

# Navigating the connectivity landscape

5G Deployment and Beyond



# Table of contents

1. **5G's rising deployment: analyzing deployment types (5G NSA vs SA) and regional trends, while assessing the impact of 5G enterprise on 5G monetization**

---

2. **5G across industries: exploring 5G-enabled industry applications, along with potential opportunities and challenges in network implementation**

---

3. **The road to 6G: providing insight into the future of wireless mobile networks, including 5G-Advanced and 6G**

---




# Introduction

5G is the latest evolution in mobile communications, designed to boost performance, improve efficiency, and enable new user experiences globally. It serves as the foundation for advanced communication services, driving socio-economic development and industrial digital transformation.

With speeds up to 100 times faster than 4G, 5G is set to be a game-changer, significantly reducing latency and making it 5 times more responsive than its predecessor. Furthermore, 5G has the capacity to handle 100 times more connected devices, facilitating network deployment in densely populated areas and enabling increased connectivity in smart cities.

While many users associate 5G with enhanced connectivity and performance of the latest smartphone generation, its impact extends beyond that. The technology is poised to reshape industries, enabling real-time communication in manufacturing and enhancing telemedicine and remote patient monitoring in healthcare. The technology's low latency and high bandwidth optimize operations and bolster safety across industries.

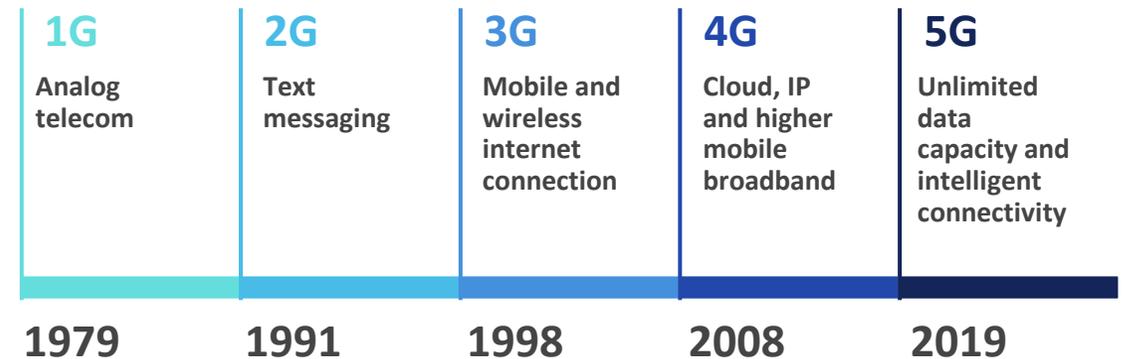
The evolution of 5G technology and standards is expected to progress rapidly in the coming years as deployment expands. The next significant advancement in the evolution of 5G, known as 5G-Advanced, will extend connectivity to new segments, supporting innovations such as low-cost massive IoT and non-terrestrial networks.

Concurrently, Research and Innovation (R&I) initiatives are already underway for 6G technologies, with the first products and infrastructure expected to develop by 2030. 6G will offer higher data rates, lower latency, and improved energy efficiency compared to 5G. Additionally, it will facilitate the integration of AI into the network, enabling new use cases such as holographic displays and autonomous vehicles.

# Acting as a catalyst for intelligent connectivity, 5G brings higher speeds, lower latency, and massive capacity

- 5G, short for the fifth generation of wireless technology, builds upon its predecessors, serving as a **catalyst for intelligent connectivity**—the combination of 5G, AI, and IoT
- Introduced by the **3rd Generation Partnership Project (3GPP)** with **Release 15** in September 2019, 5G offers significant benefits over 4G:
  - **Higher speeds:** 5G can provide download speeds of up to 10 Gbps, compared to 1 Gbps for 4G
  - **Lower latency:** 5G can offer latency under 5 milliseconds, compared to 60 ms to 98 ms for 4G
  - **Massive capacity:** 5G can support around one million devices per km<sup>2</sup>, compared to about 4,000 devices per km<sup>2</sup> for 4G
- Initially, 5G fully utilized the **5G New Radio (5G NR) air interface**, sharing radio access technology with 4G LTE networks. **5G Standalone (5G SA)** later allowed independent operation by relying on 5G infrastructure
- Currently, **ongoing 3GPP Releases introduce new iterations to 5G**, with the latest featuring **RedCAP** (designed for IoT devices with reduced capabilities). The upcoming **Release in 2024 is set to launch 5G-Advanced**, further advancing the capabilities of the network

## Mobile network generations: 1G to 5G

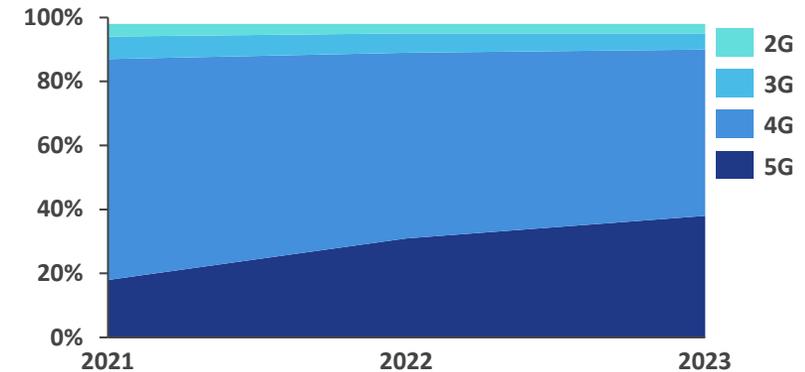


# 5G's rising deployment

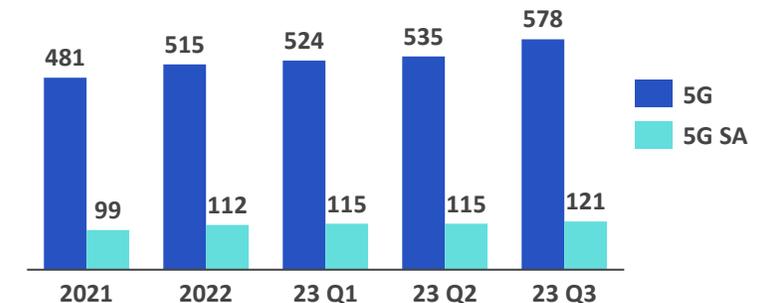
# As of 2023, 40% of the global population has access to 5G, with non-standalone 5G dominating current deployment

- After 4 years of commercial operation, the global 5G landscape is making significant strides. In Q3 2023, 163 million subscriptions were added, bringing **the total to 1.4 billion**
- As of 2023, **40% of the global population** is covered by 5G, but **coverage is uneven**, with high-income countries leading. Obstacles to 5G adoption persist in low-income countries where 2G and 3G are prevalent, such as **infrastructure costs and regulatory barriers**
- Current deployments of **5G rely on a 4G core network**, which is non-standalone. Although Standalone 5G began in 2021, **its expansion has been slower than expected**.
- As of Q3 2023, **only 121 operators** have invested in public 5G SA (trials, plans, or deployment), with **at least 47 deploying it**. This is primarily due to the high infrastructure costs of 5G SA and the current lack of significant market demand
- The most common 5G services launched by service providers include enhanced mobile broadband (eMBB), Fixed Wireless Access (FWA), and AR/VR services

Population coverage by mobile network type<sup>1</sup>



Number of operators investing in 5G and 5G SA for public networks



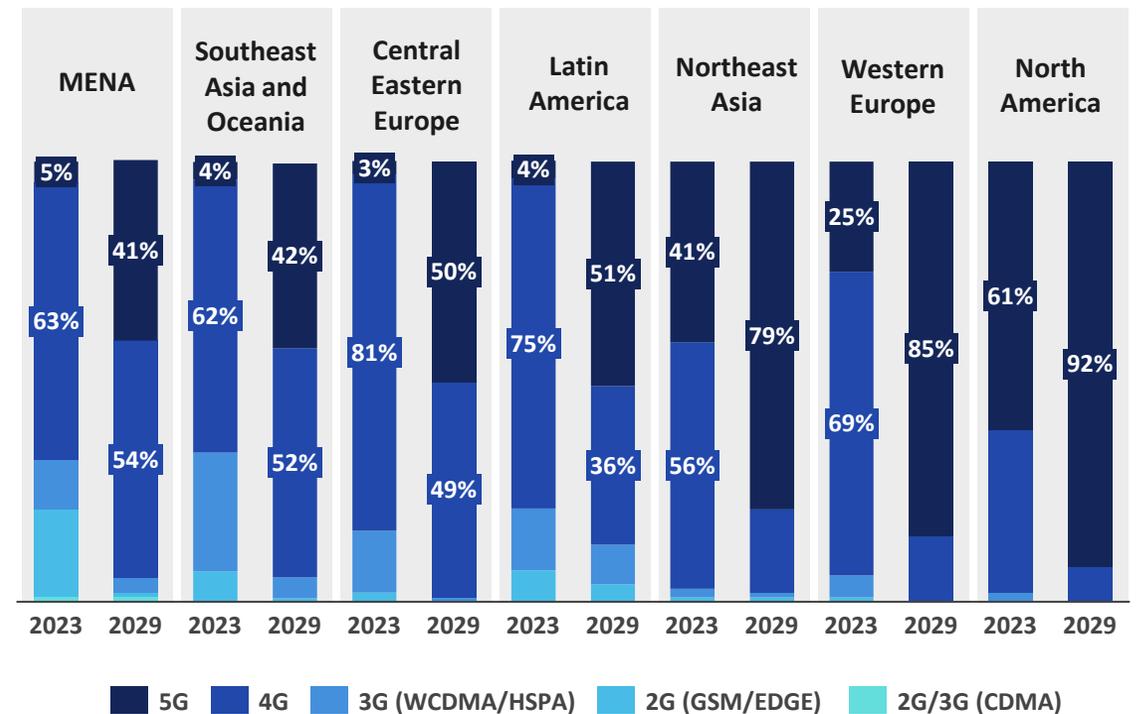
<sup>1</sup> The values for 2G, 3G and 4G networks show the incremental percentage of the population that is not covered by a more advanced technology network; 2) The latest data available by the Global Mobile Suppliers Association (GSA)

Sources: ITU "Mobile network coverage" (2023), GSA "5G - 5G Standalone October 2023 Summary" (2023), Press Search

# Global 5G has surged to 1.4 billion subscriptions in 2023, with North America at the forefront of this progress

- In 2023, **North America** maintained its **lead in 5G deployment** with a **subscription penetration of 61%**, driven by the introduction of mid-band spectrum
- The **Asia-Pacific region** was forecasted to have **550 million 5G subscriptions** by the end of 2023, with a focus on diversifying services, improving customer experience, and expanding network coverage
- In **MENA**, the telecom industry expects a **2.4% annual increase** in overall subscriptions **from 2023 to 2029**. Service providers are focusing on mobile financial services, particularly in North Africa
- Although **Western Europe** lags in 5G subscription penetration compared to other developed markets, it is experiencing robust growth, **reaching 139 million by the end of 2023 compared to 67 million in 2022**
- Looking ahead to 2029, 5G is projected to become **the primary mobile access technology**, with global subscriptions **surpassing 5.3 billion**, constituting **58% of all mobile subscriptions worldwide**

Mobile subscriptions by region and technology in 2023 and 2029<sup>1</sup>



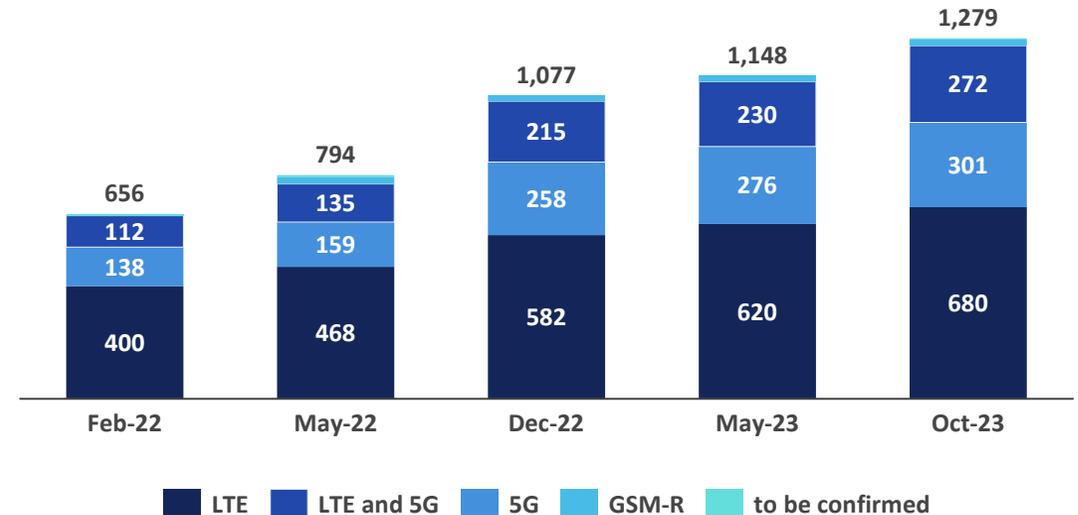
<sup>1</sup>) Forecasts as of November 2023

Sources: Ericsson "Ericsson Mobility Report" (2023), Press search

# Telecom companies are focusing on their enterprise offering as a main driver of growth

- Telecom companies are **prioritizing the deployment of 5G networks for enterprises** as a significant revenue stream. As of 2022, while B2C services remained dominant, **comprising 70% of total revenues**, according to GSMA estimates, the focus is shifting towards tapping into the B2B market
- To enhance 5G enterprise revenues, telecom operators are **adapting their offerings to meet business needs**, including the provision of exclusive 5G networks for specific organizations, known as private 5G networks
- While other 5G options are available for businesses, private 5G networks offer **enhanced security, stable connectivity, and customized control over network resources**, tailored to their specific business requirements
- As of November 2023, **45% of 1,279 catalogued<sup>1</sup> customers with private networks have adopted 5G**. Sectors such as **financial services, healthcare, manufacturing, sports, media, and events** are emerging as key growth areas for private 5G
- As enterprises expect enhanced **real-time insights, productivity, automation, and customer experiences** from 5G, operators must simplify customer experiences through **intuitive engagement, standardized open APIs, and personalized services** to meet these expectations

Combined number of private network deployments by wireless technology<sup>1</sup>



<sup>1</sup>) GSA catalogues customers deploying private wireless networks with revenue greater than EUR 100k

Sources: GSA "Private Mobile Networks" (2023), GSMA "The telecoms industry: trends to watch" (2023, 2024), GSMA "Private 5G Industrial Networks" (2023), Press search

# 5G across industries

# Industrial 5G enhances machine utilization and equipment efficiency by enabling automation and remote operation



## 5G in the manufacturing industry

Industrial 5G is highly scalable and adaptable, enabling diverse applications with varying requirements

- **Improving autonomous logistics** through 5G's low-latency data transmission, as demonstrated by the use of automated guided vehicle systems (AGVs) in intralogistics
- **Supporting AR applications** for service technicians by offering supplementary audiovisual information during maintenance
- **Enhancing warehouse intelligence** through real-time inventory tracking and automated sorting systems, resulting in significant reductions in downtime and operational costs

## Telkomsel

Telkomsel implemented a 5G smart manufacturing solution in June 2021, partnering with a multinational company in Batam City, Indonesia

**The challenge:** In manufacturing, the need to reconfigure machinery or address faults can lead to significant production time loss. Manufacturers are actively seeking solutions to anticipate adjustments and prepare in advance, minimizing downtime

**The solution:** The company adopted Telkomsel's 5G and IoT Smart Manufacturing for real-time data. This connectivity enabled the use of VR headsets for staff training in machinery maintenance and repair, facilitating instant reporting on plant operations

### The impact

- The company reduced weekly report preparation for managers, resulting in a **17% reported boost in worker productivity**
- Telkomsel foresees a 20% increase in machine utilization, a **15% boost in equipment effectiveness**, and a **15% reduction in unplanned downtime** for companies using 5G for IoT smart manufacturing

# The transportation industry can ensure efficient traffic and fleet management and enhance safety measures by utilizing 5G networks.



## 5G in the transportation industry

5G is transforming transportation hubs, ensuring superior connectivity, efficient traffic management, integrated systems, and enhanced safety measures

- **Enhancing Advanced Driver Assistance Systems (ADAS)** with faster data transmission and reliable connections for features such as lane departure warnings and collision avoidance
- **Supporting smart traffic management** via real-time processing of operational data and optimizing traffic signals based on current road conditions
- **Improving asset tracking accuracy** with a 5G-enabled low-cost tracker attached to shipments, pallets, or individual assets, providing precise location and temperature data. It helps ensure efficient fleet management



Siam Cement, AIS, Huawei, Yutong, and Waytous developed a 5G-powered self-driving transportation system for efficient raw material transport

**The challenge:** Remote mining areas face connectivity challenges, relying on inconvenient and inefficient radio communication. The hazardous nature of mining work can lead to a shortage of skilled workers, and increased usage of nonrenewable fuel

**The solution:** SCG used 5G to implement unmanned EVs with obstacle detection and automated charging. It also incorporated an intelligent dispatching system to optimize real-time truck dispatch, improving efficiency and safety, while reducing waiting times

### The impact

- The 5G Smart Autonomous Vehicle solution **enabled fuel cost reductions from 65% to 100%**, along with a **35% decrease in emissions**
- It also increased **workplace safety** and boosted **operational efficiency** by more than **20%**

# 5G has the potential to revolutionize healthcare and save lives by enhancing telemedicine, patient services, and treatments



## 5G in the healthcare industry

5G has the potential to revolutionize healthcare by enhancing networking reliability, speed, and scalability:

- **Enhancing telemedicine** by enabling high-quality video consultations, real-time data transfer, and improved remote patient monitoring
- **5G-connected ambulances** send vital health data with 1ms latency, enhancing emergency response and patient care. In the UK, healthcare workers have conducted the first remote diagnostic procedure using this technology
- **Enabling Precision Medicine** for quick access to genetic and personalized healthcare while enhancing data analytics for improved decision-making



True and Huawei deploy 5G SA at Siriraj Hospital in Bangkok, accelerating medical processes.

**The challenge:** Aging populations strain healthcare, especially in rural areas with limited resources (fewer than 2 doctors per 10,000 people). Swift emergency treatment is vital, given that about one-third of critically ill patients die in ambulances

**The solution:** Siriraj Hospital in Bangkok used 5G to connect ambulances with hospitals, allowing for pre-arrival preparation. This initiative enabled real-time remote consultations, enhanced timely alerts to physicians, and aided AI-driven pathological diagnosis systems

### **The impact**

5G implementation at Siriraj Hospital has significantly **boosted the survival rate of emergency patients**. Moreover, the integration of AI has reduced pathological diagnosis time from an average of **15 minutes to just 25 seconds per case**

# Mining companies use 5G for remote operations, real-time monitoring, and improved communications to increase worker safety and efficiency



## 5G in the mining industry

The use of a 5G-optimized private network is set to revolutionize smart mining, with projections indicating a 10% reduction in fatalities and a 20% decrease in injuries over the next decade

- **Enabling remote low-latency control** streamlines mining operations, allowing operators to manage equipment centrally and boosting overall efficiency
- **Enhancing mining operations communication** with applications like push-to-talk (PTT) and push-to-video (PTV), ensuring seamless communication among workers in various mine areas
- **Optimizing Worker Safety** in mining by minimizing risks, reducing injuries, and preventing fatalities through improved communication, monitoring, and automation



In October 2021, Yanjiahe Coal Mine collaborated with China Unicom Industrial Internet (Shanxi) and Huawei to launch a 5G private network

**The challenge:** Ensuring safety in mining, especially for underground workers facing risks like explosions and structural failures, is challenging due to the vast haulage passages. This complexity hampers efficient monitoring of devices and personnel

**The solution:** In October 2021, Shanxi Xiangning Coke Coal Group, in collaboration with China Unicom and Huawei, implemented a 5G network at Yanjiahe Coal Mine. HD cameras were utilized for real-time underground tracking of conveyor belts to ensure safety, while 5G sensors monitored environmental conditions, providing timely alerts to workers

### **The impact**

- Implementation of 5G has reduced **the number of workers needed** at the mining site from **130 to 65**
- It has enabled unmanned haulage trunks to operate for up to 22-23 hours a day, improving **production efficiency by over 10%**

# 5G has the potential to revolutionize various sectors, but its deployment is hindered by infrastructure and regulatory challenges

5G technology represents a significant improvement over its predecessor, 4G LTE. It promises high speed, increased bandwidth, and minimal latency, which could revolutionize various sectors. Mobile operators are actively working to accelerate the rollout of 5G to reach a broader user base. However, several barriers are impeding the deployment process:



## Infrastructure Investment

Deploying 5G infrastructure involves significant costs, such as installing new base stations and upgrading existing networks. For instance, a large US company seeking to implement a private 5G network from AWS with 3 radio units covering at least 25 cameras and 125 handheld devices for 3 years would face a total cost of USD 287K, with a monthly data transfer cost of USD 312.75



## Regulatory Challenges

The deployment of 5G faces challenges due to varied regulatory frameworks and policies across regions. Global harmonization is required to address issues such as spectrum allocation, licensing, and privacy regulations. In 2020, the FCC allotted the 6GHz band for unlicensed operations like Wi-Fi, which limits its use for US 5G operators. However, operators outside the US can access the band, causing concern among US 5G players about potential technological advantages



## Lack of expertise

Deploying and managing 5G networks demands specialized skills, and a shortage of skilled professionals in the field can impede its successful implementation. To address this, companies like Cisco are investing in upskilling programs to equip the existing workforce with the necessary 5G-ready skills, bridging the gap and preparing a future-ready workforce



## Security Concerns

Security concerns in 5G networks include unauthorized access, data breaches, service disruptions, and privacy risks. The complexity of 5G, coupled with virtualization and network slicing, introduces new challenges. Global infrastructure reliance on a few vendors poses supply chain risks. Moreover, the surge in IoT devices raises privacy concerns due to data collection and enhanced location tracking

# The road to 6G

# 3GPP is gearing up to launch 5.5G, promising significant improvements, but industry experts are skeptical about its deployment

- The upcoming **5G-Advanced (or 5.5G)**, denoting 3GPP's **Release 18** to be finalized by 2024 and any iterations proposed, aims to enhance support for **AI, extended reality (XR), and energy efficiency** with major upgrades, including a **10-fold improvement in speed and latency**
- Currently, **China leads 5G-Advanced momentum**, with China Unicom and Huawei testing it in automobile welding lines through collaboration with EA Automation
- In B2B contexts like smart factories, 5G-Advanced applications are anticipated, but **consumer applications lag** due to a **perceived lack of groundbreaking uses** and low per capita value conversion
- Furthermore, experts are **skeptical about the optimistic timeline** for the **deployment of 5G-Advanced**, comparing it to the slower-than-anticipated progress of 5G standalone by 2023. In 2024, operators are expected to prioritize between 5G SA and 5G-Advanced in their new phase of 5G investment

Timeline of 3GPP releases and main developments

2017		
2018	Rel-15	<b>5G</b> Enhanced mobile broadband (eMBB) Ultra-Reliable Low Latency Communications (URLLC)
2019	Rel-16	<b>5G evolution</b> unlicensed, relaying, device-to device, positioning
2020		
2021	Rel-17	<b>5G evolution</b> Reduced capacity, Non-terrestrial Networks, broadcast, 52.6-71GHz
2022		
2023	Rel-18	<b>5G-Advanced</b> Network Energy Efficiency, AI/ML for radio access network automation, XR
2024		
2025	Rel-19	<b>5G-Advanced</b> Multiple-input and multiple-output (MIMO), XR, Mobility, Energy Efficiency, AI/ML
<b>6G Focus</b>		

# The expected improvements of 5.5G are diverse and impactful, spanning various sectors and applications

5G-Advanced is the next step in 5G technology, enhancing capabilities for various industries. It offers extended connectivity, serving new market segments, supporting low-cost massive IoT and non-terrestrial networks, and facilitating industrial automation. Therefore, it **improves the overall experience, introduces new services, and enhances operational performance through automation, network slicing, and energy efficiency.**

## IMPROVED MASSIVE MIMO

5G-Advanced's enhanced multiple-input multiple-output (MIMO) technology uses advanced antenna array technology to increase data transfer rates, which will be especially beneficial for industrial wireless sensors used underground and for industries like manufacturing and logistics

## ACCURATE TIMING

5G-Advanced can ensure precise millisecond timing by preventing satellite signal issues, which is crucial for sectors like banking, utilities (smart energy grids), and manufacturing (industrial IoT). The reliability of accurate timing in 5G Advanced extends beyond timekeeping, influencing the functionality and efficiency of critical processes

## EXTENDED REALITY (XR)

Mobile Extended Reality in 5G-Advanced can improve low-latency performance, simultaneous user connectivity, and indoor reliability for immersive XR experiences in sectors such as education, healthcare, and remote technical support

## ENHANCED SUPPORT FOR IOT AND INDUSTRIAL IOT

In 5G-Advanced, improvements will focus on the transmission of small and infrequent data packets. By eliminating the need for the entire session setup procedure, the battery life of user equipment is extended, allowing for efficient transmission of data packets and signaling messages

## IMPROVED POSITIONING

Release 18 can improve location accuracy below 10 cm using beamforming and time-based methods, enabling precise machinery movement without dependence on GPS signals. This feature will be particularly beneficial for industries such as logistics, manufacturing, and indoor navigation services

## SUPPORT FOR DRONES AND SATELLITE CONNECTIVITY

5G New Radio introduced drone communications based on LTE Rel-14 work. In the context of 5G-Advanced, the goal is to enhance drone coverage and mobility for standard smartphones, incorporate improved satellite backhauling connections and benefit industries like agriculture

# As the global deployment of 5G continues, attention is already turning to 6G, which promises greater support for disruptive applications

- While the global deployment of 5G is underway, **attention is shifting towards 6G (IMT-2030)**, focusing on connected intelligence beyond just people and things
- 6G aims to support disruptive applications like **XR, Industry 4.0, autonomous vehicles, AI, the Metaverse**, and **holographic telepresence**, demanding superior performance, including **terabit-per-second rates, ultra-low latency, and extensive connectivity** surpassing 5G capabilities
- Moreover, the ITU is also setting a goal for 6G to contribute to **an inclusive information society and support the UN's sustainable development goals**
- However, even in its early stages of development, anticipated challenges for 6G include **significant infrastructure costs**, requiring substantial investments in research, development, manufacturing cutting-edge equipment, and extensive network deployment
- Additionally, **efficient spectrum utilization is crucial**, with a need to explore higher frequency bands like terahertz waves. It will offer vast bandwidth but will pose challenges such as **signal attenuation in the air**, where the signal weakens as it travels through the atmosphere

## Technical capability evolution from 5G to 6G

	 5G	 6G
Max. Bandwidth	1 GHz	100 GHz
Air Latency	1 ms	0.1 ms
Position Accuracy	1m	0.1m
Peak Data Rate	1Tb/s	20Gb/s
Mobility	500 km/h	1000 km/h

# 6G will enhance the use cases of 5G and enable new ones such as ubiquitous connectivity, seamless AI integration, and advanced sensing capabilities

An analysis of various trends across users, applications, and technology has identified **six primary usage scenarios expected for 6G**, considering the established goals and evolving landscape of societal and environmental needs.

## Extending usage scenarios of 5G

### Immersive Communication (eMBB+)

Providing a dynamic video experience with user-machine interactions, aiming to connect the unconnected through expanded broadband coverage

### Hyper-Reliable, Low-Latency Communication (URLLC+)

Encompassing specialized cases with more stringent requirements for reliability and latency, pushing the boundaries of 6G capabilities

### Massive Communication (mMTC+)

Connecting a large number of devices or sensors for various use cases and applications, possibly in a small area

## New usage scenarios offered

### Ubiquitous Connectivity

Providing higher connectivity to bridge the digital divide and ensure widespread access seamlessly, particularly in currently uncovered areas, possibly through collaboration with other access systems

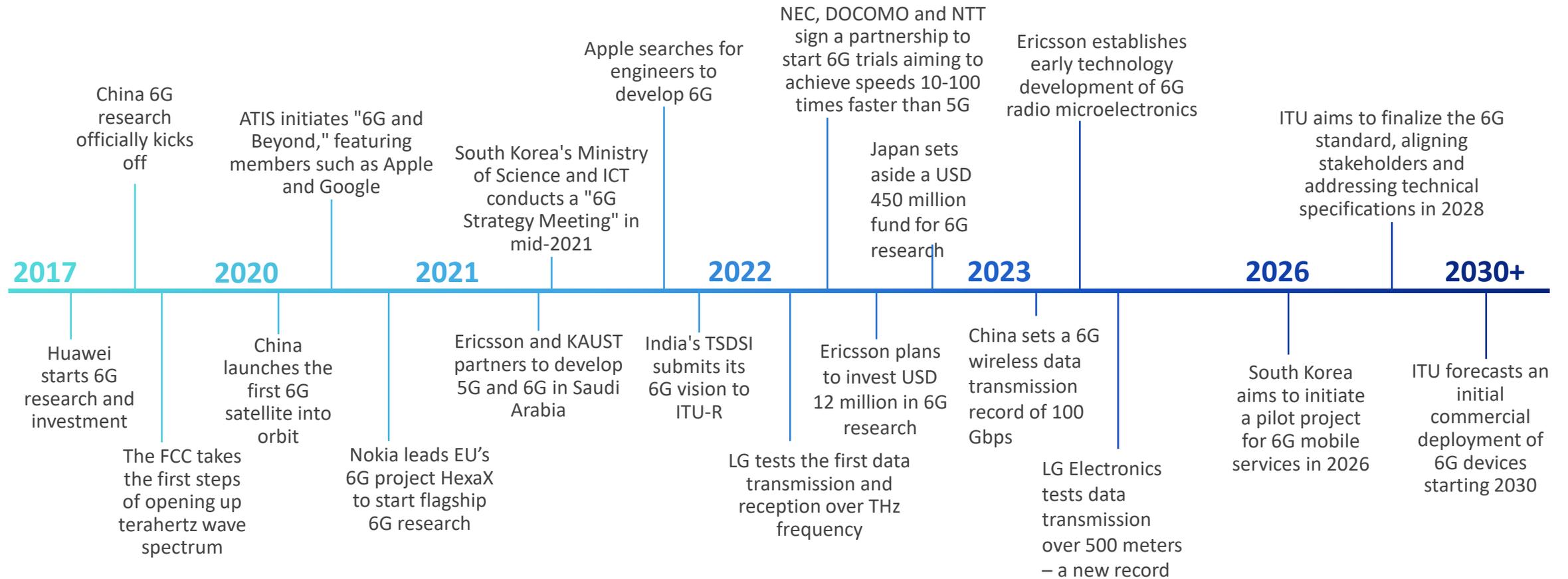
### Integrated AI and Communication

Empowering distributed AI applications through data collection and computing offload across intelligent nodes

### Integrated Sensing and Communication

Enabling innovative applications requiring sensing capabilities by providing spatial data about unconnected objects, connected devices, their movements, and surroundings

# Research on 6G is already underway, as countries and technology companies strive to lead the way



# When deployed, 6G is poised to benefit several industries by enhancing communication, automation, productivity, and security (1/2)



## 6G agriculture applications

- **Optimizing Resource Management:** 6G will address societal needs by improving water resource management and optimizing fuel consumption in large machinery on rural roads
- **Enabling Precision Farming:** Anticipated applications include autonomous machinery, data-driven decision-making, and real-time monitoring, contributing to the future of precision farming

## 6G automotive applications

- **Safety Applications:** With 6G, safety applications in the automotive sector are set to advance significantly. This encompasses comprehensive accident reporting via systematic vehicle data recording, vehicle-to-pedestrian (V2P) communications for crucial warnings, and enhanced intersection safety through timely alerts
- **Enhanced Automotive Connectivity:** 6G's high data rates will enable rapid and efficient data transfers, benefiting applications like autonomous driving. This technology will ensure real-time communication, precise positioning, and quick access to large datasets, enhancing the overall efficiency of automotive applications

## 6G industrial applications

- **Smart Factory Automation:** 6G will enhance smart factory automation by integrating industrial sensors, automatic guided vehicles (AGVs) using high-definition video, and augmented reality/virtual reality (AR/VR)
- **Creation of Digital Trust Zones:** 6G will introduce the concept of digital trust zones, where manufacturers can establish secure and reliable communication within designated areas, ensuring the integrity and safety of critical operations

# When deployed, 6G is poised to benefit several industries by enhancing communication, automation, productivity, and security (2/2)



## 6G smart city applications

- **Communication and Sensing:** In the future, 6G will address societal needs by improving water resource management and optimizing fuel consumption in large machinery on rural roads
- **Security and Privacy:** Addressing multi-stakeholder concerns, 6G will implement robust identity management, authentication, and privacy controls to ensure secure data practices in smart cities

## 6G healthcare applications

- **Distributed Sensing for Enhanced eHealth:** The fusion of distributed sensing and computing enabled by 6G will improve human presence and proximity detection, gesture recognition, obstacle proximity, and other multisensory functions, enhancing preventive care through early detection of fall risks, mobility challenges, and cognitive decline
- **Enhancing healthcare education:** 6G will enhance healthcare education through XR technologies. Virtual Reality (VR) immersion will elevate learning outcomes, providing high-fidelity simulators and unique modalities for interactive learning, especially in domains like anatomy, ultrasound scanning, and surgical simulators

## 6G sports applications

- **Advancements in Athlete Performance and Safety:** 6G will enhance real-time data collection for athletes, empowering coaches with instant physiological and biomechanical metrics. Smart protective gear, enabled by 6G, will notify medical staff in real-time, enhancing athlete safety
- **Innovative Marketing & Monetization:** 6G will enable real-time data transfer for micro-betting and in-game wagering. AI-powered personalized advertising during live streams will generate new revenue streams, revolutionizing sports marketing

# Outlook

The emergence of 5G technology is a major milestone in the evolution of wireless communication. Its ultra-fast speeds, low latency, and massive device connectivity are revolutionizing various industries and paving the way for innovative applications and services. To fully harness the potential of this transformative technology, stakeholders must collaborate, innovate, and adapt as we embrace the era of 5G.

However, despite the ongoing global rollout of 5G, some regions are already researching and developing 6G technology, which is expected to be commercially available by 2030:

- In North America, the Next G Alliance, led by ATIS, is spearheading these efforts, with support from a US government expert group and pending congressional bills
- In Europe, the European Union has allocated over EUR 95 million to fund 20 joint initiatives involving 156 organizations
- East Asia, particularly China, South Korea and Japan, are actively pursuing Beyond 5G programs with significant government investment. South Korea has announced a five-year, 220 billion won project for core 6G technology, and China is reportedly making significant investments in research

However, a globally unified 6G standard is essential to fully realize the potential of this emerging technology. It is crucial for achieving universal connectivity and socio-economic benefits and preventing a fragmented hardware landscape. This will require a cohesive, transparent, and inclusive global research and development approach. Key regions with influential institutions and leading telecommunications companies should collaborate and share their 6G strategies to merge global innovations and maintain leadership in the field.

# infomineo

BRAINSHORING SERVICES

[www.infomineo.com](http://www.infomineo.com)

Infomineo Copyright © 2024. All rights reserved.

