Shaping The Future Of Healthcare

Innovative GPRS/UMTS mobile services for applications in healthcare

healthservice24 (eTEN-C517352) is funded by the European Commission under the »eTEN« Programme

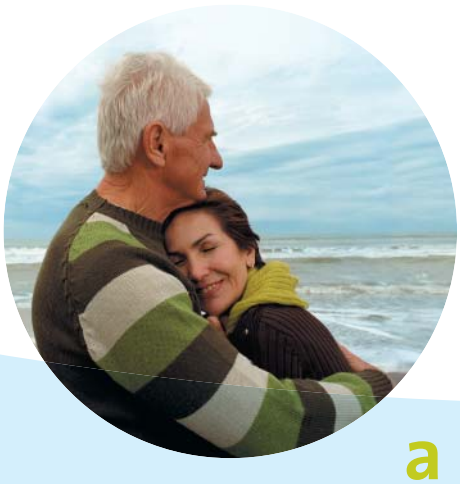
healthservice24
The Mission

healthservice24 offers a viable mobile healthcare service that permits healthcare professionals to remotely assess, diagnose and treat patients, while allowing the patients to be free to continue with life's daily activities. healthservice24 monitors the physical condition of patients so that they can obtain advice and information from their authorised healthcare staff at any place, any time. Hence, the service enables patients to be fully mobile.

healthservice24
The Objectives

The healthservice24 project aims to launch an integrated mobile healthcare service. healthservice24 is based on a technically validated and **fully functioning mobile platform prototype**. The solution was developed within the MobiHealth project financed by the European Union under the IST programme (IST-2001-36006). The existing service prototype will be validated and fine-tuned to enable sustainable market deployment.

Healthcare Sector – Main Drivers



a

b

Patient-empowerment and quality-of-life

Patients today are becoming increasingly more pro-active in seeking individualised and interactive treatment and care. These patients are looking for freedom, security and peace of mind so that they can continue to enjoy their personal lifestyle. healthservice24 enables this to happen. Rather than being confined to a hospital for long periods of time, patients who have had an acute event, an operation or suffer from chronic diseases can remain mobile and continue to pursue a normal life. As a result, their overall condition can improve much faster. If they have a chronic illness, it can to a large extent, be stabilised, thus preventing acute episodes that would require hospitalisation.

Cost pressure and budget deficits of healthcare payers

National, public healthcare systems and health insurers in most western countries face increasing budgetary problems. This is mainly due to the growing number of elderly people and people with chronic diseases as well as increasing treatment and therapy costs. Apart from structural changes, Patient Management or Disease Management are seen as possible parts of a cost reduction solution. What exactly an efficient Patient Management solution should look like and how it should be implemented and integrated into healthcare systems is currently being discussed in many countries. A number of studies have found that it is possible to save between 10-30% of disease-related costs when applying effective Patient Management. Mobile solutions work effectively in this area because patients are remotely monitored and provided with the most appropriate cost-efficient treatment or therapy with guaranteed freedom of movement and high patient convenience.

d

c

Cost pressure and fixed budgets in hospitals

In many European countries Diagnose Related Groups (DRG's) were introduced early in 2004. DRG's clearly define the budget for certain interventions (e.g. an operation) in hospitals. This means that hospitals will have to work hard to meet tight budget constraints. One way for hospitals to do this is by reducing internal costs through the early discharge patients after treatment or operations. However, with early discharge, patient safety becomes an issue. Using healthservice24 mobile patient monitoring, patient safety is under control.

Development of new drugs (clinical trials)

Time to market has become the most important success factor in the pharmaceutical industry. Each day a high-potential product remains in R&D rather than out in the market means an estimated $ 1 million in lost turnover and opportunity costs for the pharma company. Bringing new pharmaceutical products with enhanced properties or completely new treatment mechanisms quickly to the market is crucial for the survival of research orientated pharmaceutical companies. However, speed and shorter time-to-market is not enough. The company's ability to efficiently structure and organise its R&D and related processes is also vital to saving time and reducing costs. Conducting clinical studies via mobile channels substantially contributes to this. healthservice24 enables quick collection of clinical or quality-of-life data. As this data comes immediately and directly from the patient, it is of an unprecedented quality which, in turn, substantially contributes to better drug safety.

healthservice24
Meeting The Challenges

HEALTHSERVICE24 OFFERS MOBILE HEALTHCARE SERVICES THAT TARGET AND SUPPORT VARIOUS HEALTHCARE STAKEHOLDERS:

Healthcare payers: mobile patient management (e.g. of patients with chronic diseases such as diabetes, asthma, cardiac diseases, etc.) to optimise and individually adapt therapy to achieve cost-savings and consequently contribute to curbing health expenditures and diminishing budget deficits

Pharmaceutical industry: clinical trials using mobile communication (to collect and generate high-quality clinical data or quality-of-life data) to decrease time to market, save on R&D costs, and provide safer drugs

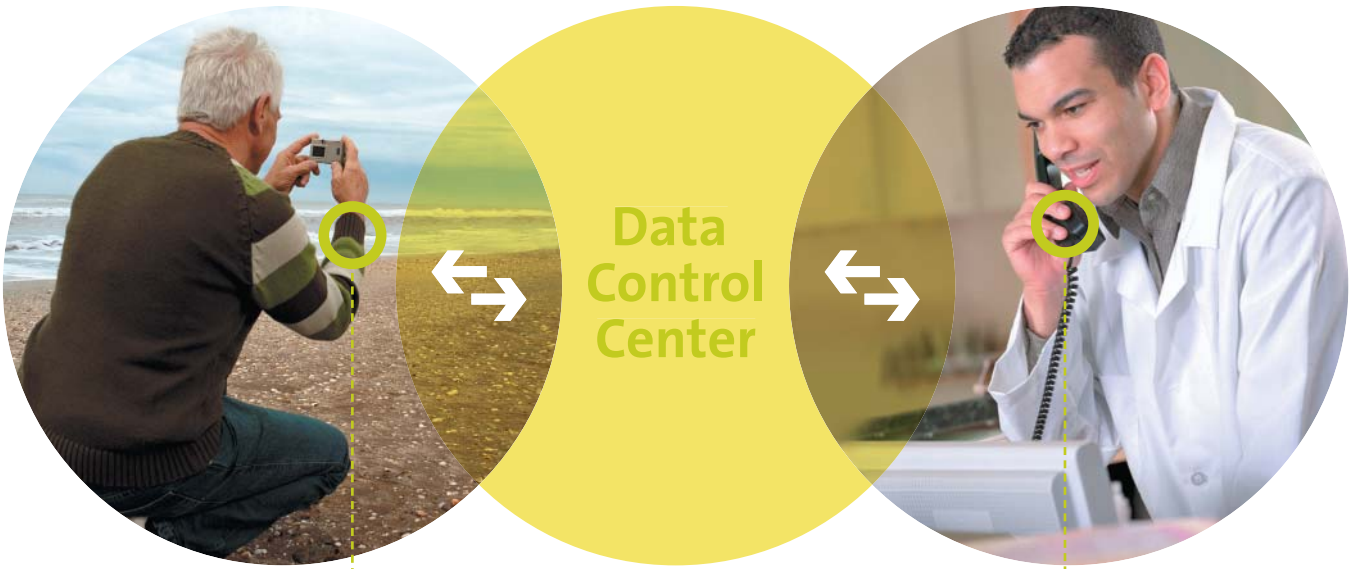
Hospitals: mobile patient monitoring (e.g. high-risk or early-discharged patients) and emergency handling to decrease costs and meet fixed budgets

Patients: mobile patient management and monitoring (e.g. of disabled patients or patients with chronic diseases) for better quality-of-life, peace of mind and mobility

healthservice24
How The Services Work

Data centre

The measurements are transmitted wirelessly using UMTS (or GPRS) to a data centre that acts as an intermediary between patients/users and healthcare providers. It provides three services: data repository (collecting and storage of the received data), streaming service (forwarding data to a doctor or medical centre), and feedback service (analysis of the data received and the sending of an alarm or a reminder signal to a predefined destination, using SMS or other means). The data centre can also provide technical support and, if needed, act as the Level 1 medical support for the healthservice24 users.



Wireless Body Area Network

A healthservice24 patient/user is equipped with vital constant sensors to monitor areas such as blood pressure, pulse rate and ECG. These sensors are interconnected through a wireless Body Area Network that is managed by a mobile telephone which is worn on the body, and thus, moves with the person. In this way, patients can stay mobile yet be continuously monitored and receive advice when needed.

Information access

From the data centre, data is transferred to the healthcare providers and can be visualised (e.g. on a laptop or a PDA). Healthcare professionals, to whom the patients' data is transferred, can remotely assess, diagnose and treat patients.

healthservice24
The Benefits

Areas of challenge for the respective parties and stakeholders

Among the most important potential areas of application for these new services are:

- Remote monitoring of chronically ill patients
- Remote assistance and monitoring in a homecare setting
- Remote assistance in case of accidents and emergencies
- Remote physical state monitoring in sports
- Remote management of clinical trials

healthservice24 provides easy, convenient and ready-to-use services.

Healthcare payers benefit through:

- Reduction in patient treatment costs
- Better management of resources
- Significant health-economic improvements

Patients benefit from:

- Increased freedom and improved quality of life
- Flexible, individual and effective treatment and therapy
- Peace of mind

Healthcare providers benefit from:

- Better management and monitoring of patients' therapy
- Prevention, as well as fast and professional handling, of emergencies
- High service differentiation with low investment in technology and time

Commercial services providers benefit from:

- An open and standardised mobile service platform
- Proven functionality and usability
- Convincing business models

How The Benefits Will Be Validated

The trial sites of healthservice24 were selected with the objective of covering both the most commercially promising medical applications and representative European hospitals.

High risk pregnancy trial
(Medisch Spectrum Twente, The Netherlands)

This trial will use the healthservice24 solution to support integrated homecare for women with high-risk pregnancies. Women with high-risk pregnancies are often admitted to the hospital for longer periods of time because of possible complications. Homecare with continuous monitoring is desirable because it can postpone hospitalisation and reduce costs. It also offers more security for the mother and unborn child as the maternal and foetal bio-signals are remotely transmitted to the hospital. Establishing how long hospitalisation can be postponed and by how much costs can be reduced are the two main objectives of this trial.

Trial 1

Trial 2

COPD – patients' trial
(Hospital Clinic i Provincial de Barcelona, Spain)

This trial will use the healthservice24 solution to support remote assistance of elderly and chronically ill patients suffering from diseases including COPD (Chronic Obstructive Pulmonary Disease). The mobile solution is used to take patient measurements during home visits and for continuous monitoring during patient rehabilitation at home or outdoors. Facilitating the patients' access to healthcare professionals, without saturating the available resources, is one of the main expected outcomes of this remote monitoring approach.

Trial 3

Cardiac patients' trial
(LITO Polyclinic, Cyprus)

The healthservice24 solution will be tested on two groups of cardiac patients.

Group 1: these patients have had an acute episode, been admitted and stabilised, but need further monitoring. Using healthservice24, they can receive an earlier discharge.

Group 2: these patients, in a suspected acute episode, have been brought in for examination. A decision whether to keep them at the hospital for observation or to send them home must be taken. If the patient is discharged, and a possible abnormal condition is suspected, the patient will be equipped with the healthservice24 mobile solution to enable constant monitoring of the patient's state.

healthservice24 Coordinators And Consortium Partners

Overall Project Coordination:

Dipl.-Ing. Barbara Streimelweger, MBA
Ericsson Austria GmbH
Pottendorfer Straße 25-27
A-1121 Vienna
Austria
Tel.: +43 1 81100 6567
barbara.streimelweger@ericsson.com

Scientific Coordiantion:

Prof. Dr. Ing. Dimitri Konstantas
Universities of Twente and Geneva
Rue du General-Dufour 24
CH-1211 Geneva 4
Switzerland
Tel.: +41 22 379 76 59
dimitri.konstantas@cui.unige.ch

Technical Coordination:

Ing. Richard Bults
University of Twente
Application Protocol Systems Group
Drienerlolaan 5
NL-7500 AE, Enschede
The Netherlands
Tel.: +31 53 489 3743
bults@ctit.utwente.nl

Project funded by:

EUROPEAN COMMISSION
DG INFSO UNIT H4
Trans-European Telecommunications Networks – eTEN
Avenue de Beaulieu 31 00/49
1049 Brussels Belgium

Consortium Partners:

Ericsson Enterprise AB
LM Ericssonsväg 8
126 25 - Stockholm
Sweden
www.ericsson.com

University of Twente
Centre for Telematics and Information Technology
P.O. Box 217
NL – 7500 AE Enschede
The Netherlands
www.utwente.nl

Yucat
mobile business solutions
P.O. Box 208
NL – 3970 AE Driebergen
The Netherlands
www.yucat.com

UCY
University of Cyprus
75 Kallipoleos St.
P.O. Box 20537
1678 Nicosia
Cyprus
www.ucy.ac.cy

Medisch Spectrum Twente
P.O. Box 50000
NL – 7500 KA Enschede
The Netherlands
www.ziekenhuis-mst.nl

TMS International BV
P.O. Box 1123
NL – 7500 BC Enschede
The Netherlands
www.tmsi.com

Coperació Sanitària Clínic
Villarroel 170
EL – 38036Barcelona
Spain
www.csc.es

Polyclinic Paralimni LITO LTD
Sotiras Avenue 8
PO Box: 33251
5312 Paralimini
Cyprus

www.healthservice24.com

Summary Of Key Issues And Statements

- The main objective of healthservice24 is to test the feasibility of the deployment of the existing service prototype via trials. This will validate the precise conditions to be fulfilled for subsequent deployment.
- healthservice24 aims to provide a solution that allows patients to carry out their normal daily activities and to be easily monitored from a distance. This enhances patient quality of life and improves cost control for healthcare providers.
- Continuous monitoring and feedback using the healthservice24 solution enables hospitals to identify aberrations in the patient's condition and respond quickly to aberrations that might otherwise be missed and prove to be fatal.
- The healthservice24 solution provides research-driven pharmaceutical companies with a reduction in development costs and quicker time to market due to the improved quality of patient data and the increased speed of data collection during clinical trials.
- Using the healthservice24 solution to provide mobile healthcare gives hospitals and medical centres the opportunity to continue providing high quality care while significantly reducing some of their patient treatment costs.