

# Beacon for Attendance Management

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# Problem Definition

## **Selected Area:**

Attendance management in the ALU classrooms

## **Details of Problem:**

- Currently, facilitators in ALU take class attendance by calling the name of members to verify their presence.

This approach is time-consuming because the facilitator has to call each person's name regardless of the class size.

Also the chaos of rechecking any member's presence at the end of the day manually is real troublesomeness.

## **How beacon fixes it:**

The beacon technology provides a way for the facilitators to instantly record and analyze the attendance of all students. A student can check the attendance record in his/ her mobile anytime anywhere using any device that supports the application, as the data is recorded in the server/cloud.

# Target Users & their Needs

## Faculty

The Faculty of ALU is one of the Target Users

They need:

- a stress free method of taking attendance
- accurate data on student attendance

## Students

The ALU students are the other Target Users

They need:

- A reliable system to keep records of their attendance

# What is a beacon?

## **Beacon**

Beacon is a small bluetooth device that repeatedly transmits signals that other devices like your smartphone can see.

Beacon broadcasts radio signal that is a combination of letters and numbers ( magic number) approximately every 1/10th of a second.

## **Beacon enabled app:**

Even though the beacon broadcasts the signals, it is the beacon enabled app that does all the inferences.

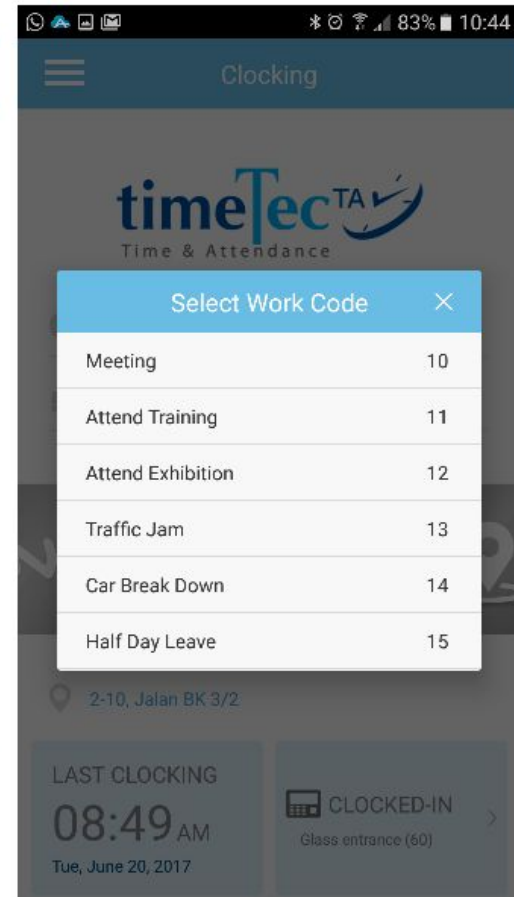
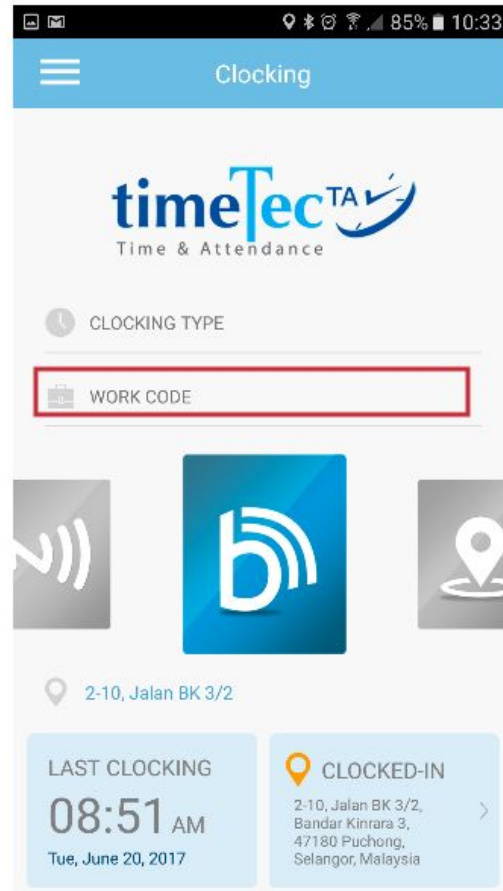
Hence the choice of app is very important that is why TimeTec Ta beacon app is being proposed here.

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## Why Time Tec TA?

When beacon are close together in the same building mobile devices in that proximity can pick up the signals.

Time Tec TA beacon app provides a solution to this by setting ID and name of the class and assigning the users for a more accurate and reliable data collection.



# Form of Innovation

- The use of beacon is a Disruptive Innovation
- A disruptive innovation is often a much more simple, low-grade solution that's more affordable and accessible to a larger population, which opens it to an entirely new market.
- Beacons are affordable, easy to use and the effect is very significant as it stops the time wasting conventional means of taking attendance

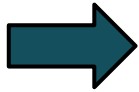
# How the solution works

- Install bluetooth low energy (BLE) beacon on wall at vantage points within at most 10 meters range from classrooms.
- Target users must install beacon enabled app (TimeTec TA) on smart mobile devices and turn on their bluetooth.
- The facilitator sets the ID and name of the class on the app.
- The presence of students is registered automatically when he/she comes in Beacon range.(given he has the mobile device with bluetooth on).
- Attendance history can be viewed on mobile devices anytime, anywhere which aids in keeping a track/analyse on their presence.

# Solution Schematics



BLE beacon to transmit small packets of data as magic numbers



Beacon enabled app(TimeTec TA) for facilitators to set class name and id and display attendance records



Mobile device with bluetooth on to receive magic number from BLE



Beacon enabled app(TimeTec TA) on students' device to send scanned ID and name with magic number to server

Cloud server to store information





# Benefits of Implementation

- The use of this technology prevents the students from deceiving their facilitators by leaving the classroom premises right after marking a present.
- This system solves the problem with the conventional system that takes a long time for all the students to be marked as the facilitator calls out individual names
- It provides reliable attendance report to both target users.(Facilitators get accurate records and students trust the records because it minimizes possible human errors which is highly possible in the conventional system).
- They are easy to use and implement.

# Limitations of the solution



- This solution is a disadvantage to student present but without mobile any mobile device.  
They will not have their attendance marked as present.
- The solution is not plausible to students with low or medium mobile device specification because the beacon enabled app is not available on them

# Strategies to increase adoption

The key strategy to increase adoption is increasing the Users' Procedural Knowledge by :

- On demand training - both the facilitators and the students should be trained on how to use it to make them familiar with the system
- . A short video made will make it easier for the targets users to refer to at anytime in case they miss out on something

# Reference

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