

group 2

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Application of 5G in Smart Campus

Increased efficiency with 5G technology

Industrial Talk 5

CommScope Malaysia's insight on emerging technology on Network Infrastructure

Industrial Talk 6

HUAWEI's insight on 5G, Wifi6 and Emerging Network Technologies

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APPLICATION OF 5G

in Smart Campus

5G, the hot topic that we always hear peripherally nowadays, but what is it exactly, why is it so important.

THE FUTURE depends entirely on connectivity and 5G is gonna make that happen. From artificial intelligence to self-driving cars and mixed reality. All the things we hope will make our lives easier, safer, and healthier will require high-speed, always-on internet connections.

To keep up with the explosion of new connected gadgets and vehicles, the mobile industry has introduced something called 5G—so named because it's the fifth generation of wireless networking technology.

Aside from smart homes and smart cities being established one by one, meanwhile in the education sector, 5G can be implemented within the campus grounds of a university, transforming it into a Smart Campus, changing the livelihoods of everyone in said campus.

SMART CAMPUS as a prospect for a university is nothing to scoff at. Even just having it will boost the reputation for the university, attracting students all around the world. The application that it brings will impact students' lives on a whole other scale and it goes to show how everyone within the campus will benefit from it.

The one application that I will be explaining is the most important of all and that is 5G allowing smart campus management.

Smart campus management mainly refers to the intelligent management of all types of campus equipment, including security cameras, sensors, projectors, attendance machines, just to name a few.

“...ACCORDING TO
RESEARCHERS, ABOUT
1.5 BILLION PEOPLE
WILL HAVE ACCESS TO
5G BY 2024.”

(CNET.COM)

LEADING COUNTRIES

in 5G Coverage



- China
- USA
- Philippines
- South Korea
- Canada



SMART CAMPUS MANAGEMENT



By using intelligent perception technology and IoT technology, devices such as cameras and sensors are used to collect information on campus environments and on people. Then, the collected massive data are intelligently analyzed.

INTELLIGENT MANAGEMENT that produces analysis results are applied to daily activities like school teaching, scientific research, management services, and other works to realise the management of energy consumption, status monitoring, asset management, equipment control, environmental monitoring, security monitoring, vehicle management, and so on to further realise the intelligent operation of a campus. This application of 5G brings a tremendous amount of benefits including :

BENEFITS

Interconnection of audio-visual educational equipment and different resources, services and platforms to accomplish local direct management or remote indirect management

Intelligent management of IoT equipment to shape the information environment of mutual perceptions between people and the environment, and to comprehensively improve the information level of the campus, intelligently save energy and reduce emissions

Data collection and optimise management through raising the level of intelligent monitoring, control, and management by long-term collection, data mining, and in-depth analysis of all equipment to improve the overall management efficiency of a campus.

“ 5G goes beyond the regular business operation; it's a business revolution. ”



REFLECTION

With 5G integrated into a campus, any new innovation can be implemented almost immediately within the educational premises. If the application of smart campus management is done right, innovative methods of teaching, university databases and security will be better than ever before.

Students can experience interactive teaching through methods like remote interactive teaching where lecturers can students can interact online with minimum lag; AR/VR teaching where students can better understand 3D models with AR technology. Simple tasks like taking attendance, purchasing items can be automated or even self-driving cars within campus grounds can all be realised with the implementation of 5G.

Personally, I look forward to the implementation of 5G and its application for students like myself. It will make everything so much more convenient. Smart campus management allows all data within the campus to be analysed intelligently and allows for swift improvement in all aspects of a campus, making everyone's lives easier. All these futuristic technologies will not just stay as a pipe dream, 5G will make all these incredible things possible and we are well aware of it.



EXAMPLE OF DOMAIN

IoT is taking the world to another level of easiness and comfort, with this great technology we can control almost everything using Internet and Network system.

At the moment IoT is used for all different fields of our life, General Safety Across all industries, Healthcare, transportation and logistics etc.



There are so many types and examples of IoT that we already use in our daily life such as Smart phones which is the most popular and common example.

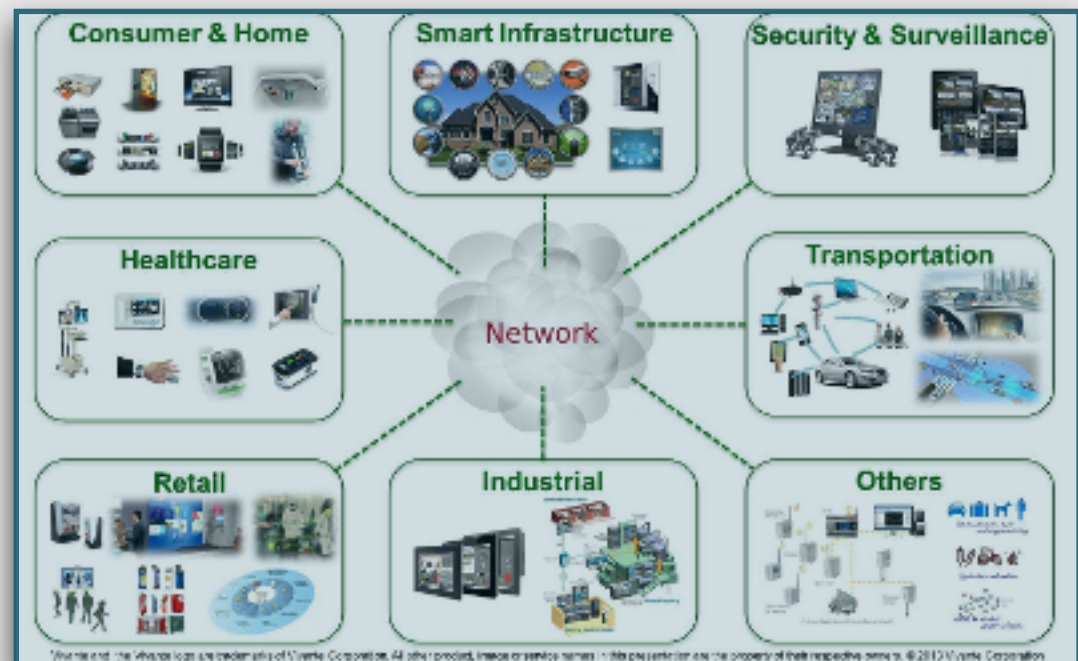
There is also Smart cars like Tesla cars, Smart glasses like Google glasses.

One of the most impressive models of IoT is Smart home which depends essentially on Network and Internet.

Smart home is becoming more popular during the combination between fifth generation (5G) and WiFi technologies.

REFLECTION

The industrial talk 5 which was presented by Mr. Goh Bih Der was so informative, I've learned to many things from it especially about the future of Internet and Network system and how life is changing and it's going to be absolutely different in the next 5-10 years.



5G, WIFI6 AND EMERGING NETWORK TECHNOLOGIES

INFRASTRUCTURE

The commercialization of 5G technologies is speeding up over the world. 5G communications are seen as the key to private utilization encounter overhauls and advanced mechanical change from the standpoint of industry development drivers. The 5G framework refers to the configuration of macro-and small-cell base stations with edge computing capabilities that are required for the fifth-generation cellular network innovation standard to work. 5G has had a far-reaching impact on businesses and can be transformative for lower inactivity that allows us to use a faster transmission of a larger data stream, more dependable that allows us to have way better transmission of information in extreme conditions like torrential rain and storms, and more adaptable than standard Wi-Fi that will support a wider range of gadgets, sensors, and wearables. 5G is closely linked to control applications such as IoT devices, semi-autonomous vehicles, and virtual reality. Wi-Fi 6 configuration models will provide better administrations for consumers.

DEVICES USED

Because 5G provides such a significant jump in execution, benefit suppliers are now offering buyers another option for connecting broadband networks to their homes via remote broadband via 5G.



VR is the most important application of 5G because the ultra-low latency and high transfer speed that 5G provides are critical in enabling the use cases. VR has the potential to introduce a variety of new applications to business, including additional specialists, preparation, maintenance, and repairs, to name a few.

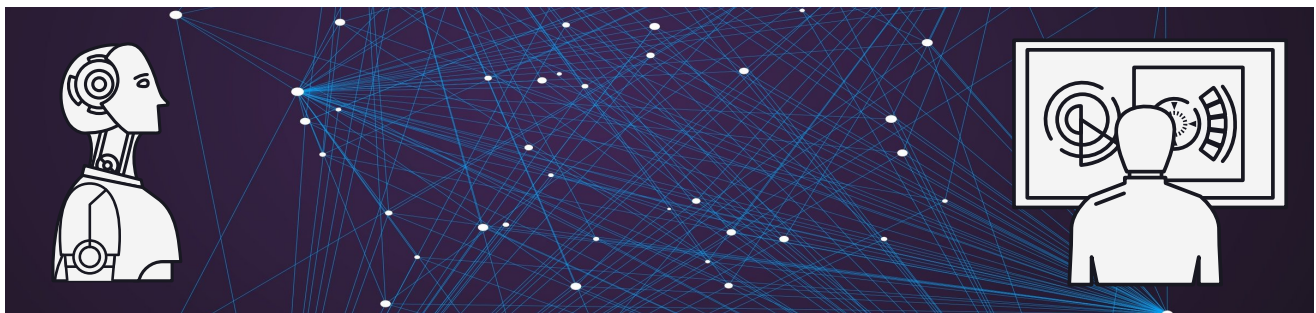
5G also aids in the development of clever receiving wires that improve SNR while increasing the range span by 20% when used in a distant framework.

A 5G Radio Access Network (RAN) uses 5G radio frequencies to deliver remote networks to devices, allowing these incredible applications to be delivered.

To provide unfathomable speeds and mobility, Radio Get to Organize consists of receiving wires, radios, baseband (RAN Compute), and RAN program. Meanwhile, Wi-Fi 6 will continue to be the most productive and well-liked method of interfacing.

EXAMPLE OF DOMAIN

5G might be a space where the open-air web, which is an exterior wide-scope industry and city that spans the urban scope, business road, interstate, and scenic zone, emerges. The 5G administrations space provides the business rationale and repair lesson requirements for 5G administrations. TM Gathering and Open Arrange Robotization Stage, 5G Open Private Association, and other bodies, are all relevant benchmarks and open-source improvements.



The multidomain coordination layer may provide a proof of concept that ensures such requirements exist between spaces. The ease with which a domain-based approach to innovation can be used in early 5G rollouts will prove beyond a shadow of a doubt that administrators can mix and coordinate innovations. Wi-Fi 6 might be a location for an indoor high-speed scope that is an encased ultra-high-density building and houses that cover the home network, general store, colleges, classrooms, and structure. this is the case

REFLECTION

After listening to Mr. Nicholas Yong, Huawei's Official Industry Arrangement Chief for Asia Pacific Locale, speak about 5G and Wi-Fi 6, I learn a lot of things.

Wi-Fi 6 and 5G are expected to deliver portability, speed, and optimal execution with the commercial release of next-generation remote systems. These advancements deliver considerably faster information rates and moo latencies, even in swarmed regions, to satisfy increasing objectives for enhanced distant connection, including keen cities, IoT, and independent arrangements. To summarize, Wi-Fi 6 and 5G were thoroughly evaluated and used to study client interactions. According to the findings, depending on client circumstances and scenarios, Wi-Fi 6 may be more suited in some cases and 5G may be more appropriate in others. Overall, the objectives for this year's extension were met successfully.