Embedded Mobile

Telefónica Tele-Rehabilitation

Company Overview

Telefónica is one of the largest telecommunications companies in the world in terms of market capitalisation. The company has a significant presence in 25 countries and a customer base that amounts close to 282 million accesses around the world. Telefonica aims to be the driving force on e-health and already owns a solid Global Portfolio with Customer references along +15 products within ICT, Telehealth and Telecare.

Solution Overview

Telefonica's Tele-Rehabilitation solution is designed to cater for patients who are rehabilitating after an injury or operation. Many types of rehabilitation are catered for, including physical (e.g. after knee surgery), cognitive (after a stroke) and cardio-pulmonary (aerobic exercises).

Patients are provided with a touchscreen kit in their home. Doctors can remotely assign exercises for the patients to undertake – either physical or cognitive – and the patient can then input their experiences with the exercises; including ease with which it was performed, any pain experienced etc. Doctors can view the information via their on-line portal and alter future exercises to match the condition of the patient. The touchscreen uses Telefonica's standard M2M platform to communicate with the network.

In all cases of physical rehabilitation, the patient wears a connected brace on the injured area which transmits movement information to the touchscreen gateway. This information is then used to create an avatar of the patient, so they and their carers can view exactly how the joint or area is moving. The connected braces use Zigbee M2M communications to connect to the touchscreen.

Pulmonary rehabilitation is that which is done on the go (for example walking or running) and in these cases data is gathered via medical devices (e.g. a pulsemeter) connected to a mobile phone via Bluetooth. Data gathered includes heart rate, speed of walking/running and oxygen saturation in blood. Patients also input responses to a questionnaire on the difficulty of the exercise.

Benefits

- Improves patients' adherence to physiotherapy regimes which could last 4-12 weeks post-surgery
- Allows patients to undertake all their exercises in the home and only visit their doctor in the event of a concern
- Doctors and patients have access to an increased amount of accurate data and patient outcomes can be tracked over time
- Doctors have more time to spend with critical patients.

Current Status

Trials were commenced in 2009 in Spain with several public healthcare systems and in Chile in a private hospital. A trial was commenced in the UK with a public healthcare system in 2010.

This solution will go commercial in early 2011 and will be targeted at hospitals, social services and insurance companies.

Key Understandings / Best Practises

- Bottlenecks for surgery are being reduced by 50% in some cases
- In some cases physiotherapists only need to give 10 minutes per day to a patient rather than one and a half hours
- It was challenging to achieve accuracy in the measurement of exercises (the degree of movement or acceleration). Telefonica worked very closely with physiotherapists to develop the appropriate algorithms
- The logistics of the patients' kits are a challenge, including having them ready on time for individual patients, getting them to the right location, deleting data when rehabilitation is finished etc. This challenge is increased when hospitals are running the service but service providers are in charge of logistics.

Contact: carolina.pinartgilberga@telefonica.es