Chapter 51
Case Studies in Customization of E-Health Services

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ABSTRACT

This chapter discusses existing service customization projects in the health sector. It first defines e-health and compiles a list of personal health management applications that range from those that provide access to electronic health records and health information, to community interaction and social media environments, and finally to decision support tools for disease management. It presents examples of e-health services that have adopted customization/ personalization techniques as the means to provide better service, such as those from the National Health System (NHS) in the UK, and online portals such as Healthspace, DiasNet, and others. This chapter concludes with the presentation of a framework for acceptance of personalized e-health services by patients and citizens.

INTRODUCTION

E-health refers to the application of information and communications technologies to any health related activities and services, that are provided to patients and their family by healthcare providers (EUROPA, 2008; Englebardt & Nelson, 2002; Eysenbach 2001; Pagliari et al., 2005). From an IT perspective, e-health is defined as the medical informatics applications, especially internet enabled applications that facilitate the management and the delivery of health care services (Pagliari et al., 2005). Richardson (2006) adopts a broader view of e-health and classifies it further within the terms: telecare, telemedicine, telenursing, remote patient monitoring, telehealth, decision support system, e-learning for health professionals and public health monitoring.

Table 1 presents the range and categorizes e-health applications.

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Table 1. Personal health management applications (US (2006), adapted from: http://www.health.gov/communication/ehealth/ehealthTools/pdf/ehealthreport.pdf)

Applications	Description
Health Information	Applications providing access to health information organized as searchable information (i.e. online medical database) or as specific content (i.e. health portals).
Behavior change/prevention	Applications supporting a specific behavior change (i.e. stop smoking) or aiding disease prevention.
Health self-management	Applications assisting in achieving and maintaining healthy behavior in various lifestyle areas (i.e. diet, fitness). Mostly marketed online.
Online communities	Applications facilitating the online interaction to provide social support, exchange health information and supporting decision making.
Decision support	Applications providing structured support in various health related fields such as treatment decisions, health insurance programs or healthcare providers.
Disease management	Applications providing surveillance, recordkeeping, and communication devices to help patients manage a specific disease (i.e. diabetes).
Healthcare tools	Applications facilitating the interaction between patients and healthcare providers (i.e. personal health records).

Over the last 20 years, patients are concerned more often with their personal well-being decisions, which indicate a shift from curing medical problems to preventing health problems (Chhanabhai et al., 2006).

Therefore, e-health should not focus merely on building cost-effective, convenient, accessible and quality healthcare solutions. E-health's ultimate vision is to empower patients, families and societies to engage in the decision-making and management of their own health status. Many e-health sites provide services across the spectrum presented in

Table 1. WebMedline is a Common Gateway Interface (CGI) application, which uses Hypertext Markup Language (HTML) in order to display data. The main idea of this project was to design an application which would allow resources like Medline data, evidence-based-medicine reviews and journals, to be seamlessly integrated and to become available online to physicians (Detmer & Shortiliffe, 1997). Another approach to meet physicians' needs is the CliniWeb application. CliniWeb is a database, which contains several Web resources; each one of them indexed using Medical Subject Heading (Detmer & Shortiliffe, 1997). Medically trained indexers search the Internet, in different medical interest locations, like specified web sites, medical schools, governmental health agencies and medical publishers, focusing on medical information. As soon as the indexer finds a piece of information, all relevant data is added into the CliniWeb (the name of the source, the URL, the institution etc.). Another application, which serves a completely different task than the other two mentioned above, is DXplain. DXplain is a decision support system that offers the opportunity to the user to interact with the system, instead of passively browsing and downloading information (Elhanan et al., 1996). The physician can enter different kinds of medical data and laboratory results, like cough, fever etc, in order to retrieve a list with all the possible diagnoses. DXplain contains information for more than 2,000 diseases, 4,700 clinical findings and 65,000 interrelationships. MedWeaver, is a decision support system, which performs assisted searches in order to direct users to useful Internet sites. MedWeaver doesn't contain content itself, but it's actually sharing the content provided by other applications and databases, like WebMedline, CliniWeb and DXplain (Detmer & Shortiliffe, 1997). MedISeek is a system that focuses on the contribution of medical information as an image.