Innovative applications in the field of health care, CARE topic

PROSPECTIVE AND CHARACTERIZATION STUDY

Author: INCREASETIME®

Technology for better life

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Technological tendencies – CARE

- **cHealth (Connected Health)** – access to patients’ health data from anywhere at anytime

- **mHealth (Wearable Devices)** – use of biosensors and mobile communications to follow the health conditions of patients

- **Electronic patient records**

- **Real time big data analytics** – analysis of user health data and hospital indicators in real time. Evaluation of the effectiveness of different treatment intervention, based on cognitive intelligence
Technological tendencies – CARE

• **3D printing** – production at low cost of customized items, adapted to the physiological needs of each patient

• **Artificial intelligence** – increase of agility and decrease of the human error in clinical tasks. Acceleration of pharmacological development

• **Point-of-Care diagnosis** – broad set of quick tests that allow fast and on-site diagnostics

• **Virtual reality** – use of simulated virtual reality environments to accelerate the change of patients' change in a more secure, convenient, and accessible way
CARE topic - Social Challenges

1. Increasingly older population, subject to formal long-term care

2. Lower availability of families to nurse the elders

Population aged 65 or more subject to formal long-term care
(Source: OECD Health Data 2011)
The top ten diseases that represent a challenge for aging CARE are:

- Cardiovascular disease
- Cerebrovascular disease
- Hypertension
- Cancer
- Type 2 diabetes
- Parkinson's disease
- Dementia (including Alzheimer's disease)
- Chronic Obstructive Pulmonary Disease
- Osteoarthritis
- Osteoporosis
Wearables in CARE

In 2015, 117,000 wearables were sold in Portugal, which represents a 276% increase over 2014. (Source: IDC European Quarterly Wearables Tracker)

Wearables ↔ Internet of Things

✓ Remote health prevention and monitorization to avoid unnecessary in person appointments
✓ Anticipation of acute health conditions to reduce posterior problems and costs
Projects and Products for CARE – Health

H4D – Health for Development (https://www.h-4-d.com/): telemedicine booth, combining professional measuring instruments, screens and a communication system. The cabin, along with the Medical Access Consult Access package, allows physicians to perform general or specialized medical consultations remotely. The doctors guide patients through video conferencing, measuring vital signs, and conducting medical examinations that they deem necessary.

Medical Dispenser + (http://www.fagorhealthcare.com/en/blisters-packs/): helps to centralize all user information, improving adherence to treatment and avoiding interactions and duplications in your treatments. Offer all medicines together in one pack.

Keep Up (http://increasetime.pt/): Mobile application that integrates a set of services aimed at diabetic patients. The application consists of three working faces: monitoring, gamification and physical exercise.
Projects and Products for CARE – Participation

**TSBank Time and Skill Bank for Active Aging** ([http://www.tsbank.eu/](http://www.tsbank.eu/)): promotion of voluntary work of the elderly, making their knowledge and skills available in this way, increasing their self-esteem and general well-being, and promoting their empowerment and participation in society.

**Playtime** ([http://aal-playtime.eu/de/](http://aal-playtime.eu/de/)): motivates the accomplishment of exercises oriented to the emotions in order to stimulate cognitive processes, to develop physical activities and to promote the social inclusion. Uses sensors to propose personalized exercises more suitable for improved training.

**PrimerCog – Brain Training** ([http://primercog.pt/](http://primercog.pt/)): intelligent digital platform that provides a set of activities of stimulation, maintenance, monitoring and cognitive rehabilitation.
Projects and Products for CARE – Security

KeepCare Mob (http://increasetime.pt/): app that allows the continuous monitoring of the location and health status of the elderly by monitoring parameters such as heart rate, blood pressure, glucose, temperature, weight, or oxymetry.

GPS Dokodemo shoes: device placed on the shoe that reads the position of the user, being possible to analyze the characteristics of the movement and to alert in case of fall.

SHINESeniors (https://icity.smu.edu.sg/shineseniorn-home): wireless sensors located in the residences that monitor the habitual movements of the individuals. Changes to these movements are communicated to the caregiver through an app.
Projects and Products for CARE – Measurement, Monitorization and Research

AAL4ALL (http://www.aal4all.org/?lang=Pt): innovative project in the area of assisted environments that involves 27 partner institutions, among industries and R&D institutions. The objective of AAL4ALL is to develop Ambient Assisted Living (AAL) products and services to provide assistance and increase the independence of seniors and people with disabilities, anchored in the definition of specific product standards and services.

K-shirt (http://www.ideiam.com/?work=k-shirt&lang=pt-pt): health monitoring device that allows monitoring of various vital signs such as heart rate, temperature, respiratory rate and ECG.

SensoSCAN (https://www.sensogram.com/sensoscan): device to use around on finger that uses optical sensors to measure blood pressure, heart rate, saturation of oxygen in the blood and rate of breathing.
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