Texas Instruments Innovation Challenge: Europe Analog Design Contest 2014

WIRELESS PERSONAL MONITOR

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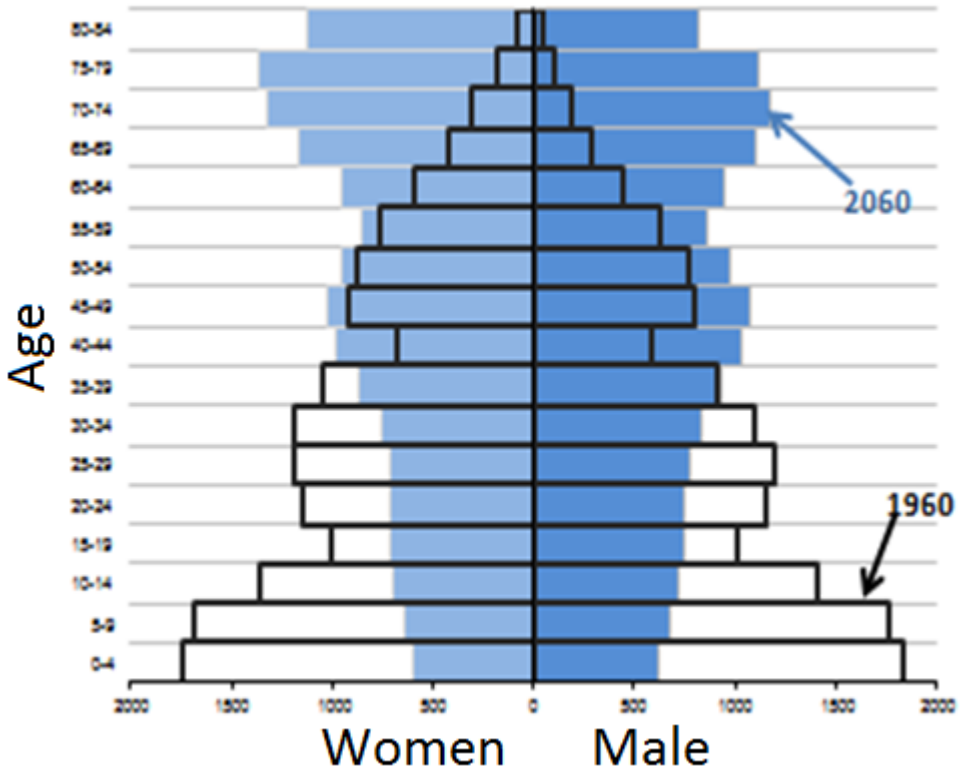
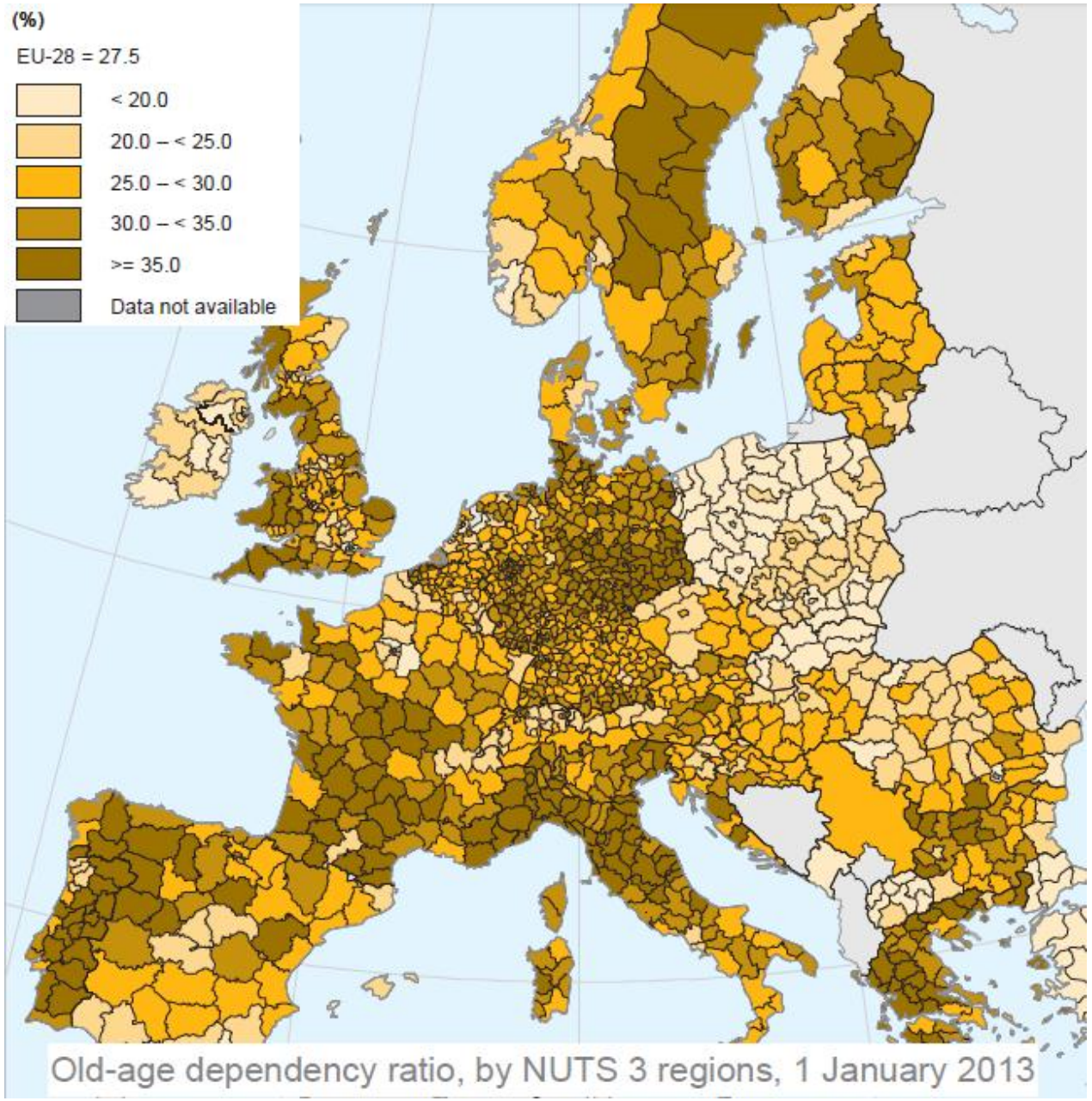
Motivation

- Solving the problem of user monitoring in wide range
- Protect live and give the ability to identify potentially dangerous situations
- Device on which everyone can afford

Population



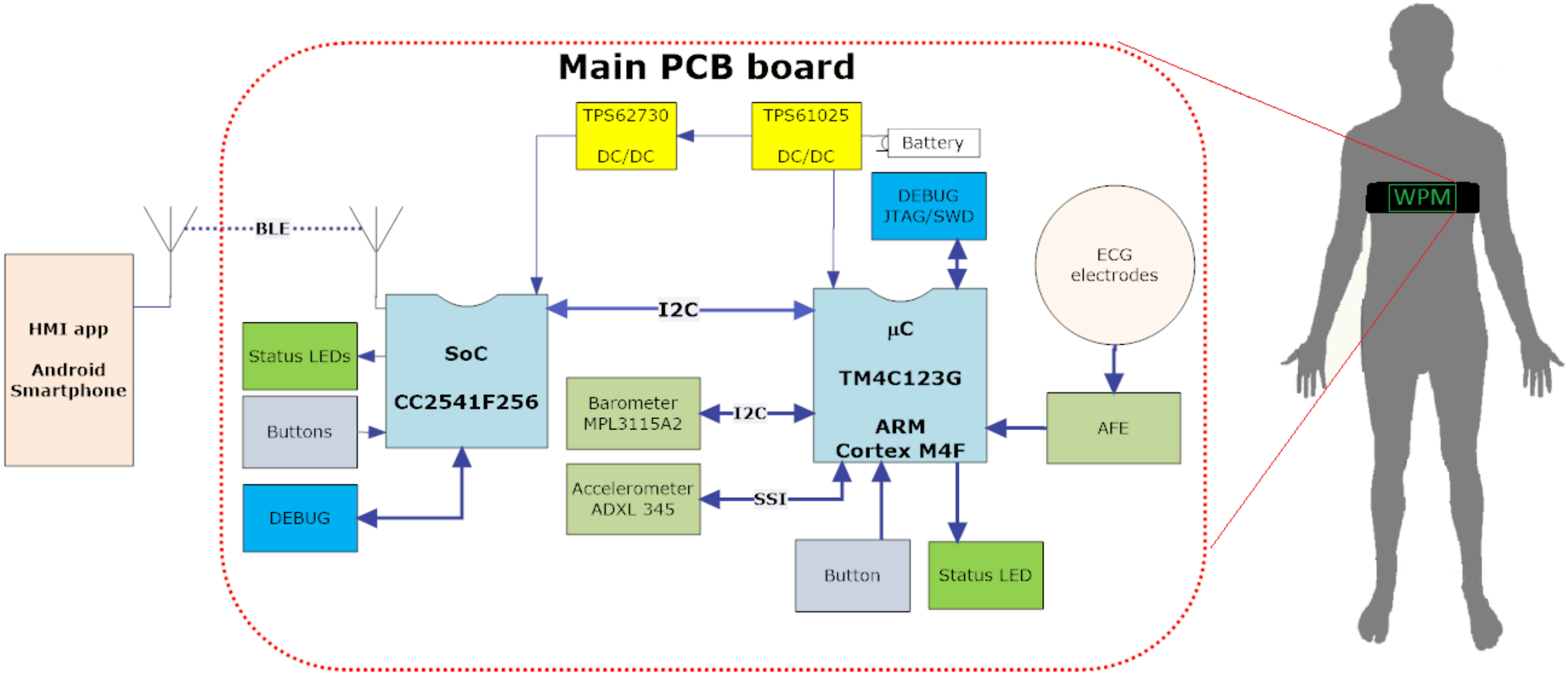
Source: *ec.europa.eu, biuletynmigracyjny.uw.edu.pl*



Main functions

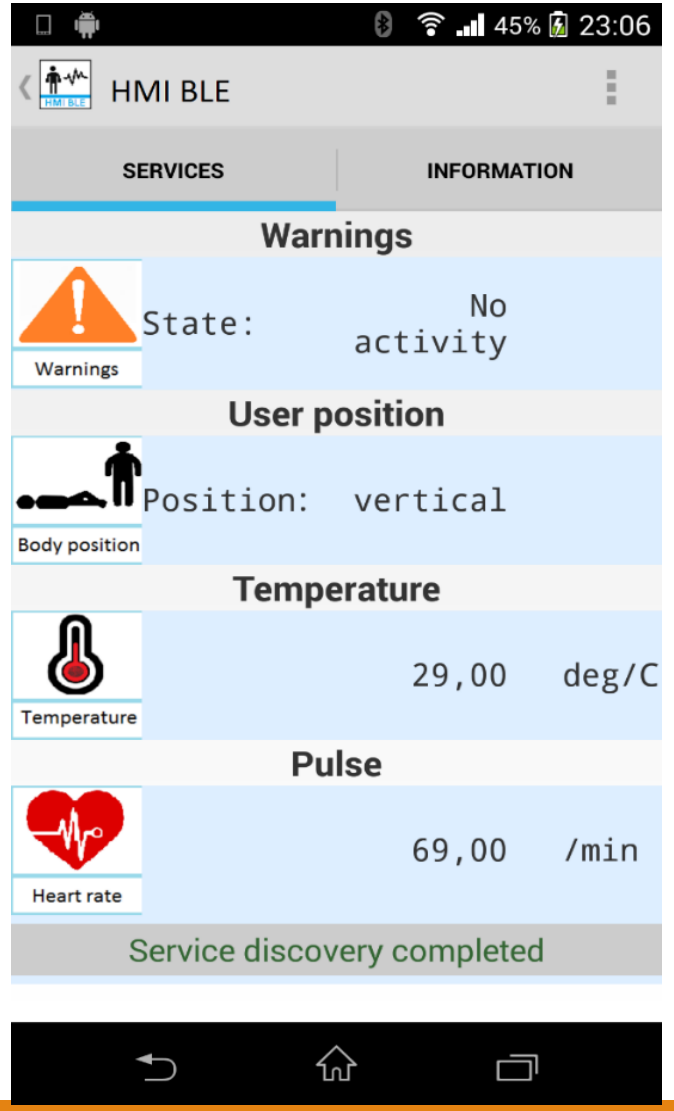
- Measuring Heart Rate
- Monitoring of user body position (lying, staying)
- Detection of user fall, his immobility and chest movement during sleep
- Measurement of ambient: temperature, altitude and pressure
- Assistance button
- Informing about irregularities
- Wireless communication

Wireless Personal Monitor



Mobile application

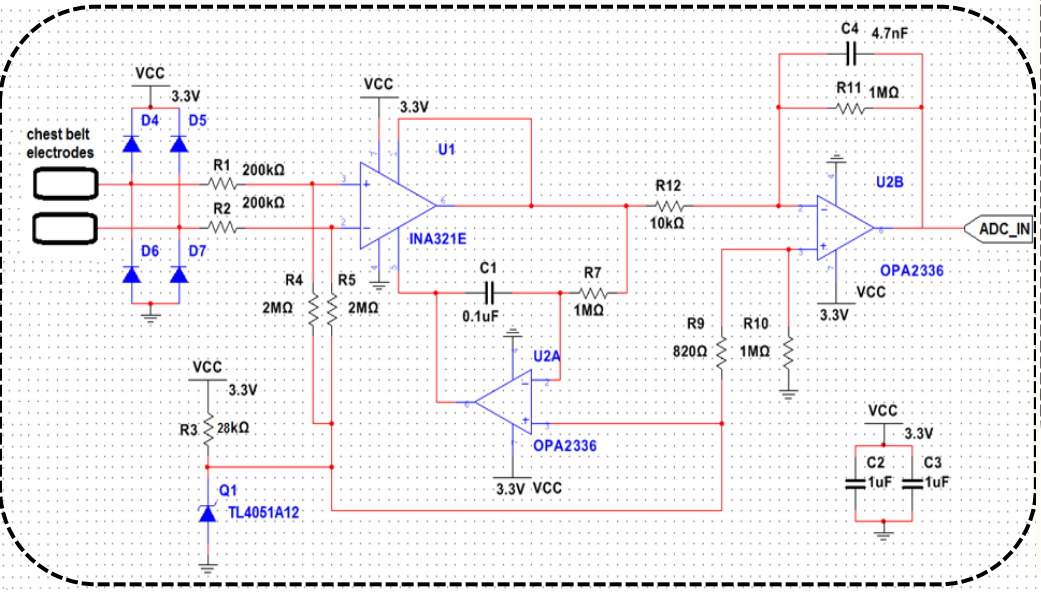
- Works on Android
- Uses Bluetooth Low Energy
- Live preview of user condition
- Remote control of device

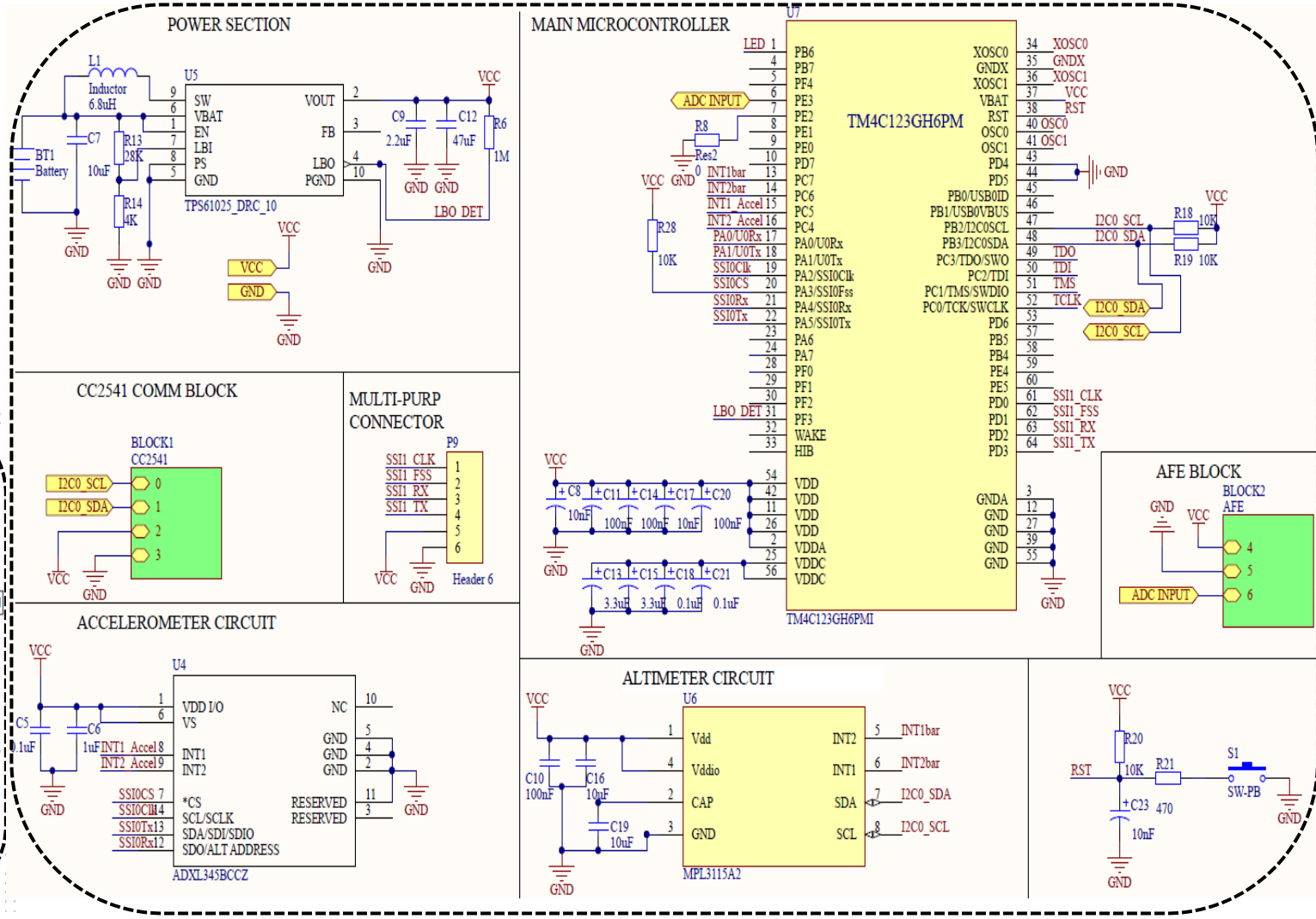


Schematics

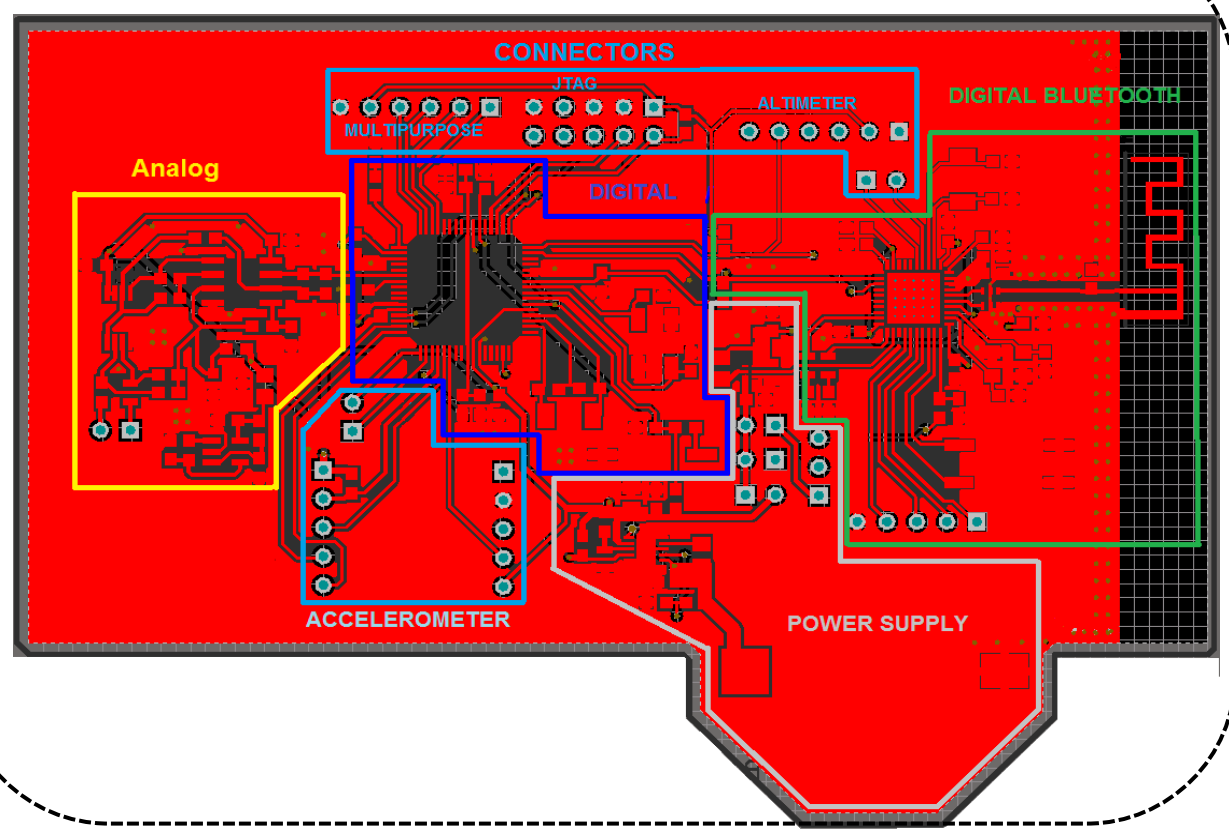
Main board schematic

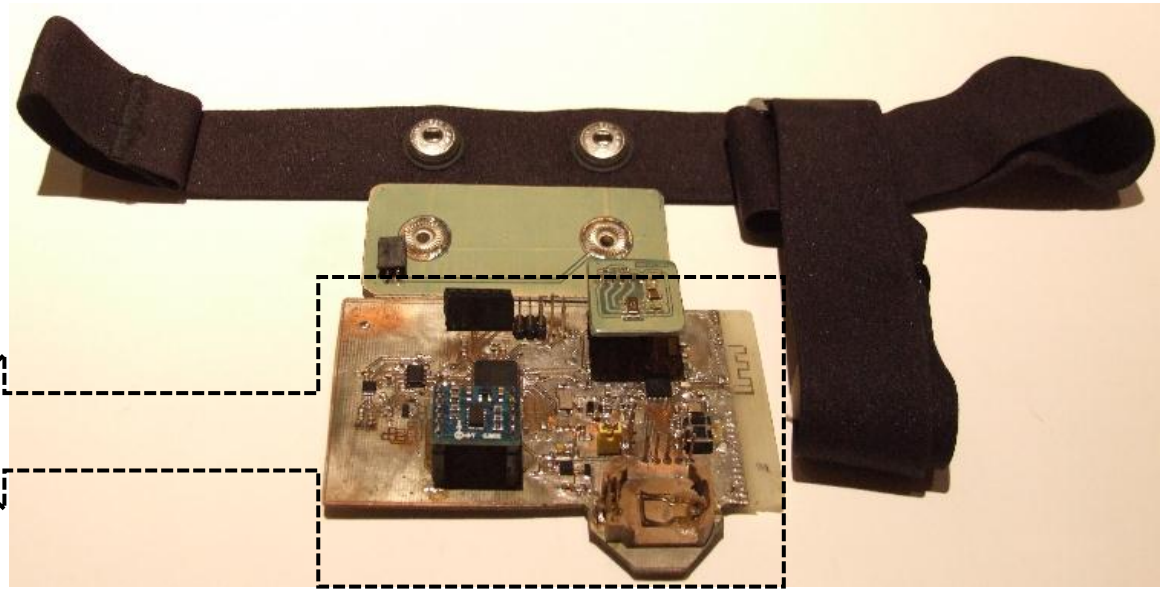
Analog Front End - ECG



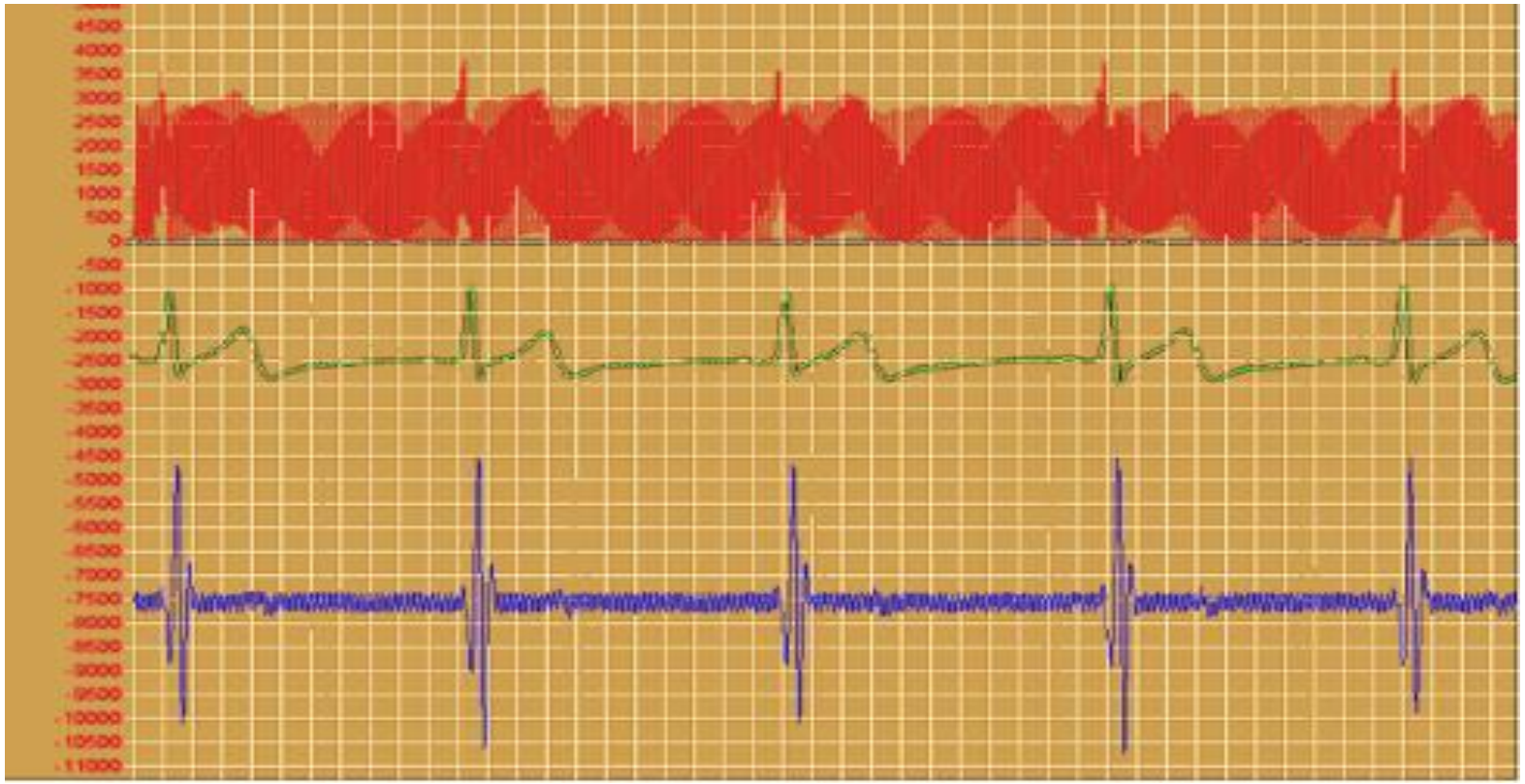


PCB design

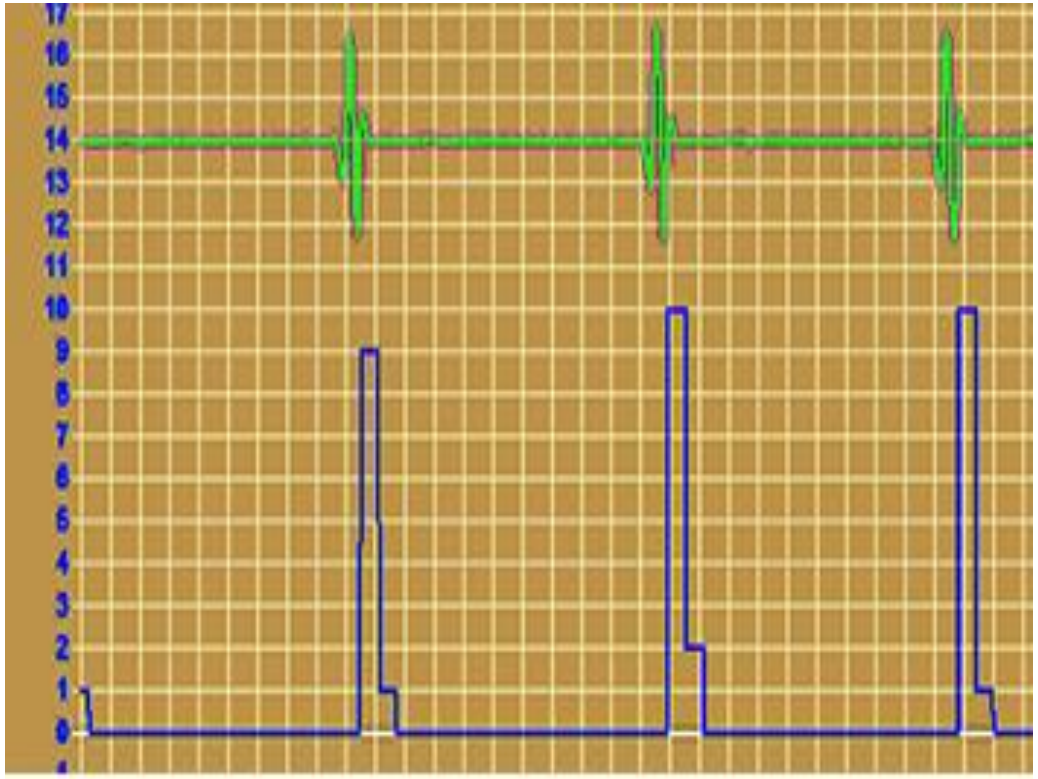

CONNECTORS
JTAG
MULTIPURPOSE
ALTIMETER
DIGITAL BLUETOOTH
Analog
DIGITAL
ACCELEROMETER
POWER SUPPLY

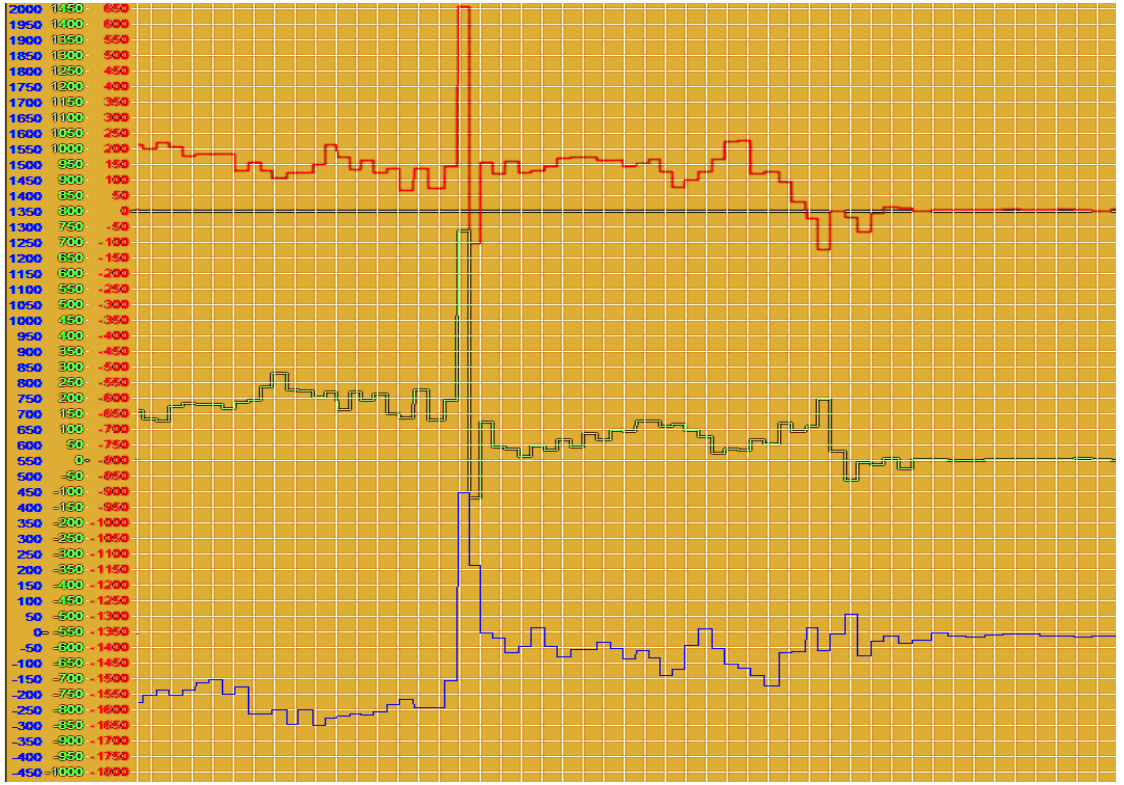


Programming and test results



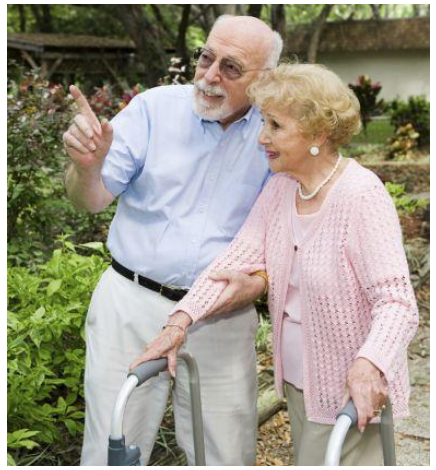
Results





Summary

- Modular system for monitoring of user condition
- Solving the problem of the supervision of elderly
- Variety of applications
- Adjustable number of measured values
- Low cost



Source: *swiatnauki.pl, cylex.co.za, stlucianewsonline.com*

Future plans

- New design – reduced PCB size,
- New communication – towards IoT: Ethernet, GPRS/EDGE, ANT+,
- New modules – GPS, GSM, CO sensors,
- Upgrade of mobile HMI application
- Base station

Thank you for your attention!

…have a nice day!

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