

SIARS is about modelling, developing and integration with selected existing Information Systems of a new state-of-the-art telemedical Information Systems that will allow saving more injured patients and lessen the death rate on the battlefields.

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### SIARS

Smart I (Eye) Advisory Rescue System  
Project ISEG.EAP.SFPP 984753  
Project duration: 08.04.2015 – 08.04.2018

\*Turkey recognises the Republic of Macedonia with its constitutional name.

# Smart I Advisory



# Rescue System



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# Biosensors

# Android applications

## Zephyr BioHarness 3



For extracting ECG, heart rate and respiratory rate, we use the Zephyr Bioharness sensor. The data are streamed at a frequency of 250 Hz.

## Omnisense - Blood pressure



For measuring blood pressure, we use the automatic MyTech Wrist Cuff Blood Pressure Monitor sensor, which communicates with Zephyr Bioharness bio module by its MAC address.

## Nonin - Oxygen saturation

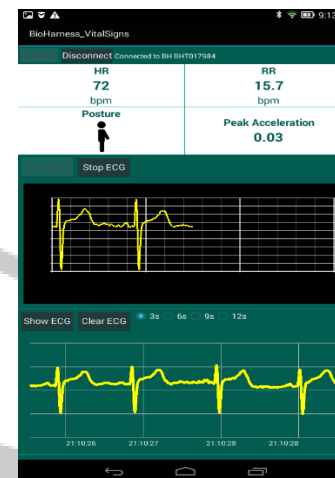


For measuring SPO2, we use Nonin Saturated Blood Oxygen device, which also communicates with Zephyr Bioharness bio module by its MAC address.

The image displays three screenshots of an Android application interface. The first screenshot shows a 'History screen for HR and RR' with multiple line graphs for HR, RR, SpO2, and Peak Accel over time. The second screenshot shows the 'Glasgow coma scale screen' with radio button options for eye opening, verbal response, and motor response. The third screenshot shows the 'Injured body parts screen' with a human silhouette and checkboxes for marking injured body parts and their levels of injury (Immediate Care, Secondary Care, Tertiary Care).

*History screen for HR and RR*      *Glasgow coma scale screen*      *Injured body parts screen*

## Mobile application for General Hospital in Celje

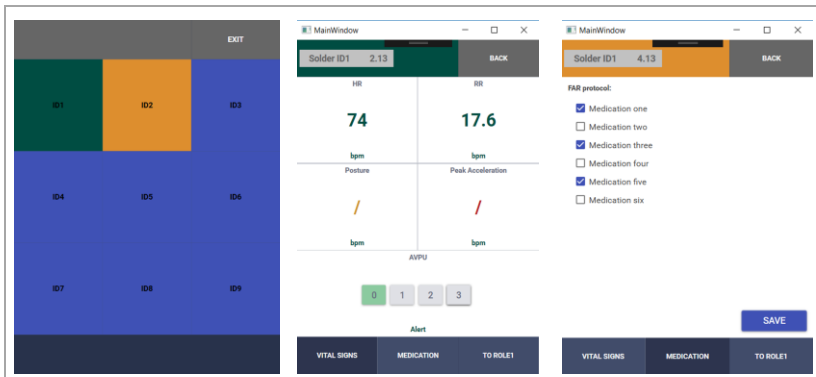


This application confirms the usefulness of the Zephyr Bioharness sensor in a hospital environment by providing remote monitoring of patient vital parameters. The application is set and tested in General Hospital in Celje, Slovenia.

# Android applications

# Data transfer

## Mobile application for FAR



The screenshot shows a mobile application interface for a First Aid Responder (FAR). On the left, there is a grid of nine soldier IDs (ID1 to ID9). The main screen displays the selected soldier's ID (2.13) and their vital signs: HR (74 bpm), RR (17.6 bpm), and AVPU (0). Below the vital signs, there are buttons for 'VITAL SIGNS', 'MEDICATION', and 'TO ROLE1'. A 'SAVE' button is also visible.

*The FAR can see soldiers vital signs and select the given medication*

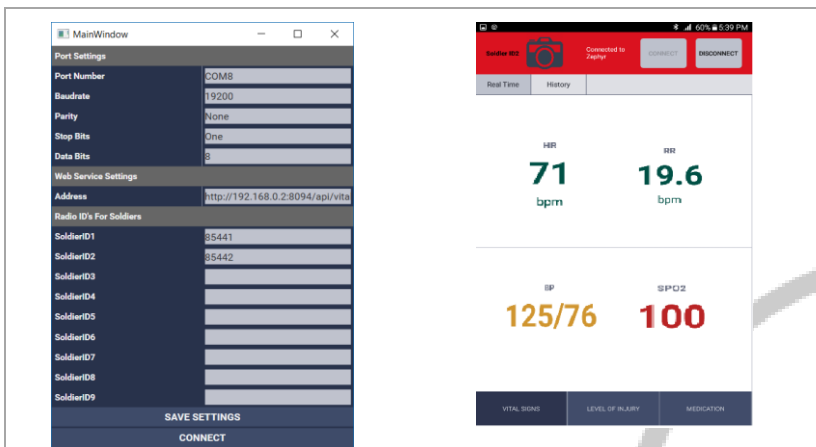
## Tait TP9400 radio



For the communication between the biosensors and the FAR's tablet is used Tait TP9400 radio.

The biosensors send soldiers' biodata via bluetooth to his radio, and the radio transfers the data via the FAR's radio to his tablet, where the application gives the triage information according that biodata. With that information the FAR can decide easily which soldier to treat first.

## Settings screen and Mobile application for Role 1



The screenshot shows two parts of the mobile application. On the left is the 'Settings screen' with options for Port Settings (COM8, 19200 Baudrate, None Parity, One Stop Bits, 8 Data Bits), Web Service Settings (http://192.168.0.2:8094/api/vital), and Radio ID's For Soldiers (SoldierID1 to SoldierID9). On the right is the 'Vital signs screen in real time' showing HR (71 bpm), RR (19.6 bpm), SP (125/76), and SPO2 (100). It also has buttons for 'VITAL SIGNS', 'LEVEL OF INJURY', and 'MEDICATION'.

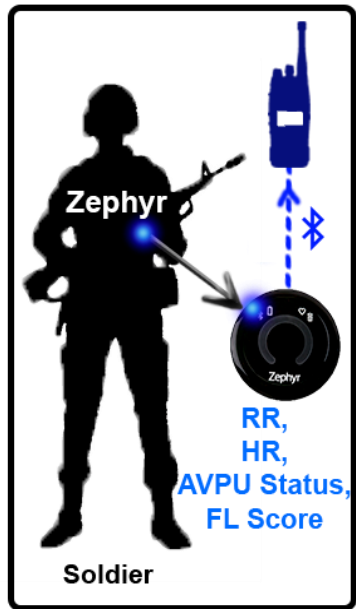
*Settings screen*      *Vital signs screen in real time*

## Benefits

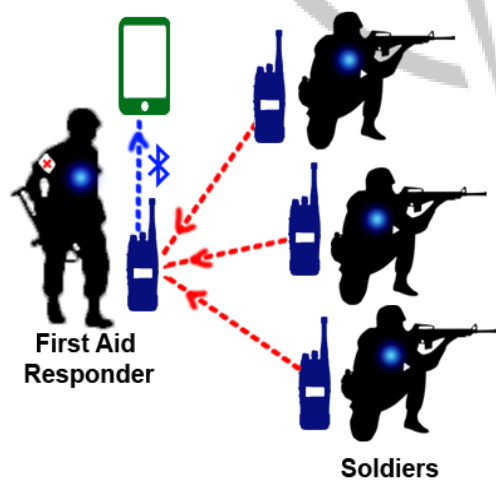
- Effective transformation of management in medicine which will be implemented using the Telemedical System;
- SIARS will reduce the time of manually collection of vital parameters of injured individual;
- Automatic TRIAGE process;
- Processing of information to the higher levels of medical care.

## More information:

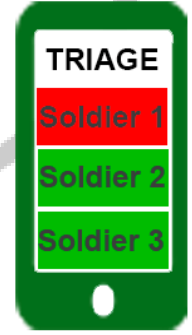
- [www.siards.finki.ukim.mk](http://www.siards.finki.ukim.mk)
- [www.ma.edu.mk/?page\\_id=1555&lang=en](http://www.ma.edu.mk/?page_id=1555&lang=en)
- Video MA: <http://goo.gl/xU7KqQ>
- Video UKIM: <http://goo.gl/Xt235x>



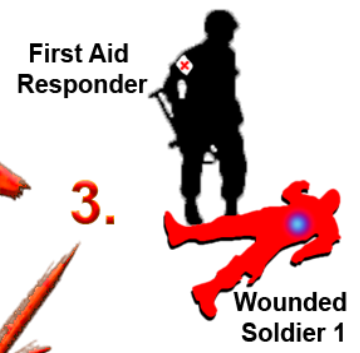
## 1. Battlefield



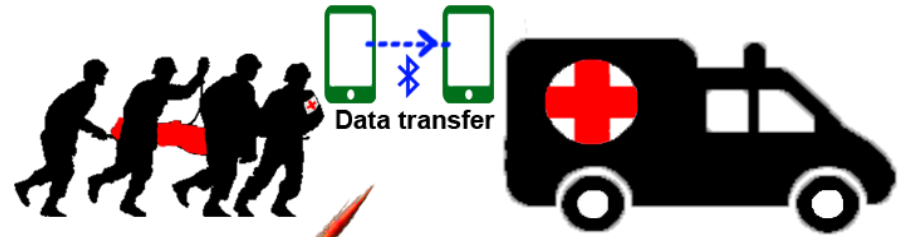
## 2.



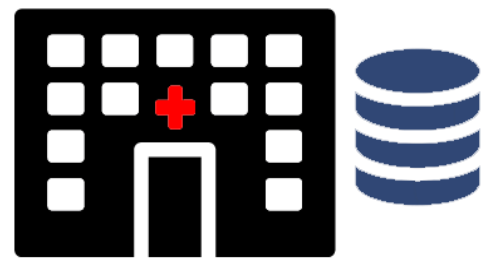
## 3.



## 4. Transport (Role 1)



## 6. Hospital (Role 2)



Transferring soldier's  
bio data to the server

## 5. Transportation

