



HealthService24

Issues being addressed

HealthService24 targets to provide support to forthcoming changes in the healthcare industry and give solutions to the problems of the different players in the health market. Change in the healthcare industry is driven and influenced by various forces, like increasing budget and deficit problems stemming from an increase in the number of people with chronic diseases, erosion of traditional business models of the pharmaceutical industry due to shortening period of exclusivity, need for hospitals to manage and control administrative and treatment related costs and most of all increasing demand from the patients to be closely involved in the care process (patient empowerment).

HealthService24 proposes a solution to these upcoming challenges, by validating and preparing the launch of innovative, mobile patient monitoring and management services. This is done with the design and integration of a healthcare services platform based on state-of-the-art communication networks and technology.

The HealthService24 platform is based on advanced concepts and technologies, like Body Area Networks (BAN), 2.5/3G wireless broadband communications (GPRS/UMTS) and wearable medical devices. HS24 will provide integrated and comprehensive mobile healthcare services to patients, such as management of chronic conditions and detection of health emergencies.



Objectives of the project

HealthService24 aims at developing a viable mobile health care service, permitting healthcare professionals to remotely and interactively diagnose and treat patients whilst the patients are free to continue their normal daily life activities. The HealthService24 will allow patients and non-patients to monitor their physical condition and obtain advice and information at any place and moment.

The main objective of HealthService24 is to test the feasibility of deploying mobile healthcare services via trials that will validate the precise conditions to be fulfilled for the subsequent deployment of the services.

The HealthService24 project will address the study of the related social aspects, working conditions and the related economic issues stemming from the deployment of its services on a larger scale, including the changes that will be brought to the processes and practices of the healthcare organizations and medical personnel. HealthService24 will define the needs, expectations and requirements of all members of the value chain and will create added value and benefits for all value chain members, as only such an approach can make a sustainable market deployment possible.

The Consortium

The HealthService24 consortium consists of 8 partners:

- **Ericsson Enterprise AB (SE)** – Project coordination
- **University of Twente (NL)** – Project Scientific & Technical Management
- **University of Cyprus (CY)** – Hospital Information System support
- **Hospital Clinic Provincial de Barcelona (E)** – Healthcare provider
- **Medisch Spectrum Twente (NL)** – Healthcare provider
- **LITO POLYCLINIC PARALIMNI LTD (CY)** – Healthcare provider
- **TMS International B.V. (NL)** - Medical Systems manufacturer
- **Yucat B.V. (NL)** – Mobile Business Solution development

Expected benefits



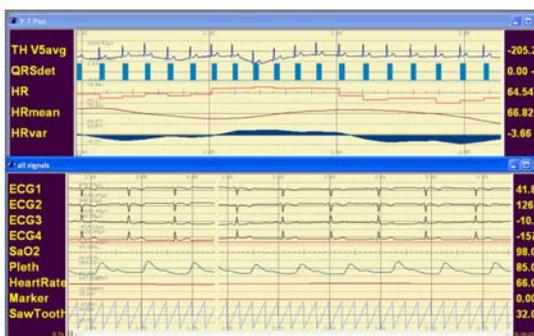
HealthService24 aims at patients and health care professionals. Patients will be able to stay mobile and have a fairly normal lifestyle while being monitored on a daily basis. Frequent daily monitoring is especially important in case of chronic and high-risk patients, e.g. patients discharged early from hospital after a surgery and high-risk pregnant women that require almost constant monitoring.

Today these patients are often hospitalised for long periods, resulting in high hospital costs and moral degradation. HealthService24 can decrease hospital time for chronic and high-risk patients while their feeling of safety remains intact by allowing them to obtain health advice by experts at any

moment and place.

Consequently, HealthService24 reduces health care costs resulting from the occupation of a hospital beds significantly.

The cost reduction aspect makes the service potentially interesting for health insurances and governmental institutions paying for medical services.



Executive Summary of the trials

The HealthService24 project is running since fall 2005 trials at 3 sites:

- Medisch Spectrum Twente, in the Netherlands,
- LITO Clinic, in Cyprus and
- Hospital Clínic i Provincial de Barcelona, in Spain

Each trial site targets patients with different health conditions, so that a wider spectrum of conditions and cases can be validated in the timeframe of the project. The target of the trials is to test the HealthService24 system in real-life scenarios, assessing the feasibility for integration in the clinical process and market viability. In addition, validate the system and its services from the medical and health-economic point of view. To fulfil this goal, each participating trial site developed specific clinical scenarios in which the use of the HealthService24 system supports the clinical process as a whole or a significant part of it.

The system supports monitoring of different vital signs; e.g., ECG, EMG, Oxygen saturation, respiration, activity and temperature. Vital sign selection depends on the trial site and patient.

Trial 1 : High Risk Pregnancies (The Netherlands)

Women with a high-risk pregnancy are admitted to the hospital frequently for medical examination and intensive monitoring of maternal and foetal vital signs. Based on monitoring data, a gynaecologist is able to act pro-actively in case of emerging complications. In many cases, an examination reveals no immediate health-risk for both mother and foetus. Hence, a high-risk pregnant woman is unnecessarily bound to a hospital bed for a substantial amount of time. She wants to continue here normal daily life visiting the outpatient clinic only in case of emerging complications. Tele-care based on continuous monitoring for specified time intervals is viable solution. It decreases hospitalisation time, reduces costs, and offers a feeling of security for pregnant women.

In this trial we currently have an average of 8 women participating each day (the observation time being short - ranging from a couple of days to a couple of weeks; the patients are changing). The intermediate results are more than encouraging (especially with the adapted versions of the system). Both patients and doctors are very enthusiastic of the aim of the trial and we have already started discussion for the use of the system after the completion of the project. To be noted that during the trials new conditions leading to labour are tested and the medical personnel is hopeful that at the end of the trial they will have identified a way to predict labour within the next couple of days.

From the point of view of the economic and hospital process validation, the up today results show us that the financial benefits can be very high and that the integration to the hospital process is, for the MST hospital, feasible at low cost.

Trial 2 : Cardiac patients (Cyprus)

Two distinct groups of cardiac patients are tested in this trial:

Group1: Patients who had an acute episode. They have been admitted and stabilised, but need continuous monitoring of their condition and drug regime for a few days. Using the HealthService24 system allows these patients an earlier discharge, with an appropriate follow up (by using the system) in the place of their choice.

Group 2: Patients in a suspected acute episode. After medical examination, a decision needs to be taken whether to keep the patients at the hospital for observation, or to discharge them home. In case a patient is discharged, and there is a suspicion of an abnormal condition, the patient will be equipped with the HealthService24 system enabling constant monitoring of the patient's health state.

In the current phase of this trial we have 10 patients (in the next phase we plan to augment to 20 patients). Although the users are happy with the overall concept, feedback was given regarding the usability of the mobile part of the system (i.e. Body Area Network). For example, too long ECG cables reduce wearability, system failure in case of empty batteries, limited usability due to poor connectivity to the local GPRS network. Many of these problems will be fixed for the next phase of the trials.

From the economic and social validation point of view, the LITO clinic has already identified savings and possibilities for the HealthService24 services to different types of patients. However some patients show reluctance to use the system due to psychological reservations (like, "it might have side effects", "I am not that sick" etc).

We must note that the integration of the HealthService24 system to the DITIS Hospital Information System is under way.

Trial 3 : COPD patients (Spain)

This trial uses the HealthService24 to support remote assistance for elderly and chronically ill patients suffering from co-morbidities including the COPD. The HealthService24 Body Area Network (BAN) will be used to perform patient measurements during nurse home visits. In addition, it will be used for continuous monitoring during patient rehabilitation at home or outdoors. It is very important to facilitate patients' access to healthcare professionals without saturating the available resources, and this is one of the main expected outcomes of the HealthService24 remote monitoring approach.

In the current phase of the trial 10 patients are monitored. In the next phase we aspire to reach the number 50 patients monitored in parallel. The users acknowledge the advantages offered by the system as well as the dramatic improvement of the usability and interfaces (compared with the MobiHealth <http://www.mobihealth.org> version of the system). Comments regard the short life of the BAN batteries and the sensitivity to poor GPRS network connectivity.

From a socio-economic point of view, the integration of the system in the hospital process and the Hospital Information System is under study. The Barcelona hospital has an advanced HIS (in contrast to LITO and MST). Nevertheless the related costs as well the benefits are clear for the hospital and the patients.

Reference Data

<http://www.healthservice24.com/>

Contract Type: Market Validation

Start Date: February 2005

End Date: July 2006

Duration: 18 months