6PM GROUP

6PM Business Centre
Triq it-Torri, Swatar
B'Kara BKR 4012, Malta

t: (+356) 2258 4500
f: (+356) 2148 9653

e: info@6pmsolutions.com
w: www.6pmsolutions.com

Title: emCare Case Study

The project: Launch of emCare 360

In July 2012, 6PM completed the year long implementation of an electronic mobile medical solution called emCare.

emCare, a first of a kind in Malta, seeks to empower people to monitor their health through home devices and web-based communication tools. A partnership between Vassallo Group's elderly care operation Caremalta and 6PM Group, emCare fuses both organizations' expertise in healthcare and technology.

emCare the innovative, electronic and mobile health services company provides continuous health and environment monitoring. Through the use of emCare's simple devices, people are empowered to monitor their health and enable emCare to protect them in their own environment. What distinguishes emCare's services is the fact that the data is registered, transferred to emCare's care centre and monitored continuously. The data can be accessed by the users' doctor, authorized persons such as their family and the users themselves.

Background & requirements

emCare's aims are various but they can be summed up as follows:

- To provide electronic and mobile health services to assist a person's continued integration within the community.
- To create a safe environment through continuous monitoring via a customized technology based system for the client's specific needs.
- To provide continuous monitoring via direct inputting and backing of the clients' health records through specialized devices. Immediate action can be taken if necessary.
- To ease professionals' work by giving them portable authorized access to their clients' records.
- To offer continuous interaction between clients and professionals.
- To keep emCare's clients informed about health issues through frequent articles published via the portal.

This created the need for an automated continuous eMonitoring and eCare system offering various peripheral devices to its customers with the role of helping their well-being and living environment. The system is also used by physicians who have a real time view into their patients' records and body vital signs.

The solution

The main challenge faced was the interoperability of a number of different and dispersed systems while offering a continuous 24/7 service and a rich user portal for the various groups of users.

The solution was a clustered server environment, fully separating the concern of the above main functionalities to ensure that each of them is functioning in its own isolation and not interfering with

each other if problems arise.

The portals were implemented using Liferay Portal, a free and open source enterprise portal project written in Java and distributed under the GNU Lesser General Public License and optional commercial license. Liferay Portal is a web platform with features commonly required for the development of websites and portals. It includes a built-in web content management system allowing users to build websites and portals as an assembly of themes, pages, portlets/gadgets and a common navigation.

6PM currently maintains its own version of the popular open source portal and also regularly commits the various feature enhancements and bug fixes for the portal back to its community supported version, supporting the open source movement.

The Care Centre software, responsible for the 24/7 monitoring, has been implemented in JavaFX, a software platform for creating and delivering rich internet applications (RIAs) that can run across a wide variety of devices and operating systems. The Care Centre software runs in a highly secure and controlled environment, only accessible to trained personnel, offering instantaneous notifications upon alarming readings or events.

The rest of the heterogeneous system is comprised of the eCare subsystem provided by Chubb Community Care. The eCare subsystem uses Chubb's proprietary hardware to connect to the client's homes using just their telephone lines. All the data transfer from the Care Centre and to the peripherals installed in the client's home or vice versa is done just using their telephone line. No Internet connection is necessary. Furthermore, the eCare subsystem offers an instantaneous phone call from one of our operators to our clients upon an alarm being triggered which furthermore boosts their confidence that they are being taken care for.

The whole software suite is accompanied by a number of hardware peripheral devices such as blood pressure monitor, blood sugar monitor, pulseoximeter, thermometer, fire alarm, gas alarm, panic button, perimeter sensor etc. All of those peripherals report in real time to emCare's Care Center software which is then used by the Care Center personnel to act on any abnormal events in the patient's vital signs and living environment.

Business benefits

Electronic health monitoring adds a new paradigm in healthcare, where the patient is monitored between physician office visits. This has been shown to significantly reduce hospitalizations and visits to the Emergency Room, while improving the patient's quality of life. eMonitoring and eCare also benefit patients where traditional delivery of health services are affected by distance and lack of local specialist clinicians to deliver services.

In 2003, the University of Arkansas for Medical Sciences implemented an eMonitoring program to enhance access to care for high-risk pregnant women living in rural areas. The Antenatal and Neonatal Guidelines, Education and Learning System (iANGELS) program provides real-time eMonitoring consultation among patients, their local physicians and medical centre specialists through a state-wide telemedicine network.

The program has reduced the state's 60-day infant mortality rate by 0.5 per cent by increasing the number of low birth weight infants delivered at a medical centre. In Alaska, the Alaska Federal

Health Care Access Network (vAFHCAN) connects approximately 180 Alaska Native community village clinics, 25 sub regional clinics, 4 multi physician health centres, 6 regional hospitals, and the Alaska Native Medical Center in Anchorage. More than 3,000 providers have engaged in 160,000 eMonitoring clinical consultations since 2001. It is estimated that in 2012, the AFHCAN eMonitoring program saved the state of Alaska $8.5 million in travel costs for Medicaid patients alone.

The UK's Department of Health's Whole System Demonstrator (rWSD) was launched in May 2008. It is the largest randomized control trial of eMonitoring and eCare in the world, involving 6,191 patients and 238 GP practices across three sites, Newham, Kent and Cornwall. 3,030 people with one of three conditions (Diabetes, Chronic Heart Failure and lzCOPD) were included in the eMonitoring trial. The trials were evaluated by: City University London, University of Oxford, University of Manchester, Nuffield Trust, Imperial College London and London School of Economics.

The results were staggering:

- 45% reduction in mortality rates
- 20% reduction in emergency admissions
- 15% reduction in A&E visits
- 14% reduction in elective admissions
- 14% reduction in bed days
- 8% reduction in tariff costs

The above is just a testament of the benefits which eMonitoring and eCare services provide for the people themselves and the various health associations. 6PM thrives to bring the above benefits to Malta and emCare is just the first step in the process.