA that has made all of this possible. We welcome your input as MESA and its membership continue to drive the transformation of the entertainment industry. Please stay in touch with any one of our segment leaders. HITS: Devendra Mishra, devendra@MESAlliance.org S3: Alan Wolk, alan@MESAlliance.org CDSA: Bryan Ellenburg, bellenburg@CDSAonline.org SCC: Mary Yurkovic, mary@MESAlliance.org

MESA EUROPE Media & Entertainment Services Alliance

Our sister organization, MESA Europe (based in London), drives SIGs in line with the above, focusing primarily on European issues, initiatives and local events. If you're interested in learning more, please contact Jim Bottoms, jim@MESAeurope.org.

And, if you've got news that you want to share with the MESA community, stay in touch with our writers and editors for the M&E Daily, 2nd Screen 2 Day, CDSA Security News, Smart Content News and HITS List:

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Guy Finley, our executive director, guy@MESAlliance.org

We look forward to working with you in 2015 and beyond! ■

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The Role of IoT in the Future of M&E

IoT has been most visible in common household appliances, but it has the ability to bring together content publishers and consumers in an unprecedented way

By Bhanu Srikanth, CEO & Co-Founder, Jargon Technologies

Abstract: IoT is going to be a transformative experience for consumers as well as businesses. For us in media and entertainment, it will create new ecosystems, markets and business models. The shrinking gap between content-creators and consumers will lead to an enhancement of consumer satisfaction. This, in turn, will lead to more consumption.

The Internet of Things (IoT) is the network of real-world objects ("Things") accessed through the Internet. A Thing in IoT has a unique identifier and contains embedded technology, which is able to transmit data over the Internet without any human intervention. A Thing can be any natural or man-made object. A typical IoT device would have sensors for its specific purpose. Some examples of IoT devices are pacemakers that transmit data to the hospital, animals injected with biosensors to track migratory patterns, street cameras that send emergency alerts upon detecting accidents, aircraft transponders that transmit GPS location at all times, and energy/water monitors for a smarter, more-efficient city. An IoT device can not only sense but can actually "do" things. For instance, a smoke-alarm that detects smoke in an area can automatically activate a sprinkler system in that area; security monitors, when detecting a breach, could automatically secure exit areas without any manual operation. Experts agree that the impact of IoT is going to be much wider than the impact of the Internet itself across all aspects of our life.

At the heart of this concept lies the fact that any and every object can be uniquely identified. Although this may sound implausible, it has already been achieved thanks to Internet Protocol version 6 (IPv6). An address or identifier in the Internet is referred to as an "IP address." Every device on the Internet is assigned an IP address for identification and location definition.

With IPv6, there is no risk of exhaustion of IP addresses.

Yet, the adoption of IPv6 has been slow. According to Google, only 4 percent of

IoT could simplify digital rights management due to the uniquely identifiable IoT devices and make it easier to trace any rights violation to the root.

the users accessing their services have IPv6 addresses as of June 2014. It is imperative that IPv6 gets adopted globally for IoT to evolve. The transition from IPv4 to IPv6 is expected to be gradual as all hardware and software get updated.

In specific reference to the Media & Entertainment industry, IoT could solve the many challenges our industry faces today. IoT will change how content is distributed, marketed and consumed. Content providers want to provide flexibility to the consumers to view their content across various channels such as theaters, Blu-ray, digital streaming and download. And yet, they want to protect the rights to their content. Standards such as UltraViolet have emerged to meet these two, often conflicting, requirements. But to keep up with the constantly-changing ecosystem is going to be an expensive proposition for such standards. From a consumer perspective, the current digital rights management practices do not provide a user-friendly experience. Multiple user actions such as registrations and validations are mandated to exercise the right to one's content, which makes it cumbersome. IoT could simplify digital rights management due to the uniquely identifiable IoT devices and make it easier to trace any rights violation to the root.

IoT could bring together content publishers and consumers in an unprecedented way. Content publishers could define the access rights for a consumer right at the Point of Sale/Service (POS) without depending on third-party human interaction.

Imagine going to watch a movie in the theater, where a POS IoT device, say the ticket scanner, could register your purchase and after some time, push the content for you to watch again on your IoT-enabled device, which could be your television or tablet or phone or desktop. Publishers could instantly reward consumers for going to the theater in a number of ways, like giving them a discount to purchase a digital or a physical copy, or allowing them stream similar content on their IoT device. Consumers could be rewarded with exclusive behind-the-scenes footage for purchasing a ticket. Similarly, consumers purchasing a Blu-ray disc could be rewarded with an instant digital copy on their IoT devices or a streaming subscription for similar content without needing to register devices and enter codes.

Adding layers to social media and interactivity

We can also expect IoT to lend a new dimension to social media and social experiences. A virtual movie-hall where people from across the world are watching the same movie and interacting with one another is no longer limited due to technical barriers and lack of inter-operable technologies. Although such experiences are possible today, it requires costly planning and execution. Imagine studios creating ad-hoc virtual movie theaters and inviting fans or the press to catch an exclusive look at an upcoming blockbuster.

IoT could take interactivity to new heights. Consumers could rate the movie, request information on location or participate in a lottery to win movie-related gear during or after the theatrical experience. Second-screen could evolve into a web of meaningful interactions with consumers' IoT devices. Content can have metadata to trigger a web of contextual experience on other IoT devices.

For example, imagine you are watching a movie when your favorite actor appears on screen. Knowing your preference, your phone could ask to pose for a picture with him/her, then send the picture to your smart-frame in your living room or/and across the world to your friends' living rooms. When you are watching a soda commercial, your IoT TV could alert you to the fact that your refrigerator is about to run out of soda and offer to place orders for you at your nearest or favorite store.

The enormous impact of IoT is going to be on targeted marketing. IoT-enabled devices are going to transmit copious amounts of data, tons of useful information on consumer spending and preferences. No longer will content publishers need to rely on traditional methods of surveys and gathering ratings. They will have real data at hand. If these data are mined properly, it could lead to streamlining of distribution and marketing content, as well as the evolution of new business models.

IoT is going to be a transformative experience for consumers as well as businesses. For us in media and entertainment, it will create new ecosystems, markets and business models. The shrinking gap between content creators and consumers will lead to an enhancement of consumer satisfaction. This, in turn, will lead to more consumption.

Privacy and security

The biggest hurdle for IoT adoption is going to be concerns over privacy and security. The American Civil Liberties Union (ACLU) has already expressed concerns over the intrusive nature of IoT. In a recent survey of 2,000 consumers published online by Acquity Group, 80 percent of the respondents expressed that they were concerned about security, but half of them said they are willing to share certain personal information with third-party retailers if provided compensation. Even if consumers willingly share certain information, securing the big data is going to be a daunting task. There is also concern of security at the national and international levels, where criminals could gain control to a network of IoT devices to cause harm.

Can the current IT security systems evolve to meet the demands of IoT? Or is there a silver bullet waiting to be discovered? Only time will tell. ■

As CEO of Jargon, Bhanu Srikanth is responsible for overall corporate and technology strategy, account management and business development. Before starting Jargon, she was part of the core R&D team that developed and evolved the Blu-ray format and was involved in various aspects of Blu-ray technology. She spearheaded PHL's Blu-ray authoring group during the startup phase of Blu-ray production.

The Potential of the Cloud to Disrupt and Improve Content Creation

Digital film and TV productions demand new business processes that support multi-disciplinary collaboration in real time

By Ginny Davis, CIO, and Tim Sarnoff, President, Production Services, Technicolor

Abstract: In this article, we explore the role that cloud technology-enabled business strategies can play in:

- Fundamentally altering the nature of collaboration in creating content
- Moving away from a delivery model that has traditionally depended on serial (step-by-step) processes toward new strategies that embrace parallel collaboration (in which multiple steps can be executed at once)
- Transforming the economics of media and entertainment experiences

The media and entertainment sector has made tremendous strides in harnessing new digital technologies to transform the way people consume film, television and music – to name but a few artistic forms of expression.

But of these three art forms, it could be argued that only music has also used new technological capabilities to reinvent the eco-system that makes up that industry's value chain. The rise – and acceptance – of online music venues (such as iTunes) has not only left an indelible mark on how music is produced; it has altered how music is developed, distributed, delivered and consumed.

Television and film have been more deliberative in figuring out how new cloud technologies can alter the chain of activities that connect the content development process to the delivery of increasingly immersive augmented experiences demanded by today's customers. Some of the most interesting areas of activity in the distribution of moving pictures involve over-the-top (OTT) players like Netfilx, Vudu, and more recently, MGO. These players are harnessing cloud computing principles to fundamentally alter the relationship that consumers have with the content in which they are interested.

Where we see an immense opportunity to have cloud computing creatively disrupt – and improve – the entertainment industry is in "up-stream" early stages of the content creation process.

Time, tradition and barriers to transformation

Technology has always had an immense impact on the culture and business practices of every industry. What is interesting to observe, however, is how entrenched culture can become, even when the technological realities around us change. Tradition, after all, offers a seal of approval on "tried and true" behaviors that are difficult to displace. It is why people and institutions can be so reluctant to change.

In the media and entertainment sector, the nature of chemical and magnetic tape-based technology led to serial, step-by-step processes for content creation that defined – and even enshrined – the relationships that make up the media and entertainment value-chain. As one step in the process was completed, the next link in the chain took over in a linear trajectory that ended with the screening, debut and release of a production to a consumer audience.

Every year the technology associated with this traditional process got better, further codifying the underlying principles and value-chain relationships. But making things better often meant introducing nuances and complexities that necessarily extended the number of links – and hence the length of the value chain.

However, the digitization of film has introduced dramatic disruption to both the creative process and consumer expectations. Scenes, for instance, need to be more realistic even as the stunts are more fantastic. In just a few years, we can see how rapidly digital image enhancement technologies have altered the visual experience by comparing Peter Jackson's *The Lord of the Rings: The Fellowship of the Ring*, in 2001 to his 2013 installment of *The Hobbit: The Desolation of Smaug.*

The visual difference is palpable. But even more

impressive is what has had to occur behind the scenes to create these new immersive augmented entertainment experiences.

Parallel processes, collaboration and the cloud

The entertainment industry is rapidly – even if reluctantly – coming to the conclusion that the complexities associated with today's digital productions cannot be supported by traditional (linear/serial) business processes. The number of interdependent variables associated with telling compelling stories has exploded beyond the ability to place all processes on a single critical track.

The digital revolution in content creation has created demand for new business processes that support multi-organizational, multi-disciplinary collaboration in "real time." The industry has evolved to a point where multiple activities must move forward in a simultaneous and parallel fashion.

And this where the principles of cloud computing come into play.

For years, industry has struggled with how to create common platforms and shared resources that facilitate collaboration, but which also provide the security and risk management capabilities that are associated with closed proprietary, private systems. What cloud computing has introduced is a new way to think of the underlying infrastructures that must be interconnected and integrated to produce and distribute cinematic and television programing.

An integrated approach to infrastructure virtualization, application program interfaces (APIs), data management, as well as strong identity management (IM) and role-based access control (RBAC), are just a few of the central tenets and organizing principles for cloud computing.

These principles abstract the applications – the functional purpose of a piece of software – from the underlying infrastructure. Virtualization, for instance, allows organizations to optimize the utilization of processors. But the same technology also makes it possible to place several virtual machines on a single server so that multiple activities – and user disciplines – can share the same resource.

The sharing concept is critical if we are to engage in parallel collaborative processes and minimize the number of file copies (scenes for instance) that exist across the multiple systems used by the community that comes together to produce a motion picture.

Why is this important?

When multiple copies of files are flying around in different systems that are not integrated, it creates a version control challenge that can paralyze the production process.

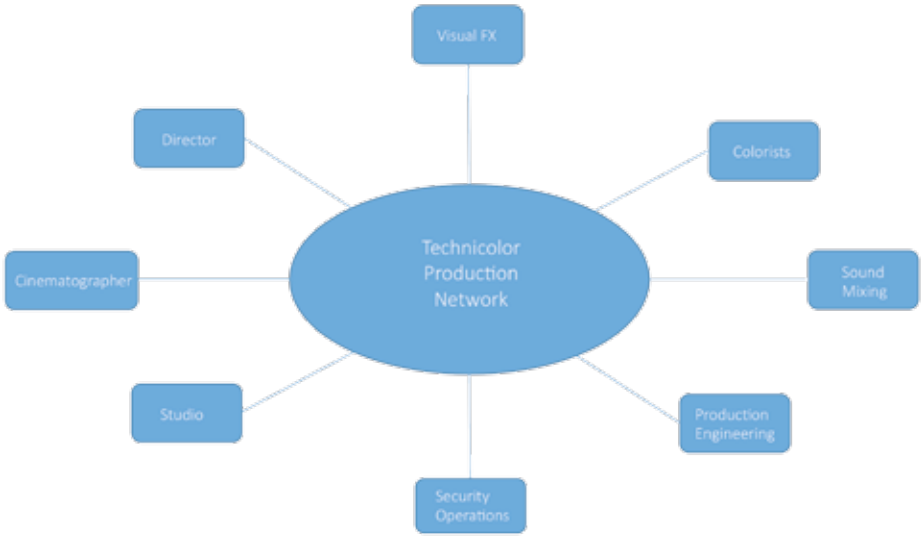
The abstraction of applications from the underlying infrastructure makes it possible to create logical segregation of activities based on policies that can be automated, monitored and enforced on the same computing resources.

Along the same lines, APIs are important because they allow different systems to be adapted and integrated to support multiple functions – such as sound editing, visual special effects or colorization – on a common platform.

From a security, compliance and management perspective, IM and RBAC allow executives to validate and authenticate who is using cloud resources while also restricting user behaviors and access to files and processes based on defined and prescribed roles and responsibilities.

This cloud architecture can (and should) be analyzed and audited by third parties to

Members Only



Technicolor's cloud-based network supports content creation.

ensure that the performance, controls and security characteristics meet the highest standards of compliance with the shared priorities and policies of the community that uses the cloud to streamline the production process.

A "Members Only" cloud

These are the technological principles that are at the center of the "Members Only" production network that Technicolor has put in place to support studios, producers, editors, directors, colorists, visual and sound effects professionals along with the rest of the community that must work together to produce major motion picture productions or television programing. But it is important to recognize that the cloud architecture only serves as a platform for designing business processes that support today's production realities.

The architecture is what allows a movie director in Hollywood to make changes based on discussions with VFX professionals in London in a way that can be tracked – in "real time" – by a team of colorists in Los Angeles, who may be working on the same scene.

It is not enough to simply share files and keep track of evolving versions on shared computing resources; we have embedded logic into the digital exchanges, transactions and updates so that all key dependencies are automatically updated when additions, deletions or alterations are made in this parallel production process.

Economic implications

Shifting to cloud-based processes can reduce capital expenditures, but still requires well managed production planning to control the variable costs.

We might be tempted to conclude that new cloud-enabled parallel production processes generate their primary value by reducing costs and accelerating "time-to-market." But the fact is that while both outcomes are possible, the true benefits of a parallel collaboration workflow come from the ability to better manage the rising complexities associated with digital productions, so that more time, money and human talent can be focused on the story-telling function.

Rather than spending time on administrative and technical efforts to ensure that everyone is working off of the same set of master files – an almost impossible task for a traditional serial process – in a collaborative cloud environment, the entire community of interest can focus on delivering the intended artistic vision of the content creators.

Instead of being managers of a cumbersome set of disjointed processes that are loosely connected (and in which the entire operation is only as strong as the weakest link), we can let automated workflows on shared computing resources manage these complexities so that more talent can be focused on movie making.

Effective cloud environments allows us to invest more in collaborating creatively – rather than spend operational dollars coordinating administratively. This is important if you believe that the quality of talent and artistic collaboration are the greatest contributing factors to artistic and commercial success.

So while there are gains in productivity and operational efficiency to be leveraged from cloud-based processes, these benefits represent improvements that can best be described as "defensive" in nature.

The more difficult outcomes to measure and quantify – but by far the more impactful implications delivered by cloud-based business strategies – stem from the improved ability to tell the best and most compelling stories without yielding or compromising to the growing day-to-day complexities of today's digital production environment. ■

Ginny Davis leads key strategic partnerships and manages the applications, networks, data centers and IT services used by Technicolor employees, customers, and suppliers across more than 30 countries and 200-plus sites. She is responsible for defining and implementing new technologies to continuously improve our productivity for both internal and external customers.

Tim Sarnoff oversees the company's key activities including visual effects, post-production, digital cinema, and animation & games. Prior to joining Technicolor Mr. Sarnoff was President of Sony Pictures Imageworks for 12 years, and previously created Warner Digital Studios as a division of Warner Bros., and shepherded the start-up and growth of Warner Bros. Animation.

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Transforming the Digital Supply Chain for Efficiency

The best possible path is through automation and cloud IaaS

By Douglas Reinart, Chief Operating Officer, ContentBridge Systems

Abstract: A discussion directed at those involved in the digital content supply chain, covering the effects an inefficient supply chain is having on the industry, some of the common proposals to improve, and one vision for how transformation may be shaped.

Many of us are attracted to supply chain work not so much for the daily grind, but for the potential to refine and improve. It is the engineer or the architect in us that can't help but think of better ways to connect supply with demand. We aren't satisfied with the status quo.

If you are a participant in the digital content supply chain, you must be acutely aware of the brimming inefficiencies that exist. We are talking about wrangling media assets of all formats, directing the movements of very large files, and executing complex transformations to increasingly stringent retailer requirements. Very unlike most supply chains.

What we are experiencing is the following:

- video, audio, and data elements scattered across disconnected repositories;
- assets unnecessarily re-generated;
- masters handled and transformed over and over again;
- derivative assets proliferating;
- re-work and redundant QC steps;
- product configurations for one output (e.g., Blu-ray) not available, or overlooked, for other windows;
- sales teams committing titles and delivery time frames that are simply not supportable by operations due to missing or unavailable elements;
- numerous retailer-specific delivery requirements;
- and sales associates having to become closet experts in digital media technologies.

Regardless of whether the retailer or the content owner covers digital supply chain processing costs, inefficiencies make content more expensive to acquire. Other problems also arise. A less agile and responsive supply chain leads to poor fulfillment performance and missed sales opportunities. Technical complexity impairs connections between sales and operations, further limiting a content owner's ability to capitalize on opportunities. Retailers find it more difficult to discover and transact content.

Because today's supply chain limits vis-

ibility and discovery, retailers are driven to a greater reliance on aggregators, middlemen, and other "filtering mechanisms" to weed out content and squeeze their funnels. The added cost of an inefficient digital supply chain also means that retailers have less to spend on the content itself.

Getting to this point

Not too long ago, we lived in an analog entertainment world. Back then, we went to theaters to watch the projection of 35mm film and tuned in to any of four or five broadcast television channels (counting UHF) in our homes. Film and broadcast TV maintained entirely self-contained distribution infrastructures rigidly defined by standards. Content owners had well-defined deliverables and in many cases owned the distribution chain.

Things didn't change much with cable television, although various tape formats did begin to multiply. Even VHS and the advent of home entertainment represented just another self-contained, consistent, and entirely standards-driven distribution.

It wasn't long before digital technology crept into distribution, but the major studios managed to keep the genie bottled for a while longer. Digital Cinema Initiatives, LLC (DCI) paved the way for digital cinema, while collaborations between studios and the consumer electronics industry yielded DVD and Blu-ray specifications that drove lucrative businesses.

Once all title assets are available, the physical media supply chain for DVD and BD progresses down a consistent path from authoring to emulation/QC, disc mastering, replication, packaging, pick/pack, and delivery – all controlled by major content owners, right down to the retail shelves where they are displayed.

Studios kept their eyes on the packaged media prize. Meanwhile, in DVD's shadow, the digital supply chain germinated without studio coordination or standards.

Today's digital supply chain quickly diverges from the content owner's control, roughly where compression and authoring begins in the DVD and Blu-ray world. Digital retailers now control the path that intersects the consumer, and they define what flavors and variants get created after the mastering step. The largest and most influential of them used this control to push upstream, aggressively dictating the format of deliverables to suit their consumer delivery infrastructures. The studios left a vacuum and the digital retailers filled it. Compounding the issue for everyone is a multitude of device form factors and technology "ecosystems" adopted by consumers.

Proposed improvement paths

If you have attended a digital media-themed conference within the past eighteen months, you can attest that we are not exactly lacking for proposals to improve the digital content supply chain. Let's take a closer look at some of the proposed paths.

Do Nothing

The digital supply chain has evolved, warts and all, to where at least it is functional. Maybe we are too far down the path for significant changes to be worthwhile. Perhaps major investments have already been made on internal processes, systems, and partners to help deal with the complexity. Slow movers chained to sunk investments will start to lose out.

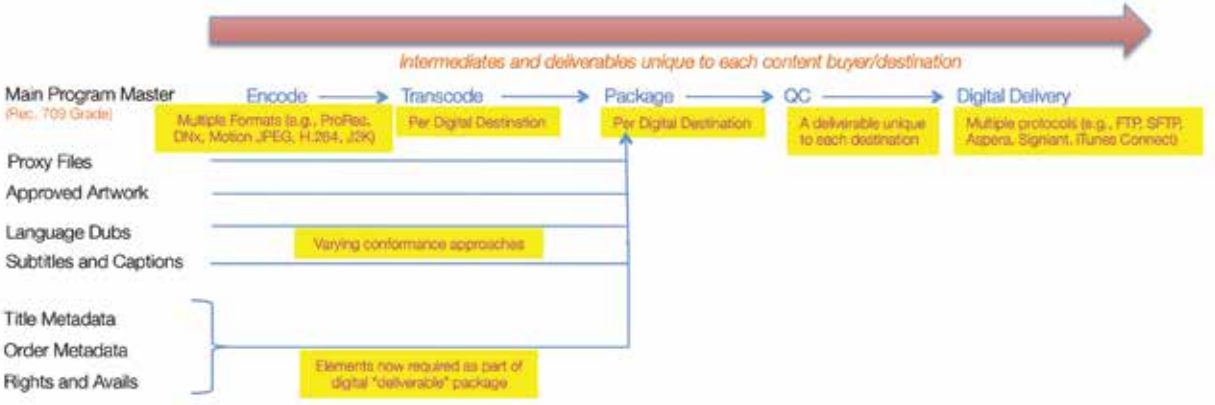
Standards

Leading entertainment industry groups like DEG, EMA, MESA, and SMPTE have sponsored efforts to define digital supply chain standards. Much of the focus has been on metadata, but work has encompassed mezzanine files formats, image artwork, closed captioning, subtitling, and avails. Some retailers have expressed their desire to receive mezzanine-level packages from content owners that adhere to Interoperable Master Format (IMF) specifications.

Clearly, standards are an important piece in the digital distribution puzzle. However, experience suggests that we can't solely rely on this path. We see how quickly standards efforts can devolve into yet another metadata schema or file type proposal. Some retailers believe they can push through a de facto standard.

No content provider wants a digital retailer to dictate supply chain terms more than they already do. And how likely is it that digital retailers – committed to differentiating experiences for their consumers – will be comfortable settling for a "one size fits all" package from content owners? Still, there may be time to forge some standards, building off the good work done to date. It might help matters if a DCI-like entity was empowered to implement digital distribution standards, but that too would require broad consensus. A role may exist for a coordinating group focused not

Example Digital Distribution Workflow



The added cost of an inefficient digital supply chain means that retailers have less to spend on the content itself.

on specific standards, but on something a bit broader (more on that below).

Retail savior

Lately, there has been talk that a major digital retailer may be willing to step forward and take over the entire digital supply chain on behalf of the industry. After all, a retailer of sufficient size and scale already receives content from the vast majority of owners and aggregators. They could process deliveries to other destinations just as third party services providers do today. The largest have seemingly limitless resources at their disposal to step into the breach. In fact, it might all be offered free to content owners.

Except that it won't be free. In my studio home entertainment days, we evaluated and rejected offers from retailers to "offload" some of our supply chain burden. Those proposals didn't go anywhere because they would have put us in awkward positions with our other customers. What is being proposed now for the digital supply chain would be the equivalent of awarding the studio's entire DVD and Blu-ray fulfillment to a single big box retailer.

Central servicing entity

If trusting a single retailer to assume control of the digital supply chain is not the way, perhaps a large media service provider could act as a consolidated intermediary. This is a fantasy to which post houses and other media service providers are still clinging. Understandably, content companies are unlikely to put all their eggs in one third-party service provider basket.

Other variants include a dedicated servicing entity that is jointly owned by multiple studios, or an industry consortium. Both the Digital Cinema Distribution Coalition (DCDC) and the Digital Entertainment Content Ecosystem (DECE) are good examples of entertainment distribution consortia. DCDC addresses the satellite delivery of digital cinema packages to theaters, while DECE, of course, begat its digital locker service familiar to us as UltraViolet.

Whether a third-party provider, joint studio entity, or industry consortium, a centralized servicing group doesn't automatically eliminate inefficiency from the supply chain. Individually, they concentrate the effort and may be able to push through standards convergence. They also introduce another intermediary into an already crowded supply chain full of middlemen.

Technology to rationalize distribution

We are witnessing the rapid evolution of distributed processing and storage solutions across nearly every industry. It is not hard to envision the realization of entire supply chains in the cloud – particularly those charged with processing and moving digital goods.

Automation capable of processing video, audio, artwork, and associated metadata into packages accepted by any digital retailer would transform the supply chain without requiring adoption of monolithic standards or establishing new middlemen.

Taken further, an interoperable "ecosystem" of digital supply chain services could leverage the ever-improving economies of the cloud. In this model, content owners would be free to choose how and where their asset libraries exist (although Total Cost of Infrastructure (TCOI) advantages will likely drive content owners to maintain a 'service-ready' library with one or more Infrastructure as a Service (IaaS) providers). Content owners would only need to provide the path to uniquely identified assets. The supply chain, in the form of cloud services, would be delivered to the content.

The Crystal Ball

I believe that the true and inevitable path to transforming today's digital content supply chain is through automation and cloud IaaS.

The technologies already exist to bring an interoperable ecosystem of supply chain services to reality. Automation can take over the supply chain process from the point where a content owner has high quality conformed assets. This includes dynamic localization (swapping alternate language audio tracks, subtitles, and even scene replacements or dub card inserts). Automation in the 'front-end' asset conform stage (specifically, the mastering and QC steps) will take a bit longer to address. Still, much of the effort to create diverse retail deliverables can be (and is) automated today.

Standards can help accelerate this vision by limiting the variations in deliverables for which automation would have to solve. Interoperability of solutions presents its own challenge. Standards can help the technical component, while joint industry initiatives can help address the business challenge by encouraging studios, service providers, and retailers to work toward a common vision.

Automating the fulfillment process then opens up possibilities to rethink content search, discovery, and transacting between content owners and retailers. Think for a moment about a "common virtual VOD engine" powered by competing but interoperable cloud services. Content owners decide what to make available to whom, under what terms and where they keep their assets stored and protected. Retailers decide what they wish to transact and specify how they want to receive the content. Cloud services take care of the rest. Such an approach could allow for fine grain control of access rights and greatly reduce the need for aggregation. Selling and distribution frictions would be eliminated. More content, including independent works, would find their way to retailers looking to differentiate their platforms. The whole pie grows.

Who owns such an engine (or if it needs an owner at all) and how it all operates will have to wait for another installment. The good news is that there are real opportunities—and now the technologies—to transform the digital content supply chain in dramatic and meaningful ways. After all, isn't that why we chose to be supply chain professionals in the first place? ■

Douglas Reinart prior to ContentBridge was VP Global Studios at Technicolor. He also served as EVP Worldwide Operations for Paramount Pictures Home Entertainment and Partner at PRTM Management Consultants, now part of PriceWaterhouseCoopers.

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4K UHD: Delivering on the QoE Promise

Files will need to undergo rigorous testing and quality analysis to realize the format's potential

By Ken Goeller, Vice President, Solutions Engineering, Deluxe Digital Distribution (D3)

Abstract: "Good enough" will no longer be accepted as "good enough" given that the critical differentiator and fundamental driver behind 4K is unprecedented and superior quality over today's HD content. The goal here is to discuss the broad range of considerations that must be addressed to ensure 4K content and services are delivered at a Quality of Experience (QoE) commensurate with market expectations.

Industry consensus is that 4K will be the next generation television technology that will capture the consumers' imagination. With this consensus, production, processing, workflow, and delivery mechanisms must be re-defined for mass scale as subscribers embrace the potential of this exciting new viewing experience. Now is the time for service providers to investigate the necessary steps to prepare and ramp commensurate with the pace of the market and position themselves as leading providers of very high-quality content.

Fundamentally, it should be understood that there will be variations in the quality of 4K formatted titles. This is based on nuances having to do with parameters used in the preparation of content from sources that are either 4K native shot and mastered production, or in the conversion, restoration, and re-mastering from film or HD. Furthermore, to ensure that the playback experience is optimized on target devices, 4K files will need to undergo rigorous testing and quality analysis of resolution, color gamut, bit depth, frame rate, compression, and decoding algorithms.

All 4K is not created equal

For content that is not 4K-native shot and produced, various modes of conversions from HD and film to 4K will impact the quality of content. These include:

- ***Upscaling***: In its most basic form, upscaling does little more than quadruple the number of pixels. However, there are some versions of the upscaling process that attempt to augment the quality through algorithmic processes and add information by "guessing"

New Workflows, Evolving Standards

Some of the technologies and standards used in 4K UHD workflows.

what a rendering with deeper color depth and contrast would look like. While upscaling may offer a fast track to library building, operators will have to decide whether upscaling methods will meet the higher quality expectations that subscribers expect and demand.

■ ***Restoration scanning:*** One approach involves scanning each frame individually to create a sequence of uncompressed discreet image files processed with various restoration imaging applications, including applications that bring the 4K color palette into play. An alternative approach involves continuous scanning, basically an enhancement of the old Telecine restoration process, which scans the frames as the film runs through the scanner. Either way, the processing procedure also repairs defects in old films such as scratches and removes dust and other materials, leaving a pristine, very large master file which must then be compressed for storage.

■ ***CGI:*** A more expensive and comprehensive conversion method in which computer generated imaging is used to recreate the film digitally in 4K. This process involves re-rendering once 2K images in 4K.

While film converted and encoded digitally for display on today's HDTV sets has not posed much of a problem, use of High Efficiency Video Coding (HEVC) and the higher resolution 4K UHD TVs will capture graininess with greater clarity and make it far more apparent to viewers. To what extent this intensification of graininess needs to be remedied through filtering or other additional processing in the conversion process is another issue that content owners will have to address prior to releasing content.

Resolution and more

The current iterations of 4K UHD TVs relied on rec. 709 (ITU's recommended foundation color depth standard for digital TV since 1992), which prescribes a bitrate of 8-bits per color with 256 gradations per primary color, for a total of approximately 16.8 million possible colors. 10-bit is also supported for a total of approximately 1.07 billion possible colors.

With the introduction of rec. 2020 (a new standard for next generation TVs, including 4K UHD) there is a discernable improvement of 4K compared to HD. With a coding scheme of 10-bits or 12-bits per color, rec. 2020 generates about 1.07 billion colors with 10-bit coding and a whopping 68.7 billion colors with 12-bit coding.

Dolby Vision is another contender for the de facto 4K capture and display standard. Dolby Vision uses the 12-bit version of the rec. 2020 color palette and introduces far greater contrast capabilities in line with High Dynamic Range (HDR) imaging. While there's been much focus on Dolby's prototype display generating eight times the brightness of conventional displays, the real goal of HDR is not so much to increase luminance as it is to generate greater contrast across whatever the range of luminance might be for a given display.

Bandwidth and storage issues

The crux of the technology discussion revolves around properties specific to two major areas of development: the 4K platform itself and the new encoding standard, HEVC or H.265, likely to deliver ~35% to 50% reduction in data sizes. This is required to reduce the bandwidth constraints imposed by distribution of programming in the 4K format.

While some have cited 15 Mbps as a target rate for their 4K rollout, transmission rates will more likely be 25 Mbps or above for rec. 2020-compatible 4K from stored content delivered at 60 fps. Live feeds will require even higher rates, especially in sports programming. Bandwidth and storage consumption will explode. This is a significant bitrate increase over 5.625 and 7 Mbps H.264 used by many MSOs today.

HEVC is only the first step. In the run-up to introduce true 4K and HEVC, cable operators will need to look at new approaches to quadrature amplitude modulations (QAM) allocations to leverage their existing capital expenditures and infrastructure. By dedicating more QAM bandwidth to transmitting higher bitrate 1080p content, operators will be able to provide content amenable to upscaling on UHD TV sets to quality levels approaching 4K while providing non-4K households HDTV quality that offers a 10 percent to 20 percent or better improvement over customary lower bitrate 1080i content.

There is also an opportunity to consider cloud-based workflow alternatives to over-

Ken Goeller oversees Engineering Solutions for D3's Cloud-based multiscreen content processing solutions, which encode and package any title, in any format and deliver high quality device-optimized video assets to any OTT and MVPD back-office platform. He has 20 years of technology development experience in film, video, audio and file-based systems.

With 4 times more pixels than HD, higher color depth and simply the ability to display much more detail, 4K workflows require significantly more storage and higher bandwidth networks necessary to support higher quality source materials in the 4K HEVC compression workflow.

come cost-related and business issues to more effectively address an emerging 4K market and scale commensurate with the demand, rather than taxing existing video on demand (VOD) infrastructures.

Workflow impact to support 4k

On the surface it may appear that 4K has the same back office compression workflow as an operators' existing MPEG-2/H.264 workflows, and that all a cable operator has to do to get going with 4K is to add new encoders to an existing workflow. If only it were that simple. Compressing 4K requires another level of infrastructure beyond traditional HD workflows currently deployed.

With 4 times more pixels than HD, higher color depth and simply the ability to display much more detail, 4K workflows require significantly more storage and higher bandwidth networks necessary to support higher quality source materials in the 4K HEVC compression workflow.

As previously discussed, quality in and quality out (QIQO) is very applicable to this new format. Taking advantage of UHD's visual quality potential means higher bit rate [>180 Mbps 4:2:2] source materials in a new 4K workflow process. Post production labs like Deluxe Entertainment are using enormous 2 Gbps masters to achieve the highest quality HEVC encodes. And when the title is required to be more affordable, 180 Mbps ProRes mezzanines are used as source. Typical legacy 15 Mbps and 30 Mbps HD back office workflows are simply inadequate.

Adding to the infrastructure cost problem, the standards, workflow tools and consumer electronics are still evolving and maturing; and this is expected to occur for several years. New equipment and software used in compression and multiplexing are becoming obsolete overnight, as significant improvements are being made both to compression run times and to output quality.

Further complicating the situation is 4K's evolving standard. New, better consumer electronics with new features are being introduced. The biggest feature improvement, HDR, is on the horizon. HDR, seen in demonstration televisions at 2014 trade shows, is likely to become the single most important feature for 4K quality. While it may be a few years off, it will likely arrive before any current 4K workflow can be fully amortized; presenting operators with the problem of when to invest in a 4K workflow.

All of the above leads to a conundrum for service providers: Do you lay-out the capital now for new 4K workflows and run the risk of infrastructure obsolescence? Or should you wait for standards to converge and tools to stabilize and run the risk of losing market share to other competitors? It also raises the natural question of whether service providers should apply traditional approaches to amassing 4K content in the same manner in which they built in-house VOD libraries.

Leveraging the cloud

It's not if but when the volume of 4K content for on-demand access will grow, eventually reaching the quantities common to today's HDTV-based VOD systems. Most 4K content will initially be delivered from storage in an on-demand mode. It will take a considerable amount of time for an end-to-end HEVC/4K ecosystem capable of supporting live 4K programming to emerge (beyond sporting events). As such, the infrastructure and storage burden alone will be immense, adding to the already significant costs being incurred with the expansion of today's on-demand service into the multi-screen domain.

Integrating cloud-based solutions into the existing workflow can facilitate the migration to 4K and provide the flexibility to scale content and services offerings at the pace commensurate with the market. Roll-out of 4K services will depend on a number of factors that will span content availability, television distribution technologies, and workflow and infrastructure-related investments and advancements. As such, service providers need the ability to scale capacity to meet short-term needs and incorporate business continuity over the longer term.

Outsourcing to the cloud mitigates the risk of investing in nascent technologies that are likely to be obsolete when the market reaches mass scale and maturation. Beyond cutting costs, the opportunity to rely on best practices developed by experts in content management, processing and storing 4K content for access in the cloud will help service providers sort through the complex issues that go into establishing benchmarks for delivering a superior 4K experience to their customers.

Cloud-based companies addressing issues to create, store, and distribute 4K files include Deluxe Digital Distribution (D3). Through decades of managing master source files for Hollywood studios, Deluxe has developed the critical knowhow to create device-ready 4K files based on the latest proven specifications and investments in advanced technology.

As a cloud service, D3 can operate as an extension of the service providers' back office workflow operation and function in what is essentially a shared cost model across many operators—reducing risk and maximizing growth opportunity. ■

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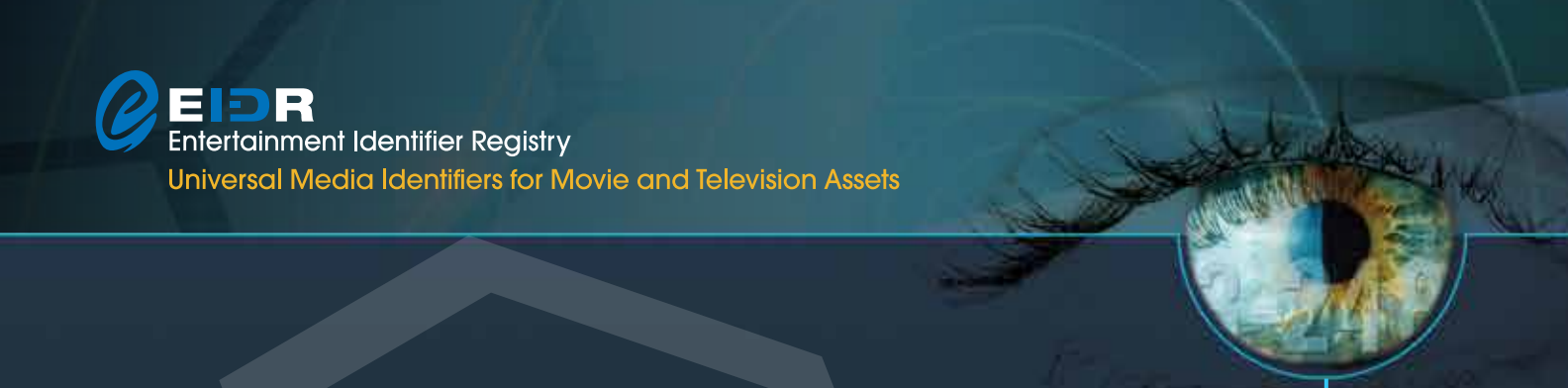

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Analyzing Digital Sales can Bring Hidden Insights to Light

Study shows were EST is now and hints at what the future may hold

By Dr. Davinder Luthra, VP Business Development, New Media Industries, V2Solutions

Abstract: Electronic Sell-Through is about more than just delivering a product for sale—with the right information service in place, it's an instant data-harvester capable of providing deeper consumer insights, enriching business partner interactions and spurring sales across entire catalogs. At the most basic level, titles are released on time, across every region with proper local configuration. Beyond that, the true difference-maker is an ability to track reporting by various metrics and to gain near real-time insight into trends across diverse geographies and consumer groups, giving business groups, partners, and retailers the ability to respond instantly. V2Solutions reveals the data hidden within EST performance and suggests what it means for the industry.

Electronic-Sell-Through (EST) has crossed the billion-dollar sales threshold, a watershed that signals the pronounced importance of EST as a model for digital commerce and bodes well for its continued expansion. With this, however, intellectual property creators, owners and distributors face ongoing pressure to ensure global digital products are released on time, in the correct format/version, and with all necessary platform/country-specific requirements accurately in place. Specific marketplace dynamics related to day-and-date releases, platform specific releases, and exclusive releases only add to these challenges.

Additionally, EST sales are now occurring at a rate that gives us a window into the digital consumer's habits and overall industry trends across a wide variety of criteria and geographies. Although there is valuable data to be culled, M&E organizations have been slow to put platforms in place to accurately monitor and collect the wider slew of data now available in a systematic manner given that priorities to date have largely been focused on operational aspects.

Given also that some aspects of EST purchasing are similar to impulse buying, it is crucial that titles available for purchase have all supporting metadata in place for discoverability and selection from day-one. Said another way, no one can afford to miss initial early windows for monetization. A service such as V2's Digital Store Check service can act as a funnel in which wide ranging operational inputs (avails, metadata, schedules) and an assessment of actual levels of asset availability are combined to provide meaningful verification, reporting & analytics across countries / platforms / assets.

Seeing the trends in EST

To inform our perspective as this paper was assembled, V2Solutions conducted a detailed study of more than

Platform and Studio Distribution By Country

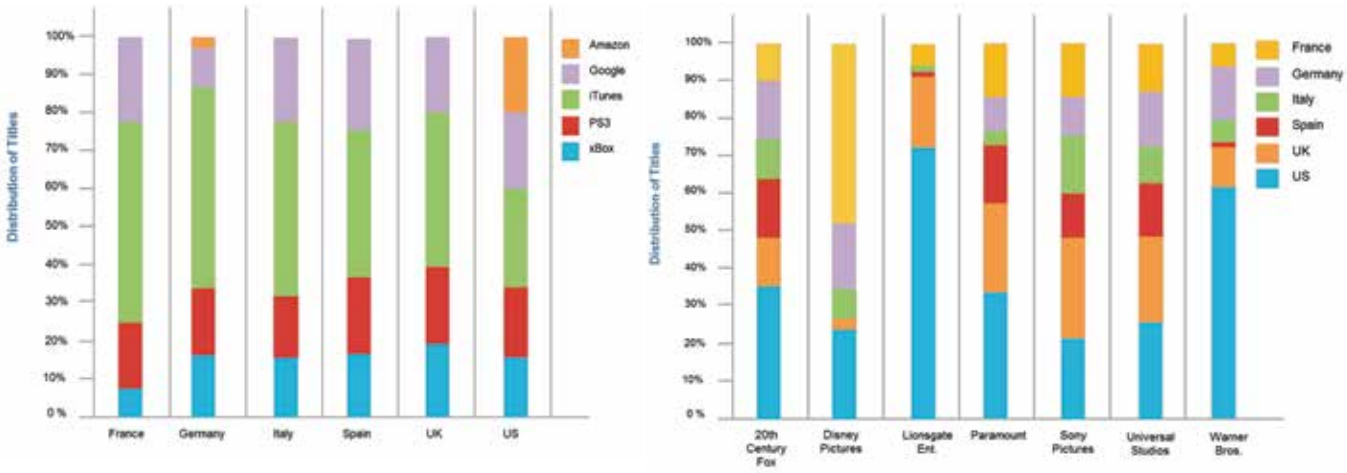

Fig.1 (left): Although the US remains the world's primary distribution market, international positioning is increasingly significant to the industry. All signs point to increasing democratization of title selection amongst competing platforms—this means a level playing field will soon be the norm. Fig. 2 (right): Internationally, the majority of titles still see distribution through independent entities with a particular studio sometimes being noted as one of the distribution parties – variation from an international breadth of the footprint and also in territory preference is seen.

1,200 digital releases across numerous platforms, including Amazon, Google Play, Apple iTunes, Sony PlayStation, and Xbox. The study gathered information from various geographies as well, including the U.S., U.K., France, Italy, Germany, and Spain.

The results of this study are represented visually in a series of graphics that each demonstrates key data points.

Insight: U.S. and iTunes are important, but their dominance is shrinking (Figure 1).

- Among digital platforms, iTunes captures the overall lion's share of 36 percent of all releases. The next three platforms each had an approximately even share, ranging from 16 to 19 percent for Google, Sony PlayStation, and Xbox, with 12 percent left for Amazon.
- Within France and Germany, iTunes uniquely captures more than half (53 percent and 52 percent, respectively) of total selection.
- Overall, the US appears to be the most democratized territory—no platform contributes lower than 16 percent of overall selection. At the opposite end of that spectrum is France, showing the highest dominance of iTunes.

Insight: Differences in the international land-grab reach amongst studios and distribution partners creates opportunities to solidify leads for early entrants and revenue growth for late adopters (Figure 2).

- Of the major studios that played a principally recognized role in distribution of titles for EST, the majority of titles were distributed to the U.S. (40 percent), followed by the U.K. (19 percent), France and Germany (both at 12 percent), and Spain and Italy (a combined total of 19 percent).
- Release slates for Lionsgate and Warner Bros appeared to be the most skewed towards U.S. distribution, with those from Disney and Sony Pictures the least.
- A disproportionately higher amount of Disney titles were available in France (vs. other territories it directly distributed to). Of all the major studios, 20th Century Fox and Universal appeared to have the most evenly balanced and proportioned distribution slate relative to the markets surveyed.

Insight: Two equilibriums can be seen for normalized HD pricing around $12 and $19.50, creating unique opportunities for "value pricing" below those points or "premium pricing" above those points (Figure 3).

- Pricing variations between countries, platforms, and studios are pronounced. From a platform perspective, the widest variation in pricing is seen within iTunes, with a median price of $13.65, and corresponding upper and lower quartile price tiers of $18.60 and $8.88, respectively. Google Play represents the platform with the narrowest overall spread of prices, where only $2.05 separates upper and lower quartiles.
- Spain and Italy show the greatest pricing consistency across all countries and digital platforms. In those two countries, only a $4.80 difference in median prices was seen across all platforms.
- Among major studios, Disney commands the highest median price ($20.46) across all titles it has distributed. Lionsgate, meanwhile, commanded the lowest median price across their titles, at $13.99.

Perspectives on the Future

These insights tell us where EST is now, revealing trends and attitudes among consumers and the distributors and studios that serve them. But they also suggest strongly

Dr. Davinder Luthra is a senior executive in M&E outsourcing, shared services and large scale process transformation. He previously held executive positions with a leading strategy consulting firm, a global IT and business process service provider specializing in transformation for high tech and media organizations and as CTO for the largest eCommerce fulfillment platform in South East Asia.

Distribution of Titles by Normalized HD Price and Platform

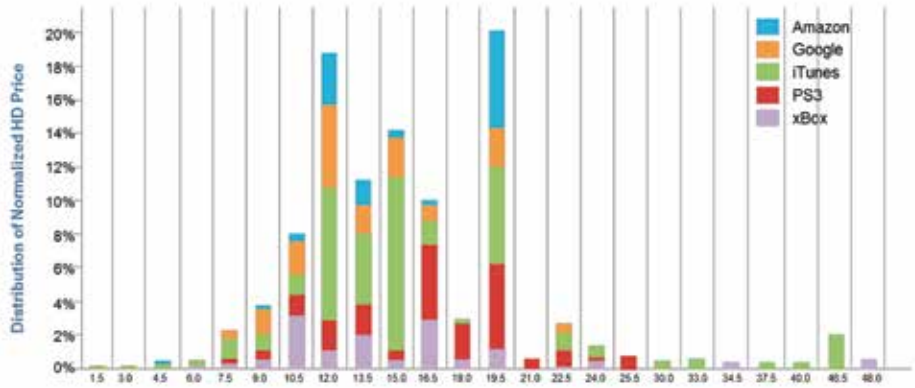

Fig 3: From a pure price perspective, variation and fluidity can be seen across the entire product spectrum. (Pricing was normalized to USD and adjusted for cost-of-living factors between international countries.)

what we can expect in the future. Though still in its growth stage, EST will eventually become a dominant revenue model for the industry—and one that consumers will be extremely receptive to across various geographies. With success in US and European markets, we can expect this trend to continue throughout the world, with platforms, distributors and studios racing to reach far-flung markets and capitalize on their catalogs' appeal.

We know that to effectively do this, localization efforts must be accurate and comprehensive. The more foreign the locale, however, the more of a challenge this can be. Russian rating systems and cultural mores in terms of movies are much different than those in China or Indonesia. Solving these types of problems, more prevalent in today's delivery models for Global EST-based commerce, can take attention away from the kind of rich intelligence gathering that serves a broader strategic set of needs.

Is it important to know that almost no titles available in Germany are priced below $6? Or that certain digital platform/studio titles account for nearly half of all global titles priced above $24? The obvious answer is yes. This is insight into competitor and consumer behavior that can give you an advantage as you plan and execute your business strategy. Collecting these kinds of actionable insights can help you craft release schedules and coordinate marketing efforts. But those plans are useless without a way to bring them to fruition. Using a Digital Store Check type of platform allows you to execute those plans accurately, across any markets on the planet, and then follow their progress and adjust instantly.

A verification and intelligence gathering system, such as Digital Store Check, is an essential tactical tool to handle challenges inherent to Digital EST-based commerce, including release day readiness, business partner interactions, sales performance and promotion, competitive positioning and direct promotion of assets.

A layer of competitive intelligence and verification feeds back to create actionable insights for knowledge workers and operational teams handling drive set-up and asset delivery.

A verification and intelligence gathering system, such as Digital Store Check, is an essential tactical tool to handle challenges inherent to Digital EST-based commerce, including release day readiness, business partner interactions, sales performance and promotion, competitive positioning and direct promotion of assets.

There is no denying that EST will be a part of the industry for many years to come. Many studio and distribution professionals are anticipating EST to be the leading revenue stream for home viewing of titles across the globe. Yet globally, we are still in the early stages of growth for this delivery medium, and opportunities exist to leverage today's data to enable major impacts moving forward.

The information V2Solutions has shared here represents just a sampling of what can be achieved by careful usage of a strong service platform such as Digital Store Check. This kind of platform is fast becoming an essential ingredient in the race to penetrate new markets quickly and gain a competitive advantage. Present and future EST strategy is certain to rely on the capabilities offered by this type of platform—the capabilities of which are only going to grow as the market does. ■


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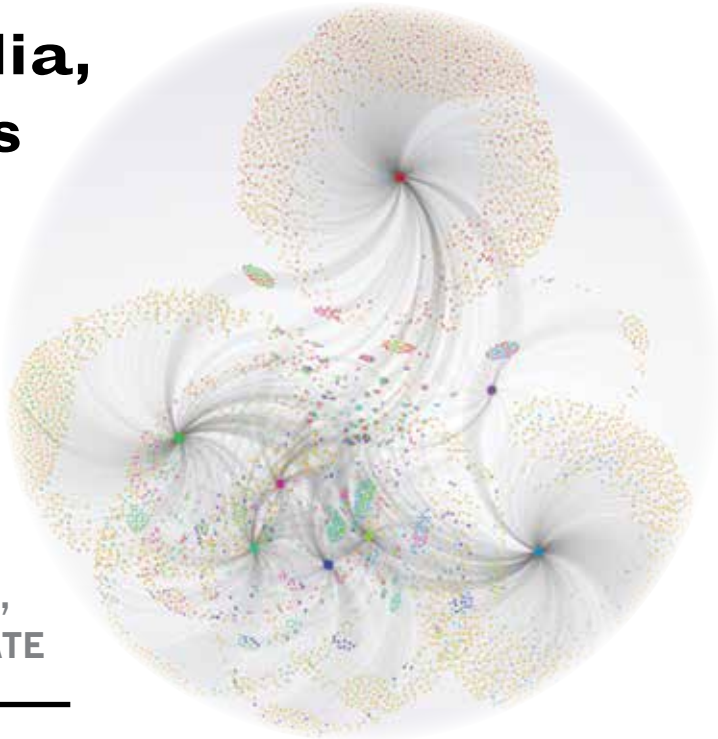
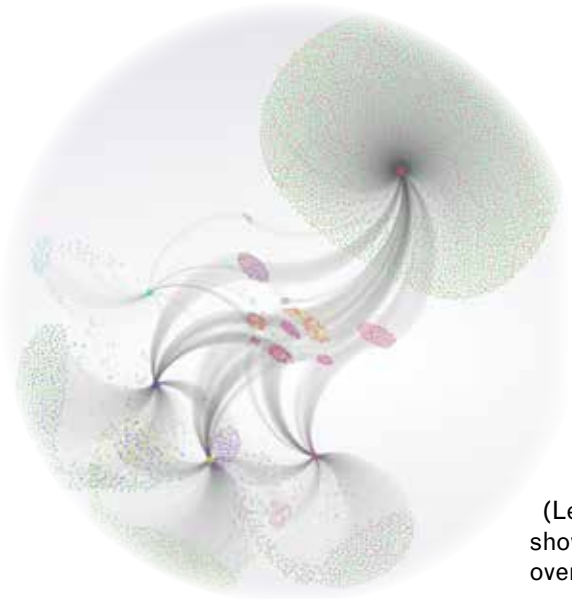
In Social Media, Context Counts

New metrics demonstrate how accurately social media conversations reflect viewer sentiment

By Kameswara Rao Bh, Principal Architect, Digital Group, and J. David Garland, Associate VP of Consulting, Media & Entertainment, IGATE





Abstract: With the advent of social media, the experience of watching television has become much more interactive. Social data analytics can provide useful insights about the ways of enhancing viewer interaction, by identifying the right mechanisms and right channels to engage viewers. As the use of both second screens and social media continues to grow, the field of Social Media Analytics can be expected to become more and more important. Analyzing and acting on these insights can lead to more profitable projects.

(Left and above) These graphs depict contestants on a vocal competition show and the network of viewers commenting about them in social media, over four consecutive weeks.

Understanding consumer sentiment has long been the Holy Grail for both advertisers and content providers. As the business shifts from being content-centric to consumer-centric, this need becomes even more critical. The ability to quickly adapt content to conform to consumer tastes, change ads for greater effectiveness, and optimize expensive promo campaigns is now required to be competitive.

In the past, information was limited to what could be inferred from polls and surveys. While helpful, small sample sizes and long turnaround times limited their accuracy and usefulness. The explosion in popularity of smartphones, tablets and social media has created a new phenomenon called the "second screen" in the context of TV viewing. A second screen is a second electronic device used by television viewers before, during, or after they are actively watching programming. (The term also applies to screens other than television sets for viewing content, but that's not the context we are using here.)

Second screen applications are making television more interactive, and increasing engagement, viral influence, and ultimately, viewership. They also provide an ideal platform for presenting targeted advertising as well as creating advertising

tie-ins with the content. As we saw with votefortheworst.com, social media applications can cut two ways and must be carefully managed.

Votefortheworst.com was an attempt at "making sure that America stops taking *American Idol* and other singing reality shows seriously," according to creator Dave Della Terza. This was attempted through encouraging viewers to vote for a contestant they deemed the least talented, and was a source of controversy for nine years.

During August 2013, Nielsen conducted a study on the relationship between Twitter activity and TV viewership that found that a two-way causal relationship exists between Twitter activity and TV viewership. In analyzing over 200 primetime program episodes using time series analysis, Nielsen found a statistically significant causal influence between tweets and tune-ins. That the relationship was two-way means that increased ratings also resulted in more tweets.

Nielsen's study substantiates the impact of social media, specifically Twitter in this case, on TV viewing from a quantitative perspective—the volume of social conversations and TV viewership. A causal relationship between tweets and tune-ins is certainly interesting, and knowing the volume of social media interactions can provide a useful tool for marketing. But to get actionable information from social media, a deeper analysis is necessary. What we really need is a qualitative view to expose the consumer thinking and sentiment behind the posts. IGATE recently conducted a study to explore whether significant indications of consumer sentiment can be gleaned from social media traffic.

Measuring consumer sentiment

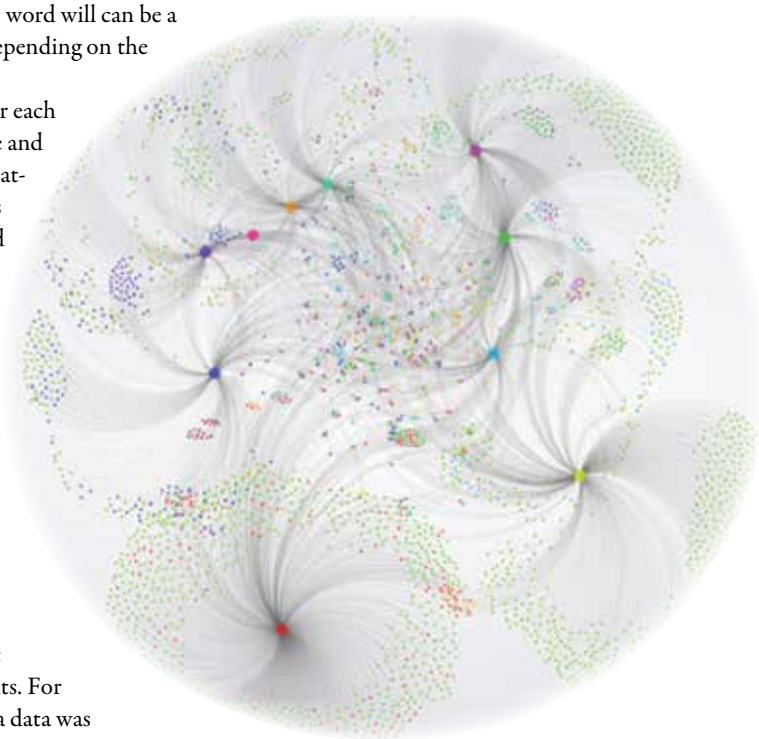
The objective of the IGATE study was to understand how accurately social media conversations reflect viewer sentiment, and whether they could be used to derive insights about the programs being discussed. The study was conducted using an in-house developed platform called Social Insight, which aggregates public social data from various social media sites like Facebook, Twitter, and LinkedIn, and analyzes traffic using various statistical and Natural Language Processing (NLP) techniques from the growing field of Social Media Analytics (SMA).

For the study, we chose a popular American reality show that features vocalists competing to be the last person standing at the end of the season. The artists are eliminated in weekly rounds based on the viewer voting. We collected social feeds from the Facebook and Twitter pages of this show, classified them by artist, and measured the social media sentiment for each artist. Several NLP techniques such as synonym matching, fuzzy matching, and Part of Speech (POS) tagging were used to classify the feeds, thus increasing the accuracy of the analysis. These techniques allow words to be interpreted in context. For example, the word will can be a name, a verb or a noun depending on the context.

The sentiment data for each artist (number of positive and negative posts) was calculated for the first four weeks of episodes and compared against the actual results (the elimination or selection of each artist). This data was used to develop a statistical model to predict the performance of an artist based on the sentiment from the social feeds. Logistic regression was used for creating the model. We applied this model for the subsequent weeks to predict the results. For each episode, social media data was taken in a time window of four days before the episode, up to one hour before the voting started for that episode. Sentiment metrics obtained from this data for each artist were used to predict the elimination or selection of the artist. We were able to predict the results with an overall accuracy of about 90% through this analysis.

The graphs (Figs. 1 and 2) depict the results for one of the weeks, against social density (total volume of feeds) and social sentiment (calculated using logistic regression) for each artist. The points marked red denote the artists who were eliminated in that week.

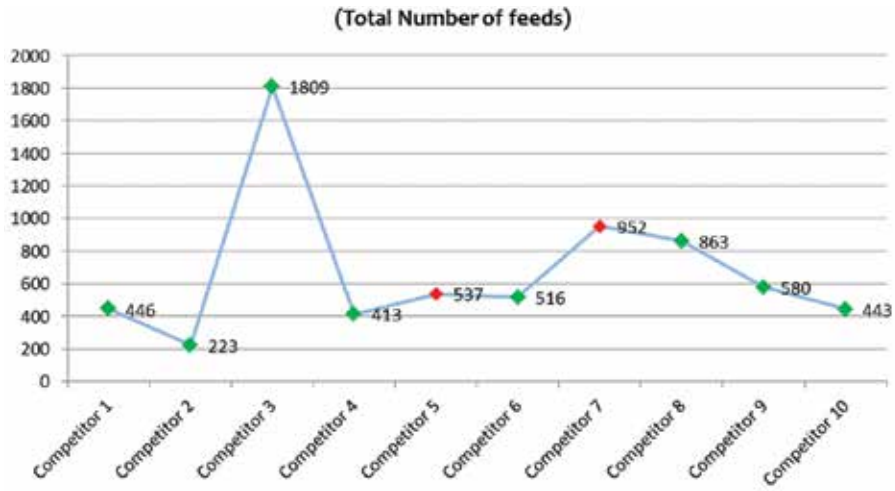
As can be observed from the graphs, the volume of conversations does not correlate well with the results. Competitor 7 received a higher volume of posts (Fig. 1), but was eliminated. Probabilities from logistic regression (calculated using positive and negative sentiment) correlate well with the results. The artists with lowest probabilities end up being the eliminated candidates. Interestingly, the long-odds ratios



Kameswara Rao Bh has worked in the development and assessment of architectures for large scale applications. He is currently working in the Digital Intelligence team where his focus areas are social analytics and content analytics. His area of expertise includes analyzing unstructured text using different statistical and natural language processing techniques to extract useful information and insights.

At IGATE, J. David Garland focuses on thought leadership, leading consulting engagements, and business development. He has a broad range of experience in M&E from systems architecture to senior management in music, television and radio.

Social Density vs. Results *(Fig. 1)*



In Figures 1 and 2, the red points denote the artists eliminated in that week. The volume of conversations (Fig. 1) does not correlate well with the results, but the sentiment of social media conversations (Fig. 2) does.

from the logistic regression model indicated that negative sentiment had approximately four times more impact than positive sentiment in determining the end results.

Another interesting observation was that, as the show progressed, more viewers became segregated into distinct groups around artists, and clear winners emerged.

Analytics for competitive edge

The applications of consumer sentiment analysis using social media data are virtually endless. In advertising, it can be used to gauge the effectiveness of individual spots or entire campaigns. In addition, it can be used to measure the efficiency of different distribution channels (TV, mobile, web, etc.), day parts, and programming.

For television and film, knowing consumer sentiment around content is of enormous value. The idea of being able to measure consumer sentiment before committing to expensive projects is greatly appealing. Additionally, the near-real time nature of the results can lead to viewer-driven plot programming.

As with advertising applications, television and film both spend heavily on promotional campaigns and trailers, often without having a solid idea of their effectiveness. Social Media Analytics can be used to measure the impact of both campaigns and individual trailers, provided the study is set up properly, by using the near real time nature of the information to rapidly tailor advertising to consumer sentiment.

Conclusion

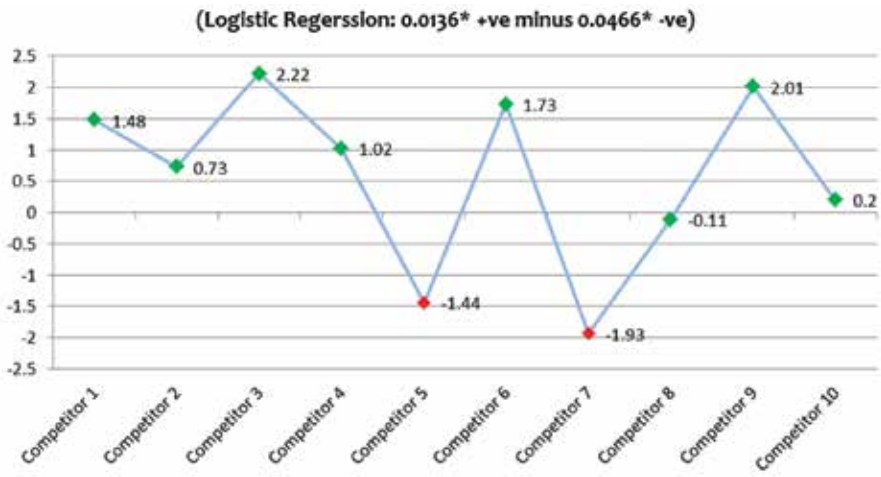
This study substantiates two important points with respect to the Second Screen phenomenon.

1. Social conversations about a TV show (especially while the show is being aired) not only reflect the volume of actual viewership, but also, to a measurable extent, reflect the consumer sentiment about the show.

2. Social Media Analytics techniques can be used to extract actionable information from social conversations.

As the IGATE study indicates, social media conversations can be mined to derive useful business information. Insights into consumer sentiment concerning the content of programming, casting decisions, characters, and plot twists can be gleaned from the conversations. Social data can provide insights on consumer concerns about the timing of the shows, as well as for comparative analysis of shows on the same or competitor channels. Network analysis of social data provides information on social influencers who can be potential advocates. ■

Social Sentiment vs. Results *(Fig. 2)*



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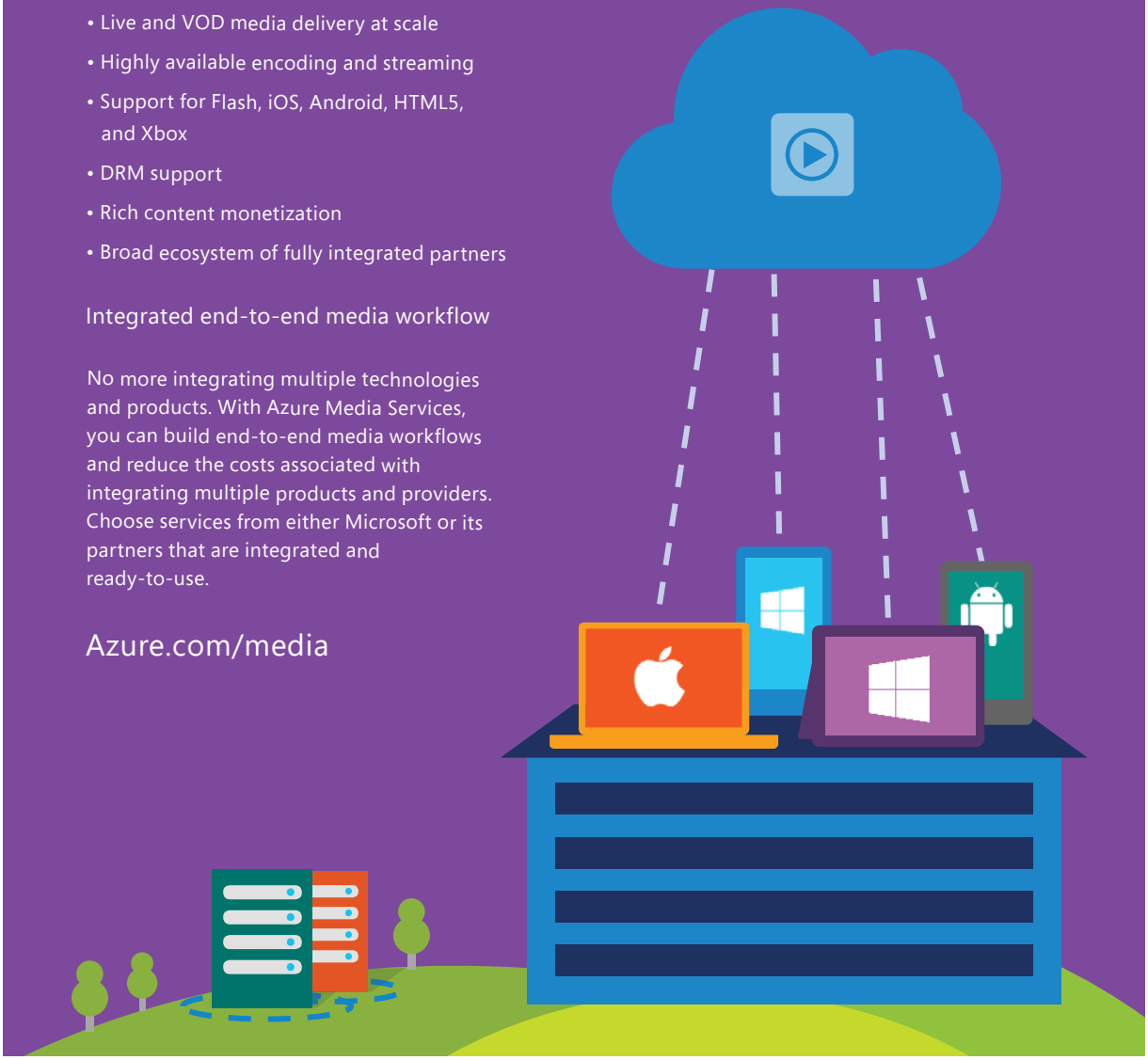

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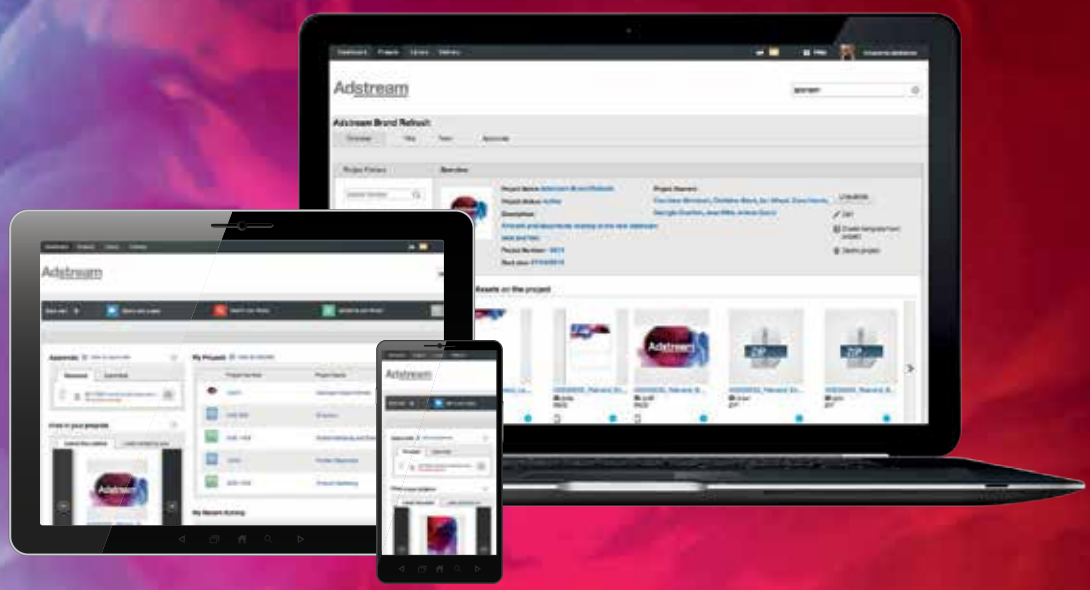

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CLOUDSOLUTIONS

"For M&E companies, it's no longer a question of why, or even when, they would migrate to cloud platforms. They are already there."

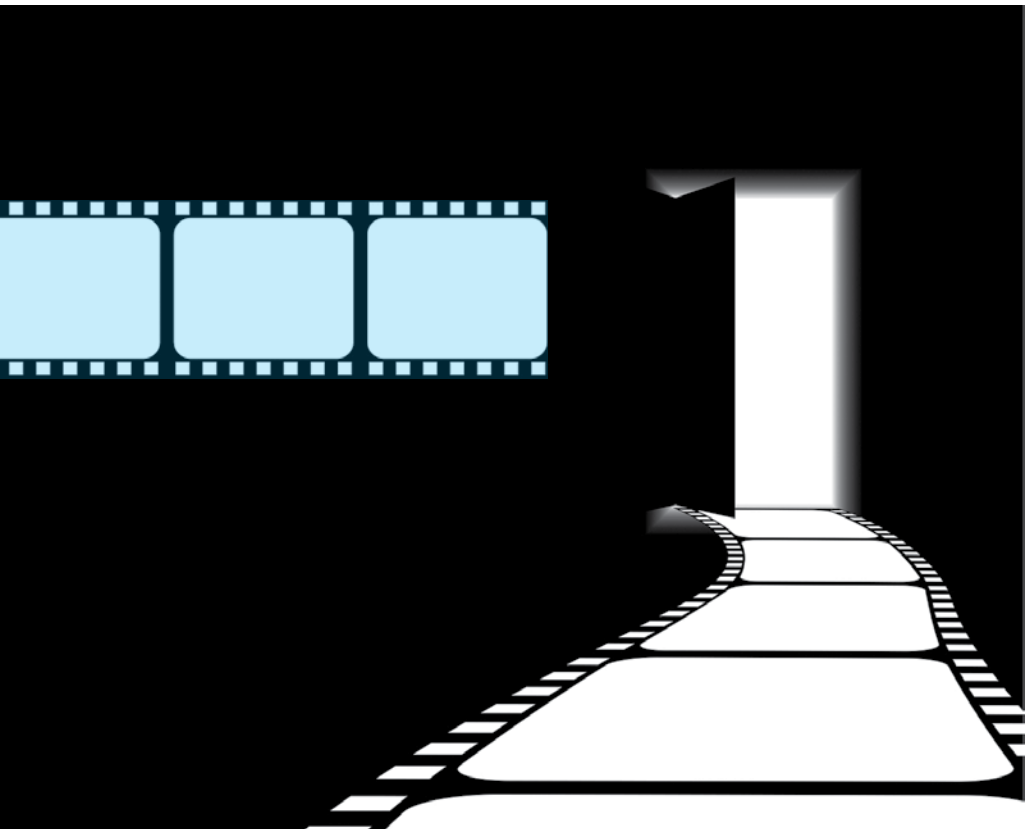
– Hitachi Data Systems, Page 58

The potential of "the cloud" touches every segment of M&E: IT, finance, analytics, media services, digital asset management, production, post-production, manufacturing, distribution, marketing, and more. It promises more agile and streamlined workflows, increased collaboration, cost efficiency, and less time, resources and effort required to do business. The seven articles in this section shed light on how far M&E organizations are –or could be—pushing the cloud. ▶

Post-Production Steps Out of the House

In the era of cloud computing, the role of post houses is evolving– 'Finishing house,' anyone?

By Jason Kassin, Co-founder & CEO, FilmTrack



Abstract: As the Media and Entertainment industry continues its rapid digital transformation, even the word post-house, which implies a physical structure, has become something of a misnomer. A new generation of SaaS-based companies are entering the post-production space offering cloud-based, end-to-end platforms for production, post-production, distribution and delivery with very limited physical infrastructures. The challenges and opportunities facing post houses are significant as studios and filmmakers seek out more collaborative, connected, cost effective and scalable platforms to manage their content.

It is a widely accepted fact that the media management and quality control (QC) roles of the post-house, along with key staff positions such as the digital imaging technician (DIT), remain exceptionally important in the modern film industry. Current trends in the industry have reduced the need for a traditional post house as it was once understood, however.

One of the most outwardly visible signs of Hollywood's conversion from film to digital is the successive closure of the town's once great film processing labs. In May, the Deluxe Hollywood Lab, which was built on the Fox Hollywood film lot in 1919, finally closed its doors. Technicolor has shuttered both its Glendale lab and its iconic boxy black building on the Universal lot (now a cutting-edge NBC Universal media center).

This past year, the Academy of Motion Picture Arts and Sciences offered the ultimate posthumous tribute to the film-processing business when it presented an honorary Oscar to the men and women who operated the labs, with Chris Nolan giving a stirring eulogy for their "more than a century of service to the motion picture business."

The changing value of bricks and mortar

These lab closings have helped spark an intense debate over the direction of post-production in the digital age. One of the key questions is whether a centralized bricks-and-mortar post facility still makes sense at a time when so many film companies are turning to a cloud-based post-production model, in which work is globally dispersed and subcontracted to a wider range of companies.

On the one hand, you have giants of the business like Technicolor, Deluxe and ModernVideoFilm, which have made significant investments in physical infrastructure. All of these major players are transforming themselves and adding new digital services and cloud-based offerings to meet the changing needs of their clients. On the other hand, you have companies like Hulu Post and platforms like Amazon Web Services and the Google Cloud Platform, which allow for a virtual workflow and don't necessarily require a physical infrastructure. Both sides are searching for a business model adaptable to an industry that requires ever more streamlined and connected solutions to manage the digital production and post-production value chain.

I've worked on the creative, production and technology sides of the film industry for more than two decades and have seen countless business models come and go. When we stared FilmTrack more than 14 years ago, the relationship between content creators and post-houses had been largely unchanged for decades. Film companies would simply hand over their materials to a single post-house with instructions for distri-

Are you monetizing your digital assets to their full revenue potential?

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IGATE has helped leading Global Media and Entertainment companies define, develop, and implement technology solutions that automate digital content delivery, digital asset management, licensing and IP rights management. We are experienced in building capabilities that help you increase revenue through a wide array of flexible and innovative digital content monetization options in a fast changing technology and business landscape.

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bution and delivery, and the post-house would handle the entire back-end servicing.

Today FilmTrack manages the content and data for close to 200 companies and works with some of the leading post-houses to define what the next-generation post-house will look like. I've seen the complexities of this process through our employees' involvement in organizations like the Hollywood Post Alliance, EIDR and SMPTE. The forces driving these changes to the post-production landscape are manifold: vast improvements in technology and processing power; huge increases in digital and file-based content that is cheap to produce; and the vast amounts of data and metadata that must now be cataloged and stored for every film and television series.

The growing sophistication of the digital camera has probably been one of the major game changers. Many of the processes and tools that production and post-production technicians required are now managed by the camera itself. Just a cursory look at the latest developments in camera technology showcase how, in the not too distant future, all the capture, transcodes, sync, watermarking, versioning, color space conversions can, and will, be managed by the camera itself.

The evidence is right before our eyes: Studios and filmmakers are now thinking in terms of end-to-end solutions for their artistic and business workflow – from ingestion to vault/storage, transformation, QC, delivery and commerce. More and more they're relying on cloud-based platforms that have the potential to provide content owners, distributors and their customers with a safe, secure and sophisticated model for the long-term life-cycle management of their content. In conjunction, the rate card for services found within the traditional post house are changing as functions like encoding and transcoding can be done with out-of-the-box software.

Effects complexity to grow

However, when you look at final color correction, visual effects and sound mixing, these processes are more complex than ever, and no less time consuming than 10 years ago. According to Bob Pfannkuch, an industry pioneer who founded Rank Video Services, now a division of Deluxe: "The post house of the future may be called a 'finishing house' not a 'post house.' It will be known for taking content that is 90 percent done and finishing it."

Such changes have fueled consolidation among the industry's bigger players, with traditional rivals like Technicolor and Deluxe working together to offer complementary services. This evolution has also created opportunities for new SaaS-based companies that provide a whole new level of flexibility and collaboration to meet evolving industry needs.

These changes are also fundamentally transforming the way in which studios do business with post-houses. As James Staten, a VP at Forrester Research who blogs about cloud computing and next-generation business intelligence, points out: "Disney's *Frozen* required 50,000 CPU cores crunching simultaneously to process its 3D effects and meet its opening date. The next *Frozen*, shot in 4K, will up the effects complexity 10-12x, according to visual effects experts." Staten also observes that, "on-premise workflow systems are hitting the limits both in ability to onboard and manage a federation of identities and support the collective editing of the growing video files. As such, nearly all the major workflow tools makers now offer SaaS-based workflow systems that are either used purely in the cloud or in a hybrid mode with some workflows on premise and others delivered from the cloud."

Access is everything

This is forcing industry professionals and technologists to start thinking in terms of file access rather than file transfers. Right now the major emphasis is on how fast you can you transfer files, speed and bandwidth. But we want to get to a place where we're giving access to files, not transferring files around. On a consumer level, we're already doing this with music, pictures and email that are stored in the cloud and accessed with different devices. We're going to get there on the B2B level too: eventually the file will exist in one place in the cloud. That will bring cost savings and reduce concerns about asynchronicity since everyone will be working on the same thing.

These changes cut across the whole production, post-production and distribution cycle. Dailies captured on set are now routinely managed through virtual platforms that can be run for directors and producers in far-flung locations and allow for transcoding and color correction on premise. The dailies business has quickly morphed into another role managed by the DIT and others.

Furthermore, the management and delivery of global marketing assets has been radically transformed by the advent of cloud-based DAM services. In other words, a lot of things that used to be done with hardware processing are now being done with software updates and SaaS solutions. However, creative services for quality films with extensive digital effects will still be performed by the post house.

Pfannkuch points out that "regardless of whether you have a big centralized lab or a remote worker utilizing the cloud, the common and necessary thing for a post-production house is to tie information together—the necessity to keep track of who's doing what and where everything is." In other words, whether you have a big lab or a small facility leveraging cloud storage, you need a data infrastructure to enable collaboration.

That's been a core mission for FilmTrack, as we team with partners across the industry to help them collaborate and connect the dots across the entire life cycle of their IP. At FilmTrack, we understand there is no one-size fits all solution. That's why we've made all metadata fields user-definable and configurable allowing clients to develop standards that fit with their unique business needs.

As we consider the future of post-production, one thing is clear: the business of content is expanding not shrinking. Emerging distribution platforms like Netflix, Hulu and Amazon are fueling this transformation, as is the rapid proliferation of devices on which content is being viewed—from iPhones to Androids, smart TVs, HD sets, 4K sets—all of which have different constraints. Simultaneously, the consumer is becoming more and more demanding – expecting more personalization and interactive options. The critical question is whether cities like Los Angeles, or even the U.S. itself, will continue to serve as the hub for post-production. ■

As CEO of FilmTrack, Jason Kassin oversees the company's day-to-day operations, strategic direction and delivery of business solutions to some of the world's leading media and entertainment companies. He is a leading expert in the development of rights and content management solutions for the global IP supply chain.

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By Andy Hurt, Senior VP, Global Product Management and Marketing, Front Porch Digital

Abstract: While public cloud solutions continue to gain traction, leveraging purpose-built private cloud services focused on Service Level Agreement (SLA) criteria is often a more practical, cost-effective plan of attack for M&E organizations. When these organizations look beyond disaster recovery workflows and specifically address the overall media lifecycle, the full potential of a private cloud is revealed. Indeed, purpose-built, private cloud solutions have helped content owners and media organizations around the world benefit from the cloud while ensuring protection, accessibility, and unmatched security for their most valuable assets.

Private-cloud solutions offer more than disaster recovery, which is what people often think of when they consider cloud implementations. Disaster recovery is certainly an important use case, but a private cloud can do so much more. Once the content is in the cloud, a private cloud can be configured to accommodate a variety of workflows, in many cases automating repetitive processes while scaling massively.

CSM as a foundation

The ideal private-cloud for any M&E organization starts with a content storage management (CSM) system, which automatically retrieves broadcast-quality content from any storage infrastructure — disk, datatape library (with the aid of a robot), optical archive, etc. — and delivers it to an edit station, a playout device, or wherever else it might be needed. CSM systems were invented for media companies. Unlike IT-based storage systems, which are designed to handle documents, numerical data, and the like, CSM systems are primed for the big-data requirements of video files, with built-in "video-aware" characteristics such as file-based quality assurance, timecode-based partial restore, and in-path content transcoding. CSM systems are also designed to automatically handle difficulties arising from file compatibilities, essence types, wrappers, etc., in a highly active media-storage environment. These and other advanced features allow media organizations not only to store limitless amounts of high-resolution video assets, but to share those assets seamlessly throughout their organizations.

In short, CSM systems help content owners cope with what would otherwise be an overwhelming volume of content, to address the

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A private cloud can implement disaster recovery workflow on a massive scale.

video-specific complexity of that content, and to facilitate smooth integration with video operations.

Deploying CSM in the cloud yields a feature-rich system built for media, without the infrastructure investment and overhead costs that can be a barrier for many organizations, but with all the advantages of the cloud's unlimited storage space and computing power.

Active-archive cloud solutions exist as a counterpoint to the public-cloud scenario. They offer cost-effective big-data storage and media-centric features in a pay-per-use, "CSM as a Service" package. They are also built to meet all SLAs, however stringent, that an organization defines. Creating a purpose-built private cloud with these cloud-based CSM services lets media organizations overcome financial barriers and address the challenges associated with cloud-based video management. With CSM in place in a private cloud, that cloud can become far more than a storage center.

Disaster recovery

Disaster recovery (DR) is perhaps the most obvious use for a private cloud. In one implementation, a well-known global entertainment conglomerate uses a massive CSM-based private cloud as the backup and DR archive for its entire organization. As depicted in Figure 1, the private cloud, located in another part of the country, is configured to ingest archived content from the company's West Coast operations to an off-site datacenter.

Business continuity

Unlike a DR implementation, where the restore function happens reactively, this private cloud is configured to be an active archive, where content is simultaneously and continuously being ingested and restored every day. The same conglomerate that uses a private cloud for DR also built 14 separate private clouds for some of its distribution networks. This implementation takes a proactive approach to disaster by ingesting a continuous 14-day playout scheduling, with elements of the programming coming from two separate locations on the West Coast into one datacenter in a third location. From there, the private cloud continuously restores that content to a redundant playout center on the East Coast. If ever there is an event that affects the primary playout center on the West Coast, the East Coast center can — with virtually the flip of a switch — ensure that playout on the 14 channels continues uninterrupted.

Editing

A private cloud can also be configured for active use, such as in editing and postproduction workflows. In this way, the cloud becomes a universal, collaborative workspace that is especially useful for multisite organizations.

Split storage

In countries where laws require that a subset of the data cannot leave the country, companies can split the data as appropriate, storing some in a private cloud within the country, while sending content intended for more long-term storage and archiving to a private cloud within a datacenter in another country.

Publishing

In another scenario, a sports team built a private cloud to connect directly to its on-premises archive. It also created an iPad app to be used internally, so that coaches can share video clips with players. Selected clips are sent from the local archive to the cloud, and from there, a cloud-based distribution workflow publishes the video to the app. This example illustrates how, once content reaches the cloud, it can be repurposed and published to any platform.

Economic benefits

No matter how it is used, a purpose-built private cloud using CSM as a service has its economic benefits. As discussed, cloud-based CSM solutions were created with video in mind, so they provide video-centric service for a fraction of the cost of a traditional cloud service. Building cloud-based workflows that take advantage of the video-aware features of CSM can not only alleviate budget-intensive local equipment and processes, but automate parts of the workflow to make them more efficient. In addition to DR and business continuity, the cloud can also handle other mission-critical but expensive services such as technology refresh and migration to new tape technologies, thus eliminating significant capital expenditures. ■

Andy Hurt has more than 13 years of experience leading product development, management, strategy, and operations in multiple global technology organizations. He previously worked at Level (3) Communications, First Data and DISH Network. He is certified as a New Product Development Professional from the Product Development and Management Association.

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Meeting Today's Workflow Demands in a Private Cloud

Solutions address issues, including security and unreliable access, to improve on public clouds

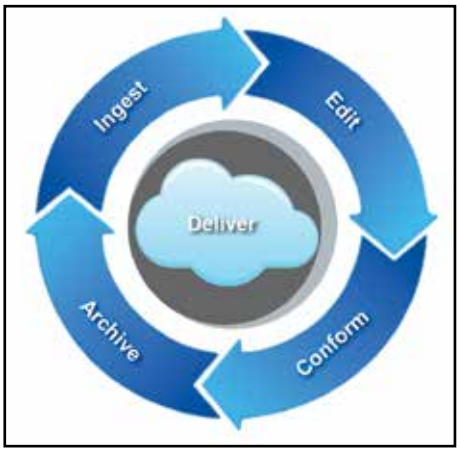
By Alex Grossman, VP, Media and Entertainment, Quantum

Abstract: When employed to provide seamless access to shared content and to support the way people are accustomed to working, the cloud can enable broadcasters and post houses to realize more agile and streamlined workflows and, in turn, to reduce the time, resources, and effort required to meet their deadlines. By moving to a private cloud, businesses can offload pressures associated with moving content across the organization, implementing effective replication, managing collaborative access to content, assuring version control, and maintaining security.

As broadcast and post-production businesses embrace higher resolutions such as 4K, adopt new camera formats, address a growing range of delivery outlets, and manage increasingly distributed collaborative production and approval models, their workflows become ever more complex. Though the process of completing projects requires an ever greater number of steps, deadlines have remained the same or grown tighter. To continue to meet these deadlines and remain competitive, businesses must both improve their efficiency and lower their costs. To this end, they must ensure that content is always ready and available for production.

Workflow today really is a roundtrip process rather than a linear workflow. Delivery lies at the center of this circular flow. How can a business address this new reality?

Whether through gradual growth or a series of acquisitions, many businesses have wound up with multiple independent production centers that are not easily connected. Without the benefit of shared content, such businesses must instead ship content from one place to another and maintain different copies of that content. In this scenario, version control becomes difficult. Some businesses thus



A new approach to building workflow in the cloud offers broadcasters and post facilities a better solution: the best of the cloud along with the benefits of familiar and proven media applications and workflows.

choose to constrain hiring and continued employment to local talent, who can work on the same local store of content. In a highly competitive marketplace, this is not an ideal approach.

The cloud offers a much better solution. Cloud storage enables a location-independent storage methodology that gives multiple people or facilities easy and secure remote access to content and other digital assets.

Considering the cloud for media workflow

The cloud did not come into being to support media workflow. Though various vendors have built pieces of workflow solutions in the cloud, most of these solutions deal only with the two fundamental components of the cloud: storage and compute power.

The storage component is what most people think of when they think about the cloud. It is Google Drive, iCloud, or any number of cloud-based backup and shared storage devices intended for personal use. And indeed, applications such as static data backup or photo sharing are ideal uses of the "public cloud," which provides convenient and inexpensive storage but lacks the service level agreements (SLAs) or guaranteed access demanded by professional media applications.

The compute component often is associated with software as a service (SaaS), such as CRM or accounting programs that offer software functionality via the cloud, but more media-centric processes such as transcoding fall into this category as well. In some cases, public cloud offerings give customers individual clouds for compute and storage, and even different clouds for different types of storage, such as nearline and long-term. However, this does not equate to true end-to-end workflow.

Thus, businesses seeking to realize the benefits of working in the cloud instead must surrender the efficiencies they have gained within their existing workflows and spend their resources on stringing storage and compute resources together, coordinating the movement of content from cloud to cloud, and establishing the necessary quality assurance checks across these transfers. With these concerns come serious issues of content access and security.

Control over security often ends once content has moved to cloud infrastructure managed by an independent third party. Shared environments typical of public cloud infrastructures place one company's content next to that of another company, rather than on separate hardware, even separate spinning disks, and thus raise questions of who has access to content. In this scenario, the reliability and consistency of content access are also dependent on the decisions of the third party managing the cloud.

Hardware, software, and even system design can make a difference in service level uptime. In some cases, the infrastructure initially deployed cannot keep up with bandwidth and capacity demands of a growing number of users. All of these issues can undermine the promise of public-cloud-based media workflow.

Tailoring the private cloud

Private-cloud solutions address many of the issues, such as security and unreliable access, that make public-cloud solutions a poor choice for professional media storage and processing. However, most of today's private cloud offerings are designed to provide global access to media in simple storage repositories. The major shortcoming of these repositories, whether situated locally or in remote datacenters, is that they don't provide integrated storage and compute resources, along with the applications fundamental to the media workflow.

Fortunately, a new approach to building workflow in the cloud offers broadcasters and post facilities a better solution: the best of the cloud along with the benefits of familiar and proven media applications and workflows.

Rather than simply move storage and compute resources to the cloud, private-cloud solutions tailored to media applications are taking existing workflow and applications and moving them to the cloud. With the benefit of a quality API development structure and a rich technology partner ecosystem, both of which are key enablers of true cloud-based media workflow, a solution can ensure that if the media workflow is effective locally, then it will be effective in the cloud. This reliance on well-established applications, linked by proven coding, is critical to reliable and efficient operations now, and it will become even more important as workflows become increasingly automated.

Freeing users from compromise, this model not only allows businesses to retain the way they work and the applications they use, but also makes this work location-independent without the need for external gateways, translations, or other quality control procedures.

The most common model for leveraging a private-cloud solution typically includes one primary production facility and one or more secondary production facilities, all with workflow storage collaboration. These facilities all are connected to one another via the Internet (by WAN-accelerated transfer or a similar mechanism), as well as to a data center hosted workflow that provides much more than just storage or compute resources.

Through this model, users can ingest content locally in any facility and push that content up to the cloud-based data center, where it becomes available to all other independent facilities. Once the content is in the cloud, it

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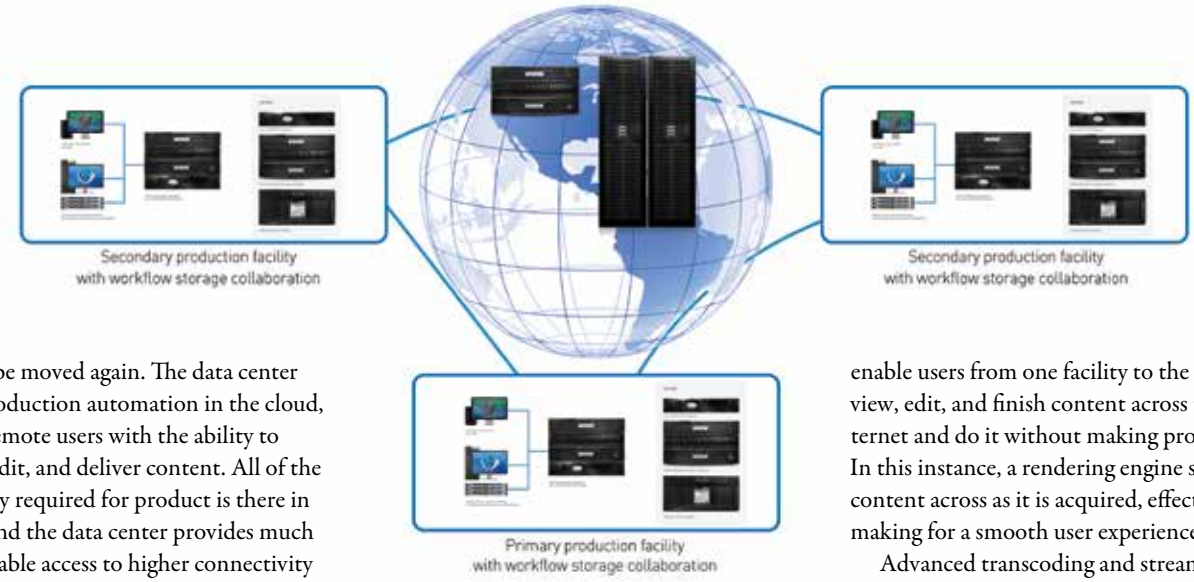

never need be moved again. The data center supports production automation in the cloud, supplying remote users with the ability to transcode, edit, and deliver content. All of the functionality required for product is there in the cloud, and the data center provides much more affordable access to higher connectivity than could be realized by any individual facility.

While the central value proposition of this model is that it allows users to lower their costs, it also offers a number of other key benefits. Because it is private, each business can maintain control over access while outsourcing hosting and maintenance, as well as the expense of deploying large primary storage, secondary nearline storage, and archive storage systems across all sites. If the solution boasts interoperability with leading production technologies and applications, and a few now do, then users can continue working with the tools they know in the way they're most comfortable. Businesses thus can eliminate not only capex equipment in each facility, but also the migration time and security concerns associated with those systems.

Alternative deployment models

In some cases, the broadcaster or post business will employ a private-cloud-based remote data center to support a more efficient, flexible, and cost-effective workflow but still maintain a primary production facility with a large store of online content. This affords users the opportunity to replicate and spread content across the primary production facility and the cloud-based data center, with versioning typically managed by an asset manager controlling where the content resides and keeping it in a single repository. Because content and assets should be maintained in multiple locations for security, content may be backed up on "forever" storage in the form of an object-based storage system or on tape. A strong model for disaster recovery and business continuance, this approach uses replication to ensure content will be available to the users under virtually any circumstance.

Other businesses have adopted a model in which they use a private cloud hosted locally within their own data centers or machine rooms, with the substantial bandwidth required to support production operations. This approach is popular with those businesses that are growing but not sure if they want to outsource the cloud-based workflow or maintain their own. While this in-house approach may address security concerns, it does require a significant amount of bandwidth to support access by all users, local and remote.

Building the cloud-based workflow

Because new private-cloud-based workflows are compatible with leading production applications, businesses often can migrate their existing workflows to the cloud seamlessly. Popular and widely deployed software suites enable users from one facility to the next to view, edit, and finish content across the Internet and do it without making proxy copies. In this instance, a rendering engine sends content across as it is acquired, effectively making for a smooth user experience.

Advanced transcoding and streaming engines ensure that content is moved with the speed necessary for real-time production workflows, and automation of ingest and delivery processes serves to keep the workflow just as simple as in a local production model. Underpinning this complete production automation system is the engine that manages the full inventory of assets and content. Going well beyond the role of a media asset management (MAM) system, a true workflow automation system automates the workflow from end to end, keeping content and assets in sync no matter where they are stored. Thus, as soon as content is ingested to cloud, it becomes visible and accessible to users across all connected facilities, which effectively become a single collaborative production environment.

Content creation and delivery have evolved into a complicated process for a host of different reasons, ranging from technical advances to new media consumption trends. What hasn't changed is the need to provide quality content on deadline while keeping costs low. Cloud-based media workflow offers broadcasters and post houses a way to achieve all of these objectives. ■

Alex Grossman is responsible for driving Quantum's go-to-market strategy and activities in this key vertical. He joined the company in January 2013, following senior positions at Active Storage, Apple and MicroNet Technology. He has contributed to several patents associated with media management and storage technology, and he led the team that developed the first FireWire®-based storage area network.

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The Next Evolution in Cloud Services: Managed DAM

Outsourcing provides a cost-effective means for companies to focus on their core competencies

By John Libby, President, MediaMax Online

Abstract: The trend in off-premise, or "cloud," solutions for effective business technology and personnel improvements is showing up in many areas within organizations. Entertainment and media companies are leading the way in many aspects of technology, outsourcing and media services. A developing trend leverages off-premise digital asset media solutions that include cloud components for media services, DAM software, storage, infrastructure and now of late, DAM managers and librarians.

Does this sound familiar? A time critical digital asset like an image, ad or video needs to be quickly created and delivered. The process requires many steps for review, approval, edits, final approval, mastering, distribution, reporting and inventory management. Marketing, sales, executives and even finance are awaiting the success of the asset. In the case of most companies, this process gets repeated frequently in many time zones, territories, languages and variations along with timing and security requirements. Technology and personnel are clearly the linchpins to the successful workflow that can and will occur at any time.

Enter, the "cloud." Cloud is a marvelous marketing term to rebrand "off-premise" business functions enabled by Internet connectivity. Thankfully, the cloud is much more than hype as evidenced by the considerable business improvements, cost efficiencies and seemingly endless entrepreneurial creativity exploding from the Internet. This realized delivery on the cloud promise fuels the continued adoption and expansion of cloud-based technology, services and staffing.

Traditional cloud hosted data center services have provided reliable and scalable computing platforms for storage, servers, bandwidth, hosting, streaming and application services with cost-effective precision. Companies benefit from reducing headcount and avoiding the pitfalls of constant technology refreshes.

A 2013 study by Gartner demonstrates acceleration in cloud adoption, predicting that global spending on public cloud services will grow at a compounded annual growth rate (CAGR) of 17.7 percent from 2011 to 2016. The Infrastructure-as-a-Service segment leads with the fastest predicted growth of 41.3 percent through 2016.

Outsourcing and staffing have evolved into a cloud delivery system as well by leveraging the Internet and software tools residing "on-premises" or "off-premises" to effectively manage a wide range of company functions, such as finance, accounting, information technology, procurement, legal, human resources and marketing operations. Just like cloud computing, the trend is increasing in adoption and acceleration, with the entertainment, media and publishing industries expecting to increase outsourcing by 80 percent, according to HfS Research. Furthermore, cloud staffing is becoming an established staffing model as entrepreneurial staffing firms are rebranding themselves for business functions provided by virtual staff located off premise.

Digital Asset Management (DAM), like every other software category, has clearly

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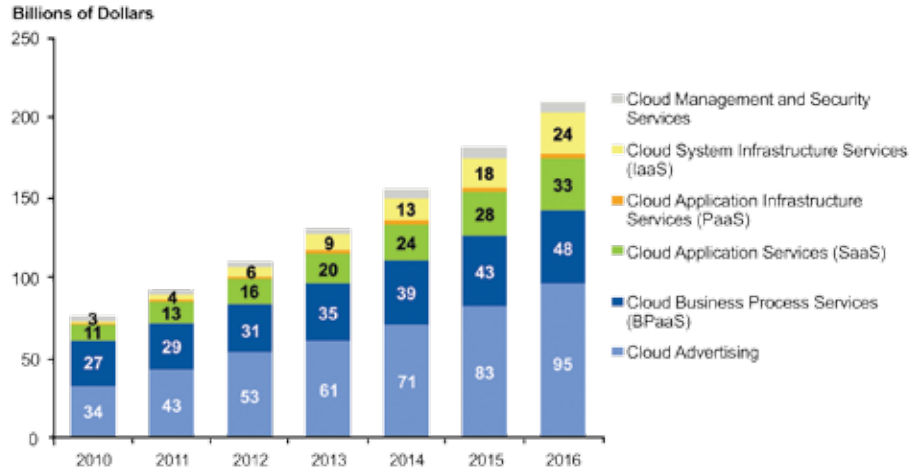
Public Cloud Services by Segment, 2010-2016



Source: Gartner (February 2013)

adopted cloud offerings with traditional "on-premises" software vendors offering hosted options. In addition, new DAM cloud offerings continue to provide media solutions for enterprise DAM, encoding, media services, workflow, project collaboration and file sharing. DAM related cloud service segments are predicted to grow, according to Gartner, at an annual rate of 25.9 percent for enterprise content management and 36.4 percent for storage through 2016. With the continued adoption and acceleration of cloud computing, cloud staffing, cloud media services and cloud DAM, it seems logical that enterprise media management would benefit from the convergence of these trends.

Outsourcing provides a means for companies to focus on their core competencies and business competitiveness. Leveraging their assets and content is a core competency but the technical workflow can be left to cloud sourcing options. More and more companies are accepting the practice of trusting asset management and librarian functions to cost-effective experts.

Expanding managed DAM in the cloud

As a developing area, cloud sourcing options for managing an enterprise or departmental DAM can be found in relatively limited vendor offerings such as post-production or library service companies. Post-production companies have long coupled together end-to-end media services to accommodate media workflow and now include options for DAM with its management and maintenance. Post-production companies have facilitated the monetization of content libraries with the creation, on-going management and support of DAM driven sites for the likes of Johnny Carson's television episodes and Paul McCartney's music library. Post companies have created specialized business units to manage client media workflow and DAM management, such as DVS InteleStream for the distribution of marketing and publicity materials for film, television and music. LAC Group uniquely provides Library as a Service (LAAS). There are an array of DAM, archiving, research, preservation, curation, library outsourcing services and experts in DAM platforms such as North Plains, OpenText, Xytech, etc.

Per Robert Corrao of LAC Group, options for the digitization and management of your assets include:

1. Outsourcing the recovery of archives, assets lost in a crisis, including storage repository recovery and expansion. The digitization and organization of specific assets for a specific project.

2. Outsourcing the cataloging, meta-tagging, and organization of your digital and physical assets, followed by training of your internal information management staff for the on-going administration of your library from in-house.

3. Outsourcing the digitization of your assets and retaining a contracted digital asset managers as part of your IT team for the on-going administration of your asset library.

4. Adding an experienced digital asset manager to compliment your in-house employees for the digitization and/or permanent administration of your library.

Cloud hosted and managed DAM reliably handles the technology burdens of support, training, performance, storage, business continuity, capacity planning, technology refreshes and application development. Business unit leaders prefer to focus on their core business practices and not engage IT in continuing projects to upgrade on-premises software systems and related infrastructure. Technical and end-user training concerns are minimized as the managed DAM vendor typically runs the system and facilitates training for only client oversight, as needed. A managed DAM adoption clearly alleviates many technology burdens but clients also benefit from continued software enhancements released into a platform. As managed DAM clients essentially partner with their provider, their collective ideas materialize into software features and even industry improvements.

Cost savings

The New York Times in 2009 reported a predicted tripling in the need for DAM professionals this decade. Companies that implement DAM certainly know the cost dynamics of staffing the operation, which often comes as

John Libby, President of MediaMax Online and MESA Board Member, is a 25 year veteran of entertainment technology and marketing. MediaMax Online specializes in hosted media management, monitoring solutions, media analysis and software development such as EPK.TV, MMD.TV, PSAmedia.org and Daily Buzz.

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Cloud is a marvelous marketing term to **rebrand** **"off-premise"** business functions enabled by Internet

a surprise. Experts like Jeff Lawrence at Celerity and industry implementation guides like North Plain's "The 13 Cost Areas for a Digital Asset Management System" routinely cite the overlooked cost areas of DAM manager, business support and technical support. Most traditional DAM or cloud DAM implementations will require the hiring of additional staff to support and maintain the new DAM system. According to the DAM Foundation's salary survey, the mean reported salary for Digital Asset Managers is $82,198.

DAM software makers have used Total Cost of Ownership (TCO) models to demonstrate organizational value in software solutions. Recent studies performed by Gistics with OpenText on outsourced or cloud-based DAM services solutions show a remarkable improvement on TCO for an enterprise size implementation with 5,000 global consumers. Three-year operations costs with startup were approximately 71 percent lower for an outsourced DAM ($1.57 million versus an internal deployment DAM ($5.34 million). The cost reductions come from typical areas like avoiding hardware purchases and internal implementation staffing. (However, an outsourced DAM three-year implementation cost still includes 52 percent internal staffing for library services and end-user training for a monthly cost of nearly $23,000.)

The Gistics' study, although obviously just a hypothetical case, does certainly highlight the internal staffing costs that cannot be overlooked with a company DAM operation. A managed DAM cost improvement would be expected given the nature of the pay-as-you-go model and leveraged resources of a cloud based provider across many clients. A managed DAM avoids the direct and indirect costs of traditional staffing, such as turnover, hiring, training, management and budgetary headcount. Most importantly, a professional service resource, like a managed DAM, provides the accountability and performance demanded by leading companies.

...and what happened to the time critical digital asset? With the managed DAM solution, the finished time critical asset example is handed off to a managed DAM vendor's client representative, who shepherds the asset, variations, communications, ingestion, tagging, delivery, archiving and reporting while the client focuses on the ultimate promotion and success of their business. The managed DAM provides the end-to-end service that's reliable, timely and works in partnership with a client's common goals. ■

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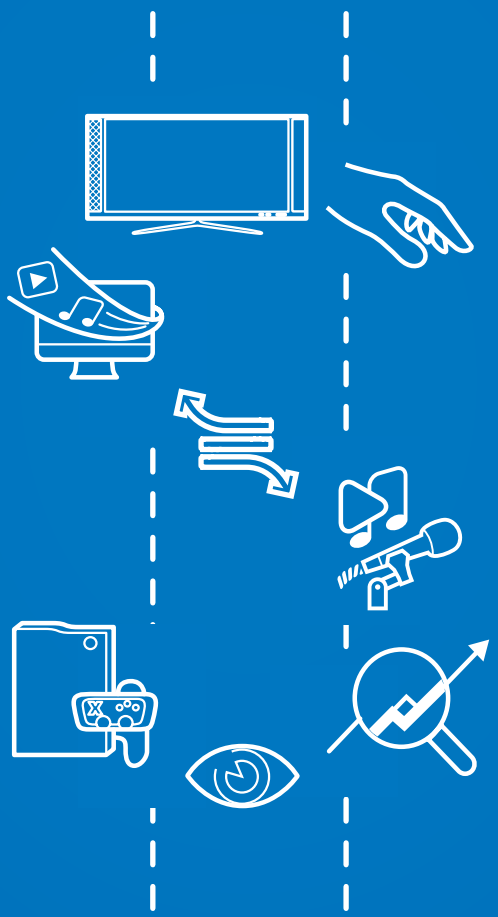

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Cloud Trek: The Next Generation

Tomorrow's cloud will provide for integration and "stacking" of workflows and processes, enabling greater mobility of content and workforce

By Dr. Jay Yogeshwar, Director, Media, Broadcast and Entertainment, Dr. Shane Archiquette, CTO, and Ron Quartararo, Director, Business Development, Communications, Media and Entertainment, Hitachi Data Systems

Abstract: For media and entertainment companies, it's no longer a question of why, or even when, they should migrate to cloud platforms; they are already there. The question now is how to move from an a la carte menu of individual functions [archive, transcode, render, media asset management (MAM), and so forth] to an integrated workflow-orchestration model. In an increasingly mobile, global environment, how far can media and entertainment organizations push the cloud? Besides the known challenges of security, latency and workflow integration, how will the cloud address the growing need for mobility? Where will we draw (or redraw) the lines between private and public environments?

This article explores the next-generation media cloud and how it uses virtualization and mobility to transform the landscape for M&E workflow and analytics.

While media and entertainment companies have been considered slow to adopt the cloud, they are now beginning to embrace the cloud for a variety of business and media workflow applications. We must differentiate, however, the use of the cloud for media workflow versus business processes. The former is the more daunting challenge given the need for those systems to be media aware, frame accurate, low latency and secure. At the same time, they must support more than five nines of reliability and integrate with disparate systems.

As M&E organizations move toward cloud adoption for media workflows, they must look at how to stack sometimes-

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disparate (multivendor) processes to achieve seamless integration from one application to the next, and the ability to orchestrate these workflows remotely. More sophisticated hybrid on-site and cloud workflow systems will be required to automate the flow of content, metadata and instructions from an application on-premise to another in private cloud A to yet another in public cloud B. Such systems are needed to take advantage of particular technical infrastructure advantages or cost differentiators.

Yet, in the trek to the next-generation cloud, it may not be necessary to move content at all. Envision an environment in which content enters a private or hybrid cloud – and never has to leave. Even distribution can be handled via a pretranscoded (or master) copy of the file sent via a WAN accelerator or content distribution network (CDN). And so the highest resolution distribution content copy ever required could be stored in the cloud, and only accessed and repurposed when needed, then distributed outside the cloud in whatever format is requested.

So what will it take to achieve the next-generation of cloud for M&E? We believe it will consist of three advances:

- Integrated and automated workflow orchestration – combining business process and media workflows in the cloud.
- Cloud mobility – seamless cloud-to-cloud migration and cloud virtualization.
- Workforce mobility – for both consumers and media engineering professionals.

The integration of these three advances into a next-gen media cloud will power the future of content creation, management, distribution and monetization. The geographic, technological and financial barriers will be significantly lowered to allow media professionals to focus on their core competency: storytelling. Content will continue to reign supreme. The new, less-imposing environment will attract even more talent to create compelling content, a benefit to consumers and industry, alike.

Automated and integrated workflow orchestration

As media engineering professionals no longer want to be saddled to one vendor, the next-generation cloud must support the easy integration of disparate workflow applications (and vendors). And, it must automate the process for initiating and controlling those workflows.

Integration will be achieved by one of several means. The work being done through European Broadcasting Union (EBU) and Advanced Media Workflow Association (AMWA) around Framework for Interoperability of Media Solutions (FIMS) will likely provide one answer. FIMS will enable an enterprise service bus (ESB) to communicate between disparate applications, linking different applications through a custom adapter that each vendor would develop, and then linking them to the bus. Any two vendor applications that have written adapters will then be able to communicate, and thus pass instructions from one to another.

Entertainment Technology Center's (ETC) Production in the Cloud effort seeks to identify the technology barriers and enablers to create a multidimensional framework via six different work streams to create the capability of a cloud-based workflow for media production and post-production. Most of the inhibitors to media cloud adoption by companies are latency and integrated workflow with cloud-based resources. ETC seeks to identify how far these areas can be utilized with an industry-standardized workflow set of models.

A second method of enabling integration, short of hard-coded APIs, is via Open Stack. Now highly regarded in the IT world, Open Stack has several key enabling technologies, such as Swift and Cinder, that can provide integrated dynamic media workflows in the future.

Ensuring integration of diverse functionality is but the first half of the challenge. The second half is the need to automate the ordering and initiation of those functions from a unified control application, that is, workflow orchestration. Service oriented architecture (SOA) and service orchestration are key to creating new applications, accomplished simply by invoking new orchestrations. This approach is very different from the old ways of developing new code and by new API integrations. With service orchestration, messages are exchanged in the enterprise application domain. The central message engine used in connection with service orchestration is the ESB, while the enterprise application integration (EAI) layer enables data integration via ESB. Several commercial products have successfully taken these concepts to market, including the Sony Media Backbone and the Dalet Galaxy. Such architectures are not limited to on-premises workflows and may be logically extended to the cloud.

Cloud mobility

While the cloud uses virtualization within its domain, we will also need mobility between cloud providers to truly reap both the technological and economic benefits. For example, one might select Amazon S3 for archiving, but decide for economic reasons Microsoft Azure would be more cost-effective for transcoding. From the M&E end-user perspective, the next-gen cloud will need to treat these as seamless interactions through an abstraction layer that enables content to move unencumbered from one location to the other and back.

Some of this migration may not be necessary, as more cloud providers will adopt "cloud virtualization." Cloud virtualization will utilize all the elements of a software-defined network (SDN) and hardware (server, storage, networking) virtualization in a

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Workforce mobility is this transformative trend that has created new opportunities for media professionals. A key challenge to its successful implementation is the tightly integrated control and management of content wherever it is accessed.

cloud-based infrastructure. Such cloud virtualization would ease workflow orchestration by letting the user simply select the application and predefine the infrastructure requirements as if this were an on-premises implementation. Further, cloud virtualization would allow users to not be locked to a particular cloud implementation and provide greater cloud choice to balance both capital expenditure (capex) and operating expenses (opex).

An object store at the cloud core, with resident metadata and policies, can help maintain full control of data management. The additional ability to encrypt and replicate content moving out of the object store and migrating to an external cloud will ensure data privacy and data availability. This is the essence of cloud mobility: the tightly integrated control and management of content wherever it is accessed. Cloud mobility allows for access of content across multiple devices, locations, applications and storage resources, while providing flexibility with data center governance, protection and efficiency.

Workforce mobility

Consumers are not the only ones who demand mobile access to content. Producers, motion picture and television executives, editors, news directors, writers and broadcast executives are also demanding mobile access. Whether for collaboration, review and approval, editing or monitoring, M&E engineering and business executives need access to content and metadata anytime, anywhere.

Assets need to be accessible from any location at any time. Cloud-based drop-box services are one way to handle content migration without clogging IT networks. One example is Hitachi Content Platform (HCP), a multitenant cloud-based repository designed for private cloud implementation. Hitachi Content Platform Anywhere (HCP Anywhere), a software layer above HCP, is a secure, smart, sync-and-share collaboration solution that enables easy access to stored media files from any mobile device. In addition, the platform is object-based, enabling access to valuable metadata at the same time.

Workforce mobility is this transformative trend that has created new opportunities for media professionals. A key challenge to its successful implementation is the tightly integrated control and management of content wherever it is accessed. The ubiquitous information access and sharing of content when and where they are needed considerably speed the business process. An optimal implementation will help mobilize media across devices, locations and cloud services, while helping the content owner maintain full visibility and control over the data and associated business processes.

Object storage and the value of metadata

Cloud-based object storage enables access to metadata independent of the application. In most instances, metadata about a specific piece of content is trapped within a proprietary DAM, MAM or policies and measures (PAM) database. Object storage (using appropriate means of metadata extraction) can enable the metadata to be stored with the media file in as a virtual object.

This approach solves multiple problems. The first is its potential to enable centralized asset management within a multi-silo-oriented organization without the need for a wholesale "rip and replace" and without the need to standardize on one MAM system. Since media management professionals look upon MAM/DAM/PAM systems with somewhat of a religious fervor, this solution would bode well for those who might consider trampling on one broadcast or production unit's preference. A search engine embedded within some of these object storage repositories (such as HCP, for example) would then enable any tenant (given the appropriate rights) to search on any asset. And it would do so at any time, at any location, and on any device. A MAM-independent object store can greatly help with metadata standardization across multiple parts of a media organization it can also help with conforming to industry standards such as Entertainment Identity Registry (EIDR) that is for standardizing metadata across the heterogeneous media workflow.

The second is the ability of object storage to unlock the value of the metadata for applications other than asset management. For example, let's consider a "big data" analytics project in which we want to "marry" media asset metadata with in-house audience metrics. In this project, we also want to correlate these metrics to third-party psychographic data to develop behavioral profiles associated with media asset preferences. Achieving this would require access to certain pieces of metadata, which may otherwise only exist with the MAM database.

Such behavioral profiles would impact marketing and promotional campaigns, social media engagement, programming decisions, investments in new films, and so forth. It may even impact new business models as new distribution channels continue to emerge.

Conclusion

Today's media cloud has progressed considerably over the past five years, both from a workflow perspective (from simple transcoding to more complex broadcast and post production processes), and from a business process perspective (leveraging the cloud to optimize the monetization of content). Tomorrow's cloud will build on today's successes, and provide for integration and "stacking" of workflows and processes. It will enable greater mobility of content and workforce, and extend virtualization to new levels. ■

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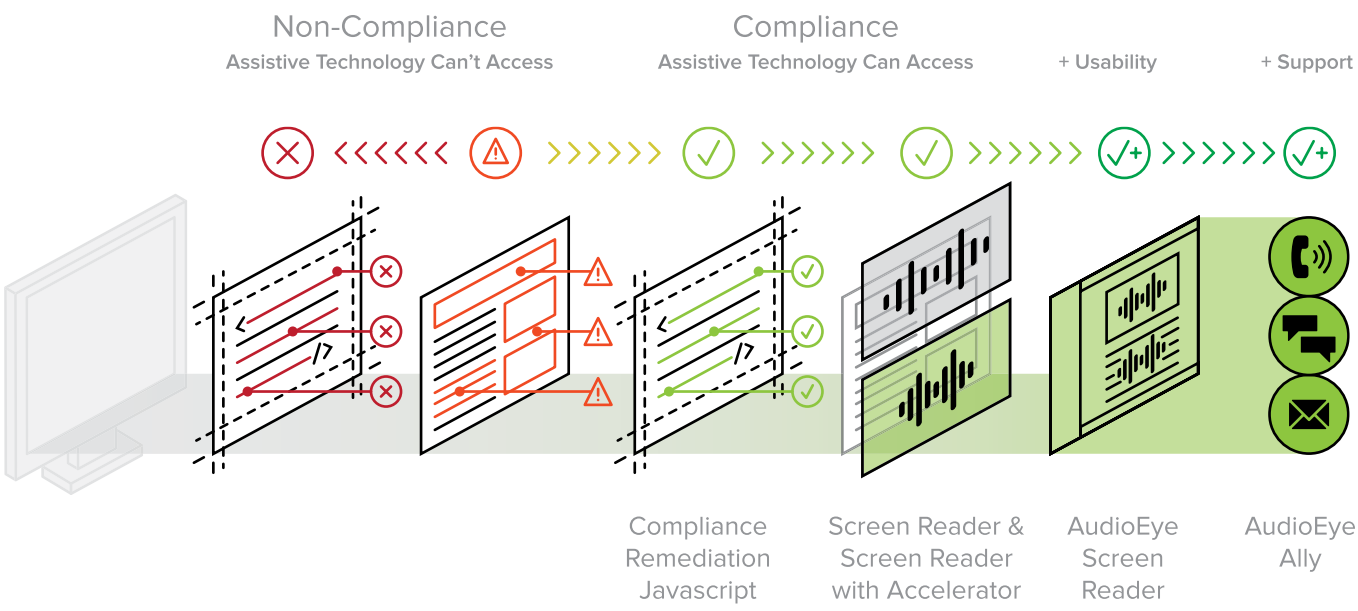

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Creating the Intelligent Media Business

An increasing number of media and entertainment businesses are anchoring financial and analytics platforms in the cloud

By Robert Ambrose, Media and Entertainment Industry Director, Oracle

Abstract: The old divisions between 'back office' and 'front office' are fast disappearing, along with the divisions between 'the business' and 'technology'. CFOs are building finance operations that enable agility and business model innovation to support new types of transactions with customers, and fend off the threat of new digital competitors. And by enabling the entire business to understand each consumer as an individual, analytics are moving from operational and financial reporting to become the fundamental bedrock for an intelligent media business.

The digital economy is fundamentally changing the expectations of consumers and shaking up the way many long-established organizations do business. That was brought home to me on June 11 when I came close to missing a flight home from a business trip to Madrid, Spain, thanks to a 24-hour strike by taxi drivers, who were protesting against Uber, the car service app.

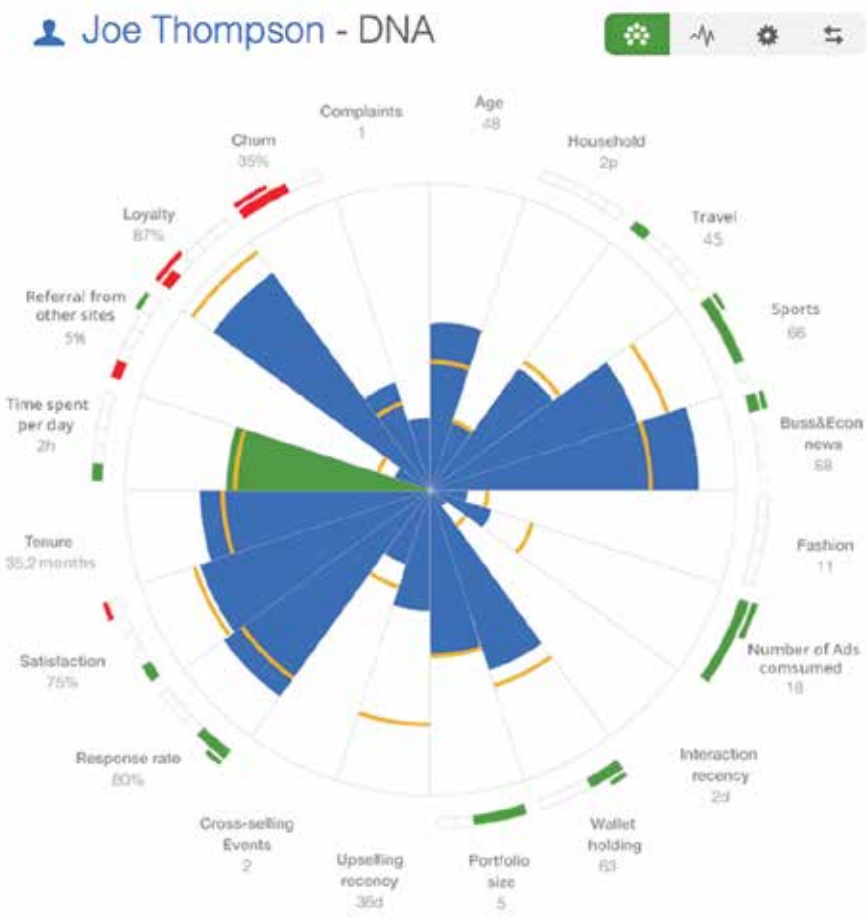
The speed with which Uber arrived on the scene and unsettled the centuries-old transport industry acts as a warning to media and entertainment businesses. Our industry has its own 'Ubers' like Netflix, Spotify and BuzzFeed, and more will spring up without warning. The success of incumbent players depends on their ability to meet the needs of audiences with compelling consumer-centered experiences, while ensuring that they can update their business models and respond instantly when a disruptive new service appears.

Creating business agility

No media business can be agile, flexible and

Robert Ambrose is the Media and Entertainment Industry Director at Oracle. He works with global broadcasting, publishing, advertising and online gaming companies, creating technology and business solutions that underpin successful and sustainable digital business models. He has extensive international experience, working directly with media companies in Europe, the Middle East, Africa, Asia and North America.

A 360° Consumer View



Big data technology is evolving from being the domain of data scientists to tools that enable business users to understand each consumer as individual, and drive personalized advertising, marketing and content.

ready to innovate without the right foundation. Media CFOs are charged with delivering a finance function that underpins the launch of new charging models and digital revenue streams, while also improving the efficiency of business operations. This may include a single, streamlined order-to-cash process covering all parts of the business: traditional and digital, B2B and direct-to-consumer, sales and subscriptions, products and bundles. It must also unite multiple lines of business, operating units and international divisions to provide a single, efficient view of the enterprise, while crossing numerous legacy systems.

Traditional enterprise resource planning (ERP) projects are major investments in time and resources – with a lifespan of more than a decade. Many ERP systems claiming media credentials are rooted in the traditional physical media world. With more 'Ubers' just around the corner, there is a real risk that a "new" finance system is out of date before it is fully implemented – and an even greater likelihood that an existing platform is long overdue for an update.

Financial management in the cloud

The answer for an increasing number of media and entertainment companies is found in the cloud. Moving to a software-as-a-service (SaaS) finance system such as Oracle Financials Cloud accelerates the deployment of new finance and revenue management capabilities, and greatly simplifies the management of the platform – for example, eliminating the need to manage complex upgrades. New business enablers – like expenses submitted via a simple smartphone app, or the ability to handle tax for complex digital product bundles in international markets – can be added in a snap.

The cloud approach is vital for the new generation of digital media start-ups. Curse Inc. provides online video gaming news and content, targeting a specific audience of video gamers. For Finance VP Brandon Byrne, a benefit of a cloud-based finance solution is the ability to support rapid expansion in new markets: "We have tremendous growth, not just financially but also with our digital media properties. We're running in a bunch of different countries, a bunch of different states – we have a lot of compliance issues, regulatory issues in other areas.

"The other thing that makes it great is that the upgrades are really someone else's problem and not mine. In the past when you would do these types of things it would break all of your customization. Now we just hand this off to people who are much better at it than we are and we can go about our daily business."

Finance leaders are increasingly focused on ensuring that the finance function can proactively support the growth of digital business. Current cloud-based finance platforms provide modern user interfaces, social collaboration and simple reporting tools that make it much easier to unlock the value of data to drive business strategy.

Finance and operational staff have long worked with business intelligence, reporting and enterprise planning tools – providing management insights into the business across different brands, content products and delivery channels. Cloud-based finance platforms make this type of reporting much simpler – enabling any user to work with management dashboards and instantly drill down into the underlying data.

Unlocking value with customer analytics

Finance leaders are also supporting a revolution in reporting and analytics. Such tools have previously been used exclusively to track the historical performance of the business, looking backwards to see 'what happened.' Now an analytics capability underpins future growth as all parts of the business, particularly

RELATIONSHIP BEYOND CONTENT

Media and entertainment companies are experiencing multiple disruptive forces of digitalization, multi-platform content consumption, social media integration, management and analysis of data and content. This trend provides companies with the opportunity to adopt newer and integrated technologies. But how can this be achieved with shrinking IT budgets? One element that continues to remain unchanged is the importance of the relationship of the company with its customer.

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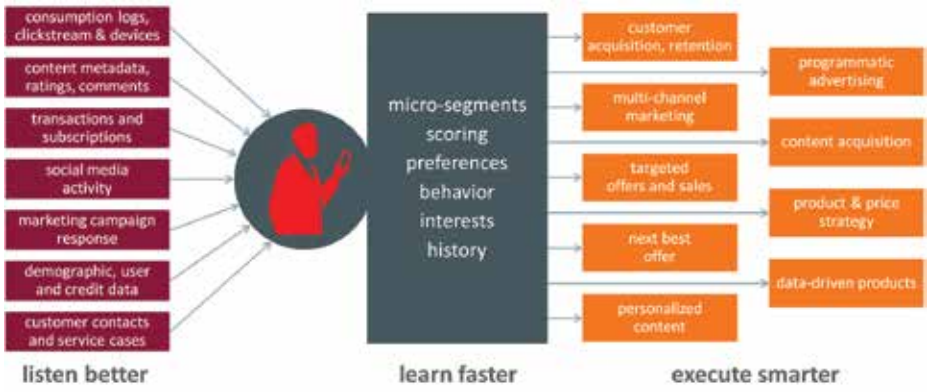
How Data Drives Operations



By taking a customer-centered view, valuable data from across the business is captured and automatically builds a highly detailed individual profile of each individual consumer. This core data then drives marketing, advertising, content, customer service and business operations.

marketing and advertising, demand the ability to understand and target individual consumers – their interests, value, and demographic segments. Analytics now become forward looking, predicting behavior and uncovering 'why it happens.'

Many media companies are now hiring heads of customer analytics and building teams of data scientists. They are unlocking the value in the data collected from every interaction with a consumer: content clicks, ad consumption, subscription transactions, social media comments to name just a few.

With digital advertising rapidly shifting to an automated programmatic model with inventory traded by real-time bidding, the data that media companies have about their users becomes immensely valuable. That same data can also drive increased customer acquisition and retention through more relevant, personalized content-based marketing. And it can help make consumers' experiences far more engaging by building personalized content products.

When Netflix famously spent more than $100 million on two seasons of House of Cards without so much as a pilot episode, the power of data analysis became clear. Netflix is able to understand its consumers in a way far more sophisticated than 'traditional' media companies have been able to do. Despite the big investment in content, Netflix barely had to spend a cent on marketing the series. Data analysis allows precisely the right users to be targeted with marketing messages and recommendations.

From business intelligence to media intelligence

The good news is that building highly-detailed customer insights has become much easier and is now readily available to all media and entertainment businesses, no longer requiring a huge investment in expensive technology or specialist people. Dedicated big data hardware appliances like Oracle Big Data Appliance make for simpler, quicker and lower-cost deployment. New software platforms, like Oracle Media Intelligence, automate the process of turning millions of raw customer interactions into usable data that can drive real marketing and advertising campaigns.

Media businesses can unlock even greater value by merging their proprietary, granular 'first-party' data, gathered from their audience interactions, with a vast amount of additional consumer data held in a cloud data management platform (DMP). This combination of in-house big data and cloud DMP provides the richest possible view of each consumer – including those who are anonymous or unregistered – while maximizing the CPMs that can be realized for digital advertising inventory.

This is a field where CFOs, CMOs, CIOs and heads of content and advertising can all gain huge advantage from a common platform delivering a single, highly detailed view of each audience member.

This approach is already delivering results for European media house De Persgroep, based in Belgium. The company is at the cutting edge of using Oracle's big data technology and customer analytics to understand and engage customers across its fast-growing digital platforms, as well as traditional print, TV and radio. De Persgroep's CIO Luc Verbist leads the project, working with the CEO and heads of each line of business.

"We want to create a superb user interaction. In order to so, we need to have a lot of information about our customers, in detail. Which channels they are using, what devices, what time of the day they're using them, what are they reading. In order to do all of that we need to collect data – a lot of data – about our customers," Verbist explains.

De Persgroep is now able to run consistent marketing campaigns and customer service interactions built around the needs of each customer – across print, digital and broadcast. Before, each line of business was operating in individual silos, sometimes leading to confused and contradictory messages presented to customers – and missing opportunities to acquire and retain print and digital subscribers. The same data is also creating new advertising opportunities – such as location-based ads to users of De Persgroep's mobile apps.

Finance leaders are also spearheading the adoption of analytics to support the entire business, building on their traditional expertise in operational reporting, BI and data warehousing. Curse's Byrne has analytics as a high priority on the 'to do' list. "We have some big plans to ultimately look at a data warehousing solution that will help us to manage our traffic and non-financial data in the future," he says.

Media and entertainment industry CFOs see the full picture and potential of their business across current silos and operating divisions. They are therefore particularly well placed to help drive their businesses to become adaptive, intelligent, and customer-focused organizations. ■

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Transforming IT to Put People Ahead of Technology

The benefits of a user-centric IT environment and how to create one

By Whitney Bouck, SVP Global Marketing & GM Enterprise, Box

Abstract: The concept of user-centric IT has emerged as the way IT professionals should be thinking about technology purchases and priorities, and resulted from ongoing discussions between industry and technology leaders including author Geoffrey Moore; CEOs from Box, GoodData, Jive, Marketo, Okta, Skyhigh Networks, Zendesk and others; and CIOS who are ahead on the curve of cloud adoption and IT transformation. This article summarizes what it means to approach IT planning from a user-centric perspective, and provides some guidelines for how to get there.

Today's business world is characterized by disruption. Rapid technology changes have gone beyond simply changing the pace of business and are disrupting entire business models and industries. Look at what the Internet did to retail bookstores, or connectivity to the home thermostat. Social media has created radical transparency into business operations and customer experiences.

Businesses are also changing from within as the behaviors and habits of the workforce shift. A new generation of workers chooses not to have a landline telephone at home, own desktop computers or read printed magazines, preferring instead to use tablets and laptops. Increasingly, they bring these expectations for social collaboration and connectivity to work with them.

Every business is on the front lines of these changes, but nobody is closer to this than IT. Most IT departments and cultures originated in a world where technology was a scarce resource, provisioned and controlled by the business from the inside out. Yet today, cloud computing and mobile devices are moving essential computing workloads and data outside the enterprise data center. IT isn't the only one buying technology –IT leaders are recognizing and adapting to this reality. The time has come for IT to enable users with the tools that work the way they prefer...and yet still meet a company's standards for security and oversight.

Current IT models aren't sustainable

There is a real challenge for IT organizations that have built architectures on the premise that technology is a scarce, expensive resource centrally purchased and managed for a select few. This challenge is compounded by the complexities from having many different on-premise systems and applications that are aging and are therefore expensive, many of them underused by employees. Most of those legacy applications were built before the era of mobile computing and were designed to be used only within the company's network.

As user expectations changed, mobile became a regular work tool, and as business processes naturally became more cross-company, employees began exploring new business tools that they could easily procure themselves, and that work more like the tools and apps they use in their personal lives. This has created a wide gap between the old systems governed by IT for corporate protection and the new systems adopted by employees to which IT has no visibility. Understandably, IT organizations want and need visibility into and control over enterprise data. Data privacy and security regulations often require it. Yet cloud adoption is growing rapidly, and evidence

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The guiding principles behind user-centric IT

The time has come for IT to take a different approach to planning and procurement. Great IT organizations will become enablers of user productivity, seeking out those tools that enable employees to work the way they want while maintaining the security, visibility and control that companies require to protect business information. And those that find and adopt those kinds of technology will also reap the benefits of cost savings, better adoption of purchased technology, greater agility to change as business needs evolve, and reduced dependency on hardware. IT needs to put the user at the center of IT decision-making with employee productivity and access to information as the key objective...not technology for technology's sake. User-centric IT must become the way IT selects and procures software.

Better yet, IT organizations have the perfect heat map of where to start. User adoption of cloud and mobile technologies is a great indicator of what those employees need in order to be most productive. Using that insight to prioritize where to begin adopting tools and applications that users love and IT trusts is a solid start.

The group that first defined user-centric IT came up with 5 guiding principles to help others on their journey to IT transformation and user-centric IT. Those principles are:

1. User-centric IT serves the business by empowering people.

2. User-centric IT adapts to the way people work, not the other way around.

3. People, information and knowledge must connect in real time.

4. Mobility is a work-style preference, not a device.

5. Security should be inherent and transparent to the user experience.

IT's evolving role

The IT organization is as critical to this user-centric model of IT as it is to the legacy model. In fact, with increasing adoption of mobile technology and cross-company collaboration, visibility and security are more important than ever. Just as security models and application selection need to evolve to accommodate emerging technology, IT skills and methodologies also need to evolve. Some of these strategies and needs include:

- Stronger business relationships: User-centric IT starts with an understanding of the business users and their needs. IT should be a key player in every new business initiative from its inception.
- New skills and knowledge: IT teams also need a deep understanding of business data structures and how data flows between apps and users. IT practitioners need to be lifelong learners, ready to evaluate a constant flow of new technology possibilities and opportunities.
- Refocused objectives: Old-school IT organizations focus on managing servers and infrastructure with the intent of driving cost efficiency and minimizing downtime. User-centric IT teams focus on enabling the business, measuring their effectiveness in terms of user productivity, time-to-market and business agility in addition to cost.
- Flexible tools and technologies: In a cloud-enabled world, IT identifies, curates, provisions and integrates the right tools and technologies to enable user-centric computing. In an environment with many interlocking systems, open standards and interoperability will be critical parts of the overall architecture.
- A new way to evaluate technology priorities: There is now a map for thinking about how to think about and prioritize technologies in a user-centric environment. This map begins with those technologies users touch first, and how those interact with other components within the larger IT landscape. Different from a traditional 'IT stack', this guide looks differently at the interaction points of various systems and applications, all with the user as the ultimate center.

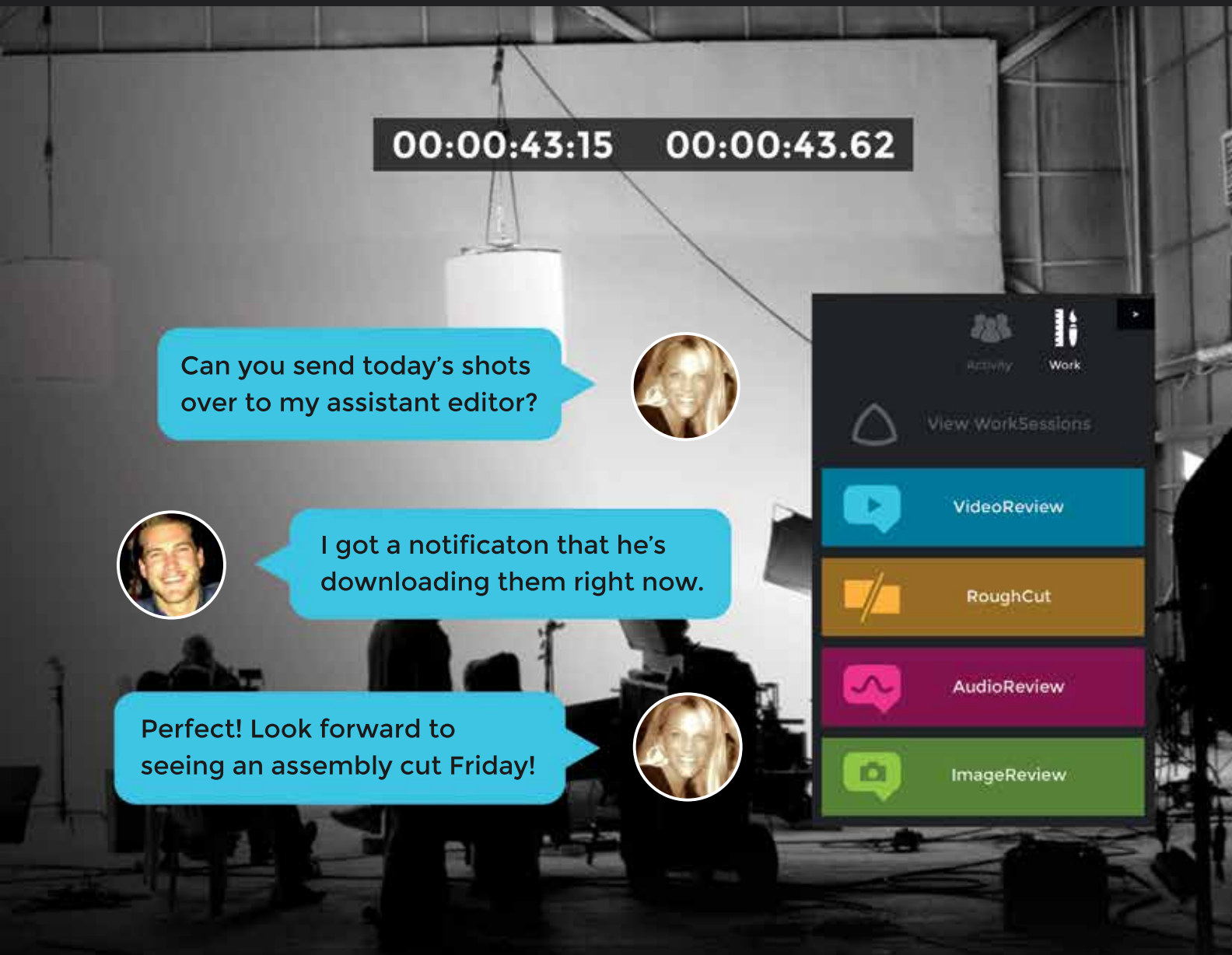
Organizing Around User-Centric IT

This map for prioritizing technologies in a user-centric environment places the user at the center of all activity.

Next steps

The forces of the information economy –social, mobile, analytics and cloud – are pointing businesses towards a user-centric approach to IT. Depending on the current IT organization, putting the business users at the center may seem almost radical. There's no way to do a 'forklift upgrade' to user-centric IT infrastructure, and no single technology blueprint to deploy. That's exactly the point—the actual solutions vary with business user needs. IT leaders have a key decision to make: either embrace a new model of IT or risk becoming irrelevant. ■

Whitney Bouck drives all marketing, branding, and customer acquisition for the business worldwide, and founded the enterprise business for Box, establishing the strategy engaging with and servicing the largest businesses in the world. Prior to joining Box, Bouck spent 15 years with Documentum and then EMC (via acquisition).



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—Teradata, Page 96

In the era of digital entertainment, M&E companies are developing direct relationships with consumers that simply were not possible before. These connections create unprecedented opportunities for M&E companies to create tailored entertainment experiences and deliver customized marketing messages. Consumers, in turn, have more power than ever to demand the entertainment they want, delivered conveniently and flexibly to a range of devices. It's a new era of registered viewers, second screen, social listening, Big Data, and analytics. The 14 articles in this section focus on how to make the most of these new consumer connections. ▶

Using the Consumer Halo in Media and Entertainment

As people increase their use of digital media, they create complex trails of information that smart marketers can mine to refine messaging and increase profits

By Alex Akers, Senior Associate, Jacob Carlson, Consulting Manager, and J.P. Benedict, Managing Consultant, Cognizant Business Consulting

Abstract: Today's consumers are increasingly interweaving their physical worlds with their virtual lives (and vice versa). The websites they visit, devices they use, and social networks they build online all create 'Code Halos,' or digital profiles about their interests, persona and tendencies. This creates massive opportunities for entertainment companies not only to create tailored entertainment experiences, but also to deliver them more precisely and efficiently than ever before. In this article, Cognizant will share how one studio is starting to realize the benefits of the consumer halo, by combining data sets and generating new insights in their CRM program through a pilot analytics project.

Big Data. That's the term we hear so much in today's consumer economy, describing the sheer volume of data accessible to companies. Social media, mobile devices, and cloud-based storage have propelled big data from an idealistic concept into what we know today. Year after year, human consumption of data grows at an ever accelerating rate.

An IDC white paper published in 2010 estimated that in 2009, 800,000 petabytes (0.8 zetabytes) of data were generated. By 2020, the amount of data in the digital universe will grow to 35,000 zetabytes, IDC estimated, a figure that was inconceivable to most people a decade ago. While information has been accumulating for a long time, the rate of growth has exploded as computers and digital devices—especially connected devices—have become ubiquitous. Where in the late 1990s or early 2000s a household might have had one family computer, now individual family members have a personal computer, a smartphone, tablet, smart watch, and are even wearing smart glasses. Today's consumer is über-connected. News, business, and social communication are constant, so the portability and "always on" notion of our devices are deemed a necessity to those consumers. Everything we touch now has the ability to collect data about us.

As the consumer has been busy trying to keep up with the rapid pace of media by using more devices, granting access to online profiles, and linking everything together, he is leaving behind a trail of digital breadcrumbs. We call this trail a "Code Halo". The Code Halo has the potential to reveal significant amounts of useful information about a particular consumer's preferences, habits, and inclinations. Code Halos help avoid misdirected messaging and poorly focused channels, while optimizing marketing programs and creating highly specific, highly granular messaging that hits the target market with precision. Better yet, when properly implemented, a Code Halos program will continue to sift through data, find correlations, gather insights, and strengthen continuously over time. As assumptions

are confirmed or re-evaluated, the results will become ever smarter and more valuable to the company.

Impact on the marketplace

Code Halos utilizes a concept called The Crossroads—a point in time where growth of traditional industry leaders is challenged, outpaced even, by growth among competitors leveraging data-driven analytics to their advantage. This concept is particularly evident in the media and entertainment industry, where companies like Netflix, Google, Amazon and Hulu are already differentiating themselves in the theatrical, broadcast, publishing, and information services segments.

Netflix initially gained popularity by bringing movies to the consumer in a more convenient fashion. However, it has blossomed into an entertainment juggernaut by being meticulous about metadata, and combining that data with customers' viewing habits. It invests significantly in continuing to hone an algorithm that delivers more relevant and personalized programming to its customers.

Amazon's early selling points were similar to Netflix in that its customers could purchase books and other consumer goods conveniently and inexpensively. However, for years it has also been tracking and collecting data on its customers, mining it to drive consumer purchases through compelling recommendations. Furthermore, it used this competency as leverage in driving contract and pricing negotiations with publishers and content providers.

Google has a well-documented history of data collection. While this has, from time to time, attracted controversy among competitors (remember Microsoft's 'Scroogled' campaign?), Google has successfully grown its email product to hundreds of millions of active users by creating a personalized experience for its customers.

Hulu uses data as a differentiator to deliver personalized advertising to its customers. Despite a smaller (but growing) user base when compared to the major television networks, Hulu's ability to collect data about viewer activity and preferences allows it to target precisely which viewers will receive which message

The compelling commonality between all of these examples is that these companies are relatively young when compared to their industry rivals. Amazon (1994), Netflix (1997) and Google (1998) seem like industry veterans being founded in the 1990s while Hulu was only founded in 2007. If a startup can demonstrate this type of success with data, one can be optimistic about the opportunities an established, historically successful company has to do the same—and to win at The Crossroads. It just doesn't happen without thought and planning. In order to be successful, a Code Halos initiative must be deliberate and methodical, and receive full support from the highest level within the organization.

Capturing Data About Dan

Value is derived from combining data from different sources, including Web traffic, e-commerce and video.

Case study: consumer insights at a major studio

A significant advance in the big data revolution is just how rapidly companies are beginning to adopt aspects of the Code Halos concept. Over the past 18 months, Cognizant has been actively shaping how its clients manage the influx of consumer information—including a wide array of new vendors and tools—as well the challenges of aligning new and existing business models with "consumerized" data. A recent project at a major Hollywood studio tasked Cognizant with providing an in-depth segmentation study of the studio's digital customer, including strategic recommendations on segment utilization, visualizations of the psychographic breakout, and profitable audience engagement tactics. Some key business questions included:

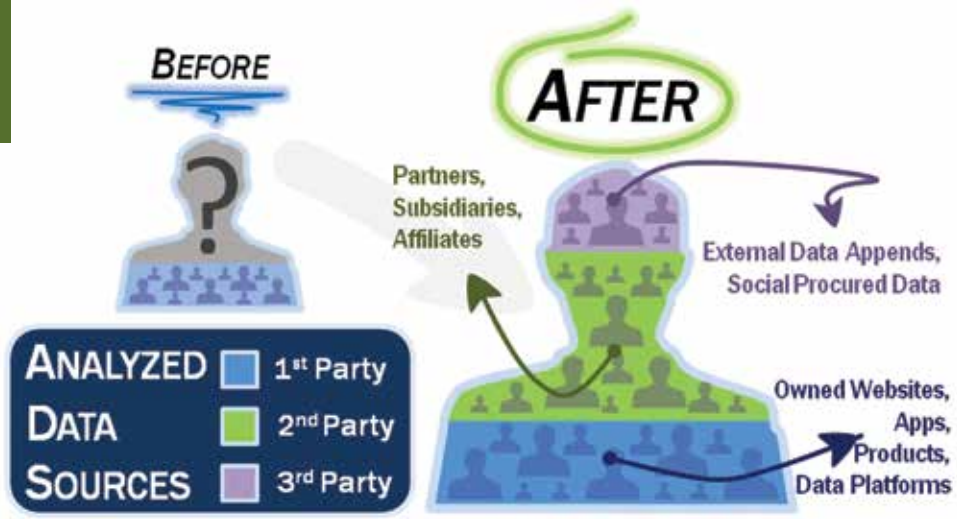
- How are customers consuming content?
- How can we measure engagement across brands, devices, countries, etc.?

Alex Akers has led and executed engagements at two of the six major motion picture studios in Southern California. A self-proclaimed wearer of many hats, he primarily focuses in the areas of digital media and technology, marketing analytics, process analysis, and customer experience.

Jacob Carlson was a producer in the animation industry for five years before obtaining his MBA at USC's Marshall School of Business, where he also graduated with a Business of Entertainment certificate from the School of Cinematic Arts.

J.P. Benedict has worked in technology business process consulting since 2009 and specializes in Agile software development, analytics, and digital security. He has an MBA from the University of Arizona.

Building a Better Customer Profile



Analyzing data from multiple sources can enable the creation of more targeted marketing messages.

- What are the most profitable consumer behaviors?
- How do we drive our audiences in high ROI directions?
- Who are our customers and what do they care about?

This studio is in the early stages of developing a comprehensive digital fingerprint for its customers, mining its data warehouse for insights into behaviors and patterns. Various customer data points are captured through many different sources, including web traffic, video playback, e-commerce, CRM response data, sweepstakes and newsletter signups (to name a few). Individually, each of these sources can tell a story about the studio's customers. However, the real value is derived from combining this data together and mapping as much as possible to individual users. This mapping process is where Code Halos becomes a reality. When the studio is able to take a step back and analyze a multitude of reports generated from this layering of data sources, executives and business units are able to make strategic decisions with increasingly sophisticated information.

This customer profiling allows the studio to be more targeted with marketing, more focused with recommendations, and truly understand the interests and preferences of its customers. The resulting shift in marketing spend should also increase the revenue associated with more relevant targeted products and smarter up-selling to the customer. The studio will also be able to improve the customer experience by sending more targeted communication on a cadence that fits each customer profile. For highly engaged customers, they may get more emails with detailed messaging for specific campaigns. For less-engaged customers, they may only get occasional sale messaging for mass campaigns to entice action.

Assigning customer value

In addition to marketing, Code Halos is giving this studio insight into how much its customers are worth. We are currently working to create a segmentation model based on predefined business rules around the data the studio currently holds. This segmentation process will value different activities and data touchpoints as a way to align customers into relevant groups. These groups will give the business an idea of who its customers are, how many are associated with different characteristics, and what their average value to the studio looks like. These values will help the studio make decisions for marketing and even content creation.

The overall (total) value of each customer can be estimated using statistical and predictive analysis with all of their known data points. Rather than a simplistic linear extrapolation, we are mapping data points, activities and patterns into a predictive model that projects future value more realistically. For example, a new customer that clicks through on emails at a high rate, subscribes to one of the studio's digital products, and attends a convention featuring a studio franchise may have a small actual dollar value in isolation. With our predictive model however, we are able to contextualize these characteristics and provide a better look at how much this person will actually be worth to the studio in the long run. Here, a series of discrete data points, otherwise compartmentalized in unrelated line-of-business silos, have been smartly aligned to identify high potential consumers for further targeting. The result is greater than the arithmetic sum of the parts. Code Halos is the magic glue.

Summary

The best part about a Code Halos initiative is that both sides win. The customer receives a better, more personalized experience with more relevant and interesting marketing communications. The studio benefits from more efficient, targeted marketing campaigns that drive opportunities for additional revenue.

The bottom line is that Big Data is here to stay. The pipeline of information flowing from all of our devices isn't going to slow down any time soon – it's only going to continue to grow. Companies are best advised to get in early and claim the competitive advantage while industry peers are still trying to hone their strategy around data and analytics. The timing is right. Code Halo programs are still in their infancy at most of the major brands in entertainment. They aren't simple to implement. In fact, they require significant thought and coordination to truly succeed. However, when implemented properly, Code Halos can be used to optimize marketing campaigns, increase profitability (through better revenue and cost savings), and create better entertainment experiences for customers. In turn, these new consumer experiences will create important new revenue streams for those companies able to harness the power of Code Halos. ■

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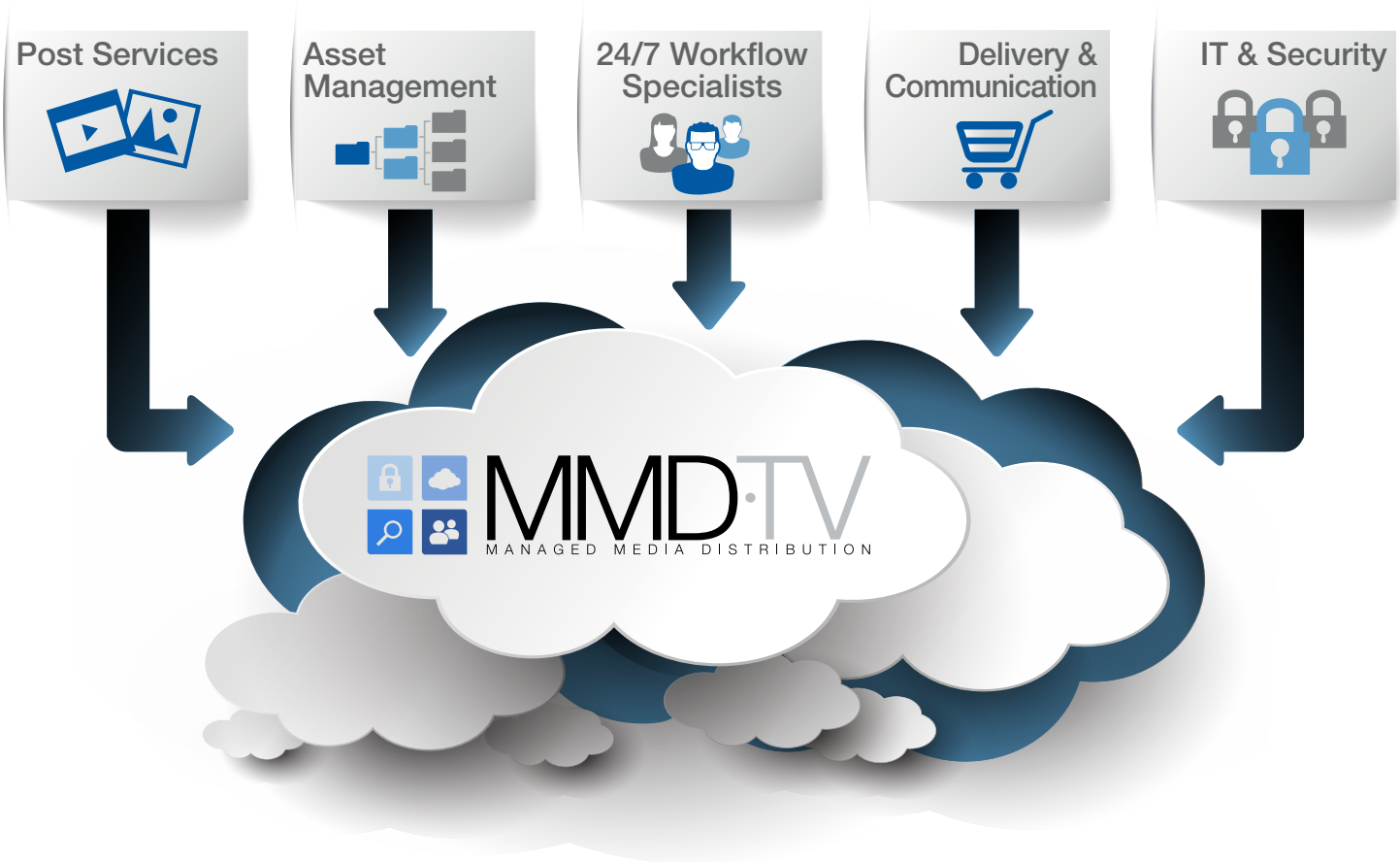

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It All Starts with Mobile

Today's consumers demand a holistic entertainment experience beginning with mobile and assigning specific expectations to each screen

By Cindy McKenzie, Managing Director, Entertainment, Media and Communications, PwC

Abstract: At work, at home, and on the go, today's consumers can access information and entertainment on their device of choice. But they are no longer interested in the mere replication of content and services in their various contexts and environments. Now they want even more: enhanced, personalized entertainment experiences across every environment and context relevant to them. This provides a wealth of new opportunities for entertainment and media companies. Companies that offer tailored content, delivery, and multi-view experiences to meet these expectations can extend their relevance with consumers and increase their share of the consumer's lifetime value.

Historically, consumers watched feature films in a movie theater and television at home. Then, DVDs became available for home viewing. Over the last few decades, the business model for media and entertainment companies was fairly consistent: Build it and they will come.

Not anymore.

Entertainment choices for consumers are now ubiquitous as Internet penetration converges with the exponential growth of mobile devices. As the number of connected mobile devices on the planet edges past the number of human beings, entertainment and media companies are well positioned to gain an even larger share of the consumer's time by providing enhanced viewing experiences.

It's what consumers have come to expect: a multi-view experience with content tailored to each device, enhanced by value-added content and experiences. They can see the big game on the large-screen TV, for example, complemented by player stats, or other scores, or social-media interaction on a tablet or smartphone. In fact, research from PwC's Consumer Intelligence Series has found that more than 50 percent of viewers interact with a second screen while watching TV.

Each time consumers access content in the way that best suits them, companies have the opportunity to uncover a rich trove of data on customer habits, preferences, and selections: a two-way feedback loop with the potential to engender lifelong loyalty. By analyzing this data, they can tailor content creation and distribution for our contemporary multi-view environment, one with an insatiable appetite for original content.

Key drivers of change

According to the Consumer Electronics Association's Video Content Discovery and Purchasing Trends, the primary devices

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for watching streaming or downloaded video content are: laptops — 52 percent; desktop PCs — 44 percent;, and HDTVs — 40 percent. A third of consumers view video content on smartphones (32 percent) and tablets (31 percent).

This sea change in the way consumers view content has resulted from the interplay of several factors:

- Increased high-speed broadband penetration.
- Increased mobile-device penetration with a vast array of choices.
- Increased online viewing.
- The rise of the "Internet of Things," with almost seven times as many connected devices as people on the planet projected by 2020, according to research from Cisco.
- Wearables such as networked fitness monitors.
- Explosive global growth in app downloads.
- Cloud technology.
- Continuous connection between brand and consumer as more and more content creators engage customers in a direct two-way relationship rather than communicate via distributors.

A new business mindset

The rapid pace of sweeping digital change industrywide demands a new business mindset that goes far beyond technology, not just quicker, but also more targeted, experimental, experiential, inclusive, and collaborative.

The abundance of mobile-device choices for consumers compounds the complexity of content creation and delivery for entertainment and media companies. Gone are the days when content could be device-agnostic; today, consumers want a personalized entertainment experience specific to each device they own.

To satisfy their preferences, the narrative of a program should extend beyond the original platform to provide richer, multi-dimensional viewing experiences for the audience — online, in social media, and via mobile devices. This opportunity to customize the entertainment experience adds additional value to consumers through multi-view experiences while making advertising and promotional opportunities more relevant and interesting.

Customer engagement through personalization

The new business mindset also compels the transition from digital innovation to relationship innovation as the differentiator. With digital products and platforms now in place, companies can innovate on data insights and analytics to drive personalization and deeper two-way relationships.

Delivering a holistic entertainment experience to consumers requires getting to know them as individuals — while they simultaneously get to know you. This type of two-way engagement requires not just the right technology but also the right mindset and talent for relationship innovation. When all these elements unite around the consumer, the result is relevance — which brings the company that delivers it a disproportionate share of that individual's lifetime value.

Highest value: superfans

High individual lifetime value is turbocharged and best represented by "superfans" — those consumers that love particular content or brands and share their enthusiasm with others. Superfans are arbiters of taste, providing a test market and advertising your content for you among their peers. These "inspired evangelists" — as one company refers to them — represent the ultimate achievement in relevance.

Offer them a premium — or so-called "inside-the-ropes" — experience, such as access to pre-release or exclusive content, or participation in product development, and they will reward you with their loyalty. Time and again, they also share their enthusiasm with others. With their voracious appetites for ever-more entertainment, superfans are the perfect audience for multi-view experiences that offer continual value-added content and experiences.

Partnering is critical

Operational and infrastructure implications are inevitable in the ever-widening quest for relevance. In this new world, partnering is critical to growth and agility. Large media companies are buying niche players to complement their offerings by entering new markets, gaining consumer data, and adding new products. Pure technology plays are partnering with entertainment behemoths to create new content. And distributors are upending old ways of doing business by creating wildly successful original content based on consumer preferences. Over the long term, this intensifying battle for the consumer will see formerly separate value chains coalesce into a fluid, multi-directional matrix around the customer, triggering large-scale cross-industry reshaping and collaboration.

The role of technology

Today's digital environment calls for creating and embedding a technology-enabled business mindset enterprisewide to nurture relationship innovation. Here's how to get started:

- ***Implement*** systems to capture data and perform analytics to experiment with innovation, measure effectiveness, uncover consumer preferences, and test monetization models such as micro-transactions. When one company noticed an uptick in online streaming versus DVDs, the analytics it implemented helped determine what percentage of streaming revenues represented a new audience versus those making the transition from physical to digital.
- ***Consolidate*** to enterprise-wide content management solutions with human-centric collaboration workflows to improve coordination across brands and channels while speeding up content and delivery across multiple formats, devices, and locations.
- ***Engender*** loyalty by opening a two-way channel of communication with your customers to engage them with personalized multi-view experiences that extend the main viewing experience. Superfans responded in droves, for example, when a studio invited them to exclusive early screenings of a new movie at more than 600 theaters nationwide.
- ***Streamline*** distribution with a consolidated end-to-end digital distribution system that monitors and disseminates the various formats, devices, and locations required in every situation. The key to success in this new multi-view reality is nurturing an innovative two-way relationship with customers, acting on the knowledge gleaned from that relationship, and building the right competencies to listen, analyze and act with precision and speed. ■

Cindy McKenzie's area of focus is technology strategies and solutions that improve companies' customer engagement, business intelligence, information management, rights management, third-party payments, and operational effectiveness. Prior to joining PwC, Cindy worked for Fox Entertainment Group and Sony Pictures Entertainment. She was honored in 2012 as one of Computerworld's Premier 100 IT Leaders.

Data Driven Media is Happening Now

Companies are moving beyond basic demographics to begin to understand audience interests and preferences

By Steven L. Canepa, General Manager, and Richard Maraschi, Solutions Leader, Big Data & Advanced Analytics, IBM Global Media & Entertainment Industry

Abstract: In the past two years, pioneering studios, distributors and platform providers across the industry started successfully using data and analytics to create and market shows and films. This is part of the fundamental shift within the media and entertainment industry to a consumer-centric approach that values the individual. Analytics is at the heart of this change. Big data combines structured and unstructured information – both static and real-time data -- that can be accessed, aggregated, integrated and interrogated.

The transition from audience demographics to consumer microsegments is underway. For years, technology promised that soon -- very soon -- we'd be able to use data about what people watch and discuss to determine not just what types of media to suggest to viewers, but also what to create for them. It seemed like tech nirvana, always just out of reach. Until now, that is.

New enablers such as cloud, social media, mobile and digital distribution platforms are providing access to more data than we've ever had before. Driven in part by people tapping out 98,000 tweets, 700,000 Google searches, and 168 million emails every 60 seconds, the amount of data being created is growing at a 40 percent compound annual rate. The new challenge is how to turn all that data into insights and value.

Advances in analytics are propelling media companies forward, and evolving the focus from the idea of serving audiences to the notion of shaping offers that engage individuals. Analytics enable the discovery of actionable insights regarding consumers and the ability to create audience profiles. They create a greater understanding and optimization of how distribution windows impact content and advertising values. They dish up real insights regarding customer content preferences, and they allow us to instantly tailor offers, services and ads. And, they're giving us predicative ability to forecast

demand as well as adding new attributes and putting them in context. Now we can discern the influencers in an audience, adjacent micro segments and key determinant attributes.

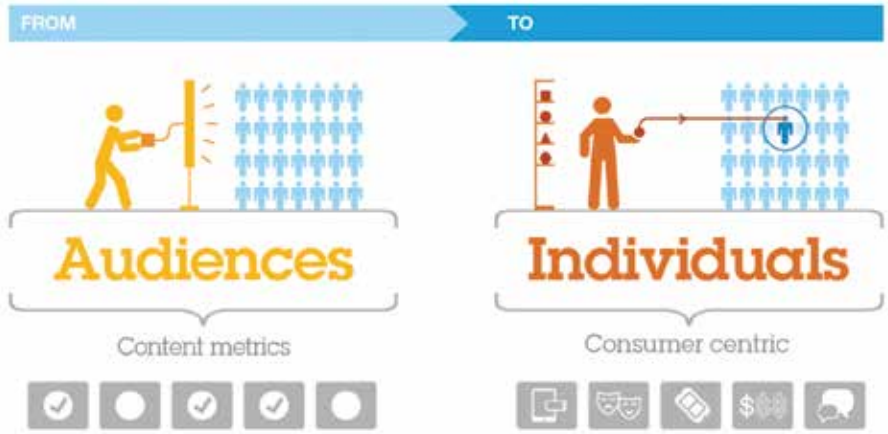
Creating a complete portrait

Consider a project a leading telco is doing to leverage its "connection" points. The company is using advanced analytics tools to develop a 360 degree portrait of its subscribers, pairing socio-metric attributes with movement and location information and then matching viewers to advertising programming. To accomplish this, the telco collects, with appropriate permissions, set-top box data about the shows its viewers like and the ads they're watching. Since it's also a wireless provider, it has the ability to track mobile data including the sites and apps its customer use, where they go, and how long they spend in certain places. It can pair this information with social media data to create nuanced profiles.

A profile might highlight that a specific customer watches soccer on VOD, likes to tweet when Barcelona plays a match, attends five soccer games a year, doesn't miss an episode of the TV show "Muscle Car," researches specialty auto cars online, and goes to a local Dick's Sporting Goods store three times a month.

This begins to address the historic issue media companies have faced regarding a lack of information about their audiences. In the past, media firms had to rely on general proxies for discrete data: focus groups, box office exit polling, and other panel based market research. By combining a broad variety of sources — including social media, CRM, third-party consumer data, and direct digital interactions — companies are moving beyond basic demographics to begin to understand psychographics including audience interests and preferences.

The Way Forward



The focus of analytics is evolving from serving audiences to shaping offers that engage individuals.

The potential of social media

Social media provides a powerful new data source for the entertainment industry. Companies can distill the interests of different people on social media. For example, it's possible to analyze hundreds of millions of tweets to identify tens of millions of folks who mention a show or movie and then link to other subjects or attributes. Each of these insights helps to create fields of interests for individuals that can be pieced together to build social profiles.

We can link and de-duplicate entity matching to third-party data from data service companies and the CRM applications underlying a media company's content or ecommerce site or streaming video apps. Using advanced analytics modeling techniques, microsegments can be built that power targeted promotion of shows and movies through marketing and special offers, ads and services, and improve customer retention and service.

With engagement and churn analytics, media and entertainment companies are beginning to apply predictive knowledge to their relationships with customers. By being able to measure viewers' engagement levels as they ebb and flow, benchmark that data based on past behavior, and pair the information with predictive analytics, cable and content companies can anticipate when and how to best reach out to specific customers -- before they're on the way out the door.

The opportunity for one-on-one relationships

For content creators, this capability is particularly promising. With the proliferation of digital applications that let content companies reach out to viewers on second screens, content companies have a new opportunity to have one-on-one relationships with consumers. By crafting programs that collect data and measure engagement they can understand who is watching their shows, who the passionate fans are, and who is starting to lose interest. Then media companies can offer promotions or suggest other shows that the viewer might like, keeping them engaged on the network. And, importantly, determine consumers' likelihood to buy, like, or watch.

Here's an example of how this can work. IBM consultants and researchers analyzed social media data about upcoming theatrical releases using our big data platform. Our goal was to monitor unreleased movies being marketed during the Super Bowl season and

Steven L. Canepa is responsible for the P&L of a market-leading global organization serving the entertainment, online, games, advertising, broadcast, cable, publishing, satellite, sports, music, search and social marketplace. Under his leadership, the division has grown into one of the largest providers of solutions, services and technology to the M&E industry.
Richard Maraschi leads IBM's global strategy and solution development efforts for big data and advanced analytics in the M & E industry, advising clients and internal IBM teams on how to apply IBM's big data and advanced analytics portfolio. He has also held executive management roles at Ascent Media Group (A Liberty Media Company), Yahoo, Hewlett-Packard Digital Entertainment and Sony Corp.

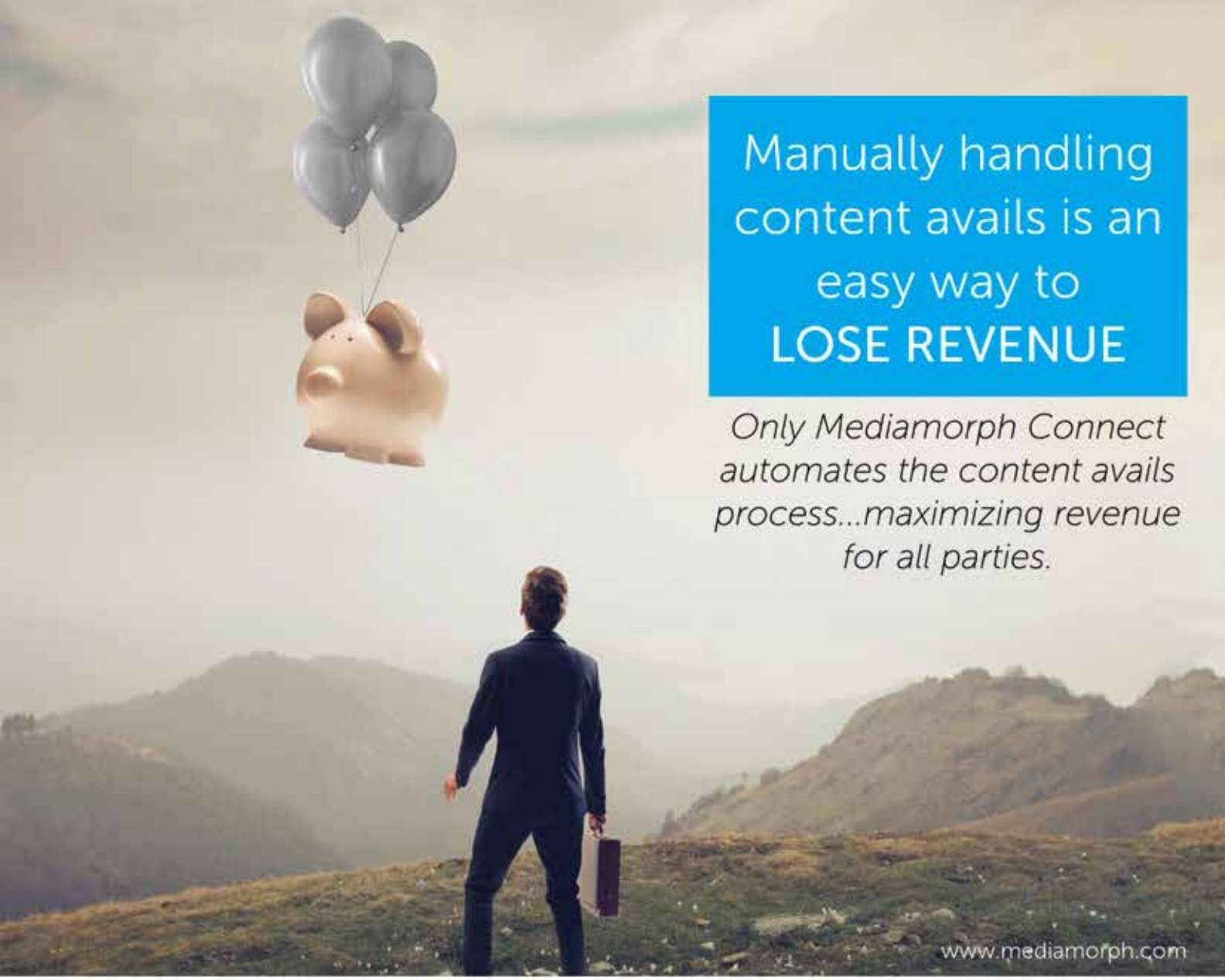
to track the real time activity on Twitter as the movie ads were aired leading up to the game. The platform pulled together more than a billion tweets and more than five million blog and forum posts, which we whittled down to 3.5 million relevant messages. Then, during the Super Bowl, we tracked the sentiment and the intent to see the film while the trailers aired and compared the results to other movies in real time. This allowed us to evaluate the interest and reactions across different segments, including gender, affinity groups, and geography. These insights highlighted which specific messages prompted interest (and which didn't) and pinpointed influential segments that the studio could further target.

With forecasting and optimization analytics, media players can use historic data in combination with real-time market signals to predict how an app, movie, TV pilot, or another offering will likely perform. With this knowledge they can pro-actively adjust marketing or promotional efforts. Using these approaches, we are working on use-cases that predict box office demand eight or 10 weeks before a movie comes out – so that the studio can appropriately adjust marketing spend, allocate spending on different channels, and determine which segments within those channels to spend more marketing dollars on.

Another powerful opportunity is the selling of archive, or long tail, content. It's a truism that there's an audience for almost every bit of content that entertainment companies produce. The real task lies in identifying and defining these audiences as well as the financial costs of catering to them. Upcoming movies or cultural events could create markets for leveraging the huge vaults of content the entertainment industry creates. But first, media players need to understand whether clearing the rights and digitizing titles makes sense financially. By deploying lookalike content modeling, companies gain the intelligence they need about how to leverage their content assets.

This new world will require business domain experts who know the important questions to be asked of data. In addition, data scientists will be required to identify and extract insights from different data sources. Finally, application developers will build the tools that can be integrated into various business processes. It is these interdisciplinary teams that will need to work together to build insights around a media company's audience.

The bottom line is that a consumer-centric approach in media and entertainment is on the rise. The approach will be cognitive, focused on consumers as individuals, and dedicated to better predicting results. Agile workflows and analytics that inform the ability to sense and respond will create seamless multichannel experiences. Ultimately, it is inevitable that those who embrace this "next-generation data architecture" will secure better margins and gain enhanced profitability by better knowing their audience. ■



Getting Content Availability Wrong Costs Everyone

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Helping clients track and maximize content monetization

Deepening Engagement With the Target Audience

How TV networks can turn digital browsers into registered users and reap ad rewards

By Rahul Sabharwal, Solutions Lead, Neha Lamba, Sales Director, and Subhankar Bhattacharya, Practice Head, HCL America (Media & Entertainment)

Abstract: Over the years, TV networks have enhanced their digital content and experience significantly. Yet, it is barely enough to drive a customer to register, interact and socialize on a network's digital channel. As a result, TV networks rely on broad geographic and demographic data points. This paper will discuss some of the strategies that a TV network can adopt to let customers identify themselves in their digital platforms, which can significantly enhance the digital ad value proposition of the networks.

The next great challenge for media companies is to transition away from "creative hunches" and "promotional excess" and to transform into truly data-driven businesses. This will require a significant investment of time and resources in order to create a new core-competency around data. Then, having nurtured this new expertise, firms must develop a relentless focus on audience intimacy – that is, understanding individuals' interest, behavior, motivation and influence.

Television Networks are facing two large problems today. On one hand, the television advertising market is facing increasing competition for ad dollars from the digital video market as evident from the widely reported potential decline in the TV upfront market in 2014. On the other hand, its own digital business is plagued with the problem of having scanty customer data that can be effectively packaged and sold to advertisers to either compensate or complement the TV advertising model.

From the perspective of an advertiser, all that matters is an effective targeted advertisement strategy which can be measured and monetized; the medium is only a means to carry the message. "Follow the consumer" is the real mantra. Nearly 40 percent annualized growth, according to eMarketer, in the digital video ad market is making it increasingly clear that a higher level of account-

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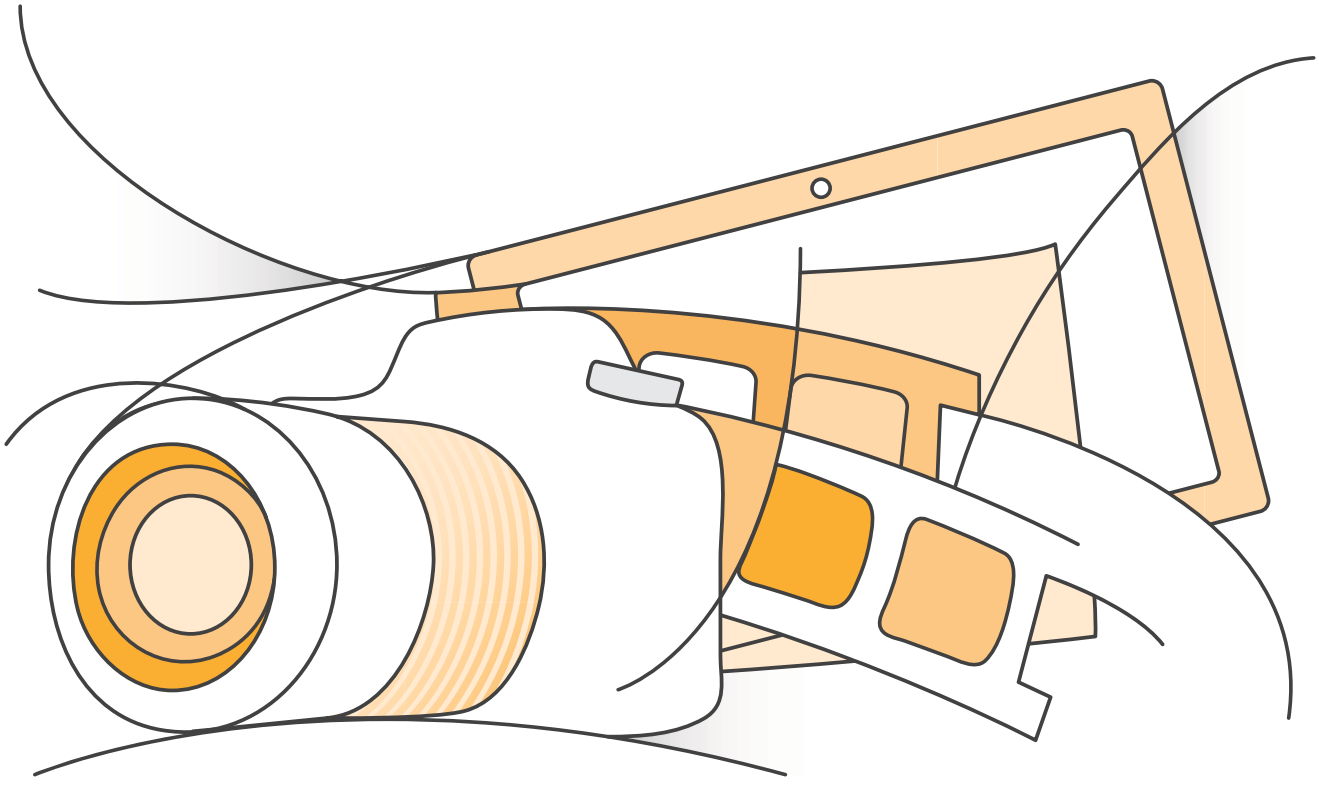

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AWS adheres to the MPAA's established security best practices for protected media and content.

ability and consistency of digital data is going to drive the advertisers to digital video at a very rapid rate.

If we look at the competitive landscape for digital, players such as Google and Yahoo have deep consumer behavior data; Facebook and Twitter have deep individual customer data; and carriers such as AT&T and Comcast have petabytes of set-top box data. In contrast, a TV network's revenue model still in most part is based on third party data.

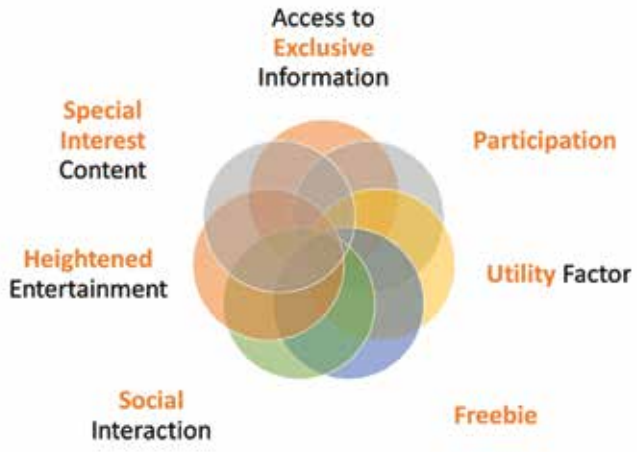
Readers of this article might recall the recent strategy of BBC to make BBC3 a digital-only channel. The young demographic of the BBC3 network, coupled with low TV ratings, prompted BBC to make that move. By allowing higher social interaction through small but significant features like tagging and commenting on this digital-only channel, BBC is engaging this audience for a longer duration and in the process is generating deeper customer data that can potentially be leveraged not only for other digital channels, but also for the TV audience. It is conceivable that certain content genres, which are better served through digital channels, could be served up through digital only and at that point customers could be persuaded to register themselves to interact with the content.

While a digital-only channel could be a potential strategy by networks for specific content and audience group, a bigger and wider strategy is needed to acquire and identify audiences across content genres.

Knowing your audience

We would like to look at the lifecycle of identifying a digital audience in terms of their journey from "in-flight" to "registration", each offering unique opportunities to know and act. "In-flight" the audience makes multiple interactions with a network's digital property – browsing through a variety of content, watching free video content, etc. IP-based tracking coupled with in-session optimization offers opportunities to identify and know some traits about your digital audience. Within limits of persistence, some of it can also be used cross-sessions and to varying degrees cross-brand. While some of this 'knowledge' about your customer can be monetized, unlocking full monetization potential warrants making the customer undertake that journey from "in-flight" to registration on a network's digital property. A registered user's first-party activity owned by the network, together with several mechanisms to mix-and-match this with third-party customer data offers networks the opportunity to command ad dollars once again.

Key Incentives for Registration



More than one of seven key incentives could apply to one or more demographics.

Making the journey happen

Broadly, seven key incentives could persuade a customer to register on a network's digital property.

Some of these, such as access to exclusive information, may apply to a specific genre of content such as news; some others such as social interaction may apply to genres such as reality shows. Potentially more than one incentive could apply to one or more demographics. The important consideration would be to identify what kind of incentive could be applicable to a specific demography at a certain time.

These drivers by themselves only go so far in persuading a customer to register. The real effectiveness of this strategy is realized by delivering content tapping into one or more of these drivers at select opportunities of heightened demand, related to events.

Each event will have its own impact-po-

Rahul Sabharwal leads HCL's digital marketing solutions team for HCL's Consumer Services Business (Media & Entertainment, Retail, CPG, and Telecom). He has more than ten years of consulting, design, development and pre-sales experience. He has consulted with clients in the areas of mobility, digital marketing, Web, digital solutions and emerging technologies.

Neha Lamba manages key client relationships within HCL's Media & Entertainment Practice. Prior to joining HCL, she worked in traffic scheduling and ad sales within News Corp.'s STAR TV Network and in management consulting at Booz & Co. Lamba has a Master's degree in Business Administration from New York University's Stern School of Business.

Subhankar Bhattacharya has more than 19 years of experience in the Media & Entertainment sector across filmed entertainment, television networks, music, publishing, advertising and sports. Prior to joining HCL, he worked as a Principal Consultant to the Media Practice for Infosys Technologies Ltd

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tential timeframe within which it needs to be utilized. Outside it – nobody knows, or nobody cares!

For example, access to exclusive information about a celebrity could be extremely valuable while some event, either positive or negative has happened related to the celebrity. Similarly, participation as a strategy could be adopted by a news network during a heated election campaign where the voters could potentially interact with candidates in a live forum.

Need for a broad approach

Networks know the value customer identification brings to bargaining power during ad sales. Despite this, customer identification as an integrated strategy has not been adopted by TV networks. While many prime planned events, such as the Christmas and New Year holidays, are sought after and tapped to varying degrees, an integrated approach at holistically being prepared for numerous event opportunities which unfold throughout the year has not been factored into a network's strategy.

Events need not necessarily be wide-scaled, publicly anticipated, planned external occurrences. Both external (ex: global sporting, elections) and network specific (ex: new show season) events open up massive opportunities to tap into the consumer psyche. Events could also very well be unplanned, spontaneous. Readiness to deliver the right content aligned to consumer drivers at these moments of opportunity is essential to guide a customer through their journey to 'registration'.

The answer: an integrated platform across networks

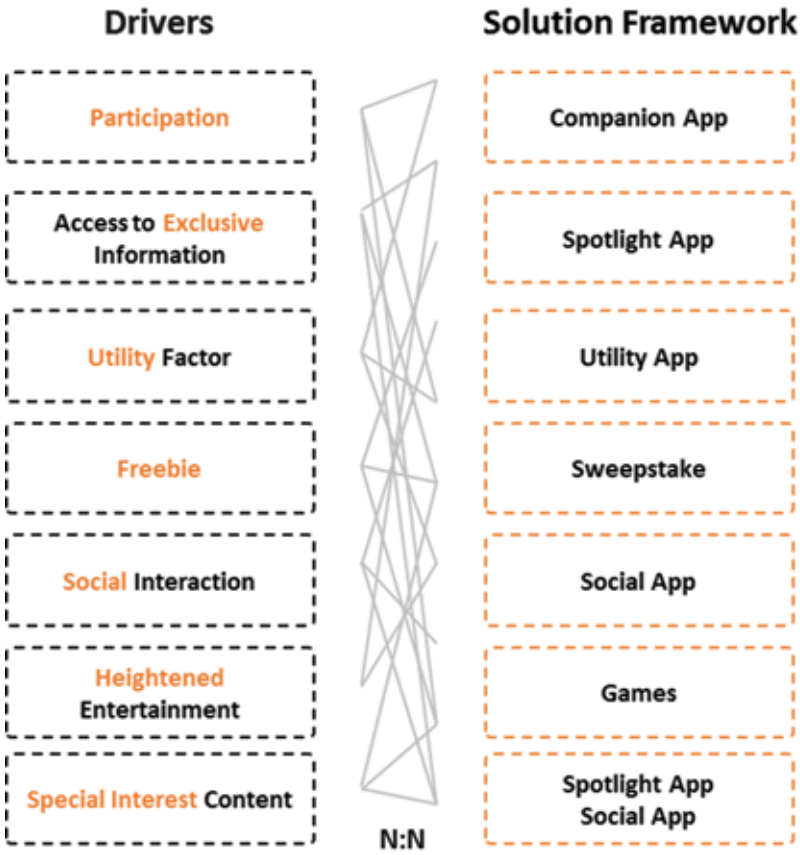
Readiness to roll-out this event-driven customer acquisition strategy warrants an integrated platform with a suite of solutions enabling content rollout mapping to key customer drivers. Solution readiness is the key to ensuring the 'impact-potential timeframe' of events is utilized to its fullest. The solution framework will potentially have a many-many mapping between solutions and drivers; the key is to optimize investments against right-drivers, and bring in re-usability as much as possible.

To make the most use of the suggested solution framework, it is essential to have a coordinated effort between networks. Just like linear channels, digital channels today also work in isolation with regard to their customer acquisition and identification strategies. The result is high cost and effort; repeat investments in similar solutions and deployments; and repeat effort in acquisition and re-acquisition.

A common solution framework, sitting on top of an integrated digital backbone, could help multiple networks optimize their technology investments and help rollout solutions tapping into event opportunities with a shorter time-to-market. For example, a single companion app rolled-out and managed within a common solution framework could be used by three networks for delivering 'participative' content across news, sports and food networks.

A unified digital strategy that works in conjunction with the business units could significantly amplify "know your customer" efforts, with significant downstream dollar impact. What are needed are political will and a new way to do business. ■

Platform Integration



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Personalizing the Global Entertainment Experience

Key developments within OTT will come from providing unique, personalized content mixes for users around the world

By Dan Peters, SVP Product Management, Saffron Digital

Abstract: As consumers share their passions for entertainment they create an immediate, global demand for content. This has led to the opening up of new markets and new audiences that help content owners and providers generate diversified revenue streams. However, consumers are also demanding TV services that not only provide instant access to the best global content, but also which deliver locally relevant and personalized content based on their specific passions and interests as well.

The barriers and borders around content consumption are dropping. With users being increasingly able to share the viewing experience within social networks there is now a great demand for TV programming to be made available across borders much sooner.

As the next generation of TV evolves we are seeing greater links between major social media, recommendation services and analytical engines; all of which combine to enable consumers to give and receive recommendations from their network wherever they are in the world.

OTT services like Netflix are already responding to this. Its original series *House of Cards* is a perfect example. Netflix famously chose to commission two seasons of *House of Cards* for $100 million without ever seeing a pilot. It based the decision on a meticulous analysis of the viewing habits of its 44 million subscribers worldwide by running the data on a number of factors: the actors, director David Fincher and the type of cinematography he creates, its subscribers' reaction to the original (British) *House of Cards* released in 1990, and whether the online audience tends to enjoy political drama.

Additionally, locally produced content such as Nordic-noir thrillers and dramas like *The Killing* and *Borgen* have opened up new international audiences through word-of-mouth shared by fans across the world.

Consumers are also changing their viewing habits in favour of "TV Everywhere." They are no longer tied to viewing content on a broadcaster's schedule, and limited by access to the TV. They want content whenever and wherever they are. They want the ability to "binge" watch, and access their favourite content even while traveling overseas.

In November 2013, Saffron Digital worked with ITV - the UK's largest commercial television network – to launch ITV Essentials, an international subscription VOD service which gives ex-pats and holidaymakers the opportunity to watch a selection of ITV's most popular programmes while abroad.

In an evolving and highly competitive digital market, ITV Essentials is a way for ITV to respond to the challenges of new connected technologies, changing patterns of user behaviour and new market entrants. The overall intention of ITV Essentials is to take a cost-effective approach to creating a new subscription focused (non-advertising based) revenue stream.

Online video platforms like Saffron Digital's MainStage are enabling studios, content owners and broadcasters like ITV to generate revenue from fans and audiences across the globe. It enables them to quickly and cost-effectively launch or add premium channels that can deploy and evolve new business models and markets for their content.

These end-to-end platforms also give providers the tools to support multiple languages,

subtitles, currencies and territory rights and launch to new markets as and when the content rights are signed and audiences demand it.

Localizing the experience

However, content creators need to be careful about striking the right balance of keeping cultural preferences in mind while ensuring programming that can cross international and cultural boundaries.

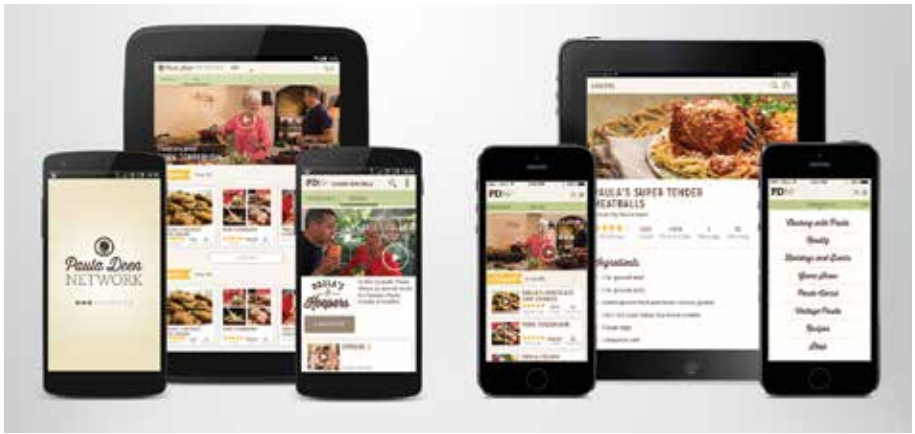
Historically companies have approached new markets on a country by country basis, localizing content per territory. The real gain comes in doing this once and keeping the content in a central place for use across many outlets and countries. By taking content, applying multiple languages, audio or subtitles, then choosing the optimum combination from a central repository saves repeating the process many times. Service Providers can additionally manage and restrict how content is accessed geographically, whilst cloud deployment ensures high availability, performance and the ability to scale effortlessly and cost-effectively with the peaks and troughs of global demand.

It's getting personal

Personal relevance is also proving to be an important part of a successful multi-screen strategy. One of the challenges of having hundreds of items of content available on demand at any time is finding content that is relevant for you at the time you wish to watch it. For example, people tend to watch different types of programming in the morning or during their commute than they do when at home in the evening.

When consumers are not bound to a linear TV schedule the world of content and viewing options they have is a lot larger. They need new mechanisms for content discovery that make it easier to find the content they want to watch. This makes personalisation key in helping users discover content that is of interest to them. Service providers need to utilize search, recommendations and social features that track what consumers have watched and suggest similar content.

One of the biggest advantages of OTT over traditional TV broadcasting is that you have access to so much more data and insight on which to base these discovery mechanisms and therefore you have much more information with which to offer users a personalised experience.



The Paula Deen Network is an example of a multi-platform service for superfans.

We have been working with Japanese telco KDDI to personalise its Video Pass subscription service for the past two years, focusing our data tracking and analytics on time-sensitive content recommendations. One example is delivering users personalized content during the unique peak travel time scenarios in Tokyo. We found episodic TV content to be a perfect short-form fit to consume during their commute, and so surfaced and promoted this type of TV content when we saw users choosing and downloading content prior to their daily travel times.

However, one of the risks of any in-market personalization or recommendation service is that users end up in a 'filter bubble'. They are only suggested content based on previous viewing habits, which are skewed due to the availability and type of content they consuming digitally via a single service. This can mean users are only recommended content they probably already aware of, rather than led to discover new content which may be less obvious but which they will like.

When choosing an OTT platform provider it is important to ensure that it can blend both algorithmic and human-based curation in order to deliver a content mix that is both personally relevant but also highlights new and interesting content as it emerges.

Taking it a step further

We are also seeing the emergence of "Superfan" OTT channels that are connecting celebrities to their fan bases with direct to consumer TV channels. Is this the ultimate personalization? Individual consumers choosing to subscribe to services that have exclusive access to the exact programming they demand? We recently launched the Paula Deen Network, a multi-platform service which features a mix of cooking and lifestyle shows, with exclusive value-added content and community engagement across smartphones, tablets and web. Its appeal has been very evident.

Superfan TV disintermediates the traditional TV networks and enables talent and content owners to generate significant revenues by engaging their fans directly. Superfans typically represent up to 25 percent of a star's fan base and by going direct to consumer with a premium subscription service there is potential to generate a monthly fee from each of these fans, whilst providing them with content they care about.

Is this the future? With the advent of direct to consumer OTT services powered by specific celebrities or brands like the Paula Deen Network does this herald a shift in new content packaging and consumption models? Are consumers willing to pay a-la-carte for specific access to content they are passionate about or will the cost advantages of the bundling provided by Pay-TV operators re-assert itself within the OTT space? Ultimately, key developments within OTT are likely to come from providing more unique, personalized content mixes for each individual user – no matter where they are in the world. ■

Dan Peters joined Saffron Digital following a successful career in product management for some of the biggest names in the digital space, including Yahoo! and Monster.co.uk. At Saffron, Dan is tasked with driving the company's product strategy and roadmap to ensure its platform and services continue to lead the market and serve its customer needs in the secure delivery of premium multi-platform content.

Data Collected from Connected Consumers Can Lead to M&E Growth

How one packaged goods company used behavioral analytics to deepen its consumer relationships

By Colleen Quinn, Director of Marketing, Media & Entertainment, Teradata Corporation

Abstract: The traditional M&E consumption model has gone the way of the VHS—going... going... gone. Today, consumers are savvier than ever and demand content that is not only far from "one-size-fits-all," but personalized. These customers are known as the "connected consumer," and they are now the ones shaping your brand.

Mass marketing is slowly taking second stage for entertainment marketers, as consumers move away from single screen entertainment into the second screen or multi-screen experience. The average customer doesn't just consume a piece of content, but they interact with the brand on social media, watch reviews on their tablet, and make recommendations of their own. This highly engaged customer represents a large portion of the U.S. market, with 37 percent of U.S. consumers owning a trio of tablets, smartphones, and laptops, according to Deloitte's 2014 Digital Democracy Survey. This number, which is up 42% from last year, will represent a majority by 2015.

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The company needed to elevate its digital strategy. The key was the ability to bring together integrated data, analytics and big data discovery tools to create individual marketing strategies for specific customer personas.

Knowing the connected consumer

Brand meaning and value is no longer dictated by the marketer. Rather, the connected consumer defines the meaning and value of the brand and content. Therefore, the smartest content creators are those that really tap into these connections, establishing and reinforcing these relationships with consumers. It's a new model for entertainment – going direct-to-consumer – but one that is fueling industry growth, and meeting audience demands.

In order to create these meaningful and personalized connections, businesses in Media & Entertainment and beyond need to leverage the information they should already be collecting: customer data. This data is the customer's digital footprint, leaving behind key information for the company: audience viewing and purchase history, browsing patterns, product and service preferences, and more. This data can create the foundation for this customer's relationship with the company, and, when managed properly, will shape all future interactions. Incredibly, few M&E companies are utilizing this trove of data in ways that can optimize audience experience.

Gathered from multiple sources including player logs, Web logs, browsing and purchase history, and social media interactions, this data is used to gain insight into the preferences of each member of the audience. The term for the insights gleaned from this data is behavioral analytics, and they can help a company to shape its brand messaging to better serve its audience. By catering the message and recommendations for each member of your audience, M&E companies can personalize experiences across every channel.

With a commitment to engaging in relevant individual interactions, content creators and distributors can increase audience response and receptiveness to content, marketing, and entertainment experiences – and drive fan loyalty. This is now the most effective way to influence engagement and purchase behavior.

Lessons learned in data-driven marketing

In times of industry flux, it's helpful to take a lesson from different industries that have navigated similar shifts. M&E finds a counterpart in Consumer Packaged Goods (CPG).

Using the familiar mass marketing channels also traditionally embraced by M&E, marketing used to be easy for large CPG companies. With a captive audience, it was simple to build "one-size-fits-all" advertising campaigns that were consumed wholly without the input of customers. This one-sided communication model only benefitted the company, leaving the customer fairly voiceless in the process and generally disconnected from the brand.

Now, consumers are empowered. Mobile device usage continues to grow, making this the largest marketing opportunity in the industry. In fact, Gartner projects that worldwide combined shipments of devices (PCs, tablets, ultramobiles, and mobile phones) will reach 2.5 billion units in 2014, a 7.6 percent increase from 2013.

Armed with this information, one CPG company began to analyze its customers and made some key discoveries. It found that its target audience was more engaged than ever with their favorite brands. However, the company also realized that it was missing individual consumer data, like transactional information and web logs, for these customer interactions. Without this data, it would be unable to offer a personalized customer experience through its marketing campaigns. Thus, this led to a realization that the company needed to elevate its digital strategy.

The key was the ability to bring together integrated data, analytics and big data discovery tools to create individual marketing strategies for specific customer personas. The result was an integrated consumer insight platform that enables a 360-degree view of the consumer as they interact with each brand over many channels. With this data driven marketing strategy, the company was able to gather data and insights on how customers interact with brands, rate products, interact with other consumers, and track purchase behaviors. By then utilizing this information, it could craft specific messaging to consumers that would bring them greater value. By leveraging behavioral analytics, the CPG company could use that insight to hone personalized marketing techniques to trigger a sale, suggest new products, and build stronger loyalty across other company brands.

The results were impressive—driving significant improvements across a number of key marketing KPIS: increases in email marketing effectiveness, reduced operating and capital costs achieved through a single CRM platform, and reduction of redundant creative development spending. However, it is the brand trust that has been cemented through this new data driven marketing strategy that has brought the most value. This evolution gives the CPG company the ability to deeply interact with and influence its customer in a way that has never been experienced in the consumer product industry.

This is not unlike the M&E industry, where companies are seeing unprecedented interac-

Colleen Quinn has more than 10 years of expertise in digital media management and technology and more than 15 years in M& E, having transitioned to digital media from a successful career writing and producing award-winning television programs for TLC, Fox and Sony. She also worked at Ascent Media and served as principal and partner with SoftArt Management Consulting.

tion and engagement with consumers. At this CPG company, the digital strategy went from mass marketing on a large, anonymous scale to establishing strong, well-nurtured customer relationships. As consumers move away from the single-screen experience, it is important to move right along with them.

What do diapers and DVDs have in common?

If you think about the experience of this CPG company, it shifted its approach to focus on its consumer—from one model where retailers owned the consumer relationships, to a new model that allowed the CPG company to directly engage in the lives of the its consumers. And, that shift to direct-to-consumer marketing unleashed huge financial and emotional results.

Diapers and DVDs need to share that same cultural shift. M&E consumers are no longer confined by the television programming schedule. They aren't even confined to their television screen anymore. Today's connected consumer engages with content from anywhere at any time. Commercials are often skipped or muted, and cable subscriptions and movie purchases are being swapped for on-demand services and free online content. In fact, it was concluded that U.S. consumer interest in streaming content nearly doubled, soaring from 17 percent in 2012 to 32 percent in 2013, according to Deloitte's Digital Democracy Survey.

Like CPG, the M&E industry is the throes of transition. Though the avenues for connecting may have changed, they are still open for traffic, and it is important to leverage those opportunities. Using the digital fingerprints of your customers, behavioral analytics, in combination with integrated marketing, enables you to understand and act on audience preferences.

Data-driven dollars

Imagine having the ability to know every member of your audience on a personal level, on their terms. Gaining insight into their content preferences, being able to predict future behaviors, and having knowledge of their preferred channels will not only give you better information on those individual customers, but on other people like them. As more data begins to accumulate, the insights flow back through the entire content supply chain, from creation through consumption.

As illustrated by the real-world CPG Company example, the process for engaging this new breed of customer is not a quick fix. The process requires a dedicated team to commit to a new data driven marketing strategy with a fresh perspective. Letting go of old, commonplace marketing adages can be a challenge, but by allowing your data to speak for itself and dictate marketing decisions, you can change your brand identity and gain greater accessibility to your target audience.

With the integration of behavioral analytics and detailed audience data into your marketing strategy, you get to know your audiences in ways the box office or retail channel never allowed. ■

Adopting Predictive Analytics in the Age of the Connected Consumer

M&E companies can use big data to market to consumers, predict content performance and refine the supply chain.

By Suzanne Clayton, Senior Product Marketing Manager for Communications, Media and Entertainment, SAS

Abstract: Content consumption has changed drastically with wide adoption of smartphones and tablets. To thrive in this new digital era, media companies must collect and combine consumer data from the Web, email, social media and other digital sources to understand who is consuming what, when, where and how — and then apply predictive analytics to gain insights about their business not previously possible.

But how? The path forward starts with assessing where you are today, establishing where you want to go, and determining how much of your data is big data, then focusing on the low-hanging fruit that is ripe for analytics. This includes data-driven marketing, social media to predict and assess content performance, and supply chain demand planning and optimization.

In the mere five years since the first iPad appeared, connected devices have transformed the entertainment world. With the number of mobile, connected devices today surpassing the number of humans on Earth, the time is now for media and entertainment companies to capitalize on the consumer data pouring in from the Web, email, social media and other digital sources. But where to begin?

Media and entertainment companies curious about technology buzzwords are naturally wondering: What resources do we need for predictive analytics? How much data is "big data"? Should Hadoop be part of our information strategy? Where should we focus first? How do we bridge organizational data silos? How can we be more data-driven? And can data make our supply chain more efficient?

We are talking about information modernization. It begins with assessing your business information and analytics maturity – your people, processes, data, technology and culture. The process of conducting this assessment is called business analytics modernization assessment. It typically takes a few days to complete.

Media and entertainment companies run the gamut on in-

Gain Insights from All Your Data

formation and analytical maturity. They range from using Excel for analysis to pockets of predictive analytics, typically in marketing, to a centralized BI and analytics team and strategy. Even the least analytics-savvy business analyst can become a data scientist. By using in-memory data visualization tools and Excel-based analytic add-ins available via a Web browser, anyone can access analytics in an easy-to-use environment.

After you have assessed your readiness, you'll want to determine what area(s) of your business you want to tackle. What will drive the greatest bang for your investment buck? Depending on what you're looking at – predicting and improving content performance, widening content distribution, enabling more personalized packaging or beefing up analysis on pipeline capital expenditures – your analytics focus will vary.

Media conglomerates covering the broad spectrum of entertainment lines of business may want to consider an industry best practice we are seeing across multiple industries: the analytics center of excellence (ACOE). An ACOE creates economies of scale and helps organizations apply knowledge across multiple business units. It also seeks to connect disparate pockets of analytics, improving overall results. If the ACOE is too broad to begin with, then zero in on one area and grow your analytics footprint over time.

Whichever approach you choose, it is critical to clearly define your objectives and strategies. These can include measuring where, when and how consumers are engaging with content; using social media as a leading indicator of content performance or to boost box office revenue; accurately forecasting box office sales and subsequent distribution for new releases; increasing audience insights to support programming decisions and ad sales negotiations; and more effectively pricing content in various distribution formats, including DVDs, Blu-ray Discs, electronic sell-through, video-on-demand and over the top.

Data visualization and predictive analytics can support the above and more. Understanding content consumption patterns helps uncover previously unknown insights about the connected consumer. We have gone from broad audiences on linear TV and big movie screens to individual content consumption on smartphones and tablets. This leaves me wondering if the iWatch or Google Glass will become the next consumption device of choice. Or is it something we haven't even thought of?

Harnessing big data analytics

Big data analytics makes it possible to combine cross-platform data about consumers from many sources. For example, we can integrate audience measurement systems like Nielsen and Rentrak with social media data and digital consumer data from the Web. Big data analytics lets you dig down to base/transaction-level data – structured and unstructured – and analyze it all with no sampling.

The benefits? You can miss important insights when limited to analyzing samples or information aggregated in data warehouses. These deeper insights will improve the connected consumer experience, which in turn increases content consumption.

To take full advantage of big data, some companies are moving to a Hadoop-based platform such as Cloudera or Hortonworks. Apache Hadoop, per Wikipedia, "is an open-source software framework for storage and large-scale processing of data sets on clusters of community hardware."

The best way I can explain Hadoop is the M&M analogy. Say you have quadrillions of M&Ms stored in trillions of jars with all the colors mixed together. If someone asked you how many blue M&Ms you had in all your jars or how many blue and red M&Ms would likely be consumed together, and why, it could take days or months to solve. You'd have to pour out all the M&Ms, separate the colors, and count. With Hadoop, you can count the blue M&Ms in seconds without removing them from their respective jars. And by combining predictive analytics with Hadoop, you could answer the blue-and-red M&M questions very quickly as well.

Hadoop can co-exist with any type of existing data warehouse or legacy system, so this is not a rip-out-and-replace prospect. This big data analytics environment exists primarily so companies can quickly perform forecasting and find correlations on very large data sets, for example. One can only imagine the hidden gems that could emerge from, say, combining

Since Suzanne Clayton's start at SAS in 1997, she has been bringing emerging and innovative solutions to the Communications, Media, Entertainment, Travel and Hospitality industries. Suzanne's achievements at SAS include bringing the SAS® Patron Value Optimization to the gaming, sports and hospitality industries. Additionally, she was a key driver in bringing to market SAS Revenue Management Price Optimization Analytics.

Understanding content consumption patterns helps uncover previously unknown insights about the connected consumer.

Fandango ticket purchasing data with social media data to uncover correlations between purchasing behavior and box office performance.

Let's look at some specific examples of how media and entertainment companies can apply predictive analytics to solve specific problems.

Data-driven marketing to the connected consumer

The connected consumer is generating petabytes of data that are growing every day. Likewise, media and entertainment companies are discovering new ways to engage with the connected consumer. In order to maximize your company's marketing impact, the best way forward is to synchronize marketing processes based on a comprehensive understanding of the connected consumer.

Remember, connected consumers are a diverse group in terms of culture, race, age and sex. Analytics can increase your understanding of how connected consumer diversity affects consumption behavior. You can use this knowledge to create more personalized marketing communications.

The casino industry is an interesting and informative example. Like media and entertainment, it focuses on providing a superior entertainment experience.

About 10 years ago, casinos started modernizing their marketing. Why?

Over time, casinos had grown too much to be able to personally greet every patron who walked through the door, as they had in early years. But mass marketing campaigns, such as parking a flashy new car at the front door to draw guests in, weren't working anymore. They had to do something to counter the fierce competition and proliferation of gaming establishments.

Some marketing analytics best practices that casinos developed could transfer seamlessly to media and entertainment:

- Building a 360-degree view of the consumer by gathering data from all sources including loyalty programs, social media, Web interactions and POS data.
- Performing intelligent customer segmentations, so when interacting with these customers in the venue or on their website, they can engage in relevant, real-time communications.
- Improving campaign management by more effectively measuring campaign performance and attribution.

While the first two points will tell you how to attract and keep the consumer, the last is not one to miss. It will tell you what is working to attract the consumer and what marketing activities and channels have the most impact.

Using social media to predict performance

Social media data is by nature big data, and as such touches on everything previously discussed in terms of managing and collecting data. However, there are a few additional points to consider here. Since social media data is coming straight from the connected consumer's brain, this information is not only a leading indicator of overall content performance, it provides an inexpensive basis for broad marketing.

Text analytics tools can help you assess content sentiment and analyze what is being said. It is also possible to go a step further, analyzing social media data to determine how consumers actually "feel" about content. Such information can be invaluable when deciding how to proceed with TV content before ratings are aggregated, or to evaluate how audiences are receiving your ad campaign in advance of a new movie release. But social media content is enormous and needs be analyzed as quickly as possible. So when choosing a tool, you need to consider the horsepower behind it.

Supply chain demand planning and optimization

Predictive analytics can be a player both in the physical production of Blu-ray Discs and DVDs and optimizing the digital distribution network. Many manufacturing and consumer packaged goods (CPG) companies are modernizing in this area today. Even those with existing supply chain management systems are upgrading to a more predictive, demand-driven planning and optimization platform.

One of the keys to a more efficient content supply chain is more accurate forecasts on new releases. These need to incorporate as much relevant data as possible, including social media data. "Lookalike" modeling using a data mining tool is an effective way to determine which previously released movies are most similar to a new release, in order to better forecast box office performance.

Equally important is a collaborative environment or workbench where all areas affecting content performance and distribution – e.g., sales, marketing, finance and distribution – work together to produce a more precise, consensus statistical forecast.

Another analytical tool, operations research (OR), can enable companies to optimize resources in the digital and physical supply chain based on demand forecasts and various business constraints. OR automates this process, so business analysts aren't spending countless hours manipulating data. The time savings alone make this a fruitful endeavor.

What's it all mean?

The world has changed. We are now in the midst of the digital age. We are no longer dealing with uniform audiences or distribution channels. Data about your consumers, about your films and TV shows, about your physical and digital content consumption, about your distribution channels, is growing every day. Adopting predictive analytics in the new age of the connected consumer is the way forward. ■

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Bringing Real World Relevance to Entertainment Metadata

Five ways a knowledge graph can help build out a more personalized entertainment experience

By David Yon, VP, Data Solutions, Rovi Corporation

Abstract: Entertainment fans enjoy, yet also struggle with, the explosion of entertainment content now available to them. To help them find the content they're most interested in more quickly, the entertainment navigation experience moving forward will be tailored to the needs and tastes of the individual viewer.

The last decade has seen some of the most profound changes in home entertainment since the advent of the television itself: The shift from linear to on-demand content, the launch of "TV Everywhere" on mobile devices, and the birth of UltraViolet, to name a few. While it is hard to know exactly how entertainment will be consumed as we head into the next ten years and beyond, what is as crystal clear as the hi-def flat screen TV in the family room is that the future will be personalized

This move to personalization has a strong ally in standardized metadata, the descriptive, image-rich entertainment programming information that is used to describe and identify content. Metadata includes things such as title, actors, box art, running time, rating, and even tags such as "mood" of the content. To date, metadata has enabled the digital supply chain to uniquely identify any piece of content as well as the multiple assets associated with it, such as box office data, release and air dates, credits, images and descriptors like genre or themes. Digital technology, new formats and player devices have caused the number of unique products for a movie or TV production to grow exponentially, making metadata even more critical. Content creators, producers and distributors are integrating third-party, standardized metadata into work flows from production analysis to rights and window management, increasing efficiencies and streamlining processes.

As the industry looks to meet consumer demand for a more engaging entertainment experience and find new ways to monetize its offerings, there exists a need for a highly sophisticated data model to help advance personalization — a graph or "knowledge graph" that is able to bring real-world relevance to entertainment. Rovi's knowledge graph is designed to take metadata another step forward and into the dynamic realm. Because the world is constantly changing, our graph indexes movies, TV shows, celebrities, brands, concepts, popularity and locations against more than 100,000 different data sources, and it knows which ones are trending in the news or on social media at any given time.

The knowledge graph model can substantially enhance the consumer entertainment experience while also providing new opportunities for members of the ecosystem to differ-

entiate their services, add value to the supply chain and create competitive advantages. Importantly, this model can be used to provide real-time relevance, helping content creators and distributors identify what's trending in entertainment and its relationship with real-world concepts and interests.

But how can a knowledge graph contribute to a more personalized way for consumers to enjoy their entertainment?

1. ***A knowledge graph can take into account context and deliver based on relevance.***

We believe in bringing together recommended entertainment that exists at the intersection of content, context and the consumer. Context is incredibly important because it means having an understanding of what's relevant in terms of time, location and popularity. For example, consumer TV viewing habits in the morning are probably very different than those during prime time.

Our own knowledge graph has the ability to understand what is happening in the world at any moment and incorporate this into predictive results to anticipate what the user is likely to want to find. The model is able to identify the importance and popularity of people and entertainment, the relationships between them and how that changes over time.

A majority of recommendation systems are not able to pick up on trends quickly just by looking at their own usage data. Take for instance, the World Cup. Systems that relied just on collaborative filtering were unlikely to discern in real-time that the World Cup was trending in countries where typically soccer might not be popular. The end result is that by not integrating real-world trends into the model, a significant sporting event such as the World Cup might not impact search and recommendations results when it should be front and center for consideration.

By applying a range of contextual relevance filters that take into consideration the time of day, day of week and location, the entertainment experience can become more personal.

2. ***A knowledge graph can not only help improve search and recommendations relevance but also increase speed and accuracy.***

In a recent survey conducted by Rovi of 554 respondents in the U.S., 22.6 percent said that they spent 30 minutes or more a day looking for TV content. The endless amount of content that has become available from multiple sources across various screens and platforms has made the process of finding and discovering entertainment content very cumbersome and tedious. Consumers are looking for fast ways to connect with the entertainment that they love.

In order to streamline the process, search and recommendations need to provide not only relevant results but also accurate ones based on standardized, quality data and provide them quickly.

When combined with robust user profiles, the knowledge graph can ensure that consumers get personalized recommendations based on their behavior, habits and interests as well as preferences. By taking into account these elements, the system can provide optimal suggestions and highly accurate results, helping drive a seamless user experience.

3. ***A knowledge graph can help power state-of-the-art conversational interfaces to enable the user to discover entertainment content more easily.***

According to an online survey conducted by Veveo (a Rovi subsidiary) in 2013, 60 percent of participants felt that voice command and conversational interface systems would significantly improve the way they search for TV content. However, we believe that the technology must be smart enough to follow natural conversations and perceive differences in meaning.

Language can be ambiguous but by providing contextual intelligence such as entity recognition, user intent recognition and context recognition, this can make it possible for consumers to have a free-flowing conversation that is designed to drive voice-enabled search and recommendations that go beyond the basic voice-command features used by some entertainment services today.

Our own platform allows consumers to ask questions and have a back-and-forth dialog to find the content that interests them, switching topics and using pronouns during follow-up requests, in much the same way they would interact with another individual. Not only does this mimic our everyday conversation styles, but is how users typically browse for programming, often not knowing exactly what they want to watch, or meandering through options. For example, it is possible to search for the following via Rovi's service, "What's the film where Tom Hanks works for FedEx?" (*Cast Away*).

4. ***A knowledge graph can integrate social media interactions and serve as a foundation to foster meaningful interactions between consumers and the content they care most about.***

Metadata has moved into new use cases, serving as a foundation to foster meaningful interactions between consumers and the content and brands that they care most about. Metadata is also the key to making the connections between people, the conversations that are taking place on a movie or TV show or celebrity, and can help organize the social conversations and surface the information that people really want.

Using a knowledge graph, companies in the ecosystem can create real-time opportunities for conversation and community amongst their followers and loyal viewers. A knowledge graph can identify what's trending in entertainment and what consumers are talking about, helping members of the ecosystem identify the latest social buzz and use that information for various applications to benefit their businesses and brands.

Social networks can synch consumers with their friends' and family's favorite TV shows, movies and programs. Rovi's service can enable a user to receive recommendations for content based on the celebrity, actor or artist he or she follows on Twitter. By integrating the people a user follows on Twitter

David Yon and his team focus on developing comprehensive programs that provide core technologies and solutions to power enhanced discovery and personalized experiences around digital entertainment content (TV, movie, music, books and games). Prior to joining Rovi, David was focused on building innovative digital content products including mobile music platforms and premium services for the wireless and music industries.

into his or her profile, the user will get recommendations for content in which his or her Twitter favorites appear.

5. ***A knowledge graph combined with predictive analytics can bring more tailored and addressable advertising as well as refine the personalization experience.***

Predictive analytics can provide strategic intelligence about what people watch, when and where that can help companies target specific audiences for advertising, media buying and other content provider promotions. Predictive analytics harnesses advanced data collection – from smartphone and tablet viewing data to market segmentation, socioeconomic statistics and online usage patterns – to illustrate a more comprehensive user profile. These enhanced viewer snapshots can help discern the likelihood of where a highly specialized demographic of viewers will be amidst the ever-expanding broadcast landscape.

Predictive analytics will play a key role in the future of ad targeting, and when combined with elements of a knowledge graph to showcase the connections between entertainment and real-world concepts, can help drive an optimal entertainment discovery experience with increasingly intelligent search and recommendations capabilities.

Trending metadata and the digital supply chain

For content creators and distributors, the dynamic popularity and trending metadata provided by a knowledge graph can provide the basis for tracking in real-time the very latest entertainment buzz and determining which films, actors and even movie soundtracks are most popular as well as how all these entities relate to each other. This can be helpful to studio creative and distribution teams as well as marketers in their quest to remain ahead of the competition. With insight into what is trending, the studio can inform retailers what to feature on digital storefronts.

For entertainment marketers, this dynamic metadata can help, for example, with promotions and publicity of a given movie or program. By providing insight, marketers can research and use this information to develop advertising and other campaigns informed by what's trending in entertainment as well as establish connections between shows, programs and people. In addition, using this trending information, companies can create real-time opportunities for conversation and community amongst their followers and loyal viewers especially as it pertains to social media interaction.

As personalization continues to offer the promise of entertainment that is tailored to the needs and wants of the user, a dynamic metadata layer such as a knowledge graph will be critical in powering advanced discovery. By using a sophisticated model that provides an understanding of entertainment as it relates to time, location and popularity, the digital supply chain can use this technology to drive the industry forward while also advancing the consumer experience. It's a win-win for all. ■

Building the Next-Generation Media Analytics Platform

How the worlds of analytics and content converge to bring about advanced consumer media experiences

By Steve Poehlein, Director, Media and Entertainment Solutions, Communications, Media & Entertainment, and Jeff Caldwell, Managing Director, EMCIE Industry Consulting, HP Enterprise Services

Abstract: In today's rapidly evolving content landscape, M&E companies are working hard to understand how end-user consumption of content is changing. Media organizations have adopted new techniques such as social listening to discover the likes, dislikes, and the overall conversational themes of their consumers and industry competitors. But they've just begun to scratch the surface in using advanced Big Data capabilities to provide insights and near real-time analytics to help accelerate decision processes and outcomes.

That the traditional business model of the TV industry is being changed due to a disruptive intermediation by digital media is not new information. In the past decade we have seen a rapid proliferation of smart screens among consumers and research shows that mobile phones and tablets are fast replacing desktops and PCs at home as the secondary device for content consumption. By 2015 the global shipment of tablets is expected to take over that of desktops and portable PCs with the inflection point arriving even sooner in some markets like the U.S. and UK.

The key to coupling rich analytics into content production is in facilitating the integration of these insights into production and operational processes. This approach will allow media organizations to optimize their production lifecycles, better direct franchise management activities, provide improved value to their various partners (such as sponsors, advertisers, and licensees) and, ultimately, to their end users or consumers.

The results will be competitive advantages that allow media organizations to better align with changing market demands and more accurately "hit the mark" with entertainment experiences that drive repeat revenues and an increase in brand-loyal fans. This gives many M&E companies a level of direct consumer engagement that they've never experienced before.

We've seen our clients increase customer acquisition and retention by leveraging customer interaction data captured from CRM across digital, social, and mobile, along with third-party data. This has enabled campaign optimization, customer and marketing engagement, and personalized delivery of dynamically generated content as well as personalized advertisements and promotions.

Approaches that focus on transforming the landscape of media companies through analytics, rather than just adding another audience research tool, help implement an underlying intelligent platform that integrates media analytics with content production. From the ingest of traditional forms of media, including broadcast, as well as other unstructured data through its storage, classification, routing, formatting, and final consumption, the platform enables and optimizes content production. HP calls this a media analytics platform.

Media analytics platforms bring it all together

Over the coming years, media analytics platforms will bring together the media "content" worlds and the consumer "context" worlds to change the definition of what a media enterprise is and how it relates to its audiences. Consumers will increasingly play the role of innovator/designer/producer/advertiser with the enterprise playing the role of aggregator/enabler/content provider/distributor.

These intelligent platforms leverage analytics, especially social media analytics, to enable market intelligence to optimize and automate strategic content distribution and accelerate the creative/editorial process. This provides important benefits for both consumers and M&E enterprises: more relevant, personalized content and monetization agility.

Personalized delivery

People's expectations for the entertainment experience they should receive have changed enormously in just a few years. They are no longer passive consumers of packaged programming delivered through a fixed set of venues. Rather, online video sharing, one-click download offerings, and social media have created demand for personalized content.

By coupling analytics with content production, content providers can deliver a more real-time and personalized interaction to consumers. Personalized delivery ensures that consumers will start getting the content they want when they want it and how they want it.

For the enterprise, a stronger customer engagement leads to a stronger affinity alignment. In addition, M&E companies can engage new markets by enabling the distribution of content that will best align to their respective market segmentation.

And engagement doesn't stop after the content is delivered. A media analytics platform provides the capability to enrich engagement with consumers through the analysis of the full lifecycle. It helps keep the conversation going.

Personalization is a critical brand attribute to attract and retain new audiences who expect to receive a better experience. A strong integration between analytics and production enables seamless, interactive, multichannel engagement with audiences. This supports the broader concept of franchise management, which provides new opportunities for monetization across many channels.

Analytics-informed content

M&E content is not static. It lives and breathes. Advanced analytics enable you to both forecast market demand and—working with better understandings of consumption patterns and advances in machine-to-machine (M2M) communications—automate content management. This supports the franchise across many channels and ongoing customer engagements.

So rather than launching another broad-brush campaign to push a new media property, you can now access consumer profiles and more effectively customize the entertainment offering on the fly. And you can do this across multiple channels to maximize revenue.

Monetization agility

Media analytics platforms provide new opportunities for driving revenue from both new and legacy content to optimize media assets and improve monetization. You can also leverage ancillary content, such as behind-the-scenes or cut footage, that you may not be monetizing today. Remember that every member of your audience is on their own unique journey. So you have to place the right content in front of the right consumer at the right moment to ensure that you're getting the full payback from your content development.

These intelligent platforms also have the capability to optimize premium pricing dynamically rather than relying on a fixed and out-of-date pricing structure. By better understanding what consumers are willing to pay for content, you can generate new revenues faster.

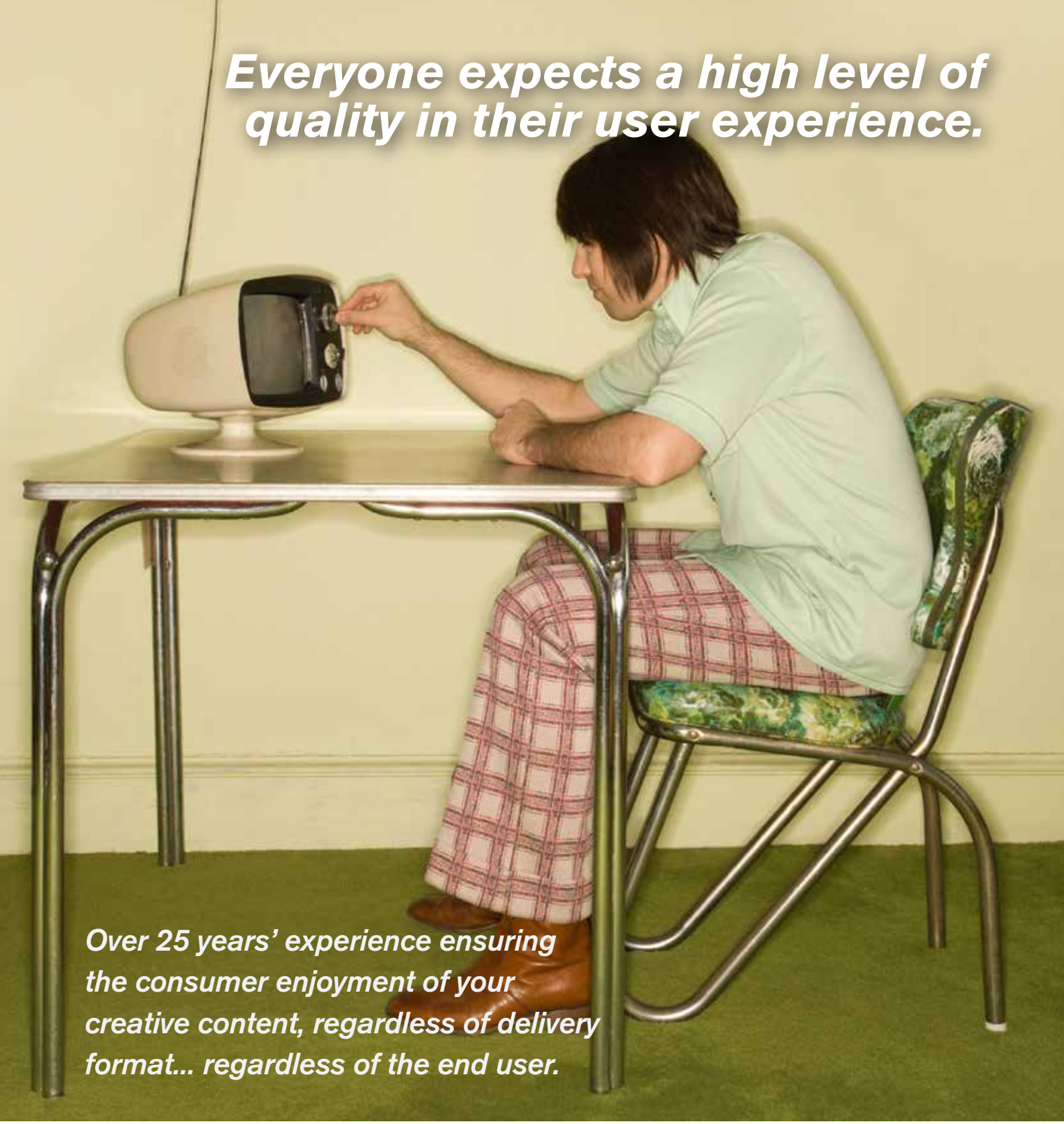
Only the marriage of rich digital media content and Big Data analytics provides you with the capabilities you need to fully monetize content along the consumer's journey and achieve business revenue goals in M&E organizations. Further, media analytics platforms help complete the transformation of M&E companies from B2B property producers to B2C experience companies that maximize direct consumer engagement.

Fitting new analytics into an existing portfolio

The new capabilities provided by analytics-enabled content systems are groundbreaking in how they can enrich M&E content to provide an exciting audience experience. And rather than requiring you to discard what you already have and start over, a media analytics platform integrates with your existing workflow and applications to leverage and extend your current investment.

The key is to take a holistic view of your content processes and the real-time desires of your audience and then think strategically about how analytics-driven transformation can bring them together. ■

As the Media and Entertainment Solutions practice lead for HP Enterprise Services, Steve Poehlein leads the Center of Excellence to provide strategy and solutions, as well as the development of service offerings to support the creation, management, and distribution of content for the media and entertainment industry.
Jeff Caldwell has more than 25 years of experience in business and technology leadership positions and has held Partner and CIO level executive positions for worldwide consulting firms, IT advisory organizations, and Global Fortune 100 companies. He is a frequent speaker on technology innovation and improvement.



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That's a Wrap

Digital "packaging" can enhance the online gifting experience

By Tyson Wiebe, International Marketing Manager—North America, Scanavo

Abstract: The trend of online shopping shows no signs of slowing down as consumers continue to buy digital media and eGift cards at a rapid pace. As more and more digital media retailers add eGifting to their services, the need to differentiate themselves from competitors grows.

One way retailers can stand out is to deliver digital content in an interactive way and provide virtual packaging for unique gift delivery experiences.

The growth in digital media sales is well documented. In video games, DFC Intelligence forecasts that by 2018 over 75 percent of game software revenue is expected to be delivered via online models such as digital distribution, subscriptions and virtual item sales. In home entertainment, digital purchases surged 47 percent in 2013 to top $1 billion, and another 37 percent in the first half of 2014, according to DEG: The Digital Entertainment Group. And with the increase of eReaders hitting the market, PwC has predicted that eBooks will reach $8.2 billion in sales by 2017, surpassing printed book sales.

Overall, U.S. online retail sales are expected to rise at a strong compound annual growth rate of 9.5 percent between 2013 and 2018, yielding about $414 billion and representing 11 percent of all U.S. retail sales by 2018, according to Forrester Research.

While demand remains greater for physical gift cards than digital gift cards, digital card purchases continue to rise year over year. According to Gift Tango, digital gift

Virtual packaging provides the consumer with an opportunity to creatively enhance delivery of digital media and provide a unique experience to the recipient.

cards are ordered as a last minute gift option, while physical cards are ordered in advance. During the 2011 holiday season, 34 percent of gift card sales were digital and 66 percent were physical.

As online shopping and digital media each continue to grow in popularity, it's inevitable that consumers will seek out new ways to gift digital media and to replicate the physical gift giving experience with digital goods.

The opportunity to deliver a digital game with recipient experience is not currently available on present game platforms such as Xbox One and PlayStation. ITunes does allow its customers to gift digital content to a recipient, however there is no experience other than the recipient receiving a simple notification of the media gifted. This experience is similar to receiving a CD or movie without a card, wrapped box or experience. Nevertheless, the fact that Apple has created a gifting system suggests it sees an opportunity for digital gifting. Amazon has created something similar to Apple. The

buyer of digital content can gift this content to a desired recipient, however the digital gift is visible when received and the experience generated is from the digital gift itself and not the experience of revealing the gift.

Retailers will have to establish creative ways to enhance the online shopping experience while enhancing delivery of digital media, music, digital movies and downloadable eGift cards. Otherwise, price becomes the only differentiating factor for the consumer. If an online shopping experience is provided, a consumer is incentivized to pay more for digital media or those enhancements that create a good recipient experience.

Virtual paper and ribbon

Companies can differentiate themselves through the relatively new, but growing, concept of virtual packaging. Virtual packaging provides the consumer with an opportunity to creatively enhance delivery of digital media and provide a unique experience to the recipient. The recipient opens the digital gift and has the same reveal experience as though the gift was physical. The content is unknown to the recipient until the digital gift is unwrapped and opened virtually.

If a consumer is considering purchasing an album and choosing a retailer, the buyer may be more inclined to shop at the online store that provides opportunities to creatively gift the album to the recipient. The packaging experience then creates an opportunity for the retailer to acquire a long time customer.

Companies entering the virtual packaging space include Cashstar, Sony and Scanavo. These companies provide creative shopping experiences to consumers or sell software to online retailers.

Cashstar has created a system called Tactile Unwrapping. These new capabilities make digital gifting even more personalized and engaging by replicating the gift unwrapping experience in the digital medium. The module can be configured to allow consumers to select wrapping paper, add a hand-written message, and virtually wrap the gift. Tactile Unwrapping has been used in conjunction with Cashstar eGifting systems. Sony, meanwhile, has developed eWrap, which also provides the recipient with a digital gift opening experience.

Virtual Packaging is a company owned by Scanavo, the world leader in media packaging. Scanavo's Virtual Packaging Digital Delivery System can be added on to an ecommerce system and can deliver most digital content forms. The consumer is provided with the option of using the system to digitally wrap the digital gift. The recipient has the experience of unwrapping the digital gift. Small, medium, and large enterprise without an online store can use the system to send digital content to staff or contacts. The company uses the emails in the database to send a digital gift with the click of a mouse. This creates a more efficient and streamlined employee gift delivering system.

As with any technology, continual enhancements are needed in order to provide a more innovative experience. Simulating physical unwrapping is only part of a much greater future experience. Adding other layers for the user to experience such as puzzles, personal images, and voice are only part of what makes virtual packaging so exciting.

Online sales of digital media will continue to grow and more users will shop online and companies will need to creatively distribute digital products in order to remain competitive. Companies such as Cashstar, Sony, and Scanavo are delivering innovative systems for companies to enhance delivery of digital content. ■

Tyson Wiebe is an award-winning producer of commercials and films and has spent most of his career working with media companies in various forums. He is currently involved with business development to explore new markets and opportunities for the packaging leader Scanavo.

The Renaissance of Linear TV is Coming

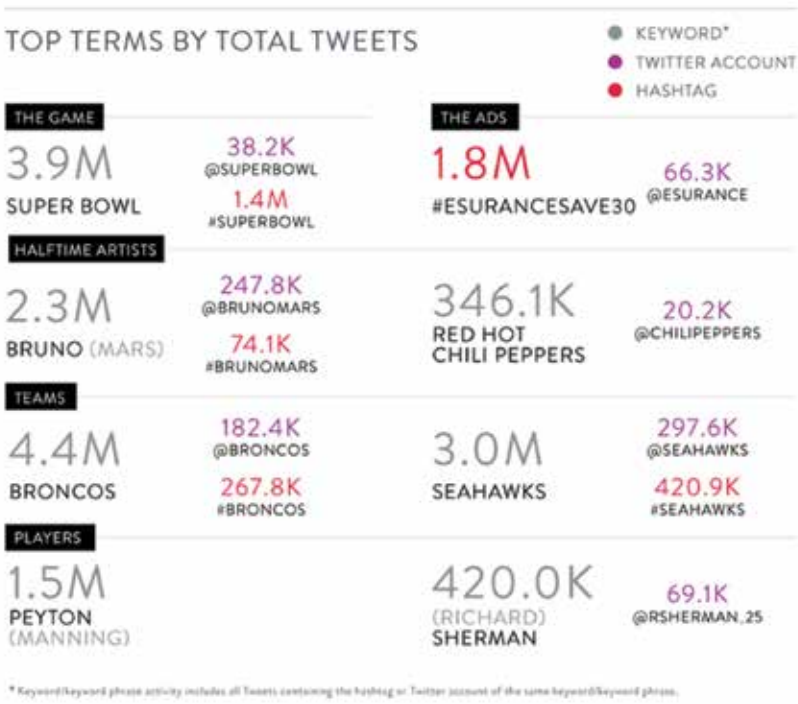
The addition of second screen apps and social listening can provide almost instant feedback for advertisers

By Ian Wheal, Global Strategy Director, Adstream

Abstract: The digital revolution is driving a renaissance in the medium it once threatened to destroy, linear TV. Factors driving this resurgence include global cross-media delivery of content; second screen platforms and social listing metrics; real-time analytics and effectiveness measures; and creative platforms to enable TV changes and clearance. Just knowing how a TV ad performed is no longer enough. Brands now want to make changes in real-time with the aim to drive greater engagement at the next ad break. This is fast becoming a reality, and not just in the U.S. market but on global platforms.

For more than a decade, linear TV has largely been left behind by its digital counterparts. Today's digital toolkit allows CMOs to measure engagement with their content in real-time and then react to that feedback again in real-time. Both of these elements—measurement and the ability to react rapidly—are critical. But so far, only half of this puzzle has started to be solved for linear TV: the data side.

There is a very narrow window of time for reacting to feedback. If data from your audience tells you something, you only have a very brief moment in time to change something before your chance to re-engage and increase effectiveness is lost. To do this in a linear TV world requires a platform that not only pulls in data but delivers actionable insight and then makes it easy to rapidly execute on that insight and get it back out to your audience before they've moved on. Right now, that exists in digital but not for linear TV. That moment is coming, the renaissance of linear TV is nearly upon us.



Super Bowl XLVIII: Nielsen Twitter TV Ratings Post-Game Report

Leveraging the enemy to become more powerful

The "death of linear TV" has been cried since YouTube launched back in 2005. This cry has since been revived in more recent times as online video streaming services such as Netflix and Hulu have started to gain traction with people keen to indulge in on-demand "binge" sessions of the latest TV series. While the emergence of digital on-demand viewing is real, important and here to stay, linear TV is definitely not dead or dying.

Linear TV not only continues to attract huge numbers of eyeballs, but also huge amounts of social engagement in real-time. In February of this year, at least 56 million Americans decided not to scroll through thousands of queued up movies in their Netflix account or watch something they'd recorded earlier on their DVR. Instead, they tuned into at least one of three live programs on ad-supported US television—the return of The Walking Dead on AMC, the Olympics on NBC and a Beatles special on CBS. Those eyeballs are ripe to engage with brands through compelling content. An interesting data point from Super Bowl XLVIII wasn't just about the record breaking 108.4 million people who tuned into the live television event, it was that the top tweeted hashtag was from an advertisement. The hashtag #ESURANCESAVE30 was tweeted 1.8 million times by 1.2 million unique authors, exceeding even the #SUPERBOWL hashtag by 400,000, according to Nielsen Social.

Data only solves part of the puzzle

Data is key, but it's still not everything. Linear TV itself has not traditionally been known for its ability to generate accurate and timely data that agencies and brands can act on quickly. To do that, adjacent technologies, such as second screens and social listening, have had to be developed.

Audience viewing figures are still the key metric generated directly from the linear TV channel itself. However, this metric is still trapped in the past. In the United Kingdom, audience viewer numbers are generated from collecting television data from just over 5,000 households. Specialist research companies commissioned by the British Audience Research Board (BARB) then scale that sample's data to estimate Britain's viewership across a population of more than 26 million people. It also takes a week to compile before it is released. By that time, live audiences have moved on and CMOs are still left wondering whether their campaigns were effective or not.

The emergence of second screen apps and social listening over the past 5 years has begun to change the game for advertising campaigns on linear TV. Suddenly, a brand manager can log into Hootsuite or one of tens of other social engagement platforms and "listen" in real-time to conversations about their campaigns. When an ad is shown on a television station in Los Angeles the marketer can immediately gather feedback from its audience about what they think, feel and if they are taking action. Maybe the audience thinks the ad is funny, maybe it's too sad, or maybe it's just plain confusing? Combine this with second screen activation and running a digital campaign in conjunction with broadcast cannot only boost the engagement of the digital but start to give brands direct feedback.

This combination of second screen, social listening and many other digital data sources is now providing useful engagement data back to marketers as it is happening. That is a huge, huge step for linear TV but it begs the next big question... now what?

Reacting in real-time in a linear world

Now it is time to close the loop: It is possible for brands to change and resubmit creative in real, or close to real, time. By connecting the data feedback to a global creative asset management system that can also assist with clearance and delivery of TV spots across the globe, adjusting linear TV creative is no longer a pipe dream. There is no doubt that the first creative adjustment based on a data feedback loop will be small changes such as pack, end tags (price points), and calls to ac-

Ian Wheal leads the product strategy, marketing, and corporate partnerships at Adstream, where he works with some of the world's leading brands, agencies and studios in developing innovative solutions for the marketing ecosystem. He started his career at the global management consulting firm AT Kearney, and founded West Point Media, a UK and German outdoor advertising company.

tion; however this alone is a big step forward in a increasingly competitive world.

Let us imagine that you've just found out through social listening that your latest TV ad for your new product is causing confusion amongst your key audience... but mainly in Australia. They're saying things like "I don't get what this product actually does" or their next hashtag is #dontknowwhyanyonewouldwantthis. Luckily it's 2014 and you are gathering this feedback as your audience is viewing your ads, not four weeks later via a lack of sales or a customer focus group that just took you a week to organize.

Okay, now let's assume that you've pinpointed the problem down to something relatively simple to adjust: the end tag. But to change this is not as simple as quickly updating some text.

You've now got to:

1. *Coordinate multiple teams that may be sitting across different regions of the world;*
2. *Find the right master files, but just the ones that were used in Australia;*
3. *Work with your copywriter to write new copy;*
4. *Get this copy approved by multiple stakeholders;*
5. *Have your production guys update the Australian ad;*
6. *Get the updated ad approved again by multiple stakeholders;*
7. *Send the updated ad to your delivery partner for quality control checking and standard versioning;*
8. *Have your delivery partner securely send your 1GB file back to local Australian TV stations in the right format so they can seamlessly queue it up for your next slot.*

That's a lot of things that need to happen within a very short period of time for you to be able to increase the effectiveness of your live TV campaign.

How long does that process take you today? Imagine it taking minutes, not weeks. That is the future of linear TV and it's almost here.

The future delivered now

In order to solve this huge challenge, we need to bring together a number of critical elements to into a loop that is rapid, seamless and easy.

First, you need a global digital platform for creative collaboration and asset management.

Second, you need to digitally connect this global platform to all the linear television stations and other destination points around the world that you need.

Third, you need to track the play out of TV ads against media plans, and then link this to digital campaigns, search data, social listening, point of sale and other data points.

Fourth, you need to measure real-time feedback from your audience about your linear TV campaigns and deliver clear, actionable insight to decision makers within your teams so they know how to react.

Fifth, you need to rapidly speed up and loop this process so that you can continually drive greater effectiveness for your campaigns in real-time.

Finally, one company will not solve this entirely; it will require global platforms and collaboration as well as true integration that results in the sum of the parts is much greater than the parts themselves. ■

CONTENTINNOVATION

"M&E workflows are increasingly complex and revenue is derived from increasing numbers of lower-value transactions. Anything that can reduce costs, increase supply chain velocity, or put organizations in a position to respond quickly to new threats and opportunities is worthy of consideration."

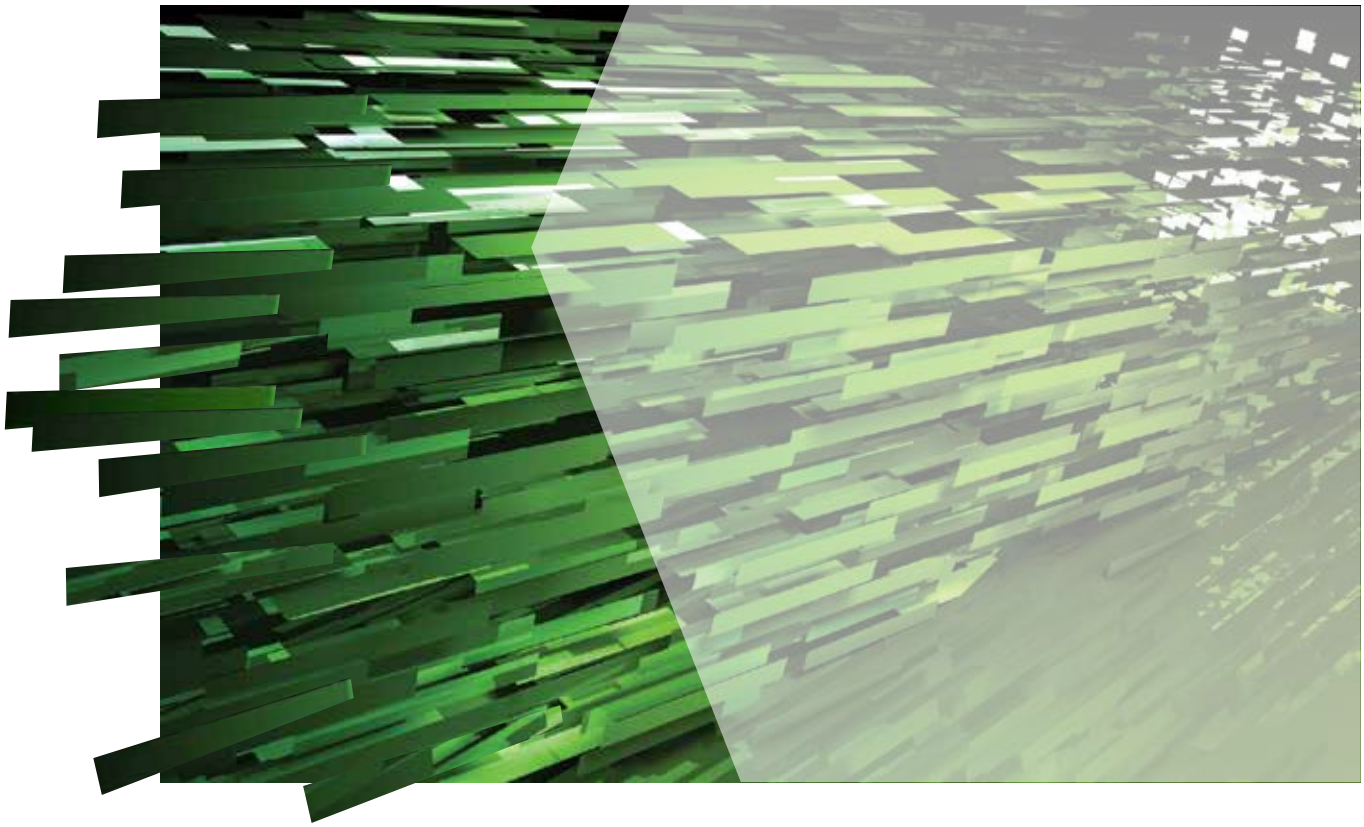
—Entertainment Identifier Registry (EIDR), Page 148

Innovation in content creation, production and distribution is growing apace with the new digital outlets for that content. This creativity touches every point along the digital supply chain, seeking to improve workflows, content protection, security, resilience and user experience, while reducing costs, boosting revenue, deepening consumer engagement and ensuring the highest quality playback of content on any device. This section holds 17 takes on innovation in the M&E ecosystem. ▶

Streaming Video Requires Strong, Invisible Security

Post-consumption technologies like watermarking can do the job

By Andy Nobbs, Chief Marketing Officer, Civolution



Abstract: Consumer demand for digital video content is accelerating faster than distributors can figure out how to most effectively get that content to them. In this competitive marketplace, differentiation between legitimate online video distributors will come down to not only content offering, but also ease-of-access in the user experience. Video security must strive to disappear completely from the user experience, while still providing the protection that copyright holders and distributors require.

Technology futurists claim the best kind of tech is the type that seems to disappear completely from the user experience, leaving only the content in view. Jack Dorsey, in describing to Charlie Rose his aspirations for the user experiences of both Twitter and Square, in 2011 stated that his foremost goal was to have the technology simply fade away. He pointed to Apple's game-changing tablet as an example: "When you're using the iPad, the iPad disappears—it goes away," explained Dorsey. "You're reading a book. You're viewing a website, you're touching a website. The technology goes away."

Two years later, following the rollout of Apple's completely reimagined iOS 7, the Apple head of design himself, Jony Ive, explained his vision for security on the new iPhone 5S: "[The new Touch ID feature makes] something as important as security so effortless, so simple. We believe that technology is at its very best—at its most empowering—when it simply disappears."

This so-called "disappearing" technology is especially critical in the consumer market, where masses of non-technical users are armed with personal computing devices that allow for the consumption of infinite digital goods, services, and entertainment. Powered by now-ubiquitous touchscreen devices, consumer app experiences are increasingly evolving into those in which the user can simply manipulate on-screen content

by way of natural, physical gestures, with little thought as to the powerful hardware and software that hums along in the background—where it should be—making it all possible. Many categories of consumer technology have made great strides toward adapting this style of user experience, from payment services and e-commerce to social media and daily to-do lists.

Digital video distribution can benefit greatly from this "disappearing technology" approach as it strives to grow customer satisfaction and loyalty. With piracy becoming easier every day, it is this loyalty that will be a key asset in protecting a subscriber base. Streaming video has much to innovate in this regard as today's streaming video security is not yet seamless—not yet "invisible."

Streaming video consumption and distribution has tossed coders, technologists, pirates, content owners and distributors into the same ring. The disruptive nature of the Internet has always been due to the level playing field it creates—one that equips companies large and small, located around the block or around the globe, with the same potential for service and innovation. The case for streaming video is no different, with technological breakthroughs driving the mass adoption of streaming video—be that video UGC, premium, legal or pirated. Namely, these technological advancements include near universal access to broadband at speeds that can support high-definition streaming video; advances in video compression technology; and, ironically, legitimate content distributors wading into the online distribution space themselves, which provides illegal content distributors with HD-quality digital copies of content straight to their hard drives.

Delivery speeds skyrocket

The pace of this disruptive innovation has been staggering. In the early 2000s, the U.S. Federal Communications Commission defined "broadband" as 200 kilobits per second. Today, that definition has changed to include the range up to 30 megabits per second, and speeds up to 100 megabits per second are widely available (not to mention a certain Fortune 100 company, also affiliated with a streaming video portal, is now rolling out gigabit internet in select U.S. cities). This high-speed video delivery pipeline is open to all—legitimate or illegal—and its reach is moving beyond what even fixed-line carriers offer, as public Wi-Fi and cellular LTE begin to provide bandwidth capable of HD-quality speeds to mobile devices. The same democratization of technology holds true for video compression specifically: whereas a decade ago MPEG-2 could offer standard definition video requiring six-megabit-per-second connections, MPEG-4 now enables the distribution of high definition video at comparable speeds—and the next generation of compression technology, High Efficiency Video Coding H.265, will cut this in half.

With skyrocketing bandwidth and more powerful compression flooding the space, consumers are quickly taking these innovations for granted, and the immediate gratification of longstanding video hosting sites like YouTube have trained them to expect HD-quality streams on demand and on any device they happen to have in hand at the time. This means that consumers expect the experience around "premium" video content—once segregated to the television set and cable box exclusively—to be as equality intuitive, immediate, and frictionless as the other applications on their connected personal devices.

Reducing security friction

Further, whereby premium distributors often compete by way of exclusive content, illegal video distributors aggregate the best content offerings regardless of copyright and provide versions often digitally equivalent to the legal distributor. In fact, all things being equal, when both legitimate and illegal online video distributors have access to the same distribution technology, speed, and consumer reach, differentiation on delivery quality all but evaporates, and the differentiating factor between them becomes one, quite simply, of user experience.

That brings us back to streaming video security, currently one of the most friction-inducing factors in the legitimate streaming video experience. If we are to follow the aforementioned advice of tech pioneers such as Dorsey and Ive, we as an industry must work toward less obtrusive video security solutions.

One way to achieve this end is to introduce "post-consumption" streaming video security—a technique that can be achieved through content watermarking and active monitoring. This type of security does its job in the background, rather than the foreground, and gets out of the way of consumers doing what they—and we—want them to do in the first place: consume. The music industry learned this lesson with significant growing pains, having debuted digital downloads with DRM protection before realizing that level of front-and-center security caused more harm to legitimate consumption than it saved in deterring piracy.

Post-consumption video security can identify illegal broadcasts and drop the security roadblocks only where they should be: directly in front of those few bad players that, up to this point, have created the need for such intrusive pre-consumption security across the board. Not only is this type of security less invasive to legitimate users, but it enables a number of additional benefits for distributors by way of consumption analytics. Even the tracking of illegal consumption can offer up new opportunities, as demand for pirated versions of content can validate entry into new territories—a tactic mainstream heavyweights such as Netflix have already integrated into their international licensing strategies.

Enabled by rapid innovation in broadband and cellular data speeds, and more efficient video compression technologies, consumer demand for digital video content—be it pay-TV content, feature films, or live sports—is accelerating. The differentiation between legitimate online video distributors will come down to not only content offering, but also ease-of-access in the user experience. To be successful in this new paradigm, video security must take a page from the tech pioneers, and strive to disappear completely from the user experience, while still providing the protection that copyright holders and distributors require. ■

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Know Your Attack Surface: Be Resilient

Cyber resilience looks to reduce the impact of attacks and provide the ability to keep operating

By Chris Morales, Practice Manager, Architecture and Infrastructure, and Kari Grubin, Sales Director Western Region, NSS Labs

Abstract: The entertainment supply chain is under continuous attack. Not only are the resources associated with content creation and distribution being targeted by those looking to exfiltrate intellectual property, we should assume a breach has already occurred. That's right – the enemy is already inside. At this point, organizations must identify where attacks can occur, how information can leave the entertainment supply chain, and how the impact of these attacks can be reduced. This is cyber resilience.

When it comes to storytelling, Hollywood loves hackers. The hacking subculture is cloaked in a mystique that insinuates a dark underworld of evildoers fighting against the better good. With a few keystrokes, the übersmart hackers crack the most daunting of encryption algorithms; with a few more, they transfer the digital contents of a bank somewhere in Eastern Europe; and then with a few final clicks, they shut down the energy grid for a daring escape. It makes for great movies.

Back in the real world, the media and entertainment industry is protecting its assets against far less glamorous enemies: organized crime, easy-to-access malware tools, and social engineering – and these methods of attack are on the rise.

For better or for worse, the industry response to cyber attacks is technology-driven. Information security best practices dictate a defense-in-depth strategy with the core focus on network perimeter detection and prevention. In the M&E space, securing physical content from piracy has always been a priority. This model followed the premise of controlling and centralizing content within the entertainment supply chain, and digital content has been secured in the same way. Today, however, content creation has become decentralized, and information security professionals must respond to this change. Now, studios have 24/7 access to tools, partners, and distributors, and this mandates the need for closed networks to connect to exposed networks. The entertainment supply chain attack surface, which is the potential entrance point for any attack, has evolved from a single computer terminal inside a secure facility to thousands of points of entry. Any laptop, smartphone, tablet, or outside vendor connection can be exploited. If a large enterprise such as Target can suffer a breach that occurs as a result of the compromise of its HVAC network, M&E companies must recognize that breaches could

The entertainment supply chain attack surface has evolved from a single computer terminal inside a secure facility to thousands of points of entry.

come from any source, not only those most commonly associated with breaches.

Enterprise architecture and systems engineering must be based on the assumption that systems or components have been compromised (or contain undiscovered vulnerabilities that could lead to undetected compromises), and that missions and business functions must continue to operate in the presence of compromise.

Defining the attack surface

The challenge facing information security is to understand the size of the entertainment supply chain attack surface. This surface comprises the systems, applications, and users with access that are exposed to outward-facing attacks. Information security teams must be aware of where attacks may occur across the entire surface.

The attack surface starts with the user. Social engineering is the most common means of attack. Information security teams must cooperate with business units to understand user needs. For devices on which users spend lengthy periods of time, methods for restricting use of enterprise data should be transparent to the user. Approaches such as mandating complex passwords for the entire device are giving way to more user-friendly approaches such as transparently encrypting enterprise data, adding authentication for enterprise access only, and single sign-on. By understanding how business units use new technology, the information security team learns how these changes impact the attack surface. As information security approaches the business, they must provide tools that appeal to all levels of risk tolerance while keeping in mind the needs of users. Additionally, ensuring that users are aware of the exposure created by poor user practices helps to eliminate these practices.

Systems and applications can affect the attack surface of the entertainment supply chain. The standard method for achieving awareness of exposure to attacks is through penetration testing. But while penetration testing is valuable, it provides only a snapshot of the attack surface at a given moment in time – it will not show a system's risk as it relates to new and emerging threats in real time. The attack surface is dynamic. The success of a penetration test is also limited to a tester's ability to perform testing within the allotted time. Real-time attack anticipation occurs when the known attack surface is correlated with current threats to reveal the gaps in a security stack, i.e., where there is no protection.

The security health of content creation tools can affect the attack surface of the entertainment supply chain. The more a vendor understands how its security health affects an organization's security posture, the more the organization can reduce its known attack surface. Secure software may utilize compensating controls to reduce the attack surface. However, the size of the vendor must be a consideration; if the vendor is small and has a limited budget, it is not reasonable to require security measures more appropriate for a Fortune 500 company.

Operating under attack

Cyber resilience provides the framework for a new architecture that is appropriate for the entertainment supply chain. Where the goal of cyberprevention has been to reduce the probability of an attack against the organization, cyber resilience looks to reduce the impact of these attacks and provides the ability to operate in the face of persistent attacks. Resilience enables the government to continue to provide services to the public, and industry to continue to serve employees and customers while repelling cyberattacks.

The key goals of this approach are:

- ***Anticipate.*** Assume the breach has occurred and focus on preparedness. Ask yourself key questions such as: What are the attacks that are being used by threat actors today? Which of these are effective against the business applications deployed in my network? And which of these are capable of bypassing my defenses?
- ***Withstand.*** How can I function in an infected environment without the business failing? How does my organization continue to function without having to suspend critical services to remediate the problem? Prepare to operate at 60% capacity, which will reduce – but not eliminate – services.
- ***Recover.*** Reconstitute and rearchitect the network for a restoration or continuation of critical services. Remove the infected portion of the network and assign new resources to replace it.
- ***Evolve and adapt.*** Learn why the attack was successful while it is underway, and then redesign the architecture to withstand similar attacks.

A cyber resilience program still considers detection and prevention techniques, but it also assumes that a breach is likely. This stance emphasizes anticipation, agility, and adaptation. Not every attack can be prevented. But with a successful cyber resilience program, damage can be mitigated or avoided altogether. ■

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Chris Morales, has more than 17 years of IT and information security experience. His areas of research include mobile security, data security, vulnerability management, malware detection and host protection. Previously, Chris was Senior Analyst, Enterprise Security at 451 Research, and Technical Partner Manager at Accuvant.

Reimagining Participations Management

How content companies can address constrained profitability, increasing complexity, and litigation in the participations space

By J. Kent Bracken, Director-BPO, Media & Entertainment, Capgemini

Abstract: Changing market dynamics are guiding M&E companies to optimize their global participations processes in order to boost revenue, reduce cost, and improve the dialog with talent in an increasingly competitive creative marketplace. M&E companies can and should expect more from their participations function.

The pace of change in today's digital business world means one thing: nothing is sacred. In all things you must be forward-thinking, innovative, and open to change. In the digital universe, we see innovation everywhere. From 3D printers to bio-fabrication, innovation and change rule. If you're not convinced, talk to the management of companies left behind like Eastman Kodak, Blockbuster, and Motorola.

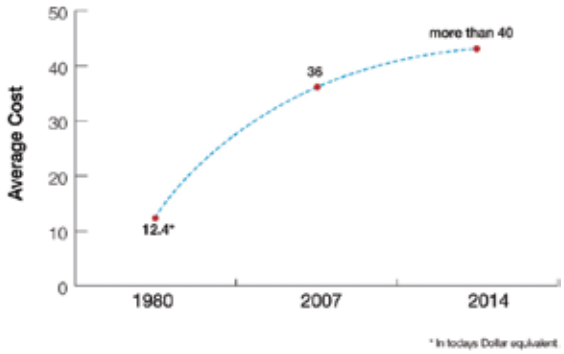
Until recently, many media and entertainment companies have been slow to embrace innovation in the participations space. Existing manual processes, tribal knowledge, home-grown tools, and limited reporting have reigned. Now, broad changes in the industry and the competitive landscape show that innovation in participations management is needed and can yield improvements in competitive posture, lower cost, reduce risk and improve the dialog with talent.

"Participations is one of the last analogue process areas in a global media and entertainment industry that has otherwise adopted digital-based processes," Charles Sutherland, EVP Research for HfS Research recently commented. "Simplifying and digitizing the processing of participations will not only reduce costs significantly for M&E companies but will create new opportunities to capture analytic insights on the commercial possibilities of content, products and services."

Industry trends suggest there are three

The Average Cost of Marketing a Studio Movie in the U.S.

In 1980, the average cost of marketing a studio movie was $4.3 million, according to MPAA, which translates to $12.4 million in today's dollars. The average cost to market a medium-size film in 2014 has been estimated at more than $40 million, a 225 percent increase.



major drivers impacting participations: headwinds in revenue and cost; increasing complexity; and litigation.

1. ***Revenue and cost challenges***

At the Hollywood HITS Digital Marketing and Analytics Summit last year, Professor Jonathan Taplin noted in his keynote address that as electronic downloads continue to replace hard media sales, many companies are suffering from lower incremental revenue and profit in home entertainment. Taplin also noted the increase in general production and marketing costs. His broad thesis was that sweeping changes in the industry must be addressed by content companies in order to prevail in a disrupted ecosystem.

The Motion Picture Association of America reported in the 2013 release of Theatrical Market Statistics that U.S. box office revenue rose less than 1 percent from 2012 to 2013. Meanwhile, marketing costs are surging, creating a drag on profitability.

As content providers shift their business models to meet consumer demands for quality content with flexible viewing alternatives, traditional studio revenue has taken on a new form. New technologies and new channels are redirecting revenue in the industry as consumers spend more to access content online through companies like Netflix or Amazon, which in turn both push for better pricing from content owners and invest in their own content creation. We also expect these new content creators to consume a visible piece of the new market pie as their capacity emerges.

Revenue can also be impacted by a shrinking theatrical release window and related new pricing models.

While US revenue growth is slowing, the international market is expanding and content creators face growing costs in international overhead, marketing costs, and new systems and processes, all of which must be rationalized. As part of a larger plan to streamline and improve the overall finance and accounting function, the participations function can harvest substantial savings and increased capability.

2. ***Complexity***

The digital shift has enabled content companies to take advantage of new delivery channels, new international markets, and new acquisitions and partnerships. However, as sources of revenue react to changing demand and expanding markets, the resulting volume and complexity are taxing existing capabilities in systems, reporting and integration for participations. Studios are also acquiring new content companies with unique capabilities in the over-the-top (OTT) space, accelerating the need to integrate systems and tools in order to rationalize operating costs. Production and financing partners are increasingly present on deals and they expect greater transparency. In general, deal complexity has increased for all parties, including participants.

3. ***Litigation***

The discussion of profit participations often invokes stories of disagreements with talent and resulting litigation, sometimes focused on the lack of transparency in how profits are defined. This litigation touches popular titles like *Smallville, Walking Dead, Dora the Explorer,* and *Butterfly Effect*, along with dozens of others. The costs go beyond lawyers and settlements. Support staff, research and analysis, accounting and other costs must also be factored in. Litigation can also damage the reputation of content companies, impacting their ability to attract top talent. And to remind us of materiality, Charles G Harder wrote in his book "Entertainment Litigation" that the estate of J.R.R. Tolkien had recently settled for "over $100 million with New Line Cinema over 7.5 percent of gross receipts from *The Lord of the Rings Trilogy*." That's real money.

No business strategist likes to see increasing competition, downward pressure on revenue and rising costs, without an innovative plan to maximize the use of technology and people to counter those expanding threats.

Tom Torlone, US Leader of Shared Services and Outsourcing at Price Waterhouse Coopers, notes: "The pain is real. Administering entertainment payment structures is labor-intensive, expensive and fraught with legal liabilities. Our clients are eager to find an end-to-end solution that relieves the administrative burden of these processes, from contract administration to payment processing, allowing them to focus on higher-value activities. The challenge is that providers are hesitant to invest in these capabilities when there is limited market potential (i.e. established and emerging

J. Kent Bracken is the vertical markets development lead for the Media and Entertainment team under Capgemini's BPO practice. His experience includes top corporations Accenture, HP, Thomson Reuters, and Computer Sciences Corp and more than eight years of international consulting work in Milan, Geneva, Buenos Aires and Johannesburg.

Driving transformation in a secure, measured way is not an easy task, which is why a number of the leading studios have partnered with business process outsourcing (BPO) providers who have operating models based on industry best practices.

studios). If a provider can figure out a cost-effective alternative, they can corner a market that's desperate for a quality solution."

In order to be more competitive, maximize revenue and control cost, content creators can tune their participations and participations audit strategies by embracing innovation.

Re-engineering participations

By embracing best-practice process improvement, implementing new reporting and analytics, and leveraging new platforms and systems integration, content companies can lower total cost, identify and target new revenue, zero in on profitable deal metrics, and ensure systems and infrastructure are optimized.

1. *Process improvement*

In the participations space, in-house processes have rarely come under external scrutiny until recently. Internal processes evolved, but the will to upgrade, optimize and integrate was limited. Now we are well into the digital revolution, and it's clear the ground has shifted. Internal processes must be upgraded to industry best practice, then mapped, and rolled out to all users to standardize and harmonize the function, end-to-end. Consistency in process delivery leads to reduced errors, improved cycle time, improved collaboration and reduced overhead through efficiency. Rollout of best-practice process in participations will also highlight inconsistencies in approach and understanding previously not on the radar. Poorly framed work-steps, skill-to-job mismatches, misunderstandings in accounting treatment, incorrect use of the chart of accounts and incorrect application of tools all surface during the best-practice process evaluation and rollout.

For many companies, this requires a full transformation of their finance operations. Driving transformation in a secure, measured way is not an easy task, which is why a number of the leading studios have partnered with business process outsourcing (BPO) providers who have operating models based on industry best practices which can easily be applied. Early adopters are already seeing the impact on top-line growth and improved working capital.

2. *Reporting and analytics*

In today's world of digital solutions we have grown cavalier about the availability of data. It's everywhere. Big data, micro-transaction data, unstructured data, summarized data. But what about useful and actionable data?

In the participations space, reporting and analytics have been difficult to master because the results come from multiple systems, tools, people and processes, and entertainment companies have not always made the investment necessary to place critical decision support data at their fingertips. Now, focused reporting and predictive analytics are needed to guide companies to improved results. Examples include analytics that identify the most profitable deal structures for winning pictures, predictive reporting forecasting participations liability in any given quarter or year, or updated and automated 'ultimates' based on current sales data. Reporting and analytics need to move beyond the basics and establish the new objective of providing useful and actionable data which executives can use to increase revenue and control cost.

3. *Systems integration*

Content companies today often operate on a host of unique systems and infrastructures. As disruption becomes the norm and the industry re-aligns, forward-thinking companies with rationalized and well-integrated systems will have a competitive advantage as others trail in committing the effort, capital and thought leadership to fully integrate their legacy participations, accounting systems and processes. Excel models, Visual Basic, and tribal lore will give way to integrated systems, optimized processes and labor efficiency.

The road map to success

Market dynamics are guiding content companies to rethink strategies to enhance profit to include the participations management function. To tackle the task more effectively, M&E companies have come to rely on and expect more from BPO providers, who have noted that streamlining processes, optimizing labor and improving the availability of statement support documentation will reduce cost. Automating audits and audit documentation will reduce liability and better support the dialog with talent. Leveraging enhanced predictive analytics will place valuable data at the hands of executives who can guide the company to increased profitability.

Follow these steps

1. ***Identify*** best practice processes across the enterprise in order to harvest savings by streamlining work, winnowing out inefficient work steps, and optimizing the labor model.
2. ***Implement*** actionable analytics and reporting with the goal of synthesizing information that will highlight opportunities that guide the enterprise to success, through improved revenue realization and reduced costs.
3. ***Establish*** workflow automation in the statement and audit functions to improve tracking and analyzing human productivity, while improving predictive analytics for better forecast participation liability and audit exposure.
4. ***Build*** automated audit processes that improve leadership access to the completion status and possible exposure on any audit.
5. ***Improve*** the talent experience in participations by improving the timeliness of statements and access to statement data.

Following this roadmap, content companies can address the constrained profitability, increasing complexity, and litigation in the participations space by embracing innovation to address each challenge. The dialog with talent will improve as support data for calculations is improved, and details on audit status move online.

More importantly, modernizing participations will help companies position themselves for success with flexible and optimized solutions that can respond quickly to market shifts, moving disruption from a negative to a positive force for profit and growth. ■

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Third Party Quality Control Needed Now More Than Ever

The proliferation of home entertainment formats and platforms increases the need for objective examination by human eyes

By Ramón Bretón, Chief Technology Officer, 3rdi QC

Abstract: As the home entertainment landscape evolves and increases in complexity, one area of a project's budget that is often reduced is third party QC. As more analysis shifts to the facilities tasked with content production, the content's value and content owner's reputation can be jeopardized when the same party helping create the work reviews it. In contrast, by not having a stake in content production, third party QC companies are free to focus on the consumer experience, which amplifies the end user's enjoyment and ultimately contributes to more consumption.

We all remember the good old days: the 2000s when DVD sales were skyrocketing. Consumers weren't just upgrading their home video collections from VHS to DVD, they also were amassing an even greater collections of discs, spurred on by the vastly improved quality and bonus features previously unavailable on VHS. The novelty and convenience of DVD (no rewinding!) also contributed to the public's rapid embrace of the format. Unlike LaserDisc, DVD resonated with film buffs and the average consumer alike.

Each year from 1998 to 2004 saw a remarkable increase in U.S. consumer spending on DVD rental and sell-through, while the peak years of 2004 through 2009 saw total spending on DVD and Blu-ray reach between $15 billion and $20 billion each year, according to Rentrak and DEG: The Digital Entertainment Group data.

Ensuring the promise of perfect quality

A large part of the allure and sales pitch of DVD was its "perfect" quality and special features. Errors such as digital hits in the video, misspellings on menu pages, out of sync audio and incorrect subtitles all caused discs to be re-pressed with replacement discs issued to consumers. These gaffes, which were frequently and embarrassingly detailed in online home entertainment forums, not only ate into the studios' profits, but threatened the reputation of the format as a whole.

DVDs released internationally increased the risk of consumer complaints with translated menus, audios, and subtitles, all of which could – and unfortunately, sometimes did – contain errors.

In order to ensure that the viewer's experience would live up to the "perfect quality" promise of the DVD format, as well as to protect the reputation of the content owners, during those days of tremendous profits, using a third party quality control (QC) company for every major studio release was the norm.

Employing the services of third party QC companies is attractive for several reasons. Firstly, a company whose sole focus is QC seeks out and hires specialists who demonstrate an aptitude for proofreading, problem solving and attention to detail, while also having the imagination needed to identify potential problems

To address the demands of today's varied home entertainment landscape, many studios look to automated QC as a cost-effective way to fill the gap.

that are not defined in any specification document. To serve the international needs of their clients, third party QC companies assemble a team of language experts who also possess these skills. Secondly, a company positioned outside of the process of content creation encourages a truly focused evaluation. Finally, independent operators are less likely to work under the assumption that the tasks of programming the assets or translating the material was done correctly.

In the days of skyrocketing physical disc sales, the typical workflow consisted of the content production partners completing their own internal QC before third party evaluation occurred. Their motivation, in addition to delivering a quality product for their clients, was to find and correct any errors internally rather than allow them to be revealed on the subsequent third party QC report, which could reflect poorly on those creating the content. The resulting DVD, in going through testing by two separate entities, had a much greater chance of being error-free once in the hands of the consumer.

Declining revenue

As physical disc sales began to decline at the beginning of this decade, naturally content owners looked for ways to maximize profits. One of the first areas often deemed redundant was the double evaluation by the content production facilities as well as by third party QC companies. As a result, in recent years many catalog and lower profile releases have been evaluated strictly by the post-production facilities creating the discs, reserving the skills of third party QC companies primarily for new releases and important re-releases.

To be clear, the intent of the content production facilities is the same as that of third party QC companies: to deliver a quality product that is error-free and will not generate negative consumer feedback. Both understand the value of their clients' reputations while striving to uphold their own reputation for quality work. Nonetheless, third party QC companies have some distinct advantages over in-house evaluation.

At any given time, most large post-production facilities undertake multiple assignments for numerous clients. They are commissioned not only to create content for home entertainment distribution, but also to prepare material for theatrical and broadcast release as well. Quality control is only one of many components in the vast toolbox of large post houses. By contrast, third party QC companies specialize in one thing only: the evaluation of home entertainment products, without the distraction of any other post-production work. They are hired by the content owners with the singular expectation of identifying issues that may lead to consumer frustration.

Another potential pitfall for in-house QC is that of assumption. It is natural for an employee of the same company creating the work to assume that the work completed by their comrades is sound. This assumption, no matter how subconscious, may play a role in the amount of focus applied to the task of evaluating the product. A third party QC technician, on the other hand, has no allegiance to the content creators and is free to focus solely on the end user experience.

The shifting landscape

A contributing factor to the monumental sales of DVDs was the lack of other avenues for the consumption of home entertainment. Today's consumer has many more choices for spending their time and their money, given the rise of over-the-top streaming services such as Netflix, Hulu, and Amazon Instant Video; the proliferation of tablets and media-capable smartphones; and the explosion of Internet video sharing sites such as YouTube.

As studios move into new avenues of home entertainment distribution, the profit margins are unknown. The prudent course of action is to keep budgets as low as possible. To this end, third party QC often falls by the wayside, while the company responsible for creating the content is tasked with protection against those errors that may lead to consumer frustration.

It is precisely the proliferation of home entertainment choices available to today's consumer that makes third party QC even more crucial, however. Instead of one or two formats, each film or television show must now be readied for a variety of distribution outlets. In addition to coming to grips with this increased output per project, post-production facilities must also contend with compressed timelines, to meet the strict windowing deadlines required in today's short-attention-span market.

To address the demands of today's varied home entertainment landscape, many studios look to automated QC as a cost-effective way to fill the gap. With all that these software-based systems can accomplish, they are a welcome tool when preparing content for market. However, human interaction is still needed, not only to verify the issues flagged by the application, but also to uncover the myriad errors currently beyond the scope of discovery by automated systems. Creative intent may be confused with unwanted glitches, for example. Or, the software can report if closed captions are present, but has a hard time verifying the lip sync of each caption and authenticating the accuracy of the captions themselves. A perfect scenario involves automated QC as a complement to, not as a replacement for, human QC.

Something altogether new to today's home entertainment landscape is the extent to which the digital supply chain depends on metadata. When it comes to today's file-based delivery systems, accurate metadata can be as important as the content itself. Cataloging, searchability, contract compliance, revenue protection, release windows, new business opportunities, and consumer discovery are a mere handful of the areas impacted by metadata. Third party QC companies, whose expertise lies in proofread-

Ramón Bretón has been with 3rdi QC, a pioneering company in the field of quality assurance for the home entertainment industry, for 12 years. Previously, he spent 10 years in the music business as an audio mastering engineer, giving him over 20 years' experience contributing to quality entertainment for the consumer.

Human interaction is still needed to uncover the myriad errors currently beyond the scope of discovery by automated systems.

ing, verification, and paying attention to the smallest detail, are befitting the task of ensuring that a project's metadata is accurate and robust.

Important then and now

Regardless of how complicated or unique new home entertainment offerings may be, they have one thing in common: the user experience must be frustration-free. Whether DVD or Blu-ray disc, an Ultra HD episode of an SVOD (Subscription Video On Demand) service's original series, a companion app to a network TV show, or an UltraViolet EST (Electronic Sell-Through) movie watched on an iPad, the content owner's reputation is on the line every time a consumer interacts with the content. Since their focus has always been on the consumer experience, not on creating the content itself, third party QC companies are well suited to the task of protecting the content owners' investment, regardless of the delivery medium.

Consumer spending on digital formats is on the rise. DEG's Mid-Year 2014 Home Entertainment Report indicates 37 percent growth in EST and 26 percent growth in SVOD in the first half of 2014 compared to the same period in 2013. As new home entertainment profit avenues prove reliable, a natural course of action is a return to routinely employing the services of third party QC companies.

A comprehensive QC evaluation not only protects, but enhances a project in many ways. In addition to helping ensure that the releasing studio's legal obligations are met by verifying the presence of warnings and disclaimers, as well as confirming that the proper availability dates are encoded in the metadata, a good evaluation can also help audiences connect with the material. When potentially distracting issues such as video and audio glitches are flagged in QC reports early in the production process, they can be removed in a cost-effective or even cost-neutral manner, ensuring a smooth, error-free viewing experience.

Current home entertainment offerings may be more varied, but the promise to the consumer remains the same as in the glory days of DVD: to provide a pleasurable experience in exchange for their hard-earned dollar. When consumers feel they are getting good value for their money and are happy with their purchases – both physical and digital – they are more inclined to keep spending, to keep connecting with the films and television programs they love. The goal of this business, after all, is to provide that connection. ■

Evolution Not Extinction: How to Successfully Navigate Digital Disruption

Companies can streamline operations, speed time-to-market and take control of their bottom lines

By Harris Morris, CEO, T3Media

Abstract: The new content ecosystem requires a radical rethinking of the entire digital media supply chain – one which allows content owners to maximize the value of every piece of content in their libraries, while enabling them to focus on their core creative capabilities and cater to the needs of today's consumers. Content creators and distributors need to establish a digital supply chain that allows them to protect their legacy businesses, while also positioning themselves for those innovations still to come.

An age-old adage reminds us that hindsight is 20/20. As M&E companies struggle to make sense of dramatic shifts in how they create, manage, distribute and monetize content, there is one question most haven't been able to answer: what can we learn from the mistakes of other industries interrupted by massive digital disruption, and how can we avoid those mistakes in our own?

As a result of massive technology innovation—namely, the Internet—the way consumers access and listen to music was disrupted overnight. In the decade that spanned 1999 to 2009, the music industry's revenues were cut in half, according to the Recording Industry Association of America. It was a stunning free fall that resulted in the loss of more than $6 billion dollars in annual revenue.

It took the music industry nearly five years to wake up to the crisis confronting it. By 2010, digital revenues had increased by 1,000 percent; but digital growth from almost nothing to something came too late. The industry had lost control of its consumers—and left innovators to take control of the market.

Basic economics would seek to explain the massive revenue losses as a function of diminishing demand. In fact, the opposite is true: there has been an explosion of (legitimate) choice, flexibility and access to music for consumers. Demand isn't the issue.

Third time's the charm

We'd be wrong to think the music industry's cautionary tale is an aberration. That same level of disruption soon upended publishing. For newspapers, the recession started in 2005—a full six years after the virtual collapse of the traditional music industry—and the bottom fell out even more quickly. Within five years of reaching its revenue peak in 2005, the newspaper industry lost 55 percent of its advertising revenue.

It was clear that executives still had much to learn from the painful lessons of their peers.

As they say, the third time is the charm. Since its peak of $22 billion in 2004, the

Even with awareness of content supply chain challenges, few companies are taking control of their content and their consumers in ways that optimize user experience, and the bottom line.

U.S. home entertainment market has lost nearly 20 percent in annual revenue, seeing double-digit percentage revenue losses in some years. The unexpected shift has squeezed the bottom line of every content creator, and thrust content economics further into the spotlight.

Digital red ink

The explosion of new distribution channels—and the complexity associated with managing and fulfilling into those channels—is no surprise to anyone with a grasp on today's content ecosystem. But even with awareness of content supply chain challenges, few companies are taking control of their content and their consumers in ways that optimize user experience, and the bottom line.

Few content creators and distributors have content volumes that warrant the infrastructure scale, resource expertise and operations needed to exist in the new ecosystem. Yet, often, content owners try to bring these capabilities in-house.

The result? Inefficient operations, bloated infrastructure (that becomes obsolete quickly) and quality that suffers due to ever-changing specifications, packaging requirements and SLAs. It's no wonder that many organizations still question if digital revenues will ever really offset traditional losses. That scenario is hard to imagine when digital operations are in the red.

Economics for new audiences

Upside-down digital businesses don't have to be par for the course. Content owners and distributors need to embrace a new math to streamline their operations, speed time-to-market and take control of their bottom lines.

Here's how:

- Minimize opex and capex: Many companies make massive investments in hardware, software and resources without having content demands to justify those investments. Profit margins, which are already under pressure from the relatively small size of digital deals, suffer even more when opex and capex costs grow.

And, these aren't one-time investments. More content created and fulfilled over time requires increased storage with more sophisticated management capabilities. Software and hardware upgrades consume time and resources, and introduce risk into already fraught processes.

Even content owners with large volumes are at dangerous disadvantages. In today's ecosystem, content format specifications, packaging requirements, discovery demands and localization processes require continual evolution of workflows and technology, not to mention professional expertise. With every new partner, channel or technology improvement, there is often a new and unique workflow requirement.

iTunes takes delivery via Aspera. Cable VOD needs metadata in accordance with CableLabs specifications. Nielsen's watermark is catching-on for multi-channel measurement. Encryption. Logos. Forensic Watermarks. The list is endless.

Content owners need to boost the productivity and profitability of their digital businesses by minimizing opex and capex investments. By leveraging the depth and breadth of agile service providers, content owners unburden themselves from having to adapt to ever-changing end-to-end content requirements. And, they can do so at disruptively low cost.

- Monetize content: There's no question that today's array of channels, platforms and distribution partners creates massive complexity for digital workflows. But, it also creates huge opportunities to monetize and exploit every second of content in your library.

You can't monetize what you don't know you have. Comprehensive library management capabilities allow companies to catalog their content, exposing assets securely to the people who need access to them. Content portals enable access-controlled rights to search, browse and fulfill content. This ease of search and visibility is essential to sales and licensing teams driving time-sensitive deals.

Worse than your own impaired content visibility, imagine the impact on your potential licensees and consumers. With a centralized, secure and managed archive, you can make decisions about how, when and where to expose content externally to potential buyers. This increases your content reach for monetization through licensee self-service–which fuels more revenue, faster.

More than ever, successful digital asset management also depends on the ability to capture, create and distribute rich, flexible metadata. Technical and descriptive metadata is the fingerprint of your content, allowing buyers to evaluate the content you bring to market and ultimately driving downstream discovery for audiences. When thinking through a successful digital strategy, metadata schema definition and enrichment are essential.

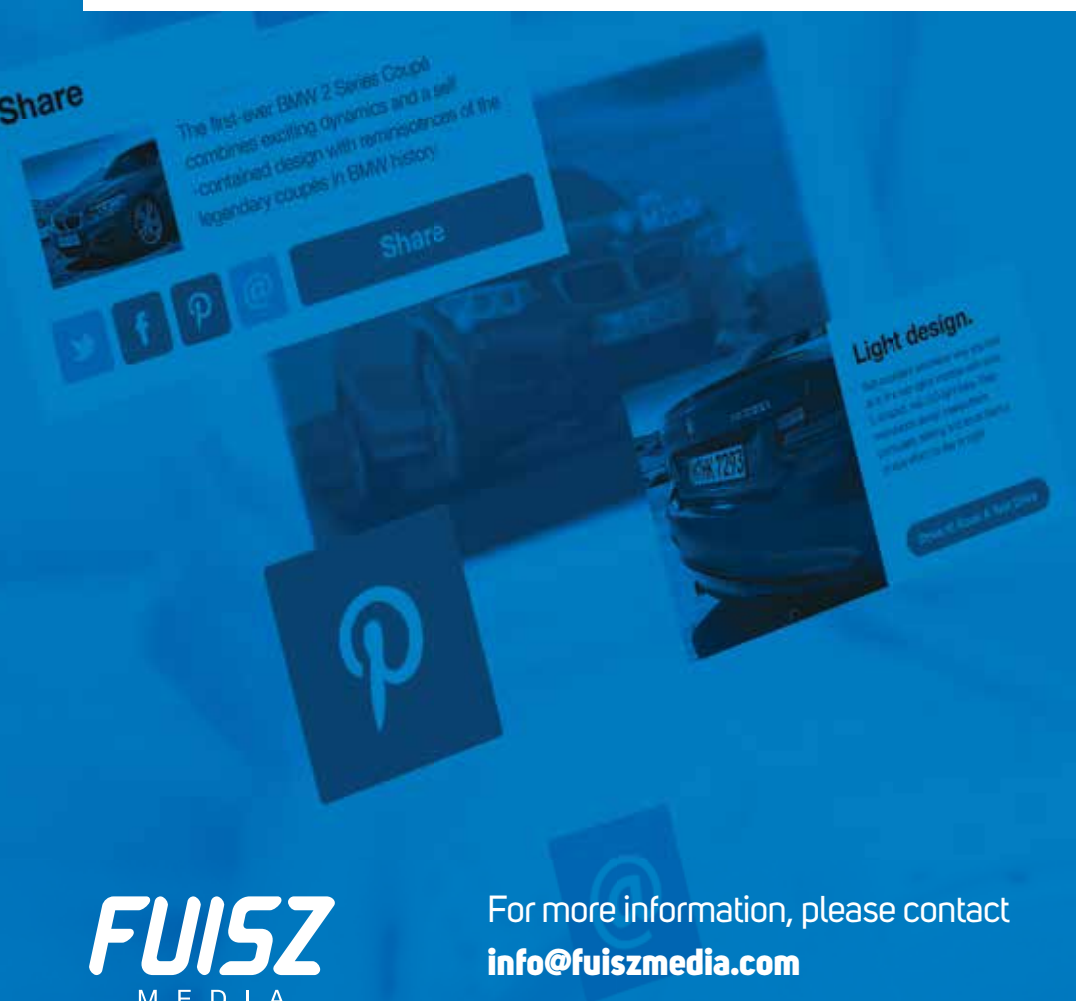
Today's metadata is dynamic and living. Schemas change. Licensing partners have unique requirements for descriptive metadata and the formats in which that information is delivered. Being able to capture and transform the metadata you have—with tools that tightly integrate into overall digital workflow—streamlines operations, reduces cost and creates visibility.

Continued on Page 161

Harris Morris' digital media and enterprise software solutions experience spans media and entertainment, education and technology-enabled consumer industries. Previous roles include CEO of the Broadcast Communications Division of Harris Corporation, Chief Strategy Officer of Thomson Learning and a Partner at Bain & Company.

INTERACTIVITY

THE NEW DIMENSION IN VIDEO STORYTELLING



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Mining Metadata Gold with Semantics

Experts are turning to new models to better define metadata and to store it more flexibly and accurately

By Matt Turner, Chief Technology Officer, Media and Publishing, MarkLogic Corporation

Abstract: The value of metadata continues to grow in today's digital marketplaces and maximizing this value impacts nearly every part of entertainment and media organizations. Metadata is also becoming more complex, covering not just the asset information but now including product and title data, contributor and topics, and details on usage and consumption. With the rise of new technologies tailored to handle the intricacy of today's information, new approaches are available to manage metadata. Enterprise NoSQL databases and Semantic technology can make a wider set of data available to users and reduce the complexity and cost of delivering this valuable resource.

With the rise in the value of metadata and its direct impact on the new digital business, metadata is becoming a critical asset for product creation and distribution. This is driving the need for more accurate and flexible metadata. To address this need, organizations need to look beyond the traditional tools and technologies for managing metadata and embrace new approaches, including NoSQL databases and semantic technologies to create, manage and deliver more accurate and complete metadata.

Traditional metadata

Traditional metadata management processes define, up-front, the metadata required for the organization, using tools that range from Excel spreadsheets to taxonomy and ontology management tools. These tools all define a fixed set of attributes for the metadata, typically in the rows and columns of a relational database.

This process means creating a row for every possible type of metadata including dates, contributors, asset information and categories. This can become rapidly complex due to the need to define in advance all the possible permutations of the metadata. Problems may include defining a single model across multiple types of assets, selecting attributes that cover specific uses and adopting new information as data and purposes change.

In addition to the items of metadata, expressed as the columns in the model, the values of the columns also need to be managed. Many of the items of metadata are managed in lists called controlled vocabularies or look-up tables. Taxonomy tools are used to create and manage these lists and the selection of these items gives the metadata context for a given purpose. The typical taxonomy approach is to manage categories in a hierarchy with the distinct levels all having distinct sub-levels of choices.

Categories and taxonomies are also tailored to specific business purposes. Internal processes have different needs than external distribution processes, for example. The metadata may have either many similar categories or generic categories that do not have the specificity required for each distinct business process. This can cause additional data processing or clean up as different systems use the metadata.

These approaches also require that all the items of metadata including categories be explicitly associated with the metadata record. If an asset is associated with several categories, all of those categories must be associated with the asset directly in the metadata record. This can lead to metadata models that have hundreds of attributes to explicitly capture all of

the complexity of the information in the single metadata record.

To address these issues, metadata experts are turning to new models of data to both better define metadata and more flexibly and accurately store it.

NoSQL databases

Hierarchical, complex and sparse metadata are not well suited for relational databases and their strict rows and columns. Therefore many organizations are adopting enterprise NoSQL database technology that allows metadata to be defined and stored with a flexible schema without giving up data integrity or security. Instead of defining up-front every item that must go into the metadata record, the NoSQL approach allows for each record of metadata to store only (and all!) the attributes that make sense for that particular asset.

Schema flexibility addresses some of the issues found with the traditional approach:

- Varying types of assets can have the different types of metadata they need with out having to also carry or fit into a model not suited for that asset.
- A wider set of data can be stored including data suited for a specific purpose for one kind of asset and not another because the model can allow for the flexible storage of additional information without having to pre-define that information.
- New information can be added as data sources or metadata models change without having to rebuild the system.

With enterprise NoSQL systems like MarkLogic, this flexibility can be used without any loss in data integrity or reduction in security. Enterprise NoSQL allows for processes to ensure the data is accurate and has the core attributes needed for the system and that the information can only be accessed with the correct permissions and rights.

Semantics

To address the complexity of managing categories and taxonomies and to record more accurately the intricate relationships for an asset such as categories, genres and contributors, organizations are also embracing Semantic Web technology.

Semantic Web technology is a new approach to defining and managing relationship data. Using a simple format called a triple, Semantic Web technology indicates facts, concepts and object and how they are related.

Example of a Semantic Triple

A simple example about a contributor could be information about his location starting with a fact: "John lives in London". Combined with the information that "London is in England," we can now also state "John lives in England".

The data modeled in this fashion can be used with other data about England to derive new information about John – for instance that he lives in a monarchy.

The model can also be extended with more information about John. We can state that John is an actor and, if John is the lead character for a show, we can link John to the details of that show, all actors of that show, when that show is in production. We now have new levels of insight into his activity for instance when he was working in a given year or what other actors he has worked with.

The creation of this type of data requires data management structures called ontologies. Ontologies are similar to taxonomies that describe look-up lists except that the ontologies describe the collection of triples and are not only hierarchical. In our example, the ontology would describe the types of data we are recording (people and places) and the types of relationships they can have (lives in and is in).

Ontologies are also expressed as triples and, along with the types data and relationships, they can also define the values of that data. For instance we can restrict place to a list of known locations including London and England.

This approach is particularly valuable for entertainment as it allows for the accurate creation of models – or ontologies – that are tailored to the specific uses of the metadata within an organization. It can also record and manage the details of that organization's specific products. If our simple example explains where John can live, a complex real-world example for an entertainment organization might model all the possible characteristics a famous fictional character might possess, map those attributes over the many different times that character has appeared in films or shows and provide different metadata values tailored for production and distribution.

Semantic Web and NoSQL together

New technology capabilities are bringing the schema flexibility of a NoSQL database together with power of semantic technology. MarkLogic's Enterprise NoSQL has seamlessly combined these two data models into a single component, removing the final hurdle to fully leveraging the value of the semantic models with the active, operational metadata.

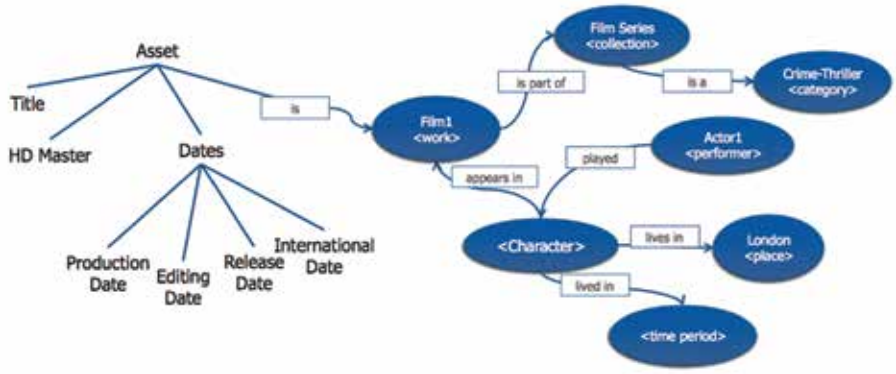
This combination addresses some of the major issues with taxonomy management:

- The relationships do not need to be only hierarchical but can express many different associations and be linked together to correctly model complex metadata attributes.
- Using several ontologies, metadata can now record relationships (instead of categories) for the many different purposes of the asset.
- Because the ontologies are independent of the individual metadata records, changes to the data and additions of new types of data can be done at any time without having to reprocess or remodel the metadata.

Using semantic triples, the metadata record does not need to store attributes for every single possible value related to the record. With only a few defined semantic relationships, an asset can be linked to a much broader set of data -- making metadata management much more efficient. For example, a

Matt Turner works with customers and prospects to create leading edge information and digital content applications with MarkLogic's Enterprise NoSQL database. Matt works closely with MarkLogic's customers McGraw-Hill, Warner Bros., Conde Nast and LexisNexis. Before joining MarkLogic, Matt was at Sony Music and PC World.

Melding Data Models



NoSQL Metadata record (l.) with semantic triples (r.) associated to an ontology.

metadata record using our fictional character, the asset only needs to be associated with the specific title where the character appears. All the other data about the character, for instance where and when they lived, what genres and categories they fit into, would all be automatically available to that record with that one item of metadata.

With this model, the metadata can now provide accurate and complete information to a much wider range of audiences, the processes for maintaining the metadata are much more efficient and the metadata will be a much more valuable asset to the organization.

Dynamic delivery

In preparation for the hosting of the London Olympics in 2012, BBC Sport adopted a Semantic Web approach to not only the management of the metadata of the assets it would be delivering on its web pages, but also the delivery of the experience to the end users.

The BBC Sport team developed sports ontologies that contained the categories of events and sports and the key players and organizations in each sport. Individual articles and information about the teams and athletes were tagged with just the links to the ontology, greatly reducing the amount of editorial work and streamlining the content creation process. The live video feeds, sport scores and schedules were also tagged to the ontology with automated feeds updating the information.

This data was used to create the public website (bbc.sport.co.uk) that, for the Olympics alone, featured over 10,000 pages. All of this content was dynamically generated from the ontologies and the articles, video feeds, scores and schedules and was constantly updated as results and scores were tallied. The resulting user experience broke many records in the UK with, at times, more people watching and interacting with the events via the site than over traditional broadcast.

Conclusion

As metadata becomes even more important to the delivery of digital products for media and entertainment organizations, leveraging new approaches to address the many challenges with traditional tools is becoming critically important.

Semantic Web technology combined with Enterprise NoSQL allows metadata to address more information, including data for multiple purposes with more flexibility in the management of the data while maintaining the data integrity and security. ■

Driving Digital Profits and Reducing Risk

The need to improve digital supply chain efficiency

Mike Side, CEO and Co-Founder, Mediamorph

Abstract: The burgeoning digital marketplace brings with it a continually growing supply of current and library content, but it also disrupts content creation. In order to capitalize on the digital opportunity, the digital video supply chain must operate as efficiently as possible across the entire ecosystem, for both suppliers and distributors.

As busy, on-the-go film, television and sports viewers, we've never had it so good. Streaming and downloading digital video in HD is ubiquitous, so we can watch the majority of programs on demand whenever we want to. New services with apps for our laptops, tablets and phones mean we can watch just as easily when travelling as we can at home. Many of us are more likely to be watching TV streamed through a games console, smart TV app or set-top boxes than we are to be watching a live broadcast.

New entrants are producing original shows, unbound from the traditional studio and network system. Subscribers get to watch and green light pilots. Producers, networks and video operators are building new funding models based on exclusive digital windows across their respective customers.

This golden age for consumers of digital content has been complex and difficult to achieve for the studios – but they have been rewarded as digital revenues continue to grow as a significant percentage of their businesses. According to figures published by DEG: The Digital Entertainment Group, U. S. consumer spending on digital consumption (EST, VOD and subscription streaming) has continued to grow heartily; for the first half of 2014, spending on digital totaled $3.6 billion in the U.S., up nearly 17 percent from the roughly $3.1 billion spent in first half of 2013.

As the market expands, satellite, cable and IPTV operators must provide high quality and differentiated services to grow their customer base. Competing next to them, standalone OTT providers have to be able to scale rapidly in order to survive and thrive.

One thing is clear: in order to capitalize on this opportunity, the digital video supply chain must operate as efficiently as possible across the entire ecosystem, for both suppliers and distributors. This means addressing the inherent challenges of digital video distribution.

Deals between studios, networks and video operators are changing rapidly as digital business models evolve. For studios, there are the difficulties of tracking and understanding sales behavior across increasing volumes of platforms, devices, and formats. This is on top of the challenge of managing content rights, metadata and asset delivery to a growing content partner base.

For video service operators and digital retailers, increasing content volumes and the associated data complexities increase the risk around remaining compliant to windows and rights restrictions imposed by content owners. Additionally, editorial and programming decisions are impacted by the operational concern of processing larger data volumes to

For studios, there are the difficulties of tracking and understanding sales behavior across increasing volumes of platforms, devices, and formats. This is on top of the challenge of managing content rights, metadata and asset delivery to a growing content partner base.

understand what titles are available when and where. Finally, the increase data volumes lead to challenges in revenue management, with the accuracy and timeliness of suppler payments made more difficult.

The need for standards

One major difficulty across the industry is the lack of standardization in the way digital content, rights and data is shared. Data is exchanged using varying file types and formats; Microsoft Excel is widely used, but each company has unique templates, field names, rights data models, territory identifiers, etc. These factors are also in constant flux, with report formats, identifiers and data fields changing over time. For partners, it means they continually need to make changes to their back-end systems.

The industry is attempting to address these challenges, with companies and industry groups working towards new standards. They are also engaging in collaborative projects to improve sharing of industry data and refining digital supply chain processes.

The Entertainment Identifier Registry (EIDR) is one such standard, where content owners who are EIDR members register titles and receive a unique identifier used when sharing data about their content. The Entertainment Merchants Association (EMA) has developed a metadata standard for digital audiovisual content, an XML framework designed to support the transfer of information about titles from content owners to digital retailers. Similarly, the Asset Distribution Interface (ADI) is an XML metadata standard developed by CableLabs.

While the emergence of standards is undoubtedly beneficial for the industry, until they are much more widely adopted by content providers and digital retailers they alleviate, but do not remove, the problems of managing multiple data sources and formats.

Another cross-industry collaborative project is the Digital Entertainment Group's Digital Data Tracker, the goals of which are to allow more sharing of industry data between members, to better understand content performance and purchase behavior. The end result from the Digital Data Tracker should ultimately be better decisions and higher revenues for both studios and the sales channels.

Even for a company gaining benefits from implementing standards and engaging in data-sharing projects, back-office systems and business processes must be flexible enough to adapt to the rapidly changing times. Legacy applications, which weren't designed for digital, force inefficient workarounds. In many cases, large cross industry ERP systems are not well suited to manage the fast pace of change that has occurred in Media and Entertainment. And while improving processes and technologies are important, the majority of these projects are internal only. There needs to be much more focus placed on solutions that improve collaboration between content owners and video service operators.

Data and asset management

One key area of focus needs to be at the start of the digital distribution chain, specifically in how content owners tell video service operators what content is available to them. Rights management systems can adequately capture contract details agreed to when entering into a new deal, but there is a continual flow of new information about title availability, exclusions and license periods that are being sent out by content providers. This data sent throughout the lifecycle of an agreement is not addressed by traditional rights management systems. Availability and license period updates, known as "avails", come via emails, attachments, or links to content management systems, and video operators and retailers face a huge volume of data that needs to be managed. That management includes identifying avails relevant to their deals, matching them to contracts in a rights management system, and making licensing selections. From there, downstream content management systems and delivery platforms need to be notified that a title is available or needs to be taken down.

Manual management of this data is extremely time-consuming. When businesses lack visibility of content rights and availability, there are risks of content underutilization or breach of contract.

The bottom line is that if content goes up too early, too late, or in the wrong place, everyone loses. Automating the flow of data from content providers to their digital partners gives greater clarity into and control over content availability. Eliminating manual effort frees up time for operations and programming teams to concentrate on scheduling and package creation, content reporting and analysis. That in turn helps companies spot trends and informs better programming and title selection decisions.

Implementing systems that provide control and drive efficiencies in these cross-industry processes allows video operators and retailers to rapidly scale the number of content providers and amount content. Scaling, in an automated manner, means opportunities to not only drive up digital revenues, but also reduce overall risk. ■

Mike Sid has helped leading entertainment companies build their digital entertainment systems and businesses. His experience in digital entertainment ranges from leading the media and entertainment vertical for a major Web integrator and building the infrastructure for digital entertainment at Sony Music to establishing a semantic web start up as the leader in its space.

Broadening the Entertainment Experience in a Connected World

Lessons learned from the 2014 FIFA World Cup

By Johann Schreurs, Connected Workflows Solution Manager, EVS

Abstract: This article looks a a specific example of multimedi services around a major sportin event: the 2014 FIFA Worl Cup in Brazil. It delves into th multimedia operation that wa designed, implemented an serviced by HBS, FIFA TV's hos broadcaster for the event

Live matchcast second-screen user interface.

Less than five years ago, no one had seen an iPad. Now, however, it is impossible to underestimate the impact that tablets and smartphones have had on the broadcast industry. It is equally impossible to measure the social changes tablets have brought about, with our desire to be better informed, to know more. Viewers are no longer passive. The smart broadcaster or producer will understand this, and retain the attention of the viewer by providing additional engaging content.

That keeps the consumer within a managed experience, delivering a combination of attractive and engaging content. It also keeps the viewer within the single brand, retaining audience loyalty and increasing the opportunities for revenue generation.

Where does this additional content come from? Creative producers will quickly identify suitable material. Reality-style programming is ideal for backstage views. Game shows allow the viewer at home to play along, and because the app is connected to the production, it can be used as contestant research: if you do well on your tablet at home, you could be in the studio playing for real prizes.

Sports are ideal for multimedia, multi-layered content. Sports engender tremendous passion and devotion, and fans are always eager to learn more about their favorite teams, athletes and events.

Delivering World Cup 2014 to the world

FIFA TV manages the whole process to ensure that each match, and each rights holding broadcaster (media rights licensee, or MRL), delivers a consistently high quality of coverage. For the 2014 tournament the camera plan for each stadium was identical, with no fewer than 34 cameras, including a helicopter for beauty shots, a spider-cam, and numerous super slow motion and ultra motion cameras.

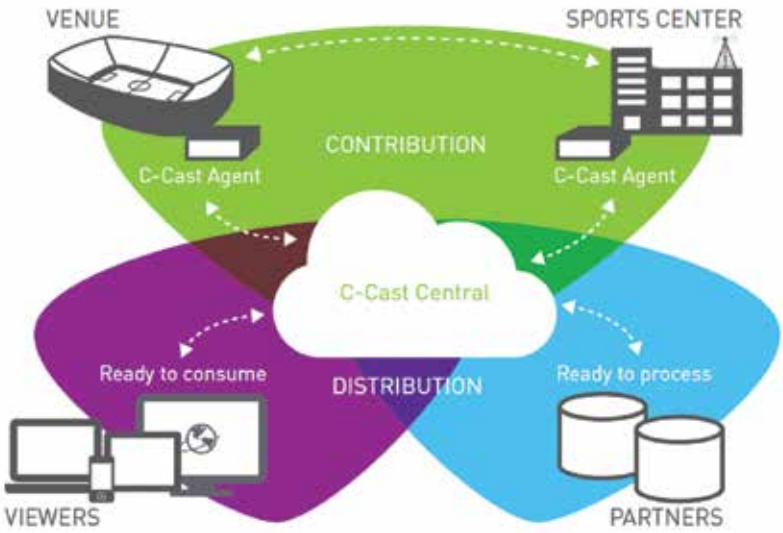
The reason for so many cameras was to provide a view of all the action from multiple angles, allowing for the analytical replays that global soccer fans so value. Every camera was recorded independently on a bank of 16 EVS servers. Each game generated more than 60 hours of coverage.

But in the television feed from each game, only one camera could be on air at a time. There was a huge treasury of footage, which was ripe for exploitation. Licensed by FIFA, HBS set about developing a rich multi-screen viewing experience. It turned to EVS to provide the platform for delivery of live multimedia to smartphones, computers, tablets, connected televisions and other devices.

The resulting service allowed consumers to select their own perspective of the FIFA World Cup. They could select angles from an interactive camera plan, and set up their own replays of critical action.

FIFA provided a "white label" set of apps, that could be tailored to the branding and requirements of individual MRLs. An API was also available for MRLs that wanted to implement the service within an existing and

Multiscreen Content in Motion



Content flow for the The 2014 FIFA World Cup Project, which was designed, implemented and serviced by HBS, host broadcaster of the event.

familiar online environment. So the solution provided both the back end content production and front end – user interfaces – so MRLs could serve their viewing audience with minimal additional effort or cost.

The service

The user applications developed for MRLs included applications for iOS and Android, in phone and tablet versions. It also included an online user interface, which again could be customized by the MRL.

To support these user facilities, the back end had to support multiple live match versions; dedicated mobile and multimedia feeds; additional video on demand clips; multi-angle content; in-match clips; multi-media and text messages; interactive data access; and data visualization.

The great advantage is that all this content was already available in the International Broadcast Centre (IBC) or at the match venue. What was required was a means of managing it all, and providing the processing necessary to create the different formats. For the 2014 World Cup, EVS' C-Cast connected content platform was the managing system, combining live production infrastructure with a flexible central cloud-based platform.

Live streaming - matchcast

The "matchcast" was a combination of the main match coverage – as broadcast – with embedded data, delivered via a live stream or as a file for catch-up viewing. Using this structure, the system was able to deliver six camera angles during live streaming, and as many as 24 angles for on-demand content.

The six live streams included:

- the main match coverage
- coverage focused on team A
- coverage focused on team B
- coverage focused on the star player in team A
- coverage focused on the star player in team B
- the "tactical" channel, including interviews and specialist comment.

Users of the catch-up service could view most of the stadium cameras. When the app was loaded, an interactive camera plan was presented on screen, making it easy for the user to choose the preferred view, and to switch views to follow specific pieces of action.

The technical challenge was to process the high-quality HD video from the servers into the right formats, codecs and wrappers for mobile and online delivery. Over the course of the 64-game tournament, close to 4,000 hours of video content would need to be processed to deliver the best possible quality on whatever platform consumers chose to watch.

Traditional, hardware-based video processing would not have been a practical solution, because the load was very peaky: during and immediately after matches the demand for encoding was massive. For this reason, EVS chose a cloud solution from Elemental to perform the encoding. This ensured the system was able to reliably deliver high quality content within reasonable timeframes.

During live matches, the six live feeds came via EVS XT3 servers and were automatically processed by C-Cast agent contribution encoders and sent as 10Mb/s streams over fiber to the IBC in Rio. From there, they were sent over fiber to Amazon Web Services in Dublin, Ireland, where C-Cast cloud production was hosted.

To provide resilience in the feed to the cloud platform, the signal was fragmented into two-second packets. This provided the most efficient use of the available network, as well as making it practical to retransmit lost packets.

Elemental cloud encoding then generated a bouquet of 10 different bitrate versions, which provided all the required delivery and adaptive bitrate versions. These were distributed to the MRLs that had elected to take the multimedia service via a global CDN.

The Elemental encoding also referenced additional information, and added links to extra dedicated content such as interviews, highlights and archive clips.

Multi-angle content

Drawing on the huge amount of content available at each match – from 34 cameras and slow-motion replays – the best angles, as well as unseen actions, were selected by dedicated operators in the IBC, who had access to all the content transferred from the venues. Selected and approved clips were transferred as 10Mb/s clips into a dedicated storage area,

Johann Schreurs joined EVS in 2011.His focus is to create new products that will enable consumer interactivity. Previously, he worked at Procter & Gamble in the Global Data Client team. He managed global SAP projects implementations. In 2001, he founded Globule Bleu, a communication agency highly specialized in all Internet activities.

Using this platform, the first clips were available within about three minutes of an event taking place, and at least three angles were provided at that time. More assets built up later.

part of the FIFA Max (media asset exchange server) network.

These clips were then transferred, using Aspera over fiber, from Rio to the Amazon S3 storage facility in Dublin for processing. These feeds were processed in the cloud using BrightCove Zencoder, again to produce the 10 different bitrate formats for final delivery.

Using this platform, the first clips were available within about three minutes of an event taking place, and at least three angles were provided at that time. More assets built up later.

Users saw these scenes appear on the timeline of their devices. Using the interactive camera plan, they were able to select the angles to review the action. Ambient audio from the stadium was added to each clip to maintain the excitement.

External analytics, provided by Oris, were imported into C-Cast Central to be displayed on all devices, again providing another way for consumers to engage with the action.

The same platform also provided the path for other, non-match content. These packages included interviews with players, stadium tours and other interest reportage, and highlights shows.

This additional video on demand content was edited in the IBC, delivered to BrightCove Zencoder in the Amazon cloud, and on to the CDN for global distribution.

Record-breaking viewership and engagement

According to content delivery network provider Akamai, more data was streamed from the 2014 World Cup than any other event in history. During the Argentina versus Netherlands match, online demand was such that the peak streaming rate was 6.9 terabytes a second.

Overall, more than 10 million apps were downloaded, and as many as three million users a day chose to enrich their experience through the app. Over the course of the tournament, more than 24 million unique users watched tens of millions of hours of content through the multimedia solutions.

The technology is here for billions of people worldwide to have access to near-live, original and personalized action from a range of live events, satisfying viewers' thirst for innovative, immediate and targeted content. All that is required now is for producers and broadcasters to grasp the creative opportunities and to develop continuing revenue models (think real-time advertising). Ours is a new media reality that has moved far away from a single screen. ■

"The key for CBS and for all the major media companies (is) continue to produce A-quality premiere content, and you will get paid. You'll get paid differently than you do today, but you'll always get paid. Content wins."

–Bill Gates, from "Content is King," 1996

Content is King

An analysis of key trends affecting change in TV programming

By Von Johnson, CEO, MCF Media Solutions

Abstract: Evolutionary changes are affecting the style of programming and TV content. These changes are driven by both cultural and technological shifts and are both broad and profound. This article analyzes key shifts in the areas of the rise of new TV networks and production, the emergence of reality TV, the revival of the big-budget production and the influence of online content on TV.

It's doubtful that Bill Gates knew how explosively and profoundly true this statement would prove to be. If it weren't true, then Roku wouldn't have 700 content channels (adding an average of one per day), ESPN wouldn't garner the heftiest household sub-fees in all of U.S. cable (estimated at $5/sub), American Idol wouldn't be locally formatted in 42 countries, and You Tube's Annoying Orange wouldn't have hit a billion views last January. Incidentally, the latter spawned a video game, a series on Cartoon Network, a range of toys and a clothing line in the span of four years.

An exhaustive review of the broad and profound changes affecting media would be more ambitious than this article strives to address. However, several key trends are worthy of focus: the rise of new TV networks and production, the emergence of reality TV, the revival of the big-budget production and the influence of online content on TV.

New TV networks and growth

New niche networks continue to capture an increasingly fragmented audience. News Corp. recently announced the launch of a third FX-branded channel, for example. FX will continue to cater to 18- to 49-year-old viewers as FXM is expanding its' core movie service to include original programming designed to capture adults 25 to 54. The new network, FXX, will target adults 18 to 34. FX president John Landgraf recently mentioned plans to achieve original programming parity with ABC, NBC, FOX and CBS over the next few years.

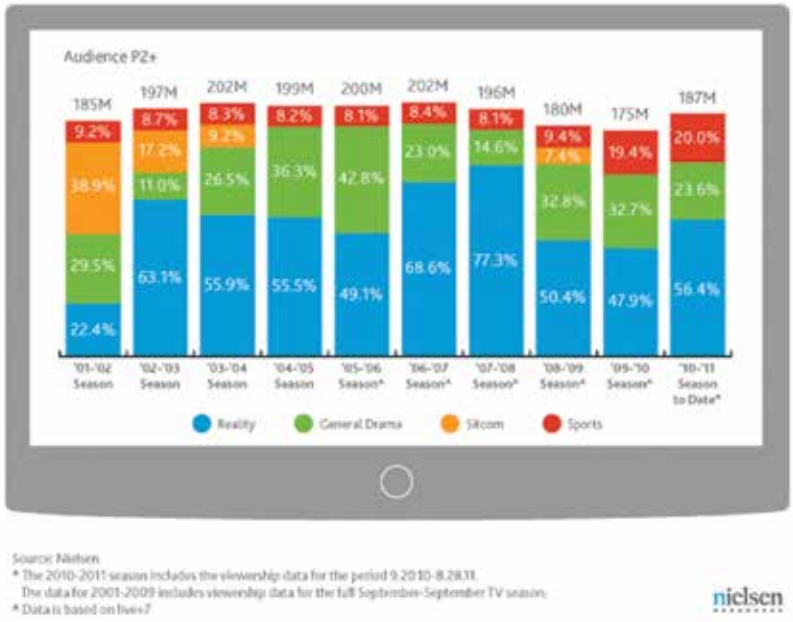
Not all niche networks are successful, however, and News Corp. has made its share of blunders. Recent reboots include the former Speed network becoming Fox Sports 1; Fox Soccer becoming the new FXX network in September 2013; and Fox Reality becoming National Geographic Wild late last year.

There are other new channels popping up that have endemic advertisers, which are specific to the topic. An example is O'Neill surf equipment tied to Xtreme sports. These advertisers can afford to get involved because of the low cost of entry and the efficiency of the ad spend to reach a very targeted audience. These new networks are very vertical and deeply engaged with their target audience.

TV programming today vs. 5 years ago

The chart reveals the top ten prime-time program types on the broadcast networks from 2001 to 2011. Note this analysis does not include programming outside the top ten programs,

Shifting TV Reality



Source: Nielsen
* The 2010-2011 season includes the viewership data for the period 9.2010-8.2831.
The data for 2001-2009 includes viewership data for the full September-September TV season.
* Data is based on live+7

nielsen

A look at the primetime audience and top genres over the past decade.

nor does it consider cable networks or platforms. Taking that handicap into consideration, the chart is useful to sense a number of interesting trends.

- Reality television has consistently captured the largest percentage of the audience watching the top 10 broadcast programs since 2003.
- Eight percent of the top ten programs in prime time 2003 were sporting events, growing to 19.4 percent in 2010 and beyond.
- The audience for scripted drama peaked at 43 percent during 2005-2006 and dropped to 21.6 percent by 2010. Still, scripted drama is a consistent presence in broadcast television's top 10, and since Nielsen did not include cable or OTT networks in the analysis, they may have missed an insightful migration statistic.
- Sitcoms are in short supply among the broadcast top ten. Again, audiences may be getting their laughs elsewhere. *Big Bang Theory*, and *Two and a Half Men* are notable exceptions.

The next chart demonstrates the reliability of traditional broadcast networks to reach a large audience. Note that the most popular cable-based network is ESPN.

Re-emergence of branded series and mini-series

More than 30 U.S. broadcast and cable networks are commissioning original scripted programming. Expensive story-driven television production is attractive because it mirrors feature film tent poles, attracts advertisers, attracts international broadcasters, creates subscriber 'stickiness' and places the networks in a space traditionally reserved for pay television.

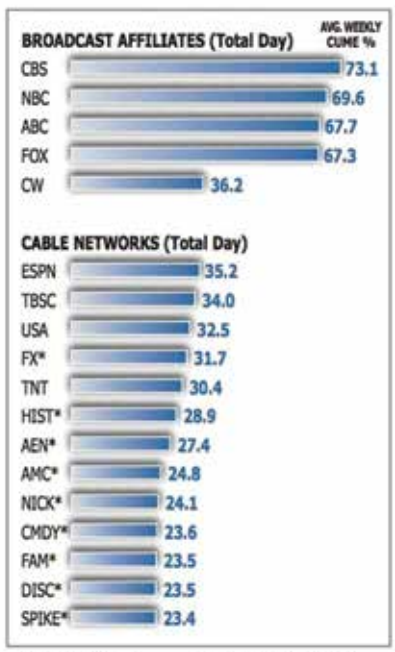
Mini series like *The Bible* and *The Vikings* are perfect for cable budgets because they are essentially document-dramas with very little dialog, rich production values, international scope and stories driven through narration.

Netflix entered the arena with a $100 million investment in *House Of Cards* with Kevin Spacey, a non-commercial serial that's squarely aimed at the $8 per month streaming subscriber who may be attracted to an alternative to HBO. Commercial cable network AMC hit grand slams with *Walking Dead* and *Mad Men*, products that ultimately land on Netflix or Amazon as non-commercial versions.

The traditional networks are looking at mini-series as a way to mitigate live TV events and sports and shore up a slightly eroding reality base. "A lot has changed in the media landscape, and the notion of creating an event that is on for a shorter period of time that really demands attention is exciting," Fox Senior VP-Event Series Shana C. Waterman said in *The Hollywood Reporter* on May 3, 2013.

Moreover, studios continue to lean towards big budget, franchise tent pole theatrical releases and away from adult dramas in the $50-100 million range in an effort to mitigate risk. This creates an opportunity for producers to close that gap on television. "With the kind of movies being made right now, there are a lot of people who have adult drama stories that are harder to get made," said Gina Balian of FX, in the same *THR* story. "Television has become a really attractive place."

Some of the new programming is already underway, including an adaptation of Joel and Ethan Coen's *Fargo*; *Grand Hotel* from Sam Mendes, about a fictional



Source: The Nielsen Company Television Activity Report Vol: 4th Qtr'11 Estimates include Live+7 days
*Cable networks did not telecast during the entire daypart.

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Expensive story-driven television production is attractive because it mirrors feature film tent poles, attracts advertisers, attracts international broadcasters, creates subscriber 'stickiness' and places the networks in a space traditionally reserved for pay television.

terrorist plot in Paris; *Sutton* from Alexander Payne and Michael de Luca, about the infamous U.S. bank robber Willie Sutton; *Mad Dogs* from Shawn Ryan, a black comedy originally seen on British television; and *Mayflower* from Paul Giamatti and Gil Netter, about the Puritan expedition to the New World.

Even Amazon is producing 14 pilot programs through its new Amazon Studios division and letting viewers help decide which programs get the final green light. "We think there is an opportunity to reinvent the process of developing original films and TV shows by getting lots of feedback and input from our customers much earlier in the development process," Bill Carr, Amazon's VP of Music and Video said in a March, 2013 issue of *Businessweek*.

Online content moving to TV

Popular content that started as a videogame is also making its way to TV screens and vice versa.

Case in point is SyFy Network's $40 million dollar series *Defiance* that bowed day and date with a $60 million dollar MMO (Massively Multiplayer Online game) that features the same characters and environments from the series and takes the story in different directions. The success of one doesn't necessarily guarantee success for the other.

On the other hand, Content Media's *Halo 4: Forward Unto Dawn* began as a short form series on YouTube's Machinima network. The series was so successful online that the distributor packaged the episodes and sold them as a feature in DVD, subscriber-based TV and video-on-demand markets.

"This is a slightly new model. *Halo 4* is one of the first properties that we've taken out that first aired on a YouTube-funded channel," Jonathan Ford, Content Media's Executive VP of Television and Digital, said in *Variety* in April, 2013. "This show, which is driven by a strong brand, has helped prove that there is an economic model for entertainment beyond the traditional TV windows."

Amazon Studios division head and former Disney executive Roy Price agrees, telling Associated Press in April, 2013, "Why follow the guru method when you don't have to anymore? The audience is out there, and the audience is interested. We might as well make them a partner in the process." ■

How to Boost Digital Media Revenues

Successful strategies and techniques used by the video game industry

By Charles Tigges, Regional Director for Media, Entertainment, Software, and Online Services, hybris Software / SAP

Abstract: As early entrants into digital entertainment, video game publishers have accumulated nearly 40 years of lessons learned, avoidable mistakes made, and relevant experiences they can share with newer digital entertainment developers. This article suggests innovative monetization strategies originally developed for the games business, and ideas that other media distribution and entertainment players can adapt to their unique segments.

All entertainment producers should be aware of the critical importance of leveraging modern technologies and digital commerce platforms that support the testing of new monetization strategies, not through time-consuming and expensive IT initiatives, but with business tools that empower digital marketers to make informed decisions, and keep offerings real-time and tailored to ever-changing customer demands.

Questions to be answered:

- Can the freemium game model be translated into a customer acquisition tool for other digital entertainment distributors? What can be learned from game developers and publishers about lowering the entry hurdle for digital purchases?
- How can the media industry benefit from the learning around targeted in-game and real-time promotions? Can digital video and television producers follow similar approaches to acquire and retain long-term audience?
- Game publishers are pushing the boundaries of traditional customer loyalty programs with highly granular digital reward systems. How can other media players test such models in their own businesses?

Trials and freemiums

Free trials, freemiums, and subsidized content have subtle yet important differences, and each can be fine-tuned by entertainment producers to optimize audience acquisition. Game publishers encourage buyers with a seamless transition between free play and pay-to-play. In the course of play, an added feature or a game-enhancing tool (a sword or upgraded weapon) can be easily purchased with a single click, offered in a contextual way, such as when a multiplayer battle is about to begin.

Free trials usually have a limited period of use, typically seven days or thirty days, after which a payment must be made to continue. The freemium strategy relies on in-app purchases and other paid premium options. Free versions of multiplayer games are distributed as a starting point in a game and, at some point, players naturally and organically reach a seamless barrier that leads them to spend money. Monetization has been built into the product starting from its design. There may be other forms of monetization along the way, plus a requirement to view a video commercial or static advertisement.

With a freemium, limited use is free, perhaps subsidized by ads, with an enhanced version of the content available for a charge. The advantage of freemiums over free trials is that freemiums provide a seamless conversion from free to paid versions, while free trials are sometimes a little more labor intensive to convert, and may require the customer to make additional software, game, or media downloads.

By hybris estimates, as much as 85 percent of the revenue being booked by mobile game distributors is derived from the trial and freemium markets with upselling and in-app purchases. A few years ago, most games were pay-to-play, but today most mobile games are distributed as freemiums, monetizing as an in-app purchase – and this is where the greatest growth is taking place. Even the video game console companies are making immediate upsell offers to their customers for additional characters, upgraded cars in race games, and expanded pay-to-play options together with their boxed games, like the recently launched Watchdogs by Ubisoft.

For television and films, techniques adapted from gaming can be easily added to the commerce strategy. Perhaps the pilot or first few episodes of a TV series are free, in order to engage viewers and promote viral social sharing. At an appropriate point, when audience interest is piqued, an upsell offer is made – addi-

tional episodes or chances to preview a new release, before it is available to the general public. This concept not only helps increase viewer numbers, but also initiates a direct relationship between content producers and end-consumers, becoming a revenue stream for repeat purchases.

Other video premiums might include digital assets layered on top of a broadcast show, extra celebrity content, or directors' cuts and additional scenes. With IP-based video and IPTV, there could be an upsell offer from a single screen format to a multi-screen promotion that allows users to view a program on a tablet or smartphone. When popular theme music and sound tracks are a part of the mix, added revenues are possible via online music downloads through platforms like iTunes.

Real-time and targeted promotions

Digital technology enables producers to offer real-time and targeted promotions, as game companies have been doing for years. One example of this is Machine Zone's *Game of War*, a multiplayer strategy and fighting game. At specific points during play, there are tailored purchase opportunities. The time required for a player to build a civilization and assemble an army can be shortened by buying virtual gold or game performance "boosts." Users can purchase shields and immunity from attacks, and teleports from one "city" to another, to achieve a strategic advantage. Target offers are made to specific user profiles, or when a specific situation exists during the game. Two or three different packages may be offered at any time, with conversions producing welcomed profits for game developers.

For motion picture and television producers, similar opportunities include promotions targeted to specific profiles, such that frequent movie watchers are offered a premium movie package, or sporting enthusiasts receive special offers for bundled sports packages. This is more difficult in a traditional broadcast environment but, with IP-based video and IPTV, individual viewer profiles can be identified and targeted with relevant promotions or dynamic inserts of contextual video advertisements and direct offers for click-through purchases.

Comcast Cable has already started moving into this area by inserting targeted, dynamic ads into its Xfinity brand of on-demand programming to TV set top boxes, computers, tablets and smartphones, driving the monetization of more content to more devices and consumer touchpoints.

Broadcasters, too, have been looking for new revenue opportunities and alternatives to traditional ads. One new option made possible by modern commerce platforms is for television production companies to create metadata in parallel with content development to identify products, clothing, beverages, vehicles, and other items depicted within the program. These items could be purchased by viewers as they watch an episode. With a state-of-the-art product catalog management system, this opportunity instantly becomes reality for both physical and digital products.

Cross promotions could produce immediate conversions in travel or food shows. When a viewer sees a desirable hotel, restaurant, theme park, or airline in a show, they could click to make a reservation or purchase a ticket in real time. Commodities such as beverages, foods, tech gadgets, and books could also be ordered instantly for home delivery, or pickup from a nearby store.

Anything viewed in a streamed movie could be purchased instantly, provided the product information is encoded in the metadata, and the viewer is linked electronically into a purchase account. hybris has developed a demo used in its software labs that shows a tablet displaying contextual product information and commerce functionality for specific products appearing on TV, sensed through an encoded audio signal.

By leveraging the mature world of multi-channel and omni-commerce used by nearly every large retailer and major manufacturer today, digital entertainment producers can create new revenue streams that generate revenue limited only by the geography of their content distribution and the pocket books of their audience.

Omni-commerce opens the door to any touchpoint, including smartphones, tablets, digital wearables, and kiosks in shopping malls, hotels, transportation hubs, and theme parks. The potential audience scope and reach of entertainment developers has never extended as far and wide as they do today.

Digital reward systems

In gaming, when players log in every day of the week, their digital reward value, known as "VIP Value" grows exponentially over time. People are incentivized to come back and, if they miss a day, they may lose some of their status or be required to purchase additional downloadable content.

The potential of this strategy in other entertainment sectors is an inverted example of the free trial period. As a person visits a movie or TV show site regularly, he or she may be awarded a loyalty bonus, digital reward value points, or some other special status.

Other revenue-enhancing possibilities for entertainment companies exist within loyalty programs, when they deploy tailored websites integrated with an e-commerce engine that senses user "likes" and preferences across social properties.

Those who came before

By learning from the experiences of some of the more seasoned game developers, and adopting modern omni-commerce technologies, entertainment producers can leapfrog more rapidly into creating and implementing mature and effective digital monetization models. Another good strategic step is to partner with a best-of-breed commerce platform developer who enables digital media companies to optimize cross-selling and up-selling opportunities that can be gained from direct relationships between producers and consumer audiences. ■

Charles Tigges is a Regional Director for Media, Entertainment, Software, and Online Services at hybris Software, an SAP Company. He previously worked as a production executive in TV broadcasting, games, and digital services with the BBC and BSkyB, and he holds a masters' degree in media and communications from the University of St. Gallen in Switzerland.

The New Entertainment Bundle—A Victory for Consumers

Cable and satellite face the biggest threat of substitution from Internet TV

By Steven Herrera, Consultant at Zaszou, LLC

Abstract: Consumers are not satisfied with cable/satellite TV because it forces them to pay high prices for large bundles of channels they never watch. Subscription video-on-demand (SVOD) services such as Netflix have become mainstream, but have shifted their focus to original content. Meanwhile, TVs connected to over-the-top (OTT) devices, such as those offered by Roku, allow access to a proliferation of genre-specific streaming services and the creation of custom bundles. What will the new distribution models look like? How will cable and satellite evolve? How will new revenue be generated? What will it all mean to consumers?

The home entertainment industry has been rapidly evolving as long-standing business models—such as cable and satellite television subscriptions, and commercial advertising to mass-audiences—have recently been disrupted by the widespread adoption of Internet video-on-demand (VOD). Changes in technology have caused changes in audience consumption habits. Consumers are increasingly streaming video content from the Internet, not only to computers, but to Internet-enabled TVs and mobile devices. Although linear cable TV and DVRs remain popular with Baby Boomers and Generation Xers, younger generations of "cord cutters" and "cord nevers" increasingly rely on online video for all of their entertainment needs.

In general, consumers are not satisfied with the service offered by cable/satellite providers. They are forced to purchase large bundles of channels they never watch; service blackouts occur when broadcasters and cable/satellite providers fail to reach deals; and prices increase with no corresponding increase in value. Content bundling even came under fire from legislators last summer when Senators John McCain and Richard Blumenthal co-sponsored the Television Consumer Freedom Act of 2013 to force providers to offer channels on an à la carte basis.

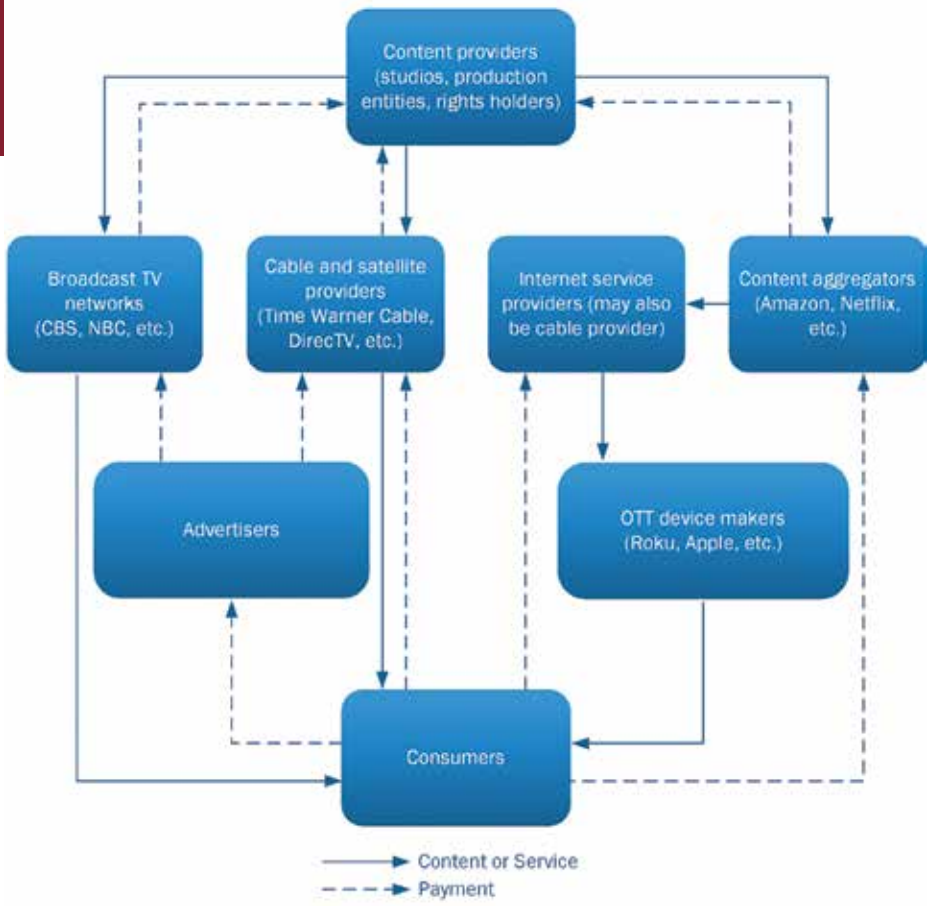
Meanwhile, over-the-top (OTT) consumer electronic devices such as the Roku 3 and Apple TV enable access to numerous streaming services on an à la carte basis. Genre-specific streaming services available through these OTT devices are growing and have managed to attract sizeable audiences. Consumers are starting to demand the ability to build their own custom bundles of genre-based channels relevant to their interests. There is a perfect storm brewing to cause new distribution models to take shape.

Creative forces unleashed

The shift to streaming video is forcing content providers such as film and television studios to revisit their licensing opportunities. They are considering whether to license film and television content to Internet streaming services in addition to, or instead of, traditional cable operators. The issue, of course, is revenue generation and cannibalization of their own owned and operated distribution channels. Right now, content providers still earn a major source of their income from cable and satellite distributors—by a wide margin.

However, in negotiations between con-

The Current Broadcast/Cable/Internet TV Ecosystem



Consumers navigate an increasingly complex web of services to access programming and pricing that appeals to them.

tent providers and cable companies, the tides are turning in favor of the Internet streaming services. As contracts come up for renewal, cable companies looking to reduce their programming costs are giving up the digital rights to content. Content providers are recognizing the value of selling these rights directly into the VOD marketplace. This bodes well for the burgeoning streaming services, which are looking to expand their inventory of rights.

Although Internet streaming services such as Netflix are often looked at as competitors to traditional television networks, the two are actually interdependent: TV networks need to sell streaming rights to VOD services to generate income, and the streaming services need popular content to attract subscribers. The film and television studios could even develop new TV series specifically for video streaming services. The streaming market serves as an outlet for more niche programming, which would otherwise be passed on by the major networks. In the long run, film and TV content providers are carrier-agnostic.

Broadcast television is here to stay

Over-the-air broadcast television seems to be here to stay, even as cable and OTT television evolves. Broadcast TV still maintains its dominance for sports and special events, such as the Academy Awards, the Super Bowl, and Monday Night Football. Over-the-air television is a public service, an important communication system for emergency situations, and a viewing experience that is deeply ingrained in consumers.

How will cable and satellite evolve?

Cable and satellite providers face the biggest threat of substitution from Internet TV. We have seen cable providers explore ways to coexist with Internet streaming to mitigate the risk of cord cutting. For example, Time Warner Cable made its entire lineup of channels available through an app on the Roku box as a convenience for cable subscribers. We've also seen the opposite cross-over between streaming services and cable boxes when Netflix struck a deal to build an app into the set-top boxes of three cable operators: Atlantic Broadband, Grande Communications, and RCN Telecom Services. Most of the companies that provide cable TV also provide Internet service.

In the long run, the major cable providers could go in several directions. They could:

- Counter Internet streaming services by offering their own à la carte business model, or smaller groupings of channels in "skinny bundles."
- Become Internet-only providers.
- Focus on their core strength of providing coverage of live events such as sports and concerts, allowing all other content to exist on Internet TV.

Aggregators refocus

The mainstream subscription VOD services such as Netflix, Amazon, and Hulu have shifted their focus to the development of original programs.

As more of the premium film and TV content providers introduce their own streaming channels, content aggregators like Netflix, Amazon, and Hulu will be threatened.

Steven Herrera is a consultant with Zaszou, LLC. A former systems engineer for Raytheon, he has also held market research positions at Spotlight Pictures and Anchor Bay Entertainment. He has done graduate work in the area of entertainment business.

Consumers are starting to demand the ability to build their own custom bundles of genre-based channels relevant to their interests.

These aggregators could go in several directions. They could:

- Continue to produce unique content to differentiate themselves from each other.
- Give up content licensed from the major studios altogether, becoming standalone streaming channels offering their own brand of entertainment.
- Subdivide themselves into genre-based streaming services to suit the diverse needs of viewers—there are those who like *House of Cards* but don't like *Hemlock Grove,* for example.

ISPs upgrade the plumbing

Internet service providers, which may or may not also provide cable service, probably will not be adversely affected by the shift to Internet TV. As more and more consumers look to OTT services for their video needs, and as Netflix moves to higher resolution 4K streaming, there will be increased data traffic on the network. Internet service providers may have to upgrade the network infrastructure in order to meet the demand for bandwidth and higher quality. However, the cost of these upgrades may not be passed on to consumers, as we have seen Netflix absorb this cost by paying Comcast for this work.

OTT device makers see a new beginning for TV

The OTT streaming function as it exists today as an external add-on to the television is an interim solution. The key to future success will be for device manufacturers such as Roku to integrate their operating systems into new televisions. Just as Windows and Mac are the platforms for computers and iOS and Android are the platforms for mobile, we may soon see consolidation in Internet TV platforms. Roku already has partnerships with TV manufacturers Hisense and TCL to integrate the Roku functionality right into the television.

Streaming media devices may soon completely replace the traditional Time Warner Cable box or AT&T U-verse receiver, as more premium VOD streaming services emerge, and existing TV networks—such as those offering live sports and news—migrate to Internet delivery. Consumers have thus far enjoyed commercial-free content through subscription streaming services and devices, but ads may slowly creep in.

Advertisers reach targeted audiences

Advertisers are attracted to media that can reach large audiences, and they pay for advertising based on CPM rates, or cost per thousand impressions. The larger the reach, the more advertisers pay. Marketers are starting to take notice of the potential of Internet-enabled televisions, but most media buyers still don't know how to purchase video ads for smart TVs or TVs connected to a streaming device such as a Roku box.

Internet TV is in its infancy, but as audiences grow, advertisers will start to catch on, and Internet TV will generate dual-revenue streams—subscriber fees and advertising fees—just like the traditional cable business model. Internet TV will then be a viable platform for more premium content such as live sports from ESPN and cutting-edge series from HBO.

Video streaming also gives advertisers the ability to target ads to individual households. This allows advertisers to spend their budgets more efficiently, eliminating the waste of advertising to mass audiences as with traditional television.

Consumers are in the driver's seat

OTT streaming devices such as the Roku 3, Apple TV, and Amazon Fire TV—which have all reached consensus pricing around $99—allow the user to stream content from the Internet to the living room television. These OTT devices are a one-time purchase, so consumers can avoid paying the leasing fees associated with a cable box. And they provide an improved user experience. Content can be easily discovered with the Roku 3 thanks to a search function that can be controlled with an iOS or Android mobile device, and the Amazon Fire TV even has voice recognition.

Consumers can create their own custom bundles of streaming services to suit their tastes. The Roku box offers over 1,200 streaming channels, some of which are genre-specific and have managed to attract sizable audiences. Today, consumers are using these genre-specific channels as complements to mainstream VOD services such as Netflix.

Full reliance on streaming video services does have drawbacks. There is the lack of access to live sports and a time lag for access to newer season TV series. Also, consumers love "linear" television— it's so easy to just push the Power button and Channel Up or Down to stumble across something familiar and comforting to watch. Technology giants such as Google, Apple, and Amazon may soon simplify Internet TV so that consumers can enjoy watching TV in "lean back" mode—having the right content pushed to them at the end of a long work day—just as with linear television.

The future of television unfolds

TV of the future is a customizable experience, and there are an endless number of possible scenarios that could play out in the next three to five years. OTT video streaming is one alternative to the cable bundle that has gained traction with consumers, but broadcast and cable stakeholders must keep up with new trends in consumption patterns and technology. The entertainment industry has historically been slow to react to technology changes, often taking the wait-and-see approach. Content providers will be wary of creating premium content unless they feel confident of seeing big money. Advertisers won't spend on a new medium until there are big audiences. But, there won't be big audiences unless there is great content. And the new medium is different as it allows better targeting for advertisers. The tides are turning in favor of the consumer and the future of TV is taking shape as more and more stakeholders shift to streaming to address the diverse needs of consumers. ■

Unleash the Power of Privacy to Protect Your Content

Real content security threats lie within the cycle of production and distribution

By David Melnick, Founder and CEO, Weblife Balance

Abstract: As we complete our transformation from an industrial to an information society, we find our personal privacy increasingly appearing in the crosshairs. Content has become the currency of this era, and personal privacy unlocks bthe vault. No matter how much people complain, most of us are willing to sacrifice our personal privacy in the name of content, consumerism and convenience. Those companies that are willing to advocate for individual privacy will catapult their businesses into a category-killing leadership position.

An age-old adage reminds us that hindsight is 20/20. As M&E companies struggle to make sense of dramatic shifts in how they create, manage, distribute and monetize content, there is one question most haven't been able to answer: what can we learn from the mistakes of other industries interrupted by massive digital disruption, and how can we avoid those mistakes in our own?

Driving changes to privacy today are technological evolutions such as the migration of most of our content to the cloud, our constantly tethered state to our device(s) and the explosion of social media, enticing us to live our professional and personal lives out online. The resulting "always-on" and "always-available" ethos that has emerged, coupled with the increasing availability of our personal identifying information (PII) online has forced us to begin re-examining the importance of privacy in our lives.

These changes become increasingly challenging for organizations, as individuals' personal online activity occurs in the workplace or they interact with organizational assets. This employee personal use of the Internet exposes organizations to privacy obligations, cyber threats, and Web use liability. Privacy and security of the workplace network is under increasing distress due to several developing trends.

- Cyber threats are up. Increased experience and training of hackers, both individuals, and state-sponsored, leads to record number of malware incidents causing data breaches, cyber theft and intellectual property losses.2
- 90 percent of fully undetected malware is now delivered via Web-browsing3
- Web use liability losses are up as companies are unwilling to enforce strong acceptable use policies.
- Additionally, inappropriate Web use (e.g., cyber loafing, gambling, or accessing pornography) increases employer liability and costs U.S. businesses $178 billion in lost productivity annually.
- Above it all, CIOs have less control of their corporate networks than ever due to "consumerization" trends which prioritize employee preferences for communications technology access and usage, to the detriment of the control and security of the corporate network.

As lawmakers play catch up with the technological shifts taking place that threaten personal privacy, a groundswell of public awareness is rising that has profound economic, political, civil liberty and security implications. The right to privacy in all spheres of life is pretty solidly protected in Europe, which is leading the way with a revamp of the Data Protection Directive to accommodate modern technology and globalization. But one year after the Edward Snowden revelations about government spying, the U.S. is still struggling to define the scope of personal privacy protection and has only stood up budding, fragile legislation such as the USA Freedom Act. Thankfully, the proposed "Consumer Privacy Bill of Rights" and the recent Supreme Court decision in Riley vs. California foreshadow broader privacy legislation, which may well bleed over into the workplace.

Next generation content protection strategies will need to segment the personal, high-risk Internet use that individuals expect from the content development and distribution-related activities they are performing every day.

Meanwhile, evidence abounds that while consumers pay lip service to caring about protecting their online privacy, they are willing to sign away their rights in the name of consumerism and convenience. In fact, the 2014 EMC Privacy Index surveyed 15,000 people in 15 countries to produce a ranking of nations based on consumer perceptions and attitudes about data privacy, and their willingness to trade privacy for greater convenience and benefits online. In the U.S., 56 percent of respondents (51 percent globally) indicated they are willing to trade their online privacy for convenience. The Index revealed that privacy is a complex issue, with consumers indicating they want the benefits of technology without having to sacrifice any of their privacy. They expect the government, the companies they do business with and the vendors they buy from to take responsibility for protecting their privacy.

This is nowhere more evident than in the entertainment industry. As part of its digital makeover, executives are working feverishly to distribute digital content efficiently and economically. They are having to adapt to this new reality in order to meet consumer demands for unfettered, convenient access to the content they love. These dramatic changes are also forcing industry executives to deal with unprecedented technological and policy issues that go well beyond the traditional scope of the business, including cyber security, individual privacy, content piracy, and illegal distribution.

While they're experimenting with ways to monetize content distribution in the information era, it's essential that entertainment executives acknowledge that cyber threats pose a strategic risk to their content and therefore the lifeline of their business.

Addressing content protection

Content is the currency upon which entertainment companies build their business, and protecting that content is essential to growing the bottom line. But as most understand, the real threats lie within the lifecycle of production and distribution, not with the consumer. The contractors and employees, so critical to developing the content also accidentally, and in some cases even intentionally, cause content loss.

For example, according to a Symantec and the Ponemon Institute white paper titled "What's Yours Is Mine – How Employees Are Putting Your Intellectual Property at Risk", employees are moving IP outside the company in all directions. Over half of 3,317 respondents admitted to emailing business documents from their workplace to their personal email accounts, and 41 percent said they do it at least once a week. Forty-one percent also said they download IP to their personally-owned tablets or smartphones, leaving confidential information even more vulnerable as it leaves corporate-owned devices. In addition, over half of respondents do not believe that using competitive data taken from a previous employer is a crime.

Some content protection strategies in the development and distribution process advocate shutting down all access to the Internet for employees and contractors, but that approach just stifles the creative need to access the Internet to develop the content. The reality is that employees and contractors both need to access the content and also access the public Internet that simultaneously gives rise to our growing cyber threats. We need an approach that accepts and manages the risk of that new reality.

The next generation content protection strategies will need to segment the personal, high-risk Internet use that individuals expect from the content development- and distribution-related activities they are performing every day. Providing a personal portal for employees to use for personal Web use is one way to protect your network and information assets from any dangerous online activity employees may engage in.

The future of privacy in entertainment

A decade from now, the global privacy landscape will look dramatically different, and it will continue to shape the way the entertainment industry interacts with individuals. Computing technologies will increasingly be integrated into our private person, giving people more intuitive, inherent ways to access content 24-7, whether at work or at home, putting increasing pressure on executives to find innovative ways to develop and deliver that content securely. Meanwhile, content storage and distribution services will occur exclusively in the cloud.

From a legal standpoint, laws will evolve to interpret the Fourth Amendment as providing individuals a right to privacy, even in the workplace, as an inalienable right. In parallel, consumers will begin to appreciate the privacy rights they are forfeiting and become less willing to compromise them. As the natural consequences of sharing personal information online become more commonplace, individuals will stop pawning responsibility for their personal privacy off on others and will become proactive and engaged in protecting it fiercely as contractors and employees.

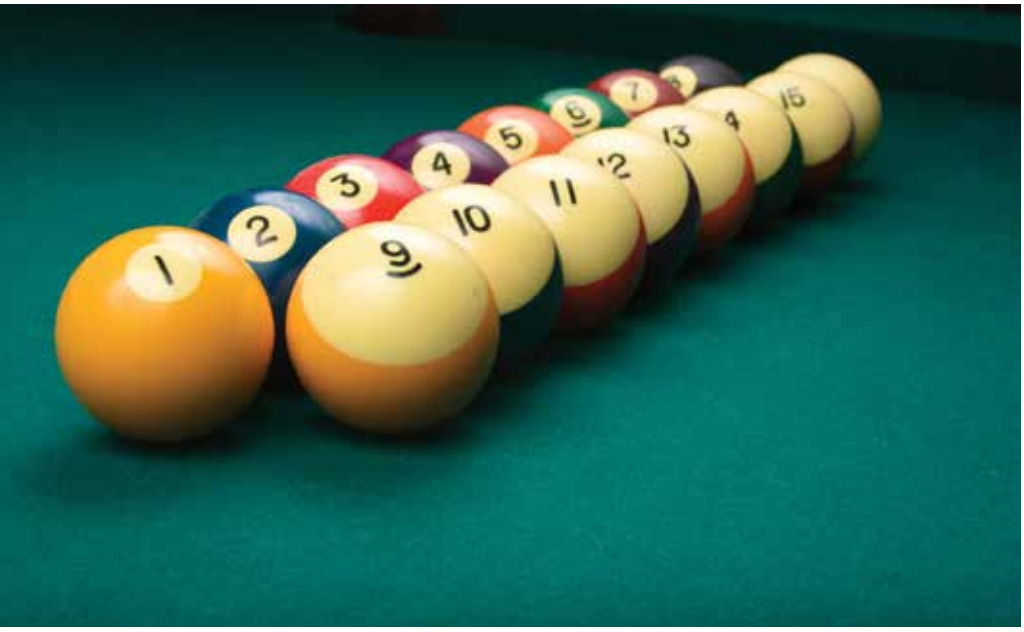
Thankfully, entertainment executives do NOT have to choose between the security of their content or their contactors and employees' privacy. Those that want to be successful should take a leadership role in the privacy debate and develop a long-term content protection strategy that makes privacy protection a core competency and a set of practices that actually enhance content protection, benefiting the business and the creative individuals that the business relies upon to thrive. ■

David Melnick has almost 25 years' experience in technology and security. He has worked extensively with both U.S. and global companies advising them on setting strategy, developing risk-based priorities, and operationalizing effective governance of highly sensitive and regulated data. Melnick has authored several books, including PDA Security: Incorporating Handhelds into your Enterprise.

Bringing Order to Digital Identifiers

The case for streamlining with EIDR

By Richard Kroon, Director of Engineering, Entertainment IDentifier Registry (EIDR)



Abstract: M&E workflows are increasingly complex and revenue is derived from increasing numbers of lower-value transactions. Anything that can reduce costs, increase supply chain velocity, or put organizations in a position to respond quickly to new threats and opportunities is worthy of consideration. Common use of EIDR as a globally unique, persistent identifier will accrue multiple benefits throughout the media & entertainment ecosystem at multiple points within every product supply chain.

During the Studio Era, there was no need for the sort of durable, globally unique audiovisual works identification provided by EIDR. At that time, vertically integrated monopolies exercised complete control over production, distribution, and exhibition and there were no ancillary markets. Then came television, the break-up of the Hollywood studios, the rise of independents, home video, and the Internet. Now it is impossible to imagine an audiovisual work that does not pass through multiple hands and that is not viewed in multiple media and innumerable places over a long span of time. Whenever two or more parties must communicate about a common work or cooperate on a single project, they must first find common ground.

Traditionally, companies communicated by exchanging descriptive metadata along with any contract, asset, or transaction and then relied on manual labor to match everything together. Sadly, communicating parties do not always agree on what these descriptive data are or how they are structured – even titles may differ, especially when abbreviated to fit within arbitrary space limitations. Thus, record matching has been a long-standing challenge and remains an ongoing expense. The process can be improved significantly if the two parties agree on a single identifier for each project or asset. However, this is a point-to-point solution and the number of identifiers expands geometrically with the number of parties involved. Worse yet, since title management and other workflow support systems are not particularly flexible, there is often no place to record these point-to-point identifiers in each party's workflow support systems, so they reside off to the side, requiring manual effort to re-link them at every touch point.

Providers of niche solutions – aggregated metadata, digital distribution, television guides, performance results, etc. – often provide their own identifiers, requiring their customers to track these external identifiers in addition to their internal identifiers and all the point-to-point identifiers they developed with their close partners. In most companies, there is no one place where all of these identifiers are stored, leading to a complex structure of inter- and dis-connected Towers of Babel with occasional isolated silos of common understanding. So now, instead of just manually matching different bits of metadata in the hopes of keeping product flowing through the supply chain, people are also called upon to match and manage different identifiers that facilitate brief spurts of automation within a product's years-long lifecycle. This works, after a fashion, so long as margins remain high and transactional volumes remain steady.

Metadata Enrichment for Content Discovery

However, market fragmentation, the disintegration of discrete release windows, and the myriad options encompassed within digital delivery mean that the status quo cannot be maintained.

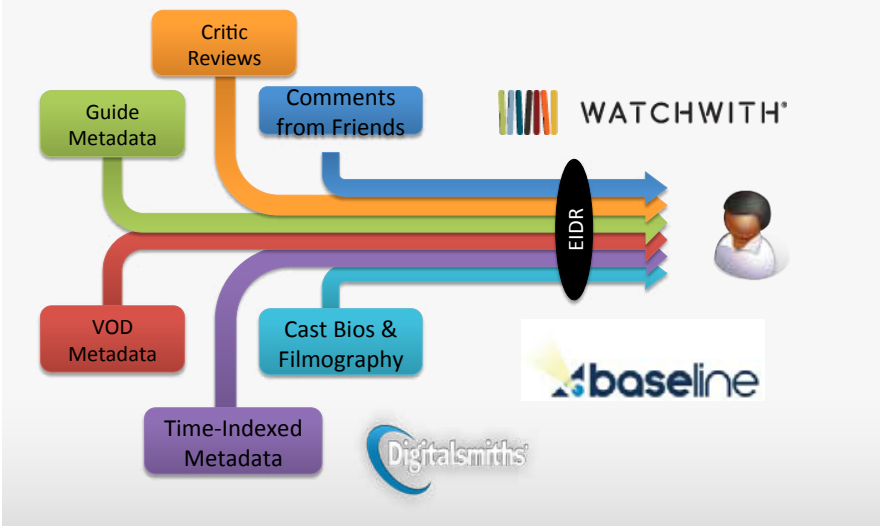
The promise of alternate IDs

The universal adoption of EIDR will help solve these communication and matching problems. Companies will continue to use internal identifiers for their own purposes, but EIDR will be the lingua franca that facilitates all multi-party transactions. Until that glorious day, real-world transactions will remain dependent on some indeterminate number of identifiers, generated by different parties for various purposes.

For example, in an eight-party ecosystem, there could be up to 28 different point-to-point identifiers per asset. One hopes that the party generating the point-to-point identifier would already have that ID stored in their internal systems, but everyone else will certainly have to match the external IDs to their internal systems. That means there would be 21 different ID matching efforts across the eight parties for each asset. If each party used EIDR as their external identifier, there would only be eight ID matches necessary – a system-wide savings of at least 13 matching efforts per asset. (Recall that the same asset ID may need to be matched multiple times if it is not tracked in all of the necessary internal systems.)

The labor savings of moving from metadata-based matching to ID-based matching is significantly greater than even this, since metadata-based matching does not lend itself well to automation and must be repeated every time there is an interaction between the parties, which could be a dozen or more times per asset per distribution partner in a digital distribution workflow. (See the Winter 2013-14 *M&E Journal* for a case study showing the labor savings of moving from manual matching at each touch point in a two-party digital distribution workflow to an EIDR ID-enabled process.)

The next best thing to using an EIDR ID for all multi-party communications is using the EIDR alternate identifier repository (containing studio internal IDs, IMDb IDs, BFI IDs, ISANs, Rotten Tomatoes IDs, Netflix IDs, etc.) to facilitate the translation from an ID one party possesses to a different ID that another party requires. In a simple example, where Party A has an EIDR ID but would like to communicate with Party B who does not (say, a distributor wishing to purchase enhanced descriptive information from a metadata aggregator), Party A may be able to use EIDR to find Party B's proprietary identifier and avoid the need for manual matching or the tracking of yet another point-to-point ID. In a more complex example, neither party has yet mapped their internal systems to EIDR, but may find that they each possess IDs associated with the same EIDR record, allowing EIDR to act as the translator between them.



Each EIDR record can carry an unlimited number of matched alternate identifiers.

It's the data, stupid

To paraphrase James Carville c. 1992, as far as the business side of the media & entertainment industry is concerned, "It's the (meta)data, stupid." Every business transaction requires an exchange of data. This could be data about an item offered for sale to consumers, television guide data, performance data, etc. In some cases, the data document and facilitate the transaction, as with B-to-B sales. In other cases, the data are the focus of the transaction, as when one buys enhanced descriptive metadata or audience ratings information. However they arrive and for whatever reason they were generated, the receiving party cannot make use of the provided data until they are tied to the receiver's internal records. The fastest, cheapest, and most reliable method for doing this is via a globally unique, shared ID, such as EIDR. The next best solution is by translating the IDs each party already possesses via a common point of reference--namely, the EIDR alternate identifier repository.

Proper identification via a shared identifier or alternate ID translation can deliver significant cost savings and can help make an organization sufficiently nimble to take advantage of new revenue opportunities as they present themselves. These alternate IDs come from a variety of sources. Vendors often store a studio's internal ID when prepping a deliverable, making that a possible pivot point for future transactions. Data aggregators and digital retailers, such as IMDb, Baseline, and Amazon, often publish their IDs along with their data, making the IDs a valuable tool for multi-party identification exchange. Local acquisitions may arrive with a potpourri of

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identifiers, making it difficult to link them with other corporate records.

It is also possible to use the EIDR registration hierarchy to move from one identified asset to a related asset elsewhere in the tree – such as from a transcode to the abstract work or from one edit to another. In these cases, the assets do not technically share a common ID in any reference system, but are still associated with one another via unambiguous links in the EIDR registry.

For example, before greenlighting a theatrical motion picture project, one studio will review competitive data showing the past performance of similar works. The collected data cover theatrical performance, cable TV, broadcast TV, VOD (pay-per-view, subscription based, Internet-delivered), electronic sell through, physical media sales, etc. across multiple markets worldwide. No one data provider covers all of these channels in all of these territories, so the studio must collect and aggregate data from more than 25 different sources – per title – to develop a complete picture of the competitive landscape. Only then can an informed business decision be made.

In another example, there is a studio that does not have room to store an extensive list of third party IDs in its master title system. Instead, it has a hyperlink to each title's record in the EIDR Web UI. By clicking on that link, the studio's users suddenly have access to hyperlinks to a variety of Internet-searchable data sources including BFI, IMDb, ISAN, Rotten Tomatoes, and IVA, and retailers such as Amazon and Netflix. They can also access pre-matched internal IDs to obtain data from commercial aggregators including Baseline, Red Bee, Veronica Publishing, and West 10. The studio's staff can use these resources to verify how their works are being presented to the public and to augment their descriptive offers in B-to-B or B-to-C avails.

Another studio regularly engages in joint ventures for foreign distribution of their produced content. They provide descriptive and business metadata to their JV partner, who must then incorporate the affected works into their internal master title system – or match them to existing records if they are already there from a prior deal. When the JV partner returns performance data to the originating studio, they must be re-mapped into the recipients' data systems. These data exchanges cannot be automated as they stand. If both of the JV partners had EIDR IDs for all of their titles, this process could run lights-out. Failing that, they could use EIDR to transform separately known IDs into an exchangeable ID. It is not as convenient as using an EIDR ID directly, but it is still an improvement over repeated manual title matching.

Having the ability to translate one ID into another as an intermediate stage helps organizations reap immediate benefits while they work towards full EIDR integration. Other areas of potential cost savings or revenue enhancement include:

- Elimination of organizational redundancies
- Procurement consolidation
- Easier satisfaction of compliance requirements
- Increased supply chain velocity
- The ability to quickly explore new revenue opportunities
- Improvements in the consumer second screen experience
- Collecting money you are already owed
- Paying what you owe with less effort and greater accuracy

World harmony through shared identification

Every business transaction is driven by data, and every set of data is linked by some common point of reference. If we still lived in the 1940s at the pinnacle of the Studio System, the status quo would serve just fine. But we do not, and it does not. Workflows are increasingly complex and revenue is derived from increasing numbers of lower-value transactions. Anything that can reduce costs, increase supply chain velocity, or put organizations in a position to respond quickly to new threats and opportunities is worthy of consideration. Something that can do all three, is not a commercial advantage, it is a survival necessity. Common use of EIDR as a globally unique, persistent identifier will accrue multiple benefits throughout the media & entertainment ecosystem at multiple points within every product supply chain. Until that day, the EIDR alternate ID repository can be used to break down the Towers of Babel that have grown up around point-to-point and proprietary identifiers, allowing organizations to realize these future benefits today. ■

Alternate IDs in the EIDR Registry

- Amazon ASIN
- Baseline
- BBC
- BFI
- BUFVC
- Canal+
- Disney Studio ID
- Fox Studio ID
- Gifford
- IMDb
- ISAN
- ITV
- IVA (Video Detective)
- Flixster (Rotten Tomatoes)
- NBCUniversal Studio ID
- Netflix
- Red Bee
- Sony Studio ID
- TheCinemaSource
- Veronica Publishing
- Warner Bros. Studio ID
- West10

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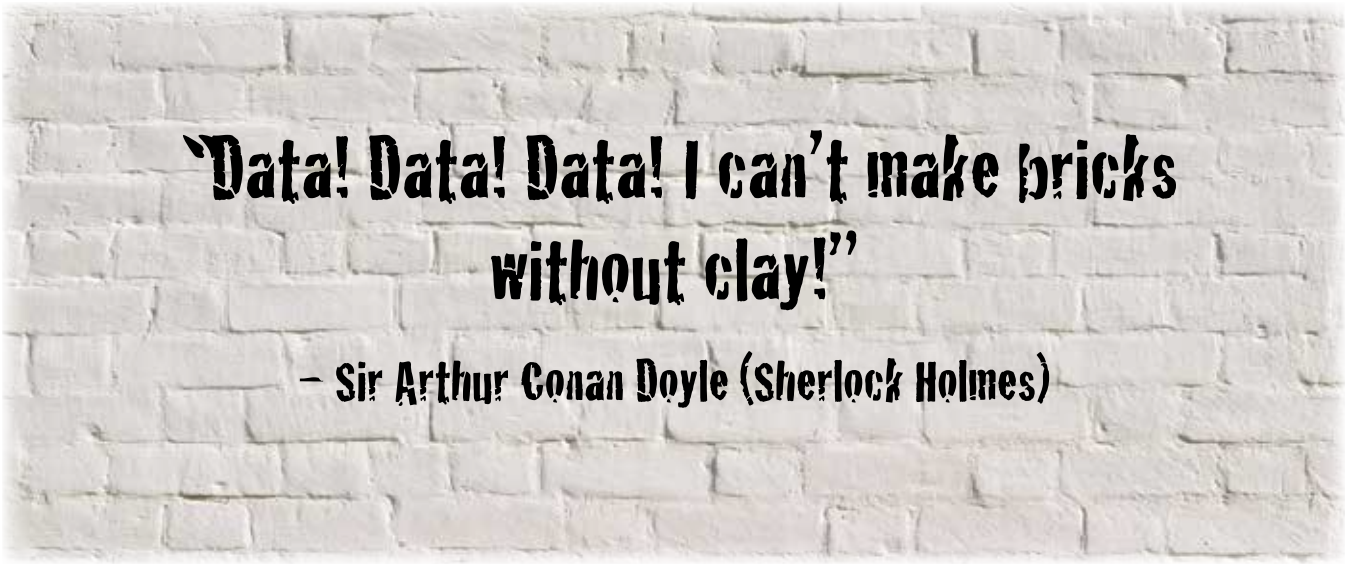
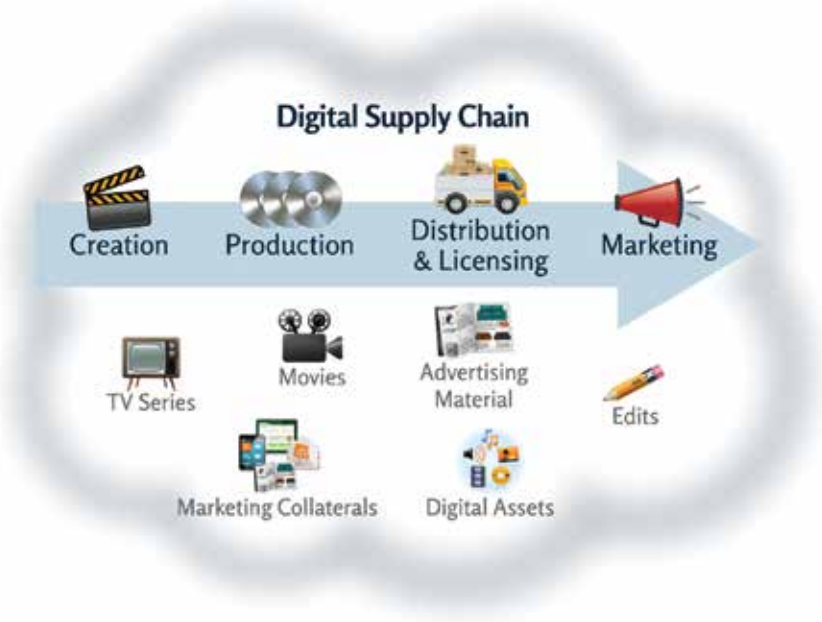
Using MDM for Mastering Data in the New Digital World



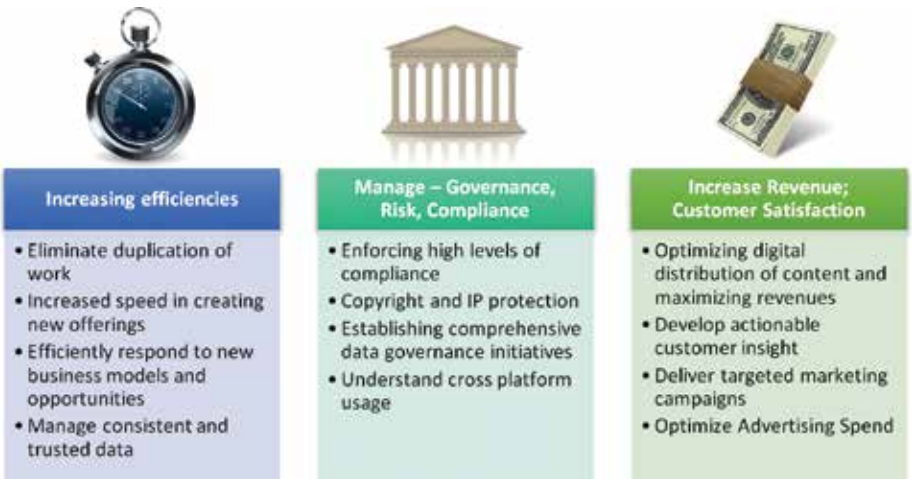
By Ninad Raikar, Director Strategic Solution Alliances, Riversand Technologies

Abstract: As the media and entertainment industry goes through disruptive changes with the dynamic digital supply chain, managing data effectively and building a next generation data driven technology infrastructure is critical to success.



In today's new digital world, media and entertainment companies are continually changing their operating models to create a better digital experience for consumers. Content is being accessed by consumers across multiple channels and devices. By 2018, two-thirds of the revenue growth in the media industry will be through digital sources. For industry players to adapt to the disruptive invasion of the digital supply chain, they must first manage their data. They will have to transform themselves to be truly data-driven. This will involve investing in people, processes and taking their technology infrastructure to the next level.

According to PwC's Global Entertainment and Media Outlook, by 2018 two-thirds of revenue growth from consumers and advertising will be digital. That means that of the $241 billion growth in total US media consumer and advertising revenue from 2013 to 2018, $157 billion will come from digital sources. Two of the best-performing consumer subsegments use a model where consumers pay for around-the-clock access: digital music streaming, where revenue will grow



Benefits of MDM

at a 13.4 percent CAGR, and electronic home video OTT/streaming, set to rise at a 28.1 percent CAGR. The success for media and entertainment companies over the next five years will be based on how well they adapt to the digital environment and how effectively they can monetize the digital consumer.

Fragmentation of information

Digital media is causing a disruption to conventional means of publishing, distribution, and consumption of content. Fragmentation of titles, edits, movies, and other IP related information across the digital supply chain can cause inefficient processes and duplication of information. Lack of a single source of truth and golden record for title information will make it increasingly difficult for companies to enforce copyright and IP protection across multiple channels.

It has been nearly 75 years since the studios have had to deal with technology changing their platform and distribution channels. Now, consumers are expecting products at the click of a button. It is important for organizations to create, manage, market and distribute content at extremely fast speeds compared to traditional cycles.

As distribution channels keep expanding, consumers are getting more information savvy. There is an increasing need to store more and more information around title data – not only the basic title information, but information specific to the consuming channels as well as metadata for the titles. Information is also critical to gain an accurate view of the activities and performance of a title across multiple channels.

How would mastering title information help?

Managing title data across the digital supply chain and facilitation of the information flow is imperative to success. Master Data Management (MDM) tools and technologies help companies with streamlining their title data, creating a single source of truth across multiple channels and managing consistent and trusted data across the enterprise.

To have a truly successful MDM implementation, it is important to ensure that not only that the right tool is selected, but also that the processes and infrastructure necessary to support the MDM tool are in place. Organizations typically take a step-by-step approach to their MDM initiatives. This can help organizations to socialize the changes in process required by MDM in a gradual fashion to achieve maximum effectiveness.

Consolidation

The first step is to consolidate the data across multiple systems and create a single source of truth with a golden record. This will help streamline the process of collection and distribution of data, creating a quick win for the MDM initiative. The selected MDM software should have robust data modeling, workflow and integration capabilities. Identifying duplicates, merging data across sources and measuring data quality related functionalities in the tool can be very helpful through this phase.

Governance

Once data is consolidated into a single MDM system, organizations can start building advanced governance, analytics and decision making on top of their master data. Enterprise-wide information performance indicators can be built to ensure accurate and complete data. This will help build better analytics and decision making processes. The MDM software used should have strong data quality management, governance and reporting functionality to best support this phase.

Build intelligence

To be truly data-driven, organizations should be able to create insights and build intelligence to depict a model and predict future offerings. Title data can be connected to consumer, social and other channel data to create a 360 degree view. This will help organizations achieve a complete view of their title information and derive insights into consumer behavior. The MDM software should not only be able to manage title information, but also be able to manage the relationships with consumer and channel based data.

In the end, organizations that can efficiently manage their master data and harness the intelligence gained from easy-access to consistent, accurate information will certainly thrive during the dynamic digital era. ■

Ninad Raikar is responsible for managing strategic solutions for the Media and Entertainment industry at Riversand. Prior to this role he was also involved in developing Riversand product strategy and product management. His past experience involves working as an Architect for Accenture and Tata Consulting Services.

A New Age of Innovation for the Entertainment Industry

A complete digital media supply chain will help control production costs and spur innovation

By Charles Matheson, Industry Strategist Media & Entertainment, OpenText

Abstract: Media companies are at the forefront of the digital transformation. Information technology has been a critical tool in realizing this transformation, but all of this effort has created a parallel IT organization within media companies separate and distinct from the business IT unit. The imperative for media companies today is integration of their existing production workflows with their enterprise business systems to create a true digital media supply chain.

Media and entertainment companies are dealing with transformational changes in how they manage and distribute digital assets. The business is changing its production workflows and distribution systems to accommodate digital files and create new products. All are looking to understand and leverage new technological innovations like 4K Ultra HD workflows, social media forecasting, physical and digital bridged platforms, and UltraViolet. At the same time, new models for content localization, cloud-based storage and production solutions, and omni-channel distribution are disrupting established digital media workflows. In this digital age of entertainment, companies are now looking ahead for better ways to sell and serve their customers. In the word cloud above are some of the basic components they will need to drive innovation in the coming years.

No DAM can contain it

Every media company needs a Digital Asset Management system to keep track of its digital files, establish workflows and, through automation, control the time it takes to create content. Every large media enterprise will have several DAM platforms spread across multiple departments and it's not uncommon for some departments to have several DAM systems, each for a specific task in the overall production workflow. An enterprise class DAM system can simplify this complexity by aggregating content and establishing a standard interface, but the realities of digital production create a real life situation where no single DAM system can hold all the content being created—and more digital media is being created every day. More importantly, DAM systems as a rule are not integrated with real time pricing, rights or customer data so the creation, management and distribution of media projects takes place without this critical information.

Orchestrate the process

Every production system or platform has a workflow engine specific to the tasks the system is designed to perform, and capabilities contained within a software platform can be impressive. Media workflows require something more universal, however. Over the years the enterprise services bus (ESB) has been assigned the "traffic cop" task of linking together different production systems and managing the order in which jobs are assigned and managed. But the ESB needs a lot of help. Business process management (BPM) acts as a conductor for the assemblage of software tools and

platforms that form the total production environment – including back office business systems. Using BPM software, a true end-to-end workflow can be created and executed linking diverse production platforms and leveraging the embedded workflows contained in those systems. If the BPM software is well designed it will take into account both mapped out, straight-through processes and case- or project-specific processes, as both types of business process occur in media production workflows.

Federate content repositories

Though DAM systems are essential to digital media management, they are only part of the content story in a fully realized digital media supply chain. Along with multiple DAM systems, all enterprises will have a number of other content systems for holding related documents and contracts that should be integrated into the whole. In addition, many "creative professionals" will simply ignore DAM systems and store content on file servers or personal hard drives until the artwork is finished. Aggregating this digital content, even if only in a virtual manner, and linking together related media is important to making the digital media supply chain function properly. If a producer or creative lead doesn't know what digital assets exist, or where they are stored, or if the latest version is available, the entire production process gets bogged down in repeated searches and validation procedures. Having a platform that can search, access and move content from multiple DAM systems/content repositories—including SharePoint servers, file servers and hard drives—is essential to making the digital media supply chain work.

Manage tiered storage

Storage requirements at media companies have grown at an astonishing rate as file sizes of digital media increase. How to manage the mountain of data that is now the daily creation of a media enterprise is top of mind for almost all CTOs who write the checks for storage infrastructure. Media companies need to implement a multi-tiered storage infrastructure that allows digital files to be stored on fast disk, object storage and archival tape, but the management of that storage infrastructure should be done through enterprise software. Files sizes are so large that they need to be stored on tape and moved to fast disk for editing, color correction, quality control, etc. A media management system needs to give users insight on file location, transfer time and playout speed. The disconnect between the digital workflow, metadata and actual "real life" file that makes the product is an often overlooked reality of vendors promising to manage metadata disconnected from the actual data. The best DAM platforms manage metadata and proxies but also extend seamlessly into the vast pool of storage to manage the master file itself.

Leverage the power of the cloud

The cloud is probably the most appropriately named IT term since the days of "client/server" and the amorphous, opaque and stratospheric qualities of the name make it malleable, mysterious and distant, but let's bring it down to earth. Outsourcing IT infrastructure can be cost effective as long as the production IT group has control and is not locked in to a proprietary platform that they can never leave. Since most media companies already have a substantial investment in enterprise software, finding a cloud provider that can integrate with and leverage that investment is preferable to starting from scratch. Many CFOs like the capex vs. opex financial rational for cloud deployment, but in the digital media supply chain a more strategic assessment needs to be employed when deciding what the cloud can and cannot do. A hybrid cloud environment that mirrors, or at least integrates with, the on-premises systems that make up the current digital media supply chain will save time and money over the long run and give administrators direct control over cloud-based applications.

Distribute to all your customers

The traditional forms of content distribution are being displaced or superseded by the networked world and new mediums for consumption of content. Some media segments have felt the sting of this new paradigm sooner and more dramatically than others, but the rate of change is accelerating and all media companies will be forced to change or loose market share. Distribution of numerous file types over multiple networks to an unknown universe of display devices is a daunting business requirement and uncharted territory for media firms that, for most of their history, had tight control over content format and distribution. There is no way to meet this challenge by "throwing more people at it" – the only way to effectively distribute content to business associates, retailers or direct to consumers is through software automation.

Manage your creative community

The creative process for making media is a social process requiring the participation of numerous collaborators. The digital media supply chain should exploit the power of social networking technology to bring teams together, both inside and outside the organization. An integrated social media platform can provide instruction and quick answers to common problems with the numerous systems that make up the digital media supply chain. Properly implemented, the social media platform will allow for media companies to acquire new content from creator/consumers outside the traditional production process. It also allows media companies to get real time feedback from vendors, partners and customers in a controlled environment.

For the future, a complete digital media supply chain from inception of a project through creation, management, distribution and transaction will help to not only control production costs, but to also spur innovation. ■

Charles Matheson has more than 25 years of experience working for and with companies in the M&E industry. For 10 years he was a digital media specialist for IBM. He also created the digital media strategy for EMC Corp's Cloud Infrastructure Group. He has developed innovative IT solutions for The New York Times, ABC Television Network, Ogilvy & Mather, Pearson PLC, The Walt Disney Company and Warner Bros.

The Personalization of Business Management Systems for Today's Global Enterprise

Modern facility management systems must be organic extensions of your production platform

By Greg Dolan, COO, Xytech

Abstract: In a global marketplace where content creators and distributors are increasingly challenged to produce a wide variety of formats, business and content management processes are more important than ever. While many companies focus on the individual pieces of the content creation and distribution cycles, very little attention is paid to the business systems driving them. Today, a successful company needs to effectively merge the business management process with the automation process to create a holistic management and operational strategy for the entire enterprise.

Historically, facility management solutions were monolithic systems unable to meld easily with the needs of individual users, adapt to a global marketplace or modify core workflows on an as needed basis. They focused on a legacy business model filled with appointment-based schedules and permanent staff management. Linear approaches to automated billing rates, the lack of interface to other systems in the enterprise, and the inability to create an integrated network of all participants in the supply chain left these dated systems unable to cope with today's challenges and completely inappropriate as platforms for change.

Beware the buggy whip

Essentially, those traditional systems equate to well-intentioned buggy whips in the space age. The introduction of ad hoc management practices, the velocity of metadata, and the downward pressure placed on pricing have made redundant data entry and inefficient workflows more than an inconvenience. They are a potential death knell for a business of any size.

Not all that long ago, a media business could thrive while making employees bend to the will of their IT systems, and the idea of servicing a worldwide clientele was patently absurd. Then the global explosion of formats and distribution channels set the previous paradigm on its ear. In many cases, however, business systems have continued to just chug along; blissfully unaware of the radically different market conditions their users confronted.

Businesses can little afford the inefficiencies inherent in these legacy systems. Facility management systems must be organic extensions of the production platform, and they must conform to the global marketplace, as well as to the personalized needs of individual users.

The dawn of the open system

I've been to dozens of technical conferences over the years, and I'm always surprised to find order management left out of any serious discussion of overall automation. At the end of the day, somebody has to request the content being consumed, do they not? Doesn't it make sense to begin the automation process with the actual order? You'd be amazed at the error rate introduced by human mistakes in the translation process of order to workflow. I believe the reason for this omission isn't a lack of understanding, but rather exhaustion brought on by watching traditional business systems try to operate in the current world with yesterday's technology. With so many other challenges to address, wading into the quagmire of management software no doubt seemed a poor use of valuable time.

Now with (semi-)solid interface protocols and componentized design, new facility management systems are on the market and well positioned to meet today's challenges without impeding the ability to adapt to rapid change. There are several keys to a modern system.

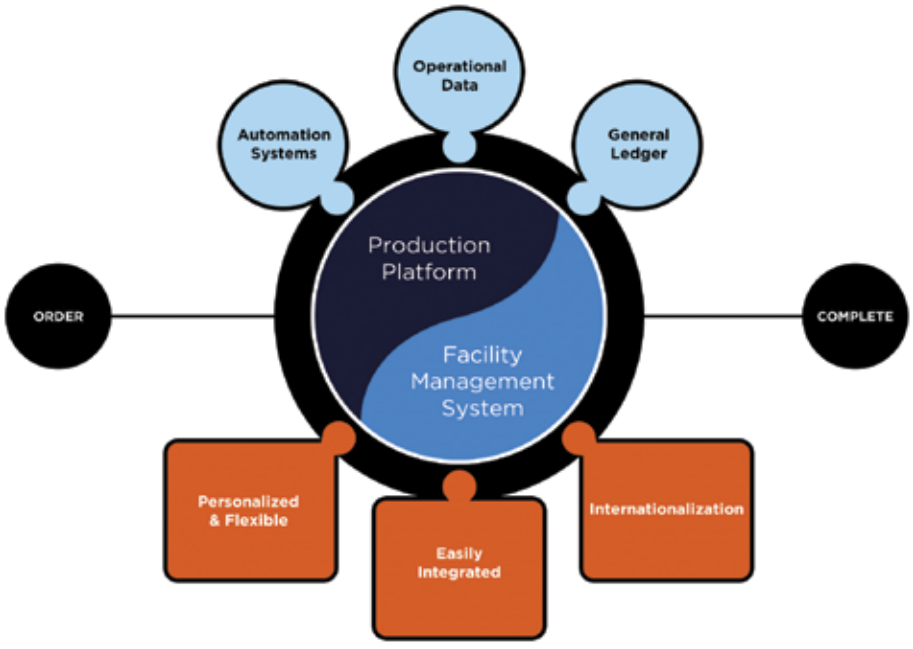
First is personalization. The functions of a system at large, as well as an individual user, are now easily tailored to need. This is made possible by system design based around a development platform where the interfaces are modifiable extensions of the platform itself. A successful system will easily create separate user interfaces for administrative staff, operational crews, management and file management. These interfaces can be modified without going back to the vendor and can now walk a user through the process outlined by management in a logical and elegant manner, as opposed to training staff how to work around a system's shortcomings.

Secondly, interfaces to all systems in a company's workflow are even more important. To achieve seamless integration, APIs cannot be bolted on to legacy systems. Systems must have a componentized architecture and use automated workflows to trigger data movement and transformation functions. For instance, a vendor may use an internal workflow engine as part of its core offering. In this case, triggering events are created and launch workflows populated with data payloads through a translation phase, where data is converted to the target format. By using this model, integrations are not singularities but ongoing, configurable features of a platform.

Thirdly, internationalization is a key component of a modern Facility Management System. Multilingual and multi-currency features are great starts. Federation of schedules, master data, asset repositories, orders information and purchase order information is key to today's business world.

The true path of data is no longer inside a system or even across a platform. Data paths now flow amongst systems. A purchase order in one system can set up a work order in another. The movement of an asset in one storage system is now radiated to multiple business systems. This structure allows the supply chain to evolve from something a manufacturer runs to a matrix of systems all participants in the ecosystem leverage. To do this successfully, taxonomy maps, multilingual user interfaces and on the fly currency conversion are required.

Three Keys to a Modern Facility Management System



Conclusion

With ever shrinking margins and the continuing commoditization of technology, a strong production platform is mandatory to manage the sheer velocity of content. Tighter budgets demand that businesses wring efficiencies out of every system at their disposal, and the days of looking at a facility management system as simply the "house calculator" are long gone. While systems traditionally played a key role in converting operational details into General Ledger Transactions, their mandate has greatly expanded.

Hopefully our article armed you with the right questions to consider as you evaluate whether you have a buggy whip in your hand or if you're hitching a ride with Henry Ford. ■

Greg Dolan directs Xytech's operational, sales and marketing organizations worldwide. He joined Xytech after a decade at another firm, where he successfully introduced a suite of software products for the media services, broadcast, and video transmission industries. He has held other senior positions; including CIO of New York Media Group and Manager of Budget Systems for Sedgwick James.

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HITS Hollywood Society — hollywoodITsociety.com

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2nd Screen Society — 2ndscreensociety.com

WiTH women in technology | hollywood — MESAlliance.org/WiTH

CDSA Content Delivery & Security Association — CDSAonline.org

MESA Europe Media & Entertainment Services Alliance — MESAeurope.org

2015 Event Calendar

	Supply Chain	Information Technology	Content Security	Second Screen	MESA Europe
January				2nd Screen Summit @CES 2015 Las Vegas, NV	
February		HITS Breakfast New York, NY WiTH Luncheon Los Angeles, CA			Content Protection Briefing Paris, France
March	Metadata Madness Los Angeles, CA New York, NY		Content Protection Briefing Los Angeles, CA		Smart Content Summit Europe London, UK
April	Take the DAM(n) Tour @NAB Las Vegas, NV	MESA Member Party @NAB Las Vegas, NV		2nd Screen Sunday @NAB Las Vegas, NV	MESA Europe Reception @NAB Las Vegas, NV, USA
May		Hollywood IT Summit Los Angeles, CA			Metadata Workshop Brussels, Belgium
June	ESCA Digital WiTH Breakfast Los Angeles, CA			2nd Screen Summit: Sports @CE WEEK New York, NY	HITS Europe London, UK
July	MESA Executive Retreat		Content Protection Briefing New York, NY		Content Protection Briefing Berlin, Germany
August					
September		L.A.msterdam Party @IBC Amsterdam, The Netherlands			ESCA Digital Europe London, UK 2nd Screen Summit @IBC Amsterdam, The Netherlands
October		HITS: Data, Marketing & Analytics Los Angeles, CA		MESA Reception @AdWeek New York, NY	Content Protection Summit EU London, UK
November	Smart Content Summit WiTH Luncheon Los Angeles, CA	HITS: Broadcast @CCW New York, NY		LiveTV L.A. Los Angeles, CA	Data & Analytics Workshop London, UK
December	Forecast:Hollwood 2016 MESA AB Dinner/Holiday Party Los Angeles, CA		Content Protection Summit US Los Angeles, CA		

For more information contact: Guy Finley, Executive Director [917] 513-5963 Guy@MESAlliance.org

Studies show that the majority of people watch most of their video content on a television. There is still a real opportunity for providers to leverage that demand into a real revenue-generating supply.

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together, keeping it on time and on budget. Plus, any misstep that causes a poor user experience is sure to cause a crisis in consumer confidence and allegiance.

A handful of start-ups and new entrants are seizing upon the opportunity, as are other content delivery networks, infrastructure providers and a variety of businesses that are experts in content creation and rights ownership. Many are finding that even after the capital investment, content acquisition and preparation, managing the entire process is overwhelming its technical and staffing capabilities.

The power of two

Building a platform that had the ability to give providers a path to consumer satisfaction and bottom-line profitability became possible when Vubiquity and Akamai agreed to leverage their strengths.

Akamai operates the world's largest content delivery network and is a market leader in delivery of multiplatform IP Video. The company boasts a highly distributed global platform with 150,000 servers deployed on more than 1,200 networks in 92 countries.

Vubiquity is the leading provider of multiplatform video services. The company works with content owners, multichannel video programming distributors (MVPD) and over-the-top providers (OTT) in over 37 countries, offering a broad set of modular services that include a deep library of licensed content, set-top box delivery, a digital storefront, and direct-to-subscriber streaming, electronic sell-through (EST) as well as other next-generation video services.

The two have combined experience, strength and infrastructure to create Content-as-a-Service (CaaS), a powerful, scalable and cost-effective first generation platform that enables Entertainment Everywhere on a leading edge content delivery network without licensing or preparation headaches. CaaS resolves three of the industry's biggest bottlenecks — content, technical and infrastructure.

On the technical side, Vubiquity has the expertise to prepare the 20 or so different file versions of each title needed that are needed to play on today's devices, and are constantly tracking evolutions in technology to be ready for the devices of tomorrow.

Akamai's cloud-based platform is scalable and optimized to provide a high quality, seamless viewing experience for customers. The company's hybrid-elastic model gives carriers the ability to utilize Akamai solutions as needed, rather than

buying for peak and not using that potential 364 days of the year.

CaaS in action: VOD

Let's say a Tier 2 carrier in Latin America wants to give its customers the ability to catch-up with their favorite shows by watching full episodes online, but lacks both the content and platforms to deliver.

The carrier's first step is to either license the content (or purchase licensing services) from Vubiquity. From there, Vubiquity transcodes, packages, and edits the content before transferring it to Akamai's network for storage and delivery. Finally, the carrier works with Akamai to find the right delivery platform — a Licensed Content Delivery Network (LCDN), a Managed Content Delivery Network (MCDN) or within the Cloud Platform.

The Carrier is able to offer an additional service without having to invest millions of dollars in new infrastructure or stress over technical complications.

CaaS in Action: TVOD

In another example, let's look at a Tier 1 carrier in Germany that wants to launch a TVOD OTT service so its subscribers can watch full-length movies on any device for a set price.

While the carrier has a licensing relationship and has access to the required rights, it needs a solution for content preparation, storefront, app development, DRM, storage and delivery.

So, the Carrier works with Vubiquity to ingest, transcode, package and edit content. DRM Key Management can also be purchased through Vubiquity or through another vendor. That content is stored and delivered via Akamai. A preferred third party vendor, alá Saffron or CSG, is recommended for app development. Akamai would store and deliver the content from the LCDN, MCDN or within the Cloud Platform, depending on the services purchased by Carrier. Here, the carrier is able to open a new revenue stream without the headaches of content preparation and delivery.

The future is now

The introduction of Content-as-a-Service gives cable operators, who for years have been limited to regional customers, access to the same pool of potential customers as OTT services. Indeed, CaaS offers the ability to acquire content with consortium prices, universal processing, and preparation so that content is ready to play on every device, cloud-based storage and a delivery network that spans the globe.

So, CaaS enables cable operators the ability to satisfy their customers today while building for a profitable future. ■

Steven Chester is responsible for setting the strategic direction of Akamai's digital media distribution solutions and services for the premium content industry. He works closely with major studios such as 20th Century Fox, Paramount, Disney, and Sony Pictures, as well as distribution outlets like Netflix and Best Buy to develop solutions that benefit the entire digital distribution workflow.

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■ Maximize speed-to-market: Today's connected consumer demands access to content on any platform, any time. Distribution windows have collapsed, creating demand to push content into more markets, more channels and more platforms faster than ever.

Release paces continue to accelerate, with some content bypassing traditional windowing altogether. This means that all content versions need to be prepared, packaged and delivered faster than ever before. These impacts flow upstream. Promos, trailers and spots are under more deadline pressure, especially for international territories where in-country localization is needed.

Digital supply chain delays create lags bringing content to market. These lags are catastrophic—wasting marketing dollars, frustrating licensees, and ultimately, slicing into revenue with lost sales. Content creators need capabilities that allow them to exceed the pace of change and streamline operations without sacrificing quality.

Simplicity sets the stage

Today's digital content landscape continues to broaden. With that growth and uptake, technology and process demands also grow. To be successful, content owners need to navigate increasingly complex workflows with simplicity.

Creative companies can't afford to get bogged down in technical and operational processes that distract from their core business focus: to make and monetize content.

So, what do you need to think about to ensure your business doesn't go the way of the Compact Disc? Here are some key questions to consider:

■ Am I leaving money on the table? Today's content ecosystem offers more opportunities than ever to turn content inventory into licensing revenue. Do I have the right capabilities to capture, catalog and share the content I own with the people who want to buy it?

■ Are my digital operations distracting me from what's most important? Keeping up with the acceleration of digital technologies, processes and workflows demands massive investment in infrastructure and people. Technology becomes outdated. Specialized skills are scarce. Am I investing too much time and money building out a digital supply chain that creates excess cost and confusion?

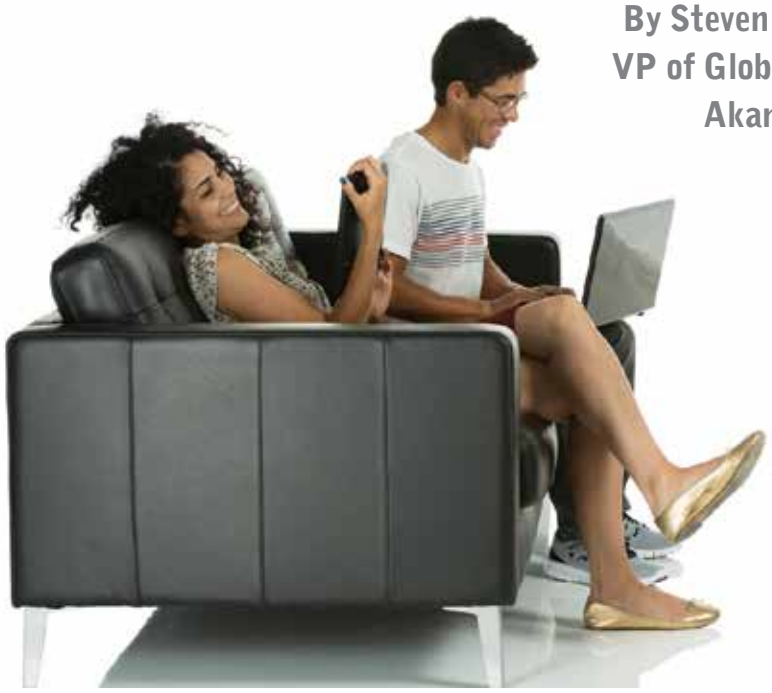
■ Do my consumers get the content they want when they want it? Collapsing release windows apply pressure across the entire supply chain. Faster paces, unfamiliar requirements, and new technologies increase mistakes and compromise quality. Are my people, processes and technology agile enough to keep pace with today's demands, and anticipate tomorrow's innovations?

It's time to take a lesson from other industries that have gone through similar cycles of digital disruption. Today's digital economy isn't a short-lived innovation, it's an essential change in the way audiences engage with you and your media. Luckily for M&E companies, the third time is the charm. ■

Content-as-a-Service Enables Entertainment Everywhere

New platform can remove barriers to content, technology and infrastructuret

By Steven Chester,
VP of Global Media,
Akamai



Abstract: Content-as-a-Service (CaaS) is the first generation platform that answers consumer demand for Entertainment Everywhere made possible by a unique industry partnership between Vubiquity and Akamai. This third-party solution enables carriers, retailers and online retailers (distributors or providers) to offer consumers access to the entertainment they want to watch on a leading edge content delivery network without content, licensing, preparation or storage headaches. The CaaS infrastructure is a cost effective solution that ensures the highest quality playback on any device.

The conversations around the water coolers in pay TV providers' headquarters have become hubs of concerned whispers. Because, even as the amount of available award-winning content swells, consumers are leaving in droves. In fact, Bloomberg reported in March that subscriptions to pay television services declined in 2013, for the first time ever.

Those consumers — as well as a new generation of viewers who are not signing up for traditional cable service — are flocking to online video services thanks to the greater availability of broadband services. Netflix, just one of those services, recently announced it has reached 50 million paid subscribers. The trend is not slowing down, either, since of the 745 million homes with broadband service 64.6 percent will use it to watch online video and television at least some of the time.

Meanwhile, studies show that the majority of people still watch most of their video content on a television in their home. So, there is still a real opportunity for providers to leverage that demand into a real revenue-generating supply.

But, the barriers to launch a new Entertainment Everywhere service are plentiful and daunting. First, licensing content can cost anywhere from 50 to 70 percent of revenue. Second, device, DRM and format fragmentations means operators must create, store and distribute up to 20 versions of each title, which increases transcoding and storage costs. Then there is the capital investment it takes to build out virtual storefronts, an e-commerce backend and DRM systems.

Add to that the less obvious challenges of finding and managing the extensive number of vendors it takes to bring the service

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