VERANCE

White Paper

Understanding
Next Gen TV Interactivity within MVPD Environments

Exploring the benefits of Next Gen TV interactive features and the Verance® Aspect™ watermark for MVPDs.

INTRODUCTION

Next Gen TV levels the playing field between digital-only platforms and programmers by enabling enhancements to existing and future content distribution systems. With Next Gen TV, programmers and their distribution partners have the ability to develop two-way connections with their viewers and utilize return path data to deliver personalized and interactive experiences in traditional distribution systems such as cable and broadcast.

As a result of these experiences, we anticipate benefits for all participants:

- Programmers will increase viewer engagement;
- Distributors will enjoy rapid deployment of new features;
- Viewers will benefit from new features providing greater convenience and control; and
- TV manufacturers will benefit from new television sales.

To maximize the reach and impact of these benefits, Next Gen television standards contemplate the use of the Verance® Aspect™ watermark. Without the watermark, less than 15% of U.S. households will be able to take advantage of Next Gen features. With the watermark, Next Gen features can reach every broadband, cable and broadcast-enabled household.

To date, discussion of Next Gen TV has largely focused on the benefits to broadcasters and viewers. However, a discussion of the benefits for multichannel video programming distributors (MVPDs)* is essential, because MVPDs are utilized by approximately 80% of U.S. households to access television programming, significantly more than any other distribution system.

In particular, MVPDs will benefit from the delivery of compelling, non-duplicative Next Gen experiences such as personalized audio, multiple camera angles, enhanced statistics and virtual channels - all of which received top scores in recent consumer studies - without requiring them to make any financial or infrastructure investments of their own. The purpose of this white paper is to enumerate the benefits for MVPDs, the role of the Verance Aspect watermark in delivering these experiences, and provide MVPDs with guidance to maximize the positive impact of Next Gen TV experiences on their businesses. Sections include:

- ► What is Next Gen TV
- ► The Benefits of Next Gen TV Interactivity for MVPDs
- ► How Next Gen TV Experiences Are Delivered within MVPD Environments
- ► Maximizing the Impact of Next Gen TV for MVPDs
- ► Summary

* MVPDs provide a large number of television channels for one monthly price and are utilized by approximately 80% of U.S. households to access television programming. The most common examples of MVPDs are cable service providers (e.g. Comcast and Charter/Spectrum), satellite service providers (e.g. DirecTV and Dish Network) and Verizon FIOS. Other providers, referred to as virtual MVPDs or vMPVDs deliver services via the internet (e.g. Sling TV, DirecTV Now, YouTube TV, Hulu Live and Sony PlayStation Vue).

WHAT IS NEXT GEN TV

Next Gen TV bridges the feature gap between digital-only and linear & MVPD platforms. It represents an evolution of broadcast and cable television from a mostly one-way experience that pushes uniform content to viewers, to a two-way experience that allows programmers and their distribution partners to deliver highly personalized and interactive features to their viewers. It takes a smart TV and makes it even smarter, irrespective of distribution platform.

In a late 2018 video released by FCC Chairman Ajit Pai, "Next Gen TV marries the best of broadcasting; that one-to-many architecture we've known and enjoyed for many years with the Internet."

In the United States, Next Gen TV is powered, in part, by ATSC 3.0, a set of common standards established by the Advanced Television Systems Committee (ATSC) that are designed to offer support for newer TV technologies. The next version of the current ATSC 1.0 standard, ATSC 3.0 enables Next Gen audio and video enhancements, datacasting, mobile TV, interactivity, targeted advertising and much more.

Click here to watch video.

Ajit Pai ✓
@AjitPaiFCC

Exciting to see the latest developments of Next Gen TV (ATSC 3.0) @PHXNextGenTV! It's an Internet-based broadcast standard that promises major consumer benefits, from local emergency alerts to immersive audio to better accessibility. Here's a quick look at what I learned. 📺

♡ 91   12:04 PM - Aug 19, 2018 · Phoenix, AZ

THE BENEFITS OF NEXT GEN TV INTERACTIVITY FOR MVPDS

As Next Gen TV launches in the United States, programmers are developing new interactive capabilities that take advantage of the two-way connectivity and allow them to compete, at long last, with digital platforms.

These experiences run the gamut from improved audio and video experiences, to Netflix-style personalization and custom content recommendations, integrated social and e-commerce experiences, addressable advertising, and the ability to deliver highly targeted emergency alerts that will play a significant role in saving lives.

With so many options to choose from, Pearl TV partnered with Frank N. Magid Associates in Q3 2018 to develop a comprehensive consumer research study to identify and prioritize the most compelling Next Gen TV experiences for viewers. Coupled with findings from a separate consumer study conducted by SmithGeiger on behalf of Verance, several experiences consistently emerged as priorities among consumers, including:

► **Personalized Audio** – choose from different audio tracks, including options in different languages and visual descriptive services (audio replacement); select different commentaries including director's cut and hometown announcers during live sports (alternative commentary); enhance program dialogue while reducing background noise (dialogue enhancement)

► **Enhanced Statistics** – access additional content regarding program currently being viewed, e.g. team and player stats

► **Enhanced Actor Information** – access additional content regarding the actors and show currently being watched, e.g. actor bios and images

► **Multiple Camera Angles** – select from several camera angles when watching live events

► **VOD Features (Catch-Up TV)** – restart a show from the beginning, skip forward and backward

► **Virtual Channel** – automatic notifications when additional, related programming is available via over-the-top services

► **Customized Ads & Offers** – advertising catered to individual viewers' interests

► **Advanced Emergency Alerts** – interactive alerts with rich media, images and real-time updates based on a viewer's specific location

The good news for MVPDs is that these experiences are all complementary to their current service offerings. Without making any financial or infrastructure investments of their own, MVPDs will gain compelling new interactive capabilities that add value for their subscribers and ensure they remain competitive with free over-the-air services. Programmers are doing the heavy lifting by developing and distributing these desirable Next Gen TV experiences themselves.

HOW NEXT GEN TV EXPERIENCES ARE DELIVERED WITHIN MVPD ENVIRONMENTS

The benefits of Next Gen TV are directly related to the number of viewers that are reached. However, the patchwork of different distribution systems and methods in the United States creates barriers to reaching all viewers. Therefore, in order to reach the maximum number of viewers, irrespective of distribution platform, Next Gen TV contemplates the use of audio and video watermarks to enable the means of return path communication when the platform, itself, cannot.

By embedding the Aspect watermark within broadcast streams, the metadata and triggers associated with Next Gen TV experiences are retrieved from the Internet by Aspect-enabled devices, whether they are televisions or set top boxes. This ensures that Next Gen capabilities will reach 100% of these TVs, including the 80% of U.S. households currently accessing their television programming via MVPD services.

Because the Aspect watermark survives all distribution paths and is compatible with both ATSC 1.0 and ATSC 3.0 environments, it plays a vital role in accelerating the delivery of Next Gen TV experiences to viewers.
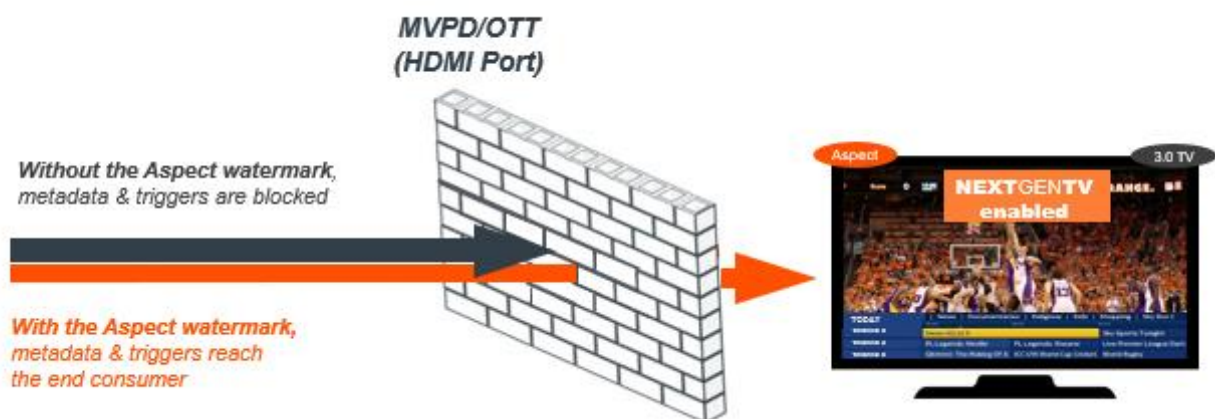
MAXIMIZING THE IMPACT OF NEXT GEN TV FOR MVPDS

In order to ensure the best possible experience for MVPD viewers and services, Verance has carefully studied how Next Gen TV applications can work seamlessly within MVPD environments. Within the following section we address potential questions regarding the convergence of over-the-air applications with MVPD services and provide an overview of guidelines and recommendations to optimize these integrations.

#1: User Experience

MVPDs have been at the forefront of developing and delivering interactive features for many years. While the development of Next Gen TV interactive apps will significantly enhance broadcast programming, some MVPDs have questioned whether these apps will conflict with their existing user interface and disrupt the viewing experience.

The reality is that programmer applications are able to determine the distribution system providing the broadcast service and present different experiences for over-the-air versus MVPD viewers, ensuring they are complementary and not in conflict with MVPD offerings. Further, the option exists to turn off particular features that are irrelevant or duplicative; i.e. guide features including an overall on-screen guide.

Considering these factors, the most logical initial Next Gen interactive use cases include the examples referenced previously. These experiences are complementary to current MVPD service offerings and were also identified as leading consumer features within the recent Magid and SmithGeiger studies.

Leading Next Gen TV Interactive Use Cases for MVPDs (continued on next page)

Dialogue Enhancement	Audio Replacement	Alternative Commentary
Audio Presentation Selection: Normal Dialogue, Enhanced Dialogue	Audio Presentation Selection: English, Spanish, Visual Description	Audio Presentation Selection: Cardinals, Lions
Brings dialogue forward relative to background noise	Select from multiple languages or Visual Description	Select alternate commentary sources; i.e. Hometown Announcer

Enhanced Statistics	Enhanced Actor Information	Multiple Camera Angles
Team/player stats on demand	*Actor bio/images on demand*	*Select from different viewing angles*

Virtual Channel	Customized Ads & Offers	Advanced Emergency Alerts
Watch related content via OTT	*Customized offers for loyal viewers*	*Interactive, geo-targeted alert information*

#2: Multiple Remotes

In today's MVPD environment, we often assume that the majority of customers use a single MVPD remote to control television power and volume, as well as their MVPD set-top-box. As a result, some people may question how viewers will respond to the need for an additional remote when controlling programmer applications. Will it be a turn-off? A deterrent to their use entirely?

Consumers already use multiple remotes without issue.

Connected device   MVPD set-top-box   Manufacturer

The reality is that today's television viewers are already accustomed to using multiple remotes to interact with their TVs and doing so without issues. Approximately 80% of U.S. households currently use MVPD services, and over 70% of U.S. households use connected TV services including Roku, Amazon Fire, Google Chromecast and Apple TV according to recent eMarketer findings. **Because both types of services require separate remotes to utilize their services, more than 50% of U.S. households are already utilizing multiple remotes.**

Given the fact that more than half of the country is already accustomed to using multiple remotes, we believe U.S. television viewers will adjust to an additional remote to control programmer

applications. As precedent, Europe's Hybrid Broadcast-Broadband TV standard (HbbTV), which delivers similar interactive experiences and sometimes requires the use of a secondary remote, has been very well received by consumers since its introduction five years ago.

Lastly, the option for universal remotes have been around for decades and can serve the portion of the population that prefer a single remote.

#3: Customer Service Support

While MVPDs already respond to customer service support calls, it is important to ensure that new features do not unnecessarily increase the burden to MVPDs, particularly if the call is unrelated to their service.

The good news for MVPDs is that programmers are joining forces to create best practices, branding and consumer education around the ATSC 3.0 format. Included within these best practices will be requirements for the provision of customer service resources and viewer education. These preemptive measures will help reduce the frequency of viewers erroneously contacting MPVD support centers when the issues actually stem from a programmer's application.

Will these efforts be impactful? Once again, we can reference connected devices such as Roku, Apple TV and Amazon Fire TV for precedent. With the rapid pace of adoption, viewers are quickly learning that MVPDs aren't the only source of issues – or resolutions. Each of these connected TV services offer comprehensive set-up and customer service support that viewers are becoming increasingly accustomed to using. By this same measure, it will be a matter of educating and reinforcing to viewers that broadcaster support is available when issues arise.
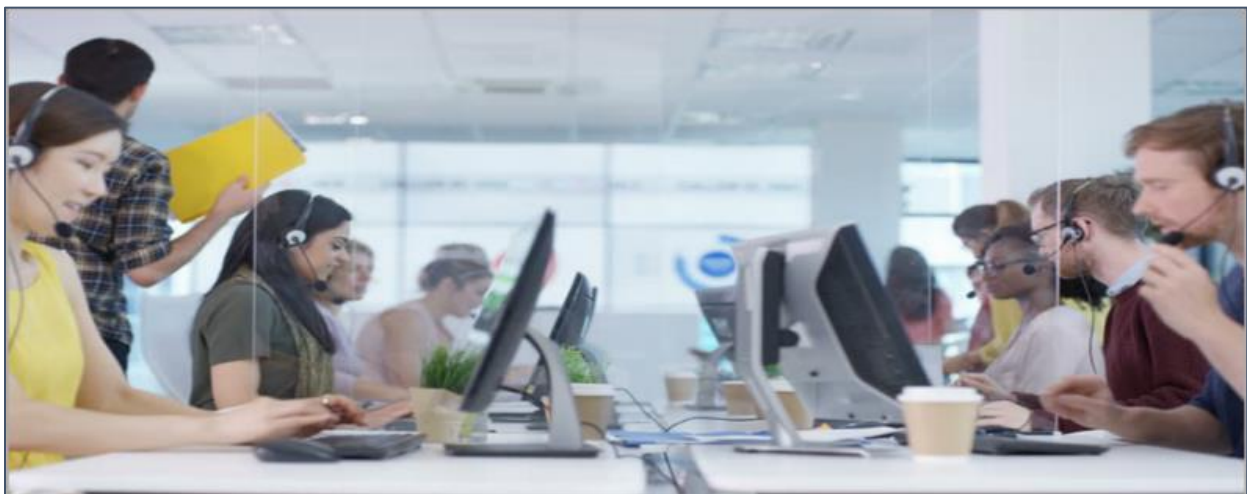
#4: App Development and Versioning

Every large entertainment portal offering improves their consumer experience by developing and maintaining apps for their customers. They also understand the rigors and challenges of supporting these apps across a multitude of platforms. For this reason, some questions have been raised about the broadcast industry's ability to version applications for every ATSC 3.0-enabled Smart TV.

Using mobile app development as a proxy, most companies begin with iOS app development because it allows them to serve a very large base of customers quickly. Android apps are more challenging. While the Android platform is theoretically a single platform, every Sony, Samsung and LG Television – as well as all next tier manufacturers – require their own version of Android apps. This task is daunting, yet it is still more manageable than versioning apps for every Smart TV make and model.

ATSC 3.0 promises to address this problem because it provides a single, common standards-based platform for app design. Adhering to the standard, a developer can design one application that works across all ATSC 3.0 televisions regardless of brand.

While this doesn't alleviate the challenges of app versioning entirely, it certainly mitigates the concern. Our expectation is that ATSC 3.0 app development will be akin to Android development -- not as easy as iOS development, but still much easier than creating entirely different versions of apps for every manufacturer.

Along these same lines, broadcasters and TV manufacturers recognize that app development needs to be prioritized for Next Gen TV to achieve its full potential. Industry leaders from both sectors are jointly developing testing and certification guidelines that will further facilitate interoperability between TV manufacturers and models.

Television overlays are directional only. Each manufacturer may render the experiences slightly differently.

SUMMARY

With the advent of Next Gen TV, a new era of television is on the horizon. Armed with the ability to create two-way connections with their viewers, programmers are working quickly to identify and develop engaging Next Gen TV experiences on par with digital platforms.

To maximize the reach of these experiences, the Verance Aspect watermark plays an essential role. By utilizing Aspect, Next Gen capabilities will reach 100% of ATSC 3.0-enabled TVs, including the 80% of U.S. households currently accessing their television programming via MVPD services – and any 1.0 TVs that are upgraded.

With programmers taking responsibility for the development and distribution of Next Gen interactive applications, MVPDs stand to gain significant benefits without making any financial or infrastructure investments of their own. Compelling, non-duplicative Next Gen features such as personalized audio, multiple camera angles, enhanced statistics and virtual channels all received top scores in recent consumer studies and will increase viewer engagement. Additionally, these features will enable MVPDs to remain competitive with free over-the-air services. While some questions have been raised regarding the impact of Next Gen TV experiences on MVPD subscribers and their businesses, the benefits of extending these experiences to MVPD viewers is more clear.

Within the past year we have witnessed significant growth and support for Next Gen TV, with leading broadcasters and TV manufacturers voicing their commitment to the standard. With the benefits of Next Gen TV interactivity more clearly understood within the MVPD environment, we expect the positive momentum for Next Gen TV to grow at an even faster pace.

ABOUT VERANCE

Verance® Aspect™ watermarking powers broadband features on broadcast television by enabling advanced, census-like audience measurement, personalization, interactivity and addressable advertising across all screens and distribution paths. Selected as a foundational component of the ATSC 3.0 Next Generation TV standard, Aspect is fully compatible with the ATSC 1.0 broadcasting environment and currently being deployed by FOX, NBC, PBS and other leading broadcasters. Aspect was also selected for use within the HbbTV ecosystem.

Verance content measurement and enhancement technologies are at the forefront of innovation and set the industry standard for television, movies and music. Our solutions have been adopted by over 100 leading entertainment and technology companies and deployed in over 330 million consumer products worldwide. For more information, visit www.verance.com or email us at marketing@verance.com.