

Chapter 17

A Smart Card Based Software System for Surgery Specialties

Nektarios Konstantopoulos
OptionsNet, Greece

Ioannis Panaretou
OptionsNet, Greece

Vasileios Syrimpeis
*Robotics Research Group, University of Patras,
Greece*

Nikolaos Aspragathos
*Robotics Research Group, University of Patras,
Greece*

Vassilis Moulianitis
University of Aegean, Greece

Elias Panagiotopoulos
General University Hospital of Patras, Greece

ABSTRACT

This chapter presents a software system based on smart cards technology for recording, monitoring and studying patients of any surgery specialty (General Surgery, Orthopedics, Neurosurgery, etc.). The system is also suitable for the computerization of any surgery specialty clinic and the respective surgical material repositories. Dynamic customization functions adapt the system to the different characteristics of the surgery specialties. Special customization is involved concerning implantable materials. The .NET platform and Java Cards used for the development of the system and the architectural model of the system are designed towards satisfying the basic integration and interoperability issues. The developed system is “doctor-friendly” because it is based on classifications and knowledge grouping used in every day clinical practice provided from medical experts on the field but is not intended to be a complete Electronic Medical Record (EMR). The major scope of this effort is the development of a system that offers a fast and easy installable, low cost solution in health environments still immature in adopting solutions based exclusively on Informatics and is designed to be installed in small Private Medical Consulting Rooms to Community Clinics, Health Centers, Hospital Surgery Departments till Central Health Organizations.

DOI: 10.4018/978-1-5225-2237-9.ch017

INTRODUCTION

Software systems are broadly used in healthcare, usually under the terms of Electronic Health Record (EHR), Electronic Patient Record (EPR) or Electronic Medical Record (EMR). These terms are often used interchangeably, although differences between them can be defined. An EMR is a patient record that mostly contains clinical data, is created in Hospitals and can be used as a source for the EHR (Habib, 2010), (Kierkegaard, 2011). An EHR is a superset of the EMR containing administrative, financial and clinical data, offering facilities to patients, physicians and other health care providers, employers and payers or insurers.

Smart cards are used in many fields as a reliable and proven solution for that are now making their mark on healthcare. A portable mini-computer that can be programmed for specific services is a basic description of a smart card. In order healthcare to become a more digital area, smart cards technology is embraced. Smart cards are generally used for authentication and access purposes as well as data repositories.

Their added values, more analytically, are: (Grogan, 2007)

1. Fast access to accurate information.
2. Acting as a portable data repository.
3. Speeding manual processes such as hospital admissions.
4. Reducing fraud.
5. Streamlining administrative procedures.
6. Decreasing expenses from patient verification to insurance confirmation.
7. Facilitation of electronic claims submissions.
8. Acting as a payment source.
9. Linking disparate data sources in a secure fashion.

This paper presents a smart card based Software System for Surgery Specialties (SCS⁴) suitable for any surgery specialty patient (General Surgery, Orthopedics, Neurosurgery, etc) and any surgery department. Minor medical history and health information are not recorded therefore SCS⁴ is not intended to be a complete Electronic Medical Record (EMR). SCS⁴ is designed to offer a fast and easy installable, low cost solution in health environments still immature in adopting solutions based exclusively on informatics, as a first step towards controlling and computerizing major issues of a health system. SCS⁴ is designed to be installed in Small Private Medical Consulting Rooms, Community Clinics and Health Centers to Hospital Surgery Departments, Private Surgery Clinics, till Central Health Organizations like the Ministry of Health and Country Region Health Offices. “Doctor friendliness” and adaptability to all surgery specialties, are major benefits of the system. SCS⁴ is installed in a pilot mode in two Orthopedics Clinics in two different Hospitals and a third installation on a General Hospital Orthopedic Clinic is pending.

The remainder of the paper is organized as follows. In section 2, we introduce related work concerning smart cards usage in healthcare. Section 3 describes the proposed system and reveals his advantages and disadvantages comparing the functionality of the national health system as it works nowadays with the functionality of the national health system if it is based on scs⁴. In section 4, the case studies in two general hospitals are presented. In section 5, we discuss the results and finally in section 6 the conclusions are presented.

14 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:

www.igi-global.com/chapter/a-smart-card-based-software-system-for-surgery-specialties/180593

Related Content

Information Architecture for Pervasive Healthcare Information Provision with Technological Implementation

Chekfoung Tanand Shixiong Liu (2017). *Healthcare Ethics and Training: Concepts, Methodologies, Tools, and Applications* (pp. 498-527).

www.irma-international.org/chapter/information-architecture-for-pervasive-healthcare-information-provision-with-technological-implementation/180599

Are Adult Women or Men Who Use the Internet as a Health Information Resource More Health Literate?

Filiz Yildirimand Metin Çakir (2016). *Handbook of Research on Advancing Health Education through Technology* (pp. 114-138).

www.irma-international.org/chapter/are-adult-women-or-men-who-use-the-internet-as-a-health-information-resource-more-health-literate/137959

Curriculum Design for Interprofessional Education in the Preclinical Health Sciences

Barbara Lynn Joyce, Nelia Afonso, Jill E. Stefaniak, Victoria C. Luciaand Stephanie Swanberg (2015). *Transformative Curriculum Design in Health Sciences Education* (pp. 159-193).

www.irma-international.org/chapter/curriculum-design-for-interprofessional-education-in-the-preclinical-health-sciences/129430

Narratives of Journal Writing

Jennifer Lynne Bird (2020). *Using Narrative Writing to Enhance Healing* (pp. 269-294).

www.irma-international.org/chapter/narratives-of-journal-writing/242505

An Intelligent and Secure Framework for Wireless Information Technology in Healthcare for User and Data Classification in Hospitals

Masoud Mohammadian, Dimitrios Hatzinakos, Petros Spachosand Ric Jentzsh (2016). *Handbook of Research on Advancing Health Education through Technology* (pp. 452-479).

www.irma-international.org/chapter/an-intelligent-and-secure-framework-for-wireless-information-technology-in-healthcare-for-user-and-data-classification-in-hospitals/137972