

Number theories:

what 100 operators really think about 5G

The ICT industry has never seen anything like **the journey to 5G**. But what will 5G be used for, who will drive it and when will operators be ready? **Our exclusive survey** holds up a mirror to 5G - and reveals that objects in the future are **closer than they appear**.

“87 percent of executives agreed with the statement: “5G will be a real game-changer for us””

5G AND THE NETWORKED SOCIETY

By 2021, it is estimated that there will be 28 billion connected devices globally – close to 16 billion of which will be part of the Internet of Things [1]. 5G communication technology, along with the continued development of 4G, will be the foundation for enabling these connections and helping realize the full potential of the Networked Society.

Standardization efforts for 5G have just begun and are expected to be completed by 2020. However, many operators around the world have started planning for 5G adoption and are taking initial steps toward vendor selection and early trials.

To learn more about operators' expectations, use cases and plans for 5G, Ericsson commissioned a detailed survey of 100 technology leaders from operators in North America, Europe, Asia Pacific, and Central and Latin America. Respondents included COOs, CTOs and CIOs, as well as heads of network operations, network innovation and network development.

This article summarizes the results of this research, including operators' plans for 5G adoption, and makes three key recommendations for what can be done now to prepare for 5G.

5G: A REAL GAME-CHANGER

Almost all (95 percent) of the respondents in the survey agreed that 5G supports the ongoing influx of connected devices and the Internet of Things (IoT). This is because 5G will increase network capacity, which will be required to handle the traffic generated by the expected 28 billion connected devices in 2021. In addition, 5G will decrease the energy requirements for devices, enabling battery life of up to 10 years in some cases. This will significantly reduce maintenance costs, making large IoT installations more practical and cost-effective.

Ninety-two percent of respondents agreed that 5G paves the way for the emergence of new technologies. One such example is haptic feedback, which brings the sense of touch to a user interface. This could enable someone controlling a remote robot, for example, to “feel” objects in the robot's environment in real time in order to avoid collisions. The near-zero latency of 5G enables the quick reaction times that make this possible. Haptic feedback will enable new use cases such as remote surgery, and it will greatly improve the safety and effectiveness of remote robot or drone operation.

A very large majority of respondents (86 per-



cent) believed that 5G enables a wider range of services than any network has done before, and 86 percent also believed that 5G will enable new disruptive business models and technology in industries.

The introduction of 5G will allow operators to become more flexible and efficient by moving from a rigid network to an agile one that can meet many diverse needs with new, as-a-service business models using network slicing. A network slice conceptually decouples a network from the underlying physical infrastructure, thereby providing individual, isolated and elastic virtual networks on demand, with unique defined characteristics. To implement network slicing, technologies like software-defined networking and Network Functions Virtualization, as well as management and orchestration processes, will have to work in harmony with a flexible radio-access network that can adapt to different requirements and deployment models.

Overall, there is an expectation that 5G will be an innovation platform that provides the ability to bring new services to market quickly. This will enable operators to take advantage of market opportunities and dynamically meet changing consumer and business needs.

These findings explain why most of the executives we surveyed (87 percent) agreed with the statement: "5G will be a real game-changer for us."

5G USE CASES

Operators expect 5G to bring opportunities in the areas of IoT, broadband everywhere and anytime, critical control of remote devices, smart vehicles and transportation infrastructure, and media everywhere.

In the 5G era, operators' traditional businesses will evolve and grow as many industries are transformed by new capabilities. When respondents were asked about the most important potential 5G use cases for their organizations, mobile broadband topped the list, followed by public safety and health care:

- ▶ 64 percent – mobile broadband
- ▶ 41 percent – public safety
- ▶ 38 percent – remote operations in health care
- ▶ 36 percent – real-time remote control
- ▶ 35 percent – smart buildings
- ▶ 32 percent – smart cities.

While operators mostly agreed on important use cases, there was regional disagreement about whether 5G use cases will be primarily consumer-driven (as 4G/LTE was by smartphones) or if 5G will be primarily driven by business needs. A small majority of European and North American operators believed 5G will be more consumer-

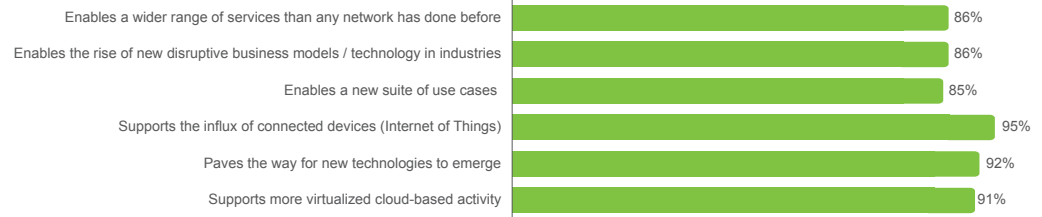
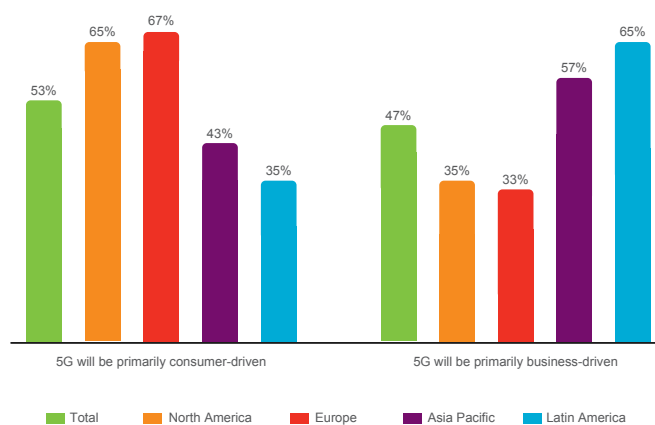


Figure 1: Why is 5G a game-changer?

driven, while a similar majority in Asia Pacific and Central and Latin America expected 5G to be more business-driven. Although many of the new 5G use cases currently in the spotlight are more industrial in nature, it will also be important to maintain focus on consumer needs.

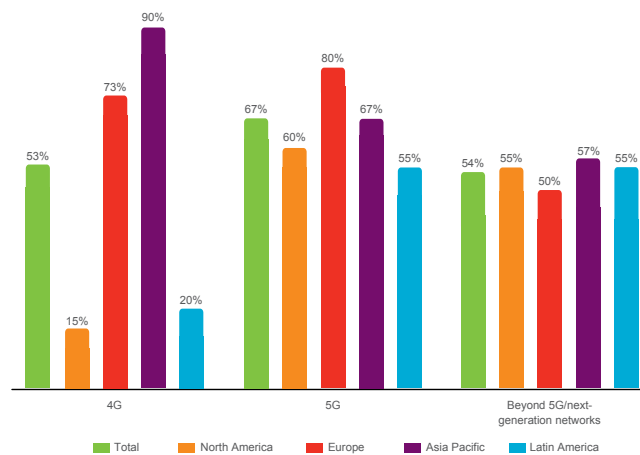


Base: Total Respondents (100); NA (20) Europe (30) Asia Pacific (30) LAM (20)

Figure 2: Will 5G be driven primarily by consumers or businesses?

5G ADOPTION

While 5G standards are not expected to be finalized until 2020, many operators have already begun preparing for this new technology, with some trials beginning in 2016. Responses to the survey confirmed this trend. In fact, even those operators still focusing on 4G are beginning to turn their attentions to 5G.



Base: Total Respondents (100); NA (20) Europe (30) Asia Pacific (30) LAM (20)

Figure 3: What is your focus for the next five years?

According to the survey, operators in Europe and Asia Pacific [2] plan to split their attention between 4G and 5G over the next five years, while it appears that North American operators are looking ahead to 5G and beyond.

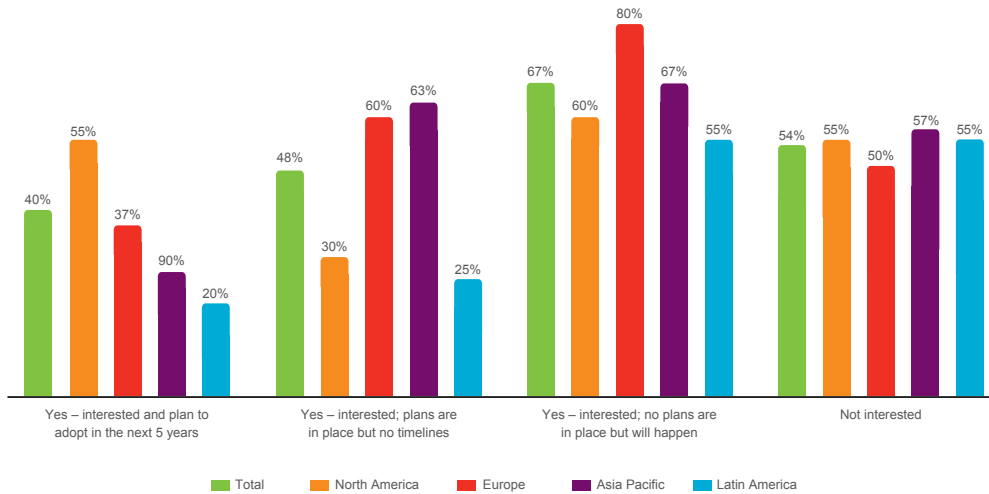
Most respondents worldwide – 74 percent – have plans to roll out 5G at some point, but not all have timelines for those plans. North American operators lead the way, with 90 percent having plans in place to roll out 5G, followed by 80 percent in Central and Latin America, and 67 percent in both Europe and Asia Pacific.

ents believed their own trials would begin between 2017 and 2018, with a smaller spike in 2020.

Across all regions, there were high expectations for commercial deployment of 5G before 2020, when the standards are expected to be finalized. More than half of North American respondents expected their organization to have critical mass adoption in 2018. And in all other regions, at least half of respondents expected critical mass adoption by 2020.

The respondents were much more conservative regarding their perceptions of adoption time-

“Even those operators still focusing on 4G are beginning to turn their attentions to 5G”



Base: Total Respondents (100); NA (20) Europe (30) Asia Pacific (30) LAM (20)

Figure 4: Do you have plans for 5G?

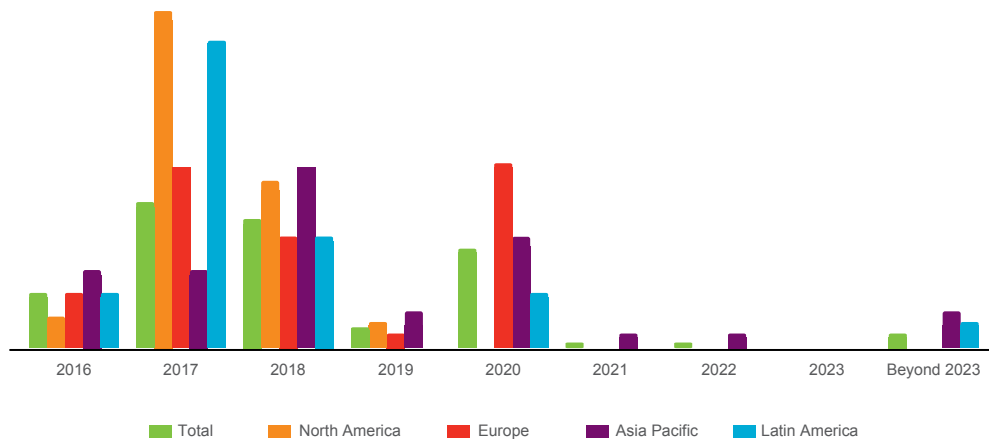
In the survey, we covered three major milestones in rolling out 5G: trials, initial commercial deployment, and critical mass deployment. Respondents were asked when their organization would reach these milestones, as well as when they thought operators in different regions would achieve these goals.

When we asked respondents when their organization would reach these major milestones, their timelines were quite aggressive. Most respon-

lines for other organizations and regions. When asked when milestones would be reached in specific regions, the respondents had high expectations for rapid progress in North America followed by Europe and Asia Pacific, with mixed expectations for Central and Latin America.

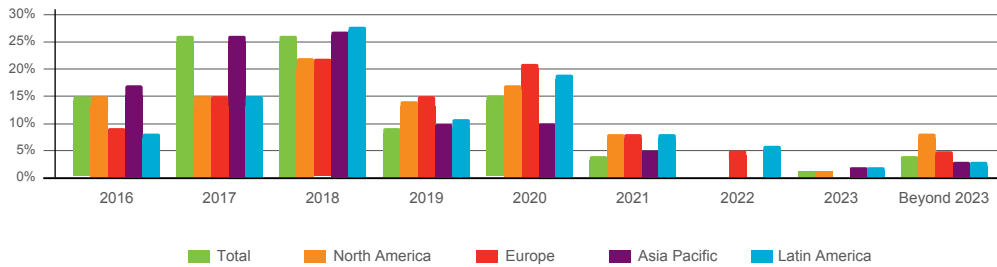
PREPARING FOR 5G

Based on these timelines, the time to start preparing for 5G is now. 5G systems will include ra-



Base: Total Respondents (100); NA (20) Europe (30) Asia Pacific (30) LAM (20)

Figure 5: When will you start 5G trials?



Base: Total Respondents (100): NA (20) Europe (30) Asia Pacific (30) LAM (20)

Figure 6: When will operators in each region be in 5G trials?

dio-access, cloud, core, and management solutions (operations support systems/business support systems) that address the requirements of mobile communication beyond 2020. As a result, the transition will be more extensive than in any previous generation of mobile communication technology. However, operators can already take the following three steps to ensure a successful transition to 5G:

Choose a trusted partner: operators should select a transformation partner that can help create new revenue streams based on 5G business models and use cases. In particular, operators will need a partner with the right strategy and architecture in order to evolve smoothly from their current technology to 5G. Moving to any new technology has its risks, so we recommend implementing a carefully planned, step-by-step transition to 5G.

The ideal partner has expertise in minimizing risk during highly advanced and multi-access technology rollouts, experience in making customers successful with large, intricate deployments and a strong partner ecosystem to accelerate the process.

Plan ahead to transform everything: in addition to technology transformation, operators should focus on how their businesses must change in order to address new markets and customers with dramatically different business models. For instance, what is the business model for offering application-specific, on-demand virtual networks? With the new industrial use cases that 5G enables, there are opportunities for operators to provide more high-value services. What will these look like?

As well as offering network planning, optimization and transformation services that prepare operators for 5G, the right partner can help on the business side with business case development and organizational readiness services.

Begin the transformation today: 5G networks will be programmable, scalable and on-demand, as well as agile and analytics-driven to meet customer needs. Operators can put their networks on the right path today by making the following technology choices:

- ▶ cloud systems that modernize infrastructure, applications and data under one operational and economic architecture
- ▶ analytics platforms to analyze network, subscriber and application data
- ▶ real-time charging and policy solutions for dynamic and adaptive governance based on analytics
- ▶ real-time service enablement platforms that deliver customized offerings to subscribers.

CONCLUSION

The Networked Society is here today, bringing disruptive change across industries and societies. The introduction of 5G will accelerate this transformation and create new use cases and business opportunities for operators, industries and consumers. Ericsson predicts that there will be 150 million 5G subscriptions by the end of 2021 [3] – and that time is fast approaching.

To capture the full value of 5G, operators around the world are aggressively pursuing 5G rollout plans – even before standards are finalized – to keep up with demand for low latency, higher performance, capacity, density and security.

The journey to 5G will be unlike any previous network technology evolution. Now is the time for operators to engage a trusted partner with the knowledge, expertise and experience to guide them through this critical transformation. ●

ABOUT THE AUTHOR



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▶ REFERENCES

- [1] Ericsson Mobility Report, June 2016, available at: <http://www.ericsson.com/res/docs/2016/ericsson-mobility-report-2016.pdf>
- [2] While there has been a lot of early activity around 5G in Japan and South Korea, the survey defines Asia Pacific as including Japan, South Korea, Australia, Singapore, China and India, which makes the overall regional adoption timeline appear less aggressive.
- [3] Ericsson Mobility Report, June 2016, op. cit.