THE GLOBAL PAY-TV INNOVATION LANDSCAPE:

INDUSTRY PERSPECTIVES ON A YEAR OF CHANGE

WHITE PAPER – SEPTEMBER 2017

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INTRODUCTION TO THE PAY-TV INNOVATION FORUM

Launched in 2016, the Pay-TV Innovation Forum is a global research programme for senior executives, developed by NAGRA and MTM designed to explore and catalyse innovation across the pay-TV industry at a time of unprecedented change.

This is our second annual report, summarising our findings from this year's programme. It explores recent progress and developments, highlights some of the most important challenge facing pay-TV providers, and examines perspectives on the most attractive areas of opportunity and innovation priorities for the industry – in Europe, Asia Pacific, Latin America and North America.

What do we mean by innovation? Innovation can be defined in various ways: it can encompass improvements to internal business processes, incremental extensions to existing products and services, and new business models. Although all of these are important, our focus is narrower – on the creation of radically improved or new customer-facing products and services that can deliver value to the pay-TV enterprise.

The findings in this report were developed between March and August 2017, and are based on MTM research and analysis and extensive engagement with pay-TV industry executives from around the world. We hope that our findings prove useful for the industry.

All quotations used in the report come either from in-depth interviews or seminars with senior pay-TV industry executives held across the four regions. The majority of sessions were completed under the Chatham House Rule (no attribution without prior permission), with some contributors permitting us to quote them. Any views and opinions expressed in the quotations are those of the interviewees and do not necessarily reflect the views of their companies. MTM and NAGRA would like to thank all those who have contributed to the programme in 2017:

Europe, the Middle East and Africa

Asia Pacific

North America

Latin America

Inevitably, this paper provides only a partial view of a highly complex industry: it represents a snapshot of industry perspectives at a particular moment in time. The opinions expressed in this paper are solely those of the authors and reflect MTM's judgement at the time of writing, based on the available information. These views do not necessarily represent the views of the contributors. Any errors or mistakes are entirely the responsibility of the project team.

EXECUTIVE SUMMARY

The pay-TV industry remains, in many respects, a global success story – providing a growing range of services to millions of households around the world. It invests heavily in infrastructure, innovative new products and advanced technologies, and delivers state-of-the-art experiences to customers, seamlessly combining entertainment and communications. In most markets, pay-TV providers have continued to grow during the last ten years, despite the global economic downturn at the end of the last decade.

Today, however, the pay-TV industry is experiencing a period of disruption as service providers face slowing growth, intensifying competition and business transformation challenges. In the last year, the pace of change has accelerated across the industry – with most major pay-TV markets seeing lower subscriber growth as a result. This pace shows no sign of slowing either: among the executives surveyed, **82%** expect competition from other pay-TV companies, telcos and OTT service providers to increase dramatically over the next five years.

Although many trends and developments are impacting the pay-TV industry, executives identify three fundamental disruptive challenges facing the industry today:

+ The digital giants are transforming the pay-TV market with new OTT services, new device and service ecosystems and major investment in content and technology, as well as new business models.

+ Consumers are demanding multiscreen viewing, more flexibility in their content packages, and personalised experiences, while viewing and subscription patterns are increasingly fragmented among different consumer segments.

+ Pay-TV piracy is on the rise globally, notably in Latin America and Asia Pacific, with an estimated **$7 billion per year** lost in unrealised pay-TV service provider revenues, fuelled by improved broadband access and growing ownership of illicit streaming devices. This stimulates operators to invest in their product offerings and innovative anti-piracy measures to fend off illegal competitors.

To respond to these developments, pay-TV service providers require a new playbook that leverages their assets, expertise and relationships to develop high-growth products and services, while retaining a profitable core business. Innovation is a top priority for the majority (**74%**) of industry executives and has become even more of a priority for **69%** of them during the last 12 months.

While most pay-TV providers have improved their portfolios (**61%**) in the last 12 months, the propensity to innovate varies significantly, pointing to a widening innovation gap between the lead innovators and followers. The top third of the most innovative providers identified in the last year's analysis, for example, were significantly more likely to innovate than the bottom third, with **80%** and **37%**, respectively, improving their portfolios over the last 12 months by introducing new products or features.

Innovation capabilities also vary strongly by region: providers in North America are notably ahead in developing advanced and well-diversified offerings, followed by their peers in EMEA, Asia Pacific, and Latin America. Pay-TV providers in North America and EMEA are also the quickest to bring innovation to their customers, with **81%** and **72%**, respectively, improving their portfolios over the last year.

The core pay-TV proposition, including the TV platform and online TV services, remains the main area of innovation for operators globally as they deploy advanced functionalities and multiscreen services. Only a small number of large-scale providers, typically operating in larger, developed markets, are currently addressing adjacent business opportunities, such as advanced advertising, Smart Home solutions, and technology re-licensing. These providers are expected to continue driving innovation in adjacencies, because of their ability to deploy the necessary assets, budgets, and capabilities.

Despite slowing growth and external pressures, industry executives still believe there is considerable scope for innovation in pay-TV. So, which are the most commercially attractive and strategically important areas of opportunity for the pay-TV industry over the next five years? Investment priorities vary significantly by market and service provider type, but most executives agree that the most commercially attractive opportunities relate to strengthening and differentiating their core pay-TV and online-TV propositions, in terms of both the product offering and the commercial model:

+ **Product innovation:** service providers see a growing focus on delivering connected, interactive, and seamless pay-TV experiences across multiple devices. To do that, they are deploying next-generation back-end and front-end technologies and new content offerings, as well as online TV services.

+ **Commercial innovation:** service providers are focusing on new ways to price and package their content, taking a more segmented view of their customers, introducing more flexibility, and establishing innovative partnerships with content providers.

Today, innovation capabilities vary significantly across the pay-TV industry, with providers at varying stages of developing and diversifying their product and service portfolios. So, how big is the innovation gap between the innovation leaders and the laggards, and what would be the impact of closing that gap? What would happen, for example, if the least innovative service providers upgraded their product and service portfolios at least to the level of the average innovators in their countries? In this scenario, global industry revenues could be improved by **11%**, equivalent to **$20 billion** per year, with the biggest improvements likely in EMEA and Asia Pacific, where pay-TV markets tend to be the most fragmented.

What steps do pay-TV providers need to take, to ensure that they are fit-for-the-future and well-positioned to grow and remain competitive?

Our research highlights four main strategic priorities for pay-TV providers:

1. **Establish strategic partnerships** with content providers and technology suppliers that go beyond rigid commercial structures

2. **Cultivate the right digital culture,** processes and capabilities to support innovation, learning from the new breed of digital-first and data-led OTT service providers

3. **Focus on scale and diversifying product portfolios,** by growing customer footprint and launching new products and services

4. **Invest in the advanced technologies,** such as IP-delivery and cloud, needed to support business transformation

Today, the global pay-TV industry is experiencing a period of change and disruption, with service providers in many markets facing a perfect storm of slowing growth, intensifying competition and business model disruption. In many markets, broadband quality and availability continue to improve steadily and connected devices, such as Smart TVs, digital media players, and smartphones, are gaining traction. This is providing consumers with access to a much wider range of video content and allowing new OTT entrants as well as content owners to retail premium TV and film content directly to consumers. A large number of telcos, both global and local, have aggressively entered the pay-TV market, leveraging their network capabilities and existing customer relationships to offer highly attractive multi-play bundles.

82% OF EXECUTIVES AGREE THAT "COMPETITION IN THE PAY-TV INDUSTRY IS SET TO INCREASE DRAMATICALLY, AS PAY-TV COMPANIES, TELCOS AND OTT SERVICE PROVIDERS COMPETE FOR SUBSCRIBERS."[1]

These developments are unevenly distributed across different geographies and are at a relatively early stage in many markets, where pay-TV remains a robust and often highly profitable business. Furthermore, many pay-TV providers have responded to increased competition by expanding into telecoms services, scaling up their investments in content, developing multiscreen and OTT offerings, and offering adjacent services, such as advanced advertising and Smart Home.

Nonetheless, a growing number of pay-TV executives around the world believe that the external pressures are intensifying and the industry is entering a transitional period, with future growth becoming significantly more challenging:

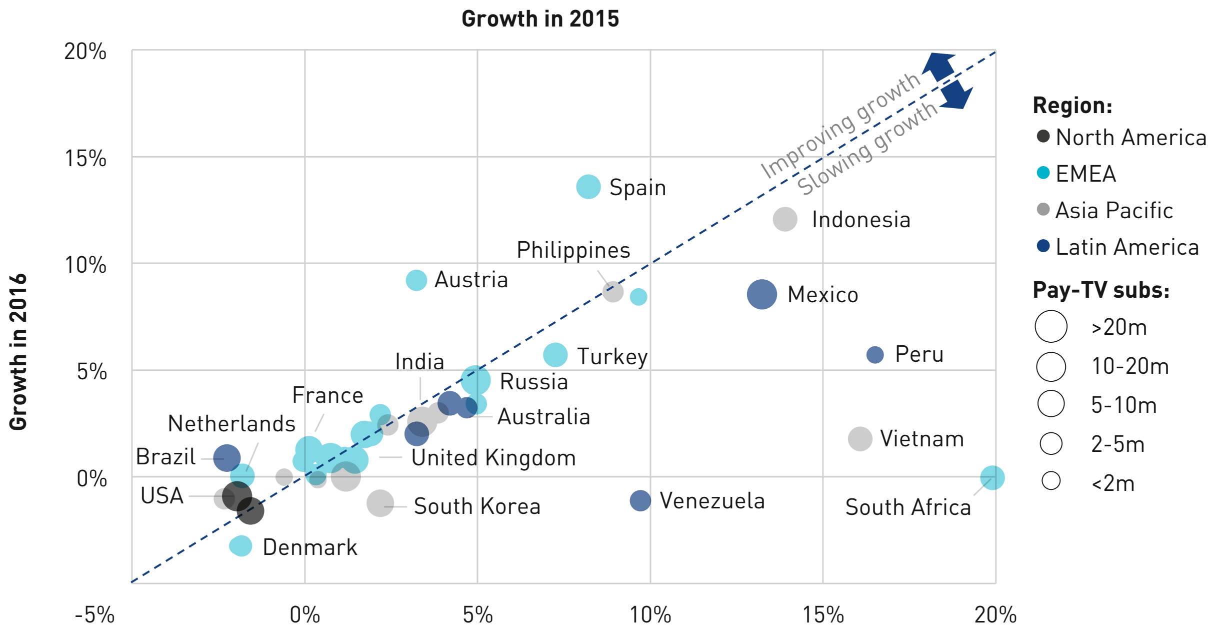
71% OF EXECUTIVES THIS YEAR AGREE THAT *"PAY-TV SERVICE PROVIDERS IN THEIR COUNTRY WILL STRUGGLE TO GROW THEIR BUSINESSES OVER THE NEXT FIVE YEARS"*, UP FROM **57%** LAST YEAR.[2]

During the last year, the pace of change has accelerated across the pay-TV industry, with **67%** of the 42 major pay-TV markets covered in the programme seeing lower subscriber growth compared to the year before (See Exhibit 1). The majority of pay-TV markets exhibited either a small, less than 5%, increase (e.g. UK, Malaysia, Australia, and Brazil) or a decline (e.g. Ireland, USA, Canada, and Hong Kong) in subscribers over the last year. Only a handful of pay-TV markets, mostly in emerging countries, such as Indonesia, Mexico, Vietnam, Philippines, have seen double-digit annual subscriber growth over the last two years, with growth still slowing over the last year. However, most of this growth is believed to have come from lower value subscriptions: *"The challenge we face is clear – the high ARPU markets are pretty mature, and the low ARPU markets are growing, but are low ARPU."*

1: Question: Thinking about developments affecting pay-TV industry revenues in your country through to 2022, how much do you agree or disagree with the following statements? (% of respondents indicating "strongly agree" or "agree"; n = 125)

2: Question: To what extent do you agree or disagree with the following statements about innovation and the pay-TV industry? (% of respondents indicating "strongly agree" or "agree"; n = 125)

Exhibit 1: Growth in pay-TV subscriber numbers has slowed in most of the major pay-TV markets[3]



In the light of these recent trends, many pay-TV executives surveyed in 2017 are revising their expectations for future growth:

+ **55%** BELIEVE THAT THE PAY-TV INDUSTRY REVENUES WILL GROW MODERATELY / STRONGLY OVER THE NEXT FIVE YEARS, DOWN FROM **60%** LAST YEAR.[4]

+ **20%** BELIEVE THAT INDUSTRY REVENUES WILL DECLINE OVER THE NEXT FIVE YEARS, UP FROM ONLY **8%** LAST YEAR.[4]

+ **69%** DISAGREE THAT AVERAGE REVENUES PER SUBSCRIBER FOR THE MAJOR PAY-TV SERVICE PROVIDERS WILL GROW STRONGLY FROM CURRENT LEVELS.[5]

As growth slows down across the existing product and service portfolios, pay-TV service providers will need a new playbook, leveraging their key assets, expertise and relationships to develop innovative, high-growth propositions. Despite growing competitive threats, many industry participants believe that this is a great time for pay-TV providers to innovate and transform their businesses: *"Right now, service offerings change rapidly because innovation cycles have become shorter. It is cheaper to launch and run new services, which has a positive impact on creativity and innovation across the industry. Everybody knows that this is a big opportunity to modernise and offer more interesting and appealing services to customers."*

3: Change in pay-TV subscriber numbers (2014-16); Data provided by Nagra; MTM analysis

4: Question: Which of the following statements best describes your opinion about the growth prospects for the pay-TV industry in your country through to 2022? (n = 125)

5: Question: Thinking about developments affecting pay-TV industry revenues in your country through to 2022, how much do you agree or disagree with the following statements? (% of respondents indicating "strongly agree" or "agree"; n = 125)

2 –KEY CHALLENGES FACING THE PAY-TV INDUSTRY

Although there are many trends and developments impacting the pay-TV industry, most pay-TV executives highlight three major challenges facing the industry:

- The proliferation of OTT services
- Changing consumer behaviour and demand
- Content piracy, fuelled by illicit streaming devices

These trends are truly global, but there are important regional differences to consider: the Pay-TV industry in North America is seen as the most severely disrupted by the new consumption trends, primarily due to high levels of pay-TV penetration and high ARPUs. The pay-TV industries in Asia Pacific and Latin America, on the other hand, face their own set of challenges brought about by the rapid growth in content piracy, mostly due to the widespread availability of illicit streaming devices. In this context, the pay-TV industry in EMEA appears to be the least disrupted, but there is significant variation within the region.

To the credit of the pay-TV industry, many providers have made significant progress in strengthening and diversifying their businesses, by investing in advanced platforms, content, and new products and services as well as expanding into adjacent markets. Despite these positive developments, many pay-TV executives believe the industry needs to accelerate its transformation to succeed in this constantly evolving environment.

THE PROLIFERATION OF OTT SERVICES

Globally, the growth and development of cheaper OTT services, free content and new device and service ecosystems are stimulating intense competition and having a strong impact on pay-TV businesses leaving them little choice but to respond.

67% OF EXECUTIVES AGREE THAT "COMPETITION FROM SUBSCRIPTION OTT SERVICES WILL HAVE A NEGATIVE IMPACT ON THE PAY-TV INDUSTRY, PUSHING DOWN PRICES AND INCREASING CUSTOMER CHURN"[6]

The pay-TV market in the US is widely believed to be the most impacted by cheaper OTT services: *"The US market is ripe for disruption by low-cost competitors – we are seeing this from players like Hulu and Amazon – and the big players are fighting back, with services like DirecTV Now. It could be hugely disruptive, as consumers gain more choice at lower prices."*

However, the impact of OTT services is felt by pay-TV providers across all regions. For example, many pay-TV providers in Asia Pacific are reporting increasing pressures from SVOD service providers pursuing aggressive pricing strategies and offering their services for free for extended periods of time as well as AVOD services that are growing in popularity in some markets.

Many industry participants argue that the pressures from OTT services will only intensify in the future, particularly due to the growing presence of digital giants: *"We need to think about how the likes of Google, Amazon, Apple, Facebook, and Netflix are affecting the video ecosystem. I think we're overestimating their impact in the short-term and underestimating in the long-term."*

6: Question: Thinking about developments affecting pay-TV industry revenues in your country through to 2022, how much do you agree or disagree with the following statements? (% of respondents indicating "strongly agree" or "agree"; n = 125)

Amazon's ambitions and the resources it can deploy in its home markets to offer competitive video entertainment services are seen as particularly concerning: *"Amazon can bundle video content with its other services. As such, the video offering is highly subsidised and can be offered at highly attractive prices. How can we compete effectively against this model? I don't think many pay-TV operators are worried about Netflix anymore as it's a single-product play, but Amazon is a different kettle of fish, and there's little prospect for all but the largest of pay-TV providers to pursue similar models."*

A large number of pay-TV industry executives also believe that the increasing availability and quality of free video content also poses a significant threat to pay-TV providers as the likes of YouTube, Facebook, and Twitter grow and develop their free advertising-funded video content offerings.

62% OF EXECUTIVES AGREE THAT "THE INCREASING AVAILABILITY AND QUALITY OF ONLINE VIDEO CONTENT ON SERVICES LIKE YOUTUBE WILL MAKE IT HARDER TO GROW PAY-TV INDUSTRY REVENUES"[6]

As OTT distribution becomes a feasible alternative to pay-TV platforms, a growing number of content owners are also looking to launch direct-to-consumer offerings and distributing them over new streaming platforms and devices. Over the last year alone, a number of major content owners, including Disney, NBCUniversal, Turner, AMC, Warner Bros., and Lionsgate, among others, have announced their plans to start offering direct-to-consumer services.

However, OTT is not all bad news for the pay-TV industry – it increases competition, creates new consumer expectations and disrupts established value chains, but it also creates more opportunities for pay-TV providers to deliver services to consumers and to grow their customer bases. Pay-TV is becoming more diverse, as OTT offerings present consumers with new choices. Furthermore, the boundaries between OTT and pay-TV are eroding. There's a growing consensus among industry participants that OTT is simply pay-TV delivered by other means. When we first started the work of Pay-TV Innovation Forum, OTT service providers were seen as a key competitor to pay-TV. Today, however, OTT is no longer seen as the pay-TV industry's foe as the likes of Netflix are finding their way onto pay-TV platforms. However, OTT does create commercial challenges for pay-TV providers as OTT services have become synonymous with 'cheap', usually marketed at significantly lower prices than typical pay-TV subscriptions or bundled with other services. Pay-TV providers are concerned that going OTT can lead to customer churn and spin-down to cheaper products. As operators aim to maintain growth in the future, they are acutely aware that they will have to find the right balance between OTT and other products and services in their portfolios.

As the availability of IP-connected consumer devices and alternative OTT services continues to grow, consumer expectations about video services are shifting, with users becoming accustomed to advanced functionalities and features, such as multiscreen, on-demand viewing, greater pricing and packaging flexibility, and personalisation. Many of these trends are associated with the emergence of younger generations of consumers, but few pay-TV executives are willing to ignore them: *"If you look at the younger demographics, the trends are very discouraging. They do not want to subscribe to pay-TV services as we know them today. They will require a different approach."*

Although consumer expectations vary by market and region, the most common ones include:

MULTISCREEN, ON-DEMAND VIEWING	GREATER FLEXIBILITY IN PRICING AND PACKAGING	PERSONALISATION
• Watching content on one's preferred schedule • Seamless anytime anywhere viewing • Desire for experiences optimised for the mobile screen	• Greater sensitivity to prices • Desire for unbundled content services • Preference for no or short-term contracts	• Highly personalised experiences • Bespoke content recommendations
66% OF EXECUTIVES AGREE THAT "WE'LL SEE A NEW WAVE OF MOBILE-FIRST SERVICES FROM PAY-TV SERVICE PROVIDERS TARGETED AT MOBILE CONSUMERS."[7]	**61%** OF EXECUTIVES AGREE THAT "THE MAJORITY OF PAY-TV SUBSCRIBERS WILL BE TAKING PERSONALISED 'À LA CARTE' SUBSCRIPTIONS RATHER THAN TRADITIONAL BIG PAY-TV BUNDLES."[7]	

Pay-TV executives in the USA are particularly concerned and see significant risks – of declining ARPUs, falling demand from younger customers, and increasing spin-down and churn – if the industry fails to adapt and invest in transformation.

Growing on-demand consumption is creating uncertainty about the future outlook for linear TV channels. To date, TV channel providers have been largely successful in maintaining multi-year linear channel provision contracts, locking in pay-TV platforms for long periods of time, and limiting the supply of on-demand rights, while at the same time launching proprietary direct-to-consumer content offerings. However, going forward, many industry participants expect to see a decline in the number of linear channels carried by pay-TV platforms as distribution moves from linear to non-linear environment, requiring more flexibility and cooperation between content owners and pay-TV platforms:

+ *"90% of content is not linked to a particular time or schedule, which means it can be consumed in a non-linear fashion and consumers are much happier with that model."*

+ *"We see a shift towards non-linear consumption... channel as a brand and as a source of content becomes less relevant, particularly those channels that have weaker brands. We'll see a decrease in the number of linear channels, but the amount of content available will go up."*

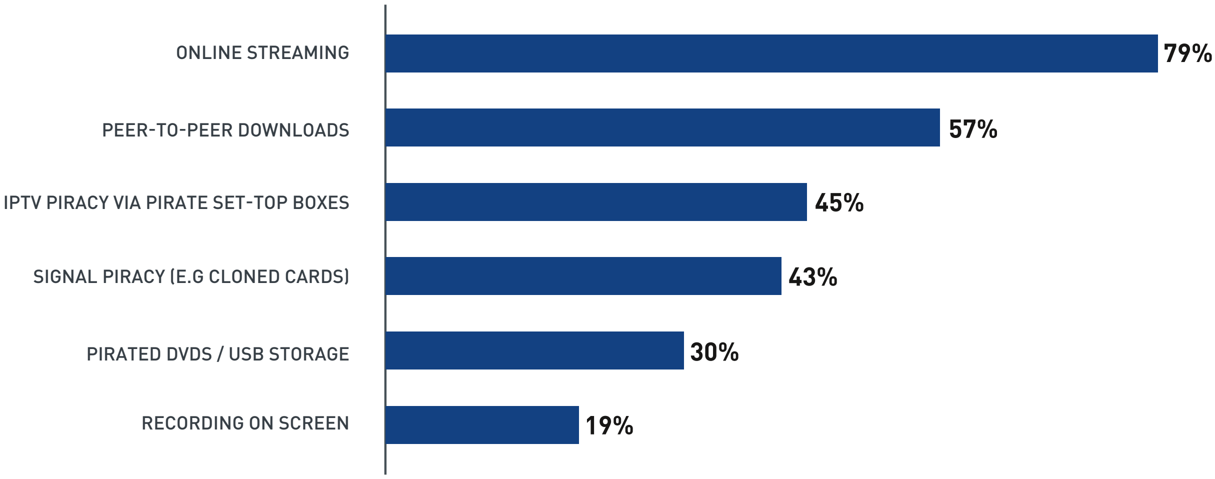
7: Question: Thinking about developments affecting pay-TV industry revenues in your country through to 2022, how much do you agree or disagree with the following statements? (% of respondents indicating "strongly agree" or "agree"; n = 125)

CONTENT PIRACY

Content piracy is seen as a significant, and growing, problem for pay-TV providers and content owners, with **50%** of respondents (up from **41%** last year) thinking that it will lead to greater pressures on the industry over the next five years and only a quarter (**26%**) believing it is a diminishing problem: *"Content piracy is getting worse. In the old days of BitTorrent, we could at least measure the extent of it, but now it's much harder as it a lot of it has shifted into IPTV and OTT boxes. The reality is that most people who are fighting piracy don't have good visibility of its extent."*

Online streaming, peer-to-peer downloads, and IPTV piracy via illicit streaming devices are seen as the most important forms of piracy affecting pay-TV providers globally (See Exhibit 2).

Exhibit 2: Streaming, P2P downloads, and IPTV piracy are seen as the most important forms of piracy[8]



The growing impact of video content piracy is felt by pay-TV providers in all regions, but is considered to be particularly damaging in Latin America and Asia Pacific:

+ *"The impact of piracy on pay-TV businesses is extensive, especially in Latin America, where it is not uncommon to find pay-TV operators that do not pay for content and distribute it illegally over their networks. In some Latin American territories, these operators are the main competitors to legitimate pay-TV businesses"* – Michael Hartman, DIRECTV Latin America (AT&T).

+ *"Content piracy is the biggest challenge that we face in the video industry today. It is very hard to compete against free"* – Mike Kerr, beIN Asia Pacific.

Video content piracy is evolving and is no longer associated with low quality and difficult-to-use services. Consumers can now easily access the latest high-quality film releases, TV series and live sports on various illicit streaming devices, which are believed to have seen a rapid increase in ownership over the last year. These devices are widely available to purchase from many consumer electronics retailers. Many of them are Android-based and come preloaded with Kodi add-ons, enabling consumers to access international as well

8: Question: In your opinion, how big a challenge are the following types of content piracy to pay-TV businesses in your country? (% saying "somewhat a challenge" or "major challenge" n = 125) as local high-value content through user-friendly interfaces: *"There are a lot of people who buy set-top boxes for illegal streaming in retail stores, who are simply not aware that this is piracy. It appears to be a legitimate thing, for which, in some cases, they even pay a subscription fee."*

Estimating the commercial value lost to content piracy has always been a complex exercise, because of challenges to track and measure illicit consumption and the fact that not everyone who consumes pirated content would pay for it. For this research programme, we focus more specifically on pay-TV piracy, which includes signal piracy (e.g. cloned cards or software-based solutions) and hardware piracy (e.g. pirate set-top boxes and illicit streaming devices). This type of content piracy is arguably easier to estimate as it often occurs at the household level and substitutes a legitimate pay-TV subscription. To produce global estimates, pay-TV industry executives were asked to gauge the proportion of TV households that they believe engage in these forms of pay-TV piracy, cross-referencing their responses with publicly accessible sources.[9]

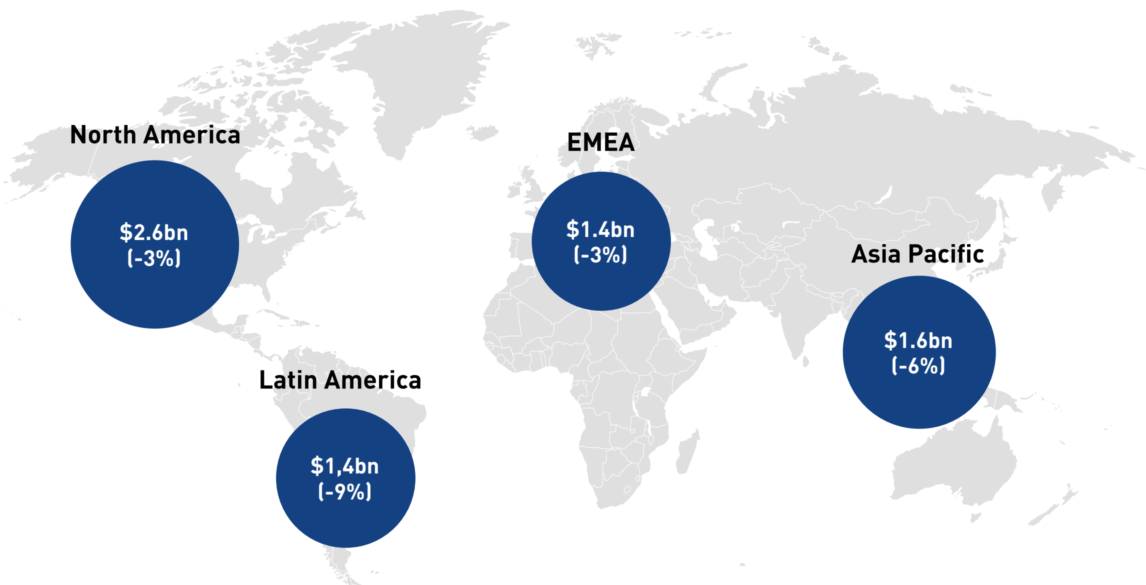
Pay-TV piracy is believed to be most widespread in Latin America and Asia Pacific, with **15%** and **14%** of TV households, respectively, using illegal pay-TV services[10]. These regions are followed by North America and EMEA, where **9%** and **7%** of TV households, respectively, are believed to be using illegal pay-TV services. But how does this translate into the actual revenues lost to pay-TV piracy? The total value lost to pay-TV piracy can be estimated by assuming that all users of illegal pay-TV services would instead subscribe to a legal service. If that happened, the global pay-TV industry could generate an additional **$28 billion** in revenues. However, not all of this lost value can be captured through legitimate offerings.

To produce a more realistic estimate, we have assumed that **one in four** consumers of pirated pay-TV services would be willing or able to replace them with a legitimate option. If this was achieved, the global pay-TV industry would be able to earn an additional **$7 billion**, or **4%** of annual industry revenue, with the largest relative gains in Latin America (**9%** of annual revenue) and Asia Pacific (**6%** of annual revenue).

Exhibit 3: The pay-TV industry could gain $7 billion per year by converting one in four pirates to legal users[11]

Industry revenues lost to pay-TV piracy (estimated)

Global = c.$7 billion (-4% of revenue)

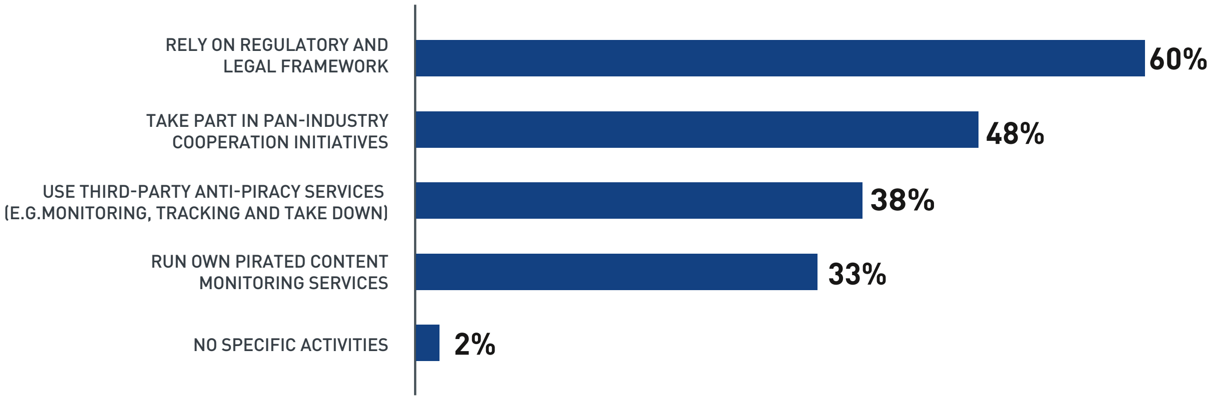


9: Alianza, Pay-TV Signal Piracy in Latin America and the Caribbean (2015); YouGov, Almost five million Britons use pirated TV streaming services (2017); Sandvine, Global Internet Phenomena (2017)

It appears that the gains from curtailing pay-TV piracy could be significant. While traditional content protection technologies, such as Conditional Access Systems (CAS) and Digital Rights Management (DRM), remain highly relevant to secure content delivery over a managed network or a public IP network, the new anti-piracy challenge today is to reduce the impact of rapidly growing illicit streaming services. These services typically enable global distribution of content that is illegally captured in a single market. Reducing the impact of these services requires pay-TV providers and content owners to pro-actively watermark content and monitor, track, and take down illegal services.

In addition to traditional content protection technologies, such as CAS and DRM, pay-TV providers engage in a mix of activities, relying on regulatory and legal frameworks, taking part in pan-industry cooperation initiatives, and using third-party anti-piracy services (See Exhibit 4).

Exhibit 4: Most pay-TV providers rely on a combination of approaches to fighting content piracy[12]



72% of pay-TV providers see the benefits of engaging in anti-piracy activity[13] and many believe that further investment in the area would lead to tangible positive results: *"There is a lag in fighting piracy in terms of technology and legal tools, but I think there is a lot of progress. There are some encouraging signs from markets like the UK, the US and Australia and we've also seen successful initiatives against piracy in Asian countries, such as Thailand"* – Mike Kerr, beIN Asia Pacific.

There is a growing number of successful pan-industry cooperation initiatives being set up to collectively address the challenges of piracy. For example, DIRECTV Latin America and other pay-TV companies as well as content providers in Latin America have banded together with NAGRA to form Alianza contra Piratería de Televisión Paga, which has made significant progress in fighting content piracy in the region.

10: Question: As a rough estimate, what proportion of all TV households in your country do you think use illegal TV services, either via signal piracy or hardware piracy? (n = 125)

11: The analysis includes the 42 major pay-TV markets (excl. China) covered in the programme and is based on survey findings and 2016 industry data provided by Nagra

12: Question: What activities is your company undertaking to fight content piracy? (n = 48)

13: Question: In your opinion, how effective are the activities that your company is currently undertaking to fight content piracy? (Proportion of respondents saying "effective" or "very effective"; n = 47)

Although progress has been made, improved and more effective collaboration and coordination between content owners and pay-TV platforms are still widely seen as a key priority to reduce the impact of piracy:

"There has been real progress lately – I particularly applaud the formation of the Alliance for Creativity and Entertainment (ACE), a big-tent consortium of content owners and distributors formed just this summer to promote legal content and fight online piracy. But even with ACE's formation, there are still too many content owners and distributors that benefit from these pan-industry initiatives without contributing to them. In that sense, there is more to be done in terms of broadening the coalition of the willing. We need all content owners and distributors to adopt the latest anti-piracy techniques, to jointly lobby for legislative and regulatory changes where necessary, and to join and fund anti-piracy initiatives like ACE" – Ron Wheeler, Twentieth Century Fox.

Many industry participants believe that there is a lot more that the pay-TV and content industry could be doing in its fight against content piracy, leveraging next generation anti-piracy technology solutions, with urgent short-term actions to be taken against illegal streaming services and devices as they become increasingly easy to access: *"We are at a turning point in the [Asia Pacific] region – and need to take stronger action against piracy to secure our future, while maintaining investment in new services and innovation."*

In the fight against content piracy, pay-TV executives stress the importance of taking a systematic approach, involving technological solutions, legal tools, enforcement, lobbying, and marketing and educational efforts: *"There is no silver bullet – it is a problem that we need to combat using a multi-faceted approach, including industry coordination, technological solutions, legal action, lobbying, and education"* – Michael Hartman, DIRECTV Latin America (AT&T).

Fighting piracy is also about providing the right experience across multiple screens to subscribers in an increasingly international and open content market. It is particularly important for both pay-TV providers and content owners to ensure that consumers have access to and are aware of legitimate services that serve their needs in terms of available content, user experience, convenience, and affordability: *"They [strategies to combat piracy at the end-user level] tend to be less enforcement related and more about educating consumers, making it difficult for them to get access to illegal content, and improving the value proposition of existing pay-TV services to make sure consumers can get the content they want the way they want at a more reasonable cost"* – Michael Hartman, DIRECTV Latin America (AT&T).

3 – THE INNOVATION IMPERATIVE

Although the developments and challenges mentioned previously vary by region and territory, most industry executives believe that innovation is becoming ever more important to the pay-TV industry in all markets, as providers look to drive future growth, remain competitive and satisfy the increasing expectations of customers and investors.

85% OF EXECUTIVES AGREE THAT "TO GROW, PAY-TV SERVICE PROVIDERS WILL HAVE TO INNOVATE STRONGLY OVER THE NEXT 5 YEARS", UP FROM 78% IN 2016.[14]

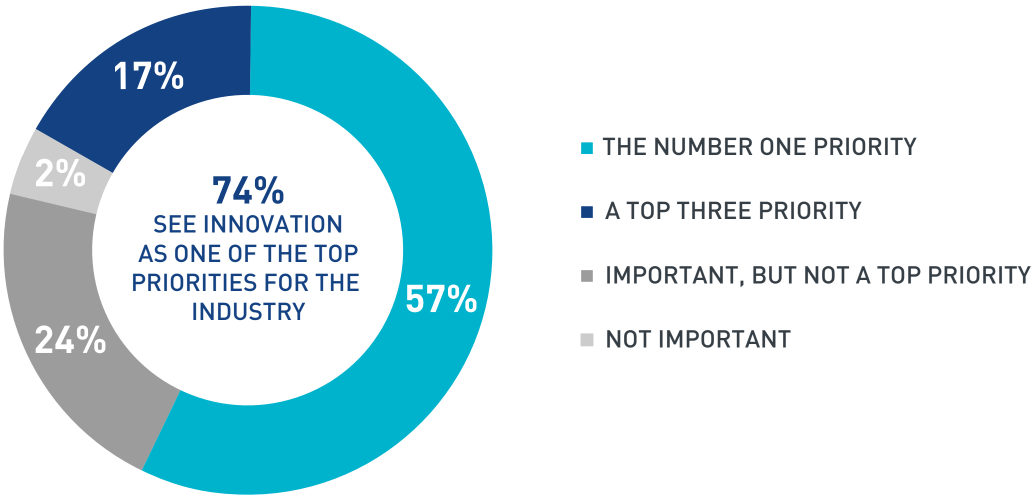
14: Question: To what extent do you agree or disagree with the following statements about innovation and the pay-TV industry? (% of respondents indicating "strongly agree" or "agree"; n = 125)

Innovation can be defined in various ways – it can encompass improvements to internal business processes, incremental extensions to existing products and services, and new business models. Although all of these are important, our focus is narrower – on the **creation of viable new customer-facing products and services that can deliver value to the pay-TV enterprise.** In this sense, innovations may be new to the market or industry, but they may also be evolutionary, based on previous advances and existing offerings. Innovation may involve invention, but successful innovation requires other elements too, such as: anticipating, testing and exploring demand, the development of viable commercial propositions, and good partnering skills.[15]

Perhaps unsurprisingly, there is a strong consensus that innovation is becoming more important and more urgent for the pay-TV industry, with **74%** of executives considering it to be one of the top three strategic priorities for the industry (See Exhibit 5). More importantly, **69%** of executives think that innovation has become more important to the pay-TV industry over the last 12 months, with an additional **26%** saying that it remained as important as it was 12 months ago.

However, perspectives on the importance of innovation somewhat vary by market and region. Service providers operating in wealthy, mature, and highly competitive pay-TV markets have significantly stronger incentives to innovate compared to those in less developed markets, where consumers have limited purchasing power, broadband and pay-TV penetration is low, and service providers face little competitive pressure. In these markets the key priority often is to acquire new customers by rolling out existing broadband and pay-TV products.

Exhibit 5: The majority of pay-TV executives see innovation as one of the top three strategic priorities[16]



There is a strong consensus that the pay-TV industry faces a more competitive future as consumers gain access to a greater choice of services, often delivered at lower prices, new entrants take advantage of falling barriers to entry, and studio broadcasters look for new routes to market. This creates a challenge for pay-TV providers to remain profitable while migrating to new technology platforms and innovative – and often lower-priced – products and services. As a result, there is an equally strong consensus across the pay-TV industry that future growth will depend on diversification as providers find new ways to monetise

15: Larry Keeley, Ten Types of Innovation (2013) and Alexander Osterwalder, Business Model Generation (2010)
16: Question: Where does innovation rank among the pay-TV industry's top strategic priorities? (n = 92)

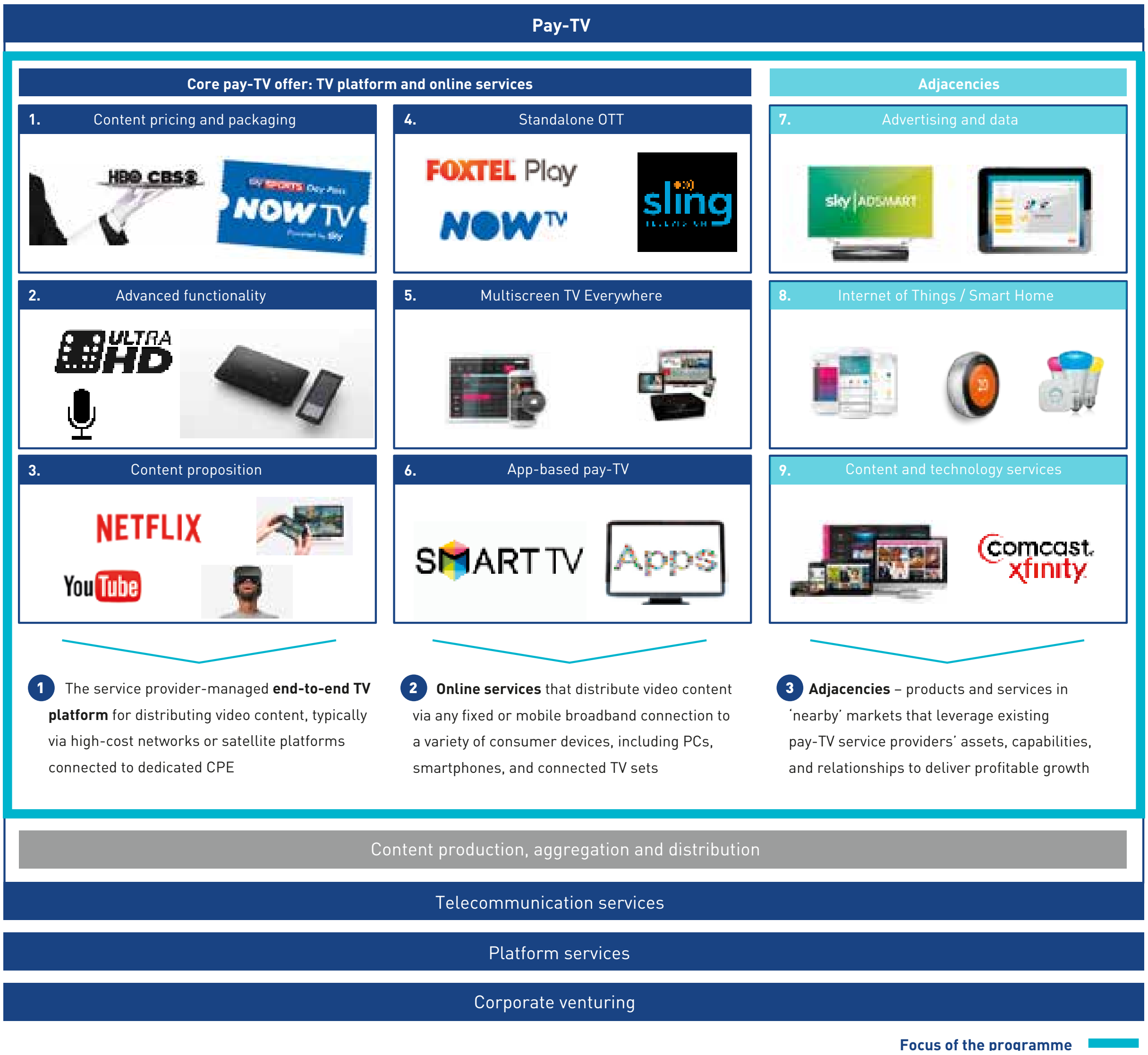
their customer bases and to generate revenue from adjacent products and services. There is a strong call to action for pay-TV providers to transform their business models and become more innovative: *"The pay-TV market is being transformed… pay-TV businesses have tended to follow rather than lead innovation… but now we're increasingly challenged from the outside by the likes of Amazon and Netflix. What we need to do is challenge ourselves internally, so that we can be in front of innovation rather than behind."*

4 – THE STATE OF PAY-TV INNOVATION TODAY

WHAT ARE THE MAIN AREAS OF INNOVATION OPPORTUNITY FOR PAY-TV PROVIDERS?

Over the years, pay-TV service providers have innovated and developed their portfolios to encompass a variety of products and services. We distinguish between three key areas of innovation[17]: the core pay-TV offer, which consists of **1) TV platform** and **2) Online TV services**, and **3) Adjacencies** (See Exhibit 6).

Exhibit 6: Pay-TV service providers innovate in the following product and service areas



17: Detailed descriptions of each of the areas are provided in the Appendix

In some cases, major pay-TV groups are also diversifying their businesses by investing in a broad range of companies (See Exhibit 7). However, this type of diversification is excluded from the detailed analysis and focuses on products and services offered by pay-TV companies directly to their customers.

Exhibit 7: Some major pay-TV groups are also investing in a range of ad tech, OTT, and content companies

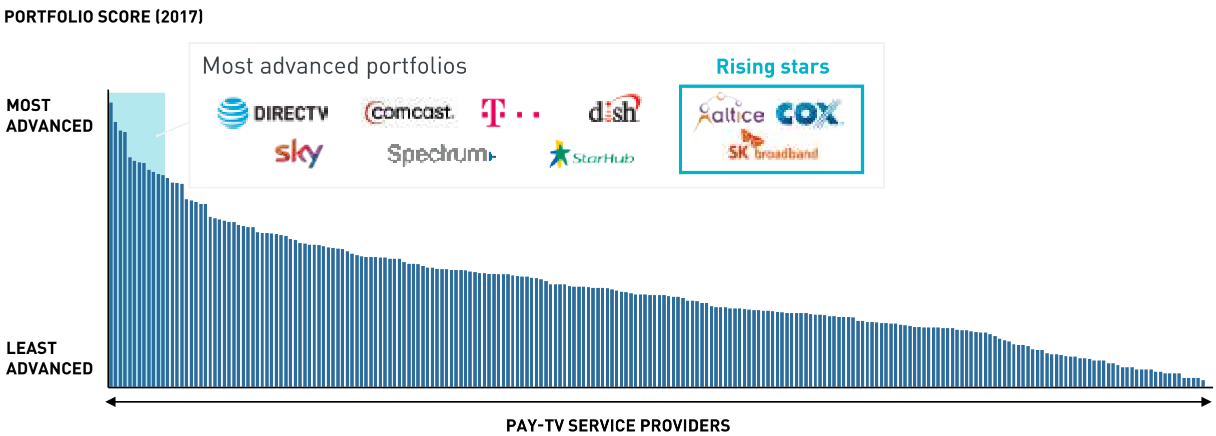
Pay-TV group	sky	MTG
Ad tech	DataXu, sharethrough	SMART AD
OTT	Roku, PLUTO.TV, molotov.tv, iflix	
Content	JAUNT, TRX, fubo TV, DRL, TV4, Whistle Sports	TRACE TV, ZOOMIN.TV, nice entertainment group, splay networks, ESL, InnoGames, Zoomin Talents, DreamHack

HOW HAVE PAY-TV PORTFOLIOS DEVELOPED OVER THE LAST YEAR?

Pay-TV service providers are at varying stages of developing and diversifying their product portfolios, ranging from **highly advanced portfolios**, mainly offered by major pay-TV operators and telcos in North America (AT&T / DIRECTV, Comcast Cable, DISH Network, Charter Communications, Cox, and Altice USA), Europe (Deutsche Telekom and Sky), and Asia Pacific (StarHub and SK Broadband); down to the **very basic service offerings**, usually offered by small-scale local pay-TV operators and, in some cases, major pay-TV operators in emerging markets, such as India. However, the fact that a service provider has deployed an advanced product or service does not necessarily mean that their entire customer base is using it. Most service providers have diverse customer bases, using a range of low-, mid- and high-end set-top boxes. For example, Liberty Global's next-generation TV subscribers accounted for 41% of their total cable video base in Q2 2017[17].

Most of the innovation leaders have maintained their leading positions in the top 10 (See Exhibit 8), but three operators – namely Altice USA, Cox, and SK Broadband – have entered the leader board by showing significant improvements in their offerings.

Exhibit 8: The most advanced portfolios tend to be offered by major pay-TV operators and telcos[18]

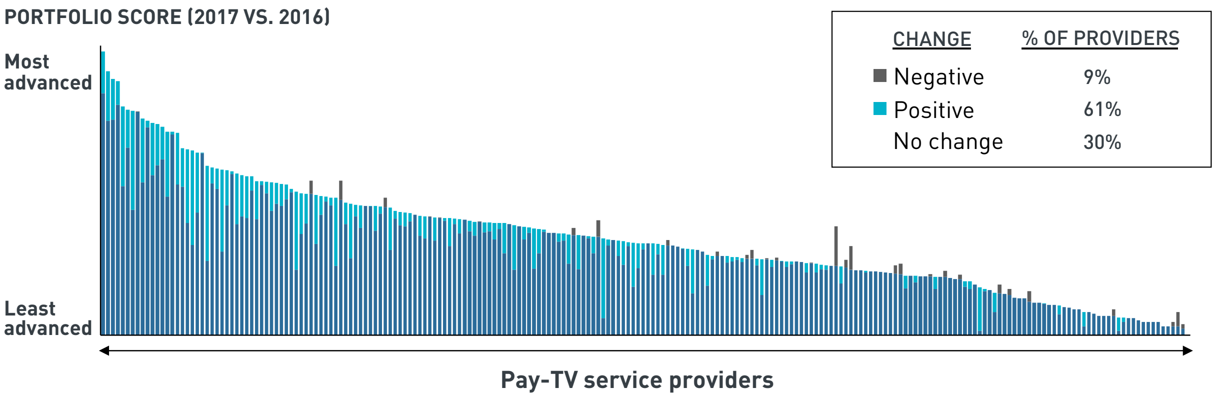


18: Liberty Global (2017); next-generation subscribers are defined as those that have one of Liberty Global's advanced set-top boxes, such as Horizon TV, Horizon-Lite, TiVo, Virgin TV V6 and Yelo TV

19: Pay-TV portfolio rankings by innovation score (n = 233); For methodology, see the Appendix

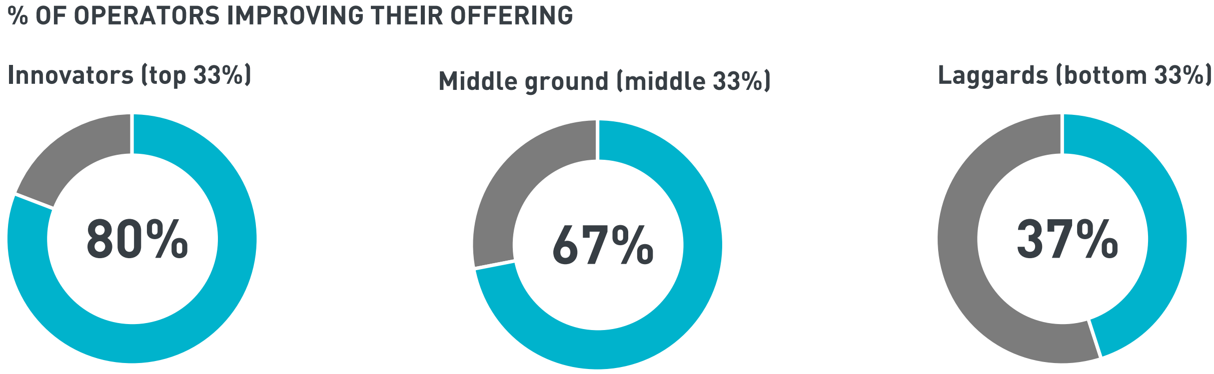
In response to market and competitive pressures, pay-TV service providers around the world are investing to strengthen and grow their product and service portfolios, with more than half (**61%**) improving their offerings in the last 12 months (See Exhibit 9).

Exhibit 9: Most pay-TV providers continue to invest in new products and services[20]



However, the propensity to innovate varies significantly by type of provider: the top third of the most innovative pay-TV providers, as measured by the innovation score, are much more likely to innovate, with **80%** of them improving their propositions over the last 12 months. In contrast, only **37%** of the bottom third have improved their propositions over the same period (See Exhibit 10), pointing to an increasing innovation gap between the lead innovators and followers.

Exhibit 10: Top innovators in 2016 were the fastest ones to improve their portfolios over the last year[21]



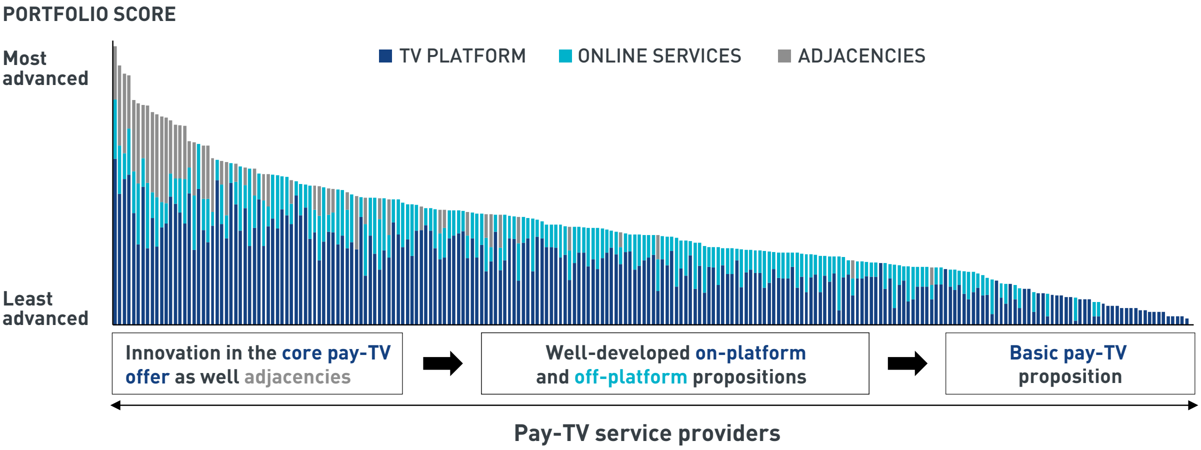
The core pay-TV proposition, including the TV platform and online TV services, remains the main focus of investment among operators globally, with **50%** and **35%**, respectively, showing improvements in these two areas over the last 12 months, while adjacency diversification remains less common, with only **13%** of operators showing improvement in this area.

20: Pay-TV portfolio rankings by innovation score (n = 220, change YoY, on a like-for-like basis)

21: Proportion of providers improving their offerings – i.e. introducing new products, features or functionalities – during the 2016/17 period (n = 220, change YoY, on a like-for-like basis)

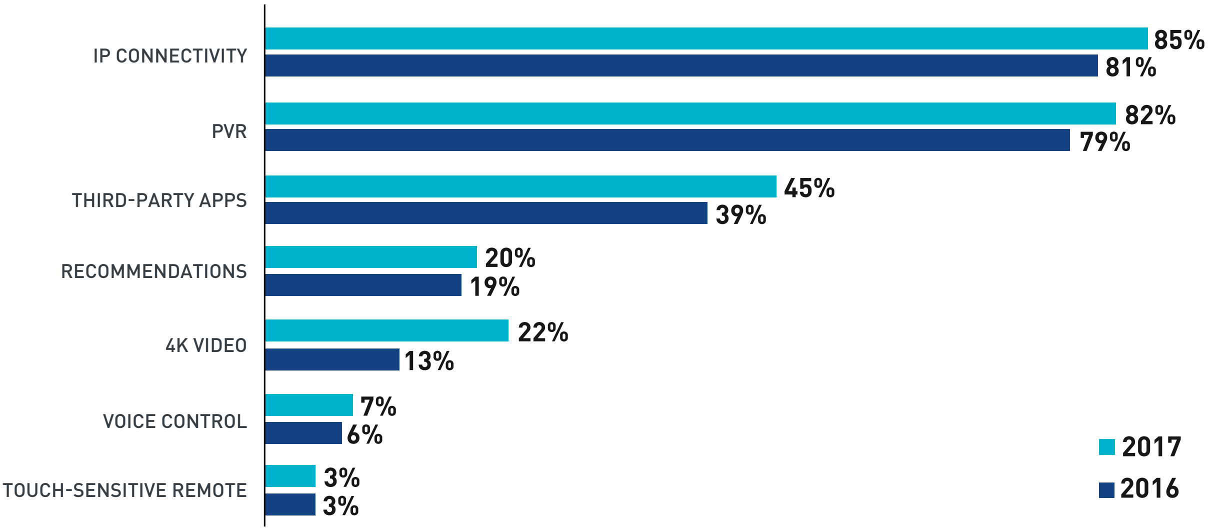
Adjacency diversification is usually limited to a small set of innovation leaders (See Exhibit 11): *"Only the innovation leaders can address these [adjacent] areas successfully... Smaller businesses will have to be smart, agile and truly innovative to gain traction."*

Exhibit 11: Adjacency diversification remains limited to innovation leaders[22]



With 24 of the 233 pay-TV providers covered in the research programme launching new set-top boxes, advanced functionality remains a key area of innovation, particularly through the introduction of 4K video, IP-connectivity, and support for third-party apps, such as Netflix or YouTube.

Exhibit 12: Proportion of service providers offering features on their top of the range STB (change 2016-17, %)[23]



22: Pay-TV portfolio rankings by innovation score (n = 233)

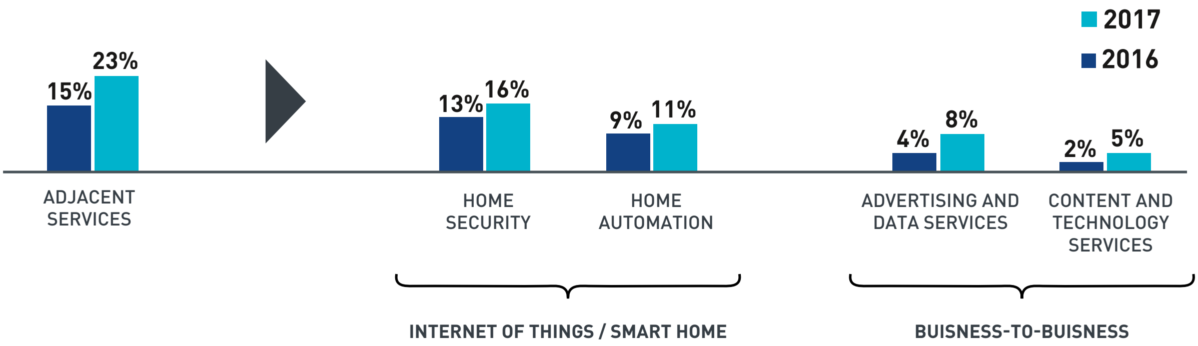
23: Base: n = 220, change YoY, on a like-for-like basis

The further roll-out of online TV services remains slow, with no step change across all three categories, namely, multiscreen TV Everywhere, standalone OTT, and app-based pay-TV services (See Exhibit 13). Major online TV service launches over the 2016-2017 include DirecTV Now in the USA, SFR Sport in France, and Studio+ in Brazil (a partnership between Vivo and Vivendi) for standalone OTT services, and Vodafone TV Online in Spain and Play+ on Apple TV in Sweden (Telia) for app-based pay-TV services.

Exhibit 13: Proportion of service providers offering online TV services (change 2016-17, %)[24]

Adjacencies, such as Smart Home solutions and business-to-business (B2B) services, continue to be offered by a limited number of providers.

Exhibit 14: Proportion of service providers offering adjacent services (change 2016-17, %)[24]



HOW DOES THE STATE OF PAY-TV INNOVATION VARY BY REGION?

Pay-TV providers in North America are notably ahead of their peers in other regions as they offer the most advanced and diversified product and service portfolios. This is due to a number of factors, including high purchasing power and consumer appetite for state-of-the-art in-home services, high pay-TV and broadband penetration, and consolidated consumer footprints (top five pay-TV providers account for more than 80% of 100m pay-TV subscribers), which support significant R&D and product development budgets.

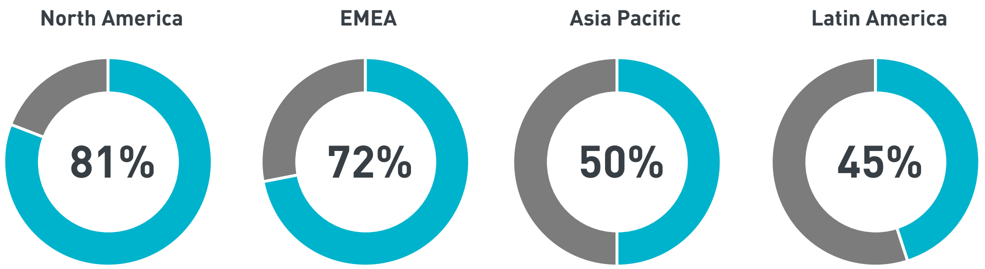
On average, pay-TV providers in EMEA and Asia Pacific are not as advanced innovators as their North American peers. However, innovation capabilities vary substantially by territory. For example, operators in Advanced Asia tend to have more advanced pay-TV portfolios compared to those in Emerging Asia; similarly, operators in Western Europe tend to be ahead of their peers in Southern and Central and Eastern Europe.

24: Base: n = 220, change YoY, on a like-for-like basis

At the lower end of the spectrum, Latin American pay-TV providers lag behind their peers in other regions due to low purchasing power and high levels of income inequality, poor fixed-broadband infrastructure, and easy access to free or illegal high-quality alternatives, such as free-to-air TV and pirated content.

Pay-TV providers in North America and EMEA, already the most innovative compared to their peers in Asia Pacific and Latin America, are also the fastest in bringing innovation to their customers, with **81%** and **72%**, respectively, upgrading their product and service portfolios over the last year (See Exhibit 15).

Exhibit 15: Pay-TV providers in North America and EMEA were more likely to introduce new features[25]



Pay-TV providers in North America continue to invest in improving the consumer experience, particularly focusing on 4K, third-party apps on set-top boxes, and standalone OTT services. They are also investing in adjacencies, particularly advertising and data services.

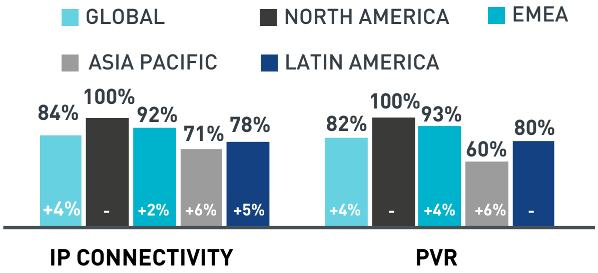
Pay-TV providers in EMEA have also invested in similar core pay-TV offer areas as their North American peers, but are slower in developing adjacencies, such as Smart Home and advanced advertising and data services, largely because of smaller customer footprints.

Providers in Latin America and Asia Pacific have focused their investment on more basic core pay-TV functionalities, such as IP-connectivity and PVR, but are also increasingly investing in standalone OTT services and adjacencies. However, focus areas within adjacencies differ across the two regions: providers in Latin America have advanced in Smart Home solutions, while providers in Asia Pacific have developed advertising and data services.

THE CORE PAY-TV OFFER

IP-connected set-top boxes and personal video recorders (PVR) are widely deployed, with nearly all major pay-TV service providers in North America and EMEA offering these functionalities on their top-of-the-range set-top boxes. Operators in Latin America and Asia Pacific are also trying to keep up, with many introducing these functionalities over the last year (See Exhibit 16).

Exhibit 16: Proportion of service providers offering features on their top of the range STB (%)[26]

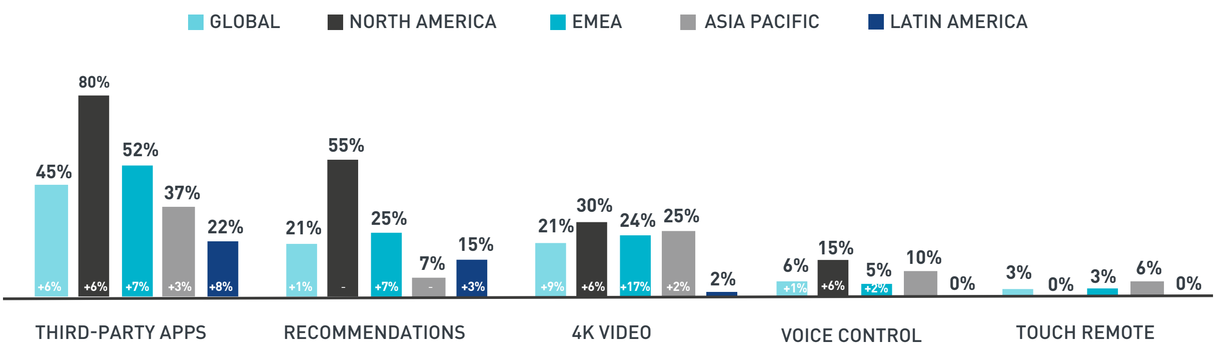


25: Proportion of providers improving their offerings – i.e. introducing new products, features or functionalities – during the 2016/17 period (n = 220, change YoY, on a like-for-like basis)

26: Base: Major pay-TV service providers in Asia Pacific, EMEA, Latin America, and North America (n = 233); YoY change on a like-for-like basis indicated at the bottom of the bars

The availability of more advanced features – such as 4K video, voice control and search, content recommendations and touch-sensitive remotes – remains limited. However, these features are more common among advanced service providers in North America, EMEA and Asia Pacific (See Exhibit 17). Pay-TV providers in EMEA, in particular, have been active in 4K video functionality, with **17%** introducing it over the last year.

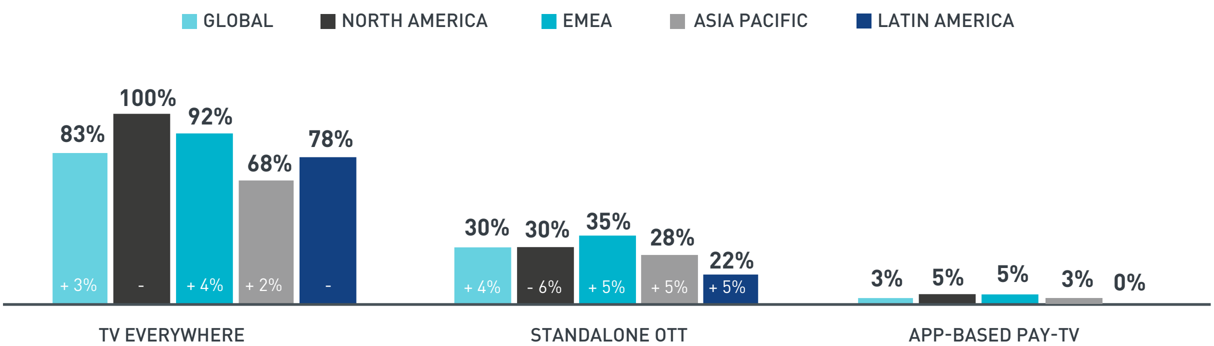
Exhibit 17: Proportion of service providers offering features on their top of the range STB (%)[27]



Third-party applications on set-top boxes are relatively widespread and growing, offered by **45%** of pay-TV service providers globally, up from **39%** last year. Third-party applications are increasingly common in North America and EMEA, offered by **80%** (up from **74%**) and **52%** (up from **45%)** of service providers, respectively. They are also getting traction in Latin America, where 8% of providers have introduced some third-party application on their set-top boxes over the last year.

Among the online TV services offered by pay-TV providers, multiscreen TV Everywhere services remain the most widely deployed, with **83%** of providers offering them to their customers (See Exhibit 18). However, there were very few new launches over the last year, with EMEA being an exception, where **4%** of providers launched TV Everywhere services (e.g. TeleColumbus launching its new multiscreen advanceTV service).

Exhibit 18: Proportion of service providers offering online TV services (%)[27]



27: Base: Major pay-TV service providers in Asia Pacific, EMEA, Latin America, and North America (n = 233); YoY change on a like-for-like basis indicated at the bottom of the bars

Pay-TV providers in EMEA, Asia Pacific, and Latin America have been active in introducing standalone OTT services, with **5%** of providers in these three regions launching a new service over the last year. These services are primarily aimed at fending off competition from standalone OTT content aggregators, but can also tap into new customer segments both within and outside of pay-TV provider footprints.

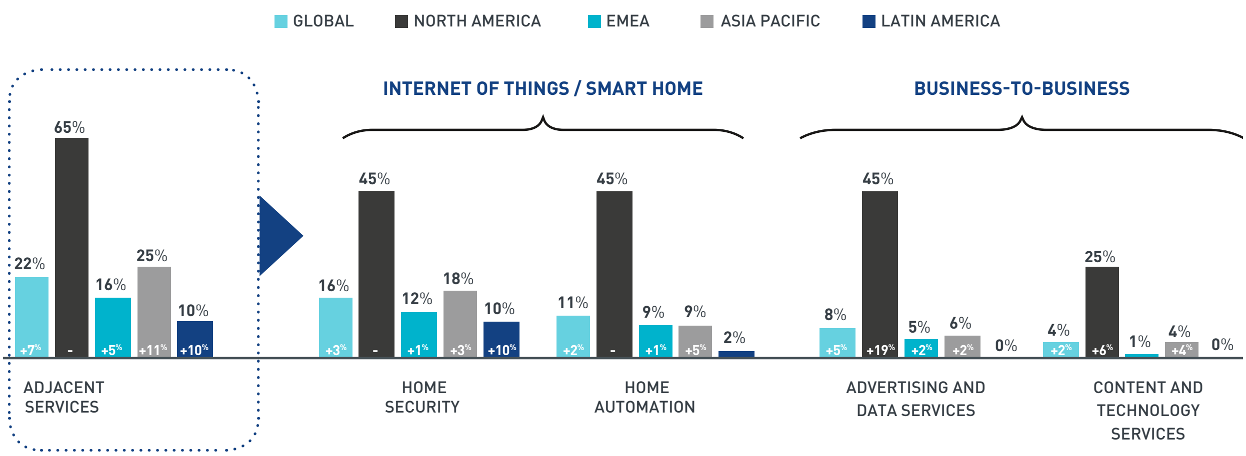
The download-to-watch functionality, which allows consumers to watch content while they are not connected to the Internet, is growing in importance, with **12%** and **7%** of pay-TV providers across the globe offering it on their TV Everywhere and standalone OTT services, respectively.

App-based pay-TV services are much less common than TV Everywhere and standalone OTT services, with only a few providers in North America, Europe, and Asia Pacific (e.g. Charter Communications, Bell, Vodafone, and Softbank) offering them to their customers. Many pay-TV executives have remained sceptical about the app-based model for a variety of reasons, including significant investment requirements, technical challenges involved and potential loss of revenue as customers might be expecting to pay less for such solutions because they do not have a clear hardware cost attached to them.

ADJACENCIES

Pay-TV providers in North America remain the most advanced ones in adjacencies, both in terms of Smart Home solutions and business-to-business services (See Exhibit 19). They have also been the fastest ones to introduce business-to-business services over the last year, particularly in advertising, with Altice USA, Rogers, and Bell introducing advanced advertising solutions. Providers in Latin America and Asia Pacific have also been active in developing adjacencies, with **10%** of providers in both regions introducing new services, focusing on Smart Home and B2B services, respectively.

Exhibit 19: Proportion of service providers offering adjacent services (%)[27]



Pay-TV providers in EMEA have been slower in introducing new adjacent services compared to providers in other regions, with only a few launches over the last year, including Sky launching its advanced advertising offer Sky Ad Smart in Ireland and Italy and Cyfrowy Polsat extending its SmartDOM offering to include home security and monitoring solutions.

WHAT ARE THE KEY ENABLERS OF PAY-TV INNOVATION?

The key factors underpinning the most diverse and advanced pay-TV portfolios are well-established and include both internal capabilities and external economic factors.

In general, the most innovative pay-TV providers tend to be major enterprises with large subscriber bases or customer footprints, access to funding, and substantial technology resources. Providers that are offering a portfolio of multi-play services, including broadband and telephony, alongside pay-TV, have more scope for innovation in pricing and packaging of bundles. Similarly, providers deploying flexible technology platforms can develop new products more quickly than those relying on legacy hardware and software.

External factors appear equally important in providing the right incentives to innovate – market characteristics such as consumer wealth and purchasing power, broadband penetration and quality, the regulatory environment, levels of pay-TV penetration and the competitive environment. Pay-TV service providers that are operating in highly populous, high-income markets tend to have the largest addressable opportunities, while those operating in competitive markets have the strongest incentives to innovate as their survival depends on it.

It is important to note that the same technological advancements that have benefited the new wave of OTT disruptors are also increasingly benefiting pay-TV providers. Broadband delivery is creating opportunities for pay-TV providers to deliver new products and services to wider audiences, going beyond the constraints of their existing networks, while advanced IP platforms and cloud solutions are creating a wide range of innovation opportunities, making it easier to test and launch new services and functionalities quickly. As the pay-TV industry becomes more IP-centric, it is expected to see a new wave of innovation.

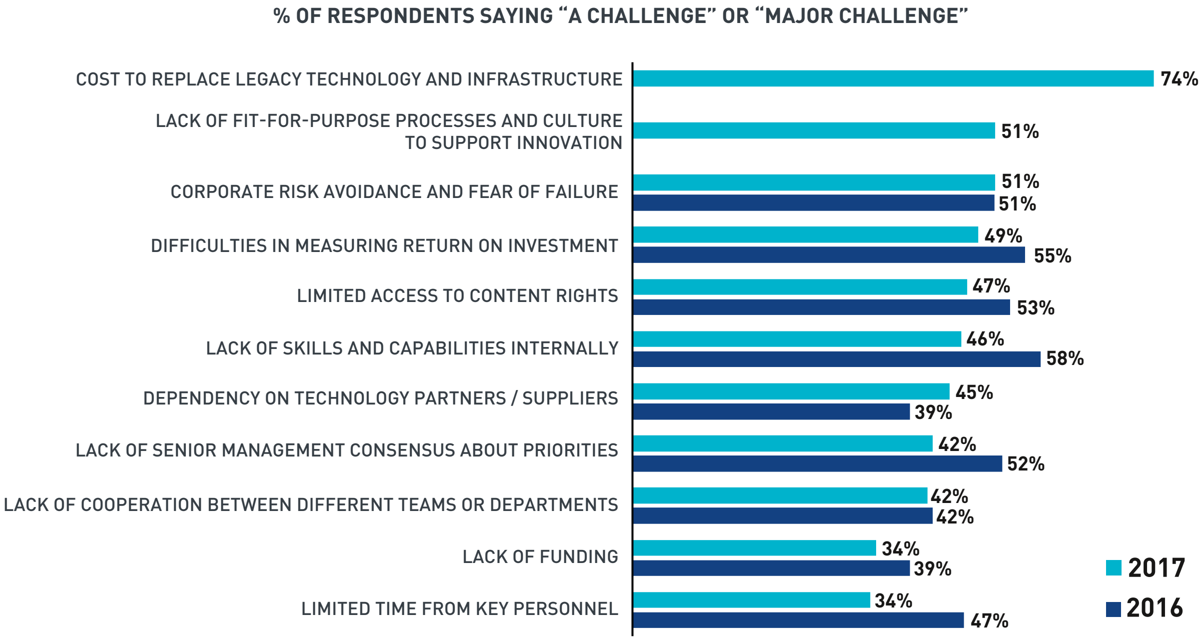
WHAT MAKES INNOVATION DIFFICULT?

Despite innovation being at the top of agenda of many pay-TV executives globally, it remains a complex, time- and resource-consuming undertaking that many businesses struggle to deliver. Pay-TV providers rarely feature in global innovation rankings, which are dominated by international technology and manufacturing companies, such as Apple, Google, Tesla and Microsoft. Some studies do reference Orange, BT Group, and NTT DoCoMo, but these are mainly telco businesses, in which pay-TV is only a small part of their overall portfolio[28]. This might be explained by the fact that most studies are international in their focus and, as such, tend to favour large international companies and well-known brands, whereas most pay-TV providers are often restricted to only a few territories, limiting their visibility.

Nonetheless, many pay-TV providers do face significant innovation challenges. Industry executives highlight a number of challenges, with legacy technology and infrastructure, lack of fit-for-purpose processes and culture, and corporate risk avoidance seen as the most common ones (See exhibit 20).

28: BCG, Most Innovative Companies 2016 (2017)

Exhibit 20: Executives highlight the following key innovation challenges across the pay-TV industry[29]



Many pay-TV executives understand the need for a technological transformation of their businesses but face significant commercial challenges. The majority of pay-TV executives (**74%**) feel held back by the significant cost of replacing legacy technology and infrastructure, which are typically associated with large capital expenses that need to be amortised over multiple years: ***"It has taken us a lot of time, money and multiple stages to build, upgrade, and maintain our network and consumer devices. As in the past, taking the next step, which is rolling out next-generation devices, would require a lot of time and investment."***

Similarly, around half of industry executives (**51%**) believe that pay-TV providers struggle with innovation because they do not have the right processes and culture in place to support innovation and suffer from corporate risk avoidance. Many industry executives admit that pay-TV businesses could benefit from improved speed and agility and more experimentation, which would help them to reduce development costs and time-to-market, and to respond quickly to changing consumer demand:

> ***"By far the biggest challenge is organisational change. Pay-TV businesses need to learn how to do things in a different way, become more agile and foster a 'test and learn' culture. Obviously change is difficult without the right market incentives, but the television industry has had digital challengers for some time now and is on notice"*** – Oliver Hansard, Liberty Global.

Although many innovation challenges remain, pay-TV executive sentiment points towards a number of positive and encouraging trends this year. Significantly fewer industry executives report challenges related to time from key personnel (**34%**, down from **47%** last year), getting senior management consensus about priorities (**42%**, down from **52%** last year), and the availability of skills and capabilities internally (**46%**, down from **58%** last year).

29: Question: What do you see as the most important innovation challenges facing the pay-TV industry in your country? (% of respondents indicating 4 = somewhat a challenge or 5 = major challenge; n in 2017 = 125; n in 2016 = 92; two of the questions were only asked in 2017)

With the importance of innovation growing, more pay-TV businesses are establishing executive roles that are purely dedicated to innovation or at least have it as one of their priorities, developing in-house innovation programmes, and hiring or training new R&D and technology talent, for example:

+ StarHub (Singapore) has opened Hubtricity, a new centre for innovation, to work closely with its partners and start-ups to develop innovative products and services in areas such as smart home, Virtual Reality, and intelligent vehicles[31].
+ Comcast (USA) has launched a start-up accelerator, LIFT labs for Entrepreneurs, aimed at fostering and investing in media, entertainment, and connectivity start-ups[31].
+ Sky (UK) is hiring 300 new technology staff to strengthen its in-house capabilities and develop next-generation products and services[32].
+ Altice Group opening Altice Labs, an in-house R&D and innovation centre, in a number of locations around the world to develop solutions in areas such as online TV services, Smart Home, and advanced advertising[33].
+ Astro (Malaysia) has launched an in-house innovator programme, The Certified Innovator Programme, which aims at developing internal capabilities across all levels of the organisation[34].

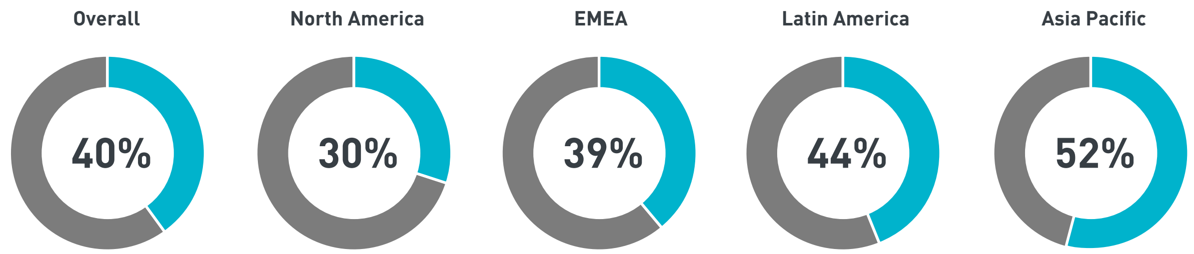
5 – LOOKING AHEAD

FUTURE AREAS OF OPPORTUNITY

Pay-TV executives remain convinced that there is considerable scope for innovation in pay-TV products and services to help drive the next stage of industry growth. However, there is a strong consensus that the pay-TV market is maturing in most territories and future growth will require new and innovative approaches. Fewer than half of pay-TV executives globally (**40%**) think that there are a lot of commercially attractive opportunities open for pay-TV providers in their countries, with those in Asia Pacific and Latin American being the most optimistic (See Exhibit 21).

Nonetheless, **90%** of executives agree that "to grow, pay-TV service providers will have to develop new products and services to sit alongside the core pay-TV and over-the-top propositions." [35]

Exhibit 21: Proportion of survey respondents agreeing that "there are a lot of commercially attractive opportunities open to pay-TV service providers in their country"[35]



30: Marketing Interactive, StarHub launches new innovation centre named Hubtricity (2017)
31: Forbes, Comcast's Next Step Toward Innovation (2017)
32: The Times, Sky to invest in tech and programmes to fend off rivals (2017)
33: Multichannel News, Altice Group Launches R&D Lab in Portugal (2016)
34: Astro, Building a sustainable culture of innovation (2017)
35: Question: To what extent do you agree or disagree with the following statements about innovation and the pay-TV industry? (% of respondents indicating "strongly agree" or "agree"; n = 125)

So, which are the most commercially attractive and strategically important areas of opportunity for the pay-TV industry over the next five years?

Although investment priorities vary significantly by market and service provider type, the majority of executives agree that the most c ommercially attractive opportunities relate to strengthening and differentiating their core pay-TV and online TV propositions –in terms of both the product offering and commercial model (See Exhibit 22):

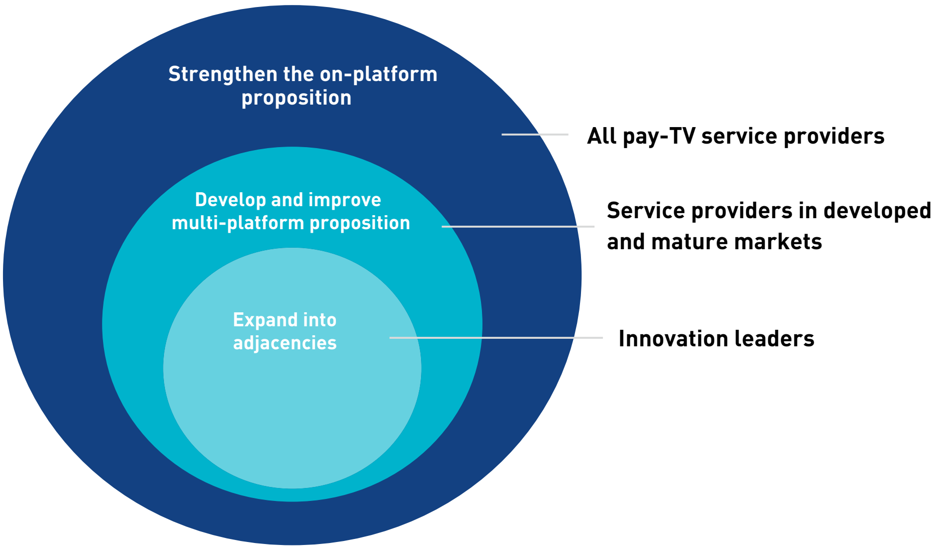
+ **Product innovation:** service providers see a growing focus on delivering connected, interactive, and seamless pay-TV experiences across multiple devices by deploying next-generation technology platforms and user interfaces (item 2), new content offerings (item 3), and online TV services that encompass standalone OTT (item 4), multiscreen TV Everywhere (item 5), and increasingly app-based pay-TV services (item 6).
+ **Commercial innovation:** service providers are focusing on new ways to price and package their content (item 1), taking a more segmented view of their customers, introducing more flexibility, and establishing innovative partnerships with content providers.

Exhibit 22: Pay-TV executives see strengthening the core pay-TV offer – with growing focus on online TV services – as the most attractive area of opportunity[36]

36: Question: Thinking about new products and services, what do you see as the most commercially attractive opportunities for pay-TV service providers in your country? (%?(% of respondents indicating 4 = attractive and 5 = highly attractive, n = 125)

The majority of pay-TV providers globally are expected to invest in strengthening their core pay-TV on-platform proposition, while those in more developed and mature markets also expect to develop strong and differentiated multi-platform offerings, with some also expanding into adjacencies. Pay-TV executives are more cautious about the opportunities to expand significantly into adjacencies. Innovation in this category is expected to be driven by the innovation leaders – namely, major telcos and large-scale pay-TV service providers. On the other hand, most pay-TV providers in emerging markets with lower broadband and pay-TV penetration tend to focus on developing products and services to drive take-up and attract new customers (See Exhibit 23).

Exhibit 23: Investment priorities by service provider characteristics



These differences in investment priorities are also, to a certain degree, reflected in the top-level regional trends:

+ Pay-TV executives in North America identify the need to deliver seamless, multi-platform TV Everywhere services as a key requirement for retaining subscribers, and see low-priced standalone OTT offerings, skinny bundles and new thematic services, as crucial for attracting new subscribers. In addition, advanced advertising is seen as an important priority for the major providers – leveraging the power of their platforms to deliver addressable advertising and data-driven targeting.

+ Pay-TV executives in EMEA expect future growth to be driven by consumers taking up new and innovative products and services, such as skinny bundles, personalised packages, and seamless multiscreen experiences, rather than increasing take up or prices of traditional pay-TV packages and services. Similar to their North American peers, providers in EMEA see three key priorities for the industry to drive future growth: investing in next-generation content aggregation and discovery across multiple services and devices, building seamless multiscreen TV Everywhere services, and developing advanced advertising offerings.

- Pay-TV executives in Asia Pacific are also looking to develop more consumer-focused and diversified product portfolios. By embracing new business models, operators can develop new packages and offerings that appeal to changing consumer tastes at a wider range of price points, including skinny bundles, personalised offerings, seamless multiscreen TV Everywhere services and Smart Home solutions. Providers in Advanced Asia are also excited about potential opportunities for growth through new business-to-business services, including harnessing data and new analytics tools to offer enriched data services and support targeted advertising.

- Pay-TV executives in Latin America remain focused on strengthening their core pay-TV propositions to deliver more interactive and seamless experiences across multiple devices. They are investing in next-generation set-top boxes, multiscreen TV Everywhere solutions and in certain cases, standalone OTT services, while at the same time finding ways to address the large base of low-income consumers. A few pan-regional players are also excited about the opportunities in adjacencies, particularly Smart Home and advanced advertising.

As noted above, industry executives' views on the relative commercial attractiveness and strategic importance of opportunity areas differ by region. In forming these views, executives took into account a range of factors, including the scale of potential opportunities, the business case and operational challenges. As such, the cross-regional comparisons described in detail in the following section compare the relative perceived attractiveness of these opportunities, not the relative or absolute scale of opportunities.

THE CORE PAY-TV OFFER

Pay-TV executives expect that the major opportunities in the core pay-TV offer – a key area of focus – will relate to seamless pay-TV experiences across multiple devices and screens; new ways of pricing and packaging content by moving away from big bundles to skinny and personalised bundles; and new types of content offering, particularly focusing on content aggregation and providing customers with the widest choice of content possible in pricing and packaging of content, and delivering better user experience and more value to customers through advanced functionality and features. In parallel, industry participants are increasingly optimistic about opportunities in standalone OTT and app-based pay-TV services, particularly in Latin America and Asia Pacific, where these types of services might be a reasonable alternative to traditional CPE-based pay-TV services.

As competition intensifies and alternatives proliferate, pay-TV executives believe that it is more important than ever to strengthen their commitment to their customers, working hard to establish and maintain a satisfied, loyal base of subscribers: ***"We're working hard to cultivate super fans of our entertainment experience. We need to invest in the relationship we already have with our customers, and ensure we do everything to improve the stickiness of our services."***

Exhibit 24: Opportunities in the core pay-TV offer - pricing, functionality, and content[37]

	NORTH AMERICA	EMEA	ASIA PACIFIC	LATIN AMERICA
1. Content pricing and packaging	80%	81%	74%	67%
2. Advanced functionality	43%	51%	63%	67%
3. Content proposition	60%	78%	81%	67%

KEY: COMMERCIAL ATTRACTIVENESS

LOW — HIGH

CONTENT PRICING AND PACKAGING

Industry executives think that content pricing and packaging innovation offers the most significant business opportunity for pay-TV businesses across the core-pay TV offer and adjacencies, with **78%** saying it is a commercially attractive area, up from **72%** last year. Most industry participants expect the gradual shift from traditional big bundles sold with long-term contracts to flexible skinny and personalised bundles to continue across all regions, while some are calling for a more rapid change in the light of growing competition from low-cost services and, in some territories, illegal content providers:

+ *"The pay-TV industry needs to move away from the traditional model of packaging and pricing content as it does not work when we're competing with either illegal, free or low-cost services. We need to become much more innovative and flexible."*

+ *"One of the key changes in the industry is that we need to go from being Prada to being Walmart – from selling one big and expensive product to selling a large number of smaller products."*

Some industry participants expect that in the long-term traditional pay-TV bundles will be replaced by personalised and highly flexible content bundles:

> ***"There is a growing fragmentation of content, and people are turning away from subscribing to a large number of individual channels and/or services. In the long-term, the one-size-fits-all bundles will disappear and we'll see a transition to personalised content offers. These offers will combine both the content that consumers subscribe to at that moment and the content that they could get from the aggregator for an extra fee. Aggregators will have to accommodate the 'dip in and out' behaviour – for example, consumers subscribing to an SVOD service to watch a single season of a new TV show and then dropping the subscription – and to ensure that customers pay the right price"*** – Laurent Perchais, Orange.

37: Question: Thinking about new products and services, what do you see as the most commercially attractive opportunities for pay-TV service providers in your country?(% of respondents indicating 4 = attractive and 5 = highly attractive, n = 125)

However, most industry participants do not expect traditional pay-TV bundles to go away anytime soon. Instead, they are expected to co-exist with innovative new approaches to pricing and packaging content – some subscribers in certain households still want and value large channel bundles: *"There will be customers that will happily continue taking on classic long-term pay-TV subscriptions. On the other hand, there will be a lot of complementary services that will be more flexible, charging customers per event or on a weekly or monthly basis. Pay-TV operators will have many more options to create new products and services, but justifying long-term contracts will be more and more difficult."*

Innovative content packages, such as skinny and mobile-first bundles optimised for smartphones, will be very important for pay-TV operators to attract younger consumers, who are typically less likely to subscribe to traditional pay-TV services: *"We will have to develop and market a different set of products and services targeted at the younger generations in order for them to become our customers."*

Pay-TV executives in Latin America and Asia Pacific also see an opportunity to develop low-cost content services and innovative payment solutions to address a large population of low-income consumers, who currently cannot afford or do not have the means of paying for a pay-TV service: *"Content providers will have to become significantly more innovative in terms of payment methods. For example, if I go and open a bank account at a local bank I could also be given the opportunity to subscribe to a pay-TV or SVOD package and have the payment deducted monthly. Similarly, it could be done with mobile subscriptions or even pre-paid mobile services. That would make video services much more accessible by eliminating the payment friction"* – Shad Hashmi, BBC Worldwide.

ADVANCED FUNCTIONALITY

53% of industry executives see the development of advanced functionality as a commercially attractive area for pay-TV businesses (up from **45%** last year), particularly in Latin America and Asia Pacific where both basic and advanced types of set-top box functionality are less widely deployed.

Pay-TV providers in North America and EMEA are expected to continue deploying next-generation IP-based set-top boxes that support advanced functionalities, such as third-party applications, voice control and search, and 4K video quality. However, their primary focus is expected to be on developing a personalised and easy-to-use user interface that brings together all the customer's content and delivering a great content discovery experience, using prediction and recommendation techniques that customers find convenient and acceptable: *"As the volume of content available to customers continues to grow, content discovery becomes critical. Pay-TV providers need to reinvent their role as trusted curators, using sophisticated recommendation and prediction engines to power their user experience."*

> ***"Today, the ability to integrate rich broadcast TV and on-demand experiences into an easy-to-use user interface, such as the backward EPG functionality offered by Freesat in the UK, gives pay-TV service providers a significant competitive advantage"*** – Alexander Sacher, HD Plus.

Interestingly, some pay-TV executives argue that innovations in functionality, at least among the most innovative providers in North America, EMEA, and Asia Pacific, will soon be predominantly software-based, as operators move away from developing new set-top boxes: *"Next-generation set-top boxes that some operators have launched over the last year might become the last set-top box they are ever going to launch, because there might not be much that is going to be worth investing in."*

On the other hand, pay-TV operators in some Latin American and Asia Pacific countries, where IP-connected and PVR-enabled set-top boxes are less widely deployed than in other regions, are expected to primarily focus on rolling out these more basic functionalities before shifting their focus to more advanced functionalities. However, some industry participants have argued that due to the rapid pace of technological development, some providers might be able to leapfrog and roll out next-generation set-top boxes, which support advanced functionality. This has recently been done by Airtel India, which has launched "India's first hybrid DTH set-top box", which has a recording function, supports third-party apps, such as Netflix and Google Play, and comes with 4K and voice search.[38]

CONTENT PROPOSITION

74% of industry executives see new types of content offering as a commercially attractive area of opportunity. It is top of mind for many pay-TV providers as it is expected to help them grow their businesses, particularly in Asia Pacific and EMEA, where **81%** and **78%**, respectively, regard it as a commercially attractive area of opportunity: *"Future growth will not come from traditional pay-TV services, it will be affordable and convenient OTT video services as well as other services that we can add to our portfolio."*

While some major pay-TV providers remain heavily focused on being exclusive providers of certain types of content and are not willing to on-board third-party OTT content onto their platforms, a growing number of them, particularly among telcos, are embracing next-generation content aggregation. They are looking to aggregate as much high-quality content as possible, including but not limited to linear TV, on-demand, transactional, short-form, and third-party OTT services:

+ *"Our vision, and conviction, is to be a content aggregator. We want to be the right partner for content providers, promoting and selling their content to consumers and delivering a great user and customer experience. The alternative model of vertical integration is much more risky, often requiring a huge investment in content assets and delivering low returns... I'm confident that content aggregation is the better model. However, many companies today, not only telcos, are pursuing this model and trying to become the aggregator of choice"* – Laurent Perchais, Orange.

+ *"While traditional pay-TV services tend to be walled gardens, our philosophy is to aggregate as much content as possible, both linear and on-demand, providing our customers with choice. Rather than fighting OTT, we have successfully embraced it."*

Operators that follow the path of content aggregation recognise the growing importance of establishing strong relationships with a wide range of content partners: *"To succeed, pay-TV providers will have to deliver an integrated and seamless user experience across a variety of consumer devices, combined with a rich content offering that encompasses traditional linear TV, on-demand content and YouTube-style short-form video clips.*

38: Airtel, Airtel launches 'Internet TV' for Digital Homes (2017)

However, pay-TV operators will not be able to deliver this on their own and will have to embrace close partnerships with content providers" – Alexander Sacher, HD Plus.

"We've seen a wave of major OTT aggregators such as Netflix entering the Swiss market, with others expected to launch as well, and a number of smaller OTT providers already providing access to linear TV. In addition, we position ourselves as an aggregator. We have on-boarded Netflix onto our platform and are looking for additional content that would enrich our offering" – Ingmar Schmidt, Swisscom.

Telcos and cable companies providing fixed-broadband services are widely believed to be in an advantageous position to become the go-to next-generation content aggregators, but digital giants, particularly Amazon, are also seen as strong potential contenders in certain territories:

+ *"Telcos, in particular, are in a very advantageous position, as they have been able to roll out their services to many more consumers. They offer integrated access, have direct relationships with the widest consumer base and they have strong financials and marketing platforms they can leverage"* – Mike Kerr, beIN Asia Pacific.

+ *"Vertically integrated pay-TV providers, such as Sky, are not willing to distribute SVOD services, such as Netflix because they want to defend their incumbent content businesses. On the other hand, SVOD providers like Netflix do not want to aggregate linear TV channels due to high cost, among other reasons, and are limiting themselves to content available directly on their platforms. Telcos, however, do not have existing content businesses that they need to protect and have the technological agility to distribute linear TV channels over their platforms at a reasonable cost. As a result, telcos are well positioned to bring the two worlds of traditional broadcast TV and OTT together"* – Laurent Perchais, Orange.

Pay-TV providers are also keen to explore opportunities in innovative types of content offering that would appeal to younger audiences, including esports, gaming, and Virtual Reality, hoping that these would help attract them to subscribe to their services: *"Most content innovation is happening on the Internet. Esports and short-form videos were born on the Internet and VR and 360-degree videos are primarily consumed on YouTube. As an aggregator, we're trying to bring these innovations to the big screen. VR, in particular, is a major focus area for Orange"* – Laurent Perchais, Orange.

"From a sports perspective, VR is a very interesting concept. Sports is perfectly suited, and created for VR, as sports fans are naturally predisposed to immersive and engaging experiences – anything that brings them closer to the live action. It's a game changer in content production that could gain mass popularity very quickly"
– Mike Kerr, beIN Asia Pacific.

Virtual Reality is a particularly hot topic among pay-TV executives and has made its way onto the product roadmaps of many pay-TV businesses, with **39%** of pay-TV service providers surveyed planning to launch a Virtual Reality and/or 360-degree video content proposition over the next five years.

64% of industry executives see standalone OTT services as a commercially attractive area for pay-TV businesses, up from **53%** last year. This change in perceptions might appear surprising because a year ago many pay-TV executives argued that business cases of standalone OTT services are challenging and the video market has become more crowded and more competitive over the last year. However, growth in broadband penetration and quality, increasing OTT and on-demand consumption, wider availability of consumer devices, such as Smart TVs, digital media players, and smartphones, and decreasing operational costs are pointing towards improved economics of standalone OTT services and making pay-TV providers reconsider their options: *"Growing one's customer base and making own content available to new audiences by going OTT is also a valuable option, even when executed only with a limited content portfolio. However, there cannot be any compromises when it comes to the quality of service"* – **Ingmar Schmidt, Swisscom.** As a result, 23% of pay-TV service providers surveyed are planning to launch a standalone OTT service over the next five years.[39]

Exhibit 25: Opportunities in the core pay-TV offer - online TV services[40]

	NORTH AMERICA	EMEA	ASIA PACIFIC	LATIN AMERICA
4. Standalone OTT (FOXTEL Play, NOW TV, sling)	63%	64%	59%	78%
5. Multiscreen TV Everywhere	57%	68%	70%	89%
6. App-based pay-TV (SMART TV, Apps)	50%	54%	78%	89%

KEY: COMMERCIAL ATTRACTIVENESS

LOW — HIGH

Pay-TV providers have a large pool of relevant assets, skills, and experience to develop and run standalone OTT services, which are seen as a particularly attractive area of opportunity in some less-developed markets in Latin America and Asia Pacific, where consumers might not be willing or able to take on a traditional pay-TV services due to high costs or lack of delivery infrastructure: *"They [pay-TV providers] will have to take advantage of new technologies, to reach a broader consumer base beyond their current infrastructure. We work closely with our pay-TV distribution partners, encouraging and helping them to develop their propositions. Even when it comes to very traditional satellite pay-TV operators, we want to see them taking their aggregation, curation and distribution experience, local market knowledge, and customer relationships, and applying them in digital, so that they can reach a much larger audience"* – Mike Kerr, beIN Asia Pacific.

39: Question: Does your company currently provide the following services? (n = 57)

40: Question: Thinking about new products and services, what do you see as the most commercially attractive opportunities for pay-TV service providers in your country?(% of respondents indicating 4 = attractive and 5 = highly attractive, n = 125)

Some major pay-TV providers also see standalone OTT services as a great way to address customers outside of their home markets, with Sky announcing plans to launch "a simple and affordable" OTT service in Spain[41] and Telefonica planning to launch an OTT service outside of Spain[42].

Nonetheless, developing competitive OTT offerings in this space will remain challenging given the large and growing presence of digital giants, such as Netflix and Amazon, which account for the majority of SVOD subscribers globally:

"The ability to offer OTT services as part of the product and services portfolio has become vital for pay-TV providers globally. Today, most traditional pay-TV providers have all the assets, skills, and capabilities required to provide OTT streaming services. However, the key question they have to answer is whether they will be able to compete against the major global Internet players like Amazon, Google/YouTube, Apple, and Netflix in their region or territory. Unfortunately, this is an area over which traditional pay-TV providers can have little influence" – Alexander Sacher, HD Plus.

TV EVERYWHERE

Multiscreen TV Everywhere services remain one of the three most commercially attractive areas of opportunity, with **67%** of industry executives globally seeing them as commercially attractive, down from **76%** last year. They are considered particularly attractive in Latin America and Asia Pacific, where a relatively large proportion of major pay-TV providers (**22%** and **32%**, respectively) have not yet rolled out a TV Everywhere service. There is a strong consensus that multiscreen TV Everywhere is an integral element of next-generation TV experiences. Its slightly diminished attractiveness this year can be explained by a growing number of pay-TV providers, particularly in North America and EMEA, rolling out seamless multiscreen pay-TV propositions and shifting their focus to other areas:

"We've introduced full device convergence – ensuring that all content is available on all devices ... Our focus now is the content proposition: How can we deliver current and new content that improves the overall perceived value of our offering?" – Ingmar Schmidt, Swisscom.

Nonetheless, there is significant scope for both new launches of TV Everywhere services and improvements to existing services to ensure they provide an integrated and seamless pay-TV experience in terms of functionality, user interface, and available content. Seamless TV Everywhere services are seen as the primary means for pay-TV providers to successfully compete against OTT services. The development next-generation TV Everywhere services can also benefit content providers as these services can support pay-TV platform growth, deliver improved returns on multiscreen rights and help to reduce platform fragmentation.

"The pay-TV market is developing rapidly and becoming increasingly more diverse. Growing competition and changing consumer demand mean that both established and new pay-TV providers need to find ways to optimise their content offering... and ensure that they can deliver a high quality user experience across multiple consumer devices and apps" – Alexander Sacher, HD Plus.

41: Variety, Sky to Launch 'Simple and Affordable' OTT Service in Spain (2017)
42: Broadband TV News, Telefónica eyes European Netflix service (2017)

A significantly larger number of industry executives this year (**61%**, up from **41%** last year) regard app-based pay-TV services – which do not require a proprietary set-top box and allow pay-TV services to be delivered through applications on Smart TVs and other connected devices – as a commercially attractive area of opportunity. This is largely driven by pay-TV executives in Asia Pacific and Latin America, where app-based pay-TV services are increasingly seen as an attractive alternative to traditional pay-TV services, which require consumer premise equipment and owned and operated delivery infrastructure that few providers can develop on a large scale.

This represents a significant change in executive sentiment compared to last year when the majority of pay-TV executives in Latin America and Asia Pacific were sceptical about the technical feasibility and commercial attractiveness of app-based pay-TV services. This change is driven by a variety of factors, including growing broadband penetration and quality, wider availability of consumer devices, such as Smart TVs, digital media players, and smartphones, and improving consumer purchasing power.

However, developing app-based pay-TV solutions still requires significant investment and providers need to consider a variety of issues relating the quality of user experience and future scalability: *"Set-top boxes might be an obstacle in ensuring your service reaches as many customers as possible, with USB sticks or Smart TV apps presenting a feasible alternative of delivering pay-TV services. Developing integrations with multiple platforms is costly and might be uneconomic to a single-country operator...However, for a large-scale multi-territory provider it might make sense to develop additional solutions and integrations"* – Ingmar Schmidt, Swisscom.

Mobile TV services are also starting to attract significant interest from pay-TV providers, with **35%** of pay-TV service providers surveyed planning to launch this type of service, either paid (e.g. Bell's Alt TV in Canada) or ad-funded (Verizon's go90 in the USA), over the next five years[43]. These appear to be particularly attractive in certain Asian and Latin American territories, where pay-TV and fixed-broadband penetration is low, while smartphone penetration is growing rapidly: *"I don't think every market [in Asia] is going to roll out massive fibre networks. Instead, mobile is likely to become the key content delivery technology across Asia. This doesn't mean that TV, as we currently define it, or the big TV screen will be dead. It simply means that smartphones will become more and more important, effectively becoming consumers' window to the world, which in our industry means that smartphones will become their set-top boxes. There is going to be a redefinition of what we mean by television and pay-TV"* – Mike Kerr, beIN Asia Pacific.

Despite monetisation of new app-based pay-TV services being difficult, some pay-TV operators are relatively optimistic about the prospect of selling multiple personalised subscriptions to a household instead of a single subscription, which is typical of traditional pay-TV services: *"There's a major debate about whether Millennials will maintain their video consumption habits as they grow older or whether they will start watching more linear TV as they settle down and start having kids. Regardless of the right answer, we're seeing an underlying change in video consumption habits. As a result, we're starting to focus on mobile and personal rather than only on household-level services. This could allow service providers to sell 2-3 subscriptions per households rather than a single subscription. However, despite the increase in overall volumes, monetising these personal services among younger audiences might prove difficult. The model is not there yet – you have to test and adapt"* – Laurent Perchais, Orange.

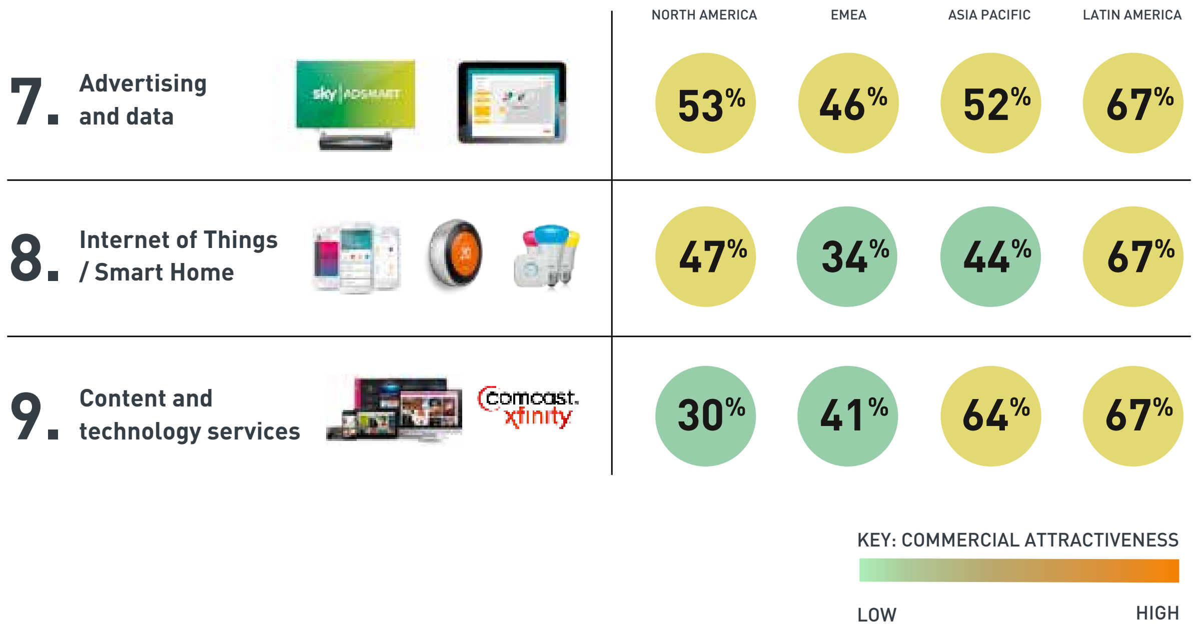
43: Question: Does your company currently provide the following services? (n = 57)

Regarded as a 'hot' area in the USA last year, app-based pay-TV services are seen significantly less appealing this year, following the shutdown of the Federal Communications Commission's regulatory initiative to 'unlock the box', which would have allowed consumers to access an MVPD's video content without the obligation to rent its set-top box.

ADJACENCIES

At present, few pay-TV providers are well-equipped to capitalise on the opportunities in adjacencies, with innovation in this category expected to be primarily driven by large-scale telcos and pay-TV service providers. Advanced advertising is regarded as the key area of opportunity.

Exhibit 26: Opportunities in adjacencies[44]



ADVERTISING AND DATA SERVICES

50% of industry executives see advertising and data services as a commercially attractive area for pay-TV businesses globally, slightly down from **54%** last year. Similar to last year, opportunities in advanced TV advertising remain limited to major pay-TV providers that operate in large-scale TV advertising markets, have large IP-connected subscriber bases and have access to TV advertising inventory, either through their owned TV channels or through sales houses that sell on behalf of other TV channel owners.

In North America, advanced TV advertising solutions already generate significant revenues for pay-TV businesses and are expected to see further investment. In other regions, progress to date has been slower, with few pay-TV providers rolling out advanced advertising solutions. Nonetheless, a growing number of pay-TV providers outside of North America are optimistic about the commercial prospects of advanced TV advertising over the next five years, with some already exploring partnership opportunities and conducting trials. However, many providers are held back by regulatory limitations and difficulties in finding the right collaboration model.

Anonymised audience behaviour data that pay-TV providers are able to collect on their subscribers through IP-connected set-top boxes and online TV services is seen as the key asset that they can deploy when developing advanced TV advertising solutions: *"Today, multiple other businesses can provide data on someone's age, gender, location, income, but no one knows how that person spent three hours on Sunday afternoon watching TV. It is a very powerful strategic asset for pay-TV providers. This data obviously has significant value in advertising, but we will also see a host of other applications... the most immediate commercial opportunities are in addressable TV advertising"* – **Chris Harvey, Foxtel.**

INTERNET OF THINGS / SMART HOME

42% of industry executives see Smart Home as a commercially attractive area for pay-TV providers globally, slightly up from **39%** last year. As the battle for the living room intensifies, home automation and home security are seen as the two key areas of focus for pay-TV providers. These services can complement existing pay-TV and broadband propositions and help to unify and integrate the overall offering through common interfaces, home gateways, Wi-Fi extenders, and digital assistants. Some executives are also excited about harnessing the customer data that these services would deliver. However, most industry executives believe that opportunities in Smart Home will be best addressed by large telcos and cable companies, which already own network infrastructure, have significant presence in consumer homes and established billing relationships: *"Smart Home will naturally play into telco 'connected home strategies as they aim to provide reliable home networking bundled with a wide selection of entertainment and other services."*

Pay-TV executives in North America, Latin America, and Asia Pacific are on average more optimistic about opportunities presented by Smart Home compared to those in EMEA. Smart Home services are already widely deployed by pay-TV providers in North America and Asia Pacific, where they are seen as an important growth driver going forward:

"We're planning to add Smart Home solutions to our portfolio, which we expect will deliver more value to our customers and help us reduce churn. We already have a great customer care capability and are looking to extend it to home security and elderly care" – **Jimmy Chen, Taiwan Broadband Communications Co.**

Smart Home services have also seen an increased interest in Latin America, where a number of pay-TV providers launched new services over the last year. On the other hand, pay-TV providers in EMEA have struggled to bring new Smart Home services to the market over the last year and have seen limited consumer interest to date.

Regardless of the region, many pay-TV executives believe that they will face a tough competitive environment for Smart Home services as major broadband providers, technology manufacturers, and digital giants, such as Amazon and Apple, compete for the same customers and partners: *"Who will own the customer relationship in Smart Home? There are a lot of suitors, and some of them have very deep pockets and strong ecosystems of products and services."*

44: Question: Thinking about new products and services, what do you see as the most commercially attractive opportunities for pay-TV service providers in your country?(% of respondents indicating 4 = attractive and 5 = highly attractive, n = 125)

CONTENT AND TECHNOLOGY SERVICES

Content and technology services, such as licensing or white-labelling technical solutions developed in-house, are considered to be an increasingly attractive area, with **45%** of industry executives seeing it as a commercially attractive area of opportunity, up from **30%** last year. A growing number of pay-TV providers are looking for ways to monetise the technology developed in-house, helping them to amortise development costs and share them with other providers. Many executives cite the success of Comcast syndicating its X1 TV platform and home automation products to other providers outside of its customer footprint in North America as a good example of this type of innovation. However, these opportunities are largely limited to leading pay-TV providers, such as Comcast, Sky, and Deutsche Telekom, which have strong in-house R&D and new product development budgets and capabilities.

THE INNOVATION GAP – AN OPPORTUNITY FOR THE PAY-TV INDUSTRY?

There are significant differences between the most and the least advanced pay-TV portfolios in any region or territory, but how big actually is the innovation gap in the pay-TV industry? How much additional revenue could pay-TV providers generate if they were to upgrade their product and service portfolios to the level of the most innovative provider in their country? It is a question many pay-TV executives would love to answer. However, there are many factors to consider, including competitive dynamics, consumers' appetite and willingness to pay, and unique content assets, such as premium live sports, usually held by the leading operators in the market.

Furthermore, it is unrealistic to assume that all pay-TV providers would be able to upgrade their portfolios to the level of the most innovative provider in their country, while some of the features of their portfolios, such as ownership of exclusive content rights, may simply not be replicable. To account for that, the analysis explores two scenarios of pay-TV providers upgrading their portfolios: first, to the level of the average provider in the country; and second, to the most innovative pay-TV provider in the country. This assumes that if pay-TV providers were to upgrade their portfolios, they would also realise the corresponding ARPU gains[45]. Although the analysis relies on simplified assumptions, it should be viewed as a thought experiment to help understand the potential uplift in pay-TV revenue if operators were to upgrade their product and service portfolios.

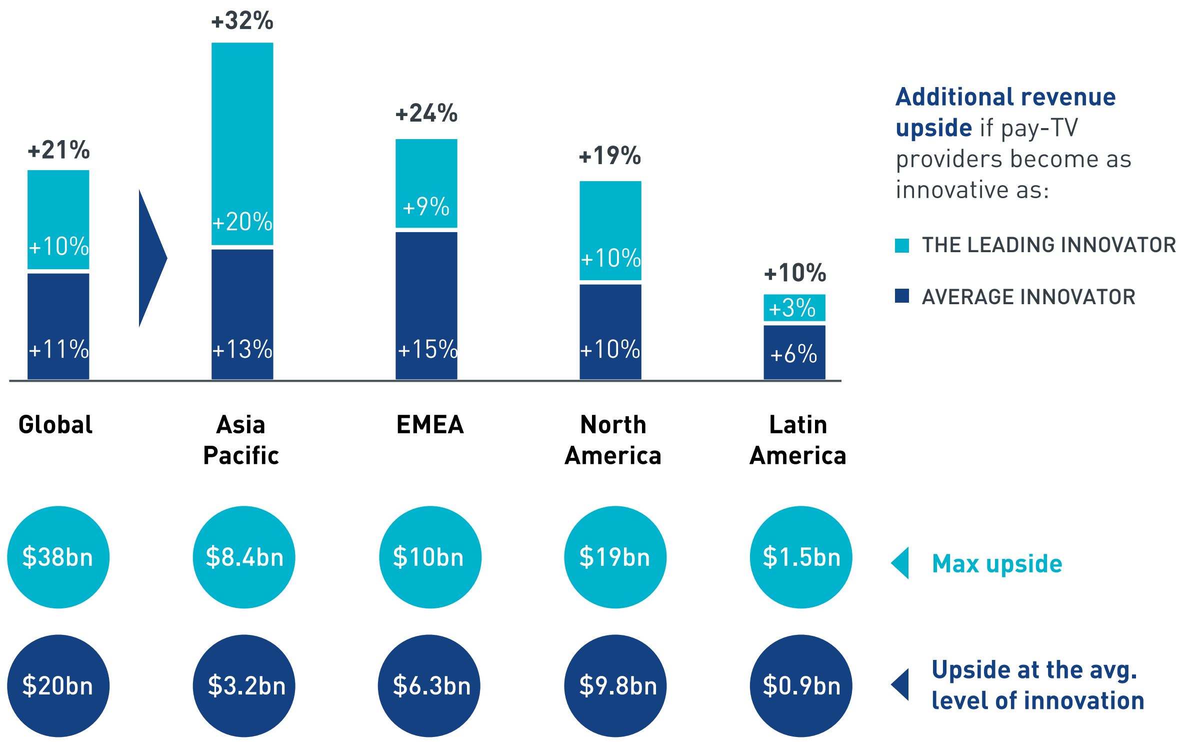
If pay-TV providers with below-average portfolios were to become as advanced as the average innovators in their countries, global industry revenues would be improved by **11%**, equivalent to **$20 billion** per year (See Exhibit 27). The most significant innovation gap is in EMEA and Asia Pacific, where it equates to **15%** and **13%** of industry revenues, respectively. In these two regions, pay-TV markets tend to be dominated by one or two advanced and often large-scale providers, while the remaining pay-TV providers tend to offer a range of less advanced pay-TV services.

In a less realistic scenario, where pay-TV providers upgrade their portfolios to the level of the most advanced provider in their country, the innovation gap – the additional revenue that could be earned – would double, accounting for **21%** of global industry revenues, equivalent to **$38 billion** per year. Again, pay-TV industries in EMEA and Asia Pacific exhibit the most significant innovation gap, equating to **24%** and **32%** of industry revenues, respectively.

This analysis focuses on pay-TV services and does not represent the full extent of the growth opportunities available to pay-TV providers. It does not account for new and growing consumer spend on

45: If the ARPU of a given provider is already higher than that of the leading innovator, the analysis assumes it remains unchanged video entertainment as well as other new sources of revenue, generated by adjacencies, such as advanced advertising or technology relicensing. Although the global OTT market is still about eight times[46] smaller than the global pay-TV market, it is growing at a significantly higher pace and is attracting new consumer spend, much of which is captured by global OTT aggregators. By investing in product and service portfolios that go beyond traditional pay-TV services, operators will potentially be able to unlock further growth opportunities, taking a higher share of OTT, advertising, technology services, and Smart Home markets, among others.

Exhibit 27: The pay-TV innovation gap is the biggest in Asia Pacific and EMEA[46]



6 – RECOMMENDATIONS

The pay-TV industry remains, in many respects, a global success story providing a growing range of services to millions of households around the world. It invests heavily in infrastructure, innovative new products and advanced technologies, and delivers state-of-the-art experiences to customers, seamlessly combining entertainment and communications. In most markets, pay-TV providers have continued to grow during the last ten years, despite the global economic downturn at the end of the last decade.

However, the industry is also having to change. Innovation has become even more of a priority during the last 12 months, as challenges and opportunities proliferate. Pay-TV providers in all markets see future growth to be increasingly challenging, as competition intensifies, piracy evolves, and margins come under pressure.

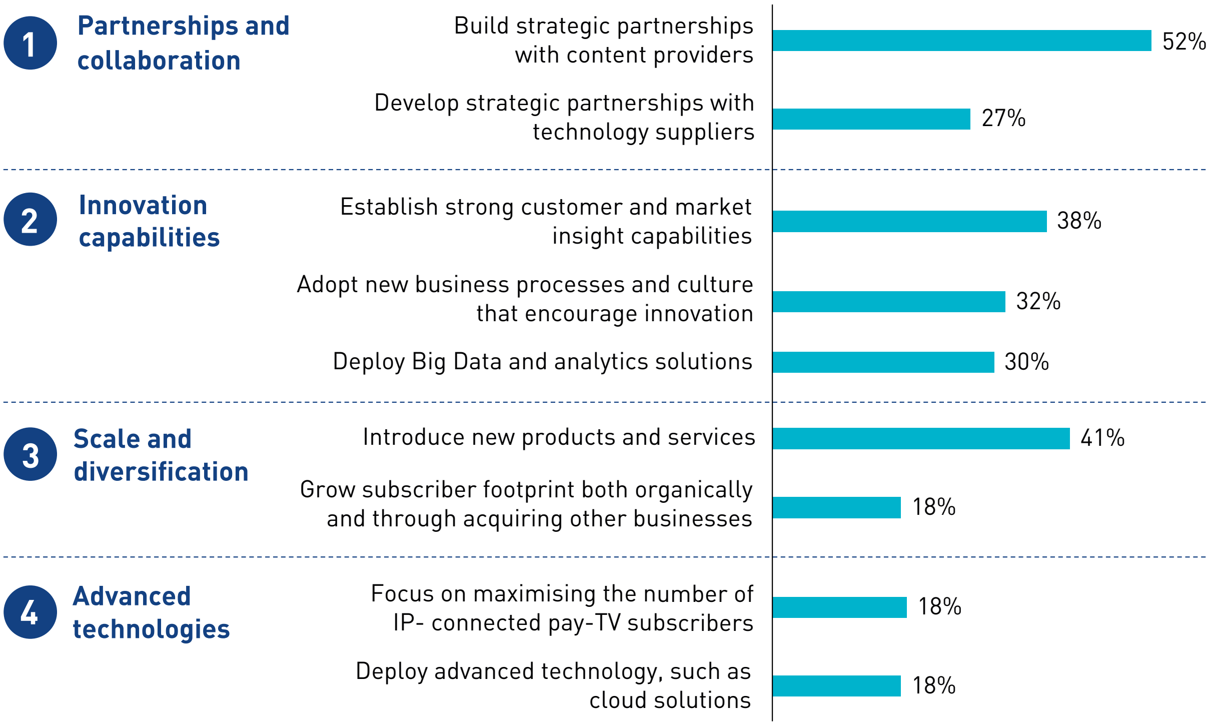
46: The analysis includes the 42 major pay-TV markets (excl. China) covered in the programme and is based on the 2016 industry data provided by Nagra

What steps do pay-TV providers need to take, to ensure that they are fit-for-the-future and well-positioned to grow and remain competitive?

Our research highlights four main strategic priorities for pay-TV providers:

1. Establish strategic partnerships with content providers and technology suppliers
2. Cultivate the right digital culture, processes and capabilities to support innovation
3. Focus on scale and diversifying product portfolios
4. Invest in the advanced technologies needed to support business transformation

Exhibit 28: Pay-TV executives highlight the following key innovation priorities for the pay-TV industry[47]



STRATEGIC PARTNERSHIPS AND COLLABORATION

As we have stressed in previous reports, the pay-TV industry has always been built on partnerships and collaboration, with platform operators licensing content and drawing upon a strong base of content companies, suppliers and technology providers. Many of these relationships have been traditional buyer-seller interactions.

However, around the world, industry executives participating in this year's Pay-TV Innovation Forum have emphasised the growing importance of deeper partnerships and collaborations – between MVPDs, programmers and networks, and technology suppliers – to deliver growth and support the roll-out of new products and services:

47: Question: What are the most important steps pay-TV service providers need to take, to ensure that they are fit-for-the-future and well-positioned to innovate successfully? (Please select up to 3 options; n = 125)

+ *"Partnerships across the TV ecosystem will be critical because no single company has a view across the entire ecosystem. We're starting to see broadcasters and pay-TV platforms making common cause. There is plenty of scope for win-win partnerships if it's done appropriately and I'm sure we'll see more of them going forward."* – Oliver Hansard, Liberty Global.

+ *"Innovation has always been and will remain very important for the pay-TV industry, as only by innovating can pay-TV providers maintain their competitiveness, reach new audiences, generate demand for new products and drive growth. However, we need to distinguish between two types of innovation. The first type is new inventions, which are rare and are very difficult for companies to deliver in a formulaic way. The second type is incremental improvements, which are more mainstream, accessible to and delivered by many companies in areas, such as content, technology, and business. These types of innovation can be planned and are predictable, but require a lot of focus in order to develop a new or improve an existing product or service. When it comes to the second type of innovation, external partners – including technology vendors and content providers – are very important to the delivery of these incremental improvements. However, we often see these partnerships struggling to innovate because some partners do not share the same vision or do not understand the bigger picture."* – Alexander Sacher, HD Plus.

In particular, industry executives stress the need for close, collaborative relationships with content suppliers, to provide the commercial flexibility required to develop new ways of packaging, pricing and distributing content to subscribers, and with technology providers, to deliver the agility and robustness required to remain competitive. In both cases, pay-TV providers are looking for new kinds of relationship – beyond rigid commercial structures.

INNOVATION CAPABILITIES

The pay-TV industry has a long track-record of successful innovation, delivering complex entertainment and communications products and services to subscribers around the world. However, the rate of change has accelerated, and competition has intensified, with a wide range of well-funded competitors raising the bar in media and technology. New products and functionalities are entering the market at a rapid pace. More than ever, pay-TV providers need to be able to think fast, identify new opportunities, and move quickly to develop new offerings, learning from the new breed of digital-first and data-led OTT service providers: *"We need to make sure that we're developing innovations that truly differentiate our offering. We want to be ahead of the market for at least one year in terms of new features. Our customers have developed very high expectations for the quality of our services, expecting us to introduce new features every 3-6 months."* – Ingmar Schmidt, Swisscom.

There is a strong consensus across the industry that data sits at the heart of the capability to innovate, providing the insights required to identify new opportunities:

"In the long run, data and how it is used will be critical to success. Do this right, and you will create opportunities to deliver better customer experiences, to run your business more efficiently and to improve the performance of your business operations. Traditional pay-TV providers have historically used data analytics for business intelligence and a bit of ad hoc analysis. In contrast, data-native companies, such as Amazon, Netflix, or even Now TV, have data embedded in their organisations, products, and interactions with customers. Today, along with many other industries, traditional pay-TV providers are on a journey towards that data-native end of the spectrum." – James Alexander, Sky.

Importantly, this is a fast-changing area: *"So far we have barely scratched the surface of what data and analytics can enable in pay-TV. Advanced data and analytics will be key, driving substantial growth through application of machine learning, artificial intelligence, and predictive analytics."*

Looking forward, the most advanced industry participants have ambitious visions for leveraging data: *"I think a lot of people in the industry share a very similar vision. It's about having an accurate and comprehensive picture of an existing customer or prospect, with relevant data being available on a robust and timely basis. It has to involve a deep integration between data, analytical models or rules running on the data, and dynamic tailoring of customer interactions – through products and systems that have been built with data front of mind. Lastly, you will have an organisation which embraces this opportunity, thinks data first, thinks 'test, learn and iterate' and does so very efficiently. All of this is driving towards customers who consciously, or subconsciously, benefit and appreciate improved experiences and journeys." –* James Alexander, Sky.

At the same time, pay-TV industry executives participating in this year's programme stress the importance of establishing a supportive culture and innovation processes:

"It was absolutely essential for us to get our development cycles right. Previously, it would take us about one-and-a-half years to bring new product features into the market, which was too long. After we migrated to a technology platform developed in-house and adopted agile development approaches, we managed to reduce the development cycle to as low as 3 months. This has given us a competitive edge. In addition, it has provided us with a certain level of flexibility to test and add or remove new features, staying sensitive to our customer needs and business implications. We are very customer- and data-driven in our development work and do product iterations working closely with our partners." – Ingmar Schmidt, Swisscom.

SCALE AND DIVERSIFICATION

Although scale is not an essential prerequisite for successful innovation in the pay-TV industry, it does help. Our research has shown that the largest operators tend to operate the most advanced portfolios of products and services, benefiting from greater organisational resources and investment capabilities and ability to monetise new products and services across a wider subscriber base. Telcos also rank highly in many markets, cross-subsidising their investments in pay-TV platforms from their wider telecoms businesses. At the same time, these enterprises tend to have the highest ARPUs – reaping the returns from their broad, state-of-the-art portfolios, as well as their investments in premium content. These competitive advantages can be mutually re-enforcing, producing a virtuous circle of innovation and investment at scale, generating higher returns.

For smaller operators, the challenges of innovation are more profound, with a greater reliance on external rather than internal resource and a commitment to fast-following, to quickly adopt new features and functionalities and to launch new products, as and when the economics make sense, and the business logic becomes unavoidable: *"Advanced data and analytics [...] is becoming increasingly important, but many pay-TV providers are struggling to build the business model to support the investment. Indeed, there is such a large investment required in terms of systems and skills ahead of value generation that many operators are not yet prepared to make the leap and invest; however, if they wait too long it will be too late."*

The final priority for pay-TV providers, emerging from this year's programme, is the importance of maintaining appropriate levels of investment in relevant technologies and related services. Clearly, investing in technology for technology's sake makes little sense – but industry executives participating in the programme emphasise that the media industry is experiencing a period of transformation, transitioning from one set of underlying technologies to another. Pay-TV companies are fundamentally platform operators, maintaining an end-to-end secure infrastructure for delivering premium TV and video to consumer premises. These platforms and the services delivered over them are changing, with content more widely distributed across a far greater range of devices, interfaces, and networks. Timing the adoption of new technologies is always challenging, but pay-TV executives participating in the programme emphasise that new technologies now have the potential to transform and enhance operations and offerings and to support the delivery of brand new offerings, as never before:

"For me, one of the things is the virtualisation of consumer premise equipment – a lot of functionality can be put into the cloud, giving us a quick way to ensure consistent customer experience on different devices and rolling out new services both on the set-top box and via OTT services."

"We're in a state of transition, as an industry – moving from one technology paradigm to another. The speed of adoption varies across different markets – and operators have to make their own decisions about when and how to invest – but the direction of travel is clear. Ten years from now, pay-TV will be about the cloud, networks, OTT and data, software and fast development."

METHODOLOGY

Service provider portfolio scores

We have conducted a detailed review of pay-TV service providers' product and service portfolios globally. We analysed the product and service portfolios of **233 service providers[48] across 42 major pay-TV markets:** Argentina, Australia, Austria, Belgium, Brazil, Canada, Chile, Colombia, Denmark, Finland, France, Germany, Hong Kong, India, Indonesia, Ireland, Italy, Japan, Malaysia, Mexico, Netherlands, New Zealand, Nigeria, Norway, Peru, the Philippines, Poland, Portugal, Russia, Saudi Arabia, Singapore, South Africa, South Korea, Spain, Sweden, Switzerland, Thailand, Turkey, UK, USA, Venezuela, and Vietnam.

Our analysis focuses on video products and services – including the end-to-end TV platform and online TV services, as well as adjacent products and services that are closely related to the core pay-TV offer, such as dynamic ad insertion solutions that deliver targeted advertising on connected set-top boxes or Smart Home solutions that are delivered through a common set-top box.

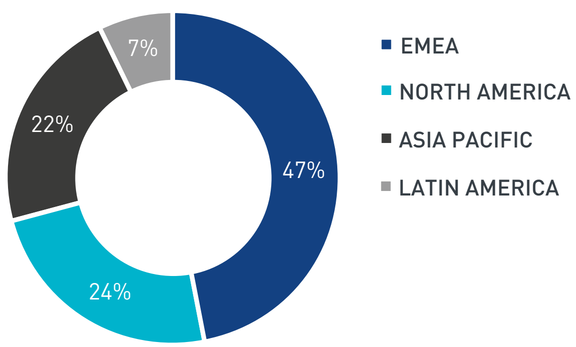
All pay-TV service provider product and service portfolios are scored in three product areas (i.e. TV platform, online TV services and adjacencies) based on how advanced a particular offering is. Each feature within a certain category (e.g. PVR or 4K video quality in the advanced functionality category) gets a score between 0 and 3 (where 0 = not supported to 3 = highly innovative), based on how innovative it is. To illustrate, PVR functionality is assigned a low score of 1, while 4K gets a high score of 3 due to its innovative nature and limited availability in the market. These scores are then averaged and weighted by category to produce an overall portfolio score.

The sample of pay-TV providers that were included in this analysis[49] is slightly different to the one used last year (233 pay-TV providers included this year vs 231 in 2016) due to some providers being acquired (e.g. Altice USA was formed on the back of Cablevision and Suddenlink acquisitions in the USA) and some growing their subscriber base or market share to surpass the threshold for inclusion in the analysis . It is important to note that all year-on-year comparisons are performed on a like-for-like basis, covering only 220 pay-TV providers that available in both the 2016 and 2017 sample.

Online survey of industry executives

We conducted an online survey with pay-TV industry executives, exploring their views on innovation and growth opportunities across the industry. The survey was conducted in April-July 2017, receiving 125 responses from pay-TV industry executives based in the following regions:

Exhibit 29: Online survey respondents by region[50]



48 Service providers included in the analysis account for c. 583m pay-TV subscribers in total. The analysis covers: 1) Pay-TV service providers that have more than 100,000 pay-TV subscribers and account for more than 3% of all pay-TV subscribers in a given country, 2) Pay-TV service providers that are part of larger telcos.
49: Threshold that pay-TV providers need to pass to be included in the analysis: more than 100,000 subscribers or more than 3% of all pay-TV subscribers in a given country
50: Base: all survey respondents (n = 125)

Innovation areas

Over the years, pay-TV service providers have innovated and developed their portfolios to encompass a variety of products and services. We distinguish between two three areas of innovation:

+ The service provider-managed end-to-end TV platform (which is part of the core pay-TV offer) for distributing video content, typically via high-cost cable networks or satellite platforms connected to dedicated consumer premise equipment.

+ Online TV services (which are part of the core pay-TV offer) that distribute video content via any fixed or mobile broadband connection to a variety of consumer devices, including PCs, smartphones, and connected TV sets.

+ Adjacencies – products and services in 'nearby' markets that leverage existing pay-TV service providers' assets, capabilities, and relationships to deliver profitable growth.

The core pay-TV offer

Pay-TV service providers have been successful in developing their core pay-TV propositions, extending them beyond the 'traditional' end-to-end TV platform and offering multi-platform products and services. Today, pay-TV executives identify six main areas of innovation opportunity for their core pay-TV products and services:

1. **New ways to price and package content.** Pay-TV service providers are evolving their pricing and packaging to adapt to changes in consumer preferences and competitive environment by introducing more flexible and affordable options, such as skinny bundles, à la carte pricing, daily passes, and contract-free subscriptions.

2. **Advanced functionality.** Service providers are leveraging IP connectivity and next-generation set-top boxes to introduce more sophisticated features and functionalities, such as network digital video recorders, voice control, personalised content recommendations, and 4K video quality.

3. **New types of content offering**. The emergence of new types of content and IP connectivity is enabling service providers to offer these types of content on their platforms. These include on boarding of third-party content (integrating third-party OTT services and applications, such as Netflix or Facebook, onto their set-top boxes) as well as virtual reality and gaming.

4. **Standalone OTT.** Many leading service providers are developing their own standalone OTT subscription or ad-funded services to expand their footprint and target new customer groups. These new services are often developed as complements rather than substitutes for the existing pay-TV offerings, but many providers still struggle to build robust business cases for them.

5. **Multiscreen TV Everywhere.** Many service providers have developed multiscreen TV Everywhere offerings that allow their subscribers to access live and on-demand video content on a variety of portable devices. Executives see these services as an integral part of next-generation multiscreen pay-TV experiences.

6. **App-based pay-TV.** With growing number of app-based OTT video services and devices that support them, pay-TV service providers are also exploring opportunities to offer similar services, which would not require a proprietary set-top box, allowing pay-TV services to be delivered through applications on Smart TVs and other devices.

Adjacencies

Growth outside the core, expanding into new categories and adjacencies, is a hallmark of many of the pay-TV industry's innovation leaders. Leveraging existing assets, capabilities and relationships to develop new products and pursue new opportunities can deliver highly profitable growth – an important priority for pay-TV providers operating in mature, competitive markets and facing significant disruption from online video and OTT businesses. Although there is a wide range of potential adjacencies, providers are currently focusing on three main innovation opportunities:

1. **Advanced advertising and data.** TV platforms increasingly support new forms of targeted advertising and dynamic ad insertion and provide valuable data about TV viewing. The most advanced operators are extending these capabilities to their OTT offerings, developing new ways of targeting ads across different devices and platforms.

2. **Internet of Things (IoT) and Smart Home solutions.** Connected home revenues and IoT offerings are forecast to grow rapidly during the next decade, creating opportunities for pay-TV providers to evolve set-top boxes into connected home gateways – service hubs for in-home IoT offerings that support new device ecosystems. Potential applications include home security, monitoring, automation and integration of entertainment applications.

3. **Content and technology services.** Many pay-TV providers provide B2B services to channel partners and have developed products and technical solutions that can potentially be provided or licensed off-platform. For telcos, these offerings are often a natural extension of existing business services, with pay-TV providers increasingly looking to develop similar capabilities. Similarly, more and more providers are showing interest in licensing or white-labelling their technical solutions, helping to amortise development costs beyond their footprint or to share costs with other providers.

PAY TVIF

INNOVATION FORUM

NAGRA KUDELSKI | mtm

MTM
62-65 Chandos Place
London WC2N 4HG

+44 (0)20 7395 7510
www.mtmlondon.com

design: diabolo.com

DTV.NAGRA.COM/PAYTVIF

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