



# 5G

**5G going live was the single biggest change in the telecoms industry over the last 12 months, and this is just the beginning.**

## KEY TAKEAWAYS

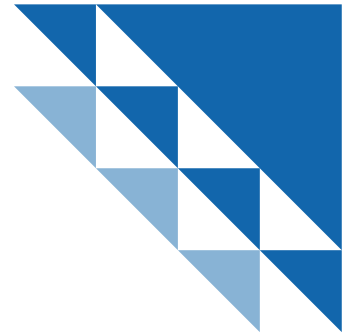
- 5G is rolling out fast in all parts of the world
- Media & Entertainment is set to benefit the most from 5G in near term
- Support is strong for continued investment in 4G

# EXFO

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**IMPORTANT NOTE:** This document is an extract from the Telecoms.com Annual Industry Survey 2019 Report published by Telecoms.com Intelligence in November 2019. The extract focuses on the 5G section that was sponsored by EXFO. For more information and to download the full report, please visit [telecoms.com/intelligence/telecoms-com-annual-industry-survey-2019/](https://telecoms.com/intelligence/telecoms-com-annual-industry-survey-2019/).

# 5G



The single biggest change in the industry landscape since last year’s Telecoms.com Annual Industry Survey was the launch of commercial 5G services in different parts of the world. South Korea and the United States may continue to argue which of them was the real first to press the “On” button, but the world has been charging forward.

According to the tracking by the GSA, by the beginning of November, 50 operators in 27 countries have already switched on commercial 5G networks. While the US and Uruguay are the single 5G markets in their respective continents, two countries in Africa, five in the Middle East, six in Asia Pacific, and twelve in Europe have launched 5G commercial services.

Consumer enthusiasm for 5G has been strong. The 5G subscriber base in South Korea, the pacesetter in the first phase of 5G, grew faster than the corresponding period when 4G was first launched. Samsung announced at the IFA in September that it had already sold 2 million 5G smartphones, and expected the shipment to double by the end of the year.

But 5G is much more than just faster download speeds on newer smartphones. The survey respondents identified better customer experience as the leading benefit 5G can bring to mobile network operators, selected by 24% of the respondents. Following this, there were new business models (24%), selected by an almost equal number of respondents, and optimal network resource efficiency (19%).

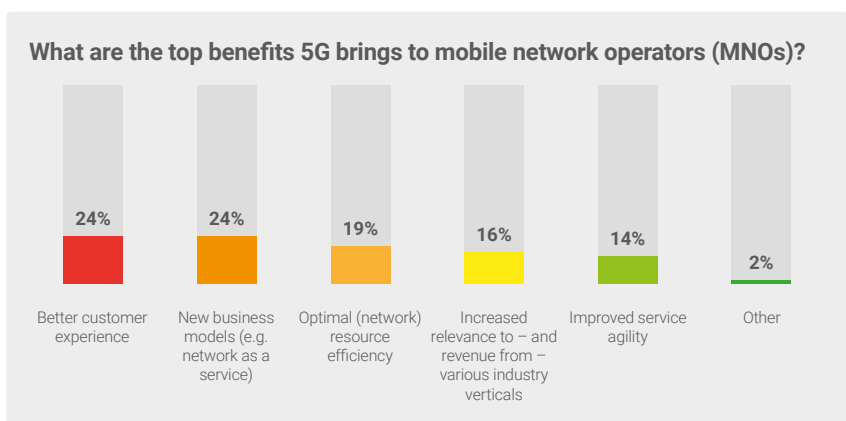
It is worth noting that all these benefits do not only apply to services for consumers, but also to business

customers. 5G is the first time in the mobile telecoms history that industry use cases can be as important to operators as consumer services, if not more. Such a significance is well recognised by the industry professionals.

When asked to nominate the industries that 5G will be most relevant to, in addition to the communications industry itself, which was a runaway number one chosen by 34% of the respondents, media & entertainment and automotive were close, selected by 19% and 16% of respondents, respectively. This is a clear indication that the industry professionals are looking at 5G from both near and long perspectives. While media & entertainment can benefit from 5G almost instantly, the automotive

industry will feel the increasing impact of 5G in the long run. With end-to-end, standalone mode 5G more broadly deployed, 5G’s capabilities for low latency and massive machine-type communications will serve industries like autonomous cars and manufacturing automation in more pronounced ways.

Along similar lines, when drilled down from industry level to service and application level, 48% of respondents saw data (including fixed mobile access) and video as the number one 5G revenue generator for mobile operators. This is already happening. Two months after it launched 5G service, the South Korean operator LG Uplus announced that the average data consumption per 5G user had already gone up by 225% over





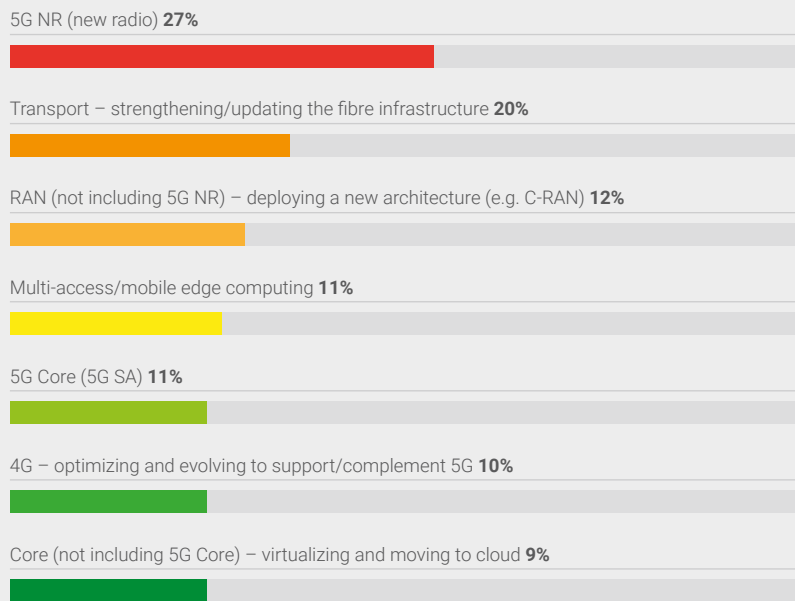
4G average, while the price of the unlimited package it offers on 5G started 68% higher than 4G. Driving such growth in data consumption were primarily entertainment services like ultra-widescreen broadcasting (12K UHD) over 5G, and live sports broadcasting.

Another high-ranking revenue generator, chosen by 22% of respondents, was industry automation or Industry 4.0. Again, it may take the industry a while to realise the full potential of 5G for industry use, as some scenarios will require standalone 5G. However, it does not mean the industry has to wait for standalone mode. Some industry cases can already benefit from the existing non-standalone 5G networks, while some cases that started in 4G environment can be hugely improved with 5G, smart homes and smart cities being the obvious examples. China Telecom, the world's largest integrated operator by subscribers, highlighted the 5G+Cloud+AI capability it will offer to industry customers, including industrial internet, smart cities, smart medical care, smart education, transport and logistics, and smart energy.

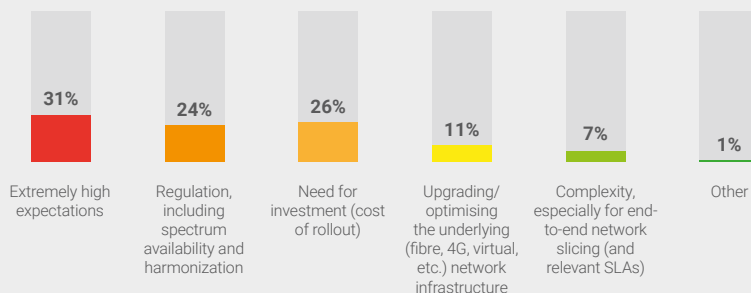
However, the industry needs to overcome some big challenges before these benefits can be realised. These include both technology and market challenges. On the technology front, 5G new radio (NR) is by far the biggest challenge identified by the experts, selected by 27% of them. This is to do both with radio access network (RAN) on new radio bands, and with related domains like network planning that the industry has yet to accumulate rich experience in. Transport systems related to upgrading fibre infrastructure (20%) and new RAN architecture like cloud-RAN (12%) were also seen as leading technology challenges.

When it comes to identifying the biggest market and business challenges, how to manage expectations was viewed as the

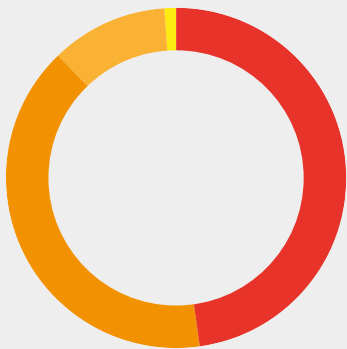
### What are the top 5G technology challenges for MNOs?



### What are the top 5G market challenges?



**Should MNOs continue to invest in 4G evolution?**



- Yes, 4G will continue to be key for years, even after the launch of (Standalone) 5G .....48%
- Yes, 4G is essential for the initial (Non-Standalone) 5G launches .....40%
- No, 4G will not be relevant for long .....11%
- Other .....1%

toughest task, chosen by 31% of the respondents, followed by the cost of rollout, selected by 26% of the respondents, and the regulation environment including spectrum availability and harmonisation, by 24%.

To overcome these challenges, the telecom experts believed that modernising legacy IT systems (25%), closely followed by investing in expertise (24%) and breaking down internal operational silos (22%) are the priorities for the industry in preparation for 5G. Furthermore, to ensure that 5G delivers, respondents picked end-to-end view of network performance and service quality (36%) and automation in all phases of 5G deployment (35%) as almost equal priorities.

However, not all legacies should be thrown out. The industry experts also recognised that, realistically, 5G will not achieve universal coverage any time soon. When asked if mobile operators should continue to invest in 4G, an

overwhelming majority of the survey respondents said yes. 40% of them believed 4G is essential for the initial non-standalone 5G launches, while a further 48% thought 4G will continue to be key for many years, even after the launch of standalone 5G.

Despite that legacy networks like 4G will be with us for a long time, 5G's momentum will not be hampered in any way. A most recent and extremely strong impetus to the 5G market is the simultaneous launch of commercial 5G service by China's three incumbent operators. Thanks to the sheer size of the market, China is poised to become the biggest 5G market shortly. According to the prediction of GSMA, an industry lobby group, China will have 600 million 5G subscribers by 2025, about 40% of the global 5G market. The momentum is definitely on. ●

## Sponsor's Comment

**5G is here, now. To a large extent, this survey reflects the telecoms industry expectations from 5G today (firstly) and in the future (secondly). For example, better customer experience is identified as the number-1 5G benefit. But if we count all responses and not just the first pick, adopting new business models (e.g. network as a service) comes out on top.**

The survey respondents' views on the 5G relevance to verticals are interesting too. And so are the results on the revenue-generating 5G applications/services. While video and data dominate, industry automation shows up strongly to confirm the anticipated 5G role in robot/machine operation. Unsurprisingly, 4G is still significant for respondents. Investing in 4G, as part of an overall network transformation strategy, should not be overlooked.

Technology challenges wise, 5G new radio (NR) wins the first spot. But if we count all responses, the need to strengthen the – transport – fibre infrastructure leads. Undoubtedly, the underlying network infrastructure

is crucial for 5G. The results on market challenges and on how to best prepare for 5G (adding expertise, for example) are more-or-less in line with network operators' concerns.

Finally, to ensure that 5G delivers, the survey emphasises automation – in all phases of 5G rollout – and the end-to-end view of network/service quality. Network operators frequently refer to complexity, customer expectations and cost limitations as key challenges that call for advanced test, monitoring and analytics expertise, from deploying and optimizing network infrastructure to assuring and monetizing services.

The success of 5G, including end-to-end network slicing, mandates a unified view across layers and domains, built upon understanding network/service topology and relevance to customers/devices. 5G mandates actionable insights and intelligent automation to detect and resolve or to predict and prevent customer/device-impacting issues in real time. Can we make 5G a success? Yes, we can!