

## PROJECT TYPE

Mobile application,  
Smartwatches app

## TECHNOLOGIES

PostgreSQL, Ruby on Rails,  
React, JSON:API

## DURATION

3 months

## METHODOLOGY

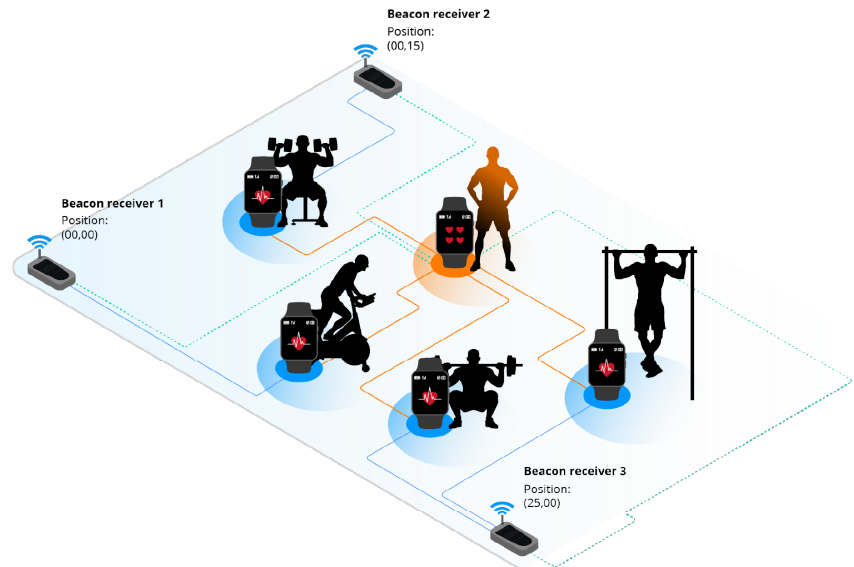
Scrum

## TEAM

1 Business Analyst  
1 Designer  
1 Project Manager  
1 Mobile Developer

# Fitness Tracking System Development

A smartwatches app for fitness trainers that detects nearby clients and shows detailed info about them and their activity.



## Business challenge

A client has a fitness club, where they hold 1-hour classes. In their work, they try to create a “family-like” approach where knowing each client’s name and background is of high importance. But for obvious reasons, trainers can’t remember all the clients’ names and their info.

So they came up with an idea of building an app for smartwatches that will be worn by trainers to detect the clients that are standing nearby, via wristbands, and displays detailed info about the clients - name, injury type, age, photo.

The app should connect to CRM, and select fields in the CRM, that should be displayed in the app.

## Our solution

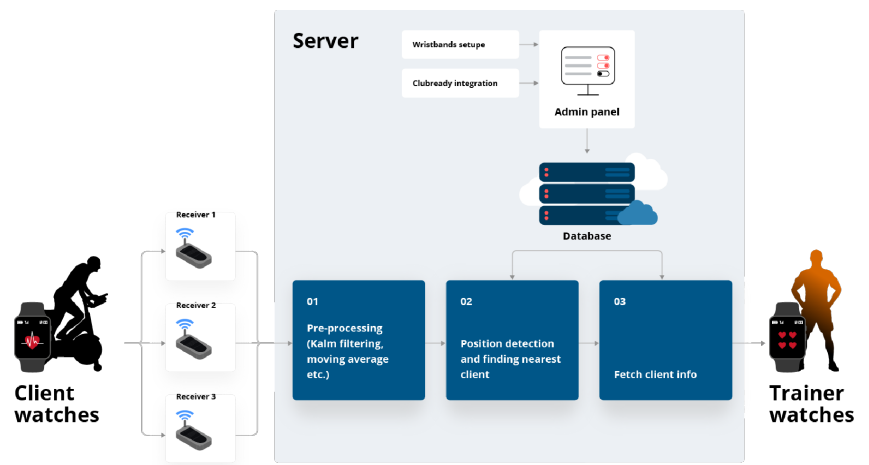
3 iBeacon receivers were placed in a gym with predefined positions (coordinates) around the perimeter of a gym on the height above all physical obstacles.

Each client with their wristband acts as an emitter of a BLE (Bluetooth low energy) signal. Beacon receivers obtain this information from each reachable wristband and transmit it to a server (over HTTP or MQTT or web sockets).

The server receives the package (which primarily consist of device ID and RSSI - signal strong value) and starts the preprocessing phase (smoothes the noise with Kalman or average filtering). Then it prepares data for positioning calculation; this procedure is performed with trilateration technique (that's why we use at least 3 beacon receivers).

All intermediate and final data are stored in the database. In this way, we have a map with coordinates of all beacons.

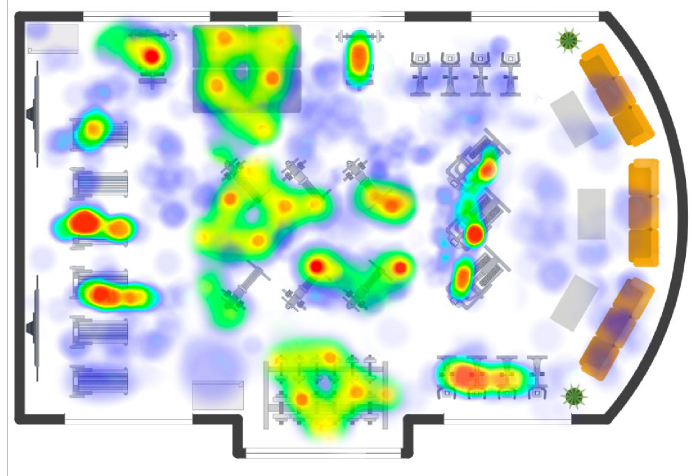
## How it works



## Business benefits

- ✓ No need to carry a phone to detect the closest client;
- ✓ Reducing the impact of physical obstacles on a signal (noise reduction);
- ✓ Possibility to detect the exact location of each beacon at a particular moment;
- ✓ Low cost of setup equipment;
- ✓ The support of multiple trainers at the one;
- ✓ Statistic calculation of clients' activity (heatmap, etc.).

## Heatmap of a gym



In general, such a heatmap of a gym can allow us to get the information about:

- ✓ Spots where clients queue most often – it may become a signal that you lack certain training equipment (for example, a treadmill) and need to install more treadmills to satisfy the needs of your clients;
- ✓ Spots which are rarely visited by clients – perhaps that equipment is not very popular and can be removed from the gym;
- ✓ Typical routes of clients inside the gym and arrange the equipment in a way that makes their navigation around the gym handy and convenient;
- ✓ Usage of particular training equipment during the day (morning, afternoon, evening), etc.