



11–12 October 2012, Riga

**Riga Technical University  
53<sup>rd</sup> International  
Scientific Conference**

Dedicated to the 150<sup>th</sup> Anniversary and  
The 1<sup>st</sup> Congress of World Engineers and  
Riga Polytechnical Institute / RTU Alumni

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ISBN 978-9934-10-360-5



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Rīga-2012

# Development of New Mobile Telemedicine Screening Complex

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**Keywords** – Telemedicine, health care, mobile, screening, diagnostics, e-health.

## I. INTRODUCTION

Public health is one of key priorities of any European Union country, including Latvia. This means not only high quality and high levels of treatment of diseases, but also the timely diagnosis and prevention. An important role here is regular preventive examinations that can be taken by the family doctor, if he is provided with the necessary medical technologies. Currently investigations and analysis are usually carried out by health care institutions, because only in very rare cases, family doctor has the necessary diagnostic equipment and skills of evaluation of the information obtained in the investigations. Often the tests are carried out at different times and in institutions, which may be located a considerable distance from the residence of the person under investigation. Thus additional time and resources of the patient and the employer's is being spent time on the way to examination centers and waiting for the results as well as for re-appointment with the doctor's for collection and assessment.

## II. THE AIM OF THE PROJECT

To solve the above-defined problem, it is necessary to develop a new mobile telemedicine screening complex with analysis and advice center software, which will eliminate the existing system deficiencies and will be substantially better than the existing systems.

System overall schematic and information flow is shown below in Fig.1.

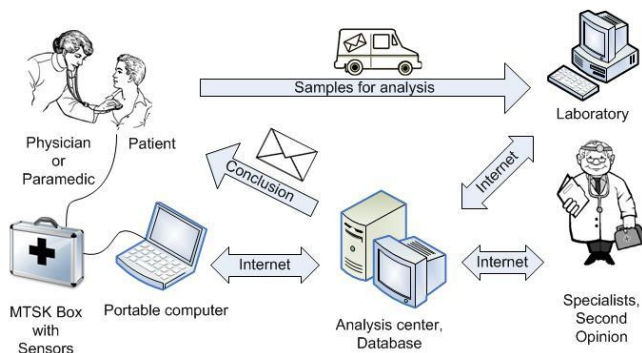


Fig.1 MTSK overall schematic and information flow.

## III. RESEARCH TO BE CARRIED OUT IN THE PROJECT

For development of mobile telemedicine screening complex hardware and software the technical solution must be found for registration of at least 6 subsequent physiological parameters:

- Electrocardiogram (ECG);
- Spirometry (Spiro);
- Pulse oximetry (SpO2);

- Blood pressure, registration using non invasive method (NIBP);
- Digital thermometry (contact or contactless measurement of body temperature);
- Digital phonendoscopy (heart and lung-tone registration);

Industrial research of MTSK modules is based on team previous experience in local and international projects [2, 6].

In addition to mentioned above extended research needs to be done to include new features in MTSK:

- Methodology and the optimal solution for computer based vision and hearing test, including hardware.
- Development of new anthropometric data recording system.
- Exploring the possibility of setting up simplified strip express analysis module.
- Analysis of the feasibility of adding dermascope module.
- Fat-muscle ratio measurement method development by means of complex impedance measurement method or another.
- Study for MTSK interactive diagnostic questionnaire design.

## IV. RESULTS

MTSK Module research and development and experimental design is generally finished and includes modular design in level of tested schematics to record ECG, spirometry, audiometry, NiBP and SpO2. This research includes also wireless data transmission options and methods to provide data integrity and safety.

Research work is not finished and presented here are only preliminary results up to day. The results of research when finished and system pilot sample may be used to develop industrial model of MTSK. In this case new product will be offered, being significantly advanced and more economical in use, compared to those currently in the market.

Quality of goods or services will improve because the study of MTSK development plans not only to increase the number of recorded parameters, but also increase the quality of usage. This is resulting from the research of new and innovative solutions and information obtained in the analysis and interpretation of the project.

## V. REFERENCES

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