TV Connect

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DISRUPTING THE CONNECTED ENTERTAINMENT VALUE CHAIN

EXCLUSIVE REPORT

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TV Connect

DISRUPTING THE CONNECTED ENTERTAINMENT VALUE CHAIN

EXCLUSIVE REPORT

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DISRUPTING THE CONNECTED ENTERTAINMENT VALUE CHAIN

TV Connect's survey, **Disrupting The Connected Entertainment Value Chain**, canvassed opinion from a wide range of companies and sectors. Geographically, it drew responses from the Americas, Europe, Middle East, India and Asia-Pacific

The survey caputured job functions covering product design & development, innovation, technology & engineering, sales & marketing, academia and analysis. From CEOs to students, the survey provided a snapshot of how the connected entertainment industry is managing rapid change.

The findings have been merged with the views of leading analysts and institutions to create this companion report. The end result is an overview of what has been happening in connected entertainment during 2016.

Building on the survey responses and analyst insights, the report also identifies the key themes and trends that are likely to dominate the connected entertainment debate during 2017.

The prevailing sentiment in most sectors is that disruption is a commercial and creative opportunity. With few exceptions, respondents said that their companies grew during 2016, taking advantage of the fact that consumers are watching more and more video across traditional and emerging platforms.

The overall picture is one in which increased video consumption is driving revenues across PayTV, OTT and mobile. This in turn creates opportunities for those in service sectors ranging from content and advertising creation to video software solutions.

A good indicator of the prospects in content creation is the US$6 billion content budget that Netflix has allocated for 2017. IHS Markit also has positive revenue projects for video software.

Asked about their top priorities for the next 12 to 24 months, there was plenty of emphasis among respondents on expansion – with companies seeking to "increase reach", "launch new platforms", "secure more partner agreements", "expand globally" and "establish branches in new regions". Others talked of innovating faster and refining audience intelligence.

Breaking walls

Evident throughout the TV Connect Survey and Report is the fact that sector distinctions are breaking down. Broadcasters and traditional PayTV platforms are shifting into OTT and mobile, making both of these spaces especially crowded. The fact that Netflix, Facebook and Google are positioning themselves as platform agnostic brands is equally significant. There are convergence implications for advertising too, with the underlying ad technology platforms also coming together.

Mobile is very much front of mind both among survey respondents and analysts. Ericsson sees a seismic shift coming in the way people consume their video – with mobile set to benefit. Heralding the importance of 5G, Ericsson also forecasts that there will be 550 million 5G subscriptions by 2022. "5G is one of the most anticipated advances in the ICT industry. It will accelerate transformation in many industry verticals, enabling new use cases in areas such as automation, IoT and big data."

Survey respondents cited dozens of companies that they regard as innovators across the various sectors of the business. Names that cropped up frequently included Netflix, Amazon, Apple, Google/YouTube, IBM, Sky,

TOP 25 INNOVATORS

COMPANY	TYPE	TOTAL
Amazon	OTT Service	48
Netflix	OTT Service	41
Sky	PayTV Operator	22
Google/YouTube	Technology Company	21
BBC	Broadcaster	15
Apple	Technology Company	14
Elemental	Technology/Video Processing	10
Zoo Digital	Localisation/Distribution	9
Ericson	Mobile Technology	8
Huawei	Technology	8
Harmonic	CDN	7
HBO	Content Producer	7
IBM	Technology	7
Microsoft	Technology	7
Sony	Technology	7
Imagine	Content Producer	6
Nokia	Mobile Technology	6
Verizon	Mobile Technology	6
BetRadar	Gaming Technology	5
DaCast	Video Streaming Service	5
Intel	Technology	5
Keshet	Distributors	5
Okko	VoD Service	5
SIGOS	Mobile Technology	5
Telos	Technology	5

Vodafone, Verizon, Huawei, the BBC and Microsoft.

On the subject of innovations, 4K/UHD/HDR, VR, 5G, DOCSIS 3.1, screen ubiquity and voice recognition were mentioned to varying degrees. Among these, 4K is viewed as a natural extension of HD's rollout but VR is regarded with a little more caution – some observers regarding it as less viable commercially than augmented reality.

Voice recognition

Of all the trends on the table, voice recognition appears to have emerged quicker than anyone expected. Already this year, Google has unveiled plans to roll out its voice-controlled Google Assistant service to Android TV devices.

"You'll be able to ask the Google Assistant for help so you can enjoy the content you love, faster than ever, on the best screen in your house. No more typing or struggling to get to what you're looking for – just ask the Google Assistant," says Android TV director Sascha Prueter.

On the subject of revenue, the industry is betting on an increasing propensity for consumers to pay for content. But with this comes issues related to security and piracy. One theme identified was that the threat of piracy in some key markets will make advertising a compelling alternative.

The ad industry faces tough issues around fake bot advertising, but survey respondents were optimistic that brands will benefit from a shift towards personalisation and better engagement.

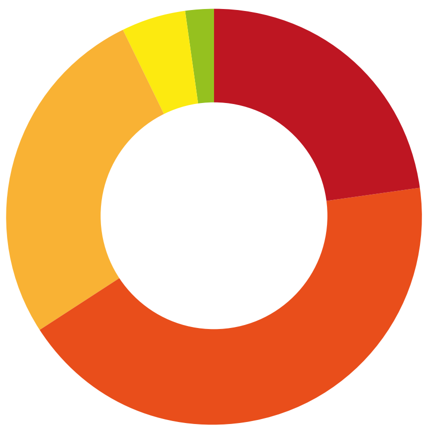
In what promises to be an exceptionally exciting year for the connected entertainment industry, TV Connect's Survey and Report anticipate significant levels of innovation around technology and devices.

The coming together of connected entertainment and consumer electronics around Internet Of Things (IoT) advances represents a new wave of disruption. ■

INDUSTRY SECTOR

- Content creation 5.6%
- Broadcaster/channel owner 17%
- OTT service provider 3%
- Cable Operators 7%
- Satellite operator 2%
- Mobile operator 10%
- Marketing/Advertising 3%
- Technology/devices 21%
- Other 30%

HOW WELL HAS YOUR BUSINESS FAIRED IN THE PAST 12 MONTHS?



- Rocketed 23
- Improved a little 43
- Stayed the same 27
- Contracted slightly 5
- Plummeted 2

CONTENT CREATION

Content creators made up about 5% of the response to TV Connect's survey

> Going forward, excessive spend on content by channels and platforms seems to be a general concern among analysts, with several of them warning it may become a permanent drag on profits

Asked how their business had performed over the past 12 months, respondents were split 50-50 between those who felt it had "rocketed" and those who felt it had "stayed the same". No one in the sector reported a contraction.

This positive picture reflects the growing amount that leading media players spent on content origination in 2016. During the year, John Martin, CEO of Time Warner's Turner Broadcasting, told investors that the original programming part of the company's content budget is growing in "the strong double-digits annually." This trend is also evident at Netflix, Amazon, Discovery, Time Warner, Viacom and Fox. Researcher MoffettNathanson estimates that the cost of programming at Discovery's cable networks, other than sports, grew 55% between 2013 and 2016 while Viacom's expenses rose more than 25%.

Survey opinions varied regarding the biggest challenges facing the sector. Those on the budget holder side of the business emphasised the difficulty of knowing what to look for when commissioning. There was also some concern among respondents about the issue of digital rights management.

The survey showed a wide variety of opinions about who the top innovators in the content creation sector are – but most of the names selected are familiar ones. Digital disruptors Netflix, Amazon, YouTube and Apple all had their supporters – as did Microsoft. Among content creation studios, FremantleMedia, Red Arrow, ITV, Keshet and Dori Media all rated a mention, the latter two illustrating the big impact Israeli firms are having.

Of these, Netflix has probably had the most dramatic impact on the sector in the past year, expanding into dozens of new territories and commissioning local content in markets like the UK (The Crown), France (Marseilles), Italy (Suburra), Germany (Dark), Scandinavia (The Rain) and Japan (Hibana). This patterns looks set to continue, with Netflix planning to increase its content spend to US$6 billion in 2017. However, some analysts are concerned about this turbo-charged investment in origination. Angel Dobardziev from consultancy firm Ovum recently said: "Netflix's business model burns massive and increasing amounts of cash, which we think is not sustainable. We think Netflix will find it near impossible to maintain its subscriber growth while at the same time keeping tight control of the costs that are driving its cash burn. The exuberance surrounding Netflix has parallels with the dot.com boom."

Cost concerns

In future, excessive spend on content by channels and platforms seems to be a general concern among analysts, with several of them warning it may become a permanent drag on profits. Notwithstanding this concern, our respondents in this sector are upbeat for the coming year. Asked about their top priorities, they identified targets such as "increase convergence", "increase revenues" and "grow subscriptions".

Outside continued investment in high-end drama, 2016's most interesting content trends included incursions into the TV space by VR firm Oculus Rift. A high-profile example of this is Halcyon,

BIGGEST CHALLENGES FOR CONTENT CREATORS

3.25	Understanding what to look for when commissioning
2.75	Digital rights management
2.5	Creating a commercial model that hits the increasing demands of consumers
2.5	Storytelling with Impact of next-gen technology (VR AR)
2.5	Piracy and security

a Syfy Channel drama that will have five episodes that are only viewable with an Oculus Rift headset (there will also be a regular run of ten episodes viewable without VR).

Some analysts and companies are skeptical about VR's likely impact, however, citing cost and the fact it is too immersive. They argue that augmented reality is a better bet, pointing to the success of Pokémon Go as AR in action. Microsoft, for example, has focused its R&D effort on AR devices like its HoloLens.

Alive to live

Also of interest is Vivendi-owned Canal+'s aggressive expansion into shortform video for mobile. "The mobile has become the first screen, the first interface between viewers – especially the millennials," says Dominique Delport, president of Vivendi Content. "The Vivendi Group is convinced of the relevance of mobile models for the development of a new popular culture."

The year also saw a surge in live video on social media platforms, with Facebook reporting a four-fold increase in live video posted since spring 2016. Speaking at CES in Las Vegas, Facebook's VP of advertising and business platform Andrew Bosworth said this was a response to the growing professionalisation of non-live video. "The fact that live can't be so heavily produced is one of the things that makes it so compelling for audiences. It is real and there is no extra editing." Bosworth's view is that virtual and augmented reality are likely to be tools we make regular use of in five years' time. ■

BROADCASTERS & CHANNEL OWNERS

> Established broadcast players will have to re-assess their use of social media to drive awareness and capture audiences

Broadcasters and channel owners made up 17% of respondents to TV Connect's survey

Like content creators, they painted a positive picture of their sector in 2016 – with 15% saying it had "rocketed", 54% saying it had "improved a little" and 31% saying it had "stayed the same". As with the previous category no one reported contraction – despite the impact of disruptors.

Although there are clear challenges to the traditional linear broadcasting model, this positive picture isn't as implausible as it may appear. In a 2016 research note, reported on by Informa's DTVE, MoffettNathanson analyst Michael Nathanson said the "powerful and widely communicated narrative" around Netflix's negative impact on TV was often "made with an absence of facts". While Netflix is having an impact on the TV business, it is not quite as dramatic as it might appear, says Nathanson: "At present, Netflix would be larger than the smallest cable network companies, but smaller than the seven largest cable and broadcast conglomerates. Netflix is a source of industry pain, but not necessarily a cause of industry death."

The number one concern among TV Connect's survey respondents was striking the balance between OTT, apps and linear delivery. However, issues relating to piracy and security also loomed large. Creating a model that "meets the increasing demands of consumers" was viewed as a bigger challenge than "creating brands and communities around content".

On the innovation front, respondents identified a wide array of pioneering companies – though the names that cropped up most frequently were Amazon, Netflix, Sky and Sony. Among channels, there was support for the BBC, Discovery, Disney and HBO. The latter wins fans both for its innovation in distribution and in content. Under the former heading it has introduced services such as HBO Go and HBO Now, while under the latter it has impressed audiences with Game Of Thrones and Westworld.

Innovations or innovators

Other "innovators" to rate a mention in survey responses included Blackmagic Design, DaCast, Grass Valley, Imagine and Microsoft, all of which also featured in Streaming Media's list of 100 companies that matter most in online video in 2016.

Some respondents chose to name innovations under this heading rather than innovators – with 4K/UHD, broadband TV, VR and 5G all referenced. 4K/UHD, in particular, saw a surge in activity in 2016 with a 75% increase in shipments, according to Futuresource Consulting. Futuresource forecasts that by 2020, 4K/UHD's share of worldwide TV shipments will rise to 60%.

In terms of top priorities for the next 12 to 24 months, some respondents went for the obvious, such as "producing programmes that our subscribers will watch", "growing audience" and "improving the customer experience". One expressed a desire to open six new international bureaus – reinforcing the general sense of bullishness in the sector.

There was also a definite emphasis on OTT expansion with one respondent stressing the need to "define and execute a viable OTT and SVOD business model".

Business efficiency was a key theme with one respondent seeking to improve content management to ensure fast and easy workflow. Another stressed the importance of upgrading network infrastructure.

Nigel Walley, managing director of consultancy Decipher, anticipates greater competition for channels from social media platforms as they enter the TV arena in the coming year or two. "The video aspirations of the main social media players will become clearer with the establishment of well-funded TV content strategies that include acquisition of unique content. We will also see new distribution strategies that reflect the continued importance of mainstream TV platforms. Social media giants will launch television channels and the TV EPG will re-invent itself. In this model ITV goes head to head with Facebook Live and MTV goes head to head with Vevo."

Content exposure

Reference to the EPG is a reminder that a big challenge for broadcasters and channels going forward will be discovery, with increased effort required for both channel brands and individual programme titles to cut through.

"Established broadcast players will have to re-assess their use of social media to drive awareness and capture audiences," says Walley.

There are many more issues related to content discovery that are likely to be on the agenda, adds Jennifer Walker, product marketing lead at Ericsson. In her blog, she stresses the importance of metadata "the fuel which powers personalised search and recommendations. Imagine a world without detailed synopses, film or programme information nor images/trailers – our viewing experience would be limited".

Content discovery trends identified by Walker include greater reliance on image-enriched content to aid discovery, drilling down into semantics to ensure more relevant searches, and the introduction of voice recognition software to aid search. Creating a discovery infrastructure that allows consumers to go directly to a specific scene or frame in a show is another aspiration, says Walker, since it will reduce time wasted navigating. Maybe there is even a business model lurking here – for example mobile users voice requesting a favourite scene from a series – that is then introduced with a pre-roll advert. ■

BIGGEST CHALLENGES FOR BROADCASTERS & CHANNEL OWNERS

4
Striking the right balance between OTT, apps and Linear delivery

3.31
Piracy and security

3.15
Creating a commercial model that meets the increasing demands of consumers

3.15
Digital rights management

3.08
Knowing what content formats to champion?

2.92
Creating brands and communities around content

OTT SERVICE PROVIDERS

OTT service providers accounted for 4.5% of TV Connect's survey pool and painted a positive picture of growth in 2016

While 25% of the sector reported that business had stayed the same, 50% said it had improved a little and 25% said it had rocketed.

This sentiment is echoed by research from Digital TV Research, which anticipates that that global OTT market will be worth US$64.78 billion by 2021, up 120% from US$29.4 billion in 2015. This growth will be fueled by both SVOD and AVOD services.

Looking specifically at SVOD, DTVR predicts 220 million SVOD subscriber additions between 2015 and 2021, with 107 million in Asia Pacific and 28 million in the Middle East & Africa. The North American market, however, has still not reached maturity, with 28 million additions expected by 2021.

In terms of top challenges, the number one issue cited by survey respondents was the complexity of creating a single roadmap across multiple markets. However, this was closely followed by concerns about piracy and security and "the impact of evolving PayTV models on monetisation opportunities".

This chimes with the views of Brett Sappington, senior director of research at Dallas-based Park Associates. He says: "Competing in the global market is challenging for a couple of key reasons. Firstly, because content doesn't necessarily travel well across all borders. And secondly because you have to market your service uniquely for each country and region."

Creating a sustainable OTT platform is expensive, which is why the market has seen some high-profile failures – notably Shomi in North America and Watchever in Europe. "But it is possible to find a recipe that works if you serve your market segment well," says Sappington. "WWE wrestling is a great example. But there are also services like Crunchyroll and Drama Fever, the latter of which has just been acquired by Warner Brothers."

Sappington sees potential for further standalone OTT platforms "based around areas of passion that have emerged with the youth and millennial audience. I think one area that might develop in this way is the growing field of e-Sports".

Ads or subs

Sappington says his company's research also indicates there is a strong propensity for people who pay for one OTT service to acquire others. "People interested in content will subscribe to multiple services. This service-stacking phenomenon will help provide the consumer-paid revenues necessary for continued industry growth." That said, he doesn't rule out some standalone OTT services becoming viable on the back of ads rather than subscriptions. "Success in OTT is about scale, so if you get enough audience that might prove interesting to advertisers. Bear in mind that AVOD may be a better way to generate revenues than SVOD in markets which have a piracy problem."

A new State Of Online Video report by CDN provider Limelight Networks also found that 34% of US respondents are subscribing to more than one online/OTT service. Computer and laptop remain the most common devices for online video viewing. However, this is not true for millennials, who have made

> On the question of innovators, it's not surprising that Amazon and Netflix were top of mind among TV Connect respondents

BIGGEST CHALLENGES FOR OTT SERVICE PROVIDERS

3.5
The challenges of one product roadmap across multiple markets

3
Piracy and security

2.5
The impact of evolving pay-TV models on monetisation opportunities

2.25
Aligning premium and low-cost services

2
Effectively personalising content

1.75
Understanding what content is suitable for multi-platform delivery

1.75
Delivering linear online channels

smartphones their primary device for watching online video.

An implication of this is that new dayparts are opening up to online video: "Since our first survey in May 2015, the number of people using a computer or laptop as the primary viewing device has dropped while the use of a smartphone has risen significantly.

This trend indicates an increase in online video viewing throughout the day using a mobile device, rather than restricting online viewing to times of the day when a computer or laptop is available." An eye-opening 68% of millennials said they watched more than two hours of online video per week, compared with just over half of all consumers.

Making VR a reality

On the question of innovators, it's not surprising that Amazon and Netflix were top of mind among TV Connect respondents. However, there were also supporters for BT, Apple, Microsoft, Tata, Google, IBM, Arqiva, Bitmovin and AppStream. Still on innovation, a study by Level 3 Communications and Unisphere Research Group found the OTT market is looking at VR-video as part of its content proposition. Two-thirds of respondents to their June 2016 survey anticipated deploying VR content.

The Level 3/Unisphere work also explored some of the challenges facing OTT. On the commercial front, lack of consumer awareness, securing content rights and competition from free services were cited as the major challenges. On the technical front, quality of experience, bandwidth limitations, user functionality and broad device support were all raised. 4K and high-dynamic range (HDR) will also be significant.

While some standalone OTT business focus on niches, there is expected to be a wave of broad-based services coming on stream in 2017. Google, for example, is poised to launch its new subscription streaming service, Google Unplugged. Hulu is launching a live streaming service that will provide access to a wide array of mainstream channels at a price point that is significantly lower than traditional cable and satellite packages.

The distinction between OTT and legacy media is, of course, breaking down – as is also evident in the next sub-heading of TV Connect's survey. Hulu's main shareholders are media blue-chips like Time Warner, Comcast, Disney and 21st Century Fox.

In France, similarly, public broadcaster France Televisions is talking to producers about the prospect of setting up a local rival to Netflix.

There's a parallel scenario in the UK where the BBC wants to transform iPlayer from a catch-up service into an online TV rival to Netflix. "Our goal, even in the face of rapid growth by our competitors, is for iPlayer to be the number one online TV service in the UK," says BBC director general Tony Hall. "That will mean doubling our reach, and quadrupling the time each person spends on it. And we want to do it by 2020." ■

CABLE & SATELLITE OPERATORS

Cable and satellite operators made up 9% of the survey's response

> Cable and satellite encroachment into OTT is not all about collaboration, however. Some leading players are entering the sector with independent products but, interestingly, keeping their involvement low key

Two thirds of respondents reported that business had "improved a little". One said business had "plummeted", though this is probably not an accurate reflection of the cab-sat sector's experience throughout 2016.

Several reports across the year suggested that cable and satellite PayTV platforms in markets including Asia-Pacific, India, MENA, Latin America and Eastern Europe will grow in the next 3 to 5 years.

Simon Murray, principal analyst at Digital TV Research, forecasts that "PayTV subscriptions for the world's top 400 operators with 585 platforms across 100 countries will increase from a collective 778 million in 2015 to 912 million by 2021. Only 93 (23%) of these 400 will lose subscribers between 2015 and 2021."

That said, Murray is not expecting revenue growth to match subscriber growth – arguing that subscription and VOD revenues for these 400 operators will remain flat at US$206 billion. "Competition will keep revenue growth in check," he says, "with leading players continuing to offer attractively priced bundles that cover TV, broadband and telephony. I think it's also important to factor in the growing appeal of free DTT services, which are now starting to pick up after a slow start."

In terms of business challenges, cab-sat operators were evenly split – regarding disruptive convergence, piracy, increased costs and the need for innovation with a similar level of concern. Murray's view is that the major players in the sector are doing a pretty good job of managing the threat from disruptors – in part by working with them: "In the wake of Netflix's global expansion, we've seen a number of leading players introduce the SVOD service to their platforms, high-profile examples being Comcast in the US and Liberty Global around the world."

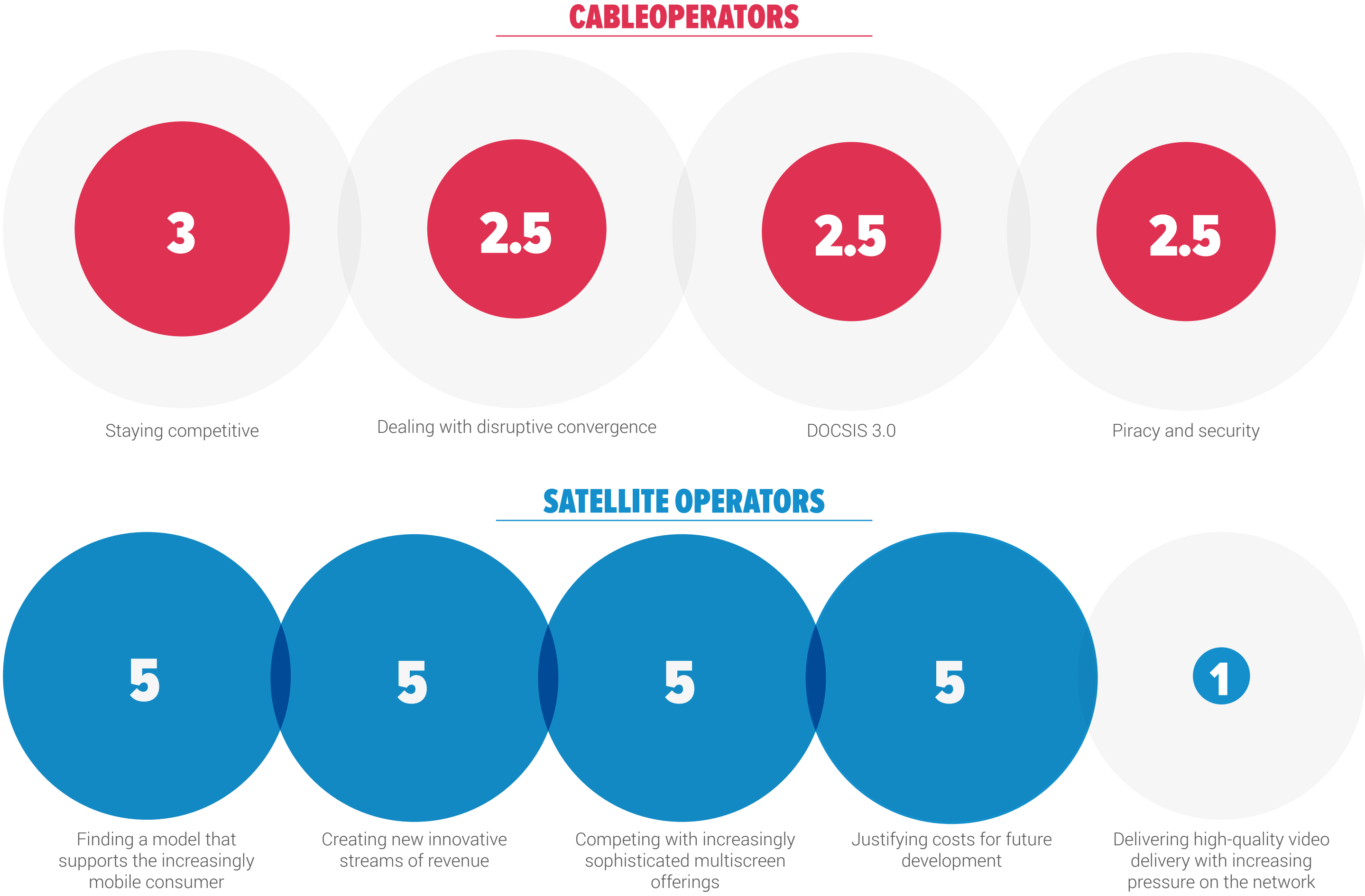
Triple play will pay

Murray's assessment is echoed by research firm IHS Markit, which reported that Europe's cable industry has continued to grow, despite increasing competition from traditional and OTT players. IHS put the value of the European cable market at €22.4 billion in 2015, up from €21.2 billion in 2014. Like Murray, IHS identified the importance of triple play, with the contribution of internet and telephony services in the EU rising from 47% in 2010 to 53% in 2015. Maria Rua Aguete, research director at IHS Technology, said there had been "a determined effort by many operators to invest in infrastructure and significantly improve their offerings".

On collaboration between PayTV and Netflix, Rua Aguete said: "Our research concluded that the integration of Netflix into PayTV is having a positive impact on cable operators' key performance indicators, generally benefitting their business while co-existing well with traditional parts of the bundle."

Cable and satellite encroachment into OTT is not all about collaboration, however. Some leading players are entering the sector with independent products but, interestingly, keeping their

BIGGEST CHALLENGES FOR CABLE & SATELLITE OPERATORS



involvement low key (possibly to prevent their new OTT services cannibalising existing traditional-style offerings).

European PayTV operator Sky, for example, keeps a healthy distance from its UK online streaming service Now TV. It has also just teamed up with Cisco to launch an international app-based OTT project called OnPrime TV. The service, which offers "some of the best foreign language entertainment, movies and news channels, live and over the internet" doesn't carry Sky or Cisco branding. At time of writing, it is available on Apple TV, iPads, iPhones, Android phones and tablets, Roku streaming media devices, Sony PS3/4 and Microsoft Xbox One consoles.

Cable consolidation

Consolidation also seems to be a key part of the traditional industry's response to TV disruption, with AT&T acquiring Time Warner for US$85.4 billion and 21st Century Fox completing the takeover of pan-regional DTH satellite firm Sky, in a deal that values the latter company at £18.5 billion.

IHS identified similar trends in European cable, with Germany's third-largest cable operator Tele Columbus entering into an agreement to buy Primacom and France's Altice securing complete control of Numericable-SFR. "Further consolidation in the sector can be expected, with cable remaining fragmented compared to the platforms it competes with," said Rua Aguete.

On the subject of innovation, respondents picked out themes including OTT video streaming, 4K/HDR, VR and cloud-based open API IPTV platforms. Investing in next-generation IPTV technology was regarded by one respondent as the best way to ensure differentiation and competiveness. IHS's research shows that take up of HDTV is now high, arguing that this bodes well for new formats such as 4K/UHD in years to come.

The use of cloud-based solutions is also a theme that came up repeatedly in the survey across a number of categories. This is a development that has been closely monitored by market analysts and solutions providers, including Accenture – which helped BT Sport get its live football service up and running using Accenture Video Solution (AVS).

Head in the cloud

Accenture's view is that cloud solutions enable the traditional broadcast segment to compete with OTT providers by offering four potential benefits. Firstly, faster speed to market for new services. Secondly, scalability, to handle spikes in workload, including live events, and surges in popularity of new services. Thirdly, the ability to collect, store and conduct analytics on vast amounts of data, to drive personalisation, service development, customer experience and one-to-one relationships. And fourthly, by driving service innovation through agile development, constant iterative experimentation and a culture of fail fast, fail cheap. ■

MOBILE OPERATORS

Mobile operators represented just under 10% of TV Connect's survey respondents

Of this group, 83% said business has "improved a little" over the past 12 months, while 17% said it has "rocketed". There was no consensus on the big challenge facing the industry as it seeks to build out its video business. But LTE Broadcast, 5G/ spectrum issues and "finding new markets" all percolated to the surface. Commissioning dedicated content for mobile was regarded as a bigger issue than piracy/security.

Asked to name the sector's key innovators, respondents were split – though it is interesting to note that China's Huawei was mentioned by more than one respondent. The company is expanding aggressively into mobile video – a point it emphasised when it released a report into the sector at the European Mobile Video Forum in Amsterdam late last year.

Entitled Mobile Video Report – Business Models Innovation Drives Mobile Video Monetisation, the report advises European operators to cash in on mobile video – following the lead from Asia and the US. "Operators like LG Uplus in Korea, T-Mobile in the USA and Verizon have demonstrated a strong ambition to monetise video content, by introducing innovative pricing approaches, including zero-rating video traffic, enabling sponsored data, offering video-centric tariffs and by launching their own branded mobile video apps and services to tap new sources of revenue," said Qiu Heng, president of Huawei Wireless Network marketing operation. "We see some leading European mobile operators already exploring the use of video services and they are seeing increasing revenue from it. We would like to see more European mobile operators consider similar approaches to maximise demand for mobile video."

Consumer first

Other companies noted for innovation by respondents included Ericsson, Nokia, Google, Harmonic, Vodafone Germany and Cisco. There was also support for firms like Salesforce.com and CloudSense. Some respondents also identified the following areas as key areas of mobile sector innovation – Internet Of Things (IoT), VR, AR Games, 5G and Network Virtualisation.

In terms of priorities for the coming year, 5G was again referenced by respondents. Also mentioned were "quality of customer experience" and "how to provide enough network capacity". On the former point, one respondent said "experience is becoming a real differentiator". As for network capacity, another respondent observed that "data traffic is growing fast and there is uncertainty about growth rate."

Ericsson provides useful insights into the mobile market via its regularly updated mobility report. In November 2016, it forecast that there will be 550 million 5G subscriptions by 2022. Not only will this enhance mobile broadband services, it will enable a wide range of use case for the Internet of Things. "5G is one of the most anticipated advances in the ICT industry," says Ericsson. "The introduction of 5G will accelerate transformation in many industry

BIGGEST CHALLENGES FOR MOBILE OPERATORS

LTE Broadcast	Finding new markets	5G/spectrum issues	Commisioning dedicated content for mobile	Piracy and security
3.6	3.4	3.2	2.8	2.2

verticals, enabling new use cases in areas such as automation, IoT and big data."

The company also predicted that LTE will become the dominant mobile access technology by 2019, going on to reach 4.6 billion subscriptions by the end of 2022. Mobile broadband, says Ericsson, is the key driver of subscriptions across all regions.

In line with other analysts in the market, Ericsson predicts mobile video traffic will grow by around 50% annually through until 2022, at which point it will account for 75% of all mobile data traffic. "The use of embedded video in social media and web pages continues to grow, fueled by larger device screens, higher resolution and platforms supporting live streaming."

Live streaming is here to stay

Ericsson shares Facebook's view that live video streaming is growing in significance: "Although live streaming has existed for some time in South Korea, there has been a recent surge in popularity for live video apps in markets like the US. Streaming apps focusing on UGC, including Periscope and Bambuser, are being used by millennial power users and video-centric smartphone users in the US. The inclusion of live streaming capabilities in social apps, such as Facebook and Twitter, is likely to make it easier for consumers to watch both UGC and professionally made live video content. Based on consumer interest, the proportion of smartphone users in the US using live streaming apps is likely to triple in the coming year."

The company sees a seismic shift coming in the way people consume video – with mobile set to benefit. While teens watch the same amount of video as older groups, they watch far more on phones. Teen video viewing on phones grew 85% between 2011 and 2015, while traditional TV viewing halved.

The advance of mobile video is not just good news in terms for entrepreneurial content creators, but also advertisers. PwC's annual Global Entertainment and Media Outlook predicts that mobile video advertising is on an upward trajectory that will take it from US\$3.54 billion in 2015 to US\$13.3 billion in 2020, a 30% compound annual growth rate. That would make mobile video the fastest-growing digital ad segment in the next five years. ■

> While teens watch the same amount of video as older groups, they watch far more on phones. Teen video viewing on phones grew 85% between 2011 and 2015, while traditional TV viewing halved

MARKETING & ADVERTISING

Marketing and advertising executives made up just over 3% of respondents to the TV Connect survey

> Advertisers have been struggling to get to grips with the realisation that some of their digital ads aren't performing as they were first led to believe because of unsafe environments, viewability, ad fraud, ad blocking and badly targeted ads

Views were split with 50% saying business in 2016 "improved a little" and 50% saying it "contracted slightly". With none of the respondents reporting that their business "rocketed" or "plummeted". This suggests 2016 was a relatively stable year for the overall sector.

Respondents were fairly equally divided over the key challenges facing the sector. "Creating brands and communities around content" was marginally the number one issue, but close behind were "personalisation and dynamic ad insertion" and "how to effectively use social media".

The survey's buoyant view of the marketing and advertising sector is echoed by analysts. Media agency ZenithOptimedia predicted global advertising would rise by 4.6% to US$579 billion in 2016 and top US$600 billion by the end of 2017. IHS Markit, meanwhile, said big brand budgets and quadrennial events such as the Olympics, European Football Championship and US Presidential Election would drive 2016's global advertising revenue growth to US$532 billion. "The advertising industry is about to turn the corner thanks to the economy getting back on track," said Eleni Marouli, principal analyst, IHS Technology.

IHS did, however, advise that the industry is witnessing a shift in the balance of power between TV and online. Although TV was the number one medium globally for advertising revenue, accounting for US$192 billion (36%), Marouli believes this will change by 2020. "In some countries such as the UK, online already accounts for almost 50% of total advertising revenue and will only keep getting stronger," she said.

Having said this, there are those who think the industry needs to adopt a new mindset. Decipher managing director Nigel Walley says: "TV advertising and its online competitor have been shadow boxing for 5 years while, behind the scenes, the two underlying technology platforms have been converging.

Convergence champions

Making claims that one side was going to take over the other misses the point – which is that it's been increasingly hard to tell the two apart. The launch of Sky AdSmart, and its multi-device ad product Sky Advance, shows that the TV platforms have the capability to build ad-tech infrastructure that could rival the two supposed market leaders – Google and Facebook. In 2017, we will be examining the potential for each of the main European TV platforms to build pan-regional advertising and data infrastructure, and evaluating their competitive advantage over social or agency owned players."

Speaking at CES 2017, James Field, product manager for cloud apps and solutions at Cisco, reminded delegates that one of the big challenges with online advertising is that such a high percentage of digital ads are fraudulent (the Association of National Advertisers in the US estimates that US$7 billion in advertising investment is wasted because of nonhuman digital traffic – with fraudulent mobile ads a particular concern).

BIGGEST CHALLENGES IN MARKETING & ADVERTISING

3

Creating brands and communities around content

2.5

Personalisation (dynamic ad insertion)

2.5

How to effectively use social media (social meets broadcast)

There's also an issue around ad-blocking, with large numbers of consumers switching off slow-to-download, annoying or potentially virus-laden online ads. This issue has been a priority for Randell Rothenberg, president and CEO of US digital advertising trade body the Interactive Advertising Bureau (IAB), who believes the answer to ad-blocking is better creativity, "the one thing that can help us overcome the ad-blockers".

Threat of ad blocking

Recently, there has been speculation that the issue of ad blocking may also start to impact on television. With more TV delivered by broadband and satellite, and programmatic being used to plan, buy, measure and optimise advertising on television, the threat has become a real one, says Mario Yiannacou, media and advertising manager at UK advertiser trade body ISBA: "Advertisers have been struggling to get to grips with the realisation that some of their digital ads aren't performing as they were first led to believe because of unsafe environments, viewability, ad fraud, ad blocking and badly targeted ads. How long will it be until the user will be able to download an app that the blocks the ads on TV regardless of the broadcaster is? After all it is just a piece of software."

In terms of key innovations in the sector, respondents identified areas like real-time data, first party data from TV consumers, data management platforms (DMPs), data lakes, addressable ads and programmatic TV.

Lotame, a leading independent DMP, says there are various benefits of using DMPs. One is that it allows marketers to create a unified view of their customers by centralising, activating and protecting all audience data in one place. Another is that it allows marketers to build deeper insights into customers. It also makes it possible to create a holistic view of consumers across devices. Brands can reach their most valuable audiences in the right place at the right time for increased engagement. Or they can combine their efforts for sequential messaging across screens.

In a related development, marketing consultant Warc predicts VR and AR are set to "revolutionise the e-commerce industry", reaching a value of US$150 billion by 2020. "VR and AR are not new technologies – but 2016 saw them really emerge as marketing platforms," says David Tiltman, Warc head of content. "As the advertising market becomes more cluttered and many people opt out of receiving marketing messages, brand experiences that can cut through are valuable." ■

TECHNOLOGY & DEVICES

21% of respondents to TV Connect's survey identified themselves as working in technology and devices

> We have a new class of 'connected home platform operator' to consider, offering an ever expanding list of services, including voice commands and home automation

Overall, they painted a positive picture of their sector – though with a slight shade of grey. 27% reported that business had "rocketed" while the same percentage said it had "improved a little". 36% said it had "stayed the same" and 9% said it had "contracted slightly".

In terms of challenges, the number one concern was the future of "4K, 8K and beyond" while DRM is also taxing a number of respondents. Piracy and security is regarded as a bigger issue than the impact of VR and AR on storytelling and there are also some concerns over "cloud costs" and "content localisation".

This sector's big pool meant there was a healthy debate about who are the industry's top innovators. A points allocation system generated the following top six innovators table: Amazon (16), Netflix (14), Google (13), Apple (10), IBM (6), and the BBC (6). Other companies to be supported included AWS/Elemental, New Codecs, Zoo Digital, Nokia, AT&T, SKY, IMS, Deluxe, Harmonic, TiVo, Microsoft, NGN, Premiere Digital, Oracle, Simplestream, Roku, Adobe, Samsung and Vubiquity.

Priorities for the next 12 to 24 months covered sales and technology. Moving customers to 4K was cited more than once while "stronger IT security for apps" came up as an issue in the battle against viruses and piracy.

Other respondents are looking at "expanding their workflow offering for serving localised content" and "creating leads and nurturing them into services commercialisation". AI was cited as a way of increasing personalisation and engagement while a general intention to monitor technology was seen as a way of staying in the game.

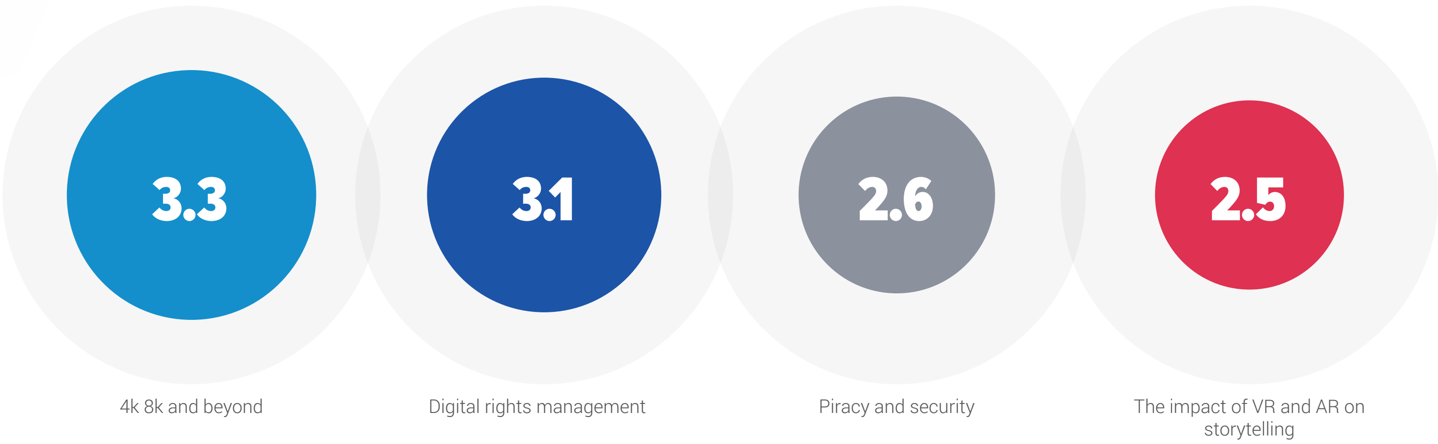
Is there an Echo in here?

Analysts are anticipating some quite profound changes in the technology and devices sector. Decipher's Nigel Walley, for example, is predicting a redefinition of what we mean by a platform. "In recent years, we have used this term to describe TV companies, mobile phone companies and broadband companies. But this definition will be challenged with the arrival of Amazon and Google into the group we define as 'platforms'.

The emergence of Amazon Echo (and soon Google Home) as companies that 'put devices into our homes and sell us media services' has been shockingly quick. These companies don't yet deliver linear broadcast, or fixed line broadband/phone, but there are ways to achieve that very quickly. We therefore have a new class of 'connected home platform operator' to consider, offering an ever expanding list of services, including voice commands and home automation."

The arrival of these companies into the platform raises interesting questions, says Walley. "Will they compete or collaborate? Is Amazon Echo a re-definition of the set top box? Do I need a network of Sky MiniQ boxes attached to a main SkyQ box, if I also have a network of Amazon Dots and Firesticks attached to an Amazon Echo? We clearly have a group of companies who, from different

BIGGEST CHALLENGES IN TECHNOLOGY & DEVICES



starting points, are heading towards the same end-point which is to be the main provider of media devices, services and content in our homes."

Walley's observations are very much on the agenda for 2017. Already this year, Google has unveiled plans to roll out its voice-controlled Google Assistant service to Android TV devices. Speaking at CES 2017, Google said that Assistant would be available on supported TVs and set-top boxes powered by Android TV. "You'll be able to ask the Google Assistant for help so you can enjoy the content you love, faster than ever, on the best screen in your house. No more typing or struggling to get to what you're looking for — just ask the Google Assistant for help," explained Android TV director, Sascha Prueter.

There's no smoke without Fire

Amazon meanwhile is opening out its Fire TV interface and Alexa voice control functionality with new TV and DVR deals. TV and display manufacturers Seiki, Westinghouse Electronics and Element Electronics have announced 4K/UHD smart TVs called Amazon Fire TV Edition. These are designed to offer streaming and over-the-air content and include the Amazon Fire TV experience and support for a voice remote with Amazon Alexa.

IHT Markit, meanwhile, is forecasting a revolution in new device formats: "The consumer drone is the closest example of a product type evolved over the past few years that has quickly gone mass market. 3D printers and pens are heading the same way. The next set of new devices may well materialise at the boundary of cheap 3D printing and inexpensive smartphone components to create completely novel device types and uses."

All of this comes at a time when consumers are set to be engulfed by the Internet of Things (IoT). Ericsson's November 2016 Mobility Report anticipates that there will be 29 billion connected devices by 2022, of which 18 billion will be related to IoT. "In 2018, mobile phones are expected to be surpassed in numbers by IoT devices, which include connected cars, machines, meters, wearables and other consumer electronics. From 2016 to 2002, IoT devices are expected to increase at a compound annual growth rate of 2% driven by new use cases."

In tandem with the growth of IoT, the market is seeing screens become more and more common around the home, in vehicles and in public places. At IFA 2016, for example, Samsung introduced its Family Hub refrigerator, which has a 21.5 inch full HD LCD resolution screen located on the upper right exterior door. Phase one of the fridge's roll-out will probably see the screen used for practical family requirements, but it also offers the option of music streaming or television viewing using Screen mirroring with (for example) a Samsung Smart TV.

Meaningful experiences

Consultancy firm EY sees screen ubiquity as a key trend. In its report Future Of Television, it says there will be growing demand for content to seamlessly follow the viewer wherever they go and that "programmers will have to use data and personalisation to deliver a meaningful experience". More screens means "more potential opportunities for ad impressions, provided the experience is carefully calibrated and tuned for a multiscreen lifestyle".

Not to be overlooked in this sector is the emergence of HDR (High Dynamic Range). Sony unveiled two new 4K HDR series televisions at the Consumer Electronics Show in Las Vegas. ■

WIDER UNIVERSE

The remaining respondents were especially interesting because they covered such a wide range of job functions at varying size enterprises

While there was strong representation from consultants, there was were also respondents from component providers, measurement vendors, ICT providers, platforms, trade associations, design and metadata content providers.

In terms of business headlines, 30% of this category said business had rocketed and a further 35% said it had "improved a little". A further 30% said it had "stayed the same" while just 5% reported that business had "contracted slightly".

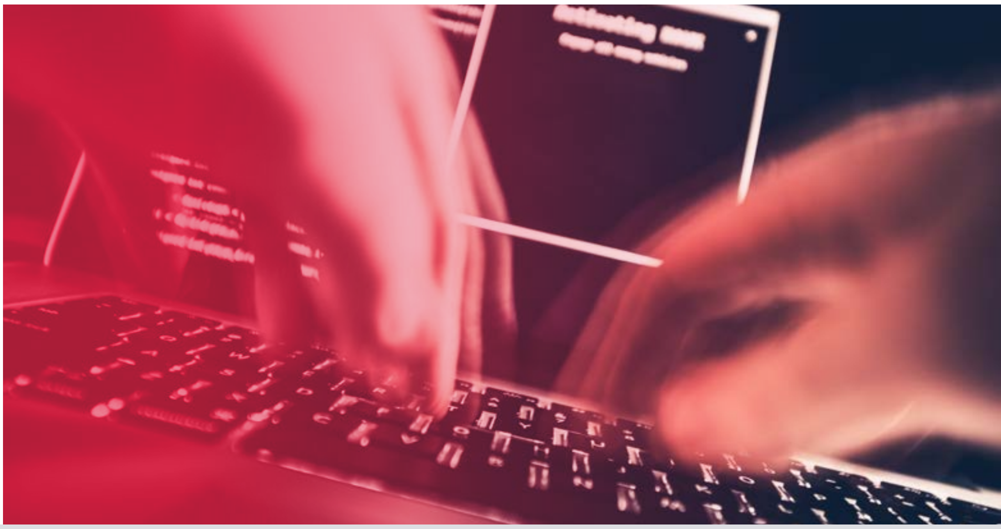
The biggest challenges identified by this group – which made up 30% of respondents – were focused on how to deal with uncertainly. "Future technology", "future business models" and "business model evolution" were named as the three major challenges followed by "mobile and new media" and "scaling online services". 360 live TV, bid data, youth audiences and next-generation bundling were acknowledged as challenges.

Amazon and Verizon came out on top in the innovation stakes – and it was noticeable how many big firms were credited in this respect. Intel, Ericsson and Netflix all had their fans – as did the likes of Viacom, HBO, Hulu, Turner, Vevo, Showtime, Sky, Snapchat and the BBC. Even some of the less high-profile innovators are actually part of big groups. For example, Amazon owns Elemental Technologies, a company that has pioneered a number of software-based solutions for multiscreen content delivery (it was recently selected by Russian telco and mobile operator MegaFon to help power its over-the-top MegaFon.TV service). Other companies to be referenced for their innovation included Texas Instruments, Sigos, Okko, Tie Kinetix, Arm, Zoo Digital, Ooyala and Imagine.

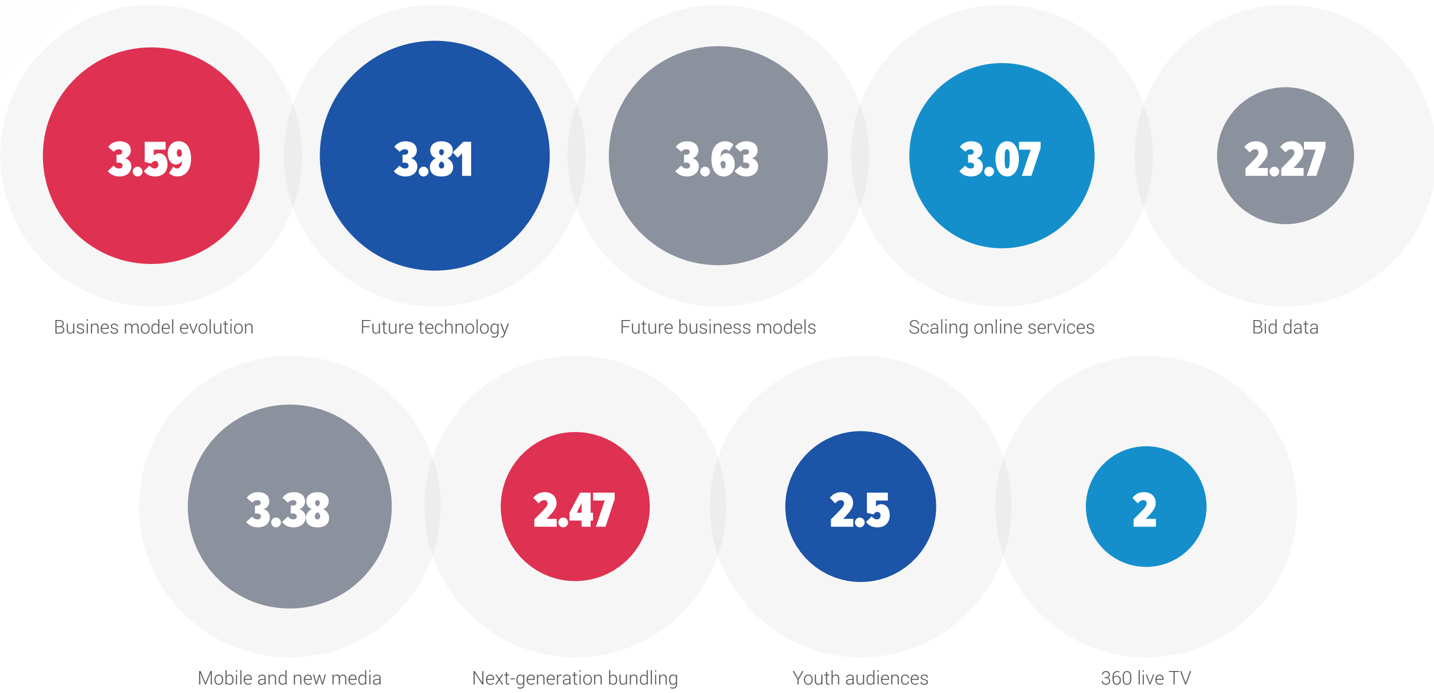
Pace of change

Asked about their top priorities for the next 12 to 24 months, there was plenty of emphasis on business expansion – with companies seeking to "increase reach", "launch new platforms", "secure more partner agreements", "expand globally" and "establish new branches in new regions". Others talked of the need

"The risk of hacker attacks meant that security was also a key priority for some businesses in the survey



BIGGEST CHALLENGES OF THE WIDER UNIVERSE



to innovate faster and to refine audience intelligence.

Front of mind issues included the scalability of multiplatform devices, mobile and app testing and OTT emulation. The risk of hacker attacks meant that security was also a key priority for some businesses in the survey.

Security remains a big business. In December 2016, IHS Markit reported that content security accounts for 32% of revenues in the video software market.

More generally, IHS Markit expects the video software sector to exceed US$9 billion in revenue by 2021. Within this, Online Video Platform solutions will grow rapidly, says Cecilia Zhu, analyst at IHS Technology. "The necessity of online distribution backed by a platform pre-integrated across a rich ecosystem of partners, means demand for OVP solutions will rise over the next five years," she says.

The biggest player in the video software segment is Cisco, with a 15% share. "The company has proven adept at transitioning into the video space, and at using its longstanding presence in core, metro, and access-network infrastructure to cross and upsell video-specific software," explained Zhu.

Collaborative challenge

Cisco has positioned itself as a leading technology innovator on the back of an R&D budget of about US$6.3 billion. Despite its US$130 billion market capitalization, it has numerous engineers at work on disruptive new technologies – an effort that has resulted in around 19,000 patents globally.

Known for its emphasis on collaboration, one of Cisco's most interesting recent moves in the media space is the Infinite Video Platform, a new facility that enables customers to test new features and get user feedback before making them generally available.

Israeli cable platform Yes was one of the first PayTV operators to use the service. It used IVP to design and test a feature that delivers a personalised user interface to different audience segments and viewers. "One of the benefits of moving to IVP is the ability to innovate faster at lower cost. Gone are the days of costly professional services engagements to make minor changes with high downtimes. Being able to provide immediate feedback, and adapt the functionality is a critical success factor," said Yitschak Elyakim, CTO, Yes. Other potentially disruptive technologies to be referenced in the TV Connect survey included DOCSIS 3.1, a cable-based system that promises incredibly fast internet speeds. Vodafone Spain has just teamed up with Huawei to upgrade its network to the new tech. Vodafone said the investment would allow it to offer higher speed data services and launch new channels on its Vodafone TV service, including 4K UHD TV services. ■