**CT090-3-2-MWT**

**Mobile and Wireless Technology**

**Alternative Assignment (Individual)**

Choose the relevant Mobile and Wireless Technology to solve problems in any given scenario (C3, PLO2)

**Instructions:**

1. All discussion and justification should be made using your own words (**no copy paste work is allowed**), and supported with citations from external resources (books, reliable Internet resources etc.). Please use APA Referencing System to fulfill this requirements
2. Plagiarism is a serious offence. **Zero (0)** mark will be awarded for the entire assignment if any part of it is found to be copied directly from any materials or from another student.
3. Explanation should not be in general, must relate it with the given scenario.
4. All submissions should be made on or before the due date. Any late submissions after the deadline will not be entertained. **Zero (0)** mark will be awarded for late submission, unless extenuating circumstances (EC) are upheld.

**SCENARIO:**

REKACIPTA Exhibition and Convention Center (REC Center) is the largest convention center in Sarawak, with 40, 000 square meters of exhibition space, 40 meeting facilities, and a broad range of conference services. In year 2015, the events held in REC Center attracted 2, 000 exhibitors and more than 5, 000 exhibition visitors. Then, in year 2021, after almost two consequence year when REC Center no longer having any event and activities being conducted due to pandemic situation, now it was decided by the Sarawak’s Government for this REC Center to be one of the Covid-19 Quarantine Treatment Center in Sarawak. The current REC Center has to upgrade the existing Wi-Fi network as the existing wireless installation was no longer able to meet the requirements of today’s network demands.

Now, for Covid-19 Quarantine Treatment Center readiness, 800-bed hospital, treatment hall, pharmacy, resuscitation zone and X-ray room had been made available in the center. Next, the lounge areas is also require to accommodate smart televisions, computers and Wi-Fi for patients and medical staffs.

Apart from that, based on experiences gained from other Covid-19 Quarantine Treatment Center in other places, when medical staffs began spending significant portions of their shifts searching for important healthcare assets such as oxygen tanks, stretchers, IV pumps, etc in facility, the REC Center Biomedical and IT teams investigated the use of Real-Time Location System (RTLS) technology as a possible solution to the medical team’s challenges. Sarawak’s Government understood that freeing up medical staff’s time could boost morale, improve patient experience and throughput, as necessary equipment became available. At the same time, the IT team was upgrading their Cisco Wi-Fi network to better support data and voice requirements and the team wanted to leverage their Wi-Fi to enable asset tracking. The IT team began investigating the use of Real-Time Location Systems (RTLS), which uses an existing Wi-Fi infrastructure with costly, wired readers in each room. Now the expectation of having solutions to re-purpose existing Wi-Fi networks in the center by ensuring that whole-center RTLS adoption was cost-effective, thus improving the effectiveness of the center-wide asset tracking application.

In achieving all those mentioned challenges and requirements, REC Center Biomedical and IT teams collaborate with many freelance consultants which mostly having more than 10 years experiences in developing and maintaining the systems. Sarawak Government’s main concern is all about the IT infrastructure and the cost incurred in it and as the expectation is to fully utilize the available budget in accommodate the best infrastructure in supporting the medical team during this pandemic time. You are the Certified Wireless Network professional hired by the REC Center Biomedical and IT teams has assigned you the project with some requirements and questions. As a Certified Wireless Network professional, you are given a job to address the following questions popped up during the project review:

**Question 1**

REC Center Biomedical and IT teams had series of discussion with you, and directed you to provide solutions which will help them to provide not only high speed internet access with better mobile and wireless technologies for their medical staffs, but also, it potentially able to support the patients and the RTLS usage. You are supposed to choose another mobile/wireless technology or just to maintain the current Wi-Fi technology that suits their expectations. Justify your choice of selecting the proposed mobile/ wireless technology by discussing at least **FIVE (5)** reasons to support your argument.

(Total: 25 marks)

**Question 2**

REC Center Biomedical and IT teams would like to implement most cutting edge wireless communications technology only for its 20 meeting’s room as well as its 10 medical’s officer room. REC Center Biomedical and IT teams would like to introduce Visible Light Communication (VLC) technology that delivers high-speed internet, bi-directional mobile communications in a much more secure way with the top speed of 224Gbps. Which mobile/wireless technology that suits the said requirement? Justify your choice of selecting the proposed mobile/wireless technology by discussing its working principle, advantages and disadvantages.

(Total: 25 marks)

**Question 3**

As per stated in the requirements above, REC Center Biomedical and IT teams began investigating the use of Real-Time Location Systems (RTLS), which uses an existing Wi-Fi infrastructure with costly, wired readers in each room. Which mobile/wireless technology that may suits the said requirement? Justify your choice of selecting the proposed mobile/wireless technology by discussing its features.

(Total: 25 Marks)

**Question 4**

Currently, Dr. Hendry Silver, one of the Senior Medical Officer had decided to accommodate his current office room in REC Center with Small Office Home Office (SOHO) automation system using low cost solutions and preferably to be supported with battery operated appliances, as most of his time will be mainly in his office rather than on and off back to home. Provide **ONE (1)** Personal Area Network (PAN) solution for Dr. Hendry Silver by supporting your answers with the advantages of the provided solutions.

(Total: 25 marks)