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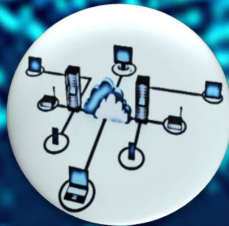
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5G in Campus

This could change the way we
imagine classrooms



Emerging Technology

On Network Infrastructure
Modernization of Industries



Wifi6

The next generation of WIFI

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5G in Campus

5G brings
unprecedented
changes to speed
and capacity. But
what good does it
do for universities?

Explore further with
Siam Rahman's
ideas

What do we think of when we hear about 5G? Faster speeds? Low latency? What else? Internet of Things? Before I started research for this article, that was the extent of my knowledge as well: common wisdom felt like an echo chamber of those three phrases. But 5G has more unsung capabilities. One of these is making 3D visualization available.

Imagine an engineering class. The teacher is giving a lecture about car engines. And as you listen to the lecture, you can see an engine right in front of you. But today is not a once-in-a-month practical demo. You see this kind of 3D model in every class and every lecture. You can take the engine apart at will, see the fuels flow in, and the exhaust fume out. Furthermore, your university is not burning through its budget giving you a new engine to open every day. 5G can make this possible. Let's see how.

First of all, what do we need for this? We need a powerful computer to create the models, a device that can output 3D visuals, and a device to manipulate the model. The first item we can easily get from cloud computing service providers. They have huge data centers and can easily provide us with the computing power we need. But how will those huge chunks of data travel to us? That is where 5G comes in. Through 5G we can access the full power cloud computing has to offer. Not only that, 5G can connect the input and output devices with the computer creating the models. And voila, you have your classroom that can bring anything to life.

This technology of 3D visualization extends beyond engineering classes. Every math, economics, physics class can experience 3D graphs and charts at will: no more stuffing 3D graphs in 2D slides.

And the best thing about all this is that 5G can make it available everywhere. If 5G is made available for the people, every university can bring the advantages of 3D technology to their classrooms, and close their gaps with universities with more funds.

However, every coin has two sides. Though 5G has the potential to be a game-changer, implementing it requires large investments in building infrastructure. Because going from 4G to 5G calls for big changes. For example, 5G taps into frequency bands previously untouched by 3G or 4G. Plus, some of those frequencies have the tradeoff of having less penetrative properties. Thus, to fully implement 5G we need a lot of communication receivers and transmitters a comparatively small distances than we did before.

Again, as 5G speeds up communications, it will increase energy consumption. So, the universities that are struggling with reducing their carbon footprint or

switching to renewable energy will have a harder time.

In a nutshell, 5G can change the way we think of classrooms. But it is not without limitations. Clever design and investments can help to overcome the hurdles.

“The revolutionary speed and capacity comes with tradeoffs of infrastructure costs and power consumption”



WiFi 6 and 5G

The new generations are here. Are you up to date about it?

Read more on Ahmad Hafiz's update

5G is the 5th generation of wireless technology that is taking over the world right now, which has made a lot of impossible things possible. 5G is a better generation as 5G has a lower latency and is much more reliable. They allow faster transmission of large data streams and enable better transmission in extreme conditions. 5G is also much more reliable than Wi-Fi as it supports a wider range of devices to be connected at the same time.

5G can provide a 10Gbps peak data rate and 1 million device connections within 1 km². Isn't that impressive? With the implementations of 5G, things like Virtual Reality, Augmented Reality, Autonomous Vehicles, and much more will be made possible and seamless. All of these need 5G due to the high throughput of data and low latency to avoid signal disruptions anywhere in the world.

5G has created multiple opportunities and benefits in multiple sectors such as tourism, where tourists will be able to live-stream their

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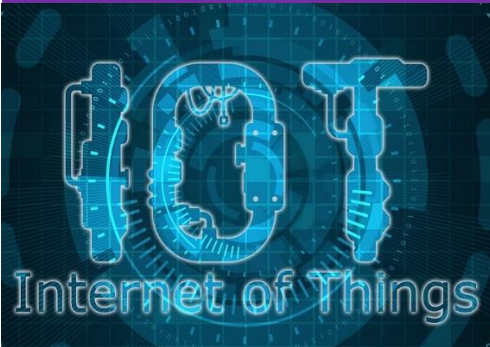
experience smoothly and seamlessly without any interruption and in better quality. Tourists also can have an enhanced experience with the usage of VR and AR in their holidays. In education-wise, Virtual learning will be made easier for students and teachers as the interaction will be mixed in with VR and AR which will make the student understand their subjects better. Let's say as an example, Automotive students will be able to look through every single nook and cranny in an engine of a vehicle in virtual learning without any issues.

WIFI 6 is a newer generation of wifi that has been verified for more than 3 years. Wifi 6 uses 802.11AX standards and most appliances are wifi 6 compatible nowadays. Wifi 6 can provide a 9.6Gbps rate of data. Wifi 6 has larger bandwidth, low latency, better uplink and downlink experience, supports a better multi-user experience while reducing the power consumption of terminals by 30%. Wifi 6 also has higher spatial

streams, sub-carrier quantity, symbol durations and coding mode.

Wifi 6 has some similarities as 5g with the device

connections, low latency, and high-speed data transfer. Wifi 6 enables multiscreen IPTV, Cloud VR interaction, E-sports accelerations, and HD video teaching. Wifi 6 enables all these interactions to be operated smoothly and seamlessly just like 5G. These inventions will bring remarkable changes to the world and it will lead the world to a better future.



Emerging Tech in Network Infrastructures

How did the pandemic affect technological developments?

Catch up with Adrian Norman's quick take

In the last 24 months with Covid-19, digital transformations happened rapidly in the IT World due to the pandemic. There is a lot of high-speed broadband connectivity improvements in Malaysia as well. Most employees are now working hybrid as they can still work at home remotely. A lot of companies chose to go with remote working environments during this pandemic. This is why there is some sort of acceleration of digital transformation. However, most companies have business resilience as they were quick to adapt to this new form of working while maintaining continuous business operations. Moreover, because there is a lot of remote working environments for the organizations, there are so-called IT infrastructure platforms that provide some remote management as well.

Post-pandemic environments have shown us that there are many changes in every aspect. There will be some pressure to improve performance. In terms of higher asset utilization, those organizations will start looking to lower down the energy as well as the utility costs. Other industries like the hospitality industry are looking to improve guest services. For example, hotels can provide a different experience for the customer using IoT equipment. Other than that, these organizations also looking to improve for better securities. Due to this pressure, there will be billions of IoT devices being deployed every month after the post-pandemic environments.

In a nutshell, emerging technologies on network infrastructure can be really important as they play a vital role in the modernization of industries. New technologies can help in transforming enterprises into a digital world. Technology is indeed one of the fastest-growing agents in the present world than ever before. The emerging technology has brought a significant transfer in information, technology and development sectors.



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