▼ Introduction to IT Applications in Healthcare Environments Minitrack

Radmila Juric
University of Westminster
juricr@wmin.ac.uk

Jasna Kuljis
Brunel University
jasna.kuljis@brunel.ac.uk

Patricia Oberndorf
Carnegie Melon University
po@sei.cmu.edu

This minitrack focuses on a spectrum of IT applications in healthcare related to a variety of problems: from data sharing in primary care, hospitals and public health domains to integrated and pervasive healthcare environments. We have chosen 7 papers from US, Canada, UK, Germany and Austria, which show the diversity of IT healthcare applications. They pave the way to systems where classical healthcare, delivered by professionals, is extended with personalized self-care, or home care or any other health service, which can be delivered at any time and in any place.

Paper 1 focuses on coupling a clinical decision support (CDS) system with electronic medical record (EMR) systems, to improve adherence to medical evidence and the rate of knowledge transfer in healthcare environments. They report on the development and evaluation of an open source and reusable software component, released on Sourceforge, which is agnostic to any EMR system, but which encapsulates standardized CDS functionality.

Paper 2 gives design strategies for building customizable public health knowledge management systems, created by the Center of Public Health Informatics at the University of Washington, US. Its purpose is to develop IT applications to support the collection, description, management and retrieval of public health documents, data sets, software etc. The authors report on collaborative user-designer approach and multiphase prototyping methodology, which delivers the system and improves the quality of public health services.

Paper 3 is an application of the ETICS project, funded by the European Commission, which provides an integrated infrastructure for improving interoperability and information sharing in software systems, including healthcare. ETICS helps to evaluate integrated software solutions with published standards, such as DICOM and HL7, and validates the portability of software components in Grid and distributed environments. The authors demonstrate the implementation of ETICS in applications, which requires the sharing of healthcare images across libraries and applications implemented by DICOM and across DICOM servers, which extend the public domain UCDMC DICOM software.

Paper 4 centers on pseudonymization of patient clinical data, based on secure integration of their primary and secondary usage. This is particularly valuable for nationwide healthcare systems, which store lifelong patient medical data. Their solution ensures that the patient is in full control of his/her data with the maximum security, achieved by applying authorization on encrypted data. The testing of their prototype has been conducted in Austria and supported by the Austrian Federal Ministry of Economics and Labour and the local government of Vienna.

Paper 5 proposes a single sign-on smart card management approach, based on the latest introduction of the national healthcare telematics infrastructure in Germany, where every patient and physician will be issued a smart healthcare card. They compare the effectiveness of their and some other decentralised approaches in healthcare management and demonstrate that a single card system imposes no additional development requirements on such systems, but may reap benefits in a very short time.

Paper 6 introduces a specific way of creating value propositions in healthcare systems, derived from four methods and associated case studies: Return on Investment, Economic Assessment, Pragmatic Modelling and Stock Market. The authors discuss the relative merits of all of them and favor Pragmatic Modelling, which promises a relatively fast assessment of the value of a potential IS solution in healthcare, and identifies which specific stakeholders would benefit.

Paper 7 is an IT application for an intelligent hospital ward, based on ontologies and semantic web tools. It generates a pervasive hospital computational environment, with provisions for data sharing, interoperability and context awareness, as a result of processing data generated from embedded devices in hospital wards. It also proves that it is possible to merge traditional software applications with the pervasiveness of modern hospital environments.