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5G is Transforming Various Industries

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The 5G mobile network is set to revolutionise the way we communicate, collaborate and exchange information, as we continue to consume ever-increasing amounts of data and utilise more and more connected devices. It will enable us to work, play and move more efficiently, save us time and money, as well as access more services at higher capacity and increased connectivity.

Industry digitalization is already happening, opening up endless opportunities. With 5G, industries all over the world can innovate and rise to their full potential.

With commercial consumer-based 5G networks already going live around the globe, the next wave of 5G expansion will allow different industries to reap the benefits of enhanced mobility, flexibility, reliability and security.

The 5G use cases in ten different industries are discussed below.

Let's explore the possibilities.

5G Use Cases in Different Industries



Public Safety

Smart Cities

5G will represent a key turning point in the evolution of Smart Cities as high-speed connectivity, low-latency, better battery life and the ability to handle a massive number of connections will all create new potential services.

For example, surveillance cameras, including body-worn cameras, can use the 5G network to provide real-time Ultra-High-Definition and 360-degree video feeds. These video feeds can be transmitted to a control centre that monitors crowded public areas and critical infrastructure in particular.

Infrastructure Management & Maintenance

Thousands of Internet of Things (IoT) sensors that connect to the 5G network can be installed across major infrastructure such as bridges. These sensors, in turn, are continuously monitoring the vibrations produced by the vehicles and trains that pass those bridges on a daily basis. Vibrations that are considered abnormal may be the first indication that a section of the bridge isn't functioning as it should, prompting the deployment of an inspection team.

Media & Entertainment

Cloud Gaming

Any game-based service that is handled remotely in the cloud rather than locally on a console or computer is referred to as cloud gaming. The rest of gaming will migrate from the actual console (e.g., PlayStation and Xbox) to the cloud thanks to the reduced latency and higher network speeds of 5G.

Users can no longer be bound by the actual location of their console when they play cloud-based games. Cloud gaming examples include Nvidia's GeForce Now, Google's Stadia, Sony's PlayStation Now, Microsoft's Xbox Game Pass, Tencent's START, Electronic Arts' Project Atlas, and Samsung's Hatch.

Augmented Reality/ Virtual Reality (AR/VR)

AR/VR is used as live event features for audiences and spectators such as replay, various angle viewing and live sports betting. Various AR/VR services are, in fact, an integral element of viewing e-sports and promoting the stadium's gaming culture.

The decrease in latency in 5G is very essential for AR/VR use cases. This is because 5G lowers signal lag periods, which may make people dizzy if they are too long.

The League of Legends Park, an Esports stadium in Seoul, South Korea, is one example of where AR/VR is being utilised. Every year, about 120k visitors attend this esports arena.

When visitors to League of Legends Park point their smartphones in a particular location within the stadium, they can view messages from other fans in augmented reality. During games, there is also virtual reality live streaming and replays.

Automotive

Autonomous Vehicle

5G enables Cellular Vehicle-to-Everything (or C-V2X) technology, which allows autonomous vehicles to connect to the 5G network and transmit data via:

- Vehicle-to-Vehicle communication (V2V)
- Infrastructure-to-Vehicle (V2I)
- Network-to-Vehicle (V2N)
- Pedestrian-to-Vehicle (V2P)

Fleet Management

The 5G network is used by fleet management to track various data streams from cars in real time. GPS location, speed, travel duration, seat belt usage, fuel consumption, vehicle problems, battery voltage, and engine condition are just a few of the data streams that are available.

Data is gathered as a result, which may be utilised to identify when vehicle components need to be replaced or how to better manage drivers. As a result, real-time monitoring improves the vehicle fleet's safety and usage. At the same time, fleet management helps the fleet owner save money by increasing fuel economy.

Manufacturing

Manufacturing Automation

5G networks are being utilised to support industrial end-devices such as autonomous guided vehicles (AGVs). Indeed, 5G networks' mobility management, coverage, and service quality assurance offer the dependable connectivity required by a variety of autonomous guided vehicles. Tractors, pallet movers, and forklifts are just a few of the AGVs available. Forklifts, for example, can use 5G to move across the manufacturing floor more effectively and in an automated way.

Remote Robotic Control

5G is important for linking production line robotics since it provides:

- Robotics connectivity that does not need fibre or cable connections
- Remote monitoring of live robotics video feeds
- Remote-control applications with a low latency feature

Healthcare

Telemedicine

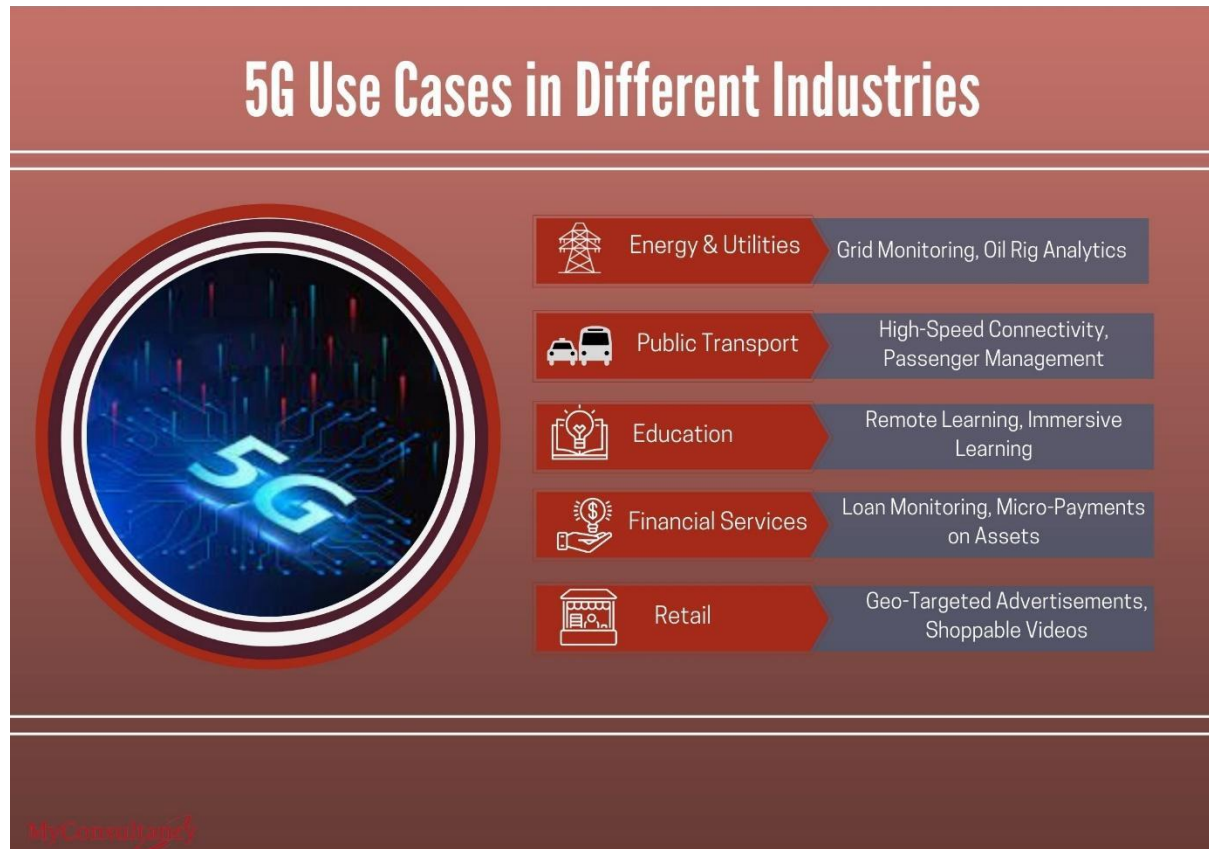
With 5G, telemedicine can benefit from superior, security-rich connectivity and improved data transfer built to address current challenges and unlock new possibilities. These benefits add up to an overall improved quality of care for telemedicine providers, and most importantly, patients. The increased bandwidth and low latency of 5G connectivity allows for higher resolution video and images, increasing the quality and value of virtual interaction. This not only reduces the need to come into a medical premise when unnecessary or unsafe, but can greatly benefit remote patients who may not have easy access to a medical facility or hospital.

Personal Health Systems

When most of us think of personal health systems, our minds go straight to smartwatches like the Apple Watch and Fitbit. They track our fitness, health, and more, and we seem to love the insights they extract from our daily habits.

In personal health systems, 5G will bring real-time notifications, more precision, and richer data and insights into our health, surroundings, wellness, and goals. The Internet of Things (IoT) systems often work with a multitude of sensors, from basic switches to complex cameras

recording at set intervals. Using this model of combining sensor information to create a more cohesive picture of our bodies and well-being, personal health systems will become much more powerful and valuable to us on a personal level.



Energy and Utilities

Grid Monitoring

Depending on production and consumption levels in various sections of the electrical grid, the 5G network can provide real-time, flexible routing of electricity flows.

Oil Rig Analytics

Oil wells fitted with Internet of Things (IoT) sensors and connected to the 5G network can transmit and receive data in real time. This real-time sensor data from oil wells can be used to spot patterns in the data and anticipate when the wells are operating outside of their optimal production ranges.

Public Transportation

High-Speed Connectivity

5G's signal strength allows for increased mobility, enabling data to be sent to a device travelling at 500 kilometres per hour (310 miles per hour). As a result, 5G enables data transmission via high-speed trains and autonomous drones, causing disruption in these sectors. These trains and drones will often reach speeds of up to 500 kilometres per hour (310 miles per hour).

Passenger Management

Over the 5G network, train sensors can detect vacant cabins and transmit information back to the train station. As a result, passengers may be directed to cabins that are available.

Education

Remote Learning

When you log into Zoom, there is a high propensity toward lagging and breaks in connectivity, which negatively impacts educational delivery. With 5G, video conferencing platforms will improve in quality and reliability worldwide. Therefore, instead of waiting for programs to load, time will be better spent connecting teachers with learners, even in remote settings. This allows teachers to concentrate on the student instead of dealing with connectivity issues. A better and faster internet connection means quicker video downloads and holograms of guest lecturers for students.

Immersive Learning

Online learning of certain abilities, including lab work and hands-on experiences, need additional tactile input. Incorporating AR and VR into immersive classrooms may help students learn new skills and visualise complex ideas in an engaging manner. Learning will be easier with 5G's increased network bandwidth and seamless experience. Tactile learning may be introduced to a classroom through video conferencing using haptic responses which simulate the sensation, touch, or motion of physically touching a real item.

Financial Services

Loan Monitoring

5G technology can benefit the financial services sector that relies heavily on lending money. Loans given to individuals to buy equipment, for example, may be rewarded if the equipment is well maintained and utilised.

For example, if a client takes out a loan to buy a warehouse forklift and then stops using it, this may suggest that the customer's company is experiencing financial difficulties. Internet

of Things (IoT) solutions that connect to the 5G network can assist to monitor loan compliance and trigger a warning of pending loan default.

Micro-Payments on Assets

Another area that 5G technology can disrupt is assets that have financing but also generate revenue, such as cars. This category includes, for example, a financed car that is utilised by the owner for a ridesharing service like Uber or Grab.

Specifically, the Uber or Grab driver might make money and then have micropayments sent to him or her to help pay down the car loan after each trip. The 5G network allows for quicker and more secure transfer of transaction data. In addition, as more cars connect to the network, 5G becomes increasingly essential for processing many transactions at the same time.

Retail

Geo-Targeted Advertisements

With 5G's improved responsiveness, geo-targeted offers will be more accurate and timely. Device position in 4G is determined by satellite-based GPS technology, which is accurate to within metres. In 5G, however, devices may be found and measurements recorded within a few millimetres.

Ikseon-dong, for example, is a fashionable district in Seoul, South Korea, with numerous prominent cafés, restaurants, and stores. This area gets around 80 thousand visits each month. In addition, the Ikseon-dong neighbourhood is just around 500k sqft in size.

This tiny space offers services including customer-centric discount coupons and event advertising at local businesses, cafés, and restaurants. As a result, geo-targeted advertising helps to boost the small and medium-sized company micro-economy. Indeed, 5G allows for geo-targeted advertising in these particular areas.

Shoppable Videos

In-video purchases are possible with shoppable videos, which may be accessed through live television, YouTube, or Netflix. To transmit these shoppable movies, 5G provides greater capacity (or throughput).

The Bachelor, for example, is an American television show with over 8 million viewers each episode. Indeed, being able to click on a pair of shoes that someone is wearing at the show and purchase them right away would be very powerful. Purchases may be made without the need for any redirection or extra websites containing shoppable videos.



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