



## At a Crossroad: Weighing the Realities and Risks of 5G

*Survey explores executives' perspectives on next-generation cellular technology*

# Executive Summary

The promises of 5G are undeniable: massive connectivity for Internet of Things (IoT) devices, reduced latency and ultrareliability with supersonic speed. While forward-thinking business leaders are embracing this new era of improved network performance, speed and user experience, many still wonder if 5G is right for their business — and if so, when is the right time to invest in it?

Protiviti recently conducted a survey of 183 executives to explore 5G's impact. Business leaders in various industries were surveyed about their timelines for 5G adoption, levels of investment, perceived benefits and barriers to implementation. Key highlights of the survey include:



Uncertainty regarding 5G availability is partly to blame for enterprise leaders' hesitation



Fixed wireless is likely to be the most widely adopted enterprise use case in the next three to five years



5G's ability to create a more engaging customer experience was the most significant benefit identified among respondents



Of enterprises surveyed, the highest percentage of respondents is currently adopting or planning to adopt 5G within the next two years



The most significant barriers to 5G adoption are cost and integration with legacy technology



High costs associated with new systems architecture is the most significant risk of 5G adoption.

# Planning for 5G —Six Things Executives Can Do Now

5G is here and its impact on future infrastructure, user experience and technology continues to grow. Even if you are not yet ready to begin deploying 5G solutions, it is important to understand the role 5G will play for your organization and begin planning ahead. Here are six steps executives can take now to prepare.



Investigate how 5G can drive improved customer experiences and employee engagement



Evaluate new 5G use cases and capabilities



Examine business and future IT infrastructure plans for the advantages that 5G brings



Understand how a 5G roadmap and timeline will impact information technology (IT) and operational technology (OT) security



Communicate with peers on their 5G plans



Weigh short- and long-term costs of 5G implementation

# Survey Results

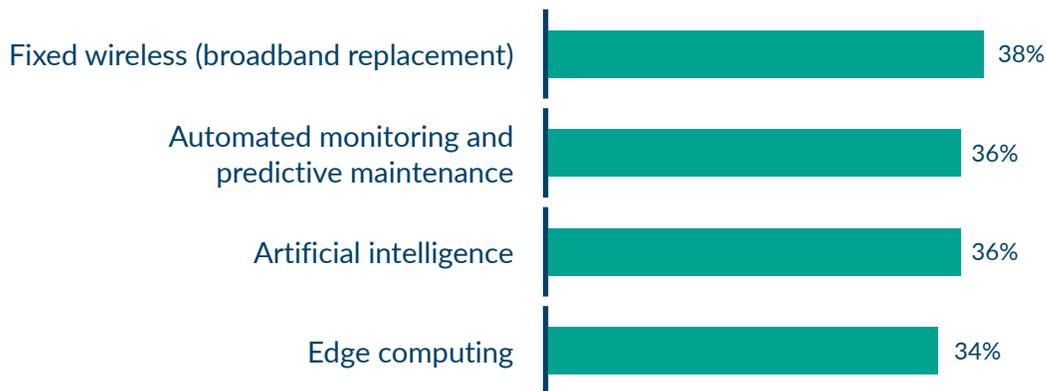
## Fixed Wireless Use Cases Take the Lead for Widest Adoption

Survey results point to early enterprise 5G investment in devices (i.e., smartphones and tablets), upgraded networking (fixed wireless) and a focus on improving customer experience and employee engagement. The results align with the initial 5G deployment by large wireless carriers as primarily being dominated by premium devices such as smartphones and tablets.

In IoT/OT, the first adoption of 5G has primarily been in the area of fixed wireless routers where 5G is the internet backhaul, and IoT/OT devices are able to connect through traditional wireless and wired methods.

In the next few years, early 5G adoption is expected to be driven by new use cases made possible by 5G advancements such as enhanced automated monitoring, remote controlled robots, augmented reality and advancements in autonomous vehicles that rely on 5G speed and latency enhancements.

## Which 5G use cases are most likely to be widely adopted in the next 3 to 5 years?



## Executives Value the Unsurpassed Customer Experience 5G Brings

When asked about the most significant benefit to adopting 5G, more than 35% of respondents cited a more engaging customer experience. The top perceived benefits of 5G can be divided into two groups. First, 5G offers improved speed and latency — which drives both customer experience and employee engagement. Second, the massive connectivity for IoT devices will provide stronger data for advanced analytics. Combined with mission-critical communication capability, executives expect 5G to enable increased automation in

everything from the factory floor to infrastructure and surgical procedures in operating rooms.

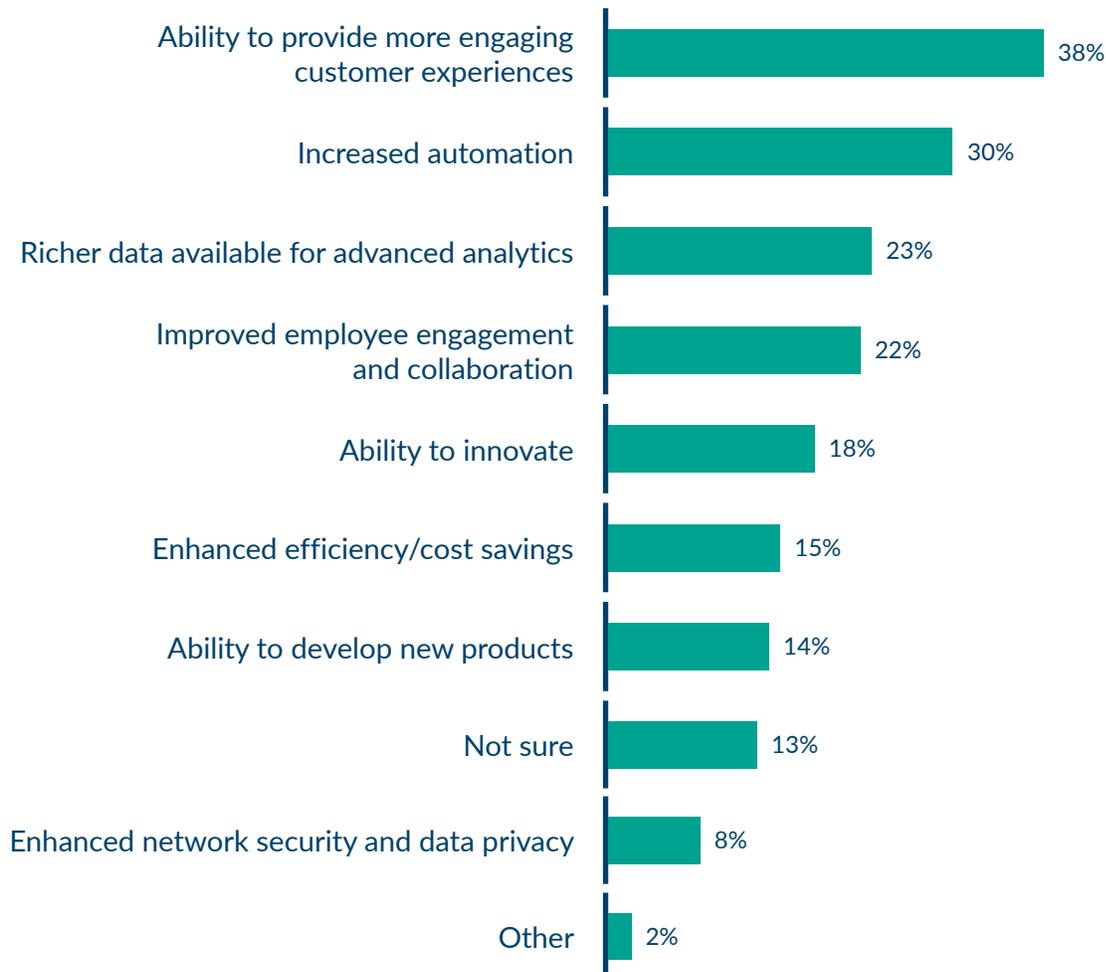
5G is also expected to provide easier access to cloud data and capabilities on personal mobile devices. The increased speed and reduced latency of 5G means that users — both customers and employees— will be able to have an enriched experience digitally and in the real world through more personalized, targeted interactions. 5G is already bringing renewed focus in the areas of edge cloud computing and artificial

intelligence solutions. More data will be at a user's fingertips than ever before. With decreased latency, data can be curated to the most relevant information and delivered in real time resulting in more engaging customer experiences.

With LTE expected to last another 20-25 years, many organizations are already investing in IoT solutions today using 4G LTE in the areas of predictive

maintenance and remote monitoring of equipment and infrastructure. The pace of investment in this area is expected to increase with the transition to 5G. It is fueled primarily by AI, the ability to push compute and heightened decision-making capabilities from cloud to edge computing. Accordingly, this enables increased autonomy at the edge and allows for more effective monitoring, efficiency and real-time action.

### What do You See as the Biggest Benefit to Adopting 5G?



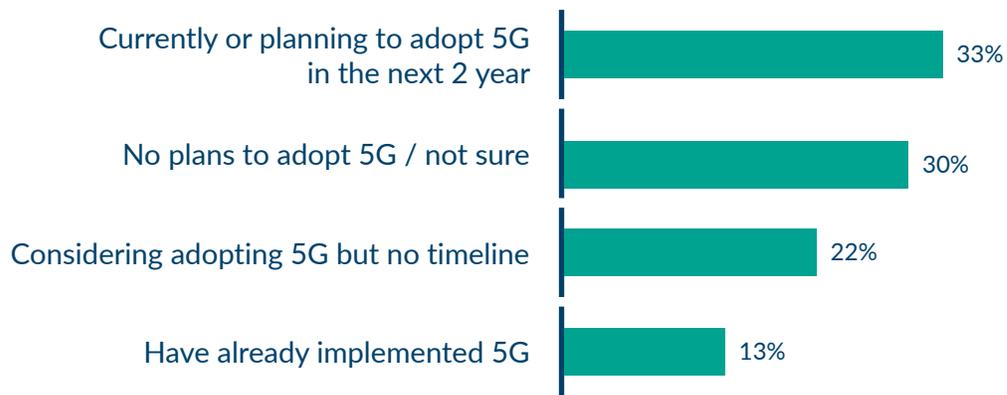
# Challenges

## Cost and Integration Drive the Timeline of 5G Adoption

Determining the right time to jump into 5G investing is complex. The results of the survey suggest that about half of organizations surveyed are already adopting or planning to adopt 5G in the next two years, while the other half of respondents had no timeline. Less than 15% of organizations indicated they have already adopted 5G.

There are a number of reasons causing such hesitation. Cost and the ability to integrate with legacy systems and networks are clearly the most significant barriers to 5G adoption, followed closely by security concerns and the availability of products and technology with 5G. The cost of 5G modems is expected to decrease significantly over the next several years. However, it will likely be more than five years before 5G modems approach the cost of today's LTE cellular modules for IoT devices.

## Where is Your Organization in Adopting 5G?



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*“The 5G promise of ultra-fast, low latency communications for massive amounts of devices opens the door for technologies and use cases that were previously only imagined in science fiction. But, as with any new technology, there are significant barriers that must be removed in the coming years as 5G fully matures.”*

– Geoff Weathersby, Director, Emerging Technologies

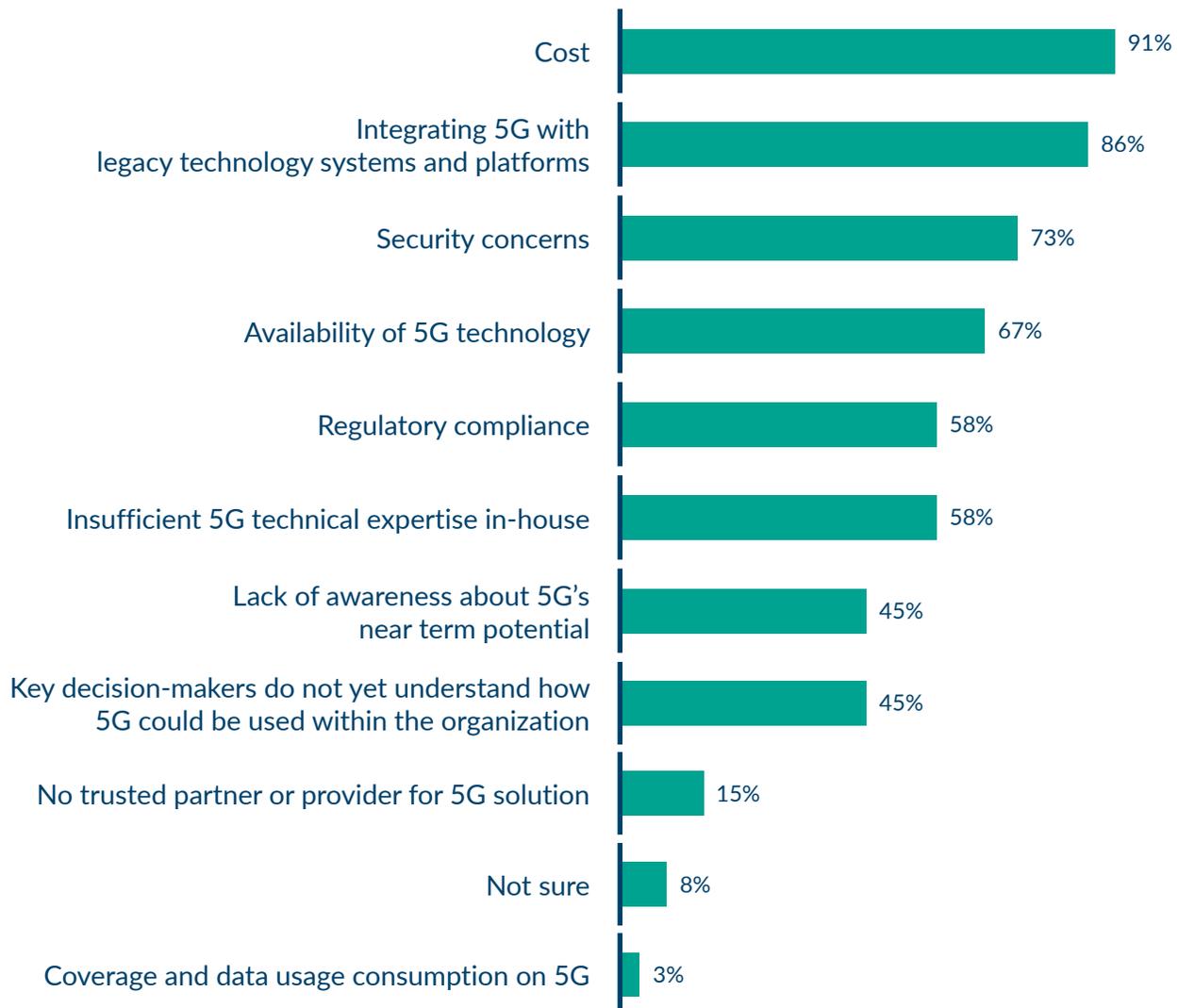
## Cost and Legacy Technology Bring Challenges to 5G Adoption

Today's reality is that 5G is still very expensive and the devices that support 5G are currently limited. Over the next several years, new products are expected to address new use cases such as autonomous drones, remote cobots and robots, edge cloud computing, artificial intelligence and other augmented reality solutions. These products will rely on the speed and low latency of 5G to become a reality. Many IoT devices that use LTE today — and that do not require the speed

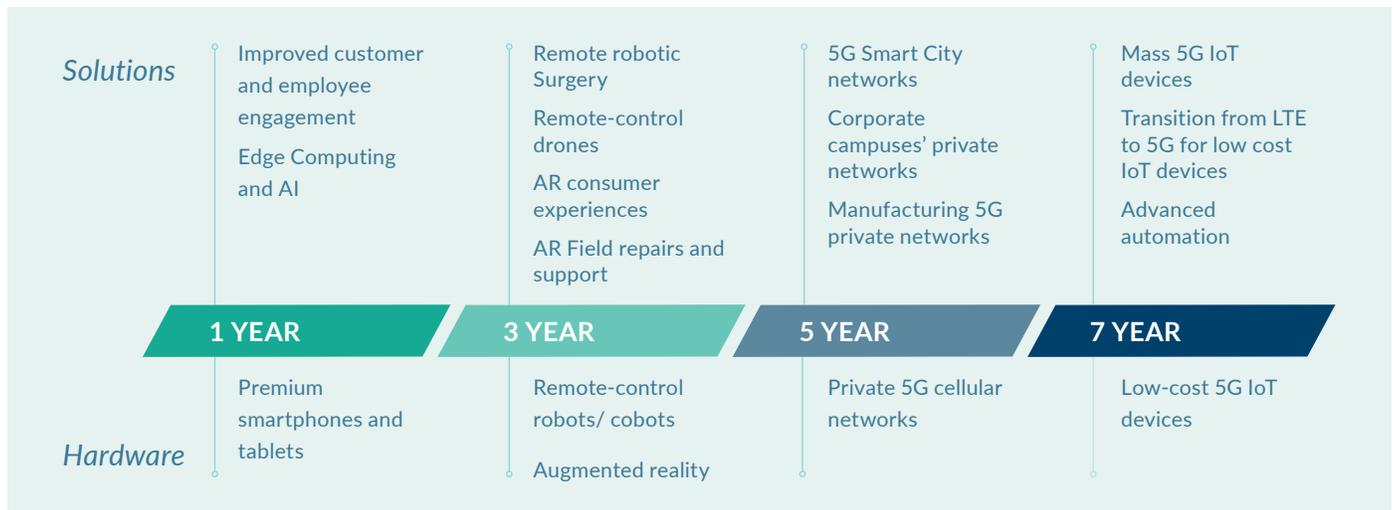
and latency advancements of 5G — will continue to do so for the next five to 10 years until the costs of 5G are more aligned with LTE costs.

As commercial 5G becomes more ubiquitous, the feasibility of these new products is expected to increase. In addition, the products are likely to fall into the range of premium solutions that can accommodate the high cost of 5G.

### Most Significant Barriers to 5G Adoption



# Roadmap to a Mature 5G Environment

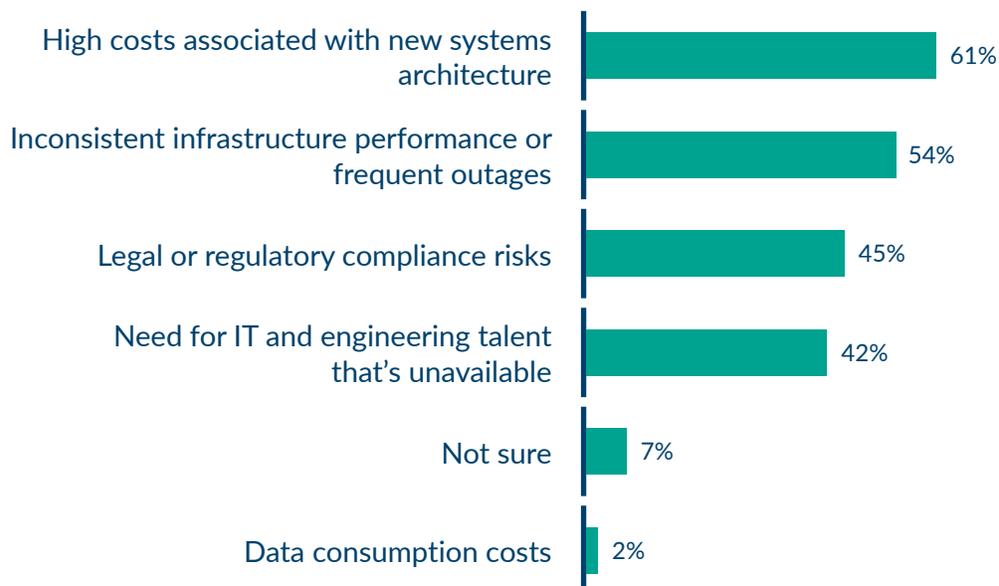


## New System Architecture Costs Are a Risk Concern with 5G Adoption

Survey respondents view high costs and inconsistent infrastructure performance as the most significant risks in adopting 5G. In addition, businesses must consider the potential regulatory and compliance implications on the horizon. For example, there have been recent challenges by the Federal Aviation

Administration over 5G mid-band deployments. Why? Because 5G covers a very wide range of spectrum frequencies and certain frequencies may have an impact on other equipment operating in that spectrum (or that spectrum may already be in use by other devices, or certain regions or countries).

## What are the Most Significant Risks involved in 5G Adoption?



# 5G's Impact on Enterprises

Certainly, individuals using premium individual devices such as phones and tablets will experience the initial impact of 5G. Cost-sensitive IT, IoT and OT devices that rely on cellular are also going to be positively impacted, but it will take more than five years to fully realize this benefit.

5G networks are still being built out and the dream of private 5G networks for hospitals, smart cities, manufacturing facilities and utilities is still three to five years away. Modems and modules are prohibitively expensive to deploy currently — and they cost significantly more than wireless alternatives such as LTE or Wi-Fi.

*5G will fundamentally change how enterprises do business and how individuals interact with the world by enabling immersive customer experiences through:*



Augmented reality



Customer-tailored offerings based on user data



Location and other information



Robotic medical procedures



Autonomous drones and intelligent cities

For instance, a field technician wearing augmented reality glasses could practice an upcoming installation or repair virtually before attempting the repair in the field. A rural emergency doctor performing a life-saving operation could be assisted in real-time by a specialist 1,000 miles away through augmented reality.

Over the next five to seven years, incremental progress will be made in the adoption of 5G. To fully realize the transformational change that 5G promises to bring, enterprises must be planning now for how they will adopt 5G and begin thinking about their 5G transition strategy.

# A Look into the Near-Term Future of 5G

Much of the promise of 5G for the IoT and OT world is still mostly theoretical. Private 5G networks are in their infancy with very limited pilots rolling out currently. There is great promise of 5G private networks in manufacturing, smart cities, stadiums, commercial real estate and hospitals, college and corporate campuses offering a more secure, scalable and faster network than available with Wi-Fi. There is also the promise of mobile devices being able to seamlessly cross between private and public 5G networks and further enabling mobility.

5G private networking offers many benefits for the enterprise. However, it will create a vastly different environment from that of traditional Wi-Fi which are most familiar to IT departments. IT teams are well-versed and have mature tools to manage and scale a corporate Wi-Fi network. Cellular networks operate fundamentally differently — so IT teams will need to learn entirely new skill sets, adopt new tools and be ready to address entirely new challenges in operating and maintaining a private cellular network.

Many of the IoT and machine-to-machine benefits of 5G, such as greater power savings, are not yet included in the current 5G protocols — and realistically, they will not be seen in products for another three to five years. For that reason, along with the low cost of LTE solutions and the expected longevity of the LTE networks, the conversion of many IoT/OT products to 5G will be delayed for another five to seven years.

5G and LTE are able to co-exist with Dynamic Spectrum Sharing (DSS). DSS is a new technology that allows 5G and LTE networks to be used in parallel on the same frequency band with the same network equipment. This will allow carriers to operate 5G and LTE simultaneously and ensure that LTE is a viable solution for IoT connectivity. If high speed and low latency are not critical for the device or use case, expect low-cost IoT and OT products to remain on LTE for the indefinite future.

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*“In many organizations, information security leaders are discussing who has responsibility for storing, securing, and safely disposing of data in hundreds of 5G use-case scenarios, many of which could come online in the next couple of years. How well these leaders and their organizations leverage 5G opportunities and prepare for the risks associated with the technology depends on how quickly they get in place plans and mechanisms for securing the approaching data superabundance today.”*

– Michael Lyons, Managing Director, Technology Consulting

# While Some 5G Uncertainty Remains, 5G Application is a Given

The bottom line is that 5G is everywhere. Nearly every cellular commercial on television touts its numerous benefits — most notably, incredible speed and coverage. Indeed, cellular carriers are continually expanding 5G coverage and features. However, it is not completely deployed and will not be completely deployed for a few years. In the meantime, LTE (4G) is not going away anytime soon and it appears that it will be supported well into the next decade.

Although 5G adoption comes with uncertainty — including a slow-but-steady rollout, LTEs expected longevity, increasing competition from Wi-Fi 6, and other wireless protocols — there are clear and compelling reasons for broader adoption of 5G. Protiviti's survey results and analysis provide a window into how 5G will impact enterprises and what organizations can do to prepare now. Now, how ready is your organization for 5G?

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*“The success of 5G adoption will depend on whether organizations have built a risk culture that encourages management to look out far enough, monitor what matters both internally and externally, and devote sufficient time to assess the implications of change on the business.”*

– Gordon Tucker, Managing Director, Global Technology, Media & Telecommunications Leader

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## CONTACTS

**Gordon Tucker**  
Managing Director  
+1.415.402.3670  
[gordon.tucker@protiviti.com](mailto:gordon.tucker@protiviti.com)

**Michael Lyons**  
Managing Director  
+1.727.249.3031  
[michael.lyons@protiviti.com](mailto:michael.lyons@protiviti.com)

**Geoff Weathersby**  
Director  
+1.213.327.1400  
[geoff.weathersby@protiviti.com](mailto:geoff.weathersby@protiviti.com)



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