

StoryTech@NABShow

Driving the Relationship Between Storytelling & Technology

CHANGE ACCELERATED

“How can you use technologies to have successful, measurable and sustainable impact?”

The answers are on the NABShow Floor, the ultimate marketplace for digital media and entertainment with more than 93,000 Attendees from 156 countries and 1,550+ exhibitors, offering solutions that address processes at every point along the content value chain from creation to distribution to consumption to data.

The rapid evolution of technology is transforming the broadcast landscape and affecting the bottom line for storytellers, content creators, distributors, and brands. Keeping up with the pace of technology change that impacts storytelling and audience consumer behavior is the foundation of the work we do for storytellers whether they are brands or advertising agencies, networks or studios; and now some of the newer models of media companies that combine all sorts of content creation. Following are StoryTech's key trends across the industry that will help put the NABShow experience in the context of your business.

TREND #1. IT'S A MATCH! Data Driven Relationships.

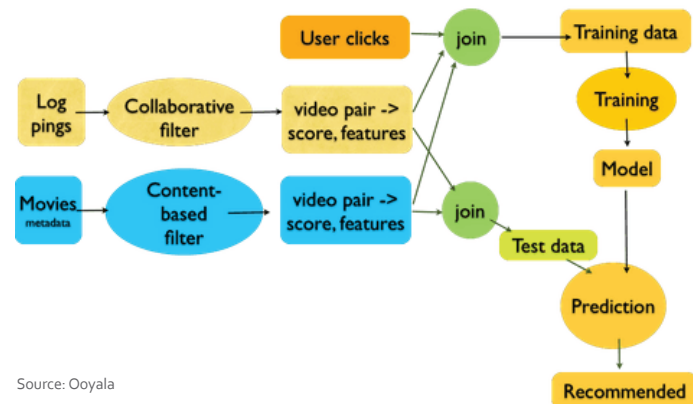
Video-enabled devices in the digital marketplace are projected to reach 15 billion by 2020. Today's consumers demand the ability to watch what they want, where they want, and on whatever device they like. Content is not only about entertainment. It is also about lifestyle and reaching audiences where they are living. More and more you are going to rely on the audience to champion and share that content.

Little Data/Big World

There's been big buzz around big data for the last few years but turning that big data into "little data" that tells content creators and distributors what they need to know in terms of content performance, aggregate audience behavior and individual behavior is where it counts. Big Data is big business. According to Forbes, IDC (International Data Corporation) estimated the 2014 data market to be worth \$US 16.1 billion covering storage, services and software. But, data also stirs up issues of privacy, compliance and security, as companies integrate this information into relevant and mutually beneficial lifestyle services. Every business is realizing a growing reliance on data. Companies that serve them are offering a wide range of solutions. The 2015 NABShow floor showcases some prime examples.

Solutions-based companies include **Ooyala**, who claim that their video analytics software collects over 2 billion discrete pieces of data every month. The result is not only information that digs deep into the performance of content, but also presents a trending picture of the online video business as a whole. Ooyala uses this massive amount of data to develop *machine intelligence* encompassing both machine learning and artificial intelligence. Computers simulate some aspects of the way humans think and the way we learn and are developing more "senses" in the way they can "see" and "hear" what is around them. Machine intelligence combines

the data from these computer senses with vast databases of other information and then uses tools like natural language processing, classification, clustering and other analytic tools to draw conclusions and make predictions. As the machine tests its hypotheses against new incoming 'Big Data', it can "learn" to refine those predictions and make better conclusions, which then inform content and marketing strategy.



Source: Ooyala

Here's how it goes. Machines are learning about us, and then personalizing content, advertising, and environments that work best for each and every one of us. Forrester researcher says that among top performing companies over 50 percent of them have adopted marketing automation.¹

Viewers now want to engage with content tailored to their personal interests. They are seeking curated content experiences via OTT (Over the Top) platforms that learn their viewing preferences, adjust to them and recommend what is sure to be their next favorite show.²

1: The Forrester Wave: Lead-To-Revenue Management Platform Vendors, Q1 2014.

2: Ooyala, All About The Cord, White Paper, 2/2015.

Taking Things Personally. Products That Become Services through Data and Analytics.

One of the biggest trends in marketing automation is programmatic advertising. Sixty percent of all media agencies are planning to execute on programmatic *this year*.³

Programmatic advertisers take a large amount of available user data, correlate it with brands and current events in real time and then use it to coordinate ad buys, prioritize content iterations, and make marketing decisions. Before programmatic, advertising purchasing was done by people weeks or months in advance based on the best information the Nielsen or other ratings companies provided. Computers, using the very latest data about customers and available ad inventory, now conduct an increasing percentage of ad buying. This data is very quickly correlated with marketing goals and can literally drive a lot of personalization in delivering advertising messages.

Psychability, located in the start up area at **Sprockit Pavilion** at this year's NABShow has a data management platform that does just that. "Psy 360 Audience DMP" helps companies develop a 360-degree picture of how the audience is consuming content across multiple platforms. The system gathers key analytics about what and where the audience is watching and collates it with personal data gathered from digital platforms like computers and cell phones. Much of the gathering was done in the past via small bits of tracking data installed on your system called cookies. Amid concerns for privacy, many people have turned off cookies. Some platforms no longer allow them. Psychability uses a cookie-free social media data collection system. Their patent-pending privacy protection technology assures customers and audiences that Personally Identifiable Information (PII) will be protected across all platforms and devices.

The New Social-ism: The Democratization, Co-Creation and Collaboration in Content Creation.

The democratization of media combined with the influence of a new generation has resulted in the phenomenon known as YouTube Celebrity. **Pointless Alfie**, **Bethany Mota**, **PewDiePie**, and **Zoella** are pulling in hundreds of millions of views, and dollars, for short form content, under 15 minutes or less and inking traditional Hollywood deals. New brands have been born such as **Machinima**, **Smosh** and **College Humor**. Traditional media companies are paying attention and making acquisitions (**Disney** bought **Maker**). Even **Dreamworks** announced a new short form YouTube Channel exploiting its owned IP. Picking up on the trend of 360-degree video and virtual reality, YouTube recently announced upload capability for 360 video and new entrant **Vrideo** intends to be the "YouTube of 360." Short form has rightfully taken its place along side "traditional" content. But wait- it gets shorter.

Sure, you can tell a story in 2 hours, 30 minutes, 6 minutes, but can you tell it in 6 seconds? Who wants short shorts?



Source: GoPro

Millennials have creatively fueled the growth of platforms like **Vine**, **Instagram**, **Keek** and **Snapchat** who managed to rebuff a takeover offer from Facebook for \$3 billion in cash. Just like YouTube gave rise to new stars so it is with Vine. Take Jessi Smiles for example with 1.9 million followers⁴. Check out Curtis LePore or K.C. James. Why be almost famous when you can be app famous? The tech enabled short-form portable world knows what it does best and is a hallmark of a natural born multitasking generation.

All of the social platforms, including others like **Facebook**, **Twitter**, **Google+**, **Pinterest**, **YouTube** and **LinkedIn**, have their own cultures, visual styles, populations and unwritten rules. Each of them has had a unique impact on what's happening with video and social activities. And what of streaming video? If you've been living under a rock and haven't heard yet, **Periscope** acquired by **Twitter** in January for just under \$100 Million is an app that allows you to instantly share anything your camera phone is pointed at in a real time stream with your social media followers. Another solution, **Meerkat**, was the darling of the recent SXSW festival but was placed in the shadows by Twitter's launch of Periscope on March 26th. Periscope's strength right now it's access to the Twitter API, it instantly creates distribution through access to your Twitter network. The user interface is fun, engaging and promotes social activations. But don't rule Meerkat out, it recently received a significant investment from Greylock Partners, Aston Kutcher, Beverly Hills talent agency UTA and Lorne Michaels' Broadway Video Ventures among other well known entertainment industry figures. Hollywood wants its fingers in the live streaming game.⁵ And lastly, Facebook has just launched **Riff**, a new video-recording app that lets users make videos with their friends.

For Twitter "Video was the last missing piece of the puzzle and Periscope now provides a platform to support global broadcasts at scale."⁶

– Jeffries Investment Bank

So with all these video activations generating data, how can those insights help create better experiences? **Spredfast**, the "Social Media Experience Management Software Company"⁷, located on the show floor, is doing just that. They have over 600 customers in 84 countries and are delivering over 1 billion media connections related to insights around this data. They can provide insights around what's trending in the marketplace related specifically to your content or product so that you can literally respond to those trends in real time, upload content and curate conversations that put you right at the center of what's hot. Content creators need to be able to predict what is likely to be hot over the coming weeks or months so they can build and roll out content to match those trends and stay relevant. Not to mention helping to build audiences for campaigns, entertainment properties and any type of content about to launch.

³: Percolate.com

⁴: CNN.com, Vine Starts Get 15-minutes of fame, 6 seconds at a time 10/2014.

⁵: Business Insider, Here are the famous faces investing in hot new streaming app Meerkat, 3/2015.

⁶: Forbes, Jefferies Praises Twitter's Periscope Acquisition, Gives Stock A Buy Rating, 4/2015

⁷: Spredfast.com

TREND #2. WE'RE ENGAGED. Transformation of the Experience of Content

Come Into My World. Immersive Experiences.

Nicholas Woodman, founder of technology and now media company **GoPro**® speaks of “experience transfer” where the audience is literally in the experience that the content creator is having. This new “immersive” continuum starts with the GoPro Camera moves into 360-Video and then right into immersive storytelling, gaming and augmented and virtual reality.

The technology enabling production and delivery of these experiences ranges in prices from accessible prosumer hardware such as 4K cameras, multi-camera rigs and software to high-end cameras such as the one in development from JauntVR and cloud-based production services.

Facebook founder, Mark Zuckerberg has said that Oculus will operate independently within Facebook, and has suggested that people prepare to look beyond first person shooter games and towards ways that VR could reinvent media, marketing, meetings and more.⁸

Augmented Reality or AR is digital information overlaid onto a real image as viewed through the camera of a device like a tablet or phone. **Layer**, an Amsterdam based company leading in this area, is providing information on just about anything through the use of your mobile phone camera and their AR browser app. It even turns a city into a playing board by superimposing characters into the scene. Google has a global game called **INGRESS** that has millions of players around the world competing in the real world using their mobile phones and AR. What started out as a 2D experience is now 3D on smartphones.

Falling somewhere between augmented reality and virtual reality is **Microsoft's** soon to be released **HoloLens**. A head-mounted display (HMD) with two tiny projectors on each side of your head HoloLens, projects information including graphics, text and video into your field of vision. Sensors in the HMD track your hand movements turn what you are seeing into a virtual interactive touch screen.



Source: Microsoft

Virtual reality is a 360 experience or actually a spherical 720 experience that is captured via an array of cameras (currently from 6 to as many as 24) that shoot in sync in multiple directions from a central point. These videos are then, using special software in postproduction, stitched together as a spherical film that places the viewer inside the experience. To truly experience VR, the viewer needs at the very least a simple stereoscopic viewer like the inexpensive **Google Cardboard** and at the very most a head-mounted display unit such as the **Samsung Gear VR** unit powered by **Oculus**. A common belief in the industry is that VR will move ahead in mobile first and then in game consoles and PC's.

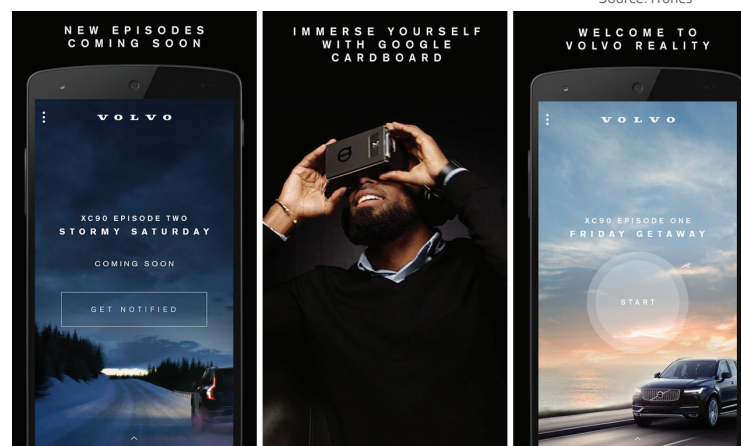
the VR Cardboard Toolkit.



Source: Google

Google Cardboard is a DIY or available retail folding cardboard mount with lenses that, along with a smartphone, offers a genuine VR experience. Quite a number of manufacturers including industry leader **Dodocase** have used the specs to offer fully-assembled Google Cardboard rigs from simple to elegant for under \$10-\$20 and elementary DIY kits for as little as \$2.

Source: iTunes



Experience A Full Virtual Reality Test Drive On Your Phone. RGA in partnership with Framestore has created the Volvo Reality, a VR experience for your phone, which includes custom-branded Google Cardboard goggles as well as an Android App that lets users explore Volvo's XC90 vehicle.⁹

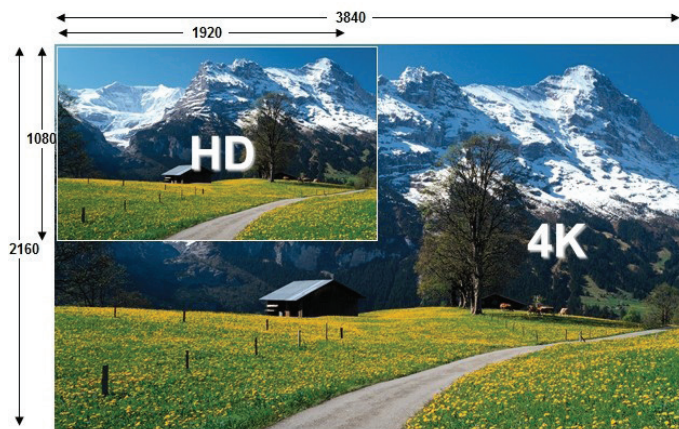
8: Business Insider, Mark Zuckerberg: Here's Why I Just Spent \$2 Billion On A Virtual-Reality Company, 3/2014.
9: The Verge, Volvo is using Google Cardboard to get people inside its new SUV, 11/2014.

Amir Rubin of Sixense told StoryTech that he estimates that by the end of 2016 there will be more than 100 million VR capable mobile devices in the hands of consumers. He also believes that companies like Samsung will subsidize VR headsets with carriers to be included in your mobile phone contract.

Let Me Take You Higher!

Resolution, Contrast and Color.

More resolution (4K) more contrast (HDR) more color gamut and more frames (HFR). These technologies will work together to sell you new TVs and theater going experiences, but some offer more bang for the buck.



Typically 4K refers to video that is about 4000 pixels wide by 2000 lines high. This represents about 4 times the resolution of a HD 1080p signal. Worldwide penetration of 4K television sets is not all that high...yet. According to a 2014 report by Digitimes Research¹⁰, current market penetration of 4K TV sets, also known as UltraHD TV or UHDTV sets, is less than 2 million. However, according to that same report, 4K sales are expected to account for over 25 percent of all TV sets shipped in 2017.

4K continues to garner its share of attention from both content creating and viewing crowds. Rapidly coming to prominence is High Dynamic Range (HDR) which refers to the difference or contrast between the bright and dark parts of an image. Photographers and DPs have waxed poetic about dynamic range for years. "The blacks are blacker and the brights are brighter!" they exclaim.

Brighter display technology is one key to HDR made possible because of the switch to Quantum Dot (QD) and Organic Light Emitting Diode (OLED) technology. Both QD and OLED offer more brightness, blacker blacks and a higher color gamut than the other television display technologies currently in the market.

To 4K or Not To 4K

Cameras for shooting in 4K range from the GoPro Hero4 from \$399 to the Canon EOS-1D for \$6,000 which is the world's first 4K capable SLR Camera.¹¹

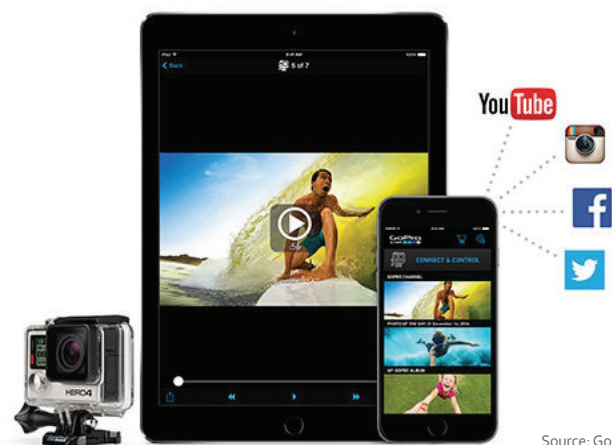
We the People.

The Democratization of Content Tools.

The incredible improvements in hardware (like cameras) and software for capturing, editing and distributing video content have encouraged an ever growing number of people to create higher quality User Generated Content. Few companies have inspired users to generate content like GoPro. Founded by Nicholas Woodman to give surfers a wrist camera to film each other and maybe make money to support his surfing habit, the company closed last year with annual revenues of over \$1.4 billion, shipping 5.2 million cameras. GoPro is no longer just a technology company. It is a cloud-based media company with a growing community of viewers and contributors and even it's own video channel on Virgin America Airlines. Third party GoPro camera rigs and software for 6,8,10 and 12 cameras are allowing for 360 video and Virtual Reality production.

Last year, GoPro was recognized with a technical Emmy® for their groundbreaking HERO camera--which can capture 1080p at up to 120 fps, 2.7K at up to 60fps and 4K at up to 30fps. Their newer HERO 4 camera can capture video at low light levels and is the most portable GoPro camera yet—20% smaller than its predecessor. It features built in Wi-Fi and a handy Wi-Fi remote control. You can use this built-in Wi-Fi to upload your raw footage directly to GoPro's Partner **Younity**—a personal cloud service for content creators. Once your content is up on the Younity server, you can catalog it, add thumbnails or instantly share your videos. You can also use your iPhone or Android phone with the GoPro App to control your camera, frame your shots using the live preview function, play back videos once you've shot them, store your videos and share them instantly via Facebook or Instagram.

The extreme popularity of the adventure camera has led a number of other companies into the adventure and 360-camera space. **JVC, Panasonic, Apple, Sony** either have or will have adventure camera models. **Bublcam, Giroptic, Kodak** and **Ricoh** have high feature inexpensive 360-cams.



Source: GoPro

10: Digitimes.com, The transition to 4k TV - UHD TV market forecast, 2014-2017, 6/2014.
11: BHPPhoto.com

TREND #3. TO INFINITY AND BEYOND. Production Anywhere.

Cloud-Based Solutions

Impacting The Main Stream and Screen.

Cloud computing is revolutionizing business. Gartner Group estimates that worldwide public cloud services will total over \$180 billion by 2015.¹² Basic foundational advantages include not having to own your own hardware or software, not having to purchase expensive multiple licenses, not having space or time limit productivity and having on demand scalability in both computing power and storage. You only pay for what you need as you need it and it's allowing production teams to work with people all over the world.



Source: topleftdesign.com

Cloud Services Driving Entertainment

From 2013 to 2019 entertainment and media digital storage will increase by about 2.7X (from \$2.2 to \$6.0 billion) Currently, 20 percent of the industry's total cloud storage is used in post-production.¹³

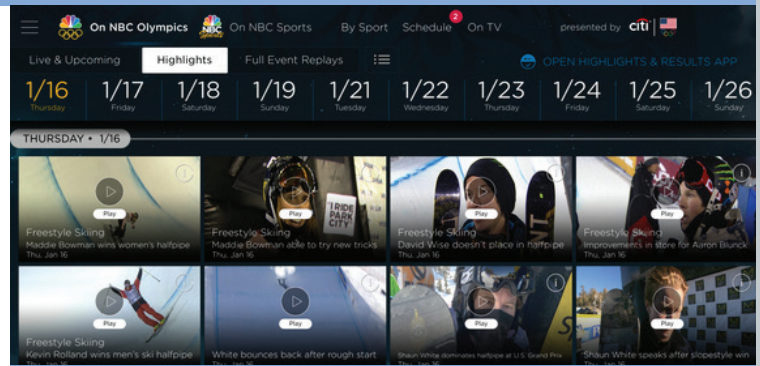
— Coughlin Associates

Scalability is particularly important when it comes to managing huge amounts of data for analytics or personal analysis, or when needing to store, transcode, manage and securely deliver a large amount of content. **Microsoft's Azure Media Services** was used by broadcasters to help deliver high-definition coverage of every event during the 2014 Winter Olympic Games in Sochi to audiences in 22 countries across four continents on a variety of platforms.¹⁴



Source: Microsoft

12: Gartner Group, Forecast Overview: Public Cloud Services, Worldwide, 2011-2016, 4Q12 Update.
13: Coughlin Associates, 2014, Digital Storage for Media and Entertainment Report.



New Business Models: NBC anticipated its live streaming to be to more than 1000 hours of footage. To have full access to NBC's online streaming coverage, you had to register and verify your cable or satellite subscription. If you were cable-free, you're limited to NBC's highlight clips, full-event replays, and select live events.¹⁵

The SaaS (Software as a Service) model makes production tools that address many functions in the content value chain, available from the cloud. This means that rather than paying a single price for a piece of software and installing it on your system, you use the software in the cloud via a subscription model. Example: **Adobe's Photoshop, Illustrator, Premiere and AfterEffects** via online subscription service for \$30-\$50 a month. **Avid**, another booth exhibitor on the NABShow floor, has adopted a similar strategy.



Where Do I Put All This Stuff? Cloud Storage Will Be Essential.

Current production and postproduction techniques create media files and data of ever growing proportion. Storage in the cloud makes working with those files accessible from anywhere any time. The management of data particularly during postproduction can mean the difference between profit and disaster. Whether talking about DAM (Digital Asset Management), PAM (Production Asset Management) or MAM (Media Asset Management) you can't monetize what you can't find.

Digital asset management solutions control not only audio and video content files but also all the data that accompanies those files. This accompanying "metadata" might contain scene and take information, lens, camera, performers, makeup notes, lighting notes, rights and clearance notes and much more. Some digital file formats can track several hundreds of pieces of metadata for a single audiovisual file.

14: Microsoft, 'Microsoft Azure Media Services Announces Enhanced Capabilities & New Partnerships' 4/2014.
15: TechHive.com, How to stream the Olympic Winter Games, 2/2014.



Source: business2community.com

“TV Everywhere” Content, Content, Content.

Despite constant predictions of the demise of television, people are watching more television than ever; and not just on a TV. According to a recent eMarketer study, more than 77% of all tablet users will watch video programming on their devices at least monthly, and that penetration rate will grow to 87% by 2018, totaling 149 million tablet video viewers. To put that into context, more than 70% of all digital video viewers will be watching on a tablet in 2018¹⁶. The concept of ‘TV Everywhere’ services has really been rolled as an answer the industry trend of ‘cord cutting’ from cable or telecom distributors. Cord Cutters are experiencing a lot of interesting issues in putting together their own content packages including higher fees for multiple connected services, discovery challenges in finding shows, and the ultimate cord cutter dilemma, access to live events like the Superbowl.

Research indicates that people are watching long-form content on all of their connected devices including mobile, which was considered the domain of short-form content.

I Want More Than A Snack: 42 percent of those surveyed watched news clips on their smart phones, over 30 percent said they watched full-length movies and over 27 percent watched television reruns. And, while watching long-form content on their devices, people are seeing plenty of ads too.¹⁷



Take Your TV Everywhere

Watch Live TV on your iPhone™ and other mobile devices

Source: cablebuster.com

16: eMarketer, VIDEO CONTENT ROUNDUP, 4/2014.

17: eMarketer, Video Content Roundup, 5/2014.

Everywhere Vs. Anywhere

TV Everywhere describes a process where video is delivered via a Multichannel Video Program Distributor or MVPD, which typically requires a login and a password for authentication and often charges a subscription fee. TV Anywhere is an informal term usually used to describe the viewer’s desire to watch their content anywhere and on any device they like.

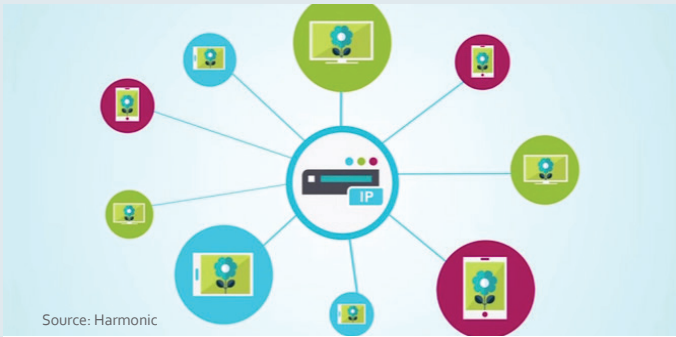
What Am I Watching? Premium Content from New sources.

At this point, everybody is a studio and brands are now media companies. **Marriott**, **Lexus** and **Starbucks** are creating original content. New professionals are rising up though User Generated Content that even includes animation and special effects. **YouTube**, **Vine** and now **Periscope** are creating the next generation of filmmakers and stars.

Long-form, high-budget dramas and comedies, once the product of television networks are created by streaming aggregators and OTT subscription companies. Netflix’s Emmy®-winning *House of Cards*, now shot in 4K, was just the beginning. Netflix is a new programming powerhouse with series such as *Orange is the New Black* and *Marco Polo* (shot for HDR viewing), with a huge list of movies, miniseries and specials. **Amazon Studios** has *Alpha House* and the Emmy® winner *Transparent*. Premium content exclusive to a single distributor still drives subscription dollars. It’s just now the Over The Top (OTT) providers distributing over the Internet and connected TV’s and stand-alone hardware are taking their place along side cable networks. OTT can be subscription (Netflix, Amazon Fire) offer a tiered system of premium channels and free ad supported channels (Hulu) or just free ad-supported content (YouTube). Examples of OTT streaming devices include Google’s **Chromecast**, **Vudu** and **Apple TV**, which just dropped in price from \$99 to \$69.

In a June 2013 survey from PricewaterhouseCoopers, 63% of respondents said they considered original programming at important in determining which subscription service they will choose.¹⁸

18: PriceWaterHouse Cooper, Consumer Intelligence Series Video content consumption, 2013.



Source: Harmonic

Today's world demands multiplatform distribution. MCN's (Multichannel Networks) such as Maker and Machinima are now being referred to as MPN's (Multiplatform Networks) recognizing the accessibility of their program across distribution platforms and devices. The challenge content creators face is the management of multi-screen delivery so that it is smooth, successful, and profitable. The need for a unified multiscreen content strategy becomes paramount. Harmonic is one of the world's leading providers of multiscreen delivery solutions for television content. **Harmonic** has delivered TV Anywhere solutions to clients spanning six continents and 110 countries including **Fox, CNN, PBS, Virgin, ESPN, E Entertainment, NBC and Amazon Instant Video.** Harmonic offers a suite of products that allow for real-time content delivery to the web, smart phones, tablets and all IP connected devices.

Internet Protocol Television or IPTV is another delivery system. Programming is delivered via a dedicated managed network or "walled garden" system. Content is delivered in an on-demand manner via a closed proprietary network where compression and delivery are precisely optimized to meet the network requirements and the end user display device. **AT&T's U-verse or Verizon Fios** are examples of IPTV delivery.

Specific distribution methods have specific format delivery and hosting requirements. A growing number of content providers are creating their own content distribution platforms. **Kaltura**, a company on the NABShow floor, offers assistance with many challenges faced by custom video distribution channels like video publishing and hosting, live streaming, discoverability, analytics, digital rights management and content security. Forrester Research just singled out Kaltura as a 2015 leader in enterprise video platforms¹⁹ and webcasting.



Source: Kaltura

19: Forrester, The Forrester Wave™: Enterprise Video Platforms And Webcasting, Q1 2015.
20: International Business Times, Netflix Inks AT&T Deal To Pay For Faster Service, But Will It Work?, July 2014..

TREND #4. THE BUSINESS OF THE BUSINESS. Whose Net is it Anyway?



Source: nbcnews.com

Net Neutrality.

In February this year, the Federal Communications Commission (FCC) confirmed what everyone knew was coming, the reclassifying of broadband providers as common carriers and the move towards regulating the Internet as a public utility.

Proponents of Net Neutrality feel that the federal government should assure fair and democratic access to the Internet. Opponents feel that given the increasing amount of traffic and demand for high bandwidth that the system can be tiered allowing companies who want faster access to pay more in order to have a favored "fast lane" to the consumer. On the consumer side- the more you use the more you pay. Prior to the FCC announcement of "Open Internet" rules and policies in March 2014, some ISP's were accused of "throttling" i.e. slowing down Internet speeds in an attempt to change behavior and to prompt a discussion on costs. In July of 2014, Netflix signed a "paid prioritization" deal with AT&T that allowed them to pay for faster distribution of Netflix Content for better consumer playback.²⁰

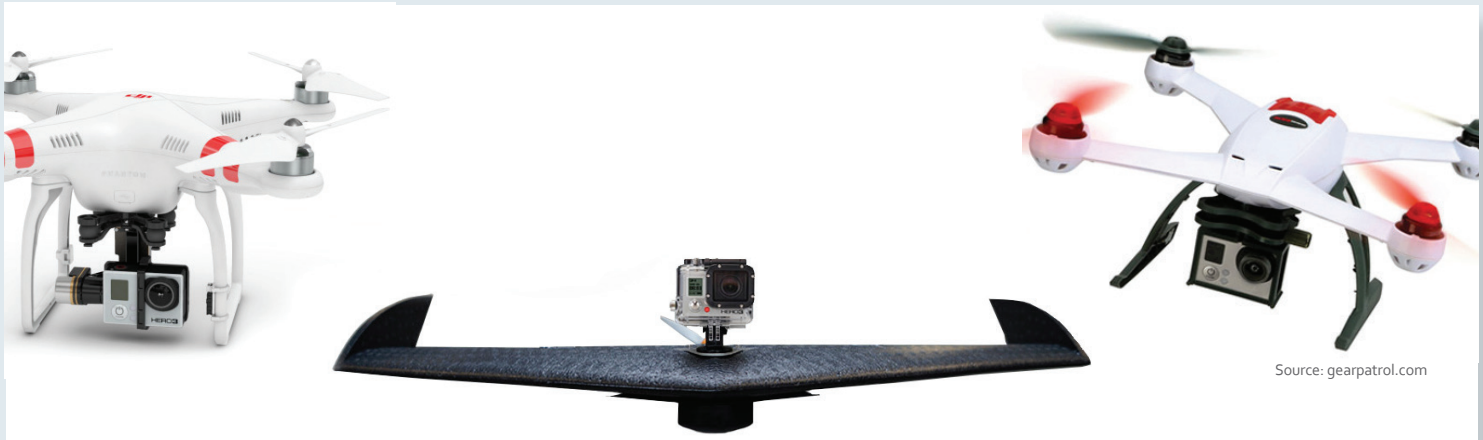
It appears that the telecom and cable industries objections to the new net-neutrality rules will most likely play out in federal court. Groups representing the various parties (wireless carriers, cable firms and Internet providers) are expected to also argue that you can't reclassify broadband services for regulation under the same utility-like rules for phone networks. Trade groups may take aim at specific provisions such as the ban on paid prioritization.

"The big dogs are going to sue regardless of what comes out."
— Tom Wheeler, FCC Chairman²¹

Net Neutrality is not just a debate on access to the Internet but also on government policy, partisan agendas in the White House and the status of the United States as a global super power. An 'Open Internet' is acknowledged to be a driver of new business models, new technology solutions and better access to content and knowledge for everyone.

"Investment in wired and wireless networks has supported jobs and made America the center of a vibrant ecosystem."
— Barack Obama²²

21: The Washington Post, FCC chief on net neutrality, 11/2014.
22: Medium, @Barack Obama, 'My Plan for a Free and Open Internet'



Source: gearpatrol.com

**Droning On. Drones.
Look Ma, No Wires!**

Aerial photography - if you wanted that shot from above, you had to hire a pilot, rent a helicopter and an aerial rig including a gyroscope and secure a very experienced shooting team for the day. The costs could run to tens of thousands of dollars.

Unmanned Aerial Vehicles (also known as UAVs or drones) are changing that. These smart, souped-up model helicopters can hold small cameras or adventure cameras like the **GoPro Hero** or the small **JVC action** camera. Some can carry a heavier payload, have mounts for a range of DSLR cameras and are compatible with a range of gimbals such as those offered by **Zenmuse**.

Regarding camera choice, GoPro is great for certain applications, but other higher end cameras will offer a different sort of lens or changeable lenses, a wider shooting radius or the ability to capture at a higher frame rate. At 4K,

the GoPro cannot capture over 30fps. Drone control systems will also need to be considered including things like landing gears and crash protection or even the option to hire a licensed drone pilot.

The Federal Aviation Administration has stepped in and ruled that drones fall under their regulatory jurisdiction just like any other form of aircraft. At first the FAA suspended all commercial drone flights outside of a mere handful of authorized operators with authorized exemptions. Since then, a growing list of companies has received authorized exemptions.

**Privacy and Security.
What the Hack?**

In security circles, 2014 is known as the “Year of the Breach.” Edward Snowden and the NSA, the Sony hack and companies from retail to health care have made consumers acutely aware of the vulnerability of their data. Target, one of a number of hacked retailers, fell victim to the largest ever data theft (more than 60 million credit card numbers stolen). Home Depot was not far behind at 56 million cards and 53 million email addresses. As a consequence, Target is now spending \$100 million plus on a new non-magnetic credit processing solution —which will also, conveniently, support NFC and other mobile transactions.²⁴ Visa and MasterCard have finally come around to the embedded chips and upgrading of card processing units that Canada and Europe have had for years. The next wave of security tech may be upon us.²⁵ Will security come in the form of biometrics identification (fingerprints, eye scans, facial recognition) and play an increasing role in the management of digital data? Possibly, but Gartner Group and others suggest that security through risk assessment is a more realistic goal.

Clash between Local Govs and Fed Rules Coming. The FAA has been feverishly working on a new set of regulations regarding drone flight. New proposed regulations include: ‘Drones must be flown during the day, the operator must retain line of sight and the aircraft must have registered aircraft markings.’²³

Source: techcrunch.com



“Perimeters and firewalls are no longer enough,” they say. “Every app needs to be self-aware and self-protecting.”²⁶

23: FAA.com, Unmanned Aircraft Systems (UAS) Regulations & Policies.
24: WSJ.com, Home Depot Hackers Exposed 53 Million Email Addresses, 11/2014.

25: WSJ.com, The End of the Swipe-and-Sign Credit Card, 2/2014.
26: TechRepublic.com Gartner’s top 10 tech trends for 2015, 11/2014.

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