

# **ROBO M.D.**

## **Home Care Robot for monitoring and detection of critical situations**



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European Union



**INNOVATION  
4 WELFARE**



# Objectives

A personal health care system consisting of

- personal sensors for heart rate, skin temperature and acceleration
- possibly environmental sensors
- a logging station connected to the sensors by a wireless network
- a robot able to reach the person in case of need and establish an oral and/or visual communication
- The system records continuously data from sensors and uses detection algorithms to detect possible anomalies from a list of frequent cases. The algorithms are based on physiological understanding, with some data to be tuned during start up or operation.
- If an anomaly in the data is detected, the robot approaches the person and offers the possibility to communicate. If the person is in a situation that communication is not possible pictures should be sent to some rescue service.

# Partners

1. JKU (UAT): Johannes Kepler University, Institute for Design and Control of Mechatronical Systems
2. IEIIT (LOM): Italian National Research Council (CNR) Institute of Electronic, Information and Communication Technologies (IEIIT) Milano Branch(MI)
3. Fontys (NBR): Fontys University of Applied Sciences
4. JU (SWB): University of South Bohemia in České Budějovice
5. UT (Tartu): University of Tartu

# Activities

- Work Package 1 (WP1) – Management and Coordination
- WP2 – Communication – Dissemination - Exploitation
- WP3 – Analysis & Development Phase

## Sensor Setup

### Physiological modeling

Provide physiological models able to describe the behavior of healthy persons / people with cardiovascular diseases

### Robot sensor setup

### Wireless Communication Network

Establish an interface between various sensors and mobile Robot

### Physiological measurements

Conducting measurements on subjects

### Human computer interaction

Definition of a protocol

Analysis of user applicability and acceptance

### Data mining – Human pattern recognition



# Activities

- WP4 – Assembly & Adaptation Phase

- Parameter Estimation

- Estimating parameters of physiological model

- Simulation of Abnormal Conditions

- Analysis of critical conditions – Alert phase definition

- Personalized profiling of the subject

- Human pattern recognition algorithms adapted to specific persons

- Feed-back protocol with the subject

- Specific questions can bring more information on the state of subject

- Robot coordination

- Trajectory control of the robot

- Implementation of the network – assembly of hardware

- WP5 – Demonstration Phase

- Testing the Assembly

- Demonstration

- Analysis of end user acceptance

# Expected results

- Prototype of the robot with the abilities
  - Permanent connection to all relevant sensors
  - Statistical data evaluation
  - Detection of pre-defined critical situations
- Correct and efficient management by the implemented management and monitoring bodies within the planned budget lines
- Broad awareness of project results with the help of produced dissemination materials and others, e.g. among beneficiaries, interested public and among experts as well as within the framework of European networks of partners

# Regional policy context

ROBO M.D. is in accordance with the regional development strategies and the content and aims of I4W, especially with priorities focused on economy, social and health care, quality of life and human resources.

ROBO M.D. intends to save and strengthen the unique position of European social and health system in the following context:

- The I4W FDP looks for more innovation and RTD integration in order to increase finally demand oriented products and services via technology driven innovations
- ROBO M.D. will contribute to the I4W and regional policies to realize the innovation potential of the welfare sector and turn it into success in order to save and further strengthen the competitiveness of the European home care services
- The INTERREG Programme and the I4W Programme benefits from policy recommendations, prepared by ROBO M.D. activities as well as from regional policy measures, ready to be transferred to other European regions and sectors through guidelines and the policy recommendations guide delivered by ROBO M.D.

# Budget

Partner	Total Costs	Grant %	Requested grant	Co financing
UAT	135000	75	101250	33750
LOM	70000	100	70000	0
NBR	101360	75	76020	25340
SWB	76000	85	64600	11400
Tartu	63636	85	54091	9545.40
	<b>445.996</b>		<b>365.961</b>	



**Thank you very much for your  
attention**

