

ANALYSYS MASON

# QUARTERLY

CONSULTING AND RESEARCH SPECIALISTS  
IN TELECOMS, MEDIA AND TECHNOLOGY

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# In this issue

## Welcome to the latest edition of the Analysys Mason Quarterly

Welcome to the first Analysys Mason Quarterly for 2018. This edition brings you our experts' insight and analysis on key issues which will impact the sector over the coming year.

We begin with our top 10 telecoms, media and technology (TMT) predictions for 2018 and reveal which trends will make an impact in the next 12 months. This will help ensure network operators and their suppliers factor this into their planning and decision making for 2018.

Janette Stewart discusses the key findings of the Analysys Mason study, Socio-economic benefits of Cellular V2X, which was commissioned by the 5GAA. The study concludes that cellular vehicle to everything (C-V2X) will be fundamental to the deployment of cooperative intelligent transport systems and will lead to major improvements in driving and road safety. A number of scenarios are explored identifying that the socio-economic benefits of C-V2X could amount to EUR43 billion by 2035.

The market for cloud-related services continues to increase rapidly. This presents both an

opportunity and challenge for telecoms operators that are seeking to capture a share of this growing market and its associated connectivity revenue. Igor Babić compares the financial performances of cloud services and explains how operators are well positioned to take advantage of this growth.

The last few years have seen a clear increase in the number of new submarine cables all over the world and, in parallel, the submarine cable industry has changed structurally and international bandwidth use continues to soar. Patrick Kidney considers the impact of these changes on global submarine cable developments and the factors that will influence investment over the next 5 to 10 years.

Omar Bouhali's article looks at how binding roll-out commitments are necessary for network protection in low density areas. However, potential changes in market conditions and/or operator strategies must be well timed in order to avoid a commercial overbuild.



**BRAM MOERMAN**  
CEO Analysys Mason

Internet-driven innovation is accelerating the transformation of the video and TV markets worldwide. Lluís Borrell looks at how traditional pay-TV operators face the greatest competitive challenge as investor valuations indicate that traditional TV players must adapt to TV over IP or face an uncertain future.

We welcome the opportunity to discuss your views on these and any other key industry topics. I look forward to hearing from you.



# Top 10 predictions for the telecoms media and digital services sectors in 2018

“ Network operators and their suppliers must pay close attention to these trends for their decision making in 2018. ”

## 1. Specialist mobile virtual network operators (MVNOs) will continue to surprise the IoT market by signing major deals.

- In 2017, some relatively small IoT MVNOs won notable contracts with large automobile manufacturers to provide in-car connectivity (for example, Globetouch's partnership with GM; Truphone's affiliation with Kia, as well as the continuing relationship between Cubic and Audi).
- Analysys Mason expects more of these types of contracts to be awarded in 2018, and for this trend to increasingly become a concern of larger MNOs.
- M&A deals are possible, either between smaller MVNOs or with MNOs buying up their smaller rivals; with more than 20 firms offering global IoT connectivity, the market is ripe for consolidation.

## 2. Revenue growth from new enterprise services will help to offset losses in traditional enterprise revenue.

- Any growth in spending by large enterprises will depend on the success of new services.
  - In 2018, growth in this segment is likely to come from newer services such as SD-WAN, sophisticated collaboration tools and more-advanced cyber security solutions rather than established services such as high bandwidth connectivity or unified communications.
- Adoption of cloud services, in particular SaaS, IaaS and SECaaS, will increase significantly in medium-sized companies.

- Micro and small enterprises will adopt or upgrade basic services.
  - There is considerable scope for increasing the penetration of mobile handset data and fixed broadband services.
  - Some medium-sized enterprises in middle-income countries will also invest in new or upgraded services.

## 3. Digital transformation will shift from offering new digital services to transforming labour costs in established networks.

- Every major telecoms vendor will announce a roadmap for the migration of their products to new cloud-native software architecture.
  - Cloud-native software – deployed successfully by web-scale companies already – represents the next phase of standard software architecture.
- Any software system that a vendor wants to sell in 2018 will need to be cloud-native, or plans must be made to make this transition possible. Cloud-native software will become an RFP requirement.
- Operators will deploy new DevOps processes of continuous integration and/or continuous delivery to speed up the introduction of new software in the network.
  - These new approaches will swiftly find their way into the software development and deployment processes of operators.

## 4. Operators that provide digital methods for customer acquisition and support will win market share from those that lag.

- The number of customer service representatives (CSRs) will begin to decrease worldwide in 2018 as subscriber growth slows and new digital engagement channels mature.
  - Increasing functionality and usability of direct digital engagement channels will reverse the recent growth trend in the number of CSRs.
  - This trend will be driven by subscribers that prefer non-assisted channels.
  - The introduction of chatbots and AI-based automated attendants will further accelerate this downward trend.
- Every operator will plan to move at least 20% of its customer interactions to digital channels.
  - Some operators have already reduced the number of customer interactions via CSRs by 20% and are working on reducing these interactions by a further 20%. Most operators are focusing on the first 20%.

## 5. Service-specific and unlimited data tariffs will win out over volume-based pricing as the foundation for consumer mobile services.

- Unlimited data tariffs and the increase in service-specific pricing (for example, zero-rating) will put more pressure on volume-based pricing.
- Alternative approaches to pricing include an increased focus on services and/or content, a move to multiple accesses/convergence, and competition around quality of experience.
- Pricing activity will go increasingly below-the-line as the use of analytics and AI improve segmentation and

support the ability to discriminate/ personalise in pricing.

#### **6. Growth in consumer spending on OTT video services will outpace traditional pay-TV spending in 2018.**

- Operators' programming investment will start to shift from sports towards drama 'originals'.
  - Multi-national operators will lead this move (for example, both Orange and Sky have committed to heavier spend on drama and have not pursued specific sports rights).
  - Co-investment models are maturing and production joint ventures are becoming more common.
  - Piracy of live sports content is increasing and this will start to have a greater effect on the sports investment case.
- Major pay-TV providers will begin to embrace full pay-TV services OTT as a primary delivery mechanism in 2018.
  - European satellite player Sky plans to launch its Sky Q service OTT in early 2018; US operator DirecTV is also preparing to launch Android-based OTT hardware in 2018.
  - In many emerging markets, particularly in emerging Asia-Pacific, such live OTT services will be tightly integrated with operators' telecoms services.
- Consumer spend on OTT video services will reach USD51 billion worldwide in 2018.
  - Subscription VoD services will account for 74% of OTT video spend in 2018.
  - The overall value of paid-for OTT video will have grown five-fold in the 5 years to 2018.

#### **7. Operators will deploy Alexa-like AI techniques to engage customers in a more-digital manner.**

- Operators will introduce AI techniques to optimise current processes through partnerships with software vendors.
- Inbound marketing insights will shift from manually generated segmentation and event triggers to insights derived from subscriber analysis performed by AI technology.
- AI will be implemented in all new chatbots within major operators, learning from customer interactions and outcomes to optimise customer experience, reduce calls to service representatives and to ensure the most-efficient resolutions to customer requests.

- The proliferation of smart speakers and voice assistants will start to change the way users discover and consume services.
  - New interfaces are being established to support relatively simple interactions (for instance, playing music or ordering repeat purchases), but the industry is experimenting with more-complex scenarios.

#### **8. A small number of 5G New Radio (NR) trials will start in 2018, but 90% of operators will wait until after 2020.**

- Leading operators will begin to conduct commercial non-FWA (fixed-wireless access) 5G NR trials in late 2018.
  - Only 8% of MNOs worldwide will deploy 5G NR networks before 2020.
- Competitive pressure to offer unlimited data plans will put MNOs' networks under stress, leading to the need for improved capacity in very dense areas by using 4x4 MIMO antennas and small cells.
  - Capacity bottlenecks are in specific, limited areas. There will be no need for across-the-board capacity increases.
- Major operators will increase their efforts in 2018 to bring open-source technologies into the physical network to improve multivendor interoperability.
  - Virtualised RAN supports operators' goals of increasing network innovation, reducing deployment costs and enabling 'true 5G' capabilities (especially network slicing). Operators can use open-source technologies in a virtualised RAN.

#### **9. The mainstream telecoms market is embracing virtual networks. By 2018, more than USD6 billion in capex will have shifted to virtualised and cloud-based networks; this shift will grow to more than USD50 billion in 2022.**

- Network function virtualisation (NFV) software, hardware and professional services spending will nearly double in 2018 to over USD5.1 billion (USD13.0 billion in 2021) as the mainstream telecoms market embraces virtualisation.
  - Deployment is still proceeding primarily in use case-based silos; operators are virtualising already-understood deployment scenarios.
  - Professional services will account for nearly 25% of all software controlled networking (NFV, SDN and cloud computing) spend in 2018, but over 30% of NFV spend. CSPs will tap suppliers' expertise to develop, implement, integrate, test, onboard,

support and upgrade hardware and software in multiyear network transformations.

- Investment by communications service providers in software-defined networking (SDN) (WAN automation) will intensify in 2018, with software, hardware and professional services spending growing by over 50% to USD2.2 billion, reaching USD5.0 billion in 2021.
  - Spending growth will be driven by competition in the B2B market and the need to demonstrate enterprise revenue growth.
- By 2022, all RAN build-out will be cloud RAN. USD30 billion in operator capex will shift from traditional hardware to software, services and IT systems.
  - 5G networks will be built on cloud and virtualisation technologies.

#### **10. Operators will begin to deploy NGPON-2 as a converged infrastructure to support 5G, FTTp and enterprise services.**

- 5G readiness will drive investment in a denser, more-efficient fibre infrastructure. This core will support all future services.
  - Several operators will start to strategically invest in xPON in 2018. Dense fibre infrastructure build will be one of the main drivers of a turnaround in operator capex worldwide in 2018 after 3 years of post-4G decline.
- We will see a resurgence of LTE-based home broadband in 2018.
  - We already see early signals that mobilecentric operators are ready to use abundant LTE capacity to challenge the view of limited wireless capacity; this trend will, in turn, drive retail fibre prices down, and accelerate fibre construction to extend mobile reach.
- The first commercial '5G' mmWave FWA services will be launched in 2018 in the USA.
  - We expect more trials in 2018, with further launches in 2019. Analysys Mason believes that mmWave will constitute 15–20% of next-generation access connections by 2027.

#### **Questions?**

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# Cellular V2X (C-V2X) could fulfil a market need, if the commercial timing is right

“For Cellular V2X to fulfil a market need for wireless connectivity for connected and automated vehicles, it must be rapidly commercialised.”



**JANETTE STEWART**  
Principal, Consulting

V2X will enable communication between vehicles, and between vehicles and infrastructure. It will potentially complement on-board sensors in vehicles by providing enhanced information (such as data from other vehicles) over a longer range.

Cellular V2X (C-V2X) is a technology developed by the Third Generation Partnership Project (3GPP) to deliver V2X services, including a direct vehicle-to-vehicle (V2V) mode (called 'PC5' in 3GPP specifications) and a network communications interface for vehicle-to-network (V2N) communication. The former short-range communications mode is designed to use spectrum designated for intelligent transport systems (ITS) in the 5.9GHz band for V2V and vehicle-to-roadside infrastructure (V2I) messaging, whereas the V2N mode will utilise the spectrum assigned to mobile operators within cellular networks.

There is also an existing, short-range, wireless technology that has been standardised for V2V and V2I connectivity, based on IEEE 802.11p. These standards have been developed over the past decade, although applications based on IEEE 802.11p have not seen widespread adoption to date. Both IEEE 802.11p and C-V2X can be considered as possible solutions for the deployment of co-

operative intelligent transport systems (C-ITS) such as those being proposed both in Europe and globally.

The 5G Automotive Association (5GAA) is a cross-industry association between the cellular and automotive industries, set up to develop, test and promote C-V2X communications solutions, initiate their standardisation and accelerate their commercial availability and global market penetration, with applications such as automated driving, ubiquitous access to services and integration into smart cities and intelligent transportation. The 5GAA commissioned Analysys Mason to conduct a study on the socio-economic benefits of C-V2X in Europe after recognising that the European Commission (EC) was holding a public consultation closing in December 2017 on the deployment of C-ITS. Our report was completed in December 2017 and has been published by the 5GAA.<sup>1</sup> In this article, we discuss the report's key findings.

**Features of C-V2X include its low deployment costs and wide-area coverage potential, as well as a clear medium-term evolution path to 5G**

A key reason for C-V2X developments is to meet demand within the automotive sector to enhance automated driving technologies with improved wireless connectivity. Such automated driving

technologies are evolving rapidly and are widely expected to transform driving experiences, provide safer cars and improve the efficiency of car travel. C-V2X will potentially complement on-board sensors (used within automated driving solutions currently) by providing enhanced information (such as data from other vehicles) and enabling operation over a longer range. For car drivers, this will contribute to further improvements in the safety, efficiency and convenience of car travel.

Both C V2X and IEEE 802.11p technologies have the potential to bring improved safety and efficiency to transport. We identified in our study, however, that using the currently defined long-term evolution (LTE) technology for V2V ad-hoc short-range communication, combined with LTE cellular networks for V2N, has the potential to bring additional benefits, including:

- better coverage for V2N, by exploiting existing cellular network coverage provided by lower-frequency spectrum
- reduced infrastructure deployment costs and improved service reliability, by using existing mobile infrastructure, and thus making use of cellular technology integration and economies of scale, rather than building independently operated roadside infrastructure

<sup>1</sup> <http://5gaa.org/news/5gaa-study-the-cost-benefit-analysis-on-cellular-vehicle-to-everything-c-v2x-technology-and-its-evolution-to-5g-v2x/>



- the potential for V2X and other telematics services in vehicles (such as infotainment) to be provided through a common cellular interface
- increased deployment flexibility, along with the ability to provide coverage for both short-range and wide-area applications
- the opportunity for integration with smart cities and other connected-transportation initiatives that also use cellular technology
- enhanced security, through the use of mobile subscriber identity module (SIM) cards
- certainty of future evolution, which will enable C V2X communications to progress seamlessly into the 5G era (while offering backward compatibility with earlier C V2X solutions).

#### Net benefits in Europe could reach EUR43 billion by 2035

As part of the study, we defined four scenarios to help us quantify the changes in the magnitude of the overall costs and benefits associated with different timescales and volumes of V2X adoption. We also wanted to distinguish relative differences in the net benefits, depending

on whether LTE/4G PC5 and the forthcoming 5G PC5 or IEEE 802.11p technology is adopted in vehicles, and the extent to which synergies with cellular networks are exploited for the provision of V2I/vehicle-to-pedestrian (V2P). When quantifying the costs and benefits of C V2X, we considered the time period from 2018 to 2035.

A summary of the net benefits that we calculated, per scenario, is shown in Figure 1.

#### Rapid completion of end-to-end tests and commercialisation is now needed

Road authorities across Europe are actively considering digital infrastructure requirements and several governments are actively supporting the roadside connectivity agenda through the funding of research and development and trials.

C-V2X has the potential to meet the future digital infrastructure requirements for connected and autonomous vehicles, initially using the latest LTE-based specifications (as per Release 14 of the 3GPP specifications), and subsequently with 5G. The re-use of cellular networks to provide V2N will reduce road infrastructure costs significantly, and

might also allow high infrastructure penetration from the point of C-V2X launch (resulting in benefits from V2I/V2N services being realised sooner). Our study also found a greater likelihood of C-V2X integration into smartphones, compared to IEEE 802.11p, meaning that V2P services – a further component to enable future automated driving – can be more rapidly achieved.

In conclusion, the study made several recommendations in relation to the European ITS policy. Firstly, the cost-benefit results from the study indicate strong benefits to the European market from synergies between the different modes of C-V2X, and with the wider eco-system of mobile infrastructure already deployed in Europe. Hence, it is recommended that European ITS policies encourage these synergies to be realised. Secondly, it is recommended that the European C-ITS policy should be designed to encourage migration from the current V2X technologies to 5G once forthcoming 5G PC5 technology is available.

#### Questions?

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Scenario	Summary	Net benefits by the end of the modelling period (2035)
<b>1. Base case</b>	The adoption and timing of the deployment is determined by automotive original equipment manufacturers (OEMs), in the absence of any regulatory measures.	EUR39 billion
<b>2. 2020 EC mandate on V2V/V2I</b>	An EC mandate requiring all new vehicle models to support EC defined 'Day 1' and 'Day 1.5' services from 2020 results in C-ITS services using IEEE 802.11p technology for V2V and V2I. Provision of V2I using IEEE 802.11p requires an extensive roll-out of 5.9GHz roadside units (RSUs).	EUR20 billion
<b>3. 2023 EC mandate on V2V/V2I</b>	An EC mandate requiring all new vehicle models to support 'Day 1' and 'Day 1.5' services from 2023 results in C-ITS services using LTE PC5 technology for V2V and V2I. Provision of V2I using PC5 requires an extensive roll-out of 5.9GHz RSUs.	EUR27 billion
<b>4. Equitable 5.9GHz use</b>	C V2X and IEEE 802.11p technologies co-exist in 5.9GHz spectrum, with the division of spectrum enabling the adoption of both technologies based on market demand.	EUR43 billion

FIGURE 1: SUMMARY OF SCENARIOS FOR QUANTITATIVE ANALYSIS [SOURCE: ANALYSIS MASON, 2017]

# Telecoms operators could benefit from the growth in cloud markets that is driven by global IT players

“Operators are well positioned for a role in delivering managed data, security and private cloud services, as well as services targeted at key industry verticals where they can differentiate themselves.”



**IGOR BABIĆ**  
Research Analyst, Research

The market for cloud-related services continues to increase rapidly, as evidenced by the double-digit revenue growth rates enjoyed by many global IT market players. This presents both an opportunity and a challenge for telecoms operators that are seeking to capture a share of this growing market and its associated connectivity revenue.

This article compares the financial performances of cloud services from well-established global IT players with those of telecoms operators and discusses what operators are doing to take advantage of the growth trend in the cloud market. The reporting of cloud revenue is opaque – it is not always clear what is or is not included and exact comparisons are impossible. However, the reported figures give us a reasonable sense of how the different cloud divisions, broadly defined, are performing.

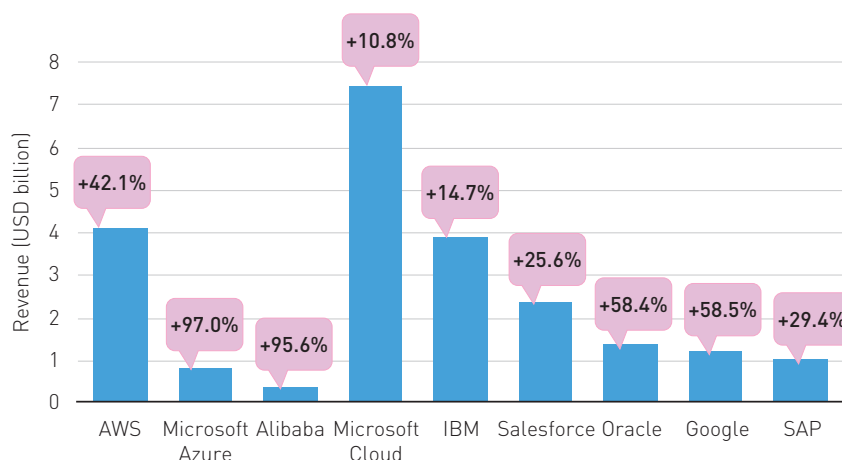
## Alphabet, Amazon, IBM and Microsoft dominate the rapidly growing cloud market

Global IT players continue to report huge increases in year-on-year revenue for their cloud services (see Figure 1). Microsoft Azure and Alibaba Cloud are particularly notable, with growth rates of above 90%, but many others including AWS, Google Cloud and Oracle Cloud are also growing at more than 40% year-on-year.

Revenue is shifting from legacy IT offerings to cloud-based services. For example, IBM Cloud's revenue (which includes Bluemix) grew by 14.7% between 2Q 2016 and 2Q 2017 while the overall revenue for IBM Technology Services and Cloud Platforms (which includes infrastructure services, technical support services and integration software) fell by 5.1% in the same period.

The cloud market positions of the companies represented in Figure 1 can be summarised as follows.

- AWS is a strong leader in the infrastructure-as-a-service (IaaS) market, followed by Microsoft Azure, Alibaba Cloud and Google Cloud, which are behind, but closing the gap.
- Microsoft Azure and Alibaba Cloud have outperformed their competitors by a large margin when it comes to cloud revenue year-on-year growth rates. However, this growth comes from a low base compared to that of AWS, for instance. In fact, AWS's revenue grew by USD1.21 billion in 2Q 2017 while the combined revenue growth of Azure,



**KEY:** AWS = Amazon Web Services; Alibaba = Alibaba Cloud; IBM = IBM Cloud; Salesforce = Salesforce Cloud Subscription and Support; Oracle = Oracle Cloud; Google = Google Cloud; SAP = SAP Cloud Subscriptions and Support.

**FIGURE 1: CLOUD REVENUE AND YEAR-ON-YEAR GROWTH, BY GLOBAL IT PLAYER, 2Q 2017<sup>1</sup>**  
[SOURCE: ANALYSYS MASON, 2017]



Alibaba Cloud and Google Cloud was USD1.33 billion in the same period.

- Alphabet reported that its cloud unit accounted for more of the company's headcount additions than any other areas of the business in 2Q 2017 and that the unit is one of Alphabet's fastest growing businesses. Further inclusion of artificial intelligence services in Google Cloud is its potential key differentiator in the cloud market in the future.
- Alibaba Cloud's biggest market is China, where the market for cloud computing services is still a few years behind the USA and Western Europe. This, along with other less developed cloud markets, such as India and Indonesia, is where the company sees its chance to capture further revenue growth and gradually catch up with its competitors in IaaS. Alibaba Cloud is one of the conglomerate's fastest growing units and it is focusing on growth and international expansion, rather than profitability.
- IBM is not within the top-five companies by revenue in the IaaS market – it makes most of its cloud revenue from software-as-a-service (SaaS) and platform-as-a-service (PaaS) offerings. The same is true for Oracle, Salesforce and SAP.

### Some telecoms operators also report significant growth in cloud revenue

Some of the telecoms operators that provide details of cloud revenue are also experiencing significant revenue growth rates, albeit smaller than those of the global IT players. Deutsche Telekom and NTT are the most successful in achieving year-on-year growth of over 10% from a reasonably sizeable base [see Figure 2]. Orange does not report revenue figures for its enterprise cloud services, but stated that this revenue grew by 15% year-on-year in 2Q 2017 and 37% in 3Q 2017, although its IT & Integration Services revenue as a whole increased at the lower rate of 3.3%.

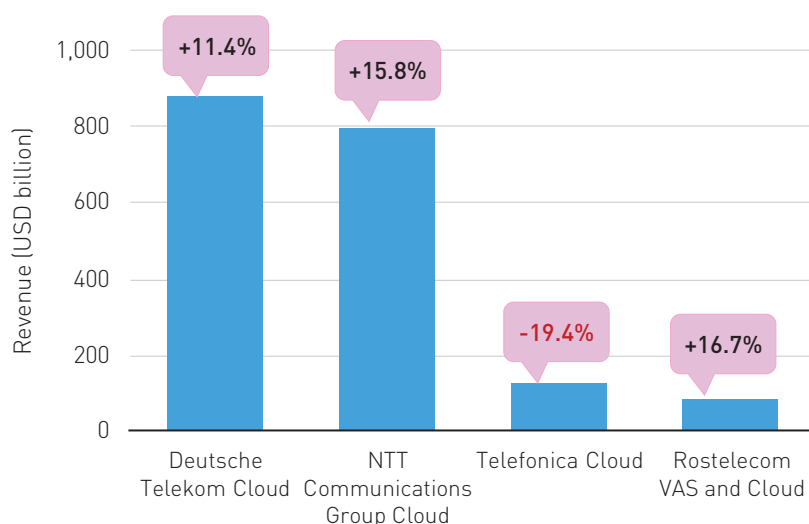
The increased competitive pressure in Spain and Latin America meant that Telefónica's revenue declined in this area in 2Q 2017 compared to a year earlier [see Figure 2]. However, a positive performance in IaaS and SaaS in Spain and the launch of new projects in Brazil in 3Q 2017 translated into a year-on-year revenue growth of 25.0% between 3Q 2016 and 3Q 2017. Pricing pressures in the USA prompted AT&T and Verizon to sell off some of their data centres, because they could not compete on a cost basis in the economy-of-scale public cloud business.



Deutsche Telekom is the market leader among telecoms operators that compete in the cloud space. Its IaaS services are popular with the German financial sector, local government and SMEs (which form a significant proportion of the country's economy) because the data is stored exclusively in Germany, which has rigorous data protection regulations. NTT's cloud revenue growth has lifted the company's profits since 2Q 2016, thanks to the company's focus on medium-to-large enterprises – a market segment that has not yet been locked up by the largest cloud providers.

Telecoms operators do not generally disclose revenue from their cloud offerings, suggesting that these typically form a small proportion of overall revenue. However, operators need not be marginalised in the cloud market. They need to play on their strengths of local presence, existing relationships and having a good understanding of customer requirements, as well as connectivity provision, to innovate and partner with IT specialists rather than try to imitate their service offerings.

The public IaaS, SaaS and PaaS cloud markets require large scale and it is therefore unlikely that telcos will be able to compete directly with Alphabet, Amazon or Microsoft. However, telcos are well positioned to play a significant role in delivering managed data, security and private cloud services, as well as services targeted at key industry verticals where they can differentiate themselves.



**FIGURE 2: CLOUD REVENUE AND YEAR-ON-YEAR GROWTH, BY SELECTED OPERATOR, 2Q 2017**  
[SOURCE: ANALYSYS MASON, 2017]

#### Questions?

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<sup>1</sup> Information taken from the companies' financial reports and press releases. Cloud revenue for Microsoft Azure and Google Cloud and the revenue growth for Google Cloud are estimates based on third-party reports.

# The submarine cable industry: new investment opportunities and key trends

“The submarine cable industry has changed structurally and international bandwidth use continues to soar.”



**PATRICK KIDNEY**  
Principal, Consulting



After nearly a decade of limited investment in submarine cables, the last few years have seen a marked increase in the number of new cables all over the world. Over 50 new systems have been completed or are under construction, and another 35 systems are planned for completion before 2022. In parallel, the submarine cable industry has changed structurally and international bandwidth use continues to soar. This article considers the impact of these changes on global submarine cable developments and investment over the next 5 to 10 years.

## Changes in the submarine cable industry over the last 10 years

Global international bandwidth grew by over 40% per annum from 2012 to 2016, according to TeleGeography. Traditional industry players, including wholesale Internet and voice operators, have experienced an impressive growth in traffic, but it is the entrance of the content and cloud providers that has had the biggest impact on the industry. Companies such as Amazon, Apple, Facebook, Google and Microsoft are responsible for approximately 70% of this growth, according to Cisco, and it is these companies who are influencing much of the investment in new cables.

These content and cloud providers use the international cable infrastructure to

distribute their content via servers located in data centres closer to the consumers of the content, thereby enhancing the experience of the Internet user.

The networks interconnecting data centres are private content distribution networks (CDNs); private (and to an extent) open CDNs have been a driver of structural change in the industry over the last 10 years. The data centres that form part of the CDNs are globally distributed (see Figure 1).

The requirement to interconnect these data centres means that content and cloud providers are:

- dictating the submarine cable routes; for example, the transatlantic MAREA cable connects two unique landing station sites in Bilbao, Spain and Virginia Beach, USA
- underwriting project demand risks by committing to use dark-fibre pairs on the system before construction, or by paying for the right of use in the early days of the project
- becoming co-owners and investors in new cables (such as the MAREA cable system noted above and the Pacific Light Cable Network (PLCN)).

The availability requirements of the content providers, cloud providers and traditional industry players in general have led to expanding requirements for

diversity and redundancy, which have been a driver for some of the new investment. The impact of outages on businesses, and the practical constraints on rapid repair mean that alternative routes to interconnect the same locations are required, which in turn has led to alternative cables being laid.

The presence of terrestrial diverse dark fibre from the landing point inland to data centres or Internet exchanges is another requirement that is partially driven by content and cloud providers taking full dark-fibre pairs on the submarine cables.

#### Factors that will impact investment over the next 5 to 10 years

The requirements of content and cloud providers will continue to shape the industry over the coming years, particularly in larger trans-ocean projects. As illustrated in Figure 1, the global data centre footprints are extensive, though large parts of the world are not yet served by these CDNs. As the local geographical market evolves, content providers may require further connectivity. Africa, for example, is largely underserved by global CDNs, and as Internet penetration and traffic per user increase, the CDNs will need to expand.

Submarine systems occasionally suffer disruption through accidental cable cuts and damage from, for example, anchors, fishing or seismic activity. Content providers and some other corporate customers typically require at least three different sea routes meaning that providing route diversity will remain a key driver for investment in new cables.

Commentators have highlighted the possible vulnerability of cable networks to sabotage with a consequent impact on national economies in recent months. These security concerns could result in an increase in government funding or other support for further diversity.

#### Where investment might materialise in the coming years

There are over 35 announced plans for the completion of cable systems in the public domain, and others are in the pipeline (even if some will be cancelled or delayed). Investment will be used in a variety of schemes, including the following.

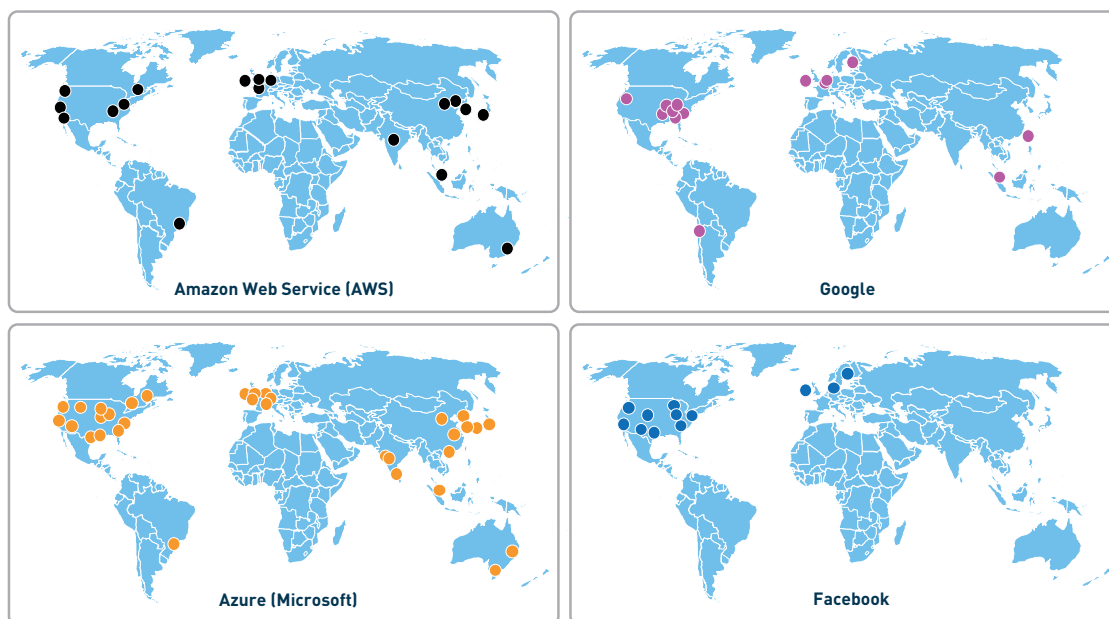
- Replacement of older cables, although the upgrade of these systems to 100G systems will keep them in service for longer.

- Diversification of cables for resilience and security. Physically diverse routes are a requirement for most users and are especially important for CDNs.
- Development of shorter routes and more regional systems where markets are under-served (thin routes). These will help to increase the availability of inter-data centre connectivity when combined with terrestrial networks.
- Generation of new trans-ocean routes, which will largely be driven by the CDNs of the Internet giants and their strategies for those parts of the globe that they are not currently addressing.

Analysys Mason has extensive experience advising investors, governments and public bodies on the commercial and technical aspects of submarine cables, data centres and the Internet generally.

#### Questions?

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**FIGURE 1:** SAMPLE OF CONTENT PROVIDERS' GLOBAL DATA CENTRES  
[SOURCE: ANALYSYS MASON, AMAZON, FACEBOOK, GOOGLE AND MICROSOFT, 2018]

# Binding roll-out commitments are necessary for network protection in low density areas

“Potential changes in market conditions and/or operator strategies must be well timed in order to avoid a commercial overbuild.”



OMAR BOUHALI  
Principal, Consulting

In areas where market conditions do not support next-generation access (NGA) roll-out on a commercial basis, local authorities can intervene and provide subsidies. However, potential changes in market conditions and/or operator strategies must be well timed in order to avoid a commercial overbuild.

One of the cornerstones of the 2002 European Telecoms Framework was the removal of unnecessary constraints to the development of telecoms networks and services. The general authorisation framework that was put in place still applies and, for fixed networks and services, this framework provides freedom to roll out fixed networks on a commercial basis.

No specific restrictions were put in place against a commercial overbuild on publicly subsidised networks, as it was assumed that compliance with the State aid rules restricted such networks to areas where market conditions do not support NGA roll-out on a commercial basis. In practice, the delimitation of publicly subsidised networks generally results from a formal check of the absence of any actual or planned commercial initiatives before public intervention.<sup>1</sup>

Several examples in Europe, however, have shown that changes in market conditions and/or operator strategies could contradict this assumption.

- As part of the National Broadband Plan in Ireland, in July 2016, the Department of Communications, Climate Action and Environment (DCCAE) short-listed three operators to roll out high-speed broadband (over 30Mbps) over an area of 757 000 homes and businesses where no operator had previously expressed an interest to roll out on a commercial basis. However, in April 2017, eir, the incumbent operator, committed to commercially roll out to 300 000 of these homes and businesses by the end of 2018. The DCCAE assessed the credibility of the roll-out, concluded that it was sincere, entered into a commitment agreement with the operator and started formally monitoring this binding agreement. The DCCAE intervention area was therefore reduced to include, after a few additions, just 542 000 homes and businesses.
- The French government held a national call for expressions of interest to roll out FTTH in 2011 that led to the identification of areas with 13.6 million homes and businesses where public







intervention was needed due to a lack of commercial initiative. Local authorities conducted procurement processes resulting in both local- and national-level subsidies as part of Plan France THD. However, just before losing out in one of these procurement processes in Grand Est in June 2017, SFR, one of the major fixed and mobile operators, wrote a letter threatening to build a parallel FTTH network in Grand Est, without any subsidy, which would jeopardise the profitability of this public network. SFR subsequently extended its plan to all of France by writing a letter to the Prime Minister in which it offered to roll out a nationwide FTTH network, with no subsidy, covering 80% of the French territory by 2022, and 100% by 2025. SFR's offer raised significant doubts and concerns among stakeholders because its profitability was questioned. Even if SFR was to roll out FTTH only in the densest parts of some public networks, this would jeopardize those networks' business models in these areas as well as the associated public subsidies. SFR eventually announced that they would not proceed with this plan in December 2017.

The following changes in the regulations are being considered at an EU- and national-level to better secure public intervention.

- The current project of the European Electronic Communications Code includes a regular geographical survey with compulsory operator participation in order to drive public intervention in low density areas. Under such a framework, if adopted, commercial roll-out in an area where an operator has not previously expressed interest and where another NGA roll-out is upcoming (after due announcement) would be punishable by the national regulator on the basis that it would affect the business model of the first network in an area where network duplication is not sustainable. As this proposed geographical survey would be conducted every 3 years, operators would have regular opportunities to update their roll-out targets.
- A French legislative draft submitted in November 2017 includes provisions to address the risk of parallel roll-outs in low density areas. Under this framework, if adopted, the minister in charge of electronic communications would gather proposals for NGA roll-out in low density areas from operators and/or public bodies and would select one for each area. These proposals and their schedules would then become binding and be followed by the national regulator, who would be entitled to punish both unmet commitments and roll-outs outside of the accepted roll-out areas. The

operators whose roll-out commitments have been accepted would have priority access to civil engineering with a limited capacity, but would lose this if they missed their roll-out commitments.

These projects may still evolve to consider trade-offs between protecting public intervention and avoiding excessive restriction of commercial initiative. However, the protection of network roll-outs in low density areas is now a clearly identified objective, which can be achieved by securing binding roll-out commitments.

We can help stakeholders to understand how changes in technologies, market conditions and regulations can affect NGA roll-out plans.

#### Questions?

Please feel free to contact  
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<sup>1</sup> 'Planned commercial initiatives' must be technically, commercially and financially credible – an announcement without evidence of credible funding and deployment plans would not normally be taken into account.

# Investor valuations indicate that traditional TV players **must adapt to TV over IP** or else face an uncertain future

“Before long, all video entertainment, sports and news will be consumed over IP streaming networks. - James Murdoch, CEO of 21st Century Fox and Chairman of Sky plc, speaking at the Royal Television Society Cambridge Convention, UK, September 2017.”



**LLUÍS BORRELL**  
Partner, Consulting



Internet-driven innovation is accelerating the transformation of the video and TV markets worldwide.<sup>1</sup> As a result, we are seeing valuation multiples of new media players completely outperforming those of traditional media players. In this article, we briefly comment on this observation and discuss the need for traditional players to adapt.

## **Investors provide higher valuation multiples to new media players than to traditional players**

Analysys Mason has compared recent EBITDA to enterprise value (EV) multiples for a selected number of TV and video players grouped in to three categories. These multiples are between two and seven times greater for new media players than for traditional players (content or distribution).

## **Traditional pay-TV operators face the greatest competitive challenge, but pressure on advertising TV and PSB will follow**

The TV and video markets have three principal sources of funding: advertising, subscriptions (pay TV) and public funding. The nature of the challenges presented

by TV over IP are different in each case, but we believe that pay TV currently faces the greatest challenge.

- **Pay TV is currently most at risk from competition from TV over IP.** Although the initial focus of new video players has been on video rather than TV, the launch of paid-for live TV 'skinny'<sup>2</sup> over-the-top (OTT) bundles (such as NOW TV) has put pressure on subscribers and ARPU. Skinny and all-inclusive TV packages, pure OTT and 4P/5P bundles will coexist. However, there is a risk of cannibalisation (by players such as NOW TV and Sky), and as consumers adopting these TV services, operators will need to adapt.
- **Advertising TV is bearing up, but is coming under increasing pressure from TV over IP.** The migration of traditional advertising to digital advertising will accelerate in the short-medium term, with mass market launches of live TV streaming and the use of data and algorithms to create value through better targeting. Moreover, advertisers are also demanding greater metrics, which the

traditional platforms are struggling to provide. This will provide additional incentives for moving to TV over IP.

- **Public service broadcasting (via public funding) seems (so far) to be more resilient pay TV and advertising TV.** Funded public service broadcasters may appear to be less affected now, but still face pressure to deliver value for money. Other PSB-branded video and TV propositions over IP will increase and will aim to compensate for any losses in the reduction of viewing of traditional linear TV offers.

#### Traditional media players can adopt several strategies to help them adapt and compete with TV over IP

TV over IP technology can offer consumers their desired TV and video services across multiple devices and at times that suit them. Our research indicates that there are several key elements that characterise winning TV and video strategies and are central to investors' expectations for sustainable long-term value. These strategies include the following.

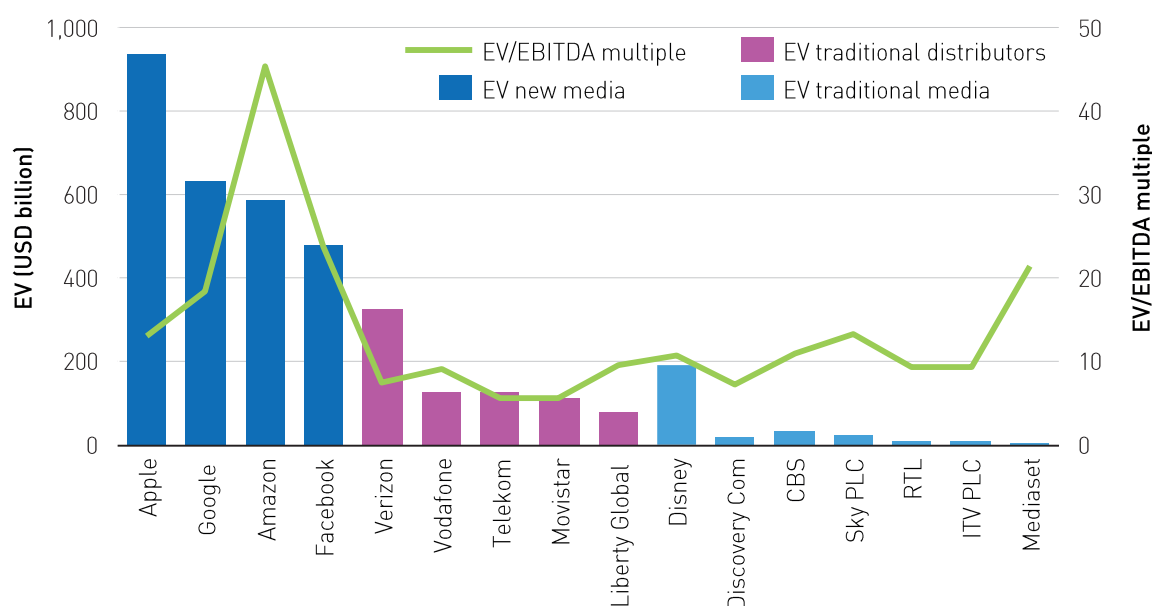
- **Integrated user experience.** An excellent integrated linear and on-demand consumer TV and video experience is essential for retaining viewers and subscribers in the long term. User interfaces should favour discovery and display the most-relevant content prominently.
- **Attractive content.** New media competitive dynamics will favour the growth of global audiences, fostering the growth of attractive international content. However, it will also be important to include local content to appeal to customers.
- **Trusted brands.** In a fragmented Internet market, trusted brands will be able to compete for consumer attention and have the means to invest in high quality content.
- **Low OTT distribution costs.** Some OTT players are already providing lower prices to consumers and greater revenue share to content providers, reducing the value of vertically integrated pay-TV providers.

- **Data and algorithms.** Data and algorithms can provide a competitive edge to players, enabling them to maximise revenue.

Analysys Mason has broad experience in the audiovisual, telecoms and digital sectors. We work with players and investors, supporting them on transactions across the full media value chain (including producers, tv channels, pay-TV operators, digital terrestrial television (DTT), cable, satellite, IPTV, OTT and vendors).

#### Questions?

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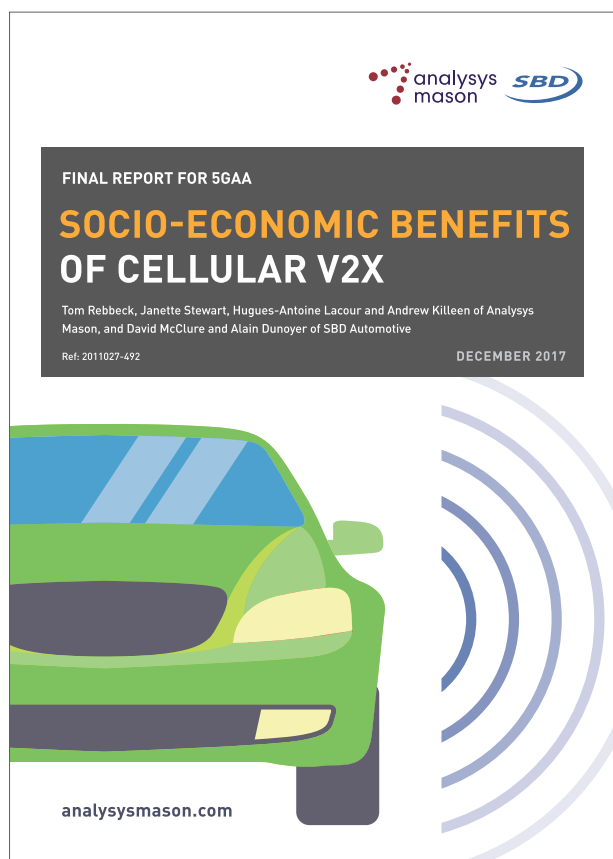
**FIGURE 1:** EV/EBITDA MULTIPLE AND EV (USD BILLION) FOR SELECTED NEW AND TRADITIONAL MEDIA COMPANIES, DECEMBER 2017 [SOURCE: YAHOO! FINANCE, DECEMBER 2017]

<sup>1</sup> For further details, see Lluís Borrell's presentation from the IBC2017 Conference: Platform Futures Stream: Is IP really having an impact on broadcasting. Available at: <http://www.analysismason.com/About-Us/News/Events/ibc2017-conference/>

<sup>2</sup> The term 'skinny' is commonly used to refer to small, or niche, low-cost OTT video or pay-TV offers.

# Socio-economic benefits of C-V2X

“Independent study finds that the socio-economic benefits of C-V2X will amount to EUR43 billion by 2035, based on 5GAA’s proposed approach to co-existence.”



## Questions?

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Tom Rebbeck, Research Director, Enterprise  
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On 5 December 2017, the 5GAA published a report, authored by Analysys Mason together with SBD Automotive, which assesses the benefits of cellular vehicle-to-everything (C-V2X) technology for delivery of vehicle-to-everything (V2X) communication. The report, which has a focus on the benefits of such solutions in Europe, uses qualitative evidence, and describes quantitative cost-benefit analysis that the consultants have undertaken, relating to deployment of C-V2X.

Publication of the report coincides with policy development on V2X, and use of the 5.9GHz band, in the European Union (EU), where the European Commission is currently undertaking a public consultation on the deployment of cooperative intelligent transport systems (C-ITS).

The study concludes that the deployment of C-ITS systems is beneficial at the EU level. Net benefits that could be accrued in Europe are estimated to be in the range of EUR20 billion to EUR43 billion in 2035 (with the highest benefits coming from increased road safety, and traffic efficiency), across the four scenarios modelled.

The most favourable scenario of those modelled in the study (amounting to EUR43 billion in net benefits) is one which maximises the potential for rapid penetration and economies of scale for C-V2X, and where both C-V2X and the Wi-Fi standard IEEE 802.11p are able to co-exist in the 5.9GHz spectrum band. Less than half this level of net benefits is expected to arise in a scenario where the use of IEEE 802.11p is mandated for C-ITS services (EUR20 billion).

The study also indicates that benefits of C-V2X for the European market lie in its deployment flexibility, with the ability to provide coverage for both short-range and wide-area applications, and certainty of future evolution to 5G, potentially facilitating earlier deployment as well as after-market deployment (e.g. V2X services provided in vehicles via a smartphone or other after-market device with C-V2X connectivity).

A reduction in infrastructure deployment costs is a further key benefit of C-V2X, due to the potential to re-use existing mobile infrastructure, and thus leverage cellular technology integration and economies of scale, rather than building independently operated roadside infrastructure.

## Download full report at:

<http://www.analysysmason.com/About-Us/News/Press-releases/socio-economic-benefits-of-c-v2x-study-Dec2017/>



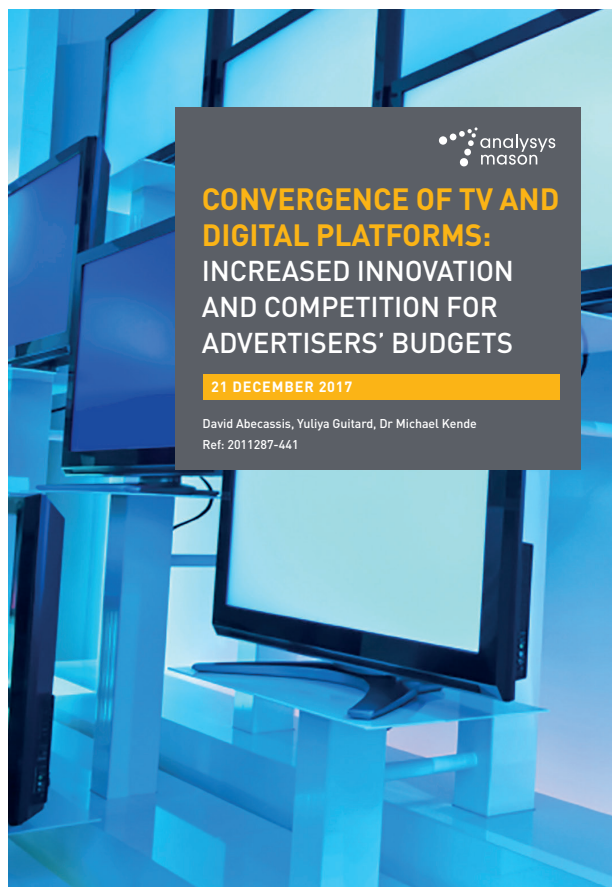
# Convergence of TV and Digital Platforms: Increased Innovation and Competition for Advertisers' Budgets

This paper explores recent dynamics in the advertising market and uses case studies to demonstrate the increasing convergence between TV and digital advertising in terms of technologies, audiences, data and products, with a focus on the USA and the three largest EU countries (France, Germany and the UK).

Digital advertising has grown at a tremendous rate, and now accounts for nearly half of the total advertising market expenditure in many developed countries. TV advertising revenue has remained resilient, as TV continues to attract large audiences. However, the consumption habits and the age profile of TV audiences are changing. Changes in the consumption of TV content have, so far, largely been focused on the rise of on-demand consumption.

These changes are leading to a broader commercial convergence between TV and online digital advertising, and increasing innovation in TV advertising products. TV players are developing digital capabilities to complement their traditional strengths (access to a large amount of attractive content, direct relationships with advertisers and the increased ability of audience metrics to produce comparable outputs across platforms). Some of these new capabilities relate to technology, with a focus on 'addressable' advertising, which is the ability to serve advertisements dynamically depending on the profile of viewers. Meanwhile, US-based TV players have invested to position themselves as advertising technology and solutions providers for the TV value chain both in the USA and internationally.

In response, online players are increasingly seeking to integrate third-party audience metrics into their platforms to improve comparability and transparency, although much remains to be done to fully align measures. These dynamics mean that TV and online players are moving closer together in terms of the characteristics of the advertising products they offer, enabling a higher level of competition for advertisers' budgets.



## Questions?

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**The full report is available at:**

<http://www.analysismason.com/Research/Content/Reports/convergence-of-tv-and-digital-platforms-Dec2017>

# Analysys Mason's consulting and research are uniquely positioned

Analysys Mason is a global consulting and research firm, specialising in telecoms, media and technology (TMT). Since 1985, Analysys Mason has played an influential role in key industry milestones and has helped clients through major shifts in the market. We continue to be at the forefront of developments in the digital economy and are advising clients on new business strategies to address disruptive technologies.

See what clients have to say about working with us: [www.analysismason.com/client-testimonials](http://www.analysismason.com/client-testimonials)

## ABOUT OUR SERVICES

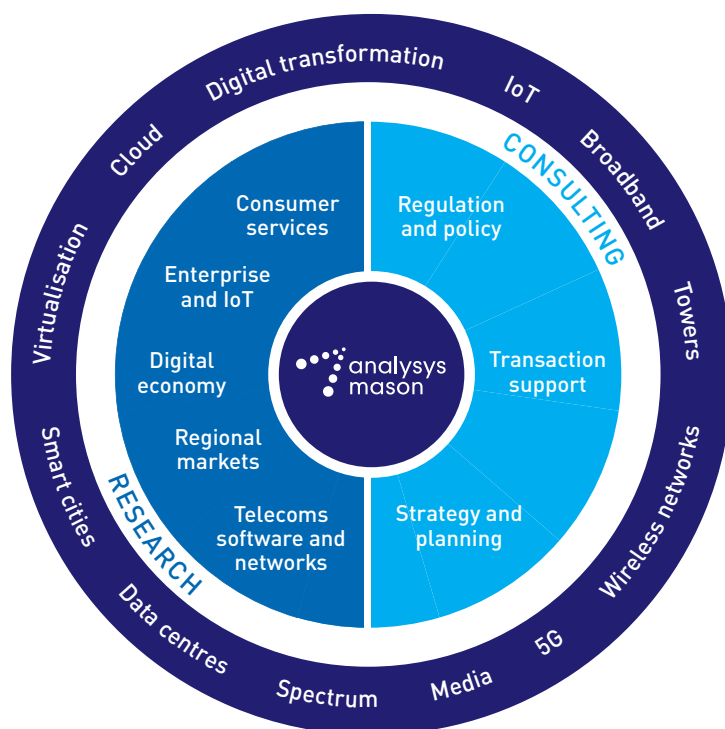
At Analysys Mason, we understand that clients in the TMT industry operate in dynamic markets where change is constant. Our consulting and research has helped shape clients' understanding of the future so that they can thrive in these demanding conditions.

### CONSULTING

- We deliver tangible benefits to clients across the telecoms industry, including communications and digital service providers, vendors, financial and strategic investors, private equity and infrastructure funds, governments, regulators, broadcasters and service and content providers.
- Our sector specialists understand the distinct local challenges facing clients, in addition to the wider effects of global forces.
- We are future-focused and help clients understand the challenges and opportunities that new technology brings.

### RESEARCH

- Our dedicated analyst team tracks and forecasts the fixed and mobile services accessed by consumers and enterprises.
- We offer detailed insight into the software, infrastructure and technology that deliver those services.
- Clients benefit from regular and timely intelligence, and direct access to analysts.



“Analysys Mason is a global consulting and research firm, specialising in telecoms, media and technology (TMT). Since 1985, Analysys Mason has played an influential role in key industry milestones and has helped clients through major shifts in the market. We continue to be at the forefront of developments in the digital economy and are advising clients on new business strategies to address disruptive technologies.”







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