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"VR WILL BE A KILLER APPLICATION OF 5G"

NEW TECHNOLOGY IS DETRIMENTAL TO THE ORGANIZATION

ALL ABOUT OUR FUTURE

APPLICATION OF 5G IN SMART CAMPUS

Smart parking one of application of 5G in smart campus

EMERGING TECHNOLOGY ON NETWORK INFRASTRUCTURE (COMMSCOPE MALAYSIA).

An Industrial Talk 5 by Mr. Goh Bih Der (System Engineer of COMMSCOPE)

5G ,WIFI 6 AND EMERGING NETWORK TECHNOLOGIES (HUAWEI)

An Industrial Talk 6 By MR. Nicholas Yong (Executive Industry Solution Maneger For Asia Pasific Region)

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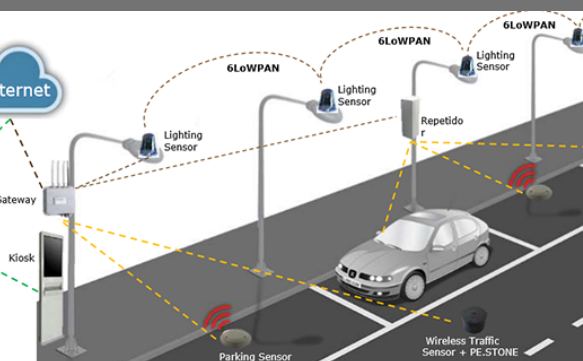4.NASRUL AMIN BIN AB HADI (A21ECOO99)
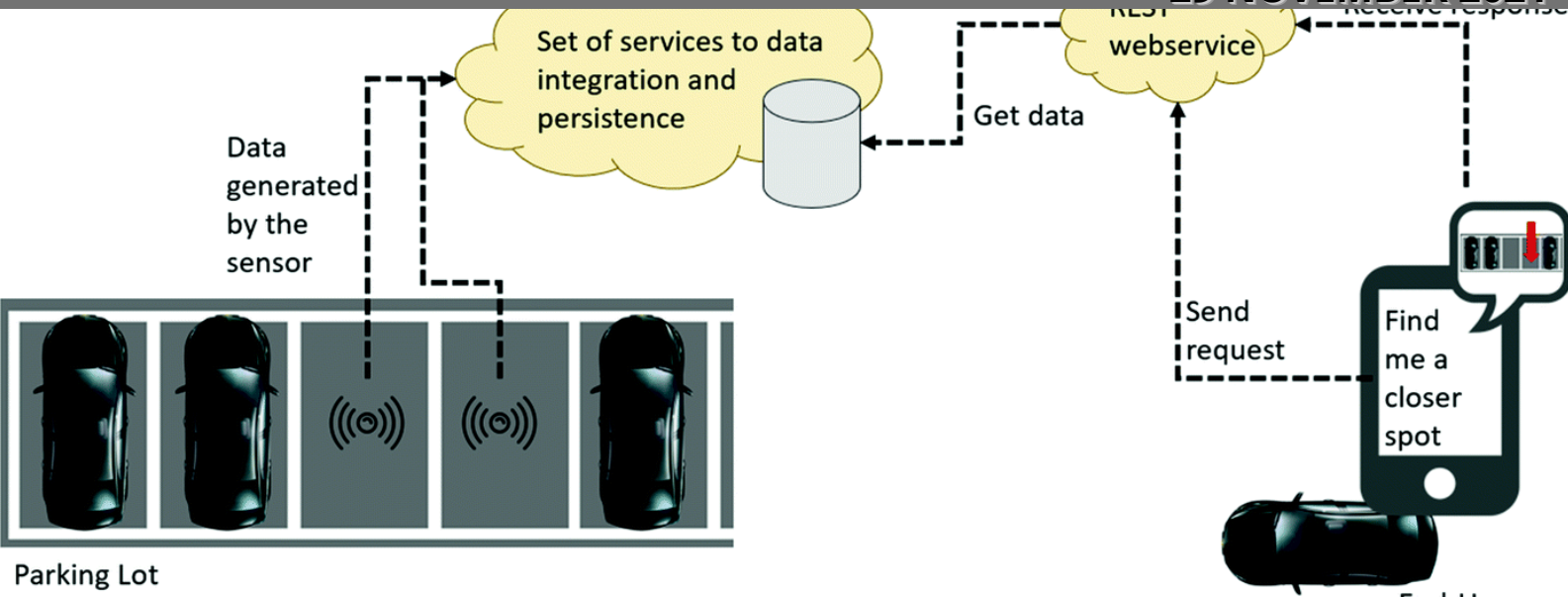
APPLICATION OF 5G IN SMART CAMPUS

SMART PARKING ONE OF APPLICATION OF 5G IN SMART CAMPUS

1.WHAT IS SMART PARKING

Smart parking is a parking system that monitors the availability of parking space and the information of parking space that has been full. This smart parking using technology to detect if parking space are available or full and then this information or data will use to generate a real time parking map. Then the data will be transmitted to a smart parking mobile applications or website and LED board that communicates the availability to its users. We can check which building or area in campus that have empty parking space through the application using the phone.

Data generated by the sensor

Set of services to data integration and persistence

REST webservice

Receive response

Get data

Send request

Find me a closer spot

Parking Lot

End User

2.SMART PARKING SYSTEM

In a first, the sensor and camera will detect whether has a car or not at the parking space to get the parking status and free parking spaces nearby any desired area in real-time. Then the data will be transmitted to the data collector and process the signal from the sensor and camera, then that's data will send to the server. The server will send the information to the application of smart parking or website and the LED boards. If the users using the application or website, they can find a closer spot for the parking park or book for a car parking before arriving at the destination meanwhile the LED board will display how much the availability of parking space.

3.BENEFITS OF SMART PARKING

- **Reduced pollution:** A million barrels of oil are burned every day just because to search for parking space. This effective parking solution will lowering the global environment impact because its significantly reduce driving time and also lowering daily diesel emissions which contributes to air pollution

- **Convenience:** This could be stressful to drive around area repeatedly just looking for available parking spaces, especially during the peak time. With this parking smart, its help the drivers find empty parking space just only by phone because majorities of smart parking available on app and website, so you just check through the app and website.Beside that, you can pay for parking just through the app without without withdrawing cash.

- **Saves a lot of time:** This smart parking can help the driver search the availability of parking spaces before arrive at the destination because this smart car park uses a real -time system that provides current and up -to -date information to the designated system. With that in mind, drivers can find parking space more quickly without having to turn around many times in the same area especially those who are chasing time.

REFLECTION

From this smart parking we can learn that every innovation created by meeting human criteria and desires, it can help help humans facilitate work faster. This smart can also be seen in its growing use, especially parking especially in shopping malls, universities, hospitals and public parking lots that are always crowded. In addition, we were able to learn how smart parking works and the types of tools used in this smart parking. But every thing created must have weaknesses, just as this smart parking has weaknesses such as always breakdown and requires regular maintenance. So, from this weakness can give us a little bit of motivation to learn more in depth about this smart parking to make it be better.

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EMERGING TECHNOLOGY ON NETWORK INFRASTRUCTURE

AN INDUSTRIAL TALK 5 BY MR. GOH BIH DER
(SYSTEMS ENGINEER COMMSCOPE)

29 NOVEMBER 2021

People are becoming more Internet savvy as a result of this new norm, and practically all everyday usage facilities have been digitized. The demand to increase performance is rising in the post-pandemic era. Higher asset utilization, cheaper resources costs, improved guest experience, and a safer and more secure environment are all the benefits. Many innovative equipment and solutions have been developed to assist with this problem. Each month, countless the Internet of Things (IoT) devices are utilized, and they are produced in increasingly complicated problems to use, manage, and act on all of this new information. The hardware and software resources of a complete network that enable network connectivity, communication, operations, and administration of an enterprise network are referred to as network infrastructure. It acts as a conduit for communication and services between people, processes, applications, and services, as well as network services internet.

An access point is a device that establishes a wireless local area network (WLAN) in a company or big building. An access point is a device that connects to a wired router, switch, or hub through an Ethernet connection and broadcasts a Wi-Fi signal to a specific region. It is the most recent network infrastructure trend.Wi-Fi will be in more demand in the future.

The most recent wireless technology is Wi-Fi 6, also known as 11ax. Because of its benefits, it has become the primary component of the future communications business. Because this new generation of wireless technology offers benefits such as lower network bandwidth, improved battery life, higher dependability, and improved Wi-Fi coexistence, people began seeking for Wi-Fi 6 to address the current issues.Access points have various types of protocols in them. Some of these protocols are used for different purposes.

As the campus core faces stress, there is a significant increase in core traffic, such as a quick increase in Wi-Fi speeds, the usage of IoT of smart building devices, higher wired edge speeds (Multigigabit), cloud apps, and video streaming. To handle all types of equipment, the traditional approach to on-premises LAN/WLAN network management uses two network elements which is the WLAN controller and Network Management System. Access point switches are used to unify network management in one place. This will allow for management to be consolidated. The IoT offers enormous potential for expansion.

In the future, the IoT is expected to be quite vast. There are several advantages to integrating IoT solutions, including cost savings as the most operational costs are saved, improved customer experience, increased efficiency and production, and more business potential. Connectivity, security, and compatibility are all issues that arise while adopting IoT technologies. Cloud analytics is a tool that makes it easier for humans to address network problems by automating and self-optimizing the process. It will self-identify and will no longer require people to locate or search the problem on the internet. Someone will be able to save time as a result of this.

Physical infrastructure is built on top of network infrastructure in a smart city. It will raise situational awareness for new services, save expenses, and increase public safety. The IoT is being used to connect buildings, cars, people, and things. Household expectations are shifting as a result of smart houses. The smart campus, on the other hand, is a hybrid of smart city and smart houses. Smart campuses are divided into three areas to increase automation and operational efficiency on campus which is smart living, smart learning, and smart security. If a smart campus is created, students will have a better experience.

Utilizing Wi-Fi Access Points Towards Smart Learning

In this day and age of online education, the usage of smart learning is vital. As a result, the utilization of network infrastructure such as Wi-Fi access points is very beneficial in this aspect.

The Advantages of Using Wi-Fi Access Points for Smart Learning

1.Higher productivity among campus residents
- Users who are linked to a wireless network can keep a virtually continual connection with their selected network while they travel from one location to another. This means that students can possibly be more productive because their work can be completed from any convenient place.

2. Wi-Fi Performance Optimization
- Classrooms and lecture halls often have the largest number of Wi-Fi devices in an institution. Wi-Fi access points enable resilient performance during periods of increasing authentication traffic to facilitate a successful e-learning experience. Furthermore, IT managers may set specific connection limits on access points to proactively manage available wireless service resources and ensure smooth network operation.

3. Schedule and Role-based User Access Control
- For schools to secure important network resources, have comprehensive visibility across all users and devices, and respond swiftly to any possible network concerns, powerful Wi-Fi access management is required. E ach position may be allocated with different access regulations based on their schedule, and they can be permitted network access based on the location of the Wi-Fi access points with which they are affiliated.

"Moving forward, organizations won't be able to rely on acts of individual heroism, but rather will need to evolve to more automated, self-optimizing, and healing network environments."
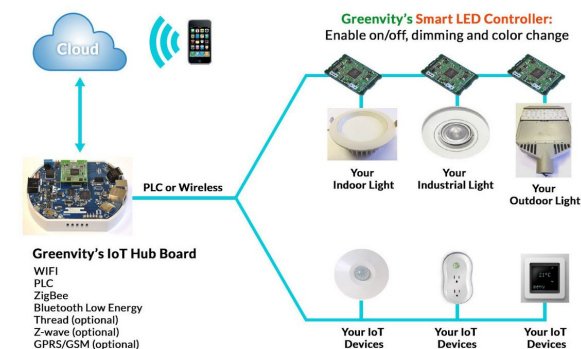
- ESG Network Predictions for 2020

DEVICES USED

Example of devices used in Emerging Technology on Network Infrastructure :

- Hyundai i20 Coupe
- Smart Lock
- CCTV
- Smart Lighting
- Smart Thermostats
- RUCKUS R850
- Fixed Switches

REFLECTION

We may learn from this industrial discussion that any invention made by addressing human needs and aspirations can help people work quicker. For example, in this discussion, the speaker addressed the Internet of Things (IoT), which has a lot of beneficial benefits for mankind since it may improve commercial chances while also increasing the country's economy. Furthermore, this discourse inspires us, students, to think critically in order to be more creative and imaginative in order to produce something that will benefit the community in this world. All new inventions and technological advancements have benefited the world as a consequence of rising technologies on network infrastructure, and all of this demands long-term innovation.

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Greenvity's Smart LED Controller:
Enable on/off, dimming and color change

Cloud

PLC or Wireless

Your Indoor Light
Your Industrial Light
Your Outdoor Light

Greenvity's IoT Hub Board
WIFI
PLC
ZigBee
Bluetooth Low Energy
Thread (optional)
Z-wave (optional)
GPRS/GSM (optional)

Your IoT Devices
Your IoT Devices
Your IoT Devices

IOT

5G ,WIFI 6 AND EMERGING NETWORK TECHNOLOGIES (HUAWEI)

AN INDUSTRIAL TALK 6 BY MR.NICHOLAS YONG
(EXECUTIVE INDUSTRY SOLUTION MANAGER FOR ASIA PASIFIC REGION)

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2 DECEMBER 2021

HUAWEI - A leading provider of ICT infrastructure and smart devices. Huawei is building the horizon digital platform and ecosystem , integrating new ICT technology and bringing an intelligent world to the life through digital transformation.

In order to achieve the vision and mission Huawei is endorsing interconnectivity and equal network access to lay the groundwork for the intelligent world .As well as it provides the ultimate computing power to deliver ubiquitous cloud and intelligence. Then build a powerful digital platforms to help all sectors of the economies to become more agile, productive, and innovative; and reshape user experience with AI by offering consumers more customized and intelligent experiences across all environments, including home, work, fitness and health.

5G is the next generation of wireless technology systems . It provides speeds faster than any previous generation, comparable to those delivered via fiber-optic cables. Once 5G becomes widespread, the effect on these industries could be transformative for 3 main reasons.

First of all , 5G devices are lower latency, enabling faster transmission of larger data streams. Secondly, 5G devices are more reliable, enabling better transmission of data in extreme conditions. Following by 5G is more flexible than Wi-Fi and can support a wider range of devices , sensors and wearables.

Wi-Fi 6 is the next generation of Wi-Fi technology which is also known as 802.11ax Wi-Fi. The purpose of Wi-Fi 6 is to supports gigabit broadband promotion , improves bandwidth , improves coverage until 5GHz signals, and; to provide video services such as multi-screen IPTV, online education and VR. Moreover its supports better multi user experiences by connecting more than 100 terminals. Thus, the power consumption of terminals are reduced by 30 %.

The only commercially available 5G devices are

- Huawei 5G CPE 2.0 (mmWave)
- Huawei 5G CPE 2.0 (Sub-6 GHz)
- Huawei 5G CPE Win
- Motorola 5G Moto Mod
- Netgear Nighthawk M5 Fusion MR5000 (aka Nighthawk 5G Mobile Hotspot)
- Nokia Fastmile 5G Gateway

There's more to 5G devices than smartphones. In 2021 we will also see the growth in 5G-compatible customer premise equipment (CPE), fixed wireless terminals (FWT) and pocket routers, marking the beginning of the trend towards 5G-enabled homes, which will dramatically increase adoption.

VISION and MISSION

" Bringing digital to every person , home and organization for a fully connected , intelligent world "
HUAWEI

Application will propel businesses to the next stage. HUAWEI has several innovative cloud applications : video streaming , security and intelligent surveillance.

PETER LAM
MANAGING DIRECTOR of HUAWEI

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Enhancing Virtual Experiences with 5G

Certain technologies have the potential to expand virtual reality's possibilities. In a virtual world, artificial intelligence increases computer vision and sensor tracking. The Internet of Things (IoT) environment makes it easier for objects to communicate with one another.5G is perhaps the most valuable technology of all for virtual worlds. Through faster connections, companies can reduce latency, improve mobility, and immerse their users deeper into a realistic virtual environment.

Virtual Reality's Benefits from 5G

1. Reduced Latency
    Lower latency is equals to a higher responsivity. 5G has the potential to cut latency by 10 times while increasing data transmission rates. Reduced latency will have a significant influence on how we engage with virtual worlds**.**

2. Higher Quality Displays
    Because 5G networks it can process a bigger data, as they easily export larger files, such as 4K or 8K video streams, without any latency or congestion. This ought to guarantee that the illustrations we can access on future VR gadgets are more vivid and sensible.

3. More Opportunities for Collaboration
    5G ought to likewise make ready for better community openings in computer generated simulation. As of now, many organizations are starting to investigate augmented reality as a method for uniting groups from different areas all over the world. Individuals who beforehand wouldn't have approached the right information data transfer capacity to join a VR meeting but now they enter a virtual climate easily. This could prepare to more readily admittance to remote colleagues and experts for an undeniably half and half work environment.

The ascent of 5G availability could dispense with a portion of the serious issues that would some way or another keep organizations from accepting augmented simulation. Joined with other problematic advancements like AI and IoT associations, 5G addresses another wilderness for Virtual reality improvement.

5G's effect on the Internet of things (IoT), is relied upon to result from a mix of its high information rates, diminished idleness, energy investment funds, cost decreases and higher framework limit. The combination of artificial intelligence, machine learning and 5G form the technical foundation for mixed reality, digital twins and IoT.
The potential benefits in the social sphere are another reason why we need 5G technology. The basic capabilities of 5G are easy enough to understand, but the ways in which the next-generation network could help address generations-old societal challenges are unique and multifaceted.

" How 5G Will Accelerate the VR Revolution ?   "

" VR will be a Killer Application of 5G "

-Mark Zuckerberg
Keynotes in MWC 2016