Sensor, e.g. heart rate sensor

Embedded System

Actuator, e.g. buzzer

Heart rate Sensor

Buzzer

ADC

Digital Line

Arduino UNO rev.3

SPI Bus

Bluetooth Low Energy Shield

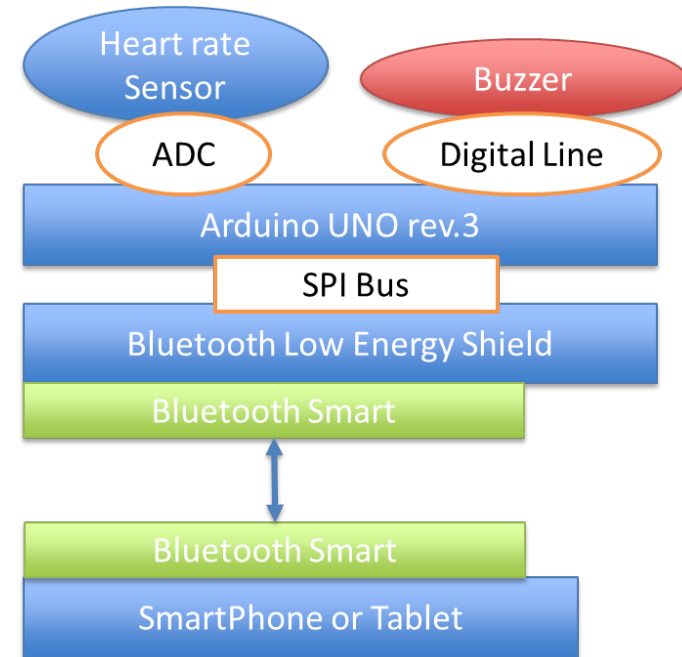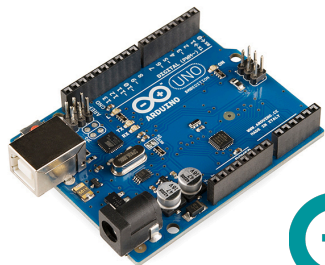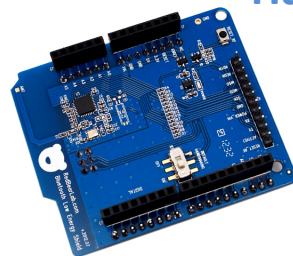Bluetooth Smart

Bluetooth Smart

SmartPhone or Tablet

- The embedded system can be connected with sensors and/or actuators.
- The smart mobile device can be locally connected with the system.
- The acquired information is received by the smart mobile device and can be analyzed on it.
- The smart mobile device is capable of controlling the actuators.

Hardware modules

Arduino UNO rev.3

ARDUINO

Bluetooth Low Energy Shield

9 V power supply

Arduino UNO enclosure

DESIGNING A BLUETOOTH SMART GADGET

HOW TO

1. Download the Arduino IDE and the Arduino and iOS/Android library from the Red Bear Company (redbearlab.com).
2. Connect all the hardware modules.
3. Install de Arduino library on the Arduino IDE and select the most suitable example as a template for your project. Compile and upload the selected project on the Arduino.
4. Open the most suitable Android or iOS example. Modify it, if needed, and run it on a real device with Bluetooth Low Energy support (iPhone 4s or higher or another device, such as a Samsung Galaxy S3).
5. Verify that the system is properly working.

commercial example

The environment affects us in so many ways, from how we feel through to how productive we are.
Blue Maestro's Tempo™ Environment Monitor is a powerful Bluetooth Smart sensor unit that is compatible with iOS and Android smartphones and tablets.

EXTENSIONS

- Other sensors and actuators can be connected to the Arduino UNO + the Bluetooth Low Energy Shield.
- The Arduino UNO and the Bluetooth Low Energy Shield can be easily replaced by smaller versions that are available in redbearlab.com.
- If the smart device is connected to Internet, the data can be stored in the cloud.

Security

The communication is always secure and protected since the Bluetooth Core Specification provides several features to cover the encryption, trust, data integrity and privacy of the user's data.

Scalability

Bluetooth Smart allows to control many devices at the same time. The App should be compatible with the gadget and it should be within the communication range.

Portability

Bluetooth Smart defined in the Bluetooth Core Specification version 4.2 is a communication standard is being widely adopted by the manufactures when developing gadgets for smart devices.