SMART BELL

Wireless and mobile networks project of

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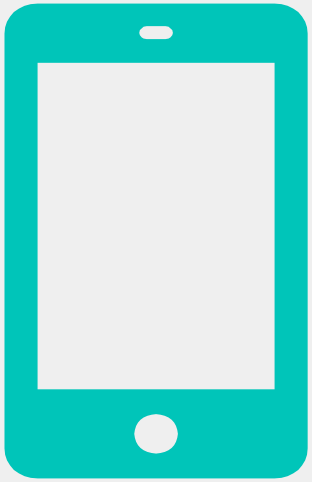
A shop keeper spends a lot of time in his back-shop

He wants to be alerted when someone passes the door of his shop

He keeps his smartphone always with him



PROPOSED SOLUTION

Wireless connected device with proximity sensor, able to send notifications to the shop keeper’s smartphone

1.
Environment

Characteristics of the scenario

Characteristics of the scenario

- Small area to cover with connectivity
- One single door
- The solution has to be cheap, small and low energy

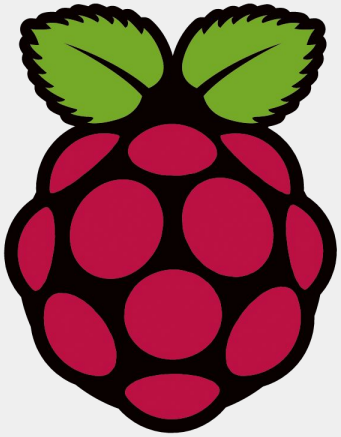
2.
Solution

Characteristics of the solution

Characteristics of the solution

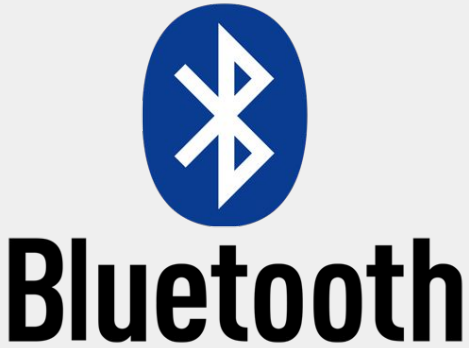
- PIR based proximity sensor
  - To detect motion when someone passes the door
- Raspberry PI
  - To handle the PIR sensor
- Bluetooth chip
  - To let the Raspberry PI to communicate with a smartphone
- Application on the smartphone
  - To receive notifications from bluetooth, and display the alert when someone enters the shop

Why Raspberry PI



- It’s cheap: the Zero version costs about 5$
- Easily maintainable
- Adaptable to many situations
- Little need for electricity
- It’s what I already had at home :)

Why Bluetooth



- Ideal to transfer a small amount of data
- Available on mobile devices by stock
- Easily configurable
- Can cover the whole area of the shop

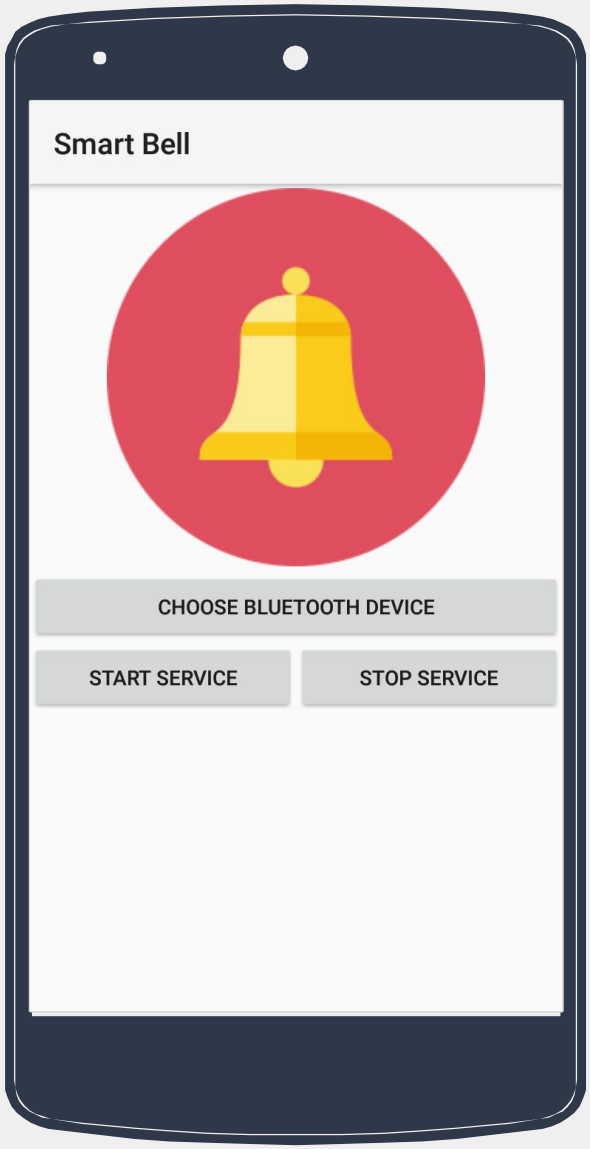
Why PIR sensor

- Very cheap and easily maintainable
- It can detect motion even in low light condition
- No need for cameras
  - No need for authorizations
  - No privacy implications
    - IT JUST DETECTS MOTION!


Let’s put things
together!
ACT
PWR
FDX
LNK

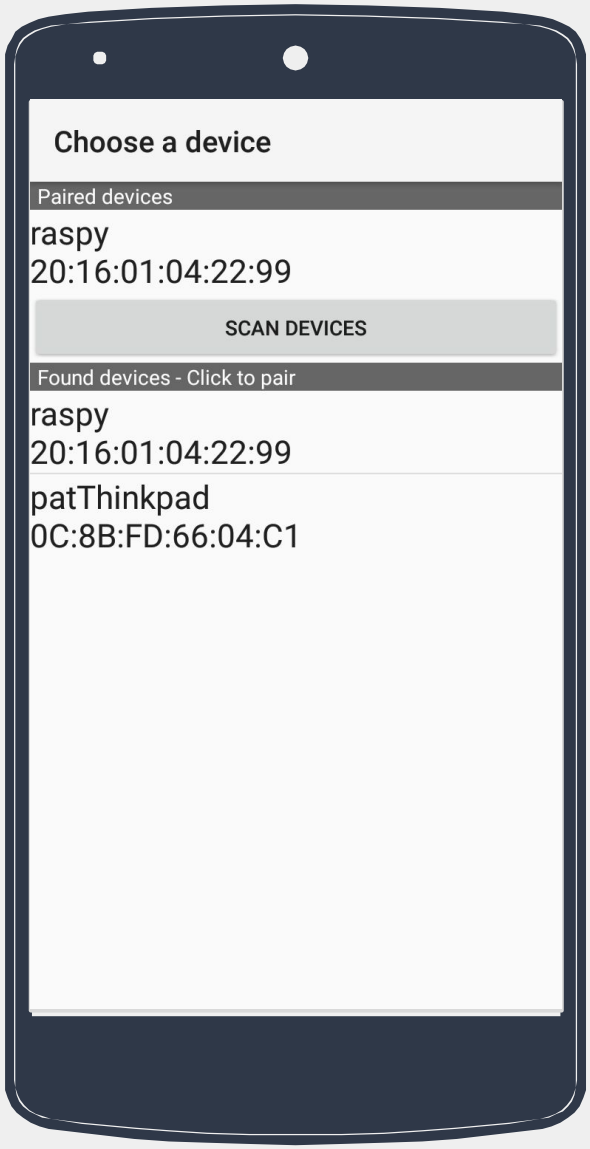
Smartphone APP

- Developed with Microsoft Visual Studio and Xamarin Framework (C# language)



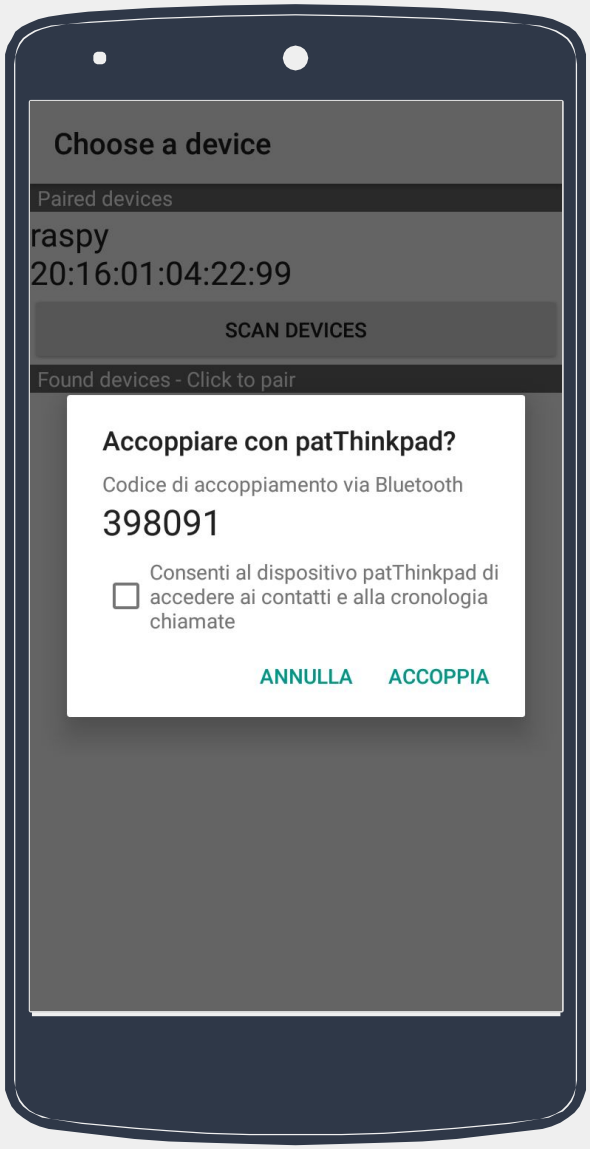
Smartphone APP

- Developed with Microsoft Visual Studio and Xamarin Framework (C# language)
- It allows the user to inquiry bluetooth devices



Smartphone APP

- Developed with Microsoft Visual Studio and Xamarin Framework (C# language)
- It allows the user to inquiry bluetooth devices
- It allows the user to pair a bluetooth device with the smartphone



Smartphone APP

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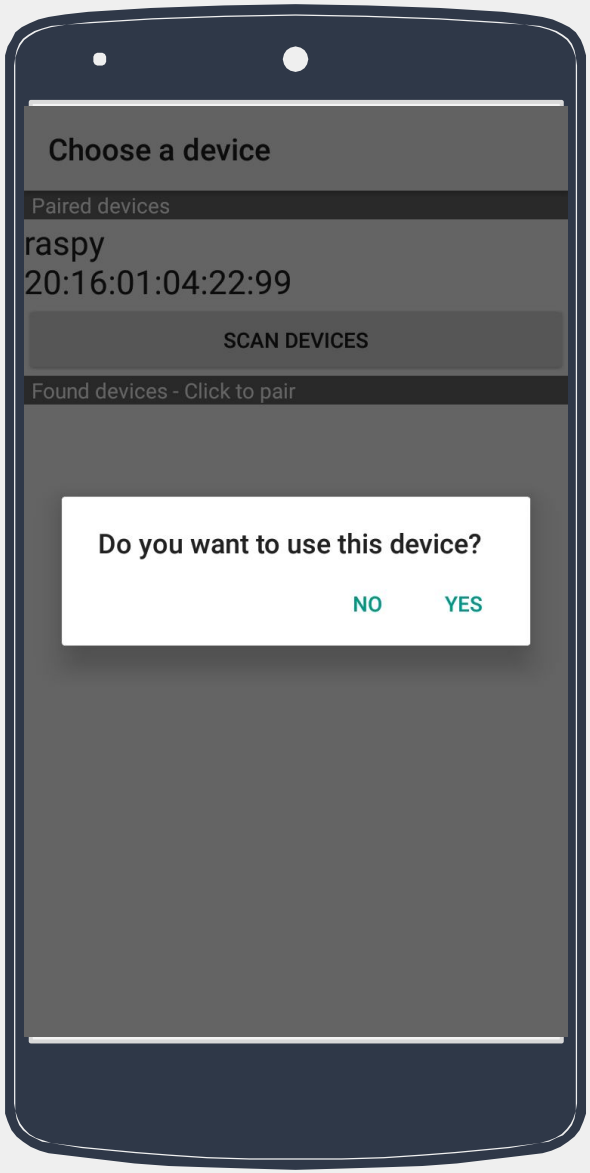
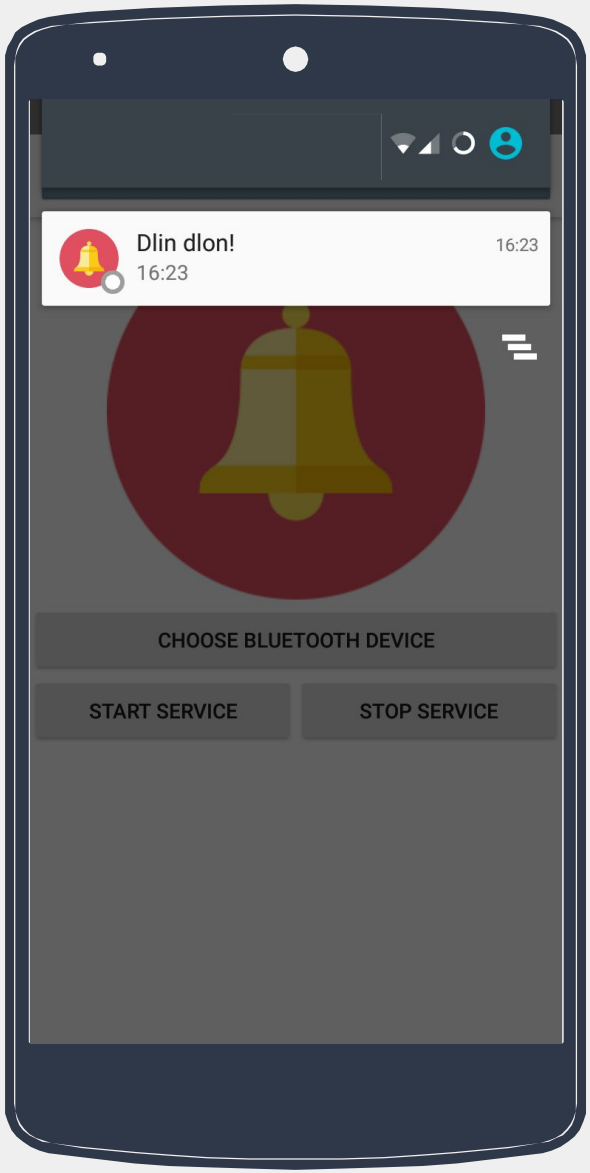
- It allows the user to inquiry bluetooth devices
- It allows the user to pair a bluetooth device with the smartphone
- It allows the user to set the device as default



Smartphone APP

- Developed with Microsoft Visual Studio and Xamarin Framework (C# language)
- It allows the user to inquiry bluetooth devices
- It allows the user to pair a bluetooth device with the smartphone
- It allows the user to set the device as default
- When someone passes through the door, it shows an alert, with sound and vibration



Process


John Doe, the shop keeper, is in his backshop
Someone enters in the shop
THE PIR SENSOR DETECTS HIS MOTION!

Process


The Raspberry PI receives a signal
It sends a message to the smartphone
The shop keeper gets alerted and can serve his client

Cost evaluation

Things to buy

- Raspberry PI Zero : € 8
- PIR Sensor: € 1
- HC-06 Bluetooth Adapter: € 5
- Wires: € 1

Equipment need

- Soldering station
- A computer
- An Android smartphone

Development costs

- 40 hours of development:
  - 1200€

But you don’t really need it!

I make it open source!

Source code available at ***https://github.com/patriziotufarolo/BluetoothProximitySensor***

So...

what are you waiting for?

Build your own!

Thanks!

Any questions?

You can find me at:
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