



LOCATION TRACKING APPLICATION USING WIRELESS SENSOR NETWORK

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ABSTRACT

Location tracking system have been facing limitation of GPS connectivity at low network coverage area, where the system unable to attain the necessity. The highly demand technology that are being top option on developing a location tracking system is Wireless Sensor Network (WSN). WSN has been widely used in many platforms such as monitoring device which able to collect data and information from a specific location which may be temperature, pressure, humidity or movements. WSN is a technology which has high number of small, reasonable price, low powered and multifunctional sensor nodes that will be deployed in specific site. Those nodes have wireless communication ability with the other nodes . WSN could be the best solution which is reasonable cost and low powered device. Thus, WSN could be highly recommended to be used to enhance the existing tracking technology which perform poorly in some low network coverage area.

PROBLEM STATEMENT

GPS based location tracking is not reliable enough to be used in deep forest site which usually student goes for hiking or camping as the network signal is weak.

The geographical location of the student is not easily identified during any emergency situation using a GPS based tracking system or mobile network

The student are not aware if they entered dangerous or restricted area.

OBJECTIVES

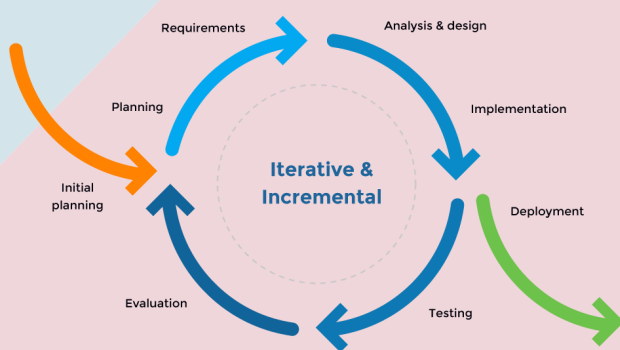
To conduct a study and understand about the components and requirement of WSN based tracking system

To develop the tracking with monitoring feature for hiking and camping activities which will be able to track student's past and real time location.

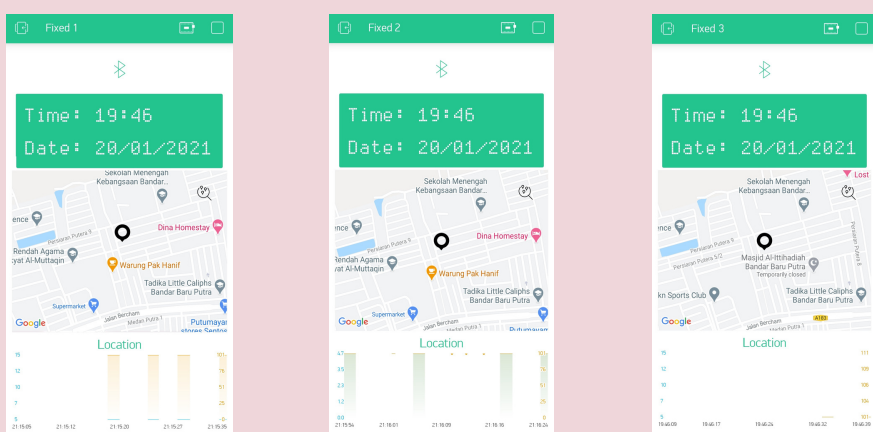
To test and evaluate the functionality of the Wireless Sensor Based location tracking system using Bluetooth to obtain the location coordinates.

METHODOLOGY

Incremental and Iterative Development



IMPLEMENTATION



DISCUSSION

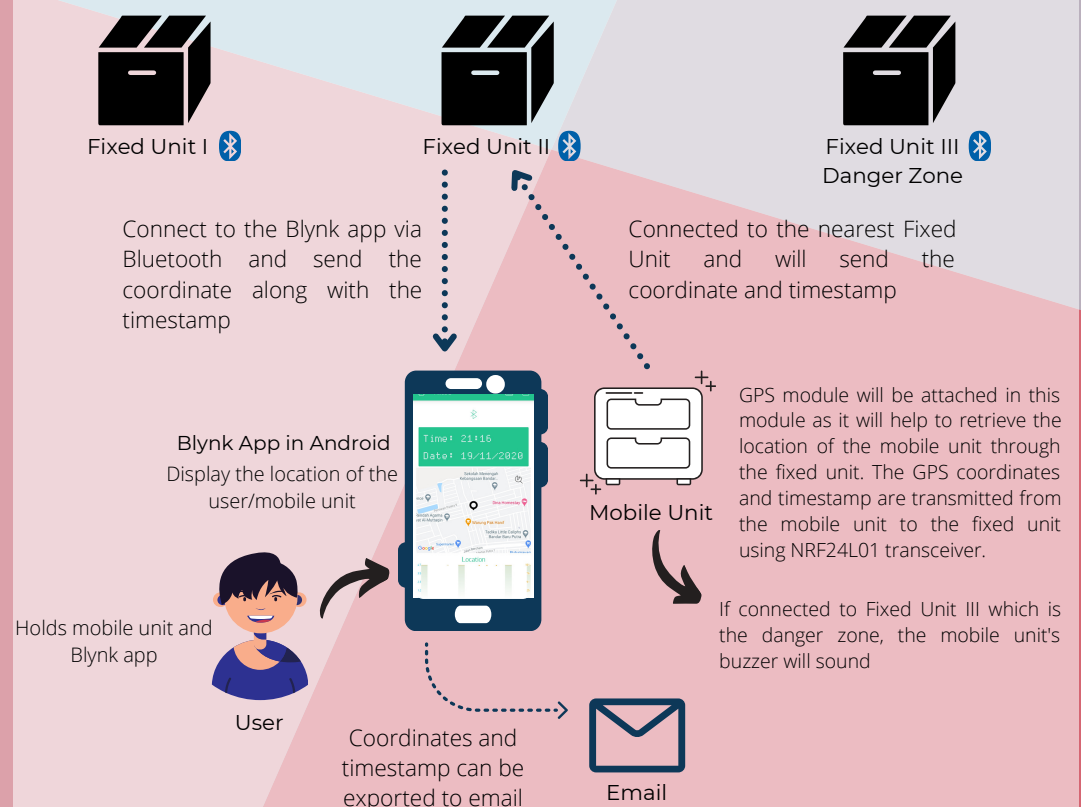
From Class 3 experiment, Bluetooth connection could be relied to obtain an accurate coordinate in distance less than 10 meters range between the fixed unit and mobile unit which will be considered as the user's location. For Class 2 experiment, even though the mobile unit is 10 meters farther than the fixed unit, it able to connect and get the coordinate with slight inaccuracy as the coordinates reading might be affected due to barriers, like walls between the devices. Adding on, for Class 1 experiment, the device have been found that it was unable to connect to any fixed unit at the distance of 100 meters.

CONCLUSION

In a nutshell, it can be concluded that location tracking system could be reliable with the application of WSN through Bluetooth connection with the proximity range of Class 3 which the distance between the device are 10 meters with the presence of environment barriers. Hereby, the conclusion has been achieved has proposed

HOW DOES IT WORKS ?

Each fixed unit consist of NRF24L01, Arduino Nano and HC-06 Bluetooth module. The Bluetooth module will connect to the Blynk android application to send the location of the mobile unit



DEVELOPED MOBILE UNIT AND FIXED UNITS

