Human-Centric Automation and Optimization For Smart Office

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Abstract: Advanced positioning technology has led to the development of delivery services of automatic advertisements and notifications to the user based on his/her location. For indoor environments, Notification environments developed using beacons are preferred. A variety of applications from shopping malls and museums, prefer Indoor positioning systems using beacons to subject monitoring and tracking.The usability and reliability of these positioning systems are based on their accuracy, cost and the ease of deployment. In an indoor space, Beacons are installed by users, to construct the notification environment. To make setting of notification positions easier, the beacon installed is linked to the notification content. Using this system the customer as time is saved as customer gets notifications on his Smartphone when they pass through any malls, store etc. When the customer finds a notification they react to that and reach to that space. Customer enters into the space and gets more notifications about the space which may help the customer. Although, the Global Positioning System (GPS) is an accurate solution for outdoor space, it cannot be used in the indoor space.

Keywords: Beacon, Bluetooth Low Energy, Location Data, Indoor Positioning, Diffusion, RFID

I. INTRODUCTION

In a range of contexts including office buildings, museums, university campuses, airports and other public spaces, indoor positioning as a method of augmenting and enhancing user experience is attracting increased interest from commercial organizations . none of the forms of marketing offers personalized marketing based on a user as current location in real time. shopping is one regular activity that human beings spend significant amount of time. us bureau of labour carried out a survey ,according to which, customers spends average of 1.4 hours every day on shopping. ips has become the popular way to design navigation indoors. instead of using satellites, ips uses radio waves or magnetic fields to determinate positions. a range of different technologies have been tested and implemented, such as using infrared, ultrasounds or more commonly wi-fi and bluetooth ips is implemented in a couple of different ways. one approach is that a device, or listener, is used to register incoming signals from the beacons positioned around the person. beacons are small, wireless transmitters that use low-energy bluetooth technology to send signals to other smart devices nearby. they are one of the latest developments in location technology and proximity marketing. put simply, they connect and transmit information to smart devices making location-based searching and interaction easier and more accurate.
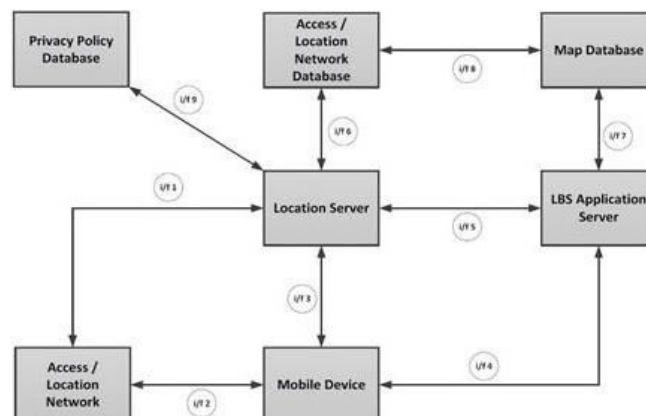
## II. OBJECTIVE

Fig. System Flow Diagram

- To make existing problem into pure embedded software and increases business standard.
- To reduce and remove human Deification in terms of locating a object.
- To make process faster and accurate.
- System will able to implement in various domain organization and modify according their business need

III. PROBLEM STATEMENT

The problem studied in this project is to evaluate if lost assets can be tracked in indoor environments by using a couple of smart phones and beacons. In more detail, the problem of the study is to implement a Smartphone application able to locate the beacons accurately enough at a low cost and being energy efficient as well as user-friendly

IV. PROPOSED SYSTEM

Bluetooth Low Energy, (BLE or Bluetooth Smart) is a new technology that allows Bluetooth signals to be transmitted with lower power consumption while maintaining a similar communication range. Proximity beacon device that based on BLE technology can provide indoor and outdoor positioning service to BLE ready mobile devices that supports Bluetooth 4.0. Inside a building, Bluetooth indoor positioning would be more practical than using the Global Positioning System (GPS) because the latter requires a view to the clear sky for consistent satellite communication. Bluetooth micro-location technology therefore opened up possibilities for context and location awareness feature to be integrated into mobile applications. I BLE proximity beacon is a low-powered transmitter device that will broadcast a signal at a certain interval to indicate their presence. Without the need of pairing, a Bluetooth Smart ready device will be able to receive the signal when in range. The signal strength (RSSI) received by the mobile device will be used to estimate the distance between the user device and the beacon. Mobile applications can be designed to dynamically perform action or display information paired to the nearest beacon. The terminology for such intelligence is called location awareness. The BLE beacon technology is featured by Apple in iOS7 and Apple trademarked it as iBeacon.
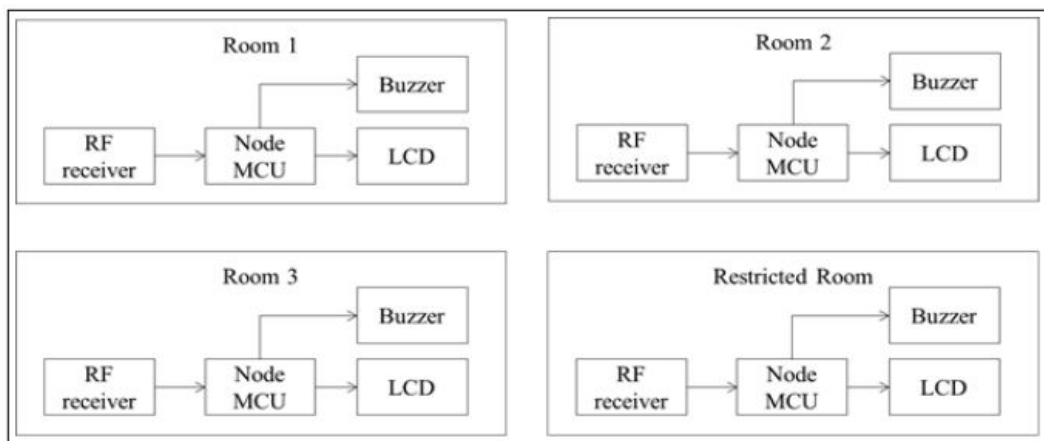
Radio Frequency (RF) transmitter is kept in pocket of user which user has to carry everywhere. RF receiver recognize particular user after detecting frequency of RF transmitter. Whenever any person enters into any room RF receiver detects him/her presence. LCD will display any important information sent by higher authority (in case of School/College, Principal will sent any important notification to a teacher which will display on LCD of particular room where teacher is present). Buzzer will alert about notification. If anyone enters in restricted room then LCD displays restricted area and buzzer will not stop until that person doesn't come out from that ˆ room.

IV. CONCLUSION

The aim of this project is to investigate and develop a new approach of an IPS which tracks down a lost object and relies on the users of the application. Was it possible to use only cheap BLE beacons and then let the more expensive parts of the system be the users smartphones? To make this possible, we needed to combine an earlier approach of an IPS, where a user can be positioned relative to the room, and combine it with the crowd-sourced localization technique. In addition to this, we needed to evaluate how many users were required to run the application in order to get a fast and reliable result. The accuracy to get a useras position relative to the room is very ˆ good thanks to existing technology. The hard part has been to get a good accuracy of a lost asset relative to the user. As stated earlier, the beacons attached to the assets are not meant to return an exact distance, they instead work with proximity. This is the main cause of the unreliability of the accuracy in our tests. Besides this proximity beacon, Estimote also provides location beacons. This

leads to the first possible extension of this thesis, replacing the current bea- cons with these location beacons. Since they are developed to track real-time positions, it would most certainly give us a more accurate position of our lost assets. Our conclusion is that we know that the application works and fulfills our preconditions, if enough people use it.

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