

SMART I (EYE) ADVISORY RESCUE SYSTEMS (SIARS)



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PROJECT PARTNERS

- ▶ LJ1 - UoL-FE – University of Ljubljana, Faculty of Electrical Engineering, SLOVENIA;
- ▶ LJ2 -UoL-MF- University of Ljubljana, Faculty of Medicine, SLOVENIA;
- ▶ SK1 - UGD – MA – Goce Delchev University, Military Academy “General Mihailo Apostolski” – Skopje; the former Yugoslav Republic of Macedonia*
- ▶ SK2 - UKIM – FCSE –University St.Cyril and Methodious, Faculty of Computer Science and Engineering, the former Yugoslav Republic of Macedonia

PROJECT DURATION

- ▶ 08.04.2015 – 08.04.2018 – 3 (three) years.

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

INTRODUCTION

- ❑ Development of Telemedical Information System will covered this “Next” level of medical procedure by using:
 - mobile device, radio conection, biosensors and other sophisticated equipment;
 - measure all vital parameters; and
 - send it to the Mobile base stations placed in medical vehicles which will communicate to the next levels of medical support units (Role 1, Role 2 or Role 3 medical units)

OBJECTIVES OF THE PROJECT SIARS

FUNDING PROVISIONS AND CONDITIONS.

Comparative analysis with the other telemedical information systems (IS) used in military environment

Definition of a IS model with modules that can provide efficient information exchange

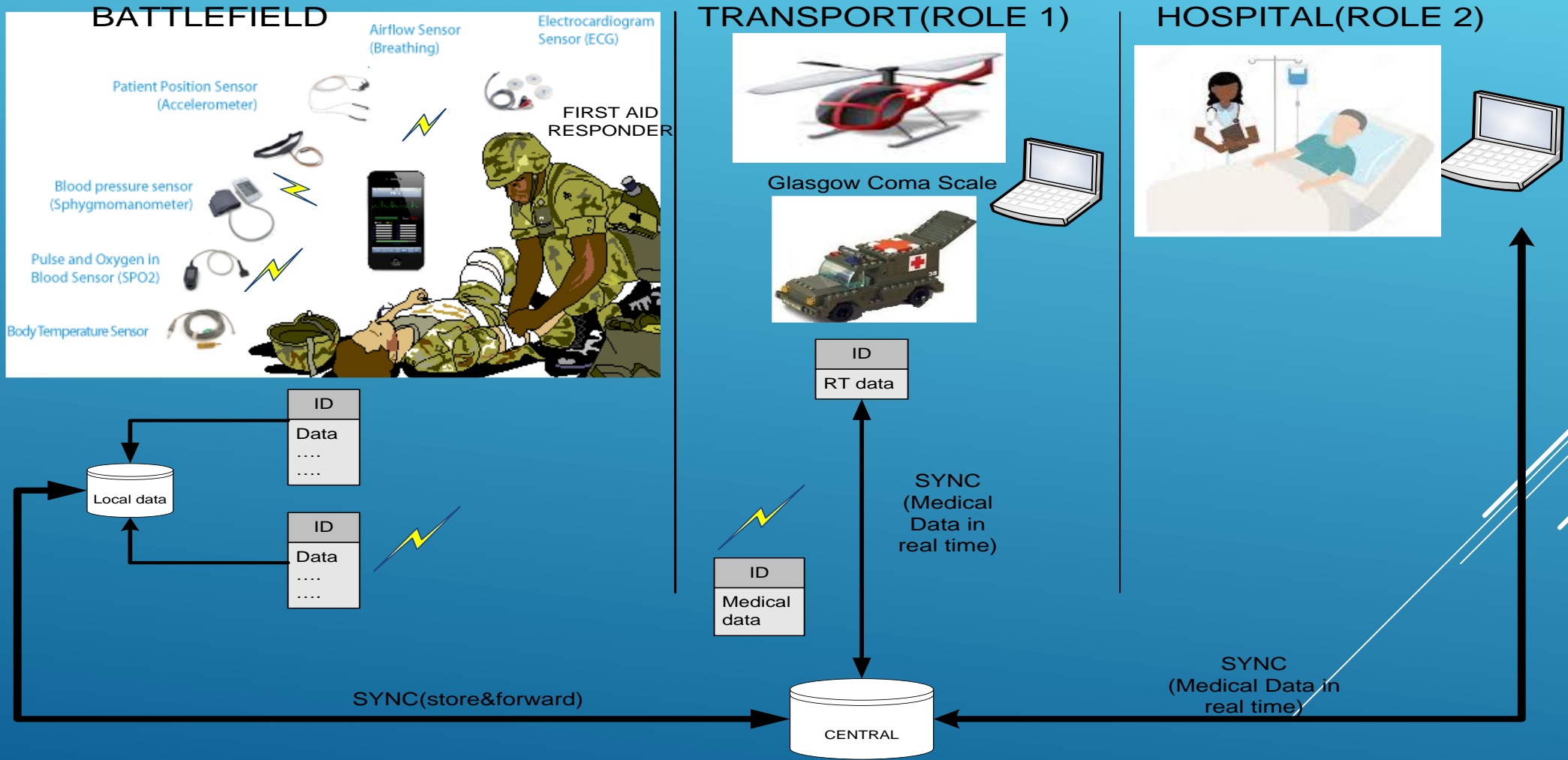
Development of a modular platform that can be latter upgraded with additional medical services

Development of prototype services (applications) for distributed telemedical IS that can work locally or via satellite connection

Selection and description of security standards for SOA – to be used for achieving certain control level for access and authentication


You can affect change.

Smart I (Eye) Advisory Rescue System based on SOA



Model of SIARS

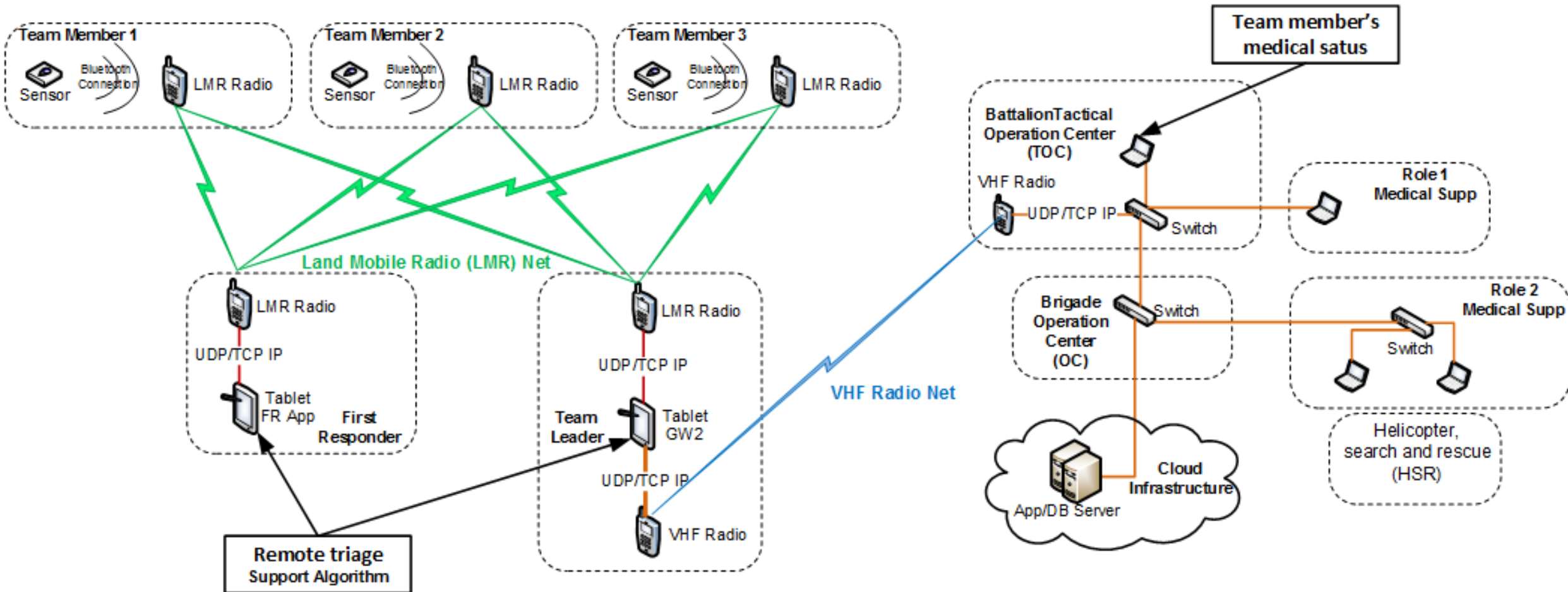
ADVISORY MODULE / OFFLINE MODULE

- ❑ The **Advisory module** – learning/advisory for FARs continual education
 - ❑ The **Offline module** for collection of vital parameters of injured individual
 - ❑ works independently
 - ❑ Providing automatic TRIAGE
 - ❑ analyze the digital record of vital parameters; and
 - ❑ record it in order to process it to the higher level of military medical institutions
- 

BENEFITS OF SIARS

- ❑ 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;

SYSTEM ARCHITECTURE



TRIAGE cards

Red tags/cards - (immediate)

• are used to label those who cannot survive without immediate treatment but who have a chance of survival.

Yellow tags/cards - (observation)

- or those who require observation (and possible later re-triage). Their condition is stable for the moment and, they are not in immediate danger of death. These victims will still need hospital care and would be treated immediately under normal circumstances.

Green tags/cards - (wait)

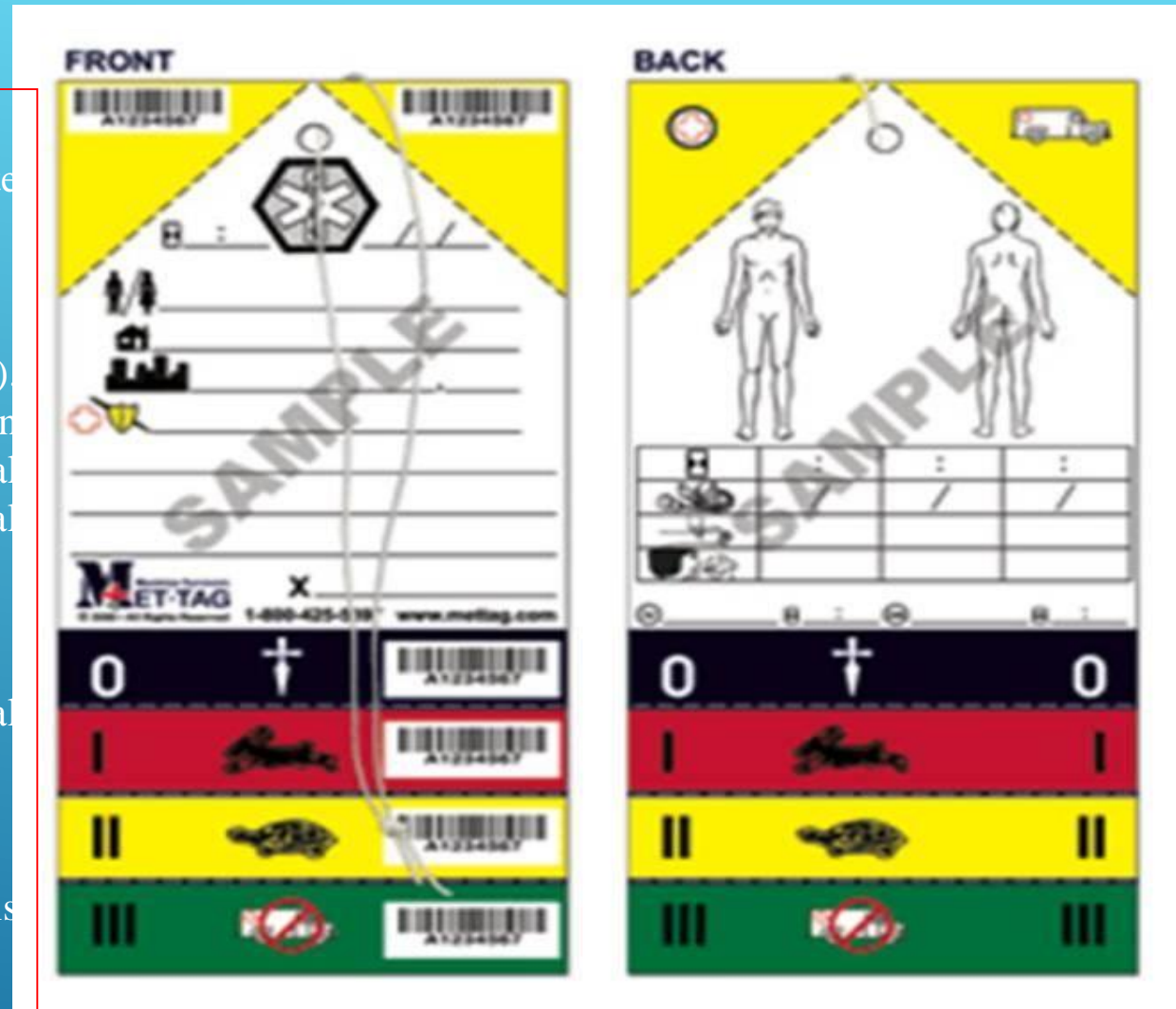
- are reserved for the "walking wounded" who will need medical care at some point, after more critical injuries have been treated.

White tags/cards - (dismiss)

- are given to those with minor injuries for whom a doctor's care is not required.

Black tags/cards - (expectant)

- are used for the deceased and for those whose injuries are so extensive that they will not be able to survive given the care that is available



NATO CARD (METTAG)(FRONT) NATO CARD (METTAG)(BACK)

FUNCTIONALITY OF THE TELEMEDICAL SYSTEM

- ❑ precise and fast determining the patient`s vital parameters,
- ❑ proceed it to the next level of military medical units together with additional data (ID, Time, Location, Coordinates);
- ❑ it can be implemented in every unit that performs military operations;
- ❑ SIARS will be fitted into the existing process of work and will improve the existing process of work.
- ❑ Functionality of the system to be checked on some military or medical exercise;

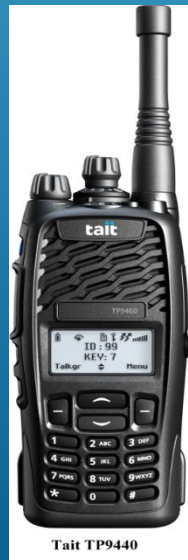
MILITARY STANDARDS - HW AND SW



HARRIS RF-3590 RUGGEDIZED TABLET



PANASONIC TOUGHPAD FZ-B2
(OS: ANDROID)
< \$2000

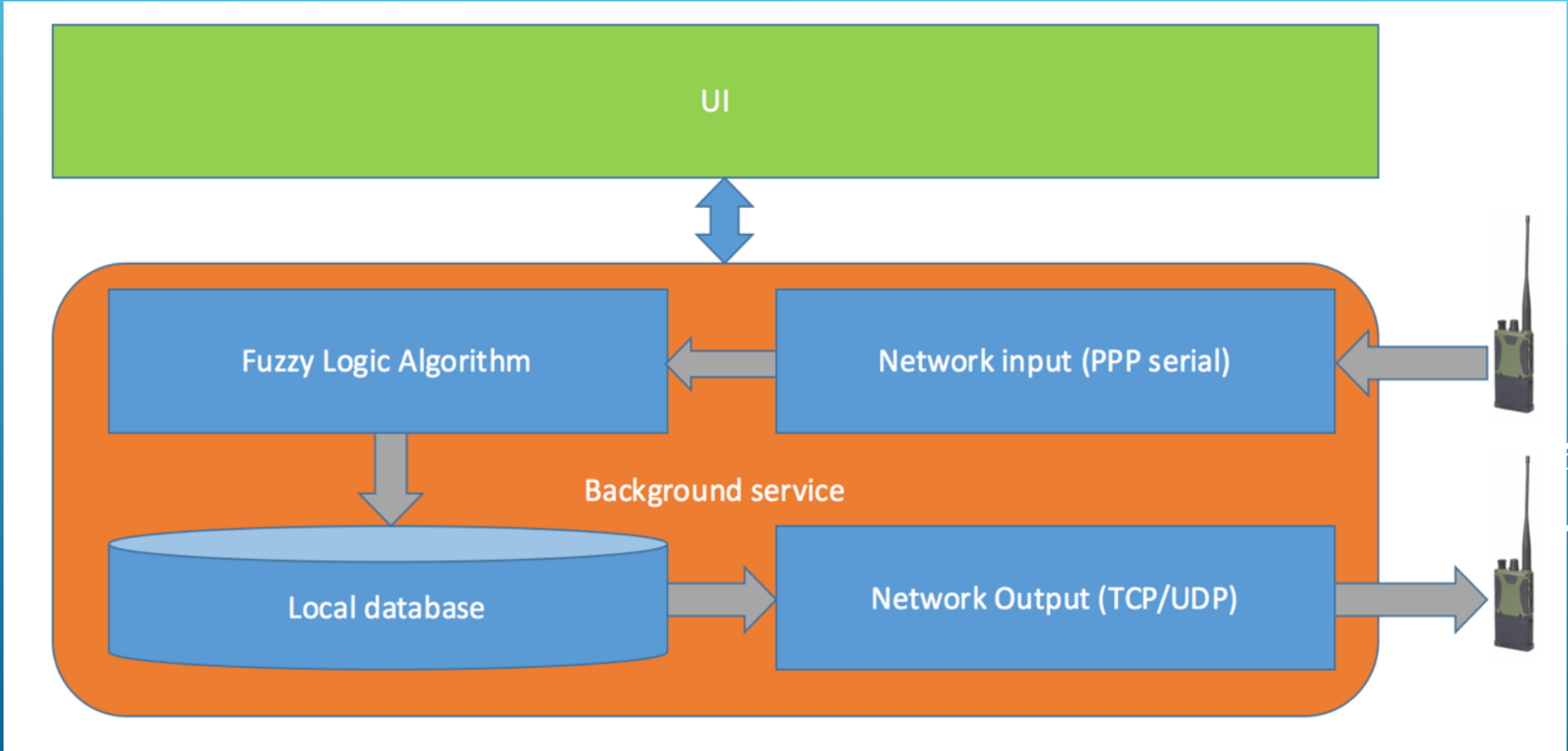


\$4000

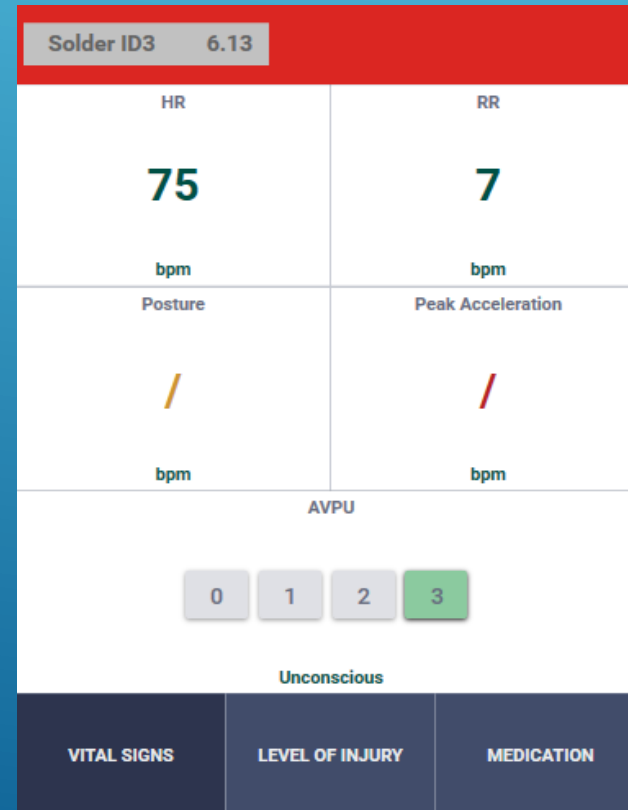
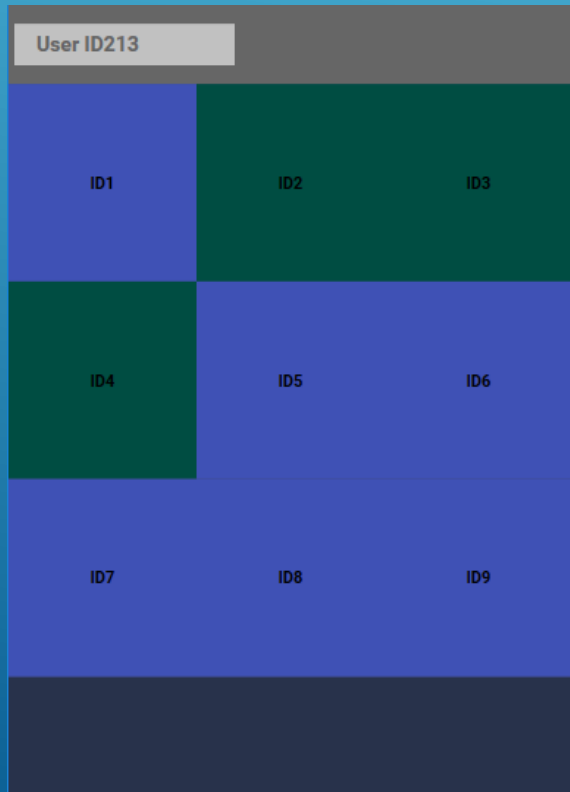


PANASONIC TOUGHPAD FZ-M1
(OS: WINDOWS)
< \$2000

- ▶ **MAIN contributions of SIARS**
 - ▶ **Algorithm for distance TRIAGE**



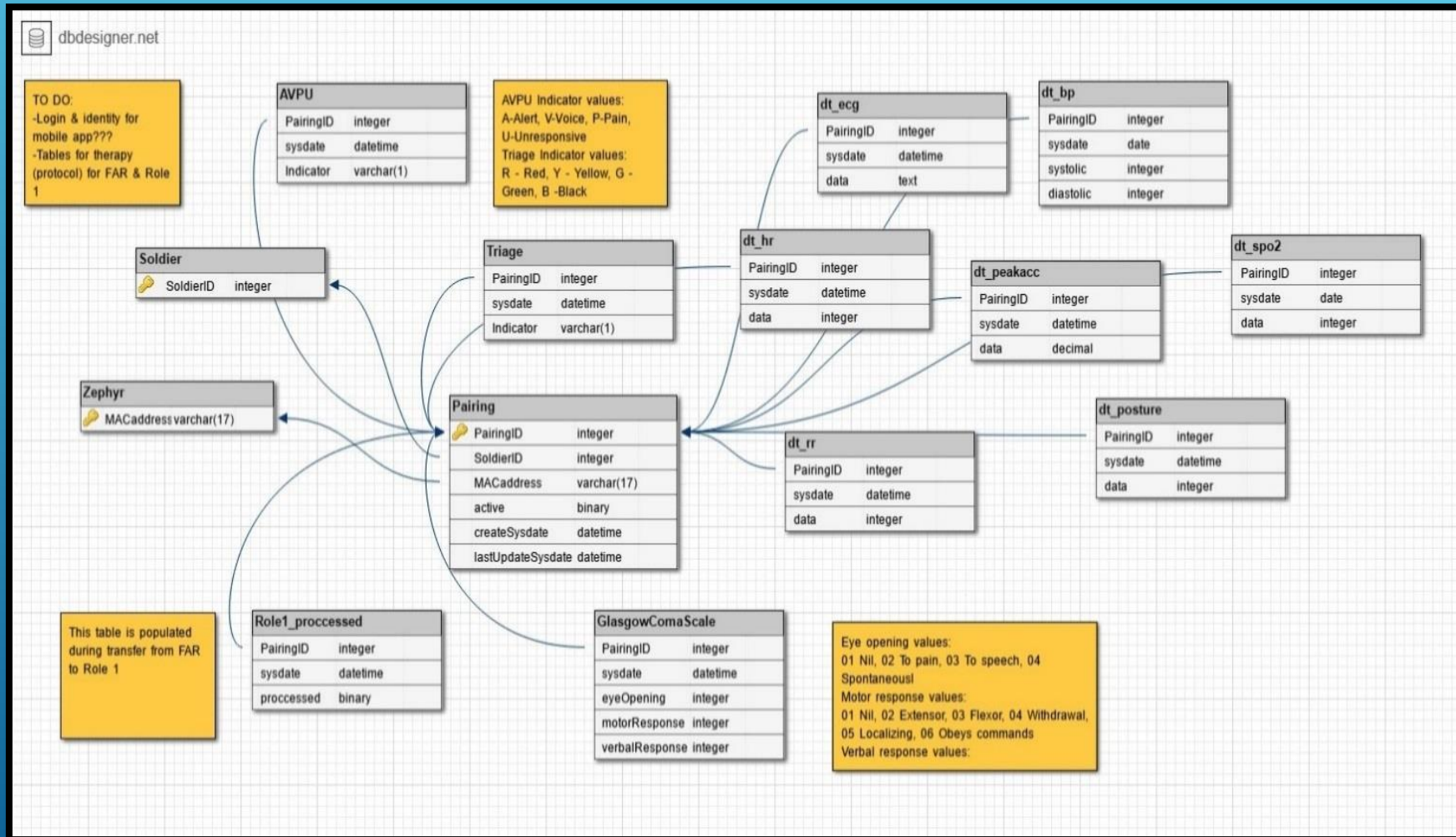
► Interface of the Triage algorithm – FAR tablet



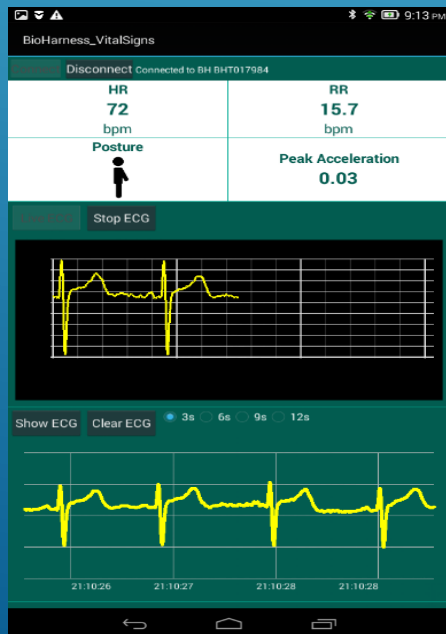
► The used Biosensors



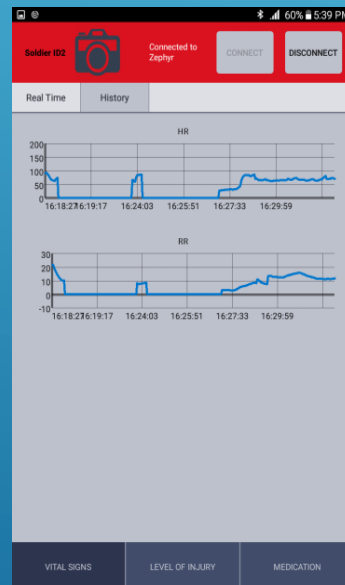
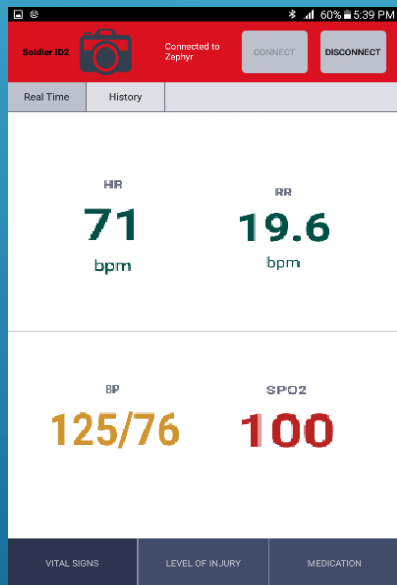
► Server side software



- ▶ **Application for Celje hospital – reading ECG**
- ▶ 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 a patient vital parameters. The application is set and tested in General Hospital in Celje, Slovenia.



► Mobile application for the medical need in Role 1 - during transportation of a patient



Screenshot of the mobile application interface showing the GCS and Injured body parts assessment. The top bar and tabs are the same as in the previous screenshots. The main display shows:

- Section: GCS
- Section: Injured body parts
- Eye opening: Spontaneous, To voice, To pain, No response
- Verbal response: Oriented, Confused, Inappropriate, Incomprehensible, No response
- Motor response: Obeys commands, Localises, Pain Withdraws, Pain flexes, Pain extends, No response
- Level of priority (according calculations): 13
- SAVE button

At the bottom, there are three tabs: 'VITAL SIGNS', 'LEVEL OF INJURY', and 'MEDICATION'.