

Chapter 13

Architecting for Connected Healthcare: A Case of Telehomecare and Hypertension

Torben Tambo

Aarhus University, Denmark

Nikolai Hoffmann-Petersen

Regional Hospital Holstebro, Denmark

Karsten Bejder

Aarhus University, Denmark

ABSTRACT

The healthcare system is in many countries operated by the governments, and interaction with the healthcare system is one of the most frequent interactions between citizen and government. Demographic, medical, and technological changes are likely to bring new aspects of connectedness into the everyday life of people and place healthcare and homecare professionals in new roles. A transformation is taking place where hospital best practices are constantly reducing patient's in-hospital stays to alternative, less-costly care—notably at home. Telemedicine, telehealth, eHealth, home monitoring, and self-care are essential aspects of this transformation. Many issues are influencing this transformation, and new barriers are showing up where others are removed. A broadly oriented enterprise architecture effort is presented for the underpinning of the change process. The architectural approach encompasses views of the citizen, the healthcare system, the information infrastructure, and the citizen-oriented technology. A case of telemonitoring and self-care is presented using mobile hypertension measurement on a large-scale population cohort. Evaluation of the acceptance and success of the solutions is done within a combined understanding including technology, economy, organization, and culture.

DOI: 10.4018/978-1-4666-1824-4.ch013

INTRODUCTION

Telemedicine, TeleHealth, eHealth, telehomecare, and similar ICT-based systems are assumed to be critical in providing healthcare solutions in the future with ageing population, healthcare system under financial pressure, and with the “epidemic” in life-style chronic diseases (Kun, 2001). Traditionally, healthcare in industrialized societies has been built upon a physical, direct contact between healthcare professional and the citizen (patient). Physical interaction has put a linear-to-exponential load on the healthcare system. With new, smart electronic solutions, it is the belief that home-monitoring and self-care solutions will reduce the load by the individual patient with the distinct medical conditions on the healthcare system (Bellazzi, 2001). Interhuman interaction within the physical rooms of the healthcare system could be shifted into virtual rooms where none of the parties are limited in space and—in some case—also time. The logistics of patients, nurses, and doctors could be replaced by a logistics of information.

Many projects in this area are, however, still at an experimental level and narrowly technologically focused projects tend to overlook economic, social, and organizational issues like cases found in Savel et al. (2010) and MacFarlane et al. (2006). Even technologically oriented projects tend to focus on patients and “gadgets” and overlook infrastructure, and infrastructure might relate to hosts of new issues such as repositories, communication protocols, equipment, patient-doctor information logistics, embedding of new data into existing hospital systems, etc. This chapter is based on two case studies aimed at creating benefits of telemedicine both at the local and national level with a critical focus on the cross-organizational collaboration and communication. The chapter argues from the first of the projects that are looking at founding telehomecare as a cross-organizational phenomenon and the establishing of organizational constructs as the key transitional element

from having experimental telehomecare and into operational telehomecare.

The lens used for this chapter is the investigation of the prerequisites in obtaining valuable connectedness between citizen and government, the technological, social, economic and organizational architecting necessary to make such a connection meaningful and create sound (business) cases. The disciplines of enterprise architecture and partially information systems are the bearing theoretical viewpoints each having its embedded paradoxes. Even if new public management strongly influences in governmental healthcare services, and a regime of business terminology is widespread, then medicine, people, and politics dominate are the main driving forces. Consequently, the strategic management objectives driving enterprise architectures might come from anything else than traditional market-driven profit-potentials.

The aim of the chapter is to illustrate a requirement for a flexible, well-defined architectural approach with a strong focus on engineering of organization, professional and clinical acceptance, user orientation, intra-/inter-organizational interfaces, and infrastructure more than technology itself.

BACKGROUND

This chapter has its background in the Danish healthcare system (Dinesen, et al., 2007; Strandberg-Larsen, et al., 2010; Pedersen, et al., 2011) that consists of the primary care mainly General Practitioners (GPs), but also groups like dentists, therapists, and various medical specialists. All act as self-employed despite being largely governmentally funded. The secondary care consists of hospitals, clinics, and various care and rehabilitation centers; most are governmentally run enterprises; a few are privately held. The tertiary sector is municipal or private care in form of homecare or nursing homes. Almost all revenues in all the sectors are funded by the government in

18 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/architecting-connected-healthcare/67028

Related Content

IT Governance and IT Risk Management Principles and Methods for Supporting 'Always-On' Enterprise Information Systems

Mario Spremic (2010). *Always-On Enterprise Information Systems for Business Continuity: Technologies for Reliable and Scalable Operations* (pp. 1-16).

www.irma-international.org/chapter/governance-risk-management-principles-methods/36588

Internal Social Networks: The Danger of Misleading Promises

Martin Heitmänn and Monique Goepel (2014). *Handbook of Research on Enterprise 2.0: Technological, Social, and Organizational Dimensions* (pp. 298-313).

www.irma-international.org/chapter/internal-social-networks/81112

Factors Influencing the Adoption of Mobile Application Development Platforms: A Qualitative Content Analysis of Developers' Online Reviews

Mohammad Kamel Daradkeh and Haneen Ahmad Saleh Sabbah (2019). *International Journal of Enterprise Information Systems* (pp. 43-59).

www.irma-international.org/article/factors-influencing-the-adoption-of-mobile-application-development-platforms/238835

A Weighted Monte Carlo Simulation Approach to Risk Assessment of Information Security Management System

Seyed Mojtaba Hosseini Bamakan and Mohammad Dehghanimohammadabadi (2015). *International Journal of Enterprise Information Systems* (pp. 63-78).

www.irma-international.org/article/a-weighted-monte-carlo-simulation-approach-to-risk-assessment-of-information-security-management-system/143267

Enterprise Application Integration from the Point of View of Agent Paradigm

M. Yoo (2007). *Enterprise Architecture and Integration: Methods, Implementation and Technologies* (pp. 225-238).

www.irma-international.org/chapter/enterprise-application-integration-point-view/18370