Bluetooth beacon navigation

Erasmus Project

Thomas Van Raemdonck Wouter Vande velde

2017

# Introduction

The project is about geolocation inside a certain room. Using 4 Bluetooth beacons, a room will be covered by a Bluetooth connection. The challenge is to see the location of a smartphone as accurate as possible inside the room.

A few examples where this idea can be possible in real life are

* the locations of clients inside a store and their pathing
* the location of babies inside a nursery
* the location of patients with for example Alzheimer's
* …

# Indoor navigation using Bluetooth

Bluetooth communicates over small distances on the 2.4 GHz ISM frequency band. Bluetooth uses 79 channels to transmit data, starting with the first channel at a frequency of 2402 MHz and continuing up to the last one at a frequency of 2480 MHz in 1 MHz increments.

In order to transmit data, Bluetooth devices must first stablish a connection. One single device is capable of connecting to up to 7 devices and communicating with each one of them simultaneously. This is done by using a connection model known as “master-slave”, in which the device that initiates the connection takes the role of master over the other devices. Whenever a master and a slave establish a connection, a bond is created, enabling them to transmit and receive data.

Bluetooth is also known for indoor navigation purposes. In this casa a connection is not necessary. Because there is no data exchange between devices.

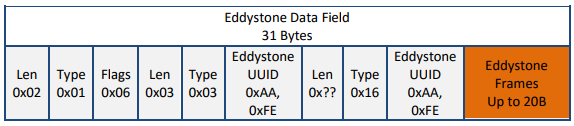
# Bluetooth Beacons

Bluetooth beacons are devices whe can broadcast data packets at a time interval.

### Beacon protocols

Eddystone

Eddystone is an open beacon protocol developed by Google.



# Indoor Navigation Methods

### Triangulation