

OVER THE TOP

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Executive

# Magazine

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Fall 2017

## OTT Apps, Technology & Platform Integration

*Making all the Puzzle Pieces Fit Together*

### Getting to the Bottom of Over-the-Top User Experience

Reviews of Apple TV, Roku, Amazon Fire, and Android TV

### Mobile Integration Extending OTT Viewership

Farm Journal Media Case Study

### Where Are You Watching?

OTT and Geolocation Integration

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# Inside this Issue



## Case Studies

- 8 **Boost in Mobile Use and OTT Viewership Extends Audience Reach for Farm Journal Media** by Paul Brickel
- 22 **WWOZ Uses Alexa to Bring Radio Back into the Home as an OTT Service** by Kiriki Delany



## Trends & Analysis

- 5 **The End of OTT Video as We Know It** by Eitan Koter
- 12 **Building a Business, Not Just an App** by Fredrik Andersson
- 16 **Understanding the OTT Business Model** by Carlos Hulett Guinand
- 18 **OTT Trajectories and Cloud Computing** by Mark M. Myslinski



## Executive Insights

- 4 **Integration Is the Key to Successful OTT Projects** by Brian Mahony
- 14 **At the Bottom of Over-The-Top: Review of the Leading OTT Apps/Devices** by Nick Buzzell
- 21 **Who Will Be King of the OTT Hill?** by Terry Owen



## Best Practices

- 7 **Next-Gen Compression Techniques Are Helping Eliminate Latency From Live OTT Video Delivery** by Thierry Fautier
- 10 **Driving Interactive Engagement Through Personalized Audio** by Reto Brader
- 11 **Delivering OTT Content? Don't Fall into These Five IP Geolocation Data Traps.** by John McArthur
- 24 **OTT Innovation: Up Close and Personal** by Francesco Moretti
- 26 **Why Pay TV Operators Should Embrace Android TV** by Hugo Santa Maria

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Volume 5, Issue 3 - Fall 2017

**Published by:** Trender Research Inc., 24 Village View Road,  
Westford, MA 01886 • info@TrenderResearch.com

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**Subscriptions:** [www.OTTextec.com/magazine](http://www.OTTextec.com/magazine)

Yearly printed/mailed subscription in the U.S.: \$39.95

**Advertising:** [achambers@OTTextec.com](mailto:achambers@OTTextec.com)

**Disclaimer:** Some submitters may be charged an editing fee to ensure articles are well-written and not overly promotional.

Printed in the USA





# Integration Is the Key to Successful OTT Projects

By: Brian Mahony

I am currently working on two consulting projects. One is with a major new OTT content studio/channel that will stream video content worldwide. The other is with a (primarily) cable TV equipment provider working on a new OTT strategy. They are very different projects but they both share a similar problem. Once the OTT vision and business model are defined, the biggest challenge is with integration and implementation. In short, there are MANY moving parts with OTT, some of which are fairly well-defined and others which are not. Anyone who tells you they have “a fully integrated platform that does everything you need” is either grossly naïve or plain out lying to you.

I have had the opportunity to work on many OTT projects over the past few years—everything from strategy/vision, to technology platform definition, to financial modeling, all the way through RFP creation and vendor selection. In the process, I have created what I call the “OTTMatrix,” basically a spreadsheet listing the capabilities of most

of the vendors in the industry. These include OVPs, CMSs, CDNs, DRMs, Workflow Tools, Subscriber Management, CRMs, Apps, Devices, Metadata Management, Social Integration, you name it. For each component, I list feature/capabilities and even pricing. It’s become an invaluable tool for me and my clients trying to get a handle on their technology options and come up with rough (or very detailed) ROI models or service pricing.

My consulting work has caused me to conclude that the best OTT strategy can be dashed against the rocks of integration and implementation. Yes, there are wonderful “all you can eat OTT platforms” out there which will do maybe 50%-75% of what you need for a basic implementation. But even these vendors will tell you that beyond a certain point, you may want to integrate with a third-party tool that does something specific, and does it well, such as DRM, subscriber management, or universal log-in.

In this issue of the magazine we try to illuminate some of the opportunities and



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products and companies.

pitfalls of OTT platform integration, to help you think about and hopefully avoid some common mistakes in implementation. We have several excellent articles on content delivery best practices, including insights from Harmonic’s Thierry Fautier and Vimmi’s Eitan Koter. Mark Myslinksi has returned with another excellent in-depth analysis—this time comparing the total cost of ownership (TCO) of cloud vs. premise-based video compression and processing platforms. Brightcove’s Paul Brickel gives us a great customer case study from Farm Journal Media, providing a roadmap for mobile device integration that includes OTT players, user data, content management, and advertising.

On the user side of the equation, Accedo’s Fredrik Andersson provides us with a thoughtful cautionary tale warning against merely focusing on building OTT apps versus optimizing OTT business models. Fincons Group’s Francesco Moretti provides his short list of OTT innovations you should consider integrating into your next OTT deployment to keep your subscribers/viewers coming back. ADB’s Hugo Santa Maria makes a bold case for embracing Android TV for your OTT strategy. And Neustar’s John McArthur shows you how to integrate IP geolocation into your OTT service, while avoiding five common pitfalls. Finally, NBTv’s Nick Buzzell gives us a candid review of four of the leading OTT apps/devices from a user experience perspective.

Together with our normal strategic faire including explorations on OTT business models, strategies, and case studies, this issue is packed with content to get you and your teams thinking and planning for truly successful OTT projects. □



There are many moving parts to a well-oiled OTT machine.



# The End of OTT Video as We Know It

By: Eitan Koter

Video consumption is going through the roof. According to a forecast published in the Cisco Visual Networking Index (VNI), total Internet video traffic will be 79% of all global Internet traffic in 2020, up from 63% in 2015.

This sounds like great news for the video industry, and it should be. But for thousands of video service providers and OTT platforms worldwide, this exciting statistic is a cause for a lot of stress, because it brings with it a set of growing challenges and an uncertain future.

## The mobile video challenge

For many communication service providers (CSPs), their video platforms were built when online video was new, but since then consumer demands for video content have skyrocketed. These platforms cannot scale to meet current demand at the right price – especially if live services and other advanced features are being offered. Today, the legacy systems cannot keep up.

Complexities and limitations in current architectures, high operational costs, and poor video quality are just some of the challenges facing today's operators and

content providers. Their legacy systems were built with multiple vendors and inflexible processes, and they are unable to cope with the fast introduction of new video services and often cannot provide anything better than moderate video performance and a substandard features set.

Poor performing legacy platforms mean that CSPs and content providers are having difficulties supporting the scale required for today's video OTT demands yet alone being able to meet the requirements to support the further growth predicted for the future. A lack of real-time analytics makes it difficult to know how video is being served to end users and what actions are required to resolve performance issues, whilst uncertainty about the best business model to adopt means that new projects or upgrades are delayed.

## Edge computing squares up to the challenge

To meet the demands of today's video-hungry subscribers, operators and content providers need video OTT and CDN platforms that are based on software architecture that is open, agile and has the capability to scale to peak demand within seconds. The ability to add new features or services



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.

within days rather than months is now vital.

Deep learning algorithms that use predictive modelling improve video delivery and user experience whilst, in some instances, halving the network resources required. According to Ericsson Mobility report (June 2017), mobile data traffic grew 70% between Q1 2016 and Q1 2017. This requires the implementation of new network architecture such as Multi Access Edge Computing that is vital to optimise delivery, storage and processing at the mobile network edge. Global Virtual Reality traffic, according to Cisco's VNI report, will increase 61-fold between 2015 and 2020. Therefore edge computing is now essential for the introduction of new video services such as VR, AR, 4K, HDR, HFR, live events, personalized advertising and user-generated content.

With 73% of all Internet video traffic predicted to cross content delivery networks in 2020, service providers who want to be around in the long term need to act fast. For a start, they need to own the delivery platform and use advanced, open and scalable CDN technologies that work across both fixed and mobile networks. This will enable them to rapidly scale to peak demand at the right cost without dependency on external and shared CDNs that are challenged to guarantee performance at the right cost, especially with linear and 4K delivery.

## The importance of quality

According to Unisphere Research's OTT



*Mobile viewing is just one trend pushing the limits of online video platforms.*



Video Services report, 26.8% of survey respondents raised concerns about the quality of service and quality of experience provided to end users. This is almost double that of the second technical concern. Service providers should now utilize open, agile and scalable software platforms not only for their CDN, but also for their CMS, content preparation workflows, and performance and marketing analytics.

Quick deployment and scalability are critical. Deploying a new platform should be quick and stress-free, and shouldn't take more than a few weeks. And once deployed, any changes, such as launching new services or projects, should take only a matter of days.

### The future of OTT

The future of OTT is already here. Service providers need to future-proof their video delivery by deploying a unified video OTT software architecture that will prepare them to meet any demand for video, and to be equipped to introduce new services such as live 4K and VR, low latency OTT, nDVR and other advanced video services.

OTT players should not be failing subscribers, but they are. Strategically, video is important to keep customers subscribed and engaged, but the operators are in danger of having neither. They must look to creative business models for video and to new on-premise and hybrid implementations that

reduce costs and increase the speed of implementation. There are ways for operators to increase both their profits and the user's video experience. But if they do nothing, then for many it may be end of OTT video as we - and they - know it. □



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"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



# Next-Gen Compression Techniques Are Helping Eliminate Latency From Live OTT Video Delivery

By: Thierry Fautier

As OTT video consumption continues to explode, service providers today face a very big challenge. In order to provide the same high-quality video experience that consumers are used to receiving with traditional satellite, cable and IPTV offerings, OTT service providers need to eliminate latency, especially for live sports applications.

The latency for live OTT content currently averages 30 to 60 seconds, compared with less than 5 seconds for terrestrial and satellite delivery networks. Under those terms, it's not hard to see why latency can negatively impact a video streaming experience for live sports. Let's say you are streaming a live sporting event on your iPhone or connected TV. If the latency is a significant amount more than traditional cable and satellite services, you might hear your neighbor celebrating a game-winning goal before you actually see it on the screen.

Solutions are being developed to bring the latency level for live OTT close to what it is with traditional pay-TV offerings. One area of the video workflow that can be enhanced to improve latency is compression.

Aside from compression, latency is also impacted by content delivery networks (CDNs). OTT service providers may need to tweak their packaging, origin server and

CDN workflow systems to resolve the delays that are often prevalent with live video streaming. Right now Microsoft and Apple are working within the Moving Pictures Experts Group (MPEG) on the development of the Common Media Application Format (CMAF) to alleviate latency issues at this level of the workflow. CMAF is designed to unify MPEG TS and fMP4 media containers in single format for OTT. Supported by HLS and DASH, the International Standard includes a low-latency mode that reduces latency by a significant amount compared with other standards. At IBC, Harmonic was showing a Live demo on Akamai network where the delay was below 5s. It achieves this by mapping CMAF chunks efficiently into delivery containers that are quickly sent to an origin server. There are two caveats with CMAF low latency: encryption is not unified as CBC and CTR are not compatible, although version 4.0 PlayReady player now supports both, and it has to be modified to work on existing Targeted Advertisement systems that are DASH based.

Once latency for live streaming video reaches the same level as traditional broadcast, without impacting video quality or bandwidth, OTT service providers will be able to compete on common ground with satellite, cable and IPTV providers.



*As Vice President of Video Strategy at Harmonic, Thierry Fautier is in charge of defining and driving the execution of the long term strategy of Harmonic's video business. In*

*addition, Fautier is the current President of the Ultra HD Forum, the global organization responsible for promoting market adoption of UHD. His previous experience at Harmonic includes leadership positions in Solutions Marketing, where his area of responsibility covered Harmonic's major markets. Prior to joining Harmonic, he was Vice President of Marketing for Vsofts and held various positions at Philips in Research, Engineering and Marketing. An experienced speaker, he has presented at leading industry conferences throughout the world.*

Live sporting events won't be limited to traditional pay-TV customers; rather, they'll be available for viewing on any screen, without a subscription.

Harmonic has always been a supporter of open standards because they enable interoperability, which makes operations and infrastructure upgrades simpler for broadcasters, pay-TV and OTT operators. □



*Live sports presents the biggest challenge for OTT service providers to eliminate high latency.*



# Boost in Mobile Use and OTT Viewership Extends Audience Reach for Farm Journal Media

By: Paul Brickel

*Video views surpass goal in 6 months with high traffic and audience engagement.*

If you're one of the 3.2 million farmers in the United States, chances are you've heard of Farm Journal Media (FJM), one of the oldest agricultural publications in the country. What started as a print magazine 140 years ago has now evolved into a full-blown multimedia company focusing on the intricacies of the commercial farming industry.

FJM's evolution is apparent in its collection of media properties, including 11 print publications, eight broadcast programs, 12 websites, two e-newsletters, and an OTT network, Farm Journal On Air, which is available via web and mobile app. Its programs are broadcast to 100 or so local network affiliates, and they're also available on digital cable and satellite channel, RFD-TV. Considering FJM's audience reach, high-quality content, and impressive viewership of nearly two million people weekly, the company is arguably the agricultural industry's leader in media publishing.

In order to stay number one, FJM knows it has to continue evolving and providing viewers quality content in whatever mode they prefer. "It's important we go where the customers are," says Clinton Griffiths,

Editorial Director of FJM's Broadcast Division. And as evidenced by FJM's track record, they've been doing just that. A perfect example is the company's transition from a single print magazine to an industry premier website, AgWeb, and syndicated broadcast program, AgDay, which is also available on a variety of platforms, including Farm Journal On Air, RFD-TV, and the AgDay website.

"The AgWeb site has now grown into a powerhouse of the industry," says Griffiths. "It gets more than half the traffic from people looking for agriculture news, markets and other related information. It's just a behemoth out there in the business."

Giving customers what they want has always been the driving force behind FJM's business model. That's why the company teamed up with Brightcove to further expand its digital footprint. In just about seven months, Brightcove successfully supported FJM in building and launching its OTT and mobile initiatives, driving incredible engagement across all digital properties, and discovering new ad revenue opportunities to help fund future video endeavors.

## Farm Journal Media Supercharges Its Video Content

During the company's transition to digital, FJM first delivered video through a



Paul Brickel is the Director of Product Management, OTT Solutions at Brightcove. He has extensive product management and marketing experience helping media organizations navigate the digital landscape and deliver market leading solutions.

content delivery network, but during that time, the team recognized several challenges preventing FJM from really optimizing its assets. For one, the network's player, based in Flash, forced content to load far too slowly. Two, the platform lacked a smart tagging system and a flexible player. This made it nearly impossible to play video seamlessly within different browsers or mobile devices, and it erased any chance of enabling interactive content. And three, the entire platform was behind the times; it couldn't provide FJM the tools it needed to stay on top of the latest technology trends.

That's when the FJM team began looking for an industry standard platform.

An integrated video player proved the ultimate asset for FJM. Its optimized, lightweight technology allows for fast load and play times, which is incredibly helpful for consumers living in areas of limited connectivity. Since FJM's target demographic is located mostly within rural areas, consumers' access to high-speed internet is spotty at best. That's why the new player helps FJM deliver high-quality video content to any location, regardless of bandwidth.

The player also supports smart tagging, making it easy to distribute video seamlessly, no matter what browser or platform people are using.

"You can put one video up, and it deliver to multiple players," says Griffiths. "That's opposed to setting up and managing each player individually."

Because of its workflow efficiency, the new platform has truly transformed the way Griffiths and his digital team think about producing and distributing content. Rather than managing separate players and playlists,



**An integrated player helps FJM deliver high-quality video content to any location, regardless of bandwidth.**



they're now able to focus solely on managing the videos themselves, which makes a big difference as far as efficiency is concerned.

### Optimizing Content Helps Drive Ad Revenue for Farm Journal Media

Since partnering with Brightcove, FJM has been able to take advantage of the platform's many benefits to drive an increase in ad inventory.

The team is segmenting video content into short, strategically packaged pieces—a helpful practice that drives more traffic to multiple distribution points. Griffiths explains:

“We discovered shorter, more compact clips are far better solutions for digital audiences. Now that we're doing smart tagging, we're shortening our clips and being more specific. We're writing new stories around everything and driving traffic to individual pieces of video, as opposed to the entire show every day.”

FJM now is able to repurpose one piece of video into individual segments and deliver them separately throughout the company's multiple digital properties and platforms. Therefore, FJM doesn't have to create more

video content; instead, they can distribute many versions of the same video, resulting in more viewing opportunities and a highly efficient work process. In fact, within the first six months of using the new platform, FJM hit its max data limit for video views, indicating incredibly high traffic and audience engagement. From August 2016 to August of 2017 digital video and audio plays have risen nearly 140 percent.

As FJM's video assets continue to grow and its viewership increases, its sales team has begun seeking opportunities for additional revenue to support the company's video initiatives. Griffiths says the team is collaborating with sales staff to develop an impactful approach to pre-, mid-, and post-roll opportunities proving to advertisers just how valuable FJM's digital content is.

### Boost in Mobile Use Allows FJM to Make the Argument for OTT Video

While broadband connectivity poses a challenge to most of FJM's rural viewers, it's actually helped expand FJM's mobile viewership. With more people investing in mobile technology, including increased data plans and 4G speeds, the company's ability to

reach on-the-go audiences has skyrocketed.

“It makes sense that people are going to get the content where they can actually stream it,” says Griffiths. “It looks like our viewers use their phones for that because the connection is actually faster often times than the internet connection they have at home.”

And with such an attentive mobile audience, FJM is now aiming to attract even more users to its OTT channel, Farm Journal On Air. The channel's recently revamped mobile app, built with the help of Brightcove's OTT Flow, will be a huge asset in extending reach to mobile consumers and at-home audiences. FJM expects their mobile app will be especially appealing to those who have chosen satellite TV or have “cut the cord” in favor of other video services for direct-to-consumer viewing.

“We're looking to roll out our OTT channel to services like Apple TV and Roku,” says Griffiths. “We eventually want to deliver to bigger screens and living room television sets.” □

## OVER THE TOP VIDEO

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\* Trender Research reserves the right to edit, or decline, assets that are poorly crafted, overly promotional, or uninformative.

# Driving Interactive Engagement Through Personalized Audio

By: Reto Brader

As audio, video and IT technologies converge onto centralized IP networks, new solutions are emerging to personalize content for consumers.

IP networks and streaming represent the support system for OTT content delivery and interactive consumer engagement. Beyond television, there is no question that a mass convergence of audio, video and IT technologies is taking shape across many industries.

Digital signage is an ideal example of how businesses and organizations are using IP networks to efficiently move valuable visual content to multiple screens in a single building (local banks or restaurants), across a large complex (corporate and university campuses) or throughout expansive terminals (airports). On a grander scale, IP networks have grown robust and sophisticated enough to carry content over IP networks in support of large retail and hotel chains.

While digital signage is now ubiquitous, the power of audio for interactive engagement has been somewhat lost. However, new strategies for multimedia content delivery over IP networks are coming to market that once again bring audio to the forefront.

Looking specifically at hospitality environments, interactive audio is being used to drive guest engagement in a very personalized manner. For hotels already using digital signage, streaming audio to mobile devices is one emerging trend that can strengthen intimacy between the hotel and the guest.

Most digital signage deployments today lack live audio tracks so as not to disrupt the natural environment. This can be very limiting from a marketing and communications perspective, however. The delivery of audio tracks to complement the video output allows the business to leverage digital content on a far more intimate level.

This emerging trend is now oft-referred to as "Audio Signage." In an Audio Signage deployment, an analog audio source is streamed to a smartphone or tablet with very low latency, or delay. That minimal latency is the key technical element to ensuring the application works properly, and that the audio stream is synchronized with the video

output.

Opportunities for Audio Signage are beginning to take shape. Many of the earliest deployments have been seen within museums and visitor attractions to provide one-to-one audio connections at talking exhibits, providing each patron with his or her own informational audio stream. Another emerging business model focuses on Audio Signage as a cost-effective solution to provide live translation of presentations to the audiences within conference facilities and meeting rooms in hotels.

Hotels and hospitality settings have indeed been an early success, including the hotel lobby. A guest that is waiting to check in, for example, can tune into a private stream that provides information about the hotel and its services. This creates two-way relationship between the presentation and the guest, without polluting the lobby environment with a voice track. A less disruptive background music can continue to exist.

Audio Signage lives on the network, streaming single- or multi-channel audio tracks over WiFi to mobile devices. In a single-channel environment, an encoding device picks up the analog audio stream and converts it into a stream delivered over the network. An app on the mobile device receives the stream and decodes it back to audio.

In a multi-channel deployment, users can select from multiple audio tracks on a single screen; or separate audio tracks used on multiple screens. The former example works well for multi-lingual audio tracks, where a guest can switch between English, Spanish or French languages of the same informational program in the lobby.

The latter example is especially ideal in a bar, where a patron can switch between different TV sets. Think of a hotel with a sports bar, where multiple football games might be broadcast on various screens. Multi-channel Audio Signage deployments require an additional server that communicates the various channel information and availability to guests on their mobile devices. In both single- and multi-channel configurations, a simple QR code provides the gateway to the



Reto Brader is VP of Worldwide Sales & Business Development at Barix AG, a Zürich, Switzerland based manufacturer. Reto brings 20 years of international experience in sales, marketing and sales development in the audio, video and datacom technology space. He holds a Masters degree in Business and Administration (MBA) and a Bachelors degree in Electronic Engineering. Before joining Barix, he worked as Regional General Manager for Utah Scientific, Pixelmetrix Corp., Alcatel and Hewlett Packard in Switzerland and Canada.

app download. This removes the burden of hunting for the app, and quickly brings users into the Audio Signage environment.

Collectively, Audio Signage represents a true innovation in the convergence of audio-visual, streaming and mobile technologies that, used effectively, can elevate communications and guest engagement in hospitality – and personalize screen-related audio distribution. And with everything living on a centralized IP network, it won't be long before hotels taking advantage of Audio Signage find a way to merge promotional content targeted for guests with their in-room over-the-top TV systems. □





# Delivering OTT Content? Don't Fall into These Five IP Geolocation Data Traps.

By: John McArthur

You, the reader of this article, have a natural advantage because you already know my identity. It appears right under the title of this article, and you can reasonably trust the editors of OTT Executive Magazine. Readers, on the other hand, have a natural anonymity. I mention this because it underscores one of the biggest problems in content delivery today: identifying the consumer.

Subscription-based content delivery, particularly streaming media, is challenging to manage in our digital and increasingly mobile world. Unfortunately, there are people who would try to cheat the system by hiding or altering their location and/or identity. And there are shades of complexity in media licensing rights that can be hard to enforce, such as identifying when a device moves out of the state or, in some cases, even out of the initial home location. For these reasons, it's critical that OTT media providers use Internet Protocol (IP) geolocation decisioning data to identify users, devices, locations and other risk insight to piece together a truthful picture of the consumer at a specific point in time.

At Neustar, identity data makes up a big part of who we are as a company. Our IP Intelligence family of data is the authoritative source of IP decisioning data for 99.99% of the world's routable IP addresses. As a trusted provider of IP geolocation decisioning data for MLB.com, Sky and many others, we see first-hand the challenges that OTT providers face when streaming different types of content around the world. Here are five of the most common—and dangerous—IP data traps that OTT providers need to avoid when streaming content across mobile, digital domains.

## **Trap #1: Your IP geolocation data isn't detailed enough.**

We call this data granularity and it can run the gamut from basic user identification (name, address, etc.) to specific GPS coordinates, depending on the content and the licensing agreement. An OTT video streaming service, for example, might limit its broadcast to a designated market area (DMA) or a single household. For a DMA, associating a postal code with the IP address

may be sufficient granularity, but identifying viewers in a household can require much greater detail.

## **Trap #2: Your IP discrepancy resolution process is slow or non-existent.**

It can take time to verify the location of an IP address behind a proxy server or an organization's VPN connection. In the meantime, OTT providers face a hard choice: provide content to the consumer in the interim, or block them until they can be verified. Since you don't want to annoy your customers, we recommend issuing a temporary token that provides access to content until the IP discrepancy can be resolved. Of course, it goes without saying that the sooner you can solve the issue, the better.

## **Trap #3: You try to go it alone with the data you've got.**

No one is saying that your data isn't good. It's just that more data is better, especially when that data covers, say, 99.99% of all routable IP addresses. Partnering with a third-party data provider can help you uncover fraud patterns that you might otherwise miss, identify risky non-human traffic, create blacklists in a more timely manner and gather data on new markets before you roll out services to those areas.

## **Trap #4: Your data is less than fresh.**

IP addresses aren't static; they change constantly. In fact, one in ten IP addresses will change each month. So, if you only update your IP decisioning data every month, you can expect that data to be wrong 5-10% of the time. Updating your IP decisioning data every week (or more) will yield more accurate and better results, but who has the time to do that? A quality third-party data provider, that's who.

## **Trap #5: Your data partner ends the relationship at data delivery.**

Using IP decisioning data isn't simply a matter of plugging the right information into the right models. There are many nuances in licensing rights, integration issues and other challenges that require real-time



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problem-solving. That's why OTT content providers need a partner who can provide expert advice and support to find creative solutions to problems as they arise.

Even with the best data, you won't catch all the bad guys all the time. But you'll be more successful if you invest in robust and reliable IP decisioning data and processes. Finding an OTT delivery partner who can provide both is the ultimate goal. □





# Building a Business, Not Just an App

By: Fredrik Andersson

Over recent years we have witnessed a massive shift in the industry and TV, along with many other mediums, has become app-centric. Apps are a great, if not perhaps the only way to deliver video to multiple platforms and ensure a consistent look and feel. With the delivery of video becoming ever more complex, content providers are looking to software to solve the challenges that come with that. However, software is just a small component of a much larger effort. Successful services are more than just an app, they are video businesses, and as the landscape gets even more complex, that is becoming increasingly key.

## Changing Consumption

One of the biggest challenges for content providers today is the continual change in the way video is delivered and consumed. There is greater competition than ever before and consumers are watching content on a wider range of different devices than ever before, all with different formats and a whole host of technical challenges.

For the traditional TV providers, there is a struggle to remain relevant, with a higher percentage of, especially younger, consumers opting for streamed video, rather than linear TV. According to Nielsen, 45% of the video content watched by adults in the United

States overall was on TV sets by mid-2016. But Millennials watched only 31% on TVs. Eleven percent of the TV content watched by Millennials was over streaming video devices, while adults over 50 years of age watched only 3% that way. Nearly a quarter of video consumption by millennials was via mobile smartphones.

So we are seeing a rise in OTT services from a range of providers, including TV networks, broadcasters, and movie studios. In response to all of that, Pay TV providers are adding online video to their traditional set-top-box user experience in an effort to attract the millennial demographic.

## Keeping Up with Technology

Just as services and audiences are evolving, the technologies associated with video delivery and consumption continue to proliferate, and change is the only constant. Device and OS providers like Apple, Google, Roku, Amazon, Sony and Microsoft each offer video content through vertically-integrated ecosystems in an attempt to create differentiation and exclusivity. As a result, each environment is different from the rest. There are few common denominators.

Browsers are even more complicated, even though HTML5 has been touted as a common framework that accommodates



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content, feature enhancements, and security in a standard way, no single set of components works across all browsers

All of this may sound somewhat abstract until your end users start complaining that a service that they are paying good money for has suddenly broken. Most of them have no idea that the app stopped working because the latest release of the app no longer supported a legacy device, or that their Web browser was set to auto-install an update that rendered the Web version of the video provider's app





incompatible with the browser.

Meanwhile, the video provider may have lost the ability to serve entire classes of devices overnight and not even know it.

### Building a Business

With all this change, it is natural for content providers to look to technology to solve these challenges, and of course it has an important part to play. However, unless the content provider has properly considered the business they are trying to build, even with all the latest technology, the service is unlikely to be successful.

Development should always begin with setting top-line goals and objectives, which in turn can result in a clear definition of the service and a clear understanding of both the business and technical environment that it must exist within. This includes considering the rationale behind creating the service, i.e. is it for customer retention or pure monetization?



**App and device integration is one of the biggest OTT challenges.**

At the same time, it is important to consider all the different dynamics down the line, as platforms change or consumers start to watch content on different devices, the service needs to be flexible enough to come and be

adapted over time.

Ultimately, content providers need to shed the mindset of simply creating an app and instead build a video business. □



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# At the Bottom of Over-The-Top: Review of the Leading OTT Apps/Devices

By: Nick Buzzell

The current over-the-top user experience sucks. Someone had to say it bluntly, and the good news is that we are in the nascent phase of OTT and there is still time to fix it. Just like any new media innovation, whoever gets it right first will reap the rewards. Yes, today we have more control over our streaming and media services than ever. Yes, there is continuity between some of my devices for some of my apps and yes, streaming is so commonplace in our daily lives that it's being used as an innuendo for having sex (i.e., Netflix and chill). Yet, if we take a critical look at the way our OTT platforms are set up, the user experience really just sucks! Today's OTT platforms lack logic, efficiency, and more importantly, ease-of-use. Worse yet, technical problems like endless buffering within apps tend to exist at every level on every device. Let's take a critical look at what the major platforms have to offer currently and you be the judge of whether we are really taking advantage of the technology at our disposal to build the next generation media experience.

## Apple TV

Ah...the sexy and sleek Apple TV and the self-proclaimed leader in the industry. Upon setting up my Apple TV (version 4) I am met with channels or "tiles" for apps such as photos, music, podcast, computers, you know, the apps you are supposed to be constantly using within the Apple connected device ecosystem. Nothing gets the blood pumping like a nice slide-show of my vacation photos on my TV. Anyway, I enter the App Store to sort through the environment as if I'm a first time Apple customer. No smart recommendations from my iTunes account, no intuition whatsoever. Over the past 10 years I have spent thousands of dollars on music, tv shows, movies and apps with the same iTunes account. At the very least, this means Apple has lots of my personal data available to create an Apple TV experience that is curated for me.

So now I spend my time sorting through the 8000+ apps in the Apple TV App Store to choose from, because I have all the time in the world to scroll, read reviews, install and launch each one to see for myself. I

decide that the first step is figuring out how to stream my NFL games on my Apple TV, so I search for the NFL app. I am met with two different apps, NFL mobile and NFL Sunday Ticket. As a new sports fan it's hard to see the difference, but as a non-DirectTV customer, do I want to pay \$100 dollars for a Sunday Ticket subscription? The only reason that this diversion even exists is because of an out-of-date TV contract in which DirectTV figured out how to monopolize nationwide American football. We are living in 2017, yet we are letting the business rules of 1999 govern our way forward. We are letting legacy TV dominate our "new and improved" streaming experience, but more on that later.

After starting to empathize with Tom Brady and his frustration with NFL management, I decide the Bustle app is how I'm going to clear my mind. I download the app, and wait, and wait, and after a nice wait, I am met with an array of tiles for videos to sort through and choose on my own. Just a thumbnail and a title, no description or curated playlist. Given my experience thus far, it might be time to start drinking so I decide to click on a video about beer. The



content is from one of Bustle's owned and operated web sites Elite Daily and it's good quality so I'm ok with that. I think I'm done with these apps for now.

Back on my Apple TV home screen, there is no connection, interactivity or conversation between any of the apps. Each channel is its own independent walled garden of content that's either free, advertising supported or



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the next generation media company: NBTV Studios (where he's the CEO and Chairman). Nick also leads NBTV's talent management practice. Prior to NBTV Nick was the VP of Operations for Big Fuel. Before Big Fuel, Nick ran operations at NBC Universal's Digital Studios. Nick serves on the board of directors for Dress For Success Worldwide the advisory boards of the National Association TV Programming Executives (NATPE) Next Generation, Banff World Media Festival and SOS Children's Charities and has been a featured speaker at Summit Series, SXSW, NATPE, AD Week, Internet Week, Universities and various film festivals.

subscription. Sure some bits and pieces of e-commerce are threaded in, but nothing is talking to each other seamlessly. And worse yet, most of my apps require me to verify my cable subscription, so back to the "old TV" model we go. So in order to truly enjoy this ala carte world, I have to fumble around with these illogical apps that are also requiring me to pay \$100+ a month to one of the big three cable companies just to access my content? TV has become our country's most addictive drug. Most people have to have it, even if you don't want all of it and when you don't want any of it, trying to cancel (given our favorite process in the world known as customer service) it is a process so debilitating, you might as well stay addicted. I think I'm ready to move on from what is only the third largest in the OTT streaming industry.

## Roku

The number one OTT streaming device in the industry, Roku, is my next experience to examine. This time, I am met with an interface that is not as sexy as Apple's but, my mom always used to tell me never judge a book by its cover. The nice part with Roku is that my interface is preset with the most popular channels and gives me a place to start exploring. The space is a bit easier to navigate as I'm not forced to enter an "app



store,” which should be a given since I’m already in this environment versus say, a cell phone. I still have to download the apps, and although the overall experience is better, it is still not curated to my preferences. I will say it was nice to have Hulu already on my homepage when I set it up, so we’ll start there.

So, let’s go into Hulu and check out how this experience compares. At the first screen I am conveniently met with options for a free trial, log in, or learn more. Seems like a better time than ever to start my free trial. Excited to binge watch Handmaid’s Tale (don’t judge), I am disappointed when the next screen asks me whether I want the \$7.99 option for limited commercials or \$11.99 for no commercials. But it’s a free trial. On a free app. I guess I was expecting, I don’t know, free to try it? And this isn’t an issue exclusive to Hulu as most of the “free” premium content subscription services state “free trial” but demand I give them payment info upfront or require me to have a cable subscription. Why wouldn’t I be given the opportunity to experience what I want to experience right away, for free, with an option to buy once inside the monthly subscription worthy service? That experience seems like a better way to convince me to be a customer. Already on my fourth step, I start to lose interest and think about what is worth more, “free” Hulu or my time or should I move onto HBO Go?

Now HBO Go was seamless and easy to use. How did I know that was going to happen? Because I had gone into HBO before my cable subscription was saved from an earlier date. The only reason it was easy, was because I had already acquiesced to the rules of TV that are attempting to govern the OTT streaming space. Despite not being as sexy to look at, Roku proved to be a solid streaming service, and probably where I would go for my quick OTT needs.

## Smart TV

Before I start with this device, can I honestly ask if anyone actually uses a smart TV for streaming? I have a Samsung Smart TV, and with all the other streaming devices I have, I don’t even know why. But then again, that’s what this drug does to you. Upon taking a look at the interface, we are met with a slow, static screen that looks right off a computer from the 80s movie War Games. There is no interaction with the different channels, only simple thumbnails and titles to tell me what each video or app is about. My biggest pet peeve with my Samsung Smart TV is that I am constantly being reminded of how much memory I have left on the TV’s hard drive. So now I not only need to go pick out the apps I want, but now the choice of apps becomes a revolving door of characters that would make Game of Thrones jealous.

The launch of an app from my Smart TV feels much like the days of AOL dial up internet, only this time I wish I had that weird static noise so I would at least know it is working properly. And yet, as I write this, the app still won’t open. In this case, it is the pinnacle of streaming apps, Netflix. This has taken a lot of time and I hear my daughter calling me while I have no indication that this perpetual graphic will end. Narcos will have to wait.

## Amazon Fire

As I pick up my fourth remote of the day and hit the button on my HDMI switcher for the last time (since I don’t have enough HDMI ports to have all of these devices plugged in), we move onto the streamer from our favorite provider of all things, Amazon. While we started with the good-looking Apple TV, which is #3 in terms of number of devices in the US, we end with Amazon, which is the #2 after Roku. Amazon Fire has a sleek, polished and premium feeling interface and

also manages to succeed in a few areas that Apple and Roku do not. Even though the interface of Amazon is quite similar to Apple’s, Amazon differs in many ways I like. First off, Amazon Fire uses up all the real estate at the top of the screen to play promos and trailers of what is available on the platform. Imagine that,

I’m on a video platform, and I actually am watching video instantly without having to click an app, pick a title, search or log in separately to a channel. I am able to seamlessly preview videos of what I want to watch in a very linear TV like environment, which has a familiar feel to a new user who may be just getting started with OTT. Yet, Amazon still was not able to deliver in terms of curation even though I used my Amazon Prime account log in. None of my preferences from my Amazon Prime account played any factor in the curation or selection of programming presented to me, forcing me to scroll through the myriad of options without any guidance yet again. An improvement in terms of ease-of-use, but in terms of logic, curation and efficiency, not so much. Again, my daughter is calling me, so I have to go.

## What now?

All of the sarcasm and satire aside, I remain optimistic, inspired and excited to shape this new media landscape. However, we must remind ourselves that the consumer experience is all that matters as we live in a fast changing, hyper connected world. It is a new game today, and whether we like it or not, we cannot apply old rules to this new world. The changes in the music business may be the greatest lesson in this shift in consumer behavior, and as you may recall, it didn’t end well for the companies that held on to the past. The music industry used legacy business rules to impede innovation and ignored the needs of the connected consumer until a technology company made the change for them which gave us the Apple iTunes juggernaut. Just as we couldn’t apply radio’s rules to TV, we cannot try to apply the old rules of TV to the new world of OTT device streaming. Henry Ford once said, “If I had asked the people what they wanted, they would have said faster horses.” The world of streaming is not simply about creating faster or better TV, but about creating an entire interacting media ecosystem of entertainment and commerce that is curated to the user’s preferences for an easy experience at a reasonable price. No cable contracts, no verifications, no more Big Three, no more walled gardens. There is definitely plenty of work to do, but who knows, if the TV business gets it right and fast, maybe it won’t end up like the music business. Maybe we can think of a better name than OTT as well. While I dare imagine what the future of advanced TV looks like, I’m obsessed with building a better solution.

□



**What's the point of a Smart TV if the user experience isn't "smart"?**



# Understanding the OTT Business Model

By: Carlos Hulett Guinand

OTT, SVOD, TVOS, AVOD: Which business model is the winner in the OTT Industry? Everyone in the industry is asking that question without ceasing. They all say that the new trend in television is OTT, and there is no doubt about it, but the common question is: where are the profits? No OTT vendor has reported company profits, including the suppliers of technology, programming services. Even content generators ask that question, where are the earnings?

The earnings of OTT are linked to the ability that these companies have to climb quickly, but for starters, with an ARPU average of 10 dollars, one really needs to be massive to see the possibilities of delivering profits.

The scalability of a business has many assumptions. However, in the television industry, there are two important components: 1) the ability of distribution (technology) and 2) user adoption (evangelization). In the case of cable, the technology of distribution was very complex, and did not

allow that the scalability of the business outside to be fast. Probably many users had access to the information on the product before they could have access to the product itself. They all spoke of television through cable, but few had cable in the door.

In the case of OTT, using the distribution platform of the internet allows the service to be put in the hand of the consumer, since they can acquire it in the App Store, Google Play, Roku Channels or even the Amazon Store. Also, in any tech store you can buy a Smart TV or a streaming device, and in some cases for less than 50 dollars one could have access not only to hundreds of channels, but to thousands of channels and VOD titles, of all the different genres. When Netflix launched its streaming service it did not offer more than 1000 titles, but leveraged its technology; first because of the high penetration of the television sets connected to the internet, then through streaming devices, like the new tablets and the boom of smart phones. The manufacturers needed



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content for their new streaming systems and Netflix delivered that immediately. Imagine, shopping for a television set, worth more than \$1000 and then wanting to use it with a technology platform that connects to broadband, and the first application that you find already preinstalled is Netflix. It is impossible not to subscribe.

It took 40 years for the Cable Television industry to climb from 1 million to its first 50 million subscribers between 1950 and 1990, while it took Netflix less than 7 years to reach the same goal, and then it took less than 3 years to duplicate it.

"Users are adopting television via internet and streaming players, and enabled smart TV penetration has grown strongly over the last four years. In Q1 2014, just 10% of tv homes had smart televisions and 15% had streaming players. in Q1 2017, smart TVs have narrowed the gap on streaming player penetration and grown to 29% and 31% respectively. So we are seeing some lumpiness in the quarters, depending on when we launch certain content, but the big picture is remarkably steady. So think of it, really, ace this big adoption of internet TV." - Netflix CEO Reed Hastings - January 2017

Literally in no time, OTT service is in everybody's reach all over the world, but then why don't all systems scale at the speed of Netflix? Because the key is not in the technology anymore, the phase of the adaptation to technology has already passed and the challenge is to create a model of



*The battle for OTT business model supremacy is raging.*



business that depends much more on the user and his ability to adopt the product. Now the challenge has doubled, older generations don't feel comfortable with new digital technology and do not understand or trust as they are constantly challenging their knowledge of technology. On the other hand, new generations (digital natives) that never had or ever used cable, are used to free internet and not very willing to pay for content.

***This battle has prepared cable operators and they have determined to take part in it and not fall behind. Comcast with Stream, AT&T with DirecTV Now, Dish with Sling, are only the beginning. Other players like HULU and the biggest of AVOD, YoutubeTV, have also taken a step forward.***

There is a need to teach users and help them understand the product and why they need to pay for it. It is necessary to create experiences

for users so that they feel comfortable, and prove to them the interface is easy-to-use.

To the digital natives, the need is to show them that OTT provides content that add value, and if they really feel that they need it, they will use their credit card and compromise with a subscription.

But there is a great challenge "preaching our advantages" with content generators. In the early days of VivoPlay we visited all the channels and producers in Latin America, and explained what we do. Executives often said, "OTT is a technological phenomenon" and many even handled the topic with fear. It was difficult to explain to them that OTT is not a platform technology, it is a media business model that uses a platform to distribute content, we have to see it as the "path" and the content as a "destination".

All the cards seem be on the table. The battle of SVOD is being won by Netflix. The battle of TVOD is being fought between Amazon and Apple. And while the AVOD shows Youtube in first place, it seems that the under value of CPM, plus the low credibility of the advertisers, has created a new battle.

This new battle is price-based offering

services of OTT virtual multichannel video programming distributors (VMVPD), that according to a TIVO report, these services have doubled adoption from Q1 to Q2 2017.

This battle has prepared cable operators and they have determined to take part in it and not fall behind. Comcast with Stream, AT&T with DirecTV Now, Dish with Sling, are only the beginning. Other players like HULU and the biggest of AVOD, YoutubeTV, have also taken a step forward.

The vMVPD presents itself as a solution to the problem of cord cutting for the cable operators and carriers. Apparently the business model of television "a la carte" is something that the public has adopted with enthusiasm, not only for the price, but for the perception that "you only pay for what you need".

OTT's that want to introduce themselves to the market today MUST use a technology with apps present in most devices, and must select a business model coherent with the needs and the values of its content. To think that following Netflix is the "way to go" can be the difference between living and dying.

□



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# OTT Trajectories and Cloud Computing

By: Mark M. Myslinski

## Background

Companies competing in industries based on video compression and processing are at a tenuous point today. This is a time where those companies will have to make a big fat choice as to whether to invest in appliance-based capex that is frankly getting dirt cheap, or in a cloud-based model that is opex-based. These are two very distinctly different types of investments and difficult to compare in total cost of ownership (TCO) models. Yet as a company competing in this arena over the next 3 years, you will find yourself sitting in one camp and competing against companies in the other camp. And these technologies are so distinctly different that someone will likely have a distinct advantage.

As you contemplate moving from depreciation-based capex models, to overly opex-based models and considering TCO, what I would say is that identifying some of the trajectories taking place within these technologies could provide some clarity for your path forward. I say this specifically within my current strong suit, over-the-top (OTT) and broadcast television, of which I

continue to cultivate the joining of the two. And here I will say that today we are not completely there yet, but this discussion gets us a lot closer.

## Cloud Resources Today

Our discussion of cloud infrastructure needs to address two components, the application software and the underlying compute resources. And today, the cloud cost curves for video processing in general are heading sharply in a good direction, but it is elements of the underlying computing resources that need to be addressed for the TCO model to be truly effective.

Cloud application software is referred to as Software-as-a-Service (SaaS). The mainstream SaaS application software that covers storage, off-line encoding, Adaptive Bit Rate (ABR) encoding, cloud DVR; all are coming into line to make the TCO model of cloud-based solutions effective versus that of traditional appliances.

It is cloud-based Constant Bit Rate (CBR) linear encoding in particular that lags effectiveness in the TCO model. Here, most of this is due to a) the costs of



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computing resources, and b) egress costs. These computing resource costs become reduced as the volume of encoding resources is increased. The primary way you might increase this volume would be through the addition of local systems to your plant (here plant can be cloud virtual), or through the increase in consumers such as by offering off-net OTT services to public consumers in addition to your cable subscribers.

As for egress costs, these are the costs of sending media from the cloud to, in this case its local headend destinations. These costs can be quite substantial, although some commercial cloud providers are starting to cap egress costs based on volume. And if you're wondering, the act of sending media to the cloud is called ingress, of which many commercial cloud providers today offer cost-free ingress. Hmmm...

As for the cost of the SaaS application software for CBR linear encoding, these costs today are manageable in a TCO model, and will be getting even better as vendors are starting to enable their SaaS to run on multiple commercial clouds (called multi-cloud). This leads to price competition that will make the TCO of the overall cloud-based model even more competitive.

## Timing the Choice of Compression

MPEG-4 compression (H.264) with



Cloud-based computing and processing technologies are driving improved TCO.





**HEVC compression is more expensive, but as 4k content moves to mobile viewing, the comparative economics to create beautiful high quality content will improve dramatically.**

extensions produces very high quality HD video today. Don't forget this too soon. HEVC compression (H.265) has the promise of producing higher quality video, as it requires less bandwidth to transport. Today this has become more of an important factor for mobile networks. Once HEVC extensions have been developed, an even greater promise for higher quality HD followed by 4K will be delivered by HEVC.

HEVC computing costs today can be almost twice that of MPEG-4, pretty much in both cases of using either a traditional appliance-based or cloud-based solution. Subsequently, the HEVC TCO model in the near-term does not yet compete with the TCO of MPEG-4. But continue to watch this closely as hardware-based acceleration to the benefit of HEVC is on its way to the clouds.

When it comes to compression, the TCO model can include ownership of the encoding licenses, and consider that for good reason. This would be the licenses for the SaaS application software. The best example would be for a company to start with an appliance-based solution that runs virtualized application software. The benefit here is that in many cases the application software can be ported to a commercial cloud once that model is appropriate, and so the investment in the original encoding software (licenses) is preserved. Another benefit is that some of the application software vendors offer encoding licenses that are future-proofed, whereby the original license will automatically upgrade

to the next generation of compression technology once that becomes available.

#### **Virtualization Efforts in Mid-Stride**

Video processing vendors are more or less in their progressions from traditional appliances, to virtualized appliances, to commercial cloud SaaS. Some are making a formal progression to preserve all the rich broadcast features as they move to virtualization. Others have jumped to SaaS virtualized solutions quickly at a cost of fewer features out of the gate.

A secondary evolution is occurring currently as the virtualization progression goes from Virtual Machine (VM) implementation to Docker container-based implementation, of which the latter is much more efficient within the cloud footprint and underlying computing resources.

#### **Workflows to Unify**

Outside of the equipment evolution, there is an inflexion point coming up in the cable / OTT industries whereby traditional linear services which today are CBR workflows, will eventually cross over to ABR workflows. This will enable unified workflows which will reduce the overall complexity and costs of your video processing. In addition, ABR services lead to very cost efficient targeted ad insertion that can also be done entirely in the cloud. [1]

We are getting close to this possibility as ABR end-to-end Quality of Service (QoS)

is tightening up (getting more reliable). And as today consumers are getting primarily accustomed to watching media on predominantly second screens, which is ABR. Consumers are also getting their eyes more trained to ABR viewing as television DVR implementations today are becoming more cloud-based and using ABR for the consumer's time-shifted viewing.

#### **The True Power of Metadata Coming About**

New technology has become available to exploit the true power of SCTE-35 markers for addressable or targeted ad insertion. And this technology is also needed as consumers continue to move from stationary to mobile viewing. Here, both in-band metadata, like SCTE-35, and out-of-band metadata, like SCTE-224, is further embellished to enable the robust rights management required to support consumers' increasing mobile viewing.

The key here is frame-accurate metadata placement. This is the same accuracy afforded broadcast corporations and post production houses through their playout systems to create an intricate and pristine television broadcast.

As metadata is expanded to empower OTT programming, this metadata also must be inserted frame-accurately as it traverses cloud-based systems and goes on to span the globe. This is how the intricacies of television will be maintained in OTT distribution,

specifically for rights management, blackouts and program substitution. Another key here is this technology works in existing workflows and does not impact traditional television delivery at all. [2]

And as semantic audio and video analysis technologies progress, real-time metadata generation, insertion and delivery will enable contextual ad targeting based on frame-accurate metadata. A potential big boon for OTT television broadcasts.

### **Workflow Orchestration Must Become Dynamic**

As workflows unify to ABR in the cloud, as viewers become more mobile, as vMVPD operators become the norm – cloud-based workflows must become dynamically orchestrated. i.e. more resources when and where traffic swells, and less resources during off-peak times. And with this, the cost model for service delivery becomes close to all opex and as cost efficient as possible.

It is also through dynamic orchestration that comprehensive resilience creating high availability of OTT services comes about. This will enable the robustness needed to manage the dynamic swells of traffic that will occur with true global OTT broadcast television. [3]

A true opex-based model such as this departs from current conventional CDN distribution, as the costs of this new model will enable a fixed top line margin to be assigned to the service delivery. For the OTT services provider this enables the cost per consumer to be known and ahead of the programming event. Here the golden goblet I've referenced in previous articles comes about, as traditional linear advertising models are enabled for OTT broadcast television events. Furthermore, the profitability of

these events can be supercharged through the ability to target ads within that linear broadcast event to as many different outlets as possible. [4]

### **So What Does This Mean in 2017?**

- The cloud is unavoidable even when considering a 3-year TCO model, yet cloud computing costs must be roped in through volume either today or as planned for tomorrow.

- Don't leave too soon the video quality realm of MPEG-4 compression with extensions, because HEVC will only get better and its costs cheaper, and as some compression vendors will let you buy into the future.

- A step into the next TCO cycle should consider investment into virtualized appliances, assuming you see an eventual move to the cloud. And with this, consider investment into buying your encoding licenses to get the most out of it.

- The inflexion point to wholly ABR delivered video services is coming and being accelerated on two fronts. As end-to-end cloud-based ABR workflows are tightening up, and as consumers' eyeballs are getting more trained to ABR quality.

- Clouds are a natural for dynamic orchestration. Tight, container-based dynamic orchestration will shore up cloud-based ABR workflows to support the broad ebbs and flows of traffic that will come with global OTT broadcast television.

- Metadata must be fully exploited to enable OTT streaming to support a pristine

quality broadcast and the intricacies of true television programming, as well as to enable addressable advertising within OTT broadcast television events.

- Metadata for ensuring rights management must be frame-accurately inserted and especially for the dynamic rights management required for a very mobile world.

The technology cost curves for video compression and processing for both appliances and the cloud are currently so steep that total cost of ownership models need to be on the order of 3 years. TCO model considerations in the cable and OTT industry sectors need to embrace virtualized technology at a minimum such that it can be moved from appliances to the cloud by the end of this TCO cycle or sooner. Starting a new TCO cycle in the cloud may indeed be practical if you anticipate unified workflows and if your target markets are unbridled by geography to scale up. □

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# Who Will Be King of the OTT Hill?

By: Terry Owen

*Captive consumer audience, targeted analytics that augment content recommendations, ad selection and delivery, along with great content working together, will be “king of the hill” in the new world of global over-the-top (OTT) distribution.*

Internet, video entertainment, publishing, music, and video games are quickly shifting in the industry to those that provide over-the-top (OTT) services and monetize consumer data. The global OTT market model is saturated, fragmented and chaotic with services providing selective offerings while lacking in the variety of genres consumers continue to demand even as they cut the cord. Direct to consumer OTT models that offer the variety of content consumers are seeking with both affordable pricing and a variety of content options are going to eventually win in the battle for over-the-top supremacy as consumer spending on internet access, including mobile data, will rival advertising spending.

Global distributive networks that provide content partners a direct to consumer “market” will offer more fertile ground to profitability for those that choose to partner together to quench OTT consumer’s thirst for content variety.

The growing consumer cord-cutting trend is not because of the lack of channel options available to them, it is the associated costs that video and cable incumbents charge for access to their channels. Video and cable companies are attempting to fight back by offering their content on an integrated omni-channel basis, on TV, laptop, tablet, and smartphone calling their service offering what they have dubbed TV Everywhere. It should be noted again that while consumers in every market love the convenience of having their content aggregated in one place, rather than needing to root it out across a bunch of disconnected services, they still do not wish to pay the higher fees associated with cable for access to their TV Everywhere channels.

Consumers are flocking to the OTT market but in fact, due to a lack of options within the marketplace, are settling for platforms that don’t or can’t offer the variety

of content choices that cable provides at affordable monthly prices. This dilemma has led to a rise in customer exodus from OTT platforms with consumers jumping from one platform to another based on “free viewing” watching periods and in some cases piracy or manipulation to access desired content free of charge.

Customer churn, exodus and piracy are critical factors in the financial viability of the over-the-top platform. In a competitive and saturated market, companies are spending more and more each quarter in an effort to attract new consumers, retain existing consumers while spending significant funding for new content to quench consumers’ consumption demands.

In addressing global cord-cutting market trends, a comprehensive global distributive network needs to be delivered that connects innovative and disruptive HD projection smartphones and tablet devices with a variety of content options.

It is my belief that OTT consumer trends are not being addressed correctly within the industry. Incumbent industry leaders, who seem to remain oblivious to market changes, need to take action to address the needs of



*Terry Owen, co-founder of Akyumen Entertainment System, is a serial start up, consumer internet services and product guy who enjoys putting innovative and disruptive devices and services into the hands of millions of consumers worldwide to improve overall consumer experience and improve stodgy entertainment business models.*

the chaotic and saturated over-the-top (OTT) market. The ability to design and curate your own media diet has been one of the most powerful trends from cord-cutting consumers to emerge in the industry. Whether in the U.S. or Uzbekistan, consumers are demanding a greater ability for selection choices and options to consume their favorite content.

The approach outlined above, while considered “outside the box” in today’s stodgy world of exclusivity and limited content options, is designed to address and improve consumer loyalty, significantly lower subscriber acquisition spending, and increase content options for consumers. □



**OTT content combined with innovations such as HD projection smartphones will drive the market.**

# WWOZ Uses Alexa to Bring Radio Back into the Home as an OTT Service

By: Kiriki Delany

Alexa voice navigation is giving radio a new personality and opening new possibilities for the medium in the expanding OTT universe.

Most consumers have witnessed the world of interactive voice commands taking shape through their mobile devices. For Apple users, Siri has been part of the fabric for several iPhone generations, helping users navigate directions, locate businesses and recall phone numbers to dial.

The rise of Alexa beginning five years ago has cast a wider net to the possibilities of voice interactivity. Where it was first unclear whether Alexa would move beyond an Amazon-only offering, it was a pleasant surprise to learn that Amazon included skills within the application that were publishable by third-party developers. It wasn't long before companies began developing proof-of-concepts for Alexa application in various industries.

In broadcast, Alexa is starting to show its value as a consumer-engagement tool. Through the use of custom Alexa skills

creation, content delivery networks are in an excellent position to add interactive voice functionality to smartphones and tablets through the installation of apps. These custom Alexa skills add capabilities to Amazon Echo, Echo Dot and Echo Tap smart home speakers, enabling listeners to access live and on-demand content through intuitive voice commands.

***While video is certainly going to play a bigger role in the future, today Alexa is making waves as one of the more impactful platforms on the market for audio functionality. Therefore, it has emerged as a way to keep radio relevant in the digital age, as well as a way for audio content publishers – radio and otherwise – to enhance their presence in the OTT market.***

At its core, Alexa skills allow broadcasters and service providers to choose the words that users speak to launch programming, and define the interactive experience surrounding their content. In addition to live streams, Alexa skills can provide intuitive, verbal access to podcasts and on-demand archives, with simple navigation between episodes. Like web domain names, Alexa invocation names – the words users speak to open a custom skill – must be unique. This makes it important that much more time-critical for each broadcaster, including OTT service providers, to swiftly secure its preferred Alexa identity.

## Attracting Audiences through Audio

One medium where Alexa is proving value is broadcast radio. While radio remains a strong medium globally, there's little question its power has faded in some countries. Looking specifically at the United States, HD Radio, while still a presence, has not quite had the impact many FM (and some AM) broadcasters had hoped. Professional equipment suppliers continue to develop



*Kiriki Delany is the Founder and President of StreamGuys. He started StreamGuys in 2000, pioneering affordable streaming audio for the world. He enjoys serving content creators and the broadcast community,*

*who StreamGuys have co-evolved with during the information age.*

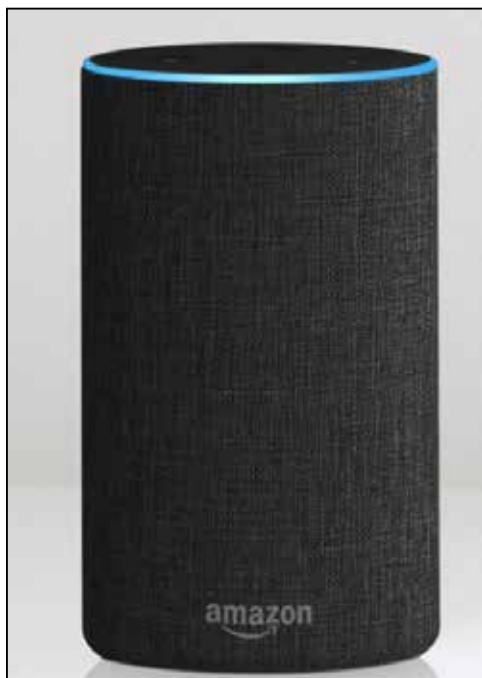
and evolve HD Radio systems for radio broadcasters, but the industry never quite recovered from early consumer confusion about how to receive it – not to mention the high expense/limited options of available receivers.

Meanwhile, FM receivers have not integrated with mobile phones to the point of making any noticeable impact. And Smart TVs, while enabling access to digital, remain mostly focused on video.

While video is certainly going to play a bigger role in the future, today Alexa is making waves as one of the more impactful platforms on the market for audio functionality. Therefore, it has emerged as a way to keep radio relevant in the digital age, as well as a way for audio content publishers – radio and otherwise – to enhance their presence in the OTT market. OTT is all about expanding reach, and as radio has always thrived on audience engagement, broadcasters are finding Alexa to be a user-friendly platform that consumers can quickly and easily learn and adapt to as a new way to tune in.

For one, users of all ages and skillsets immediately have a more streamlined interface to access content through voice navigation. The very young, as well as older demographics, have a direct portal to browse a wide array of broadcast content using a hands-free service. This has the added benefit of improving accessibility to audio content for disabled consumers. In any case, listeners can navigate live streams and podcast episodes by voice without any intensive learning curve and through true, passive engagement.

Second, Alexa, as an audio-centric device,



***Alexa Voice Navigation-  
the best OTT interface?***



is clearly giving radio a fresh personality. The consumer is given the power to tailor media preferences, such as setting a daily briefing that matches the messaging and the talent. For example, Alexa custom skills such as voice prompt personalization would replace the robotic Alexa voice with the voice of the on-air talent. These personalized services can easily be expanded to each listener in the home, allowing content providers to create unique experiences for all.

### Alexa and the OTT Workflow

Most broadcast workflows today are automated to a large degree, and Alexa represents a new way to automate the playout of live streams and podcasts. These services are fairly easily deployed as part of a broader streaming and content delivery architecture. However, there is a great degree of advanced functionality that can be added to strengthen the effectiveness of an Alexa deployment, particularly when integrated with OTT services. Some of these opportunities include:

- Content management and publishing
- Localization services
- Dynamic advertising
- Metadata integration

From a production perspective, content producers have more options to quickly repurpose content on a daily basis using new software-defined tools. One such example is our SGrecast service (see case study sidebar), which is often used to create podcasts and/or side channels out of live streams. This provides an easy way to provide fresh content daily over OTT services, and made easily accessible through voice activation. Podcasts and RSS feeds, for example, are seamlessly integrated into an Alexa experience without the content producer having to publish over multiple platforms to create Alexa-specific content. This provides a much quicker and more efficient means of moving on-demand audio content into OTT services.

Localization of content is another opportunity to enhance the listener experience. Offering content targeted to the geographic location of the listener introduces revenue-generating call-to-action opportunities including shopping experiences, membership opportunities, and accessibility to password-protected premium content.

Dynamic advertising insertion extends the revenue-generating opportunities of the OTT service. When deployed with a server-side ad insertion platform (as StreamGuys offers), which employs a single-stream feed that eliminates the latency concerns of delivering ads client-side following a play request, the payload is delivered simply by accessing the content. Looking further out into the future,

ads triggered through a voice activated call-to-action will further personalize ad delivery for the listener, which will enhance the relevancy of ad content delivered to that audience member.

The importance of metadata integration also cannot be understated. The delivery of artist/album title, show segment information and other detail associated with the file as push-based metadata is yet another element to strengthen the audience experience. It is significant to note that Alexa's display layer played an integral role, seamlessly delivering the visual information that correlates with the audio content.

### The Benefits of Adoption

There is little question that Alexa will become a major platform and connected device for the OTT market. Beyond its ability to bring radio back into the home, Alexa's integration with connected speakers and online audio services like TuneIn, iHeart and Pandora makes it a winner for whole-house audio in the residential market. Furthermore, Alexa will certainly continue to evolve as a video service, and we anticipate that the platform will soon integrate with the Amazon Fire ecosystem, smart sticks and more. We're clearly just at the starting line with the possibilities.

***Most broadcast workflows today are automated to a large degree, and Alexa represents a new way to automate the playout of live streams and podcasts.***

### Radio, OTT and Alexa: A Case Study

One of the first stations to take advantage of StreamGuys' Alexa skills development was New Orleans based, independent community broadcaster WWOZ. An early adopter of streaming technology, the music-focused station is always on the lookout for ways to grow beyond its terrestrial broadcast footprint, with roughly half of its listeners now coming from outside Louisiana. WWOZ's skill passed Alexa certification and went live in May, enabling Echo users to listen live, browse WWOZ's archives or access specific on-demand programming by genre or title through easy verbal instructions.

"Alexa lets consumers interact with their devices in a very intuitive way," said David Stafford, New Media Director, WWOZ. "It's attractive to us because of how embedded smart voice technology has become in people's lifestyles. To be one quick voice command away from people being able to hear us is very cool. By putting us in front of more listeners and embedding us further into



***Can Alexa breathe new life into radio?***

their lives, the Alexa integration increases our audience engagement, which we expect will drive more of the donations that fund us."

Listeners can access WWOZ's voice-prompted menu by saying "Alexa, open WWOZ", or go directly to desired content with commands such as "Alexa, tell WWOZ to listen live" or "Alexa, tell WWOZ to play traditional jazz". StreamGuys worked closely with WWOZ to organize the station's show archive into an easily voice-navigable structure, and to implement the new integration.

"Since launching our on-demand archive with StreamGuys using their SGrecast software-as-a-service platform to quickly repurpose content, it has become one of the most popular features on our site," said Stafford. "Our new Alexa Skill enhances our on-demand offering by giving our listeners a powerful and effortless new way to access it."

The new custom Alexa skills offering further extends the end-to-end SaaS platform and toolset for producing, managing, monetizing and delivering streaming media and podcasts, providing broadcasters with a comprehensive solution spanning content creation through to consumption. The Alexa skills can also integrate closely with a push-based metadata delivery system, allowing live stream listeners to ask the station "what's playing?" or "what song is this?", with Alexa then speaking out the current song details.

In addition to WWOZ, StreamGuys has also created Alexa skills for forward-thinking broadcasters including Internet radio outlet 808 Live Reggaecast (Alexa invocation name "Rasta Music"); NPR stations Rhode Island Public Radio and Georgia Public Radio ("GPB"); RFC Media's Third Rock Radio ("Third Rock"); Christian FM; Positive Alternative Radio ("Walk FM", "Joy FM", "Spirit FM" and "Encouraging Radio"); and CHIRP Radio. All of these are available today on many OTT services. □

# OTT Innovation: Up Close and Personal

By: Francesco Moretti

With recent reports estimating that by 2020 the OTT market value will reach \$ 62.03bn and achieve an estimated CAGR of 17.2%,<sup>1</sup> fuelled by high speed connectivity and increasing customer demand for personalised service and choice, it is not surprising that a wealth of innovation and tools are being developed around this area. Also not surprisingly, non-traditional TV viewing is increasing with multiscreen and 'second-screen' viewing becoming the norm. If broadcasters wish to increase and maintain their client base, they will need to rapidly address the popularity of OTT content and the marked consumer preference for customisation by developing business models that increase loyalty through personalisation as well as appeal to advertisers through accurate customer targeting.

In this article we aim to provide a birds-eye-view of some of the most interesting solutions that are currently being trialed in

the market which broadcasters should have on their radar.

Firstly, scene analysis provides a key example of customisation that can really appeal to the viewer. Scene analysis focuses not on the behavior of the viewer in front of the screen, but on elements of the scenes being streamed in order to set off parental control for example, or offer more tailored content such as suggesting that if the current movie is a spine-tingling thriller, the sentimental viewer may want to switch to a more customary romantic comedy.

Another technology that leverages customisation is gesture control. Thanks to multimodal interfaces viewers will be able to interact with their TV through sound such as their voice. For example, by speaking basic key words such as House of Cards viewers can trigger a multimodal TV interface to offer the latest episode.

A further frontier on the gesture



Francesco Moretti, Deputy CEO, Fincons Group began his career in 2007 interning at the USA base of the Italian multinational company Italcementi in IT and Accounting. During his first 10 years of working at

Fincons, he studied the company's business model and then managed client relations, operations and internal organization alongside his father Michele. The knowledge he gained about Fincons, the way international businesses work, and the USA environment in particular, enabled him to play a key part in the expansion of Fincons Group – a specialist in IT Business Consulting and system integration initially based in Italy and Switzerland – in the UK, and most recently in the US, in New York and Los Angeles.

recognition front will be expression recognition via sensor technology that will automatically understand when content is not interesting or relevant by analysing behaviour



OTT service providers should always be looking into innovations to help them compete.



such as looking elsewhere or moving about distractedly, or even falling asleep!

From an advertising perspective, understanding who is viewing from the device is critical allowing OTT providers and broadcasters to move far beyond interactivity based on second screen or remote-control interaction.

In fact, with HbbTV it is now possible for regular TV viewing to be interrupted so that a relevant advert is channelled-in via broadband, or so that an advert that is not interesting to the viewer is swapped for one that is. New developments will show the TV set understands whether the viewer has changed and can swap the advert programmed with something more appealing.

Based on a bidding system programmatic TV advertising allows brands to bid for high-value advertising slots in real-time. This is especially effective, for example, during the finals of important sporting events when the sponsor of the winning team wants to make sure their products really come to the forefront at a time when their team is shedding a positive light by doing well. The highest bidder wins this key slot and as more people tune in their audience is bigger and well-targeted and highly engaged. But it's the broadcaster of course that takes home the bounty as brands are willing to pay premium rates for this type of highly engaged exposure. These are just a few key examples of tools broadcasters and OTT providers should be



**Gesture control is just one example of innovations that will differentiate OTT from traditional TV.**

looking into in order to ride the wave of changing consumer viewing habits. As new developments ranging from virtual and immersive reality to Object-based video, Social TV and ATSC 3.0 continue to make their way into the tech panorama it is critical to ensure that you remain up to date with new developments and regularly consult expert views on what could propel your business

into the future. □

<sup>1</sup>MarketsandMarkets, *Over the Top Market by Content Type, by Platform (Smart Devices, Laptops, Desktops, and Tablets), by Service (Consulting, Installation, and Maintenance), by Revenue Model, by Deployment Model, by Vertical, by User Type, by Region - Global Forecast to 2020*



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# Why Pay TV Operators Should Embrace Android TV

By: Hugo Santa Maria

According to 2017 Ovum's Industry Survey Report (1) 50% of more than 300 TV service providers surveyed (including Pay TV operators, telcos and OTT streaming services) have plans to deploy Android-based STB platforms by 2021. The expected impact Android will make to the TV landscape is such that the majority of the surveyed TV service providers believe that by 2025 Android will become the leading TV platform.

However, before deciding to invest and starting development, it's important to have a clear view on the existing Android-based STB options and, more importantly, what TV service providers can get from each of them. Table 1 below focuses on Pay TV operators and the importance of assuring a seamless and across-device user experience, which is fundamental in maximizing user engagement and product monetization and

churn reduction (see table below).

As we can see in Table 1, although AOSP gives full control over user experience and installed applications, the time and cost required to launch new versions does

**Android TV ecosystem offers a vast range of content with its hundreds of applications. It's hard to compete with that living ecosystem. What's the point of having full control of the platform if users consider it incomplete?**

not cope with the fast pace of today's TV industry. One cannot underestimate the costs of maintenance and new release deployments



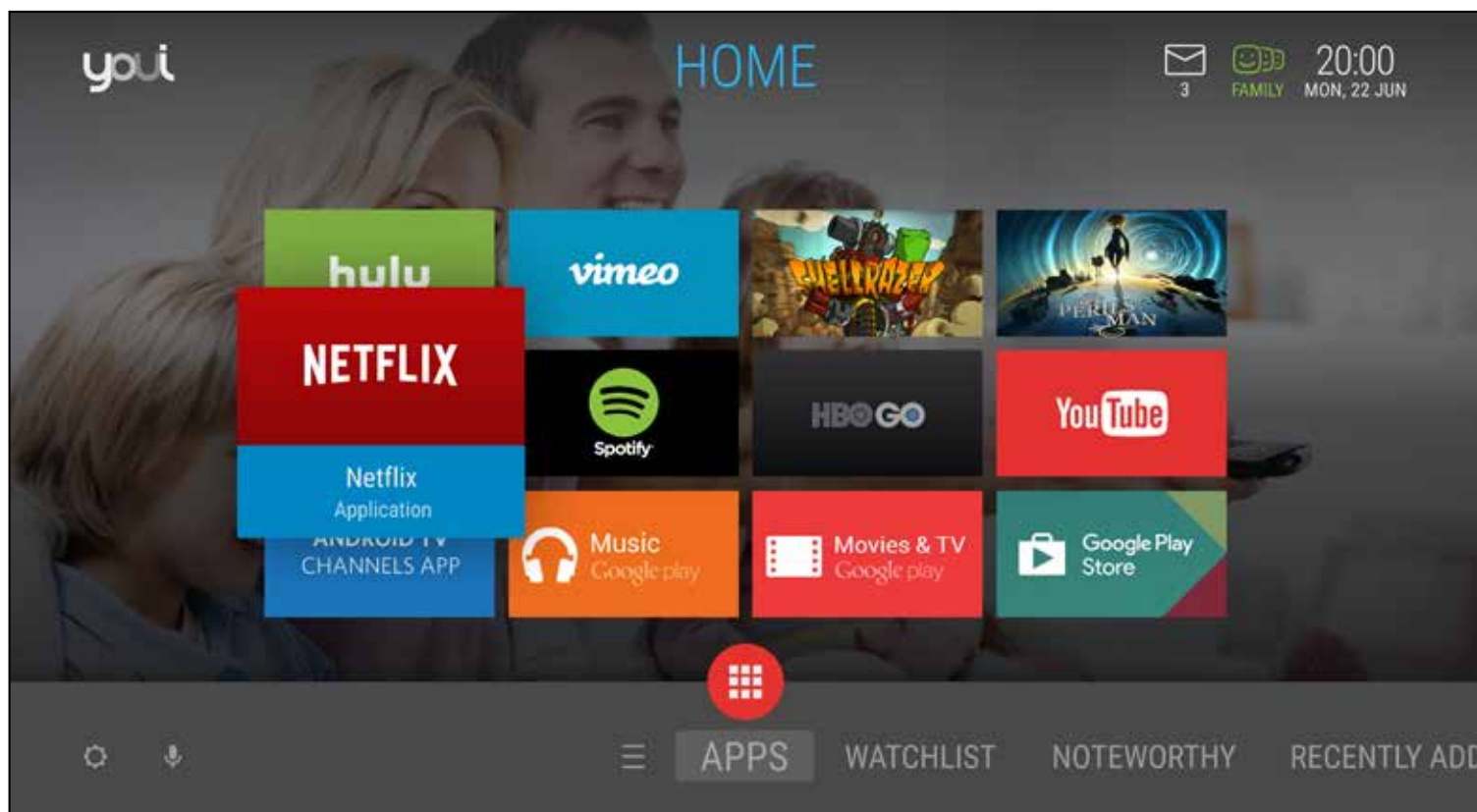
Hugo Santa Maria, Senior Manager of TV Product Management at ADB and a TV/Video enthusiast, has more than 15 years of experience in the TV and Telecommunication industries and a strong background managing both product and project teams in the development of next generation TV platforms. Prior to ADB, Hugo was Head of Multiplatform and Video on-Demand at Portugal Telecom.

typically associated to heavily customizable platforms. Another important aspect, and in my opinion the most relevant one, is content availability. Android TV ecosystem offers a vast range of content with its hundreds of applications. It's hard to compete with that living ecosystem. What's the point of having full control of the platform if users consider

	Android TV Android version for Smart TV's and STB's	Android Open Source Project (AOSP) Android open source software stack based on Linux kernel, distributed by Google for customization by the community
Control	<b>Partial control</b> TV launcher with customizable User Interface from Pay TV operator following Google certification guidelines  Recommendations provided by both Pay TV operator (editorial/proprietary recommendation engine) and Google  No Google Play application selection nor control (competitor's applications cannot be excluded)	<b>Full control</b> Free implementation of User Interface  Pay TV operator decides what applications are available (prevent competitors' applications)  Recommendations provided exclusively by Pay TV operator
Features	<b>Full-fledged set of features</b> Access to Google Play applications, including YouTube and Netflix <sup>(3)</sup>  Access to Google Search/Assistant  DVB capabilities (for hybrid scenarios – DVB Channels and OTT on-demand content)	<b>Limited</b> No access to Google Play applications  No access to Google Search/Assistant
Cost & Time to market <sup>(2)</sup>	<b>Quick setup and fast time to market</b> Software: Mainly configuration and customization of User Interface using Android TV launcher following Google certification guidelines	<b>Higher cost and slower deployment times due to required developments and updates</b> STB Middleware must be developed based on Android source code and available libraries  Upgrade of new Android versions is more complex

Table 1 – Android TV vs. AOSP: (2) For simplification, I assumed that lead time of STB and its components is the same in both scenarios (3) Netflix availability requires an agreement with Pay TV operator





**Figure 1 - graphyne2 Pay TV operator's launcher on Android TV provides a sleek user experience.**

it incomplete, not only in terms of content but also in terms of native features like, for example, Google Assistant?

Moreover, Android TV comes with everything an Android mobile device user is already accustomed to – in fact they expect the same User Experience, applications and discovery capabilities but transposed to the big screen. So, adding Android TV to the portfolio is the most direct way to address this highly attractive segment.

**Pay TV operators that react fast and follow this approach will be better positioned to make a big impact on Android's user segment (attract new users while keeping current users engaged) before their competitors.**

However, this comes with several challenges and risks attached. The mentioned lack of control of the applications is clearly one of them. Nevertheless, I strongly believe this can be significantly minimized by applying the following:

- Provide an immersive and engaging quality of experience across all existing devices and platforms (proprietary STBs, Mobile devices – Android, iOS; web portal

– Chrome, Firefox, Edge, Safari; Smart TVs, etc.)

- Make sure new features are deployed periodically and disseminated to all the devices and platforms. Again, all devices and platforms must be coherent and have the same level quality of experience.

- And finally, embrace and consider Android TV as a natural extension of the Pay TV operator ecosystem. This can be done smoothly by deploying the mentioned TV launcher with Pay TV operator's User Interface (see Figure 1), while taking the best of Android TV capabilities and native set of features (obviously following its guidelines exactly as it's done in every other platform.

Pay TV operators that react fast and follow this approach will be better positioned to make a big impact on Android's user segment (attract new users while keeping current users engaged) before their competitors. ADB, with its graphyne2 Suite, is one of the only companies on the Pay TV technology supply market, capable of providing a complete end-to-end TV platform, from video processing and delivery to the end-user devices including STBs, Android and iOS Mobile applications, web portal – Chrome, Firefox, Edge, Safari, Smart TVs; and now also Android TV (including the hardware, DVB middleware and CAS/DRM and TV launcher). All this blended in a best-in-breed user experience. □

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