Chapter 34
mHealth R&D Activities in Europe

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ABSTRACT

The scope of the chapter is to present a thorough review on the most up to date research and development activities funded by the European Union in the m-health sector and more specifically in the domain of m-Health Innovations for Patient-Centered Care. This review brings to light the latest research directions and trends that are taking place around Europe and the world. The mhealth market is analyzed along with the focusing on the main apps and their classification. Moreover, it presents the trends of the research topics addressed and what are the plans and future activities pushed. The obstacles faced, the pros and cons and the proposed actions, and their match to real life situations are also discussed. The chapter concludes on the current trends and the potential market on m-health solutions and innovations and how they are trying to address the global need for patient-centered care.

INTRODUCTION

Health care is the industry that leads the technological developments, while adopting first the Information and Communication Technologies (ICTs) innovations (Koumpouros I., 2012). The complexity and the individualities of the health care sector constitute a fertile soil for any technological innovation. The issues faced are numerous, i.e. the exponential growth of data produced, the financial viability of the system, security and privacy issues, the ageing of the population, etc. (Department of Economic and Social Affairs, Population Division, 2007), (Department of Economic and Social Affairs, Population Division, 2001), (Koumpouros Y., 2014). Technology can be proved a valuable asset in the hands of all involved key actors (i.e. health professionals, hospitals, ministry of health, stakeholders, patients, insurance companies, etc.). There is a great need for well-established solutions able to manage effectively the flow of information between the different parties and actors. ICTs are used in many ways to serve

this purpose. Hospital Information Systems (HIS), Laboratory Information Systems (LIS), Picture Archiving and Communication Systems (PACS) are only some of the existing solutions already adopted effectively by almost any hospital around the globe. More recent technologies, like cloud computing and big data, are also used due to the need of better, more accurate and immediate results. Nevertheless, several problems still exist. Interoperability is one of the major obstacles faced for many years now. The absence of common protocols, standards, etc., makes interoperability still a goal for the long future. On the other hand, the explosion of new technological solutions, along with the appearance of the net generation, force to find new ways to provide the health care services (PWC, 2012), (Jones & Shao, 2011), (Bayne & Ross, 2007). In the new era, according to (IMS, Patient Apps for Improved Healthcare: From Novelty to Mainstream, 2013), the main stakeholders of the health domain in the short future will be the patients, while nowadays physicians and payers play the key role, and in the past physicians were considered as the only stakeholders. Health consumers have a totally different profile than the ones of the previous years. Patients are more updated and most of the times they may discuss further or even argue with their physicians. This is because they may have found some information on the Internet or they may have discussed with some others (e.g. close friends that faced a similar condition, etc.) and thus, have already formed some opinions for their certain case. Nowadays, patients are looking for information related to their interests and health condition before visiting a doctor. The main source of information is the Internet. A big question arises of course whether this piece of information is reliable or not. Today's problem is the overflow of information found on the Internet and the lack of a quick and easy way to locate the right information, for the right person, from a reliable source. Misleading can be very easy. Simultaneously, the need for personalized solutions is of utmost importance for the end users. Patients are seeking answers for their specific individual needs from any place, at any time.

Mobile technology is proved to be a valuable tool in many domains. The health care industry is one of the domains that are penetrated with many such solutions. The use of the term mHealth is widely used the past years for such a purpose. However, there is no standardized definition of mHealth. Some of the most common used definitions are presented below:

- The World Health Organization -WHO (Youssef, MacCallum, McDonald, Crane, & Jackman, 2012) refers to mHealth as "the spread of mobile technologies as well as advancements in their innovative application to address health priorities".
- The National Institutes of Health (NIH) defines mHealth as "the use of mobile and wireless technologies along with wearable and fixed sensors for the improvement of health outcomes, healthcare services, and health research".
- The Global Observatory for eHealth - GOe (WHO, mHealth. New horizons for health through mobile technologies: Based on the findings of the second global survey on eHealth, 2011) and the European Commission (EC, COM(2014) 219 final, 2014) defined mHealth as "medical and public health practice supported by mobile devices, such as mobile phones, patient monitoring devices, personal digital assistants (PDAs), and other wireless devices".
- United Nations Foundation (VitalWaveConsulting, 2009) refers to mHealth as "the provision of health-related services via mobile communications".
- HIMSS - Healthcare Information and Management Systems Society (HIMSS, Healtcare Information and Management Systems Society, 2015) supports that "mHealth is the generation, aggregation, and dissemination of health information via mobile and wireless devices."

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