Chapter 99
A Case Study of the Health Cloud

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ABSTRACT

Initiatives have recently been taken to facilitate effective sharing and collaboration of healthcare information. The process undertaken to manage healthcare data is always in debate. The healthcare industry is encouraged to leverage technology solution for providing improved services to patients and doctors. The chapter explains the need of the healthcare process re-engineering through the implementation of Software as a Service (SaaS). It also highlights the potential and challenges of integrating SaaS-based health cloud in the healthcare industry. This chapter explores the exciting journey of the Indian healthcare transformation through technology implementation. Moreover, the chapter discusses the different healthcare clouds and deployment models. It illustrates SaaS-based solutions for the healthcare segment and argues that cloud-based healthcare and mobile healthcare by use of portable devices can make health consultation convenient for patients across the world.

INTRODUCTION

With the ascending health care expenditure, healthcare service providers are steadily seeking mechanisms to stay competitive and provide quality service to the customers. However, not much research has been done on the implementation of the Business Process Re-engineering (BPR) for the healthcare systems. Healthcare industry has conventionally focused on breakthroughs in operating procedures and technology to stay competitive. However, healthcare service providers have started to understand that BPR initiatives could be a better solution to achieve competitive advantage.

Reengineering modus operandi enable healthcare service providers to take a precise look at the processes involved within the organization, identifying redundancy and inefficiency that can be removed from the system. The process reengineering methods are used by managers to discover the best processes for performing work, and these processes can be reengineered for optimized output (Weicher et al., 1995). A core business process usually creates value by the capabilities it gives the company for competitiveness. A finite number of such vital business processes can be determined in a company, and improving those processes can lead to business enhancement.

DOI: 10.4018/978-1-4666-6539-2.ch099

The advantage of reinventing hospitals holds the tangible and realistic promise of profoundly cutting on cost and dramatically enhancing the quality of care provided (Harmon, 1996). The recognized reasons for the emergence of BPR are identified as consumers, global competition, technological development and IT (Francis & McIntosh, 1997). For re-engineered processes, IT is an enabler and, for any reengineering program, it is necessary to consider the enormous benefits achieved by using technologies such as document image processing and expert systems (Morris & Brandon, 1993).

With the globalized fierce competition in healthcare arena, it has become absolutely necessary for the healthcare service providers to transform and execute technology enabled processes for healthcare record management. The improved process enhances patient doctor collaboration and efficient management of patient records.

A health cloud is the interconnection of a large number of computers and servers dedicated to cater for the needs of the healthcare industry. The healthcare service is delivered to the user who can be a doctor or patient through the internet connection. The cloud service allows users to access the hardware and software managed by the third parties at remote locations (Figure1). As a result, Cloud computing has brought major transformation in how information is stored and accessed. The entire scenario, today, has drifted from desktop centric to document the centric context, while the cloud computing framework encourages re-use of IT capabilities.

The primary value proposition of cloud computing is to pay only for the services a user consumes. As an example, organizations can run multiple applications in the cloud and pay for only what they use based on the number of virtual CPU's, storage and network utilization. The cloud model can be useful to run software, handle testing, expand storage and simplify collaboration. It enables computing infrastructure to be considered as a service and leads to enhanced agility and scalability.

BACKGROUND

Cloud Computing is an interesting methodology enabled by delivering software, infrastructure and the entire computation platform as a service. Contrary to traditional Web hosting providers, cloud computing, delivers pay-per-click services. It means users only have to pay for the resources they use over time (Dawoud, Takouna & Meinel, 2010). These services are offered over the Internet by large data and computing centers (Feng, Chen & Liu, 2010).

The cloud computing is a service oriented and not application oriented. It offers on-demand virtualized resources as an assessable and chargeable service (Buyya, Yeo & Venugopal, 2008). It can also make convenient for the patients to find and keep track of their own health records (Grogan, 2006).

The healthcare applications for cellular network had gradually gained momentum over the last few years (Blake, 2008). The escalation in the invasion of mobile networks in remote

Figure 1. Health Cloud infrastructure
Data Source: Image by Author