SMART I

ADVISORY RESCUE SYSTEM

SPS - NATO - Slovenia – the former Yugoslav Republic of Macedonia*
Project ISEG.EAP.SFPP 984753
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*Turkey recognises the Republic of Macedonia with its constitutional name.
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INTRODUCTION

- **Battlefield**
  - SIARS is a Telemedical Information Smart System that uses biosensors, implements an automatic triage for the injured soldiers and transfer their vital parameters to the hospital. First Aid Responder gives medical treatment and prepare the heavy injured soldier for transportation according to the readings from the soldier’s biosensor.

- **Transport (Role 1)**
  - Multiple biosensors are attached on the injured soldier in order to get more precise clinical picture of the soldier while transporting to the hospital.

- **Hospital (Role 2)**
  - According the previous measurements, the doctor in the hospital will get the full patient bio data history from the moment of injury.
BIOSENSORS AND RADIO

- Zephyr BioHarness 3
- Omnisense - Blood pressure
- Nonin - Oxygen saturation
- Tait TP9400 radio
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.
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.
1. Battlefield

2. TRIAGE
   - Soldier 1
   - Soldier 2
   - Soldier 3

3. First Aid Responder
   - Wounded Soldier 1

4. Transport (Role 1)
   - Data transfer

5. Transportation
   - Transferring soldier’s bio data to the server

6. Hospital (Role 2)
   - 1. Respiratory rate
   - 2. Heart rate
   - 3. Blood pressure
   - 4. Oxygen saturation
MOBILE APPLICATION FOR FAR (1)
MOBILE APPLICATION FOR FAR (2)
MOBILE APPLICATION FOR FAR (3)

FAR protocol:

- Medication one
- Medication two
- Medication three
- Medication four
- Medication five
- Medication six

SAVE
MOBILE APPLICATION FOR FAR (4)

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SAVE SETTINGS

CONNECT
MOBILE APPLICATION FOR ROLE 1 (TRANSPORT) (1)
MOBILE APPLICATION FOR ROLE 1 (TRANSPORT) (2)
MOBILE APPLICATION FOR ROLE 1 (TRANSPORT) (3)
MOBILE APPLICATION FOR ROLE 1 (TRANSPORT) (4)

Mark the injured body parts:  Mark the level of injury:

- IMMEDIATE CARE
- DELAYED CARE
- MINOR/NO CARE

[Human figure with red, yellow, and green circles indicating injured body parts]
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.
**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.siaris.finki.ukim.mk
- www.ma.edu.mk/?page_id=1555&lang=en
- Video MA: http://goo.gl/xU7KqQ
- Video UKIM: http://goo.gl/Xt235x
- www.facebook.com/SiarisNato
- www.twitter.com/SiarisNato