

Idealistic Approach To Being a Chaperone

Using Bluetooth Beacon





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Introduction to Bluetooth Beacon Technology

1. Definition of Bluetooth Beacon technology

Generally, the name “Beacon” is defined as a strong light or fire that can be seen from a long distance or far away that helps us reach or know that there is a beacon present in that place.

On the other hand, the Bluetooth Beacon also states the location of a particular area with some tiny/basic information.

BLE (Bluetooth Low Energy):

Bluetooth version 4.0 is known as Bluetooth Low Energy (BLE), Bluetooth Smart, or Wibree.

BLE is a Wireless Personal Area Network (PAN) technology designed and marketed by the Bluetooth Special Interest Group (Bluetooth SIG).

Almost all our mobility devices have built-in support for BLE. It can be used for advertising and making connections to share small information to other devices where one will act as a master (central) and another as slave (peripheral).

It's only used for transferring small amounts of data between nearby devices and includes proximity sensors to provide customized experiences to users based on their current location.





Bluetooth BEACON / Smart:

Bluetooth Beacon/Smart is a class under BLE, in which beacon device will broadcast their identity to other mobile/central devices, either it can be an Android device, iOS device, or any portable BLE electronic device.

Bluetooth beacon uses proximity sensors to share the device's physical location.

To efficiently use the Beacon, we devised a solution to address the complexity of guidance as a chaperone to an unknown place like an Exhibition, Museum, Healthcare, and so on.

This document gives an overview of the Beacon as a Chaperone to Healthcare and Exhibition. Also, this document takes you through the guidance challenges faced in our day-to-day life and describes the best solution to overcome those challenges.

2. Terminology

Bluetooth Classic:

Bluetooth Classic is designed for continuous, two-way communication, whereas BLE transfers smaller packets of data over short periods of time.

Bluetooth Smart:

Bluetooth Smart is used for transferring small amounts of data between nearby devices and includes proximity sensors to give users a customized experience based on their current location.

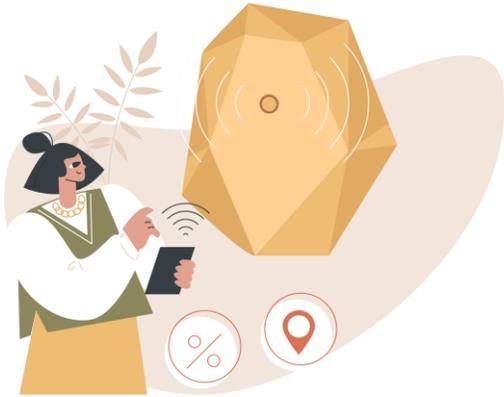
Proximity:

Here, proximity is a sensor that is able to detect the presence of nearby objects.

Why do we need Bluetooth Beacon?

1 Definition of Bluetooth?

Bluetooth is a wireless connection between your phone and the device you're connected to. Using this technology to transfer data over a short-range distance without the need for wires.



In 2000, the first mobile phone with Bluetooth capacity appeared on the market, and the technology did not pick up momentum until 2004 with the introduction of EDR (Enhanced Data Rate). After that, Bluetooth has gone through many revisions and enhancements. One of the influential revisions that hit the market in 2011 is called Bluetooth 4.0 or Bluetooth Low Energy (LE).



2 Bluetooth Classic vs BLE

Classic Bluetooth is designed for prolonged usage of two-way communication with a larger amount of data, whereas BLE is used to broadcast small packets of data for short periods.

Virtually, we can use BLE anywhere, which is its core strength compared to other low-power networks. This is the commonly used standard and principle that doesn't require any kind of specialized hardware.

Till Bluetooth version 4, Bluetooth can transfer big amount of data, which eventually happens in battery drain issues, and it will cost a lot. The advantage of BLE is it can be used in applications that need less data transfer, reducing battery usage and being cost-effective.

Classic Bluetooth:

The usage of Classic Bluetooth is for those products that use continuous streaming of data, such as

- Wireless headsets
- File transfers between devices
- Wireless speakers



Bluetooth SMART:

BLE is ideally suited for IoT applications such as

- Fitbit kind of devices
- Sensors monitoring
- Beacons

Classic Bluetooth is not a version of BLE. The usage of Bluetooth and BLE differs based on what we are trying to achieve.



3 Bluetooth Beacon

A BLE beacon is a compact device that will broadcast signals continuously, and the signal will be a combination of letters and numbers. When users are in proximity of the beacon, they will get an alert on their mobile devices.

The battery life of Bluetooth beacon devices varies depending on the manufacturer and can range between 1 to 48 months.

Advertising: Beacons will be broadcasting their presence to nearby BLE devices with a packet of information that contains UUID (Universally Unique Identifier). With the help of this UUID the event will be triggered for that beacon.

Interaction: Once the user device receives the beacon advertisement, the location and online server connectivity associated with the application will provide more information about the events or place details to further interaction.



Why do we look into this solution for Healthcare?

Today, the growing mobile technology innovations help provide solutions to a wide variety of problems. The technologies associated with mobile, like Wi-Fi, GPS, NFC, and beacons, positively impact both individuals and enterprises across diverse industries. Although in the healthcare space, mobile phones are impacting people across the entire industry, be it patients, consumers, or healthcare providers. Mobile health has become an integral part of today's hyper-connected world, where physicians and patients are prolific mobile adopters.

In a hospital, doctors and staff will work for patients. In that case, doctors and staff should know their daily and emergency duties. So most of the hospitals convey information verbally to their duty staff, then they do the work as instructed.

Beacon will help to automate the operations at hospitals. Once hospital staff reach their proximity area, they will be notified of their daily duties and emergency duties on their mobile devices. The attendance of hospital staff can also get registered whenever they enter the premises using beacons.

Using beacons gives the ability to customize the health contents of the patient or healthcare provider based on their previous records and health information.

What can be our new solution from this Beacon?

Beacon holds the power to transform healthcare when in combination with other leading technologies, offering capabilities such as

1

Resource tracking and a wellbeing equipment

The combination of beacon and IoT will help the staff to track their equipment's logs and the operations team can monitor staffs in the hospital.

Patients can find the nearest available consultants through the beacon tracking system, which will save their time.

2

Remote health solution

Using IoT in the healthcare service will equip real-time patient monitoring irrespective of how far they are, which will reduce hospital accommodations and visits.

3

Directing users to healthcare facilities

With the help of beacons, the staff and patients can identify the facilities in the hospital, which may help them navigate to their needed facilities easily.

4

Beacons in healthcare promotions

Beacon also plays an essential role in the healthcare industry's marketing strategy. Patients will receive health tips and suggestions through beacons.

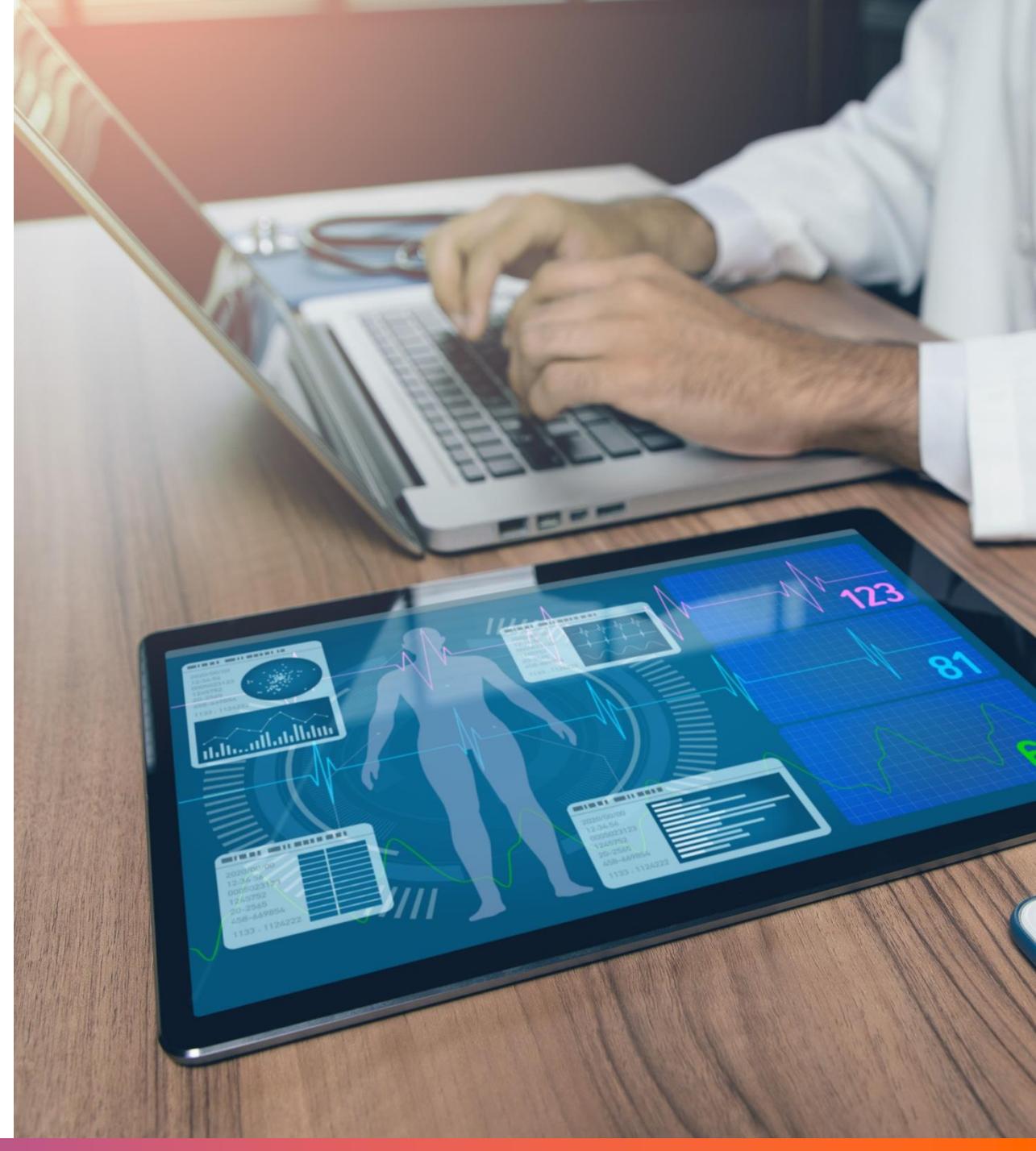
ACL Digital provides a great contribution to the Healthcare Software Solution industry.

What is the purpose of bringing this solution using Beacon?

Doctors with beacons at offices/hospitals can help streamline processes by welcoming patients as they walk in, notifying them about any documents that need to be filled out, and providing basic directions regarding upcoming tests or procedures.

Also, you could place a beacon at a patient's home. When the doctor or nurse pays a visit, they'll get all the information they need when they arrive. A beacon could also help track visits, ensuring the patient gets enough attention.

Beacons really come in handy in situations like conventions. As attendees enter a convention hall, for example, they can get an alert telling them where to register and get help navigating the hall.



Be a chaperone using Beacon as a solution

Now that we're clear on what beacon technology is and how it works, let's take a look at the beacon being a chaperone when it comes to our application.

1 During the pandemic, the old aged and children were not able to visit hospitals regularly for their treatments. So, health workers came home to take care of patients. In such cases, we need seamless connectivity on the patient records and other vital information to get them treated. Sometimes the health workers may not be regular, so they need to access patient information online. For example, when a health worker enters a patient's home, the beacon will send the UUID. Based on the UUID health worker's device will be populated with the needed information and treatment history, and he/she can edit the information online.

2 Using a beacon, we can identify the availability of doctors and their appointments. With the help of beacon, users waiting for doctor's consultation can identify when their appointment slot is and what is the current slot.





3 Geo-tagging and proximity are the main advantages of beacons in bigger organizations. The beacons will give information on proximity only, which will help the organization or hospital track the staff visits and information.

4 Using beacons geo-tagging and location technology, clients will get push notifications of the following:

- Greetings
- Notifications on current sales and special offers
- Useful information on goods or services
- Proposals for advertising

Conclusion

Beacons (BLE) provide ample opportunities in the healthcare industry to transform patients, staff, and visitors' experiences and improve their operations and patient care. Using digital kiosks, mobile devices, and digital indoor maps, beacons can enhance customer experiences more efficiently. Numerous wireless technologies have been used in the Healthcare industry for a while now, and BLE's adoption, along with those, will bring a significant change that needs to be done eventually.

The combination of IoT and BLE will enhance the way of monitoring the patient's vitals in real-time, fulfilling the asset and information tracking on a day-to-day basis. This combination will help track the equipment, log and monitor the staff activities on the premises, which will manage operations activities in a simple yet effective manner.



References

1. <https://www.link-labs.com/blog/bluetooth-vs-bluetooth-low-energy>



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www.acldigital.com

EMAIL US

business@acldigital.com

TALK TO US

+1 (408) 755 3000