



ANALYSYS MASON

QUARTERLY

Consulting and research specialists
in telecoms, media and technology

ISSUE 1 JAN-MAR 2020

Featured in this issue

Predictions for telecoms, media and
technology in 2020

New thinking to enable the full benefits of 5G

Expanding data centre investment
opportunities in APAC

A hybrid business model for video providers

5G opportunities in the 6GHz band

Emerging towerco market in Saudi Arabia

Contents



Analysys Mason Research's telecoms, media and technology predictions for 2020	p 4
Enabling the full benefits of 5G will need new thinking from regulators and operators	p 6
Data centre investment opportunities in APAC are expanding beyond the established 'Tier 1' markets	p 8
Video providers should consider using a hybrid business model in crowded markets	p10
5G opportunities in the 6GHz band	p12
The towerco market in Saudi Arabia is emerging and may disrupt the regional status quo	p14
Analysys Mason's predictions for M&A activity in the telecoms market in 2020	p16
About Analysys Mason	p18

Analysys Mason Research's telecoms, media and technology predictions for 2020



All eyes are on 5G, but the 5G experience will remain largely '4G-plus'; an increasing number of deployments and a wider range of lower-priced handsets will create a growing base of 5G mobile phone users. Meanwhile, behind the scenes, 5G will be influencing a range of use cases that involve much more than 5G mobile handset services.

1. Mobile cloud gaming: this will be a critical year for this key 5G consumer use case

The roll-out of 5G mobile services will enable mobile cloud gaming services, and many mobile operators are offering these services on their newly launched 5G networks, often in partnership with providers such as Hatch or Microsoft.

- Casual users account for the majority of mobile gaming revenue, but it is not yet known whether these consumers will want to pay for subscription-based gaming services. The industry will watch carefully for conversion rates when the promotional deals offered with 5G plans have expired.
- Avid gamers are known to pay for services but they need to be convinced that cloud services will support the game-play of AAA titles.
- The industry will require a clearer view of demand before investing heavily in edge computing to support improved performance of cloud gaming.

2. Competition in the OTT video market will approach its apex

The OTT video market will struggle under the weight of competition during 2020. New services (such as Disney+ and HBO Max) continue to launch but the market can only sustain so many players, and consumers will start to rationalise the number of subscriptions that they take.

- The average number of services that any one person uses will continue to increase in 2020, thanks to further launches by US players, but this trend will not continue. Forward-looking service providers will spend 2020 preparing for future service rationalisation and accordingly will diversify the way they sell TV and video services. Those that aggregate services will make it easier for customers to

swap between OTT 'channels' within their subscription. More OTT players will adopt flexible pricing approaches including hybrid (free/paid) models and transactional sales.

- Standalone OTT players will push for differentiated in-app experiences and will focus on original and exclusive content in order to differentiate themselves from the homogenous nature of service aggregators.
- 'Super aggregators' (providers that integrate multiple OTT services into their own service) will struggle with their role as brokers of a range of OTT content. Operators are contenders to play this role but they must work harder on platforms, partnerships and user experience.

3. Wi-Fi 6 will become a differentiator for in-home connectivity operations

Many operators are adding Wi-Fi 6 to their in-home connectivity portfolios to address quality-of-experience (QoE) issues and to improve multi-device entertainment and connected home propositions.

- Wi-Fi 6 will support the roll-out of multi-gigabit fibre and cable services in many countries, providing faster and more-reliable services for individual premises, rooms and applications.
- Operators will use the launch of Wi-Fi 6 hardware as an opportunity to revamp and enhance their smart/connected home services.
- Wi-Fi 6 will limit the impact of 5G fixed substitution. An improved in-home experience will be more resistant to any fixed-mobile substitution plays from 5G mobile, and will enhance the advantage of fibre access compared to the more-limited capacity of mid-band 5G fixed-wireless access (FWA).

4. Standalone 5G will be rare, which will limit the impact of 5G

Operators will continue to deploy 5G using non-standalone (NSA) technology and migration to standalone (SA) connectivity to the 5G core (full 5G) will face delays in 2020 because of uncertainties about business benefits and the need to implement unfamiliar cloud-native technologies and edge computing to support it.

- Many sophisticated use cases based on widely deployed, low-latency 5G networks will be delayed further while operators slowly put in place building blocks including telco cloud platforms and new internal development processes.
- Operators and vendors will continue to announce new 5G SA live deployments, but these will have limited geographical reach and new vendor revenue will also be limited.

- Operators and vendors will make significant progress towards making the changes required for 5G SA.

5. Extending the appeal of SD-WAN services will come with challenges

SD-WAN has so far mostly been sold to larger companies that have been willing to be early adopters. The technology is expected to expand into new markets in 2020, which will come with new challenges.

- More service providers will look to sell SD-WAN services to medium-sized enterprises, both directly and through partners. Service providers will need to invest in processes, including automation, for SD-WAN to scale down to smaller businesses, and the challenges are likely to be considerable.
- Telecoms operators may need to respond to alternative models for SD-WAN. Telecoms operators have concentrated on selling SD-WAN bundled with connectivity, supported by traditional vendors, such as Cisco and Nokia. Other models are separating connectivity from SD-WAN, such as application-focused SD-WAN (for example, Citrix), security-focused SD-WAN (for example, Fortinet), or standalone SD-WAN sold at an aggressive price (for example, Cato Networks). Operators will need to react if these models are to find favour with businesses.

6. 5G will not have much impact on the IoT market, but NB-IoT should finally start delivering

Operators have been pursuing IoT for a long time. 5G should expand the opportunity longterm, but operators need results from the investments that they have already made.

- Radical use cases for IoT based on 5G will depend on the future capabilities of 5G (for example, very low latency and network slicing). We will see more pilots and demonstrations in 2020, but the hard work will take place behind the scenes as vendors, service providers and enterprises try to establish what role 'full 5G' can play.
- The number of NB-IoT connections is expected to increase. The full capabilities of 5G are some time in the future, but NB-IoT has arrived. More commercial networks will be available in more countries. More international roaming agreements are in place. Device prices are declining (modules are less than USD4 and full tracking devices are under USD25), and the broader set of potential customers are getting excited about the possibilities of the technology.
- However, this is make or break time; if NB-IoT does not gain traction in 2020, operators (and vendors) may question whether demand will ever emerge.

7. Automation will move beyond 'process automation' to something more central to operators' business strategies

Automation as historically implemented has often meant 'isolated process scripting', but operators are endeavoring to apply automation to a much broader, more service-focused set of lifecycle operations.

- SD-WAN in particular will drive operators to increase investment in enterprise automation for customer engagement as well as service design, activation and ongoing operations.
- Automation will increasingly help to connect operators to partners, customers and other operators, for example through the use of standardised APIs, enterprise marketplaces and cloud-deployed platform solutions.
- Some operators will be afraid of making bad technology choices and will continue to refrain from embracing network function virtualisation (NFV)-based automation, but operator spending on related software and services will nevertheless continue to increase to roughly USD2 billion, nearly double that in 2019.

8. Operators will embrace new operating models

Financial pressures and digital disruption are leading many operators to embrace new operating models and are wresting some degree of control from traditional integrated operators.

- The fully integrated operator model is giving way to a disaggregated model where local access control does not dictate the full service model. IT assets are an increasingly important part of the communications value chain, whether in managing video content, virtualising networks or edge computing. These IT/data assets are more easily dissociated from the access networks from which traditional integrated operators derive their power.
- All communications technology, including 5G, rests upon full-fibre transport and access technology. Outsiders are investing in wholesale fibre backhaul and local access, independently of offering end-communication services. Traditional operators will wholly or partially divest their own fibre in some cases. These changes are driven primarily by financial pressures including the higher valuation of infrastructure assets, the opportunity to maximise utilisation by wholesalers serving many retail operators, and the search for the lowest cost of capital.

Download your free copy at:

<https://www.analysismason.com/Research/Content/Videos/predictions-2020-tmt/>

Enabling the full benefits of 5G will need new thinking from regulators and operators

Ian Streule, Partner, Consulting



Operators' announcements of 5G launches have stepped up in recent weeks and hundreds more will commence service during 2020. This represents the opening of a major new front for service competition, targeting an increase in per-end-user revenue, winning new customers, reducing churn and launching new services. Mobile and fixed operators can take a variety of roles in this intensified market. Governance of the sector will need to adapt swiftly and carefully to ensure fair competition and good consumer outcomes from the outset, as the industry pivots towards the opportunities enabled by 5G.

5G will boost competitiveness across a range of communications markets and their adjacent industries

Competition will increasingly focus on 5G launches

Most mobile operators have confirmed that they intend to invest in their networks to offer 5G, albeit over different timeframes. It will be important for operators to launch 5G services in a timely way to remain competitive in the mobile market, before the greater capabilities of 5G allow their rivals to outcompete them. Speed and latency will be used to market 5G, because both will become more important – for example, for supporting Google Stadia and similar services over mobile connections.

Competitive dynamics continue to move towards converged offers

5G is expected to increase fixed-mobile convergence, giving greater advantages to integrated operators. Convergence of connectivity, communications and content will continue, and content will become a key source of differentiation. National operators are not in the strongest position to acquire broadcasting rights for premium sporting and first-run entertainment content, but providing seamless access over fixed and mobile to such premium content (that is, through partnerships) will be important to prevent churn.

Opportunities in IoT and smart cities involve competition, or partnership, with adjacent industries and services

Associated 5G developments in the fields of IoT and smart cities also represent an opportunity for a wide variety of interested firms to package advanced smart utility and connected-device solutions to consumers and businesses alike. However, this will require the underlying physical and digital infrastructure to be more extensively developed (for example, densification of mobile and fibre coverage, computing power at the edge of the network). This densification is in progress, but can only be completed across entire nations in the medium to long term; operators have the opportunity to plan to be the market leader, to join forces, or be a 'fast follower, catching up from behind.

Non-telco players could own 5G spectrum in the longer term

Most mobile access services can be provided over MNO (and MVNO) connectivity, and it is not yet known whether it will be common practice for other industry players to own spectrum for 5G. However, when the wider industry and adjacent players have a better understanding of how 5G technology will develop, there could be value in non-telcos acquiring 5G spectrum. This could be to provide private campus/facility area networks, augmenting or acting as a replacement to Wi-Fi, or for specialised wide-area connectivity such as for emergency, utility or vehicular communication services.

5G will introduce or expand a variety of competition concerns

The transition to 5G-led services introduces a significant number of fundamental and technical changes to the industry, in four broad categories. Competition concerns will accompany these changes.

Industry structure: the large fixed costs of 5G deployment, particularly with higher-frequency spectrum and massive MIMO antenna systems, will lead to greater scale effects. At the same time, mobile broadband traffic carriage will become increasingly commoditised, alongside the growth of associated 5G fixed-wireless traffic.

- **Concerns:** market concentration; entry, expansion and dominance.

Operator interdependencies: RAN sharing has been spreading across the mobile sector for a number of years. RAN sharing in 5G is complicated by factors surrounding non-standalone deployment and vendor interoperability. However, strong pressures on costs will push operators

towards sharing. RAN as a service, wholesale RAN and neutral host architecture will also become more widespread, particularly where spectrum allocations are fragmented.

- **Concerns:** as per existing network sharing: correlation of infrastructure and services, restrictions to competition.

Network differentials: virtualised core networks and network-slicing technologies will be common in 5G. Analysys Mason has explored these developments in depth in other articles.

- **Concerns:** quality and service neutrality, non discrimination.

New diversified and emerging services: the new ultra-reliable, low-latency and massive machine communications opportunities made possible by 5G technologies are not the initial focus of 5G offerings but they will enable operators to plan a much wider range of consumer and industrial communications applications. This places the connectivity component at the heart of many other, generally larger value chains. Adjacent industries will need, and want, to control the essential embedded communications.

- **Concerns:** quality differentials, network effects, barriers to entry/switching, access to product-user data, adjacent sector rules.

Existing, new and increasingly complex rules, remedies and policies may be applied to these 5G-driven competition issues

The figure below summarises the complexity of existing and new remedies and policies, which could be developed to address to the competition concerns highlighted in the section above.

The key issue for industry players is understanding the challenges and risks, while proactively avoiding the potential damage, as well as managing the regulators and competition authorities' interests. Suitable governmental and regulatory policy stances can help to guide the industry stakeholders and avert service development delays and economic drag that could reduce the benefits of 5G. Such action is needed already in 2020.

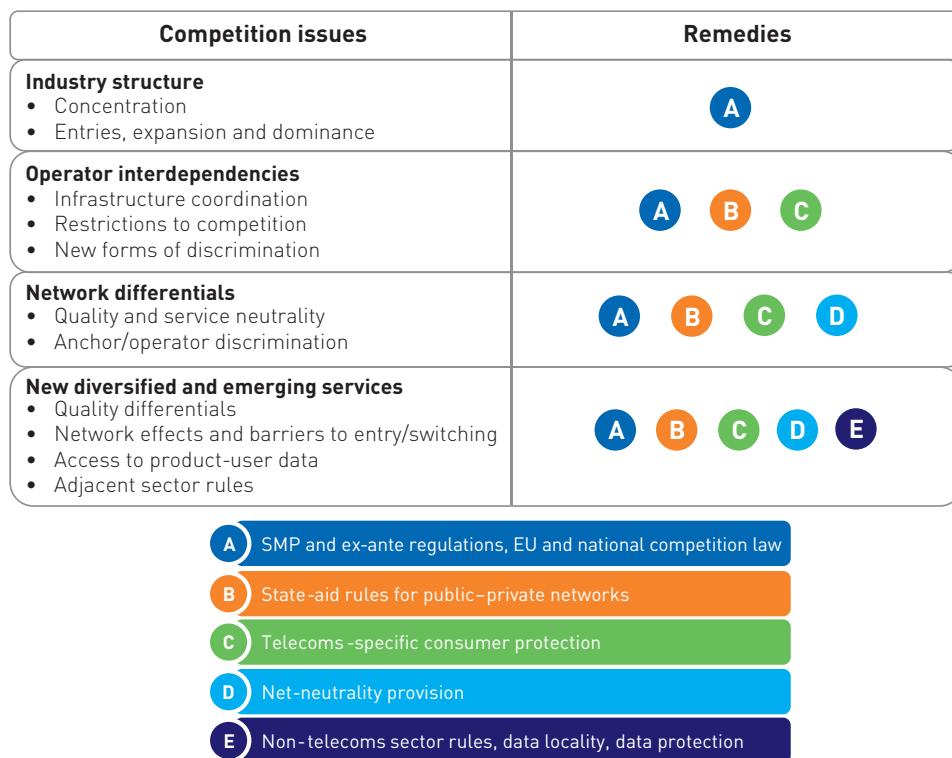


FIGURE 1: COMPETITION ISSUES AND REMEDIES [SOURCE: ANALYSYS MASON, 2020]



Questions?

Please feel free to contact Ian Streule, Partner, Consulting, at ian.streule@analysysmason.com

Data centre investment opportunities in APAC are expanding beyond the established 'Tier 1' markets

Jay Lee, Manager, Consulting and Lim Chuan Wei, Partner, Consulting



The data centre boom in the Asia-Pacific (APAC) region has mainly taken place in a select group of cities and countries. These 'Tier 1' markets account for most of the data centre capacity in APAC, and have been where cloud providers have focused deployment of their infrastructure.

However, there are signs that growth in data centre capacity in Tier 1 markets is slowing down and that the demand for data centres is spreading to other places in APAC. As such, investors must recognise the new opportunities that are emerging beyond the Tier 1 markets, while understanding the key demand drivers and challenges.

A small number of Tier 1 markets have accounted for most of the data centre capacity and supply in APAC

The emergence of cloud computing has been one of the main drivers of the demand for data centres worldwide; Cisco's Global Cloud Index (GCI) expects over 95% of data centre traffic to be cloud traffic by 2021. The main reason for this is that enterprises are increasingly using the 'public cloud' – infrastructure managed and provided by cloud service providers – for their computing requirements.

Leading cloud service providers in APAC have focused their deployment of cloud regions in key Tier 1 markets (see Figure 1).¹ A cloud region typically involves having multiple data centres present in the local market to serve as availability zones – this has driven the demand for data centres particularly because cloud service providers often rely on wholesale leases with data centre operators rather than building their own facilities.

Data centre capacity and demand in APAC have thus been mostly concentrated in Tier 1 markets thus far, with some markets effectively serving as regional hubs. For example, a large proportion of Southeast Asia's data centre requirements are being addressed via Singapore, resulting in it accounting for over 60% of data centre capacity despite having only ~2% of internet users in the region.

The demand for data centres in APAC is spreading to new 'Tier 2' markets

Growth in data centre capacity and demand appears to be slowing in Tier 1 markets because:

- the cost of building and operating data centres can be especially high
- land is becoming difficult to obtain to build additional facilities
- some governments are tightening their control of new data centre supply.

In addition, the demand for data centres is spreading to other markets, driven by the desire of cloud service providers to expand geographically and the need to address data localisation regulations.

Market	Alibaba	Amazon	Google	Microsoft	Tencent
Australia (Sydney)	✓	✓	✓	✓	✗
Hong Kong	✓	✓	✓	✓	✓
India (Mumbai)	✓	✓	✓	✓	✓
Japan (Tokyo)	✓	✓	✓	✓	✓
Mainland China – Tier 1 cities ²	✓	✓	✗ ³	✓	✓
Singapore	✓	✓	✓	✓	✓

FIGURE 1: PRESENCE OF CLOUD REGIONS IN TIER 1 MARKETS, BY CLOUD SERVICE PROVIDER, ASIA-PACIFIC
[SOURCE: ANALYSYS MASON, 2020]

Cloud expansion

Cloud service providers are seeking to broaden their reach and offer improved performance (such as via reduced latency) and will thus drive data centre demand in Tier 2 markets. Figure 2 reveals examples of such markets where cloud service providers are increasing their local presence and are therefore driving the demand for data centres. These Tier 2 markets include: (a) new and/or distinct geographical markets (for example, Indonesia), and (b) secondary cloud regions in existing geographical markets (for example, Osaka).

For example, Amazon Web Services and Google Cloud have announced new cloud regions in Indonesia, which is expected to drive the demand for data centres. The effects of this are already starting to be observed; new players such as IndoKeppel and Space DC have announced new data centres to capture this opportunity in Indonesia.

Data localisation regulation

Regulation requiring selected data to be stored locally can also contribute to the demand for data centres in Tier 2 markets. For example, Vietnam has introduced its Cybersecurity Law, which requires data to be stored in Vietnam – such measures can drive data centre demand to be addressed locally rather than relying on overseas Tier 1 hubs such as Singapore.

The new Tier 2 markets may present challenges for data centre players

The Tier 1 markets share commonalities that have facilitated the growth in data centre supply in these places, such as:

- excellent international connectivity via multiple submarine cable systems
- reliable power supply
- availability of extensive domestic fibre from multiple providers.

The Tier 2 markets may not share these characteristics, which could be a challenge for data centre operators. For example, while Indonesia appears to be one of the next growth areas in Southeast Asia, the approximately 10-hour power outage throughout Greater Jakarta in August 2019 highlights the issues that data centre operators may face. Such challenges must be identified and closely evaluated in conjunction with an assessment of market demand to make a comprehensive evaluation of data centre investment opportunities.

Analysys Mason has conducted multiple due diligence exercises and market studies on data centres worldwide for investors, and has a strong understanding of the key drivers and challenges that need to be evaluated. We have also worked with industry players such as telcos to develop their cloud and data centre strategies.

¹A cloud region is a location where the cloud providers house and operate their infrastructure (for example, servers) at data centres. Each cloud region is isolated from, and independent of, each other.

²This includes Beijing and Shanghai, which have been the main data centre hubs in mainland China.

³In line with Google's exit from mainland China in 2010, Google Cloud Platform is not offered directly in the country.

⁴This includes non-Tier 1 cities/regions such as Chengdu, Chongqing and Ningxia.

Market	Alibaba	Amazon	Google	Microsoft	Tencent
South Korea	✗	✓	Planned	✓	✓
Mainland China – Tier 2 areas ⁴	✓	✓	✗	✗	✓
Japan (Osaka)	✗	✓	✓	✓	✗
Indonesia	✓	Planned	Planned	✗	✗
India (Chennai)	✗	✗	✗	✓	✗
Malaysia	✓	✗	✗	✗	✗
Taiwan	✗	✗	✓	✗	✗
Thailand	✗	✗	✗	✗	✓

FIGURE 2: PRESENCE OF CLOUD REGIONS IN SELECTED TIER 2 MARKETS, BY CLOUD SERVICE PROVIDER, ASIA-PACIFIC
[SOURCE: ANALYSYS MASON, 2020]



Questions? Please feel free to contact Jay Lee, Manager, Consulting, at jay.lee@analysysmason.com or Lim Chuan Wei, Partner, Consulting, at lim.chuan.wei@analysysmason.com

Video providers should consider using a hybrid business model in crowded markets

Christopher Ryder, Manager, Consulting



Analysys Mason's Connected Consumer Survey 2019 shows that video service stacking is reaching saturation point in Europe, meaning that video providers will have to look elsewhere for future revenue growth. European video providers should take a cue from their peers in the USA and consider using advertising to diversify their income streams and strengthen their subscriber relationships.

Consumers are losing their appetite for stacking additional services on top of their current subscriptions and several major services have yet to launch in Europe, so local video providers should anticipate the coming and going of nomadic subscribers that are trying out new market entrants or are following different hit series and league seasons as they are available. To thrive in this increasingly fluid market, video providers should reconsider the traditional measures against churn in favour of strategies aimed at providing value on both sides, both during and outside of subscriptions.

Progressive providers are already adapting to this new dynamic and are putting an increased focus on advertising-

funded video as an integral part of their offerings. By facilitating downgrades to an ad-supported tier instead of allowing consumers to churn from the service altogether when they cancel their subscription, video providers can retain the relationship with the consumer outside a paid subscription. Further fuelling this trend, industry advancements in addressable TV advertising are delivering higher income per impression and increased value for the advertiser by reducing tune-away compared to that for traditional broadcast ads.

The return of ad-supported premium content

The major opportunity for the video industry in the coming years is in advertising; this will account for more than 50% of the projected USD95 billion growth in TV and video revenue between 2019 and 2024.¹ This is in stark contrast to the recent widespread understanding that Netflix had conditioned a fickle millennial crowd to monthly subscriptions and ad-free experiences, and that there was little consumer interest in ad-supported models. The shift was highlighted at the 2019 MIPCOM conference, and AVoD services took centre stage with the announcement of two new major initiatives from Rakuten TV and Lionsgate-backed Tubi. These announcements represent the latest developments in a year of significant activity in the AVoD space; notable other examples include the acquisition of Pluto TV by Viacom, launches by Amazon and Sinclair and announced plans from Comcast/NBCUniversal and WarnerMedia.

In order to embrace opportunities in advertising, video providers should consider customer journeys where subscribers move freely across their various business

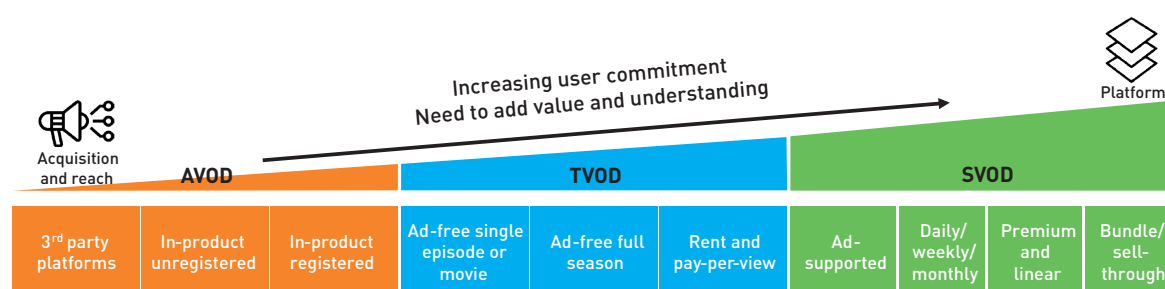


FIGURE 2: HYBRID BUSINESS MODEL FOR VIDEO [SOURCE: ANALYSYS MASON, 2020]

models and should prioritise long-term relationships over short-term profits. By combining advertising, transactional, subscription-based and aggregator business models, video providers can address the entire spectrum of user needs from offering a single piece of content to becoming the go-to platform for content and recommendations. When implemented successfully, this will enable providers to add value for both themselves and their customers in an increasingly nomadic market.

Dynamic markets call for dynamic business models

With such a sliding scale for user commitment, free or advertising-funded models can serve as the entry point to customer journeys and can be used to identify user pain points and preferences. This data can then be used to build the upgrade path along a ladder of increasing engagement and commitment in a hybrid business model. Increased user commitment along the ladder needs to be underpinned by a matching increase in value and user understanding, as illustrated in Figure 1 below. Successful services will be based on users' needs and intents, rather than the underlying business models, which should be adapted to fit the offering, not the other way around.

Major hurdles to overcome when moving customers along the ladder in Figure 1 include enticing users to move from third-party aggregation platforms to in-product experiences and encouraging them to register an account and complete their first direct payment. By making recurring payments in subscription models, a user can move up the ladder to reach the top. This can be described as the platform position for the provider, where users are deeply committed to the service and use it to discover and pay for experiences from other players.

Allowing users to move freely up and, importantly, down the ladder of business models in a single offering based on their changing needs and wishes can remove the friction that could make customers churn out of the relationship and significantly lengthen the journey to them becoming paying customers again. Creating products and experiences that fit into users' lives on their terms is the key to success in the years to come, and the tools to do so are found in the inspired use of data and the re-thinking of existing business models.

Analysys Mason has broad experience in the audio-visual, telecoms and digital sectors. We work with media, telecoms and internet players, regulators and investors on specific issues such as assessing consumer attitudes to new flexible TV propositions, regulatory challenges that new digital platforms pose to the TV market and how the future value of traditional broadcasting company assets depends on the diversification and mitigation strategies of these companies.

¹For more information, see Analysys Mason's Subscription, advertising and transactional models for TV and video: opportunities for revenue growth, and independent of, each other.



Questions?

Please feel free to contact Christopher Ryder, Manager, Consulting, at christopher.ryder@analysysmason.com

5G opportunities in the 6GHz band

Harald Wium Lie, Partner, Consulting



A much-cited ITU report from 2012 found that “First and foremost, the evidence is fairly conclusive about the contribution of broadband to GDP growth.”¹ The ITU published an updated report in 2018, which included an analysis of data for 139 countries between 2004 and 2017.² Again, the report concluded that increased fixed and mobile broadband penetration yields economic growth and we are convinced that the internet will continue to be one of the most important contributors to economic growth and improved quality of life. 5G mobile network deployment is expected to boost broadband penetration.

Mobile data usage has grown substantially in recent years, but there is potential for further growth in many countries. In particular, we have identified five areas where the additional availability of mid-band spectrum will be beneficial for 5G networks.

- **Mobile broadband and city-wide video consumption.** Access to mid-band spectrum is especially useful for applications that involve city-wide video consumption such as audio-visual communications, in-vehicle entertainment, streaming of high-definition video content at popular locations, and enhanced mobile media experiences with high-quality video for augmented or virtual reality (AR/VR).
- **Mobile networks for safe and smart cities.** A number of high-bandwidth applications are being planned for safe and smart cities, such as video surveillance, real-time text translation, video-based sensor networks and applications for public safety and emergency response personnel.

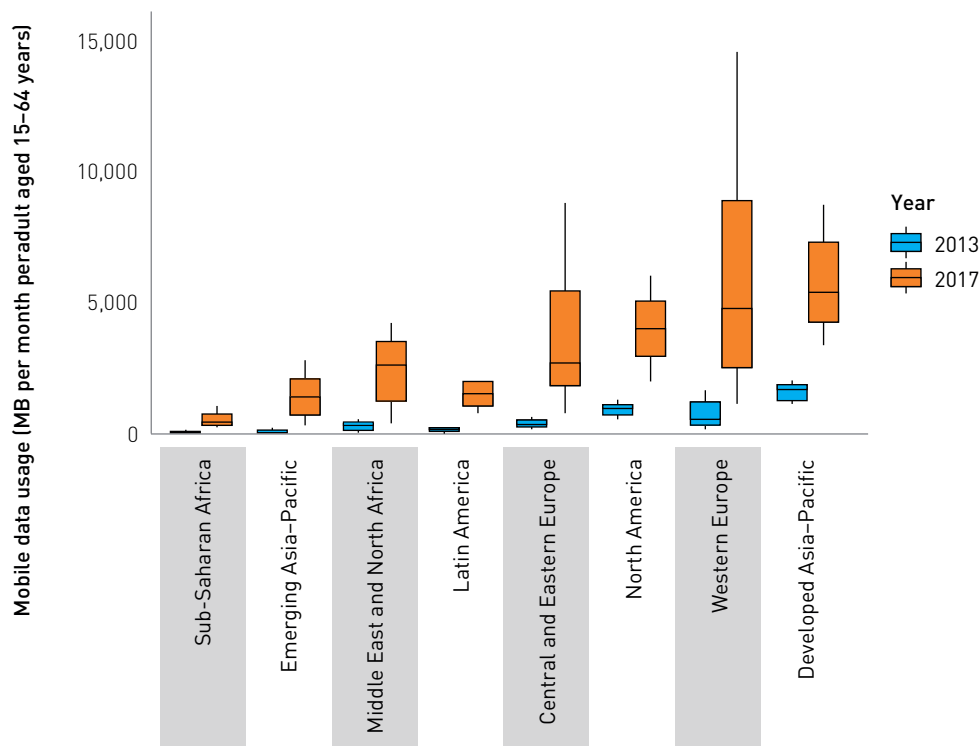


FIGURE 1: MOBILE DATA USAGE GROWTH BY REGION, 2013-2017 [SOURCE: ANALYSYS MASON, EIU AND WORLD BANK]



- **Mobile networks for Industry 4.0.** Enterprises and businesses will benefit from access to networks that can support Industry 4.0 applications such as 5G-based machine control, vehicle-to-network (V2N) services, robot connectivity, “campus-wide” multimedia services, and AR overlays for remote maintenance or construction support.
- **Fixed-wireless access (FWA).** FWA based on 5G networks with sufficient spectrum can contribute to bridging the digital divide within and between countries and can increase the level of competition among operators and access technologies that provide high-speed internet services into homes and businesses.
- **National connectivity objectives.** Many countries and regions have ambitious broadband goals that might only be met by wireless networks as part of the solution. In both urban and rural areas, access to 5G infrastructure could assist with meeting connectivity policies in an economically viable manner (for example, where it is uneconomical or impractical to deploy fibre-based broadband networks).

Mobile data usage has increased sharply in recent years, although usage levels vary between countries and regions (see Figure 1). The horizontal black line inside each box represents median usage, the upper and lower range of the boxes show the 75th and 25th percentiles, and the vertical lines show the upper and lower range for the countries in each region.

It is expected that data usage will continue to increase in many countries, although the variability between countries and regions will remain. Two important trends are likely to affect traffic growth and associated spectrum needs.

- **The take-up of price plans with unlimited data usage (“unlimited pricing”).** Mobile data pricing has important consequences for usage. For example, unlimited pricing has been in place for a long time in Finland, and usage in the country far exceeds any benchmarks in the region and is one of the highest in the world. If unlimited pricing continues in Finland, the annual growth rate in mobile data usage will be 30% and usage will be well above 150GB per capita per month in 2025.³ As other countries move towards unlimited usage plans, it is reasonable to expect that usage levels will increase in these countries too.
- **Limited fixed-line availability in many countries and FWA.** In many countries, a large share of households and businesses will not have access to high-speed (that is 100Mbit/s or more) fixed broadband coverage in the near future. Their connectivity needs could be met with high-capacity mobile networks. Assuming an annual growth rate of 30%, a household that uses 200GB of fixed broadband data today, would use around 1000GB per month in 2025. Household sizes vary around the world, but this would be an average of more than 250GB per month per user.

Timely availability of spectrum will continue to be important to support future developments of 5G. Compared with low- and high-frequency bands, mid-band spectrum can provide a better balance for meeting requirements for both coverage and capacity. This is probably why the recent World Radio Conference decided to include parts of the 6GHz band for study in relation to possible use for IMT.

¹ R. Katz, The impact of broadband on the economy, ITU, 2012.

² R. Katz and F. Callorda, The economic contribution of broadband, digitization and ICT regulation, ITU, 2018.

³ The economics of upgrading networks to accommodate this level of data usage is not assessed in this article, and it is likely that unlimited pricing could be capped before this level of data usage is achieved.



Questions?

Please feel free to contact Harald Wium Lie, Partner, Consulting, at harald.wium.lie@analysismason.com

The towerco market in Saudi Arabia is emerging and may disrupt the regional status quo

Jacopo Pichelli, Manager, Consulting



MNOs in Saudi Arabia have been contemplating the creation of a towerco for years

The three MNOs in Saudi Arabia (STC, Mobily and Zain) have been considering the sale or carve-out of their tower assets for the past few years. STC was the first to take the initiative at the end of 2019 (Figure 1), following a lengthy series of developments and changes in the strategies of all three MNOs. It carved out the majority of its tower portfolio (more than 14 000 towers) and established TAWAL, the first mobile passive infrastructure player in the country and one of the largest national towercos in the world.

Integrated Telecommunications Company (ITC) was the first operator in Saudi Arabia to sign up for co-location space, and did so on more than 150 existing sites in November 2019 (Figure 1). This will help ITC to expand its portfolio more quickly than would otherwise have been possible, thus giving concrete proof of the benefits that towercos can bring to mobile markets in the Middle East.

The demand for data and connectivity will trigger a new cycle of large investments from operators

Mobile data traffic is expected to grow steadily in the next few years, especially with the adoption of 5G. MNOs in Saudi Arabia have already launched 5G services, and offer generous data packages and unlimited plans. In parallel, the national regulatory authority (CITC) and the Ministry of Communications and Information Technology are joining efforts to make the country 5G-ready, and have imposed a roadmap of targets for 5G speed and coverage, with the first milestone set for the end of 2020.

The total traffic on Saudi Arabian mobile networks is expected to grow by 21% by 2024. Operators will have to increase their number of sites (including small cells and DAS), particularly in congested areas, in order to cater for the growing demand for data and service availability. An additional 2000 points of presence will still be needed, despite the increase in spectrum efficiency due to the deployment of new technologies such as 5G, massive MIMO and beam-forming techniques.

Operators must invest in both active equipment and passive infrastructure

Operators will need to upgrade their existing networks in order to offer 5G services. To comply with the conditions of the recently awarded 3.5GHz spectrum licences, operators will have to cover 35% of the population of the 5 largest cities in the country by September 2020, and 50% of the population of the 18 largest cities by 2025.

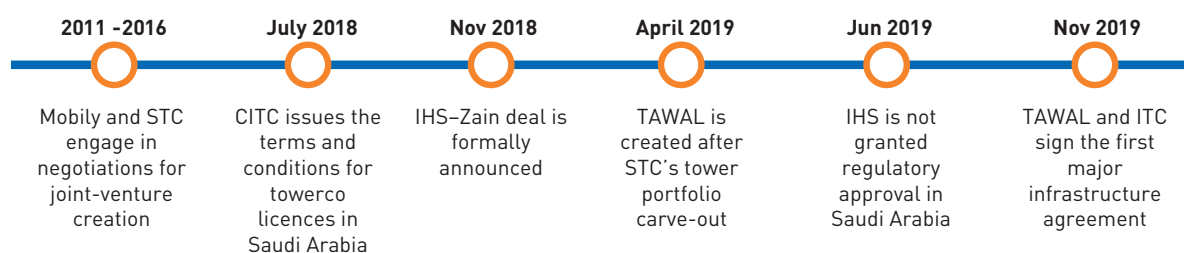


FIGURE 1: MAJOR MILESTONES IN THE CREATION OF THE FIRST TOWERCO IN SAUDI ARABIA [SOURCE: ANALYSYS MASON, 2020]



No new sites will be needed for operators to meet these obligations, but rather existing sites will have to be quickly upgraded. These upgrades will require a significant amount of capex for new active equipment such as radios and massive MIMO antennae, but they will also call for significant investments in the existing passive infrastructure in order to accommodate this equipment, which will require additional space and power. Many of the existing towers will have to be strengthened, modified or substituted, and the vast majority will require power system upgrades.

Operators may partner with towercos to quickly expand and upgrade their networks

As discussed earlier, operators will need to invest in both upgrading their existing sites and expanding their networks by adding new sites when upgrading their networks to 5G. Both aspects will put additional pressure on operators' cash flows. However, there is an opportunity for towercos to ease this financial burden and ensure a faster implementation of operators' expansion plans.

Can towercos help with the upgrade of operators' existing sites? The benefits to operators in this case are not as straightforward as those in the case of newly built sites, and a more attentive cost-benefit analysis would be needed. However, operators might find it beneficial in the specific cases when an existing site cannot support upgrades and needs to be relocated, or when most of the site equipment needs to be substituted.

There are also opportunities for towercos to support network operators in building new coverage in a series of ambitious mega projects including Neom (a 26 500km² mega city), King Abdullah Financial District (a massive complex composed of nearly 60 towers in the city of Riyadh), King Abdullah Economic District (a newly built city on the west coast near Jeddah) and the Red Sea touristic project. These will all give towercos an opportunity to provide greenfield, state-of-the-art infrastructure.

Establishing operations in Saudi Arabia would give any towerco the critical mass to operate subsidiaries in other smaller countries in the region, without incurring excessive overhead costs.

About Analysys Mason's tower experience

Analysys Mason is a leading commercial and technical advisor with an exclusive focus on telecoms, media and technology (TMT). It has supported over 350 transaction support assignments worldwide during the last 5 years, more than 100 of which were tower-related assignments, such as supporting STC with the carve-out of its tower portfolio and the subsequent creation of TAWAL, the first towerco in Saudi Arabia. Analysys Mason has a 360-degree view of the towerco industry and an in-depth knowledge of the commercial, technological, operational and regulatory aspects of the business. This unique positioning makes Analysys Mason the ideal partner for towercos.



Questions? Please feel free to contact Jacopo Pichelli, Manager, Consulting, at jacopo.pichelli@analysismason.com, Rohan Dhamija, Managing Partner, Consulting, at rohan.dhamija@analysismason.com or Andres Flores, Consultant, Consulting, at andres.flores@analysismason.com

Analysys Mason's predictions for M&A activity in the telecoms market in 2020

The telecoms sector will experience plenty of activity in mergers and acquisitions (M&A) in 2020 spurred by the development of the infrastructure wholesale business model and new technologies that will create wider opportunities for investors. Here are Analysys Mason's top ten predictions for M&A activity in the telecoms market in 2020.

Prediction 1: we are in the golden age of infrastructure carve-outs and the vertical dis-aggregation of the industry will continue in 2020

In 2019, we predicted a strong year for the carving out of infrastructure assets: operators were looking for financial partners to support capex plans that they would not be able to deliver through their own balance sheet. The tide duly swept in, starting with mobile towers and moving on to fibre and data centres, and is not expected to recede in 2020, macroeconomic conditions permitting. Unsurprisingly, we expect carve-outs to continue to account for the bulk of M&A activity, but the most interesting thing is that we are seeing plenty of interest to expand beyond the 'big three' asset categories (see Prediction 3).

Operators are increasingly interested in retaining the right degree of control over their assets. Retaining some control of assets will lead to a larger number of deals structured to attract long-term financial investors rather than strategic partnerships. Partial divestment will act as a means to highlight the cashflows generated by these infrastructure assets whilst the operator can still exert a large degree of control. Having said that, strategic investors have demonstrated their ability to make compelling financial bids that can change the mind of the seller (see Cellnex with Iliad's towers and SFR's FTTH with Covage). Strategic investors can also offer a partnership that goes beyond providing capital and will continue to leverage this to expand their footprint.

Prediction 2: Broadcasting towercos will plan the spin-off of mobile co-location business

Various broadcasting towercos are looking for buyers in Europe. Many sale processes have fallen through because of a valuation mismatch between the seller and the potential, largely due to differences in expectations regarding the longevity of the TV broadcasting revenue stream.

Most broadcasting towercos have diversified into mobile co-location, fibre and data centres. There is an opportunity for investors to sell non-broadcasting assets separately to take advantage of the difference in valuation between the different businesses. The broadcasting business can still attract interest from specialist investors, thus creating additional value from the distinction of very different businesses. For 2020, we expect to see more deals like the one Arqiva closed with Cellnex in the UK in 2019.

Prediction 3: Infrastructure investors will start looking for new asset classes

Deal volumes in traditional assets are unlikely to decrease in the short term, but investors are already considering what the next tower, fibre or data-centre asset class might be that will define the next wave of M&A. This will be driven by the natural interest in staying ahead of the curve and anticipating emerging trends to close deals and build a portfolio before the new asset class becomes mainstream and prices soar.

This will inevitably raise the question of what 'infrastructure' is and how it should be re-defined within the investor community. Some creativity may be required to be competitive, but it is already clear that spectrum and active networks (e.g. electronics) will come under scrutiny from investors – but they will not be alone.

5G will continue to arouse the interest of investors with new business models. For example, the 'landlord pays' model could be used in order to address the coverage deficit for the 'great indoor' and other high-footfall locations, which can be enabled by more flexible licensing regimes. Digital Colony has already started developing a comprehensive UK capability in this area through its acquisitions of Stratto, Opencell and Spyder but it is a geographically specific market and this model is much more nascent in other markets.

Prediction 4: Deals to aggregate assets from different infrastructure asset classes will be experimental rather than transformative

In our article last year, we predicted that convergence between infrastructure vertical sectors would become a more significant talking point. Indeed, a good degree of activity has been recorded by Analysys Mason, typically involving small deals that proved the appetite among existing players to experiment and gain knowledge of adjacent vertical sectors. However, we have not yet seen a 'wave' of related M&A deals.

Towercos, fibreco's and data centres all operate in vertical sectors that present large opportunities for organic and inorganic growth. The decision to allocate large capital amounts to diversify is not easy, especially as the business case for convergence is still limited and/or immature. On the other hand, the aforementioned players will need to continue to experiment in order to be primed for the moment they need to commit to this strategy more completely. We do not expect transformative deals in 2020, but in 2021 we may tell a different story...

Prediction 5: the use of unlicensed frequencies will create more interest in FWA, although opportunities remain limited

We note a renewed interest in fixed-wireless access (FWA) assets thanks to the improved capabilities of wireless technologies and the use of unlicensed frequencies. FWA can address attractive market niches (e.g. rural/remote areas) where the timeframe and the economics of fibre deployment make the business case challenging.

The speed of execution and the competitive economics of FWA networks deployment is expected to attract fresh capital, including from those investors who have historically preferred fibre assets. FWA networks can be upgraded to full fibre as required by take-up or competitive pressure to protect the territory that has been gained.

Prediction 6: New wave of investments in submarine cables

Additional international bandwidth will be required to support the growth in global data traffic, including for emerging markets. Despite the continuous upgrades of the active equipment, existing submarine cables will soon be unable to fulfil demand on many routes, and additional systems will need to be rolled out in parallel. Moreover, the capacity offered by new transmission technologies makes it more economically convenient to deploy a new cable than upgrading existing ones.

New routes will need to be opened to reflect the changing global dynamics of the connectivity market: emerging economies will start playing a more central role by contributing to the production of content and IP services. Internet giants will invest in a more distributed network of points of presence to create regional hubs that will need to be efficiently interconnected.

We predict significant investments for the next two to three years, with important announcements to be made in 2020, likely to be dominated by co-investments between the internet giants and traditional players.

Prediction 7: Multi-national groups are likely to retreat to core markets, providing opportunities for new investors with appetite for the geographical and political risks

Multi-country operators are predicted to reconsider the portfolio of markets in which they operate. Similarly to carve-outs, the divestment is driven by the need to fuel capex in the core markets. A large disparate footprint could be considered a distraction rather than an opportunity if the peripheral markets do not contribute sufficiently to growth in EBITDA.

A notable example is Telefónica, which announced its intention to focus on four markets, and treat the others as financial rather than strategic investments. Similar motivations can be seen in Liberty Global and Telenor selling their operations in Central and Eastern Europe (CEE), Tele2 refocusing in the Nordic region, while the destiny of Telenor's Asian assets is still unclear due to the difficulties in closing the deal with Axiata.

This trend could lead to the emergence of new regional conglomerates (e.g. PPF Group and United Group in CEE) and interesting investment opportunities for private equity firms.

Prediction 8: The European infrastructure divestment spree will start spreading to Greece and CEE

CEE was not unaffected by M&A activity in 2019. In addition to (BC Partners-backed) United Group buying Vivacom in Bulgaria, and the acquisition spree of PPF Group buying CME, Orange has been active in the region, with the acquisition of Telekom Romania. However, infrastructure investors have so far not played a large role in the region compared to other regions (perhaps with the exception of Poland), due in part to operators' preference towards vertically integrated business models.

We believe that the markets are reaching a sufficient level of maturity for investors to challenge the status quo and for operators to consider alternative options. We would expect these operators to look at successful carve-outs in Western Europe. This could be further encouraged by the changes of ownership discussed in Prediction 7 above, and there could be an

interesting opportunity for transformative strategies that include the participation of long-term infrastructure investors.

Similarly, we see great potential in certain countries previously considered difficult to invest in: the Greek market, for example, has suffered from historical economic difficulties that have blocked many deals in the past. Signals of economics improvements and business confidence should attract the investments that are required to fund the deployment of new infrastructure (e.g. fibre tenders in rural areas).

Prediction 9: Network evolution to 5G will see new winners emerging in software telecoms, prompting further M&A deals from both vendors and private equity firms

5G deployments requiring cloud-native telecoms software creates more opportunities for smaller vendors of next-generation platforms. These companies will rapidly become targets for the larger companies who have under-invested in their platforms, but the two fundamentals remain – price and performance. There are many innovations in optics and radio technology that increase performance with lower power consumption, smaller footprint and higher performance. Software innovations are automating a broader scope of network functions with more data and better, AI-led analytics.

In all these areas, start-ups flourish while larger vendors and network operators seek innovative acquisition. While vendors will lead in terms of M&A volumes, there will be further opportunities for technology-focused private equity firms to back companies able to carve out market niches (and perhaps more). The challenge will be to gain sufficient understanding of the trends and the rate of adoption of new technologies in telecoms that has often been misjudged in the past.

We also see growing interest in open-source technologies such as Open-RAN which mobile operators will increasingly look to use to solve some of the cost-based problems associated with low traffic and rural sites. Towercos could play an important role in this space but they have not fully embraced this business model yet. In the meantime, new bankable players are emerging, such as Internet Para Todos in Latin America and Africa Mobile Networks and Vanu in Africa.

Prediction 10: Very lively M&A activity in cyber security

The competition between 'security-as-a-feature' models and full suites of security products evolves and intensifies. By security-as-a-feature, we mean Microsoft bundling anti-virus protection with Windows, or offering cloud security information and event management with Azure Sentinel. By a full suite, we mean the offerings of pure-play security companies, the model followed by companies from Sophos to Palo Alto Networks. Opting for a single, best-of-breed product is losing its appeal to many businesses as they seek to reduce the number of vendors whose solutions they use and simplify their security operations.

More M&A activity is driven by the above competitive trends. Companies from other parts of the value chain will buy security firms (as we have seen in 2019 with deals by VMware and Broadcom), while security specialists will continue to make smaller, 'bolt-on' acquisitions to strengthen their portfolio. We will continue to watch the activities of specialised technology investors in the small and medium-sized market.

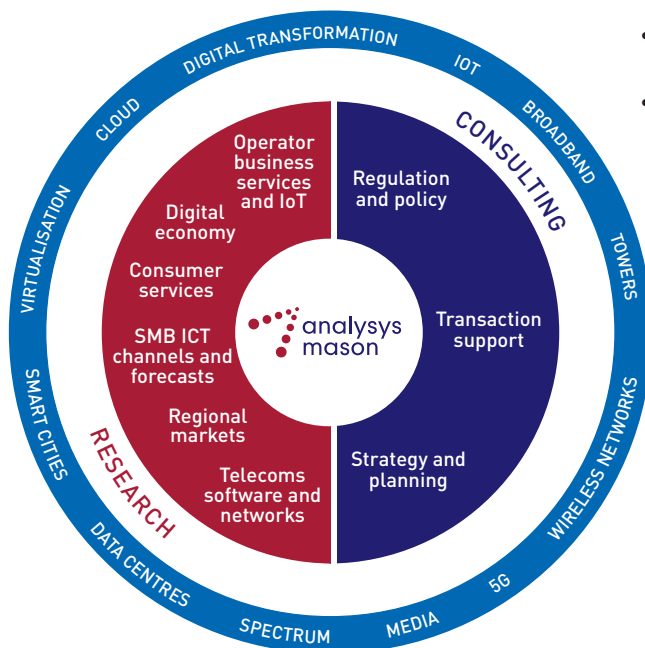
Do you have any comments on our M&A predictions for 2020? Please get in touch with the author, Alessandro Ravagnolo, at alessandro.ravagnolo@analysismason.com

Analysys Mason's consulting and research are uniquely positioned



Analysys Mason is the global specialist adviser on telecoms, media and technology (TMT). Since 1985, Analysys Mason has played an influential role in key industry milestones and helping 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



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 they can thrive in these demanding conditions.

Consulting

- We deliver tangible benefits to clients across the telecoms industry
- 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 new technology brings.

Research

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

“Analysys Mason is the global specialist adviser on telecoms, media and technology (TMT). Since 1985, Analysys Mason has played an influential role in key industry milestones and helping 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.”



Stay connected

You can stay connected by following Analysys Mason via Twitter, LinkedIn, YouTube or RSS feed.



@AnalysysMason



[linkedin.com/company/analysys-mason](https://www.linkedin.com/company/analysys-mason)



[youtube.com/AnalysysMason](https://www.youtube.com/AnalysysMason)



analysismason.com/RSS/



analysismason.podbean.com