OVER THE TOP
VIDEO Executive Magazine
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Spring 2018

# Social TV and OTT: Addition by Distraction?

*How social media will transform the TV viewing experience and business model.*

## Death on the Dial
Will Social Video Kill the TV Star?

## #TrendingNow
Three Ways to Leverage Social TV

## This Is Your Brain on Social
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*Jonathan Huberman*
CEO, Ooyala


*Belsasar Lepe*
CTO, Ooyala

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# Social TV:
## The Promise Unfulfilled (for now)

By: Brian Mahony

I rediscovered Peter Gabriel this past week. I used to love him back in the 80s and 90s and even went to see his amazing *Secret World* concert. Then I lost track of him as a recording artist. Until last week. I stumbled upon a YouTube video of him performing with the New Blood Orchestra (if you haven't heard the Biko version with this ensemble please drop the magazine now and go listen). So I spent the next week getting reacquainted with Peter Gabriel while completing the editing and production for this edition of *OTT Executive Magazine*. In the process, I learned some important lessons about social TV— we've got a long way to go before its promise of improving the viewing experience is fulfilled.

**Why I Hate Mark from Chantix**

The biggest and most painful lesson was that the advertising model is terrible. I lost count how many times I heard "Mark from Chantix" talk about how he quit smoking. Not only did it get really annoying after hearing the ad for the millionth time, but it wasn't the least bit relevant to me because I don't smoke. Further, I had to wait 4 seconds before I was allowed to skip through the ad to get to my next Peter Gabriel video. It really ruined the vibe.

Amazingly, this went on for over a week. I estimate that 75% of the ad inventory served up to me was "Mark from Chantix"— I couldn't even get a little variety in these mis-targeted stop-smoking commercials. (By the way Mark was recently blasted on social media for smoking cancer sticks again so he isn't exactly a good spokesman for the Chantix brand anymore— why he remains plastered across social ad inventory is a whole other issue to explore). The rest was just as irrelevant— for example, ads for feminine health products. The only one that I watched all the way through was an ad for a Master Class by comedian Steve Martin. I'm not a comedian but I immediately got the benefit of taking a Master Class on a topic relevant to me.


To perhaps give the recommendation engine a little nudge, I deliberately clicked around (on both my PC and my phone in case they were connected by the artificial intelligence elves) to content that is relevant to me. I both searched and specifically visited sites for the NCAA Basketball Tournament (maybe I would jump on a plane and get last-minute Final Four tickets?), travel sites for my family's epic trip to Europe this summer, and lots of other topics interesting to me. Google owns YouTube so I figured this would help. I also almost never clear my search history or viewing cache.

Result? I couldn't even get a car ad delivered to me (I'm a bit of a gear-head). I also searched around on social media (Facebook, Instagram, LinkedIn) in hopes that might help in case they shared data. Nothing. Only more "Mark from Chantix". And in case you think I am picking on the YouTube experience, which was pretty bad, the random ad insertion of social networks such as Facebook and Instagram can be far worse. There you might be in the middle of a hilarious or emotional video only to have an ad disrupt your experience without warning. The effect is so jarring you aren't really thinking if the ad content is relevant or not.

**What About Content Engines?**

To go beyond advertising, I decided to take a fresh look at Netflix to see how their content recommendation engine was working these days. A little better but still not great. The problem here is mostly likely with the profile management system. My wife and five kids all watch different shows and I know for a fact no one is diligent about logging into the correct profile. That's why I can finish watching "World War Two in Color" and then get a recommendation for a love story or a cartoon. Sigh.

But while it may look bleak for social TV ad servers and content recommendations engines, there does seem to be some daylight for content discovery. For example, while searching around, I discovered old shows like "Scrubs" and "South Park" that have used Peter Gabriel songs as soundtracks for specific episodes. I was curious enough to go to sites that carried both shows to check them out, but not enough to watch more than a snippet or subscribe. On another positive note, based on Facebook friends' suggestions I'm planning a date night with my wife to go watch "The Greatest Showman." So there's that.

*Brian Mahony is the CEO and Principal Analyst of Trender Research. He is also President of the 45,000 member OTT Executive Community— a vibrant and growing network of TV and video professionals engaged through social media, publications, and events. Brian has 25 years experience with consumer-oriented technology products and companies.*

**Social TV State of the Art?**

What is the state of the art for social TV? This issue is packed with articles that try to answer that question. David Mowrey from IBM Watson Media, ZoneTV's Jeff Weber, and TVApp Ageny's Bruno Pereira give us some great analysis and tips for leveraging social TV. Our resident UX expert Stephen Johnson makes a case for how social TV will help to reduce the number of ads and largely eliminate the "magnifying glass" search bar. Paolo Spiluttini from AstroLabs gives a wonderful analysis of how social TV can compliment traditional pay TV but also compete as a viewing platform in its own right. And in a coup de grace, PlayPilot's David Mühle transcends social TV, painting a vibrant picture for the role of cross-platform artificial intelligence in creating an "individualized production" experience. We've even thrown in perspectives from two Trenders, just to keep us grounded in the consumers' point of view. Enjoy! □

# #TrendingNow: Three Ways Video Companies Can Leverage Social TV

By: David Mowrey

With the rise of social networks, "water cooler" talk has shifted from the breakroom to online, making "must-see" TV even more urgent. Rather than chatting about last night's episode at work the next day, viewers are now incentivized to watch programming in real-time so they can participate in online conversations as they happen. TV has become a social activity and community event (#BachelorNation is just the tip of the iceberg). Whether it's Twitter, message boards, or even workplace Slack channels, super fans now have myriad platforms to discuss the shows they love, and it's inevitable that a casual viewer might run into spoilers online – another incentive to keep up in real-time.

It's clear that the combination of social media and television has fundamentally changed the way viewers consume content. For media companies, this shift presents a valuable opportunity to glean new data about viewers' consumption habits from their social media activity. With those insights in hand, media companies can more effectively reach new viewers, as well as retain viewers with more strategic scheduling and programming decisions.

**Step 1: Grow your audience.**

Prior to social networks, media companies relied on incomplete datasets like demographic data to understand their target audience, which hindered their ability to effectively reach and appeal to viewers they hoped to acquire. With the rise of social networks, media companies can now integrate social data to create more complete viewer profiles.

For instance, it's not enough to know that someone watches *Game of Thrones* – let's face it, everyone does. But with social media, media companies can determine engagement rates based on their level of activity (are they constantly posting #WinterisComing?) and make strategic marketing decisions and content recommendations accordingly. By using AI to comb through social networks and identify patterns within social data, media companies can better understand a consumer, and then extrapolate that data and apply it at scale to a group of similar viewers. By making more targeted decisions based on social data, media companies can gain a higher return on investment for customer acquisition marketing campaigns.


***Not too long ago "Must See TV" was dicussed around the water cooler the next day, today viewers comment in real time via social media.***

*David Mowrey is Head of Product and Development for Waston Media at IBM. With nearly twenty years of three-screen product development experience, David now leads product strategy and new business efforts for the IBM Watson Media business unit— applying decades of cognitive R&D to the media and entertainment industry. David previously served as Vice President of Strategic Planning & Business Development at IBM Cloud Video. He also served as Vice President of Product Management at Clearleap, an IBM company. Prior to his work at IBM and Clearleap, David served as Director of Media Solutions for Yahoo!, where he led a large portfolio of mobile, online, and interactive TV applications and managed some of the company's largest mobile and telecom partnerships.*

**Step 2: Pivot your programming.**

Beyond attracting new viewers, media companies can also employ social data to retain current viewers. Today's content owners have a distinct advantage that their predecessors did not: by tapping into social networks, content owners can gather feedback from viewers about programming, and understand how a show is resonating with viewers in real-time. With access to audience reactions, content owners can then pivot story arcs in order to appease viewers.

To capitalize on fanfare around the breakout character from ABC's *black-ish*, Zoey Johnson, Freeform greenlighted *grown-ish*, a spinoff following Zoey's college years. On the flip side, in an effort to assuage audiences, both TV networks and SVODs alike have revived canceled shows due to fan outrage online, such as *Timeless* on NBC and *Sens8* on Netflix. Yet, it is both overwhelming and inefficient for content owners to manually sift through millions of social feeds to gather, categorize, and analyze relevant posts. AI helps unlock the power of social media by parsing through massive amounts of data to produce actionable insights, empowering content owners to make strategic programming decisions – and keep their viewers happy – more efficiently.

**Step 3: Optimize your schedule.**

There are a myriad of decisions involved

in delivering content: from syndication and distribution strategy, to licensing windows and wait time before streaming an episode on-demand. And that's not even mentioning advertising spots. With social media bringing consumption patterns into focus, advertisers and programmers alike can now make more informed scheduling decisions to get the most value from their content.

By comparing the number of social impressions during a certain show, content owners can more efficiently determine if an 8pm or 9pm time slot leads to increased viewership. Beyond the number of posts, AI can help extract insights from the social posts themselves, such as emotional tone, to drive advertising strategy. For instance, is placing a commercial for tissues after a poignant breakup scene effective, or do viewers find it opportunistic? When combined with episode ratings and programmatic information, social media empowers media companies to more effectively predict consumer behavior, and in turn make more strategic scheduling decisions to retain viewers.

Media companies have an unprecedented amount of data at their fingertips – from how long viewers stayed engaged to which device they used. And now that social media is an essential part of watching TV, media companies can blend in social analytics to gain a more comprehensive understanding of viewers. Because social media doesn't only link community fans online; it also facilitates a deeper relationship between viewers and content owners. Content owners should capitalize on this access to inform their business strategy. By using AI to source insights from social media, media companies can more effectively reach new viewers, and then optimize the viewer experience through more strategic programming and scheduling decisions. □

OVER THE TOP VIDEO Executive Summit

## *Congratulations to our past OTT Executive Summit winners!*

**1st Place** — OTT GENIUS

**2nd Place** — OTT HERO

**3rd Place** — OTT GURU

***Past Winners:***

**NYC 2017**
"OTT Genius"— JR McCabe, Poker Central & eSports Productions
"OTT Hero"— Nick Buzzell, NBTV Studios
"OTT Guru"— Paul Hamm, Endavo

**NYC 2016**
"OTT Genius"— Kurt Michel, IneoQuest
"OTT Hero"— Don Wilcox, PBS
"OTT Guru"— Roger Keating, Hearst Television

**NYC 2015**
"OTT Genius"— Brian Balthazar, Scripps Networks
"OTT Hero"— Rich Antoniello, Complex
"OTT Guru"— Rick Howe, The iTV Doctor

**NYC 2014**
"OTT Genius"— Jean-Michel Planche, Witbe
"OTT Hero"— Amit Ziv, EPIX
"OTT Guru"— Steve Harnsberger, OTT Digital Services

**Boston 2014**
"OTT Genius"— James Norman, Pilotly
"OTT Hero"— Jim Turner, Net2TV
"OTT Guru"— (Tie) Gabriel Dusil, Visual Unity; and Jason Thibeault, Limelight Networks

# Making TV More Relevant:
## Social TV Versus Personalisation

By: Bruno Pereira

It will show my true age when I start talking about web targeting and personalisation, but that was the hype in the early 2000s. Everyone wanted to target their users with the best adverts and best information. The results were mixed as we really didn't know what to do with all that data.

Then we had tools like Webtrends, Omniture (now Adobe) and others come to market with analytics that would give us great insight on user habits and we could finally start targeting, kind of personalising, content delivery.

Even with all that data, the conversion rates and engagement weren't spectacular with everyone saying content is KING. With tools to do A/B testing and multi-variable testing, we started seeing improvements in conversion and engagement, but the issue here was that you needed high traffic for statistical significance and this was an issue for lower traffic websites.

Fast forward a few years and we are in the mobile days with the same challenges. Now we have a device that offers one-to-one experiences so it should be easier to target and personalise, yet results were again mixed. But guess what, people were again saying that content is KING.

The issue in mobile became that the ever-increasing quantity of apps in the market meant that customer loyalty reduced to the point that if you don't deliver content at the speed the user expects, they jump to another app. Apple also taught us how to give access to content for 40 cents or even for free and such a small amount makes loyalty really low.

Then the social networks including Facebook, Twitter and word of social marketing (should be word of mouth I know) becomes bigger than anything. We follow what our friends are watching and what other people are commenting on. Is it social that is driving content consumption or is it again that content is really KING?

**What is the impact then of social and data on video consumption?**

Well that is the big question. What we have learned from web and mobile is that human beings can change their tastes when it comes to content faster than ever. We can see a trend where consumers are moving away from traditional linear TV (the exception being sports) due to new living habits. The old days of watching the news at a set time while you have dinner are well gone, now we binge on content that we like or that is socially recommended.

Without doubt social media has a big influence on the success of shows. Numerous pilot episodes have been shared on peer-to-peer networks to measure engagement and social sentiment before investing in producing the rest of the series.

Is personalisation dead? I don't think so. More than ever it is a viable way to increase engagement or advertisement conversion. We now call it recommendations, but we are saying exactly the same as before and our expectations are exactly the same.

**The other big question is whether content is truly KING, finally?**

I believe the answer is yes, but we are falling into the same issue as mobile. There are so many apps with the same content, same price point, so how do you differentiate? Recommendation and personalisation are going to help you to differentiate from your competitors and enable you to increase your conversion and engagement (Netflix claims 52% consumption comes from their recommendations). Don't bombard your customers with emails, rather, just make sure that your apps are dynamic enough to provide recommended content first. Leverage your social data wisely, mix it with your user data and start providing great recommendations to provide a winning strategy for your app.

**Is social TV going to make us money on its own?**

No. It's part of a set of data that can be leveraged to increase conversion and viewing time. What we should be covering now is how we leverage that data with the growth of CPM on OTT platforms to start making a lot more money.

*Bruno Pereira is co-founder of TV App Agency, which launched in 2011 to provide TV app development and app store submission, to enable brands, production houses, agencies and broadcasters to get onto connected TV. Bruno has many years of experience in the online, mobile and media industries. Before co-founding TV App Agency, Bruno worked with two start-ups in the mobile space (Grapple Mobile and Service2Media). He also has a background in content management and ecommerce, having worked with companies such as Intel, Accenture, IBM, Bell Canada and Interwoven/Autonomy.*

# 2018 OTT Accolades Winners

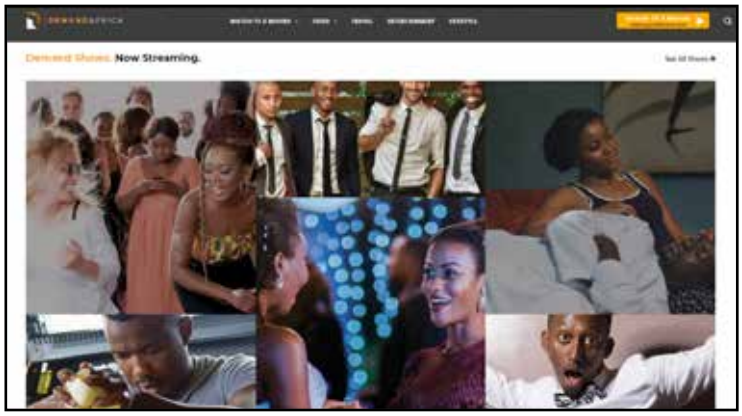
By: Brian Mahony

*We are excited to announce our 2018 "OTT Accolades" (OTTA) winners. Each year, we honor those people, companies, products, or services that stand above the crowd representing the best of the OTT industry.*

**2018 OTTA Service of the Year: Demand Africa**

Demand Africa (https://www.demandafrica.com/) is the new VOD service from The Africa Channel and is honored as 2018 OTTA "Service of the Year". It is a great example of a niche content service leveraging OTT to target a global audience. Much like predecessors Acorn TV (British content) and FuboTV (soccer-loving Spanish-speaking millennials), Demand Africa marches down a well-established path by taking advantage of OTT qualities viewers love and service providers profit from. In this age of skinny bundles and the rapid democratization of content in the entertainment industry, Demand Africa is connecting its valuable content library of African culture to viewers around the world. At the same time, Demand Africa is hoping to demystify modern Africa by sharing the best of African lifestyle, travel, food and entertainment content.

The service launched on October 1 2017, with over 300 hours of original and acquired lifestyle content, with the mission to become "The Global Destination for All Things Africa". It is available on the web, iOS, Android, Roku, Apple TV and FireTV for $6.99 per month




with a discounted rate of $69.99 per year.

Demand Africa's content includes both short and long form and spans a wide range of genres and audiences. Programs include "30 Minute Tour", which gives viewers a quick inside look at a specific country, city, or theme; "Africa On A Plate" which incorporates cooking with travel and culture and is hosted by up and coming young chef, Lentswe Bhengu; and "Before 30", a scripted drama about four twenty-something Nigerian girlfriends as they struggle to balance their dreams and ambitions with traditional and societal pressures.

Kudos also go out to the turnkey "OTT Flow" platform upon which Demand Africa was launched. The partners behind OTT Flow include Brightcove (streaming), Accedo (apps) and Cleeng (subscription management).

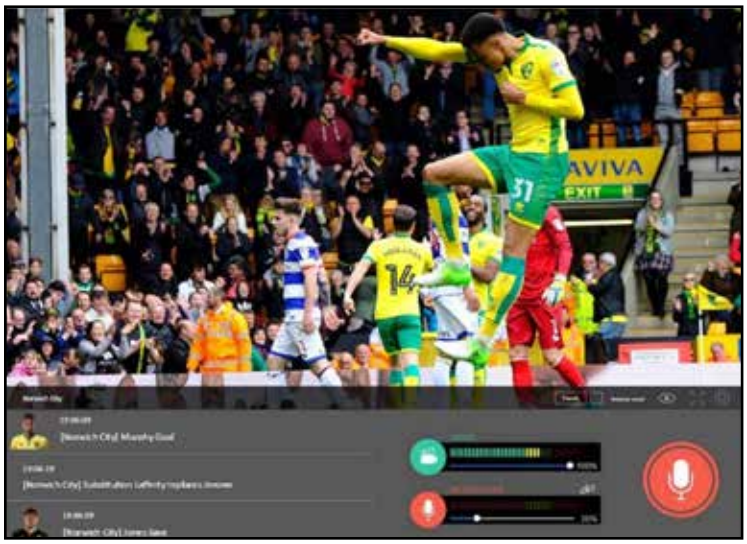
Unlike its parent The Africa Channel— which is watched in approximately 7 million homes in North America and the Caribbean through cable operators including Comcast, Charter Communications, and Cox Communications— Demand Africa is targeting a worldwide audience. Due to rights restrictions however, a common challenge for OTT services, not all content is available in every region.

**2018 OTTA Product of the Year: NeuLion Digital Platform**

The NeuLion Digital Platform was selected as OTTA "Product of the Year" largely based on the strength and maturity of its deployments with leading sports franchises such as the NBA, NFL, NBA, UFC, and the Big Ten Network, but it also the engine behind major OTT services from National Geographic, Univision, and other leading entertainment brands. NeuLion's recent $250 million acquisition by Endeavor, a sports and media giant and the parent of UFC, does nothing to detract from that.

NeuLion stands out as an OTT platform that has met the most exacting standards for quality, interactivity, and fan engagement. It is the de facto leader in streaming, delivering over 63,000 live events worldwide in 2017 across all major devices and over 30 different sports types including football, basketball, baseball, soccer, mixed martial arts, hockey, tennis, lacrosse, rugby, poker, surfing, skateboarding, bowling and eSports. NeuLion has earned a strong reputation for its reliable high-quality video delivery, in up to 4K/HDR, and its innovative features that enhance the overall fan experience.

We also selected NeuLion because of the ways it has moved the OTT industry forward. First




is the role NeuLion has played in increasing the amount and variety of sports and entertainment content available to viewers worldwide. One can't forget that live sports is the most daunting and unforgiving of OTT challenges and often cited as the "killer app" for the mainstream adoption of OTT as an alternative to Pay TV. One only has to look at the scale of English Football League (EFL) and its 1500+ games per season to understand the challenge NeuLion has to tackle.

Second, is the way that the NeuLion Digital Platform has enabled content owners to deliver fun, interactive video experiences to viewers. Recent new features include "virtual announcer broadcasting", which allows anybody with an internet connection to comment on live events in real-time, or the new UFC custom playlists based on fight types or outcomes.

Third, the NeuLion Digital Platform has pioneered new ways for content owners to make money and increase return on their digital investments. It supports any combination of OTT business models, includes flexible content packaging and promotion options, supports local language customizations, and can accept payments from every billing method and currency. It also comes with advanced data analytics and monitoring capabilities to help content owners attract and retain viewers while ensuring quality of service. Content owners can utilize real time consumer behavioral data to increase conversion rates, customer retention, and customer life time value, and at the same time reduce churn through targeted marketing campaigns. At the same time, real-time video monitoring facilitates high-quality video delivery and fast error detection and resolution. Finally, NeuLion is lauded for integrating new content protection capabilities. For example, NeuLion was the first OTT technology company to implement a multi-DRM strategy for live streamed sporting events with partners such as Rogers Communications and Sky Sports. □

**2018 OTTA Person of the Year:**
**Roku CEO Anthony Wood**


Roku CEO Anthony Wood is honored as the 2018 winner of the OTTA "Person of the Year". In addition to our trophy, Wood now has a billion reasons to be happy after guiding the company through a successful IPO late last year. It is a testament to Wood's leadership that my original HD version Roku box is still going strong after almost 8 years—a lifetime in the OTT industry.

Most people by now know that Roku got its name, the Japanese word "six", because it was the sixth company started by Woods. Roku's launch paralleled my own founding of Trender Research Inc. around the same time and, although my service-based business has not made me a billionaire, I've followed the company's success throughout its lifecycle. What's remarkable is that Wood still remains at the helm in an industry littered with cast-off founder CEOs. And if you look at the major strategic decisions Roku has navigated over the years, one is not surprised.

For one, look at the company's recent focus on transforming itself into a full-fledge streaming service. Yes, it has the most ubiquitous media player on the market. Yes, it is always listed as the desired initial distribution channel by my OTT service provider clients. And yes, it has made the process of launching and maintaining OTT apps relatively painless (compared to iOS for example). But Wood recognizes that being just a hardware company limits the company's growth and is fraught with logistical challenges (e.g. the recent NAND chip memory shortage). That's why the not-so-subtle message behind the Roku Channel being added to Samsung smart TVs is all about leveraging its strength as a content aggregator and discovery portal. In short, Roku's 20 million and growing accounts are a solid base for content distribution deals and advertising. Anything that grows that account base helps the company grow more profitably beyond its current 10% hardware margins.

Second, delaying the company's IPO until years later was a good decision. So many startups rush to the public investor market, only to struggle with the overhead costs, transparency requirements, and regulations that can keep them from being strategically flexible or operationally nimble. Roku now has the opportunity to transform itself from a position of strength as a public company with Wood, who still owns about a quarter of the company, firmly in control.

Lastly, one can point to Roku's product line as an example of the strategic flexibility built into the company's roadmap. As each new media player trend emerged, Roku followed suit with a solution that met customer needs. Initially in SD, Roku quickly launched an HD version of its box (one I still have). Now you can find a wide variety of form factors available, from set-top boxes to dongles, as well as price points over $100 and even a "Roku Express" version for $30. Lesser CEOs might have gotten stuck in arguments about which segment of the market the company should target based on financial objectives such as revenue growth or profit margins— Wood's focus has always been on giving customers a variety of options to meet the needs of every market segment.

For all of these reasons, we could think of no other executive who best embodies the promise, and tangible success, that the OTT industry has to offer than Roku CEO Anthony Wood. □

# Your UX, Your Way: What Social Networks Know About You Will Drive Your Viewing Experience

By: Stephen Johnson

We live in an age where producers' thirst for consumer knowledge might be greater than any time in recent history. This goes many times over for media consumption, particularly of video content, owing to the seismic disruptions (and consequent uncertainty) in the industry over the last decade. Content distributors face an increasingly nasty dual threat: rapid fragmentation—not least due to OTT technologies—and customer's ever-louder demands for customization. If there's a way to cut this Gordian knot for producers and distributors, it surely lies in leveraging the first problem to solve the second, i.e., using the technology roiling their businesses in the service of customizing their consumer offerings.

This is where a socially-driven viewing experience comes in: more customer knowledge (gathered thanks to that same fragmentation) should lead to cleaner, more customized experiences. The success rate for current addressable technologies, from upsell marketing to targeted advertising, looks decidedly mixed. But the lessons learned from these efforts (often by the same players, from social to OTT) are informing a better UX in an area that surely needs one: TV.

So why haven't the largest social networks – who seem to bestride everything else – cracked this puzzle? It's not from lack of customer data: they have (in case you haven't heard) veritable mountains of it. Indeed, it's the backbone of their business models and integral to their basic customer agreement, roughly summarized as "you tell it, we sell it". Obviously this has worked fabulously well for standard digital advertising, but video engagement has largely eluded them: those mountains of data and that agreement haven't really been brought to bear on this yet – much less helped the consumer.

It begs the question: why not? Is there something special or unusual about TV that doesn't fit their advertising or customer experience plans?

### We Just Know You'll Like This

Turns out matching consumer data to viewing habits is rather difficult, even for the best digital data analysts. For an object lesson in how hard, venture back to the halcyon days of 2009, when a small OTT company called Netflix sponsored a contest to design an algorithm that would predict user ratings for films, based on previous ratings *without any other information* about the users or films. The details looked odd: a million dollar prize to conclusively demonstrate a mere 10% improvement on Netflix's own algorithm.[1]

Now why would a video distributor care so much about a marginal improvement in predicting what a consumer would like to watch? Netflix's insight was to recognize that being the absolute best at what a consumer wants next[2] is the holy grail of modern viewing. Making that discovery the basis of a TV experience has yielded results that speak for themselves.[3]

If Netflix made the initial case, the social networks – and others with sufficient consumer data – have rather suddenly discovered the potential value of a more informed viewing experience. Even their recent high-profile media deals (e.g., Facebook with MLB, Amazon with the NFL) speak to their focused efforts to capture specific audiences. Of course, viewing data is driven not only by when, how and what you watch, but also by your digital media consumption experience – from what you post to the articles you read to your "likes" and comments.

*Stephen Johnson is an independent analyst specializing in video advertising technology and design for media distributors. He established his consultancy, Coach Media, in 1998 to provide services in user experience design, information architecture, programmatic advertising, and intellectual property creation and advisement to clients worldwide.*

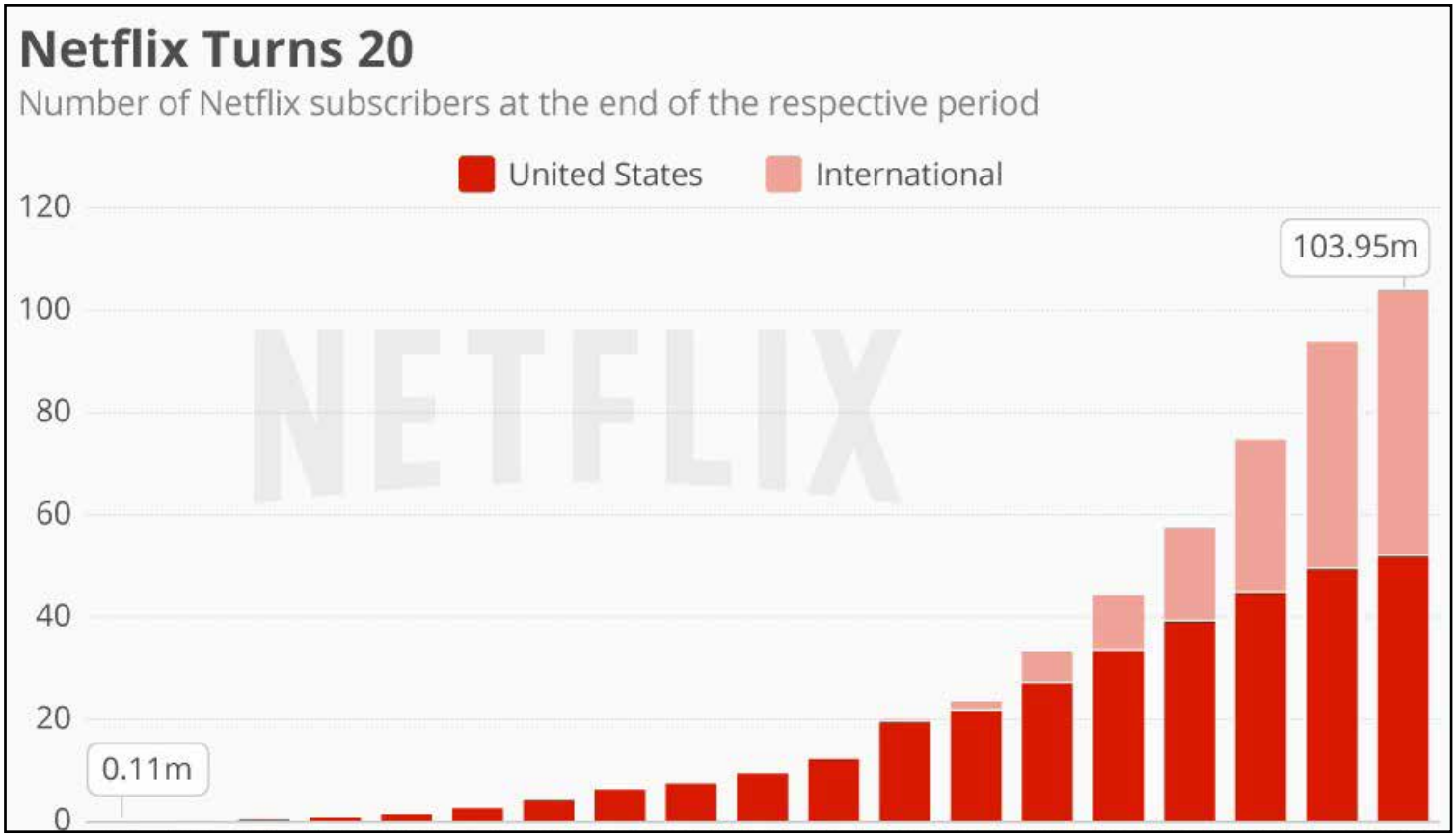
### Drive My UX

So what would a data-driven experience really look like? Without designing the screens themselves, these four (4) attributes will surely figure prominently:

#### 1. Predictive Offerings

Netflix's contest was nine years ago; there's been little indication that they, much less their competitors, have rested on their laurels since then. The next level of "you also might like …" will be informed by your online behaviors and preferences. You may not think that "liking" an obscure post has any effect on your viewing suggestions – but every one of these interactions feeds the algorithmic beast.


*Netflix Recommendations (Source: Netflix)*




***Netflix Subscriber Growth (Source: Statista, Netflix)***

**2. Diminished Search**

One of the oldest saws in video user experience design notes the activity is fundamentally passive: people watch TV. Having programming brought to you, even via non-transparent means, looks far more attractive than interactively seeking it. To be sure, every TV UX will continue to have a small magnifying glass somewhere on its screens, but it will be seldom used (if at all).

**3. Fewer Ads**

Beyond ads customized to viewer's tastes, broadcasters appear to be taking the hint that continuing to scatter ads to broad demographics isn't a solid long-term strategy. Networks like NBC Universal[4] and Turner[5] have drastically reduced commercial airtime in an attempt to make ads more "contextually relevant" (and address OTT competition).

**4. More Digital**

Portability, immediacy and personalization have (among other factors) driven the OTT revolution, so tracking behaviors from all customer devices will surely not be neglected in forming a customized viewing experience. Digital platforms have been providing customized experiences for years. As these same platforms become indispensable viewing devices, their users will demand the same level of personalization.

**Why OTT Fits**

While many of the factors driving a socially-driven UX appear custom-made for OTT technology, a personalized viewer connection might be the strongest. Viewers already expect online social experiences to be customized and will naturally lean toward technology that reflects this connection through their viewing habits as well. The most popular distributors (e.g., Netflix, Hulu, Amazon) have leveraged this advantage, but as the larger social networks (with their data and subscriber base) come on-board they'll certainly have some competition.

For various legal and historical reasons, traditional MVPDs have found little success creating an individualized UX for their "subs." By crafting experiences based on viewer's explicitly-stated preferences, OTT providers have a unique opportunity to quite literally re-imagine how we all "watch TV". □

*Footnotes:*

1. Won by the BellKor's Pragmatic Chaos team, besting Netflix's own collaborative filtering algorithm for predicting ratings by 10.06%

2. As opposed to "what I just bought", or basically every banner ad that pops up after you've ordered anything online. And this was significantly worse back in 2009.

3. Their business model and original programming haven't hurt either

4. "NBC Universal Promises to Slash TV Commercials by 20 Percent", http://adage.com/article/media/nbcu-promises-reduce-tv-commercials-20-percent/312548/

5. In Dramatic Overhaul, TNT to Cut Ad Load by 50%, http://www.adweek.com/tv-video/turners-chief-creative-cutting-tnt-ad-loads-50-percent-dramatic-overhaul-168893/

# Moving Beyond "Basic OTT" to an Enhanced Viewing Experience

Interview by Brian Mahony with Jonathan Huberman and Belsasar Lepe

*In this interview, Brian catches up with two of the principals of Ooyala: CEO Jonathan Huberman and Co-Founder & CTO Belsasar Lepe.*

**Brian:** Thanks for joining us today gentleman. Can you please start by providing an overview of Ooyala and any initiatives you might have in store for 2018?

**Jonathan:** Sure. Ooyala is a ten-year old company and we are one of the leaders in the OTT and media industries. We've helped to pioneer both of those industries. As Head of Products, Bel can speak to some of our major initiatives this year.

**Belsasar:** In terms of major initiatives you first need to look at some of the television events that are being distributed digitally this year, such as the Olympics, the Super Bowl, and the World Cup. One of our major initiatives is supporting these events and helping our customers, many of whom are broadcasters or sports rights holders, to reach their viewers in new ways. There's a significant focus this year on augmented reality, virtual reality, and really helping to bring that fan experience to wherever an end-user might be, especially if they're not in the stadium. So there'll be a lot of investment around that. The other highlight is around improving and streamlining the overall media value chain. When you look at where we come into the picture, we participate in the content creation process as early as the script or commissioning step. As a result we have a wide purview and understanding of how content is produced and what makes content perform well. We can help our customers leverage that data to guide future investments in what content gets acquired or created. It's not just a data element but also leveraging AI to actually guide some of that investment decision making.

**Brian:** Thanks Bel. You mentioned some of those major live events that have to be managed on a global scale like the Olympics and World Cup, with the goal to enhance the user experience, possibly through technologies such as AI and AR. Is it enough to just deliver good video quality, or is it required to go beyond that to enhance the viewing experience in some way?

**Belsasar:** Viewers are voting with their feet. If you look at the NFL, one of the reasons the audience is attracted is the ability to tune in from different screens. But beyond that ultimately you find that the experience is much more personalized. So of course you first need to deliver the baseline of a quality streaming experience, which is still a very difficult thing to do today at scale. We're fortunate in that we do those things very well because we invested in it. But on top of that we also see the opportunity to provide an enhanced experience. From enabling different camera angles, to tuning in via various devices, to engaging in virtual reality, we can provide the technology that enables a customized and unique viewing experience. The last thing is that we help with the discovery of that content. We help our customers find an audience. We help them broadcast their content to Facebook, whether that's full content or just teasers, and to build their fan base through Twitter for example.

**Brian:** So those are good examples of the convergence of social media and online video. The question for you is how much of that is enhancing the overall viewing experience for the consumer versus it being a distraction or a parallel activity? And how can you make those two worlds more seamless for the viewer?

*Jonathan Huberman is the CEO of Ooyala. With nearly 30 years of high-tech business leadership, he is an accomplished executive with a demonstrated track record of driving high customer satisfaction, technology innovation, and greater market value for software-as-a-service (SaaS) companies. Previously, he served as CEO of Syncplicity, Tiburon Inc., and Iomega Corporation.*

*As co-founder and CTO of Ooyala, Belsasar Lepe oversees the company's technology and product strategy. Bel is also responsible for technology partnerships around the world, with a focus on building close and collaborative relationships with partners critical to our customer's success. Before founding Ooyala, Bel was a Google systems engineer.*

**Jonathan:** Well it depends on what you define as a distraction. What I define as a distraction my teenage son defines as core to his viewing experience. What is being expected now of content providers and broadcasters is a level of interaction and customer choice that historically has been unable to be presented. While at one time you needed your PC or tablet to have an AR experience while watching TV, that's changing today. Now it's more integrated. For those who want to use it, it's incredible enhancing. For those who don't, you can always turn it off.

**Belsasar:** That's exactly right. If you're a cord-never, the experience you expect from OTT may never be a ten-foot experience if you are relying on a smart phone as a primary screen. So there is no distraction. If you're a cord-cutter, you might look at that as more of a distraction and you'll need to adjust. And if your primary provider is a Verizon or a Comcast you are going to look at these other things as a means for video snacking rather than your core experience. Personally, I probably have around 18 subscriptions,

many of which I've forgotten I am paying for, but I still find myself in that last camp. So it really depends which demographic you fit in whether you consider these enhanced services as a distraction or not.

**Brian:** That's a great segue to my next question because, now that you have less of this uniform audience sitting in front of the big screen TV interacting with the content in the same way, how do you target your content to different audiences within the home— including kids who may be staring down at their phones. In other words, how do content management systems and other technologies need to change to meet the evolving needs of consumers?

**Jonathan:** To answer that question you first have to consider how all the content is managed in different formats. Some people are going to want to consumer content in five minute bites, others in 20 minute bites, and still others will want something more traditional. And the asset itself may morph over time. So while before you may have had a stable asset, now you have more of a content group that contains all the permutations of how you might distribute that content. For example, you might have the long-form version of the asset, complimented by video clips more tailored to social media. And then of course you have the traditional breakdowns by geography, supporting different languages, etc. So at the end of the day it becomes much more complex and the CMS has more of a challenge to keep the situation from becoming a complete and utter nightmare for operators to manage.

**Brian:** Does that require you to have more intelligent schemas for metadata management?

**Jonathan:** Absolutely. For example at Ooyala we've made it very easy to design new metadata templates, and to manage data in different formats for both on-demand and live/linear content. Metadata is critical. Not only for managing formats but also for driving a very compelling content discovery experience for the viewer.

**Brian:** OK. Let's talk about content monetization. How has the model changed with OTT?

**Jonathan:** The subscription based business model is pretty well understood, thanks to the likes of Netflix and Hulu and others. But OTT provides both aggregators and direct content creators new ways to monetize. For example one of our customers, who is a major broadcaster, has a series of subscription channels and is now creating individual live channels monetized through advertising. Other customers are creating more of a blended live-linear experience within a VOD type model. In still other cases we see new channels launched from traditional set-top boxes, where they are using the EPG to launch an entirely new content library using just the remote control from your set top box. Given the explosion of content that has happened over the last few years, with much of it being niche content, subscription gives service providers a simple way to monetize these new opportunities. Bel can talk a little more about ad-based models.

**Belsasar:** With advertising you can't understate the impact that programmatic will have. Because you may have several viewing experiences going on at the same time in the family room— SVOD on the big screen, and perhaps the kids enjoying ad-supported content— you can actually increase the average revenue monetized per family. Obviously this requires you to manage at the individual level rather than at the household level. OTT is opening up a level of targeting that we haven't really seen in the TV industry before and that's exciting. The other thing I would mention is that OTT helps to improve your efficiency over time because of the very quick feedback loop in terms of the ad content served and which ads are attracting views and clicks. You can very quickly know what's working and what's not working which allows you to cut out waste from the content catalog— something you couldn't do in real-time with traditional television. For both the content and ad library, OTT helps you to understand your audience and know what you should continue to invest in and what you should kill.

**Brian:** How about some of the smaller Tier 2 cable MSOs? As cord-cutting is accelerating, what advantages, if any, do they have to take advantage of these major OTT opportunities? Belsasar: Well they have a few options. One of the more controversial strategies is to exit the TV business and focus on selling broadband internet services alone. The other approach, considering that Tier 2s are usually associated with a more local footprint, is to embrace the local aspect. They have a better understanding of their local community and can produce content that is more focused on that local community. Let's face it Netflix and Amazon are global companies and they are going after a mass-market audience. It also doesn't make sense for them to distribute regional content because the volumes don't support the model.

**Brian:** As a final question, I'd like to ask


both of you… if you look at your crystal balls for the rest of 2018, what do you see as the big OTT trends that folks will be talking about as they look back at the end of the year?

**Jonathan:** From my perspective, the two technology trends that will become mainstream this year are the integration of both AI and AR into the video workflows of media companies. Last year there was a lot of interesting demos by companies like Microsoft, IBM, AWS, and Google. This year you'll see more use of things like 360 degree video and AR in general. And on the back-end, which may not be visible to the consumer, content service providers are going to be leveraging artificial intelligence tools to make more money from their existing libraries and to reduce costs by streamlining their operations.

**Belsasar:** I agree those are both significant trends. The other one I would add is that some of the massive mergers and acquisitions in 2018 could have a major impact on whether the future of TV continues down the path of being dominated by fragmented apps or whether a few large aggregators will emerge. In some ways, these content aggregators may look a lot like the old cable subscription model in terms of content selection, curation, and monetization and ultimately how digital media is consumed. It will be interesting to see how that trend plays out in the long term.

**Brian:** Awesome. That's a wrap. Thank you both for joining us today. □

# Avoiding OTT Platform Hell

## Key Questions to Ask Yourself While Racing to Launch Your OTT Service

By: Michael Nagle

Promise me that you'll never tell my clients that I said this but sometimes it is far too easy for content owners and networks to get onto video platforms.

As a sales professional with more than 20+ years under my belt selling to MVPDs and OTT platforms, I confess that I have "winged it" in a sales meeting when a client asks, "can you do X?" or "do you have Y?" I will go a step further and admit that I have said "yes" without knowing for sure that I could fulfill that promise. If you're like me you've probably been in that elevator back down to the lobby waiting for your mobile phone to have at least one bar so that you could call your engineers, programming or anyone in the organization to validate that you'd be able to deliver on what you just promised. It isn't a pleasant experience if you can't deliver. One thing is worse – trying and failing.

When you scan the branded folders in the world of OTT you see many in prime real estate neighborhoods. Click one level into the folder and you may see a single asset that looks like it was placed there on the date of launch as long ago as 12-18 months. I'm sure that someone expected (and probably promised) to add content incrementally following that rollout but for one reason or another, that never happened.

Everyone is in the video business now. It may not be your core business but you're pretty certain that you don't want to be at the wrong party or miss it altogether. It reminds me of high school with a far more sophisticated A/V club.

Here are a few important factors to consider if you have video content and want to get it onto a platform:

• How much content do you currently have?

• How many hours or assets will you comfortably be able to shelve at any given time?

• What is your most realistic refresh schedule?

• How often and in what quantity do you produce new content?

• What is your goal? Monetization of the content or to use it for brand awareness?

• How will your organization monetize participation in the world of video?

• Are other groups in your organization using your content and if so, how?

I speak to many of my contemporaries and clients about the pay video ecosystem and I'm often shocked how many tell me they've not yet explored the menu structure and navigation of some of the most commonly discussed platforms including Netflix, Hulu, Amazon Prime Instant Video, Apple TV or even their own cable TV Everywhere app. There is an old joke that says, "if ignorance is bliss then apathy must be paradise." It more likely could become your hell if you go into a platform with little to no information.

Programmers need to determine if platforms have genres that might apply to their content. Some may straddle more than one genre. Platforms may limit how many genres each programmer might attach itself to but then again, they might not. At which point should a programmer determine those details? My recommendation would be that they get a handle on how the platform is designed before they negotiate their contract. The same holds for menu structure within your branded environment, refresh, total hours allowed, premium vs. ad supported, transport protocol and requirements, etc.

*Michael Nagle is CEO of Ashling Digital, Inc., an independent media sales and business development company. He has worked for Nature-Vision TV, Invincible Pictures, Playboy, Bloomberg and The Box Music Network. He currently consults for Vidillion, SIMC tv and serves on the Board of Directors for VIVA Entertainment Group.*

Some people say that before you buy a house you should take a shower in it. You don't want to step under a cold trickle after unpacking your boxes and have that revelation too late. Programmers and platform owners need to have informed dialogue before content starts arriving for viewing.

I'm old enough to remember pay per view. It isn't talked about much nowadays but there are correlations in terms of performance from the PPV days to the era of video on demand. If you see that your orders are low there is usually a cause that goes beyond simply that your content may have limited appeal. Programmers and platforms alike need to arrive at some understanding as to how best to help content reach the right audience so that subscribers don't find themselves navigating mindlessly through an ocean of rectangles with pictures on them for :30+ minutes or more before they become uninterested and find something else to watch or to do. □

# Zen and the Art of Viewer Satisfaction:
## The New Pay-TV Mantra is Personalization

By: Jeff Weber

For all the hubbub about cord-cutting and general disruption in the video marketplace, traditional TV and cable operators are not going away. Last year's most popular TV shows on traditional TV outlets brought in record numbers of viewers when considering shifting consumption habits. Various surveys indicate that consumers have limited appetite for multiple SVOD and vMVPD services, and express appreciation for the curation and relative simplicity of the traditional bundle.

Nevertheless, to remain relevant in a changing pay-TV ecosystem, operators are obligated to innovate in response to consumer demand.

Let's remember that cord-cutting does not represent an expression of consumer disinterest in the content or programming, but rather the bundle-and-pricing equation. The explosive growth of OTT services underscores consumers' desire to take back control of their TV diet by selecting more directly the content they purchase.

Apart from pricing, consumers also cite the sheer channels available in today's bundles. The average viewer pays for hundreds of channels but survey after survey shows they regularly consume a relative handful – two dozen at most on average. The result: feelings not only of limited "bang for your buck," but of being overwhelmed by the sheer number of options. A recent survey by Hub Entertainment Research indicated that half of respondents agreed "there are so many TV programs to choose from, it's hard to know where to start." Similarly, a recent PwC study revealed that 62% of TV consumers find it a struggle to discover programming to watch.

In short, consumers want choice combined with simplicity, and an easy pathway to the programming they want. The emerging mantra in the TV ecosphere is "discovery and personalization."

The explosion of SVOD speaks more to the consumer's desire to watch only the content in which they are interested; hand-in-hand with that, cord-cutting reflects a consumer revolution against legacy pay-TV models featuring an overabundance of content offerings bundled at an undesirably high price tag.

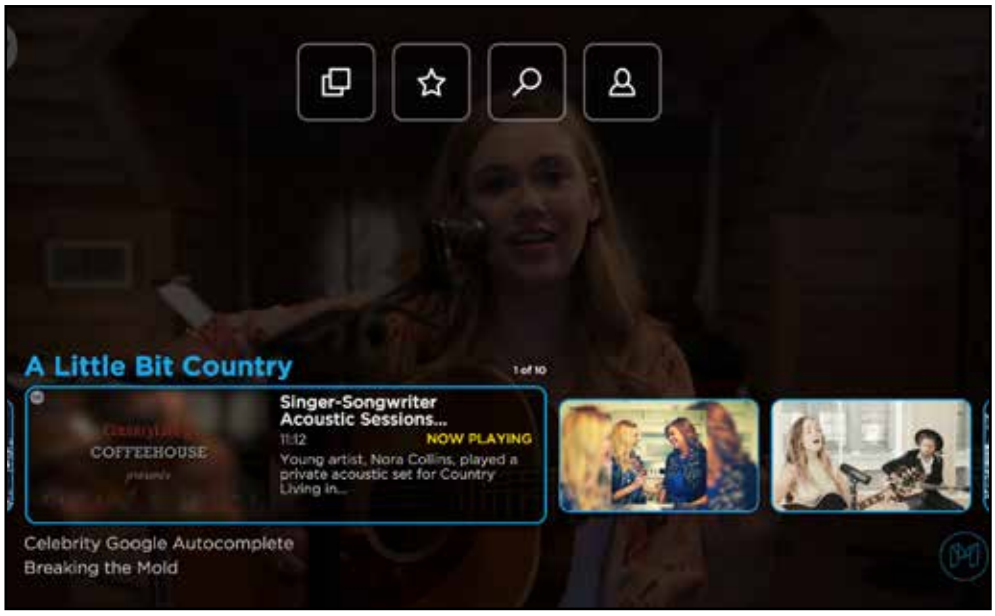
MVPDs might do well to study the rise of "social TV" – typically defined as so-called second-screening around programs. Facebook, Twitter, Instagram and Snapchat collectively represent the new watercooler, or fireplace, or "electronic hearth," where like-minded viewers gather to share their opinions and enjoyment of particular programming. Yes, the major events still dominate – Kantar reports the 2017 Super Bowl generated 10.2 million game time tweets in the U.S. – but popular shows like *The Walking Dead* generate strong social-media support as well. In short, viewers coalesce around the programming they want, and actively seek out like-minded viewers.

*Jeff Weber is the CEO of Zone·tv, which works with some of the largest operators in the world to deliver the best, never-before-seen-on TV content, augmented with AI, via pay-TV. Weber, formerly president, content & advertising at AT&T U-verse, oversaw programming and ads across company platforms.*

All is not lost: MVPDs can super-serve the viewer and create an environment where customers can find the shows and genres that most appeal to them. An emerging method to achieve this goal is to utilize the powerhouse capabilities provided by artificial intelligence. It's not as exotic a concept as it may have seemed a few short years ago, and it provides the pathway toward delivering the desired combination of content discovery and personalization.

Operators need a new platform that makes viewing smarter not harder, and that provides them an increased measure of flexibility at the content negotiating table. Viewers will enjoy the freedom to select their genre of content and actually customize their own programming day.

The days of searching for content through an endless number of channel options are waning. Television of the future MUST cater to the viewer and provide a focused interface to enable easy discovery of programming about which individual viewers are passionate. □



# Exploring New Paradigms: TV Convergence and Interactivity

By: Oliver Botti & Greg Jarvis

The convergence and interaction of traditional broadcast TV and OTT is now a mainstay in the industry, but has by no means reached its full potential, even in the United States. Both platforms bring their own advantages; broadcast TV continues to have strong branding and a solid local base, while OTT breaks boundaries by enabling service provisioning across regions and permitting interactivity and personalization.

It is interactivity that enables convergence to be utilized successfully, through the harmonization of linear broadcast with broadband delivery to consumers, via connected TVs, set-top boxes and multiscreen devices. Interactive content can be personalized by integrating and analyzing audience data collected from multiple devices. Together with data partners, broadcasters can use this analysis to provide viewers with targeted interactive content and advertising across devices, including the TV screen.

Viewers therefore enjoy a seamless multichannel experience while generating more data that helps broadcasters gain a greater understanding of their audience profile. And this is just the beginning: hybrid broadcast-broadband services become even more powerful when combined with audience segmentation and UX personalization, creating a landscape of demand/data-driven content and service provisioning. From interactive advertising to content personalization, hybrid services can viably enable new business strategies for distributors, opening potential revenue models that were previously available to online services only.

One illustration of how distributors can combine the power of traditional TV with online communication is real-time contextual content. If a hybrid model is applied to TV news channels, viewers can use the breaking news ribbon displayed at the bottom of their screen to navigate to news-orientated micro-websites. These sites run on the TV screen and are populated with automatic real-time feeds from the distributor's news portals or apps. Once the TV channel has produced video content on the breaking news story, the viewer is then driven back to the original channel or to news specific channels, all the while remaining on the broadcaster's properties. Broadcasters can thus retain viewers within their own branded experience.

A second illustration of exciting convergence potential are new advertising paradigms, such as personalized TV with interactive ads. Now, when viewers are interested in a product, they can be transferred to micro-sites showing videos and reviews, and even the nearest suppliers. Again, users remain on the TV screen so the audience isn't lost to another site. This same technology means that traditional 1-to-many broadcast advertisements can be replaced by 1-to-1 targeted advertisements provided through the TV broadband connection. In addition, the programmatic approach to advertising, well consolidated within the online landscape, can now enter the TV set, combining traditional TV advertising to generate brand new and interesting models.

A final illustration of content engagement is the promotion of related, premium or library content available. Algorithms are utilized to expose content to the consumer in different ways or even at different times; for example, exposing deep library content or long-tail non-monetized titles just as a show is ending to promote the next episode. Interactivity can also be deployed through simple games or a contest to suggest what's next.

Distributors looking to extend their reach should refer to two industry standards: ATSC 3.0 and HbbTV 2.0. In the US the ATSC 3.0 standards encompass a wide array of features and capabilities, while Hybrid broadcast broadband TV (or "HbbTV") is a global initiative aimed at harmonizing linear broadcast and broadband delivery of entertainment services. Fincons has been a strong contributor to the evolution of the HbbTV standard, drawing on experience from corporate collaborations as well as funded research and development activities. Businesses wishing to remain competitive should look to leverage this potential and partner with experienced companies that can help guide them in this new media environment. □

*Oliver Botti is the Head of International Business Development and Innovation, UK Territory Manager, Fincons Group. Since 2013 he has driven international business growth and portfolio innovation through R&D initiatives. UK Territory Manager at Fincons. Oliver started his career as a researcher at ENEL. He also acted as consultant and reviewer for the European Commission in ICT Research & Innovation programmes. He has occupied roles as BU Manager in the Energy & Utilities and Fashion & Retail sectors, as well as within the media space, and has worked for leading international vendors of digital video solutions to help them drive sales.*

*Greg Jarvis joined Fincons.US in 2017 as Executive Vice President and General Manager at Fincons US. Heading up Fincons Group's new offices in Los Angeles and New York, Greg plans on implementing new strategies and driving growth for Fincons Group across US markets. He has been a general manager of two $100 million engineering firms, lead a strategy consulting division at a big four consulting firm, as well as being an entrepreneur with two California based start-ups. In addition, he has served as the North American practice leader for a $1 billion offshore engineering firm based in Ukraine.*

# How to Build a Low-Latency CDN and Stop Hearing Future Voices from the Past

By: Eitan Koter

Here is a scenario that only OTT subscribers are familiar with: you are sitting in your apartment and watching a dramatic tight playoff game of your favorite team. Maybe even it's the championship game itself. There is one minute to go and you're on edge of your seat when suddenly you hear hysteric screams of joy coming from your neighbors apartment.

You immediately realize that there was a goal/buzzer-beater event, that your OTT service will be kind enough to show to you in 60 seconds or so. This 1-minute-long limbo-zone, of knowing that your present is other people's past, generates a variety of passing thoughts in your mind, starting from the obvious "which team actually won?" and "who scored?". Frustrated, you think "when will OTT services finally provide a real-time experience for their viewers?" and ending in existential insights such as "if a goal was scored without me seeing it – did it really happen?"

**Moving Back to TS over UDP**

It is a well-known convention that in order to reduce streaming latency, chunked HTTP protocols should to be discarded, and the adaptive bitrate concept should be implemented on UDP and not on TCP. Therefore, it is critical to develop an ABR mechanism and protocol which handles MPEG-TS over UDP. The protocol is enforced by an advanced CDN technology and the player's embedded SDK.

**Internal CDN Distribution**

The most effective CDN architecture for OTT makes the best streaming serving decisions and has the proper performance algorithms. However, for live streaming, low-latency CDN architecture is based on the common publish-point-to-multiple-edge-POPs concept.

In this low latency implementation, the use of an ABR transport stream negates the need for a packager. The CDN's Publish-Server gets from the transcoder couple TS in different bitrates and profiles. It then pushes these streams to the appropriate edge servers according to special internal distribution algorithms, based on consumption patterns and overall system load.

The CDN must ensure a sufficient bandwidth between the CDN POPs and the publishing point to accommodating the sum of all profile levels of all channels. The TS profiles are being determined as part of the project plan, according to the users' devices and type of content.

*If a goal was scored without me seeing it - did it really happen?*

*Eitan Koter is co-founder and co-CEO at Vimmi, and has over 17 years of extensive experience in all segments of the international telecommunication and video markets. Prior to founding Vimmi, Mr. Koter served as CEO of Bluebird TV, President of Scopus Video Networks (today Harmonic HLIT) and Senior Sales Manager of the Next Generation Telephony and DCME division of ECI Telecom. Mr. Koter holds a Business Administration degree from New England College in New Hampshire, USA. He holds Degree in Engineering from Management College Israel.*

**Detecting Bandwidth Fluctuation and Switching Between Bitrates**

This low-latency CDN mechanism treats a live playback request as any standard playback request: the CDN picks the best edge server to serve the specific request (based on the CDN grid-computing algorithm). It then generates and sends a token to the requesting client which relates to the chosen edge server, the client and the request time. The client then generates a request (with the token) to start the stream from the said edge server. After the token is authenticated the edge server starts streaming the content to the requesting client, using MPEG-TS over UDP.

Once streaming has started, this low-latency CDN mechanism includes special data exchange between the CDN edge server and the served player, from which the edge server can conclude the current quality of the line.

According to the concluded line quality, the low-latency CDN mechanism continuously makes decisions whether to increase, decrease or keep the current stream profile. Once a decision is made to change the stream's bitrate, the edge server picks from the multiple input TSs, coming from the publish point, the one which fits the optimal bitrate - and pours the packets of that (input)

*If a tree fell in the forest... similar to a goal being scored, latency is a big problem.*

TS to the output TS, starting from the exact location where the previous TS was cutoff.

This mechanism of constant monitoring, profile switching and stream concatenation, implements a pure adaptive bitrate policy while maintaining a continuous TS connection to the client. The result is an optimal quality of experience for the viewer, both in terms of video quality, RTT and, most importantly, streaming latency - with an average of less than 1-second from the actual source feed in any unmanaged OTT network.

**Conclusion**

As the popularity of real-time live content (ie. sports, reality, voting, and betting) is sky-rocking, and as the network's infrastructure, capacity and quality are constantly improving, the common chunked HTTP protocols have become insufficient and the need for low latency streaming solutions has become a necessity. A truly low latency CDN is an inevitable evolution of the OTT streaming industry, and it is just a matter of a few years until it will become a mandatory requirement for any content service provider delivering live content. □

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# Will Social Video Kill the TV Star?

By: Paolo Spiluttini

Social media is increasing attention and investments in the video realm, while new platforms such as Facebook Watch are fueling the growth of social video and could establish social TV as the dominant new TV consumption paradigm.

**The social TV buzz**

In the last few years the growing popularity of IPTV, the booming of online video and the explosion of social media, has made social TV one of the top discussed matters within the TV space. Despite the fact traditional TV has been losing momentum in the last few years, the quick growth of digital video (including OTT) has kept overall video the most consumed media in terms of time spent by end users in the U.S. According to recent research from Activate, in 2017 video accounted for 40% of all media consumed daily in US and is expected to maintain the same weight in 2021. The same research predicts that the time spent on social media is expected to grow by 2.6% CAGR in the same time frame. (chart n.1).

Within the digital video world, social video is expected to be the engine of growth with 18.9% CAGR, which is significantly more than any other digital video category, with Facebook being the major driver (chart n.2). In such a context with video and social media accounting for more than 50% of time spent in consuming media, and the digital video share growing (especially the social part), social TV is attracting the attention of the key tech and media companies.

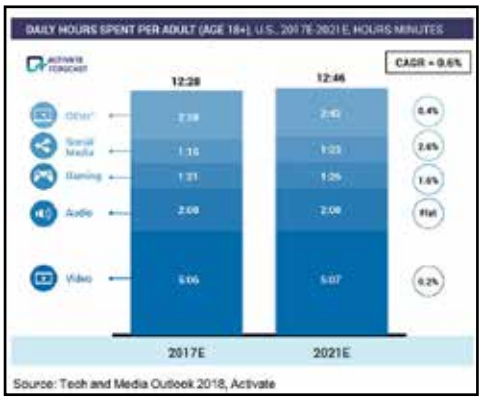


*Chart n.1 – Daily hours spent by media per adult (age 18+) and by device for video*

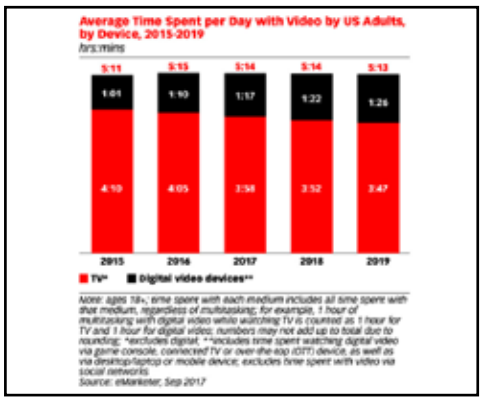


*Chart n.2.– Daily digital video time spent*

**Comparative Estimates: Simultaneous Social Media Usage While Watching TV According to US TV Viewers, 2013**
*% of respondents*

| | 2013 | Activity | Survey base |
|---|---|---|---|
| CreditDonkey, March 2013 | 83.7% | Use Facebook | Social media users |
| CreditDonkey, March 2013 | 66.9% | Use Twitter | Social media users |
| re:fuel, June 2013 | 63.0% | Use Facebook or Twitter | College student internet users* |
| Nielsen, June 2013 | 53.0% | Visit a social network | Tablet owners |
| Nielsen, June 2013 | 52.0% | Visit a social network | Smartphone owners |
| Ipsos Mendelsohn, Feb 2013 | 51.0% | Use Facebook, Twitter or other almost constantly, regularly or occasionally | Affluent internet users** |
| Jacobs Media, May 2013 | 46.3% | Use social media frequently or occasionally | Internet users |

Note: *ages 18-34; **annual household incomes of $100,000+
Source: various, as noted, 2013
162818 www.eMarketer.com

**Comparative Estimates: Social Media Activities Performed While Watching a Program According to US TV Viewers, 2013**
*% of respondents*

| | 2013 | Activity | Survey base |
|---|---|---|---|
| Nielsen, June 2013 | 21.0% | Read conversations about a program on social network | Tablet owners |
| Nielsen, June 2013 | 18.0% | Read conversations about a program on social network | Smartphone owners |
| HUB Research*, April 2013 | 17.0% | Read comments on Facebook or Twitter about show | TV viewers |
| HUB Research*, April 2013 | 17.0% | Posted comments on Facebook or Twitter about show | TV viewers |
| The NPD Group, April 2013 | 14.8% | Discussed show on social network | TV viewers |
| Nielsen, June 2013 | 13.0% | Write blurbs on the program you are watching | Tablet owners |
| The NPD Group, April 2013 | 9.4% | Followed stream of comments | TV viewers |
| Nielsen, June 2013 | 8.0% | Write blurbs on the program you are watching | Smartphone owners |

Note: *ages 16-64
Source: various, as noted, 2013
162817 www.eMarketer.com

*Chart n.3 – Simultaneous social media and TV usage in the US*

*Paolo Spiluttini, Vice President of Marketing for Du, is a seasoned marketing and strategy executive with twenty years of experience in the Telecom and TV space. He has been leading the TV strategy and go-to-market execution for key players in multiple international markets (Italy, UK, Greece and UAE) across DTH, Cable, IPTV and OTT platforms. He is a strategic leader and passionate writer about technology and new media, with focus on the radical transformation occurring in the video space. Paolo holds an Executive MBA from Cass Business School London.*

**But what is social TV?**

The most common understanding of social TV is the simultaneous consumption of television along with social media to discuss the same program shown on TV. According to a study from eMarketer that aggregated data from different market research companies, most of social media consumers use social networks through their smartphone or tablet while watching TV. The interesting part is that quite a good portion of these viewers talk about the content that they are enjoying on the TV screen (chart n.3)

The social TV phenomena is highly relevant, especially from an advertising point of view, for both TV and social media players. The social chatter means higher level of engagement for the TV and social media users, it means more exposure for the advertised brands, it can also attract more TV viewers, and it provides real-time feedback from customers and ultimately translates into extended time spent online increasing advertising monetization opportunities.

**Who's going to lead the social TV evolution?**

There are three main worlds involved in the dynamics of social TV: traditional TV, the emerging and fast-growing OTT video, and online video. The question is who, in the complex and fragmented media industry (chart n.4), will take the lead in the social TV evolution?

Traditional tv and media players are leveraging social media mainly as an

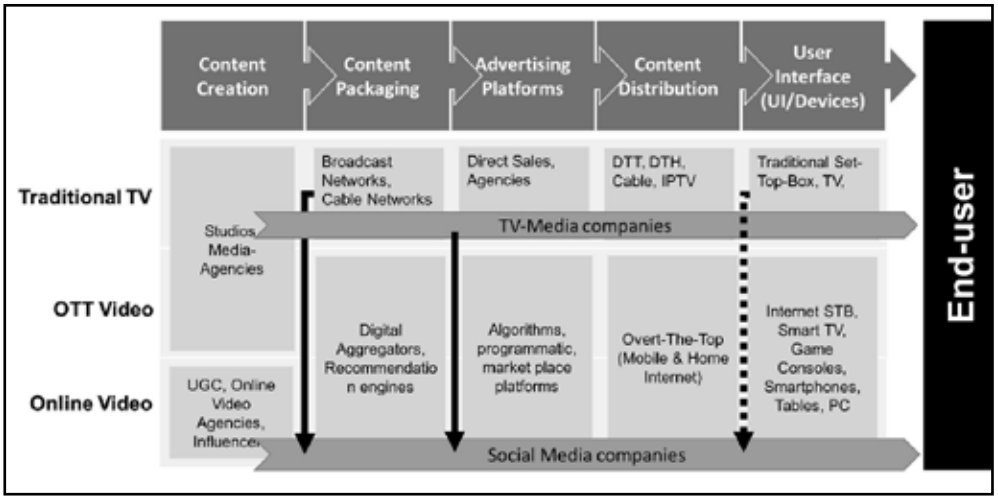


*Chart n. 4 – Media value chain and Social TV key possible actors*

| Rank | Network | Program | # of Episodes | Average Total Interactions (000) | Average Facebook Interactions (000) | Average Twitter Interactions (000) |
|---|---|---|---|---|---|---|
| 1 | HBO*, HBO Latino | Game of Thrones | 7 | 2,566 | 1,946 | 620 |
| 2 | AMC | The Walking Dead | 14 | 870 | 738 | 132 |
| 3 | FOX | Empire | 16 | 507 | 441 | 67 |
| 4 | NBC | This is Us | 16 | 486 | 447 | 39 |
| 5 | ABC | The Bachelor | 10 | 453 | 286 | 167 |
| 6 | VH1 | Love & Hip Hop: Atlanta | 18 | 380 | 297 | 83 |
| 7 | Freeform | Pretty Little Liars | 10 | 345 | 237 | 107 |
| 8 | USA Network | WWE Monday Night RAW | 47 | 332 | 221 | 110 |
| 9 | NBC | The Voice | 44 | 299 | 183 | 117 |
| 10 | STARZ | Power | 10 | 299 | 251 | 47 |

Source: Nielsen, 1/1/17 - 12/5/17

*Chart n.5 –Top social programs of 2017 in US: ranked by total interactions per episodes*

engagement channel.

Traditional TV is heavily active in the social media space, driving millions of social contacts per episode as per the Nielsen report (chart n.5) that lists the top ten TV shows ranked by average number of social interactions. TV networks are also attracting millions of followers on their Facebook pages, Twitter accounts and YouTube channels. The primary objective of TV networks presence on social media is to engage more viewers. However, such huge numbers translate into advertising revenue for cable networks, though still a fraction compared to traditional TV advertising. Jason Klein, co-founder and co-CEO of ListenFirst Media, a company specialized in social data, said, "But whereas social was all about audience development… now we're seeing many networks with communities of tens of millions of fans selling ad opportunities against that." In this respect, another recent study from Nielsen, that looks at the Super Bowl XLIX broadcast, assumes a correlation between the amount of chatter on social media and TV ranking. According to the study, every new Facebook post within the first fifteen minutes before the game correlated to approximately 250 additional TV viewers in the first minute, and an additional share correlated to 1,000 viewers in the same time-frame. Of course, correlation doesn't prove causality however, it's not the first research report that suggests some relationship between TV viewership and social activity. For example, a 2014 study by Twitter and Fox found that 92% of Twitter users have taken immediate action (like tune to live TV) after seeing a tweet about a TV show.

In the OTT video landscape, Netflix holds some key ingredients, such as a huge and fast- growing base as well as original and emotionally engaging series, that could be the basis of new social features. The millions of people that have watched Netflix super-hits like Making a Murder, Breaking Bad, Stranger Things or Narcos, are familiar with the compelling need to share about the series to all their friends. However, being that Netflix is a business model exclusively based on subscription revenue, introducing a social element to its service would have limited monetization opportunities unless Netflix would be ready to open to advertising.

Within the TV industry, video platform vendors have been trying to ride the social TV wave, complementing their solution with the integration of social media features. Solutions like Facebook Connect to login into your TV service, provide the customer with a single sign-on experience and many social-related features such as sharing and commenting directly from the TV screen to the programs that are being watched. I have seen few demos of such solutions but I haven't seen any of them implemented in the market yet. One possible reason could be related to the uncertainty of what the resulting customer experience could be when bringing the social world to the TV screen. Since the TV screen is a shared display this could open privacy issues, furthermore interactivity via a TV remote could pose user interface experience problems and the full-screen viewing experience could risk making social interactions too intrusive for TV viewers.

***Traditional tv and media players are leveraging social media mainly as an engagement channel.***

In summary, high fragmentation within the TV industry, the limited TV content suitable for social media consumption patterns and the inadequacy of the TV screen to become the main destination for a social TV platform, represent the key barriers for the TV industry to take the lead on the social TV evolution. The consolidation trend ongoing between TV and media driven by traditional players aims mainly to respond to the emerging OTT video threat, but doesn't seem to take into account the emergence of social video.
Social media giants are leading the game in the online video space and adapting their strategy to exploit the social video surge!

Despite the common definition of Social TV that requires, as we have seen, the consumer to interact with two different screens, typically a TV set and a smartphone,

tablet or PC; there are also situations where the end user can perform both actions, watching and discussing, on the same platform and on the same screen. This is the case for social video, where video content is brought to the consumer directly on social media. This is also social TV and it denotes that there is some convergence between the tv and the social media worlds, which is a key factor for the evolution of social TV in the future. In this regard, on top of the social interactions around TV shows and programs that we discussed above, there is also a massive production of social-optimized content, mainly video. The two social media giants Facebook and YouTube are determined to continue growing their video business by entering new areas as shown in the chart below from the Activate Tech and Media Outlook 2018 report (chart n.6).

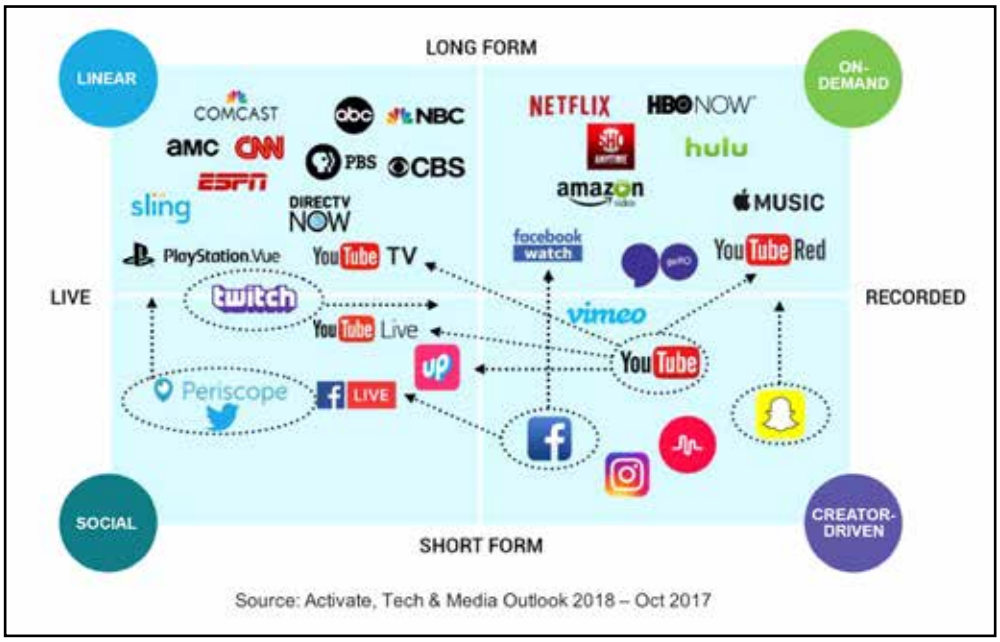


*Chart n.6 – Video Segmentation Matrix*

***Social media giants are leading the game in the online video space and adapting their strategy to exploit the social video surge!***

The most interesting initiative regarding the social TV is represented by Facebook Watch, a new service launched in August 2017 in the US market. The service features both third party TV shows and Facebook's own ad-hoc productions. According to The Wall Street Journal Facebook is willing to spend $1 billion on original shows in 2018. The shows that have been funded by Facebook so far include Mike Rowe's docu-series "Returning the Favor"; reality series "Ball in the Family" about L.A. Lakers rookie Lonzo Ball and his family; A&E's couples prank show "Bae or Bail"; BuzzFeed dating show "RelationShipped"; and unscripted series "Bill Murray and Brian Doyle-Murray's Extra Innings." Facebook users can also enjoy live sports through Watch, including the Major-League Baseball games and NCAA college basketball games. Big TV productions and popular programs streaming rights are not the only way Facebook Watch is getting traction, but also through content related to local communities. *Fiona* the hippo show is an interesting case. Facebook contacted the Cincinnati's Zoo to produce a show about Fiona, a baby hippo, and since the launch a year ago the series has attracted millions of viewers. On the wave of such success the Zoo has produced season two that started on January 24th, 2018 (Fiona's first birthday). According to a recent study from Morgan Stanley, 40% of Facebook users access Watch on a weekly basis, 75% of the videos are less than 20 minutes long, similar to YouTube. Facebook executives have stated that the service is intended to remain an ad-subsidized model and as per Facebook's Head of Global Creative Strategy Ricky Van Veen "We're not going to win by competing with prestige, hour-long dramas. What's going to differentiate us is a show that uses social fabric."

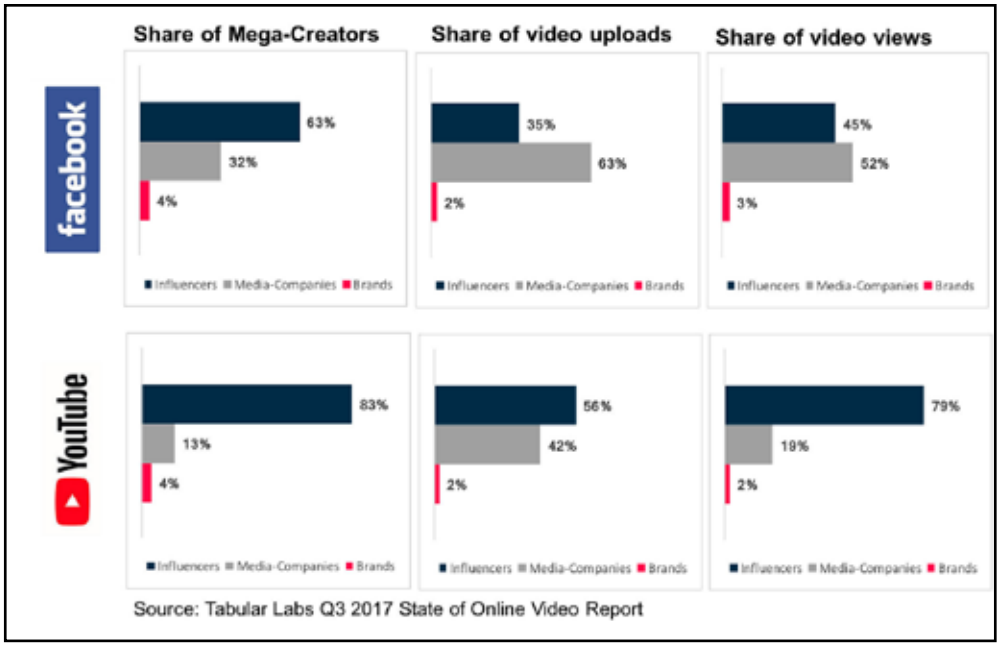


*Chart n.7 – Facebook and YouTube video stats*

There are fundamental differences in how Facebook and YouTube are developing their social video strategy. YouTube is largely skewed toward influencers which represent the majority in term of number of video creators, videos uploaded and viewership. On the contrary, Facebook relies more on media companies in terms of views and uploads, even if the majority (63%) of their mega creators are represented by influencers (chart n.7).

This picture is the result of a trend that has seen the influencers ratio growing for YouTube and the media-company for Facebook as you can see in chart n.8.

For YouTube, the top media companies' creators are TV shows, artist and TV networks, while for Facebook they are online publishers like BuzzFeed. Yet, to push the growth of its new Watch service, Facebook could progressively increase the portion of TV shows and home-grown productions as well. Certainly, Facebook Watch represents an interesting move, however, predicting which type of content will prevail in the new

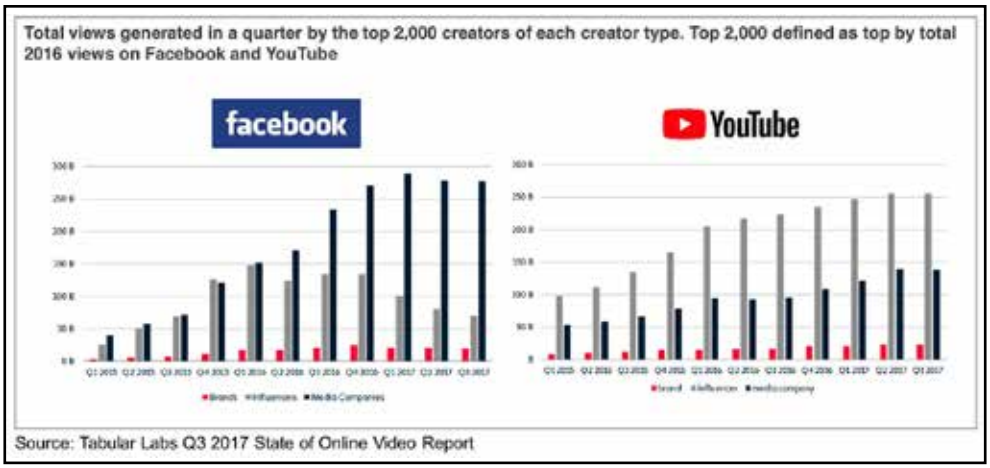


***Chart n.8 – Facebook and YouTube total views by source for top 2,000 creators***

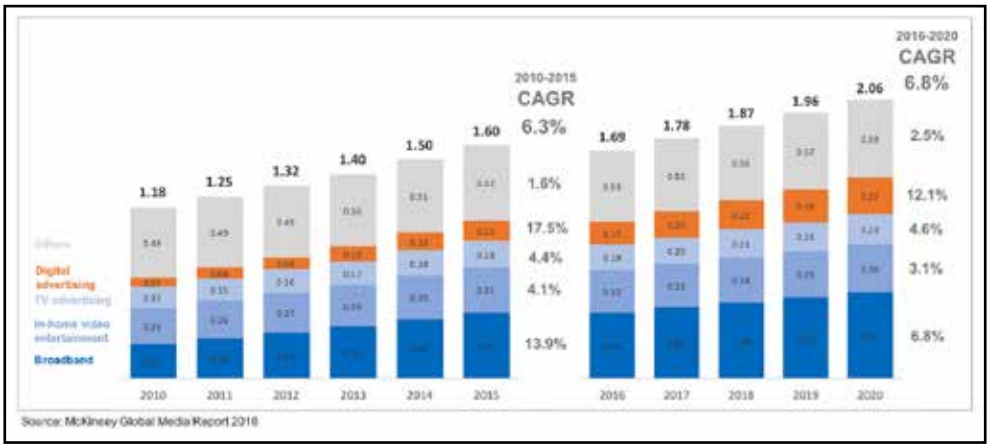


***Chart n.9 – Total global spending by media category (US $ trillions)***

social TV platform remains a hard guess.

Traditional media players remain focused on core business, reassured by a comforting picture that see access and traditional media still recording a good growth in the coming years.

The trend of global revenue for the key media value streams provide a relatively comforting picture for traditional media players that, in fact, remains focused to preserve and grow their core business. According to the McKinsey Global Media Report, in the period 2016-2020 Digital Advertising will have the highest growth with a CAGR of 12.1%. However, in the same period the spending on access (broadband), in-home entertainment and TV advertising, are expected to register a relatively good growth respectively of 6.8%, 3.1% and 4.6% CAGR and to remain the top contributors to the overall media spending.Chart n.9 – Total global spending by media category (US $ trillions)

In this context, only a drastic change in the current media consumption patterns could push traditional players to look at social TV as a serious imminent threat and a potential opportunity. In this regard, the type of content that will meet customer desires in social TV platforms like Facebook Watch will play an important role. If short videos related to specific themes will remain the main model, it will be difficult to expect social video to have a huge impact, at least in the short-to-medium term, over traditional TV and OTT video, which will continue to be the main providers of live events, news, linear channels and premium shows. Moreover, if social TV will remain focused on small screens, like smartphone, tablet and PC, leaving the TV big screen to TV players, that will also limit the inroad opportunities of social video into the in-home entertainment space. A totally different scenario would be if social TV platforms like Facebook Watch massively produce original TV-like content and extend its platform to the big TV screen becoming available on most popular OTT devices like Roku, Apple TV, etc. In such a scenario, the current strategy of telecom providers securing access and control of the content through acquisition of media companies (i.e. Comcast/NBCUniversal and AT&T/Time Warner) and the strategy of content giants securing direct access to consumers with the launch of their own streaming service (i.e. Disney), might not be enough. □

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# Beyond Social TV to Intelligent TV

By: David Mühle

Why sample size matters for the new TV; what is needed to accomplish stickier video discovery and social TV platforms; and why cross-platform recommendations are the future of everything.

When Spotify was launched, the pitch was crystal clear: all the world's music in a single app. It was bold, powerful, and to the surprise of many, achievable. Spotify has also succeeded to get their users meaningful social and sharing features. The company's subsequent success led many to believe the movie industry would evolve along the same lines. Yet almost a decade later, it's becoming abundantly clear that it's not happening any time soon.

Many have tried, including tech-giants like Apple and Amazon, but no one has been able to solve the equation in a way that's satisfactory to both producers, distributors, and consumers. As a result, the consumer is left with a notoriously fragmented video landscape that's constantly shifting as titles migrate from one service to the next. From a user perspective, it's a pretty crappy deal.

This is why Playpilot was founded 2015, a free search and discovery platform that allows users in Sweden and Denmark to explore all their streaming services through a single interface and use social features to get recommendations from friends, ratings and lists. However, let me first start with some context.

It's a story of increasing engagement via social features and personalization told through four distinct phases, all characterised by different technologies that greatly impact the amount of consumption choices available to viewers.

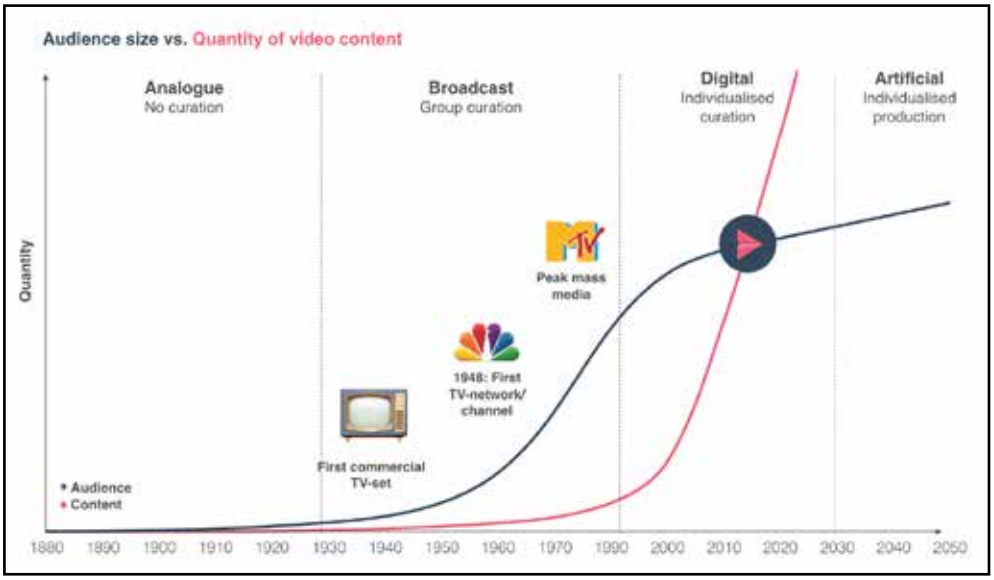
The first phase is the analogue era between 1880-1930. It was characterised by low volumes of content, poor accessibility and few video consumers. In this phase, a single person could arguably consume the entire world's moving media. Hence, there was no real need for any curation, something that would change in the second phase.

The second phase was the broadcast era that roughly spanned between 1930-1990. In this phase video became mainstream and the quantity of content grew significantly. As consumption choices increased, so did the demand for a more individualized experience. Luckily broadcasting technology offered a new powerful navigational structure that allowed viewers to tailor their viewing by tuning in to the right channel at the right time. The invention of the channel was especially significant since it allowed the market to be segmented for the first time, resulting in massive media brands that acted as curators for large portions of the population. The end of this era was most likely the peak of mass media – never have so many people gathered around so few pieces of content.

*David is the CEO of Playpilot the leading Nordic streaming aggregator. David has 15+ years of experience in technology/sales/marketing-leadership, within several of Swedens most valuable start-ups. Before Playpilot David has been VP Sales at Ooyala (US based, 500+ employees) and worked in leadership positions at Videoplaza, Ftrack, Tradedoubler and Musicbrigade.*

The third and current phase is the era of digitalization (1990-today) where the cost of producing and distributing content has dropped like a stone. Simultaneously access has radically improved resulting in a literal explosion of content. If we were previously swimming in a lake of consumption choices, we now find ourselves in a massive and ever expanding ocean that would take many lifetimes to explore. Consequently, it's become much harder to get a good overview. This problem of too much content and too little time, or informational overload as it's often referred to, has quickly resulted in an even greater demand for content curation. The issue is somewhat alleviated by word of mouth, social platforms like Twitter / Instagram and human curators/influencers, but the real cure is something far more powerful, namely the recommender system (also called a recommendation engine).

By combining and analyzing two basic data sets: one that details individual preferences and one that details content, it predicts what we want, and when we want it. It then goes on to limit the amount of content we are presented with, giving us fewer yet more relevant choices. It's the thing behind the thing that decides which posts you see on Facebook, what books you find on Amazon and what movies are displayed when you log into Netflix. We would argue that in the long run, it's one of the most impactful inventions of our time and as it grows more




***Social TV is combining with intelligent TV to create the era of "individualized production."***

accurate and intelligent, it will determine an increasing share of our experienced reality, not by expanding our options, but by limiting them in a meaningful way.

However, not all industries benefit equally from this innovation and when it comes to video, the recommendation revolution has recently come to a grinding halt. It is not because the streaming services have failed to adopt the new technology, in fact most modern streaming services have a recommender system. Instead, the problem is that most consumers think the suggestions offered are bad, and this is true even when talking about the best-in-class Netflix engine (one of the world's most advanced recommender systems). At the same time, Spotify is universally praised for their Discover Weekly playlists and their radio feature. Why is that? We find it unlikely that Spotify has better data scientists or more processing power than Netflix does, so it is more likely to be something else. We believe the answer to be quite simple - it is the sample size!

While Spotify can offer recommendations sourced from an essentially global pool of content, video streaming services can only source from their own limited selection. It's a classic silo-problem that can't be solved from within. In addition to this there are no VOD services that successfully use social features like, for example, sharing of watch-lists, ratings etc. Why would you start to rate movies on a service that only offers a fragment of the content that actually is available? Same dilemma, sample size is the problem. The solution instead lies in building a third data set that details where titles can be streamed. Once that data-set is built and incorporated into the equation, the social features starts to become really viral and the recommender system can start sourcing recommendations from the entire market, without being restricted by any local boundaries.

***This problem of too much content and too little time, or informational overload as it's often referred to, has quickly resulted in an even greater demand for content curation.***

At Playpilot, we now have this data set in place and are building a layer of data-driven recommendations and social features on top of the existing eco-system. The benefit of such a system is perhaps more obvious for video-streaming than it is for other less fragmented industries, but the model is widely applicable. In fact, we believe the next stage of digitalization, broadly speaking, will be about applying social features like sharing, list creation, etc. and recommender systems to work across services rather than within them. At a quick glance, Playpilot may come across as a simple search engine, or a social TV-guide for the digital age, but when viewed in this context it's much more than that. The way we see it – it's the next interface for moving media and the natural starting point for all video consumption.

We've all heard that AI is eating the world, and it is likely the next platform for everything. But what will it look like? We're betting that rather than a single app, the future is about specialized cross-service systems networked together with the purpose of helping consumers make great choices across several domains. Over time, we expect these systems to evolve to the point where they can offer optimal recommendations, i.e. we will choose what they suggest at a rate close to 100%.

What happens next is anybody's guess, but it's not a stretch to think that the next paradigm is less about individualized selection, and more about individualized production, ultimately written in real-time by a networked system that has far better understanding of our preferences than we do ourselves. This is where the concept of mass-media will truly go to die, since at this point, no two people will ever consume the same content.

If you're a person worried about privacy, personal data or filter bubbles, there is reason to be concerned. If not, then lean back and get ready to watch the best movie you've ever seen, every time you watch a movie. □

# Maintaining Quality Control in OTT Video Applications

By: Dan Murray

As OTT service providers seek to monetize their offerings, through increased viewer subscriptions and advertising revenue, they face the ongoing challenge of minimizing subscriber churn. Although many aspects of the viewer's experience can influence churn, one action that operators can take is to ensure that their customer's viewing experience is the best that it can be. This can be achieved by guaranteeing that the right content is delivered reliably when requested by the viewer and when it is viewed, it is of pristine quality.

Traditionally the OTT market has been associated with millennials using mobiles, tablets and computers as viewing devices. However, more recently there has been significant growth in OTT viewership by older demographics, using connected TVs as their viewing device of choice for premium video content. Nielsen survey data shows a 45 percent increase in OTT viewership by adults aged 50 to 64 and a 36 percent increase by adults aged 65+, which is faster growth than for the 25 to 34-year-old demographic. At the same time, TV viewing hours per week are stable with 50 to 64-year-olds and are in fact growing with the 65+ demographic.

It is important to recognize that the 50+ year-olds also represent a large proportion of spending power and, as such, their specific needs and concerns need to be catered to as they begin to transition from traditional TV platforms to OTT platforms. These consumers are one of the primary targets for traditional TV advertising and increasingly need to be one of the primary targets with OTT operators for advertising spots.

Younger demographics are happy to engage in a so called "lean forward" viewing experience by actively engaging with mobile and computing devices, often while engaged with other online activities. However, the older demographics tends to engage in the "lean back" viewing of programming in a passive, relaxed but focused viewing posture using large-screen TVs as the primary viewing device.

*Dan Murray is a product manager in the Video Product Line at Tektronix and has more than 20 years of experience bringing networking, performance, and security products to market. Prior to Tektronix, he was responsible for security visibility solutions at APCON and held senior positions with Kentrox and ADC Telecommunications. He holds an electrical engineering degree from Portland State University.*

As large-screen TVs become more common as OTT viewing devices, ensuring image quality will become an increasingly important issue. On a small-screen device such as a phone, image quality is less of an issue. Also, OTT streaming is a practical

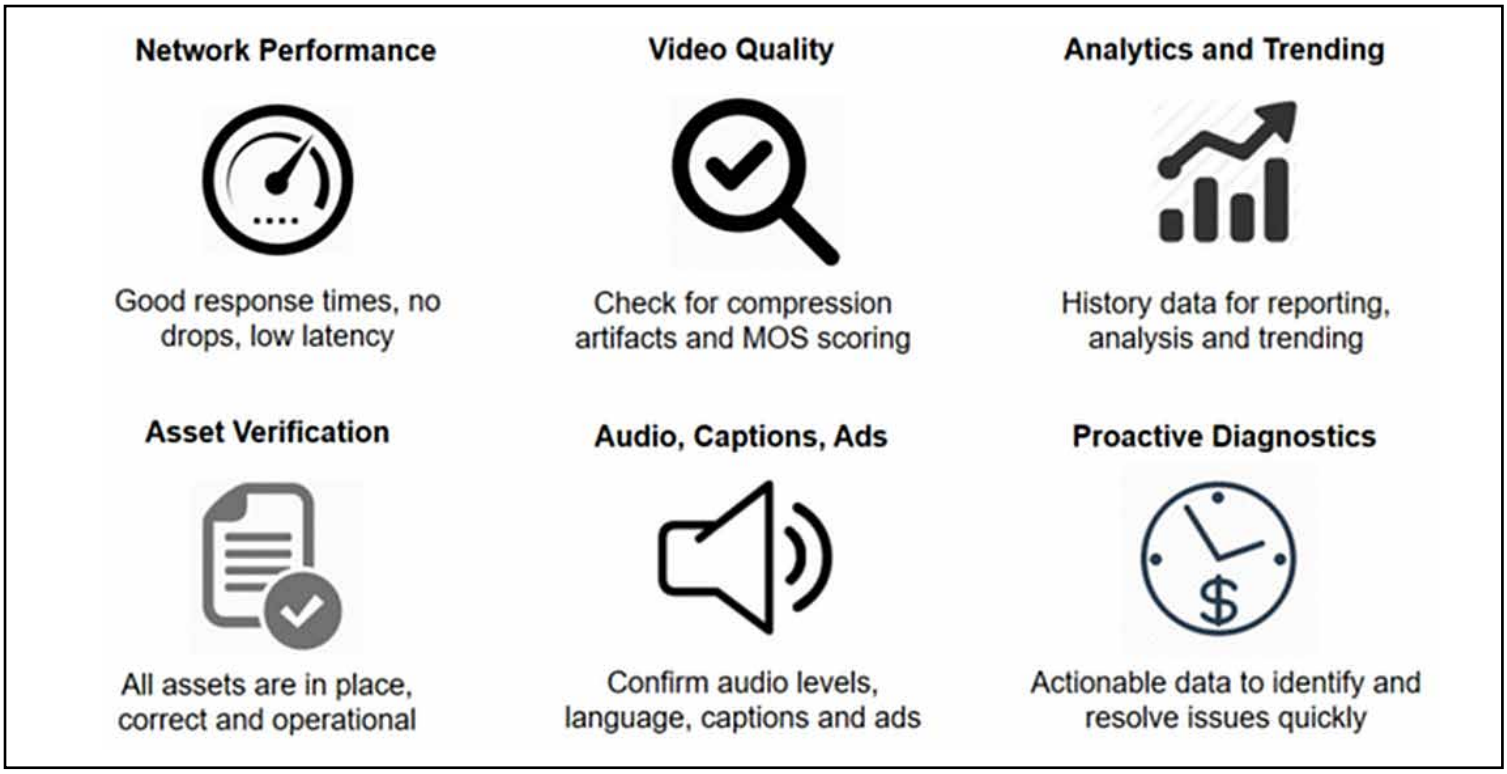



***Figure 1. Here's a summary at what should be monitored for OTT streaming.***

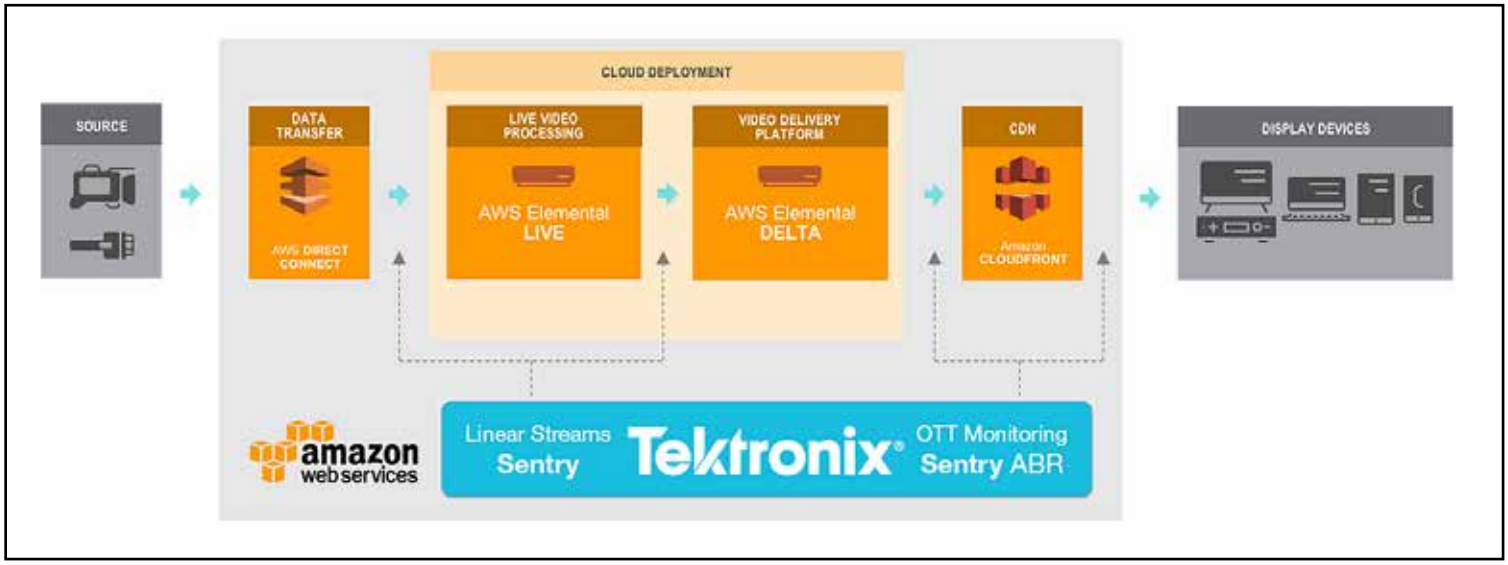



***Figure 2. Monitoring points in a cloud-based OTT network***

method for accessing compelling 4K/UHD content, where the full benefits over HD are not fully realized unless viewed on 55-in. or larger screens. With larger screens, picture quality is everything. Along with the maxim of "content is king," a second maxim is applicable here: "content quality is king."

**Two quality measures**

To ensure the quality of video and audio assets, it is important to check for two different sets of issues. The first is Quality of Service (QoS) and the second is Quality of Experience (QoE). Broadly speaking, QoS refers to the ability of the network to deliver a service and focuses on network performance factors such as availability, packet loss, jitter, latency and bandwidth. All these issues impact service performance, but crucially may or may not be observable by the viewer. On the other hand, QoE refers the viewer's actual experience and covers issues that directly impact the viewing experience such as corrupted content, poorly encoded content, program loudness, missing closed captions and subtitles and more. It is quite possible to have perfect QoS but poor QoE, or conversely poor QoS while the viewer cannot see or hear any impact. As the ability for streaming platforms to deliver content becomes increasingly reliable leading to higher view expectations, checking for QoE becomes a more important element in helping reduce churn.

**Taking stock**

Network performance is a vital consideration, and certainly there should be low latency when a channel is selected and no data loss that could result in picture or sound breakup. Regarding the picture itself, it's important to check that there are no excessive compression artifacts, such as blockiness that could affect the viewer's enjoyment. Commonly, the measured video quality is expressed as a Mean Opinion Score (MOS) that represents how well a viewer would rate the picture quality. From an audio perspective, it is necessary to ensure that levels and loudness are acceptable, the correct language is being played out and that captioning is present and correct. Figure 1 provides a summary of what should be monitored for OTT streaming.

From an overall programming viewpoint, it's also important to verify that advertisements have been correctly played out, including snapshots of the actual ad content. It's also vital to know that the correct assets are in place on the server, are operationally correct and will play out when requested by a viewer.

During playback, QC tools should proactively alert the operator when a viewer-impacting issue has been detected to enable immediate corrective action, before the viewer makes a complaint or even just changes the channel. Additionally, all captured data needs to reported in a meaningful way to allow easy system performance reporting and trending.

With the onset of cloud-based workflows, all the above QC checks and reporting should be performed directly in the cloud, avoiding the need to move assets in and out of the cloud for checking. A typical cloud based live OTT workflow like that shown in Figure 2 ingests content from a non-cloud-based content source that is in turn connected to encoding and packaging. This converts the content to an adaptive bit rate (ABR) stream, applies the relevant Digital Rights Management (DRM) and forwards the resulting stream to cloud-based Content Delivery Networks (CDNs) for delivery to the requesting viewer.

In cloud workflows each asset is ingested, content is verified, encoded and packaged, DRM is applied and is then transferred to a playout server that provides content to the CDN when requested by a viewer. CDNs can be geographically deployed anywhere in the world, making it desirable to check QoS and QoE in remote cloud-based locations.

**Monitoring tools**

For comprehensive QC, cloud and appliance solutions should be able to monitor each key point along the live workflow. This includes QoE and QoS monitoring at ingest and encode coupled with post packager/CDN monitoring. For QoE monitoring, DRM support with a range of decryption options is a critical element. This ensures that live content is continuously checked for outages and offers both true video quality QoE as well as operational QoS monitoring for a complete view of the customer experience exactly as they see and hear it themselves.

For on-demand applications, automated file-based QC software tools running on both the cloud and on-premise servers can QC check any file-based asset after it is ingested to validate that the asset is available, that the content is in the correct format, and that it can be played out with acceptable quality. The QC tools should also easily integrate into workflow management solutions. With the right monitoring solution in place, you can deliver the quality experience the growing number of OTT viewers expect and minimize churn. □

# How to Scale OTT Globally

Interview by Brian Mahony with Yves Boudreau

*In this interview, Brian chats with Yves Boudreau, Vice President of Ecosystem Partnerships & Strategy for Ericsson Unified Delivery Network.*

**Brian:** Yves thank you for joining us for our continuing OTT Executive Q&A series. Before we jump into it, can you please give us a brief introduction on yourself and Ericsson UDN?

**Yves:** I started off in the internet industry in the early days working for a cable operator. I have been working at Ericsson for about six years and it's been a great experience so far. I've had a couple of different roles running their technical sales organization in North America and I've spent some time reporting into the technology strategy group. For almost a year now, I have been working with the UDN organization. I take care of partnerships, ecosystem strategy and most recently marketing and communications for the organization.

**Brian:** Thanks for the introduction. Let's talk about UDN. With great fanfare, UDN was launched about two years ago. What was the genesis of the launch and what progress have you made in the last couple of years and what is your focus now?

**Yves:** I what I think has happened here over the last several years is that OTT delivery of video is really now a legitimate business. I think we all saw that that was going to happen. If you look back 20 years ago when I first started, even just streaming radio even on the internet was something revolutionary. People fought the same battles as they did initially with OTT questioning whether listening to music on the PC was going to catch on. Fast forward a few years, and you have everybody walking around with mobile phones listening to that same streaming audio. Move that along to video and we are in now the early majority stage of the OTT life cycle. A lot of growth happening and in all of the OTT services area. But given the heavy bandwidth requirements of video in general there is not a really good way to scale past this 3-5% range that we are in right now. We've been watching this trend for the last ten or so years when Ericsson first got into the video business from a technology stand point and have been trying to find ways to not only make sure that our operator networks are prepared to handle the incoming traffic, but also trying to understand from a business stand point how they can actively participate, not only in the technology aspect of these things in delivering the content, but also the business side.

After the last CDN federation efforts, circa 2010, ran into trouble both technically and commercially, we decided to give this some thought on how can we do things differently here to help our service provider customer base. You probably know that Ericsson is a 140 year old company. The question we asked is not just how can we help our service provider customers with technology, but how can we go one step further and help them disrupt the market as we get to that top of the bell curve where early majority and late majority people really scale this OTT thing. What we said was we've got to do something different. So rather than going to speak to the service provider community and tell them what they should do, let's get in there and do it with them. Let's invest our own money, let's build our own sales force, and let's try and create (in partnership with service providers globally) an edge delivery platform based on a common set of technologies and some common business parameters where we actually invest with the operators.

And that's what we've done. Over the last couple of years, we've set up 22 core instances of our UDN edge delivery and edge compute platform between now and last year. We've now signed up over 80 service providers in different countries and continents to join this program and deployed about half of those. The reason why we are doing this is not only to help the service providers participate in the opportunity of OTT, but we also understand that the internet today just won't scale without the cooperation of ISPs and service providers globally when it comes to the raw bit rates that need to be delivered. Those bit rates are better delivered from the edge of a network, in a low latency environment, connected directly to broadband customers. I think we are seeing enough complaining on social media that OTT is currently having issues scaling. So we believe that in partnership with those service providers, we can build, and now have, a live network carrying traffic in partnership with those service providers right at the edge which should help us will help us scale this next major wave of traffic coming into the network as more traffic moves from the operator wall garden services to just traditional OTT streaming services over the internet.

*Mr. Boudreau is a 20 year veteran of the Digital, Telecom and Cable TV industries. From modest beginnings of one of the first cable broadband ISPs in Canada to the fast paced technology hub of Silicon Valley, Yves joined ERICSSON in 2011 as Vice President of Technical Sales Support and most recently has accepted a position as the VP of Ecosystem Partnerships & Strategy for the ERICSSON Unified Delivery Network. Previously, Mr. Boudreau has worked in R&D, Systems Engineering & Business Development for companies such as Com21 Inc., ARRIS Group (Cable), Imagine Communication (Video Compression) and Verivue Inc. (CDN). Yves currently also serves on the Board of Director of the Streaming Video Alliance (www.streamingvideoalliance.org)*

**Brian:** So let's break this down a little bit. Which came first? Was it more of the collaborative business model with the operators or was it more solving the quality problem in the last mile of the network edge?

What was the prime motivator?

**Yves:** I think initially the prime motivator was to put together global networks and a one stop shop for application providers to come and deploy and reach a global audience. As you have probably followed over the years, by definition, ISP and service providers typically operate at best in a country and in some cases multi-country environments—there is nobody who is really operating edge services globally. You will find some exceptions here and there. Liberty is a good example. Deutsche Telecom, Vodafone and some others have multi-country operations but nobody is really global like us. What we've seen over the past two years, is that when somebody is looking for content delivery or they are looking to onboard their application onto a cloud or an edge cloud, you really want to go to one maybe two companies to have that content delivered or have that application executed. They don't want to go to 500 service providers with the spare technology stacks. The tipping point here really has been the demonstrated scale of Google, Amazon, Facebook, Apple, Uber, Airbnb, all these companies can be overnight product successes or a very, very short period of time using common infrastructure that's deployed globally.

**Brian:** Let's attack that problem a little bit because in my experience, and this is changing a bit, a lot of these video content services really are kind of blocked geographically at the border so to speak. That is changing but the licensing rights for distribution has a lot of restrictions. Do you see that changing and is that an opportunity for UDN?

**Yves:** Yes, it is changing and you see that. And traditionally you are right, people who own the copyrights to these different programs and sports in-country have been trying to do a better job at negotiating better deals. It just so happens that negotiating FIFA rights in 180 countries is a lot more lucrative than to give it to one person who can't deliver in those countries. So I think you will see regionalization of content will continue, but again these web scale companies, in this case Netflix, they are not interested in negotiating for distribution in the US separate from Canada, separate from all the different countries in Western and Eastern Europe. You really are looking for global blanket licensing deals and you are seeing kind of a split now with the expectation of having the right to use content in more than one country. But you are right, that kind of saves a lot of people to a certain extent where they don't have to worry about setting up infrastructure for global delivery because there is still kind of a heavy regionalization aspect there.

**Brian:** But you see that changing from maybe individual regions within a country to a country to maybe a continent to eventually more of a global audience?

**Yves:** Absolutely! These new up and coming companies start with a global "ask" for distribution of that content and then worst-case scenario they settle on multi-countries, but the definite "ask" is global. Even with the high-profile HBOs of the world, if you want to add to that regionalization of content, the release windows shorten significantly. Whereas if you get a season of any HBO with rights for 3-4 months after initial airing, that window is now shortened to 24 hours if you want global distribution rights. Now piracy plays a big role in that, but also just the fact that people can connect to different services and get that content on very short order. It's sort of forced the hand of content providers to make sure that those release windows from a multi-country stand point are also shortened so they get the maximum value of that content.

**Brian:** Basically if you are licensed to distribute on a large scale you want to capitalize on that very quickly?

**Yves:** Yes, absolutely.

**Brian:** So that's the business and license side of the equation, let's tackle the quality side of the equation. For the average consumer OTT video has improved dramatically from its early days where there was a lot of quality issues and it was pretty obvious when you were on something other than broadcast TV. That has really changed now and it's become a lot harder for consumers to know the source of the content of what they are watching. I've done these tests with my own family, my kids, and they often don't know when they are on live TV, video on demand, Netflix or whatever it might be…mobile might be the wild card. But what is the challenge? Do consumers really care? Are there still the same quality issues at the edge? How are you addressing that?

**Yves:** It pains me to see that not everybody is as passionate about technology as some of us, but we're not the majority, we're the minority in terms of people that actually care and understand how things get to us and the large majority of consumers don't care. All they want is a consistent experience on a device in a location that is convenient for them to watch and that has been a big shift (pun intended I guess) in how content providers have viewed the opportunity to get more eyeballs and create stickiness of their content. For example, we just talked about mobile phones and watching content out of your home on a personal device was just not something that you could do 15 years ago outside of listening to the radio on a PC. But ultimately these consumers don't care how it's delivered and they don't understand necessarily how content licensing works and frankly, they don't agree with it. That's why you see such a high rate of piracy in various countries right now, because as far as they are concerned, they've paid for content already and they should be able to do what they want with it. I'm not sure I fully agree with the consumer view of it at all times, but it's a licensing progression that's not kept pace with what consumers expect. The second thing I'll point out here is that TV networks out there today are pretty darn good. When's the last time you saw a re-buffering issue on a set-top box? They're very few and far between. You may see some pixelization and some outages here and there, but they have set the bar really, really high for OTT. For more mainstream events like the World Cup, Olympics, and even regional events that have now become global like the Superbowl, the expectation has been set very, very high. This is where we are going to focus a lot of attention and effort on is creating that TV-like experience over the internet using whatever technology, geography, and business model that we can use to replicate or exceed those expectations.

**Brian:** All the examples you just gave me were of live events, is live-streaming the cutting edge of the technology challenge from an OTT quality perspective?

**Yves:** Yeah, I think what people have proven over the years is that VOD is significantly easier to deploy and scale, especially with long tail content or things that aren't necessarily highly viewed, as opposed to the opposite end of the spectrum which is highly scalable, high value live events. There were some recent comments from industry insiders about ad insertion not working properly during the Olympics. When you are looking at that high value live content, those ads are not cheap. So when those ads do not get inserted or don't get delivered or the stream buffers and people tune away and don't watch, that's a lot of revenue lost. So VOD for long tail is very mature, people do it all day long and there are hundreds if not thousands of services globally who basically got on that bandwagon. But live OTT at scale is something that still struggles today in very, very public examples on social media, in the press and magazines, you name it. People know it's just not ready for primetime and scale.

**Brian:** Meanwhile. the cost for storage has gone way down, the cost for transport has gone way down. There are a lot of debates out there about whether you could actually "break the internet"? If everybody went to live streaming for anything and completely abandoned broadcast, would that break the internet? What is your opinion on this and what would be UDN solution to this problem?

**Yves:** I would say that anyone who says that taking traffic off traditional TV services and putting it on the internet won't break it, either don't know what they are talking about or don't believe that's ever going to happen. So what we are doing to try and get ahead of the curve is to make sure that operators have very heterogeneous and consistent technology stacks installed in their network and making sure that the technologies that we are employing on the network are made visible to content service providers who want to see this thing scale appropriately and embrace our same message of low latency performance and quality when it comes to delivering their content directly to end consumers. For example, if you look at most of the folks who use commercial CDNs today, they have an upwards of 10 CDNs that they use. That's also for capacity reasons and it's also for performance reasons. Certain CDNs perform better in certain parts of the world, certain CDNs have a fixed capacity that doesn't meet the requirements of a growing OTT audience, and our goal is to make sure that we have addressed those performance issues by installing caches, for example, very deep into the operator networks with growing capacity as it's needed and making that available to actual OTT providers. So when we talk about the traditional laws of physics, moving stuff closer to subscribers from a physical standpoint, should and does translate to improve bit rate, lower rebuffering rates and lower latency delivery of content in general.

**Brian:** Do you see more of a hybrid approach between traditional cable, satellite, telco delivery and OTT for the foreseeable future? Is that the solution to the challenge? If everything was switched to OTT tomorrow, we would certainly have problems, correct?

**Yves:** We definitely would, we would have some fairly major problems. If you look at the bandwidth that is installed in a traditional television network, you are talking about the capability of doing 10-20 gigs just in a particular regional cell. If you were to add, for example, one of the large telcos in the 50 top markets, we are talking about hundreds and hundreds of gigs of delivery. When you look at global CDNs, the capacity just is not there relative to what the service providers could provide if they joined the program and deployed infrastructure. I think what people tend to forget is that most people watch the majority of television sitting on a couch to be entertained in their home. The expectation is that they will be able to take that content portable, either by downloading it or being able to resume the last ten minutes of the show in the car on the way to work. At the end of the day, people still largely view content in the comfort of their home to be entertained. In a very leaned back kind of experience. Some will have us all believe that nobody is at home ever anymore, in fact the data shows that people are at home and scared to go outside even more than they were 10, 20 or 30 years ago. Those people are connected to broadband connections within the home or a fixed wireless connection (like a 5G) built on that promise of greater reach and more bandwidth. There is just going to be more and more traffic and the people best suited to deliver that traffic really are service providers and ISPs globally.

**Brian:** One final question. Looking into your crystal ball, where the OTT industry is right now and where it will be say 5 years into the future, what major trends do you see emerging or becoming more predominant?

**Yves:** What you have seen here in a lot cases is people who think this is just a fad. It really isn't. The growth of traffic will continue in the triple digits for the next 3-5 years quite easily. I think it will keep pace with the ability of edge networks, like UDN, trying to deliver it. But I think it will be the responsibility and the opportunity of companies like ours and the service provider community to make sure that it scales at the appropriate rate where they can participate actively in the business aspect of it whereas today that is not the case. But I think you will also see licensing, as contracts are up for renewal, will be looking at more global distribution. And I think you'll see, while bit rates are still very low for the content that you see over the top, people still do want connected TVs at 4K and in the future 8K, and even with the best compression technology that we have today, they are still 3, 4, 5 times the rates that are going down the pipe today. Consumers are not going to be getting less demanding. In fact, you are seeing a lot of cord-cutting happening right now just due to the sheer price benefit. The content itself and the demands of the consumers will continue to grow so we expect that the networks will have to keep pace with that growth as well. In terms of large forward looking things, I think you are going to see more people doing multi-country content deals and making sure that they can use a network like UDN to help deliver that traffic in partnership with operators at much, much higher bit rates.

**Brian:** Thanks for chatting with us today Yves. □

# Want Happy Advertisers? Get the Metadata Right

By: Roger Franklin

The video distribution industry has changed significantly. Consumer demand means it is no longer sufficient to package and provide purely linear television. What we now have is a plethora of on-demand options available to consumers who watch the content they prefer, when, where and on whichever device they want.

The rise of on-demand streaming or over-the-top television is presenting advertisers with the promise – for the first time in history – of accurately targeting their television ads to viewers who will find them relevant, informative and downright fun. In the US alone, advertisers will spend 72.72 billion dollars on TV advertising this year – but are increasingly convinced that they are not getting their money's worth. Ads are being ignored or skipped, they are losing value when watched on-demand several days later than their original airtime, and they are not being put in front of the right people to render them successful.

This is hugely detrimental to content providers, given that most non-subscription OTT services rely heavily on advertising. If ads continue to be skipped or become stale and irrelevant, providers will find advertisers reticent to part with their hard-earned cash, making the provision of OTT all but impossible.

**Catering to the Masses**

As one of the most problematic issues facing advertisers, it makes sense to first understand why viewers are skipping ads in the way that they do. In the online world, it is easy for viewers to skip video advertising, and recent figures suggest that 65 percent of people do.

Why? Lack of relevance to the viewer. Advertisers carefully design ads to appeal to certain demographics, sometimes to within an inch of their lives. I might be interested in ad promoting the latest BMW, or an upcoming series on sports cars, but my good friend Alan has no interest in cars and is unlikely to sit through an irrelevant 30-second commercial.

It's not only viewer interests which are not catered to, it's often simple but essential information such as age, location and gender. Imagine the ineffectiveness of an ad promoting a product which can only be bought in certain locations/states, or perhaps a theme park or chain restaurant which does not have any branches near the viewer.

The problem is that traditional linear TV provides only the most basic demographic targeting of viewers. In theory, OTT viewing provides much greater capabilities but for reasons of technology and business practice, that potential is not being realized. The growth of on-demand streaming has meant that linear content streams are often available to watch via OTT platforms for several days, and even weeks or months after broadcast. The problem is when OTT providers fail to replace the ads in the linear stream, or simply find it too complex and time-consuming to bother.

**Can OTT Pick Up the Slack from Linear TV Revenues?**

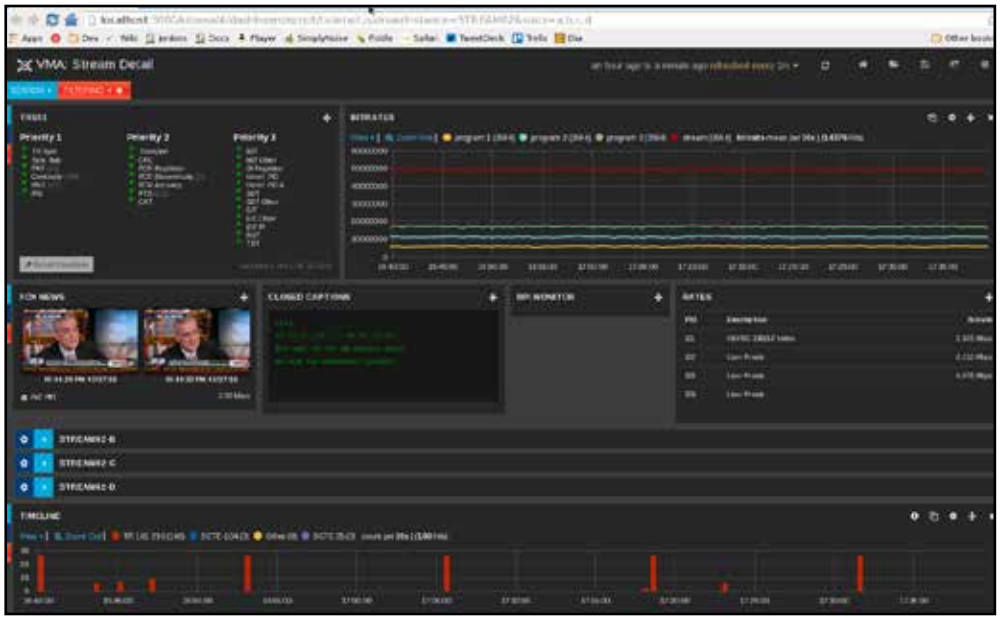
Most broadcasters want to make programs available for on-demand streaming within the C3 window to increase ratings, but to reformat linear content into VOD assets takes time, sometimes up to one-third of the C3 window. This does, however, pose a severe problem in that last week's ads are likely to be out-of-date for a viewer watching today.

For OTT to become more than a "cost of doing business" for broadcast content, content owners and OTT providers need a completely new approach.

*Roger Franklin is the President and CEO of Crystal. Mr. Franklin's unique background as both a software engineer and a business owner drives Crystal's use of leading edge technology to solve real world business problems. Roger specializes in identifying operational inefficiencies and designing intuitive, responsive, and reliable solutions to correct and capitalize on these opportunities. He has been involved with Crystal since its founding in 1986. He holds a Bachelor of Science in Applied Mathematics from the Georgia Institute of Technology.*

The number of viewers watching linear television is falling. This is particularly noticeable when you look at statistics that suggest the total number of hours spent watching video across the world continues to grow, according to a report from Marketing Charts.

Large advertisers are surrendering airtime because they know that for many non-prime time programs, the audience simply is not as large as it once was. If advertisements have



lost their value in linear television, what's not to say that OTT providers could replace that value with on-demand streaming?

**Tracking the Value**

When inserted correctly, and if targeted efficiently, ads within OTT streams can prove more effective than those within linear television, despite the supposed fall in audience size. In fact, in many ways OTT providers have an advantage over linear broadcasters because of the superior targeting and tracking capabilities of online technology. Within OTT streams, new technology offers advertisers information such as how long an ad was watched for, what actions the viewer took (to click-through or skip for example), and even in some cases whether a viewer bought a product.

In the case of the latter, this information is enabled by the connectivity between a viewer's device and the OTT platform. Many consumers now view OTT content on personal mobile devices and this looks set to increase, much to both the advertiser and the providers' advantage. If an advertiser can see that an ad placed in front of a viewer resulted in a purchase on the same device, the value of the ad increases exponentially.

**Making Use of the Data**

What does it take to achieve this cost-effectively and with minimal change to the processes that currently ensure good quality? The answer is metadata – the coding that accompanies the video and contains rich information about the content as well action triggers. In truth, metadata is central to many OTT actions, if not the provision of it altogether, making it entirely significant.

Metadata described within content alerts a playout automation system to what exactly is being viewed. This means providers can build a comprehensive picture of a consumer's viewing habits including the genre of content they watch most often and so on. In instances where a platform is linked to a viewer's device, they can even see what that viewer has been searching the web for. Once this plethora of valuable information has been extracted, metadata markers segment content and signal the precise frame where a segment begins and ends. Any advertising segments can then be replaced on-the-fly with those more suitable to the viewer, perhaps depending on where the viewer is located or contextually based on the content being watched. As this is done frame-accurately according to the metadata markers, the viewer is none the wiser.

Providers can also tackle the issue of stale ads within on-demand streams. A sophisticated system is capable of detecting when a viewer is watching episode one, which may have originally been broadcast two weeks ago, and then swapping said ads with those from the most recent episode. In cases of binge-watching (a phenomenon we are all guilty of!), a viewer may watch three episodes of a series in a row, but will always receive the ads from the most recent episode, thereby increasing the content ratings as the individual ads are watched three times.

The same system, with the help of metadata markers, can also identify memorable moments in linear content, a goal during a soccer match for example, and segment that for promotion on social media perhaps. Better still, the system can automatically place an advertisement in front of the clip with no additional effort from the content provider.

The main reason these value-adding actions have not yet become commonplace is the length of time and amount of labour needed to insert metadata markers and format content. Now, with automation and sophisticated technology, it is becoming much more feasible.

**Shifting Revenues**

Inevitably, if ads are more relevant to viewers they are much less likely to skip them. Research shows that millennials in particular are aware of the necessity of ads and are more open to them as long as the content they are watching is free.

In the future, we may well see big advertisers realise that their linear television ads are not getting the traction they once did, compared with the trackable nature of OTT. As a result, there could be a shift in where the dollars come from, but most definitely not in the amount. I predict that big brands may not spend the same figure on OTT advertising as this technology advances, but we will see smaller, local companies that don't do any video advertising now begin to take advantage of the efficient targeting and low cost of OTT advertising. The dollars per transaction may become smaller, but there will be more ad opportunities given the wide range of ads needed to please a wide range of viewers. On top of this, everything can be automated and therefore cheaper for the OTT provider.

In a future where online video advertising gradually comes to dominate spending decisions, the content owners and program distributors that make the most effective use of metadata will be the winners. □

# Techy TV for the Whole Family

By: Leigh Steele

"Kids, when I was young, TV went off the air at midnight. No more shows, no more news, until the morning. The national anthem would play and then the picture would go fuzzy and make a white noise type of sound. We used to say it looked like snow."

My four kids stare at me in amazement and confusion.

"You mean, you couldn't just pick another channel and another show?" my son asks, as he browses the available movies on Netflix for this evening's family movie night.

Times, they have a'changed. And my family and I take advantage of all that digital technology has to offer.

For every unique TV-watching personality, there is an innovative technology made to match. Whereas once a family of five got used to fighting about which program they were going to watch, my four kids all have the capacity to view different shows - on separate devices - all at the same time.

TV watching has come a long way: from the launch of the first direct broadcast Satellite service in 1991 (Primestar), to the ability to have an infinite number of movies and shows to watch in - quite literally - your back pocket.

In our home, my children favor the diversity of programming, and the accessibility, of streaming videos via YouTube. Whether watching their favorite YouTuber, or learning the latest life-hack, the bite-size offerings of YouTube are perfect for the youthful appetites. The fact that relevant, new content is always available is perhaps one of the most appealing aspects of YouTube.

My favorite way to view televised media is through the built-in apps on Apple TV, such as Netflix and Amazon. I find the navigation to be user-friendly with enough variety in programming to keep me entertained. And where would our society be without the introduction of "Netflix and chill"? The ability to easily and quickly search for a diverse genre of films and shows has made TV viewing so much more accessible. I am also fond of the original programming options found on both Neflix and Amazon, as it provides fresh, diverse content for all ages. That said, I have the tendency to get lose in the rabbit hole of the "search" function. Like many folks, I often end up spending more time trying to pick a show than I do actually devoting time to watching it.

*Leigh Steele is a freelance writer and a Creative Writing teacher who enjoys curating interesting documentaries on Netflix, hiking the vast landscape of Arizona, and traveling with her four children. She coaches a Spoken Word Poetry team at Caurus Acacemy middle school and can often be found baking and dancing in the kitchen.*

Another top media pick of mine is TED talks on TED.com. As a mother, a social activist, and a teacher, TED talks deliver inspiration and insight instantaneously. A quick peek via the search function offers alphabetized categories on topics ranging from addiction to neuroscience, and from capitalism to wunderkind (I had to Google that one). TED.com provides an opportunity to engage in rich conversations and open the mind to new perspectives, cultures, and ideas. I've been able to use TED talks in the classroom as a supplemental addition to my students' learning.

With so many options and viewing devices for on-demand media, a family of any size can easily and affordably meet the entertainment demands of every member. Yet sometimes I find myself wishing for a moment's break from flashing screens. If only the internet had its own version of "going off-air" every night. A little static and snow every now and then never hurt a soul! □

# In BeTWEEN:

## How Tweens Multitask with Technology

By: Kaia

I grab some snacks from the kitchen and plop myself down onto the living room couch. I reach for the remote and open Netflix, and start searching in the Anime section for what I might want to watch. I select one of my favorite shows that I watch often. I sit on the couch watching my show, when all of the sudden I feel a vibration and a familiar sound. I realize it is a notification from Instagram coming from my cell phone. "Oh," I think, "I should check Instagram." I scroll through Instagram, completely ignoring the show that is still playing on the television. This is how I multi-task with technology.

I'm like any other modern day tween: Always trying to keep up with social media and posting daily on Instagram to try and get lots of followers. Social media can be very addictive.

I multitask with technology all of the time. From playing online games on the computer, to taking selfies on Snapchat, to watching YouTube on the TV, my life with modern day tech is busy. Sometimes I end up playing a game on my phone while playing another game on the computer at the same time.

Recently, I invited four of my friends over for a sleepover that was dedicated to just playing an online game together. Everyone brought their laptops, and we bought lots of snacks and candy. We didn't play the whole time, though. I watched an Anime movie to go to bed and all my friends were saying how strange Anime was. We stayed up late, and in the morning we ate Sour Patch Kids, mini doughnuts, and Takis for breakfast.

I am always checking to see when the next season of my favorite show is coming out, and marking the date on my iPhone calendar. Sometimes, when I am in the mood, I will watch YouTube on the television or computer. I like to relax and watch Wengie and MyFroggyStuff (my favorite YouTube channels). Usually, I end up watching YouTube until night falls, drifting to sleep in odd positions on our armchair.

Overall, modern technology has really affected my life. I definitely like to multitask with technology such as games, social media, and shows. □

*My name is Kaia. I am 12 years old and in seventh grade. I like to draw, make and edit videos, write stories, and read (especially graphic novels). I live in Phoenix, Arizona and I love foxes.*

# Geolocation Fraud Is Eroding the Value of Content Rights

By: David Briggs

Premium content has always sold for a premium price; particularly in the more developed, wealthier markets. No surprise then that two or three territories often make up most of the revenue for a rightsholder with numerous smaller markets making up the rest. Rightsholder and broadcaster business models are built around this kind of regional pricing with exclusivity driving the highest prices under the principle that if there is only one channel showing the latest blockbuster, they will get all the eyeballs. And thus, be able to reach the market-penetration, ratings and revenues they need.

In the OTT space, the same principle applies; geo-blocking utilizes a user's IP address enabling a broadcaster to determine whether a user should be granted access. All fine in principle; however, the theory is now being challenged in practice as IP based geo-blocking has become unreliable for two reasons:

**1. Rise of geo-piracy.** Mainstream use of anonymizer services such as VPN or DNS Proxy to spoof an IP address to appear in another location. A survey by Global Web Index in October 2017 found 1 in 4 internet users use a VPN monthly – primarily to access the same content for free or cheaply internationally. In a recent Quartz article, VPN providers - with tens of millions of users - have admitted that they see big spikes in traffic during major sporting events and show releases. One of them, ExpressVPN, noted a 10% increase in traffic on Super Bowl weekend while Brazil's Summer Olympics boosted traffic by 17%.

**2. Growth of streaming over mobile connections (3G/4G etc.).** Unlike a static landline IP address, mobile operators assign IPs randomly and thus it is impossible to attribute location. This is particularly challenging for US DMAs and Live IPTV. Furthermore, if you roam with a mobile device abroad the IP address still points to the country of origin. According to Cisco's VNI forecast, consumer mobile video traffic will quadruple 2017-21 as mobile data becomes cheaper and faster.

For this reason, rightsholders are increasingly mandating to OTT broadcasters that geo-blocking methods are improved – sometimes with the threat of pulling the content plug!

*David Briggs is Chairman and co-founder of GeoGuard, the geolocation anti-fraud specialist. Starting in Barclays Bank's internet banking group David moved to join UK gaming market-leader Ladbrokes in 1999 to start-up their fledgling online division. David went on to become Managing Director of Ladbrokes eGaming from 2005 – 2007, where he ran their online Sportsbook, Casino, Poker, Bingo, Financial Fixed Odds and Games businesses worldwide; covering internet, mobile, and cable, satellite and WebTV interactive platforms. David has over 14 years of board level experience in the gaming sector and has worked at the highest levels in the UK, Europe, Asian and North America.*

You can argue that most users still use static landline connections when streaming and that there are effective defenses against geo-piracy. This is true, a good IP fraud detection service that's properly integrated can block anonymizer IPs, rendering them unusable. But anonymizer services have woken up to this fact, and that their paying customers are quick to walk away. Several leading VPN providers now use genuine residential IP addresses, typically hijacked from unwitting users who've installed free VPN software with trojan software installed, allowing their connection to be resold to the highest bidders. Beyond the obvious security issues this creates, it makes anonymizers virtually impossible to block – as doing so also blocks millions of genuine users.

In summary, the geo-pirates currently have the upper hand. The real resolution to this game is an evolution in geo-blocking. By looking at multiple user data points; IP, GPS, Wifi and Cellular, logic can be applied to generate a highly accurate decision on whether the user should or shouldn't be authorized. Other industries, such as online gambling, have embraced this approach – permanently putting a stop to geolocation fraud. □

# 9 Predictions for Online Video in 2018

By: Jim O'Neill

If you haven't already buckled your seatbelt for all the changes in the competitive 2018 digital media and entertainment landscape, do so now! Expect to see more OTT services launching, merging and, alas, even folding. It's gonna be an exciting, G-Force thrill ride as many chart new courses or entirely change direction. Ultimately everyone is going to try to get the proverbial consumer onboard.

What will 2018 have in store? *Here's my outlook for the coming year:*

**1. VR & AR: Is 2018 the year for both technologies?:** While Augmented Reality (AR) – driven by a significant buy-in from Apple (ARKit), Facebook (Camera Effects platform) and Google (ARCore) – will blossom during the year, the hallmark Virtual Reality (VR) 2018 event was the Winter Olympics. This global event enlarges the VR-verse (universe) as companies slowly move away from clunky, 3-D style headgear. In 2018 expect more lightweight, Google Glass-type wearables; and suits that can make you feel temperatures, and even pain!

**2. OTT continues to grow and the target on Netflix's back gets bigger:** While Netflix continues to generate huge consumption figures and subscriber growth, "other" OTT services quietly grow with it. Niche SVOD services that feature the content Netflix doesn't have, including local broadcast stations, sports and events (potentially in the form of pay-per-view specials) will grow.

**3. Cord cutting continues:** In 2016, pay TV continued to decline when it lost about 2 million subs; and in 2017, losses in Q2 and Q3 alone neared 2 million. Losses will be higher in 2018, perhaps as high as 5 million.

**4. We'll see an even more mobile world in 2018:** Ooyala saw mobile video plays top 58% of all video consumption in Q3, the sixth quarter of growth in that segment. That share will top 60% in the first half of 2018 as more wireless operators push more OTT content – both SVOD and AVOD – to customers and as mobile data charges decline across the world. There has been similar growth of long-form video on mobile devices: smartphones are catching up to tablets as the viewing device of choice.

**5. Amazon - Playing new games with sports:** Amazon spent a purported $50 million to stream 11 NFL Thursday Night Football games this year, a drop in the bucket compared to what it may spend in 2018 as it strives to become a next-gen sports streamcaster. Coming up for auction in 2018 are, among others, rights to English Premier League soccer, which carried a price tag of $1.3 billion for rights to the past three years. Also this year, Amazon cut a deal for rights to stream 37 live ATP World Tour tennis events to the U.K. and Ireland. The retailer also will have to decide if it wants to keep Thursday Night Football rights – which likely will carry a higher price tag this year.

**6. The cost of content will reach new heights in 2018:** Netflix is planning to spend $8 billion on content in 2018; Amazon will spend nearly $5 billion, and HBO, $2 billion. Apple is willing to spend $1 billion or more, as is Facebook – and, if live sports rights are included, those numbers could grow even more. Content costs will continue to rise, driven by the competition among distributors.

**7. Traditional advertising's slow death spiral:** The advertising industry is finally learning that the future is interactive ads and more sponsored programming: in short, a true sea change in how advertising is consumed. Look for lighter ad loads on AVOD sites, better targeting and snappier campaigns utilizing data and new technology.

*Jim O'Neill, Principal Analyst at Ooyala, is an award-winning industry expert and futurist who specializes in the convergence of traditional TV and the Internet. His focus includes pay TV, Cloud TV, OTT, multiplatform media delivery, the ecosystem that surrounds it and consumer trends. He is a frequent speaker at CES, NAB, Digital Hollywood, Parks Associates Connections events, Streaming Media and Digital Entertainment World, among others. O'Neill is the Editor of Videomind, which in the past 2 years has won awards from Editor & Publisher and Digiday.*

**8. Data, Artificial Intelligence (AI) & machine learning will permeate:** This year, more devices will use voice inputs to help you find your content. Apple's Siri, Google Home and Amazon's Alexa all are leveraging AI and machine learning to help you find what viewers want to watch without having to type in titles, names or genres. AI will help with more than just discovery and recommendation: Companies will begin to harvest the fruit of targeted advertising on mobile devices used at home and beyond.

**9. More M&E M&A:** It's unlikely that the government will ultimately block AT&T's proposed $85 billion acquisition of Time Warner: the key will be the assurances by AT&T that its actions will be fair. That won't be the only mega-deal: Disney will complete its deal for several Fox assets and I predict a 2019 closing. Those deals will likely spawn additional deals to feed consumers' insatiable content appetites.

I'm sure I'm not the only prognosticator thinking about the year ahead –what do you feel are the biggest trends to watch for this year? □

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