

Private 5G country spotlight

verizon[✓]
business



Foreword

5G is opening up many opportunities and will be critical to the future economy. PwC has estimated that it will add \$370 billion to global annual GDP in 2025 and almost \$1.4 trillion by 2030.¹ Enormous opportunities lie in the possibilities created by the combination of private 5G networks and multi-access edge computing (MEC).

In previous reports, we've outlined the critical role private 5G and MEC can play in enabling many of the digital transformation initiatives enterprises are investigating and implementing. They enable a host of highly responsive, extremely low-latency applications, such as automated guided vehicles, intelligent video analytics and much more.

Interest in private 5G continues to grow. We're seeing more interest in visiting our Innovation Labs and more requests for proposal (RFPs) being issued. But many companies are still researching the topic and formulating their strategy.

This report offers information for companies just starting on their private 5G journey. It looks at the availability of spectrum, the sort of organisations deploying the technology, and what governments are doing to drive and support adoption. This report also explores some of the challenges that companies will face as they procure and deploy private 5G networks.



5G: The not-so-new standard	3
From public to private	4
Private 5G: Adoption	6
Factors setting the pace of adoption	6
Availability of spectrum	7
Availability of devices	8
Availability of expertise	9
Government strategy	10
Private 5G: The global picture	11
Asia Pacific	12
Europe	13
Americas	14
Why Verizon	15
Ideation	16
Development	18
Deployment	19
Management	21
Next steps	22

5G: The not-so-new standard

5G isn't new. Public 5G networks are now available around the world – from Australia to the U.K. and the U.S. to Zambia. Analysts report that rollout of 5G networks is proceeding at a much faster rate than previous generations.

In many countries – including Australia, Japan and the U.S. – 5G connections are expected to make up the majority of cellular connections by 2025. Growing availability of public 5G services, used by personal and business users, will help dispel any uncertainty around the capabilities of the technology and help increase acceptance of private 5G services.

5G connections as a percentage of all mobile connections, expected 2025.

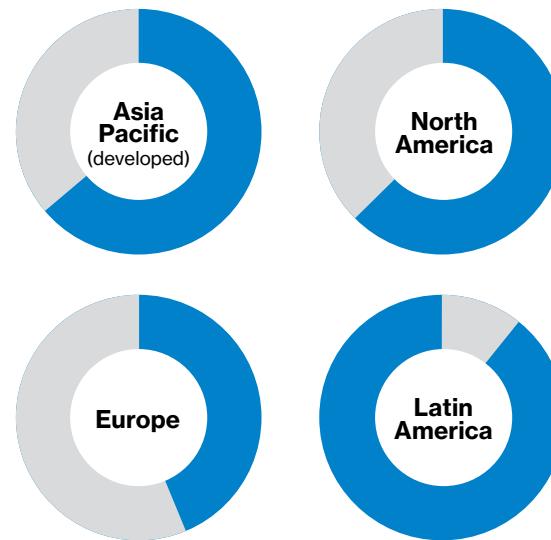


Figure 1: 5G connections as a percentage of all mobile connections. Data from GSMA²

There are many factors affecting the rollout of public 5G. Building nationwide 5G networks may require new masts, more equipment and more backhaul connections. As well as the time required to add this physical infrastructure, first locations must be agreed – and not everyone has welcomed a 5G mast in their neighbourhood. Even where there's an existing 4G site, often significantly more space is required for the equipment required to deliver the performance promised by 5G – potentially several cubic metres and hundreds of kilograms more.

83

The world's first 5G network launched in 2019, and 5G networks have now been delivered by at least 209 operators, spanning 83 countries.

Deloitte.³

From public to private

The adoption of private 5G is also gathering pace. In 2020, fewer than five licences for private 5G networks had been granted in the U.K. Toward the end of 2022, that number had risen to about 60. Over the same period, the number of applications in Germany rose from 78 to more than 200.

This is part of a wider trend, including networks built on LTE and specialised low power wireless area networks (LPWANs). Analysys Mason predicts compound annual growth (CAGR) of private 5G networks of 65% between 2021 and 2026 – 1,900 active networks rising to 39,000.

And, as the chart to the right shows, the share of private 5G networks is predicted to grow rapidly – from just over a quarter (26%) in 2021 to two-thirds (66%) in 2026.

While right now the number of private 5G networks may still seem quite small, the list of companies that have applied for licences includes many familiar names – from leading manufacturers to premier healthcare providers. We're no longer talking about first movers, they've already moved.

Interest across industries

According to GlobalData, a leading data and analytics company, the manufacturing sector accounted for almost a third of 5G and private network deployments as of mid 2022.⁴ Manufacturers are out in front at the moment, but this is partly because they have been using private networks to gather near-real-time data on the condition of equipment, production processes and more for decades. Technologies like supervisory control and data acquisition (SCADA) are decades old and many manufacturers are familiar with how to use the data.

Private cellular networks, by type

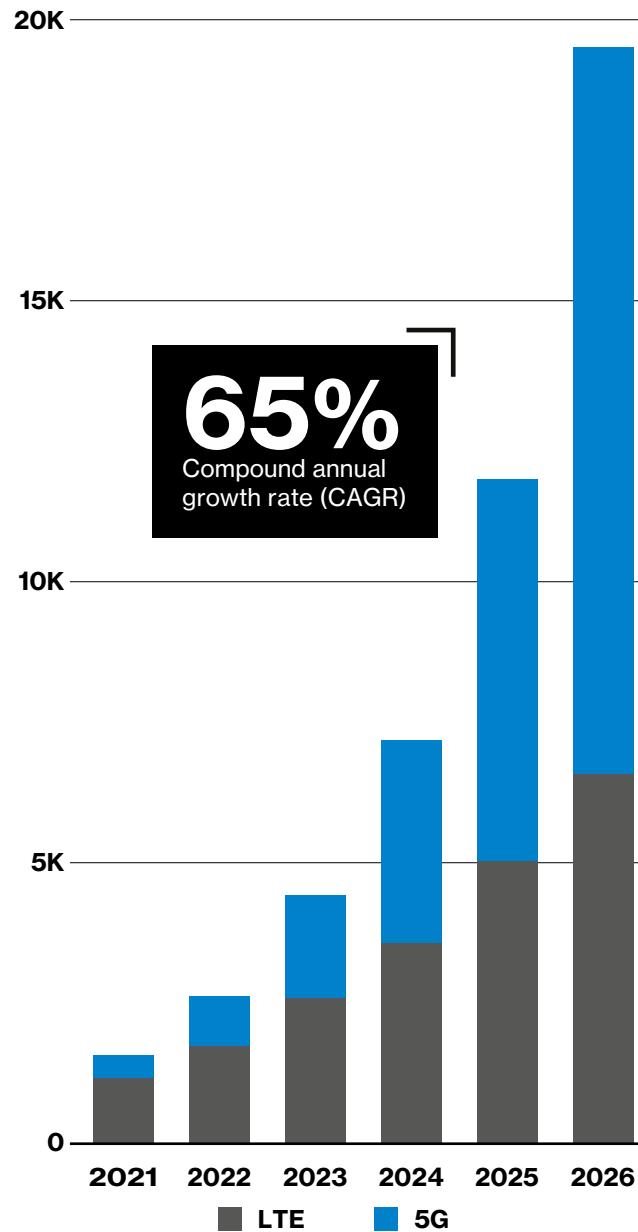


Figure 2: Based on data from Analysys Mason and GSA.

Number of organisations deploying private cellular networks by sector

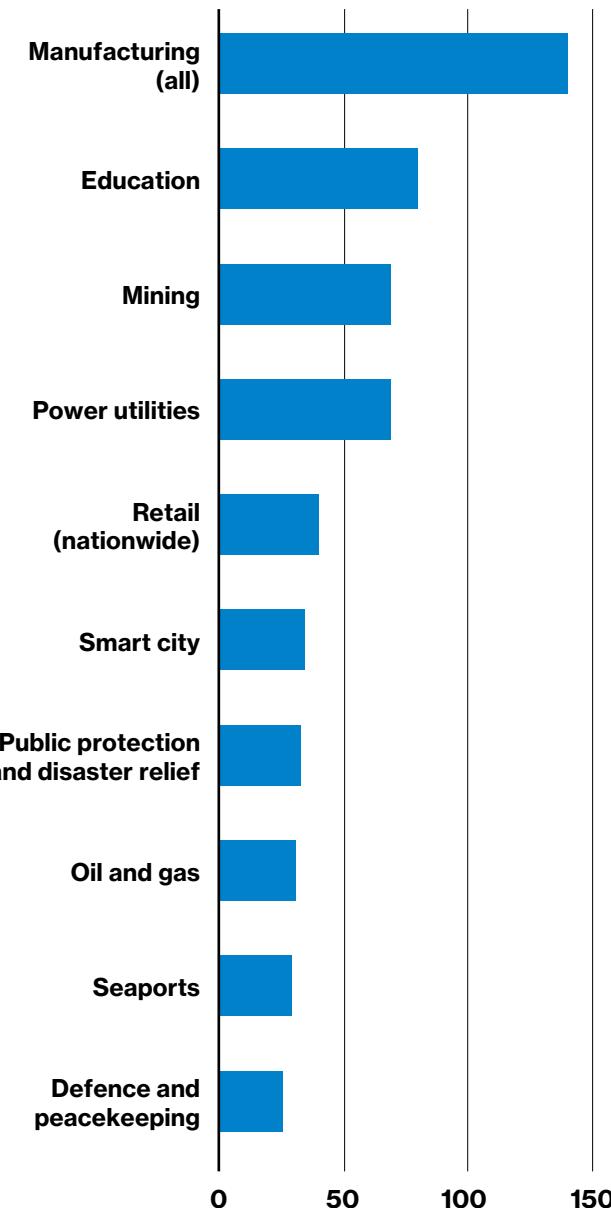


Figure 3: Number of organisations deploying private mobile networks by sector. Data from GSA.⁵

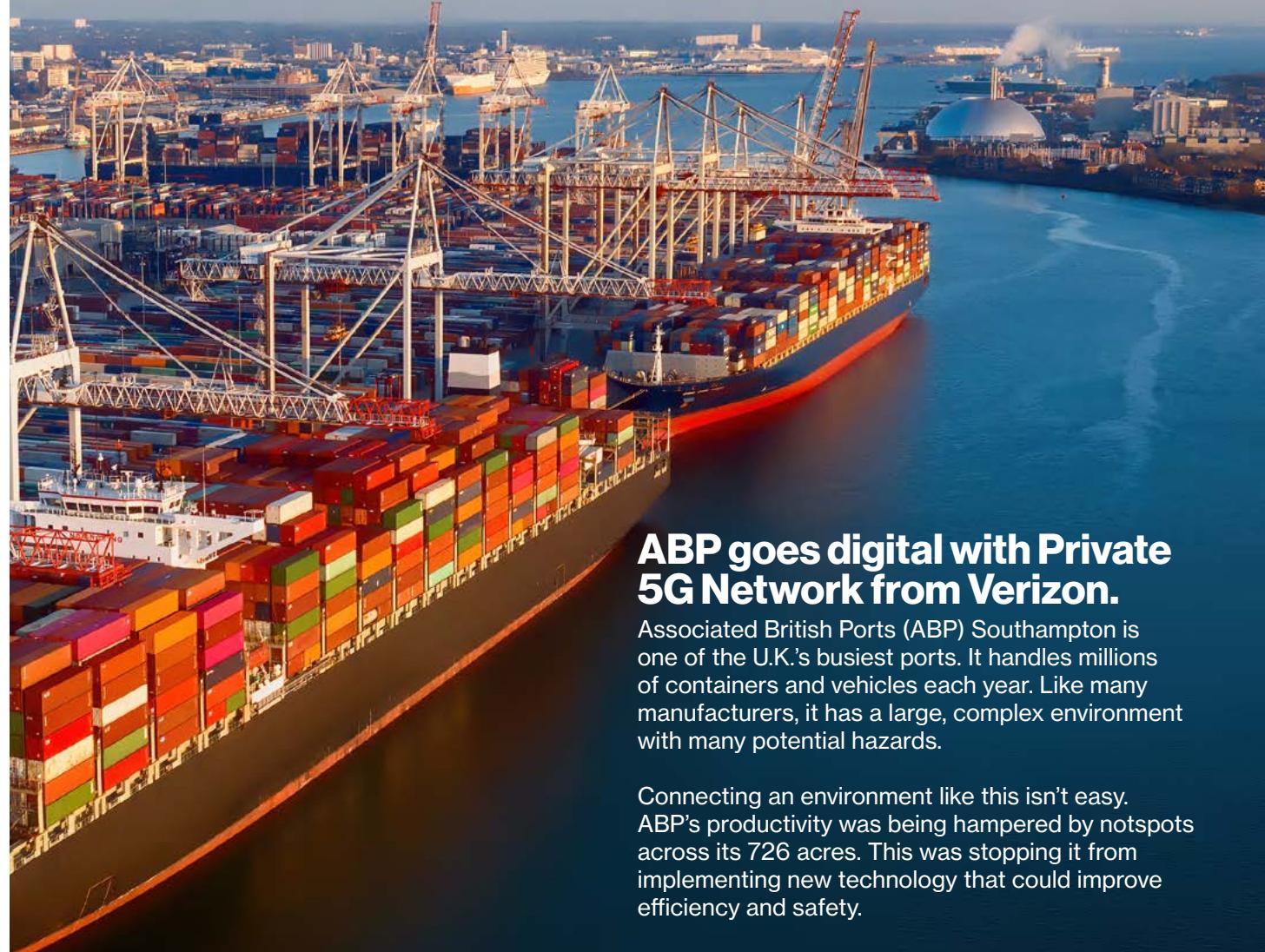
“

Smart factories are leading the next evolution in efficient manufacturing, and implementation is happening quickly. I would certainly expect that every new factory built from 2025 will include secure high bandwidth connectivity in its design to support advanced automation, while many larger manufacturers are now deploying private 4G and 5G in their existing plants.”

John Marcus, Principal Technology Analyst, GlobalData⁶

While manufacturers are the most likely to have started their private wireless network journey, they're not the only ones showing interest. As our look at the country-by-country picture later in this report (see [Private 5G: The global picture](#)) shows, private wireless networks are being used by a wide variety of industries. That's because there's such a tremendous variety of use cases – with even more being added all the time.

Companies in industries as diverse as education and mining are applying for private 5G licences, developing proofs of concept and deploying production applications.



ABP goes digital with Private 5G Network from Verizon.

Associated British Ports (ABP) Southampton is one of the U.K.'s busiest ports. It handles millions of containers and vehicles each year. Like many manufacturers, it has a large, complex environment with many potential hazards.

Connecting an environment like this isn't easy. ABP's productivity was being hampered by hotspots across its 726 acres. This was stopping it from implementing new technology that could improve efficiency and safety.

A private 5G proof of concept from Verizon solved historical connectivity issues and led to an immediate boost in productivity. Since the new network was deployed, ABP has begun testing exciting new solutions that will help it to create a competitive edge for the future.

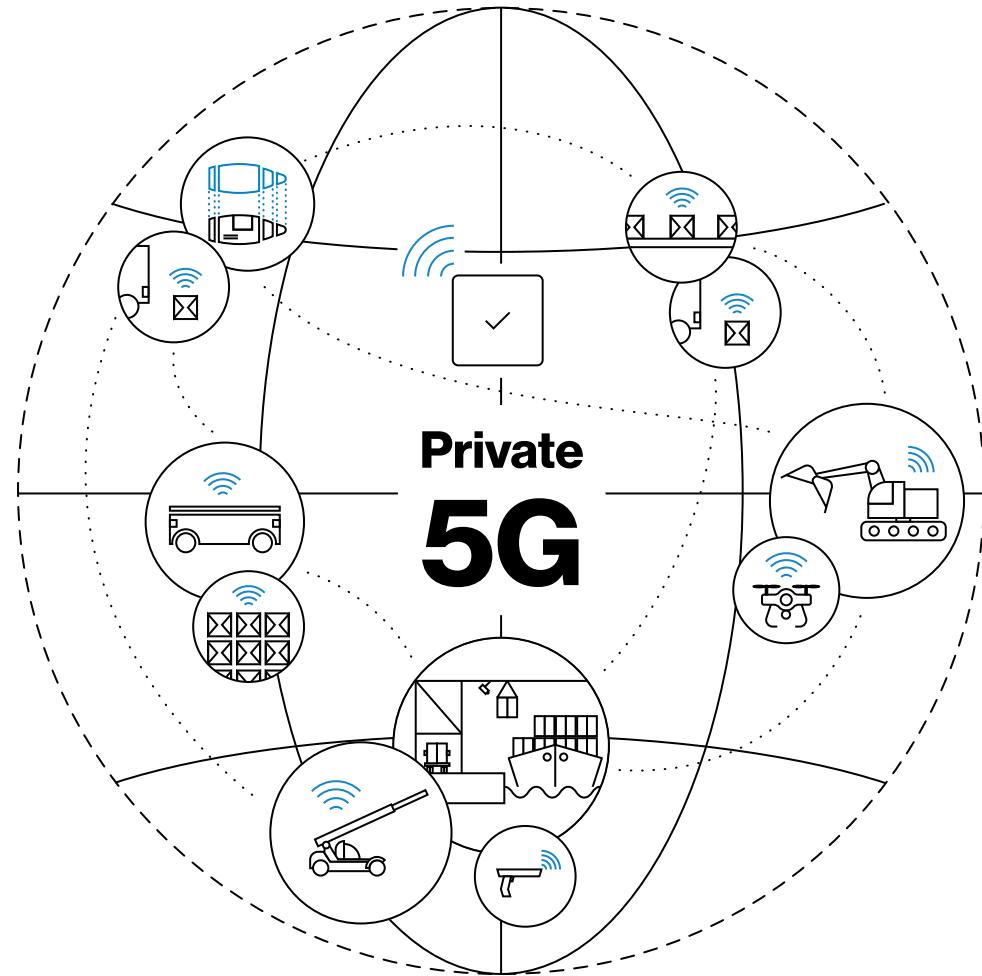
See how private 5G is helping ABP achieve Enterprise Intelligence – [video case study](#).

Private 5G: Adoption

Factors setting the pace of adoption

Private 5G doesn't face the same deployment issues as public networks. Companies don't have to wait for a mobile network operator (MNO) to deploy 5G infrastructure in their geographies – which could take some time in remote areas.

However, there are four key factors that are driving, or in some cases limiting, the adoption of private 5G:



Availability of spectrum

Where companies can adopt private 5G is limited by the speed at which countries make spectrum available for this purpose.* Obviously, there's a correlation between governments having a plan for public services and having one for private services, but commitment to supporting private 5G varies greatly. More than 20 countries have already made spectrum available for private 5G, but many organisations are still waiting for their governments to act.

Broadly speaking, the countries that have made spectrum available have adopted one of two models, or a mix of both:

Direct allocation (DA)

The regulator dedicates specific portions of spectrum for private networks. Companies must apply for a licence on a site-by-site basis and pay a one-time administration fee. These fees vary by country but are typically quite low.

Operator-led (OL)

Companies must lease spectrum from existing MNOs. Generally, MNOs in these countries have made spectrum available at a reasonable cost and without undue burden. As the market operates smoothly, enterprises can commission a private 5G network from a non-MNO virtually as easily as from an MNO direct.

Defining the “private” in private wireless networks

There are many situations in which sharing a private 5G network makes perfect sense. It's still private, just not exclusive to a single organisation. Examples include:

- **Shared spaces**

Owners of shared working spaces, like a science park campus, could build a private 5G network and lease some of the capacity to tenants. This would enable those businesses to provide services to their employees and other users within their buildings and vicinity. The costs of setting up and managing the network could be shared, making this an attractive proposition.

- **Collaborative operations**

Partnerships are essential to business. For example, smooth port operations require many parties – including the port owner/operator, vessel operators, shipping companies and logistics companies and more – to work together. A private 5G network can give all these companies better connectivity to run their own proprietary apps and access to shared systems. This can help to improve efficiency and safety.

Some of the RFPs that we've received have specifically requested that the company chosen to supply the network acts as an independent agent, handling applications from tenants and managing leases.



Private 5G isn't just about what you'll be doing in two or five years' time. While some companies are building private 5G networks purely as proofs of concept to test new technologies and solutions, many are already using them for in-production systems. Private 5G can help resolve connectivity issues in complex environments such as factories, ports and hospitals.

* While it's technically possible to operate a private 5G network over unlicensed spectrum, this poses many difficulties – not least of which is interference (see box).

Availability of devices

Number of 5G-ready devices

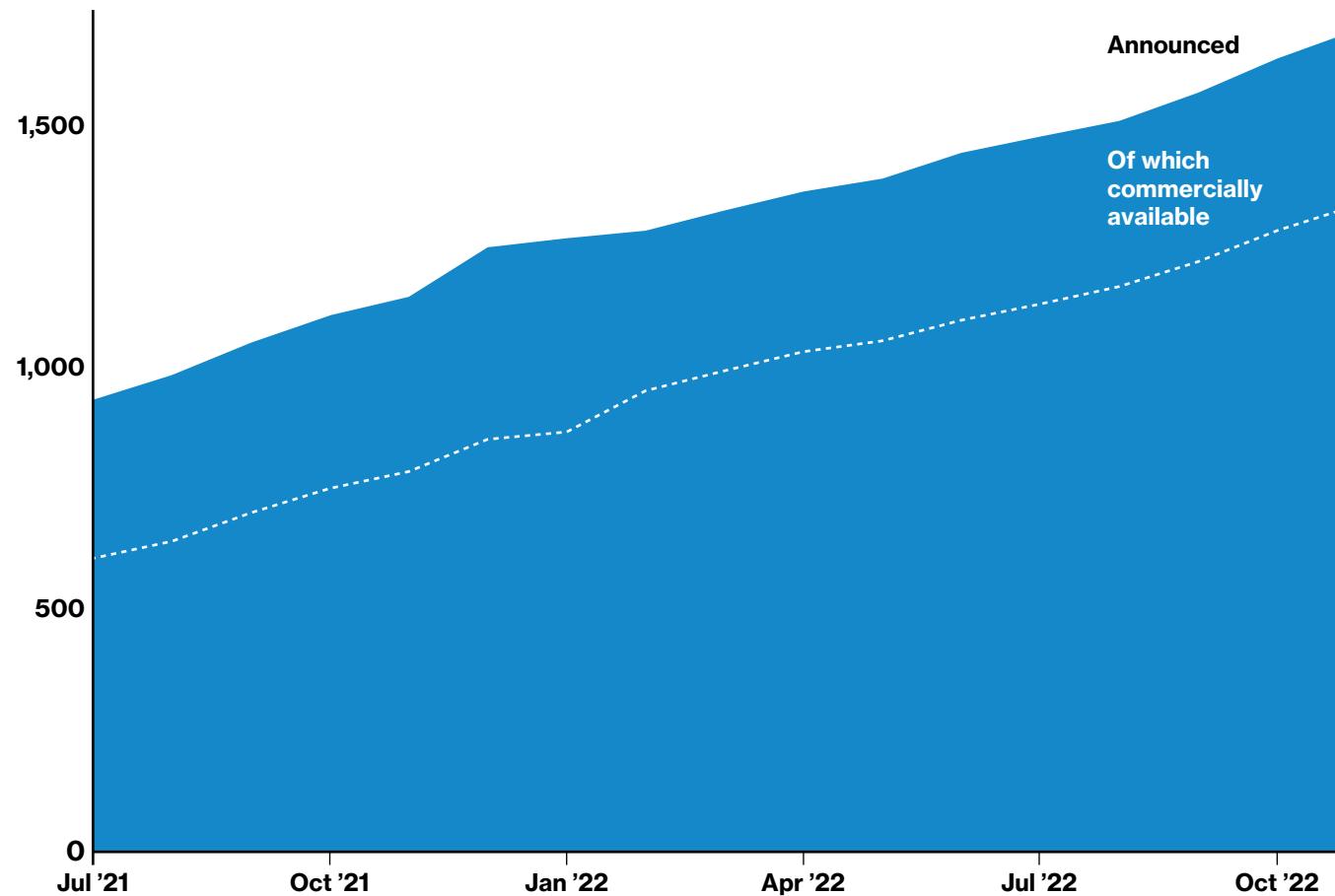


Figure 4: Number of 5G-ready devices. Data from GSA.⁷

The growing adoption of 5G is driving rapid growth in the device ecosystem. According to GSA, there are now more than 1,700 5G-ready devices available from over 200 manufacturers.

While 900 – a little over half – are phones and tablets, there are more than 25 form factors in total. Many of these are aimed at industrial applications. While there are still more 4G-ready modules and devices available – manufacturers have had over a decade to develop them – the gap is closing.

5G devices by form factor

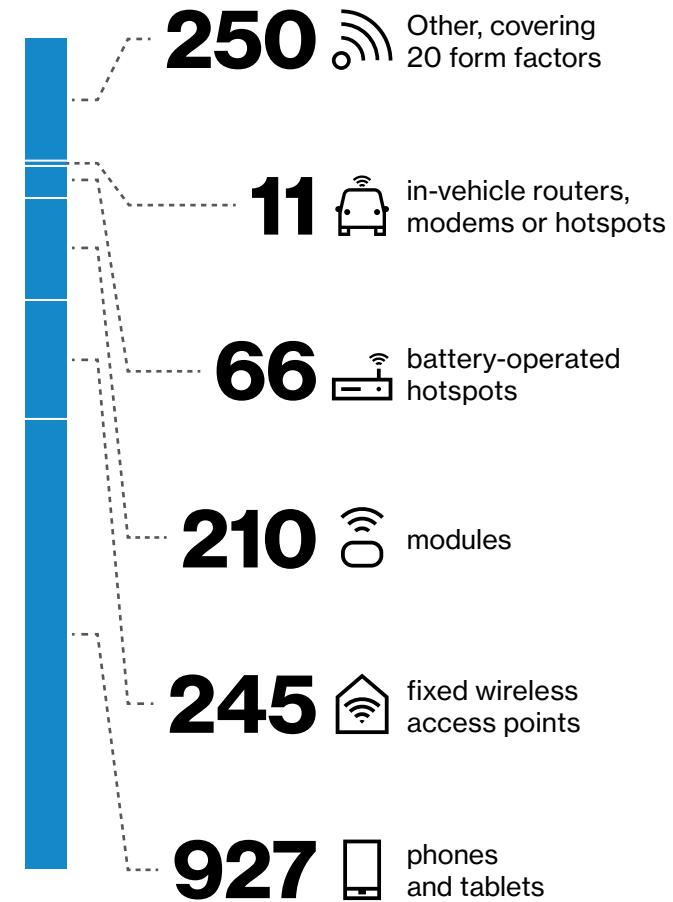


Figure 5: 5G-capable devices by form factor. GSA data.⁸

Even when a suitable 5G-ready device isn't available, that doesn't have to be a deal breaker. For example, when a port operator was unable to find a suitable scanner with 5G capability, we were able to integrate a 5G phone with an external scanner to do the job.

Availability of expertise

With any new technology, the availability of the relevant skills is a challenge. The difficulty of acquiring and retaining expertise is often exacerbated when building solutions around private 5G and MEC as these often involve a multitude of new technologies.

For example, deploying a successful quality control application using intelligent video analytics could involve:

Network

- Radio frequency (RF) surveying
- Designing and deploying a private 5G network, including avoiding coverage notspots
- Designing network security policies

Computing

- Building and deploying cloud/edge computing
- Hardening and configuring devices

Integration

- Integrating applications
- Data ingestion

AL/ML

- Extract, transform and load (ETL)
- Model training and development

Process redesign

- Business process re-engineering
- Compliance and governance

Multi-access edge computing (MEC)

Edge computing is a decentralised form of computing where data is processed and stored closer to where it's gathered and used – at the edge of the network. This has several potential benefits.

Mobile edge computing tightly integrates MEC with 5G networks to enable local compute and storage for workloads that are latency sensitive.

Some features of private 5G – like extremely low latency – start to come into play when you deploy applications on an edge compute platform. A great example of this is computer vision. An IP-enabled camera can identify a person not wearing personal protective equipment (PPE) or a vehicle in a location somewhere it shouldn't be. You don't want to rely on somebody looking at that one video stream among dozens at that precise point in time.



Greater responsiveness

By reducing the distance data must travel, latency can be reduced and responsiveness increased.



Improved business continuity

By enabling processing at local and regional facilities, sites can be kept running even when communication to a primary site is compromised.



Increased security

Keeping data onsite can help improve security and avoid data sovereignty issues.



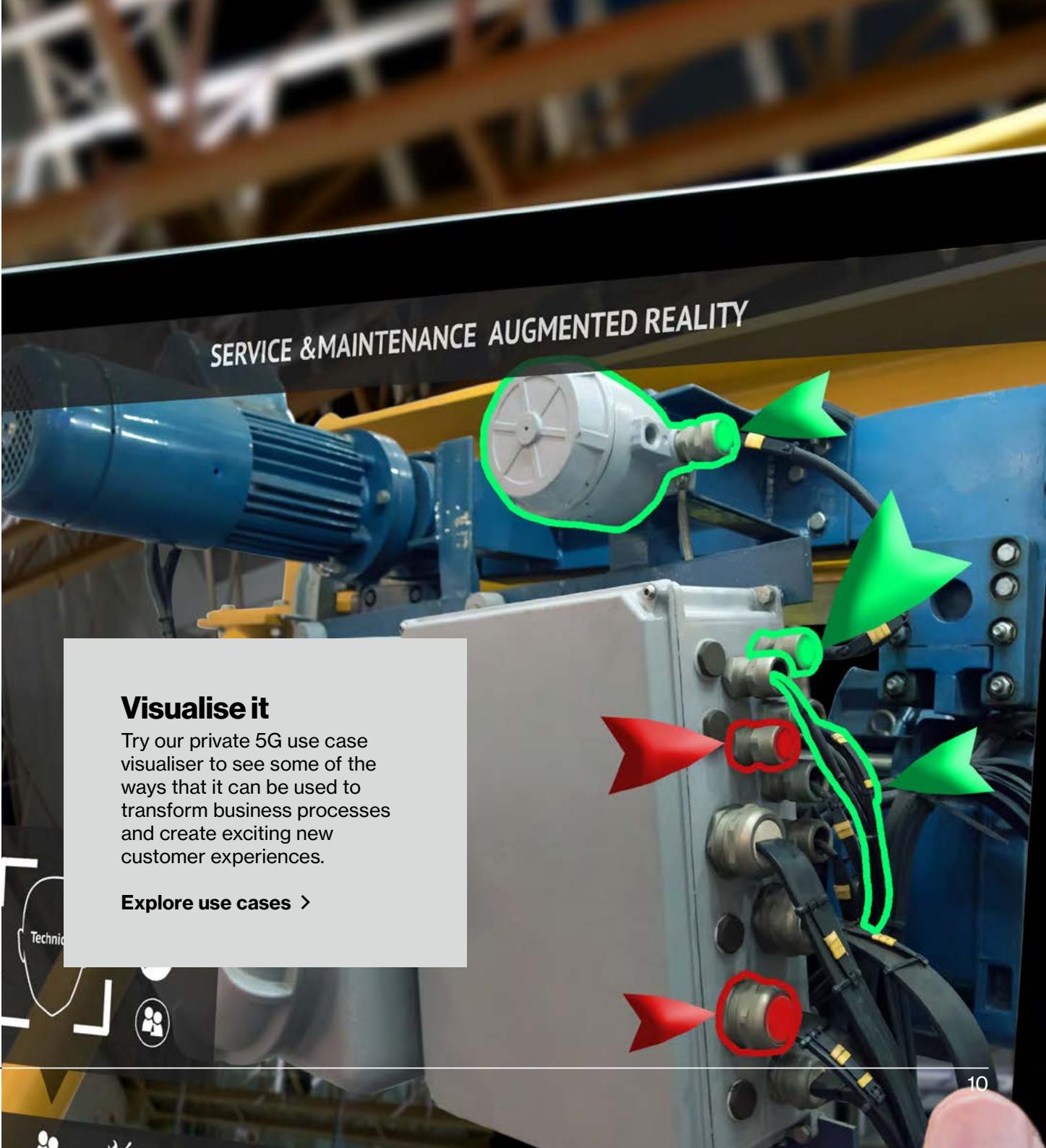
Reduced costs

By pre-processing data at the edge, the volume of data that needs to be transmitted to the cloud can be reduced, cutting connectivity costs.

Government strategy

Governments can do much more than just dedicate spectrum. We've seen interest in 5G increase dramatically when the national government provides support and encouragement. Support can include offering grants, running communication programmes to inform businesses about the technology or setting up bodies dedicated to driving innovation. Examples of support include Digital Catapult, a U.K. organisation that runs many programmes, and the Japanese government's incentives and tax breaks for companies initiating 5G projects. Perhaps the most active is the German government, which has invested billions in "Industrie 4.0" over the past 20 years.

Governments can also choose how easy, or difficult, to make the process of applying for spectrum. The Conseil national de l'industrie identified a cumbersome application process as a key reason why France was falling behind in private 5G adoption. Since streamlining its application processes and investing in promoting 5G, France has seen a huge increase in the volume of applications for private 5G licences.



Private 5G: The global picture



Asia Pacific

Countries in the Asia Pacific region have often been at the forefront of adopting new mobile technologies. The first 3G network was launched in Japan, demand for 4G was driven by consumer apps that emerged from the Asia Pacific region, and South Korea was one of the first countries to launch a commercial 5G network.

The Asia Pacific region has been one of the most active in terms of private 5G, partly driven by the proactive approach taken by several governments in the region.

However, there is little harmonisation across countries that have instigated licensing for private 5G networks. For example, in India, licences are valid for 10 years; but in Australia and Singapore, they last for just five. It's questionable if the minimum length of a licence matters. Given the low cost of licences, the minimum length is unlikely to deter companies from building proofs of concept or rolling out the technology.

Australia

We've seen a lot of interest in private 5G from enterprises in Australia, but there are significant limitations connected to the availability of spectrum. The good news is that the Australian Communications and Media Authority (ACMA) is working to facilitate spectrum access for enterprise use, including consulting with network operators and organisations.

Nationwide, millimetre-wave (mmWave) spectrum in the n258 band has been made available to enterprises to create private 5G networks. ACMA is seeking to add to this by releasing mid-band spectrum (3.4–4.0 GHz), which will support additional use cases and increase device compatibility.

The release of mid-band spectrum is expected to start in remote Australia in the second quarter of 2023 and reach in metropolitan and regional areas in the first quarter of 2024. Until then, private enterprises can obtain a short-term authorisation for trials and tests:

Temporary authorisation types

	Duration	Permitted use
Scientific licence	Typically one year	Allows the licensee to research, teach, demonstrate or trial a new technology or product.
Trial certificate	Up to six months	Allows testing of new networks or services for feasibility feasible – effectively a temporary carrier licence.

Japan

In February 2020, Fujitsu announced that it had been granted Japan's first private 5G radio licence by the Kanto Bureau of Telecommunications. This made Japan one of the first countries to make spectrum specifically available for private 5G. Japan remains a regional leader with a more formal regulatory framework for private 5G than in other countries. For example, companies need a radio licence even to conduct a pilot. The intention is to reduce the chance of network interference.

Singapore

5G is widely available in Singapore, with over two-thirds of the territory covered. It's expected to reach full 5G coverage by 2025. Despite this progress, no spectrum has been allocated for enterprises to build private networks. Nonetheless, it's possible to build a pseudo-private network, using spectrum leased from one of the local MNOs.

Unlike Japan, countries such as Singapore and India have taken an operator-led approach to implementing private 5G networks. Instead of dedicating spectrum for private networks, they expect companies to work with MNOs. Other countries are still weighing the options.

South Korea

South Korea initially implemented an operator-led approach but is now looking at setting aside spectrum as well.

The South Korean government has announced that to accelerate the country's private 5G ecosystem, it will allow non-telecom operators to build and operate 5G networks using 4.7 GHz and 28 GHz spectrum.

Europe

Europe had an early lead in private 5G networks, partly due to its focus on Industry 4.0 – particularly in Germany. According to GlobalData, as of mid-2022, Europe accounted for 56% of deployments.⁹ However, that lead is likely to shrink quickly as other regions show increased interest.

Generally, there is no right to sublicense spectrum in European countries. Businesses must get it directly from the regulator or go without. There are a few exceptions, such as Denmark and the Czech Republic, where operators must make a certain amount of spectrum available to private organisations under fair and reasonable conditions.

France

After a slow start, the French government is becoming more active in promoting 5G and there has been corresponding growth in interest from organisations. The cost of private 5G spectrum licences is typically quite low, but when France first released spectrum it priced licences at around 70,000€. Following a study, “Mission 5G industrielle” by the Conseil national de l’industrie, which identified the importance of not falling behind in this key technology, this was dropped to around 1,000€. There was an immediate leap in the number of licences applied for, with 13 issued in October 2022 alone.¹⁰ It has also acknowledged that the time taken to issue a licence – up to six months – must be reduced.

The French government has also begun investing in encouraging companies to adopt 5G and related technologies. This includes several joint projects under the European Union (EU) and other countries.

Germany

Germany was an early proponent of Industry 4.0 and remains a driving force behind the continued modernisation of its industrial base. The country was one of the first countries to make spectrum available for private 5G. The German regulator made a 100 MHz frequency band between 3.7 and 3.8 GHz directly available to organisations through a fast and simple application procedure.

While manufacturing, and specifically automotive, remains a key focus, the government is also encouraging other industries to adopt enabling technology, such as private 5G. As in many other countries, much interest is coming from the transportation sector. Germany is also a leader in medical technology and this sector is actively exploring the possibilities of private 5G. The government is supporting several projects to explore the use of private 5G in the operating room and other clinical environments.

The government is also collaborating with the EU and its neighbours to encourage companies and public-sector entities to adopt private 5G. This includes a €17.7M joint investment with the French government to fund four exploratory private projects with the goal to “deliver innovative solutions that will strengthen Europe’s ecosystem for private networks”.¹¹

This support helps explain why there are more deployments in Germany than in the rest of Europe combined.

U.K.

The U.K. government has taken an active interest in promoting private 5G. It has allocated significant funding for 5G development through programs such as:

- **UK5G Innovation Network**

This group promotes research, collaboration, and the commercial application of 5G technologies.

- **Testbeds and Trials Programme**

This programme supports the development of new 5G use cases and applications in various sectors. This initiative enables businesses, researchers and public sector organisations to test and develop their 5G solutions in real-world environments.

- **Industrial 5G Accelerator**

This partnership with industry stakeholders is driving the development and deployment of private 5G networks in key sectors such as manufacturing, logistics and healthcare.

The U.K. government has worked closely with regulatory bodies to ensure a favourable environment for the adoption of both public and private 5G, including spectrum allocation and licensing policies.

Americas

U.S.

Private 5G adoption in the U.S. is gradually gaining momentum, with industries such as manufacturing, logistics, and healthcare recognizing the potential benefits.

C-band

Use of C-band, part of the mid-band spectrum of 5G, is key to the roll out of both public and private 5G services in the U.S. C-band refers to frequencies between 3 and 6 GHz. In practice, this normally means the 3.7 to 3.98 GHz band freed up by the decommissioning of old satellite TV services. As part of the mid-band range, C-band offers a mix of coverage and performance.

U.S. Citizens Broadband Radio Service (CBRS)

CBRS refers to spectrum in the 3.5 GHz to 3.7 GHz range set aside for wireless networks based on 4G LTE and 5G cellular technologies in the U.S. Organisations can obtain licences to use the CBRS spectrum relatively inexpensively. However, it can be subject to interference issues.

The CBRS band is divided into three different tiers, with each tier liable to interference from those above it:

- **Incumbents**

Reserved for governmental agencies, navy ships and fixed satellite stations

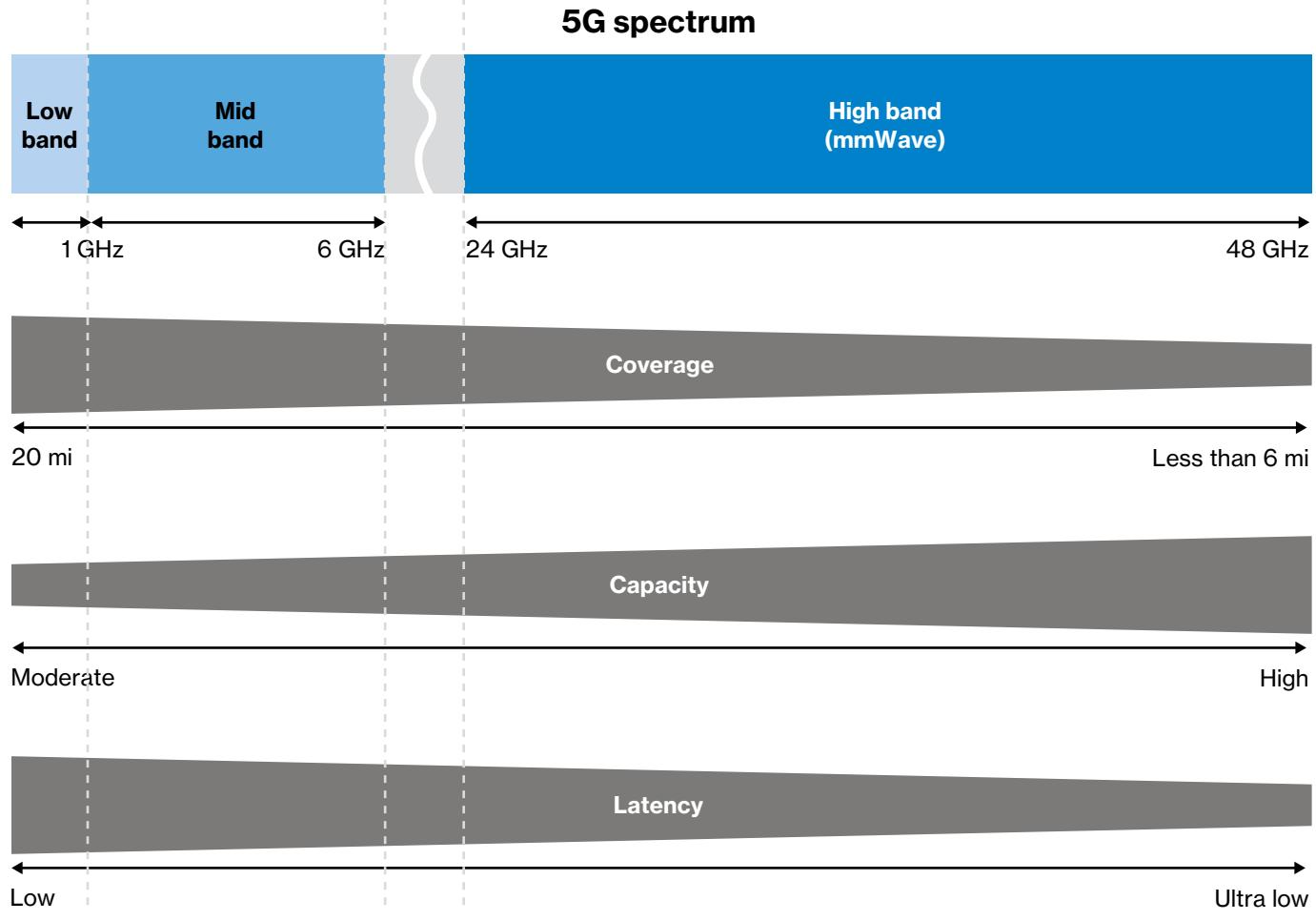
- **Priority Access Licence (PAL)**

Organisations can obtain a licence through auction

- **General Availability Access (GAA)**

GAA users must accept that they don't have protection from interference, either from the tiers above or indeed other GAA users

5G bands and their characteristics



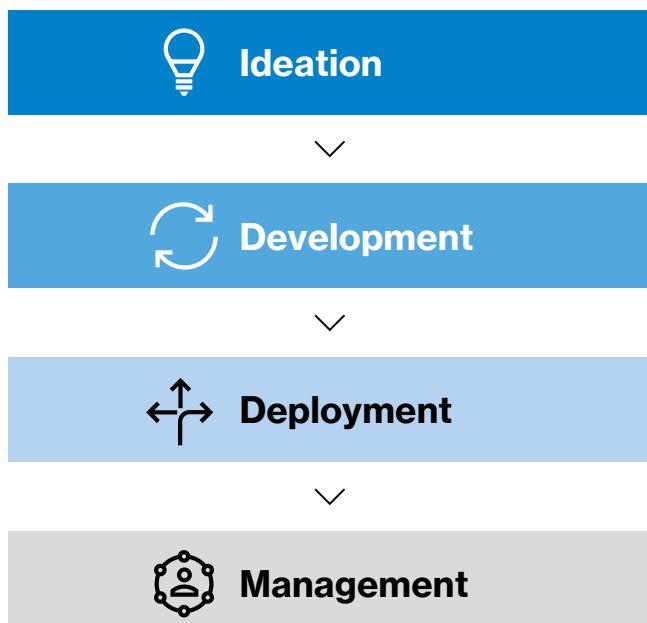
Other countries in the Americas

While lagging the U.S., the adoption of 5G and private 5G in Canada is gaining pace. As with other countries, transportation and mining industries are among those showing the greatest progress.

In late 2022, Nestlé announced the deployment of a private 5G network in Mexico – a first for company and Latin America.¹² This co-incided with Nestlé opening an R&D Center for Latin America in Santiago, Chile.

Why Verizon

We can bring extensive industry knowledge to the table. We have experts that focus on specific industries. They understand the needs of that industry and the processes, cost models and KPIs that companies in the industry use. This enables them to make intelligent recommendations on how to de-risk and accelerate change and achieve the best results.



Click to jump to the relevant section.



Ideation

A lot of organisations are asking themselves what they can do to keep pace with changing customer expectations. Whether the customer is a consumer or a business, regardless of the industry sector, they increasingly expect greater personalisation.

Often the problem with delivering innovative new customer experiences and personalisation is not a lack of understanding of what needs to change, or a lack of ideas. For many companies the challenge is prioritising what needs to be done to make the best use of limited capex.

Our innovation centres and hubs play an important role in helping business leaders to visualise how technologies like private 5G could transform their operations. As well as giving insight into the solutions that are available, a visit to a Verizon centre can provide a great opportunity to discuss your challenges and ideate with Verizon experts.

Creating an incubator for 5G.

We partner with universities, startups and established companies to co-create and test 5G concepts.

Sharing what we know.

We host panels, fireside chats and executive roundtables where we share expertise and learn along with partners, customers and academics.

Nurturing top talent.

We mentor promising innovators through a new-hire incubator called the Concept Studio. Teams tackle real-world challenges during a six-month residency and focus on creating 5G prototypes.

Suggested questions to ask shortlisted providers:

- Outline the expertise you can provide to help boost our ideation and ongoing innovation
- Describe the facilities you can offer to enable our leaders to see private 5G in action
- List any industry-specific innovation facilities and partnerships that you have



Executive briefing programme

This programme gives companies one-on-one access to Verizon executives, industry leaders and subject matter experts to help find imaginative ways to transform their business. Our Executive Briefing Centres are built for collaboration and each visit is customised to your unique needs. Join us to review your goals, exchange ideas, consider new strategies and explore the possibilities.

[Find out more >](#)





Development

As the saying goes, it takes a village. Many digital transformation solutions take products, services and expertise from several companies. Selecting and managing numerous partners can be challenging and introduce risk to a project.

Verizon has partnerships with a range of partners from chip manufacturers to security vendors. We also collaborate with most of the world's leading software developers, consultancy companies and cloud providers. We're able to recommend partners that we've worked with before and whose people and services we trust to provide many of the additional products and services you may need for your projects. But we're vendor and technology agnostic. If you'd rather keep an existing partner or choose to use another vendor's technology, we'll be happy to work with them. Our goal is to help you meet your objectives.

As a global leader in transformation, we have gathered a vast amount of practical experience. We can help businesses avoid the potential pitfalls that can be associated with large projects. As well as expertise, we have well-tested methodologies to shape and manage projects – all the way from auditing and specifying solutions, through testing to deployment.

To protect critical systems, customer data and intellectual property, it is critical that companies start building security into all their transformation programmes from the outset. With private 5G projects this is likely to involve new architectures, zero trust, segmenting devices and the virtualisation of security functions.

Few companies can claim anywhere close to the experience Verizon has securing mobile and private networks. In addition to designing and building security into the network, we offer a range of complementary solutions to help businesses reduce risk. Through our endpoint security detection service, we help monitor devices and alert customers if there is a compromise. This security architecture can be integrated with the private network and cloud.

The impact on compliance should also be considered as part of the design process. Verizon has deep experience with key legislation and industry regulations including the E.U.'s General Data Protection Regulation (GDPR), the Health Information Portability and Accountability Act (HIPAA) and the Payment Card Industry Data Security Standard (PCI DSS). We can help you understand the potential implications of your transformation projects and build robust and resilient controls to protect your data, systems and reputation.

 **Suggested questions to ask shortlisted providers:**

- Describe your partner ecosystem and how it could help us ensure our project is a success
- Explain your experience dealing with in-country telecom regulatory authorities
- Outline what experience you have in designing and building radio access networks
- Detail the expertise you have in securing cellular networks

↔ Deployment

Traditionally, Wi-Fi was almost exclusively seen in small indoor environments. While it's now being used for wider areas, the challenges are quite different. Familiarity with building cellular networks gives MNOs an edge over others when it comes to designing and deploying private 5G networks.

We operate one of the world's largest cellular networks. Over the past 20 years we've deployed service in a vast range of environments, from densely packed cities to wide-open plains. Where others may find building a network covering a complex environment like a port or a manufacturing site challenging, for us it's just another day.

Verizon also has established connections with local regulatory authorities worldwide. These relationships can help us to help you navigate the process of applying for spectrum. Our experience in this area is particularly powerful when developing a solution spanning multiple geographies.

Suggested questions to ask shortlisted providers:

- List the territories in which you can deploy private 5G networks
- Explain how you can help guide us through the licensing process
- Describe your experience rolling out full-scale private cellular networks
- Outline which solution components you can provide

Interference

Wi-Fi operates on unlicensed spectrum so it's a free-for-all. While private 5G can operate on unlicensed spectrum, most companies choose licensed spectrum route. This helps to avoid two key interference issues:

Other users

As the number of devices increases, the possibility for interference – and contention – grows. When this happens, data packets get lost and must be transmitted. Suddenly, your real-time application is no longer real-time, video feeds become laggy and productivity is affected.

Badly behaved devices

A phone with a damaged chipset or a cheap gadget using non-standards-compliant Wi-Fi could cause interference and affect core business functions. This could mean a whole production line being disrupted.

If you're using licensed spectrum and everyone works within the rules, interference is unlikely to be a problem. Should there be interference from neighbouring networks, regulators will normally say that this needs to be sorted out between the parties involved. The regulator will only step in if the parties can't settle the issue themselves.



Where we make the difference is in the completeness of our solution. We can provide the full stack—MEC, connectivity, digital solutions and security.

Scott Lawrence
Senior Vice President –
Global Solutions

Management

Effective management is key to maintaining network performance, reliability and security. To manage a private 5G network, companies must address:

- **Monitoring and maintenance**

Continuously monitoring networks performance, security, and reliability, and addressing any issues that come up. This includes keeping equipment and software updated and well-maintained.

- **Security management**

Implementing and maintaining robust security measures to protect the network from cyber threats and unauthorised access. This includes managing network segmentation, encryption and intrusion detection and prevention systems, and performing regular security audits.

- **Spectrum management**

Ensuring the efficient use of radio frequency spectrum allocated to the private 5G network, coordinating with regulatory authorities if needed, and mitigating potential interference with other wireless systems.

- **Incident response and disaster recovery**

Establishing processes and protocols for handling network incidents, such as security breaches, equipment failures, or natural disasters, and ensuring a swift recovery to mitigate downtime and impact on operations.

- **Capacity planning and expansion**

Assessing the organisation's changing needs and planning for future network growth, including upgrading equipment, expanding coverage and allocating additional resources as needed.

Verizon operates one of the world's largest cellular networks – and the most reliable 5G network in the U.S.¹³ This gives us tremendous insight into the challenges of maintaining security and performance, and how to address the challenges that this poses. But our expertise isn't limited to private 5G:

- We've carried out large transformation projects for many global organisations – we understand the challenges and can help de-risk your project
- We manage global WANs for over 4,500 businesses and organisations – we have vast experience of not just integrating systems, but then managing them 24/7, too
- We process over 60 billion security events each year – analysing this vast amount of data gives us tremendous insight into emerging threats
- We manage over 500,000 network and security devices – when a customer comes to us with a problem, we can normally say that we've seen it before, and we know how to fix it



Next steps

Don't wait for the future. Start building it now.

When there's disruption all around you, standing still isn't really an option. Those that don't seize opportunities are likely to find their margins squeezed even more, their market share under greater pressure and their ability to recruit and retain the best talent compromised.

Private 5G is powering the future of transformation for businesses. Ultra-fast private wireless connectivity and high bandwidth provide near real-time, low-latency connections to enable businesses to transform the way they are working, with improved efficiency, innovation and security.

By choosing Verizon you'll get a trusted partner and scalable solution platform. And as your projects grow – and we're sure that they will – Verizon will be able to help you extend and develop your infrastructure.

With Verizon's private wireless network solutions, you can think big, even if you want to start small.

Learn more

Let's talk about private 5G

In their own words: Six experts answer questions about private 5G.

A journey to 5G

How private 5G and edge computing will drive business growth, and how to achieve it.

Explore use cases

ABP builds the port of the future

A private 5G network is helping the operators of one of the U.K.'s largest ports improve visibility and customer service.

Private 5G use case visualiser

From customer experience and business intelligence to autonomous machines, see how 5G will change operations across industries.

Let's connect

Contact us

Arrange a meeting/workshop



- 1 PwC, [The global economic impact of 5G](#), 2022
- 2 GSMA, [The mobile economy](#), 2022
- 3 Deloitte, [5G adoption is inevitable. It is time to focus on experience](#), May 2022
- 4 GlobalData, [GlobalData finds manufacturing sector accounts for 31% of 5G and private network deployments, led by Europe](#), July 2022
- 5 GSA, [5G Device Ecosystem Member Report](#), December 2022
- 6 GlobalData, [GlobalData finds manufacturing sector accounts for 31% of 5G and private network deployments, led by Europe](#), July 2022
- 7 GSA, [5G Device Ecosystem Member Report](#), December 2022
- 8 Ibid.
- 9 GlobalData, [GlobalData finds manufacturing sector accounts for 31% of 5G and private network deployments, led by Europe](#), July 2022
- 10 Conseil national de l'industrie, [MISSION 5G INDUSTRIELLE : RESTITUTION DU RAPPORT](#), March 2022
- 11 Federal Ministry for Economic Affairs and Climate Action, Germany and France to support four joint cooperation projects on 5G applications for private networks, January 2022
- 12 Ericsson, [Smart factories: Nestlé deploys first private 5G network in Latin America using Ericsson Private 5G](#), September 2022
- 13 **Most reliable 5G network based on more first place rankings in RootMetrics® 5G data reliability assessments of 125 metro markets conducted in 1H 2022. Tested with best commercially available smartphones on three national mobile networks across all available network types. Your experiences may vary. RootMetrics rankings are not an endorsement of Verizon. Visit [rootmetrics.com](#).**
- 14 Private LTE and 5G, [Private Cellular Networks Flourish in Japan](#), December 2022