THE TACTIGON™

Perfect Link Between Human and Digital Worlds

TACTIGON SKIN

01

It’s a Platform

It’ also compatbile with Arduino IDE. You can download APP and the system change functionality

02

Ergonomic Form Factor

The hand are free and you can use the device in very simple way. It’s very easy to wear it

03

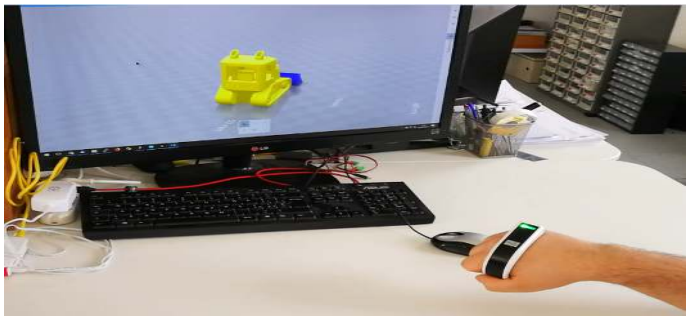
Hand + Finger Recognition

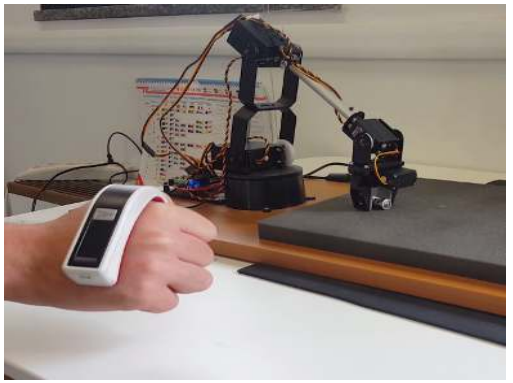
It’s no a glove it’s no a bracelet it’s no a ring. It’s new way for the hand gesture controller. The system recognize the movement of the hand and the fingers with capacity key

Examples

Rover Control

CAD/CAM software

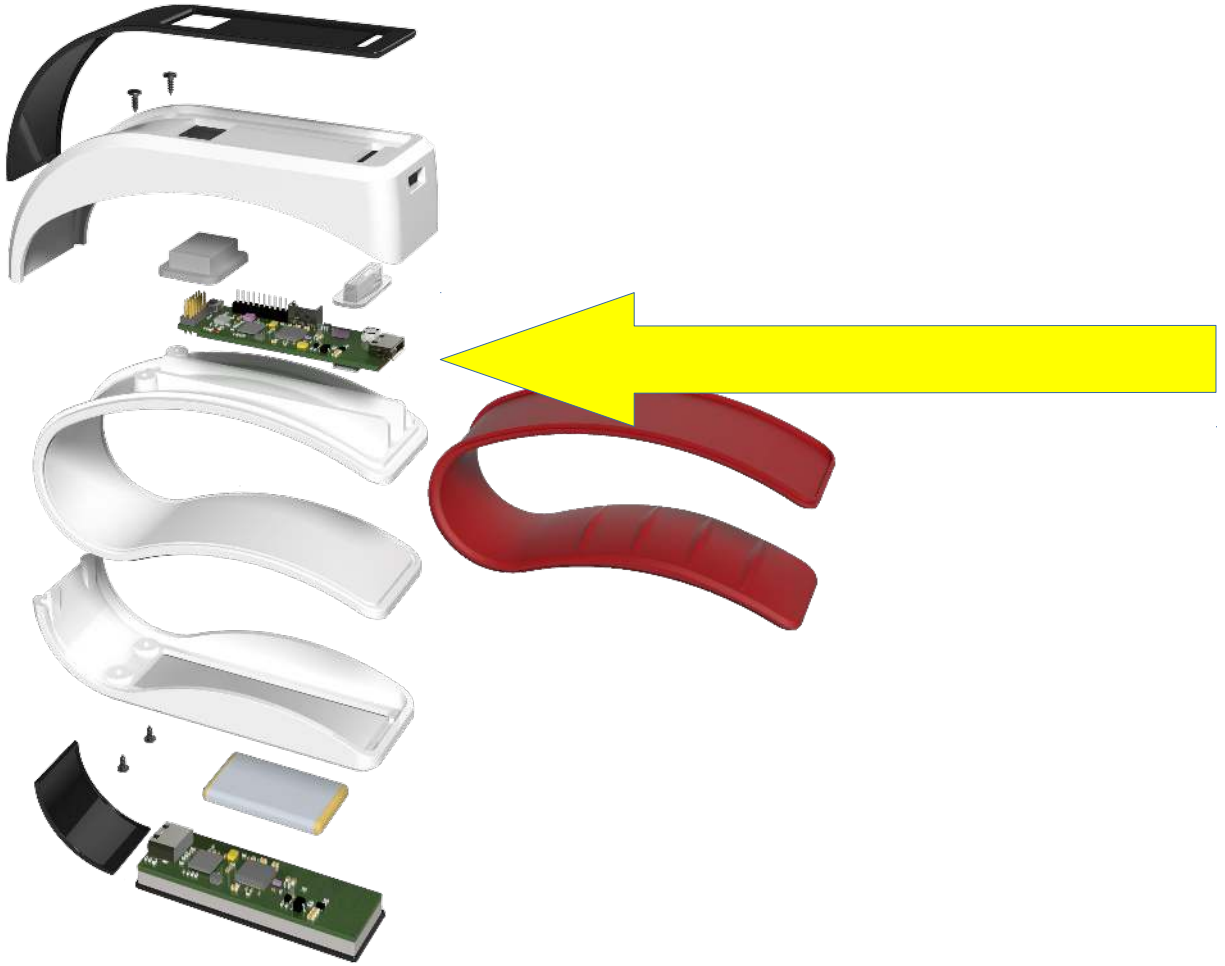


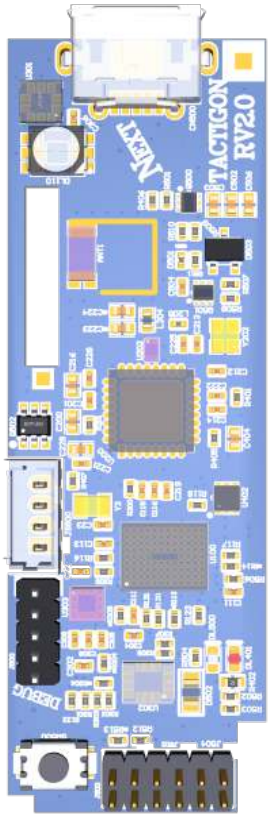


Robotic harm

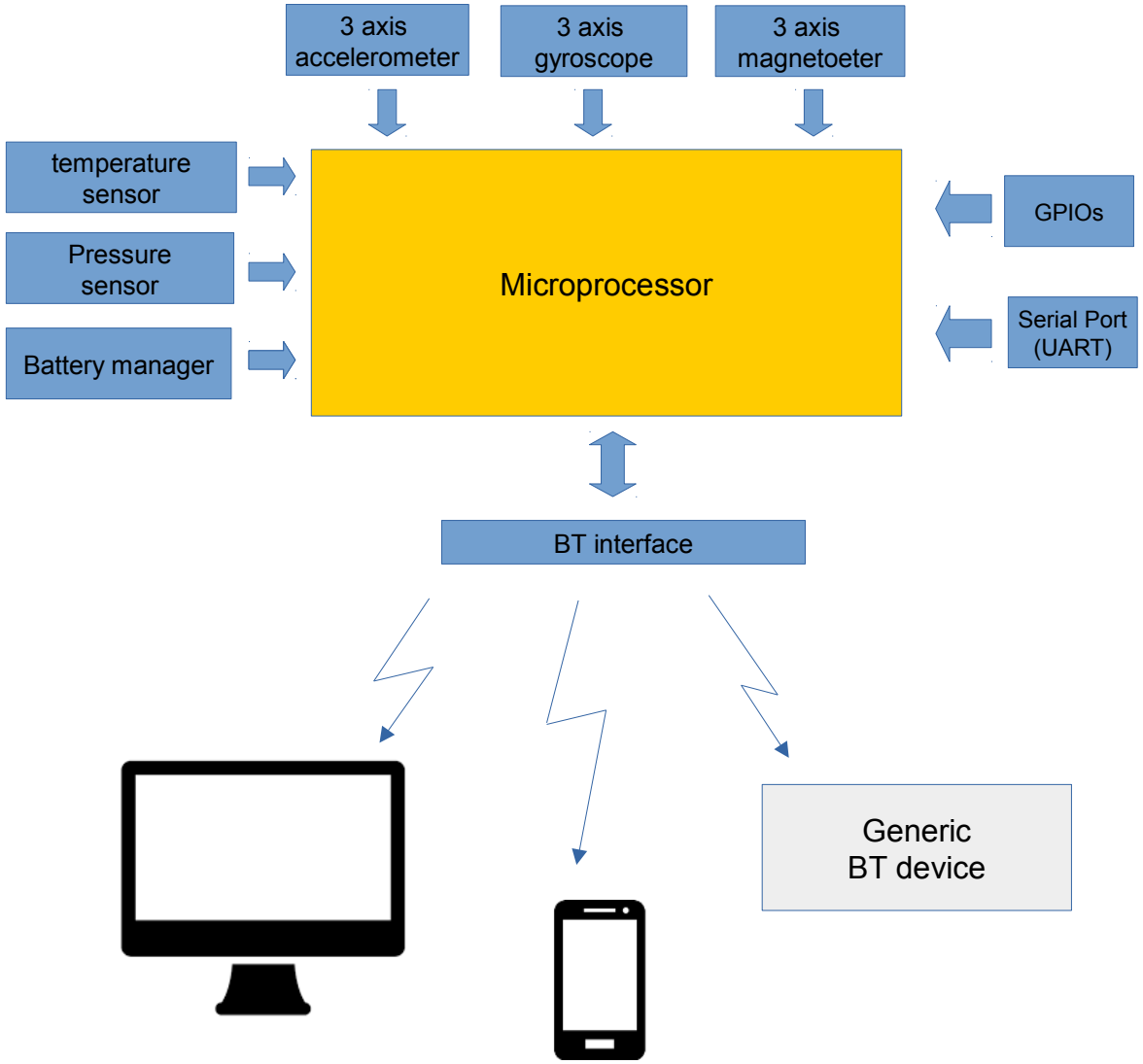
AR/VR

TACTIGON SKIN & TheTactigon One

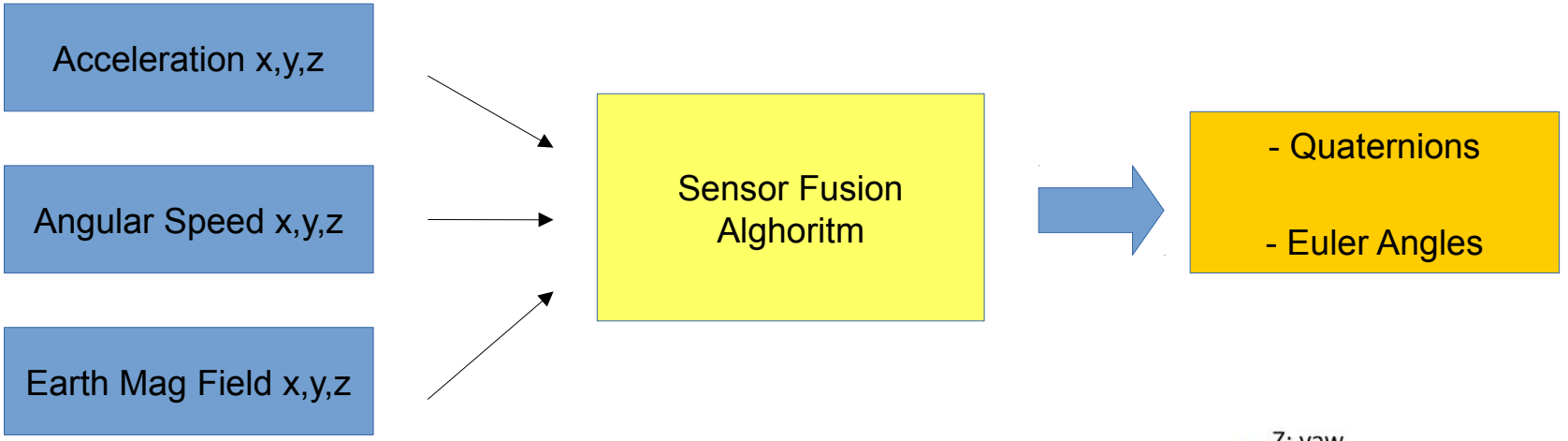




HW Architecture



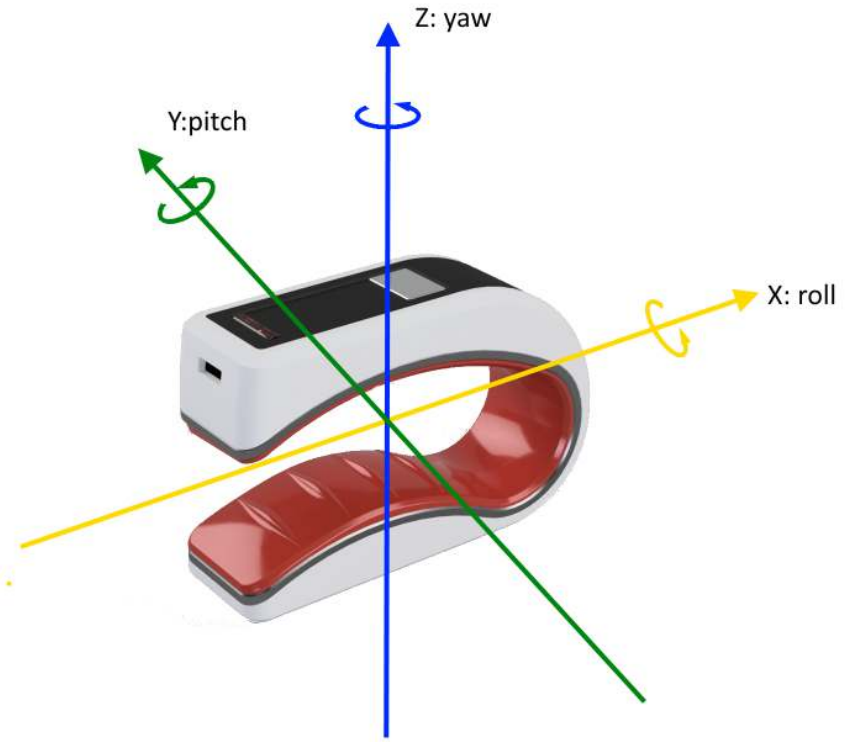
Sensor Fusion Algorithm



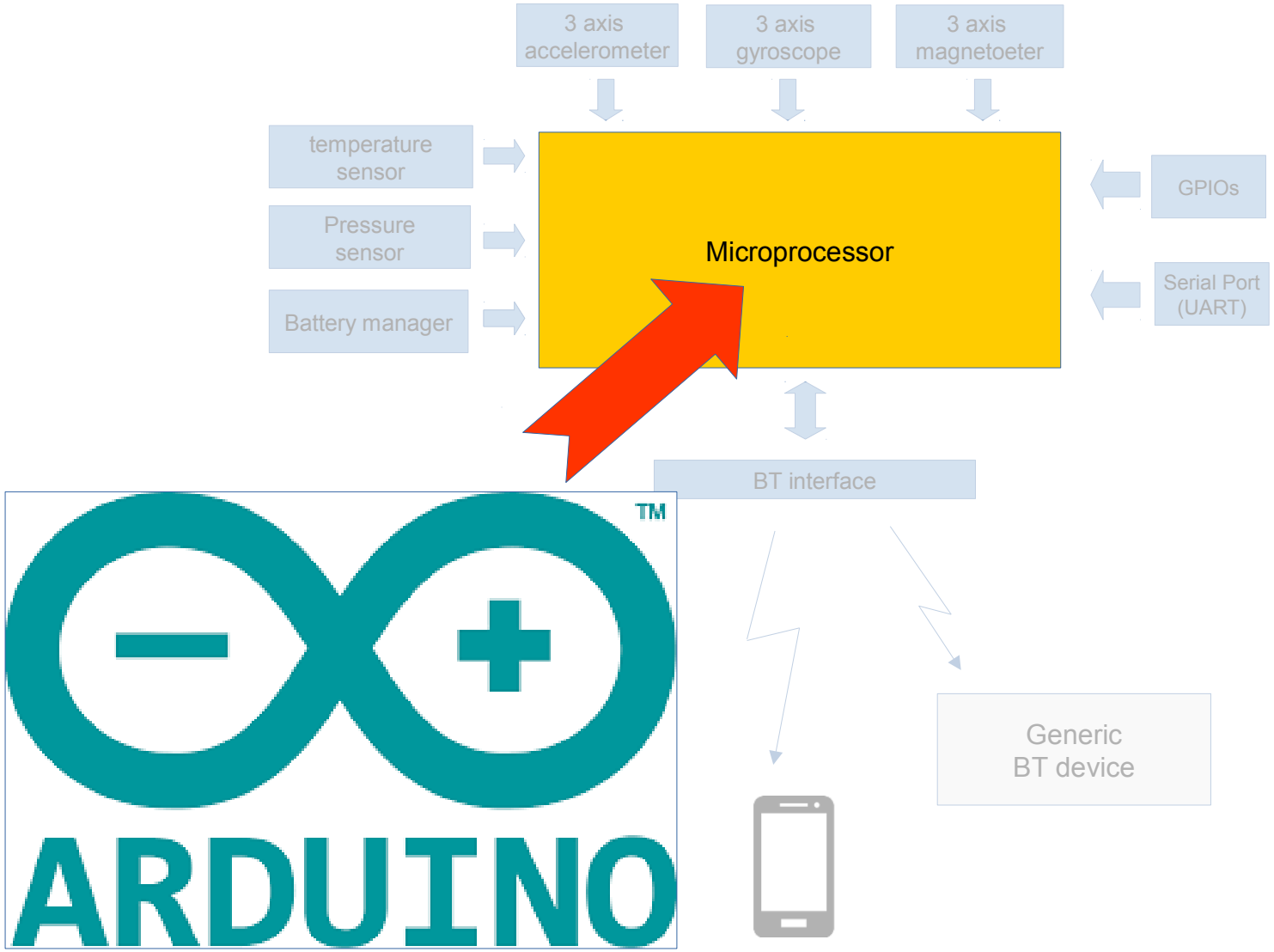
-detection of orientation in the space of the device in terms of Eulero Angles:
roll, pitch, yaw

- Based on Kalman filter

- Running by default at 50 Hz. Customizable in next API release



HW Architecture



HW Details

Microcontroller:

- STM32
- 32 bit
- 32Mhz

Flash Memory: 512 KB

RAM: 80KB

EEPROM: 16KB

IMU:

- 3 Axis gyroscope (FS: 2000 deg/s)
- 3 Axis accelerometer (FS: 16g)
- 3 Axis magnetometer (FS: 16 Gauss)

Temperature Sensor

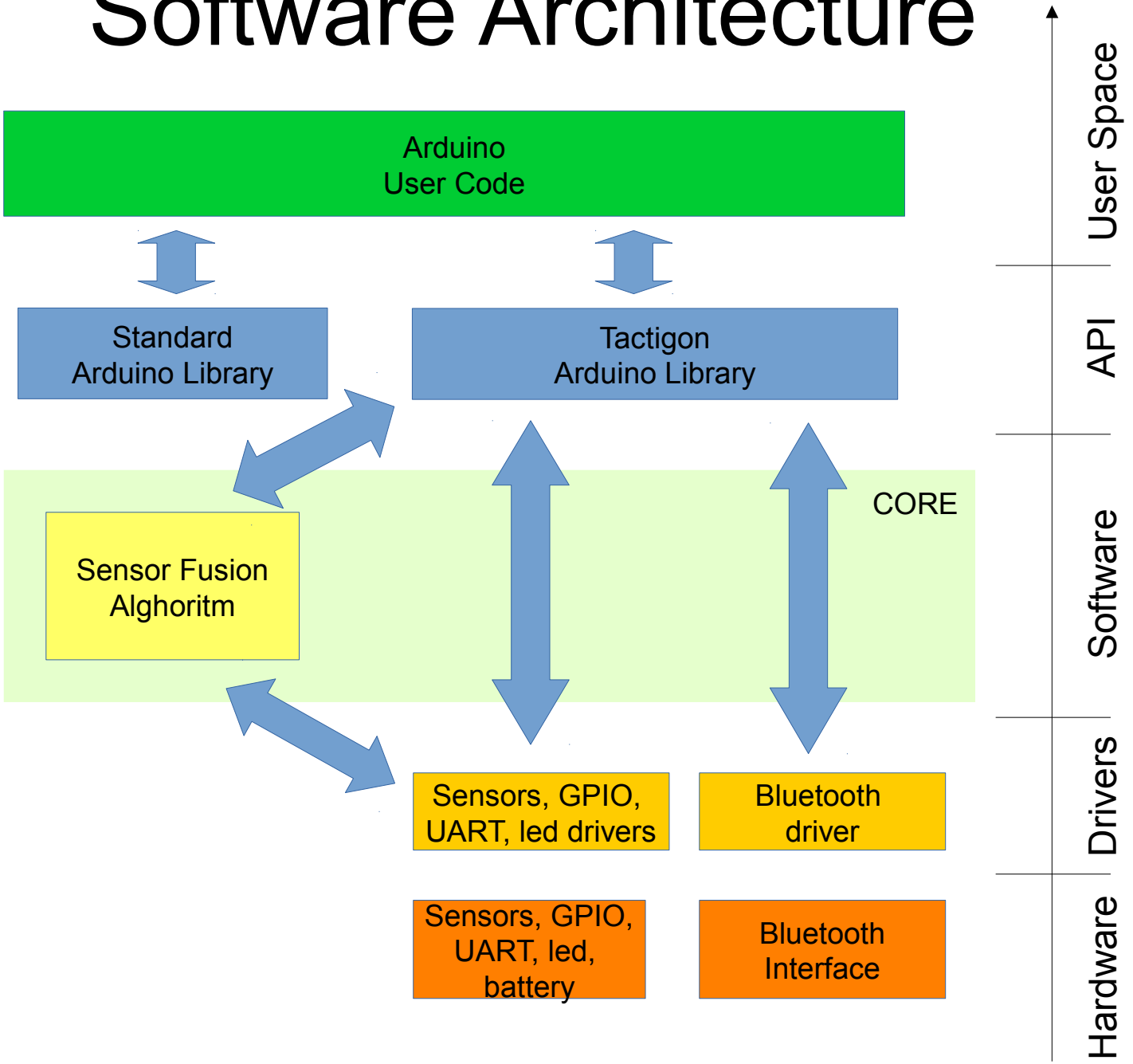
Barometric Pressure Sensorr

Connectivity:

- Bluetooth Low Energy
- Up 2 UART
- 4 GPIO

Battery: 3.7 Li Ion Rechargeable via Micro USB connector

Software Architecture



Software Architecture – CORE

CORE

{
- Sensors management: call drivers, get data
- Sensor Fusion

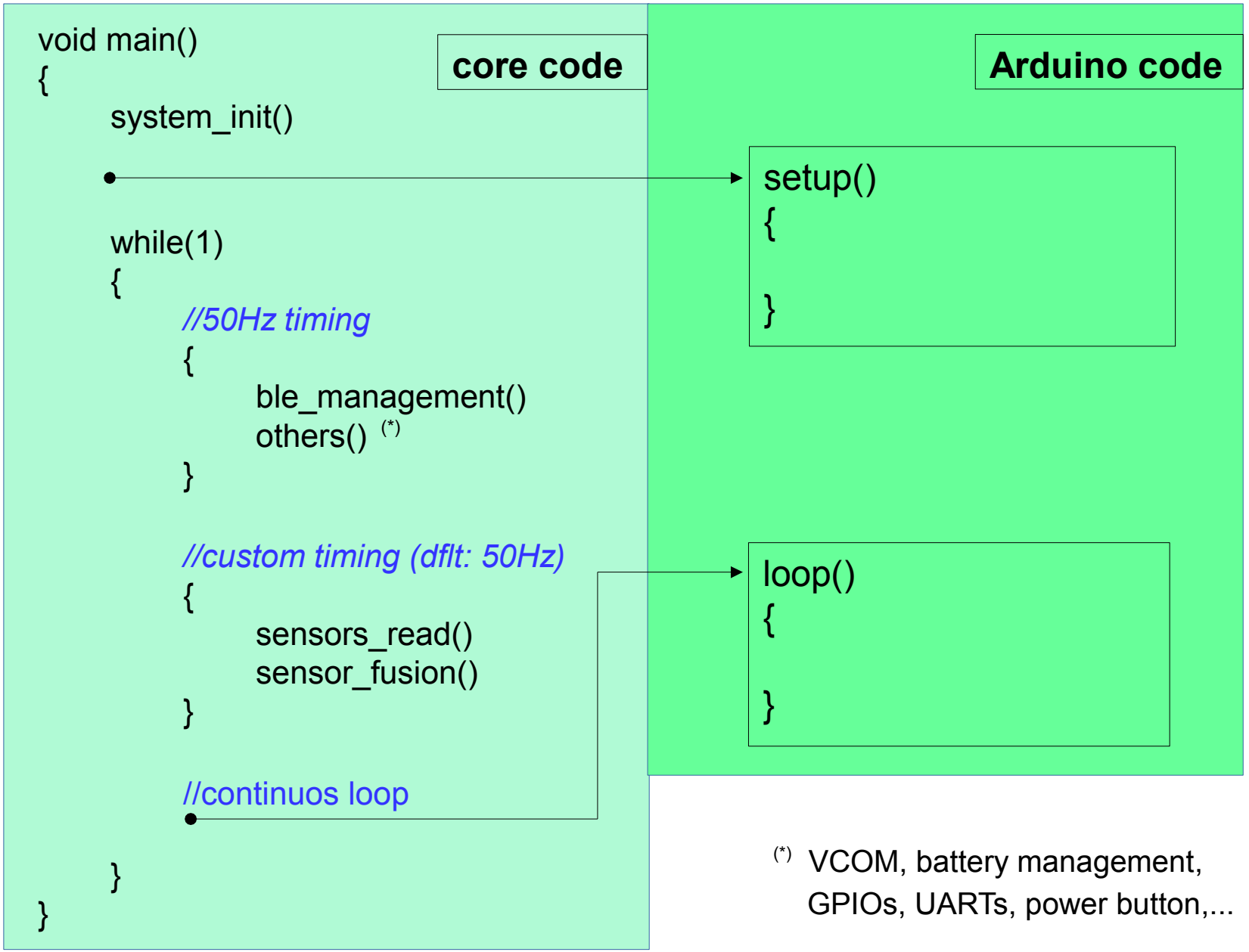
}

{
- Battery management
- BLE management:
  - connection manager
  - Role management (CENTRAL, PERIPHERAL)
  - Read/write BLE characteristics
- Virtual COM port management for fw downloading and debug

}
{
- Hook to Arduino *setup()* function
- Hook to Arduino *loop()* function

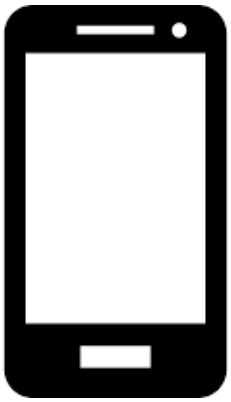
}

Software Execution



(*) VCOM, battery management, GPIOs, UARTs, power button,...

T-SKIN BLE Peripheral Role



scan

pairing

MAC = {11 22 33 44 55 66}
BLE_name = “TACTI”

BLE Characteristics [20 byte]
128bit UUID

MAC = {11 22 33 44 55 66}
BLE_name = “……”

Heart Rate Band

BLE Characteristics [20 byte]
128bit UUID

MAC = {11 22 33 44 55 66}
BLE_name = “……”

SmartWatch

BLE Characteristics [20 byte]
128bit UUID

T- SKIN BLE Central role

scan

pairing

MAC = {11 22 33 44 55 66}
BLE_name = "……"

BLE Characteristics [20 byte]
128bit UUID

MAC = {11 22 33 44 55 66}
BLE_name = "……"

Any BLE devices

BLE Characteristics [20 byte]
128bit UUID

MAC = {11 22 33 44 55 66}
BLE_name = "……"

BLE – COM converter

BLE Characteristics [20 byte]
128bit UUID

Raw data Sensors

- Acceleration x,y,z
- Angular Speed x,y,z
- Earth Mag Field x,y,z
- Battery Charge Status
- Environment Temperature
- Barometric Pressure

ROVER project

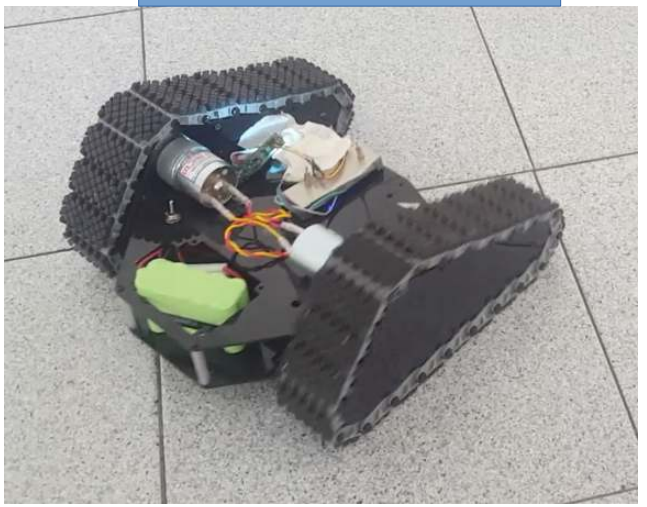
BLE Central Role

BLE Pairing

wired UART connection

BLE Peripheral Role

UART interface



PC connection project

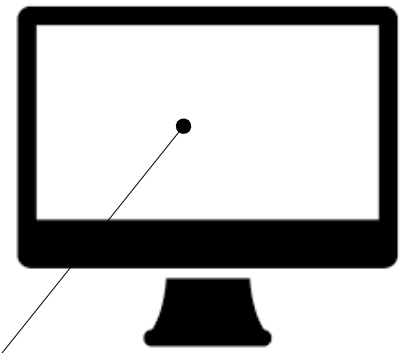
BLE Central Role

BLE Pairing

USB connection

BLE to COM adapter

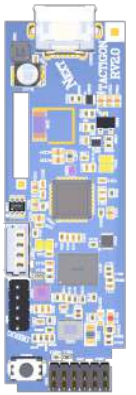
BLE Peripheral Role



Client application

Conclusions

- Tactigon board is:
- Very little
- Equipped with inertial sensors
- Powerful: it can run Sensor Fusion algorithm on board
- Self powered with Lithium battery



Suitable for gesture controller

Arduino: to be open to all possible use cases

Design and ergonomic approach: T-Skin